July 2020

A FRAMEWORK FOR PERFORMANCE-BASED FACADE DESIGN: APPROACH FOR AUTOMATED AND MULTI-OBJECTIVE SIMULATION AND OPTIMIZATION

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A FRAMEWORK FOR PERFORMANCE-BASED FACADE DESIGN: APPROACH FOR AUTOMATED AND MULTI-OBJECTIVE SIMULATION AND OPTIMIZATION

A Dissertation Presented

by

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Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2020

Department of Environmental Conservation

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ABSTRACT

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MAY 2020

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Buildings have a considerable impact on the environment, and it is crucial to consider environmental and energy performance in building design. Buildings account for about 40% of the global energy consumption and contribute over 30% of the CO2 emissions. A large proportion of this energy is used for meeting occupants' thermal comfort in buildings, followed by lighting. The building facade forms a barrier between the exterior and interior environments; therefore, it has a crucial role in improving energy efficiency and building performance.

In this regard, decision-makers are required to establish an optimal solution, considering multi-objective problems that are usually competitive and nonlinear, such as energy consumption, financial costs, environmental performance, occupant comfort, etc. Sustainable building design requires considerations of a large number of design variables and multiple, often conflicting objectives, such as the initial construction cost, energy cost, energy consumption and occupant satisfaction. One approach to address these issues is the use of building performance simulations and optimization methods.

This research first investigates and highlights the key research methods, issues and tools associated with building performance simulations and the optimization methods. Then a novel method for improving building facade performance is presented, taking into consideration occupant comfort, energy consumption and energy costs. The dissertation discusses development of a framework, which is based on multi-objective optimization and uses a genetic algorithm in combination with building performance simulations. The framework utilizes EnergyPlus simulation engine and Python programming to implement optimization algorithm analysis and decision support. The framework enhances the process of performance-based facade design, couples simulation and optimization packages, and provides flexible and fast supplement in facade design process by rapid generation of design alternatives. The dissertation describes the components and functionality of this framework in detail, as well as two-step optimization technique which is a new technique that combines GA and machine learning. The dissertation also presents results and validation techniques and provides conclusions of the study.

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NOMENCLATURE

AEC	Architecture, Engineering, and Construction
ANN	Artificial Neural Network
BIM	Building Information Modeling
BPA	Building Performance Analysis
BPS	Building Performance Simulation
CSV	Comma-Separated Value
DOE	Department of Energy
DGI	Daylight Glare Index
EA	Evolutionary Algorithm
GA	Genetic Algorithm
GUI	Graphical User Interface
gbXML	Green Building eXtended Markup Language
HVAC	Heating, Ventilating, and Air Conditioning
IFC	Industry Foundation Classes
LEED	Leadership in Energy and Environmental Design
MOEA	Multi-Objective Evolutionary Algorithms
MOO	Multi-Objective Optimization
NSGA-II	Non-dominated Sorting Genetic Algorithm-II
PMV	Predicted Mean Vote
PPD	Predicted Percentage of Dissatisfied
R	Thermal Resistance

VT	Visible Transmittance
U	Heat Transfer Coefficient U
VLT	Visible Light Transmittance
WWR	Window to Wall Ratio

CHAPTER 1

INTRODUCTION

1.1 Research Background

Energy use of buildings and the release of carbon greenhouse gases associated with their operations are one of the largest contributors to climate change, which is considered as a major problem for the built environment. The buildings and construction sector combined are responsible for 36% of global final energy consumption and nearly 40% of total direct and indirect CO_2 emissions (IEA 2019). Energy demand for building operations continues to rise, driven by improved access to energy in developing countries, greater ownership and use of energy-consuming devices, and rapid growth in global buildings floor area, at nearly 3% per year (IEA 2019).

Climate change refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and which persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or human activity. Global climate change, depletion of natural energy resources, building occupants' needs and comfort expectations, increasing awareness of the relation between indoor environmental quality and health and wellbeing of occupants and their productivity, have increased the demand of integrated approach for high-performance design to manage all these aspects. The current trend of designing high-performance,

energy-efficient buildings has increased the need for tools, frameworks and methods that can aid the decision-making process.

Energy consumption is usually divided into three main sectors: industry, transport, and other uses. Buildings' energy consumption is considered as the third group. Growth in population, increasing demand for building services and comfort levels, together with time spent inside buildings, contribute to increasing energy demand in the building sector, which has raised building energy consumption beyond the level of transport and industry. For this reason, energy efficiency in buildings is currently a prime objective for energy policy at regional, national and international levels. Buildings represent a large portion of the world's energy consumption and associated CO_2 emissions. For example, based on recent studies the building sector represents 39% of the energy consumption and 38% of the CO_2 emissions in the U.S. (Amasyali 2018).

A large proportion of building energy consumption is used to regulate thermal conditions in buildings. Sources of consumption vary between residential and commercial buildings. Energy consumption for heating, lighting, and cooling are more than other sectors (Figure 1). The building envelope forms a barrier between the exterior and interior environments, and has a crucial role in improving energy efficiency and building performance. Improvement of facade design can reduce energy needs associated with cooling, heating and lighting. Therefore, this research focuses on performance-based facade design, appropriate simulation and optimization tools and methods for design analysis and support.

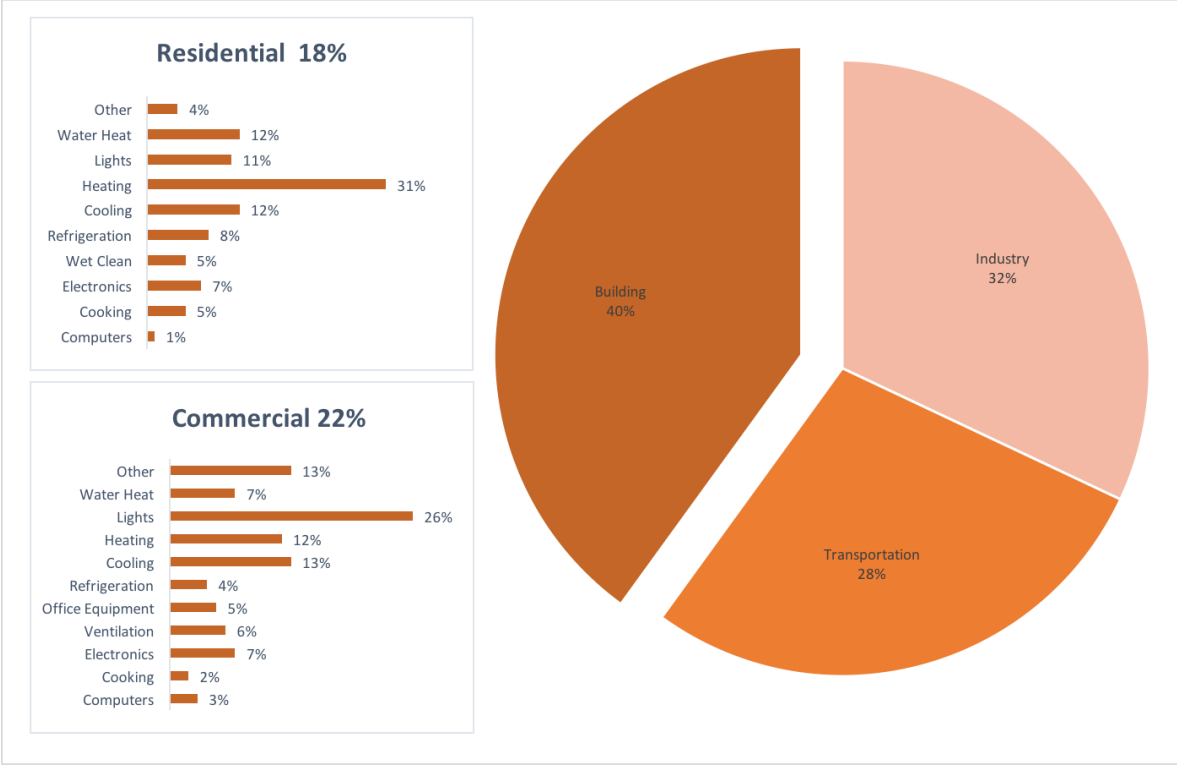


Figure 1: Energy consumption by sectors (Adapted from Attia 2013).

Building performance simulation (BPS) provides relevant design information by indicating potential (quantifiable) directions for design solutions. BPS tools and applications improve design decision-making by providing quantifiable data about building performance. BPS tools are an integral part of the design process for energy efficient and high-performance buildings, since they help in investigating design options and assess the environmental and energy impacts of design decisions (Attia 2013). The important aspect is that simulation does not generate design solutions, instead, it supports designers by providing feedback on performance results of different design scenarios.

Optimization is a method for finding a best scenario with highest achievable performance under certain constraints and variables. There are different methods for

optimization, requiring use of computational simulations to achieve an optimal solution, or sometimes requiring analysis or experimental methods to optimize building performance without performing mathematical optimization. But in BPS context, the term optimization generally indicates an automated process that is entirely based on numerical simulation and mathematical optimization (Nguyen 2014). Integrating BPS and optimization methods can form a process for selecting optimal solutions from a set of available alternatives for a given design problem, according to a set of performance criteria.

1.2 Role of Facade Design in High Performance Building

The facade is the primary barrier between an interior and exterior environment of any building, d as such greatly influences energy efficiency, building performance and occupant comfort. Highest energy consumption for different types of buildings is consumed by the HVAC systems, followed by lighting systems. Space heating, space cooling, water heating and lighting account for close to 70% of site energy consumption (Harish 2016). Therefore, heating, cooling, and lighting are the main domain to focus for reducing energy consumption in buildings. The energy requirements for heating, cooling, and lighting of the building are strongly driven by the facade performance, especially the glazing part. Glazing systems for buildings and windows have always been a critical element in facade design, and have significant impact on occupants, energy use and energy costs. Glazing parts provide view but must control glare, they allow daylight to enter but must control solar transmittance and cooling loads. Glazing systems provide a degree of connection with the outdoors and impact psychological comfort, but they must also maintain physical comfort in terms of temperature and solar

extremes. They provide natural ventilation but admit undesired air leakage and can create drafts if not properly installed and insulated. Most glazing and windows must respond over a wide range of climate and use conditions. Integrated facade design for high-performance buildings must control and consider these features. With active and passive strategies, and the ability to respond to the changes for facade design, building performance can be improved and contribute to energy use and carbon released reduction for heating and cooling and enhancement of indoor environment quality (IEQ).

1.3 Role of Building Performance Simulation in Design Process

The role of simulations in design process has evolved, and simulation models are used in different design phases to predict energy consumption of buildings and occupants' comfort levels. These methods are used at the conceptual, schematic and design development phases to optimize building performance, during the occupancy phase to monitor and control the performance and during the retrofit to decide about the benefits of different alternatives and interventions. Therefore, understanding the effects of design decisions and outlining a framework in which the simulation models should be used is crucial to achieve high levels of performance.

Simulation is an integral part of measuring and quantifying performance criteria. Defining the interface between physical building element and performance criteria plays an important role. For instance, the existing building or the reference building (i.e., in case of new construction) can be defined in BPS software programs, including thermal envelope and the HVAC systems, operation, schedules, material properties, etc. Then,

the parameters that most affect the energy performance can be identified as design variables, such as different materials, efficiencies of HVAC system, characteristics of thermal envelope, etc.

The biggest challenge of simulation in performance-based design is to provide a variety of normative calculations when an advanced simulation cannot provide a more accurate answer, either because of the presence of uncertainties, the lack of available information, or the context of decision that demands it (Hensen 2012).

Building simulations started to stand out as a separate discipline in the late 1970's. This area of building science research matured since then into a field that offers unique expertise, methods, and tools for building performance evaluation. The early groundwork was done in the 1960's and 1970's, mainly in the energy performance field, followed by an expansion into other fields such as lighting, HVAC systems, air flow, and others. More recent additions relate to combined heat, air and moisture flow, heat transfer, mass transfer, acoustics, control systems, and various combinations with urban and microclimate simulations. Building simulations are the key tool to quantify performance criteria for decision making. Building simulation models predict the building behavior under specific scenario (Augenbroe 2019). Figure 2 shows relationships between the physical world (reality), the model used to represent the physical world, and simulations, which are used to investigate the behavior of the model under certain conditions. The results of simulations reveal a behavior related to performance under study. The words 'modeling' and 'simulation' are sometimes interchanged in discussions; generally, a model is an abstraction or description of reality where simulation is the execution of that model in the computer (Incose 2015).

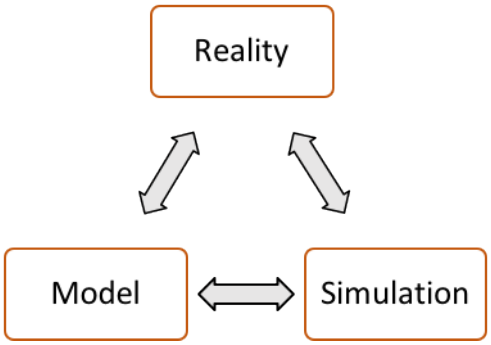


Figure 2: The standard approach to simulation.

Computational building performance modeling and simulations are multidisciplinary, problem-oriented and wide in scope. Simulations are one of the most powerful analysis methods for a variety of problems, but they do not provide solutions or answers. Instead, simulation results support user understanding of complex systems by providing (relatively) rapid feedback on the performance implications of designs (Clarke 2015).

BPS applications provide relevant design information by indicating potential (quantifiable) directions for design solutions. BPS tools and applications facilitate the process of design decision making by controlling the values and simulations. Building performance simulations are an integral part of the design process for energy efficient and high-performance buildings since they help in investigating design options and assess the environmental and energy impacts of design decisions (Augenbroe 2019). There are many available tools, and they can evaluate different aspects of building performance, such as capital and operating costs; energy performance and demand; human comfort, health and productivity; illumination; electrical flows; water and waste; acoustic design; renewable energy; and atmospheric emissions. Because the number of

simulation tools and methods is large, this research will focus on human factors (thermal and visual comfort), energy use and energy cost.

1.3.1 Building Simulation Model Classifications

Simulation models have wide spectrum of capability and come in different form. They can run on the basis of a short list of inputs or require substantial modeling effort; some are useful for research and academia while other are provided as commercial tools with support and training provisions. The underlying mathematical models may be linear or nonlinear, static or dynamic, discrete or continuous and deterministic or stochastics. Simulation models may cover different physical process such as heat, mass transfer, acoustics, light or structural behavior. They may represent small part of the building, such as one-dimensional section through a wall or complex combination of geometry, materials and systems for a full building.

Other way of classifying building simulation models is by their temporal dimension and differences between stationary, semi-dynamic (quasi-stationary) and transient models. For instance, in thermal models a stationary model of heat transport through a wall requires the mathematical solution of one set of equations, in semi-dynamic model one may for instance use 12 sets of conditions to represent the 12 months of the year, which means the same equations need to be solved twelve times. By moving to transient conditions, often studied by looking at hourly values, this increases to 8760 steps per year (de Wilde 2018).

There are other ways to categorize simulation models, one of them is related to system identification and distinguishes between black box, grey box and white box

models. These models link a series of inputs with outputs. In black box model, machine learning is the ration between input and outputs, which captures the correlation by learning from correlated data pairs. The internal working of the system that cause this correlation, is unknown so the typical techniques used are regression analysis and neural networks. In grey box model, there is certain insight in the internal working system that allows to do predictions; however, these models still have some unknown properties and relationships that need to be estimated. In the white box model, all properties and relations are known and allow to clear and in detail modeling of the relation between inputs and outputs. Sometimes these types of models are known as glass models and represent the state of art in certain domain. Figures below show these models and their workflows. Further discussion can be found in Zhao and Magoules (2012), Fumo (2014), and de Wilde and Augenbroe (2018).

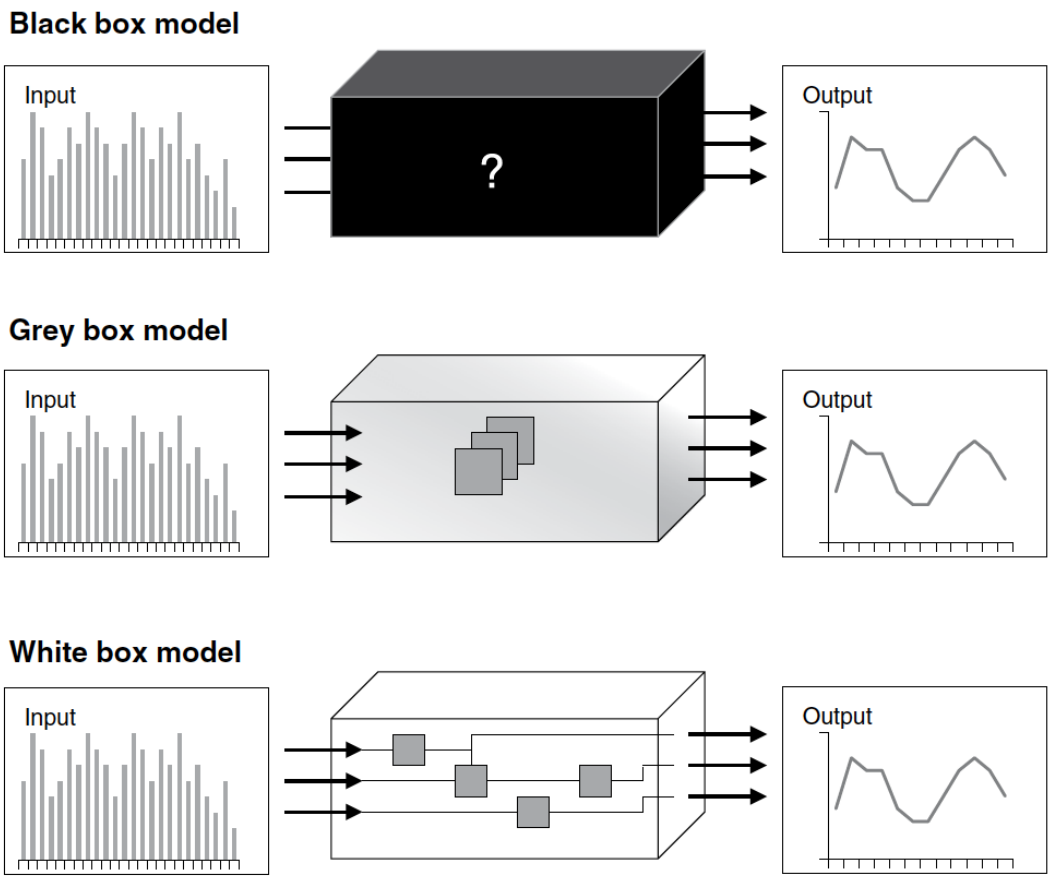


Figure 3: Black, grey and white box models (Adopted from de Wilde and Augenbroe 2018).

1.3.2 Building Simulation Modeling Issues

The process of modeling simplifies the real-world problems by applying variables of interest and enhances management of complex situations when dealing with full complexity in decision making process. This aspect of modeling applies to building and building systems, and complex patterns of external and internal actions in building. But sometimes using these models is not appropriate. The list below includes several cases that would be better without using modeling process (Basmadjian 2003):

1) If an answer is needed within hours only, leaving no time for a serious modelling effort.

2) Where a simple and inexpensive experiment might provide the answer.

3) If the client is suspicious of theory and can be better convinced by physical evidence.

4) In cases where the system is too complex for meaningful modelling.

5) Whenever the answer is self-evident.

6) Where modelling will fail to provide any new or meaningful insights.

Beside all advantages of building simulations, there are some inherent issues and challenges, which are described in more detail below.

- **Uncertainty:** The concept of simulation involves a combination of certainty and uncertainty. This can be related to the complexity of the system that is simulated. In building design, there are many external aspects that are subject to uncertainties. The subjects that have most influence on the uncertainties are weather and climate, properties of material of building elements and behavior of occupants. There are methods that have been developed to estimate the extent of these factors in building assessment.

- **Performance gap:** Performance gap is the gap between predicted and measured performance. There is a range of underlying factors, including fundamental model uncertainties, tool deficiencies and training issues that aggravated by complexity of the building design, construction and operation process. Calibration techniques and training techniques are important steps to decrease this gap.

- **Occupant behavior:** Predicting occupant presence and activities is a complex matter. A mismatch between modeled and actual occupant behavior leads to divergences as large as 40% (Duarte 2015). International Energy Agency (IEA) Annex 66 tried to explore some of these issues (Annex 66 IEA 2016). In brief, Annex 66 proposed scientific approaches to reduce the gap between the simulated and measured values for building energy performance by representing occupant behavior in a standardized quantitative way, and went further by integrating them with current building performance simulation programs, which could have important impacts on the industry from various perspectives. (Annex 66 IEA 2016)

- **Exchange data between different digital environment:** Sharing data between simulation domain and wider building information modeling (BIM) is still a challenge. Creating interoperable models that exchanges data does not contain the specific information needed to fully define appropriate digital experiments (Augenbrore 2015).

- **Evolution of buildings and systems:** Unusual shapes, complex shading systems, radiant barriers, complex HVAC systems and innovative technologies may push the borders of simulation and may even require the development of new models (Efficiency Evaluation Organization 2014).

1.3.3 Building Simulation Tools and Categories

This section explains simulation techniques according to physical aspects that are simulated. Furthermore, there are number of categories that do not fit the ordering

by physical aspect; but are related to this research, coupled simulation that combines domains and the area of tool interfaces, shells and environments. The building energy software tools directory (IBPSA-USA 2016) listed information on a wide range of building performance simulation tools.

1.3.3.1 Whole building thermal simulation

Thermal performance of whole building is an important area of building performance simulation. This domain is the main tool for thermal comfort condition analysis and studies related to human health and well-being. Sometimes the whole building thermal simulation is named building energy simulation in research and literature. Thermal models are typically well developed and have strong interaction with other building domains such as occupant behavior, building materials, HVAC systems and control system. Three main heat transfer principles (conduction, convection and radiation) are taken into account by heat and mass balance equations in thermal building models. These mechanisms occur in different combinations within the five main energy flow paths in buildings:

- Transmission (heat flow through walls, windows, doors, floors and roof)
- Ventilation (heat flow related to movement of air)
- Solar radiation (heat entering the building windows or glazed surfaces)
- Energy storage (where heat is added or removed from building parts such as concrete walls and floors)

- Internal gain (heat produced by occupants, lights, appliances and building services).

Modeling buildings for thermal analysis usually starts with defining building geometry, considering zoning decisions (such as individual rooms being modelled as one larger space). Walls, facades, roofs and floors are modeled in order of layers, layer thickness and material properties of each layer such as conductivity, density and thermal capacity. For glazing parts, reflectance, absorption and transmission values are applied to the model. Building systems can be modeled at different level of details but the simplest form is as instantaneous heat or cooling loads, and it is possible to include detailed models of boilers, furnaces, distribution systems or operation details. Modeling occupants has also various level of detail, but must represent heat emitted by human bodies in the room and the required comfort conditions. Weather conditions is assigned as weather data, which includes outdoor temperature, relative humidity, wind direction and speed and solar irradiance. Most of the weather files have an hourly format and cover a duration of one year. Modelling has to include the definition of heat transfer coefficient, air flow and boundary conditions (adiabatic boundary condition is often applied to walls, floors that have similar temperatures at both sides like internal walls). Sometime, spatial discretization (such as sub-layers to represent building fabric) and temporal discretization (time step) need to be selected for the model.

The most well-known whole building thermal simulation tools today are EnergyPlus, ESP-r, IDA-ICE and TRANSYS. Other tools, including some legacy applications, are BLAST, BSim, DOE-2, Capsol, COMFIE, DeST, HAP, PowerDomus, Sunrel and TAS (de Wilde 2018).

1.3.3.2 Lighting simulation

The subject of lighting is an important domain in simulation. Daylighting, because of the changes to outdoor conditions caused by weather, can be challenging to simulate. The complexity of lighting simulation is due to the interaction between outdoor and indoor environment, occupant and system behavior and some performance aspects that are related to psychology and perception, such as visual performance and comfort. There are criteria for daylighting such as illuminance level of task areas and surrounding, uniformity of light, color rendition, contrast, absence of glare and flickering that influence indoor environmental quality, occupant's well-being and building assessment.

One of the main lighting metrics is daylight factor (DF), the horizontal illuminance level and the horizontal to vertical illuminance ratio. And two main underlying methods for lighting simulation are raytracing and radiosity. Raytracing follow the path of light, and there are different subcategories for it. Forward raytracing starts at the light source; backward raytracing starts from the point of measurement or observation then follows the path towards the light source. Bidirectional raytracing combines forward and backward raytracing.

Radiosity method work similar to thermal models of radiation exchange. They split the surface of entities of interest into "patches" and then account for light exchange between these patches (de Wilde 2018). In both ray tracing and radiosity, managing specular and diffuse reflections is important. Raytracing is a good approach for cases

with direct illuminance, shadows, specular reflection and refraction through transparent materials, but it is complicated when dealing with diffuse interreflections.

In lighting simulation, first the geometry model is required and surfaces in the model need to be assigned with relevant properties such as reflectance and transmittance. Artificial light sources, the properties of light sources and illuminance and the operational parameters need to be positioned and assigned to the model. In relation to daylight, blinds and shutters need to be included. Selection of sky model is another important step in modeling. The references are CIE standard sky models (CIE standard overcast sky, CIE intermediate sky and CIE clear sky), the Perez all weather sky and the Matsuura intermediate sky. In some cases, measured lighting data may also be used.

There are different performance metrics in lighting simulation results that are explained briefly. Daylight autonomy (DA) captures the percentages of occupied hours when a certain illuminance threshold is met by daylight. Spatial daylight autonomy (sDA) represents the percentage of area that meets a minimum daylight illumination criterion for specific fraction of operating hours. Useful daylight illuminance (UDI) uses thresholds of 100 and 2000 lux to identify when there is too little, enough or too much daylight. Unified glare rating (UGR), Daylight glare index (DGI) and Daylight glare probity (DGP) are performance metrics in simulation results that predict glare or glare avoidance. Illuminance level can be used to develop contour maps and extended towards temporal maps which indicate areas that receive certain amount of light for specific time period.

There are many lighting simulation tools, such as AGi32, Adeline, DElight, DIALux, DIVA, Inspirer, Lightscape, Lightsolve, Lightswitch, Mental Ray, Radiance, Relux, Zemax OpticStudio, 3ds Max and Velux Daylight Visualizer. Among these tools, Radiance is the most widely used engine in lighting, daylighting, and solar control design and is embedded in several free and commercial architectural-engineering design applications, including IES Virtual Environment, DesignBuilder, Sefaira Architecture and etc.

Figure 4: Radiance and growing number of public- and private-sector tools (Adopted from DOE).

1.3.3.3 Heat and Moisture models (HAM)

Sometime the constructions are at the risk of surface or forming condensation or where moisture may cause significant change in thermal properties of the fabric. In these situations, consequences include mold growth, rot, mildew, cracks, swelling and

increased energy loss. Hygrothermal or HAM models consider both thermal and moisture conditions, based on solving the fundamental heat and mass equation. Simulation models of heat, moisture and air transport may be difficult due to the different time scales that each of these occur.

Some of the HAM simulation tools are Delphin, HAM-Tools, HAM-VIE, WUFI. The HAM model combines various domains, so application of generic engineering tools such as Matlab, Simulink and COMSOL would be helpful.

1.3.3.4 Acoustic simulation

Assessments of sound inside and outside the building, and unwanted sounds (noise) are subject of acoustic modeling and simulation. The main underlying acoustical simulation approach includes geometrical models, wave-base models and diffusion equation models. Geometrical models are based on ray acoustics; the concept of sound travelling along lines or rays. The approach in this category includes image source model, particle tracing, ray tracing, pyramid tracing, cone tracing and radiosity models. Wave-based models use partial differential equation to describe wave travelling through any medium. And diffusion equation models describe how the sound energy spread. Acoustical software in building simulations are CATT-Acoustic, Enhanced Acoustic Simulator for Engineers (EASE), Odeon, and LMS Virtual Ray Acoustic.

1.3.3.5 Computational Fluid Dynamics (CFD)

In building simulations, CFD is mainly used to study the airflow. CFD techniques are suitable for issues such as airflow patterns, temperature distributions and

dispersion of contamination. The modeling requires the definition of geometry, which can be a room or series of rooms inside the building or group of buildings and even full urban environment subject to wind, HVAC systems and other system components.

Some of the CFD software packages used in building simulation are ADREA-HF, FloVENT, PHOENICS, STAR-CCM+ and OpenFoam. The generic engineering analysis software ANSYS includes dedicated CFD tools, of which CFX and Fluent are often used for building simulation (de Wilde 2018).

1.3.3.6 Pedestrian movement models (evacuation)

The movement of humans inside the building (occupants) and outside (pedestrians) is an important domain in building simulation. Pedestrian movement has two modes: normal movement and emergency situation, which is usually studied for building evacuation. Normal pedestrian movement can be used in studies related to comfort, efficiency and risk assessment of pedestrian safety and evacuation behavior may be studied to reduce certain risks associated with movement.

1.3.3.7 Tool interfaces

Some tools provide Graphical User Interface (GUI) for simulations engines. IES-VE, eQuest are examples of these tools. DesignBuilder, OpenStudio and Sefaira are examples of interfaces for EnergyPlus as simulation engine.

1.4 Role of Optimization in Design Process

The role of simulations in the decision process has evolved and simulation models are used to predict energy consumption and comfort level of buildings. Therefore, understanding the effects of design decisions and outlining a framework in which the simulation models should be used is crucial to achieving high level of performance. This framework should ensure the effectiveness of decision making to obtain the highest performance for the lowest possible cost. For this process, there are many conflicting objectives to consider and numbers of possible solutions, which require coupling of design optimization methods with building performance simulations.

Decreasing energy consumption and improving indoor comfort levels are two fundamental, yet conflicting objectives of energy-efficient building design. Moreover, considerations for costs add additional complexity to decision making process. Finding the design solutions that consider energy efficiency objectives, while satisfying both indoor comfort level and cost optimality, is challenging. There are numbers of parameters and strategies involved, and it is necessary to use optimization strategies to find the best solutions. Conventional rules of thumb or trial-and-error processes are extremely unlikely to achieve near-optimal designs. To significantly increase energy efficiency and indoor comfort level, optimization techniques can be used. Multi-objective optimization is more relevant to single objective approach in many cases in solving real world problems.

Building performance optimization, within which optimization is coupled to BPS tools, is a process that aims at the selection of the optimal solutions from a set of

available alternatives for a given design or control problem, according to a set of performance criteria. Such criteria are expressed as mathematical functions, called objective functions. Simulation-based optimization has become an efficient design approach to satisfy several requirements in high performance buildings (Nguyen 2014).

In conventional optimization study, the process is usually automated by coupling a building simulation program and an optimization engine, which may consist of one or more optimization algorithms or strategies (Attia 2013). Genetic Algorithms (GA) are well suited to solve multi-objective optimization problems. GA-based multi-objective optimization methods that are frequently used in building research are Multi-Objective Genetic Algorithm (MOGA) and Niched Pareto Genetic Algorithm (NPGA) (Nguyen 2014). All these methods aim to produce a subset of the Pareto optimal set from which decision-makers can achieve the most appropriate solution for the problem at hand. The GA is particularly suitable for solving multi-objective optimization problems, because it deals with a set of solutions simultaneously, enabling a series of Pareto-optimal solutions in a single run, which is superior to classical methods. It can provide a continuous and iterative improvement of the building model, with the final aim of identifying a set of solutions that optimize both energy performance and thermal comfort.

The concept of multi objective optimization is an appropriate solution, which is a set of trade-off optimal solution. This approach is referred to “multi-objective optimization” or “Pareto optimization”. Pareto optimization provides only some elements of the Pareto set rather than the entire one. Due to complexity, researchers often use up to two objective functions, but some exceptions with three or more

functions have been observed. Three objective functions can be indoor environment quality, the carbon payback period and cash payback period time (Jin Q 2012). As a result, the aim of multi-objective optimization is to locate the Pareto-optimal set of solutions. The final goal of the multi-objective programming problem is the achievement of the Pareto front, which represents the set of non-dominated (i.e., "the best") solutions. There are many termination criteria that are mostly dependent on optimization algorithms. Some of the most frequently used criteria in BPS are maximum optimization time, maximum number of generations, maximum number of equal cost function evaluations and acceptable objective functions (Nguyen 2014). An optimization may have more than one termination criteria, and when at least one of the criteria is met, the process ends. Some optimization studies divide this phase into two steps: an initial optimization and a detailed optimization to investigate various design solutions (Hamdy et al. 2011) and various model responses (Nguyen 2014). The multi-objective programming problem is solved by means of proper setting and running of the optimization program. This is a very delicate phase because it affects both reliability and accuracy of results.

1.4.1 Classification of building optimization properties

To select the correct optimization algorithm for a specific problem, we need to investigate properties of the problem. The properties of building optimization problems are various and can be generally classified into three basic schemes, namely, objective functions, design variables, and constraints. Understanding these classifications helps us to find a proper approach and algorithm for different aspects in building energy related problems.

Table 1: Properties of building optimization problems (Adopted from Si 2019).

Design Variables	Objective Functions (Energy/Cost/Comfort)	Constraints
Single-dimensional	Single-objective	Inequality
Multi-dimensional	Multi-objective	Equality
Static	Quantitative	Linear
Dynamic	Qualitative	Non-linear
Deterministic	Computationally-expensive	Separable
Probabilistic	Computationally-inexpensive	Inseparable
Discrete	Linear	Convex
Continuous	Non-linear	Non-convex
Independent-variables	Uni-model	Differentiable
Dependent-variables	Multi-model	Non-differentiable
	Continuous	
	Discontinuous	
	Convex	
	Non-convex	
	Differentiable	
	Non-differentiable	
	Separable	
	Inseparable	

There are several methods that can be used to improve building performance, and to achieve an optimal solution to a problem. For example, computer building models can be created by a repetitive method, constructing infinitive sequences of progressively better approximations to a solution. These methods are known as "numerical optimization" or "simulation-based optimization" (Gosavi 2015). For example, one study focused on optimizing building engineering systems, where the direct search method in optimizing HVAC systems was used (Haung 2016).

Application of multi-objective optimization algorithms (MOOAs) identify the Pareto optimum trade-off between conflicting design objectives. To find optimal solutions without spending much time for simulation, MOOAs can be applied. There are seven evolutionary optimization algorithms in solving multi-objective optimization problems by using simulation-based optimization approach.

1.4.2 Overview on optimization algorithms in building energy simulation and analysis

There are large amount of design variables for building energy models that are discrete, non-linear and highly constrained, so the simulation results can be discontinuous and generate noise in building optimization problems (BOPs). The performance of optimization algorithms in solving BOPs are essential and need to be investigated.

Different optimization algorithms have been applied on single objectives BOPs in recent studies. These include coordinated search algorithm, Hooke-Jeeves algorithm, particle swarm optimization (PSO),PSO that searches on a mesh, hybrid PSO-Hooke-Jeeves algorithm, simple GA, simplex algorithm of Nelder and Mead, and discrete Armijo gradient algorithm, used in solving simple and complex building models and performance criteria. Many studies compare the performance of these algorithms on different design variables, which is be discussed in more detail in literature review chapter. (Si et al. 2016, Hamdy et al 2016, Junghans and Dande 2015, Kheiri 2018), Most of them found that GA consistently provide results closer to best solutions.

1.4.2.1 Hooke-Jeeves algorithm

This algorithm is a Generalized Pattern Search algorithm. It is initiated from a given starting solution and subsequently performs exploration and pattern search alternatively in the solution space. The exploration searches along the direction of each coordinate from a base solution using a predefined step size for a better performing solution. The pattern search strategy accelerates the searches along the improved objective value direction. The algorithm terminates when the maximum number of step reduction or the predefined convergence precision is achieved.

1.4.2.2 Particle swarm optimization (PSO)

The PSO algorithm is a member of the population-based stochastic algorithms. It is inspired by the social behavior of a shoal of fish or a flock of birds. Each individual, such as a "fish" in the shoal, is called a "particle". For each particle, the PSO algorithm tracks the best position of the particle (which models cognitive behavior), as well as the best position of the population (which models social behavior) in terms of the objective function.

1.4.2.3 Hybrid PSO-Hooke-Jeeves algorithm

The hybrid algorithm first runs the PSO to achieve a near-optimal solution. This step is performed based on a pre-defined number of generations. When the PSO finishes, its optimal solution is utilized as the initial solution for the Hooke-Jeeves. This hybrid algorithm aims to locate the optimal area of the solution space by running the

PSO first and subsequently to carry out a refined search in that area by running the Hooke-Jeeves (Futrell 2015).

1.4.2.4 Simple GA

The genetic algorithm is a method for solving both constrained and unconstrained optimization problems, which is based on natural selection and the process that drives biological evolution. The genetic algorithm repeatedly modifies a population of individual solutions. At each step, the genetic algorithm selects individuals at random from the current population to be parents and uses them to produce the children for the next generation. Over successive generations, the population "evolves" toward an optimal solution. It can be applied to solve a variety of optimization problems that are not well suited for standard optimization algorithms, including problems in which the objective function is discontinuous, non differentiable, stochastic, or highly nonlinear. The genetic algorithm can address problems of mixed integer programming, where some components are restricted to be integer-valued.

1.4.2.5 Simplex algorithm of Nelder and Mead

This method is a commonly applied numerical method used to find the minimum or maximum of an objective function in a multidimensional space. It is a direct search method (based on function comparison) and is often applied to nonlinear optimization problems for which derivatives may not be known. However, the Nelder–Mead technique is a heuristic search method that can converge to non-stationary points on problems that can be solved by alternative methods.

1.4.2.6 Discrete Armijo gradient algorithm

This algorithm is affiliated with the family of gradient-based algorithms and can be applied to minimize continuously differentiable functions. This algorithm approximates the gradients using finite differences, and the optimization progress is driven by the difference increment reduced. The Armijo step-size rule is used to perform line searches.

The multi-objective optimization algorithms require more research-based evidence and studies to be understood in building domain. But, some of the popular MOOAs are: NSGA-II (non-dominated sorting genetic algorithm), MOPSO (multi-objective particle swarm optimization), PR-GA (two phase optimization GA), evMOGA (multi-objective evolutionary algorithm based on the concept of epsilon dominance), ENSEN (elitist non-dominated sorting evolution strategy), spMODE-II (multi-objective differential evolution algorithm) and MODA (multi-objective dragonfly algorithm). These algorithms have been used from 2002 to 2016, and implemented into MATLAB optimization toolbox. (Hamdy et al. 2016)

The performance of optimization algorithms can be evaluated based on these following aspects and corresponding indicators (Hamdy 2016):

- Execution time of the algorithm
- Convergence to the benchmarking optimal set, indicated by normalized generational distance (GDn)
- Normalized inversed generational distance (IGDn) used to quantify both the convergence and the diversity

- Diversity of solutions in the Pareto-optimal set, indicated by the normalized diversity metric, denoted by DMn
- Number of solutions on the Pareto-optimal set, denoted by NoPsolution
- Contribution of the algorithm's solutions to the best Pareto front.

1.4.3 Building optimization methods

The selection of optimization method should be based on the nature of problem and the features of the optimization method. Each optimization problem should be formulated and defined with the goals and constraints. The next step is selection of solutions based on the goals and problem decision maker (DM) preferences. Figure 5 shows a general flowchart in building optimization process. There are many types of optimization methods, such as single and multi-objective methods, or based on the type of variables. The section below briefly discusses application of optimization methods in facade design. Chapter 2 provides an in-depth discussion and literature review.

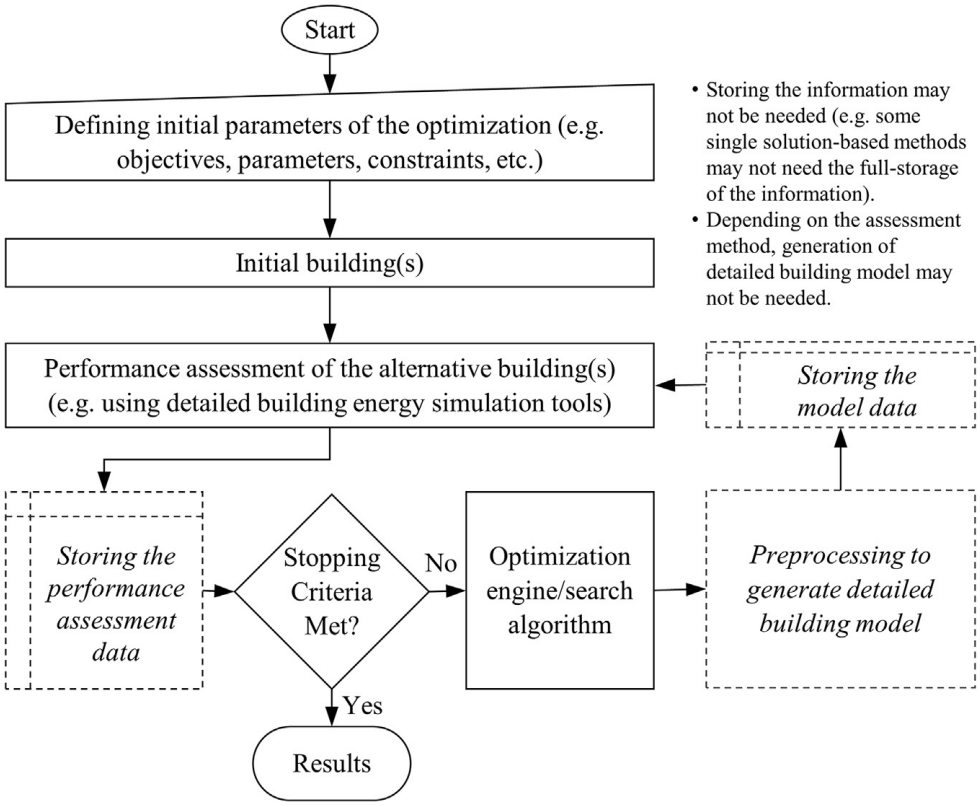


Figure 5: General flowchart of the computational optimization (Adopted from Kheiri 2018).

1.4.3.1 Calculus-based optimization

This method of optimization is basic form of nonlinear programming and includes the first and second derivative test, and their higher-dimensional generalizations to find maximum and minimum values of a function subject to constraint of them. In building performance domain, this method is applied to find optimum building envelope configurations, optimal shape and number of floors to minimize conduction heat losses.

1.4.3.2 Direct search

This optimization method does not explicitly use derivatives. Therefore, the direct search can optimize a function without recourse to its derivatives when explicit information about the function t is unavailable or untrustworthy. It is defined as a method that sequentially compares trial solutions with the "best" solution at the time while having a strategy for defining the next trial solutions (Kheiri 2018).

1.4.3.3 Simulated annealing

This is a meta-heuristic optimization technique that can be used in searches for the global optimum. It is often used when search space is discrete and for problems where finding an approximate optimum is more important than finding a precise local optimum in a fixed amount of time. In building performance assessments, this method (SA) compared it against GA and the GA performed slightly better than SA. But SA applied in optimizing timber building for both LCA and structural configuration or finding optimum LCC of two facade design with considering some facade related parameters. (Varma and Bhattacharjee 2015).

1.4.3.4 Dynamic programming

This method is based on dividing a complex problem into linked sub-problems, which deal with a few variables. Dynamic programming is efficient in time when optimization problems deals with large number of variables. In this method we need to ensure that the problem can be divided into sub-systems while maintaining the integrity, conditions of monotonicity and separability should be met with two conditions. First, it

should be possible to divide the objective function. Second, as the output of each step will be the input of next step. This method has been used for thermal analysis in buildings, minimizing the thermal discomfort and heating and cooling loads in residential and office space. It has also been used for minimizing annual source energy utilization level, as well as heating and cooling peak loads for office building in different climate zones with respect to the envelope parameters. (Pomberio et al. 2017)

1.4.3.5 Genetic Algorithm (GA)

Genetic Algorithm was inspired by the idea of natural evolution and survival of the fittest principle of Darwin. In general, GA is a population-based algorithm, classified as a global-optimum finding algorithm that includes operations to search for the optimum solution globally as well as the operations that try to improve the solutions locally. Figure 6 shows the general process in application of GA algorithms. The iterative process of GA will converge to better solutions based on the breeding of the parents with higher performance. The multi-objective GA method is used to optimize building energy cost and zone thermal comfort. There are many studies using this method for energy-efficient design by optimizing the location or size of windows, building form, size of thermal zone and tilting the roof, facade configurations to reducing lighting, heating and cooling loads.

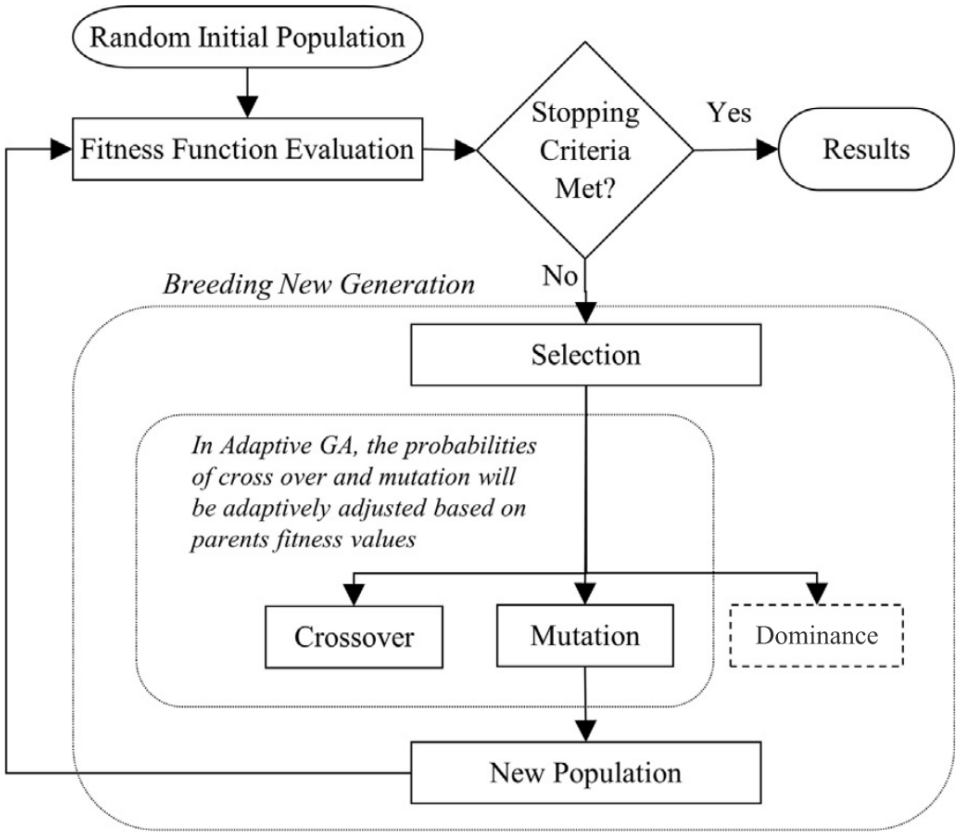


Figure 6: General flowchart of Genetic Algorithm process (Adopted from Kheiri 2018).

1.4.3.6 Particle swarm optimization (PSO)

PSO is a computational method that optimizes a problem by iteratively trying to improve a candidate solution regarding a given measure of quality. The roots of the PSO is in the artificial life in general, and in bird flocking, fish schooling, and swarming theory. PSO, which has many similarities with GA, is one of the simplest methods that can be applied to discrete problems. This method is applied in research to optimize building envelope and passive strategy I residential buildings or minimize the total energy demand for heating, cooling and lighting of a classroom.

1.4.3.7 Harmony search (HS)

HS is a random meta-heuristic algorithm used to search for the optimum solution and inspired by harmony in music by mimicking the use of improvisation in music to seek better harmony (Geem 2001). Harmony Memory (HM) stores the solutions. The probability of selecting a component from the HM vectors is determined as Harmony Memory Considering Rate (HMCR). Pitch Adjusting Rate (PAR) is a mutation parameter that allows some small modifications to the selected vector from HM. The degree of modification can be defined as a small discrete or continuous value for discrete and continuous parameters, respectively. This method has been used to optimize building envelope and find alternatives to minimize energy consumption, cost and environmental impacts (Fesanghary et al. 2012). A different study optimized energy consumption, lighting and thermal comfort by using shading device in residential building. (Khoroshiltseva et al. 2016)

1.4.3.8 Ant colony optimization (ACO)

ACO is a probabilistic technique used to solve computational problems, which can be deduced as finding the best routes through graphs. Inspired by the foraging behavior of real ants, ACO is characterized as a distributed, stochastic search method based on the indirect communication of a colony of artificial ants (Dorigo 2006).

In this method, artificial ants will choose possible paths in a graph to reach the destination point. PheromReferone trails, evaporation of pheromone, and other defined parameters direct route findings. Attractiveness, distance, tabu paths etc. will yield the probability of choosing the best routes by artificial ants. This method has been applied

to find the panel configurations that optimize lighting performance and cost (Evins 2013).

After discussing different algorithms and methods for optimization of building performance and envelope design, it should be mentioned that all methods can be classified into local and global optimum finding methods. A local optimum is defined as the relative best solutions within a neighbor solution set. A global optimum is a point where the function value is optimum, considering the value of all other feasible points. There is only one global max/min, but there can be more than one local max/min. The main difference is the way that algorithms search for the better solution. However, some of the methods, with some modifications, can be used for both global and local optimums.

In general, different optimization methods are implemented differently to find the optimum solutions. The efficiency of the optimization methods in each problem may be different based on problem characteristics.

1.5 Purpose and Outline of the Dissertation

This research first focuses on identifying the role of BPS and design optimization methods and outlines potential challenges and obstacles in performance-based facade design. This section is primarily based on literature review. Then, a new framework for performance-based facade design is presented. This framework considers occupant comfort, energy consumption and cost optimality, and implements BPS and relevant optimization methods to achieve a proper process for performance-based facade design. The components and development of the framework are discussed in detail, followed by testing and validation. The last part of the dissertation offers

conclusions.

The main contribution of this research is development of a new framework to support decision making in facade design process, considering real world applications and conflicting objectives. The research focuses on facade design and parameters related to this building system; however, the framework can be used a back-end for developing tools and interfaces that couple building simulation and optimization.

Chapter 1 introduces the main subject of this research, and discusses the role of facade, building simulation and optimization methods in building design.

Chapter 2 provides a literature review focusing on simulation-based optimization methods used for building envelope design. This chapter also provides an overview of applications, tools and methods for understanding occupants' comfort.

Chapter 3 presents the research objectives, problem statement and describes the research questions and approach. This chapter also discusses contributions of this research.

Chapter 4 describes the methodology for this research and procedures for developing the framework.

Chapter 5 discusses application of the framework, results of the study and validation. This chapter discusses research findings in detail.

Chapter 6 presents the conclusion and proposes directions for future studies.

CHAPTER 2

LITERATURE REVIW

There are many existing studies that provide literature reviews about whole building performance simulations and optimization methods. In this research, building facade was selected because of its influence on energy consumption, thermal and visual comfort of occupants. The literature review focuses on the role of BPS, optimization and tools, applications and methods in facade design, and then reviews studies on thermal and daylight modeling for facades and occupants' comfort. High performance buildings require an efficient performance-based design process that integrates optimization methods into building performance simulations. Coupling simulation tools and optimization algorithms are aimed at removing the existing barriers between optimization and building simulations. The literature review has been conducted to identify studies on simulation and optimization for building energy performance, with special focus on facade systems, thermal and visual comfort.

2.1 Simulation and Optimization for Performance-Based Design: Overview of Tools, Applications and Methods

Providing an overview of BPS tools and the methods to quantify the objectives (performance criteria) in design process is important, since designers need to choose appropriate and efficient methods among several number of available approaches. The core tools in the building energy field are the whole-building energy simulation programs, which provide users with key building performance indicators, such as energy.

BPS tools have essential role in the process of building design to improve energy performance, environmental impacts, costs, etc. These simulation tools are available for simulating the performance of buildings and building subsystems, and are capable of whole building simulation, model input calibration and building auditing. Among whole-building simulation software tools, it is important to make a distinction between simulation engines and interfaces, modeler applications and Graphical User Interfaces (GUI). So, BPS tools can be classified into three main categories bellow:

- Applications with an integrated simulation engine (e.g. EnergyPlus, ESP-r, IES-VE, IDA ICE)
- Software that docks to a certain engine (e.g. DesignBuilder, eQuest, Sefaira, OpenStudio)
- Plugins for other software applications, enabling certain performance analysis (e.g. DIVA for Rhino, Ladybug, Honeybee, Autodesk's Green Building Studio).

Most modeler applications support the user with a GUI to make data input easier. The modeler creates an input file for the simulation engine to solve. The engine returns output data to the modeler application or another visualization tool, which in turn presents the results to the user. For some software packages, the calculation engine and the interface may be the same product. Table 2 provides an overview of BPS software programs and commonly used simulation engines, plugins and glues modeler applications for BPS (Ostergard 2016). Glues refer to software programs that enable links between BPS and geometrical modeling through graphic programming. Important properties of the reviewed software are:

A. Users: Is the software primarily intended for architects, engineers, or both?

B. Design stage: In which design stages is the software typically used?

C. Interoperability: How does the BPS software connect to CAD environment and other software packages?

D. Level of complexity of the core algorithms: The complexity set the constraints of design options that the software enables to investigate and to what level of detail.

E. Objectives: Important, interdependent objectives must be evaluated to ensure holistic design.

F. Parametric: Ability to run global parametric calculations and to perform Uncertainty Analysis (UA) and Sensitivity Analysis (SA) – either by using integrated features or by configuring input text files and accessing output text files.

Table 2: Comparison of software in terms of fulfilling the requirements of the proposed software framework (Adopted from Ostergard 2016).

	Software	A. Users	B. Design Stage	C. Interoperability	D. Core Complexity	E. Objectives						F. Parametric sim.						
			Conceptual Preliminary Detailed Management			Energy	Thermal	Daylight	Air Quality	LCA	LCC	Cloud	I/O	Configurable	UA	SA	OAT	Optimization
BPS (own engine)	Bsim	E	--------	Standalone	High	+	+	+	+					+				
	DOE2	E	---	Standalone	Medium	+											+	
	EnergyPlus (E+)	E	---	Standalone	High	+	+		+					+				
	ESP-r	E	---	Standalone	High	+	+		+					+				
	IDA-ICE	E	--------	File Exchange	High	+	+		+					+			+	
	iDbuild	E	------------	Standalone	Medium	+	+	+	+								+	
	IESVE	E	--------	File Exchange	High	+	+	+	+	+	+	-						
	Radiance	E	--------	Standalone	High			+						+				
	VELUX Daylight Visualizer	AE	------------	File Exchange	High			+				-						
BPS (external engine)	Daysim	E	------------	Run-time	Radiance			+				-						
	DesignBuilder	E	--------	File Exchange	E+, Radiance	+	+	+	+		+							+
	eQuest	E	--------	Standalone	DOE2	+						-						
	N++	E	------------	Separate	E+, jE+, GenOpt	+	+		+								+	+
	OpenStudio	E	------------	File Exchange	E+, Radiance	+	+	+	+		+	+	+					
	Riuska	E	--------	File Exchange	DOE2, own engine	+	+		+						+	+		
	Sefaira	A	--------	Run-time	E+, Radiance	+	+	+				+			+	+		+
Plug-In	DIVA for Rhino	AE	------------	Run-time	Radiance			+				-						
	Green Building Studio	AE	--------	File Exchange	DOE2	+						+						
	HoneyBee(GH)	AE	------------	File Exchange	OpenStudio, E+, Radiance	+	+	+			+		+					
	jEPlus (+JESS)	E	--------	Run-time	E+, DesignBuilder, N++	+	+	+	+		+	+			+	+	+	
	Parametric Analysis Tool	E	--------	File Exchange	OpenStudio	+	+	+	+		+	+			+	+	+	+
Glue	Dynamo	AE	--------	-	-													
	Grasshopper(GH)	AE	--------	-	-													

Previous related research studies focusing on building envelope and simulation-based optimization are discussed below. Application of computational optimization methods in sustainable building design, with focus on residential retrofits and building envelope, was reviewed in detail by Envis (2013). Key aspects included construction and form, configuration and control of building systems, renewable energy generation and holistic optimizations of several areas (Envis 2013). Simulation-based optimization methods applied to building with focus on handling discontinuous multi-model building optimization problem was discussed by Nguyen (2014). Building design optimization techniques for real-world design challenge and the advances and obstacles in this field are described (Nguyen 2014). Optimization algorithms in building design was studied by Machairas (2014). This study reviewed the methods and tools used for building design optimization to explore the reasoning behind specific selections to present their abilities and performance issues and to identify key characteristics of their future versions (Machairas 2014). Building energy efficient design optimization from the architectural perspective was reviewed by Shi (2016). Analyzed subjects included the general procedure, the origin and development, the classification, design objectives and variables, the energy simulation engines, the optimization algorithm and the applications (Shi 2016). The optimization of building envelope design for the last 30 years was reviewed by Huang and Niu (2016). Numerous studies on optimization of building envelope design were assembled and reviewed, and targeted objectives were collected and summarized (Huang and Niu 2016). Building simulation and computational techniques were discussed by Wang and Zhai (2016). This study focused specially on six different topics, including ventilation performance predictions, building

energy and thermal load simulation, lighting and daylight modeling, building information modeling, indoor acoustic simulation, and life cycle analysis of buildings. Major advances in each were highlighted, as well as trends for development and application (Wang and Zhai 2016). Ostergard reviewed the building simulation in early building design by covering development in both academia and commercial software industry that target the challenges, such as time-consuming modeling, rapid change of the design, conflicting requirements, input uncertainties and large design variability (Ostergard 2016). Building energy modeling for control and operation was reviewed by Li and Wen (2016). An effort was aimed to develop a zero-energy building design support tool (ZEBO) that facilitates the use of building performance simulation in the early design stage in hot climate (Attia 2013). This study reviewed challenges and opportunities for integrating optimization tools in net zero energy building design. Key factors and major findings of reviewed research in optimization of simulated performance-based building envelope design are summarized and listed at the end of this chapter in the final table.

Detailed frequency distribution of the utilization of different optimization methods for building envelope design is shown in Figure 7 along with the year that each specific optimization method was proposed (Kheiri 2018). The diagram shows the rapid increase in building envelope optimization studies in recent years. Three mostly used optimization methods are Genetic Algorithm (GA), followed by particle swarm optimization (PSO) and direct search.

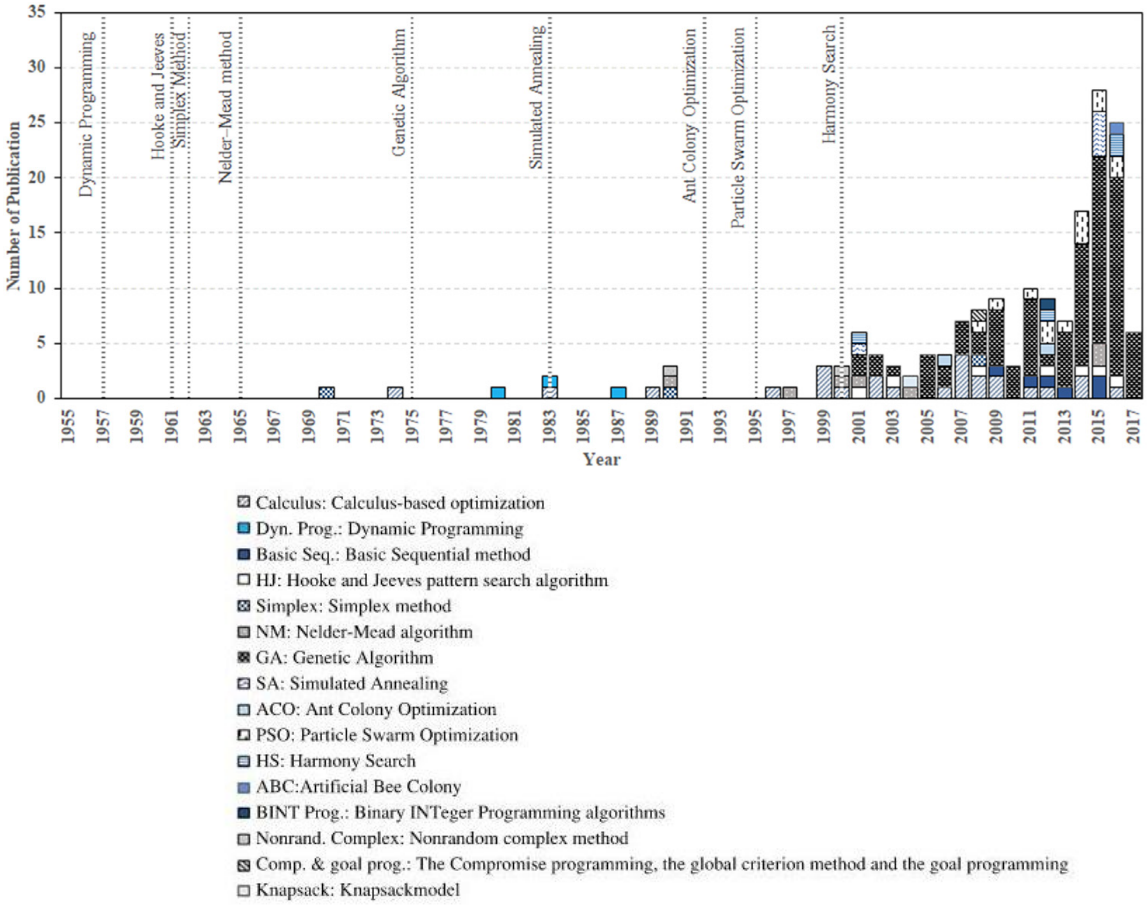


Figure 7: Histogram of utilized optimization methods (Adopted from Kheiri 2018).

Among building performance simulation tools, EnergyPlus is used most frequently. EnergyPlus is followed by the calculus-based assessments, TRANSYS, Daysim, Radiance, DOE2, IDA ICF and other tools that are listed in Figure 8. The simulation tools for daylighting and thermal analysis are not divided in this list.

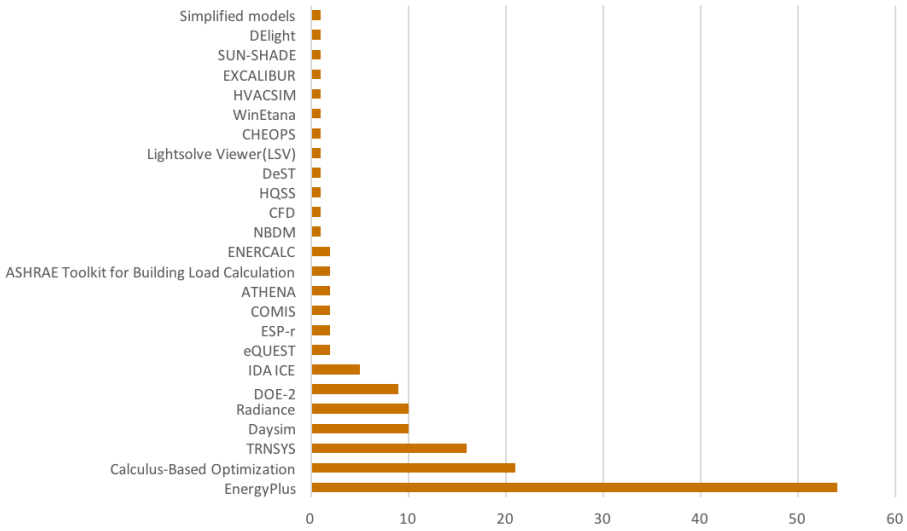


Figure 8: Frequency of the use of building performance simulation tools for building performance research (Adopted from Kheiri 2018).

MATLAB is the most widely used platform for the optimization, followed by mathematical optimization, GenOpt, JEPlus, BeOpt, modeFRONTIER, ENEROPT, etc. The platforms include all the tools specifically developed for building design as well as optimization platforms for different disciplines. Figure 9 shows the optimization tools for building performance optimization studies.

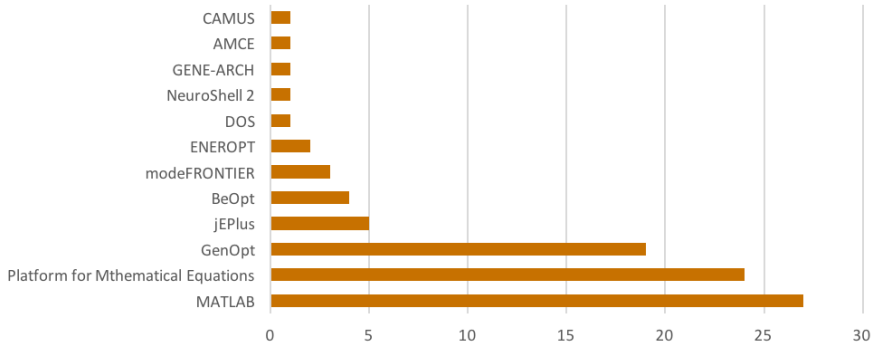


Figure 9: Frequency of the use of optimization tools for building performance research (Adopted from Kheiri 2018).

Optimization in building design has been used in different domains including space layout design, construction, structural design, acoustics, HVAC systems, and controls design. Furthermore, there are studies focusing on optimization of building components, such as wood-cement blocks, insulation, WWR, etc. to achieve lower energy consumption. There have also been different research studies conducted in the area of optimization for thermal and visual comfort in buildings (Kheiri 2018). In general, the optimization of an architectural design or retrofit can be done with different approaches. The difference can be in sampling the search space, methods to obtain optimum objectives, and the search algorithms.

According to existing surveys and interviews with professionals, users and participants for building performance optimization, findings reveal that Matlab toolbox and GenOpt are effective optimization tools, and the most used simulation engine is EnergyPlus (Attia 2013). Figures 10 to 12 show the results of that study about participants' choice of variables, objective functions and constraints in building performance optimization subject.

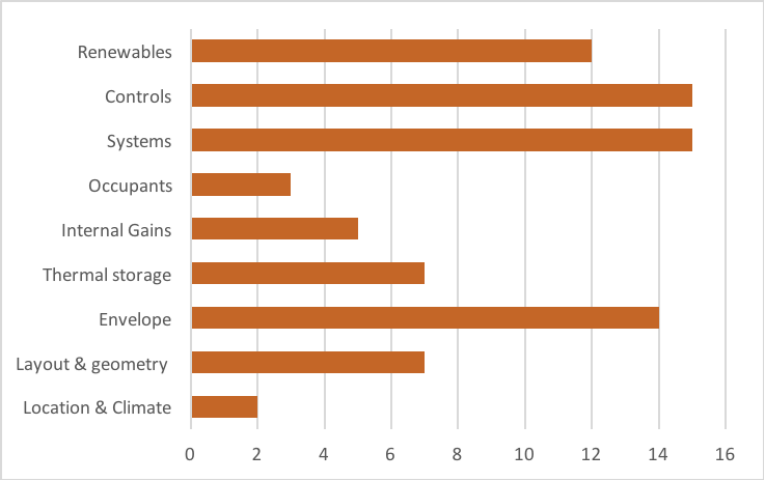


Figure 10: Participants' choice of optimization variables (Adapted from Attia 2013).

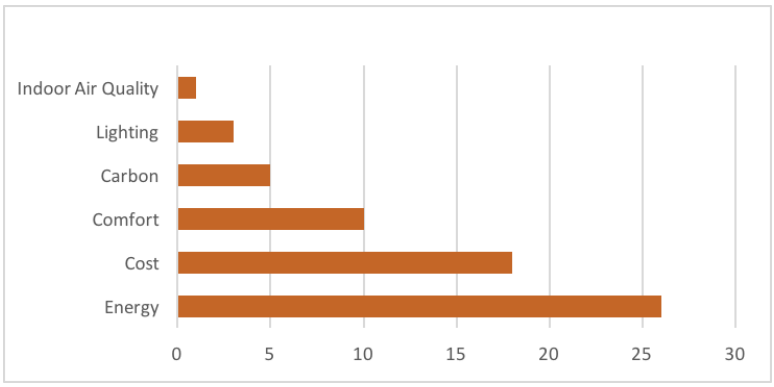


Figure 11: Participants' choice of objective functions (Adapted from Attia 2013).

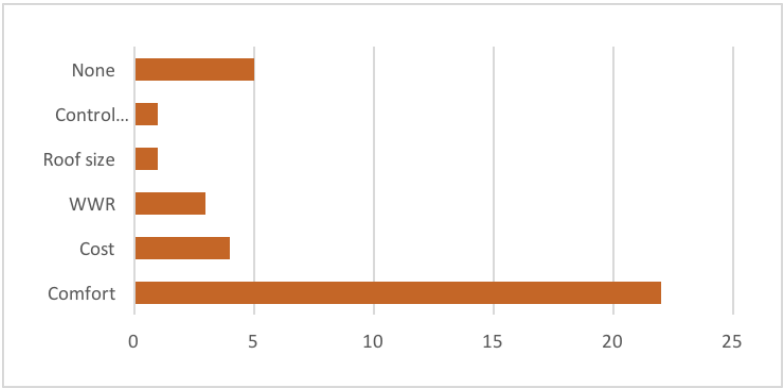


Figure 12: Participants' choice of constraints (Adapted from Attia 2013).

Computer building models that rely on repetitive method, construct infinitive sequences, of progressively better approximations to improve building performance and achieve the optimal solution to a problem can be used in energy efficient design. These methods are known as "numerical optimization" or simulation-based optimization. Wright pioneered the methods to optimize building engineering systems when he applied the direct search method in optimizing HVAC system (Gosavi 2015).

The term optimization refers to the procedures of making something (as a design, system or decision) as fully perfect, functional or effective as possible. In BPS, the term optimization generally indicates an automated process, which is entirely based

on numerical simulation and mathematical optimization (Attia 2012). In conventional optimization study, this process is usually automated by the coupling between a building simulation program and an optimization engine, which may consist of one or more optimization algorithms or strategies (Attia 2013). Building optimization refers to the methods that put forward optimal combination of simulation parameter setting in architecture design to find the optimum for the lowest total energy cost and simulation time.

One of the earliest studies used multi-objective optimization in building design and performed a Pareto optimization using dynamic programming (Gero 1983). Gero used multi-objective optimization in building design, using dynamic programming. Objectives included thermal load, daylighting, usable area and cost, and the variables covered massing, orientation and construction. Coley used a genetic algorithm to minimize energy use, and the method varied thermal conductance and thermal capacity for each zone in a model (2002). The novelty of this work was the combination of GA with human judgments. Presentation of both optimal and near optimal designs was achieved in a visual manner, enabling the user to choose based on the preference that need not be formalized as constraints or objectives. Mahdavi brought "virtual enclosure" concept that describes the building skin based on thermal and visual properties (2003). In this approach, multiple actual realizations map to a single virtual enclosure, allowing optimization algorithm to solve only the core underlying problem without conflicting information relating to its realization (Mahdavi 2003).

Wright optimized the placement of glazing using a genetic algorithm to minimize energy use based on hourly annual simulation conducted with EnergyPlus

(2014). This study described an approach in which a building facade is divided into a number of cells, each cell having one of two possible states, a solid wall construction, or a window. This method separated facade elements that could be glazed or solid, but the size of the design space increased due to very small windows. The solution was not practical because it required a constraint to limit the number of windows. Evins optimized the cost and energy use of a modular building for different climate types (2012). The variables included: construction (U-values and shading), HVAC and renewable energy sources (PV and solar thermal). Shading was optimized using a local search, which was embedded in the genetic algorithm used for all other variables. Then in 2015, Envis implemented multi-level optimization of building design, energy system sizing and operation. The optimization techniques used were a multi-objective genetic algorithm (design) and mixed-integer linear programming (operation). The objective functions used here were annual carbon emissions and initial capital cost for the multi-objective design problem and annual running costs for the single objective operational problem (Envis 2015).

2.2 Building Performance Simulation Studies in Design Process

Because the topic of this research is related to whole building simulation and daylighting simulation, the literature reviews are focused on these areas and recent related studies in these areas are discussed below.

2.2.1 Whole Building Simulation Models' Literature

Thermal building simulation is arguably the most mature of the subfields of building performance simulation. Key information on this area is described in Chapter

1. There are many works and researches for energy simulation in building design and modeling methods for energy in buildings, two significant works were done by Clarke (2001) and Underwood (2014). In building performance simulation for design and operation, Hansen and Lambert studied thermal load and energy performance prediction and thermal analysis on climate data, occupant behavior, HVAC systems and building automation (2011). Crawley in an influential paper compared the features and capabilities of twenty building simulation tools for whole building simulation (2008). Oh and Haberl studied the history of building energy simulation tools in the United States, and included charts to trace some of these developments (2016).

Strachan discussed the history of validation of the ESP-r simulation program (2008). Dols studied work on TRANSYS simulation tool, focusing on improving the coupling of heat transfer, airflow and contaminated simulation (2015). Daum and Morel studied different blind control and lighting schedules and simulated the impact of these variables on energy use of an office space (2009). Zhou worked on general comparison of the HVAC system modeling in simulation tools and described some of the fundamental differences (2014). Peng linked EnergyPlus simulation, building control virtual test bed and actual energy management and control system to compare predicted and measured building performance in terms of power consumption in real time (2012). Rysanek developed an automated search for energy efficient building refurbishment option within Matlab environment (2012). Zhao and Magoul studied different ranges of building energy consumption prediction tools, including the traditional building simulation tools, statistical methods, neural networks, support vector machines and grey methods (2012). Foucquier studied building energy performance prediction and refined

physical models, statistical and hybrid methods (2013). This work blended the borders between thermal and CFD models.

2.2.2 Lighting and Daylight Simulation Literature

Based on literature reviews, Ochoa provided a deep discussion about daylighting and how it relates to light, form and people (2012). Reinhart gave a brief overview about this subject as well (2006). Mardaljevic provided an overview about daylight metrics (2009). Andersen studied interaction between daylighting and human needs, and investigated the impact of daylighting on health, visual comfort and perception of space (2015). Du and Shaples used Radiance to study the impact of different forms and geometries and reflectance distribution on vertical daylighting level (2010). Mahdavi studied the five options to generate sky models and how these options impact computed irradiance values for vertical surfaces (2010). De Keyser worked on modeling and simulation of lighting control systems to keep the illuminance level constant in the space (2010). Reinhart presented a review of dynamic daylighting simulation capabilities and suggested the use of daylighting in design of daylit spaces (2011). Kota discussed the integration between BIM and daylighting simulation tools (2014). This research linked Revit with Radiance and Daysim. Yu worked on energy assessment potential offered by use of daylighting in educational buildings (2014). Bueno developed a Radiance-based approach to evaluate complex fenestration system (2015). Amundadottir studied advanced performance aspects, such as visual interest and gaze behavior, using Radiance to predict ocular light exposure in educational buildings (2017). Konis investigated the relations between building design, daylighting and the circadian rhythm using simulations (2017).

2.3 Building Performance Optimization Studies in Design Process

As discussed before in previous section, there is a range of available BPS tools, including EnergyPlus, DOE-s, TRNSYS, IDA ICE, etc. Besides these simulation engines and tools, there are some optimization tools such as: GenOpt, JEPlus, MultiOpt, BeOpt, etc. These tools are used to couple the energy simulation programs with optimization algorithms. This section discusses some of these optimization methods, tools and objectives in building design process.

Bucking used BeOpt to measure the effect of economic incentive on net-zero energy building (2013). Delgarm studied building energy consumptions of a single room model by coupling JEPlus and EnergyPlus (2016). Particle swarm optimization was used in this study to investigate the effects of building architectural parameters on energy consumption, including building orientation, shading overhang specifications, window size, and the glazing and the wall material properties in four major climatic regions of Iran (Delgarm 2016). Chantrellea developed MultiOpt tool for optimizing the building renovation operations, including building envelope, heating and cooling loads and control strategies (2011). MultiOpt is based on existing assessment software and methods, using a genetic algorithm (NSGA-II) coupled to TRNSYS, and economic and environmental databases (Chantrellea 2011).

GenOpt is the most used optimization tool in research and literature. Futrell combined a light environment analysis software and GenOpt to optimize buildings daylighting design, and to minimize lighting loads (2015). The study used dynamic climate-based lighting simulations and compared four optimization algorithms as implemented in GenOpt: Simplex Algorithm of Nelder and Mead with the Extension of

O'Neill (SA), Hooke Jeeves (HJ), Particle Swarm Optimization using Inertia Weight (PSOIW), and a hybrid PSO Constriction/Hooke Jeeves (PSOC/HJ) algorithm (Futrell 2015). Karaguzel used EnergyPlus and GenOpt to minimize the life cycle cost of building materials and operational energy consumption for an office building (2014).

Machine learning techniques for the development of classification models are applied in many fields. Methods such as support vector machines (SVM) or artificial neural networks (ANN) have demonstrated their high reliability in the training of non-linear regression and classification models. The difference is mainly on how non-linear data is classified. The SVM utilizes nonlinear mapping to make the data linear separable, hence the kernel function is the key. However, ANN employs multi-layer connection and various activation functions to deal with nonlinear problems. Among data-driven methods (such as ANNs, support vector machine, etc.), ANN (Artificial Neural Network) is mostly used in research studies because of better performance and structure compared to other methods (Gossard 2016, Wei 2015, Asadi 2014). Asadi studied multi-objective optimization model that combined ANN with NSGA-II to quantitatively assess technology choices in a building retrofit project (2014). Objective functions were energy consumption, retrofit cost, and thermal discomfort hours. Wei used ANN models for building comfort and energy efficiency of residential building (2015). Based on the simulation data on energy consumption and indoor thermal comfort, the study also used a simulation based improved back-propagation (BP) network, which is optimized by a genetic algorithm (GA) to characterize building behavior, and then establishes a GA-BP network model for rapidly predicting the energy consumption and indoor thermal comfort status of residential buildings (Wei

2015). Gossard used ANN and NSGA-II to find optimal value of a building envelope considering annual energy consumption and summer comfort degree (2016). In order to reduce the computation time without reducing the complexity of the problem, an artificial neural network was developed to provide fast and accurate evaluations of objective functions, which are used by a genetic algorithm. These studies also showed that using data-driven methods and models can speed up the optimization.

There are several studies on the performance of different optimization algorithms, for both single objective optimization and multi objectives optimization. There are more studies on single-objective optimization algorithms and their performance than multi-objective. But here multi-objective optimization algorithms are discussed because they relate more to the dissertation topic and the real-world problems, and there is a need to improve our understanding of these methods. Below, the studies relating to the building domain and multi-objective optimization are discussed in more detail.

Hofpe (2009) compared performance of two multi-objective optimization algorithms. The NSGA-II and the SMS-EMOA were compared based on their performance and solutions on multi objective optimization. The NSGA-II was not satisfied in all tests, while the SMS EMOA gave more competitive results, but the number of simulations was much higher. Brownlee compared the performance of five multi-objective algorithms (IBEA, MOCell, NSGA-II, SPEA2 and PAES) to solve multi-objective problem regarding window placement (2011). The study found that the NSGA-II outperformed the others, both in terms of the size of hyper volume and the spread of optimal solutions.

Hamdy evaluated performance of three multi-objective algorithms, including the NSGA-II, aNSGA-II (NSGA-II with active archive) and pNSGA-II (NSGA-II with a passive archive strategy) to find the cost optimal and near-zero energy building solutions for a problem that has a large discrete solution-space (2012). The study reported that the aNSGA-II has a better repeatability in finding high-quality solutions close to the true Pareto front with fewer evaluations and high convergence than the original NSGA-II and pNSGA-II.

Bichiou developed a comprehensive energy simulation environment to optimally select both building envelope features, and heating and air conditioning system designs and operation settings for single family homes (2011). The study used three optimization algorithms considered in the simulation environment: GA, PSO and SS. Based on comparative conclusion the robustness and the effectiveness of these algorithms, SS technique has generally significantly higher computational efforts than both the PSO and the GA techniques. GA requires the least computational time compared to PSO and SS.

Junghans combined an evolutionary genetic algorithm with a modified simulated annealing algorithm (2015). The study shows that GA does not always provide solutions close to the global optimum and provided a building optimization method, which result a higher reliability than the GA alone. This study illustrated that the hybrid GA coupled with the modified SA provides solutions close to the global optimum in all of the test runs. The proposed algorithm provides more reliable results than the GA without the addition of the modified SA.

Hamdy compared performance of seven commonly used multi-objective evolutionary optimization algorithms in solving the design problem of a nearly zero energy building (2016). The compared algorithms include: pNSGA-II, MOPSO, PR-GA, ENSES, evMOGA, spMODE-II, and MODA. In most cases, the improvement of the quality of the obtained solutions has direct relation with the number of generations. The search by the PR-GA algorithm covered a large area of the solution space and included near optimal solutions with a good diversity. Similar characteristics were shown by pNSGA-II, evMOGA and spMODE-II after PR-GA. In most running cases, ENSES, MOPSO and MODA achieved uncompetitive results.

Si evaluated algorithms used for building energy efficient design optimization (2016). A set of performance indices, namely, stability, robustness, validity, speed, coverage and locality, were proposed to evaluate the overall performance of algorithms. Based on the comparative conclusion, the convergence of MOGA-II is faster than MOPSO. Both MOPSO and MOGA-II widely searched throughout the space globally, although MOPSO performed slightly better than MOGA-II, while HJ trapped in local optimum. Both MOGA-II and MOPSO showed robust performance when slightly changing the optimization parameters, although MOGA-II performed slightly better than MOPSO, while HJ results are highly sensitive to its control parameter settings.

Multi-objective evolutionary algorithms (MOEA) are used for several purposes, such as cost-effective design, environmentally friendly buildings, energy efficient and high comfort building, net-zero energy buildings, etc. These algorithms also have great potential for these research subjects and combination with other algorithms to find optimal solutions for multi-objective problems.

2.4 Occupant Comfort (Thermal Comfort and Visual Comfort)

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) defines human thermal comfort as "the condition of the mind in which satisfaction is expressed with the thermal environment" (ANSI/ASHRAE Standard 55). There are two approaches to understanding and measuring thermal comfort: rational and adaptive. The rational or heat balance approach uses data from climate chamber to support its theory, while the adaptive approach uses data from field studies of people in buildings. Both have certain benefits and limits, as described below.

For thermal comfort criteria, the Predicted Mean Vote (PMV) is widely used and accepted for design and assessment of comfort conditions. PMV, suggested by Fanger (1970), relies on six factors for thermal comfort: air temperature, mean radiant temperature, air movement, relative humidity, clothing levels and activity levels. With these factors, the comfort zone is on average close to condition of 79°F (26°C) and 50% relative humidity. The Predicted Percentage of Dissatisfied (PPD) predicts the percentage of people who would feel more than slightly warm or slightly cold. Three kinds of comfort zone can be defined for PPD based on PMV. PMV is an index corresponding to the occupant's assessment of thermal conditions in an environment, where indices of -3 (cold) and +3 (hot) are the extremes of the seven-point scale. The standard recommends that PMV values for a particular space be within a -0.5 to +0.5 range values, which correspond to a 10% PPD, as seen in Tables 3 and 4.

Table 3: ASHRAE standard recommendations (Djongyang 2010).

	Operative temperature	Acceptable range
Summer	72°F (22°C)	68-73.5 °F (20-23°C)
Winter	76°F (24.5°C)	73.5-79 °F (23-26°C)

Table 4: Predicted percentage of dissatisfied (PPD) based on the Predicted mean vote (PMV) (Djongyang 2010).

Comfort	PPD	Range of PMV
1	<6	-0.2 < PMV < 0.2
2	<10	-0.5 < PMV < 0.5
3	<15	-0.7 < PMV < 0.7

An adaptive approach is derived from field studies, with the purpose to analyze the real acceptability of thermal environment, depending on the context, the behavior of occupants and their expectations. Therefore, the adaptive approach allows for analysis of other factors than those that can be simulated, such as everyday clothing and behaving without additional restrictions. In thermal experience, there is a very complex interaction between occupants and their environments. The adaptive comfort zone allows for the change in operating conditions depending on prevailing mean outdoor temperature, as seen in Figure 13 (ASHRAE 55-2010).

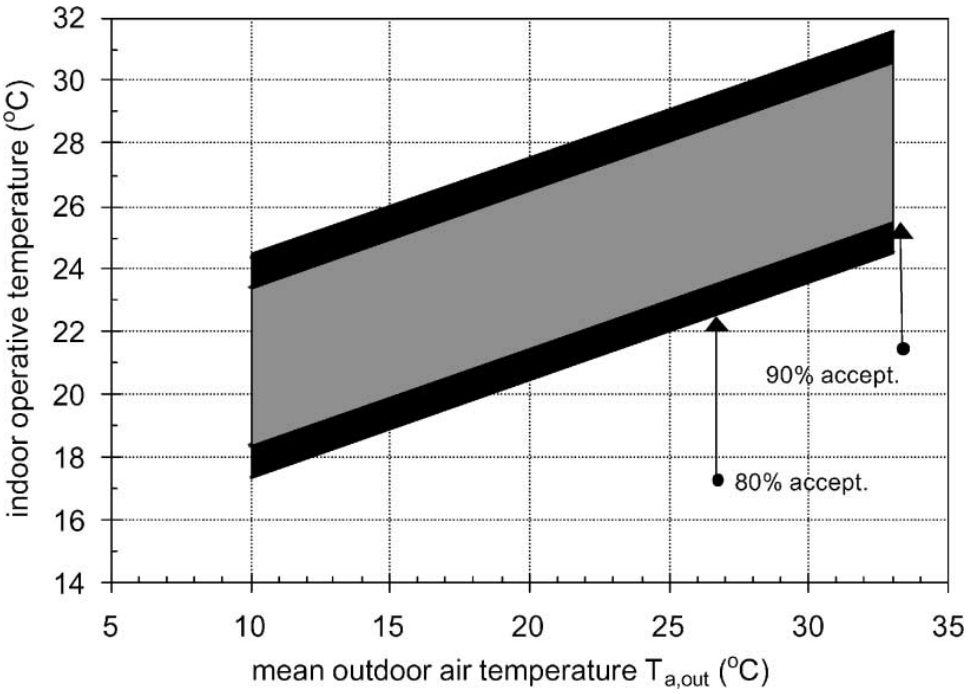


Figure 13: Adaptive Comfort Standard (ACS) for ASHRAE Std. 55, applicable for naturally ventilated buildings.

Illuminating Society of North America (IESNA) defines visual performance as the quantitative assessment of the performance of visual task, taking into consideration speed and accuracy (IESNA, 2001). It is a measure of how well one can perform a visual task. Visual comfort relates to the illuminance level. Visual performance depends on the following criteria: task illuminance, luminance ratio, uniformity, daylighting glare index and visual comfort probability. Selected visual comfort criteria for daylight quality and quantity for facade designs are task illuminance, uniformity, and luminance of window surface. Lighting Handbook, Chartered Institute of Building Service Engineers (CIBSE), Code of Interior Lighting, Commission Internationale de L'Eclairage (CIE) provides guidelines for task illuminance values, which can be used during the design process (IES lighting handbook, CIBSE, CIE Guideline). The

recommended value for general offices based on CIBSE is 46.5 foot-candles (500 lux). For performance of visual tasks of medium contrast or small size, 46.5-70-93 fc (500-750-1000 lux), based on IESNA. Spaces with the medium visual requirements, such as medium machining, offices, control rooms etc., require 28-70-93 fc (300-500-750 lux) based on CIE. Uniformity is the ratio between minimum and maximum illuminance or between the minimum and average illuminance at a work plane. Based on CIE and CIBSE standards, for the whole room, the ratio of the minimum and average illuminance should be greater or equal to 0.8.

Moeck proposed an average illuminance of window surface instead of luminance ratio, daylighting glare index and visual comfort probability, which is more appropriate (1998). There is no clear-cut standard for limiting luminance on window surface, but IESNA RP-1 1993 limits the luminance of any room surface to 850 cd/m^2. With a perfectly diffuse surface with the reflectance of 0.8, this is illuminance of 310 fc (3340 lux).

Another area of current research interest involves dynamic daylight performance metrics. While the widely-used daylight factor (DF) is calculated based on the ratio of the internal illuminance at a given point to the unshaded external horizontal illuminance under a CIE overcast sky, the dynamic daylight metrics are calculated based on annual climate data, and thus account for variations in both climate and solar position (Reinhart et al., 2006; Nabil and Mardaljevic, 2006). The calculation of these metrics is more complicated than the daylight factor method and requires the use of special software, such as DAYSIM, a Radiance-based annual daylight simulation software.

2.5 Summary of Literature

Key factors and major findings of reviewed research studies relating to optimization of simulated performance-based building envelope design are summarized in Table 5.

Table 5: Key factors and major findings of reviewed research.

Author & Year	Objectives	Optimized parameter	Tool & Algorithms	Results
Ucar and Balo in 2009 & 2010	Payback Period	Thickness of insulation materials	Direct Search	A functional relationship between heat loss and the thickness of insulation materials.
Bambrook et al. in 2011	Life Cycle Cost	Thickness of insulation materials, ventilation rate, thermal mass, window type, area, orientation and shading	Direct Search	Reduced cost, the space heating and cooling energy requirement of a new house in Sydney by up to 94% compared to BASIX requirement.
Albatici and Passerini in 2011	Heating requirement	South exposure coefficient	Direct Search	Both the shape coefficient and the south exposure coefficient were almost linear in relation to the heating energy consumption.
Jiang et al. in 2012, Cheng et al. in 2014	Room temperature	Building internal envelope's specification heat	Direct Search	A function for connecting the building internal envelope's specific heat and the indoor space

				temperature was built.
Asadi et al. in 2014	Energy consumption	17 popular building design parameters	Direct Search	Regression analysis based on the gradient-deterministic search methodology was still an acceptable approach in building design for the optimization of energy conservation.
Futrell et al. in 2014	Energy consumption and visual comfort	Window's size, location and optical properties	Hybrid GPS Hooke-Jeeves/PSO algorithm	For the south orientation, thermal and the visual performance did not significantly conflict, but for the north orientation the values had the greatest conflict.
Stazi et al. in 2012	Life cycle cost of the solar wall system	Material, thickness of the wall, type of the window	Factorial plan technique	Method was fast, simple and intuitive. However, it could only be applied for simple systems.
Gong et al. in 2012	Minimum thermal load	Thickness of insulation materials, window type, area, orientation and shading	Orthogonal method	An orthogonal method did not require a deep knowledge of computer programming, and thus was suitable for architects.

Ruiza et al. in 2014	Energy consumption and life cycle cost	Thickness of insulation materials, window type and area	Tabu Search	The methodology is designed to estimate the annual energy demand, life-cycle cost and the energy rating. In this paper, 48 different scenarios were analyzed with SEDICAE software.
Wright and Mourshed in 2009	Energy consumption	Window to wall ratio	Genetic Algorithm	The result from the GA showed a stochastic behavior, the reliability was satisfactory.
Tuhus-Dubrow and Krarti in 2010	Energy consumption	Envelope shape	Genetic Algorithm	There were some differences in energy consumption among different building shapes, these deviations were within 0.5%.
Sahu et al. in 2012	Energy consumption	The shape, orientation and materials of the building envelope	Genetic Algorithm	The climate influenced the accuracy of the optimization. If the space load situation was complex, with a widely variable combination of heating, cooling and humidity conditions, the degree of error would be larger.

Ioannou and Itard in 2015	Energy consumption	U-value for window, wall, roof and floor, ventilation, occupant, thermostat	Genetic Algorithm	Under heating conditions, the window thermal properties were the most critical parameters among all variables.
Kampf et al. in 2010	Energy absorbed by corresponding surface	Building shape with consistent building volume	Genetic Algorithm	Urban scale optimization by using GA was possible.
Gagne and Andersen in 2011	Illumination level and glare index	Size, location, transmittance of the window, window-to-wall ratio	Genetic Algorithm	The micro-GA-based optimization required much more computing time and a relatively large population size
Rakha and Nassar in 2011	Illuminance level	Geometric forms of ceiling area	Genetic Algorithm	Proposed method was more precise.
Yi and Kim in 2015	Sunlight exposure time	Distribution of buildings	Genetic Algorithm	The relative errors for the Pareto optimal solution and simulated results in EnergyPlus are relatively small, illustrating that the energy consumption and indoor thermal comfort performance can be accurately predicted by the building design multi-objective optimization model, and the model can be used in actual building design

				optimization.
Hamdy et al. in 2011	Energy consumption and thermal comfort	Size and U-value of window, size of shading system	Genetic Algorithm	An optimal solution for both thermal comfort and energy saving would require 10 kWh/(m2a) more than an optimal solution for energy saving alone.
Yu et al. in 2015	Energy consumption and thermal comfort	Area, orientation, heat transfer coefficient of wall and window	Genetic Algorithm	Under the same level of energy consumption, the indoor thermal comfort status did not change significantly.
Stavrakakis et al. in 2012	Thermal comfort	Position and size of window-opening	Genetic algorithm based on meta-model construction	Proposed methodology provides the optimal window designs, which correspond to the best objective variables for both single and several activity levels.
Palonen et al. in 2009	Life cycle cost	Insulation thickness, U-value of window	Genetic Algorithm (Applying an omni-optimizer)	The stopping criterion definition was very important for the reduction of computing time.
Kampf and Robinson in 2009	Energy consumption	Insulation thickness, U-value of window	Genetic Algorithm (Hybrid covariance matrix adaptation)	The covariance matrix was used for decorrelation of design variables. Although the calculation of the

				covariance matrix was time-consuming (compared with the computing time used for annual building simulation), it was acceptable.
Ramallo-Gonzalez and Coley in 2014	Energy consumption	Window to wall ratio, ventilation, size of shading systems	Genetic Algorithm (evolutionary strategy and HDE algorithm)	The results show that this method can reach the same optimal design, with substantially lower computational time than the optimization methods found in the literature.
Eisenhower et al. in 2012, Geyer and Schluter in 2014	Energy consumption and thermal comfort	Insulation thickness, orientation, U-value of window, window-to-wall ratio	Applying multiple algorithms for building envelope optimization.	The proposed approach could save around 80% of the computing time with a negligible change in the degree of error.
Bucking et al. in 2013	Energy consumption	Insulation thickness, orientation, U-value of window, window to wall ratio	Genetic Algorithm	Considering mutual information (dependency between variables) during the evolution of the design cases. With the consideration of mutual information, the data mining with genetic algorithm optimization could save 40%

				of the computing time and improve the accuracy by 25%.
Junghans and Darde in 2015	Life cycle cost	U-value of wall, U-value and transmittance of window, U-value of shading system	Genetic Algorithm (Combined with simulated annealing Algorithm)	In 1/3 of the optimization runs, the accuracy was improved by at least 5%, but the computing time did not change significantly.
Fesanghary et al. in 2012	Life cycle cost and CO_2 emission	Wall material and glazing type	Harmony Search Algorithm	Method required a relatively long computing time, its results were stable and trustworthy.
Magnier and Haghighat in 2010	Energy consumption and thermal comfort	Window to wall ratio, wall thickness	Genetic algorithm coupled with artificial neural	Optimization result could be achieved more quickly and reliably.
Zemella et al. in 2011	Energy consumption and annual carbon emission	Popular building envelope design parameters	Evolutionary artificial neural networks	The proposed approach was more accurate and less time-consuming.
Gossard et al. in 2013	Energy consumption and thermal comfort	Thermophysical properties of wall and roof	Genetic algorithm coupled with artificial neural network	The optimal solutions are compared to those from mono-objective optimization by using an aggregative method and a constraint problem in GenOpt. The comparison clearly shows the importance of performing

				multi-objective optimization.
Manzan and Pinto in 2009	Energy consumption and visual comfort	Positions and sizes of the external shading equipment	Genetic Algorithm	The results showed that the impact of shading devices on buildings energy needs to consider the electrical energy absorbed by the lighting system.
Hamdy et al. in 2010, Ferrara et al. in 2014	Energy consumption and life cycle cost.	Insulation thickness, type of glazing and shading systems.	Genetic Algorithm	A series of reference data for residential house designs in Finland and Italy was proposed.
Karmellos et al. in 2015	Energy consumption and life cycle cost.	Popular building envelope design parameters	Genetic Algorithm	A multi-objective optimization should consist of two parts: an optimization process and a decision-making process. A decision-making software tool was developed.
Ferraraa et al. in 2015	Energy consumption, Thermal and Visual comfort	Popular building envelope design parameters	Particle swarm optimization (PSO) algorithm	Methodology for designers to identify the most suitable set of passive solutions to guarantee a comfortable indoor environment and hence to minimize the total energy needs.

Ferrara et al. in 2014 & 2018	Energy consumption and life cycle cost	Popular building envelope design parameters	Particle swarm optimization (PSO) algorithm	The cost-optimal approach results as an effective method for delineating the future of NZEB design.
Azari et al. in 2016	Energy consumption and life cycle cost	Insulation material, window type, window frame material, wall thermal resistance, window to wall ratio	Genetic Algorithm coupled with hybrid artificial neural network	Find the optimum design scenario for low-rise office building in Seattle.
Delgarm et al. in 2016	Energy consumption	building orientation, shading overhang specifications, window size, and glazing and wall material properties	Particle swarm optimization (PSO) algorithm	Proposed optimization method shows a powerful and useful tool that can save time while searching for the optimal solutions with conflicting objective functions; therefore, facilitate decision making in early phases of a building design in order to enhance its energy efficiency.

CHAPTER 3

RESEARCH OBJECTIVES AND PROBLEM STATEMENT

3.1 Current Gaps in Knowledge (Research Problems)

Based on the literature review, it was concluded that some studies limited research objectives to building performance simulations relating to heating, cooling, airflow, lighting, and some investigations considered optimization of the building shape, HVAC systems, control systems, etc. A limited number of studies focused on developing a method for the design of building facades that take into account different performance criteria (energy, thermal and visual comfort). There is also a lack of the workable framework that implements both simulation analysis and optimization methods during facade design based on multiple performance criteria that are related to this building system.

Building simulation tools have evolved from equation solvers to validated software programs with a large user base. But there are weaknesses and gaps in the functionality of these tools. It is expected that building simulation tools will be developed to better integrate simulations during all phases of the building process. Past research efforts focused more on the data aspects of design analysis interaction rather than the design process. Enabling data exchange between applications and analysis applications enable designers and decision makers to properly deal with data exchange and control the design process. Discussions are no longer about software features but on the integration and use of simulation in the building process. So, a new approach for

design integration requires a conceptual framework that improves the analysis applications in the design process.

The new developments in building simulations should consider integration of different physical domains and provide dynamic control of design settings. But the problem of many facade design-related studies is that they are investigating the impacts of different variables separately. Therefore, this research tackled this gap in knowledge and addressed fenestration, glazing system, wall assembly and shading control systems, taking into consideration their combined impacts on energy consumption (heating, cooling, and lighting), thermal and visual comfort and then optimizing their operation by simulation and analysis of different design scenarios. The main problem in current integrated building simulation software programs is that they are usually used to evaluate the overall energy performance in the design development phase when the building form is already determined, as well as building systems. Defining different combination of facade elements, evaluating these scenarios and selection of final design solutions concerning subjective factors mentioned above are the goals of this study.

Moreover, energy modeling and simulations in design process are usually limited to analysis of few different scenarios. It is time consuming to simulate and analyze all possible design scenarios. In summary, a limited number of studies have focused on the performance-based design process for building facades which integrate simulations and optimization methods. There is a lack of a workable framework that implements both simulation analysis and optimization methods for facade design, taking into account performance criteria specific to this building system. Discussions are no longer about the software and tools' features, but about the integration and

increased use of simulations in the design process. The future performance-based design approaches and simulation tools for facades should increase effectiveness, speed, quality, assurance and users' productivity. Therefore, this research focused on developing a framework that couples simulation and optimization methods, and allows multiple design scenarios to be tested rapidly. The framework was implemented by coupling Python scripting with EnergyPlus simulation engine, enabling users to consider more variables during the design process. Moreover, a web-based application (PerforPy) was developed, which enables easier interaction between simulation program and optimization algorithms through a Graphical User Interface (GUI).

3.2 Research Objectives & Questions

The objectives of this research can be divided into two parts. The first part (Objective 1) focuses on the fundamental concepts of understanding building performance simulations, optimization methods, and tools for quantifying and making design decisions. The research categorized simulation and optimization problems, analyzed the state-of-the-art building simulation software and procedures for performance-based design. This objective is covered in Chapters 1 and 2, and the primary research methods included literature reviews and analysis of previous studies. The second part (Objective 2) focuses on developing the design framework for building facades, taking into account facade design variables to optimize energy consumption, occupant comfort and energy cost. Then, to test the framework and its effectiveness, a test cell was used to investigate functionality of the framework, its implementation and effects on design decision making.

3.2.1 Research Questions for Objective 1

The main research questions associated with Objective 1 are:

1. How do simulations support performance-based building design through different stages of the design process?

2. What performance criteria are used in the design process, how to quantify the required level of performance and choose adequate measurement methods?

3. What are the appropriate building performance simulation tools and optimization engines for building facade design?

4. How do thermal and daylight modeling contribute to decrease in energy use and enhance occupant comfort?

5. What are challenges for coupling building simulation programs and optimization methods in building performance analysis and decision making?

3.2.2 Research Questions for Objective 2

The main questions that are associated with Objective 2 are:

1. What are the main methods in the performance-based approach of facade design in this research?

2. What are the design variables for performance-based facade design, which can reduce energy consumption and meet occupants' thermal and visual comfort?

3. What kind of simulations should be performed to quantify each particular design variable? What data is needed and what is available?

4. How can different design scenarios be created and controlled based on specific variables and performance ranges?

5. How can simulations and optimization methods be integrated and conducted to meet the performance criteria requirements in the framework?

6. How will the optimization methods be implemented to select optimal scenarios? How will the coupling between optimization and simulations be performed?

3.3 Model Development and Overview of the Framework

This research focused on simulation-based optimization methods, with the primary goal to develop a framework for facade design that integrates simulation engine with optimization algorithms, in an automated manner. This framework can be used as a back-end for web or mobile applications (or any user interfaces) and eventually after collecting enough data, the deep learning can be implemented to predict the configurations related to outputs.

Figure 14 below represents the whole model development, and each part will be explained in more detail in next chapter, where the step-by-step methodology is discussed in detail.

The main focus of this work is to develop the Minimum Viable Product (MVP), which is the core feature to effectively deploy the product to the users. A MVP is that version of a new product which allows a team to collect the maximum amount of

validated learning about customers with the least effort (Ries, 2011). MVPs are designed to test hypotheses and assumptions, but they are not the final product. They rely on the concept of validated learning.

MVP can be part of the process directed toward making and marketing this product to the users (Raddof, 2014). It works as an object in the iterative process of generation, presentation, data collection and analysis and learning. Creating MVP will allow collection of maximum amounts of validated learning data from users.

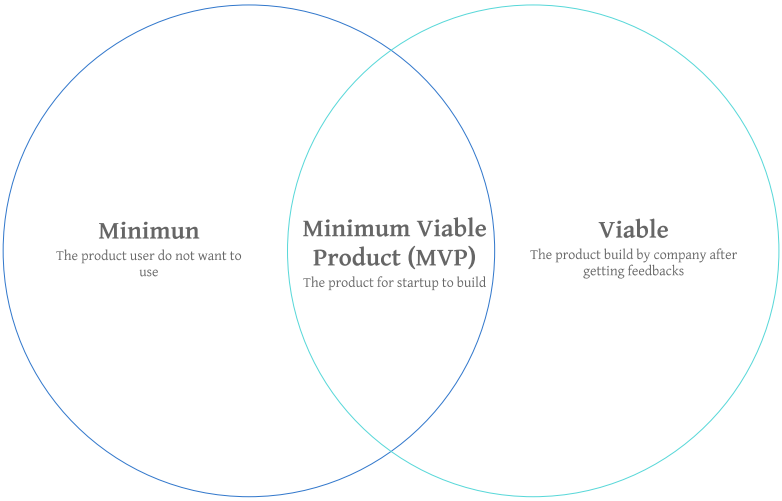


Figure 14: MVP diagram.

In this research, MVP is a web application product developed to test and collect data for the next stage of development, which requires big data for deep learning. This study mainly focuses on developing a framework as a back-end and simple front-end for users. Figure 15 shows the level 0 data flow diagram (DFD), which is known as context diagram and shows data system as whole and the way it interacts with external entities.

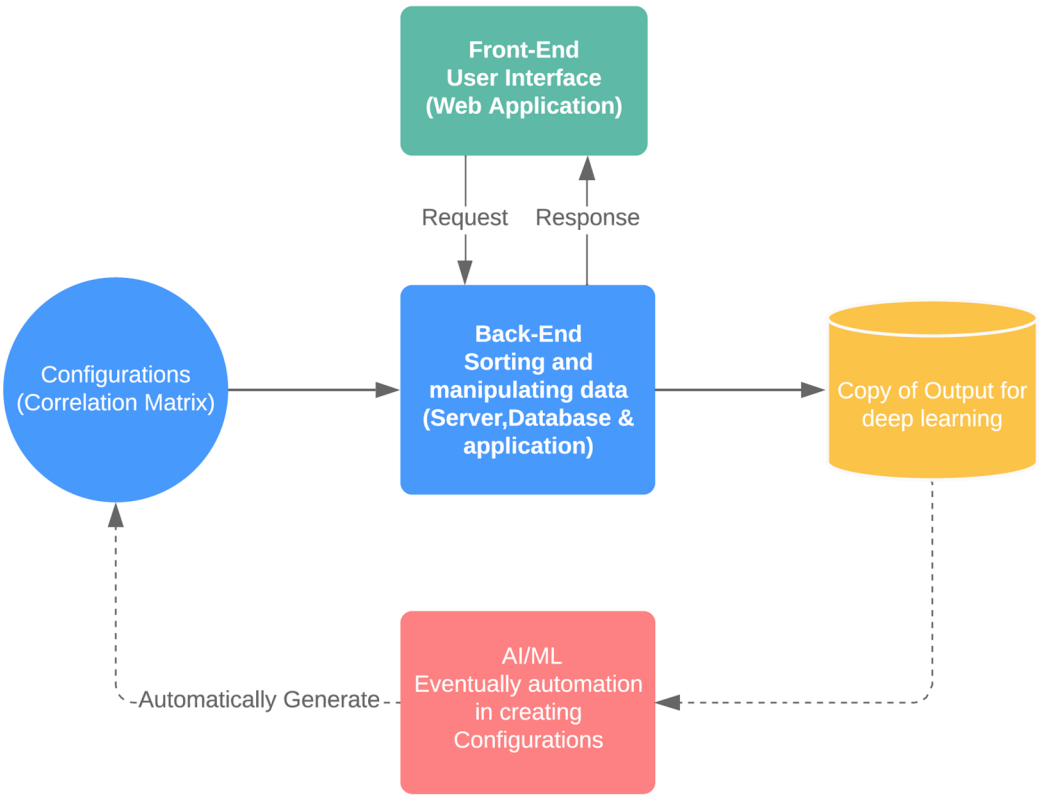


Figure 15: Data flow diagram, level 0.

In order to develop the product based on this research and test the iteration and collect the results and outputs, we need a user interface as the front-end that is connected with developed back-end. For this propose, Model, View, Controller (MVC) method is applied, which stands for three separated interconnected elements. MVC is a software and application design pattern used for developing interfaces. MVC is a lightweight highly testable framework as compared to traditional ASP.NET web forms. This method separates content from presentation and data processing. In other words, design pattern keeps the display and data separate to allow each to change without affecting the other and enable full control over the rendered HTML. The main

advantages of MVC method are providing clean separation of concern (SoC) and enabling test driven development (TDD). The basic interaction of MVC architecture is illustrated in Figure 16.

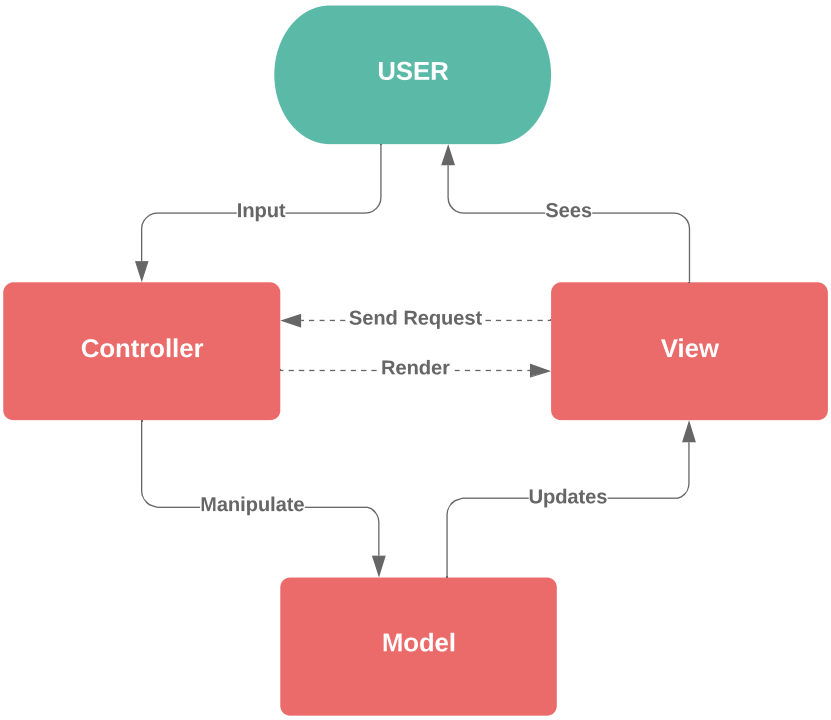


Figure 16: Basic MVC architecture.

Model represents the shape of data of the application. It is a central component that directly manages the data, logics and rules of application and is independent of the user interface. It receives user input from the controller.

View is a user interface that displays data, allowing users to modify the data. It actually works as the front-end in this case. All result representations, such as charts, diagrams or tables, can be displayed here.

Controller handles the user request and renders the appropriate view with the model data as a response. In other words, it accepts inputs and data, and converts them to commands for the model or view.

Figures 16 and 17 illustrate MVC architecture and the flow of users' requests and responses in this research, and the interaction between front-end and back-end with simulation engine and creating the configurations. Figure 18 shows the coupling of simulation and optimization procedures in this study. Next chapter describes the development of the framework, coupling, and implementation in detail.

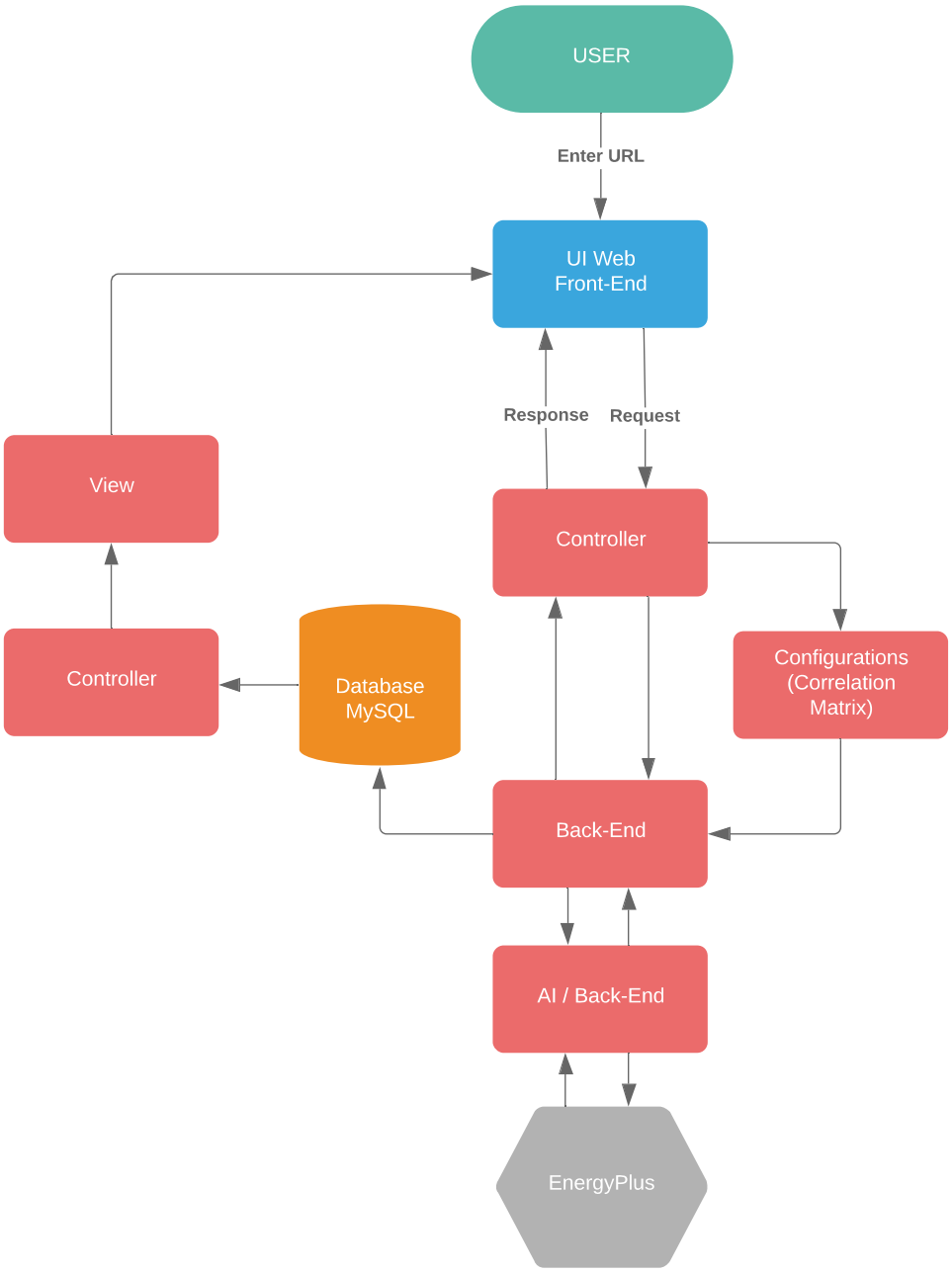
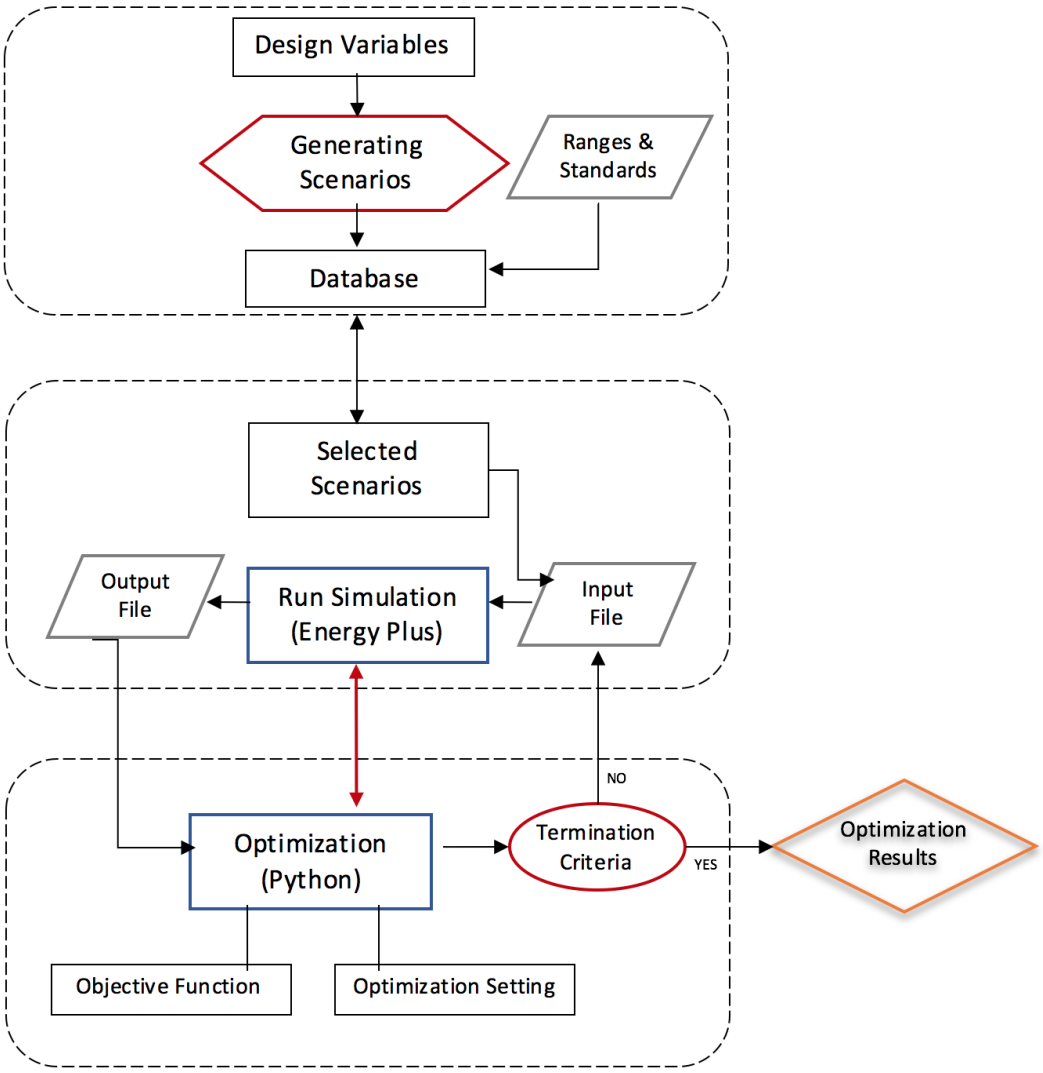


Figure 17: MVC flow chart.



//Figure 18: Procedure for applying and coupling elements of the developed framework in this research.

The web application was developed by utilizing Laravel, a Hypertext Pre-processor (PHP) web development framework. Laravel is an open-source PHP framework that is particularly known for developing high-functional web applications built with MVC pattern. Besides the open-access, the advantages of using Laravel for developing this web application are: robust code foundation, integration with other tools

to make web application faster, accreditation, authorization and access control, configuration error and handling tasks and integration with e-mail services and many other important tasks.

MVC structure in Laravel integrated the logic and presentation in framework and provides light-weight template for implementation. Therefore, Laravel was used to build a dynamic web-application. Figures 19, 20 and 21 illustrate the main component of the developed web-application. At the sign-in page, user entered their email contact information and sign into the website. On the main page, users can modify the parameters based on their design goals. The main page also allows the users to select the range of parameters relating the energy consumption, occupant's comfort and the energy cost. This is meant to improve the decision-making process. After setting the parameter, web application sends the request to the back-end to run the simulation, and find the optimum scenarios based on set parameters. After completing this process on the server, selected scenarios are saved in the MYSQL database table and send to controller. The results are displayed on the web-application in a table format. In this step, the application sends a notification to the users to notify them that the results are ready to be viewed.

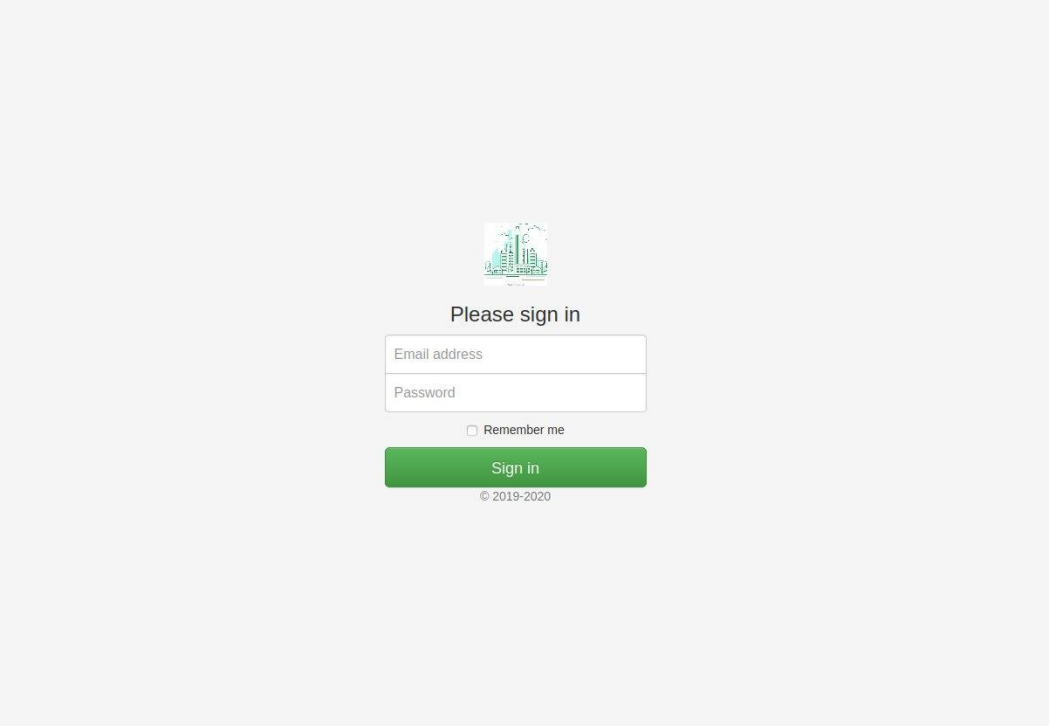


Figure 19: Web-application sign in page.

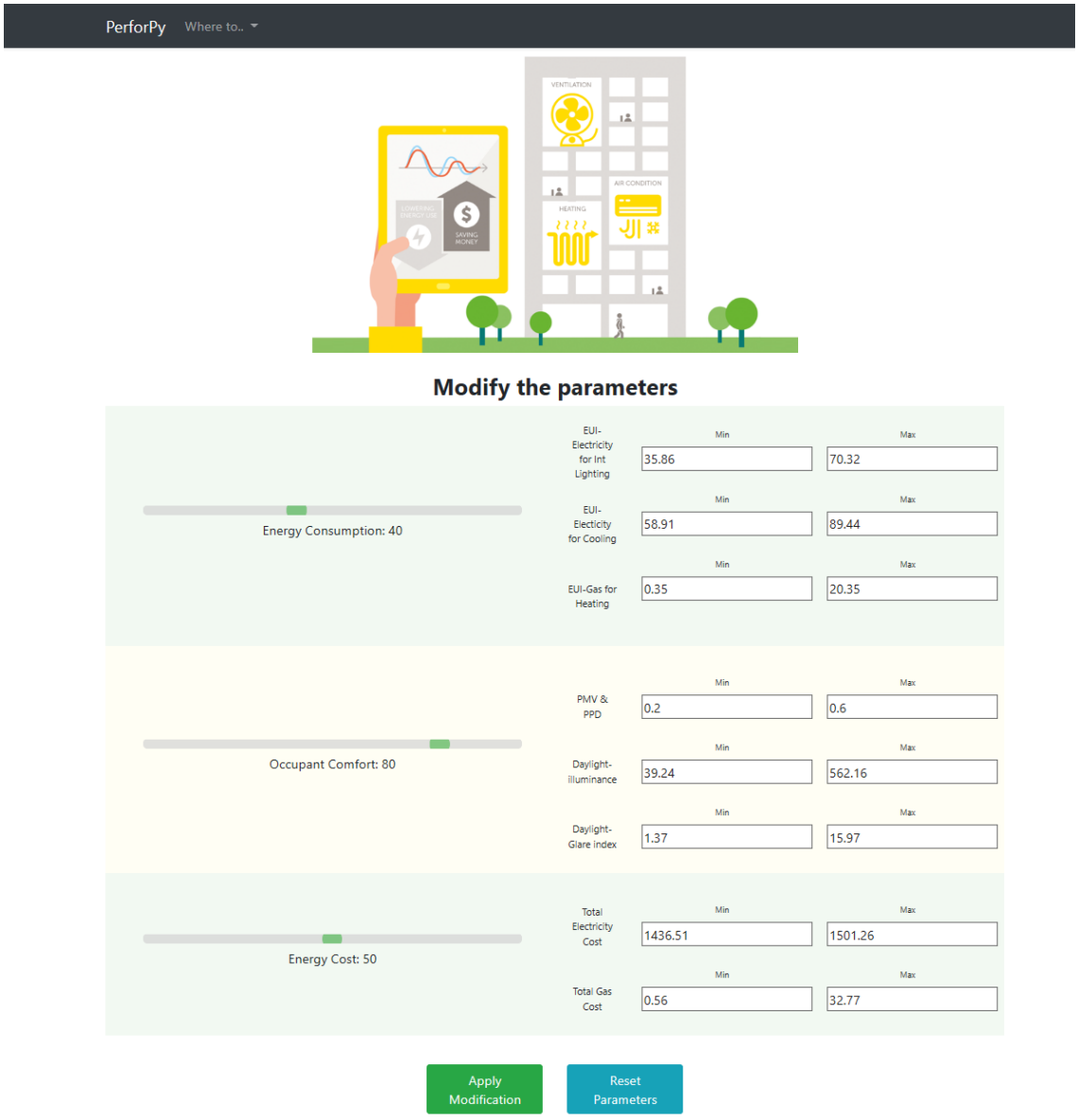
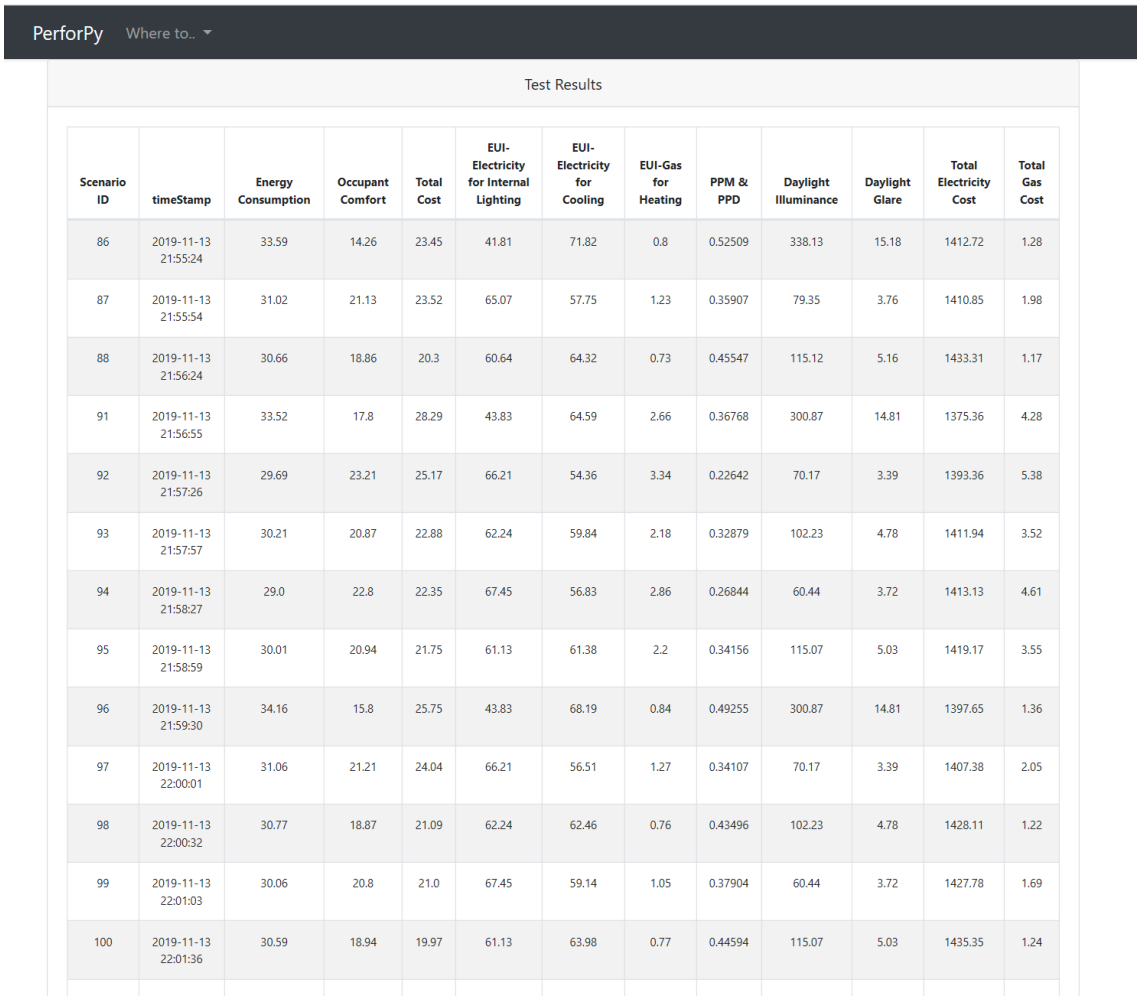


Figure20: Web-application main page, which allows users to select specific parameters.



Scenario ID	timeStamp	Energy Consumption	Occupant Comfort	Total Cost	EUI-Electricity for Internal Lighting	EUI-Electricity for Cooling	EUI-Gas for Heating	PPM & PPD	Daylight Illuminance	Daylight Glare	Total Electricity Cost	Total Gas Cost
86	2019-11-13 21:55:24	33.59	14.26	23.45	41.81	71.82	0.8	0.52509	338.13	15.18	1412.72	1.28
87	2019-11-13 21:55:54	31.02	21.13	23.52	65.07	57.75	1.23	0.35907	79.35	3.76	1410.85	1.98
88	2019-11-13 21:56:24	30.66	18.86	20.3	60.64	64.32	0.73	0.45547	115.12	5.16	1433.31	1.17
91	2019-11-13 21:56:55	33.52	17.8	28.29	43.83	64.59	2.66	0.36768	300.87	14.81	1375.36	4.28
92	2019-11-13 21:57:26	29.69	23.21	25.17	66.21	54.36	3.34	0.22642	70.17	3.39	1393.36	5.38
93	2019-11-13 21:57:57	30.21	20.87	22.88	62.24	59.84	2.18	0.32879	102.23	4.78	1411.94	3.52
94	2019-11-13 21:58:27	29.0	22.8	22.35	67.45	56.83	2.86	0.26844	60.44	3.72	1413.13	4.61
95	2019-11-13 21:58:59	30.01	20.94	21.75	61.13	61.38	2.2	0.34156	115.07	5.03	1419.17	3.55
96	2019-11-13 21:59:30	34.16	15.8	25.75	43.83	68.19	0.84	0.49255	300.87	14.81	1397.65	1.36
97	2019-11-13 22:00:01	31.06	21.21	24.04	66.21	56.51	1.27	0.34107	70.17	3.39	1407.38	2.05
98	2019-11-13 22:00:32	30.77	18.87	21.09	62.24	62.46	0.76	0.43496	102.23	4.78	1428.11	1.22
99	2019-11-13 22:01:03	30.06	20.8	21.0	67.45	59.14	1.05	0.37904	60.44	3.72	1427.78	1.69
100	2019-11-13 22:01:36	30.59	18.94	19.97	61.13	63.98	0.77	0.44594	115.07	5.03	1435.35	1.24

Figure 21: Web-application result page

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Overview of Research Methodology

The research process for this dissertation included multiple methods. The first step focused on identifying building simulation programs, design optimization methods and outlining potential challenges and obstacles in performance-based design techniques. The primary research method included literature reviews, addressing research questions posed in Objective 1. The results will help to obtain the clear understanding of the latest simulation programs and optimization methods for facade design, and thermal and daylight modeling in facade design process that contribute to decrease energy use and meet the occupant comfort needs.

The next step is the main part of the dissertation, and it focused on developing a framework for optimum facade design, considering energy usage, energy costs and occupants' comfort. Energy modeling is associated with improvement of the design process, while the optimization is applied during the decision-making process. Specific research methods for both parts are described in more detail in the following sections.

4.1.1 Research Methods for Objective 1

For the first objective, research methods included literature reviews of publications relating to BPS, BPO, and existing optimization and simulation tools, followed by determination of how building performance simulation tools are currently used, and what major limitations and problems currently exist. Then, occupant comfort

criteria and measurement methods were investigated. Research problems within the BPS community were identified, and the comprehensive literature review was conducted to define the role of simulation in performance-based design, methods and tools. This review and analysis identified issues and problems with the current methods and tools used in Architectural, Engineering and Construction (AEC) industry. Providing an overview of building simulation programs and classification of both optimization problems and algorithms is an important basis for developing a new framework and new strategies.

4.1.2 Research Methods for Objective 2

The new framework for performance-based design approach was developed as part of this research. The main goal is to minimize building energy consumption and energy costs associated with facade design, while considering occupants' comfort. This is a modular framework, consisting of independent scripts that represent modules, steps and functions of application under test. Figure 23 shows the major steps and tasks of the study. The modules are used in a hierarchical fashion to apply the framework, consisting of four steps for the main framework as backend and the fifth step is the additional step for the front end:

1) Defining goals, performance criteria, facade design variables and their properties, acceptable ranges for high-performance facade design

2) Generating the database that includes all possible design scenarios based on the variables with permutation in Python and selected outputs after simulation in EnergyPlus. This is module 1.

3) Coupling Python script with simulation engine (EnergyPlus) to automatically perform simulations for scenarios from a database (measurements methods) to quantify variables and generate the needed outputs. This is module 2.

4) Filtering and narrowing down the results by implementing Python script, genetic algorithm (GA) and Batch Normalization to evaluate outputs and find the optimal scenarios. This is module 3. Figure 22 illustrates these modules as the main part of this framework (back end).

5) Developing a web-based front-end interface for users to test the framework and collect the data for next step, which is implementation of deep learning after collecting enough data.

The next sections discuss the model development, components of the framework and its implementation in detail.

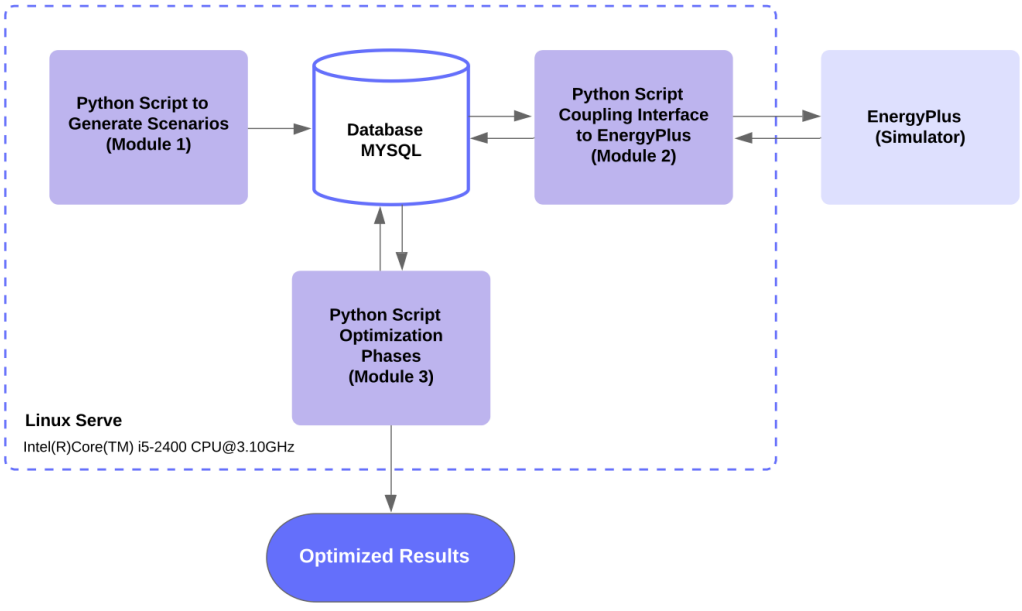


Figure 22: The Framework Back-End Diagram (Steps 1-4).

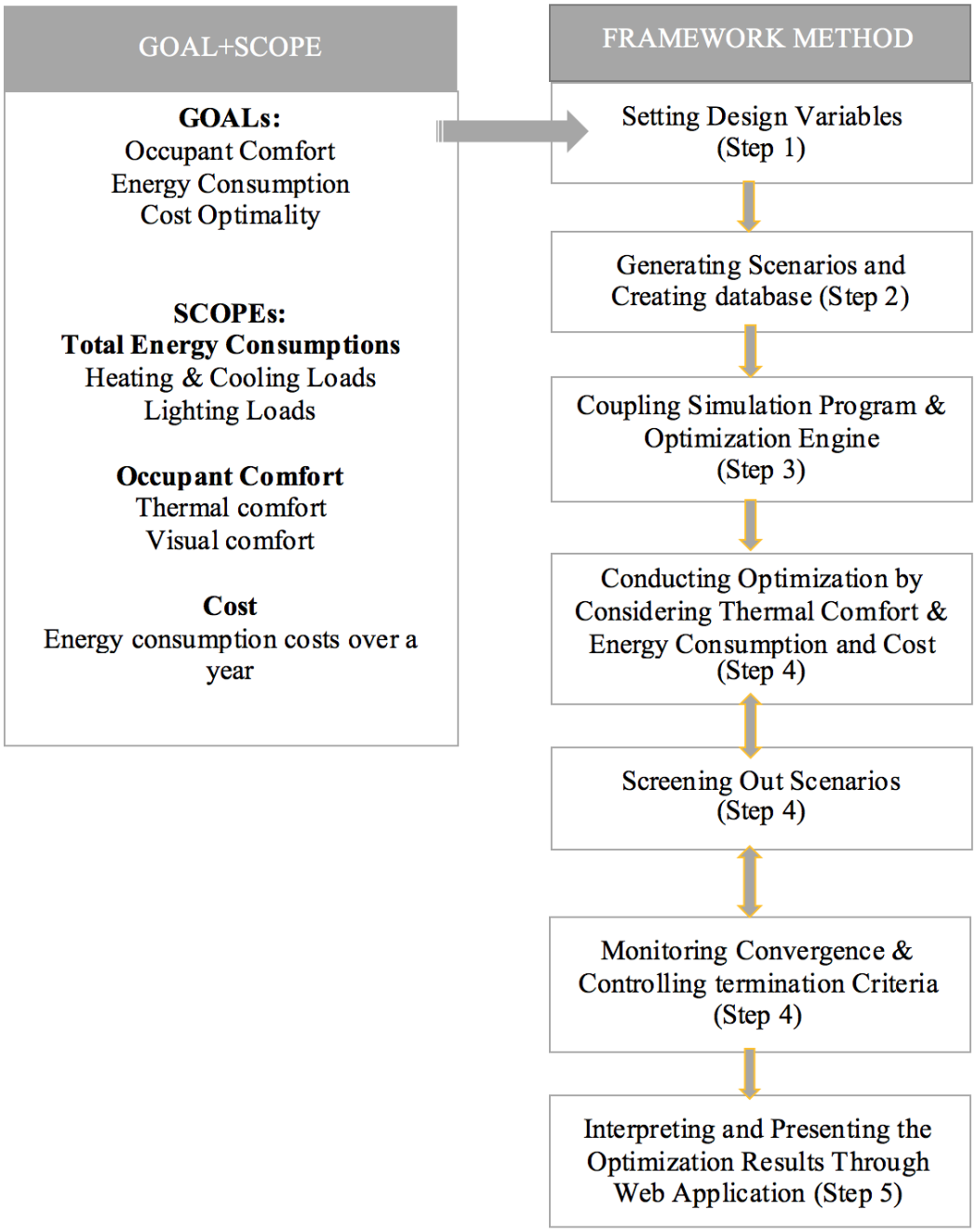


Figure 23: Major steps (1-5) and tasks in the study.

4.2 Step 1: Defining Goals, Performance Criteria and Facade Design Variables

Figure 24 shows the components of the framework. Performance-based facade design requires a holistic approach, considering performance indicators, such as energy performance and human comfort. The goals (optimization objectives) for this framework are to aid the design decision making process, where energy consumption and cost are minimized, and occupants' comfort (thermal and visual) is maximized. The energy requirements for heating, cooling, and lighting of buildings are strongly driven by the performance of the facade, especially glazing parts. The objectives for reducing energy consumption are to reduce heating, cooling and lighting loads. Performance requirements (design variables) to meet this objective include window to wall ratio (WWR), wall assembly, insulation, solar control, and glazing system. These design variables are considered in this research. Performance-based facade design objectives that relate to human factors and contribute to occupants' comfort and satisfaction include thermal comfort and visual comfort. The variables that relate to facade design include air temperature, mean radiant temperature, air movement, relative humidity, clothing levels and activity levels. The Predictive Mean Vote (PMV), suggested by Fanger (1970), predicts the effects of these six factors on thermal comfort. Predicted Percentage of Dissatisfied (PPD) persons predicts the percentage of people who would feel discomfort with certain thermal conditions.

In summary, this research investigates how optimization objectives (energy consumption and cost, and occupant comfort) are treated and set up in different phases, and what approach is more desirable for this multi-objective problem.

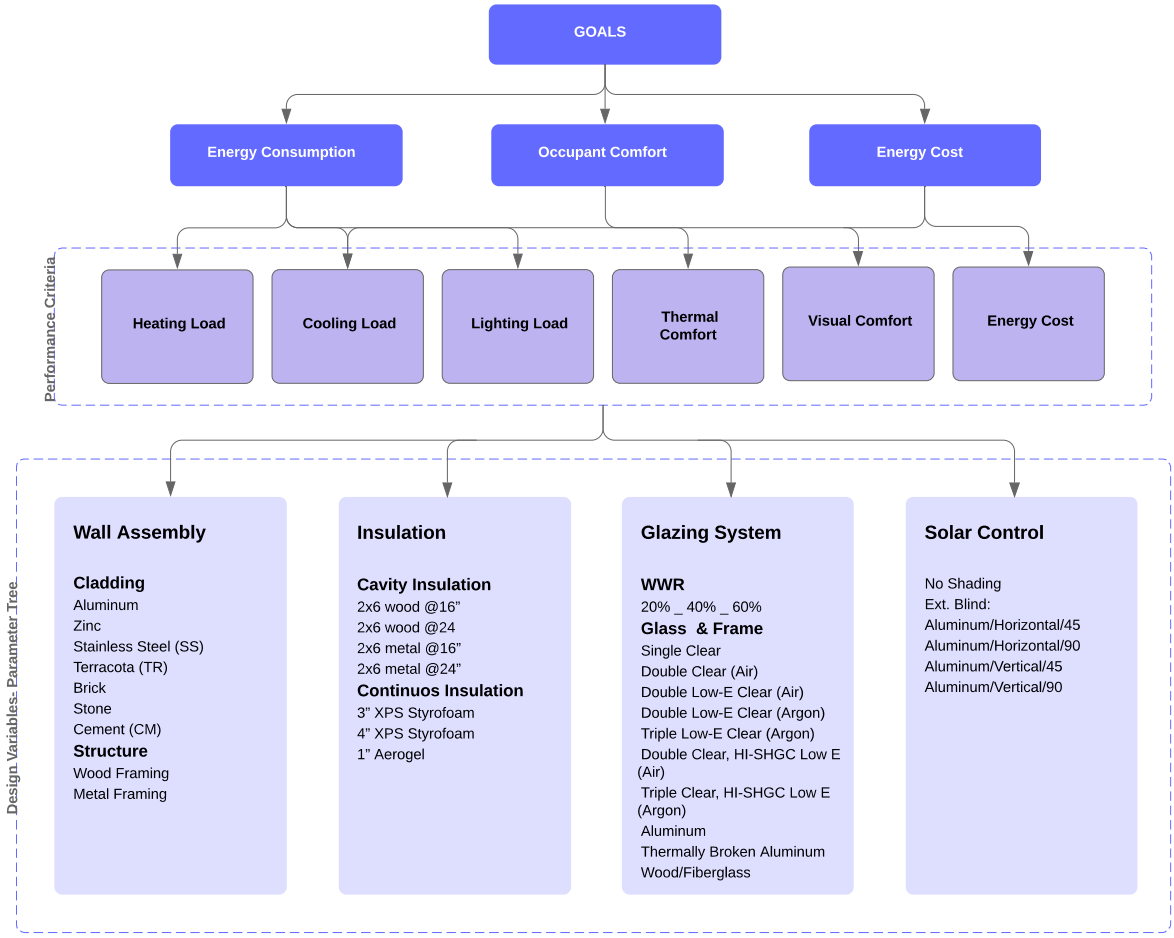


Figure 24: Conceptual diagram, showing components of the framework.

After defining all design requirements, performance criteria and variables, design scenarios were developed and prepared for the next phase of research, which included simulations and analysis. To investigate all these strategies, the basic procedures included: defining design information, building simulation models,

developing design scenarios, and simulating scenarios using different tools, as shown in Figure 25.

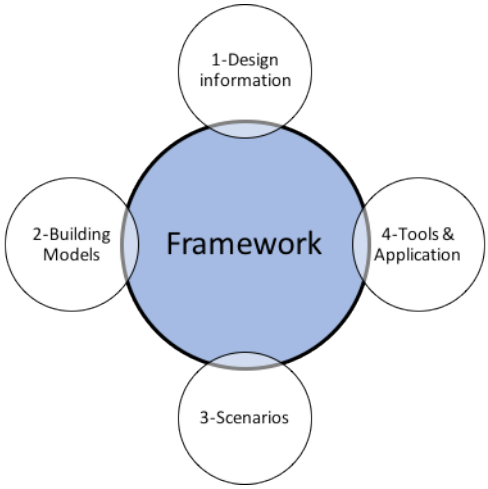


Figure 25: Basic procedure for applying the framework in this research.

The building design information relies on general data design requirements, such as weather, location, orientation and geometry, occupancy, etc. The building model layer contains analysis models that can be used for specific analysis or performance aspect. The scenario layer is based on different facade design scenarios, specifically looking into related performance criteria (variables) that will be simulated. The last layer will employ building performance analysis tools to perform the analysis.

Climate and environmental factors are the first aspects that should be considered for high-performance facade design. There are three general climate types: heating-dominated, cooling-dominated and mixed climates. Heating-dominated climates benefit from the collection of solar radiation, passive heating, heat storage, improved insulation to reduce heating demand, and the use of daylighting to reduce lighting demand. In cooling-dominated climates, protection from sun and direct solar radiation become

more important. In mixed climates, combined strategies that balance solar exposure and access to daylight must be implemented (Aksamija 2015).

The design scenarios were differentiated based on the following variables and related facade elements, properties, measurements and simulation tools, as listed in Tables 3 and 4. All variables in this research are discrete, which means that they can only take certain numerical values and are counted:

1. **Facade wall type assembly:** Different construction types were considered, including metal and wood framing with different cladding materials: Aluminum, Zinc, Stainless Steel, Cement, Terracotta, Brick and Stone. Table 11 shows the properties of these material as EnergyPlus inputs.
2. **Insulation:** Different insulation types, thicknesses, and placements within the wall assembles were considered. The type of insulation materials and equivalent insulation thickness considered in this research are listed in Table 12.
3. **Transparency:** Varying WWR (20 to 60%) and glazing system types were considered. Glazing system properties and specification are listed in Table 13.
4. **Solar control:** Different exterior blinds were considered (horizontal and vertical blinds).

Table 6: Facade design variables used in this study, and specific parameters.

Design Variables	Parameters
Window to Wall Ratio (WWR) (3 Types)	20% 40% 60%
Glazing System (21 Types)	1A: Sgl-Clr-Alum 1B: Sgl-Clr-AlumTB 1C: Sgl-Clr-W/F 2A: Dbl-Clr-Air-Alum 2B: Dbl-Clr-Air-AlumTB

	2C: Dbl-Clr-Air-W/F 3A: Dbl-Clr-LowE-Air-Alum 3B: Dbl-Clr-LowE-Air-AlumTB 3C: Dbl-Clr-LowE-Air-W/F 4A: Dbl-Clr-LowE-Argon-Alum 4B: Dbl-Clr-LowE-Argon-AlumTB 4C: Dbl-Clr-LowE-Argon-W/F 5A: Trip-LowE-Argon-Alum 5B: Trip-LowE-Argon-AlumTB 5C: Trip-LowE-Argon-W/F 6A: Dbl-Clr-HiSHGC-LowE-Air-Alum 6B: Dbl-Clr-HiSHGC-LowE-Air-AlumTB 6C: Dbl-Clr-HiSHGC-LowE-Air-W/F 7A: Trip-Clr-HiSHGC-LowE-Argon-Alum 7B: Trip-Clr-HiSHGC-LowE-Argon-AlumTB 7C: Trip-Clr-HiSHGC-LowE-Argon-W/F
Wall Assembly (3 Types)	W1: Wood Framing W2: Steel Framing
Cladding Material (8 Types)	C1: Aluminum (AL) C2: Zinc C3: Stainless Steel (SS) C4: Terracota (TR) C5: Brick (BR) C6: Stone (ST) C7: Cement (CM)
Insulation (12 Types) **Cavity Insulation +** **Continuous Insulation**	I1: 2x6 wood @16” +3” XPS Styrofoam I2: 2x6 wood @16” +4” XPS Styrofoam I3: 2x6 wood @16” +1” Aerogel I4: 2x6 wood @24” +3” XPS Styrofoam I5: 2x6 wood @24” +4” XPS Styrofoam I6: 2x6 wood @24” +1” Aerogel I7: 2x6 metal @16” +3” XPS Styrofoam I8: 2x6 metal @16” +4” XPS Styrofoam I9: 2x6 metal @16” +1” Aerogel I10: 2x6 metal @24” +3” XPS Styrofoam I11: 2x6 metal @24” +4” XPS Styrofoam I12: 2x6 metal @24” +1” Aerogel
Solar Control (5 Types) **Exterior Shading** **Vertical and Horizontal** **Different Angels**	S1: No Shading S2: Alum-H-45 S3: Alum-H-90 S4: Alum-V-45 S5: Alum-V-90

Table 7: List of facade elements, variables, properties and simulation tools used for design scenarios.

Facade Elements	Scenario Variables	Main Functionality	Properties	Simulation Tool
Wall Assembly	Metal & Wood Framing with Aluminum, Zinc, Stainless Steel, Terracotta, Brick, Stone, Cement	Energy gain Energy loss	Heat capacity Thermal conductivity R-Value	EnergyPlus
Insulation	Metal & Wood Framed @16" & @24" 3" & 4" XPS Styrofoam, 1" Aerogel	Energy gain Energy loss Energy transfer	Heat capacity Flow rate R-value	EnergyPlus
Transparency	**Window to Wall Ratio** 20%-40%-60% **Glazing System** Clear Glass-Double Clear Glass-Triple with Air, Argon Low e-Double with Argon Low e -Triple with Argon	Energy transfer Lighting	Heat capacity Flow rate SHGC U-value VT	EnergyPlus
Solar Control	No Shading Aluminum Horizontal-Vertical 45 & 90 degree	Energy transfer Lighting	R-value	EnergyPlus

The fixed parameters that are used in this study include geometry and size of the space used for simulations (40'x40'x10' H test cell), building type (office), HVAC equipment, operating schedule, equipment loads, lighting loads and system ranges, as shown in Table 8. Different visual configurations of the test cell are shown in Figure 26. This figure reflects the design variables, such as window to wall ratio and shading control options considered in this research.

Table 8: List of fixed parameters.

System Range	Heating temperatures set points: upper & lower band 68-77 °F (20-25 °C)	Cooling temperatures set points: upper & lower band 73.5-80.5 °F (23-27 °C)	Relative humidity set points: upper band 60 % RH lower band 30 % RH
Occupant Comfort Range	PMV range: -0.5 to +0.5	10% PPD	
Fixed Parameters	Type: Medium office Floor area: 1600 ft^2 Floor U-value: 0.10 Btu/ h ft^2 F Zones program: Open office	Operating hours for analysis: 9 AM-5 PM Num. of people per area	Lighting Loads: 10 W/m2 Plug & Process Loads: 25 W/m2 People: 10 m2 per person

HVAC system for this research is packaged rooftop VAV with reheat. Variable air volume (VAV) system Return Air Package system incorporates one supply duct that, in cooling mode, distribute supply air at constant temperature of approximately 55°F (13 °C). Because the supply air temperature is constant, the air flow rate must vary to meet the rising and falling heat gains or losses within the thermal zone served. Table 9 describes the key properties of the Air Handling Unit (AHU) for this system.

Table 9: AHU features.

AHU Feature	Properties
Supply Air Temperature	Constant (13C/55F)
Supply Air Temperature Reset Controls	None
Supply Air Pressure Reset Controls	None
Peak Fan Power	3.5 W/(L/s) or 1.65 W/cfm
Fan Curve	Standard ASHRAE
Economizer Cycle	Dry-bulb Control with 19C threshold
Minimum Outside Air	Sum of all zones minimum ventilation air
Heating Coil	Hot water from gas boiler
Heat Recovery	Via return air only (not indirect)
Cooling Source	Chilled Water

This multi-zone VAV system served by a rooftop AHU provides ventilation and cooling. Each zone contains a VAV box which varies the flow of air for zone-level cooling and/or heats the air to provide heating. There is a central chilled water plant that provides cooling to the air handling unit. The central plant properties are listed in Table 10.

Table 10: Central plant features.

Central Plant Feature	Properties
Heating Hot Water Source	Natural Gas
Boiler Peak Efficiency	Assumed to be 0.9
Supply and Return Temperatures-hot water	80/70 C or 176/158 F
System losses	Constant efficiency of 15%
Peak Pumping Energy	1.32 W/(L/s) or 21 W/gpm
Chilled Water Source	Water-cooled Chiller
Chiller Peak Load Efficiency	5.50
Supply and Return Temperatures- chilled water	7/12 C or 44.6/53.6 F
Peak Pumping Energy	1.32 W/(L/s) or 21 W/gpm
Pump Efficiency Controls	Variable Speed Drives
Condenser Water Source	Cooling Tower
Cooling Tower Efficiency	245.7 W/(L/s) or 15.5 W/gpm
Supply and Return Temperatures-condenser water	29/35 C or 84.2/95 F
System losses	Constant efficiency at 95%
Peak Pumping Energy	0.44 W/(L/s) or 7 W/gpm

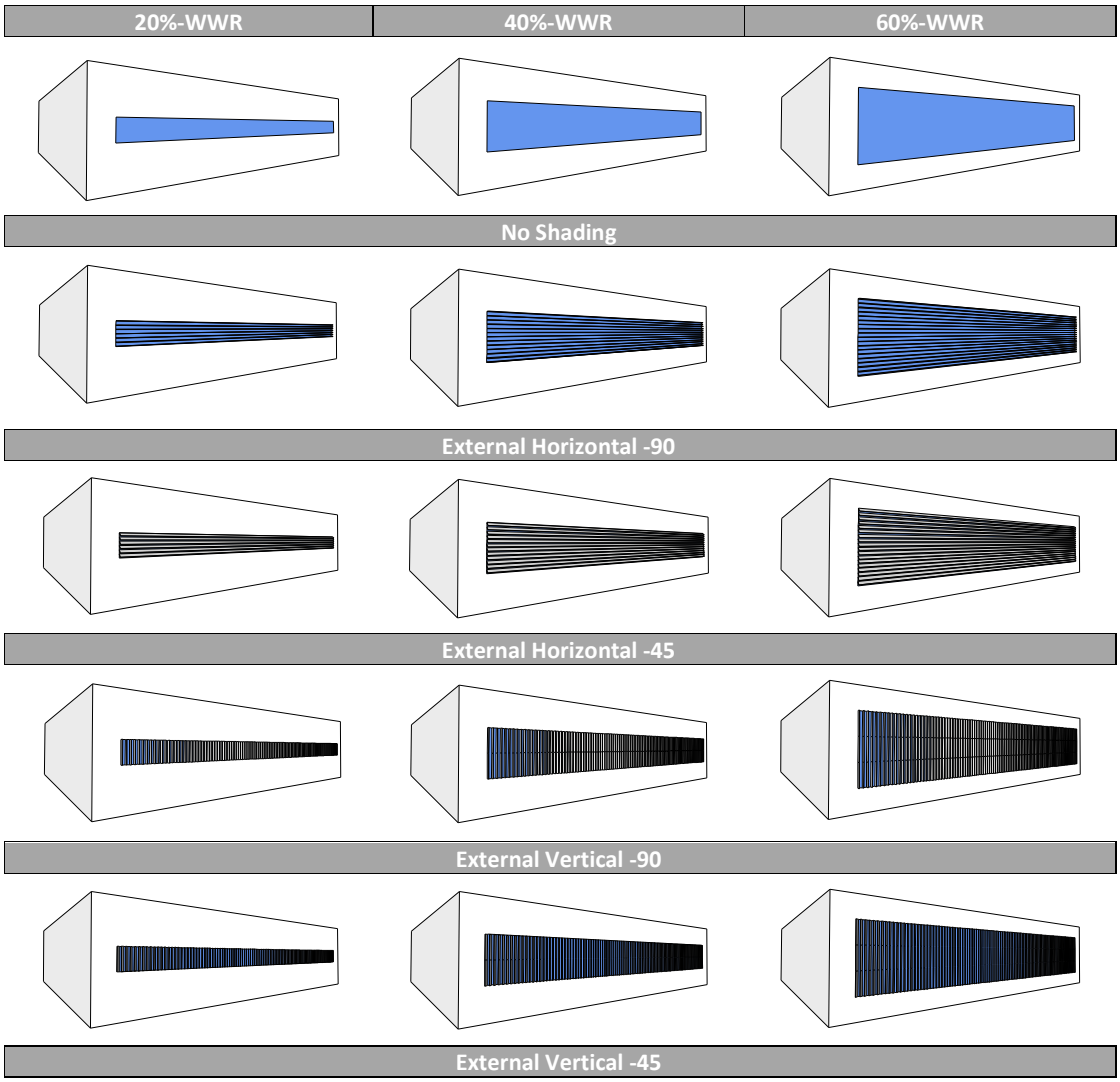


Figure 26: Different visual configurations of test cell.

4.3 Step 2: Creating the Database (MYSQL)

After setting all variables and parameters for facade design, all possible design scenarios are generated using Python programming. With permutation in Python script, design scenarios are generated and added to database with specific scenario ID. In this study, we have 26,460 scenarios to investigate for the test cell, described in the next

section. After running simulations in EnergyPlus, all outputs are populated in this database with identical scenario ID. EnergyPlus provides wide range of outputs, but for this purpose, the following results are obtained:

- Cooling, heating and lighting loads
- Energy Use Intensity (EUI) for electricity and gas
- PMV and PPD
- Daylight Illuminance and glare index, and
- Total energy costs for electricity and gas.

Module 1 is responsible for generating all scenarios with defined variables, and for populating these scenarios within the database. Module 2 is responsible for automatically sending these scenarios to simulation engine and for populating the selected outputs in the database. Data Flow Diagram (DFD) in Figure 27 shows the overview of the framework system, its implementation and flow of data through this process. Figures 28 to 31 show some part of the scripts for this framework that created the database. These figures show the scripts to create all scenarios and collecting output to create database in MYSQL. Figures 32 and 33 show this database in MYSQL representation.

The MYSQL database manages all scenario inputs and outputs. MYSQL is an open source relational database management system (RDBMS) that uses Structured Query Language (SQL) for adding, accessing and managing content in database.

MYSQL database is free and easy to set up and use. The advantages of this type of database for the purpose of this research is the quick processing time, proven reliability, open source, ease and flexibility of use.

Furthermore, the interface allows for easy integration of different types of optimization algorithms that solve the constrained nonlinear optimization problems. Developing an object-oriented framework is beneficial in this case because it can easily be reused in other programs and parallelize the function evaluations. This method is rarely used in early design process, consequently, optimization with this method will be integrated with the design process. The benefits of this kind of framework are:

- Rapid generation and evaluation of designs alternatives and scenarios
- Support of different types of decision-making process while providing all possible scenarios and narrowing down optimized solutions based on objective functions
- Supporting designers' ability to solve nonlinear and multi-criteria problems
- Providing more flexible and faster supplement in facade design process while facilitating simulations of multiple design scenarios.

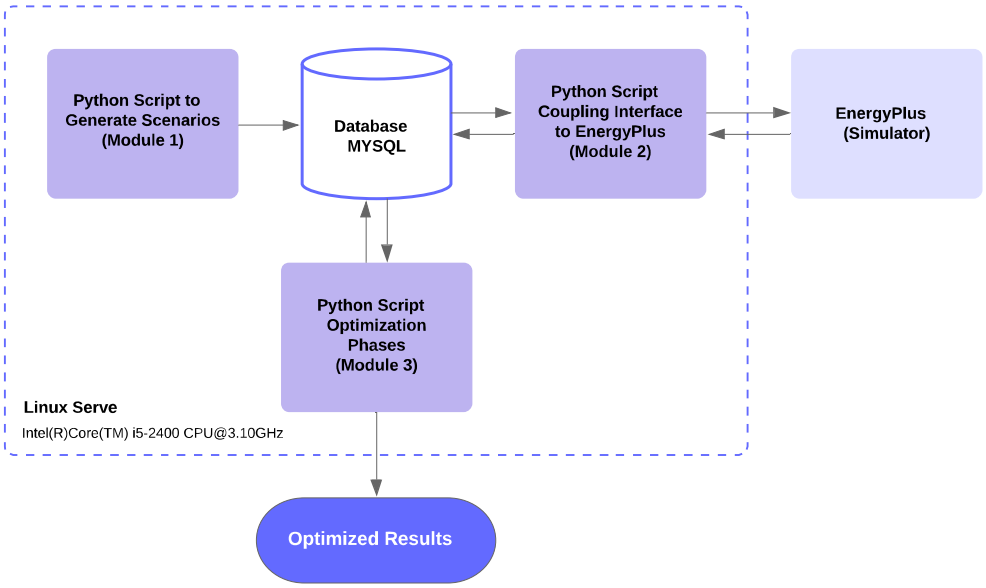


Figure 27: Data Flow Diagram (DFD) for the framework implementation.

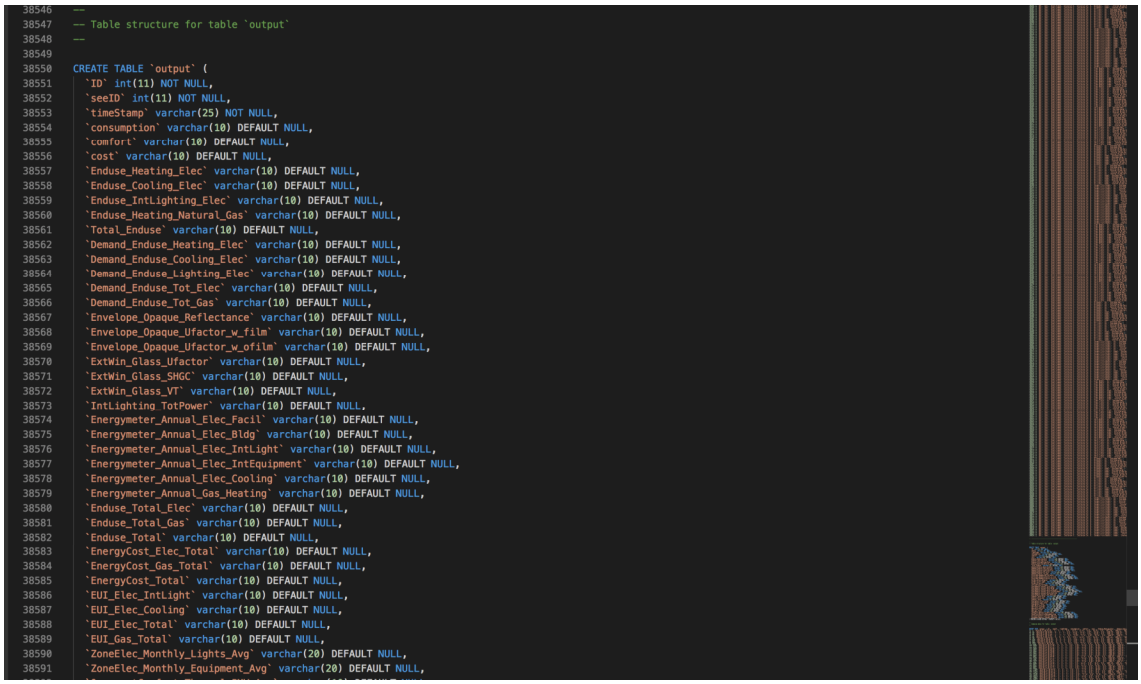
```
--
-- Table structure for table `allSce`
--

CREATE TABLE `allSce` (
  `ID` int(11) NOT NULL,
  `isDone` int(11) NOT NULL DEFAULT '0',
  `WWR` varchar(3) DEFAULT NULL,
  `Wall_Cladding` varchar(80) DEFAULT NULL,
  `Wall_Assembly` varchar(80) NOT NULL,
  `Insulation_ext` varchar(80) DEFAULT NULL,
  `Insulation_int` varchar(80) NOT NULL,
  `Glazing_System` varchar(80) DEFAULT NULL,
  `Gas` varchar(50) NOT NULL,
  `Solar_Control` varchar(80) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `allSce`
--

INSERT INTO `allSce` (`ID`, `isDone`, `WWR`, `Wall_Cladding`, `Wall_Assembly`, `Insulation_ext`, `Insulation_int`, `Glazing_System`, `Gas`, `Sola
(1, 1, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Air', 'Overhang-Small'),
(2, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Air', 'Overhang-Large'),
(3, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Air', 'External Blinds-Horizontal'),
(4, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Air', 'External Blinds-Vertical'),
(5, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Air', ' Internal Blinds-Horizontal'),
(6, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Air', 'Internal Blinds-Vertical'),
(7, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Argon', 'Overhang-Small'),
(8, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Argon', 'Overhang-Large'),
(9, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Argon', 'External Blinds-Horizontal'),
(10, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Argon', 'External Blinds-Vertical'),
(11, 2, '20%', 'AL', 'Steel-Framed', 'Insulation 2', 'Insulation Int. 6', 'Clear-Double', 'Argon', ' Internal Blinds-Horizontal'),
```

Figure 28: Part of scripts to create and permute all scenarios table in MYSQL.



```
--
-- Table structure for table `output`
--

CREATE TABLE `output` (
  `ID` int(11) NOT NULL,
  `seeID` int(11) NOT NULL,
  `timeStamp` varchar(25) NOT NULL,
  `consumption` varchar(10) DEFAULT NULL,
  `comfort` varchar(10) DEFAULT NULL,
  `cost` varchar(10) DEFAULT NULL,
  `Enduse_Heating_Elec` varchar(10) DEFAULT NULL,
  `Enduse_Cooling_Elec` varchar(10) DEFAULT NULL,
  `Enduse_IntLighting_Elec` varchar(10) DEFAULT NULL,
  `Enduse_Heating_Natural_Gas` varchar(10) DEFAULT NULL,
  `Total_Enduse` varchar(10) DEFAULT NULL,
  `Demand_Enduse_Heating_Elec` varchar(10) DEFAULT NULL,
  `Demand_Enduse_Cooling_Elec` varchar(10) DEFAULT NULL,
  `Demand_Enduse_Lighting_Elec` varchar(10) DEFAULT NULL,
  `Demand_Enduse_Tot_Elec` varchar(10) DEFAULT NULL,
  `Demand_Enduse_Tot_Gas` varchar(10) DEFAULT NULL,
  `Envelope_Opaque_Reflectance` varchar(10) DEFAULT NULL,
  `Envelope_Opaque_Ufactor_w_film` varchar(10) DEFAULT NULL,
  `Envelope_Opaque_Ufactor_w_ofilm` varchar(10) DEFAULT NULL,
  `ExtWin_Glass_Ufactor` varchar(10) DEFAULT NULL,
  `ExtWin_Glass_SHGC` varchar(10) DEFAULT NULL,
  `ExtWin_Glass_VT` varchar(10) DEFAULT NULL,
  `IntLighting_TotPower` varchar(10) DEFAULT NULL,
  `Energymeter_Annual_Elec_Facil` varchar(10) DEFAULT NULL,
  `Energymeter_Annual_Elec_Bldg` varchar(10) DEFAULT NULL,
  `Energymeter_Annual_Elec_IntLight` varchar(10) DEFAULT NULL,
  `Energymeter_Annual_Elec_IntEquipment` varchar(10) DEFAULT NULL,
  `Energymeter_Annual_Elec_Cooling` varchar(10) DEFAULT NULL,
  `Energymeter_Annual_Gas_Heating` varchar(10) DEFAULT NULL,
  `Enduse_Total_Elec` varchar(10) DEFAULT NULL,
  `Enduse_Total_Gas` varchar(10) DEFAULT NULL,
  `Enduse_Total` varchar(10) DEFAULT NULL,
  `EnergyCost_Elec_Total` varchar(10) DEFAULT NULL,
  `EnergyCost_Gas_Total` varchar(10) DEFAULT NULL,
  `EnergyCost_Total` varchar(10) DEFAULT NULL,
  `EUI_Elec_IntLight` varchar(10) DEFAULT NULL,
  `EUI_Elec_Cooling` varchar(10) DEFAULT NULL,
  `EUI_Elec_Total` varchar(10) DEFAULT NULL,
  `EUI_Gas_Total` varchar(10) DEFAULT NULL,
  `ZoneElec_Monthly_Lights_Avg` varchar(20) DEFAULT NULL,
  `ZoneElec_Monthly_Equipment_Avg` varchar(20) DEFAULT NULL,
```

Figure 29: Part of scripts to create table for outputs in MYSQL.

```
#-------------------------------------------------------------------------------
def saveData(ID):
    fname = "eplustbl.htm"
    filehandle = open(fname, 'r').read()
    htables = readhtml.titletable(filehandle)

    rData = []
    rData.append(readData(htables,-9,1,1))
    rData.append(readData(htables,-9,2,1))
    rData.append(readData(htables,-9,3,1))
    rData.append(readData(htables,-9,1,2))
    rData.append(readData(htables,-9,16,1))

    rData.append(readData(htables,5,2,1))
    rData.append(readData(htables,5,3,1))
    rData.append(readData(htables,5,4,1))
    rData.append(readData(htables,5,17,1))
    rData.append(readData(htables,5,17,2))

    rData.append(readData(htables,12,1,2))
    rData.append(readData(htables,12,1,3))
    rData.append(readData(htables,12,1,4))

    rData.append(readData(htables,13,1,7))
    rData.append(readData(htables,13,1,8))
    rData.append(readData(htables,13,1,9))

    rData.append(readData(htables,18,1,4))

    rData.append(readData(htables,43,1,1))
    rData.append(readData(htables,43,2,1))
    rData.append(readData(htables,43,4,1))
    rData.append(readData(htables,43,9,1))
    rData.append(readData(htables,43,27,1))

    rData.append(readData(htables,44,3,1))

    rData.append(readData(htables,67,1,2))
    rData.append(readData(htables,67,2,2))
    rData.append(readData(htables,67,3,2))

    rData.append(readData(htables,68,1,2))
    rData.append(readData(htables,68,2,2))
    rData.append(readData(htables,68,4,2))

    rData.append(readData(htables,70,1,1))
    rData.append(readData(htables,70,3,1))
    rData.append(readData(htables,70,8,1))
```

Figure 30: Scripts used to couple database with EnrgyPlus output results table, and to save selected output to the database.

```
#------------------------------------------------------------------------------
def savetoDB(ID, rData):
    print rData

    x = 'replace into output (seeID, timeStamp, Enduse_Heating_Elec ,Enduse_Cooling_Elec ,Enduse_IntLighting_Elec ,Enduse_Heating_Natural_Gas ,Total_Enduse\
     ,Demand_Enduse_Heating_Elec ,Demand_Enduse_Cooling_Elec ,Demand_Enduse_Lighting_Elec ,Demand_Enduse_Tot_Elec ,Demand_Enduse_Tot_Gas\
     ,Envelope_Opaque_Reflectance ,Envelope_Opaque_Ufactor_w_film ,Envelope_Opaque_Ufactor_w_ofilm ,ExtWin_Glass_Ufactor ,ExtWin_Glass_SHGC\
     ,ExtWin_Glass_VT ,IntLighting_TotPower ,Energymeter_Annual_Elec_Facil ,Energymeter_Annual_Elec_Bldg ,Energymeter_Annual_Elec_IntLight\
     ,Energymeter_Annual_Elec_IntEquipment ,Energymeter_Annual_Elec_Cooling ,Energymeter_Annual_Gas_Heating ,Enduse_Total_Elec\
     ,Enduse_Total_Gas ,Enduse_Total ,EnergyCost_Elec_Total ,EnergyCost_Gas_Total ,EnergyCost_Total ,EUI_Elec_IntLight ,EUI_Elec_Cooling\
     ,EUI_Elec_Total ,EUI_Gas_Total ,ZoneElec_Monthly_Lights_Avg ,ZoneElec_Monthly_Equipment_Avg ,OccupantComfort_Thermal_PMV_Avg\
     ,OccupantComfort_Thermal_PPD_Avg, Daylight_Illuminance, Daylight_Glare) VALUES("\
    ' + str(ID) + '", now(), \
    "' + str(rData[0]) + '",\
    "' + str(rData[1]) + '",\
    "' + str(rData[2]) + '",\
    "' + str(rData[3]) + '",\
    "' + str(rData[4]) + '",\
    "' + str(rData[5]) + '",\
    "' + str(rData[6]) + '",\
    "' + str(rData[7]) + '",\
    "' + str(rData[8]) + '",\
    "' + str(rData[9]) + '",\
    "' + str(rData[10]) + '",\
    "' + str(rData[11]) + '",\
    "' + str(rData[12]) + '",\
    "' + str(rData[13]) + '",\
    "' + str(rData[14]) + '",\
    "' + str(rData[15]) + '",\
    "' + str(rData[16]) + '",\
    "' + str(rData[17]) + '",\
    "' + str(rData[18]) + '",\
    "' + str(rData[19]) + '",\
    "' + str(rData[20]) + '",\
    "' + str(rData[21]) + '",\
    "' + str(rData[22]) + '",\
    "' + str(rData[23]) + '",\
    "' + str(rData[24]) + '",\
    "' + str(rData[25]) + '",\
    "' + str(rData[26]) + '",\
    "' + str(rData[27]) + '",\
    "' + str(rData[28]) + '",\
    "' + str(rData[29]) + '",\
```

Figure 31: Scripts used to save selected outputs from EnergyPlus report table to save into database table.

+ Options

	ID	isDone	WWR	Wall_Cladding	Wall_Assembly	Insulation	Glazing_System	Solar_Control
Edit Copy Delete	1	1	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-Alum	No Shading
Edit Copy Delete	2	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-Alum	Alum-H-45
Edit Copy Delete	3	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-Alum	Alum-H-90
Edit Copy Delete	4	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-Alum	Alum-V-45
Edit Copy Delete	5	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-Alum	Alum-V-90
Edit Copy Delete	6	1	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-AlumTB	No Shading
Edit Copy Delete	7	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-AlumTB	Alum-H-45
Edit Copy Delete	8	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-AlumTB	Alum-H-90
Edit Copy Delete	9	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-AlumTB	Alum-V-45
Edit Copy Delete	10	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-AlumTB	Alum-V-90
Edit Copy Delete	11	1	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-W/F	No Shading
Edit Copy Delete	12	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-W/F	Alum-H-45
Edit Copy Delete	13	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-W/F	Alum-H-90
Edit Copy Delete	14	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-W/F	Alum-V-45
Edit Copy Delete	15	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Sgl-Clr-W/F	Alum-V-90
Edit Copy Delete	16	1	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-Alum	No Shading
Edit Copy Delete	17	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-Alum	Alum-H-45
Edit Copy Delete	18	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-Alum	Alum-H-90
Edit Copy Delete	19	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-Alum	Alum-V-45
Edit Copy Delete	20	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-Alum	Alum-V-90
Edit Copy Delete	21	1	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-AlumTB	No Shading
Edit Copy Delete	22	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-AlumTB	Alum-H-45
Edit Copy Delete	23	2	20%	AL	Steel-Framed	2x6 metal @16 +3 XPS Styrofoam	Dbl-Clr-Air-AlumTB	Alum-H-90

Figure 32: MYSQL-all scenarios table.

	ID	seedID	timeStamp	consumption	comfort	cost	Enduse_Heating_Elec	Enduse_Cooling_Elec	Enduse_IntLighting_Elec	Enduse_Heating_Natural_Gas	Total_Enduse	Demand_Enduse_Heating_Elec
Edit Copy Delete	1	1	2020-01-23 22:34:02	25.25	21.26	19.04	0.0	10.93	5.78	1.4	57.88	0.0
Edit Copy Delete	2	6	2020-01-23 22:34:34	25.27	21.26	19.05	0.0	10.93	5.78	1.4	57.88	0.0
Edit Copy Delete	3	11	2020-01-23 22:35:06	28.93	19.26	20.5	0.0	11.01	5.78	0.83	58.0	0.0
Edit Copy Delete	4	16	2020-01-23 22:35:38	28.99	20.46	22.83	0.0	10.42	6.1	0.92	57.3	0.0
Edit Copy Delete	5	21	2020-01-23 22:36:14	32.27	18.4	26.0	0.0	10.12	6.13	0.52	56.82	0.0
Edit Copy Delete	6	26	2020-01-23 22:37:25	33.36	16.39	24.95	0.0	10.42	6.13	0.26	57.33	0.0
Edit Copy Delete	7	31	2020-01-23 22:38:12	29.15	19.04	22.33	0.0	9.69	7.69	0.67	57.66	0.0
Edit Copy Delete	8	36	2020-01-23 22:39:43	31.07	14.99	22.03	0.0	9.91	7.73	0.3	58.06	0.0
Edit Copy Delete	9	41	2020-01-23 22:40:19	31.37	14.99	20.1	0.0	10.31	7.73	0.13	58.73	0.0
Edit Copy Delete	10	46	2020-01-23 22:40:53	29.61	17.02	22.69	0.0	9.66	7.71	0.61	57.61	0.0
Edit Copy Delete	11	51	2020-01-23 22:41:28	31.21	14.99	21.61	0.0	10.0	7.73	0.25	58.22	0.0
Edit Copy Delete	12	56	2020-01-23 22:42:04	31.33	12.99	19.46	0.0	10.42	7.73	0.1	58.93	0.0
Edit Copy Delete	13	61	2020-01-23 22:42:38	29.99	16.9	21.08	0.0	9.73	8.21	0.38	58.24	0.0
Edit Copy Delete	14	66	2020-01-23 22:43:15	30.55	14.9	18.41	0.0	10.28	8.21	0.12	59.19	0.0
Edit Copy Delete	15	71	2020-01-23 22:43:51	30.59	9.0	16.99	0.0	10.64	8.09	0.03	59.64	0.0
Edit Copy Delete	16	76	2020-01-23 22:44:25	31.48	18.28	25.58	0.0	10.08	6.2	0.63	56.83	0.0

Figure 33: MYSQL-output table.

4.4 Step 3: Coupling Python Script with Simulation Engine (EnergyPlus)

EnergyPlus 8.5 is used in this framework as an energy modeling engine and simulator. EnergyPlus has been chosen as BPS tool for two main reasons: (a) this program allows reliable modeling of both building and HVAC systems, and (b) it works with text-based inputs and outputs, which enable the interaction with Python scripts.

EnergyPlus can investigate discussed variables as inputs and simulate envelope related outputs in the study. Thermal comfort is calculated based on PMV and PPD. The formulas for both PMV and PPD are built into EnergyPlus and their values can be obtained directly from the simulation output file.

A simulation test cell was used to investigate the functionality and application of this framework. The test cell is an office space (40’ x 40’ x 10’), located in Atlanta, Georgia (Climate zone 3A). The south-facing facade under different scenarios was modeled in EnegryPlus 8.5. Impact of different facade types, WWR, glazing systems, and shading control was investigated in a simulation study. All related parameters for the design variables were specified in the IDF editor in EnergyPlus. However, they were specified in a certain way so that Python script can call these variables and send it to EnergyPlus engine to automatically simulate all these scenarios in the database. Then, the determined output is stored in the database for filtering step.

Verification and finding related parameters as inputs, and setting data needed as outputs are the key elements for connecting the design scenario in database with the simulation engine. Python script works as the interface to call scenarios from the database and sends them to the simulator. Each parameter must identify a well-defined

relation with discussed variables, which reveals facade behavior in relation to performance aspects being analyzed.

Using a correct simulation methodology and the appropriate level of modeling resolution are two important elements that should be paid attention to when using computer simulations in the context of building design. In this study, Python scripts connect directly to EnergyPlus because other current simulation tools do not provide proper Application Programming Interface (API) to connect these scripts. Next section explains the modeling process in EnergyPlus.

4.4.1 Modeling in EnergyPlus (Simulation Engine)

This section discusses the difference facade variables/parameters (wall assembly, insulation, solar control, and glazing system) are modeled in the EnergyPlus.

Important features include layer-by-layer input of custom glazing, cladding and insulation, ability to accept different glass optical properties, setting up material thermal properties, incidence angle-dependent solar and visible transmission and reflection, iterative heat balance solution to determine glass surface temperatures, calculation of frame and divider heat transfer, and modeling of movable interior or exterior shading devices with user-specified controls. Setting up these variables in EnergyPlus for the test cell are explained in more details in this section.

4.4.2 Wall Assemblies (Cladding & Framing)

Definition of cladding material for facade should be defined with four main thermal properties (thickness, conductivity, density, and specific heat) of the material. This syntax is used to describe opaque construction elements only, especially for

building surfaces. The building surface models are for normal applications to building energy efficiency where the main focus is on assemblies with some thermal resistance. Extremely thin should be neglected from the construction rather than included because they will not contribute to the assembly's overall thermal resistance or heat capacity. For some cases, thin and/or highly conductive materials are a serious problem for the heat transfer modeling and the values for thickness, conductivity, density and specific heat are checked for appropriateness. Table 11 presents the properties and variables for cladding materials that were used in the study.

Table 11: Cladding material properties for EnergyPlus inputs.

Material	Name (obj)	Roughness	Thickness	Thermal Conductivity	Density	Specific Heat
Aluminum (outside layer)	AL	Smooth	5 mm (0.005 m) (0.197 in)	200 (w/m K) 0.385 (Btu. In/s. ft^2. F)	2700 (k/m^3) 168.5 (lb/ft^3)	860 (J/ Kg K) 0.2 (Btu/lb. F)
Zinc (outside layer)	Zinc	Medium Smooth	0.8 mm (0.0008 m) (0.032 in)	110 (w/m k) 0.212 (Btu. In/s. ft^2. F)	7100 (K/m^3) 443.2 (lb/ft^3)	350 (J/kg K) 0.08 (Btu/lb. F)
Stainless Steel (outside layer)	SS	Smooth	2 mm (0.02 m) (0.079 in)	40 (w/m k) 0.078 (Btu. In/s. ft^2. F)	7500 (k/m^3) 468.2 (lb/ft3)	480 (J/kg k) 0.11 (Btu/lb. F)
Terracotta (outside layer)	TR	Rough	30 mm (0.03 m) (1.18 in)	0.60 (w/ m k) 0.0011 (Btu. In/s. ft^2. F)	1120 (k/m^3) 69.9 (lb/ft^3)	830 (J/kg k) 0.198 (Btu/lb. F)
Brick (outside layer)	BR	Rough	100 mm (0.1 m) (3.94 in)	0.80 (w/ m k) 0.0015 (Btu. In/s. ft^2. F)	1700 (k/m^3) 106.1 (lb/ft^3)	800 (J/kg k) 0.191 (Btu/lb. F)
Stone (outside	ST	Very Rough	75 mm (0.075)	1.8 (w/ m k) 0.0035 (Btu.	2100 (k/m^3)	850 (J/kg k)

layer)			(2.95 in)	In/s. ft^2. F)	131.1 (lb/ft^3)	0.2 (Btu/lb. F)
Cement (outside layer)	CM	Very Rough	6 mm (0.006 m) (0.24 in)	0.35 (w/ m k) 0.0007 (Btu. In/s. ft^2. F)	1350 (k/m^3) 84.2 (lb/ft^3)	1000 (J/ kg k) 0.238 (Btu/lb. F)
Concrete Exposed (Inside Layer)	Con	Rough	150 mm (0.15 m) (5.9 in)	(1.7 w/ m k) 0.0033 (Btu. In/s. ft^2. F)	2100 (k/m^3) 131.1 (lb/ft^3)	870 (J/kg k) 0.207 (Btu/lb. F)

```
#-------------------------------------------------------------------------------
def updateData(alldata):
    print alldata
    #----------------------------------------- Window
    window = idf.idfobjects['window'.upper()][0]

    # print window['Length']
    # print window['Height']

    length = 9
    height = {'20%' : 0.6, '40%' : 1.2, '60%' : 1.8, '80%' : 2.45, '90%' : 2.75}
    print window

    window['Length'] = length
    print (alldata)
    window['Height'] = height[alldata[1]]

    #----------------------------------------- Material
    Construction = idf.idfobjects['Construction'.upper()][9]

    Construction['Outside_Layer'] = alldata[2]
    Construction['Layer_3'] = 'Conc 30mm'

    print (Construction)
```

Figure 34: Scripts used to define WWR input and couple simulation model to the EnergyPlus engine.

4.4.3 Insulation (Cavity & Continuous)

The insulation included both continuous and cavity insulation, as well as equivalent insulation thickness for each variable. Table 12 represents specifications of the insulation variables for this research.

Continuous insulation is insulation that runs continuously over structural members and is free of significant thermal bridging, such as rigid foam insulation above the ceiling deck. It is installed on the interior, exterior, or is integral to any opaque surface of the building envelope. Cavity insulation is the insulation installed between structural members such as wood studs and metal framing.

And equivalent insulation thickness shows the thickness of Fiberglass Batt insulation that equals to a unit of each specific insulation that listed in the table. In this way, we can have equivalent thickness for both cavity and continuous and add both as composite assembly U-value to define it EnergyPlus.

Table 12: Equivalent insulation thickness and thermal properties.

Insulation: Cavity Insulation & Continuous Insulation						
	R-Value	**U-Value**	**Equivalent Fiberglass Batt Thickness**	**R-Value**	**U-Value**	**Equivalent Fiberglass Batt Thickness**
	$ft^{2\cdot}°F·h/Btu$	$Btu/ft^{2\cdot}°F·h$	Inch	$m^2·K/W$	$W/m^2·K$	mm
Thermal Bridge Assemblies						
2x6 wood @16”	14.9	0.07	4.66	2 .63	0.38	118
2x6 wood @24”	15.4	0.07	4.81	2.71	0.37	122
2x6 metal @16”	7.4	014	2.31	1.30	0.77	59
2x6 metal @24”	9.0	0.11	2.81	1.58	0.63	71
Continuous Material						
3” XPS Styrofoam	15.0	0.07	4.69	2.64	0.38	119
4” XPS Styrofoam	20.0	0.05	6.25	3.52	0.28	159
1” Aerogel	10.0	0.10	3.13	1.76	0.57	79
Fiberglass Batt	3.20	0.31		0.56	1.78	

4.4.4 Glazing Systems (Glass & Frame Specification)

Glazing systems are combination of different glass types, air gap between the glass lites and different frame types, such as aluminum, thermally broken and wood or fiberglass framing. Table 13 shows different glazing systems and their specifications that were considered in this study, including visual transmission, solar heat gain coefficient and U-values. Figure 35 shows the part of scripts to define this variable for EnergyPlus.

Table 13: Glazing systems (glass & frame specifications).

Glazing System	Glass & Frame							
			Aluminum		Thermally Broken Aluminum		Wood or Fiberglass	
Glass	VT	SHGC	U-SI (W/ m^2·K)	U-IP (Btu/ ft^2·°F·h)	U-SI (W/ m^2·K)	U-IP (Btu/ft^2 ·°F·h)	U-SI (W/ m^2·K)	U-IP (Btu/ ft^2·°F·h)
Single Clear	0.66	0.66	7.39	1.3	6.08	1.07	4.55	0.8
Double Clear (Air)	0.59	0.59	4.60	0.81	3.52	0.62	2.73	0.48
Double Low-e Clear (Air)	0.52	0.33	3.81	0.67	2.78	0.49	2.10	0.37
Double Low-e Clear (Argon)	0.52	0.33	3.64	0.64	2.61	0.46	1.93	0.34
Triple Low-e Clear (Argon)	0.5	0.28	3.01	0.53	2.05	0.36	1.31	0.23
Double Clear, High-SHGC Low- e (Air)	0.58	0.57	3.81	0.67	2.78	0.49	2.10	0.37
Triple Clear, High-SHGC Low-e (Argon)	0.52	0.52	3.01	0.53	2.05	0.36	1.31	0.23

```
#---------------------------------------- Glazing_System
# windowMaterial = idf.idfobjects['WindowMaterial:SimpleGlazingSystem'.upper()][0]
windowMaterial = idf.idfobjects['Construction'.upper()][8]


GlazingSystem = {
    'Sgl-Clr-Alum' : '1A',
    'Sgl-Clr-AlumTB' : '1B',
    'Sgl-Clr-W/F' : '1C',
    'Dbl-Clr-Air-Alum' : '2A',
    'Dbl-Clr-Air-AlumTB' : '2B',
    'Dbl-Clr-Air-W/F' : '2C',

    'Dbl-Clr-LowE-Air-Alum' : '3A',
    'Dbl-Clr-LowE-Air-AlumTB' : '3B',
    'Dbl-Clr-LowE-Air-W/F' : '3C',

    'Dbl-Clr-LowE-Argon-Alum' : '4A',
    'Dbl-Clr-LowE-Argon-AlumTB' : '4B',
    'Dbl-Clr-LowE-Argon-W/F' : '4C',

    'Trip-LowE-Argon-Alum' : '5A',
    'Trip-LowE-Argon-AlumTB' : '5B',
    'Trip-LowE-Argon-W/F' : '5C',

    'Dbl-Clr-HiSHGC-LowE-Air-Alum' : '6A',
    'Dbl-Clr-HiSHGC-LowE-Air-AlumTB' : '6B',
    'Dbl-Clr-HiSHGC-LowE-Air-W/F' : '6C',

    'Trip-Clr-HiSHGC-LowE-Argon-Alum' : '7A',
    'Trip-Clr-HiSHGC-LowE-Argon-AlumTB' : '7B',
    'Trip-Clr-HiSHGC-LowE-Argon-W/F' : '7C'
}

windowMaterial['Outside_Layer'] = GlazingSystem[alldata[5]]

windowMaterial = idf.idfobjects['Construction'.upper()][10]
windowMaterial['Layer_2'] = GlazingSystem[alldata[5]]


print(windowMaterial)
```

Figure 35: Scripts used to couple glazing system input into the EnergyPlus engine.

4.4.5 Solar Control (Shading)

EnergyPlus was used to determine the incident direct and diffuse radiation on a window surface with and without external shading. Window shading with coverings like drapes, blinds, screens or pull-down shades can be used to reduce the amount of solar radiation entering the window or reduce glare. It can also be used to reduce heat loss through the window (movable insulation). Leaving the window covering open in the winter can maximize solar heat gain and thereby reduce heating loads.

In EnergyPlus with WindowProperty:ShadingControl, which is referenced by windows and glass doors (FenestrationSurface:Detailed with Type = Window or GlassDoor), we can specify the type and location of the shading device, what variable or combination of variables controls deployment of the shading device, and what the control set point is. If the shading device is a blind, also it is possible to specify how the slat angle is controlled. Shading device can be inside the window (Shading Type = InteriorShade or InteriorBlind), outside the window (Shading Type =ExteriorShade or ExteriorBlind), or between panes of glass (ShadingType=BetweenGlassShade or BetweenGlassBlind). The exception is window screens, which can only be outside the window (Shading Type = ExteriorScreen). In this study, exterior blinds with different slat angles were considered for the solar control variables. Table 14 shows the parametric variations for the shading devices in this research. Figure 36 shows part of the scripts that define and send the inputs for the EnergyPlus engine.

Table 14: Shading control (exterior shading).

	Material	Slat angle	Distance between	Slat depth
No Shading				
Alum-H-45	Aluminum	45	9 (cm)-3.5 (in)	9 (cm)-3.5 (in)
Alum-H-90	Aluminum	90	9 (cm)-3.5 (in)	9 (cm)-3.5 (in)
Alum-V-45	Aluminum	45	9 (cm)-3.5 (in)	9 (cm)-3.5 (in)
Alum-V-90	Aluminum	90	9 (cm)-3.5 (in)	9 (cm)-3.5 (in)

```
#------------------------------------------------------------------------------ Solar Control
if (alldata[6] != 'No Shading'):
    windowMaterial = idf.idfobjects['Construction'.upper()][10]

    solar = {
        'Alum-H-45' : 'Ext. Blind-H-45',
        'Alum-H-90' : 'Ext. Blind-H-90',
        'Alum-V-45' : 'Ext. Blind-V-45',
        'Alum-V-90' : 'Ext. Blind-V-90'
    }


    windowMaterial['Outside_Layer'] = solar[alldata[6]]
    print(windowMaterial)

#------------------------------------------------------------------------------ Insulation
windowMaterial = idf.idfobjects['Construction'.upper()][9]
Insulation = {
    '2x6 wood @16 +3 XPS Styrofoam' : 'Insulation W16/Batt+3"xps',
    '2x6 wood @16 +4 XPS Styrofoam' : 'Insulation W16/Batt+4"xps',
    '2x6 wood @16 +1 Aerogel' : 'Insulation W16/Batt+1"aerogel',
    '2x6 wood @24 +3 XPS Styrofoam' : 'Insulation W24/Batt+3"xps',
    '2x6 wood @24 +4 XPS Styrofoam' : 'Insulation W24/Batt+4"xps',
    '2x6 wood @24 +1 Aerogel' : 'Insulation W24/Batt+1"aerogel',
    '2x6 metal @16 +3 XPS Styrofoam' : 'Insulation M16/Batt+3"xps',
    '2x6 metal @16 +4 XPS Styrofoam' : 'Insulation M16/Batt+4"xps',
    '2x6 metal @16 +1 Aerogel' : 'Insulation M16/Batt+1"aerogel',
    '2x6 metal @24 +3 XPS Styrofoam' : 'Insulation M24/Batt+3"xps',
    '2x6 metal @24 +4 XPS Styrofoam' : 'Insulation M24/Batt+4"xps',
    '2x6 metal @24 +1 Aerogel' : 'Insulation M24/Batt+1"aerogel'
}

windowMaterial['Layer_2'] = Insulation[alldata[4]]


if (alldata[6] == 'No Shading'):
    windowMaterial = idf.idfobjects['FenestrationSurface:Detailed'.upper()][0]

    windowMaterial['Shading_Control_Name'] = ''

# idf.save()
```

Figure 36: Scripts used to define solar control and insulation inputs and coupling with EnergyPlus engine.

4.4.6 Daylight Simulation

For evaluating daylight in this study, the reference point was set close to back of the test cell to calculate illuminance and glare index. The basic approach is to divide the window into small rectangular elements and find the daylight reaching the reference point directly from each element taking into account the luminance of the sky, the angle of incidence of light on the element, and the visible transmittance of the glazing at this angle. Considering all of these elements, the total direct illuminance at the reference point is calculated and the illuminance due to light that reaches the reference point after reflecting from room surfaces. The ratio of interior illuminance to exterior horizontal

illuminance gives daylight factors for hourly sun positions along the same solar paths for which beam solar shadowing is calculated.

The daylight factors are determined separately for four different sky types: clear, clear turbid, intermediate (partly cloudy) and overcast. In the time-step calculation, the daylight factors are interpolated for the actual sun position, and then weighted according to the fraction of each sky type (determined from beam normal and total horizontal solar from the weather file) that is present at that time step. Daylight illuminance and glare index are calculated in this study to evaluate occupants' visual comfort. Table 15 show the illuminance level applied for analysis in this research. Table 16 shows the Daylight Glare Index (DGI) range for analysis in this research.

Table 15: Illuminance level analysis.

Criteria	Concept
Illuminance < 300 Lux	Insufficient
Illuminance 300 to 1000 Lux	Suitable
Illuminance 1000 to 2000 Lux	Great
Illuminance 2000 to 3000 Lux	Admissible

Table 16: Daylight Glare Index analysis.

Criteria	Concept
Below 16	Imperceptible
16-20	Perceptible
20-22	Acceptable
22-28	Unconfutable
Above 28	Intolerable

4.4.7 Cost Simulation

EnergyPlus contains several inputs that enable users to perform economic analysis. When these inputs are included in the model, new data output reports are automatically generated under economic section. The inputs for cost estimations are:

- Component cost: line item
- Component cost: adjustment
- Component cost: references

These inputs are related to determining the design and construction cost and other costs related to permitting, insurance and commissioning fees and etc. Life cycle analysis cost can also be performed but is not in the scape of this research.

The other part of cost estimation in EnergyPlus relates to computation of estimated utility bills, which can provide an understanding of energy cost saving. These cost types are included in this research. The goals of the UtilityCost input objects of EnergyPlus are to make simple tariffs easy to model and complex tariffs possible to model. The inputs used to calculate monthly and annual utility bills and are listed below:

- UtilityCost:Tariff: sets the parameters for the overall tariff such as associated output meter, conversion factors, demand computation, monthly charges, and minimum charges, and schedule names for the time of use periods, seasons, billing cycle, and real-time pricing.

- UtilityCost:Qualify: provides a method to quantify if a tariff applies to the building being modeled since utilities provide limits usually based on peak demand or energy consumption for each tariff.

- UtilityCost:Charge:Simple: defines cost per unit value for a charge based on energy or demand or other charges for a specific season.

- UtilityCost:Charge:Block: defines a more complicated but common type of charge for energy or demand where the costs are defined in the tariff with blocks of charges (i.e., the first 1000 kWh is one cost per kWh, the next 5000 kWh is a second cost, and remaining kWh is a third cost).

- UtilityCost:Ratchet: some utilities charge not only for the current month's demand but also compensate for the highest demand in recent months.

This research implemented UtilityCost:Tariff for electricity and gas for simulation of energy cost.

4.5 Step 4: Filtering and Narrowing Down the Results by Implementing Python Script, Genetic Algorithm (GA) and Machine Learning Methods

The optimization method used in this study is a combination of GA and Machine Learning. The GA, in combination with flood fill algorithms and Artificial Neural Network (ANN), create a new technique to identify the relations between the outputs, to assign weights and dynamically adjust the target position.

The GA is a method for solving both constrained and unconstrained optimization problems, based on natural selection and bio-inspired operators such as

mutation, crossover and selection. The GA repeatedly modifies a population of individual solutions. The GA contains a genetic representation of the solution domain. In this research, the solution domain includes all design scenarios and a fitness function to evaluate defined ranges and standards for high-performance facade.

Reinforcement Learning is an area of Machine Learning that focuses on what to do and how to map situations to actions. The end result is to maximize the numerical reward signal. The learner is not told which action to take but instead must discover which action will yield the maximum reward. Reinforcement Learning belongs to a bigger class of machine learning algorithms. Because of reducing process time, it can enhance the optimization process. In this research, it narrows down the scenarios to optimized results by sending scenarios to simulator and evaluating the outputs.

The optimization procedure was implemented by coupling Python and EnergyPlus, and by applying a reinforcement learning and genetic algorithm. Python sees EnergyPlus as a generator of hidden functions and this implies the use of heuristic and iterative optimization algorithms, such as the GAs and MLs. This allows the evaluation of feasible energy efficiency measures applied to buildings. Then, the energy cost of the building is calculated to identify the cost-optimal solution. The optimization engine is responsible for searching for design solutions that are as close to the objective function and as diversified as possible.

This phase is significant because this concerns the boundaries between building science and mathematical optimization, by requiring a satisfactory expertise in both the fields. Since the optimization algorithm is implemented in Python and the evaluation of the objectives needs the use of EnergyPlus engine, a communication between these two

programs is required. Therefore, coupling the simulation program and optimization algorithm is important in this phase. A coupling function discussed in previous step is written in Python environment, in order to convert decision variables into an EnergyPlus input file (.idf) and also for converting an output file of EnergyPlus (.csv) into the objectives. In this way, the communication is achieved, and the optimization problem can be solved. Next sections will explain more about the GA and ML techniques implemented in phase two of the optimization process in this this research. Evaluation and validation of the final results are discussed in the next chapter.

4.5.1 Optimization Algorithm - Genetic Algorithms

There are many optimization algorithms and mainly fall into two categories: iterative methods (mostly gradient-base) and heuristics (mainly direct-search methods and stochastic). Besides, there are hybrid methods that combine two or more techniques. Each of these groups and algorithms contain different methods for constrained, unconstrained or single and multi-objective problems.

Based on the problem that we are trying to solve in this research, evolutionary algorithms were selected to be implemented because of their robustness. Between multi-objectives genetic algorithms (MOGAs), NSGA II is selected which is a non-dominated sorting genetic algorithm and used to find optimal solutions for this research objectives. NSGA-II is a fast and multi-objective method that provides a good tradeoff between well converged and distributed solutions. This algorithm uses a specific population sorting based first on dominance, and then on crowding distance computed for each individual scenario. This selection process makes both convergence and spreading of the solution more ensured, without requiring the use of external population. This is the

base algorithm, which is coupled with other machine learning techniques to improve the framework performance. The parameters of this algorithms are explained below:

- Population size (the number of scenarios to be evaluated in each iteration): More design variables require larger population size. The number of processor cores available for running the simulations also influence the population size.
- Max generations (the number of iterations we want the optimization to run): A large enough number of design scenarios can be assigned, and the process can be terminated manually if enough solutions have been found.
- Crossover rate (when the new solutions are created by merging features of existing solutions): A high value (towards 100%, or 1.0) is desirable.
- Mutation rate (how often random changes happen to the new solutions): A lower value is preferred; otherwise the algorithm may behave like a random trial and error.
- Tournament selection size (new solutions in algorithm are created from selected existing solutions): The selection process is stochastic but influenced by the 'fitness' of the existing solutions. Tournament selection picks two (or more) solutions randomly from the existing population, and keeps the better (best) one based on its fitness value. The larger the tournament size is, the harder the algorithm is pushing towards the desired objectives. A tournament size of 2 is normally a good balance.

4.5.2 Machine Learning & Artificial Neural Network (ANN)

In building optimization studies, using GA generally reduces the computational time by two methods. The first method uses very simplified model instead of a complete simulation. However, this simplification can cause inaccurate modeling of a building. The second method is based on selecting a very small size for GA population or relatively small number of generations. But one efficient solution is to reduce the computational time associated with GA algorithm by employing machine learning techniques to reduce time and increase the accuracy of the results. The machine learning method used in this research is a combination of Batch normalization, which is an Artificial Neural Network (ANN) technique, and flood fill algorithm. ANNs are effective methods that imitate the complex relationship of the network to solve multi-objective and non-linear problems. ANNs resemble the biological neural system, composed of layers of parallel neurons and weighted links. They learn the relationship between the input and output variables by studying previously recorded data.

The neurons are connected by a large number of weighted links, over which signals or information can pass. Basically, a neuron receives inputs over its incoming connections, combines the inputs, performs generally a non-linear operation, and then outputs the final results. The most known, simple and used network arrangement is the feedforward model. In this model, the neurons are placed in several layers. The first one is the input layer, which receives inputs from outside. The last layer, called output layer, supplies the result evaluated by the network. Between these two layers, a network can have none, one or more intermediate layers called hidden layers. ANN diagram is illustrated in Figure 37, and shows these following components:

- **Input layer:** First layer in neural network takes inputs (values) and passes them to the next layer. There is no weight or bias associated in this level. In our network our input values are shown in Table 17.
- **Hidden Layer:** Hidden layers have neurons (nodes) that apply different transformations to the input data. Hidden layers can be collection of stacked neurons that are connected to each other, so they are fully connected hidden layers.
- **Output layer:** This is the last layer in the network where we can get desired number of values or ranges.

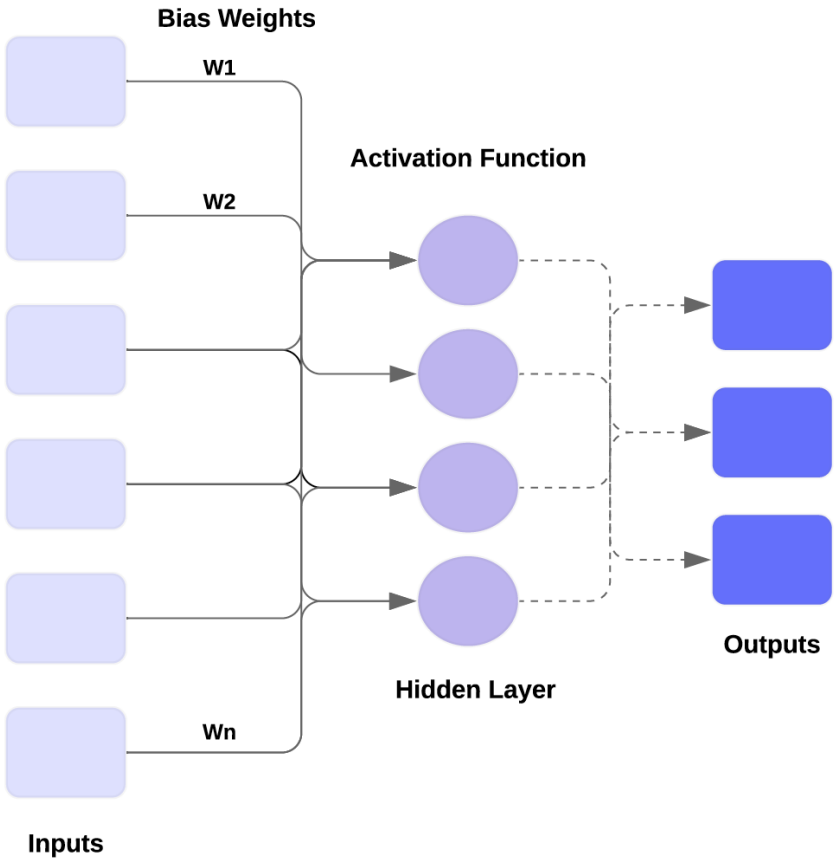


Figure 37: Artificial Neural Network diagram.

The normalization process in this study was conducted on input and output data. The normalization process minimizes the influence of number of scenarios and variations as input variables and trains the outputs to find optimum parameters and scenarios. ANN implements weight and bias to find the optimums within a divided subset of data. This study used 75% of data for normalization and training, and 25% of data (that was not considered in training) was used for validation and testing process. Then activation function is utilized to scale the outputs and optimize the ANN. Activation function decides whether a scenario should be selected or not by calculating weighted sum and further adding bias with it. The purpose of the activation function is to introduce non-linearity into the output of a scenario.

After defining the activation function, we need to apply appropriate algorithms to train the ANN. In this framework, performance of ANN is evaluated by calculation of the mean for selected outputs. These values are dynamically calculated as average of minimum and maximum for selected scenarios and are unique for this framework. A computer script (Python) is developed for adjusting and scaling the weight and bias dynamically for the indicators.

GA was implemented to find better generation of scenarios among all scenario variation. This is a different technique from implementing GA into the optimization phase. In regular GA, implementation attempt is to generate better solution in each step of generation by predefined fitness function. But in this study the goal is select and find better solutions among all variations, and the fitness of each generated batch is calculated by recalling the trained ANN of the first optimization step.

Therefore, the optimization method in this study is a combination of GA and ANN. The GA in combination with flood fill algorithm and batch normalization creates a new technique to find a relation between the outputs, to assign weights and dynamically adjust the target position to find optimal scenarios. For this framework, three indices were defined for energy consumption, occupants' comfort and costs as indicators. Indicators are combined values that are used to measure performance, achievement or the impact of changes. The values that were used in this study to define each indicator are shown Table 17 and Figure 38, representing a sample for scoring total EUI electricity indicator.

Table 17: Indicators, ANN input and weight values.

Indicators	Output (Input Layer for ANN)	Weight Values	Total Indicator Value
Energy Consumption	EUI-Electricity for Int. Lighting	10	40
	EUI-Electricity for Cooling	10	
	EUI-Gas for Heating	20	
Occupant Comfort	PMV & PPD	20	40
	Daylight-illuminance	10	
	Daylight-Glare index	10	
Energy Cost	Total Electricity Cost (Int. lighting & Cooling)	10	20
	Total Gas Cost (Heating)	10	

Batch normalization technique is used for the first phase of optimization. This is a technique for improving speed, performance and stability of ANN by adjusting and scaling the activations. The batch normalization was introduced in 2015 by Loffe. The intention behind batch normalization is to optimize network training. Several benefits of this methods include faster training, higher learning rates, reduced sensitivity, easier

methods to initialize and produce better results. This technique, combined with flood field algorithm, facilitates the optimization by sorting the highest indicators and decides which scenarios must be simulated.

The flood fill algorithm takes three parameters: start node, target and replacement, and determines the area connected to our target. This algorithm facilitates the optimization by sorting the highest indicators and decides which scenarios must be simulated, based on the specific scenario ID. Using this algorithm decreases the process time, because it is not necessary to simulate all scenarios—rather, only scenarios that are closer to the target proceed to simulation. The comparison is based on the assigned indicator value. In dynamic system, it is necessary to scale indicators to represent the impact of the indicators, and to configure following tasks and converge the results to the goal based on these scores. Figure 38 shows a sample for scoring total EUI electricity, EUI gas, PMV and energy cost indicators. These indicators work as fitness functions in genetic algorithms. These indicators or fitness functions must correlate closely to the goals and must be computed quickly because they need to be iterated many times in order to produce usable results.

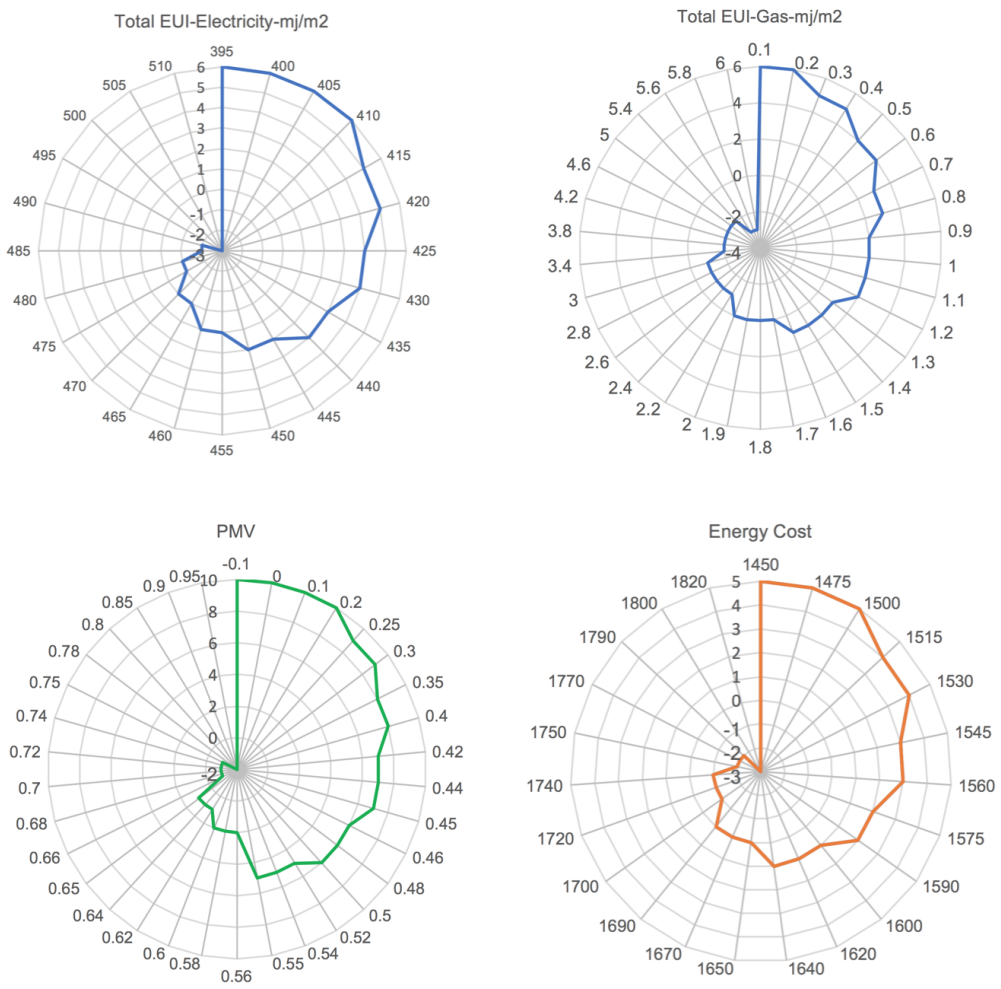


Figure 38: Total EUI-Electricity, EUI-Gas, PMV and Energy Cost indicator scores.

The initial population is generated randomly, based on the range of possible design scenarios. It is sent to the simulator to run the initial calculations, and then results are returned to the database to compare with the goals and standards. Then, design scenarios that have results closer to the goals are kept, and others are removed. In this framework, the goal is a summation of three indicators, for energy consumption, comfort and cost. The indicators are dynamically updated based on the range of results. The minimum and maximum of each of these indicators are shown in Table 18. The

values of this table are calculated and fed into the Python script to automatically weight the results and score the indicators for the optimization phase. The weight bias is part of ANN that creates a hidden layer to adjust and scale the outputs and results. The fitness of each generated output is calculated by recalling the trained ANN in the first step of optimization. Each of the outputs is defines by fitness values of indicators.

Occasionally, the solutions may be "seeded" in areas where optimal solutions are likely to be found. Individual solutions are selected through a fitness-based process, where fitter solutions (as measured by a fitness function) are typically more likely to be selected. This method accelerates the simulation process and the results give us pattern or clusters of optimized scenarios for analysis in next phase of optimization. The whole optimization process is illustrated in Figure 39.

Figures 40 and 41 show part of decision-making scripts that implement the flood fill and ANN for optimization phases.

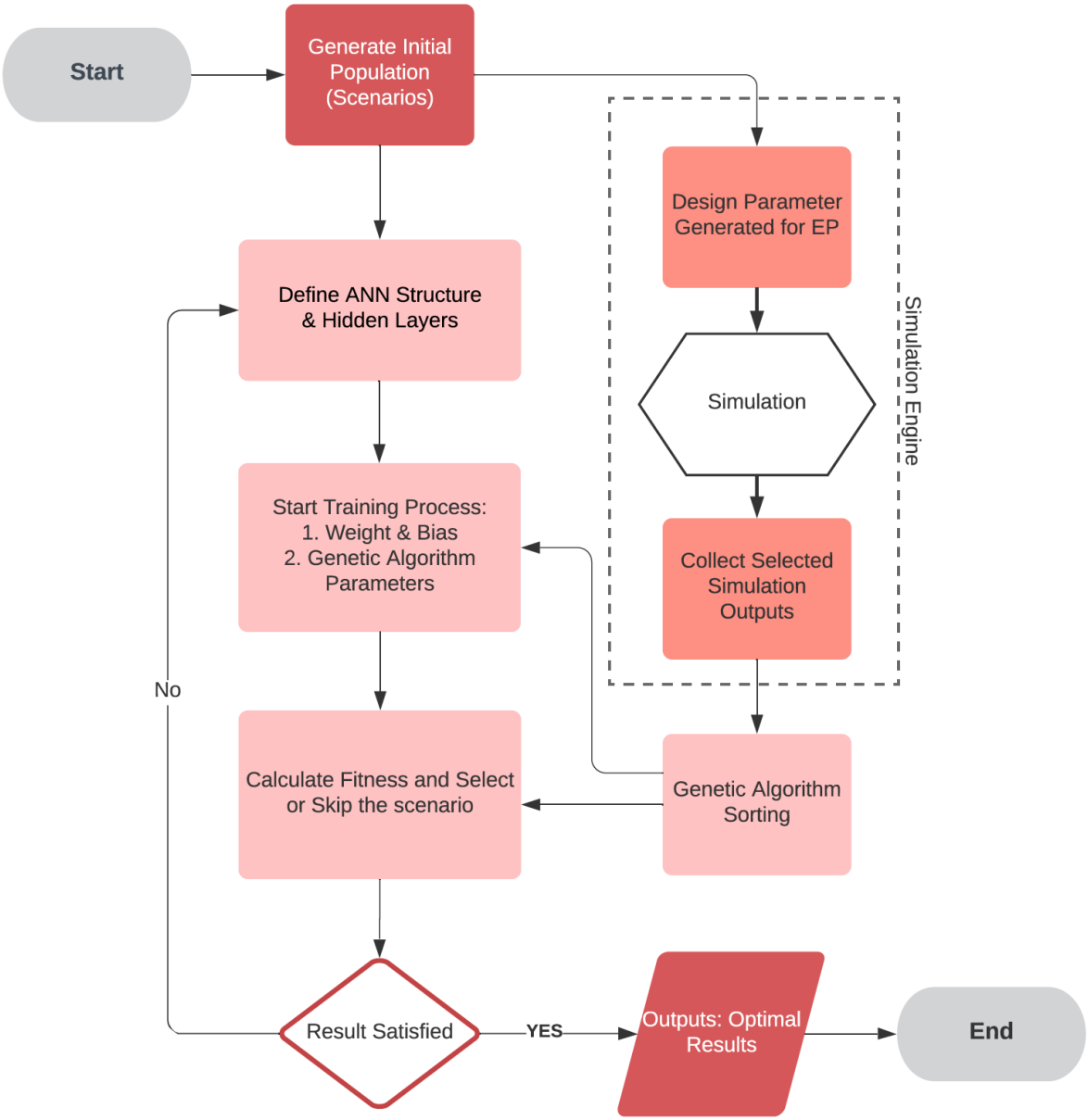


Figure 39: Optimization flow chart, illustrating the application of GA and ANN.

```
#-------------------------------------------------------------------------

def decisionMaker(id):
    cur.execute('SELECT consumption, comfort, cost from output where seeID = "' + str(id) + '"')
    res = cur.fetchone()

    print res
    if res is None:
        cur.execute('update allSce set isDone = "3" where ID = "' + str(id) + '"')
        db.commit();
        return 'nothing-a'

    consumption = float(res['consumption'])
    comfort = float(res['comfort'])
    cost = float(res['cost'])

    x = consumption + comfort + cost
    if (x < 80):
        if consumption < 30 :
            return 'consumption'
        if comfort < 50 :
            return 'comfort'
        else :
            return 'cost'

    return 'nothing'
```

Figure 40: Scripts used to calculate total points and decide whether to keep or skip the scenarios.

```
#------------------------------------------------------------------------

def getSkipVal(skipParam, id):

    cur.execute('SELECT * from allSce where isDone = "1" and ID = "' + str(id) + '"')
    res = cur.fetchone()


    print res
    if skipParam == "consumption": #Glazing, insulation int
        glz = res['Glazing_System']
        insI = res ['Insulation']
        fx = cur.execute('update allSce set isDone ="2" where isDone = "0" and (Glazing_System = "' + glz + '" and Insulation ="' + insI + '")')
        print ("\/\/\/\/\/\/\/\/\/\/\/", fx)
        db.commit();
        cur.execute('SELECT ID from allSce where isDone = "0" AND (Glazing_System != "' + glz + '" or Insulation !="' + insI + '") ORDER BY `ID` ASC limit 1' )
        res = cur.fetchone()
        res = res['ID']
        cur.execute('UPDATE allSce set isDone ="2" where ID < ' + str(res) + ' and isDone = "0"')
        db.commit();
        return res

    if skipParam == "comfort": # WWR, gazing system,
        WWR = res['WWR']
        glz = res ['Glazing_System']
        fx = cur.execute('update allSce set isDone ="2" where isDone = "0" and (WWR = "' + WWR + '" and Glazing_System = "' + glz + '")')
        print ("\/\/\/\/\/\/\/\/\/\/\/", fx)
        db.commit();
        cur.execute('SELECT ID from allSce where isDone = "0" AND (WWR != "' + WWR + '" or Glazing_System !="' + glz + '") ORDER BY `ID` ASC limit 1' )
        res = cur.fetchone()
        res = res['ID']
        cur.execute('UPDATE allSce set isDone ="2" where ID < ' + str(res) + ' and isDone = "0"')
        db.commit();
        return res

    if skipParam == "cost":#insulation ext, cladding  glazing system
        insE = res['Insulation']
        wallC = res ['Wall_Cladding']
        fx = cur.execute('update allSce set isDone ="2" where isDone = "0" and (Insulation = "' + insE + '" and Wall_Cladding ="' + wallC + '")')
        print ("\/\/\/\/\/\/\/\/\/\/\/", fx)
        db.commit();
        cur.execute('SELECT ID from allSce where isDone = "0" AND (Insulation != "' + insE + '" or Wall_Cladding !="' + wallC + '") ORDER BY `ID` ASC limit 1' )
        res = cur.fetchone()
        res = res['ID']
        cur.execute('UPDATE allSce set isDone ="2" where ID < ' + str(res) + ' and isDone = "0"')
        db.commit();
        return res




  #------------------------------------------------------------------------

  def calcConsumption(senID):
      cur.execute('SELECT ID, EUI_Elec_IntLight, EUI_Elec_Cooling, EUI_Gas_Total FROM `output` where seeID = "' + str(senID) + '"')
      res = cur.fetchall()

      print res, senID
      point = 0
      for scenario in res:

          x = float(scenario['EUI_Elec_IntLight'])

          minMax = cur.execute('select min(EUI_Elec_IntLight), max(EUI_Elec_IntLight), avg(EUI_Elec_IntLight) from outputInit WHERE name = "EUI_Elec_IntLight"')
          minMax = cur.fetchone()

          d = float(minMax['max(EUI_Elec_IntLight)']) - float(minMax['min(EUI_Elec_IntLight)'])
          d = d / 10
          point = point + (10 - ((x - float(minMax['min(EUI_Elec_IntLight)'])) / d ))
          print(point,minMax,d, x,   "-----------------")


          x = float(scenario['EUI_Elec_Cooling'])

          minMax = cur.execute('select min(EUI_Elec_Cooling), max(EUI_Elec_Cooling), avg(EUI_Elec_Cooling) from outputInit WHERE name = "EUI_Elec_Cooling"')
          minMax = cur.fetchone()

          d = float(minMax['max(EUI_Elec_Cooling)']) - float(minMax['min(EUI_Elec_Cooling)'])
          d = d / 10
          point = point + (10 - ((x - float(minMax['min(EUI_Elec_Cooling)'])) / d ))
          print(point,  "-----------------")


          x = float(scenario['EUI_Gas_Total'])

          minMax = cur.execute('select min(EUI_Gas_Total), max(EUI_Gas_Total), avg(EUI_Gas_Total) from outputInit WHERE name = "EUI_Gas_Heating"')
          minMax = cur.fetchone()


          d = float(minMax['max(EUI_Gas_Total)']) - float(minMax['min(EUI_Gas_Total)'])
          d = d / 20
          point = point + (20 - ((x - float(minMax['min(EUI_Gas_Total)'])) / d ))


          print(point,  "-----------------")
          updatePoints(scenario['ID'], "consumption", round(point, 2) )
          # print "consumption\t", scenario['EUI_Elec_Total'], "\t",  scenario['EUI_Gas_Total'], "\t ------> ", point
          point = 0


      db.commit();
```

```
#----------------------------------------------------------------------

def calcComfort(senID):
    cur.execute('SELECT ID, OccupantComfort_Thermal_PMV_Avg, Daylight_Illuminance, Daylight_Glare FROM `output` where seeID ="' + str(senID) + '"')
    res = cur.fetchall()

    print(res)
    point = 0
    for scenario in res:

        x = abs(float(scenario['OccupantComfort_Thermal_PMV_Avg']))
        if (x == 0):
            point = point + 20

        if (x > 0 and x <= 0.1):
            point = point + 18

        if (x > 0.1 and x <= 0.2):
            point = point + 16

        if (x > 0.2 and x <= 0.3):
            point = point + 14

        if (x > 0.3 and x <= 0.4):
            point = point + 12

        if (x > 0.4 and x <= 0.5):
            point = point + 10

        if (x > 0.5 and x <= 0.55):
            point = point + 8

        if (x > 0.55 and x <= 0.65):
            point = point + 4

        if (x > 0.65 and x <= 0.75):
            point = point + 2

        if (x > 0.75 ):
            point = point + 0


        x = float(scenario['Daylight_Illuminance'])

        minMax = cur.execute('select min(Daylight_Illuminance), max(Daylight_Illuminance), avg(Daylight_Illuminance) from\
            outputInit WHERE name = "Daylight_Illuminance"')
        minMax = cur.fetchone()

        d = float(minMax['max(Daylight_Illuminance)']) - float(minMax['min(Daylight_Illuminance)'])
        d = d / 10
        point = point + ((x - float(minMax['min(Daylight_Illuminance)'])) / d )
```

```
#----------------------------------------------------------------------
def calcCost(senID):
    cur.execute('SELECT ID, EnergyCost_Elec_Total, EnergyCost_Gas_Total  FROM `output` where seeID = "' + str(senID) + '"')
    res = cur.fetchall()

    point = 0
    for scenario in res:

        x = float(scenario['EnergyCost_Elec_Total'])

        minMax = cur.execute('select min(EnergyCost_Elec_Total), max(EnergyCost_Elec_Total), avg(EnergyCost_Elec_Total) from\
            outputInit WHERE name = "EnergyCost_Elec_Total"')
        minMax = cur.fetchone()

        d = float(minMax['max(EnergyCost_Elec_Total)']) - float(minMax['min(EnergyCost_Elec_Total)'])
        d = d / 10
        point = point + (10 - ((x - float(minMax['min(EnergyCost_Elec_Total)'])) / d ))

        print(minMax)
        print(point,x,  "-----------------")

        x = float(scenario['EnergyCost_Gas_Total'])

        minMax = cur.execute('select min(EnergyCost_Gas_Total), max(EnergyCost_Gas_Total), avg(EnergyCost_Gas_Total) from\
            outputInit WHERE name = "EnergyCost_Gas_Total"')
        minMax = cur.fetchone()

        print(minMax)

        d = float(minMax['max(EnergyCost_Gas_Total)']) - float(minMax['min(EnergyCost_Gas_Total)'])
        d = d / 10
        point = point + (10 - ((x - float(minMax['min(EnergyCost_Gas_Total)'])) / d ))


        print(point,x,  "-----------------")



        updatePoints(scenario['ID'], "cost", round(point, 2))
        # print "cost\t", scenario['EnergyCost_Total'], "\t ------> ", point
        point = 0


    db.commit();
```

Figure 41: Scripts used to calculate Energy Consumption, comfort and cost, and to assign weight bias.

Table 18: Minimum and maximum value scenarios for indicators to dynamically update the rang of results.

Output-Indicator	Min Value-Scenario	Max Value-Scenario
EUI Electric-Int. Lighting	60% No shading AL 2x6 metal @16"+ 1" Aerogel Hi VT (single clear-AL, TBAL or wood)	20% shading V-45 or H-45 CM 2x6 wood @24"+ 4" XPS Styrofoam Trip leLow-e Clear (Argon)
EUI Electric-Cooling	20% shading V-45 OR H-45 CM 2x6 wood @24"+ 4" XPS Styrofoam Trip le Low-e Clear (Argon)/wood fiberglass	60% No Shading AL 2x6 metal @16"+ 1" Aerogel single clear-AL Sgl-Clr-Air-W/F
EUI Gas-Heating	20% shading V-45 or H-45 AL 2x6 wood @24"+ 4" XPS Styrofoam Triple Clear, High–SHGC low-e (Argon)/Wood, fiberglass (Trip-Clr-HiSHGC-LowE-Argon-W/F)	60% No shading CM 2x6 metal @16"+ 1" Aerogel Single clear, AL or Double Low-e Clear (Air), AL
PMV-PPD	Range -0.5 and +5 Min -0.55 or +0.55	0-PMV 10-PPD
Energy Cost- Elec Total	Min Enduse int. lighting +Min Enduse Cooling EnergyCost_Elec_Total 60% No shading AL 2x6 metal @16"+ 1" Aerogel Hi VT (single clear-AL, TBAL or wood) + 20% shading V-45 OR H-45 CM 2x6 wood @24"+ 4" XPS Styrofoam Trip le Low-e Clear (Argon)/wood fiberglass	Max Enduse int. lighting +Max Enduse Cooling 20% shading V-45 or H-45 CM 2x6 wood @24"+ 4" XPS Styrofoam Trip le Low-e Clear (Argon) + 60% No Shading AL 2x6 metal @16"+ 1" Aerogel single clear-AL

Energy Cost- Gas Total	20% shading V-45 or H-45 AL 2x6 wood @24"+ 4" XPS Styrofoam Triple Clear, High–SHGC low-e (Argon)/Wood, fiberglass	60% No shading CM 2x6 metal @16"+ 1" Aerogel Single clear, AL or Double Low-e Clear (Air), AL
Daylight (Daylight reference point 1 illuminance)	20% shading V-45 or H-45 CM 2x6 wood @24"+ 4" XPS Styrofoam Trip le Low-e Clear (Argon)	60% No shading AL 2x6 metal @16"+ 1" Aerogel single clear-AL, TBAL or wood) Sgl-Clr-Air-AL
Daylight (Glare index)	20% shading V-45 or H-45 CM 2x6 wood @24"+ 4" XPS Styrofoam Trip le Low-e Clear (Argon)	60% No shading AL 2x6 metal @16"+ 1" Aerogel single clear-AL, TBAL or wood

Figures 42 to 46 are demonstrating the initial efforts to improve the performance of this framework. The final results are discussed in detail the next chapter, but these figures show some preliminary data to illustrate optimization techniques. Figures 42 and 43 show how optimization algorithm selects and sorts the fitted results for this framework. Figure 42 shows the results before applying optimization for 2,061 design scenarios and Figure 43 shows the result of 18,103 scenarios with assigning the first step of optimization. In this case, we have 1,627 scenarios that scored 20 and more than 20 (1,591 scenarios at 20 and 36 more than 20). Using this process decreases the process time, because it is not necessary to simulate all scenarios-rather, only scenarios that are closer to the target. After running all scenarios (26460 ID) with applying batch normalization technique, 3,164 scenarios are selected. Next step focuses on comparison of results.

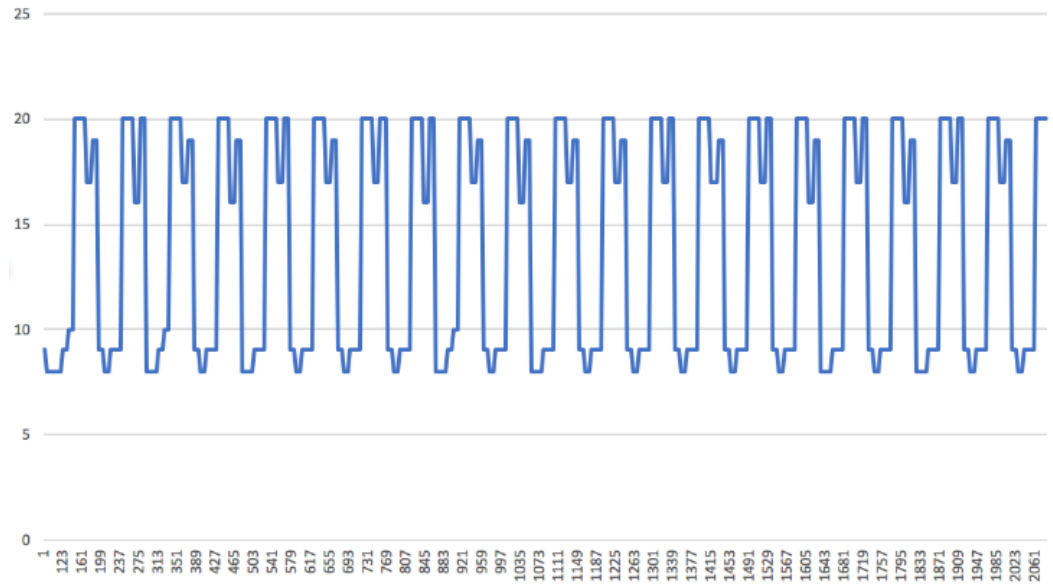


Figure 42: Total Indicators vs. Scenario IDs (for 2,061 scenarios).

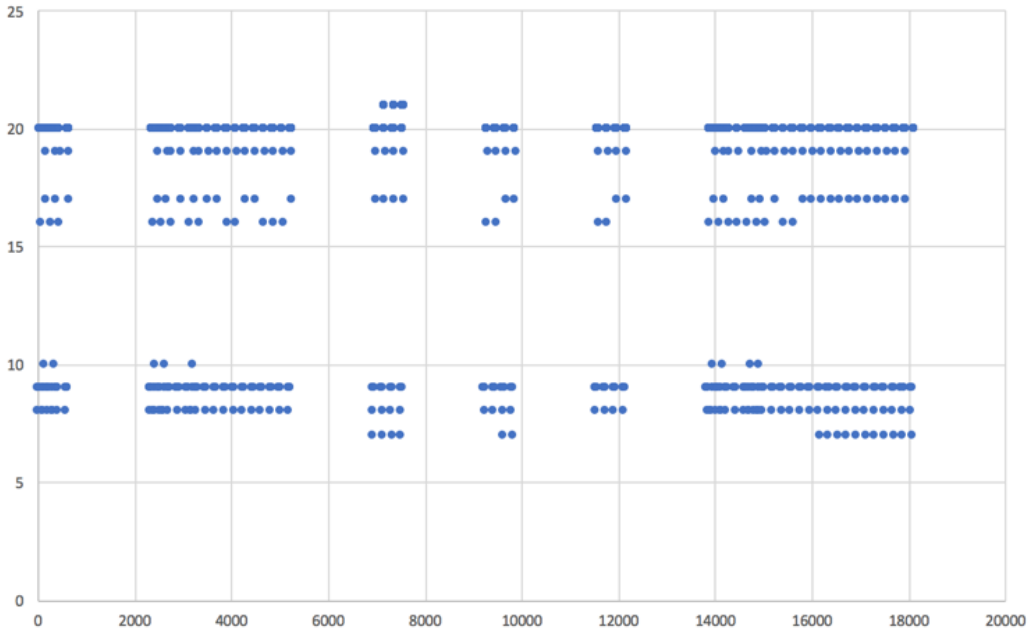


Figure 43: Total Indicators vs. Scenario IDs (for 18,103 scenarios).

The next step of optimization is applying dropout technique, then comparing the results. This is a regularization technique for reducing overfitting in neural networks by preventing complex co-adaptations on training data. Dropout refers to dropping out

units (hidden or visible) in neural network. In machine learning, correlation clustering provides a method for clustering a set of objects into optimum number of clusters based on the similarity. So, in correlation matrix, the relationship between the objects (variables) are known instead of the actual representations of the objects. Figure 44 shows the correlation matrix based on output data, integrated with optimization method to sort the results. This correlation matrix will be automated later when we are collecting data from users, so it will be populated based on those data. Figures 45 and 46 show the final results of all scenarios with both techniques implemented. Figure 45 represent the first phase of optimization, and Figure 46 shows second phase after applying correlation matrix. Results show that process time, performance and accuracy are improved by using this method.

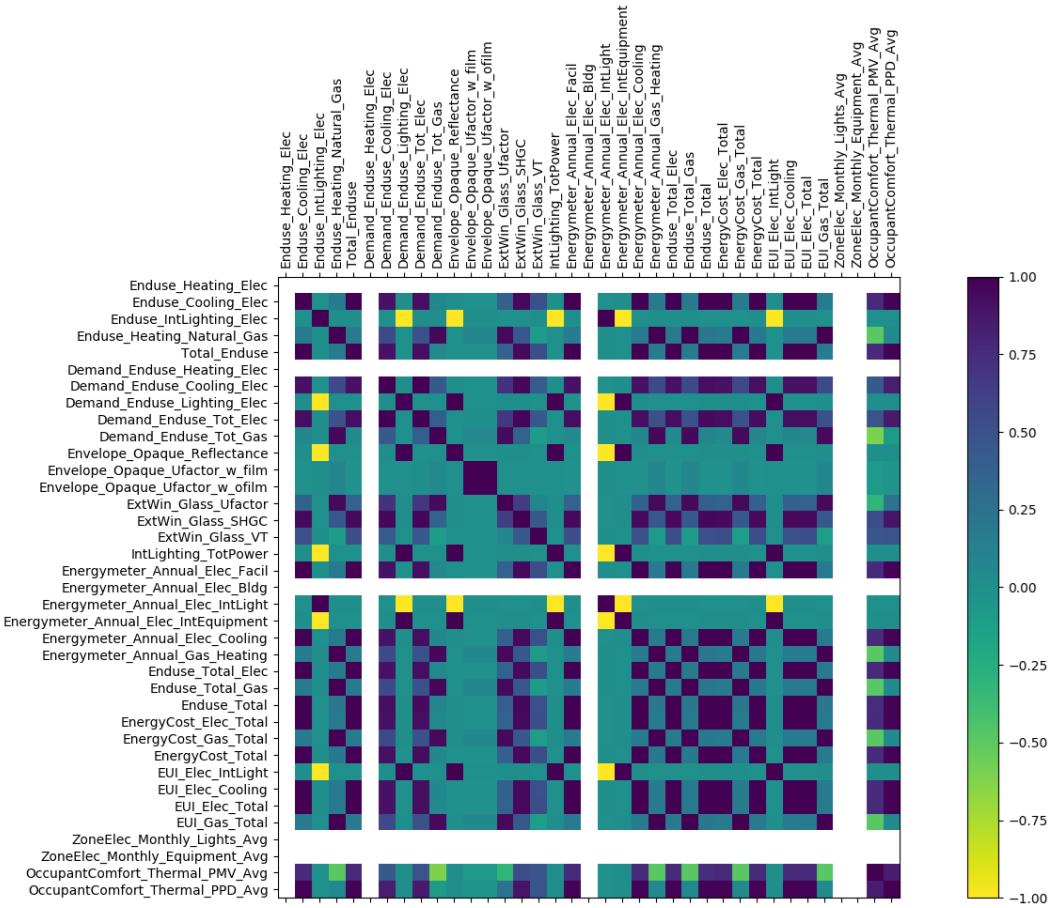


Figure 44: Correlation matrix.

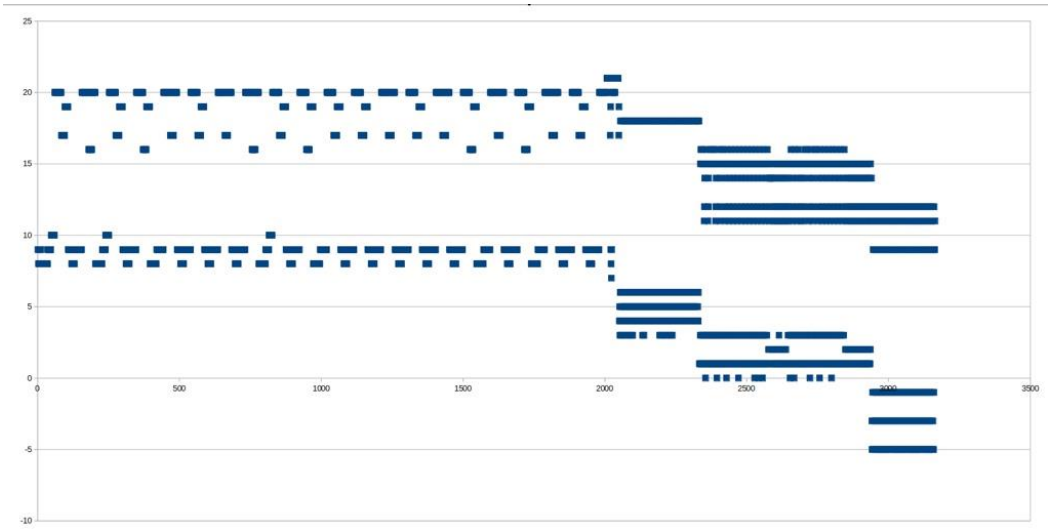


Figure 45: Results for all scenarios with applying batch normalization and flood field algorithm (Phase 1 optimization, flood fill+ Batch normalization).

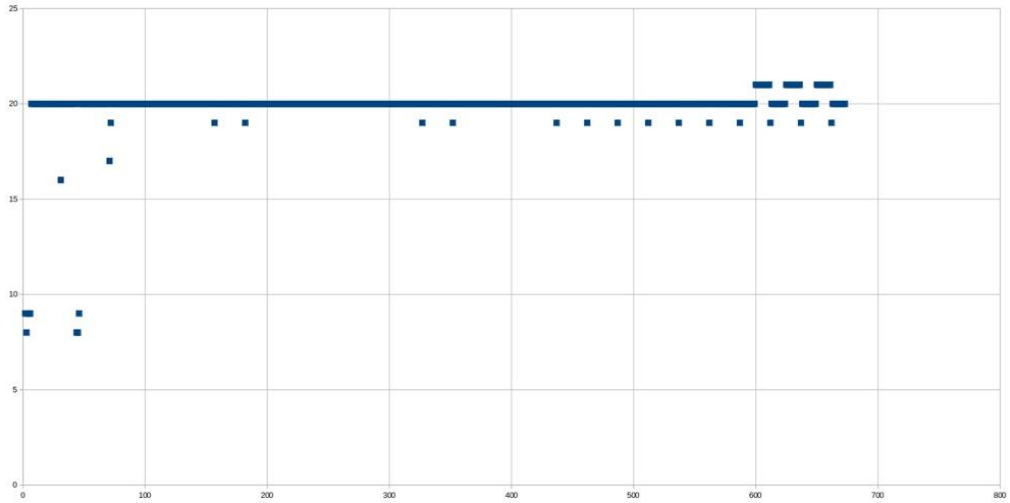


Figure 46: Results for all scenarios with applying correlation matrix and cluster eliminating (Phase 2 optimization).

In summary, this framework utilizes GA and ANN optimization techniques by employing custom Python scripts, developed as part of this research to automate simulation and optimization process.

CHAPTER 5

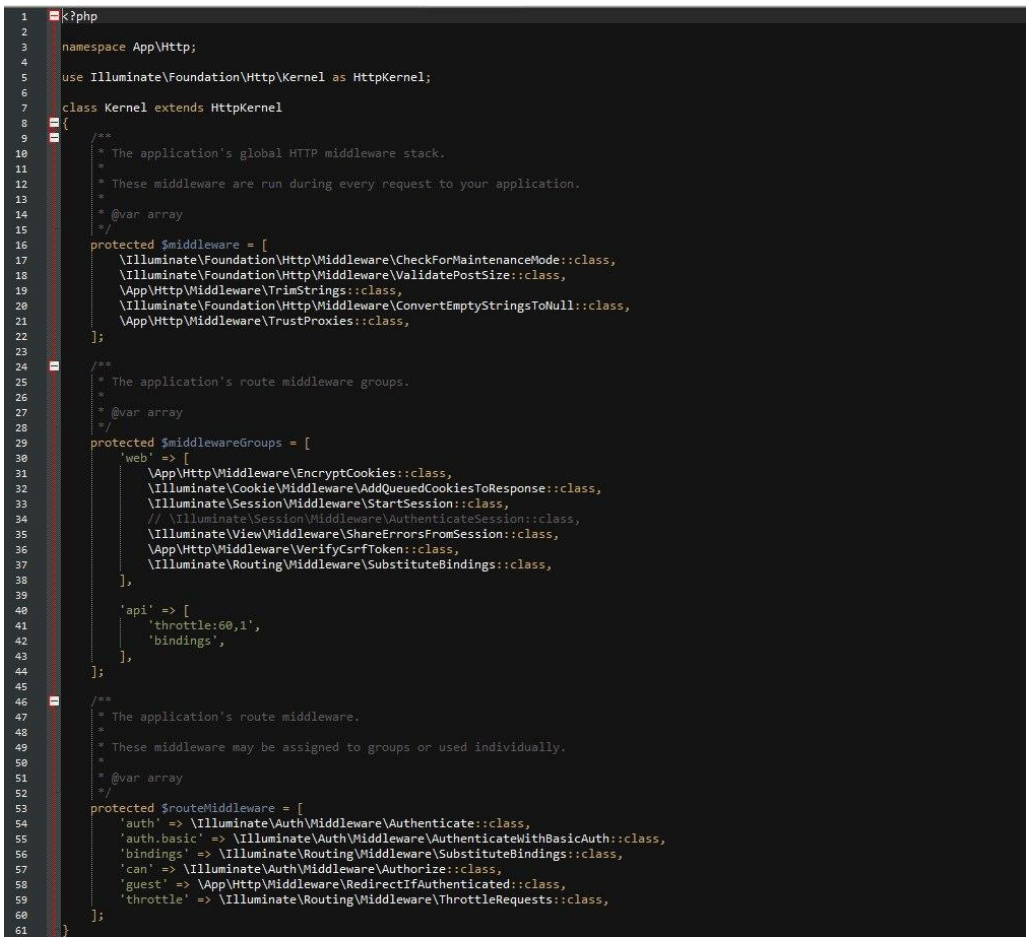
RESULTS

5.1 Results of the Study and Discussion

For final results, different weights and scores for indicators were tested to train the ANN, and then to evaluate and compare the effect of the main objective functions on final results. There are many ways to represent the results. However, in this research three different methods were used to represent the results:

- Line Charts: The line charts show the convergence of each objective and performance criteria with goals. It can be graphed by selecting the minimum, maximum, standard or individual benchmarks and deviation of objectives.
- Scatter Plots: The scatter plot can show all explored and simulated scenarios and selected scenarios with different colors based on different phase of optimization.
- Histograms: The distribution histograms of design variables are shown in these types of charts. These provide give a quick view of how scenarios are clustered and how objective functions are related to design variables.

The developed user interface allows used to visualize results in tabs, using these three different methods. Figure 47 shows part of scripts for preparing the web application that works as a front-end for the research framework.



```php
<?php

namespace App\Http;

use Illuminate\Foundation\Http\Kernel as HttpKernel;

class Kernel extends HttpKernel
{
    /**
     * The application's global HTTP middleware stack.
     *
     * These middleware are run during every request to your application.
     *
     * @var array
     */
    protected $middleware = [
        \Illuminate\Foundation\Http\Middleware\CheckForMaintenanceMode::class,
        \Illuminate\Foundation\Http\Middleware\ValidatePostSize::class,
        \App\Http\Middleware\TrimStrings::class,
        \Illuminate\Foundation\Http\Middleware\ConvertEmptyStringsToNull::class,
        \App\Http\Middleware\TrustProxies::class,
    ];

    /**
     * The application's route middleware groups.
     *
     * @var array
     */
    protected $middlewareGroups = [
        'web' => [
            \App\Http\Middleware\EncryptCookies::class,
            \Illuminate\Cookie\Middleware\AddQueuedCookiesToResponse::class,
            \Illuminate\Session\Middleware\StartSession::class,
            // \Illuminate\Session\Middleware\AuthenticateSession::class,
            \Illuminate\View\Middleware\ShareErrorsFromSession::class,
            \App\Http\Middleware\VerifyCsrfToken::class,
            \Illuminate\Routing\Middleware\SubstituteBindings::class,
        ],

        'api' => [
            'throttle:60,1',
            'bindings',
        ],
    ];

    /**
     * The application's route middleware.
     *
     * These middleware may be assigned to groups or used individually.
     *
     * @var array
     */
    protected $routeMiddleware = [
        'auth' => \Illuminate\Auth\Middleware\Authenticate::class,
        'auth.basic' => \Illuminate\Auth\Middleware\AuthenticateWithBasicAuth::class,
        'bindings' => \Illuminate\Routing\Middleware\SubstituteBindings::class,
        'can' => \Illuminate\Auth\Middleware\Authorize::class,
        'guest' => \App\Http\Middleware\RedirectIfAuthenticated::class,
        'throttle' => \Illuminate\Routing\Middleware\ThrottleRequests::class,
    ];
}
```

Figure 47: Part of scripts to create web application as the front-end and interface.

Different weight bias values for ANN were tested to compare the results. In neural network, each input can be associated with a weight. This means that weight decides how the activation function will trigger the bias and affect the outputs. In this framework, different weights were associated with indicators, some of these weighted energy consumption and energy cost more and other weighted the occupant comfort. Table 19 shows the weights assigned to each output variables for the indicators (objectives), where the total indicator values are 100 and the optimization total points are tested for 70-80 to evaluate and find relations between results and validate the training process.

Table 20 shows different weights associated with ANN in optimization phase for the investigated test cell. Each of these indicators is a combination of related outputs from the EnergyPlus simulation, discussed in Chapter 4. Figures 48 to 54 show histograms for the investigated test cell. These figures illustrate the total scenarios that are sent to simulation engine to calculate the outputs and send back to optimization modules for decision making. It means that based on GA and ANN coupled in optimization module, it is automatically decided if the framework wants to keep or skip the scenario. The different pattern for different weight bias can also be seen in these figures.

Table 19: Indicators, ANN input and weight values.

Indicators	Output	Weight Values	Total Indicator Value
Energy Consumption	EUI-Electricity for Int. Lighting	10	40
	EUI-Electricity for Cooling	10	
	EUI-Gas for Heating	20	
Occupant Comfort	PMV & PPD	20	40
	Daylight-illuminance	10	
	Daylight-Glare index	10	
Energy Cost	Total Electricity Cost (Int. lighting & Cooling)	10	20
	Total Gas Cost (Heating)	10	

Table 20: The result of different weight bias and number of scenarios selected for each type.

Energy Consumption	Comfort	Selected Scenarios	Total Points >=70	Total Points >=73	Total Points >=75	Total Points >=77	Total Points >=79
15	**30**	1770	1689	1088	673	388	84
17	**35**	1734	1653	1063	659	373	81
20	**35**	1317	1216	779	485	275	59

25	**35**	1858	1704	1096	679	390	84
30	**30**	1084	838	485	309	152	34
35	**20**	2001	1800	1079	690	364	75
35	**25**	2001	1800	1079	690	364	75

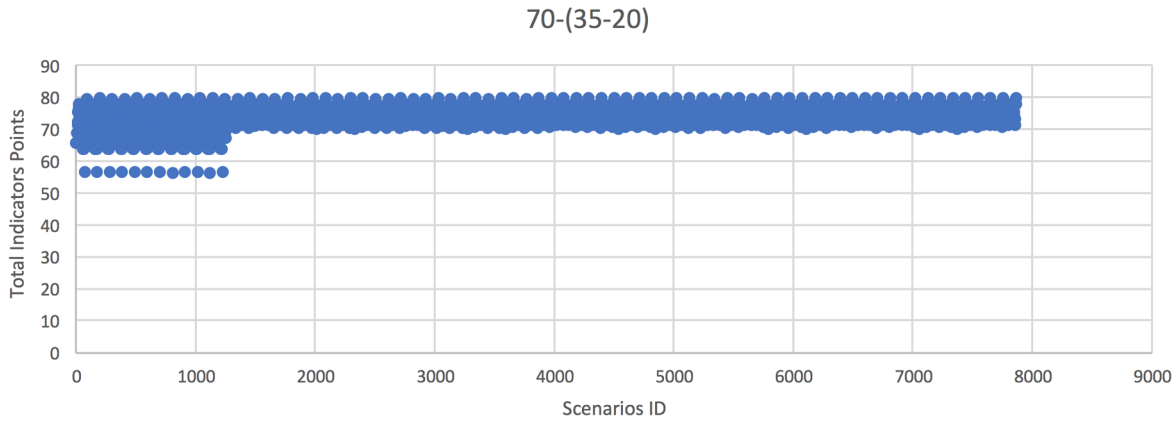


Figure 48: Weight Bias (35-20) results for total indicator scores 70 and greater.

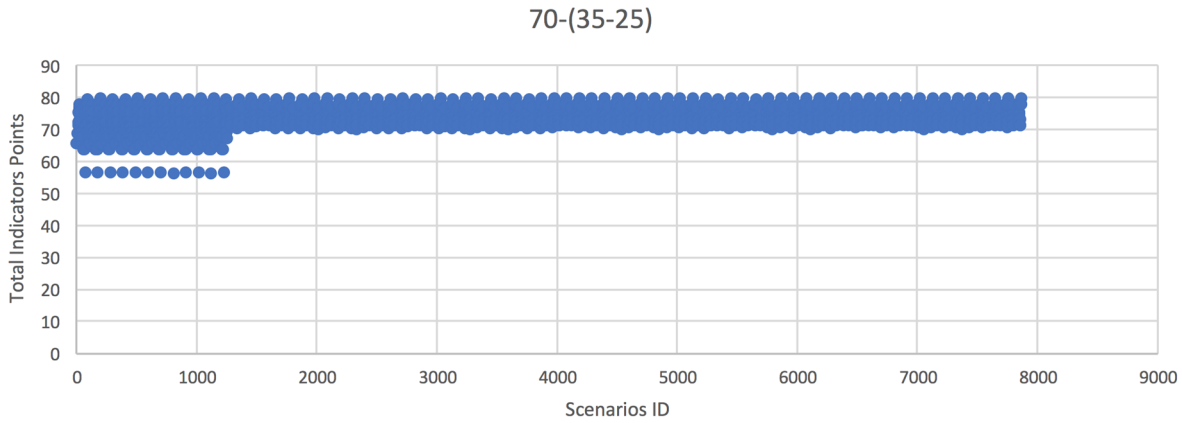


Figure 49: Weight Bias (35-25) results for total indicator scores 70 and greater.

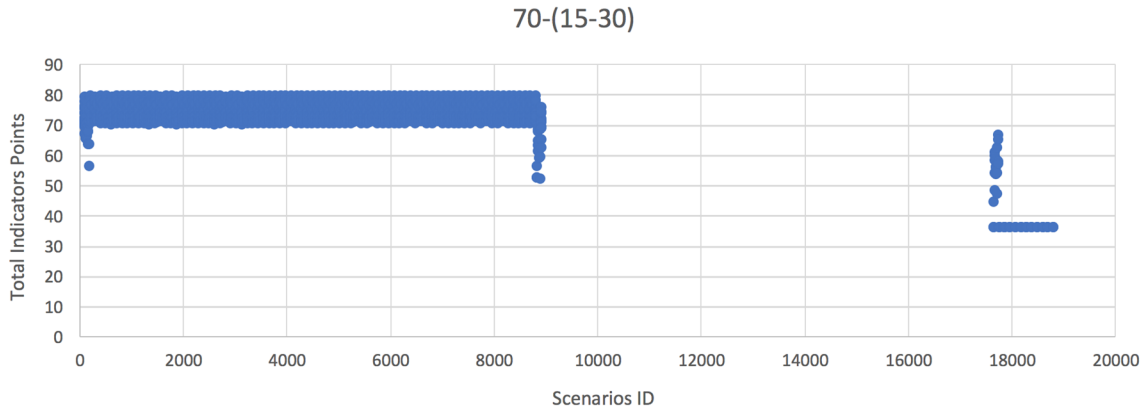


Figure 50: Weight Bias (15-30) results for total indicator scores 70 and greater.

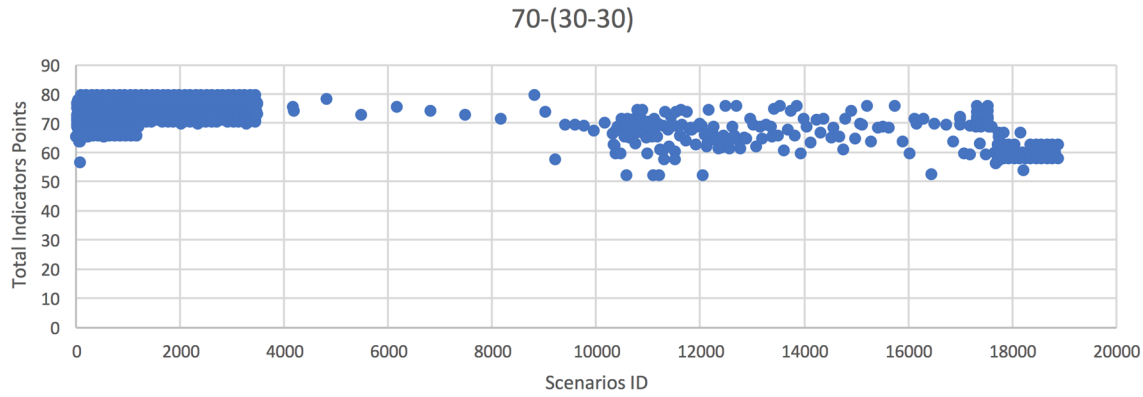


Figure 51: Weight Bias (30-30) results for total indicator scores 70 and greater.

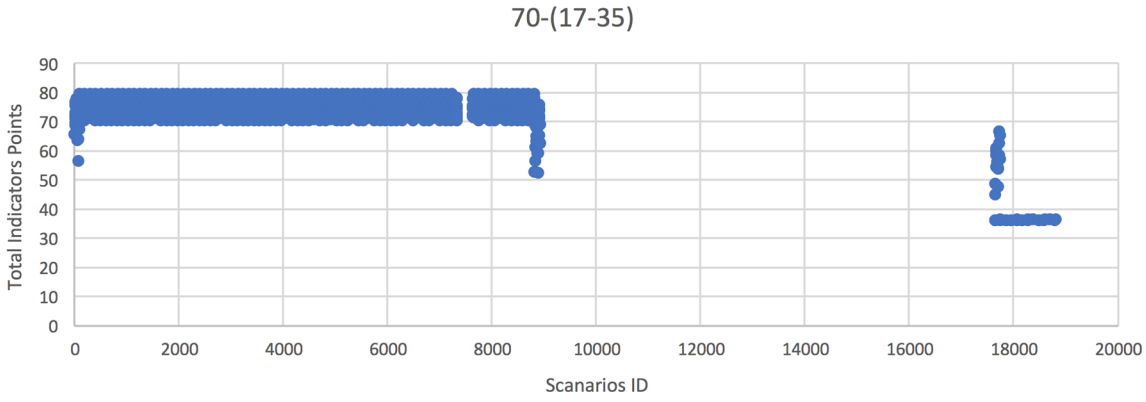


Figure 52: Weight Bias (17-35) results for total indicator scores 70 and greater.

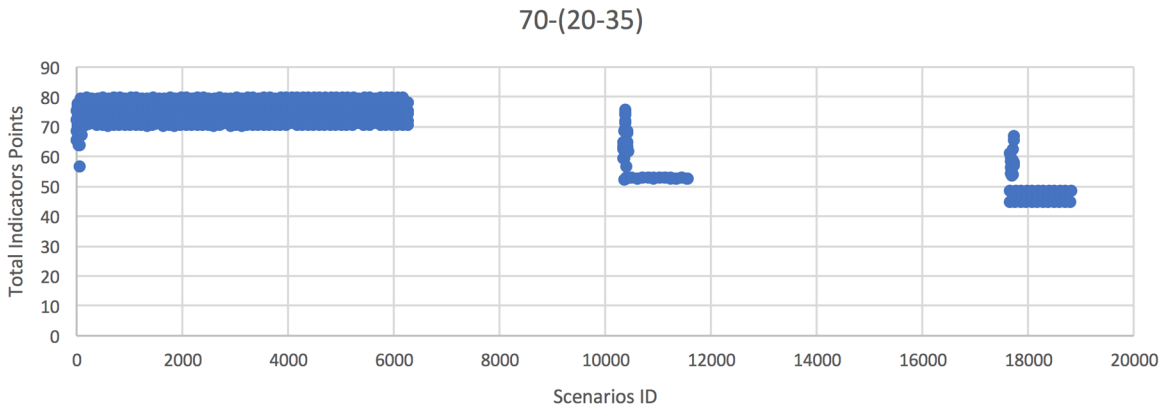


Figure 53: Weight Bias (20-35) results for total indicator scores 70 and greater.

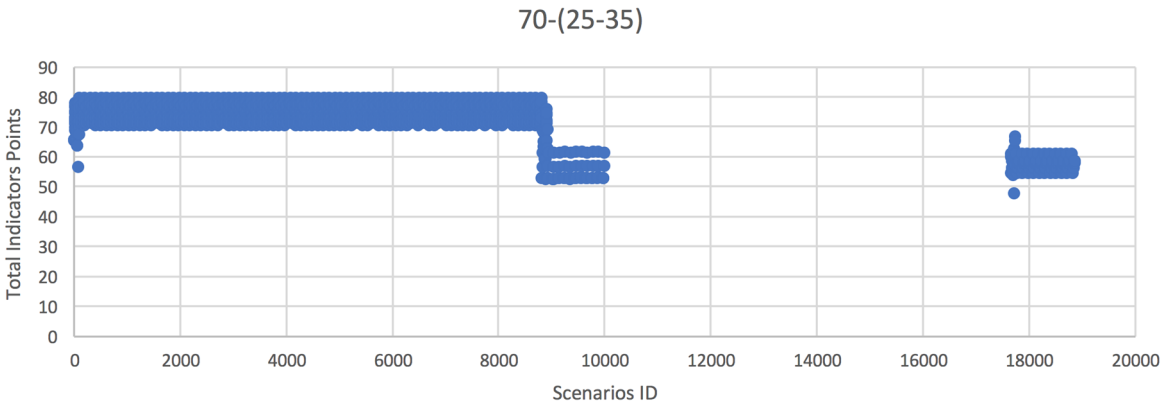


Figure 54: Weight Bias (25-35) results for total indicator scores 70 and greater.

Based on the above results, we can observe different patterns emerging for different weights and bias. This is because the ANN is trained differently based on GA algorithms and weight bias.

One of the general observations related to the range of scenarios that are sent to EnergyPlus and are simulated and selected is discussed here. When the energy consumption indicators are increased, the selected and calculated scenarios do not increase beyond 8,000 scenarios. However, when the comfort indicators are increased,

the network is selecting and calculating the wider range of scenarios (nearly all scenarios, which is 24,000).

For further evaluation of results, Figures 55 to 57 illustrate the closer results to optimum and higher total points for indicators. These figures illustrate the results in different steps for better observation and evaluation of the results.

The selected clusters can also be observed in the results in figures below. These clusters are separated by total indicator points, and show that when considering all objectives in this study (energy consumption, occupant comfort and energy cost), there is different level of results clusters with different characteristics. These clusters of selected outputs have some similar characteristics that are listed in Table 21 to 23. Table 24 lists the range of indicators for three top clusters. It illustrates the range of EUI for gas and electricity for cooling, heating and lighting, the range of daylight illuminance, glare index and PMV PPD, and cost indicators (for electricity and gas). All figures clearly show the sorted scenarios, based on the total indicator score. Figure 57 shows the top scored scenarios with associated scenario IDs.

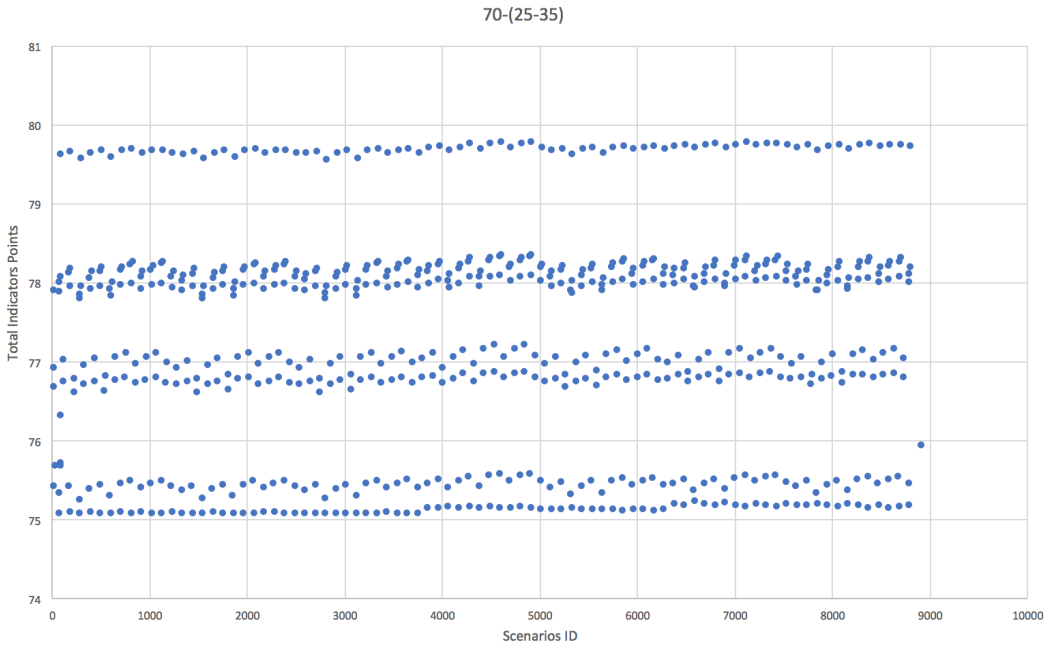


Figure 55: Selected scenarios for weight bias (25-35) that have total indicator scores 75 or greater

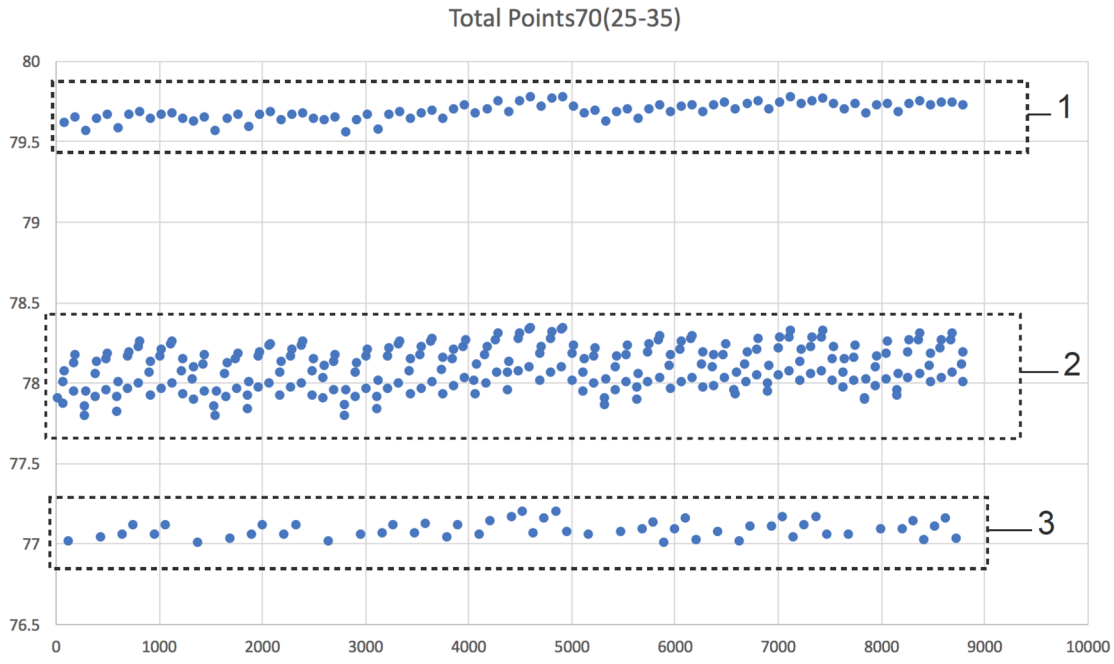


Figure 56: Selected scenarios for weight bias (25-35) that have total indicator scores 77 or greater and illustration of 3 selected output clusters.

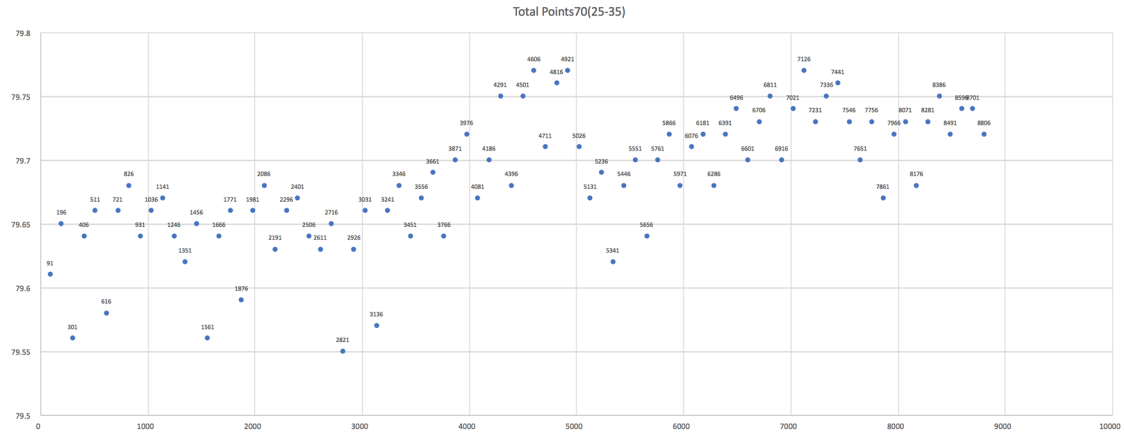


Figure 57: Selected scenarios for weight bias (25-35) that have total indicator 79 or greater (top selected scenarios-Cluster 1).

Table 21: The result of optimization showing the characteristic of optimum scenarios (Cluster 1).

Design Variables	Parameters
Window to Wall Ratio	20%
Glazing System	Trip-Clr-HiSHGC-LowE-Argon-Alum
Wall Assembly	Wood Framed
Cladding Material	Terracotta (TR) Stone (ST) Aluminum (AL) Zinc
Insulation	2x6 @24” +4” XPS Styrofoam 2x6 @16” +4” XPS Styrofoam
Solar Control	No Shading

Table 22: The result of optimization showing the characteristic of optimum scenarios (Cluster 2).

Design Variables	Parameters
Window to Wall Ratio	20%
Glazing System	Trip-Clr-HiSHGC-LowE-Argon-Alum
Wall Assembly	Wood Framed
Cladding Material	Terracotta (TR) Stone (ST)
Insulation	2x6 @24" +4" XPS Styrofoam 2x6 @24" +3" XPS Styrofoam 2x6 @16" +4" XPS Styrofoam 2x6 @16" +3" XPS Styrofoam
Solar Control	Alum-H-45

Table 23: The result of optimization showing the characteristic of optimum scenarios (Cluster 3).

Design Variables	Parameters
Window to Wall Ratio	20%
Glazing System	Dbl-Clr-Air-AlumTB
Wall Assembly	Wood Framed
Cladding Material	Terracotta (TR) Stone (ST) Zinc
Insulation	2x6 @24" +4" XPS Styrofoam 2x6 @16" +4" XPS Styrofoam
Solar Control	Alum-H-45

Table 24: Range of 3 cluster outputs results for weight bias 25-35.

Outputs (25-35)	Cluster 1 Range	Cluster 2 Range	Cluster 3 Range
EUI-Elec. For Lighting (MJ/m2)	43.83	65.07-66.21	41.23-64.71
EUI-Elec. For Cooling (MJ/m2)	64.38-64.67	54.32-56.06	55.14-68.04
EUI-Gas. For Heating (MJ/m2)	2.5-2.79	2.6-3.2	3.57-4.06
PMV &	0.362-0.372	0.228-0.276	0.210-0.361
PPD (%)	14.39-14.52	12.63-12.77	13.13-15.36
Daylight illuminance-Annual Sum or Average (Lux)	300.87	70.17_79.35	82.2-350.26
Daylight Glare index	14.81	3.39-3.76	3.89-15.31
Total Elec. Cost (Annual -$)	1378.63-1379.72	1398.34-1404.32	1392.11-1399.51
Total Gas Cost (Annual -$)	4.03-4.44	4.19-5.16	5.75-6.54

As the tables show, the optimum design scenario that yields the optimum low energy consumption is the one that incorporates triple-glazed windows with aluminum frame on south elevation, with 20% WWR and wood framed wall assembly.

Interestingly, this optimum design scenario does not contain the highest R-value. This is in line with diminishing return law, where increasing the R-value above a certain optimum point does not have a major impact on improving the building performance.

The window to wall ratio for all optimum results are 20% and 2x6 walls, while other parameters changed in other clusters. This observation verified that the impact of WWR and wall assembly compare to other parameters in facade design.

The effect of wall insulation is obvious in optimum results, and played an essential role in reducing the energy consumption. Similarly, high performance glazing (particularly, triple glazing with low-e coating) was present in most of the selected scenarios.

For the test cell case (Atlanta weather), lower WWRs had better energy performance, as savings from the use of shading and high-performance glazing could not match the increase in heating load due to the high WWRs.

Regarding the framing wall assemblies, structural framing would diminish the effectiveness of the thermal barrier. Whether steel or wood structural elements are used, there will be an impact on thermal performance. All building materials conduct heat at different rates. There is not a threshold beyond which a material becomes categorized as "insulation". However, both wood and steel framing will conduct heat more than cavity insulation products. Steel framing conducts more heat than wood, because it has higher thermal conductivity. Steel framing members also create significant thermal bridging problems if continuous exterior insulation is not used in the facade assembly. Wood framing also induces thermal bridging, but it is not as problematic as metal studs. Although less conductive than steel, wood will still diminish the effective R-value of batt insulation within the framing cavity. Therefore, another observation regarding the optimum selected scenarios indicates that even without the continuous insulation, the wood wall surpasses the efficiency of the steel wall framing with continuous insulation.

In conclusion, it became apparent that the use of multi-objective optimization for complicated design problems can aid at reaching performative solution and clarify

the relation between the design variables and objectives. The effect of the different variables on each objective can be separately and thoroughly analyzed, while trade-offs.

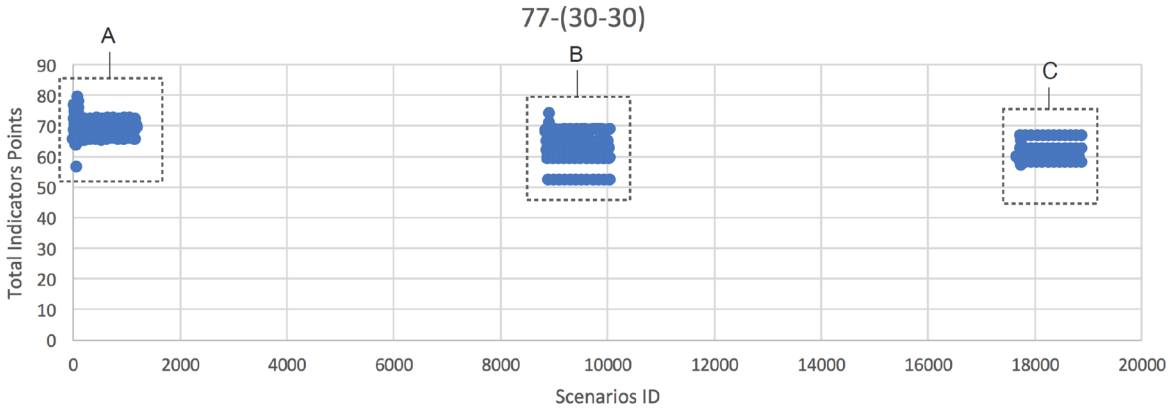


Figure 58: Weight Bias (30-30) results for total indicator scores 77 and greater.

Results also indicate that when we have greater occupant comfort weight and bias, there are three other clusters for all scenarios. However, the total indicator scores are lower than for the first cluster, but it is important to analyze and evaluate these selected scenarios for further development of this study. Figure 58 illustrates clusters B and C which are clusters in range of 40% and 60% window to wall ratio. Tables 25 and 26 shows the characteristics of clusters B and C.

Figure 59 to 61 represent the outputs of cluster A and Table 27, 28 and 29 illustrate the characteristics of these clusters. Table 30 lists the range of indicators for three top clusters.

Table 25: The result of optimization and the characteristic of optimum scenarios (cluster B).

Design Variables	Parameters
Window to Wall Ratio	40%
Glazing System	Trip-Clr-HiSHGC-LowE-Argon-Alum
Wall Assembly	Wood Framed
Cladding Material	Terracotta (TR) Stone (ST) Aluminum (AL)
Insulation	2x6 @24" +4" XPS Styrofoam 2x6 @16" +4" XPS Styrofoam
Solar Control	No Shading

Table 26: The result of optimization and the characteristic of optimum scenarios (cluster C).

Design Variables	Parameters
Window to Wall Ratio	60%
Glazing System	Dbl-Clr-Air-AlumTB
Wall Assembly	Wood Framed
Cladding Material	Terracotta (TR)
Insulation	2x6 @24" +4" XPS Styrofoam 2x6 @16" +4" XPS Styrofoam
Solar Control	Alum-H-45

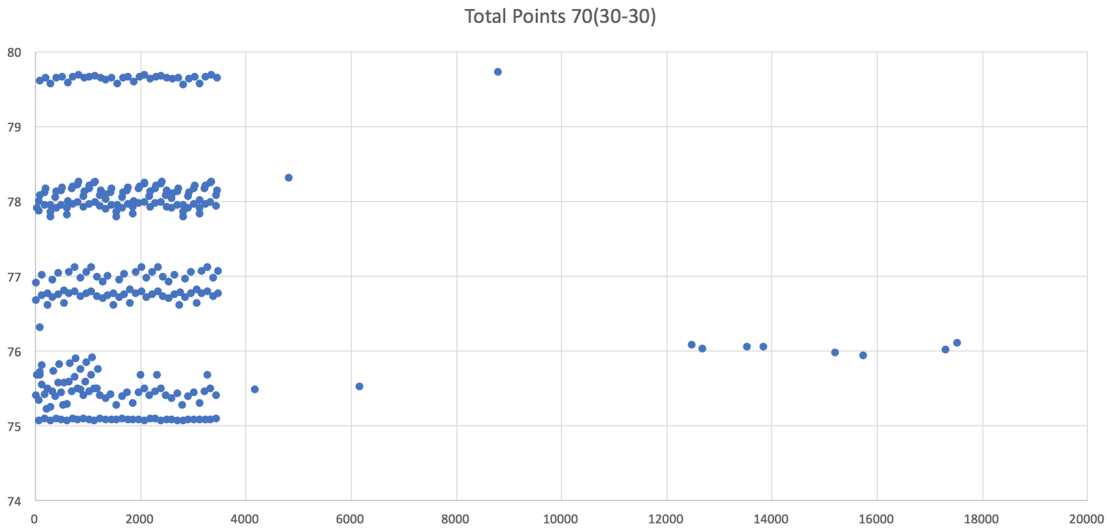


Figure 59: Selected scenarios for weight bias (30-30) that have total indicator scores 75 or greater.

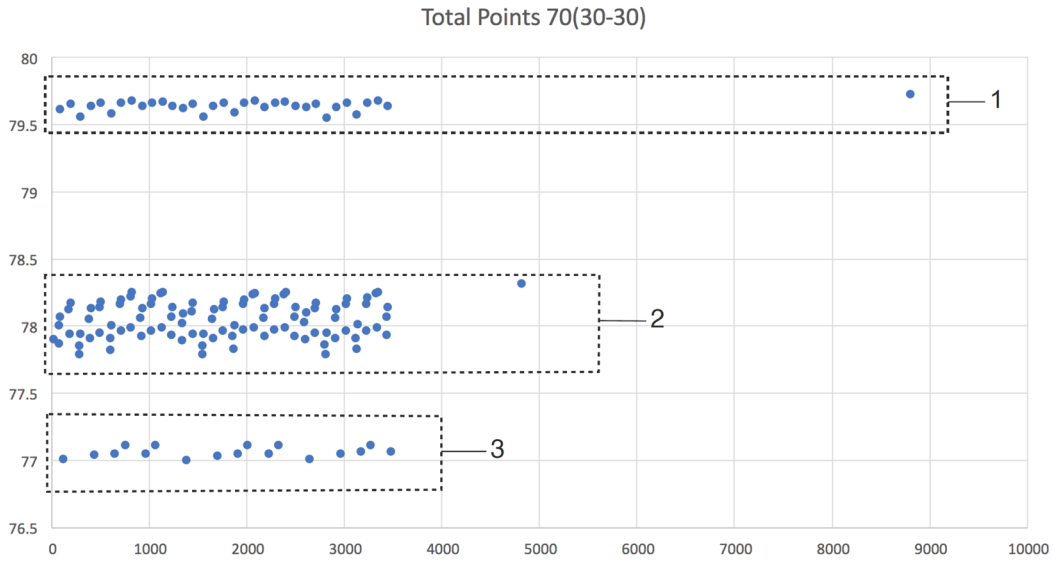


Figure 60: Selected scenarios for weight bias (30-30) that have total indicator scores 77 or greater and illustration of 3 selected output clusters.

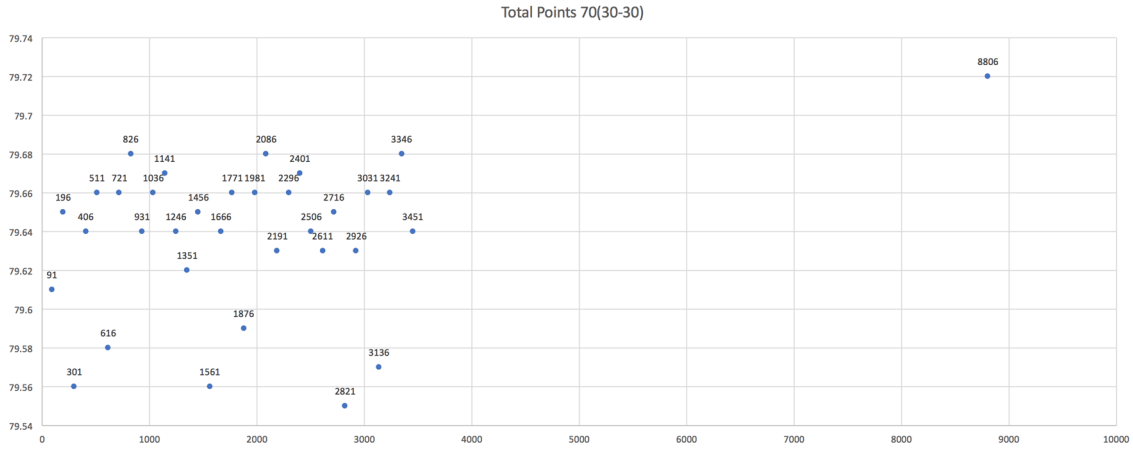


Figure 61: Selected scenarios for weight bias (30-30) that have total indicator scores 79 or greater (top selected scenarios-Cluster 1).

Table 27: The result of optimization showing the characteristic of optimum scenarios (cluster 1).

Design Variables	Parameters
Window to Wall Ratio	20%
Glazing System	Trip-Clr-HiSHGC-LowE-Argon-Alum
Wall Assembly	Wood Framed
Cladding Material	CM SS Aluminum (AL)
Insulation	2x6 @24” +4” XPS Styrofoam 2x6 @16” +4” XPS Styrofoam
Solar Control	No Shading

Table 28: The result of optimization showing the characteristic of optimum scenarios (cluster 2).

Design Variables	Parameters
Window to Wall Ratio	20%
Glazing System	Trip-Clr-HiSHGC-LowE-Argon-Alum
Wall Assembly	Wood Framed
Cladding Material	SS Aluminum (AL) Zinc
Insulation	2x6 @24" +4" XPS Styrofoam 2x6 @16" +4" XPS Styrofoam
Solar Control	Alum-H-45

Table 29: The result of optimization showing the characteristic of optimum scenarios (cluster 3).

Design Variables	Parameters
Window to Wall Ratio	20%
Glazing System	Dbl-Clr-Air-AlumTB
Wall Assembly	Wood Framed
Cladding Material	Aluminum (AL) Stainless Steel (SS) Zinc
Insulation	2x6 @24" +4" XPS Styrofoam 2x6 @16" +4" XPS Styrofoam 2x6 @24" +3" XPS Styrofoam
Solar Control	Alum-H-45

Table 30: Range of 3 clusters outputs results for weight bias 30-30.

Outputs (30-30)	Cluster 1 Range	Cluster 2 Range	Cluster 3 Range
EUI-Elec. For Lighting (MJ/m2)	43.83	65.03-66.21	64.71
EUI-Elec. For Cooling (MJ/m2)	64.5-64.7	54.32-54.85	55.17-55.21
EUI-Gas. For Heating (MJ/m2)	2.53-2.76	3.17-4.91	4.03-4.13
PMV &	0.364-0.372	0.181-0.231	0.210-0.213
PPD (%)	14.42-14.52	12.63-13.52	13.16-13.22
Daylight illuminance-Annual Sum or Average (Lux)	300.87	70.17-79.63	82.2
Daylight Glare index	14.81	3.39-3.76	3.89
Total Elec. Cost (Annual -$)	1374.9-1375.92	1393.15-1393.73	1392.97-1393.19
Total Gas Cost (Annual -$)	4.07-4.44	5.1-7.91	6.49-6.63

Validation

Cross validation occurs in the decision-making process when scoring the indicators. Cross-validation or rotation estimation is a model validation technique for assessing a certain data set. It is used in setting for prediction or estimating the accuracy of a predictive model. The purpose of cross-validation is to test the framework ability to predict new data that was not used in estimating it to find problems, like overfitting and selection bias. Therefore, cross-validation combines measures of fitness and indicators to predict outcomes more accurately. This study used 75% of data for normalization, training and learning, while 25% of data that was not considered in training was used for validation and testing process.

In order to check the accuracy of the ANN to predict EUI and PMV, 25 samples were randomly selected. The corresponding EUI and PMV from EnergyPlus were compared to data issued from the ANN. The maximum deviations for EUI and PMV are 1.86% and 0.22%. These low values confirm the accuracy of the ANN.

All results and data saved in the MYSQL database are included as Appendices at the end of this document. Figure 62 shows the screenshot of these table that can be exports as Excel files.

	Table	Action	Rows	Type	Collation	Size	Overhead
☐	allSce	Browse Structure Search Insert Empty Drop	26,460	InnoDB	latin1_swedish_ci	3.5 MiB	-
☐	initMaxMin	Browse Structure Search Insert Empty Drop	16	InnoDB	latin1_swedish_ci	16 KiB	-
☐	output	Browse Structure Search Insert Empty Drop	251	InnoDB	latin1_swedish_ci	128 KiB	-
☐	output-70-15-30	Browse Structure Search Insert Empty Drop	1,770	InnoDB	latin1_swedish_ci	1.6 MiB	-
☐	output-70-20-35	Browse Structure Search Insert Empty Drop	1,896	InnoDB	latin1_swedish_ci	1.6 MiB	-
☐	output-70-30-30	Browse Structure Search Insert Empty Drop	1,084	InnoDB	latin1_swedish_ci	400 KiB	-
☐	output-70-35-20	Browse Structure Search Insert Empty Drop	2,001	InnoDB	latin1_swedish_ci	1.6 MiB	-
☐	output-73-20-35	Browse Structure Search Insert Empty Drop	123	InnoDB	latin1_swedish_ci	96 KiB	-
☐	output-73-25-35	Browse Structure Search Insert Empty Drop	176	InnoDB	latin1_swedish_ci	112 KiB	-
☐	output-73-30-30	Browse Structure Search Insert Empty Drop	352	InnoDB	latin1_swedish_ci	176 KiB	-
☐	output-73-35-25	Browse Structure Search Insert Empty Drop	453	InnoDB	latin1_swedish_ci	208 KiB	-
☐	output-80-20-35	Browse Structure Search Insert Empty Drop	105	InnoDB	latin1_swedish_ci	80 KiB	-
☐	output-80-25-25	Browse Structure Search Insert Empty Drop	158	InnoDB	latin1_swedish_ci	96 KiB	-
☐	output-80-30-30	Browse Structure Search Insert Empty Drop	251	InnoDB	latin1_swedish_ci	128 KiB	-
☐	output-80-30-50	Browse Structure Search Insert Empty Drop	251	InnoDB	latin1_swedish_ci	128 KiB	-
☐	output-80-35-25	Browse Structure Search Insert Empty Drop	249	InnoDB	latin1_swedish_ci	128 KiB	-
☐	output-80-35-35	Browse Structure Search Insert Empty Drop	252	InnoDB	latin1_swedish_ci	128 KiB	-
☐	output-back	Browse Structure Search Insert Empty Drop	2,675	InnoDB	latin1_swedish_ci	1.5 MiB	-
☐	output-back2	Browse Structure Search Insert Empty Drop	2,001	InnoDB	latin1_swedish_ci	1.6 MiB	-
☐	outputInit	Browse Structure Search Insert Empty Drop	16	InnoDB	latin1_swedish_ci	32 KiB	-
	20 tables	Sum	40,540	InnoDB	utf8mb4_general_ci	13.1 MiB	0 B

Figure 62: Example of results and outputs, which can be exported as Excel files.

CHAPTER 6

CONCLUSION & FUTURE WORK

6.1 Conclusion

This research investigated the role of simulations and optimization in design decision-making process for high-performance facade design. A novel performance-based facade design framework was developed, where different performance criteria have been defined for achieving energy efficiency, occupant comfort and cost optimality. The framework was implemented by coupling EnergyPlus as a simulation engine, and custom scripts using Python programing language. Then, a user interface was developed with MVC method as a front-end application to test and collect data.

The dissertation described the components and functionality of this framework in detail, as well as two-step optimization technique. A case study for a test cell was presented, illustrating how the framework is used to test a variety of design possibilities.

In the presented research, various characteristics of building facade design were considered. Quantitative and simulation-based techniques were used to explore combinations of these different variables and characteristics that yield optimum design scenarios, considering energy consumption, occupant comfort and energy cost.

The results of this research address the architecture and construction research community's need to develop methods and facade design guidelines that reduce the energy consumption and energy cost and increase the occupant comfort impacts simultaneously.

For this purpose, the methodology that is used in this research can be followed to develop design guidelines. More than its results, the significance of this research is in

the methodology that is applied for coupling simulation and optimization phases and find optimum scenarios. For collecting more data and feedback from the professional users, the developed framework and MVP will be released to the public as an open-source platform.

It is important to note that the inputs can be all design variables with regards to their significance in design decision-making and impacts on environmental performance or occupants' comfort. In real-life situations, however, architects may assign more weight to some design inputs or environmental impacts because of design priorities, or in order to overcome the conflicting effects of inputs or impacts, so future methodologies and tools should follow this research capability to assign weight to factors in their decision-making support process.

A future direction of the research could be to develop a software tool that can help conduct the entire process (simulation and optimization) within one tool. Such tools need to include all design variables and construction inputs beyond what is studied in this research. Different variables, such as building systems and other components of the building, could be incorporated into the decision-making process.

6.2 Benefits of the Developed Data-Driven Framework

The basic characteristics that differentiate the developed framework and improve decision-making process can be summarized as:

- Automation and Speed: The framework enables users to automatically send the design scenarios to a simulator and gather the outputs, and then screen out and sort these outputs to find optimized results. The advantages of this automated

process are efficient testing methodology, consistency, reliability and increase in the number of possible design scenarios. Also, by implementing this framework, simulation time will be decreased for thousands of design scenarios.

- Variety of variables (multi-objective variables): This framework enables users to test multiple variables at the same time during the design process.
- Modularity: The framework is designed in multiple modules, which work independently. The key benefits of modularity in this framework are distinct functionality and manageability. Each module provides a distinct function and can be combined to provide an entirely new collective function. The separate modules make it easier to test and implement this framework in design process or detect the errors.

- Usability: The ease of use and learnability of this framework for new users is other important benefit of this framework by adding the front end to this framework.

6.3 Future Work

The PerforPy framework was developed based on open-source applications. It is available to the public and can be improved by users or developers. Based on the completed research, the following items were identified as potential improvements and would benefit further development:

1. Expand the variables and develop the user interface: Future work for this research could focus on application for various facade designs in different climates and developing the user interface. In addition to developing the user

interface and web application, the aim is to develop a method where any input IDF files can be used, and to enable users to choose their variables for optimization. The rest of the process will be automated, and results will be represented.

2. AI and Deep Learning implementation: Other important development for this research, after releasing the open source application, is collecting the data to implement deep learning techniques utilizing outputs form different iterations to enable the correlation matrix to generate automatically.
3. Expand the scope of this study: Future research can also expand the scope of this study and examine more design characteristics or other building components and systems that can impact the energy consumption and occupant comfort in the building.
4. Developing the Life Cycle Analysis: Significant research has been conducted in this dissertation on the impact of building facade design on energy performance of buildings and occupants' comfort. However, more research is needed to address Life Cycle Analysis (LCA) assessments. Future research could use other simulation tools and combine LCA software programs, such as SimaPro, GaBi and openLCA, to cross-examine the results of the present research in the context of other geographical locations and environmental data. Indeed, different locations have different climates, which would affect energy performance of buildings, energy cost and occupants' comfort. Different locations also incorporate different manufacturing practices, electricity generation and distribution,

transportation and logistics systems, and consuming patterns, which all would affect the environmental life-cycle impacts of buildings.

5. Interface update: As it is mentioned before, there is a need for improving PerforPy interface and adding new features to better serve users' needs in the process of performance optimization. Future research should also focus on development of user-friendly software and tools that can work as plug-ins for modeling simulation tools to optimize energy, comfort and life cycle and environmental impacts of design.
6. Visualizing the optimization results: Future work should also aim to improve visualization of results within the platform to help users navigate through the results quickly and make design decisions in a single design platform.
7. Exploring more real projects and test cases: Future goal is also to test the usefulness of the framework with larger projects and wider ranges of variables within design studio classes and in the industry.

APPENDIX A

SCRIPTS

(These are samples to illustrate the scripts)

```
#!/usr/bin/env python
import itertools
import MySQLdb



WWR = ['20%','40%','60%']
Wall_Assembly = ['Steel-Framed', 'Wood-Framed' ]

Wall_Cladding  = ['AL', 'Zinc', 'SS', 'TR', 'BR', 'ST', 'CM']

Insulation = [
    '2x6 wood @16 +3 XPS Styrofoam',
    '2x6 wood @16 +4 XPS Styrofoam',
    '2x6 wood @16 +1 Aerogel',
    '2x6 wood @24 +3 XPS Styrofoam',
    '2x6 wood @24 +4 XPS Styrofoam',
    '2x6 wood @24 +1 Aerogel',
    '2x6 metal @16 +3 XPS Styrofoam',
    '2x6 metal @16 +4 XPS Styrofoam',
    '2x6 metal @16 +1 Aerogel',
    '2x6 metal @24 +3 XPS Styrofoam',
    '2x6 metal @24 +4 XPS Styrofoam',
    '2x6 metal @24 +1 Aerogel'
]

Glazing_System  = [
    'Sgl-Clr-Alum',
    'Sgl-Clr-AlumTB',
    'Sgl-Clr-W/F',
    'Dbl-Clr-Air-Alum',
    'Dbl-Clr-Air-AlumTB',
    'Dbl-Clr-Air-W/F',

    'Dbl-Clr-LowE-Air-Alum',
    'Dbl-Clr-LowE-Air-AlumTB',
    'Dbl-Clr-LowE-Air-W/F',

    'Dbl-Clr-LowE-Argon-Alum',
    'Dbl-Clr-LowE-Argon-AlumTB',
    'Dbl-Clr-LowE-Argon-W/F',

    'Trip-LowE-Argon-Alum',
    'Trip-LowE-Argon-AlumTB',
    'Trip-LowE-Argon-W/F',

    'Dbl-Clr-HiSHGC-LowE-Air-Alum',
    'Dbl-Clr-HiSHGC-LowE-Air-AlumTB',
    'Dbl-Clr-HiSHGC-LowE-Air-W/F',

    'Trip-Clr-HiSHGC-LowE-Argon-Alum',
    'Trip-Clr-HiSHGC-LowE-Argon-AlumTB',
    'Trip-Clr-HiSHGC-LowE-Argon-W/F'
]

Solar_Control = [
    'No Shading',
    'Alum-H-45',
    'Alum-H-90',
    'Alum-V-45',
    'Alum-V-90'
]
```

```
db = MySQLdb.connect(host="127.0.0.1",
    user="mahsa",
    passwd="1234r",
    db="mahsa")

cur = db.cursor()



def generateAll():
    res = [','.join(x) for x in itertools.product(WWR, Wall_Cladding, Wall_Assembly, Insulation,
    Glazing_System, Solar_Control)]
    print (len(res), " scenario generated !!! :D")
    return res


#-------------------------------------------------------------------------------

def saveAll(res):
    cur.execute("TRUNCATE TABLE `allSce`")
    db.commit()

    for x in res:
        scenario = x.split(',')
        lastRes = cur.execute("insert into allSce (WWR, Wall_Cladding, Wall_Assembly, Insulation,
        Glazing_System, Solar_Control) \
            VALUES('" + scenario[0]  +  "' , '" + scenario[1] + "' , '" + scenario[2] + "' , '" +
            scenario[3] + "' , '" + scenario[4] + "' , '" + scenario[5] + "' \
             )")

        print(scenario)
    db.commit();

#-------------------------------------------------------------------------------

def clearDatabase():
    # res = cur.execute("delete FROM `allSce` WHERE WWR = '80%' and (Wall_Assembly =
    'Wood-Framed' or Wall_Assembly = 'ICF')")
    res = cur.execute("delete FROM `allSce` WHERE Insulation  LIKE '%wood%' and (Wall_Assembly =
    'Steel-Framed')")
    print (res, 'Rows deleted')

    res = cur.execute("delete FROM `allSce` WHERE Insulation  LIKE '%Metal%' and (Wall_Assembly =
    'Wood-Framed')")
    print (res, 'Rows deleted')

    db.commit();

#-------------------------------------------------------------------------------

res = generateAll()
saveAll(res)
clearDatabase()



#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------

```

```
#!/usr/bin/env python
import MySQLdb
import os



def initMaxMin():
    for x in range(16):
        r = os.system("python bil2Init.py " + str(x))
        print r


r = os.system("python bil2Init.py " + str(16))

# initMaxMin()
```

```
#!/usr/bin/env python

import sys
from eppy.modeleditor import IDF
from shutil import copyfile
import os
import MySQLdb
from eppy.results import readhtml
import pprint

iddfile = ""
idfname = ""
epwfile = ""
idf = ""
db = ""
cur = ""


def initEPPY():
    global iddfile
    global idfname
    global epwfile
    global idf



    # iddfile = "/usr/local/EnergyPlus-8-5-0/Energy+.idd"
    iddfile = "/usr/local/EnergyPlus-8-5-0/PreProcess/IDFVersionUpdater/V8-5-0-Energy+.idd"
    IDF.setiddname(iddfile)

    idfname = "TestCell.idf"
    epwfile = "USA_GA_Atlanta.722190_TMY2.epw"
    idf = IDF(idfname, epwfile)

#------------------------------------------------------------------------------
def initdb():
    global db
    global cur

    # db = MySQLdb.connect(host="127.0.0.1",
    # user="mahsa",
    # passwd="mahsadbpass001",
    # db="mahsa")

    db = MySQLdb.connect(host="127.0.0.1",
    user="mahsa",
    passwd="1234r",
    db="mahsa")

    # cur = db.cursor(MySQLdb.cursors.DictCursor)
    cur = db.cursor()


#------------------------------------------------------------------------------
def checkBuilding():
    building = idf.idfobjects['Material'.upper()][0]
    # for fieldname in building.fieldnames:
        # print "%s = %s" % (fieldname, building[fieldname])
    print (building['Thickness'])


#------------------------------------------------------------------------------
def copyf():
    copyfile("TestCell-10.idf", "TestCell.idf")
    #
```

```
    copyfile("/run/user/1000/gvfs/smb-share:server=192.168.1.201,share=auto/Mahsa/TestCell-5.idf",
    "TestCell.idf")

#-------------------------------------------------------------------------------
def delFile():
    os.remove("TestCell.idf")
#-------------------------------------------------------------------------------
def updateData(alldata):
    print alldata
    #----------------------------------------- Window
    window = idf.idfobjects['window'.upper()][0]

    # print window['Length']
    # print window['Height']

    length = 9
    height = {'20%' : 0.6, '40%' : 1.2, '60%' : 1.8, '80%' : 2.45, '90%' : 2.75}
    print window

    window['Length'] = length
    print (alldata)
    window['Height'] = height[alldata[1]]

    #----------------------------------------- Material
    Construction = idf.idfobjects['Construction'.upper()][9]

    Construction['Outside_Layer'] = alldata[2]
    Construction['Layer_3'] = 'Conc 30mm'

    print (Construction)

    #----------------------------------------- Glazing_System
    # windowMaterial = idf.idfobjects['WindowMaterial:SimpleGlazingSystem'.upper()][0]
    windowMaterial = idf.idfobjects['Construction'.upper()][8]


    GlazingSystem = {
        'Sgl-Clr-Alum' : '1A',
        'Sgl-Clr-AlumTB' : '1B',
        'Sgl-Clr-W/F' : '1C',
        'Dbl-Clr-Air-Alum' : '2A',
        'Dbl-Clr-Air-AlumTB' : '2B',
        'Dbl-Clr-Air-W/F' : '2C',

        'Dbl-Clr-LowE-Air-Alum' : '3A',
        'Dbl-Clr-LowE-Air-AlumTB' : '3B',
        'Dbl-Clr-LowE-Air-W/F' : '3C',

        'Dbl-Clr-LowE-Argon-Alum' : '4A',
        'Dbl-Clr-LowE-Argon-AlumTB' : '4B',
        'Dbl-Clr-LowE-Argon-W/F' : '4C',

        'Trip-LowE-Argon-Alum' : '5A',
        'Trip-LowE-Argon-AlumTB' : '5B',
        'Trip-LowE-Argon-W/F' : '5C',

        'Dbl-Clr-HiSHGC-LowE-Air-Alum' : '6A',
        'Dbl-Clr-HiSHGC-LowE-Air-AlumTB' : '6B',
        'Dbl-Clr-HiSHGC-LowE-Air-W/F' : '6C',

        'Trip-Clr-HiSHGC-LowE-Argon-Alum' : '7A',
        'Trip-Clr-HiSHGC-LowE-Argon-AlumTB' : '7B',
        'Trip-Clr-HiSHGC-LowE-Argon-W/F' : '7C'
    }
```

```
    windowMaterial['Outside_Layer'] = GlazingSystem[alldata[5]]

    windowMaterial = idf.idfobjects['Construction'.upper()][10]
    windowMaterial['Layer_2'] = GlazingSystem[alldata[5]]


    print(windowMaterial)


    #-------------------------------------------------------------------------------- Solar Control
    if (alldata[6] != 'No Shading'):
        windowMaterial = idf.idfobjects['Construction'.upper()][10]

        solar = {
            'Alum-H-45' : 'Ext. Blind-H-45',
            'Alum-H-90' : 'Ext. Blind-H-90',
            'Alum-V-45' : 'Ext. Blind-V-45',
            'Alum-V-90' : 'Ext. Blind-V-90'
        }


        windowMaterial['Outside_Layer'] = solar[alldata[6]]
        print(windowMaterial)

    #-------------------------------------------------------------------------------- Insulation
    windowMaterial = idf.idfobjects['Construction'.upper()][9]
    Insulation = {
        '2x6 wood @16 +3 XPS Styrofoam' : 'Insulation W16/Batt+3"xps',
        '2x6 wood @16 +4 XPS Styrofoam' : 'Insulation W16/Batt+4"xps',
        '2x6 wood @16 +1 Aerogel' : 'Insulation W16/Batt+1"aerogel',
        '2x6 wood @24 +3 XPS Styrofoam' : 'Insulation W24/Batt+3"xps',
        '2x6 wood @24 +4 XPS Styrofoam' : 'Insulation W24/Batt+4"xps',
        '2x6 wood @24 +1 Aerogel' : 'Insulation W24/Batt+1"aerogel',
        '2x6 metal @16 +3 XPS Styrofoam' : 'Insulation M16/Batt+3"xps',
        '2x6 metal @16 +4 XPS Styrofoam' : 'Insulation M16/Batt+4"xps',
        '2x6 metal @16 +1 Aerogel' : 'Insulation M16/Batt+1"aerogel',
        '2x6 metal @24 +3 XPS Styrofoam' : 'Insulation M24/Batt+3"xps',
        '2x6 metal @24 +4 XPS Styrofoam' : 'Insulation M24/Batt+4"xps',
        '2x6 metal @24 +1 Aerogel' : 'Insulation M24/Batt+1"aerogel'
    }

    windowMaterial['Layer_2'] = Insulation[alldata[4]]


    if (alldata[6] == 'No Shading'):
        windowMaterial = idf.idfobjects['FenestrationSurface:Detailed'.upper()][0]

        windowMaterial['Shading_Control_Name'] = ''

    # idf.save()



#-------------------------------------------------------------------------------
def runEP():
    idf.run()

#-------------------------------------------------------------------------------
def getAllData():
    res = cur.execute("select ID, WWR, Wall_Cladding, Wall_Assembly, Insulation, Glazing_System,
    Solar_Control from\
    allSce where isDone = 0 and ID mod 200 = 0 and ID > 90000")

    res = cur.fetchall()
```

```
    for x in res:
        delFile()
        copyf()
        updateData(x)
        # break;
        runEP()
        saveData(x[0])
        # break;

    print ("Done")
#-------------------------------------------------------------------------------
def saveData(ID):
    fname = "eplustbl.htm"
    filehandle = open(fname, 'r').read()
    htables = readhtml.titletable(filehandle)

    rData = []
    rData.append(readData(htables,-9,1,1))
    rData.append(readData(htables,-9,2,1))
    rData.append(readData(htables,-9,3,1))
    rData.append(readData(htables,-9,1,2))
    rData.append(readData(htables,-9,16,1))

    rData.append(readData(htables,5,2,1))
    rData.append(readData(htables,5,3,1))
    rData.append(readData(htables,5,4,1))
    rData.append(readData(htables,5,17,1))
    rData.append(readData(htables,5,17,2))

    rData.append(readData(htables,12,1,2))
    rData.append(readData(htables,12,1,3))
    rData.append(readData(htables,12,1,4))

    rData.append(readData(htables,13,1,7))
    rData.append(readData(htables,13,1,8))
    rData.append(readData(htables,13,1,9))

    rData.append(readData(htables,18,1,4))

    rData.append(readData(htables,43,1,1))
    rData.append(readData(htables,43,2,1))
    rData.append(readData(htables,43,4,1))
    rData.append(readData(htables,43,9,1))
    rData.append(readData(htables,43,27,1))

    rData.append(readData(htables,44,3,1))

    rData.append(readData(htables,67,1,2))
    rData.append(readData(htables,67,2,2))
    rData.append(readData(htables,67,3,2))

    rData.append(readData(htables,68,1,2))
    rData.append(readData(htables,68,2,2))
    rData.append(readData(htables,68,4,2))

    rData.append(readData(htables,70,1,1))
    rData.append(readData(htables,70,3,1))
    rData.append(readData(htables,70,8,1))

    rData.append(readData(htables,71,4,1))

    rData.append(readData(htables,101,14,1))
    rData.append(readData(htables,101,14,4))

    rData.append(readData(htables,104,14,4))
```

```
    rData.append(readData(htables,104,14,5))

    rData.append(readData(htables,109,14,5))
    rData.append(readData(htables,109,14,6))

    print(len(rData))
    print (rData)

    savetoDB(ID, rData)
#--------------------------------------------------------------------------------
def readData(htables, tableNum, rowNum, columnNum):
    initTabel = 11 + 1

    firstitem = htables[tableNum + initTabel] # table Number
    firstitem_table = firstitem[1] #
    x = firstitem_table[rowNum] # row
    # print (x[columnNum])

    return x[columnNum]

#--------------------------------------------------------------------------------
def savetoDB(ID, rData):
    print rData

    x = 'replace into output (seeID, timeStamp, Enduse_Heating_Elec ,Enduse_Cooling_Elec
    ,Enduse_IntLighting_Elec ,Enduse_Heating_Natural_Gas ,Total_Enduse\
     ,Demand_Enduse_Heating_Elec ,Demand_Enduse_Cooling_Elec ,Demand_Enduse_Lighting_Elec
     ,Demand_Enduse_Tot_Elec ,Demand_Enduse_Tot_Gas\
     ,Envelope_Opaque_Reflectance ,Envelope_Opaque_Ufactor_w_film
     ,Envelope_Opaque_Ufactor_w_ofilm ,ExtWin_Glass_Ufactor ,ExtWin_Glass_SHGC\
     ,ExtWin_Glass_VT ,IntLighting_TotPower ,Energymeter_Annual_Elec_Facil
     ,Energymeter_Annual_Elec_Bldg ,Energymeter_Annual_Elec_IntLight\
     ,Energymeter_Annual_Elec_IntEquipment ,Energymeter_Annual_Elec_Cooling
     ,Energymeter_Annual_Gas_Heating ,Enduse_Total_Elec\
     ,Enduse_Total_Gas ,Enduse_Total ,EnergyCost_Elec_Total ,EnergyCost_Gas_Total
     ,EnergyCost_Total ,EUI_Elec_IntLight ,EUI_Elec_Cooling\
     ,EUI_Elec_Total ,EUI_Gas_Total ,ZoneElec_Monthly_Lights_Avg ,ZoneElec_Monthly_Equipment_Avg
     ,OccupantComfort_Thermal_PMV_Avg\
     ,OccupantComfort_Thermal_PPD_Avg, Daylight_Illuminance, Daylight_Glare) VALUES("\
    ' + str(ID) + '", now(), \
    "' + str(rData[0]) + '",\
    "' + str(rData[1]) + '",\
    "' + str(rData[2]) + '",\
    "' + str(rData[3]) + '",\
    "' + str(rData[4]) + '",\
    "' + str(rData[5]) + '",\
    "' + str(rData[6]) + '",\
    "' + str(rData[7]) + '",\
    "' + str(rData[8]) + '",\
    "' + str(rData[9]) + '",\
    "' + str(rData[10]) + '",\
    "' + str(rData[11]) + '",\
    "' + str(rData[12]) + '",\
    "' + str(rData[13]) + '",\
    "' + str(rData[14]) + '",\
    "' + str(rData[15]) + '",\
    "' + str(rData[16]) + '",\
    "' + str(rData[17]) + '",\
    "' + str(rData[18]) + '",\
    "' + str(rData[19]) + '",\
    "' + str(rData[20]) + '",\
    "' + str(rData[21]) + '",\
    "' + str(rData[22]) + '",\
    "' + str(rData[23]) + '",\
    "' + str(rData[24]) + '",\
```

```
    "' + str(rData[25]) + '",\
    "' + str(rData[26]) + '",\
    "' + str(rData[27]) + '",\
    "' + str(rData[28]) + '",\
    "' + str(rData[29]) + '",\
    "' + str(rData[30]) + '",\
    "' + str(rData[31]) + '",\
    "' + str(rData[32]) + '",\
    "' + str(rData[33]) + '",\
    "' + str(rData[34]) + '",\
    "' + str(rData[35]) + '",\
    "' + str(rData[36]) + '",\
    "' + str(rData[37]) + '",\
    "' + str(rData[38]) + '")'


    print x
    for z in rData:
        print z
    res = cur.execute(x)

    res = cur.execute('update allSce set isDone = 1 where ID = "' + str(ID) + '"' )

    # res = cur.execute('update initMaxMin set resWindowsRM ="' + str(rData[0]) + '",
    resComponentCES ="' + str(rData[1]) + '",resOccupantCDS ="'\
    # + str(rData[2]) + '", resZoneESM ="' + str(rData[3]) + '", resZoneHSM ="' + str(rData[4]) +
    '", resZoneCSM ="' + str(rData[5]) +\
    # '", resDaylightingRM ="' + str(rData[6]) + '" where ID ="' + str(ID) + '"')

    db.commit();
#-------------------------------------------------------------------------------
def getOne(id):
    res = cur.execute('select ID, WWR, Wall_Cladding, Wall_Assembly, Insulation, Glazing_System,
    Solar_Control from\
    allSce where ID = "' + str(id) + '"')

    res = cur.fetchall()

    for x in res:
        delFile()
        copyf()
        updateData(x)
        # break;
        runEP()
        saveData(x[0])
        # break;

    print ("Done")

#-------------------------------------------------------------------------------


id = sys.argv[1]

copyf()
initEPPY()
initdb()
# getAllData()
getOne(id)



#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
```

```
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------

```

```
#!/usr/bin/env python

import sys
from eppy.modeleditor import IDF
from shutil import copyfile
import os
import MySQLdb
from eppy.results import readhtml
import pprint

iddfile = ""
idfname = ""
epwfile = ""
idf = ""
db = ""
cur = ""


def initEPPY():
    global iddfile
    global idfname
    global epwfile
    global idf



    # iddfile = "/usr/local/EnergyPlus-8-5-0/Energy+.idd"
    iddfile = "/usr/local/EnergyPlus-8-5-0/PreProcess/IDFVersionUpdater/V8-5-0-Energy+.idd"
    IDF.setiddname(iddfile)

    idfname = "TestCell.idf"
    epwfile = "USA_GA_Atlanta.722190_TMY2.epw"
    idf = IDF(idfname, epwfile)

#-------------------------------------------------------------------------------
def initdb():
    global db
    global cur

    # db = MySQLdb.connect(host="127.0.0.1",
    # user="mahsa",
    # passwd="mahsadbpass001",
    # db="mahsa")

    db = MySQLdb.connect(host="127.0.0.1",
    user="mahsa",
    passwd="1234r",
    db="mahsa")

    # cur = db.cursor(MySQLdb.cursors.DictCursor)
    cur = db.cursor()


#-------------------------------------------------------------------------------
def checkBuilding():
    building = idf.idfobjects['Material'.upper()][0]
    # for fieldname in building.fieldnames:
        # print "%s = %s" % (fieldname, building[fieldname])
    print (building['Thickness'])


#-------------------------------------------------------------------------------
def copyf():
    copyfile("TestCell-10.idf", "TestCell.idf")
    #
```

```
    copyfile("/run/user/1000/gvfs/smb-share:server=192.168.1.201,share=auto/Mahsa/TestCell-5.idf",
    "TestCell.idf")

#-------------------------------------------------------------------------------
def delFile():
    os.remove("TestCell.idf")
#-------------------------------------------------------------------------------
def updateData(alldata):
    print alldata
    #----------------------------------------- Window
    window = idf.idfobjects['window'.upper()][0]

    # print window['Length']
    # print window['Height']

    length = 9
    height = {'20%' : 0.6, '40%' : 1.2, '60%' : 1.8, '80%' : 2.45, '90%' : 2.75}
    print window

    window['Length'] = length
    print (alldata)
    window['Height'] = height[alldata[1]]

    #----------------------------------------- Material
    Construction = idf.idfobjects['Construction'.upper()][9]

    Construction['Outside_Layer'] = alldata[2]
    Construction['Layer_3'] = 'Conc 30mm'

    print (Construction)

    #----------------------------------------- Glazing_System
    # windowMaterial = idf.idfobjects['WindowMaterial:SimpleGlazingSystem'.upper()][0]
    windowMaterial = idf.idfobjects['Construction'.upper()][8]


    GlazingSystem = {
        'Sgl-Clr-Alum' : '1A',
        'Sgl-Clr-AlumTB' : '1B',
        'Sgl-Clr-W/F' : '1C',
        'Dbl-Clr-Air-Alum' : '2A',
        'Dbl-Clr-Air-AlumTB' : '2B',
        'Dbl-Clr-Air-W/F' : '2C',

        'Dbl-Clr-LowE-Air-Alum' : '3A',
        'Dbl-Clr-LowE-Air-AlumTB' : '3B',
        'Dbl-Clr-LowE-Air-W/F' : '3C',

        'Dbl-Clr-LowE-Argon-Alum' : '4A',
        'Dbl-Clr-LowE-Argon-AlumTB' : '4B',
        'Dbl-Clr-LowE-Argon-W/F' : '4C',

        'Trip-LowE-Argon-Alum' : '5A',
        'Trip-LowE-Argon-AlumTB' : '5B',
        'Trip-LowE-Argon-W/F' : '5C',

        'Dbl-Clr-HiSHGC-LowE-Air-Alum' : '6A',
        'Dbl-Clr-HiSHGC-LowE-Air-AlumTB' : '6B',
        'Dbl-Clr-HiSHGC-LowE-Air-W/F' : '6C',

        'Trip-Clr-HiSHGC-LowE-Argon-Alum' : '7A',
        'Trip-Clr-HiSHGC-LowE-Argon-AlumTB' : '7B',
        'Trip-Clr-HiSHGC-LowE-Argon-W/F' : '7C'
    }
```

```
    windowMaterial['Outside_Layer'] = GlazingSystem[alldata[5]]

    windowMaterial = idf.idfobjects['Construction'.upper()][10]
    windowMaterial['Layer_2'] = GlazingSystem[alldata[5]]


    print(windowMaterial)


    #-------------------------------------------------------------------------------- Solar Control
    if (alldata[6] != 'No Shading'):
        windowMaterial = idf.idfobjects['Construction'.upper()][10]

        solar = {
            'Alum-H-45' : 'Ext. Blind-H-45',
            'Alum-H-90' : 'Ext. Blind-H-90',
            'Alum-V-45' : 'Ext. Blind-V-45',
            'Alum-V-90' : 'Ext. Blind-V-90'
        }


        windowMaterial['Outside_Layer'] = solar[alldata[6]]
        print(windowMaterial)

    #-------------------------------------------------------------------------------- Insulation
    windowMaterial = idf.idfobjects['Construction'.upper()][9]
    Insulation = {
        '2x6 wood @16 +3 XPS Styrofoam' : 'Insulation W16/Batt+3"xps',
        '2x6 wood @16 +4 XPS Styrofoam' : 'Insulation W16/Batt+4"xps',
        '2x6 wood @16 +1 Aerogel' : 'Insulation W16/Batt+1"aerogel',
        '2x6 wood @24 +3 XPS Styrofoam' : 'Insulation W24/Batt+3"xps',
        '2x6 wood @24 +4 XPS Styrofoam' : 'Insulation W24/Batt+4"xps',
        '2x6 wood @24 +1 Aerogel' : 'Insulation W24/Batt+1"aerogel',
        '2x6 metal @16 +3 XPS Styrofoam' : 'Insulation M16/Batt+3"xps',
        '2x6 metal @16 +4 XPS Styrofoam' : 'Insulation M16/Batt+4"xps',
        '2x6 metal @16 +1 Aerogel' : 'Insulation M16/Batt+1"aerogel',
        '2x6 metal @24 +3 XPS Styrofoam' : 'Insulation M24/Batt+3"xps',
        '2x6 metal @24 +4 XPS Styrofoam' : 'Insulation M24/Batt+4"xps',
        '2x6 metal @24 +1 Aerogel' : 'Insulation M24/Batt+1"aerogel'
    }

    windowMaterial['Layer_2'] = Insulation[alldata[4]]


    if (alldata[6] == 'No Shading'):
        windowMaterial = idf.idfobjects['FenestrationSurface:Detailed'.upper()][0]

        windowMaterial['Shading_Control_Name'] = ''

    # idf.save()



#-------------------------------------------------------------------------------
def runEP():
    idf.run()

#-------------------------------------------------------------------------------
def getAllData():
    res = cur.execute("select ID, WWR, Wall_Cladding, Wall_Assembly, Insulation, Glazing_System,
    Solar_Control from\
    initMaxMin where isDone = 0 and ID mod 200 = 0 and ID > 90000")

    res = cur.fetchall()
```

```
    for x in res:
        delFile()
        copyf()
        updateData(x)
        # break;
        runEP()
        saveData(x[0])
        # break;

    print ("Done")
#-------------------------------------------------------------------------------
def saveData(ID):
    fname = "eplustbl.htm"
    filehandle = open(fname, 'r').read()
    htables = readhtml.titletable(filehandle)

    rData = []
    rData.append(readData(htables,-9,1,1))
    rData.append(readData(htables,-9,2,1))
    rData.append(readData(htables,-9,3,1))
    rData.append(readData(htables,-9,1,2))
    rData.append(readData(htables,-9,16,1))

    rData.append(readData(htables,5,2,1))
    rData.append(readData(htables,5,3,1))
    rData.append(readData(htables,5,4,1))
    rData.append(readData(htables,5,17,1))
    rData.append(readData(htables,5,17,2))

    rData.append(readData(htables,12,1,2))
    rData.append(readData(htables,12,1,3))
    rData.append(readData(htables,12,1,4))

    rData.append(readData(htables,13,1,7))
    rData.append(readData(htables,13,1,8))
    rData.append(readData(htables,13,1,9))

    rData.append(readData(htables,18,1,4))

    rData.append(readData(htables,43,1,1))
    rData.append(readData(htables,43,2,1))
    rData.append(readData(htables,43,4,1))
    rData.append(readData(htables,43,9,1))
    rData.append(readData(htables,43,27,1))

    rData.append(readData(htables,44,3,1))

    rData.append(readData(htables,67,1,2))
    rData.append(readData(htables,67,2,2))
    rData.append(readData(htables,67,3,2))

    rData.append(readData(htables,68,1,2))
    rData.append(readData(htables,68,2,2))
    rData.append(readData(htables,68,4,2))

    rData.append(readData(htables,70,1,1))
    rData.append(readData(htables,70,3,1))
    rData.append(readData(htables,70,8,1))

    rData.append(readData(htables,71,4,1))

    rData.append(readData(htables,101,14,1))
    rData.append(readData(htables,101,14,4))

    rData.append(readData(htables,104,14,4))
```

```
    rData.append(readData(htables,104,14,5))

    rData.append(readData(htables,109,14,5))
    rData.append(readData(htables,109,14,6))

    print(len(rData))
    print (rData)

    savetoDB(ID, rData)
#-------------------------------------------------------------------------------
def readData(htables, tableNum, rowNum, columnNum):
    initTabel = 11 + 1

    firstitem = htables[tableNum + initTabel] # table Number
    firstitem_table = firstitem[1] #
    x = firstitem_table[rowNum] # row
    # print (x[columnNum])

    return x[columnNum]

#-------------------------------------------------------------------------------
def savetoDB(ID, rData):
    print rData

    res = cur.execute('select name from initMaxMin where ID = "' + str(ID) + '"' )
    res = cur.fetchone()



    x = 'replace into outputInit (seeID, timeStamp, name, Enduse_Heating_Elec
    ,Enduse_Cooling_Elec ,Enduse_IntLighting_Elec ,Enduse_Heating_Natural_Gas ,Total_Enduse\
     ,Demand_Enduse_Heating_Elec ,Demand_Enduse_Cooling_Elec ,Demand_Enduse_Lighting_Elec
     ,Demand_Enduse_Tot_Elec ,Demand_Enduse_Tot_Gas\
     ,Envelope_Opaque_Reflectance ,Envelope_Opaque_Ufactor_w_film
     ,Envelope_Opaque_Ufactor_w_ofilm ,ExtWin_Glass_Ufactor ,ExtWin_Glass_SHGC\
     ,ExtWin_Glass_VT ,IntLighting_TotPower ,Energymeter_Annual_Elec_Facil
     ,Energymeter_Annual_Elec_Bldg ,Energymeter_Annual_Elec_IntLight\
     ,Energymeter_Annual_Elec_IntEquipment ,Energymeter_Annual_Elec_Cooling
     ,Energymeter_Annual_Gas_Heating ,Enduse_Total_Elec\
     ,Enduse_Total_Gas ,Enduse_Total ,EnergyCost_Elec_Total ,EnergyCost_Gas_Total
     ,EnergyCost_Total ,EUI_Elec_IntLight ,EUI_Elec_Cooling\
     ,EUI_Elec_Total ,EUI_Gas_Total ,ZoneElec_Monthly_Lights_Avg ,ZoneElec_Monthly_Equipment_Avg
     ,OccupantComfort_Thermal_PMV_Avg\
     ,OccupantComfort_Thermal_PPD_Avg, Daylight_Illuminance, Daylight_Glare) VALUES("\
    ' + str(ID) + '", now(), \
    "' + str(res[0]) + '",\
    "' + str(rData[0]) + '",\
    "' + str(rData[1]) + '",\
    "' + str(rData[2]) + '",\
    "' + str(rData[3]) + '",\
    "' + str(rData[4]) + '",\
    "' + str(rData[5]) + '",\
    "' + str(rData[6]) + '",\
    "' + str(rData[7]) + '",\
    "' + str(rData[8]) + '",\
    "' + str(rData[9]) + '",\
    "' + str(rData[10]) + '",\
    "' + str(rData[11]) + '",\
    "' + str(rData[12]) + '",\
    "' + str(rData[13]) + '",\
    "' + str(rData[14]) + '",\
    "' + str(rData[15]) + '",\
    "' + str(rData[16]) + '",\
    "' + str(rData[17]) + '",\
    "' + str(rData[18]) + '",\
```

```
    "' + str(rData[19]) + '",\
    "' + str(rData[20]) + '",\
    "' + str(rData[21]) + '",\
    "' + str(rData[22]) + '",\
    "' + str(rData[23]) + '",\
    "' + str(rData[24]) + '",\
    "' + str(rData[25]) + '",\
    "' + str(rData[26]) + '",\
    "' + str(rData[27]) + '",\
    "' + str(rData[28]) + '",\
    "' + str(rData[29]) + '",\
    "' + str(rData[30]) + '",\
    "' + str(rData[31]) + '",\
    "' + str(rData[32]) + '",\
    "' + str(rData[33]) + '",\
    "' + str(rData[34]) + '",\
    "' + str(rData[35]) + '",\
    "' + str(rData[36]) + '",\
    "' + str(rData[37]) + '",\
    "' + str(rData[38]) + '")'

    print x
    for z in rData:
        print z

    res = cur.execute(x)


    res = cur.execute('update initMaxMin set isDone = 1 where ID = "' + str(ID) + '"' )

    # res = cur.execute('update outputInit set resWindowsRM ="' + str(rData[0]) + '",
    resComponentCES ="' + str(rData[1]) + '",resOccupantCDS ="'\
    # + str(rData[2]) + '", resZoneESM ="' + str(rData[3]) + '", resZoneHSM ="' + str(rData[4]) +
    '", resZoneCSM ="' + str(rData[5]) +\
    # '", resDaylightingRM ="' + str(rData[6]) + '" where ID ="' + str(ID) + '"')

    db.commit();
#-------------------------------------------------------------------------------
def getOne(id):
    res = cur.execute('select ID, WWR, Wall_Cladding, Wall_Assembly, Insulation, Glazing_System,
    Solar_Control from\
    initMaxMin where ID = "' + str(id) + '"')

    res = cur.fetchall()

    for x in res:
        delFile()
        copyf()
        updateData(x)
        # break;
        runEP()
        saveData(x[0])
        # break;

    print ("Done")

#-------------------------------------------------------------------------------


id = sys.argv[1]

copyf()
initEPPY()
initdb()
# getAllData()
```

```
getOne(id)


#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------

```

```
#!/usr/bin/env python

import sys
from shutil import copyfile
import os
import MySQLdb
import pprint


#--------------------------------------------------------------------------------

def initdb():
    global db
    global cur

    db = MySQLdb.connect(host="127.0.0.1",
    user="mahsa",
    passwd="1234r",
    db="mahsa")

    cur = db.cursor(MySQLdb.cursors.DictCursor)
#--------------------------------------------------------------------------------

def calcConsumption(senID):
    cur.execute('SELECT ID, EUI_Elec_IntLight, EUI_Elec_Cooling, EUI_Gas_Total FROM `output`
    where seeID = "' + str(senID) + '"')
    res = cur.fetchall()

    print res, senID
    point = 0
    for scenario in res:

        x = float(scenario['EUI_Elec_IntLight'])

        minMax = cur.execute('select min(EUI_Elec_IntLight), max(EUI_Elec_IntLight),
        avg(EUI_Elec_IntLight) from outputInit WHERE name = "EUI_Elec_IntLight"')
        minMax = cur.fetchone()

        d = float(minMax['max(EUI_Elec_IntLight)']) - float(minMax['min(EUI_Elec_IntLight)'])
        d = d / 10
        point = point + (10 - ((x - float(minMax['min(EUI_Elec_IntLight)'])) / d ))
        print(point,minMax,d, x,   "-----------------")


        x = float(scenario['EUI_Elec_Cooling'])

        minMax = cur.execute('select min(EUI_Elec_Cooling), max(EUI_Elec_Cooling),
        avg(EUI_Elec_Cooling) from outputInit WHERE name = "EUI_Elec_Cooling"')
        minMax = cur.fetchone()

        d = float(minMax['max(EUI_Elec_Cooling)']) - float(minMax['min(EUI_Elec_Cooling)'])
        d = d / 10
        point = point + (10 - ((x - float(minMax['min(EUI_Elec_Cooling)'])) / d ))
        print(point,  "-----------------")


        x = float(scenario['EUI_Gas_Total'])

        minMax = cur.execute('select min(EUI_Gas_Total), max(EUI_Gas_Total), avg(EUI_Gas_Total)
        from outputInit WHERE name = "EUI_Gas_Heating"')
        minMax = cur.fetchone()


        d = float(minMax['max(EUI_Gas_Total)']) - float(minMax['min(EUI_Gas_Total)'])
        d = d / 10
```

```
        point = point + (10 - ((x - float(minMax['min(EUI_Gas_Total)'])) / d ))


        print(point,  "-----------------")
        updatePoints(scenario['ID'], "consumption", round(point, 2) )
        # print "consumption\t", scenario['EUI_Elec_Total'], "\t",  scenario['EUI_Gas_Total'],
        "\t ------> ", point
        point = 0


    db.commit();

#-------------------------------------------------------------------------------

def calcComfort(senID):
    cur.execute('SELECT ID, OccupantComfort_Thermal_PMV_Avg, Daylight_Illuminance, Daylight_Glare
    FROM `output` where seeID ="' + str(senID) + '"')
    res = cur.fetchall()

    print(res)
    point = 0
    for scenario in res:

        x = abs(float(scenario['OccupantComfort_Thermal_PMV_Avg']))
        if (x == 0):
            point = point + 20

        if (x > 0 and x <= 0.1):
            point = point + 18

        if (x > 0.1 and x <= 0.2):
            point = point + 16

        if (x > 0.2 and x <= 0.3):
            point = point + 14

        if (x > 0.3 and x <= 0.4):
            point = point + 12

        if (x > 0.4 and x <= 0.5):
            point = point + 10

        if (x > 0.5 and x <= 0.55):
            point = point + 8

        if (x > 0.55 and x <= 0.65):
            point = point + 4

        if (x > 0.65 and x <= 0.75):
            point = point + 2

        if (x > 0.75 ):
            point = point + 0



        if(float(scenario['Daylight_Illuminance']) >= 300):
            x = float(scenario['Daylight_Illuminance'])

            minMax = cur.execute('select min(Daylight_Illuminance), max(Daylight_Illuminance),
            avg(Daylight_Illuminance) from\
                outputInit WHERE name = "Daylight_Illuminance"')
            minMax = cur.fetchone()

            d = float(minMax['max(Daylight_Illuminance)']) -
```

```
            float(minMax['min(Daylight_Illuminance)'])
            d = d / 15
            point = point + ((x - float(minMax['min(Daylight_Illuminance)'])) / d )



        if (scenario['Daylight_Glare'] <= 22):
            x = float(scenario['Daylight_Glare'])

            minMax = cur.execute('select min(Daylight_Glare), max(Daylight_Glare),
            avg(Daylight_Glare) from\
                outputInit WHERE name = "Daylight_Glare"')
            minMax = cur.fetchone()

            d = float(minMax['max(Daylight_Glare)']) - float(minMax['min(Daylight_Glare)'])
            d = d / 15
            point = point + (15 - ((x - float(minMax['min(Daylight_Glare)'])) / d ))



        updatePoints(scenario['ID'], "comfort", round(point, 2))
        # print "comfort\t", scenario['OccupantComfort_Thermal_PMV_Avg'], "\t ------> ", point
        point = 0


    db.commit();
#------------------------------------------------------------------------------
def calcCost(senID):
    cur.execute('SELECT ID, EnergyCost_Elec_Total, EnergyCost_Gas_Total  FROM `output` where
    seeID = "' + str(senID) + '"')
    res = cur.fetchall()

    point = 0
    for scenario in res:

        x = float(scenario['EnergyCost_Elec_Total'])

        minMax = cur.execute('select min(EnergyCost_Elec_Total), max(EnergyCost_Elec_Total),
        avg(EnergyCost_Elec_Total) from\
            outputInit WHERE name = "EnergyCost_Elec_Total"')
        minMax = cur.fetchone()

        d = float(minMax['max(EnergyCost_Elec_Total)']) -
        float(minMax['min(EnergyCost_Elec_Total)'])
        d = d / 10
        point = point + (10 - ((x - float(minMax['min(EnergyCost_Elec_Total)'])) / d ))

        print(minMax)
        print(point,x,  "-----------------")

        x = float(scenario['EnergyCost_Gas_Total'])

        minMax = cur.execute('select min(EnergyCost_Gas_Total), max(EnergyCost_Gas_Total),
        avg(EnergyCost_Gas_Total) from\
            outputInit WHERE name = "EnergyCost_Gas_Total"')
        minMax = cur.fetchone()

        print(minMax)

        d = float(minMax['max(EnergyCost_Gas_Total)']) - float(minMax['min(EnergyCost_Gas_Total)'])
        d = d / 10
        point = point + (10 - ((x - float(minMax['min(EnergyCost_Gas_Total)'])) / d ))


        print(point,x,  "-----------------")
```

```
        updatePoints(scenario['ID'], "cost", round(point, 2))
        # print "cost\t", scenario['EnergyCost_Total'], "\t ------> ", point
        point = 0


    db.commit();
#-------------------------------------------------------------------------------

def updatePoints(outPutID, name, val):
    cur.execute('UPDATE output set ' + str(name) + '="' + str(val) + '" where ID = "' +
    str(outPutID) + '"')

#-------------------------------------------------------------------------------

def main():
    # get first or next
    id = oneCycle(0, "")
    # id = 2633

    for i in range(2000) :
        res = decisionMaker(id)
        print res
        if res == "nothing":
            id = oneCycle(0, "")
        else:
            id = oneCycle(1, getSkipVal(res, id))

    #make decision

    #loot
#-------------------------------------------------------------------------------

def oneCycle(command, id):

    if command == 0:
        res = cur.execute('SELECT seeID from output ORDER BY `ID` DESC limit 1')
        res = cur.fetchone()
        if res is None:
            lastID = 0
        else :
            lastID = int(res['seeID'])

        nextID = lastID + 1
        print "--------------------", nextID
        cur.execute('SELECT ID from allSce where Solar_Control != "Blank" and isDone = "0" and ID
        = "' + str(nextID) + '" ORDER BY `ID` ASC limit 1')


    if command == 1:
        cur.execute('SELECT ID from allSce where Solar_Control != "Blank" and  isDone = "0" and
        ID = "' + str(id) + '"')


    print command, id
    res = cur.fetchone()
    print  res
    if res is None:
        cur.execute('SELECT ID from allSce where Solar_Control != "Blank" and  isDone = "0" and
        id > "' + str(id) + '" ORDER BY `ID` ASC limit 1')
        res = cur.fetchone()
```

```
    id = res['ID']
    print("--------------------", id)
    os.system("python bil2.py " + str(id))

    #calc
    print id
    id = str(id)
    db.commit();
    calcConsumption(int(id))
    calcComfort(int(id))
    calcCost(int(id))

    return id

#-------------------------------------------------------------------------------

def decisionMaker(id):
    cur.execute('SELECT consumption, comfort, cost from output where seeID = "' + str(id) + '"')
    res = cur.fetchone()

    print res
    if res is None:
        cur.execute('update allSce set isDone = "3" where ID = "' + str(id) + '"')
        db.commit();
        return 'nothing-a'

    consumption = float(res['consumption'])
    comfort = float(res['comfort'])
    cost = float(res['cost'])

    x = consumption + comfort + cost
    if (x < 70):
        if consumption < 25 :
            return 'consumption'
        if comfort < 50 :
            return 'comfort'
        else :
            return 'cost'

    return 'nothing'


#-------------------------------------------------------------------------------

def getSkipVal(skipParam, id):

    cur.execute('SELECT * from allSce where isDone = "1" and ID = "' + str(id) + '"')
    res = cur.fetchone()


    print res
    if skipParam == "consumption": #Glazing, insulation int
        glz = res['Glazing_System']
        insI = res ['Insulation']
        fx = cur.execute('update allSce set isDone ="2" where isDone = "0" and (Glazing_System =
        "' + glz + '" and Insulation ="' + insI + '")')
        print ("\/\/\/\/\/\/\/\/\/\/", fx)
        db.commit();
        cur.execute('SELECT ID from allSce where isDone = "0" AND (Glazing_System != "' + glz +
        '" or Insulation !="' + insI + '") ORDER BY `ID` ASC limit 1' )
        res = cur.fetchone()
        res = res['ID']
        cur.execute('UPDATE allSce set isDone ="2" where ID < ' + str(res) + ' and isDone = "0"')
        db.commit();
        return res
```

```
    if skipParam == "comfort": # WWR, gazing system,
        WWR = res['WWR']
        glz = res ['Glazing_System']
        fx = cur.execute('update allSce set isDone ="2" where isDone = "0" and (WWR = "' + WWR +
        '" and Glazing_System = "' + glz + '")')
        print ("\/\/\/\/\/\/\/\/\/\/", fx)
        db.commit();
        cur.execute('SELECT ID from allSce where isDone = "0" AND (WWR != "' + WWR + '" or
        Glazing_System !="' + glz + '") ORDER BY `ID` ASC limit 1' )
        res = cur.fetchone()
        res = res['ID']
        cur.execute('UPDATE allSce set isDone ="2" where ID < ' + str(res) + ' and isDone = "0"')
        db.commit();
        return res

    if skipParam == "cost":#insulation ext, cladding  glazing system
        insE = res['Insulation']
        wallC = res ['Wall_Cladding']
        fx = cur.execute('update allSce set isDone ="2" where isDone = "0" and (Insulation = "' +
        insE + '" and Wall_Cladding ="' + wallC + '")')
        print ("\/\/\/\/\/\/\/\/\/\/", fx)
        db.commit();
        cur.execute('SELECT ID from allSce where isDone = "0" AND (Insulation != "' + insE + '"
        or Wall_Cladding !="' + wallC + '") ORDER BY `ID` ASC limit 1' )
        res = cur.fetchone()
        res = res['ID']
        cur.execute('UPDATE allSce set isDone ="2" where ID < ' + str(res) + ' and isDone = "0"')
        db.commit();
        return res


#-------------------------------------------------------------------------------
def restart():
    cur.execute('TRUNCATE TABLE `output`')
    cur.execute('UPDATE allSce set isDone = "0"')
    db.commit();
#-------------------------------------------------------------------------------







initdb()

# restart()
# print oneCycle(1, getSkipVal("cost", 49))
# print getSkipVal("cost", 49)

main()
# calcCost(2199)


#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
#-------------------------------------------------------------------------------
```

APPENDIX B

DATABASE

(These are samples to illustrate the database)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**ID**	int(11)			No	*None*		AUTO_INCREMENT
2	**isDone**	int(11)			No	0		
3	**WWR**	varchar(3)	latin1_swedish_ci		Yes	*NULL*		
4	**Wall_Cladding**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		
5	**Wall_Assembly**	varchar(80)	latin1_swedish_ci		No	*None*		
6	**Insulation**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		
7	**Glazing_System**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		
8	**Solar_Control**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		

Partitions

No partitioning defined!

Information

Table comments:

Space usage

Data	3.5	MiB
Index	0	B
Total	3.5	MiB

Row statistics

Format	Compact
Collation	latin1_swedish_ci
Next autoindex	26,461
Creation	Dec 01, 2019 at 09:10 PM

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**ID**	int(11)			No	*None*		AUTO_INCREMENT
2	**isDone**	int(11)			No	0		
3	**name**	varchar(120)	latin1_swedish_ci		No	*None*		
4	**WWR**	varchar(3)	latin1_swedish_ci		Yes	*NULL*		
5	**Wall_Cladding**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		
6	**Wall_Assembly**	varchar(80)	latin1_swedish_ci		No	*None*		
7	**Insulation**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		
8	**Glazing_System**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		
9	**Solar_Control**	varchar(80)	latin1_swedish_ci		Yes	*NULL*		

Partitions

No partitioning defined!

Information

Table comments:

Space usage

Data	16	KiB
Index	0	B
Total	16	KiB

Row statistics

Format	Compact
Collation	latin1_swedish_ci
Next autoindex	17
Creation	Oct 22, 2019 at 09:30 PM

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**ID**	int(11)			No	*None*		AUTO_INCREMENT
2	**seeID**	int(11)			No	*None*		
3	**timeStamp**	varchar(25)	latin1_swedish_ci		No	*None*		
4	**consumption**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
5	**comfort**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
6	**cost**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
7	**Enduse_Heating_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
8	**Enduse_Cooling_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
9	**Enduse_IntLighting_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
10	**Enduse_Heating_Natural_Gas**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
11	**Total_Enduse**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
12	**Demand_Enduse_Heating_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
13	**Demand_Enduse_Cooling_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
14	**Demand_Enduse_Lighting_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
15	**Demand_Enduse_Tot_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
16	**Demand_Enduse_Tot_Gas**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
17	**Envelope_Opaque_Reflectance**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
18	**Envelope_Opaque_Ufactor_w_film**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
19	**Envelope_Opaque_Ufactor_w_ofilm**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
20	**ExtWin_Glass_Ufactor**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
21	**ExtWin_Glass_SHGC**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
22	**ExtWin_Glass_VT**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
23	**IntLighting_TotPower**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
24	**Energymeter_Annual_Elec_Facil**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
25	**Energymeter_Annual_Elec_Bldg**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
26	**Energymeter_Annual_Elec_IntLight**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
27	**Energymeter_Annual_Elec_IntEquipment**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
28	**Energymeter_Annual_Elec_Cooling**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
29	**Energymeter_Annual_Gas_Heating**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
30	**Enduse_Total_Elec**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
31	**Enduse_Total_Gas**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
32	**Enduse_Total**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
33	**EnergyCost_Elec_Total**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
34	**EnergyCost_Gas_Total**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
35	**EnergyCost_Total**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
36	**EUI_Elec_IntLight**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
37	**EUI_Elec_Cooling**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
38	**EUI_Elec_Total**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
39	**EUI_Gas_Total**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
40	**ZoneElec_Monthly_Lights_Avg**	varchar(20)	latin1_swedish_ci		Yes	*NULL*		
41	**ZoneElec_Monthly_Equipment_Avg**	varchar(20)	latin1_swedish_ci		Yes	*NULL*		
42	**OccupantComfort_Thermal_PMV_Avg**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
43	**OccupantComfort_Thermal_PPD_Avg**	varchar(10)	latin1_swedish_ci		Yes	*NULL*		
44	**Daylight_Illuminance**	varchar(25)	latin1_swedish_ci		Yes	*NULL*		
45	**Daylight_Glare**	varchar(25)	latin1_swedish_ci		Yes	*NULL*		

Partitions

No partitioning defined!

Information

Table comments:

Space usage

Data	112	KiB
Index	16	KiB
Total	128	KiB

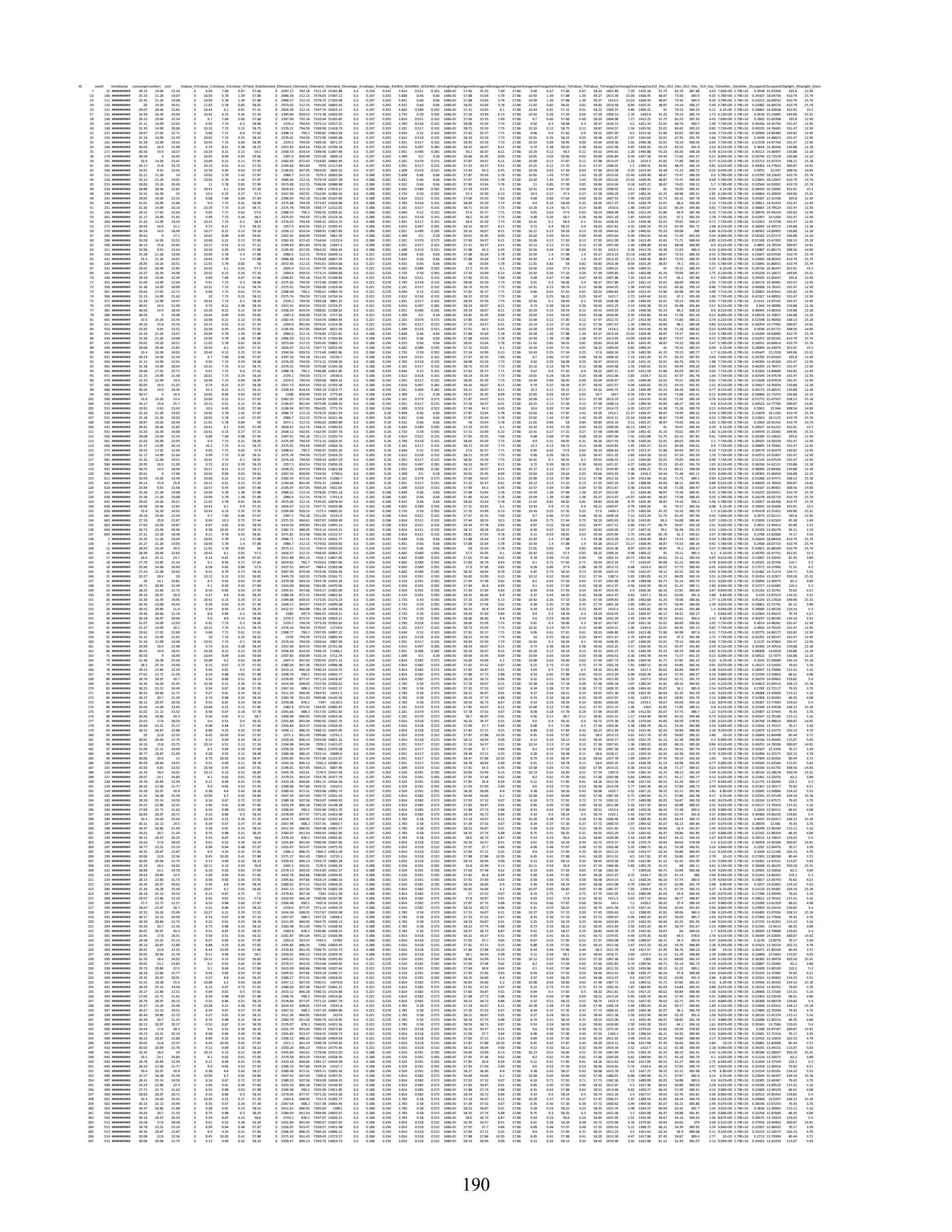
Row statistics

Format	Compact
Collation	latin1_swedish_ci
Next autoindex	253
Creation	Nov 16, 2019 at 05:23 PM

APPENDIX C

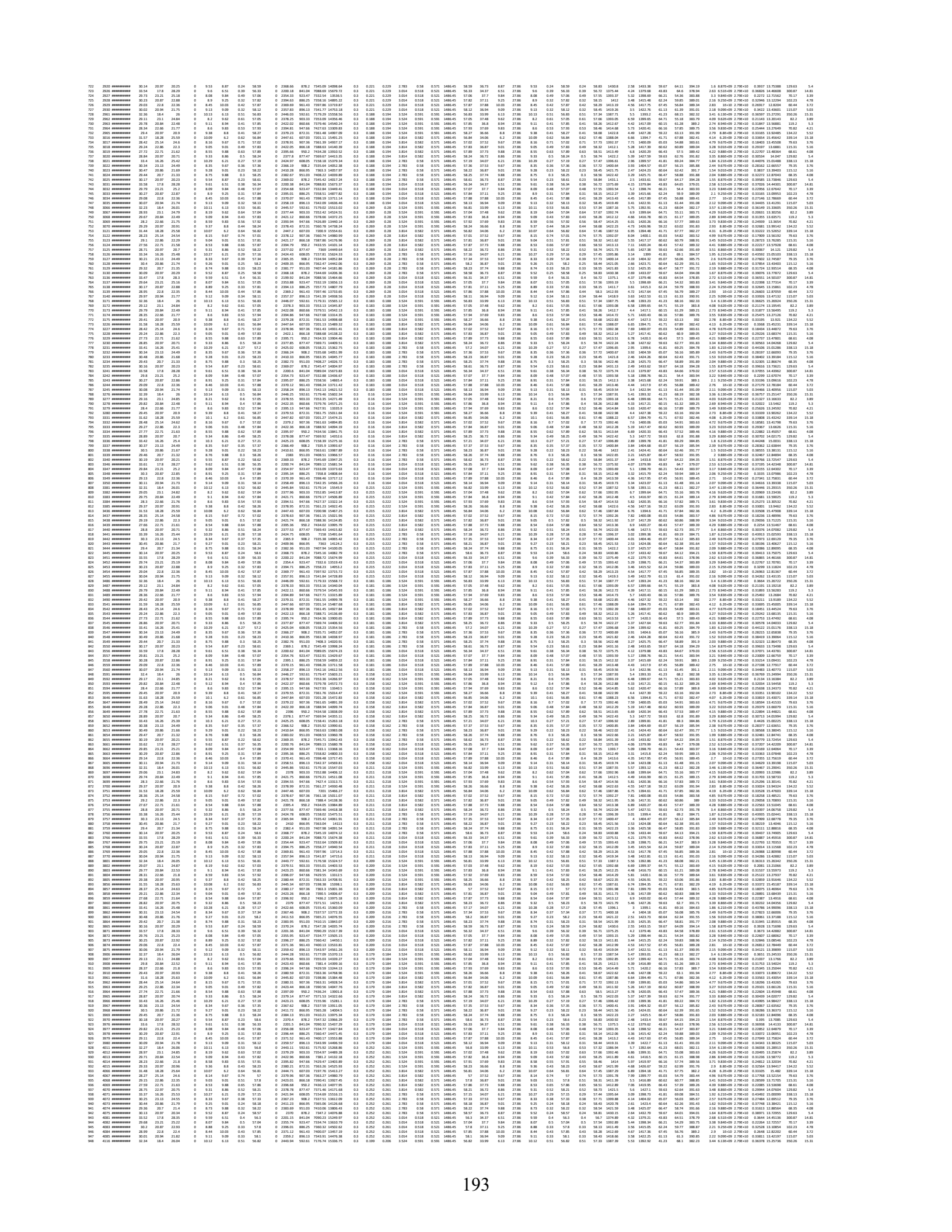
OUTPUTS

(These are samples to illustrate the outputs and results)



268	546	##########	32.22	18.4	26.01	0	10.11	6.13	0.53	56.81	0	2445.6	592.61	7178.97	15527.76	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.11	0.53	56.81	0.53	57.34	1387.11	5.77	1392.88	41.23	68.03	382.16	3.58	6.13E+09	2.79E+10	0.36154	15.34749	350.26	15.31
269	547	##########	28.92	23.1	24.79	0	8.19	9.62	0.64	57.03	0	2379.23	903.33	7354.73	14526.5	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.64	57.03	0.64	57.67	1392.71	6.92	1399.63	64.71	55.11	383.7	4.3	9.62E+09	2.79E+10	0.20626	13.31465	82.2	3.89
270	548	##########	29.66	20.84	22.49	0	9.09	8.94	0.43	57.83	0	2422.89	860.66	7380.96	14342.9	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.09	0.43	57.83	0.43	58.26	1412.1	4.67	1416.77	60.15	61.17	389.04	2.9	8.94E+09	2.79E+10	0.31357	13.64681	119.2	5.3
271	549	##########	28.18	22.66	21.74	0	8.59	9.83	0.56	57.92	0	2395.73	947.66	7429.2	13441.99	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.56	57.92	0.56	58.47	1414.25	6.03	1420.28	66.16	57.77	389.63	3.75	9.83E+09	2.79E+10	0.24937	13.3771	70.82	4.21
272	550	##########	29.29	20.97	20.91	0	9.37	8.8	0.44	58.24	0	2380.12	872.31	7362.98	14711.76	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.37	0.44	58.24	0.44	58.68	1422.2	4.74	1426.94	59.22	63.01	391.82	2.94	8.8E+09	2.79E+10	0.32684	14.00287	134.22	5.52
273	601	##########	31.43	18.28	25.58	0	10.07	6.2	0.64	56.82	0	2447.22	607.03	7200.84	15566.2	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.07	0.64	56.82	0.64	57.46	1387.49	6.96	1394.45	41.71	67.77	382.26	4.32	6.2E+09	2.79E+10	0.33227	15.53821	339.14	15.18
274	602	##########	28.23	25.14	24.54	0	8.15	9.67	0.74	57.01	0	2379.9	907.36	7363.04	14978.49	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.74	57.01	0.74	57.75	1392.03	8.06	1400.08	65.03	54.81	383.51	5	9.67E+09	2.79E+10	0.17904	13.57444	79.63	3.76
275	603	##########	29.1	22.86	22.3	0	9.04	9.01	0.51	57.81	0	2422.93	866.18	7390.15	14186.23	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.81	36.87	9.01	27.86	9.04	0.51	57.81	0.51	58.32	1411.59	5.56	1417.15	60.62	60.79	388.9	3.45	9.01E+09	2.79E+10	0.28725	13.77418	115.31	5.16
276	604	##########	27.55	22.71	21.58	0	8.53	9.88	0.66	57.87	0	2396.58	950.2	7435.85	14102.54	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.53	0.66	57.87	0.66	58.53	1413.1	7.13	1420.22	66.43	57.42	389.31	4.42	9.88E+09	2.79E+10	0.22215	13.59118	68.61	4.08
277	605	##########	28.7	20.97	20.7	0	9.31	8.86	0.52	58.22	0	2378.69	877.47	7371.18	14473.21	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.31	0.52	58.22	0.52	58.75	1421.7	5.67	1427.37	59.63	62.66	391.69	3.52	8.86E+09	2.79E+10	0.30069	14.13273	129.82	5.4
278	606	##########	33.33	16.26	25.48	0	10.27	6.21	0.29	57.16	0	2424.46	608.05	7157.76	15624.25	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	57.16	34.07	6.21	27.86	10.27	0.29	57.16	0.29	57.45	1395.8	3.15	1398.95	41.81	69.1	384.55	1.96	6.21E+09	2.79E+10	0.43597	15.06158	338.13	15.18
279	607	##########	30.2	23.13	24.49	0	8.33	9.67	0.39	57.34	0	2367.17	908.2	7337.28	14092.22	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.33	0.39	57.34	0.39	57.73	1400.1	4.2	1404.3	65.07	56.05	385.73	2.61	9.67E+09	2.79E+10	0.27599	12.75703	79.35	3.76
280	608	##########	30.4	20.86	21.74	0	9.26	9.01	0.25	58.19	0	2411.15	866.95	7364.79	14460.47	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.26	0.25	58.19	0.25	58.44	1421.02	2.67	1423.68	60.64	62.28	391.5	1.66	9.01E+09	2.79E+10	0.37857	13.44414	115.12	5.16
281	609	##########	29.32	20.7	21.35	0	8.74	9.88	0.33	58.23	0	2383.59	951.03	7409.78	14208.73	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.33	58.23	0.33	58.55	1421.8	3.53	1425.33	66.47	58.77	391.71	2.19	9.88E+09	2.79E+10	0.31723	12.94589	68.35	4.08
282	610	##########	30.08	20.97	20.29	0	9.52	8.87	0.25	58.58	0	2369.9	878.2	7346.91	14209.99	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	58.58	36.73	8.87	27.86	9.52	0.25	58.58	0.25	58.82	1430.32	2.7	1433.02	59.67	64.03	394.06	1.68	8.87E+09	2.79E+10	0.3908	13.78925	129.63	5.4
283	616	##########	33.48	17.8	28.3	0	9.59	6.51	0.4	56.31	0	2201.88	841.04	7091.06	15478.7	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.4	56.31	0.4	56.72	1375.07	4.39	1379.45	43.83	64.53	378.84	2.72	6.51E+09	2.79E+10	0.36555	14.51225	300.87	14.81
284	617	##########	29.63	23.21	25.16	0	8.07	9.84	0.51	57.05	0	2355.69	923.47	7334.53	13658.18	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.51	57.05	0.51	57.56	1393.18	5.51	1398.69	66.21	54.32	383.83	3.42	9.84E+09	2.79E+10	0.22392	12.78497	70.17	3.39
285	618	##########	30.16	20.87	22.89	0	8.89	9.25	0.33	57.81	0	2395.93	886.25	7360.06	14852.3	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.33	57.81	0.33	58.14	1411.67	3.62	1415.29	62.24	59.79	388.92	2.25	9.25E+09	2.79E+10	0.32647	13.16925	102.23	4.78
286	619	##########	28.94	22.8	22.35	0	8.44	10.03	0.44	57.86	0	2371.02	961.43	7399.8	13741.46	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.44	57.86	0.44	58.3	1412.9	4.73	1417.63	67.45	56.78	389.26	2.94	1E+10	2.79E+10	0.266	12.8819	60.44	3.72
287	620	##########	29.97	20.94	21.77	0	9.12	9.09	0.34	58.11	0	2359.1	896.13	7343.63	14953.36	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	58.11	36.94	9.09	27.86	9.12	0.34	58.11	0.34	58.44	1418.88	3.64	1422.52	61.13	61.32	390.91	2.26	9.09E+09	2.79E+10	0.33929	13.48234	115.07	5.03
288	651	##########	32.36	18.4	26	0	10.13	6.13	0.51	56.83	0	2445.88	592.61	7179.02	15555.5	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.73	5.49	1393.22	41.23	68.15	382.33	3.41	6.13E+09	2.79E+10	0.36617	15.27642	350.26	15.31
289	652	##########	29.11	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.6	903.33	7354.82	14347.82	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.06	6.59	1399.65	64.71	55.18	383.8	4.09	9.62E+09	2.79E+10	0.21157	13.2037	82.2	3.89
290	653	##########	29.78	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2423.37	860.66	7381.19	14553.01	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.67	4.41	1417.09	60.15	61.28	389.2	2.74	8.94E+09	2.79E+10	0.31866	13.57174	119.2	5.3
291	654	##########	28.35	22.66	21.77	0	8.6	9.83	0.53	57.93	0	2396.17	947.66	7429.37	13320.77	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53	57.93	0.53	58.46	1414.69	5.72	1420.41	66.16	57.86	389.75	3.55	9.83E+09	2.79E+10	0.25461	13.27892	70.82	4.21
292	655	##########	29.41	20.97	20.9	0	9.38	8.8	0.41	58.27	0	2380.51	872.31	7363.13	15005.09	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.41	58.27	0.41	58.68	1422.81	4.48	1427.3	59.22	63.13	391.99	2.78	8.8E+09	2.79E+10	0.33185	13.92795	134.22	5.52
293	706	##########	31.58	18.28	25.59	0	10.09	6.2	0.61	56.84	0	2447.46	607.03	7200.84	15495.45	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.46	1388.05	6.66	1394.71	41.71	67.88	382.42	4.13	6.2E+09	2.79E+10	0.33672	15.45983	339.14	15.18
294	707	##########	28.42	25.14	24.6	0	8.16	9.67	0.71	57.02	0	2380.25	907.36	7363.1	14932.68	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.38	7.71	1400.09	65.03	54.88	383.61	4.79	9.67E+09	2.79E+10	0.18417	13.45747	79.63	3.76
295	708	##########	29.23	22.86	22.3	0	9.05	9.01	0.49	57.83	0	2423.38	866.18	7390.34	14144.88	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.11	5.28	1417.39	60.62	60.9	389.04	3.28	9.01E+09	2.79E+10	0.29215	13.69093	115.31	5.16
296	709	##########	27.72	22.71	21.62	0	8.55	9.88	0.63	57.89	0	2397.01	950.2	7436.01	13905.74	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.63	57.89	0.63	58.51	1413.49	6.8	1420.29	66.43	57.5	389.42	4.22	9.88E+09	2.79E+10	0.22721	13.48591	68.61	4.08
297	710	##########	28.84	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.07	877.47	7371.3	14415.53	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.21	5.39	1427.59	59.63	62.77	391.82	3.35	8.86E+09	2.79E+10	0.30553	14.05009	129.82	5.4
298	711	##########	33.41	16.26	25.42	0	10.29	6.21	0.27	57.19	0	2424.85	608.05	7157.95	15378.82	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.47	1396.62	2.95	1399.58	41.81	69.25	384.78	1.83	6.21E+09	2.79E+10	0.44099	15.01878	338.13	15.18
299	712	##########	30.34	23.13	24.49	0	8.35	9.67	0.36	57.36	0	2367.57	908.2	7337.4	14065.14	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.65	3.93	1404.57	65.07	56.15	385.89	2.44	9.67E+09	2.79E+10	0.28182	12.66793	79.35	3.76
300	713	##########	30.48	20.86	21.68	0	9.28	9.01	0.23	58.23	0	2411.64	866.95	7365.05	14048.76	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.23	58.23	0.23	58.45	1421.78	2.47	1424.25	60.64	62.42	391.71	1.53	9.01E+09	2.79E+10	0.38394	13.39758	115.12	5.16
301	714	##########	29.44	20.7	21.33	0	8.75	9.88	0.3	58.25	0	2384.06	951.03	7409.98	14033.15	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.3	58.25	0.3	58.56	1422.43	3.29	1425.72	66.47	58.88	391.89	2.04	9.88E+09	2.79E+10	0.32293	12.87321	68.35	4.08
302	715	##########	30.17	20.97	20.23	0	9.54	8.87	0.23	58.61	0	2370.32	878.2	7347.09	14007.93	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.23	58.61	0.23	58.84	1431.1	2.5	1433.6	59.67	64.17	394.28	1.55	8.87E+09	2.79E+10	0.39608	13.74208	129.63	5.4
303	721	##########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2201.85	841.04	7090.66	15667.38	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.71	4.14	1379.85	43.83	64.66	379.01	2.57	6.51E+09	2.79E+10	0.37046	14.44631	300.87	14.81
304	722	##########	29.79	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.04	923.47	7334.58	13439.16	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.57	5.2	1398.77	66.21	54.4	383.94	3.23	9.84E+09	2.79E+10	0.22973	12.6786	70.17	3.39
305	723	##########	30.27	20.87	22.87	0	8.9	9.25	0.31	57.84	0	2396.38	886.25	7360.26	14883.24	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.9	0.31	57.84	0.31	58.15	1412.27	3.39	1415.65	62.24	59.91	389.09	2.1	9.25E+09	2.79E+10	0.33186	13.10241	102.23	4.78
306	724	##########	29.09	22.8	22.36	0	8.46	10.03	0.41	57.88	0	2371.45	961.43	7399.95	13723.9	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.46	0.41	57.88	0.41	58.29	1413.44	4.45	1417.89	67.45	56.88	389.41	2.76	1E+10	2.79E+10	0.27165	12.78907	60.44	3.72
307	725	##########	30.07	20.94	21.74	0	9.13	9.09	0.31	58.13	0	2359.5	896.13	7343.76	14638.81	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.45	1419.51	3.41	1422.92	61.13	61.44	391.08	2.12	9.09E+09	2.79E+10	0.34456	13.41603	115.07	5.03
308	756	##########	32.39	18.4	26	0	10.14	6.13	0.5	56.84	0	2446.09	592.61	7179.2	15598.21	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	56.84	33.99	6.13	27.86	10.14	0.5	56.84	0.5	57.34	1387.92	5.42	1393.33	41.23	68.19	382.38	3.36	6.13E+09	2.79E+10	0.36756	15.25844	350.26	15.31
309	757	##########	29.16	23.1	24.85	0	8.21	9.62	0.6	57.05	0	2379.72	903.33	7354.86	14273.21	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.21	0.6	57.05	0.6	57.65	1393.19	6.5	1399.68	64.71	55.21	383.83	4.03	9.62E+09	2.79E+10	0.21318	13.17412	82.2	3.89
310	758	##########	29.81	20.84	22.48	0	9.11	8.94	0.4	57.86	0	2423.51	860.66	7381.27	14576.11	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.86	36.8	8.94	27.86	9.11	0.4	57.86	0.4	58.26	1412.87	4.34	1417.21	60.15	61.32	389.25	2.7	8.94E+09	2.79E+10	0.32018	13.55275	119.2	5.3
311	759	##########	28.39	22.66	21.77	0	8.6	9.83	0.52	57.94	0	2396.3	947.66	7429.43	13345.59	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.52	57.94	0.52	58.46	1414.85	5.64	1420.48	66.16	57.89	389.8	3.5	9.83E+09	2.79E+10	0.25618	13.25315	70.82	4.21
312	760	##########	29.44	20.97	20.89	0	9.39	8.8	0.41	58.27	0	2380.63	872.31	7363.18	15017.89	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.39	0.41	58.27	0.41	58.68	1422.98	4.41	1427.4	59.22	63.16	392.04	2.74	8.8E+09	2.79E+10	0.33336	13.9093	134.22	5.52
313	811	##########	31.62	18.28	25.59	0	10.1	6.2	0.61	56.85	0	2447.66	607.03	7201.01	15483.01	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	56.85	34.06	6.2	27.86	10.1	0.61	56.85	0.61	57.46	1388.2	6.58	1394.78	41.71	67.92	382.46	4.08	6.2E+09	2.79E+10	0.33806	15.43959	339.14	15.18
314	812	##########	28.47	25.14	24.61	0	8.16	9.67	0.7	57.03	0	2380.36	907.36	7363.14	14896.05	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.03	37.52	9.67	27.86	8.16	0.7	57.03	0.7	57.73	1392.47	7.61	1400.08	65.03	54.91	383.63	4.73	9.67E+09	2.79E+10	0.18573	13.42608	79.63	3.76
315	813	##########	29.27	22.86	22.3	0	9.06	9.01	0.48	57.84	0	2423.51	866.18	7390.41	14100.44	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.84	36.87	9.01	27.86	9.06	0.48	57.84	0.48	58.32	1412.27	5.2	1417.48	60.62	60.93	389.09	3.23	9.01E+09	2.79E+10	0.29362	13.66943	115.31	5.16
316	814	##########	27.77	22.71	21.62	0	8.55	9.88	0.62	57.89	0	2397.13	950.2	7436.06	13843.25	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.62	57.89	0.62	58.51	1413.64	6.71	1420.35	66.43	57.52	389.47	4.16	9.88E+09	2.79E+10	0.22874	13.45806	68.61	4.08
317	815	##########	28.88	20.97	20.7	0	9.33	8.86	0.49	58.25	0	2379.18	877.47	7371.35	14357.79	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	58.25	36.72	8.86	27.86	9.33	0.49	58.25	0.49	58.74	1422.41	5.31	1427.72	59.63	62.8	391.88	3.3	8.86E+09	2.79E+10	0.30698	14.02883	129.82	5.4
318	816	##########	33.42	16.26	25.4	0	10.3	6.21	0.27	57.21	0	2425.08	608.05	7158.16	15288.46	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	57.21	34.07	6.21	27.86	10.3	0.27	57.21	0.27	57.47	1396.87	2.9	1399.77	41.81	69.29	384.84	1.8	6.21E+09	2.79E+10	0.44247	15.00906	338.13	15.18
319	817	##########	30.37	23.13	24.49	0	8.35	9.67	0.36	57.37	0	2367.68	908.2	7337.44	14003.81	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	57.37	37.53	9.67	27.86	8.35	0.36	57.37	0.36	57.72	1400.83	3.85	1404.68	65.07	56.19	385.93	2.39	9.67E+09	2.79E+10	0.28356	12.6453	79.35	3.76
320	818	##########	30.49	20.86	21.66	0	9.29	9.01	0.22	58.23	0	2411.78	866.95	7365.13	13990.75	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.29	0.22	58.23	0.22	58.46	1422.01	2.42	1424.43	60.64	62.47	391.77	1.5	9.01E+09	2.79E+10	0.38553	13.387	115.12	5.16
321	819	##########	29.46	20.7	21.32	0	8.76	9.88	0.3	58.26	0	2384.19	951.03	7410.05	13970.58	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.26	37.74	9.88	27.86	8.76	0.3	58.26	0.3	58.56	1422.63	3.22	1425.85	66.47	58.92	391.94	2	9.88E+09	2.79E+10	0.32463	12.85531	68.35	4.08
322	820	##########	30.18	20.97	20.21	0	9.55	8.87	0.23	58.62	0	2370.45	878.2	7347.15	13949.85	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.62	36.73	8.87	27.86	9.55	0.23	58.62	0.23	58.84	1431.37	2.44	1433.82	59.67	64.22	394.35	1.52	8.87E+09	2.79E+10	0.39764	13.73137	129.63	5.4
323	826	##########	33.61	17.8	28.27	0	9.62	6.51	0.38	56.35	0	2201.85	841.04	7090.57	15674.41	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	56.35	34.37	6.51	27.86	9.62	0.38	56.35	0.38	56.72	1375.92	4.07	1380	43.83	64.7	379.07	2.53	6.51E+09	2.79E+10	0.37193	14.42997	300.87	14.81
324	827	##########	29.84	23.21	25.2	0	8.09	9.84	0.47	57.08	0	2356.15	923.47	7334.61	13376.08	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.08	37.7	9.84	27.86	8.09	0.47	57.08	0.47	57.55	1393.71	5.11	1398.81	66.21	54.43	383.97	3.17	9.84E+09	2.79E+10	0.23147	12.65056	70.17	3.39
325	828	##########	30.3	20.87	22.86	0	8.91	9.25	0.31	57.84	0	2396.52	886.25	7360.33	14824.9	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.46	3.32	1415.79	62.24	59.94	389.14	2.06	9.25E+09	2.79E+10	0.33346	13.08608	102.23	4.78
326	829	##########	29.13	22.8	22.35	0	8.46	10.03	0.4	57.89	0	2371.57	961.43	7400	13729.18	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.89	37.88	10.03	27.86	8.46	0.4	57.89	0.4	58.29	1413.61	4.37	1417.98	67.45	56.91	389.46	2.71	1E+10	2.79E+10	0.27334	12.76526	60.44	3.72
327	830	##########	30.1	20.94	21.73	0	9.14	9.09	0.31	58.14	0	2359.61	896.13	7343.81	14581.46	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	58.14	36.94	9.09	27.86	9.14	0.31	58.14	0.31	58.45	1419.72	3.35	1423.07	61.13	61.48	391.14	2.08	9.09E+09	2.79E+10	0.34613	13.39976	115.07	5.03
328	861	##########	32.31	18.4	26.01	0	10.12	6.13	0.52	56.82	0	2445.58	592.61	7178.73	15546.55	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.44	5.6	1393.04	41.23	68.1	382.25	3.47	6.13E+09	2.79E+10	0.36425	15.29993	350.26	15.31
329	862	##########	29.04	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.42	903.33	7354.71	14416.34	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.86	6.72	1399.58	64.71	55.15	383.74	4.17	9.62E+09	2.79E+10	0.20935	13.24269	82.2	3.89
330	863	##########	29.74	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.15	860.66	7381.02	14513.6	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.39	4.51	1416.9	60.15	61.23	389.12	2.8	8.94E+09	2.79E+10	0.31655	13.59656	119.2	5.3
331	864	##########	28.29	22.66	21.77	0	8.59	9.83	0.54	57.93	0	2395.96	947.66	7429.23	13324.96	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.46	1414.46	5.84	1420.3	66.16	57.81	389.69	3.63	9.83E+09	2.79E+10	0.25242	13.31278	70.82	4.21
332	865	##########	29.37	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.32	872.31	7363	14933.31	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.53	4.58	1427.1	59.22	63.08	391.91	2.84	8.8E+09	2.79E+10	0.32977	13.95266	134.22	5.52
333	916	##########	31.52	18.28	25.6	0	10.08	6.2	0.63	56.83	0	2447.17	607.03	7200.57	15479.49	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.77	6.78	1394.55	41.71	67.83	382.34	4.21	6.2E+09	2.79E+10	0.33486	15.48643	339.14	15.18
334	917	##########	28.34	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2380.07	907.36	7363	15014.1	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.19	7.84	1400.03	65.03	54.85	383.55	4.87	9.67E+09	2.79E+10	0.18201	13.49897	79.63	3.76
335	918	##########	29.18	22.86	22.31	0	9.04	9.01	0.5	57.82	0	2423.17	866.18	7390.19	14140.74	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.86	5.39	1417.24	60.62	60.85	388.97	3.35	9.01E+09	2.79E+10	0.2901	13.71921	115.31	5.16
336	919	##########	27.65	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2396.81	950.2	7435.87	13998.26	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.29	6.92	1420.21	66.43	57.46	389.37	4.3	9.88E+09	2.79E+10	0.22509	13.5227	68.61	4.08
337	920	##########	28.79	20.97	20.72	0	9.32	8.86	0.51	58.23	0	2378.88	877.47	7371.18	14421.05	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.96	5.49	1427.45	59.63	62.72	391.76	3.41	8.86E+09	2.79E+10	0.30351	14.07799	129.82	5.4
338	921	##########	33.38	16.26	25.45	0	10.28	6.21	0.28	57.18	0	2424.51	608.05	7157.62	15510.44	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.27	3.03	1399.3	41.81	69.18	384.68	1.88	6.21E+09	2.79E+10	0.43893	15.03088	338.13	15.18
339	922	##########	30.29	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.37	908.2	7337.27	14078.57	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.38	4.03	1404.41	65.07	56.11	385.81	2.5	9.67E+09	2.79E+10	0.27941	12.69772	79.35	3.76
340	923	##########	30.45	20.86	21.71	0	9.27	9.01	0.23	58.21	0	2411.42	866.95	7364.88	14131.67	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.45	1421.46	2.54	1424.01	60.64	62.36	391.62	1.58	9.01E+09	2.79E+10	0.38173	13.41099	115.12	5.16
341	924	##########	29.39	20.7	21.35	0	8.74	9.88	0.31	58.24	0	2383.84	951.03	7409.83	14104.3	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.74	0.31	58.24	0.31	58.55	1422.11	3.38	1425.49	66.47	58.83	391.8	2.1	9.88E+09	2.79E+10	0.32059	12.89668	68.35	4.08
342	925	##########	30.14	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2370.12	878.2	7346.95	14085.88	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.77	2.57	1433.35	59.67	64.11	394.18	1.6	8.87E+09	2.79E+10	0.39391	13.75579	129.63	5.4
343	931	##########	33.54	17.8	28.3	0	9.6	6.51	0.39	56.33	0	2201.8	841.04	7090.72	15667.91	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.72	1375.42	4.23	1379.65	43.83	64.6	378.93	2.63	6.51E+09	2.79E+10	0.36843	14.4675	300.87	14.81
344	932	##########	29.73	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2355.86	923.47	7334.48	13522.39	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.35	5.31	1398.67	66.21	54.36	383.88	3.3	9.84E+09	2.79E+10	0.22733	12.71549	70.17	3.39
345	933	##########	30.23	20.87	22.88	0	8.9	9.25	0.32	57.82	0	2396.17	886.25	7360.11	14986.31	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.32	57.82	0.32	58.14	1411.99	3.47	1415.46	62.24	59.85	389.01	2.16	9.25E+09	2.79E+10	0.32964	13.12377	102.23	4.78
346	934	##########	29.03	22.8	22.37	0	8.45	10.03	0.42	57.87	0	2371.25	961.43	7399.82	13729.27	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.16	4.55	1417.71	67.45	56.84	389.33	2.83	1E+10	2.79E+10	0.26932	12.82046	60.44	3.72
347	935	##########	30.03	20.94	21.76	0	9.13	9.09	0.32	58.12	0	2359.3	896.13	7343.64	14750.16	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.23	3.5	1422.73	61.13	61.39	391	2.17	9.09E+09	2.79E+10	0.34238	13.43713	115.07	5.03
348	966	##########	32.36	18.4	26	0	10.13	6.13	0.51	56.83	0	2445.91	592.61	7179.04	15558.26	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.75	5.48	1393.23	41.23	68.16	382.33	3.4	6.13E+09	2.79E+10	0.36633	15.2744	350.26	15.31
349	967	##########	29.11	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.62	903.33	7354.83	14341.97	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.08	6.58	1399.66	64.71	55.19	383.8	4.09	9.62E+09	2.79E+10	0.21176	13.20039	82.2	3.89
350	968	##########	29.78	20.84	22.48	0	9.11	8.94	0.41	57.85	0	2423.39	860.66	7381.2	14556.86	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.69	4.41	1417.1	60.15	61.29	389.2	2.74	8.94E+09	2.79E+10	0.31883	13.56961	119.2	5.3
351	969	##########	28.35	22.66	21.76	0	8.6	9.83	0.53	57.94	0	2396.18	947.66	7429.38	13322.67	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.53	57.94	0.53	58.46	1414.71	5.72	1420.42	66.16	57.86	389.76	3.55	9.83E+09	2.79E+10	0.25479	13.27602	70.82	4.21
352	970	##########	29.41	20.97	20.9	0	9.38	8.8	0.41	58.27	0	2380.53	872.31	7363.13	15006.3	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.41	58.27	0.41	58.68	1422.83	4.47	1427.31	59.22	63.13	392	2.78	8.8E+09	2.79E+10	0.33202	13.92585	134.22	5.52
353	1021	##########	31.58	18.28	25.59	0	10.09	6.2	0.61	56.84	0	2447.48	607.03	7200.86	15494.46	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.46	1388.07	6.65	1394.72	41.71	67.89	382.42	4.13	6.2E+09	2.79E+10	0.33688	15.45756	339.14	15.18
354	1022	##########	28.42	25.14	24.6	0	8.16	9.67	0.71	57.02	0	2380.27	907.36	7363.11	14929.13	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.39	7.7	1400.08	65.03	54.89	383.61	4.78	9.67E+09	2.79E+10	0.18435	13.45395	79.63	3.76
355	1023	##########	29.24	22.86	22.3	0	9.05	9.01	0.49	57.83	0	2423.39	866.18	7390.35	14143.44	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.13	5.27	1417.4	60.62	60.9	389.05	3.27	9.01E+09	2.79E+10	0.29232	13.68852	115.31	5.16
356	1024	##########	27.73	22.71	21.62	0	8.55	9.88	0.63	57.89	0	2397.03	950.2	7436.02	13902.04	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.63	57.89	0.63	58.51	1413.51	6.79	1420.3	66.43	57.5	389.43	4.21	9.88E+09	2.79E+10	0.22739	13.48279	68.61	4.08
357	1025	##########	28.85	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.08	877.47	7371.31	14413.03	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.24	5.38	1427.62	59.63	62.77	391.83	3.34	8.86E+09	2.79E+10	0.30569	14.0477	129.82	5.4
358	1026	##########	33.41	16.26	25.41	0	10.29	6.21	0.27	57.2	0	2424.88	608.05	7157.97	15370.56	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	57.2	34.07	6.21	27.86	10.29	0.27	57.2	0.27	57.47	1396.65	2.95	1399.6	41.81	69.25	384.78	1.83	6.21E+09	2.79E+10	0.44115	15.0177	338.13	15.18
359	1027	##########	30.34	23.13	24.49	0	8.35	9.67	0.36	57.36	0	2367.58	908.2	7337.4	14056.9	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.67	3.92	1404.59	65.07	56.16	385.89	2.43	9.67E+09	2.79E+10	0.28202	12.66538	79.35	3.76
360	1028	##########	30.48	20.86	21.68	0	9.28	9.01	0.23	58.23	0	2411.66	866.95	7365.06	14041.94	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.23	58.23	0.23	58.45	1421.8	2.46	1424.27	60.64	62.43	391.71	1.53	9.01E+09	2.79E+10	0.38412	13.3964	115.12	5.16
361	1029	##########	29.43	20.7	21.33	0	8.75	9.88	0.3	58.25	0	2384.07	951.03	7409.99	14027.36	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.3	58.25	0.3	58.56	1422.45	3.28	1425.73	66.47	58.89	391.89	2.04	9.88E+09	2.79E+10	0.32313	12.8712	68.35	4.08
362	1030	##########	30.16	20.97	20.23	0	9.54	8.87	0.23	58.61	0	2370.34	878.2	7347.1	14001.17	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.23	58.61	0.23	58.84	1431.14	2.49	1433.63	59.67	64.18	394.28	1.55	8.87E+09	2.79E+10	0.39626	13.74095	129.63	5.4
363	1036	##########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2201.85	841.04	7090.65	15667.71	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.73	4.14	1379.87	43.83	64.66	379.02	2.57	6.51E+09	2.79E+10	0.37063	14.44449	300.87	14.81
364	1037	##########	29.8	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.05	923.47	7334.59	13432.12	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.59	5.19	1398.78	66.21	54.4	383.94	3.22	9.84E+09	2.79E+10	0.22993	12.67545	70.17	3.39
365	1038	##########	30.27	20.87	22.87	0	8.91	9.25	0.31	57.84	0	2396.4	886.25	7360.27	14876.78	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.29	3.38	1415.67	62.24	59.91	389.09	2.1	9.25E+09	2.79E+10	0.33204	13.10058	102.23	4.78
366	1039	##########	29.09	22.8	22.36	0	8.46	10.03	0.41	57.88	0	2371.47	961.43	7399.95	13724.06	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.46	0.41	57.88	0.41	58.29	1413.46	4.44	1417.9	67.45	56.88	389.41	2.76	1E+10	2.79E+10	0.27185	12.78641	60.44	3.72
367	1040	##########	30.08	20.94	21.74	0	9.13	9.09	0.31	58.13	0	2359.51	896.13	7343.77	14630.22	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.45	1419.54	3.4	1422.94	61.13	61.44	391.09	2.11	9.09E+09	2.79E+10	0.34474	13.41421	115.07	5.03
368	1071	##########	32.39	18.4	26	0	10.14	6.13	0.5	56.84	0	2446.11	592.61	7179.22	15609.06	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	56.84	33.99	6.13	27.86	10.14	0.5	56.84	0.5	57.34	1387.94	5.41	1393.35	41.23	68.19	382.38	3.36	6.13E+09	2.79E+10	0.36767	15.25687	350.26	15.31
369	1072	##########	29.16	23.1	24.85	0	8.21	9.62	0.6	57.05	0	2379.73	903.33	7354.87	14268.7	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.21	0.6	57.05	0.6	57.65	1393.19	6.49	1399.68	64.71	55.21	383.83	4.03	9.62E+09	2.79E+10	0.21332	13.17157	82.2	3.89
370	1073	##########	29.82	20.84	22.47	0	9.12	8.94	0.4	57.86	0	2423.52	860.66	7381.27	14577.08	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.86	36.8	8.94	27.86	9.12	0.4	57.86	0.4	58.26	1412.89	4.34	1417.22	60.15	61.32	389.26	2.69	8.94E+09	2.79E+10	0.32031	13.55111	119.2	5.3
371	1074	##########	28.39	22.66	21.77	0	8.6	9.83	0.52	57.94	0	2396.31	947.66	7429.43	13347.74	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.52	57.94	0.52	58.46	1414.86	5.63	1420.49	66.16	57.89	389.8	3.5	9.83E+09	2.79E+10	0.25632	13.25091	70.82	4.21
372	1075	##########	29.44	20.97	20.89	0	9.39	8.8	0.41	58.28	0	2380.64	872.31	7363.19	15017.87	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	58.28	36.66	8.8	27.86	9.39	0.41	58.28	0.41	58.68	1423	4.41	1427.4	59.22	63.16	392.04	2.74	8.8E+09	2.79E+10	0.33348	13.90764	134.22	5.52
373	1126	##########	31.62	18.28	25.59	0	10.1	6.2	0.61	56.85	0	2447.67	607.03	7201.02	15481.6	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	56.85	34.06	6.2	27.86	10.1	0.61	56.85	0.61	57.46	1388.22	6.57	1394.8	41.71	67.92	382.46	4.08	6.2E+09	2.79E+10	0.33818	15.43783	339.14	15.18
374	1127	##########	28.48	25.14	24.62	0	8.16	9.67	0.7	57.03	0	2380.37	907.36	7363.14	14892.6	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.03	37.52	9.67	27.86	8.16	0.7	57.03	0.7	57.73	1392.47	7.6	1400.08	65.03	54.91	383.63	4.72	9.67E+09	2.79E+10	0.18586	13.42336	79.63	3.76
375	1128	##########	29.27	22.86	22.3	0	9.06	9.01	0.48	57.84	0	2423.52	866.18	7390.42	14103.81	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.84	36.87	9.01	27.86	9.06	0.48	57.84	0.48	58.32	1412.28	5.2	1417.48	60.62	60.93	389.09	3.23	9.01E+09	2.79E+10	0.29375	13.66757	115.31	5.16
376	1129	##########	27.77	22.71	21.62	0	8.55	9.88	0.62	57.89	0	2397.14	950.2	7436.06	13839.7	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.62	57.89	0.62	58.51	1413.65	6.7	1420.35	66.43	57.53	389.47	4.16	9.88E+09	2.79E+10	0.22887	13.45566	68.61	4.08
377	1130	##########	28.89	20.97	20.7	0	9.34	8.86	0.49	58.25	0	2379.18	877.47	7371.35	14358.47	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	58.25	36.72	8.86	27.86	9.34	0.49	58.25	0.49	58.74	1422.43	5.3	1427.73	59.63	62.8	391.89	3.29	8.86E+09	2.79E+10	0.3071	14.02698	129.82	5.4
378	1131	##########	33.42	16.26	25.39	0	10.3	6.21	0.27	57.21	0	2425.1	608.05	7158.18	15276.31	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	57.21	34.07	6.21	27.86	10.3	0.27	57.21	0.27	57.47	1396.9	2.9	1399.8	41.81	69.29	384.85	1.8	6.21E+09	2.79E+10	0.44259	15.00819	338.13	15.18
379	1132	##########	30.37	23.13	24.49	0	8.35	9.67	0.35	57.37	0	2367.69	908.2	7337.44	13999.89	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	57.37	37.53	9.67	27.86	8.35	0.35	57.37	0.35	57.72	1400.85	3.85	1404.69	65.07	56.19	385.94	2.39	9.67E+09	2.79E+10	0.2837	12.64333	79.35	3.76
380	1133	##########	30.49	20.86	21.66	0	9.29	9.01	0.22	58.24	0	2411.8	866.95	7365.14	13985.92	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.24	36.87	9.01	27.86	9.29	0.22	58.24	0.22	58.46	1422.03	2.41	1424.44	60.64	62.47	391.78	1.5	9.01E+09	2.79E+10	0.38566	13.38608	115.12	5.16
381	1134	##########	29.46	20.7	21.31	0	8.76	9.88	0.3	58.26	0	2384.2	951.03	7410.06	13964.77	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.26	37.74	9.88	27.86	8.76	0.3	58.26	0.3	58.56	1422.66	3.22	1425.88	66.47	58.92	391.95	2	9.88E+09	2.79E+10	0.32477	12.85375	68.35	4.08
382	1135	##########	30.19	20.97	20.21	0	9.55	8.87	0.23	58.62	0	2370.46	878.2	7347.16	13945.02	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.62	36.73	8.87	27.86	9.55	0.23	58.62	0.23	58.84	1431.39	2.44	1433.83	59.67	64.22	394.36	1.51	8.87E+09	2.79E+10	0.39777	13.73042	129.63	5.4
383	1141	##########	33.61	17.8	28.26	0	9.62	6.51	0.38	56.35	0	2201.85	841.04	7090.56	15675.33	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	56.35	34.37	6.51	27.86	9.62	0.38	56.35	0.38	56.72	1375.94	4.07	1380.01	43.83	64.7	379.08	2.53	6.51E+09	2.79E+10	0.37205	14.42854	300.87	14.81
384	1142	##########	29.84	23.21	25.2	0	8.09	9.84	0.47	57.08	0	2356.13	923.47	7334.61	13370.43	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.08	37.7	9.84	27.86	8.09	0.47	57.08	0.47	57.55	1393.72	5.1	1398.82	66.21	54.43	383.98	3.17	9.84E+09	2.79E+10	0.23162	12.64813	70.17	3.39
385	1143	##########	30.29	20.87	22.85	0	8.91	9.25	0.31	57.84	0	2396.53	886.25	7360.33	14816.45	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.49	3.32	1415.81	62.24	59.95	389.15	2.06	9.25E+09	2.79E+10	0.3336	13.08464	102.23	4.78
386	1144	##########	29.12	22.8	22.36	0	8.46	10.03	0.4	57.89	0	2371.58	961.43	7400	13730.24	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.89	37.88	10.03	27.86	8.46	0.4	57.89	0.4	58.29	1413.62	4.36	1417.98	67.45	56.92	389.46	2.71	1E+10	2.79E+10	0.27348	12.76319	60.44	3.72
387	1145	##########	30.1	20.94	21.73	0	9.14	9.09	0.31	58.14	0	2359.62	896.13	7343.81	14584.39	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	58.14	36.94	9.09	27.86	9.14	0.31	58.14	0.31	58.45	1419.74	3.34	1423.08	61.13	61.48	391.15	2.08	9.09E+09	2.79E+10	0.34626	13.39834	115.07	5.03
388	1176	##########	32.31	18.4	26.02	0	10.12	6.13	0.52	56.82	0	2445.62	592.61	7178.77	15546.83	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.47	5.58	1393.05	41.23	68.11	382.25	3.47	6.13E+09	2.79E+10	0.36447	15.29724	350.26	15.31
389	1177	##########	29.05	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.44	903.33	7354.73	14408.54	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.88	6.7	1399.59	64.71	55.15	383.75	4.16	9.62E+09	2.79E+10	0.20961	13.23823	82.2	3.89
390	1178	##########	29.75	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.18	860.66	7381.05	14517.67	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.42	4.5	1416.92	60.15	61.24	389.13	2.79	8.94E+09	2.79E+10	0.3168	13.59375	119.2	5.3
391	1179	##########	28.29	22.66	21.76	0	8.59	9.83	0.54	57.93	0	2395.99	947.66	7429.25	13316.72	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.46	1414.49	5.83	1420.32	66.16	57.82	389.7	3.62	9.83E+09	2.79E+10	0.25268	13.30892	70.82	4.21
392	1180	##########	29.37	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.35	872.31	7363.01	14943.05	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.57	4.57	1427.14	59.22	63.08	391.92	2.84	8.8E+09	2.79E+10	0.33001	13.94985	134.22	5.52
393	1231	##########	31.53	18.28	25.6	0	10.08	6.2	0.62	56.83	0	2447.21	607.03	7200.61	15505.75	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.46	1387.81	6.76	1394.57	41.71	67.84	382.35	4.2	6.2E+09	2.79E+10	0.33508	15.48342	339.14	15.18
394	1232	##########	28.35	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2380.1	907.36	7363.02	15013.54	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.22	7.83	1400.05	65.03	54.85	383.56	4.86	9.67E+09	2.79E+10	0.18227	13.49424	79.63	3.76
395	1233	##########	29.19	22.86	22.3	0	9.05	9.01	0.5	57.82	0	2423.21	866.18	7390.21	14143.74	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.5	57.82	0.5	58.32	1411.9	5.38	1417.27	60.62	60.85	388.98	3.34	9.01E+09	2.79E+10	0.29034	13.71601	115.31	5.16
396	1234	##########	27.66	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2396.83	950.2	7435.89	13987.51	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.32	6.91	1420.22	66.43	57.46	389.38	4.29	9.88E+09	2.79E+10	0.22534	13.51851	68.61	4.08
397	1235	##########	28.8	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2378.91	877.47	7371.2	14423.76	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.99	5.48	1427.47	59.63	62.72	391.77	3.4	8.86E+09	2.79E+10	0.30375	14.07482	129.82	5.4
398	1236	##########	33.39	16.26	25.44	0	10.28	6.21	0.28	57.18	0	2424.55	608.05	7157.66	15493.76	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.32	3.02	1399.34	41.81	69.19	384.69	1.87	6.21E+09	2.79E+10	0.43917	15.02952	338.13	15.18
399	1237	##########	30.3	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.4	908.2	7337.29	14075.18	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.41	4.02	1404.42	65.07	56.11	385.82	2.49	9.67E+09	2.79E+10	0.2797	12.69433	79.35	3.76
400	1238	##########	30.46	20.86	21.71	0	9.27	9.01	0.23	58.21	0	2411.44	866.95	7364.9	14118.72	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.45	1421.5	2.53	1424.04	60.64	62.37	391.63	1.57	9.01E+09	2.79E+10	0.38199	13.40954	115.12	5.16
401	1239	##########	29.4	20.7	21.35	0	8.75	9.88	0.31	58.24	0	2383.87	951.03	7409.85	14095.75	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.31	58.24	0.31	58.55	1422.14	3.37	1425.51	66.47	58.84	391.81	2.09	9.88E+09	2.79E+10	0.32086	12.89401	68.35	4.08
402	1240	##########	30.14	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2370.15	878.2	7346.97	14077.31	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.81	2.57	1433.37	59.67	64.12	394.19	1.59	8.87E+09	2.79E+10	0.39417	13.75424	129.63	5.4
403	1246	##########	33.55	17.8	28.29	0	9.6	6.51	0.39	56.33	0	2201.81	841.04	7090.71	15667.34	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.72	1375.47	4.22	1379.69	43.83	64.61	378.95	2.62	6.51E+09	2.79E+10	0.36867	14.46516	300.87	14.81
404	1247	##########	29.74	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2355.88	923.47	7334.5	13512.98	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.38	5.3	1398.68	66.21	54.37	383.88	3.29	9.84E+09	2.79E+10	0.22761	12.71128	70.17	3.39
405	1248	##########	30.23	20.87	22.88	0	8.9	9.25	0.32	57.83	0	2396.2	886.25	7360.13	14962.85	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.32	57.83	0.32	58.14	1412.02	3.46	1415.48	62.24	59.86	389.02	2.15	9.25E+09	2.79E+10	0.3299	13.12136	102.23	4.78
406	1249	##########	29.04	22.8	22.37	0	8.45	10.03	0.42	57.87	0	2371.28	961.43	7399.84	13726.97	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.19	4.54	1417.73	67.45	56.84	389.34	2.82	1E+10	2.79E+10	0.26959	12.81691	60.44	3.72
407	1250	##########	30.03	20.94	21.75	0	9.13	9.09	0.32	58.12	0	2359.33	896.13	7343.65	14736.34	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.27	3.49	1422.75	61.13	61.4	391.01	2.17	9.09E+09	2.79E+10	0.34263	13.43473	115.07	5.03
408	1281	##########	32.28	18.4	26.02	0	10.12	6.13	0.52	56.81	0	2445.43	592.61	7178.6	15523.71	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.52	56.81	0.52	57.34	1387.33	5.65	1392.98	41.23	68.08	382.22	3.51	6.13E+09	2.79E+10	0.36328	15.3176	350.26	15.31
409	1282	##########	29.01	23.1	24.81	0	8.2	9.62	0.63	57.04	0	2379.36	903.33	7354.7	14441.85	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.63	57.04	0.63	57.67	1392.84	6.78	1399.62	64.71	55.13	383.73	4.21	9.62E+09	2.79E+10	0.20831	13.26951	82.2	3.89
410	1283	##########	29.72	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.05	860.66	7380.97	14425.96	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.31	4.56	1416.88	60.15	61.21	389.1	2.83	8.94E+09	2.79E+10	0.3155	13.61572	119.2	5.3
411	1284	##########	28.26	22.66	21.76	0	8.59	9.83	0.54	57.92	0	2395.9	947.66	7429.22	13352.3	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.54	57.92	0.54	58.47	1414.39	5.9	1420.3	66.16	57.8	389.67	3.66	9.83E+09	2.79E+10	0.25137	13.33688	70.82	4.21
412	1285	##########	29.34	20.97	20.91	0	9.37	8.8	0.43	58.25	0	2380.26	872.31	7362.97	14817.53	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.37	0.43	58.25	0.43	58.68	1422.41	4.63	1427.04	59.22	63.05	391.88	2.88	8.8E+09	2.79E+10	0.32873	13.9719	134.22	5.52
413	1336	##########	31.5	18.28	25.59	0	10.08	6.2	0.63	56.83	0	2447.03	607.03	7200.44	15468.74	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.68	6.84	1394.52	41.71	67.81	382.31	4.24	6.2E+09	2.79E+10	0.33395	15.50546	339.14	15.18
414	1337	##########	28.31	25.14	24.57	0	8.15	9.67	0.73	57.01	0	2380.02	907.36	7363	14990.23	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.73	57.01	0.73	57.74	1392.14	7.91	1400.05	65.03	54.84	383.54	4.91	9.67E+09	2.79E+10	0.18103	13.52679	79.63	3.76
415	1338	##########	29.16	22.86	22.31	0	9.04	9.01	0.5	57.82	0	2423.09	866.18	7390.17	14117.94	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.77	5.44	1417.22	60.62	60.83	388.95	3.38	9.01E+09	2.79E+10	0.28911	13.74003	115.31	5.16
416	1339	##########	27.62	22.71	21.6	0	8.54	9.88	0.65	57.87	0	2396.75	950.2	7435.87	14031.02	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.65	57.87	0.65	58.52	1413.23	6.99	1420.22	66.43	57.44	389.35	4.34	9.88E+09	2.79E+10	0.2241	13.54806	68.61	4.08
417	1340	##########	28.76	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2378.82	877.47	7371.16	14402.16	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.89	5.55	1427.44	59.63	62.7	391.74	3.45	8.86E+09	2.79E+10	0.30253	14.09861	129.82	5.4
418	1341	##########	33.36	16.26	25.46	0	10.28	6.21	0.28	57.17	0	2424.31	608.05	7157.42	15582.17	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	57.17	34.07	6.21	27.86	10.28	0.28	57.17	0.28	57.46	1396.1	3.07	1399.16	41.81	69.15	384.63	1.91	6.21E+09	2.79E+10	0.43783	15.04217	338.13	15.18
419	1342	##########	30.26	23.13	24.5	0	8.34	9.67	0.38	57.34	0	2367.31	908.2	7337.26	14091.72	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.34	0.38	57.34	0.38	57.72	1400.28	4.09	1404.37	65.07	56.09	385.78	2.54	9.67E+09	2.79E+10	0.27823	12.72047	79.35	3.76
420	1343	##########	30.43	20.86	21.72	0	9.27	9.01	0.24	58.21	0	2411.33	866.95	7364.84	14252.16	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.24	58.21	0.24	58.44	1421.3	2.59	1423.89	60.64	62.33	391.57	1.61	9.01E+09	2.79E+10	0.38059	13.42419	115.12	5.16
421	1344	##########	29.37	20.7	21.35	0	8.74	9.88	0.32	58.23	0	2383.77	951.03	7409.81	14138.04	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.32	58.23	0.32	58.55	1421.99	3.43	1425.43	66.47	58.81	391.77	2.13	9.88E+09	2.79E+10	0.3194	12.91567	68.35	4.08
422	1345	##########	30.12	20.97	20.27	0	9.53	8.87	0.24	58.59	0	2370.05	878.2	7346.92	14122.59	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.61	2.62	1433.23	59.67	64.08	394.14	1.63	8.87E+09	2.79E+10	0.39279	13.76892	129.63	5.4
423	1351	##########	33.52	17.8	28.3	0	9.6	6.51	0.4	56.32	0	2201.89	841.04	7090.89	15619.33	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.4	56.32	0.4	56.72	1375.28	4.28	1379.57	43.83	64.57	378.9	2.66	6.51E+09	2.79E+10	0.36741	14.48446	300.87	14.81
424	1352	##########	29.7	23.21	25.18	0	8.08	9.84	0.5	57.06	0	2355.81	923.47	7334.49	13556.06	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.5	57.06	0.5	57.56	1393.29	5.38	1398.68	66.21	54.35	383.86	3.34	9.84E+09	2.79E+10	0.22617	12.74191	70.17	3.39
425	1353	##########	30.2	20.87	22.89	0	8.89	9.25	0.32	57.82	0	2396.1	886.25	7360.08	14915.73	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.89	0.32	57.82	0.32	58.14	1411.87	3.52	1415.39	62.24	59.83	388.98	2.19	9.25E+09	2.79E+10	0.32851	13.14153	102.23	4.78
426	1354	##########	29.01	22.8	22.36	0	8.45	10.03	0.43	57.87	0	2371.19	961.43	7399.81	13731.19	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.43	57.87	0.43	58.29	1413.06	4.61	1417.68	67.45	56.82	389.31	2.86	1E+10	2.79E+10	0.26817	12.84382	60.44	3.72
427	1355	##########	30.01	20.94	21.76	0	9.12	9.09	0.33	58.12	0	2359.24	896.13	7343.62	14821.22	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.12	0.33	58.12	0.33	58.44	1419.11	3.55	1422.66	61.13	61.36	390.97	2.2	9.09E+09	2.79E+10	0.34128	13.45472	115.07	5.03
428	1386	##########	32.33	18.4	26.01	0	10.13	6.13	0.51	56.83	0	2445.81	592.61	7178.96	15545.4	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.59	5.54	1393.13	41.23	68.13	382.29	3.44	6.13E+09	2.79E+10	0.36531	15.28788	350.26	15.31
429	1387	##########	29.07	23.1	24.83	0	8.2	9.62	0.61	57.05	0	2379.73	903.33	7355.04	14378.34	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1392.97	6.65	1399.62	64.71	55.17	383.77	4.13	9.62E+09	2.79E+10	0.21056	13.22219	82.2	3.89
430	1388	##########	29.76	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2423.47	860.66	7381.38	14535.99	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.55	4.46	1417	60.15	61.26	389.16	2.77	8.94E+09	2.79E+10	0.31771	13.58371	119.2	5.3
431	1389	##########	28.32	22.66	21.77	0	8.6	9.83	0.53	57.93	0	2396.28	947.66	7429.57	13310.12	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53	57.93	0.53	58.46	1414.58	5.78	1420.36	66.16	57.84	389.72	3.59	9.83E+09	2.79E+10	0.25362	13.29503	70.82	4.21
432	1390	##########	29.39	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.62	872.31	7363.32	14990.04	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.68	4.52	1427.21	59.22	63.1	391.96	2.81	8.8E+09	2.79E+10	0.33091	13.93999	134.22	5.52
433	1441	##########	31.55	18.28	25.59	0	10.09	6.2	0.62	56.84	0	2447.39	607.03	7200.78	15501.89	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.62	56.84	0.62	57.46	1387.93	6.71	1394.64	41.71	67.86	382.38	4.17	6.2E+09	2.79E+10	0.33588	15.47269	339.14	15.18
434	1442	##########	28.38	25.14	24.59	0	8.16	9.67	0.72	57.02	0	2380.38	907.36	7363.32	14947.46	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.72	57.02	0.72	57.74	1392.3	7.77	1400.07	65.03	54.87	383.58	4.83	9.67E+09	2.79E+10	0.18318	13.47722	79.63	3.76
435	1443	##########	29.21	22.86	22.31	0	9.05	9.01	0.49	57.82	0	2423.49	866.18	7390.54	14148.33	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.49	57.82	0.49	58.32	1411.99	5.33	1417.31	60.62	60.87	389.01	3.31	9.01E+09	2.79E+10	0.29122	13.7045	115.31	5.16
436	1444	##########	27.69	22.71	21.61	0	8.54	9.88	0.63	57.88	0	2397.13	950.2	7436.21	13922.34	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.63	57.88	0.63	58.51	1413.39	6.86	1420.25	66.43	57.48	389.4	4.26	9.88E+09	2.79E+10	0.22625	13.50345	68.61	4.08
437	1445	##########	28.82	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.18	877.47	7371.5	14423.53	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.08	5.44	1427.52	59.63	62.74	391.79	3.38	8.86E+09	2.79E+10	0.30462	14.06355	129.82	5.4
438	1446	##########	33.39	16.26	25.43	0	10.29	6.21	0.28	57.19	0	2424.76	608.05	7157.87	15434.38	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.28	57.19	0.28	57.46	1396.45	2.99	1399.44	41.81	69.22	384.73	1.86	6.21E+09	2.79E+10	0.44006	15.02496	338.13	15.18
439	1447	##########	30.31	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.69	908.2	7337.61	14064.16	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.53	3.97	1404.5	65.07	56.13	385.85	2.47	9.67E+09	2.79E+10	0.28073	12.68209	79.35	3.76
440	1448	##########	30.47	20.86	21.7	0	9.27	9.01	0.23	58.22	0	2411.75	866.95	7365.24	14082.07	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.27	0.23	58.22	0.23	58.45	1421.63	2.5	1424.13	60.64	62.4	391.67	1.55	9.01E+09	2.79E+10	0.38295	13.40426	115.12	5.16
441	1449	##########	29.41	20.7	21.34	0	8.75	9.88	0.31	58.25	0	2384.17	951.03	7410.19	14063.53	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.31	58.25	0.31	58.55	1422.28	3.33	1425.61	66.47	58.86	391.84	2.07	9.88E+09	2.79E+10	0.32187	12.8845	68.35	4.08
442	1450	##########	30.16	20.97	20.25	0	9.53	8.87	0.23	58.6	0	2370.43	878.2	7347.28	14043.29	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.53	0.23	58.6	0.23	58.83	1430.95	2.53	1433.48	59.67	64.14	394.23	1.57	8.87E+09	2.79E+10	0.39511	13.74897	129.63	5.4
443	1456	##########	33.56	17.8	28.29	0	9.61	6.51	0.39	56.33	0	2202.03	841.04	7090.95	15665.65	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.39	56.33	0.39	56.72	1375.56	4.19	1379.75	43.83	64.63	378.97	2.6	6.51E+09	2.79E+10	0.36954	14.45689	300.87	14.81
444	1457	##########	29.77	23.21	25.19	0	8.08	9.84	0.48	57.07	0	2356.17	923.47	7334.8	13475.9	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.08	0.48	57.07	0.48	57.55	1393.46	5.25	1398.71	66.21	54.38	383.9	3.26	9.84E+09	2.79E+10	0.22864	12.69605	70.17	3.39
445	1458	##########	30.25	20.87	22.88	0	8.9	9.25	0.32	57.83	0	2396.49	886.25	7360.46	14916.26	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.32	57.83	0.32	58.15	1412.14	3.42	1415.56	62.24	59.88	389.05	2.13	9.25E+09	2.79E+10	0.33086	13.11277	102.23	4.78
446	1459	##########	29.06	22.8	22.36	0	8.45	10.03	0.42	57.88	0	2371.57	961.43	7400.16	13724.27	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.45	0.42	57.88	0.42	58.29	1413.31	4.5	1417.8	67.45	56.86	389.37	2.79	1E+10	2.79E+10	0.27059	12.80401	60.44	3.72
447	1460	##########	30.05	20.94	21.75	0	9.13	9.09	0.32	58.13	0	2359.61	896.13	7343.96	14688.11	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.32	58.13	0.32	58.45	1419.38	3.45	1422.83	61.13	61.42	391.05	2.14	9.09E+09	2.79E+10	0.34357	13.42628	115.07	5.03
448	1491	##########	32.19	18.4	26.02	0	10.11	6.13	0.54	56.8	0	2445.28	592.61	7178.59	15475.1	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.54	56.8	0.54	57.34	1386.95	5.82	1392.77	41.23	68	382.11	3.62	6.13E+09	2.79E+10	0.36034	15.36273	350.26	15.31
449	1492	##########	28.89	23.1	24.78	0	8.19	9.62	0.65	57.03	0	2379.21	903.33	7354.76	14548.06	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.65	57.03	0.65	57.68	1392.62	6.99	1399.61	64.71	55.09	383.67	4.34	9.62E+09	2.79E+10	0.20494	13.34	82.2	3.89
450	1493	##########	29.63	20.84	22.5	0	9.09	8.94	0.44	57.82	0	2422.85	860.66	7380.95	14281.9	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.82	36.8	8.94	27.86	9.09	0.44	57.82	0.44	58.26	1411.95	4.73	1416.68	60.15	61.14	389	2.94	8.94E+09	2.79E+10	0.31228	13.66361	119.2	5.3
451	1494	##########	28.15	22.66	21.74	0	8.58	9.83	0.56	57.91	0	2395.72	947.66	7429.23	13465.51	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.58	0.56	57.91	0.56	58.47	1414.13	6.1	1420.23	66.16	57.74	389.6	3.79	9.83E+09	2.79E+10	0.24804	13.39918	70.82	4.21
452	1495	##########	29.26	20.97	20.92	0	9.36	8.8	0.44	58.24	0	2380.09	872.31	7362.99	14641.5	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.36	0.44	58.24	0.44	58.68	1422.06	4.79	1426.85	59.22	62.98	391.78	2.98	8.8E+09	2.79E+10	0.32557	14.01948	134.22	5.52
453	1546	##########	31.4	18.28	25.59	0	10.07	6.2	0.65	56.81	0	2446.91	607.03	7200.47	15588.5	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	56.81	34.06	6.2	27.86	10.07	0.65	56.81	0.65	57.46	1387.34	7.03	1394.37	41.71	67.74	382.22	4.36	6.2E+09	2.79E+10	0.33112	15.5553	339.14	15.18
454	1547	##########	28.18	25.14	24.53	0	8.15	9.67	0.75	57	0	2379.88	907.36	7363.08	14999.78	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.75	57	0.75	57.75	1391.94	8.13	1400.07	65.03	54.8	383.49	5.05	9.67E+09	2.79E+10	0.17777	13.60108	79.63	3.76
455	1548	##########	29.07	22.86	22.29	0	9.03	9.01	0.52	57.8	0	2422.9	866.18	7390.16	14186.89	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.8	36.87	9.01	27.86	9.03	0.52	57.8	0.52	58.32	1411.48	5.62	1417.1	60.62	60.77	388.87	3.49	9.01E+09	2.79E+10	0.28599	13.79285	115.31	5.16
456	1549	##########	27.51	22.71	21.57	0	8.53	9.88	0.66	57.87	0	2396.57	950.2	7435.89	14146.45	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.53	0.66	57.87	0.66	58.53	1412.99	7.2	1420.19	66.43	57.39	389.29	4.47	9.88E+09	2.79E+10	0.22088	13.61494	68.61	4.08
457	1550	##########	28.67	22.97	20.7	0	9.31	8.86	0.53	58.22	0	2378.67	877.47	7371.2	14449.06	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.31	0.53	58.22	0.53	58.74	1421.56	5.73	1427.29	59.63	62.63	391.65	3.56	8.86E+09	2.79E+10	0.29946	14.15116	129.82	5.4
458	1551	##########	33.32	16.26	25.5	0	10.27	6.21	0.29	57.15	0	2424.11	608.05	7157.35	15629.69	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	57.15	34.07	6.21	27.86	10.27	0.29	57.15	0.29	57.45	1395.6	3.2	1398.8	41.81	69.06	384.5	1.98	6.21E+09	2.79E+10	0.43465	15.06982	338.13	15.18
459	1552	##########	30.17	23.13	24.49	0	8.33	9.67	0.39	57.33	0	2367.15	908.2	7337.31	14038.7	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	57.33	37.53	9.67	27.86	8.33	0.39	57.33	0.39	57.73	1399.97	4.26	1404.23	65.07	56.03	385.7	2.65	9.67E+09	2.79E+10	0.27454	12.77757	79.35	3.76
460	1553	##########	30.39	20.86	21.76	0	9.25	9.01	0.25	58.19	0	2411.14	866.95	7364.83	14566.29	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.25	0.25	58.19	0.25	58.44	1420.81	2.71	1423.52	60.64	62.25	391.44	1.68	9.01E+09	2.79E+10	0.37719	13.4544	115.12	5.16
461	1554	##########	29.29	20.7	21.36	0	8.73	9.88	0.33	58.22	0	2383.58	951.03	7409.82	14188.66	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	58.22	37.74	9.88	27.86	8.73	0.33	58.22	0.33	58.55	1421.6	3.59	1425.19	66.47	58.74	391.66	2.23	9.88E+09	2.79E+10	0.3158	12.96233	68.35	4.08
462	1555	##########	30.07	20.97	20.31	0	9.51	8.87	0.25	58.57	0	2369.92	878.2	7346.92	14240.67	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.51	0.25	58.57	0.25	58.82	1430.14	2.74	1432.88	59.67	64	394.01	1.7	8.87E+09	2.79E+10	0.38943	13.79924	129.63	5.4
463	1561	##########	33.45	17.8	28.31	0	9.59	6.51	0.41	56.31	0	2201.89	841.04	7091.23	15411.35	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.41	56.31	0.41	56.71	1374.9	4.44	1379.33	43.83	64.5	378.79	2.76	6.51E+09	2.79E+10	0.36429	14.52654	300.87	14.81
464	1562	##########	29.58	23.21	25.15	0	8.07	9.84	0.52	57.05	0	2355.67	923.47	7334.57	13689.46	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.52	57.05	0.52	57.56	1393.07	5.58	1398.65	66.21	54.3	383.8	3.47	9.84E+09	2.79E+10	0.22249	12.80948	70.17	3.39
465	1563	##########	30.14	20.87	22.89	0	8.88	9.25	0.34	57.81	0	2395.9	886.25	7360.08	14844.01	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.88	0.34	57.81	0.34	58.14	1411.54	3.67	1415.21	62.24	59.76	388.89	2.28	9.25E+09	2.79E+10	0.32508	13.18424	102.23	4.78
466	1564	##########	28.91	22.8	22.35	0	8.44	10.03	0.44	57.86	0	2371.02	961.43	7399.84	13725.3	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.44	57.86	0.44	58.3	1412.76	4.79	1417.56	67.45	56.76	389.22	2.98	1E+10	2.79E+10	0.26459	12.90311	60.44	3.72
467	1565	##########	29.95	20.94	21.78	0	9.11	9.09	0.34	58.1	0	2359.08	896.13	7343.65	15029.81	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.11	0.34	58.1	0.34	58.44	1418.69	3.69	1422.38	61.13	61.29	390.85	2.29	9.09E+09	2.79E+10	0.33794	13.49721	115.07	5.03
468	1596	##########	32.29	18.4	26.02	0	10.12	6.13	0.52	56.82	0	2445.57	592.61	7178.74	15544.77	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.33	1387.36	5.62	1392.98	41.23	68.09	382.23	3.49	6.13E+09	2.79E+10	0.36379	15.30607	350.26	15.31
469	1597	##########	29.02	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.6	903.33	7354.97	14431.25	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.8	6.75	1399.55	64.71	55.14	383.72	4.19	9.62E+09	2.79E+10	0.20881	13.25245	82.2	3.89
470	1598	##########	29.73	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.32	860.66	7381.27	14506.8	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.32	4.53	1416.85	60.15	61.22	389.1	2.81	8.94E+09	2.79E+10	0.31605	13.60295	119.2	5.3
471	1599	##########	28.28	22.66	21.77	0	8.59	9.83	0.54	57.92	0	2396.14	947.66	7429.48	13340.8	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.54	57.92	0.54	58.46	1414.4	5.87	1420.27	66.16	57.8	389.67	3.64	9.83E+09	2.79E+10	0.2519	13.3213	70.82	4.21
472	1600	##########	29.35	20.97	20.92	0	9.37	8.8	0.42	58.25	0	2380.49	872.31	7363.24	14917.31	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.37	0.42	58.25	0.42	58.68	1422.46	4.6	1427.06	59.22	63.06	391.89	2.86	8.8E+09	2.79E+10	0.32927	13.95932	134.22	5.52
473	1651	##########	31.51	18.28	25.6	0	10.08	6.2	0.63	56.83	0	2447.17	607.03	7200.59	15481	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.7	6.8	1394.51	41.71	67.82	382.32	4.22	6.2E+09	2.79E+10	0.33442	15.4933	339.14	15.18
474	1652	##########	28.33	25.14	24.58	0	8.15	9.67	0.73	57.01	0	2380.25	907.36	7363.26	14999.46	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.73	57.01	0.73	57.74	1392.15	7.87	1400.03	65.03	54.84	383.54	4.89	9.67E+09	2.79E+10	0.18149	13.50938	79.63	3.76
475	1653	##########	29.17	22.86	22.31	0	9.04	9.01	0.5	57.82	0	2423.34	866.18	7390.44	14126.7	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.79	5.41	1417.2	60.62	60.84	388.95	3.36	9.01E+09	2.79E+10	0.28961	13.72641	115.31	5.16
476	1654	##########	27.64	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2396.98	950.2	7436.13	14017.3	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.23	6.95	1420.18	66.43	57.45	389.35	4.32	9.88E+09	2.79E+10	0.22458	13.53194	68.61	4.08
477	1655	##########	28.78	20.97	20.72	0	9.32	8.86	0.51	58.23	0	2379.05	877.47	7371.42	14408.61	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.89	5.52	1427.41	59.63	62.7	391.74	3.43	8.86E+09	2.79E+10	0.30304	14.08516	129.82	5.4
478	1656	##########	33.37	16.26	25.46	0	10.28	6.21	0.28	57.18	0	2424.5	608.05	7157.61	15545.14	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.18	3.05	1399.22	41.81	69.17	384.65	1.89	6.21E+09	2.79E+10	0.43844	15.03417	338.13	15.18
479	1657	##########	30.27	23.13	24.51	0	8.34	9.67	0.37	57.35	0	2367.55	908.2	7337.53	14085.46	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.31	4.05	1404.36	65.07	56.1	385.79	2.52	9.67E+09	2.79E+10	0.27884	12.7052	79.35	3.76
480	1658	##########	30.44	20.86	21.72	0	9.27	9.01	0.24	58.21	0	2411.59	866.95	7365.13	14177.69	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.24	58.21	0.24	58.44	1421.37	2.56	1423.93	60.64	62.35	391.59	1.59	9.01E+09	2.79E+10	0.38122	13.41473	115.12	5.16
481	1659	##########	29.39	20.7	21.35	0	8.74	9.88	0.31	58.24	0	2384.02	951.03	7410.09	14120.55	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.74	0.31	58.24	0.31	58.55	1422.04	3.4	1425.45	66.47	58.82	391.78	2.11	9.88E+09	2.79E+10	0.32003	12.90267	68.35	4.08
482	1660	##########	30.13	20.97	20.27	0	9.53	8.87	0.24	58.59	0	2370.29	878.2	7347.19	14102.09	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.68	2.59	1433.27	59.67	64.09	394.16	1.61	8.87E+09	2.79E+10	0.3934	13.75958	129.63	5.4
483	1666	##########	33.54	17.8	28.3	0	9.6	6.51	0.39	56.32	0	2202.01	841.04	7091.01	15672.03	0.3	0.221	0.229	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.39	56.32	0.39	56.72	1375.34	4.25	1379.59	43.83	64.59	378.91	2.64	6.51E+09	2.79E+10	0.36795	14.47303	300.87	14.81
484	1667	##########	29.72	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2356.04	923.47	7334.74	13540.3	0.3	0.221	0.229	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.28	5.34	1398.62	66.21	54.35	383.86	3.32	9.84E+09	2.79E+10	0.22674	12.72465	70.17	3.39
485	1668	##########	30.22	20.87	22.89	0	8.89	9.25	0.32	57.82	0	2396.34	886.25	7360.36	14954.76	0.3	0.221	0.229	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.89	0.32	57.82	0.32	58.14	1411.91	3.49	1415.4	62.24	59.84	388.99	2.17	9.25E+09	2.79E+10	0.32911	13.12926	102.23	4.78
486	1669	##########	29.03	22.8	22.37	0	8.45	10.03	0.42	57.87	0	2371.43	961.43	7400.07	13729.89	0.3	0.221	0.229	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.1	4.58	1417.68	67.45	56.82	389.32	2.84	1E+10	2.79E+10	0.26876	12.82836	60.44	3.72
487	1670	##########	30.03	20.94	21.76	0	9.12	9.09	0.32	58.12	0	2359.47	896.13	7343.88	14778.72	0.3	0.221	0.229	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.12	0.32	58.12	0.32	58.44	1419.17	3.52	1422.69	61.13	61.38	390.99	2.18	9.09E+09	2.79E+10	0.34186	13.44267	115.07	5.03
488	1701	##########	32.35	18.4	26	0	10.13	6.13	0.51	56.83	0	2445.88	592.61	7179.02	15549.93	0.3	0.188	0.194	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.68	5.51	1393.19	41.23	68.14	382.31	3.42	6.13E+09	2.79E+10	0.36584	15.28111	350.26	15.31
489	1702	##########	29.09	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.77	903.33	7355.05	14358.92	0.3	0.188	0.194	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.02	6.61	1399.63	64.71	55.18	383.78	4.11	9.62E+09	2.79E+10	0.21118	13.21104	82.2	3.89
490	1703	##########	29.78	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2423.52	860.66	7381.4	14543.94	0.3	0.188	0.194	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.62	4.43	1417.04	60.15	61.27	389.18	2.75	8.94E+09	2.79E+10	0.3183	13.57657	119.2	5.3
491	1704	##########	28.33	22.66	21.77	0	8.6	9.83	0.53	57.93	0	2396.33	947.66	7429.59	13317.44	0.3	0.188	0.194	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53	57.93	0.53	58.46	1414.64	5.75	1420.39	66.16	57.85	389.74	3.57	9.83E+09	2.79E+10	0.25423	13.28534	70.82	4.21
492	1705	##########	29.4	20.97	20.9	0	9.38	8.8	0.42	58.27	0	2380.66	872.31	7363.34	15003.2	0.3	0.188	0.194	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.42	58.27	0.42	58.68	1422.75	4.5	1427.25	59.22	63.12	391.98	2.79	8.8E+09	2.79E+10	0.3315	13.93286	134.22	5.52
493	1756	##########	31.57	18.28	25.59	0	10.09	6.2	0.62	56.84	0	2447.46	607.03	7200.85	15497.97	0.3	0.188	0.194	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.62	56.84	0.62	57.46	1388	6.68	1394.68	41.71	67.87	382.4	4.15	6.2E+09	2.79E+10	0.33641	15.46509	339.14	15.18
494	1757	##########	28.41	25.14	24.59	0	8.16	9.67	0.71	57.02	0	2380.41	907.36	7363.33	14939.01	0.3	0.188	0.194	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.35	7.73	1400.08	65.03	54.88	383.6	4.8	9.67E+09	2.79E+10	0.18379	13.46529	79.63	3.76

495	1758	##########	29.23	22.86	22.31	0	9.05	9.01	0.49	57.83	0	2423.53	866.18	7390.56	14146.83	0.3	0.188	0.194	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.05	5.3	1417.35	60.62	60.89	389.03	3.29	9.01E+09	2.79E+10	0.2918	13.69645	115.31	5.16
496	1759	##########	27.71	22.71	21.62	0	8.55	9.88	0.63	57.88	0	2397.17	950.2	7436.23	13912.53	0.3	0.188	0.194	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.55	0.63	57.88	0.63	58.51	1413.46	6.82	1420.28	66.43	57.49	389.41	4.23	9.88E+09	2.79E+10	0.22684	13.49286	68.61	4.08
497	1760	##########	28.83	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.22	877.47	7371.51	14419.24	0.3	0.188	0.194	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.15	5.41	1427.56	59.63	62.76	391.81	3.36	8.86E+09	2.79E+10	0.30518	14.05554	129.82	5.4
498	1761	##########	33.4	16.26	25.42	0	10.29	6.21	0.27	57.19	0	2424.85	608.05	7157.95	15398.57	0.3	0.188	0.194	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.47	1396.55	2.97	1399.52	41.81	69.23	384.76	1.84	6.21E+09	2.79E+10	0.44064	15.0214	338.13	15.18
499	1762	##########	30.33	23.13	24.5	0	8.35	9.67	0.36	57.36	0	2367.73	908.2	7337.63	14065.83	0.3	0.188	0.194	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.6	3.94	1404.55	65.07	56.14	385.87	2.45	9.67E+09	2.79E+10	0.2814	12.67355	79.35	3.76
500	1763	##########	30.47	20.86	21.69	0	9.28	9.01	0.23	58.22	0	2411.8	866.95	7365.27	14059.11	0.3	0.188	0.194	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.28	0.23	58.22	0.23	58.45	1421.73	2.48	1424.21	60.64	62.41	391.69	1.54	9.01E+09	2.79E+10	0.38356	13.40033	115.12	5.16
501	1764	##########	29.43	20.7	21.33	0	8.75	9.88	0.31	58.25	0	2384.22	951.03	7410.21	14044.12	0.3	0.188	0.194	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.31	58.25	0.31	58.55	1422.36	3.31	1425.66	66.47	58.87	391.87	2.05	9.88E+09	2.79E+10	0.32253	12.87777	68.35	4.08
502	1765	##########	30.16	20.97	20.24	0	9.54	8.87	0.23	58.6	0	2370.48	878.2	7347.3	14020.66	0.3	0.188	0.194	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.54	0.23	58.6	0.23	58.84	1431.04	2.51	1433.55	59.67	64.16	394.26	1.56	8.87E+09	2.79E+10	0.39571	13.74498	129.63	5.4
503	1771	##########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2202.03	841.04	7090.91	15665.52	0.3	0.188	0.194	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.65	4.16	1379.81	43.83	64.65	379	2.58	6.51E+09	2.79E+10	0.37012	14.45057	300.87	14.81
504	1772	##########	29.78	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.2	923.47	7334.81	13452.47	0.3	0.188	0.194	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.52	5.22	1398.74	66.21	54.39	383.92	3.24	9.84E+09	2.79E+10	0.22932	12.68555	70.17	3.39
505	1773	##########	30.26	20.87	22.87	0	8.9	9.25	0.31	57.83	0	2396.54	886.25	7360.48	14898.75	0.3	0.188	0.194	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.31	57.83	0.31	58.15	1412.22	3.4	1415.62	62.24	59.9	389.07	2.11	9.25E+09	2.79E+10	0.33148	13.10659	102.23	4.78
506	1774	##########	29.07	22.8	22.36	0	8.45	10.03	0.41	57.88	0	2371.62	961.43	7400.18	13723.89	0.3	0.188	0.194	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.45	0.41	57.88	0.41	58.29	1413.38	4.47	1417.85	67.45	56.87	389.39	2.78	1E+10	2.79E+10	0.27125	12.79501	60.44	3.72
507	1775	##########	30.06	20.94	21.75	0	9.13	9.09	0.32	58.13	0	2359.65	896.13	7343.98	14657.52	0.3	0.188	0.194	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.32	58.13	0.32	58.45	1419.44	3.43	1422.87	61.13	61.43	391.06	2.13	9.09E+09	2.79E+10	0.34419	13.42023	115.07	5.03
508	1806	##########	32.22	18.4	26.02	0	10.11	6.13	0.53	56.8	0	2445.32	592.61	7178.58	15498.76	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.53	56.8	0.53	57.34	1387.08	5.76	1392.84	41.23	68.03	382.15	3.58	6.13E+09	2.79E+10	0.36135	15.3471	350.26	15.31
509	1807	##########	28.93	23.1	24.79	0	8.19	9.62	0.64	57.03	0	2379.26	903.33	7354.75	14512.5	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.64	57.03	0.64	57.67	1392.69	6.92	1399.61	64.71	55.1	383.69	4.3	9.62E+09	2.79E+10	0.20609	13.31559	82.2	3.89
510	1808	##########	29.66	20.84	22.5	0	9.09	8.94	0.43	57.83	0	2422.92	860.66	7380.96	14321.47	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.09	0.43	57.83	0.43	58.26	1412.07	4.67	1416.74	60.15	61.16	389.03	2.9	8.94E+09	2.79E+10	0.31338	13.64698	119.2	5.3
511	1809	##########	28.19	22.66	21.74	0	8.59	9.83	0.56	57.92	0	2395.79	947.66	7429.23	13427.54	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.56	57.92	0.56	58.47	1414.22	6.03	1420.25	66.16	57.76	389.62	3.74	9.83E+09	2.79E+10	0.24919	13.37758	70.82	4.21
512	1810	##########	29.29	20.97	20.92	0	9.37	8.8	0.44	58.24	0	2380.15	872.31	7362.99	14691.51	0.3	0.269	0.28	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.37	0.44	58.24	0.44	58.68	1422.18	4.74	1426.91	59.22	63	391.82	2.94	8.8E+09	2.79E+10	0.32665	14.00291	134.22	5.52
513	1861	##########	31.43	18.28	25.59	0	10.07	6.2	0.64	56.82	0	2446.94	607.03	7200.45	15551.59	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.07	0.64	56.82	0.64	57.46	1387.46	6.96	1394.41	41.71	67.76	382.25	4.32	6.2E+09	2.79E+10	0.33209	15.538	339.14	15.18
514	1862	##########	28.23	25.14	24.55	0	8.15	9.67	0.74	57.01	0	2379.93	907.36	7363.05	14965.29	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.74	57.01	0.74	57.75	1392.01	8.05	1400.07	65.03	54.81	383.51	5	9.67E+09	2.79E+10	0.17889	13.57545	79.63	3.76
515	1863	##########	29.1	22.86	22.3	0	9.04	9.01	0.51	57.81	0	2422.97	866.18	7390.16	14173.31	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.81	36.87	9.01	27.86	9.04	0.51	57.81	0.51	58.32	1411.56	5.56	1417.12	60.62	60.78	388.89	3.45	9.01E+09	2.79E+10	0.28707	13.7746	115.31	5.16
516	1864	##########	27.55	22.71	21.58	0	8.53	9.88	0.66	57.87	0	2396.64	950.2	7435.89	14083.54	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.53	0.66	57.87	0.66	58.53	1413.06	7.12	1420.18	66.43	57.41	389.3	4.42	9.88E+09	2.79E+10	0.22198	13.59181	68.61	4.08
517	1865	##########	28.71	20.97	20.71	0	9.31	8.86	0.52	58.22	0	2378.73	877.47	7371.19	14462.15	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.31	0.52	58.22	0.52	58.74	1421.67	5.67	1427.34	59.63	62.65	391.68	3.52	8.86E+09	2.79E+10	0.30052	14.13297	129.82	5.4
518	1866	##########	33.33	16.26	25.49	0	10.27	6.21	0.29	57.16	0	2424.17	608.05	7157.36	15613.91	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	57.16	34.07	6.21	27.86	10.27	0.29	57.16	0.29	57.45	1395.76	3.15	1398.91	41.81	69.09	384.54	1.96	6.21E+09	2.79E+10	0.43574	15.0601	338.13	15.18
519	1867	##########	30.2	23.13	24.5	0	8.33	9.67	0.39	57.34	0	2367.21	908.2	7337.3	14079.34	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.33	0.39	57.34	0.39	57.72	1400.07	4.2	1404.27	65.07	56.05	385.73	2.61	9.67E+09	2.79E+10	0.2758	12.75769	79.35	3.76
520	1868	##########	30.4	20.86	21.74	0	9.26	9.01	0.25	58.19	0	2411.21	866.95	7364.85	14459.03	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.26	0.25	58.19	0.25	58.44	1420.98	2.67	1423.65	60.64	62.28	391.49	1.66	9.01E+09	2.79E+10	0.37836	13.44373	115.12	5.16
521	1869	##########	29.32	20.7	21.35	0	8.73	9.88	0.33	58.22	0	2383.65	951.03	7409.82	14194.44	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	58.22	37.74	9.88	27.86	8.73	0.33	58.22	0.33	58.55	1421.75	3.54	1425.28	66.47	58.76	391.7	2.2	9.88E+09	2.79E+10	0.31703	12.94608	68.35	4.08
522	1870	##########	30.08	20.97	20.29	0	9.52	8.87	0.25	58.57	0	2369.94	878.2	7346.92	14199.91	0.3	0.269	0.28	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.52	0.25	58.57	0.25	58.82	1430.31	2.7	1433.01	59.67	64.03	394.06	1.68	8.87E+09	2.79E+10	0.39059	13.78861	129.63	5.4
523	1876	##########	33.48	17.8	28.31	0	9.59	6.51	0.4	56.31	0	2201.95	841.04	7091.12	15460.14	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.4	56.31	0.4	56.72	1375.03	4.38	1379.42	43.83	64.52	378.83	2.72	6.51E+09	2.79E+10	0.36535	14.51191	300.87	14.81
524	1877	##########	29.63	23.21	25.16	0	8.07	9.84	0.51	57.05	0	2355.72	923.47	7334.54	13644.18	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.51	57.05	0.51	57.56	1393.15	5.51	1398.66	66.21	54.32	383.82	3.42	9.84E+09	2.79E+10	0.22375	12.78606	70.17	3.39
525	1878	##########	30.16	20.87	22.89	0	8.89	9.25	0.33	57.81	0	2395.97	886.25	7360.09	14840.6	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.33	57.81	0.33	58.14	1411.62	3.62	1415.24	62.24	59.78	388.91	2.25	9.25E+09	2.79E+10	0.32626	13.1694	102.23	4.78
526	1879	##########	28.94	22.8	22.36	0	8.44	10.03	0.44	57.86	0	2371.08	961.43	7399.83	13729.44	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.44	57.86	0.44	58.3	1412.87	4.73	1417.6	67.45	56.78	389.25	2.94	1E+10	2.79E+10	0.26582	12.88253	60.44	3.72
527	1880	##########	29.97	20.94	21.77	0	9.11	9.09	0.34	58.1	0	2359.14	896.13	7343.64	14953.71	0.3	0.269	0.28	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.11	0.34	58.1	0.34	58.44	1418.83	3.64	1422.48	61.13	61.31	390.9	2.26	9.09E+09	2.79E+10	0.33909	13.48237	115.07	5.03
528	1911	##########	32.36	18.4	26.01	0	10.13	6.13	0.51	56.83	0	2445.92	592.61	7179.06	15552.68	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.71	5.49	1393.21	41.23	68.15	382.32	3.41	6.13E+09	2.79E+10	0.36613	15.27741	350.26	15.31
529	1912	##########	29.11	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.79	903.33	7355.06	14348.26	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.05	6.59	1399.65	64.71	55.18	383.79	4.09	9.62E+09	2.79E+10	0.21152	13.20499	82.2	3.89
530	1913	##########	29.78	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2423.55	860.66	7381.42	14552.44	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.66	4.41	1417.07	60.15	61.28	389.19	2.74	8.94E+09	2.79E+10	0.31862	13.57268	119.2	5.3
531	1914	##########	28.34	22.66	21.77	0	8.6	9.83	0.53	57.93	0	2396.35	947.66	7429.6	13320.31	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53	57.93	0.53	58.46	1414.68	5.73	1420.41	66.16	57.85	389.75	3.56	9.83E+09	2.79E+10	0.25456	13.28006	70.82	4.21
532	1915	##########	29.41	20.97	20.9	0	9.38	8.8	0.41	58.27	0	2380.68	872.31	7363.35	15004.9	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.41	58.27	0.41	58.68	1422.8	4.49	1427.28	59.22	63.13	391.99	2.78	8.8E+09	2.79E+10	0.33181	13.92896	134.22	5.52
533	1966	##########	31.57	18.28	25.59	0	10.09	6.2	0.62	56.84	0	2447.5	607.03	7200.88	15495.63	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.62	56.84	0.62	57.46	1388.04	6.66	1394.7	41.71	67.88	382.41	4.14	6.2E+09	2.79E+10	0.33669	15.46092	339.14	15.18
534	1967	##########	28.42	25.14	24.6	0	8.16	9.67	0.71	57.02	0	2380.43	907.36	7363.34	14933.29	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.37	7.71	1400.08	65.03	54.88	383.61	4.79	9.67E+09	2.79E+10	0.18412	13.45884	79.63	3.76
535	1968	##########	29.24	22.86	22.31	0	9.05	9.01	0.49	57.83	0	2423.56	866.18	7390.57	14144.7	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.09	5.28	1417.37	60.62	60.89	389.04	3.28	9.01E+09	2.79E+10	0.29211	13.69198	115.31	5.16
536	1969	##########	27.72	22.71	21.62	0	8.55	9.88	0.63	57.88	0	2397.19	950.2	7436.24	13906.33	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.55	0.63	57.88	0.63	58.51	1413.47	6.8	1420.27	66.43	57.5	389.42	4.22	9.88E+09	2.79E+10	0.22716	13.48714	68.61	4.08
537	1970	##########	28.84	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.24	877.47	7371.52	14415.46	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.2	5.39	1427.59	59.63	62.76	391.82	3.35	8.86E+09	2.79E+10	0.30549	14.05117	129.82	5.4
538	1971	##########	33.4	16.26	25.42	0	10.29	6.21	0.27	57.19	0	2424.89	608.05	7157.99	15381.48	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.47	1396.61	2.96	1399.56	41.81	69.24	384.77	1.84	6.21E+09	2.79E+10	0.44095	15.01945	338.13	15.18
539	1972	##########	30.34	23.13	24.5	0	8.35	9.67	0.36	57.36	0	2367.75	908.2	7337.63	14065.56	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.63	3.93	1404.56	65.07	56.15	385.88	2.44	9.67E+09	2.79E+10	0.28177	12.66889	79.35	3.76
540	1973	##########	30.48	20.86	21.68	0	9.28	9.01	0.23	58.22	0	2411.82	866.95	7365.28	14049.21	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.28	0.23	58.22	0.23	58.45	1421.77	2.47	1424.24	60.64	62.42	391.7	1.53	9.01E+09	2.79E+10	0.3839	13.39824	115.12	5.16
541	1974	##########	29.44	20.7	21.33	0	8.75	9.88	0.3	58.25	0	2384.24	951.03	7410.22	14033.69	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.3	58.25	0.3	58.55	1422.41	3.29	1425.7	66.47	58.88	391.88	2.04	9.88E+09	2.79E+10	0.32289	12.87406	68.35	4.08
542	1975	##########	30.17	20.97	20.23	0	9.54	8.87	0.23	58.61	0	2370.5	878.2	7347.31	14008.38	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.23	58.61	0.23	58.84	1431.09	2.5	1433.59	59.67	64.17	394.27	1.55	8.87E+09	2.79E+10	0.39604	13.74278	129.63	5.4
543	1981	##########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2202.03	841.04	7090.89	15665.79	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.7	4.14	1379.84	43.83	64.66	379.01	2.57	6.51E+09	2.79E+10	0.37043	14.44722	300.87	14.81
544	1982	##########	29.79	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.22	923.47	7334.81	13439.65	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.56	5.2	1398.76	66.21	54.4	383.93	3.23	9.84E+09	2.79E+10	0.22968	12.67979	70.17	3.39
545	1983	##########	30.27	20.87	22.87	0	8.9	9.25	0.31	57.84	0	2396.57	886.25	7360.49	14885.74	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.9	0.31	57.84	0.31	58.15	1412.26	3.39	1415.65	62.24	59.9	389.08	2.1	9.25E+09	2.79E+10	0.33182	13.10323	102.23	4.78
546	1984	##########	29.08	22.8	22.36	0	8.45	10.03	0.41	57.88	0	2371.64	961.43	7400.18	13724.23	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.45	0.41	57.88	0.41	58.29	1413.42	4.45	1417.87	67.45	56.88	389.4	2.77	1E+10	2.79E+10	0.2716	12.7901	60.44	3.72
547	1985	##########	30.07	20.94	21.74	0	9.13	9.09	0.31	58.13	0	2359.67	896.13	7343.99	14641.44	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.45	1419.5	3.41	1422.91	61.13	61.44	391.08	2.12	9.09E+09	2.79E+10	0.34452	13.41689	115.07	5.03
548	2016	##########	32.39	18.4	26	0	10.14	6.13	0.5	56.84	0	2445.74	592.61	7178.75	15582.22	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	56.84	33.99	6.13	27.86	10.14	0.5	56.84	0.5	57.34	1387.93	5.41	1393.34	41.23	68.19	382.38	3.36	6.13E+09	2.79E+10	0.36765	15.26124	350.26	15.31
549	2017	##########	29.16	23.1	24.85	0	8.21	9.62	0.6	57.05	0	2380	903.33	7355.25	14264.01	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.21	0.6	57.05	0.6	57.65	1393.19	6.49	1399.68	64.71	55.21	383.83	4.03	9.62E+09	2.79E+10	0.21325	13.17721	82.2	3.89
550	2018	##########	29.81	20.84	22.48	0	9.11	8.94	0.4	57.86	0	2423.75	860.66	7381.6	14569.86	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.86	36.8	8.94	27.86	9.11	0.4	57.86	0.4	58.26	1412.88	4.34	1417.22	60.15	61.32	389.26	2.7	8.94E+09	2.79E+10	0.32025	13.5557	119.2	5.3
551	2019	##########	28.39	22.66	21.77	0	8.6	9.83	0.52	57.94	0	2396.6	947.66	7429.84	13341.03	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.52	57.94	0.52	58.46	1414.86	5.64	1420.5	66.16	57.89	389.8	3.5	9.83E+09	2.79E+10	0.25625	13.25615	70.82	4.21
552	2020	##########	29.44	20.97	20.89	0	9.39	8.8	0.41	58.27	0	2380.9	872.31	7363.55	15010.76	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.39	0.41	58.27	0.41	58.68	1422.98	4.41	1427.39	59.22	63.16	392.04	2.74	8.8E+09	2.79E+10	0.33343	13.91225	134.22	5.52
553	2071	##########	31.62	18.28	25.59	0	10.1	6.2	0.61	56.85	0	2447.3	607.03	7200.55	15476.62	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	56.85	34.06	6.2	27.86	10.1	0.61	56.85	0.61	57.46	1388.22	6.57	1394.8	41.71	67.92	382.46	4.08	6.2E+09	2.79E+10	0.33816	15.44212	339.14	15.18
554	2072	##########	28.48	25.14	24.61	0	8.16	9.67	0.7	57.03	0	2380.65	907.36	7363.53	14886.9	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.03	37.52	9.67	27.86	8.16	0.7	57.03	0.7	57.73	1392.49	7.61	1400.1	65.03	54.91	383.64	4.72	9.67E+09	2.79E+10	0.18579	13.42893	79.63	3.76
555	2073	##########	29.27	22.86	22.3	0	9.06	9.01	0.48	57.84	0	2423.79	866.18	7390.8	14095.12	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.84	36.87	9.01	27.86	9.06	0.48	57.84	0.48	58.32	1412.28	5.2	1417.48	60.62	60.93	389.09	3.23	9.01E+09	2.79E+10	0.2937	13.6723	115.31	5.16
556	2074	##########	27.77	22.71	21.63	0	8.55	9.88	0.62	57.89	0	2397.43	950.2	7436.47	13834.21	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.62	57.89	0.62	58.51	1413.64	6.7	1420.35	66.43	57.53	389.47	4.16	9.88E+09	2.79E+10	0.22881	13.46083	68.61	4.08
557	2075	##########	28.88	20.97	20.7	0	9.34	8.86	0.49	58.25	0	2379.45	877.47	7371.72	14352.19	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	58.25	36.72	8.86	27.86	9.34	0.49	58.25	0.49	58.74	1422.41	5.31	1427.72	59.63	62.8	391.88	3.3	8.86E+09	2.79E+10	0.30706	14.03171	129.82	5.4
558	2076	##########	33.42	16.26	25.39	0	10.3	6.21	0.27	57.21	0	2424.74	608.05	7157.73	15292.97	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	57.21	34.07	6.21	27.86	10.3	0.27	57.21	0.27	57.47	1396.89	2.9	1399.79	41.81	69.29	384.85	1.8	6.21E+09	2.79E+10	0.44255	15.01212	338.13	15.18
559	2077	##########	30.37	23.13	24.49	0	8.35	9.67	0.36	57.37	0	2367.98	908.2	7337.84	13995.86	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	57.37	37.53	9.67	27.86	8.35	0.36	57.37	0.36	57.72	1400.84	3.85	1404.69	65.07	56.19	385.94	2.39	9.67E+09	2.79E+10	0.28363	12.64881	79.35	3.76
560	2078	##########	30.49	20.86	21.66	0	9.29	9.01	0.22	58.24	0	2412.08	866.95	7365.54	13985.93	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.24	36.87	9.01	27.86	9.29	0.22	58.24	0.22	58.46	1422.02	2.42	1424.43	60.64	62.47	391.77	1.5	9.01E+09	2.79E+10	0.38559	13.39034	115.12	5.16
561	2079	##########	29.46	20.7	21.32	0	8.76	9.88	0.3	58.26	0	2384.49	951.03	7410.46	13965.43	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.26	37.74	9.88	27.86	8.76	0.3	58.26	0.3	58.56	1422.64	3.22	1425.86	66.47	58.92	391.94	2	9.88E+09	2.79E+10	0.32469	12.85881	68.35	4.08
562	2080	##########	30.18	20.97	20.21	0	9.55	8.87	0.23	58.62	0	2370.74	878.2	7347.55	13945.17	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.62	36.73	8.87	27.86	9.55	0.23	58.62	0.23	58.84	1431.38	2.44	1433.82	59.67	64.22	394.35	1.52	8.87E+09	2.79E+10	0.39771	13.73475	129.63	5.4
563	2086	##########	33.61	17.8	28.27	0	9.62	6.51	0.38	56.35	0	2201.78	841.04	7090.47	15660.57	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	56.35	34.37	6.51	27.86	9.62	0.38	56.35	0.38	56.72	1375.92	4.07	1380	43.83	64.7	379.07	2.53	6.51E+09	2.79E+10	0.37201	14.43298	300.87	14.81
564	2087	##########	29.84	23.21	25.19	0	8.09	9.84	0.47	57.08	0	2356.43	923.47	7335.01	13368.2	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.08	37.7	9.84	27.86	8.09	0.47	57.08	0.47	57.55	1393.73	5.11	1398.84	66.21	54.43	383.98	3.17	9.84E+09	2.79E+10	0.23154	12.65411	70.17	3.39
565	2088	##########	30.3	20.87	22.86	0	8.91	9.25	0.31	57.84	0	2396.83	886.25	7360.75	14828.78	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.47	3.32	1415.8	62.24	59.94	389.14	2.06	9.25E+09	2.79E+10	0.33352	13.08934	102.23	4.78
566	2089	##########	29.13	22.8	22.35	0	8.46	10.03	0.4	57.89	0	2371.88	961.43	7400.41	13727.07	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.89	37.88	10.03	27.86	8.46	0.4	57.89	0.4	58.29	1413.61	4.37	1417.98	67.45	56.91	389.46	2.71	1E+10	2.79E+10	0.27339	12.76866	60.44	3.72
567	2090	##########	30.1	20.94	21.73	0	9.14	9.09	0.31	58.14	0	2359.89	896.13	7344.19	14584.55	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	58.14	36.94	9.09	27.86	9.14	0.31	58.14	0.31	58.45	1419.73	3.35	1423.07	61.13	61.48	391.14	2.08	9.09E+09	2.79E+10	0.34618	13.40302	115.07	5.03
568	2121	##########	32.3	18.4	26.01	0	10.12	6.13	0.52	56.82	0	2445.64	592.61	7178.8	15545.32	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.44	5.6	1393.03	41.23	68.1	382.25	3.48	6.13E+09	2.79E+10	0.36421	15.30117	350.26	15.31
569	2122	##########	29.04	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.64	903.33	7354.99	14416.93	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.85	6.72	1399.57	64.71	55.15	383.74	4.17	9.62E+09	2.79E+10	0.20929	13.24424	82.2	3.89
570	2123	##########	29.74	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.36	860.66	7381.3	14513.08	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.39	4.51	1416.9	60.15	61.23	389.12	2.8	8.94E+09	2.79E+10	0.31651	13.59776	119.2	5.3
571	2124	##########	28.29	22.66	21.77	0	8.59	9.83	0.54	57.93	0	2396.18	947.66	7429.51	13325.58	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.46	1414.45	5.84	1420.3	66.16	57.81	389.69	3.63	9.83E+09	2.79E+10	0.25237	13.31419	70.82	4.21
572	2125	##########	29.37	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.53	872.31	7363.26	14932.38	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.52	4.58	1427.1	59.22	63.07	391.91	2.84	8.8E+09	2.79E+10	0.32973	13.95392	134.22	5.52
573	2176	##########	31.52	18.28	25.6	0	10.08	6.2	0.63	56.83	0	2447.24	607.03	7200.64	15480.39	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.76	6.78	1394.54	41.71	67.83	382.33	4.21	6.2E+09	2.79E+10	0.33482	15.48776	339.14	15.18
574	2177	##########	28.34	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2380.29	907.36	7363.28	15010.79	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.19	7.85	1400.04	65.03	54.85	383.56	4.87	9.67E+09	2.79E+10	0.18196	13.50065	79.63	3.76
575	2178	##########	29.18	22.86	22.31	0	9.04	9.01	0.5	57.82	0	2423.38	866.18	7390.47	14141.16	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.85	5.39	1417.24	60.62	60.85	388.97	3.35	9.01E+09	2.79E+10	0.29006	13.72052	115.31	5.16
576	2179	##########	27.65	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2397.03	950.2	7436.16	13998.64	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.28	6.93	1420.21	66.43	57.46	389.37	4.3	9.88E+09	2.79E+10	0.22504	13.5242	68.61	4.08
577	2180	##########	28.8	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2379.09	877.47	7371.45	14421.33	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.95	5.5	1427.45	59.63	62.71	391.75	3.41	8.86E+09	2.79E+10	0.30347	14.07934	129.82	5.4
578	2181	##########	33.38	16.26	25.45	0	10.28	6.21	0.28	57.18	0	2424.57	608.05	7157.69	15513.68	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.27	3.03	1399.29	41.81	69.18	384.68	1.88	6.21E+09	2.79E+10	0.43889	15.03167	338.13	15.18
579	2182	##########	30.29	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.59	908.2	7337.56	14079.07	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.37	4.03	1404.4	65.07	56.11	385.81	2.5	9.67E+09	2.79E+10	0.27936	12.69895	79.35	3.76
580	2183	##########	30.45	20.86	21.71	0	9.27	9.01	0.23	58.21	0	2411.63	866.95	7365.16	14135.22	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.45	1421.46	2.54	1424	60.64	62.36	391.62	1.58	9.01E+09	2.79E+10	0.38169	13.41195	115.12	5.16
581	2184	##########	29.39	20.7	21.35	0	8.74	9.88	0.31	58.24	0	2384.06	951.03	7410.12	14104.89	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.74	0.31	58.24	0.31	58.55	1422.1	3.38	1425.48	66.47	58.83	391.8	2.1	9.88E+09	2.79E+10	0.32054	12.89776	68.35	4.08
582	2185	##########	30.14	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2370.33	878.2	7347.22	14086.39	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.76	2.58	1433.33	59.67	64.11	394.18	1.6	8.87E+09	2.79E+10	0.39387	13.75672	129.63	5.4
583	2191	##########	33.54	17.8	28.29	0	9.6	6.51	0.39	56.33	0	2202.08	841.04	7091	15666.87	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.72	1375.41	4.24	1379.64	43.83	64.6	378.93	2.63	6.51E+09	2.79E+10	0.36839	14.46862	300.87	14.81
584	2192	##########	29.73	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2356.08	923.47	7334.77	13522.95	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.34	5.31	1398.66	66.21	54.36	383.87	3.3	9.84E+09	2.79E+10	0.22727	12.71692	70.17	3.39
585	2193	##########	30.23	20.87	22.89	0	8.9	9.25	0.32	57.82	0	2396.39	886.25	7360.39	14989.16	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.32	57.82	0.32	58.14	1411.97	3.47	1415.44	62.24	59.85	389	2.16	9.25E+09	2.79E+10	0.32959	13.12484	102.23	4.78
586	2194	##########	29.03	22.8	22.36	0	8.45	10.03	0.42	57.87	0	2371.47	961.43	7400.1	13729.64	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.16	4.56	1417.71	67.45	56.83	389.33	2.83	1E+10	2.79E+10	0.26926	12.82177	60.44	3.72
587	2195	##########	30.03	20.94	21.76	0	9.13	9.09	0.32	58.12	0	2359.51	896.13	7343.91	14753.45	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.22	3.5	1422.72	61.13	61.39	391	2.17	9.09E+09	2.79E+10	0.34233	13.43824	115.07	5.03
588	2226	##########	32.35	18.4	26	0	10.13	6.13	0.51	56.83	0	2445.95	592.61	7179.08	15555.08	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.74	5.48	1393.23	41.23	68.16	382.33	3.41	6.13E+09	2.79E+10	0.36629	15.27537	350.26	15.31
589	2227	##########	29.11	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.8	903.33	7355.06	14342.48	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.07	6.58	1399.65	64.71	55.19	383.8	4.09	9.62E+09	2.79E+10	0.2117	13.20165	82.2	3.89
590	2228	##########	29.78	20.84	22.48	0	9.11	8.94	0.41	57.85	0	2423.56	860.66	7381.42	14556.89	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.69	4.41	1417.09	60.15	61.28	389.2	2.74	8.94E+09	2.79E+10	0.31879	13.57053	119.2	5.3
591	2229	##########	28.35	22.66	21.77	0	8.6	9.83	0.53	57.94	0	2396.36	947.66	7429.61	13322.19	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.53	57.94	0.53	58.46	1414.69	5.72	1420.41	66.16	57.86	389.75	3.55	9.83E+09	2.79E+10	0.25474	13.27714	70.82	4.21
592	2230	##########	29.41	20.97	20.9	0	9.38	8.8	0.41	58.27	0	2380.69	872.31	7363.35	15006.07	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.41	58.27	0.41	58.68	1422.82	4.48	1427.29	59.22	63.13	391.99	2.78	8.8E+09	2.79E+10	0.33198	13.92683	134.22	5.52
593	2281	##########	31.58	18.28	25.59	0	10.09	6.2	0.61	56.84	0	2447.52	607.03	7200.9	15494.49	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.46	1388.06	6.65	1394.71	41.71	67.88	382.42	4.13	6.2E+09	2.79E+10	0.33684	15.45861	339.14	15.18
594	2282	##########	28.42	25.14	24.6	0	8.16	9.67	0.71	57.02	0	2380.44	907.36	7363.34	14929.72	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.38	7.7	1400.08	65.03	54.89	383.61	4.78	9.67E+09	2.79E+10	0.18429	13.45528	79.63	3.76
595	2283	##########	29.24	22.86	22.31	0	9.05	9.01	0.49	57.83	0	2423.57	866.18	7390.58	14143.25	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.11	5.27	1417.38	60.62	60.9	389.04	3.27	9.01E+09	2.79E+10	0.29227	13.68955	115.31	5.16
596	2284	##########	27.72	22.71	21.62	0	8.55	9.88	0.63	57.89	0	2397.2	950.2	7436.24	13902.63	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.63	57.89	0.63	58.51	1413.49	6.79	1420.28	66.43	57.5	389.42	4.22	9.88E+09	2.79E+10	0.22734	13.48399	68.61	4.08
597	2285	##########	28.85	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.25	877.47	7371.52	14412.93	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.22	5.38	1427.61	59.63	62.77	391.83	3.34	8.86E+09	2.79E+10	0.30565	14.04875	129.82	5.4
598	2286	##########	33.41	16.26	25.42	0	10.29	6.21	0.27	57.2	0	2424.92	608.05	7158.01	15373.1	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	57.2	34.07	6.21	27.86	10.29	0.27	57.2	0.27	57.47	1396.64	2.95	1399.59	41.81	69.25	384.78	1.83	6.21E+09	2.79E+10	0.44112	15.01836	338.13	15.18
599	2287	##########	30.34	23.13	24.5	0	8.35	9.67	0.36	57.36	0	2367.76	908.2	7337.63	14057.38	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.65	3.92	1404.57	65.07	56.16	385.89	2.43	9.67E+09	2.79E+10	0.28196	12.66631	79.35	3.76
600	2288	##########	30.48	20.86	21.68	0	9.28	9.01	0.23	58.23	0	2411.84	866.95	7365.29	14042.4	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.23	58.23	0.23	58.45	1421.79	2.46	1424.25	60.64	62.43	391.71	1.53	9.01E+09	2.79E+10	0.38408	13.39705	115.12	5.16
601	2289	##########	29.43	20.7	21.33	0	8.75	9.88	0.3	58.25	0	2384.25	951.03	7410.22	14027.95	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.3	58.25	0.3	58.56	1422.44	3.28	1425.72	66.47	58.89	391.89	2.04	9.88E+09	2.79E+10	0.32308	12.87201	68.35	4.08
602	2290	##########	30.17	20.97	20.23	0	9.54	8.87	0.23	58.61	0	2370.51	878.2	7347.32	14001.61	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.23	58.61	0.23	58.84	1431.12	2.49	1433.62	59.67	64.17	394.28	1.55	8.87E+09	2.79E+10	0.39622	13.74163	129.63	5.4
603	2296	##########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2202.03	841.04	7090.88	15666.09	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.73	4.14	1379.86	43.83	64.66	379.02	2.57	6.51E+09	2.79E+10	0.37059	14.44536	300.87	14.81
604	2297	##########	29.8	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.23	923.47	7334.82	13432.6	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.57	5.19	1398.76	66.21	54.4	383.93	3.22	9.84E+09	2.79E+10	0.22988	12.67661	70.17	3.39
605	2298	##########	30.27	20.87	22.87	0	8.9	9.25	0.31	57.84	0	2396.58	886.25	7360.5	14879.51	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.9	0.31	57.84	0.31	58.15	1412.28	3.38	1415.66	62.24	59.91	389.09	2.1	9.25E+09	2.79E+10	0.332	13.10138	102.23	4.78
606	2299	##########	29.09	22.8	22.36	0	8.46	10.03	0.41	57.88	0	2371.65	961.43	7400.19	13724.39	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.46	0.41	57.88	0.41	58.29	1413.44	4.45	1417.88	67.45	56.88	389.41	2.76	1E+10	2.79E+10	0.27179	12.78739	60.44	3.72
607	2300	##########	30.08	20.94	21.74	0	9.13	9.09	0.31	58.13	0	2359.68	896.13	7343.99	14632.92	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.45	1419.52	3.41	1422.92	61.13	61.44	391.08	2.11	9.09E+09	2.79E+10	0.34469	13.41504	115.07	5.03
608	2331	##########	32.39	18.4	26	0	10.14	6.13	0.5	56.84	0	2445.75	592.61	7178.76	15589.05	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	56.84	33.99	6.13	27.86	10.14	0.5	56.84	0.5	57.34	1387.94	5.41	1393.35	41.23	68.2	382.38	3.36	6.13E+09	2.79E+10	0.36777	15.25957	350.26	15.31
609	2332	##########	29.16	23.1	24.85	0	8.21	9.62	0.6	57.05	0	2380	903.33	7355.24	14259.51	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.21	0.6	57.05	0.6	57.65	1393.2	6.49	1399.69	64.71	55.21	383.83	4.03	9.62E+09	2.79E+10	0.21338	13.17458	82.2	3.89
610	2333	##########	29.82	20.84	22.47	0	9.12	8.94	0.4	57.86	0	2423.75	860.66	7381.59	14569.86	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.86	36.8	8.94	27.86	9.12	0.4	57.86	0.4	58.26	1412.89	4.34	1417.23	60.15	61.32	389.26	2.69	8.94E+09	2.79E+10	0.32037	13.55397	119.2	5.3
611	2334	##########	28.4	22.66	21.77	0	8.6	9.83	0.52	57.94	0	2396.61	947.66	7429.84	13341.55	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.52	57.94	0.52	58.46	1414.87	5.63	1420.49	66.16	57.89	389.8	3.49	9.83E+09	2.79E+10	0.25637	13.25383	70.82	4.21
612	2335	##########	29.44	20.97	20.89	0	9.39	8.8	0.41	58.28	0	2380.9	872.31	7363.54	15010.92	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	58.28	36.66	8.8	27.86	9.39	0.41	58.28	0.41	58.68	1423	4.41	1427.4	59.22	63.16	392.04	2.74	8.8E+09	2.79E+10	0.33355	13.91051	134.22	5.52
613	2386	##########	31.62	18.28	25.59	0	10.1	6.2	0.61	56.85	0	2447.31	607.03	7200.56	15475.17	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	56.85	34.06	6.2	27.86	10.1	0.61	56.85	0.61	57.46	1388.22	6.57	1394.79	41.71	67.92	382.46	4.08	6.2E+09	2.79E+10	0.33827	15.44027	339.14	15.18
614	2387	##########	28.48	25.14	24.61	0	8.16	9.67	0.7	57.03	0	2380.65	907.36	7363.52	14883.47	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.03	37.52	9.67	27.86	8.16	0.7	57.03	0.7	57.73	1392.5	7.6	1400.1	65.03	54.91	383.64	4.72	9.67E+09	2.79E+10	0.18592	13.42615	79.63	3.76
615	2388	##########	29.27	22.86	22.3	0	9.06	9.01	0.48	57.84	0	2423.79	866.18	7390.79	14100.5	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.84	36.87	9.01	27.86	9.06	0.48	57.84	0.48	58.32	1412.3	5.19	1417.5	60.62	60.93	389.1	3.23	9.01E+09	2.79E+10	0.29382	13.67036	115.31	5.16
616	2389	##########	27.77	22.71	21.63	0	8.55	9.88	0.62	57.89	0	2397.43	950.2	7436.46	13830.66	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.62	57.89	0.62	58.51	1413.66	6.69	1420.35	66.43	57.53	389.47	4.16	9.88E+09	2.79E+10	0.22893	13.45834	68.61	4.08
617	2390	##########	28.89	20.97	20.7	0	9.34	8.86	0.49	58.25	0	2379.45	877.47	7371.71	14355.2	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	58.25	36.72	8.86	27.86	9.34	0.49	58.25	0.49	58.74	1422.43	5.3	1427.73	59.63	62.8	391.89	3.29	8.86E+09	2.79E+10	0.30717	14.02976	129.82	5.4
618	2391	##########	33.42	16.26	25.39	0	10.3	6.21	0.27	57.21	0	2424.76	608.05	7157.74	15280.79	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	57.21	34.07	6.21	27.86	10.3	0.27	57.21	0.27	57.47	1396.91	2.9	1399.81	41.81	69.29	384.86	1.8	6.21E+09	2.79E+10	0.44267	15.01115	338.13	15.18
619	2392	##########	30.37	23.13	24.49	0	8.35	9.67	0.35	57.37	0	2367.98	908.2	7337.83	13992.33	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	57.37	37.53	9.67	27.86	8.35	0.35	57.37	0.35	57.72	1400.86	3.84	1404.7	65.07	56.19	385.94	2.39	9.67E+09	2.79E+10	0.28377	12.64676	79.35	3.76
620	2393	##########	30.49	20.86	21.66	0	9.29	9.01	0.22	58.24	0	2412.09	866.95	7365.53	13981.14	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.24	36.87	9.01	27.86	9.29	0.22	58.24	0.22	58.46	1422.03	2.41	1424.44	60.64	62.47	391.78	1.5	9.01E+09	2.79E+10	0.38572	13.3893	115.12	5.16
621	2394	##########	29.46	20.7	21.31	0	8.76	9.88	0.3	58.26	0	2384.5	951.03	7410.46	13959.62	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.26	37.74	9.88	27.86	8.76	0.3	58.26	0.3	58.56	1422.66	3.22	1425.88	66.47	58.92	391.95	2	9.88E+09	2.79E+10	0.32482	12.85715	68.35	4.08
622	2395	##########	30.18	20.97	20.21	0	9.55	8.87	0.23	58.62	0	2370.74	878.2	7347.54	13940.37	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.62	36.73	8.87	27.86	9.55	0.23	58.62	0.23	58.84	1431.39	2.44	1433.83	59.67	64.22	394.36	1.52	8.87E+09	2.79E+10	0.39784	13.73369	129.63	5.4
623	2401	##########	33.61	17.8	28.26	0	9.62	6.51	0.38	56.35	0	2201.77	841.04	7090.45	15661.61	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	56.35	34.37	6.51	27.86	9.62	0.38	56.35	0.38	56.72	1375.94	4.07	1380	43.83	64.7	379.08	2.53	6.51E+09	2.79E+10	0.37213	14.43145	300.87	14.81
624	2402	##########	29.84	23.21	25.2	0	8.09	9.84	0.47	57.08	0	2356.44	923.47	7335	13362.55	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.08	37.7	9.84	27.86	8.09	0.47	57.08	0.47	57.55	1393.73	5.1	1398.83	66.21	54.43	383.98	3.17	9.84E+09	2.79E+10	0.23168	12.65159	70.17	3.39
625	2403	##########	30.3	20.87	22.85	0	8.91	9.25	0.31	57.85	0	2396.83	886.25	7360.74	14820.21	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.85	37.11	9.25	27.86	8.91	0.31	57.85	0.31	58.15	1412.5	3.32	1415.82	62.24	59.94	389.15	2.06	9.25E+09	2.79E+10	0.33365	13.08782	102.23	4.78
626	2404	##########	29.13	22.8	22.36	0	8.46	10.03	0.4	57.89	0	2371.88	961.43	7400.41	13728.01	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.89	37.88	10.03	27.86	8.46	0.4	57.89	0.4	58.29	1413.62	4.36	1417.98	67.45	56.91	389.46	2.71	1E+10	2.79E+10	0.27353	12.7665	60.44	3.72
627	2405	##########	30.1	20.94	21.73	0	9.14	9.09	0.31	58.14	0	2359.89	896.13	7344.18	14585.96	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	58.14	36.94	9.09	27.86	9.14	0.31	58.14	0.31	58.45	1419.74	3.34	1423.08	61.13	61.48	391.14	2.08	9.09E+09	2.79E+10	0.34631	13.40148	115.07	5.03
628	2436	##########	32.31	18.4	26.01	0	10.12	6.13	0.52	56.82	0	2445.68	592.61	7178.83	15545.49	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.46	5.59	1393.04	41.23	68.11	382.25	3.47	6.13E+09	2.79E+10	0.36444	15.29846	350.26	15.31
629	2437	##########	29.05	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.66	903.33	7355	14409.09	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.87	6.71	1399.58	64.71	55.15	383.74	4.16	9.62E+09	2.79E+10	0.20955	13.23975	82.2	3.89
630	2438	##########	29.75	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.39	860.66	7381.32	14517.05	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.41	4.5	1416.91	60.15	61.23	389.13	2.79	8.94E+09	2.79E+10	0.31675	13.59492	119.2	5.3
631	2439	##########	28.29	22.66	21.77	0	8.59	9.83	0.54	57.93	0	2396.2	947.66	7429.53	13317.33	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.46	1414.48	5.83	1420.31	66.16	57.82	389.69	3.62	9.83E+09	2.79E+10	0.25263	13.3103	70.82	4.21
632	2440	##########	29.37	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.55	872.31	7363.28	14942.13	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.55	4.57	1427.12	59.22	63.08	391.92	2.84	8.8E+09	2.79E+10	0.32997	13.95107	134.22	5.52
633	2491	##########	31.53	18.28	25.6	0	10.08	6.2	0.62	56.83	0	2447.27	607.03	7200.67	15506.67	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.46	1387.79	6.77	1394.56	41.71	67.84	382.34	4.2	6.2E+09	2.79E+10	0.33504	15.48472	339.14	15.18
634	2492	##########	28.35	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2380.31	907.36	7363.29	15013.94	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.21	7.83	1400.05	65.03	54.85	383.56	4.86	9.67E+09	2.79E+10	0.18221	13.49589	79.63	3.76
635	2493	##########	29.19	22.86	22.31	0	9.05	9.01	0.5	57.82	0	2423.4	866.18	7390.49	14143.86	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.5	57.82	0.5	58.32	1411.87	5.38	1417.25	60.62	60.85	388.98	3.34	9.01E+09	2.79E+10	0.2903	13.71729	115.31	5.16
636	2494	##########	27.66	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2397.05	950.2	7436.17	13987.83	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.31	6.91	1420.22	66.43	57.46	389.37	4.29	9.88E+09	2.79E+10	0.22529	13.51997	68.61	4.08
637	2495	##########	28.8	20.97	20.72	0	9.32	8.86	0.51	58.23	0	2379.11	877.47	7371.46	14423.97	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.98	5.48	1427.46	59.63	62.72	391.76	3.4	8.86E+09	2.79E+10	0.30371	14.07614	129.82	5.4
638	2496	##########	33.38	16.26	25.44	0	10.28	6.21	0.28	57.18	0	2424.61	608.05	7157.72	15497.01	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.31	3.02	1399.33	41.81	69.19	384.69	1.88	6.21E+09	2.79E+10	0.43913	15.0303	338.13	15.18
639	2497	##########	30.29	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.61	908.2	7337.57	14075.65	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.41	4.02	1404.43	65.07	56.11	385.82	2.5	9.67E+09	2.79E+10	0.27964	12.69552	79.35	3.76
640	2498	##########	30.46	20.86	21.71	0	9.27	9.01	0.23	58.21	0	2411.66	866.95	7365.18	14119.19	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.45	1421.48	2.54	1424.02	60.64	62.37	391.63	1.57	9.01E+09	2.79E+10	0.38195	13.4104	115.12	5.16
641	2499	##########	29.4	20.7	21.35	0	8.75	9.88	0.31	58.24	0	2384.09	951.03	7410.13	14096.33	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.31	58.24	0.31	58.55	1422.14	3.37	1425.51	66.47	58.84	391.81	2.09	9.88E+09	2.79E+10	0.32081	12.89508	68.35	4.08
642	2500	##########	30.14	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2370.35	878.2	7347.23	14077.67	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.8	2.57	1433.37	59.67	64.12	394.19	1.59	8.87E+09	2.79E+10	0.39413	13.75517	129.63	5.4
643	2506	##########	33.55	17.8	28.29	0	9.6	6.51	0.39	56.33	0	2202.02	841.04	7090.99	15666.03	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.72	1375.46	4.23	1379.68	43.83	64.61	378.94	2.62	6.51E+09	2.79E+10	0.36863	14.46625	300.87	14.81
644	2507	##########	29.74	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2356.1	923.47	7334.78	13513.57	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.37	5.3	1398.67	66.21	54.36	383.88	3.29	9.84E+09	2.79E+10	0.22755	12.71269	70.17	3.39
645	2508	##########	30.23	20.87	22.88	0	8.9	9.25	0.32	57.82	0	2396.41	886.25	7360.41	14965.97	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.32	57.82	0.32	58.14	1412	3.46	1415.46	62.24	59.86	389.01	2.15	9.25E+09	2.79E+10	0.32986	13.1224	102.23	4.78
646	2509	##########	29.04	22.8	22.36	0	8.45	10.03	0.42	57.87	0	2371.49	961.43	7400.12	13727.44	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.18	4.55	1417.72	67.45	56.84	389.34	2.82	1E+10	2.79E+10	0.26954	12.81817	60.44	3.72
647	2510	##########	30.03	20.94	21.76	0	9.13	9.09	0.32	58.12	0	2359.54	896.13	7343.92	14739.85	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.25	3.49	1422.74	61.13	61.39	391.01	2.17	9.09E+09	2.79E+10	0.34259	13.43582	115.07	5.03
648	2541	##########	32.29	18.4	26.01	0	10.12	6.13	0.52	56.82	0	2445.7	592.61	7179.04	15527.46	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.38	5.64	1393.02	41.23	68.08	382.23	3.5	6.13E+09	2.79E+10	0.36337	15.30762	350.26	15.31
649	2542	##########	29.01	23.1	24.81	0	8.2	9.62	0.62	57.04	0	2377.76	903.33	7352.66	14454.1	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.67	1392.87	6.77	1399.64	64.71	55.14	383.74	4.2	9.62E+09	2.79E+10	0.20844	13.2579	82.2	3.89
650	2543	##########	29.72	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2421.48	860.66	7378.96	14487.54	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.33	4.55	1416.89	60.15	61.21	389.1	2.83	8.94E+09	2.79E+10	0.31561	13.60557	119.2	5.3
651	2544	##########	28.26	22.66	21.76	0	8.59	9.83	0.54	57.92	0	2394.29	947.66	7427.17	13364.77	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.54	57.92	0.54	58.47	1414.42	5.89	1420.31	66.16	57.8	389.68	3.66	9.83E+09	2.79E+10	0.2515	13.3259	70.82	4.21
652	2545	##########	29.34	20.97	20.91	0	9.37	8.8	0.43	58.25	0	2378.75	872.31	7361.04	14883.19	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.37	0.43	58.25	0.43	58.68	1422.46	4.62	1427.08	59.22	63.06	391.89	2.87	8.8E+09	2.79E+10	0.32883	13.96156	134.22	5.52
653	2596	##########	31.49	18.28	25.59	0	10.08	6.2	0.63	56.83	0	2447.31	607.03	7200.9	15458.69	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.71	6.83	1394.54	41.71	67.82	382.32	4.24	6.2E+09	2.79E+10	0.33403	15.49524	339.14	15.18
654	2597	##########	28.32	25.14	24.57	0	8.15	9.67	0.73	57.01	0	2378.43	907.36	7360.97	14999.93	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.73	57.01	0.73	57.74	1392.16	7.9	1400.06	65.03	54.84	383.55	4.9	9.67E+09	2.79E+10	0.18115	13.51486	79.63	3.76
655	2598	##########	29.16	22.86	22.3	0	9.04	9.01	0.5	57.82	0	2421.52	866.18	7388.15	14124.27	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.8	5.44	1417.24	60.62	60.83	388.96	3.38	9.01E+09	2.79E+10	0.28921	13.72951	115.31	5.16
656	2599	##########	27.63	22.71	21.6	0	8.54	9.88	0.64	57.88	0	2395.14	950.2	7433.82	14044.77	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.27	6.98	1420.25	66.43	57.45	389.36	4.33	9.88E+09	2.79E+10	0.22421	13.53692	68.61	4.08
657	2600	##########	28.77	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2377.33	877.47	7369.25	14408.85	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.93	5.54	1427.47	59.63	62.7	391.75	3.44	8.86E+09	2.79E+10	0.30263	14.08795	129.82	5.4
658	2601	##########	33.37	16.26	25.45	0	10.28	6.21	0.28	57.18	0	2424.6	608.05	7157.88	15580.25	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.17	3.06	1399.23	41.81	69.16	384.65	1.9	6.21E+09	2.79E+10	0.43796	15.03395	338.13	15.18
659	2602	##########	30.27	23.13	24.5	0	8.34	9.67	0.38	57.35	0	2365.68	908.2	7335.2	14087.11	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.38	57.35	0.38	57.72	1400.31	4.07	1404.39	65.07	56.09	385.79	2.53	9.67E+09	2.79E+10	0.27837	12.70972	79.35	3.76
660	2603	##########	30.44	20.86	21.71	0	9.27	9.01	0.24	58.21	0	2409.72	866.95	7362.78	14235.36	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.24	58.21	0.24	58.45	1421.36	2.58	1423.94	60.64	62.34	391.59	1.6	9.01E+09	2.79E+10	0.38071	13.41514	115.12	5.16
661	2604	##########	29.38	20.7	21.34	0	8.74	9.88	0.32	58.24	0	2382.13	951.03	7407.73	14144.13	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.74	0.32	58.24	0.32	58.55	1422.06	3.42	1425.48	66.47	58.82	391.78	2.12	9.88E+09	2.79E+10	0.31954	12.90572	68.35	4.08
662	2605	##########	30.12	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2368.52	878.2	7344.96	14127.3	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.69	2.61	1433.3	59.67	64.09	394.16	1.62	8.87E+09	2.79E+10	0.3929	13.75972	129.63	5.4
663	2611	##########	33.53	17.8	28.3	0	9.6	6.51	0.39	56.32	0	2200.09	841.04	7088.63	15601.15	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.39	56.32	0.39	56.72	1375.33	4.27	1379.6	43.83	64.58	378.91	2.65	6.51E+09	2.79E+10	0.36751	14.47471	300.87	14.81
664	2612	##########	29.71	23.21	25.18	0	8.08	9.84	0.5	57.06	0	2354.19	923.47	7332.42	13567.9	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.5	57.06	0.5	57.56	1393.32	5.37	1398.69	66.21	54.35	383.87	3.33	9.84E+09	2.79E+10	0.22631	12.73028	70.17	3.39
665	2613	##########	30.21	20.87	22.88	0	8.89	9.25	0.32	57.82	0	2394.48	886.25	7358.02	14823.27	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.89	0.32	57.82	0.32	58.14	1411.9	3.51	1415.41	62.24	59.83	388.99	2.18	9.25E+09	2.79E+10	0.32864	13.13163	102.23	4.78
666	2614	##########	29.01	22.8	22.36	0	8.45	10.03	0.42	57.87	0	2369.55	961.43	7397.73	13724.92	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.09	4.6	1417.69	67.45	56.82	389.31	2.86	1E+10	2.79E+10	0.26831	12.83298	60.44	3.72
667	2615	##########	30.01	20.94	21.76	0	9.12	9.09	0.33	58.12	0	2357.69	896.13	7341.65	14799.63	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.12	0.33	58.12	0.33	58.44	1419.15	3.54	1422.69	61.13	61.37	390.98	2.2	9.09E+09	2.79E+10	0.34139	13.44464	115.07	5.03
668	2646	##########	32.34	18.4	26.01	0	10.13	6.13	0.51	56.83	0	2445.97	592.61	7179.24	15550.76	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.65	5.52	1393.18	41.23	68.14	382.3	3.43	6.13E+09	2.79E+10	0.36547	15.27967	350.26	15.31
669	2647	##########	29.08	23.1	24.83	0	8.2	9.62	0.61	57.05	0	2378.15	903.33	7353.01	14375.73	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.01	6.63	1399.64	64.71	55.17	383.78	4.12	9.62E+09	2.79E+10	0.21085	13.2124	82.2	3.89
670	2648	##########	29.77	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2421.92	860.66	7379.37	14528.6	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.6	4.44	1417.04	60.15	61.27	389.18	2.76	8.94E+09	2.79E+10	0.31791	13.57597	119.2	5.3
671	2649	##########	28.33	22.66	21.76	0	8.6	9.83	0.53	57.93	0	2394.71	947.66	7427.55	13303.95	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53	57.93	0.53	58.46	1414.65	5.76	1420.41	66.16	57.84	389.74	3.58	9.83E+09	2.79E+10	0.25387	13.28611	70.82	4.21
672	2650	##########	29.4	20.97	20.9	0	9.38	8.8	0.42	58.26	0	2379.14	872.31	7361.4	14970.08	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.73	4.51	1427.25	59.22	63.11	391.97	2.8	8.8E+09	2.79E+10	0.33111	13.93194	134.22	5.52
673	2701	##########	31.56	18.28	25.59	0	10.09	6.2	0.62	56.84	0	2447.55	607.03	7201.06	15493.64	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.62	56.84	0.62	57.46	1387.98	6.7	1394.67	41.71	67.87	382.39	4.16	6.2E+09	2.79E+10	0.33605	15.46398	339.14	15.18
674	2702	##########	28.4	25.14	24.59	0	8.16	9.67	0.72	57.02	0	2378.82	907.36	7361.31	14945.2	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.72	57.02	0.72	57.74	1392.34	7.75	1400.09	65.03	54.87	383.6	4.81	9.67E+09	2.79E+10	0.18347	13.46672	79.63	3.76
675	2703	##########	29.22	22.86	22.3	0	9.05	9.01	0.49	57.83	0	2421.95	866.18	7388.54	14142.1	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.04	5.31	1417.35	60.62	60.88	389.02	3.3	9.01E+09	2.79E+10	0.29143	13.69619	115.31	5.16
676	2704	##########	27.7	22.71	21.62	0	8.55	9.88	0.63	57.88	0	2395.56	950.2	7434.2	13919.84	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.55	0.63	57.88	0.63	58.51	1413.44	6.83	1420.28	66.43	57.49	389.41	4.24	9.88E+09	2.79E+10	0.22651	13.49401	68.61	4.08
677	2705	##########	28.82	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2377.71	877.47	7369.59	14417.76	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.14	5.42	1427.57	59.63	62.75	391.81	3.37	8.86E+09	2.79E+10	0.30481	14.05494	129.82	5.4
678	2706	##########	33.39	16.26	25.42	0	10.29	6.21	0.27	57.19	0	2424.9	608.05	7158.12	15414.25	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.47	1396.52	2.98	1399.5	41.81	69.23	384.75	1.85	6.21E+09	2.79E+10	0.44022	15.01856	338.13	15.18
679	2707	##########	30.32	23.13	24.5	0	8.34	9.67	0.37	57.36	0	2366.09	908.2	7335.56	14052.04	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.34	0.37	57.36	0.37	57.72	1400.57	3.96	1404.53	65.07	56.14	385.86	2.46	9.67E+09	2.79E+10	0.28099	12.67412	79.35	3.76
680	2708	##########	30.46	20.86	21.69	0	9.28	9.01	0.23	58.22	0	2410.17	866.95	7363.2	14078.12	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.28	0.23	58.22	0.23	58.45	1421.7	2.49	1424.19	60.64	62.41	391.68	1.55	9.01E+09	2.79E+10	0.38312	13.39804	115.12	5.16
681	2709	##########	29.42	20.7	21.33	0	8.75	9.88	0.31	58.25	0	2382.57	951.03	7408.13	14059.07	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.31	58.25	0.31	58.55	1422.34	3.32	1425.66	66.47	58.87	391.86	2.06	9.88E+09	2.79E+10	0.3221	12.87729	68.35	4.08
682	2710	##########	30.15	20.97	20.24	0	9.54	8.87	0.23	58.6	0	2368.92	878.2	7345.33	14039.76	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.54	0.23	58.6	0.23	58.84	1431.01	2.52	1433.53	59.67	64.15	394.25	1.57	8.87E+09	2.79E+10	0.39528	13.7425	129.63	5.4
683	2716	##########	33.57	17.8	28.28	0	9.61	6.51	0.39	56.33	0	2200.33	841.04	7088.79	15673.4	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.39	56.33	0.39	56.72	1375.62	4.17	1379.79	43.83	64.64	378.99	2.59	6.51E+09	2.79E+10	0.36972	14.44937	300.87	14.81
684	2717	##########	29.77	23.21	25.19	0	8.08	9.84	0.48	57.07	0	2354.58	923.47	7332.76	13472.65	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.08	0.48	57.07	0.48	57.55	1393.5	5.23	1398.73	66.21	54.39	383.92	3.25	9.84E+09	2.79E+10	0.22893	12.68691	70.17	3.39
685	2718	##########	30.25	20.87	22.87	0	8.9	9.25	0.32	57.83	0	2394.91	886.25	7358.42	14903.55	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.32	57.83	0.32	58.15	1412.19	3.41	1415.6	62.24	59.89	389.07	2.12	9.25E+09	2.79E+10	0.33106	13.10574	102.23	4.78
686	2719	##########	29.07	22.8	22.36	0	8.45	10.03	0.41	57.88	0	2369.97	961.43	7398.1	13712.86	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.45	0.41	57.88	0.41	58.29	1413.36	4.48	1417.84	67.45	56.87	389.39	2.78	1E+10	2.79E+10	0.27085	12.79568	60.44	3.72
687	2720	##########	30.05	20.94	21.74	0	9.13	9.09	0.32	58.13	0	2358.1	896.13	7342.01	14666.26	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.32	58.13	0.32	58.45	1419.44	3.44	1422.88	61.13	61.43	391.06	2.14	9.09E+09	2.79E+10	0.34377	13.41901	115.07	5.03
688	2751	##########	32.2	18.4	26.01	0	10.11	6.13	0.54	56.8	0	2445.49	592.61	7178.97	15511.45	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.54	56.8	0.54	57.34	1387.03	5.81	1392.85	41.23	68.01	382.13	3.61	6.13E+09	2.79E+10	0.36048	15.35064	350.26	15.31
689	2752	##########	28.9	23.1	24.78	0	8.19	9.62	0.64	57.03	0	2377.24	903.33	7352.25	14560.13	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.64	57.03	0.64	57.68	1392.67	6.98	1399.65	64.71	55.09	383.69	4.33	9.62E+09	2.79E+10	0.20515	13.32585	82.2	3.89
690	2753	##########	29.64	20.84	22.49	0	9.09	8.94	0.44	57.83	0	2420.91	860.66	7378.47	14319.42	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.09	0.44	57.83	0.44	58.26	1412.01	4.72	1416.72	60.15	61.15	389.01	2.93	8.94E+09	2.79E+10	0.31244	13.65128	119.2	5.3
691	2754	##########	28.16	22.66	21.74	0	8.58	9.83	0.56	57.91	0	2393.73	947.66	7426.7	13478.11	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.58	0.56	57.91	0.56	58.47	1414.16	6.08	1420.24	66.16	57.75	389.61	3.78	9.83E+09	2.79E+10	0.24824	13.38589	70.82	4.21
692	2755	##########	29.26	20.97	20.91	0	9.36	8.8	0.44	58.24	0	2378.23	872.31	7360.61	14676.56	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.36	0.44	58.24	0.44	58.68	1422.11	4.78	1426.89	59.22	62.99	391.8	2.97	8.8E+09	2.79E+10	0.32571	14.0069	134.22	5.52
693	2806	##########	31.41	18.28	25.58	0	10.07	6.2	0.65	56.82	0	2447.13	607.03	7200.87	15587.49	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.07	0.65	56.82	0.65	57.47	1387.42	7.01	1394.43	41.71	67.75	382.24	4.35	6.2E+09	2.79E+10	0.33124	15.54268	339.14	15.18
694	2807	##########	28.19	25.14	24.53	0	8.15	9.67	0.75	57.01	0	2377.93	907.36	7360.58	15014.2	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.75	57.01	0.75	57.75	1391.98	8.11	1400.1	65.03	54.8	383.5	5.04	9.67E+09	2.79E+10	0.17796	13.58639	79.63	3.76
695	2808	##########	29.08	22.86	22.29	0	9.03	9.01	0.52	57.8	0	2420.97	866.18	7387.68	14181.99	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.8	36.87	9.01	27.86	9.03	0.52	57.8	0.52	58.32	1411.51	5.61	1417.12	60.62	60.77	388.88	3.48	9.01E+09	2.79E+10	0.28615	13.7801	115.31	5.16
696	2809	##########	27.51	22.71	21.57	0	8.53	9.88	0.66	57.87	0	2394.59	950.2	7433.37	14162.52	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.53	0.66	57.87	0.66	58.53	1413.05	7.18	1420.23	66.43	57.4	389.3	4.46	9.88E+09	2.79E+10	0.22106	13.60124	68.61	4.08
697	2810	##########	28.68	22.97	20.7	0	9.31	8.86	0.53	58.22	0	2376.83	877.47	7368.84	14443.45	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.31	0.53	58.22	0.53	58.75	1421.61	5.71	1427.32	59.63	62.64	391.66	3.55	8.86E+09	2.79E+10	0.29961	14.13817	129.82	5.4
698	2811	##########	33.32	16.26	25.49	0	10.27	6.21	0.29	57.16	0	2424.33	608.05	7157.75	15640.1	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	57.16	34.07	6.21	27.86	10.27	0.29	57.16	0.29	57.45	1395.66	3.19	1398.84	41.81	69.07	384.51	1.98	6.21E+09	2.79E+10	0.43482	15.05972	338.13	15.18
699	2812	##########	30.17	23.13	24.49	0	8.33	9.67	0.39	57.33	0	2365.16	908.2	7334.77	14020.65	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	57.33	37.53	9.67	27.86	8.33	0.39	57.33	0.39	57.73	1400.02	4.24	1404.27	65.07	56.04	385.71	2.64	9.67E+09	2.79E+10	0.27474	12.76464	79.35	3.76
700	2813	##########	30.38	20.86	21.75	0	9.25	9.01	0.25	58.19	0	2409.13	866.95	7362.27	14548.05	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.25	0.25	58.19	0.25	58.44	1420.9	2.7	1423.6	60.64	62.26	391.47	1.68	9.01E+09	2.79E+10	0.37736	13.44363	115.12	5.16
701	2814	##########	29.3	20.7	21.35	0	8.73	9.88	0.33	58.22	0	2381.56	951.03	7407.25	14177.06	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	58.22	37.74	9.88	27.86	8.73	0.33	58.22	0.33	58.55	1421.71	3.58	1425.29	66.47	58.75	391.69	2.22	9.88E+09	2.79E+10	0.31599	12.95035	68.35	4.08
702	2815	##########	30.07	20.97	20.3	0	9.51	8.87	0.25	58.57	0	2367.99	878.2	7344.51	14244.55	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.51	0.25	58.57	0.25	58.82	1430.21	2.73	1432.94	59.67	64.01	394.03	1.7	8.87E+09	2.79E+10	0.3896	13.7884	129.63	5.4
703	2821	##########	33.45	17.8	28.3	0	9.59	6.51	0.41	56.31	0	2199.81	841.04	7088.46	15413.02	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.41	56.31	0.41	56.72	1374.96	4.43	1379.38	43.83	64.51	378.81	2.75	6.51E+09	2.79E+10	0.36443	14.51465	300.87	14.81
704	2822	##########	29.59	23.21	25.15	0	8.07	9.84	0.51	57.05	0	2353.69	923.47	7332.03	13701.74	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.51	57.05	0.51	57.57	1393.12	5.57	1398.68	66.21	54.31	383.81	3.46	9.84E+09	2.79E+10	0.22271	12.79545	70.17	3.39
705	2823	##########	30.14	20.87	22.89	0	8.88	9.25	0.34	57.81	0	2393.92	886.25	7357.55	14832.91	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.88	0.34	57.81	0.34	58.15	1411.6	3.65	1415.25	62.24	59.77	388.9	2.27	9.25E+09	2.79E+10	0.32526	13.17238	102.23	4.78
706	2824	##########	28.91	22.8	22.35	0	8.44	10.03	0.44	57.86	0	2369	961.43	7397.28	13729.04	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.44	57.86	0.44	58.3	1412.82	4.78	1417.61	67.45	56.77	389.24	2.97	1E+10	2.79E+10	0.26479	12.89013	60.44	3.72
707	2825	##########	29.94	20.94	21.77	0	9.11	9.09	0.34	58.1	0	2357.18	896.13	7341.22	15001.43	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.11	0.34	58.1	0.34	58.44	1418.77	3.68	1422.45	61.13	61.3	390.88	2.29	9.09E+09	2.79E+10	0.3381	13.48508	115.07	5.03
708	2856	##########	32.3	18.4	26.01	0	10.12	6.13	0.52	56.82	0	2445.79	592.61	7179.1	15543.54	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.46	5.6	1393.06	41.23	68.1	382.25	3.48	6.13E+09	2.79E+10	0.36408	15.29823	350.26	15.31
709	2857	##########	29.04	23.1	24.82	0	8.2	9.62	0.62	57.04	0	2377.89	903.33	7352.78	14427.98	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.92	6.72	1399.64	64.71	55.15	383.76	4.17	9.62E+09	2.79E+10	0.20926	13.24259	82.2	3.89
710	2858	##########	29.74	20.84	22.49	0	9.1	8.94	0.42	57.84	0	2421.63	860.66	7379.1	14501.08	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.43	4.52	1416.94	60.15	61.23	389.13	2.8	8.94E+09	2.79E+10	0.31639	13.5956	119.2	5.3
711	2859	##########	28.28	22.66	21.76	0	8.59	9.83	0.54	57.93	0	2394.43	947.66	7427.3	13337.08	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.47	1414.49	5.85	1420.34	66.16	57.82	389.7	3.63	9.83E+09	2.79E+10	0.2523	13.31249	70.82	4.21
712	2860	##########	29.36	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2378.88	872.31	7361.17	14907.48	0.3	0.221	0.229	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.55	4.58	1427.13	59.22	63.08	391.92	2.85	8.8E+09	2.79E+10	0.3296	13.95152	134.22	5.52
713	2911	##########	31.52	18.28	25.59	0	10.08	6.2	0.63	56.83	0	2447.39	607.03	7200.95	15470.11	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.79	6.78	1394.57	41.71	67.83	382.34	4.21	6.2E+09	2.79E+10	0.33471	15.48473	339.14	15.18
714	2912	##########	28.34	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2378.56	907.36	7361.09	15012.02	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.23	7.85	1400.07	65.03	54.85	383.57	4.87	9.67E+09	2.79E+10	0.18194	13.49866	79.63	3.76
715	2913	##########	29.18	22.86	22.3	0	9.05	9.01	0.5	57.82	0	2421.67	866.18	7388.29	14120.94	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.5	57.82	0.5	58.32	1411.88	5.4	1417.28	60.62	60.85	388.98	3.35	9.01E+09	2.79E+10	0.28996	13.7183	115.31	5.16
716	2914	##########	27.65	22.71	21.6	0	8.54	9.88	0.64	57.88	0	2395.28	950.2	7433.95	14014.17	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.34	6.93	1420.27	66.43	57.46	389.38	4.3	9.88E+09	2.79E+10	0.22499	13.52242	68.61	4.08
717	2915	##########	28.79	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2377.46	877.47	7369.37	14403.52	0.3	0.221	0.229	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.99	5.5	1427.49	59.63	62.72	391.77	3.41	8.86E+09	2.79E+10	0.30337	14.07679	129.82	5.4
718	2916	##########	33.38	16.26	25.44	0	10.28	6.21	0.28	57.18	0	2424.7	608.05	7157.96	15522.12	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.3	3.03	1399.33	41.81	69.18	384.69	1.88	6.21E+09	2.79E+10	0.43872	15.02872	338.13	15.18
719	2917	##########	30.28	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2365.82	908.2	7335.32	14072	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.4	4.04	1404.43	65.07	56.11	385.82	2.51	9.67E+09	2.79E+10	0.27926	12.69769	79.35	3.76
720	2918	##########	30.45	20.86	21.7	0	9.27	9.01	0.24	58.21	0	2409.87	866.95	7362.93	14156.56	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.24	58.21	0.24	58.45	1421.48	2.55	1424.03	60.64	62.36	391.62	1.58	9.01E+09	2.79E+10	0.38152	13.40935	115.12	5.16
721	2919	##########	29.39	20.7	21.34	0	8.75	9.88	0.31	58.24	0	2382.28	951.03	7407.87	14115.57	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.31	58.24	0.31	58.55	1422.15	3.39	1425.54	66.47	58.83	391.81	2.1	9.88E+09	2.79E+10	0.3204	12.89609	68.35	4.08



949	4117	##########	29.08	23.1	24.87	0	8.2	9.62	0.61	57.04	0	2379.56	903.33	7355.02	14382.45	0.3	0.199	0.206	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.61	57.04	0.61	57.65	1392.74	6.65	1399.39	64.71	55.14	383.71	4.13	9.62E+09	2.79E+10	0.20886	13.19929	82.2	3.89
950	4118	##########	29.77	20.84	22.53	0	9.1	8.94	0.41	57.84	0	2423.31	860.66	7381.36	14360.99	0.3	0.199	0.206	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.41	57.84	0.41	58.25	1412.33	4.45	1416.78	60.15	61.23	389.1	2.77	8.94E+09	2.79E+10	0.31609	13.55318	119.2	5.3
951	4119	##########	28.33	22.66	21.8	0	8.59	9.83	0.53	57.92	0	2396.13	947.66	7429.57	13290.21	0.3	0.199	0.206	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.53	57.92	0.53	58.45	1414.37	5.78	1420.14	66.16	57.8	389.66	3.59	9.83E+09	2.79E+10	0.25196	13.2697	70.82	4.21
952	4120	##########	29.4	20.97	20.94	0	9.38	8.8	0.42	58.25	0	2380.49	872.31	7363.34	14725.49	0.3	0.199	0.206	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.38	0.42	58.25	0.42	58.67	1422.45	4.52	1426.97	59.22	63.07	391.89	2.81	8.8E+09	2.79E+10	0.3293	13.90972	134.22	5.52
953	4171	##########	31.57	18.28	25.63	0	10.08	6.2	0.62	56.83	0	2445.5	607.03	7198.53	15394.74	0.3	0.199	0.206	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.45	1387.69	6.71	1394.4	41.71	67.83	382.31	4.16	6.2E+09	2.79E+10	0.33436	15.44474	339.14	15.18
954	4172	##########	28.4	25.14	24.63	0	8.15	9.67	0.72	57.01	0	2380.22	907.36	7363.31	14950.31	0.3	0.199	0.206	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.72	1392.03	7.77	1399.8	65.03	54.84	383.51	4.82	9.67E+09	2.79E+10	0.18148	13.45728	79.63	3.76
955	4173	##########	29.22	22.86	22.34	0	9.04	9.01	0.49	57.82	0	2423.32	866.18	7390.52	14028.42	0.3	0.199	0.206	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.49	57.82	0.49	58.31	1411.8	5.33	1417.12	60.62	60.84	388.96	3.31	9.01E+09	2.79E+10	0.28961	13.67656	115.31	5.16
956	4174	##########	27.7	22.71	21.65	0	8.54	9.88	0.63	57.87	0	2396.98	950.2	7436.21	13925.66	0.3	0.199	0.206	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.63	57.87	0.63	58.51	1413.16	6.86	1420.02	66.43	57.45	389.33	4.26	9.88E+09	2.79E+10	0.22459	13.48088	68.61	4.08
957	4175	##########	28.84	20.97	20.75	0	9.32	8.86	0.5	58.23	0	2379.05	877.47	7371.52	14274.87	0.3	0.199	0.206	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.5	58.23	0.5	58.73	1421.87	5.43	1427.3	59.63	62.71	391.73	3.37	8.86E+09	2.79E+10	0.30301	14.03594	129.82	5.4
958	4176	##########	33.41	16.26	25.47	0	10.28	6.21	0.27	57.18	0	2422.84	608.05	7155.59	15330.63	0.3	0.199	0.206	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.27	57.18	0.27	57.45	1396.21	2.98	1399.19	41.81	69.18	384.66	1.85	6.21E+09	2.79E+10	0.43856	14.98867	338.13	15.18
959	4177	##########	30.32	23.13	24.54	0	8.34	9.67	0.37	57.34	0	2367.51	908.2	7337.57	13804.58	0.3	0.199	0.206	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.34	0.37	57.34	0.37	57.71	1400.25	3.97	1404.22	65.07	56.1	385.78	2.47	9.67E+09	2.79E+10	0.27904	12.65187	79.35	3.76
960	4178	##########	30.48	20.86	21.74	0	9.27	9.01	0.23	58.21	0	2411.59	866.95	7365.24	14053.93	0.3	0.199	0.206	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.44	1421.34	2.49	1423.83	60.64	62.36	391.59	1.55	9.01E+09	2.79E+10	0.38136	13.36911	115.12	5.16
961	4179	##########	29.44	20.7	21.37	0	8.74	9.88	0.31	58.24	0	2384.01	951.03	7410.17	13926.91	0.3	0.199	0.206	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.74	0.31	58.24	0.31	58.54	1422.06	3.33	1425.38	66.47	58.82	391.78	2.06	9.88E+09	2.79E+10	0.32024	12.853	68.35	4.08
962	4180	##########	30.17	20.97	20.29	0	9.53	8.87	0.23	58.59	0	2370.29	878.2	7347.29	14013.17	0.3	0.199	0.206	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.23	58.59	0.23	58.82	1430.7	2.52	1433.22	59.67	64.11	394.16	1.57	8.87E+09	2.79E+10	0.39353	13.71407	129.63	5.4
963	4186	##########	33.58	17.8	28.32	0	9.6	6.51	0.39	56.32	0	2201.41	841.04	7090.3	15350.49	0.3	0.199	0.206	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.39	56.32	0.39	56.71	1375.34	4.18	1379.51	43.83	64.6	378.91	2.59	6.51E+09	2.79E+10	0.368	14.42364	300.87	14.81
964	4187	##########	29.78	23.21	25.23	0	8.08	9.84	0.48	57.06	0	2356	923.47	7334.77	13479.42	0.3	0.199	0.206	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.48	57.06	0.48	57.54	1393.22	5.25	1398.47	66.21	54.35	383.84	3.26	9.84E+09	2.79E+10	0.22688	12.66998	70.17	3.39
965	4188	##########	30.27	20.87	22.91	0	8.9	9.25	0.32	57.82	0	2396.33	886.25	7360.43	14443.73	0.3	0.199	0.206	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.32	57.82	0.32	58.14	1411.9	3.42	1415.32	62.24	59.84	388.99	2.12	9.25E+09	2.79E+10	0.32921	13.08012	102.23	4.78
966	4189	##########	29.07	22.8	22.4	0	8.45	10.03	0.42	57.87	0	2371.41	961.43	7400.14	13538.03	0.3	0.199	0.206	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.28	1413.06	4.5	1417.56	67.45	56.83	389.3	2.79	1E+10	2.79E+10	0.26891	12.77568	60.44	3.72
967	4190	##########	30.07	20.94	21.79	0	9.12	9.09	0.32	58.12	0	2359.47	896.13	7343.98	14536.27	0.3	0.199	0.206	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.12	0.32	58.12	0.32	58.44	1419.15	3.44	1422.59	61.13	61.38	390.98	2.14	9.09E+09	2.79E+10	0.34194	13.39367	115.07	5.03
968	4221	##########	32.39	18.4	26.05	0	10.13	6.13	0.5	56.82	0	2443.89	592.61	7176.51	15367.45	0.3	0.172	0.176	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.13	0.5	56.82	0.5	57.32	1387.5	5.44	1392.95	41.23	68.13	382.26	3.38	6.13E+09	2.79E+10	0.36532	15.23613	350.26	15.31
969	4222	##########	29.15	23.1	24.89	0	8.2	9.62	0.6	57.04	0	2379.26	903.33	7354.39	14311.04	0.3	0.172	0.176	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.6	57.04	0.6	57.64	1392.8	6.54	1399.34	64.71	55.15	383.72	4.06	9.62E+09	2.79E+10	0.21067	13.16435	82.2	3.89
970	4223	##########	29.82	20.84	22.53	0	9.1	8.94	0.4	57.84	0	2423.02	860.66	7380.76	14403.07	0.3	0.172	0.176	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.4	57.84	0.4	58.25	1412.45	4.37	1416.82	60.15	61.25	389.14	2.71	8.94E+09	2.79E+10	0.31778	13.53135	119.2	5.3
971	4224	##########	28.38	22.66	21.82	0	8.6	9.83	0.52	57.92	0	2395.87	947.66	7428.99	13214.34	0.3	0.172	0.176	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.6	0.52	57.92	0.52	58.45	1414.43	5.68	1420.11	66.16	57.82	389.68	3.53	9.83E+09	2.79E+10	0.25373	13.23933	70.82	4.21
972	4225	##########	29.44	20.97	20.95	0	9.38	8.8	0.41	58.26	0	2380.21	872.31	7362.75	14774.88	0.3	0.172	0.176	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.41	58.26	0.41	58.67	1422.57	4.44	1427.01	59.22	63.1	391.93	2.76	8.8E+09	2.79E+10	0.33097	13.8876	134.22	5.52
973	4276	##########	31.62	18.28	25.64	0	10.09	6.2	0.61	56.83	0	2445.43	607.03	7198.28	15368.24	0.3	0.172	0.176	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.09	0.61	56.83	0.61	57.44	1387.82	6.61	1394.42	41.71	67.86	382.35	4.1	6.2E+09	2.79E+10	0.33584	15.42069	339.14	15.18
974	4277	##########	28.46	25.14	24.66	0	8.15	9.67	0.71	57.01	0	2379.91	907.36	7362.68	14906.47	0.3	0.172	0.176	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.71	57.01	0.71	57.71	1392.06	7.65	1399.71	65.03	54.85	383.52	4.75	9.67E+09	2.79E+10	0.18325	13.41964	79.63	3.76
975	4278	##########	29.27	22.86	22.35	0	9.05	9.01	0.48	57.82	0	2423.05	866.18	7389.94	14027.25	0.3	0.172	0.176	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.48	57.82	0.48	58.3	1411.88	5.23	1417.12	60.62	60.87	388.98	3.25	9.01E+09	2.79E+10	0.29125	13.6517	115.31	5.16
976	4279	##########	27.76	22.71	21.67	0	8.54	9.88	0.62	57.88	0	2396.71	950.2	7435.63	13878.74	0.3	0.172	0.176	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.62	57.88	0.62	58.5	1413.23	6.75	1419.98	66.43	57.47	389.35	4.19	9.88E+09	2.79E+10	0.22632	13.44762	68.61	4.08
977	4280	##########	28.88	20.97	20.76	0	9.33	8.86	0.49	58.23	0	2378.76	877.47	7370.92	14295.98	0.3	0.172	0.176	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.33	0.49	58.23	0.49	58.73	1421.99	5.34	1427.33	59.63	62.74	391.77	3.32	8.86E+09	2.79E+10	0.30463	14.01099	129.82	5.4
978	4281	##########	33.44	16.26	25.46	0	10.29	6.21	0.27	57.19	0	2422.8	608.05	7155.37	15240.54	0.3	0.172	0.176	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.45	1396.39	2.92	1399.31	41.81	69.21	384.71	1.81	6.21E+09	2.79E+10	0.44016	14.97708	338.13	15.18
979	4282	##########	30.38	23.13	24.55	0	8.34	9.67	0.36	57.35	0	2367.21	908.2	7336.95	13901.79	0.3	0.172	0.176	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.71	1400.36	3.88	1404.24	65.07	56.12	385.81	2.41	9.67E+09	2.79E+10	0.28098	12.62559	79.35	3.76
980	4283	##########	30.51	20.86	21.74	0	9.27	9.01	0.22	58.21	0	2411.31	866.95	7364.65	13978.55	0.3	0.172	0.176	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.22	58.21	0.22	58.44	1421.51	2.43	1423.94	60.64	62.39	391.63	1.51	9.01E+09	2.79E+10	0.3831	13.35709	115.12	5.16
981	4284	##########	29.47	20.7	21.38	0	8.75	9.88	0.3	58.24	0	2383.74	951.03	7409.59	13944.3	0.3	0.172	0.176	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.3	58.24	0.3	58.54	1422.18	3.25	1425.43	66.47	58.85	391.82	2.02	9.88E+09	2.79E+10	0.32211	12.83218	68.35	4.08
982	4285	##########	30.2	20.97	20.28	0	9.53	8.87	0.23	58.6	0	2370.01	878.2	7346.7	13940.53	0.3	0.172	0.176	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.53	0.23	58.6	0.23	58.83	1430.9	2.46	1433.36	59.67	64.14	394.22	1.53	8.87E+09	2.79E+10	0.39523	13.70156	129.63	5.4
983	4291	##########	33.62	17.8	28.33	0	9.61	6.51	0.38	56.33	0	2201.1	841.04	7089.69	15464.04	0.3	0.172	0.176	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.38	56.33	0.38	56.71	1375.44	4.1	1379.54	43.83	64.63	378.94	2.54	6.51E+09	2.79E+10	0.36961	14.40494	300.87	14.81
984	4292	##########	29.84	23.21	25.25	0	8.08	9.84	0.47	57.06	0	2355.68	923.47	7334.13	13395.65	0.3	0.172	0.176	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.47	57.06	0.47	57.53	1393.29	5.15	1398.44	66.21	54.37	383.86	3.19	9.84E+09	2.79E+10	0.22884	12.63707	70.17	3.39
985	4293	##########	30.3	20.87	22.92	0	8.9	9.25	0.31	57.83	0	2396.05	886.25	7359.85	14510.7	0.3	0.172	0.176	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.31	57.83	0.31	58.13	1412.02	3.34	1415.36	62.24	59.87	389.02	2.08	9.25E+09	2.79E+10	0.33098	13.06146	102.23	4.78
986	4294	##########	29.13	22.8	22.41	0	8.45	10.03	0.41	57.87	0	2371.13	961.43	7399.54	13552.54	0.3	0.172	0.176	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.28	1413.16	4.4	1417.57	67.45	56.85	389.33	2.73	1E+10	2.79E+10	0.27079	12.74773	60.44	3.72
987	4295	##########	30.11	20.94	21.79	0	9.13	9.09	0.31	58.12	0	2359.18	896.13	7343.37	14494.94	0.3	0.172	0.176	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.31	58.12	0.31	58.43	1419.27	3.37	1422.64	61.13	61.41	391.02	2.09	9.09E+09	2.79E+10	0.34368	13.37515	115.07	5.03
988	4326	##########	32.29	18.4	26.06	0	10.11	6.13	0.52	56.8	0	2443.33	592.61	7176.14	15281.34	0.3	0.237	0.246	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.52	56.8	0.52	57.33	1387.07	5.65	1392.72	41.23	68.04	382.14	3.51	6.13E+09	2.79E+10	0.36131	15.28031	350.26	15.31
989	4327	##########	29.01	23.1	24.85	0	8.19	9.62	0.63	57.03	0	2379.37	903.33	7354.98	14460.73	0.3	0.237	0.246	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.63	57.03	0.63	57.65	1392.53	6.8	1399.32	64.71	55.09	383.65	4.22	9.62E+09	2.79E+10	0.20602	13.24235	82.2	3.89
990	4328	##########	29.72	20.84	22.54	0	9.09	8.94	0.42	57.83	0	2423.05	860.66	7381.24	14212.28	0.3	0.237	0.246	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.09	0.42	57.83	0.42	58.25	1412.02	4.57	1416.59	60.15	61.17	389.02	2.84	8.94E+09	2.79E+10	0.31338	13.57817	119.2	5.3
991	4329	##########	28.26	22.66	21.8	0	8.59	9.83	0.55	57.91	0	2395.91	947.66	7429.5	13373.57	0.3	0.237	0.246	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.59	0.55	57.91	0.55	58.46	1414.09	5.92	1420.01	66.16	57.76	389.59	3.67	9.83E+09	2.79E+10	0.24917	13.30638	70.82	4.21
992	4330	##########	29.35	20.97	20.96	0	9.37	8.8	0.43	58.24	0	2380.29	872.31	7363.29	14567.78	0.3	0.237	0.246	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.37	0.43	58.24	0.43	58.67	1422.12	4.63	1426.75	59.22	63.01	391.8	2.88	8.8E+09	2.79E+10	0.32664	13.93462	134.22	5.52
993	4381	##########	31.5	18.28	25.64	0	10.07	6.2	0.63	56.82	0	2444.92	607.03	7197.96	15386.44	0.3	0.237	0.246	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.07	0.63	56.82	0.63	57.45	1387.39	6.84	1394.23	41.71	67.77	382.23	4.25	6.2E+09	2.79E+10	0.33196	15.47174	339.14	15.18
994	4382	##########	28.31	25.14	24.61	0	8.15	9.67	0.73	57	0	2380.03	907.36	7363.28	14983.11	0.3	0.237	0.246	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.73	57	0.73	57.73	1391.84	7.93	1399.77	65.03	54.8	383.46	4.92	9.67E+09	2.79E+10	0.17872	13.50387	79.63	3.76
995	4383	##########	29.16	22.86	22.34	0	9.04	9.01	0.5	57.8	0	2423.1	866.18	7390.44	13925.36	0.3	0.237	0.246	3.814	0.582	0.571	1486.45	57.8	36.87	9.01	27.86	9.04	0.5	57.8	0.5	58.31	1411.5	5.45	1416.95	60.62	60.79	388.88	3.39	9.01E+09	2.79E+10	0.28698	13.7059	115.31	5.16
996	4384	##########	27.62	22.71	21.64	0	8.53	9.88	0.65	57.86	0	2396.77	950.2	7436.16	14050.43	0.3	0.237	0.246	3.814	0.582	0.571	1486.45	57.86	37.73	9.88	27.86	8.53	0.65	57.86	0.65	58.51	1412.95	7.01	1419.96	66.43	57.4	389.28	4.35	9.88E+09	2.79E+10	0.22187	13.52157	68.61	4.08
997	4385	##########	28.77	20.97	20.75	0	9.31	8.86	0.51	58.22	0	2378.86	877.47	7371.48	14200.03	0.3	0.237	0.246	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.31	0.51	58.22	0.51	58.73	1421.6	5.56	1427.15	59.63	62.66	391.66	3.45	8.86E+09	2.79E+10	0.30041	14.06501	129.82	5.4
998	4386	##########	33.38	16.26	25.51	0	10.27	6.21	0.28	57.16	0	2422.18	608.05	7154.93	15459.9	0.3	0.237	0.246	2.783	0.58	0.571	1486.45	57.16	34.07	6.21	27.86	10.27	0.28	57.16	0.28	57.44	1395.79	3.06	1398.85	41.81	69.11	384.55	1.9	6.21E+09	2.79E+10	0.43592	14.99753	338.13	15.18
999	4387	##########	30.27	23.13	24.55	0	8.33	9.67	0.38	57.33	0	2367.31	908.2	7337.53	13664.42	0.3	0.237	0.246	2.783	0.58	0.571	1486.45	57.33	37.53	9.67	27.86	8.33	0.38	57.33	0.38	57.71	1399.98	4.09	1404.07	65.07	56.05	385.7	2.54	9.67E+09	2.79E+10	0.27599	12.6831	79.35	3.76
1000	4388	##########	30.45	20.86	21.78	0	9.26	9.01	0.24	58.19	0	2411.33	866.95	7365.11	14116.66	0.3	0.237	0.246	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.26	0.24	58.19	0.24	58.43	1420.94	2.58	1423.52	60.64	62.29	391.47	1.6	9.01E+09	2.79E+10	0.37854	13.37993	115.12	5.16
1001	4389	##########	29.38	20.7	21.39	0	8.74	9.88	0.32	58.22	0	2383.78	951.03	7410.1	13789.27	0.3	0.237	0.246	2.783	0.58	0.571	1486.45	58.22	37.74	9.88	27.86	8.74	0.32	58.22	0.32	58.54	1421.72	3.43	1425.16	66.47	58.77	391.69	2.13	9.88E+09	2.79E+10	0.31725	12.87649	68.35	4.08
1002	4390	##########	30.14	20.97	20.32	0	9.52	8.87	0.24	58.57	0	2370.08	878.2	7347.23	14061.56	0.3	0.237	0.246	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.52	0.24	58.57	0.24	58.82	1430.3	2.61	1432.91	59.67	64.04	394.06	1.62	8.87E+09	2.79E+10	0.39075	13.72515	129.63	5.4
1003	4396	##########	33.54	17.8	28.34	0	9.59	6.51	0.39	56.31	0	2201.22	841.04	7090.25	15261.95	0.3	0.237	0.246	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.39	56.31	0.39	56.7	1375	4.28	1379.28	43.83	64.53	378.82	2.66	6.51E+09	2.79E+10	0.36539	14.44356	300.87	14.81
1004	4397	##########	29.7	23.21	25.22	0	8.07	9.84	0.5	57.05	0	2355.81	923.47	7334.76	13575.31	0.3	0.237	0.246	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.5	57.05	0.5	57.54	1392.97	5.39	1398.36	66.21	54.31	383.77	3.35	9.84E+09	2.79E+10	0.2238	12.71027	70.17	3.39
1005	4398	##########	30.23	20.87	22.93	0	8.89	9.25	0.32	57.81	0	2396.1	886.25	7360.36	14481.01	0.3	0.237	0.246	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.32	57.81	0.32	58.13	1411.61	3.52	1415.12	62.24	59.79	388.9	2.18	9.25E+09	2.79E+10	0.32636	13.10054	102.23	4.78
1006	4399	##########	29.01	22.8	22.4	0	8.44	10.03	0.43	57.86	0	2371.2	961.43	7400.09	13487.04	0.3	0.237	0.246	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.43	57.86	0.43	58.28	1412.79	4.62	1417.41	67.45	56.78	389.23	2.87	1E+10	2.79E+10	0.26593	12.80915	60.44	3.72
1007	4400	##########	30.03	20.94	21.81	0	9.12	9.09	0.33	58.1	0	2359.27	896.13	7343.93	14473.01	0.3	0.237	0.246	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.12	0.33	58.1	0.33	58.43	1418.8	3.54	1422.35	61.13	61.32	390.89	2.2	9.09E+09	2.79E+10	0.33916	13.41412	115.07	5.03
1008	4431	##########	32.4	18.4	26.05	0	10.13	6.13	0.5	56.82	0	2443.96	592.61	7176.58	15377.13	0.3	0.168	0.172	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.13	0.5	56.82	0.5	57.32	1387.54	5.43	1392.97	41.23	68.13	382.27	3.37	6.13E+09	2.79E+10	0.36558	15.23372	350.26	15.31
1009	4432	##########	29.16	23.1	24.9	0	8.2	9.62	0.6	57.04	0	2379.28	903.33	7354.4	14302.12	0.3	0.168	0.172	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.6	57.04	0.6	57.64	1392.83	6.52	1399.35	64.71	55.16	383.73	4.05	9.62E+09	2.79E+10	0.21098	13.15978	82.2	3.89
1010	4433	##########	29.82	20.84	22.53	0	9.11	8.94	0.4	57.84	0	2423.05	860.66	7380.78	14412	0.3	0.168	0.172	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.11	0.4	57.84	0.4	58.25	1412.49	4.36	1416.85	60.15	61.26	389.15	2.71	8.94E+09	2.79E+10	0.31807	13.52878	119.2	5.3
1011	4434	##########	28.39	22.66	21.82	0	8.6	9.83	0.52	57.93	0	2395.89	947.66	7429	13204.72	0.3	0.168	0.172	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.52	57.93	0.52	58.45	1414.46	5.66	1420.12	66.16	57.83	389.69	3.52	9.83E+09	2.79E+10	0.25403	13.23546	70.82	4.21
1012	4435	##########	29.45	20.97	20.94	0	9.38	8.8	0.41	58.26	0	2380.23	872.31	7362.76	14786.07	0.3	0.168	0.172	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.41	58.26	0.41	58.67	1422.62	4.43	1427.05	59.22	63.1	391.94	2.75	8.8E+09	2.79E+10	0.33126	13.88515	134.22	5.52
1013	4486	##########	31.63	18.28	25.64	0	10.09	6.2	0.61	56.84	0	2445.5	607.03	7198.35	15366.73	0.3	0.168	0.172	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.44	1387.85	6.59	1394.44	41.71	67.86	382.36	4.09	6.2E+09	2.79E+10	0.3361	15.41786	339.14	15.18
1014	4487	##########	28.47	25.14	24.66	0	8.15	9.67	0.7	57.01	0	2379.93	907.36	7362.69	14899.92	0.3	0.168	0.172	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.7	57.01	0.7	57.71	1392.08	7.64	1399.72	65.03	54.86	383.52	4.74	9.67E+09	2.79E+10	0.18355	13.41469	79.63	3.76
1015	4488	##########	29.28	22.86	22.35	0	9.05	9.01	0.48	57.82	0	2423.08	866.18	7389.96	14013.67	0.3	0.168	0.172	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.48	57.82	0.48	58.3	1411.91	5.22	1417.13	60.62	60.87	388.99	3.24	9.01E+09	2.79E+10	0.29154	13.64864	115.31	5.16
1016	4489	##########	27.77	22.71	21.68	0	8.54	9.88	0.62	57.88	0	2396.74	950.2	7435.64	13871.79	0.3	0.168	0.172	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.62	57.88	0.62	58.5	1413.25	6.73	1419.98	66.43	57.47	389.36	4.18	9.88E+09	2.79E+10	0.22661	13.44332	68.61	4.08
1017	4490	##########	28.89	20.97	20.76	0	9.33	8.86	0.49	58.24	0	2378.78	877.47	7370.93	14281.42	0.3	0.168	0.172	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.49	58.24	0.49	58.73	1422.02	5.33	1427.35	59.63	62.74	391.77	3.31	8.86E+09	2.79E+10	0.30491	14.00797	129.82	5.4
1018	4491	##########	33.44	16.26	25.46	0	10.29	6.21	0.27	57.19	0	2422.88	608.05	7155.45	15219.85	0.3	0.168	0.172	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.46	1396.43	2.91	1399.34	41.81	69.22	384.72	1.81	6.21E+09	2.79E+10	0.44044	14.97634	338.13	15.18
1019	4492	##########	30.39	23.13	24.55	0	8.34	9.67	0.36	57.35	0	2367.23	908.2	7336.96	13899.36	0.3	0.168	0.172	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.71	1400.39	3.87	1404.26	65.07	56.12	385.81	2.4	9.67E+09	2.79E+10	0.28131	12.62235	79.35	3.76
1020	4493	##########	30.51	20.86	21.73	0	9.28	9.01	0.22	58.22	0	2411.34	866.95	7364.66	13969.56	0.3	0.168	0.172	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.28	0.22	58.22	0.22	58.44	1421.56	2.42	1423.98	60.64	62.4	391.65	1.51	9.01E+09	2.79E+10	0.3834	13.35606	115.12	5.16
1021	4494	##########	29.47	20.7	21.38	0	8.75	9.88	0.3	58.24	0	2383.77	951.03	7409.6	13929.07	0.3	0.168	0.172	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.3	58.24	0.3	58.54	1422.21	3.24	1425.45	66.47	58.86	391.83	2.01	9.88E+09	2.79E+10	0.32243	12.8298	68.35	4.08
1022	4495	##########	30.2	20.97	20.28	0	9.54	8.87	0.23	58.6	0	2370.04	878.2	7346.71	13931.66	0.3	0.168	0.172	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.54	0.23	58.6	0.23	58.83	1430.93	2.45	1433.39	59.67	64.15	394.23	1.52	8.87E+09	2.79E+10	0.39553	13.70049	129.63	5.4
1023	4501	##########	33.62	17.8	28.33	0	9.61	6.51	0.38	56.33	0	2201.13	841.04	7089.7	15500.08	0.3	0.168	0.172	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.38	56.33	0.38	56.71	1375.48	4.08	1379.57	43.83	64.63	378.95	2.54	6.51E+09	2.79E+10	0.36989	14.40289	300.87	14.81
1024	4502	##########	29.84	23.21	25.25	0	8.08	9.84	0.47	57.06	0	2355.7	923.47	7334.14	13384.93	0.3	0.168	0.172	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.47	57.06	0.47	57.53	1393.33	5.13	1398.46	66.21	54.37	383.87	3.19	9.84E+09	2.79E+10	0.22917	12.6328	70.17	3.39
1025	4503	##########	30.31	20.87	22.91	0	8.9	9.25	0.31	57.83	0	2396.08	886.25	7359.86	14570.26	0.3	0.168	0.172	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.31	57.83	0.31	58.14	1412.07	3.33	1415.4	62.24	59.88	389.03	2.07	9.25E+09	2.79E+10	0.33129	13.05937	102.23	4.78
1026	4504	##########	29.13	22.8	22.41	0	8.45	10.03	0.41	57.87	0	2371.16	961.43	7399.55	13558.66	0.3	0.168	0.172	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.28	1413.19	4.39	1417.58	67.45	56.85	389.34	2.73	1E+10	2.79E+10	0.27111	12.74426	60.44	3.72
1027	4505	##########	30.11	20.94	21.79	0	9.13	9.09	0.31	58.12	0	2359.21	896.13	7343.38	14481.21	0.3	0.168	0.172	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.31	58.12	0.31	58.43	1419.3	3.36	1422.66	61.13	61.41	391.02	2.09	9.09E+09	2.79E+10	0.34398	13.37308	115.07	5.03
1028	4536	##########	32.43	18.4	26.04	0	10.13	6.13	0.5	56.83	0	2444.32	592.61	7176.95	15440.28	0.3	0.148	0.151	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.5	56.83	0.5	57.33	1387.71	5.37	1393.08	41.23	68.17	382.32	3.33	6.13E+09	2.79E+10	0.36691	15.222	350.26	15.31
1029	4537	##########	29.2	23.1	24.9	0	8.2	9.62	0.59	57.04	0	2379.41	903.33	7354.44	14257.94	0.3	0.148	0.151	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.59	57.04	0.59	57.64	1392.92	6.45	1399.37	64.71	55.18	383.76	4	9.62E+09	2.79E+10	0.2125	13.13734	82.2	3.89
1030	4538	##########	29.85	20.84	22.53	0	9.11	8.94	0.4	57.85	0	2423.19	860.66	7380.85	14467.25	0.3	0.148	0.151	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.4	57.85	0.4	58.25	1412.64	4.3	1416.94	60.15	61.29	389.19	2.67	8.94E+09	2.79E+10	0.31951	13.51618	119.2	5.3
1031	4539	##########	28.43	22.66	21.83	0	8.6	9.83	0.52	57.93	0	2396.03	947.66	7429.06	13226.91	0.3	0.148	0.151	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.52	57.93	0.52	58.45	1414.58	5.59	1420.17	66.16	57.86	389.72	3.47	9.83E+09	2.79E+10	0.25553	13.21653	70.82	4.21
1032	4540	##########	29.48	20.97	20.94	0	9.38	8.8	0.4	58.27	0	2380.35	872.31	7362.81	14863.56	0.3	0.148	0.151	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.4	58.27	0.4	58.67	1422.78	4.37	1427.15	59.22	63.13	391.98	2.71	8.8E+09	2.79E+10	0.33269	13.87272	134.22	5.52
1033	4591	##########	31.66	18.28	25.64	0	10.09	6.2	0.6	56.84	0	2445.84	607.03	7198.7	15354.45	0.3	0.148	0.151	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.6	56.84	0.6	57.44	1388.02	6.53	1394.55	41.71	67.89	382.41	4.05	6.2E+09	2.79E+10	0.33738	15.40393	339.14	15.18
1034	4592	##########	28.52	25.14	24.67	0	8.16	9.67	0.7	57.01	0	2380.05	907.36	7362.72	14865.56	0.3	0.148	0.151	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.16	0.7	57.01	0.7	57.71	1392.19	7.56	1399.74	65.03	54.88	383.55	4.69	9.67E+09	2.79E+10	0.18502	13.39034	79.63	3.76
1035	4593	##########	29.31	22.86	22.35	0	9.05	9.01	0.48	57.83	0	2423.22	866.18	7390.02	14030.78	0.3	0.148	0.151	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.48	57.83	0.48	58.3	1412.07	5.16	1417.23	60.62	60.9	389.03	3.2	9.01E+09	2.79E+10	0.29295	13.63363	115.31	5.16
1036	4594	##########	27.81	22.71	21.68	0	8.55	9.88	0.61	57.88	0	2396.87	950.2	7435.7	13811.09	0.3	0.148	0.151	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.55	0.61	57.88	0.61	58.5	1413.39	6.65	1420.04	66.43	57.49	389.39	4.13	9.88E+09	2.79E+10	0.22807	13.42226	68.61	4.08
1037	4595	##########	28.92	20.97	20.75	0	9.33	8.86	0.49	58.24	0	2378.9	877.47	7370.98	14299.33	0.3	0.148	0.151	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.49	58.24	0.49	58.73	1422.18	5.26	1427.44	59.63	62.77	391.82	3.27	8.86E+09	2.79E+10	0.3063	13.99306	129.82	5.4
1038	4596	##########	33.45	16.26	25.44	0	10.3	6.21	0.26	57.2	0	2423.27	608.05	7155.85	15117.33	0.3	0.148	0.151	2.783	0.58	0.571	1486.45	57.2	34.07	6.21	27.86	10.3	0.26	57.2	0.26	57.46	1396.67	2.86	1399.53	41.81	69.26	384.79	1.78	6.21E+09	2.79E+10	0.44185	14.97224	338.13	15.18
1039	4597	##########	30.42	23.13	24.54	0	8.35	9.67	0.35	57.36	0	2367.36	908.2	7337.01	13886.26	0.3	0.148	0.151	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.35	57.36	0.35	57.71	1400.55	3.81	1404.36	65.07	56.15	385.86	2.36	9.67E+09	2.79E+10	0.28294	12.60659	79.35	3.76
1040	4598	##########	30.52	20.86	21.71	0	9.28	9.01	0.22	58.23	0	2411.49	866.95	7364.74	13924.93	0.3	0.148	0.151	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.22	58.23	0.22	58.45	1421.79	2.38	1424.17	60.64	62.44	391.71	1.48	9.01E+09	2.79E+10	0.38491	13.3511	115.12	5.16
1041	4599	##########	29.49	20.7	21.37	0	8.75	9.88	0.29	58.25	0	2383.91	951.03	7409.67	13854.16	0.3	0.148	0.151	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.29	58.25	0.29	58.54	1422.4	3.18	1425.58	66.47	58.89	391.88	1.98	9.88E+09	2.79E+10	0.32403	12.81828	68.35	4.08
1042	4600	##########	30.22	20.97	20.26	0	9.54	8.87	0.22	58.61	0	2370.17	878.2	7346.77	13880.56	0.3	0.148	0.151	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.22	58.61	0.22	58.83	1431.16	2.4	1433.56	59.67	64.19	394.29	1.49	8.87E+09	2.79E+10	0.39701	13.69536	129.63	5.4
1043	4606	##########	33.65	17.8	28.32	0	9.61	6.51	0.37	56.34	0	2201.24	841.04	7089.75	15621.53	0.3	0.148	0.151	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.37	56.34	0.37	56.71	1375.68	4.03	1379.71	43.83	64.67	379.01	2.5	6.51E+09	2.79E+10	0.37129	14.39288	300.87	14.81
1044	4607	##########	29.88	23.21	25.25	0	8.09	9.84	0.47	57.06	0	2355.84	923.47	7334.2	13331.39	0.3	0.148	0.151	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.09	0.47	57.06	0.47	57.53	1393.45	5.06	1398.51	66.21	54.39	383.9	3.14	9.84E+09	2.79E+10	0.23081	12.61185	70.17	3.39
1045	4608	##########	30.33	20.87	22.9	0	8.91	9.25	0.3	57.83	0	2396.22	886.25	7359.93	14629	0.3	0.148	0.151	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.91	0.3	57.83	0.3	58.14	1412.25	3.28	1415.53	62.24	59.91	389.08	2.04	9.25E+09	2.79E+10	0.33281	13.04919	102.23	4.78
1046	4609	##########	29.17	22.8	22.41	0	8.45	10.03	0.4	57.88	0	2371.29	961.43	7399.61	13573.27	0.3	0.148	0.151	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.45	0.4	57.88	0.4	58.28	1413.34	4.32	1417.66	67.45	56.88	389.38	2.68	1E+10	2.79E+10	0.27271	12.72719	60.44	3.72
1047	4610	##########	30.13	20.94	21.77	0	9.13	9.09	0.31	58.13	0	2359.33	896.13	7343.43	14413.37	0.3	0.148	0.151	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.44	1419.5	3.31	1422.81	61.13	61.45	391.08	2.05	9.09E+09	2.79E+10	0.34547	13.36295	115.07	5.03
1048	4641	##########	32.36	18.4	26.04	0	10.12	6.13	0.51	56.82	0	2444.03	592.61	7176.84	15344.1	0.3	0.194	0.2	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.51	56.82	0.51	57.33	1387.42	5.51	1392.93	41.23	68.11	382.24	3.42	6.13E+09	2.79E+10	0.36414	15.2541	350.26	15.31
1049	4642	##########	29.09	23.1	24.87	0	8.2	9.62	0.61	57.04	0	2379.59	903.33	7355.02	14371.02	0.3	0.194	0.2	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.61	57.04	0.61	57.65	1392.77	6.63	1399.4	64.71	55.14	383.71	4.12	9.62E+09	2.79E+10	0.20927	13.19316	82.2	3.89
1050	4643	##########	29.78	20.84	22.52	0	9.1	8.94	0.41	57.84	0	2423.34	860.66	7381.37	14370.93	0.3	0.194	0.2	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.41	57.84	0.41	58.25	1412.39	4.44	1416.82	60.15	61.23	389.12	2.76	8.94E+09	2.79E+10	0.31648	13.54967	119.2	5.3
1051	4644	##########	28.34	22.66	21.8	0	8.59	9.83	0.53	57.92	0	2396.16	947.66	7429.57	13277.8	0.3	0.194	0.2	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.53	57.92	0.53	58.45	1414.39	5.76	1420.15	66.16	57.81	389.67	3.58	9.83E+09	2.79E+10	0.25236	13.26448	70.82	4.21
1052	4645	##########	29.41	20.97	20.94	0	9.38	8.8	0.42	58.25	0	2380.52	872.31	7363.35	14737.33	0.3	0.194	0.2	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.38	0.42	58.25	0.42	58.67	1422.49	4.5	1426.99	59.22	63.08	391.9	2.8	8.8E+09	2.79E+10	0.32969	13.90612	134.22	5.52
1053	4696	##########	31.58	18.28	25.63	0	10.08	6.2	0.62	56.83	0	2445.59	607.03	7198.62	15392.43	0.3	0.194	0.2	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.45	1387.73	6.69	1394.41	41.71	67.84	382.32	4.15	6.2E+09	2.79E+10	0.3347	15.44089	339.14	15.18
1054	4697	##########	28.41	25.14	24.63	0	8.15	9.67	0.72	57.01	0	2380.24	907.36	7363.31	14945.97	0.3	0.194	0.2	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.72	1392.05	7.75	1399.8	65.03	54.84	383.52	4.81	9.67E+09	2.79E+10	0.18188	13.45063	79.63	3.76
1055	4698	##########	29.23	22.86	22.34	0	9.05	9.01	0.49	57.82	0	2423.36	866.18	7390.53	14042.08	0.3	0.194	0.2	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.49	57.82	0.49	58.31	1411.83	5.31	1417.14	60.62	60.85	388.97	3.3	9.01E+09	2.79E+10	0.28999	13.67241	115.31	5.16
1056	4699	##########	27.71	22.71	21.65	0	8.54	9.88	0.63	57.87	0	2397.01	950.2	7436.22	13920.75	0.3	0.194	0.2	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.63	57.87	0.63	58.51	1413.2	6.84	1420.04	66.43	57.45	389.34	4.25	9.88E+09	2.79E+10	0.22498	13.47511	68.61	4.08
1057	4700	##########	28.84	20.97	20.75	0	9.32	8.86	0.5	58.23	0	2379.07	877.47	7371.52	14286.23	0.3	0.194	0.2	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.5	58.23	0.5	58.73	1421.9	5.42	1427.32	59.63	62.72	391.74	3.36	8.86E+09	2.79E+10	0.30338	14.03182	129.82	5.4
1058	4701	##########	33.42	16.26	25.47	0	10.28	6.21	0.27	57.18	0	2422.94	608.05	7155.69	15318.37	0.3	0.194	0.2	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.27	57.18	0.27	57.45	1396.27	2.97	1399.24	41.81	69.19	384.68	1.84	6.21E+09	2.79E+10	0.43893	14.98746	338.13	15.18
1059	4702	##########	30.34	23.13	24.54	0	8.34	9.67	0.36	57.35	0	2367.54	908.2	7337.58	13832.9	0.3	0.194	0.2	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.71	1400.3	3.95	1404.25	65.07	56.1	385.79	2.45	9.67E+09	2.79E+10	0.27948	12.64745	79.35	3.76
1060	4703	##########	30.49	20.86	21.74	0	9.27	9.01	0.23	58.21	0	2411.63	866.95	7365.25	14041.31	0.3	0.194	0.2	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.44	1421.4	2.48	1423.88	60.64	62.37	391.6	1.54	9.01E+09	2.79E+10	0.38177	13.36764	115.12	5.16
1061	4704	##########	29.43	20.7	21.37	0	8.75	9.88	0.31	58.24	0	2384.05	951.03	7410.18	13984.98	0.3	0.194	0.2	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.31	58.24	0.31	58.54	1422.11	3.31	1425.42	66.47	58.83	391.8	2.06	9.88E+09	2.79E+10	0.32067	12.84971	68.35	4.08
1062	4705	##########	30.17	20.97	20.28	0	9.53	8.87	0.23	58.59	0	2370.32	878.2	7347.3	14000.56	0.3	0.194	0.2	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.23	58.59	0.23	58.82	1430.76	2.51	1433.27	59.67	64.12	394.18	1.56	8.87E+09	2.79E+10	0.39393	13.71254	129.63	5.4
1063	4711	##########	33.59	17.8	28.32	0	9.6	6.51	0.38	56.32	0	2201.43	841.04	7090.31	15370.36	0.3	0.194	0.2	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.38	56.32	0.38	56.71	1375.37	4.16	1379.54	43.83	64.61	378.92	2.58	6.51E+09	2.79E+10	0.36836	14.42099	300.87	14.81
1064	4712	##########	29.78	23.21	25.23	0	8.08	9.84	0.48	57.06	0	2356.02	923.47	7334.77	13465.14	0.3	0.194	0.2	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.48	57.06	0.48	57.54	1393.25	5.23	1398.48	66.21	54.36	383.85	3.25	9.84E+09	2.79E+10	0.22732	12.66426	70.17	3.39
1065	4713	##########	30.28	20.87	22.91	0	8.9	9.25	0.31	57.82	0	2396.36	886.25	7360.44	14441.62	0.3	0.194	0.2	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.31	57.82	0.31	58.14	1411.93	3.4	1415.33	62.24	59.85	388.99	2.11	9.25E+09	2.79E+10	0.32962	13.07722	102.23	4.78
1066	4714	##########	29.08	22.8	22.4	0	8.45	10.03	0.41	57.87	0	2371.44	961.43	7400.15	13544.49	0.3	0.194	0.2	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.28	1413.1	4.48	1417.58	67.45	56.83	389.32	2.78	1E+10	2.79E+10	0.26934	12.77095	60.44	3.72
1067	4715	##########	30.07	20.94	21.78	0	9.13	9.09	0.32	58.12	0	2359.5	896.13	7343.98	14523.6	0.3	0.194	0.2	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.19	3.43	1422.62	61.13	61.39	390.99	2.13	9.09E+09	2.79E+10	0.34234	13.39082	115.07	5.03
1068	4746	##########	32.4	18.4	26.05	0	10.13	6.13	0.5	56.82	0	2444	592.61	7176.62	15384.16	0.3	0.166	0.17	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.13	0.5	56.82	0.5	57.32	1387.56	5.42	1392.98	41.23	68.14	382.28	3.37	6.13E+09	2.79E+10	0.36573	15.2324	350.26	15.31
1069	4747	##########	29.16	23.1	24.89	0	8.2	9.62	0.6	57.04	0	2379.3	903.33	7354.41	14297.3	0.3	0.166	0.17	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.6	57.04	0.6	57.64	1392.84	6.52	1399.36	64.71	55.16	383.73	4.05	9.62E+09	2.79E+10	0.21114	13.15727	82.2	3.89
1070	4748	##########	29.83	20.84	22.53	0	9.11	8.94	0.4	57.85	0	2423.06	860.66	7380.79	14417.36	0.3	0.166	0.17	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.4	57.85	0.4	58.25	1412.51	4.35	1416.86	60.15	61.26	389.15	2.7	8.94E+09	2.79E+10	0.31823	13.52737	119.2	5.3
1071	4749	##########	28.4	22.66	21.82	0	8.6	9.83	0.52	57.93	0	2395.91	947.66	7429	13199.5	0.3	0.166	0.17	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.52	57.93	0.52	58.45	1414.48	5.65	1420.13	66.16	57.83	389.69	3.51	9.83E+09	2.79E+10	0.2542	13.23335	70.82	4.21
1072	4750	##########	29.46	20.97	20.94	0	9.38	8.8	0.41	58.26	0	2380.24	872.31	7362.76	14792.76	0.3	0.166	0.17	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.41	58.26	0.41	58.67	1422.64	4.42	1427.06	59.22	63.11	391.94	2.74	8.8E+09	2.79E+10	0.33142	13.88374	134.22	5.52
1073	4801	##########	31.63	18.28	25.64	0	10.09	6.2	0.61	56.84	0	2445.54	607.03	7198.39	15365.98	0.3	0.166	0.17	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.44	1387.86	6.58	1394.45	41.71	67.87	382.36	4.09	6.2E+09	2.79E+10	0.33624	15.4163	339.14	15.18
1074	4802	##########	28.47	25.14	24.66	0	8.15	9.67	0.7	57.01	0	2379.95	907.36	7362.69	14896.25	0.3	0.166	0.17	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.7	57.01	0.7	57.71	1392.1	7.63	1399.72	65.03	54.86	383.53	4.74	9.67E+09	2.79E+10	0.18371	13.41197	79.63	3.76
1075	4803	##########	29.28	22.86	22.35	0	9.05	9.01	0.48	57.82	0	2423.09	866.18	7389.97	14000.47	0.3	0.166	0.17	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.48	57.82	0.48	58.3	1411.94	5.21	1417.15	60.62	60.88	388.99	3.24	9.01E+09	2.79E+10	0.2917	13.64697	115.31	5.16
1076	4804	##########	27.78	22.71	21.68	0	8.54	9.88	0.62	57.88	0	2396.75	950.2	7435.65	13867.89	0.3	0.166	0.17	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.62	57.88	0.62	58.5	1413.27	6.72	1419.99	66.43	57.47	389.36	4.17	9.88E+09	2.79E+10	0.22678	13.44095	68.61	4.08
1077	4805	##########	28.9	20.97	20.76	0	9.33	8.86	0.49	58.24	0	2378.8	877.47	7370.94	14267.51	0.3	0.166	0.17	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.49	58.24	0.49	58.73	1422.04	5.32	1427.36	59.63	62.74	391.78	3.3	8.86E+09	2.79E+10	0.30507	14.0063	129.82	5.4
1078	4806	##########	33.44	16.26	25.46	0	10.29	6.21	0.27	57.19	0	2422.92	608.05	7155.5	15208.46	0.3	0.166	0.17	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.46	1396.46	2.9	1399.36	41.81	69.23	384.73	1.8	6.21E+09	2.79E+10	0.4406	14.97589	338.13	15.18
1079	4807	##########	30.38	23.13	24.55	0	8.34	9.67	0.36	57.35	0	2367.25	908.2	7336.97	13897.52	0.3	0.166	0.17	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.71	1400.4	3.86	1404.27	65.07	56.13	385.82	2.4	9.67E+09	2.79E+10	0.28149	12.62059	79.35	3.76
1080	4808	##########	30.52	20.86	21.73	0	9.28	9.01	0.22	58.22	0	2411.36	866.95	7364.67	13964.64	0.3	0.166	0.17	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.28	0.22	58.22	0.22	58.44	1421.59	2.42	1424.01	60.64	62.4	391.65	1.5	9.01E+09	2.79E+10	0.38357	13.3555	115.12	5.16
1081	4809	##########	29.47	20.7	21.38	0	8.75	9.88	0.3	58.24	0	2383.79	951.03	7409.61	13920.68	0.3	0.166	0.17	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.3	58.24	0.3	58.54	1422.23	3.23	1425.46	66.47	58.86	391.83	2.01	9.88E+09	2.79E+10	0.32261	12.8285	68.35	4.08
1082	4810	##########	30.2	20.97	20.27	0	9.54	8.87	0.23	58.6	0	2370.05	878.2	7346.72	13926.77	0.3	0.166	0.17	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.54	0.23	58.6	0.23	58.83	1430.95	2.45	1433.4	59.67	64.16	394.23	1.52	8.87E+09	2.79E+10	0.3957	13.69991	129.63	5.4
1083	4816	##########	33.63	17.8	28.33	0	9.61	6.51	0.38	56.33	0	2201.14	841.04	7089.71	15532.62	0.3	0.166	0.17	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.38	56.33	0.38	56.71	1375.51	4.08	1379.59	43.83	64.64	378.96	2.53	6.51E+09	2.79E+10	0.37005	14.40176	300.87	14.81
1084	4817	##########	29.85	23.21	25.25	0	8.08	9.84	0.47	57.06	0	2355.72	923.47	7334.15	13378.99	0.3	0.166	0.17	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.47	57.06	0.47	57.53	1393.34	5.12	1398.46	66.21	54.37	383.87	3.18	9.84E+09	2.79E+10	0.22935	12.63044	70.17	3.39
1085	4818	##########	30.31	20.87	22.91	0	8.9	9.25	0.31	57.83	0	2396.09	886.25	7359.87	14579.14	0.3	0.166	0.17	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.31	57.83	0.31	58.14	1412.08	3.33	1415.41	62.24	59.88	389.03	2.07	9.25E+09	2.79E+10	0.33146	13.05823	102.23	4.78
1086	4819	##########	29.13	22.8	22.41	0	8.45	10.03	0.4	57.87	0	2371.17	961.43	7399.56	13561.35	0.3	0.166	0.17	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.4	57.87	0.4	58.28	1413.21	4.38	1417.59	67.45	56.86	389.34	2.72	1E+10	2.79E+10	0.27129	12.74234	60.44	3.72
1087	4820	##########	30.11	20.94	21.79	0	9.13	9.09	0.31	58.12	0	2359.22	896.13	7343.39	14473.62	0.3	0.166	0.17	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.31	58.12	0.31	58.43	1419.33	3.35	1422.69	61.13	61.42	391.03	2.08	9.09E+09	2.79E+10	0.34415	13.37194	115.07	5.03
1088	4851	##########	32.43	18.4	26.04	0	10.13	6.13	0.49	56.83	0	2444.35	592.61	7176.98	15445.07	0.3	0.146	0.15	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.49	56.83	0.49	57.33	1387.72	5.36	1393.09	41.23	68.17	382.32	3.33	6.13E+09	2.79E+10	0.36702	15.22099	350.26	15.31
1089	4852	##########	29.2	23.1	24.9	0	8.2	9.62	0.59	57.04	0	2379.42	903.33	7354.45	14231.29	0.3	0.146	0.15	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.59	57.04	0.59	57.64	1392.93	6.44	1399.37	64.71	55.18	383.76	4	9.62E+09	2.79E+10	0.21263	13.13535	82.2	3.89
1090	4853	##########	29.85	20.84	22.53	0	9.11	8.94	0.4	57.85	0	2423.21	860.66	7380.86	14473.54	0.3	0.146	0.15	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.4	57.85	0.4	58.25	1412.66	4.29	1416.96	60.15	61.29	389.2	2.67	8.94E+09	2.79E+10	0.31964	13.51509	119.2	5.3
1091	4854	##########	28.43	22.66	21.82	0	8.6	9.83	0.52	57.93	0	2396.04	947.66	7429.06	13261.15	0.3	0.146	0.15	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.52	57.93	0.52	58.45	1414.59	5.59	1420.18	66.16	57.86	389.73	3.47	9.83E+09	2.79E+10	0.25566	13.21488	70.82	4.21
1092	4855	##########	29.48	20.97	20.94	0	9.38	8.8	0.4	58.27	0	2380.36	872.31	7362.81	14868.93	0.3	0.146	0.15	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.4	58.27	0.4	58.67	1422.79	4.37	1427.16	59.22	63.14	391.99	2.71	8.8E+09	2.79E+10	0.33281	13.87163	134.22	5.52
1093	4906	##########	31.66	18.28	25.64	0	10.09	6.2	0.6	56.84	0	2445.87	607.03	7198.73	15383.78	0.3	0.146	0.15	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.6	56.84	0.6	57.45	1388.04	6.52	1394.56	41.71	67.9	382.41	4.05	6.2E+09	2.79E+10	0.3375	15.40273	339.14	15.18
1094	4907	##########	28.52	25.14	24.67	0	8.16	9.67	0.7	57.01	0	2380.06	907.36	7362.73	14862.42	0.3	0.146	0.15	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.16	0.7	57.01	0.7	57.71	1392.19	7.55	1399.74	65.03	54.88	383.55	4.69	9.67E+09	2.79E+10	0.18515	13.38823	79.63	3.76
1095	4908	##########	29.31	22.86	22.35	0	9.05	9.01	0.48	57.83	0	2423.23	866.18	7390.03	14033.35	0.3	0.146	0.15	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.48	57.83	0.48	58.3	1412.08	5.15	1417.23	60.62	60.9	389.04	3.2	9.01E+09	2.79E+10	0.29307	13.63234	115.31	5.16
1096	4909	##########	27.81	22.71	21.68	0	8.55	9.88	0.61	57.88	0	2396.88	950.2	7435.7	13807.79	0.3	0.146	0.15	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.55	0.61	57.88	0.61	58.5	1413.4	6.65	1420.05	66.43	57.5	389.4	4.13	9.88E+09	2.79E+10	0.2282	13.42043	68.61	4.08
1097	4910	##########	28.92	20.97	20.75	0	9.33	8.86	0.49	58.24	0	2378.91	877.47	7370.98	14301.82	0.3	0.146	0.15	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.49	58.24	0.49	58.73	1422.2	5.26	1427.45	59.63	62.77	391.82	3.27	8.86E+09	2.79E+10	0.30642	13.99178	129.82	5.4
1098	4911	##########	33.45	16.26	25.44	0	10.3	6.21	0.26	57.2	0	2423.31	608.05	7155.89	15108.31	0.3	0.146	0.15	2.783	0.58	0.571	1486.45	57.2	34.07	6.21	27.86	10.3	0.26	57.2	0.26	57.46	1396.69	2.86	1399.54	41.81	69.26	384.79	1.78	6.21E+09	2.79E+10	0.44197	14.97188	338.13	15.18
1099	4912	##########	30.41	23.13	24.55	0	8.35	9.67	0.35	57.36	0	2367.37	908.2	7337.01	13885.69	0.3	0.146	0.15	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.35	57.36	0.35	57.71	1400.56	3.8	1404.36	65.07	56.16	385.86	2.36	9.67E+09	2.79E+10	0.28309	12.60521	79.35	3.76
1100	4913	##########	30.52	20.86	21.71	0	9.28	9.01	0.22	58.23	0	2411.51	866.95	7364.75	13919.85	0.3	0.146	0.15	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.22	58.23	0.22	58.45	1421.8	2.38	1424.18	60.64	62.44	391.71	1.48	9.01E+09	2.79E+10	0.38504	13.35068	115.12	5.16
1101	4914	##########	29.5	20.7	21.36	0	8.75	9.88	0.29	58.25	0	2383.92	951.03	7409.67	13847.58	0.3	0.146	0.15	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.29	58.25	0.29	58.54	1422.42	3.18	1425.6	66.47	58.89	391.88	1.97	9.88E+09	2.79E+10	0.32417	12.81728	68.35	4.08
1102	4915	##########	30.22	20.97	20.25	0	9.54	8.87	0.22	58.61	0	2370.18	878.2	7346.78	13875.54	0.3	0.146	0.15	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.22	58.61	0.22	58.83	1431.17	2.4	1433.57	59.67	64.19	394.29	1.49	8.87E+09	2.79E+10	0.39714	13.69492	129.63	5.4
1103	4921	##########	33.65	17.8	28.32	0	9.61	6.51	0.37	56.34	0	2201.25	841.04	7089.76	15623.22	0.3	0.146	0.15	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.37	56.34	0.37	56.71	1375.69	4.03	1379.72	43.83	64.67	379.01	2.5	6.51E+09	2.79E+10	0.37141	14.39201	300.87	14.81
1104	4922	##########	29.88	23.21	25.25	0	8.09	9.84	0.47	57.07	0	2355.85	923.47	7334.2	13326.69	0.3	0.146	0.15	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.47	57.07	0.47	57.53	1393.46	5.05	1398.51	66.21	54.4	383.9	3.14	9.84E+09	2.79E+10	0.23095	12.61003	70.17	3.39
1105	4923	##########	30.34	20.87	22.9	0	8.91	9.25	0.3	57.84	0	2396.23	886.25	7359.93	14623.29	0.3	0.146	0.15	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.3	57.84	0.3	58.14	1412.26	3.28	1415.54	62.24	59.91	389.08	2.03	9.25E+09	2.79E+10	0.33294	13.04831	102.23	4.78
1106	4924	##########	29.17	22.8	22.41	0	8.46	10.03	0.4	57.88	0	2371.3	961.43	7399.61	13574.69	0.3	0.146	0.15	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.46	0.4	57.88	0.4	58.28	1413.35	4.32	1417.67	67.45	56.88	389.38	2.68	1E+10	2.79E+10	0.27284	12.72572	60.44	3.72
1107	4925	##########	30.13	20.94	21.77	0	9.13	9.09	0.3	58.13	0	2359.34	896.13	7343.43	14407.5	0.3	0.146	0.15	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.3	58.13	0.3	58.44	1419.51	3.3	1422.82	61.13	61.45	391.08	2.05	9.09E+09	2.79E+10	0.3456	13.36208	115.07	5.03
1108	4956	##########	32.36	18.4	26.04	0	10.12	6.13	0.51	56.82	0	2444.08	592.61	7176.89	15349.02	0.3	0.191	0.197	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.51	56.82	0.51	57.33	1387.45	5.51	1392.95	41.23	68.11	382.25	3.42	6.13E+09	2.79E+10	0.36433	15.25232	350.26	15.31
1109	4957	##########	29.1	23.1	24.87	0	8.2	9.62	0.61	57.04	0	2379.61	903.33	7355.02	14364.44	0.3	0.191	0.197	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.61	57.04	0.61	57.65	1392.8	6.62	1399.41	64.71	55.14	383.72	4.11	9.62E+09	2.79E+10	0.20949	13.18979	82.2	3.89
1110	4958	##########	29.79	20.84	22.52	0	9.1	8.94	0.41	57.84	0	2423.36	860.66	7381.38	14376.69	0.3	0.191	0.197	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.41	57.84	0.41	58.25	1412.41	4.43	1416.84	60.15	61.24	389.13	2.75	8.94E+09	2.79E+10	0.31669	13.54774	119.2	5.3
1111	4959	##########	28.35	22.66	21.8	0	8.59	9.83	0.53	57.92	0	2396.18	947.66	7429.58	13271.02	0.3	0.191	0.197	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.53	57.92	0.53	58.45	1414.42	5.75	1420.17	66.16	57.81	389.68	3.57	9.83E+09	2.79E+10	0.25258	13.26164	70.82	4.21
1112	4960	##########	29.42	20.97	20.94	0	9.38	8.8	0.41	58.25	0	2380.53	872.31	7363.35	14743.55	0.3	0.191	0.197	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.38	0.41	58.25	0.41	58.67	1422.5	4.5	1427	59.22	63.08	391.91	2.79	8.8E+09	2.79E+10	0.3299	13.90422	134.22	5.52
1113	5011	##########	31.58	18.28	25.63	0	10.08	6.2	0.62	56.83	0	2445.63	607.03	7198.67	15391.17	0.3	0.191	0.197	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.45	1387.76	6.68	1394.44	41.71	67.84	382.33	4.15	6.2E+09	2.79E+10	0.33489	15.43878	339.14	15.18
1114	5012	##########	28.41	25.14	24.63	0	8.15	9.67	0.71	57.01	0	2380.26	907.36	7363.31	14943.41	0.3	0.191	0.197	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.71	57.01	0.71	57.72	1392.07	7.74	1399.81	65.03	54.85	383.52	4.8	9.67E+09	2.79E+10	0.1821	13.44698	79.63	3.76
1115	5013	##########	29.24	22.86	22.34	0	9.05	9.01	0.49	57.82	0	2423.37	866.18	7390.54	14048.83	0.3	0.191	0.197	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.49	57.82	0.49	58.31	1411.85	5.3	1417.15	60.62	60.85	388.97	3.29	9.01E+09	2.79E+10	0.29019	13.67014	115.31	5.16
1116	5014	##########	27.71	22.71	21.65	0	8.54	9.88	0.63	57.87	0	2397.03	950.2	7436.22	13917.68	0.3	0.191	0.197	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.63	57.87	0.63	58.5	1413.21	6.83	1420.04	66.43	57.46	389.35	4.24	9.88E+09	2.79E+10	0.2252	13.47195	68.61	4.08
1117	5015	##########	28.84	20.97	20.75	0	9.32	8.86	0.5	58.23	0	2379.09	877.47	7371.52	14292.57	0.3	0.191	0.197	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.5	58.23	0.5	58.73	1421.92	5.41	1427.33	59.63	62.72	391.75	3.36	8.86E+09	2.79E+10	0.30359	14.02957	129.82	5.4
1118	5016	##########	33.41	16.26	25.46	0	10.29	6.21	0.27	57.18	0	2422.99	608.05	7155.74	15313.78	0.3	0.191	0.197	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.29	0.27	57.18	0.27	57.46	1396.31	2.96	1399.27	41.81	69.2	384.69	1.84	6.21E+09	2.79E+10	0.43914	14.9868	338.13	15.18
1119	5017	##########	30.34	23.13	24.54	0	8.34	9.67	0.36	57.35	0	2367.56	908.2	7337.58	13856.32	0.3	0.191	0.197	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.71	1400.32	3.94	1404.26	65.07	56.11	385.79	2.45	9.67E+09	2.79E+10	0.27972	12.64504	79.35	3.76
1120	5018	##########	30.49	20.86	21.73	0	9.27	9.01	0.23	58.21	0	2411.65	866.95	7365.26	14031.97	0.3	0.191	0.197	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.44	1421.44	2.47	1423.91	60.64	62.37	391.61	1.54	9.01E+09	2.79E+10	0.38199	13.36682	115.12	5.16
1121	5019	##########	29.44	20.7	21.37	0	8.75	9.88	0.3	58.24	0	2384.07	951.03	7410.19	14011.08	0.3	0.191	0.197	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.3	58.24	0.3	58.54	1422.13	3.3	1425.43	66.47	58.84	391.8	2.05	9.88E+09	2.79E+10	0.3209	12.84791	68.35	4.08
1122	5020	##########	30.18	20.97	20.28	0	9.53	8.87	0.23	58.59	0	2370.33	878.2	7347.3	13993.63	0.3	0.191	0.197	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.23	58.59	0.23	58.83	1430.79	2.5	1433.3	59.67	64.13	394.19	1.55	8.87E+09	2.79E+10	0.39414	13.71171	129.63	5.4
1123	5026	##########	33.59	17.8	28.32	0	9.6	6.51	0.38	56.33	0	2201.45	841.04	7090.31	15381.36	0.3	0.191	0.197	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.38	56.33	0.38	56.71	1375.4	4.15	1379.56	43.83	64.61	378.93	2.58	6.51E+09	2.79E+10	0.36857	14.41947	300.87	14.81
1124	5027	##########	29.79	23.21	25.23	0	8.08	9.84	0.48	57.06	0	2356.03	923.47	7334.77	13457.61	0.3	0.191	0.197	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.48	57.06	0.48	57.54	1393.27	5.22	1398.49	66.21	54.36	383.85	3.24	9.84E+09	2.79E+10	0.22756	12.66113	70.17	3.39
1125	5028	##########	30.27	20.87	22.91	0	8.9	9.25	0.31	57.82	0	2396.38	886.25	7360.45	14441.62	0.3	0.191	0.197	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.31	57.82	0.31	58.14	1411.96	3.39	1415.35	62.24	59.86	389	2.11	9.25E+09	2.79E+10	0.32984	13.07564	102.23	4.78
1126	5029	##########	29.08	22.8	22.4	0	8.45	10.03	0.41	57.87	0	2371.46	961.43	7400.15	13546.23	0.3	0.191	0.197	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.28	1413.14	4.47	1417.61	67.45	56.84	389.33	2.78	1E+10	2.79E+10	0.26957	12.76837	60.44	3.72
1127	5030	##########	30.08	20.94	21.78	0	9.13	9.09	0.32	58.12	0	2359.51	896.13	7343.98	14517.02	0.3	0.191	0.197	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.22	3.42	1422.64	61.13	61.4	391	2.12	9.09E+09	2.79E+10	0.34256	13.38924	115.07	5.03
1128	5061	##########	32.3	18.4	26.04	0	10.12	6.13	0.52	56.81	0	2445.54	592.61	7178.86	15428.02	0.3	0.227	0.235	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.52	56.81	0.52	57.33	1387.16	5.64	1392.81	41.23	68.05	382.17	3.5	6.13E+09	2.79E+10	0.36207	15.28714	350.26	15.31
1129	5062	##########	29.02	23.1	24.85	0	8.19	9.62	0.63	57.03	0	2377.79	903.33	7352.74	14443.21	0.3	0.227	0.235	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.63	57.03	0.63	57.66	1392.62	6.78	1399.41	64.71	55.1	383.67	4.21	9.62E+09	2.79E+10	0.20687	13.24352	82.2	3.89
1130	5063	##########	29.73	20.84	22.53	0	9.09	8.94	0.42	57.83	0	2421.5	860.66	7379.03	14415.67	0.3	0.227	0.235	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.09	0.42	57.83	0.42	58.25	1412.11	4.56	1416.67	60.15	61.18	389.04	2.83	8.94E+09	2.79E+10	0.31419	13.5855	119.2	5.3
1131	5064	##########	28.27	22.66	21.79	0	8.59	9.83	0.54	57.91	0	2394.32	947.66	7427.25	13354.44	0.3	0.227	0.235	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.59	0.54	57.91	0.54	58.46	1414.2	5.9	1420.1	66.16	57.77	389.62	3.66	9.83E+09	2.79E+10	0.24999	13.30949	70.82	4.21
1132	5065	##########	29.35	20.97	20.94	0	9.37	8.8	0.43	58.24	0	2378.78	872.31	7361.13	14792.91	0.3	0.227	0.235	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.37	0.43	58.24	0.43	58.67	1422.21	4.63	1426.84	59.22	63.03	391.83	2.87	8.8E+09	2.79E+10	0.32744	13.94136	134.22	5.52
1133	5116	##########	31.5	18.28	25.62	0	10.08	6.2	0.63	56.82	0	2447.1	607.03	7200.66	15439.41	0.3	0.227	0.235	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.08	0.63	56.82	0.63	57.45	1387.5	6.83	1394.33	41.71	67.79	382.26	4.24	6.2E+09	2.79E+10	0.33271	15.47681	339.14	15.18
1134	5117	##########	28.32	25.14	24.6	0	8.15	9.67	0.73	57	0	2378.46	907.36	7361.06	14993.96	0.3	0.227	0.235	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.73	57	0.73	57.73	1391.92	7.91	1399.83	65.03	54.81	383.48	4.91	9.67E+09	2.79E+10	0.17955	13.50291	79.63	3.76
1135	5118	##########	29.17	22.86	22.33	0	9.04	9.01	0.5	57.81	0	2421.56	866.18	7388.24	14056.62	0.3	0.227	0.235	3.814	0.582	0.571	1486.45	57.81	36.87	9.01	27.86	9.04	0.5	57.81	0.5	58.31	1411.6	5.44	1417.04	60.62	60.8	388.9	3.38	9.01E+09	2.79E+10	0.28778	13.71148	115.31	5.16
1136	5119	##########	27.63	22.71	21.63	0	8.53	9.88	0.65	57.87	0	2395.17	950.2	7433.91	14030.36	0.3	0.227	0.235	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.53	0.65	57.87	0.65	58.51	1413.04	6.99	1420.03	66.43	57.42	389.3	4.34	9.88E+09	2.79E+10	0.22269	13.52282	68.61	4.08
1137	5120	##########	28.78	20.97	20.74	0	9.32	8.86	0.51	58.22	0	2377.36	877.47	7369.34	14320.89	0.3	0.227	0.235	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.32	0.51	58.22	0.51	58.73	1421.68	5.55	1427.23	59.63	62.67	391.68	3.44	8.86E+09	2.79E+10	0.30122	14.06972	129.82	5.4
1138	5121	##########	33.38	16.26	25.49	0	10.28	6.21	0.28	57.17	0	2424.43	608.05	7157.69	15525.96	0.3	0.227	0.235	2.783	0.58	0.571	1486.45	57.17	34.07	6.21	27.86	10.28	0.28	57.17	0.28	57.45	1395.92	3.06	1398.98	41.81	69.12	384.58	1.9	6.21E+09	2.79E+10	0.43668	15.00851	338.13	15.18
1139	5122	##########	30.28	23.13	24.53	0	8.33	9.67	0.38	57.34	0	2365.72	908.2	7335.28	13941.44	0.3	0.227	0.235	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.33	0.38	57.34	0.38	57.71	1400.08	4.08	1404.16	65.07	56.06	385.73	2.53	9.67E+09	2.79E+10	0.27683	12.68934	79.35	3.76
1140	5123	##########	30.45	20.86	21.75	0	9.26	9.01	0.24	58.2	0	2409.76	866.95	7362.88	14170.75	0.3	0.227	0.235	2.783	0.58	0.571	1486.45	58.2	36.87	9.01	27.86	9.26	0.24	58.2	0.24	58.44	1421.13	2.58	1423.71	60.64	62.31	391.53	1.6	9.01E+09	2.79E+10	0.37932	13.39065	115.12	5.16
1141	5124	##########	29.38	20.7	21.38	0	8.74	9.88	0.32	58.23	0	2382.17	951.03	7407.82	14114.51	0.3	0.227	0.235	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.32	58.23	0.32	58.54	1421.82	3.43	1425.25	66.47	58.78	391.72	2.13	9.88E+09	2.79E+10	0.31807	12.88393	68.35	4.08
1142	5125	##########	30.13	20.97	20.3	0	9.52	8.87	0.24	58.58	0	2368.55	878.2	7345.05	14105.42	0.3	0.227	0.235	2.783	0.58	0.571	1486.45	58.58	36.73	8.87	27.86	9.52	0.24	58.58	0.24	58.82	1430.45	2.61	1433.06	59.67	64.06	394.1	1.62	8.87E+09	2.79E+10	0.39154	13.73508	129.63	5.4
1143	5131	##########	33.54	17.8	28.33	0	9.59	6.51	0.39	56.31	0	2199.74	841.04	7088.2	15432.35	0.3	0.227	0.235	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.39	56.31	0.39	56.71	1375.1	4.28	1379.38	43.83	64.55	378.85	2.65	6.51E+09	2.79E+10	0.36617	14.45219	300.87	14.81
1144	5132	##########	29.71	23.21	25.22	0	8.07	9.84	0.5	57.05	0	2354.22	923.47	7332.5	13553.1	0.3	0.227	0.235	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.5	57.05	0.5	57.55	1393.05	5.38	1398.43	66.21	54.32	383.79	3.34	9.84E+09	2.79E+10	0.22469	12.71351	70.17	3.39
1145	5133	##########	30.22	20.87	22.92	0	8.89	9.25	0.32	57.81	0	2394.52	886.25	7358.11	14615.15	0.3	0.227	0.235	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.32	57.81	0.32	58.14	1411.67	3.51	1415.19	62.24	59.8	388.92	2.18	9.25E+09	2.79E+10	0.32719	13.10961	102.23	4.78
1146	5134	##########	29.02	22.8	22.39	0	8.44	10.03	0.43	57.86	0	2369.58	961.43	7397.81	13642.46	0.3	0.227	0.235	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.43	57.86	0.43	58.29	1412.88	4.61	1417.49	67.45	56.79	389.25	2.86	1E+10	2.79E+10	0.26677	12.81422	60.44	3.72
1147	5135	##########	30.02	20.94	21.79	0	9.12	9.09	0.33	58.11	0	2357.73	896.13	7341.74	14729.62	0.3	0.227	0.235	3.014	0.518	0.521	1486.45	58.11	36.94	9.09	27.86	9.12	0.33	58.11	0.33	58.43	1418.91	3.54	1422.45	61.13	61.34	390.92	2.2	9.09E+09	2.79E+10	0.33997	13.42239	115.07	5.03
1148	5166	##########	32.35	18.4	26.03	0	10.12	6.13	0.51	56.82	0	2445.85	592.61	7179.11	15477.71	0.3	0.192	0.198	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.51	56.82	0.51	57.33	1387.46	5.53	1392.99	41.23	68.11	382.25	3.43	6.13E+09	2.79E+10	0.36431	15.26305	350.26	15.31
1149	5167	##########	29.09	23.1	24.86	0	8.2	9.62	0.61	57.04	0	2378.2	903.33	7353.09	14368.13	0.3	0.192	0.198	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.61	57.04	0.61	57.65	1392.8	6.64	1399.44	64.71	55.14	383.72	4.12	9.62E+09	2.79E+10	0.20945	13.20119	82.2	3.89
1150	5168	##########	29.78	20.84	22.52	0	9.1	8.94	0.41	57.84	0	2421.94	860.66	7379.44	14460.49	0.3	0.192	0.198	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.41	57.84	0.41	58.25	1412.39	4.45	1416.84	60.15	61.24	389.12	2.76	8.94E+09	2.79E+10	0.31666	13.55969	119.2	5.3
1151	5169	##########	28.34	22.66	21.79	0	8.59	9.83	0.53	57.92	0	2394.75	947.66	7427.63	13274.25	0.3	0.192	0.198	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.53	57.92	0.53	58.46	1414.42	5.77	1420.19	66.16	57.81	389.68	3.58	9.83E+09	2.79E+10	0.25254	13.27312	70.82	4.21
1152	5170	##########	29.41	20.97	20.93	0	9.38	8.8	0.42	58.25	0	2379.18	872.31	7361.49	14856.22	0.3	0.192	0.198	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.38	0.42	58.25	0.42	58.67	1422.5	4.52	1427.02	59.22	63.08	391.91	2.8	8.8E+09	2.79E+10	0.32987	13.91553	134.22	5.52
1153	5221	##########	31.57	18.28	25.62	0	10.08	6.2	0.62	56.83	0	2447.39	607.03	7200.88	15424.76	0.3	0.192	0.198	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.45	1387.77	6.7	1394.47	41.71	67.84	382.34	4.16	6.2E+09	2.79E+10	0.33489	15.44919	339.14	15.18
1154	5222	##########	28.4	25.14	24.62	0	8.15	9.67	0.72	57.01	0	2378.86	907.36	7361.4	14946.36	0.3	0.192	0.198	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.73	1392.1	7.76	1399.86	65.03	54.84	383.53	4.82	9.67E+09	2.79E+10	0.18206	13.45772	79.63	3.76
1155	5223	##########	29.23	22.86	22.33	0	9.05	9.01	0.49	57.82	0	2421.99	866.18	7388.63	14097.09	0.3	0.192	0.198	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.49	57.82	0.49	58.31	1411.84	5.32	1417.17	60.62	60.85	388.97	3.3	9.01E+09	2.79E+10	0.29017	13.68163	115.31	5.16
1156	5224	##########	27.7	22.71	21.64	0	8.54	9.88	0.63	57.88	0	2395.6	950.2	7434.29	13920.41	0.3	0.192	0.198	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.63	57.88	0.63	58.51	1413.24	6.85	1420.09	66.43	57.46	389.35	4.25	9.88E+09	2.79E+10	0.22517	13.48298	68.61	4.08
1157	5225	##########	28.83	20.97	20.74	0	9.32	8.86	0.5	58.23	0	2377.75	877.47	7369.68	14375.46	0.3	0.192	0.198	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.5	58.23	0.5	58.73	1421.94	5.43	1427.37	59.63	62.72	391.75	3.37	8.86E+09	2.79E+10	0.30357	14.04033	129.82	5.4
1158	5226	##########	33.41	16.26	25.46	0	10.29	6.21	0.27	57.18	0	2424.78	608.05	7157.99	15375.18	0.3	0.192	0.198	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.29	0.27	57.18	0.27	57.46	1396.32	2.98	1399.3	41.81	69.19	384.69	1.85	6.21E+09	2.79E+10	0.43909	14.99741	338.13	15.18
1159	5227	##########	30.33	23.13	24.53	0	8.34	9.67	0.37	57.35	0	2366.13	908.2	7335.64	13989.24	0.3	0.192	0.198	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.71	1400.35	3.97	1404.32	65.07	56.11	385.8	2.46	9.67E+09	2.79E+10	0.27962	12.65764	79.35	3.76
1160	5228	##########	30.48	20.86	21.73	0	9.27	9.01	0.23	58.21	0	2410.21	866.95	7363.29	14062.63	0.3	0.192	0.198	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.44	1421.46	2.49	1423.95	60.64	62.37	391.62	1.55	9.01E+09	2.79E+10	0.38189	13.37774	115.12	5.16
1161	5229	##########	29.43	20.7	21.36	0	8.75	9.88	0.31	58.24	0	2382.61	951.03	7408.22	14038.43	0.3	0.192	0.198	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.31	58.24	0.31	58.55	1422.13	3.32	1425.46	66.47	58.83	391.8	2.06	9.88E+09	2.79E+10	0.3208	12.85946	68.35	4.08
1162	5230	##########	30.16	20.97	20.27	0	9.53	8.87	0.23	58.59	0	2368.97	878.2	7345.42	14022.05	0.3	0.192	0.198	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.23	58.59	0.23	58.83	1430.8	2.52	1433.33	59.67	64.12	394.19	1.57	8.87E+09	2.79E+10	0.39407	13.72208	129.63	5.4
1163	5236	##########	33.58	17.8	28.31	0	9.6	6.51	0.39	56.33	0	2200.07	841.04	7088.48	15643.26	0.3	0.192	0.198	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.71	1375.41	4.18	1379.59	43.83	64.61	378.93	2.59	6.51E+09	2.79E+10	0.36853	14.43107	300.87	14.81
1164	5237	##########	29.77	23.21	25.23	0	8.08	9.84	0.48	57.06	0	2354.62	923.47	7332.84	13462.26	0.3	0.192	0.198	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.48	57.06	0.48	57.54	1393.26	5.24	1398.51	66.21	54.36	383.85	3.26	9.84E+09	2.79E+10	0.2275	12.67357	70.17	3.39
1165	5238	##########	30.26	20.87	22.9	0	8.9	9.25	0.32	57.82	0	2394.96	886.25	7358.51	14759.82	0.3	0.192	0.198	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.32	57.82	0.32	58.14	1411.98	3.42	1415.4	62.24	59.86	389.01	2.12	9.25E+09	2.79E+10	0.32979	13.08774	102.23	4.78
1166	5239	##########	29.07	22.8	22.39	0	8.45	10.03	0.41	57.87	0	2370.02	961.43	7398.19	13640.25	0.3	0.192	0.198	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.29	1413.14	4.49	1417.63	67.45	56.84	389.33	2.79	1E+10	2.79E+10	0.26949	12.7806	60.44	3.72
1167	5240	##########	30.06	20.94	21.77	0	9.13	9.09	0.32	58.12	0	2358.14	896.13	7342.1	14610.15	0.3	0.192	0.198	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.23	3.44	1422.67	61.13	61.4	391	2.14	9.09E+09	2.79E+10	0.34251	13.40073	115.07	5.03
1168	5271	##########	32.21	18.4	26.06	0	10.1	6.13	0.54	56.79	0	2445.14	592.61	7178.56	15391.93	0.3	0.278	0.29	3.524	0.591	0.591	1486.45	56.79	33.99	6.13	27.86	10.1	0.54	56.79	0.54	57.33	1386.75	5.81	1392.56	41.23	67.97	382.06	3.61	6.13E+09	2.79E+10	0.35885	15.32243	350.26	15.31
1169	5272	##########	28.9	23.1	24.82	0	8.18	9.62	0.64	57.02	0	2377.2	903.33	7352.22	14545.98	0.3	0.278	0.29	3.524	0.591	0.591	1486.45	57.02	37.48	9.62	27.86	8.18	0.64	57.02	0.64	57.66	1392.35	6.99	1399.33	64.71	55.05	383.6	4.34	9.62E+09	2.79E+10	0.20316	13.30501	82.2	3.89
1170	5273	##########	29.65	20.84	22.54	0	9.08	8.94	0.44	57.81	0	2420.85	860.66	7378.43	14254.13	0.3	0.278	0.29	3.524	0.591	0.591	1486.45	57.81	36.8	8.94	27.86	9.08	0.44	57.81	0.44	58.25	1411.69	4.72	1416.4	60.15	61.1	388.93	2.93	8.94E+09	2.79E+10	0.31066	13.62363	119.2	5.3
1171	5274	##########	28.17	22.66	21.78	0	8.58	9.83	0.56	57.9	0	2393.69	947.66	7426.68	13463.8	0.3	0.278	0.29	3.524	0.591	0.591	1486.45	57.9	37.69	9.83	27.86	8.58	0.56	57.9	0.56	58.46	1413.87	6.09	1419.96	66.16	57.71	389.53	3.78	9.83E+09	2.79E+10	0.24635	13.36259	70.82	4.21
1172	5275	##########	29.28	20.97	20.96	0	9.36	8.8	0.44	58.23	0	2378.19	872.31	7360.6	14603.07	0.3	0.278	0.29	3.524	0.591	0.591	1486.45	58.23	36.66	8.8	27.86	9.36	0.44	58.23	0.44	58.67	1421.82	4.78	1426.6	59.22	62.95	391.72	2.97	8.8E+09	2.79E+10	0.32397	13.97895	134.22	5.52
1173	5326	##########	31.42	18.28	25.62	0	10.06	6.2	0.65	56.81	0	2446.74	607.03	7200.4	15523.06	0.3	0.278	0.29	3.814	0.582	0.571	1486.45	56.81	34.06	6.2	27.86	10.06	0.65	56.81	0.65	57.45	1387.13	7.01	1394.15	41.71	67.71	382.16	4.35	6.2E+09	2.79E+10	0.32959	15.51706	339.14	15.18
1174	5327	##########	28.19	25.14	24.57	0	8.14	9.67	0.75	56.99	0	2377.88	907.36	7360.55	14988.75	0.3	0.278	0.29	3.814	0.582	0.571	1486.45	56.99	37.52	9.67	27.86	8.14	0.75	56.99	0.75	57.74	1391.67	8.13	1399.8	65.03	54.76	383.41	5.05	9.67E+09	2.79E+10	0.17595	13.56859	79.63	3.76
1175	5328	##########	29.08	22.86	22.33	0	9.03	9.01	0.52	57.79	0	2420.92	866.18	7387.66	14052.89	0.3	0.278	0.29	3.814	0.582	0.571	1486.45	57.79	36.87	9.01	27.86	9.03	0.52	57.79	0.52	58.31	1411.25	5.61	1416.87	60.62	60.73	388.81	3.49	9.01E+09	2.79E+10	0.28436	13.75479	115.31	5.16

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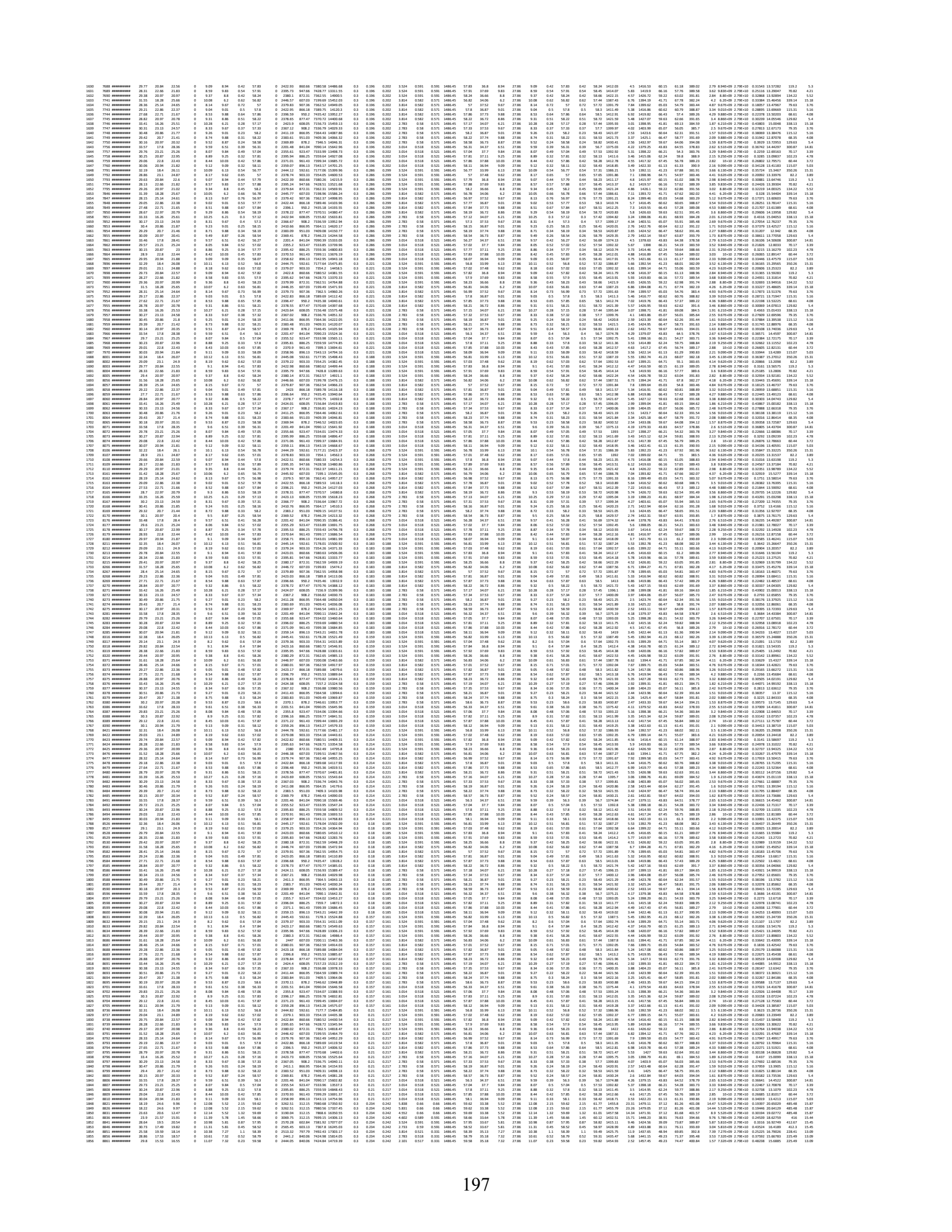
1403	6496	##########	33.58	17.8	28.36	0	9.59	6.51	0.39	56.31	0	2199.54	841.04	7087.68	15617.96	0.3	0.195	0.201	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.59	0.39	56.31	0.39	56.7	1375.01	4.21	1379.22	43.83	64.55	378.82	2.61	6.51E+09	2.79E+10	0.36713	14.42756	300.87	14.81
1404	6497	##########	29.76	23.21	25.27	0	8.07	9.84	0.49	57.04	0	2353.9	923.47	7331.79	13492.62	0.3	0.195	0.201	3.014	0.518	0.521	1486.45	57.04	37.7	9.84	27.86	8.07	0.49	57.04	0.49	57.53	1392.87	5.29	1398.17	66.21	54.3	383.74	3.29	9.84E+09	2.79E+10	0.22566	12.67693	70.17	3.39
1405	6498	##########	30.27	20.87	22.95	0	8.89	9.25	0.32	57.81	0	2394.24	886.25	7357.46	14788.35	0.3	0.195	0.201	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.32	57.81	0.32	58.13	1411.58	3.45	1415.02	62.24	59.79	388.9	2.14	9.25E+09	2.79E+10	0.32821	13.08367	102.23	4.78
1406	6499	##########	29.07	22.8	22.44	0	8.44	10.03	0.42	57.86	0	2369.3	961.43	7397.15	13653.37	0.3	0.195	0.201	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.42	57.86	0.42	58.27	1412.76	4.53	1417.29	67.45	56.78	389.22	2.81	1E+10	2.79E+10	0.26778	12.78107	60.44	3.72
1407	6500	##########	30.06	20.94	21.83	0	9.12	9.09	0.32	58.1	0	2357.44	896.13	7341.07	14660.02	0.3	0.195	0.201	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.12	0.32	58.1	0.32	58.43	1418.84	3.47	1422.31	61.13	61.33	390.9	2.16	9.09E+09	2.79E+10	0.34098	13.39667	115.07	5.03
1408	6531	##########	32.21	18.4	26.14	0	10.09	6.13	0.54	56.76	0	2444.14	592.61	7177.18	15369.35	0.3	0.284	0.297	3.524	0.591	0.591	1486.45	56.76	33.99	6.13	27.86	10.09	0.54	56.76	0.54	57.31	1386.08	5.88	1391.96	41.23	67.87	381.87	3.65	6.13E+09	2.79E+10	0.35663	15.32019	350.26	15.31
1409	6532	##########	28.88	23.1	24.89	0	8.17	9.62	0.65	57	0	2376.12	903.33	7350.64	14592.84	0.3	0.284	0.297	3.524	0.591	0.591	1486.45	57	37.48	9.62	27.86	8.17	0.65	57	0.65	57.65	1391.75	7.07	1398.83	64.71	54.96	383.44	4.39	9.62E+09	2.79E+10	0.20029	13.31459	82.2	3.89
1410	6533	##########	29.65	20.84	22.62	0	9.07	8.94	0.44	57.79	0	2419.8	860.66	7376.87	14211.29	0.3	0.284	0.297	3.524	0.591	0.591	1486.45	57.79	36.8	8.94	27.86	9.07	0.44	57.79	0.44	58.23	1411.07	4.78	1415.85	60.15	61	388.76	2.97	8.94E+09	2.79E+10	0.30816	13.62157	119.2	5.3
1411	6534	##########	28.15	22.66	21.85	0	8.56	9.83	0.57	57.88	0	2392.62	947.66	7425.11	13514.16	0.3	0.284	0.297	3.524	0.591	0.591	1486.45	57.88	37.69	9.83	27.86	8.56	0.57	57.88	0.57	58.45	1413.25	6.18	1419.43	66.16	57.61	389.36	3.83	9.83E+09	2.79E+10	0.24364	13.36768	70.82	4.21
1412	6535	##########	29.27	20.97	21.04	0	9.34	8.8	0.45	58.2	0	2377.16	872.31	7359.06	14560.05	0.3	0.284	0.297	3.524	0.591	0.591	1486.45	58.2	36.66	8.8	27.86	9.34	0.45	58.2	0.45	58.65	1421.14	4.84	1425.98	59.22	62.85	391.53	3.01	8.8E+09	2.79E+10	0.32154	13.97676	134.22	5.52
1413	6586	##########	31.4	18.28	25.69	0	10.05	6.2	0.65	56.78	0	2445.75	607.03	7199.04	15545	0.3	0.284	0.297	3.814	0.582	0.571	1486.45	56.78	34.06	6.2	27.86	10.05	0.65	56.78	0.65	57.44	1386.51	7.09	1393.6	41.71	67.61	381.99	4.4	6.2E+09	2.79E+10	0.32738	15.51801	339.14	15.18
1414	6587	##########	28.17	25.14	24.64	0	8.13	9.67	0.76	56.97	0	2376.81	907.36	7358.98	14994.47	0.3	0.284	0.297	3.814	0.582	0.571	1486.45	56.97	37.52	9.67	27.86	8.13	0.76	56.97	0.76	57.73	1391.08	8.22	1399.3	65.03	54.67	383.25	5.1	9.67E+09	2.79E+10	0.17307	13.58139	79.63	3.76
1415	6588	##########	29.07	22.86	22.41	0	9.01	9.01	0.52	57.77	0	2419.86	866.18	7386.09	14059.74	0.3	0.284	0.297	3.814	0.582	0.571	1486.45	57.77	36.87	9.01	27.86	9.01	0.52	57.77	0.52	58.29	1410.64	5.68	1416.33	60.62	60.63	388.64	3.53	9.01E+09	2.79E+10	0.28187	13.75599	115.31	5.16
1416	6589	##########	27.5	22.71	21.67	0	8.51	9.88	0.67	57.83	0	2393.49	950.2	7431.78	14182.32	0.3	0.284	0.297	3.814	0.582	0.571	1486.45	57.83	37.73	9.88	27.86	8.51	0.67	57.83	0.67	58.5	1412.16	7.28	1419.44	66.43	57.26	389.06	4.52	9.88E+09	2.79E+10	0.21644	13.58922	68.61	4.08
1417	6590	##########	28.69	22.97	20.82	0	9.29	8.86	0.53	58.18	0	2375.76	877.47	7367.29	14338.01	0.3	0.284	0.297	3.814	0.582	0.571	1486.45	58.18	36.72	8.86	27.86	9.29	0.53	58.18	0.53	58.72	1420.71	5.78	1426.49	59.63	62.5	391.41	3.59	8.86E+09	2.79E+10	0.29541	14.11352	129.82	5.4
1418	6591	##########	33.34	16.26	25.63	0	10.24	6.21	0.3	57.12	0	2422.96	608.05	7155.93	15631.7	0.3	0.284	0.297	2.783	0.58	0.571	1486.45	57.12	34.07	6.21	27.86	10.24	0.3	57.12	0.3	57.41	1394.73	3.22	1397.95	41.81	68.92	384.25	2	6.21E+09	2.79E+10	0.43098	15.01321	338.13	15.18
1419	6592	##########	30.18	23.13	24.62	0	8.31	9.67	0.4	57.29	0	2364.02	908.2	7333.14	13837.8	0.3	0.284	0.297	2.783	0.58	0.571	1486.45	57.29	37.53	9.67	27.86	8.31	0.4	57.29	0.4	57.69	1399.04	4.32	1403.36	65.07	55.89	385.44	2.68	9.67E+09	2.79E+10	0.26991	12.73611	79.35	3.76
1420	6593	##########	30.41	20.86	21.89	0	9.23	9.01	0.25	58.15	0	2408.01	866.95	7360.66	14420.12	0.3	0.284	0.297	2.783	0.58	0.571	1486.45	58.15	36.87	9.01	27.86	9.23	0.25	58.15	0.25	58.4	1419.89	2.74	1422.63	60.64	62.1	391.19	1.7	9.01E+09	2.79E+10	0.37313	13.39862	115.12	5.16
1421	6594	##########	29.31	20.7	21.48	0	8.71	9.88	0.34	58.18	0	2380.44	951.03	7405.64	14109.39	0.3	0.284	0.297	2.783	0.58	0.571	1486.45	58.18	37.74	9.88	27.86	8.71	0.34	58.18	0.34	58.52	1420.75	3.64	1424.39	66.47	58.6	391.42	2.26	9.88E+09	2.79E+10	0.31143	12.91566	68.35	4.08
1422	6595	##########	30.1	20.97	20.43	0	9.49	8.87	0.26	58.53	0	2366.9	878.2	7342.94	14209.18	0.3	0.284	0.297	2.783	0.58	0.571	1486.45	58.53	36.73	8.87	27.86	9.49	0.26	58.53	0.26	58.79	1429.26	2.78	1432.03	59.67	63.86	393.77	1.72	8.87E+09	2.79E+10	0.38546	13.74345	129.63	5.4
1423	6601	##########	33.47	17.8	28.43	0	9.57	6.51	0.41	56.27	0	2198.47	841.04	7086.58	15302.78	0.3	0.284	0.297	3.014	0.518	0.521	1486.45	56.27	34.37	6.51	27.86	9.57	0.41	56.27	0.41	56.68	1374.05	4.48	1378.53	43.83	64.36	378.56	2.78	6.51E+09	2.79E+10	0.36042	14.47889	300.87	14.81
1424	6602	##########	29.59	23.21	25.26	0	8.05	9.84	0.52	57.01	0	2352.54	923.47	7330.39	13731.08	0.3	0.284	0.297	3.014	0.518	0.521	1486.45	57.01	37.7	9.84	27.86	8.05	0.52	57.01	0.52	57.54	1392.19	5.65	1397.85	66.21	54.17	383.56	3.51	9.84E+09	2.79E+10	0.21763	12.77761	70.17	3.39
1425	6603	##########	30.16	20.87	23.02	0	8.86	9.25	0.34	57.77	0	2392.79	886.25	7355.93	14761.18	0.3	0.284	0.297	3.014	0.518	0.521	1486.45	57.77	37.11	9.25	27.86	8.86	0.34	57.77	0.34	58.11	1410.62	3.71	1414.32	62.24	59.62	388.63	2.3	9.25E+09	2.79E+10	0.32084	13.13659	102.23	4.78
1426	6604	##########	28.91	22.8	22.47	0	8.42	10.03	0.45	57.82	0	2367.88	961.43	7395.67	13617.05	0.3	0.284	0.297	3.014	0.518	0.521	1486.45	57.82	37.88	10.03	27.86	8.42	0.45	57.82	0.45	58.27	1411.89	4.86	1416.75	67.45	56.62	388.98	3.02	1E+10	2.79E+10	0.26002	12.86557	60.44	3.72
1427	6605	##########	29.96	20.94	21.91	0	9.09	9.09	0.34	58.06	0	2421.85	843.76	7351.92	14808.15	0.3	0.284	0.297	3.014	0.518	0.521	1486.45	58.06	36.94	9.09	27.86	9.09	0.34	58.06	0.34	58.41	1417.79	3.73	1421.52	61.13	61.15	390.61	2.32	9.09E+09	2.79E+10	0.33379	13.4489	115.07	5.03
1428	6636	##########	32.3	18.4	26.09	0	10.11	6.13	0.52	56.8	0	2444.99	592.61	7178.05	15437.63	0.3	0.219	0.227	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.52	56.8	0.52	57.32	1386.86	5.65	1392.51	41.23	68	382.09	3.51	6.13E+09	2.79E+10	0.36129	15.27768	350.26	15.31
1429	6637	##########	29.02	23.1	24.89	0	8.18	9.62	0.63	57.02	0	2377.13	903.33	7351.71	14452.53	0.3	0.219	0.227	3.524	0.591	0.591	1486.45	57.02	37.48	9.62	27.86	8.18	0.63	57.02	0.63	57.64	1392.28	6.8	1399.08	64.71	55.05	383.58	4.22	9.62E+09	2.79E+10	0.20576	13.23618	82.2	3.89
1430	6638	##########	29.74	20.84	22.58	0	9.09	8.94	0.42	57.82	0	2420.88	860.66	7378.04	14428.89	0.3	0.219	0.227	3.524	0.591	0.591	1486.45	57.82	36.8	8.94	27.86	9.09	0.42	57.82	0.42	58.24	1411.78	4.56	1416.34	60.15	61.13	388.95	2.83	8.94E+09	2.79E+10	0.3133	13.57549	119.2	5.3
1431	6639	##########	28.28	22.66	21.84	0	8.58	9.83	0.55	57.9	0	2393.68	947.66	7426.23	13364.51	0.3	0.219	0.227	3.524	0.591	0.591	1486.45	57.9	37.69	9.83	27.86	8.58	0.55	57.9	0.55	58.45	1413.86	5.91	1419.77	66.16	57.72	389.52	3.67	9.83E+09	2.79E+10	0.24899	13.30101	70.82	4.21
1432	6640	##########	29.36	20.97	21	0	9.36	8.8	0.43	58.23	0	2378.15	872.31	7360.13	14809.49	0.3	0.219	0.227	3.524	0.591	0.591	1486.45	58.23	36.66	8.8	27.86	9.36	0.43	58.23	0.43	58.66	1421.88	4.63	1426.51	59.22	62.98	391.73	2.88	8.8E+09	2.79E+10	0.32658	13.93137	134.22	5.52
1433	6691	##########	31.51	18.28	25.67	0	10.07	6.2	0.63	56.81	0	2446.55	607.03	7199.84	15447.91	0.3	0.219	0.227	3.814	0.582	0.571	1486.45	56.81	34.06	6.2	27.86	10.07	0.63	56.81	0.63	57.44	1387.2	6.84	1394.04	41.71	67.74	382.18	4.25	6.2E+09	2.79E+10	0.33192	15.46833	339.14	15.18
1434	6692	##########	28.32	25.14	24.65	0	8.14	9.67	0.73	56.99	0	2377.81	907.36	7360.02	14963.5	0.3	0.219	0.227	3.814	0.582	0.571	1486.45	56.99	37.52	9.67	27.86	8.14	0.73	56.99	0.73	57.72	1391.58	7.93	1399.5	65.03	54.76	383.39	4.92	9.67E+09	2.79E+10	0.17842	13.49692	79.63	3.76
1435	6693	##########	29.18	22.86	22.38	0	9.03	9.01	0.5	57.79	0	2420.92	866.18	7387.23	14093.12	0.3	0.219	0.227	3.814	0.582	0.571	1486.45	57.79	36.87	9.01	27.86	9.03	0.5	57.79	0.5	58.3	1411.26	5.45	1416.71	60.62	60.75	388.81	3.38	9.01E+09	2.79E+10	0.28687	13.70247	115.31	5.16
1436	6694	##########	27.63	22.71	21.68	0	8.53	9.88	0.65	57.85	0	2394.53	950.2	7432.89	14033.87	0.3	0.219	0.227	3.814	0.582	0.571	1486.45	57.85	37.73	9.88	27.86	8.53	0.65	57.85	0.65	58.5	1412.71	7	1419.72	66.43	57.37	389.21	4.35	9.88E+09	2.79E+10	0.22166	13.5155	68.61	4.08
1437	6695	##########	28.79	20.97	20.79	0	9.31	8.86	0.51	58.21	0	2376.73	877.47	7368.34	14379.33	0.3	0.219	0.227	3.814	0.582	0.571	1486.45	58.21	36.72	8.86	27.86	9.31	0.51	58.21	0.51	58.72	1421.35	5.55	1426.91	59.63	62.62	391.59	3.45	8.86E+09	2.79E+10	0.30033	14.06061	129.82	5.4
1438	6696	##########	33.4	16.26	25.54	0	10.27	6.21	0.28	57.15	0	2423.88	608.05	7156.88	15538.22	0.3	0.219	0.227	2.783	0.58	0.571	1486.45	57.15	34.07	6.21	27.86	10.27	0.28	57.15	0.28	57.44	1395.61	3.06	1398.67	41.81	69.07	384.5	1.9	6.21E+09	2.79E+10	0.43595	14.99635	338.13	15.18
1439	6697	##########	30.28	23.13	24.59	0	8.33	9.67	0.38	57.32	0	2365.05	908.2	7334.23	14016.23	0.3	0.219	0.227	2.783	0.58	0.571	1486.45	57.32	37.53	9.67	27.86	8.33	0.38	57.32	0.38	57.7	1399.72	4.09	1403.8	65.07	56.01	385.63	2.54	9.67E+09	2.79E+10	0.27578	12.67858	79.35	3.76
1440	6698	##########	30.46	20.86	21.8	0	9.25	9.01	0.24	58.18	0	2409.11	866.95	7361.85	14181.83	0.3	0.219	0.227	2.783	0.58	0.571	1486.45	58.18	36.87	9.01	27.86	9.25	0.24	58.18	0.24	58.42	1420.78	2.58	1423.36	60.64	62.26	391.43	1.6	9.01E+09	2.79E+10	0.37849	13.37807	115.12	5.16
1441	6699	##########	29.4	20.7	21.43	0	8.73	9.88	0.32	58.21	0	2381.52	951.03	7406.79	14112.16	0.3	0.219	0.227	2.783	0.58	0.571	1486.45	58.21	37.74	9.88	27.86	8.73	0.32	58.21	0.32	58.53	1421.47	3.43	1424.91	66.47	58.73	391.62	2.13	9.88E+09	2.79E+10	0.31712	12.87243	68.35	4.08
1442	6700	##########	30.15	20.97	20.35	0	9.51	8.87	0.24	58.57	0	2367.92	878.2	7344.04	14097.4	0.3	0.219	0.227	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.51	0.24	58.57	0.24	58.81	1430.12	2.61	1432.73	59.67	64.01	394.01	1.62	8.87E+09	2.79E+10	0.39073	13.72261	129.63	5.4
1443	6706	##########	33.55	17.8	28.38	0	9.59	6.51	0.4	56.3	0	2199.27	841.04	7087.42	15460.64	0.3	0.219	0.227	3.014	0.518	0.521	1486.45	56.3	34.37	6.51	27.86	9.59	0.4	56.3	0.4	56.7	1374.78	4.28	1379.06	43.83	64.5	378.76	2.66	6.51E+09	2.79E+10	0.36536	14.44158	300.87	14.81
1444	6707	##########	29.71	23.21	25.27	0	8.07	9.84	0.5	57.03	0	2353.55	923.47	7331.45	13558.62	0.3	0.219	0.227	3.014	0.518	0.521	1486.45	57.03	37.7	9.84	27.86	8.07	0.5	57.03	0.5	57.53	1392.69	5.39	1398.08	66.21	54.27	383.69	3.35	9.84E+09	2.79E+10	0.22354	12.70449	70.17	3.39
1445	6708	##########	30.24	20.87	22.97	0	8.88	9.25	0.32	57.8	0	2393.86	886.25	7357.08	14659.77	0.3	0.219	0.227	3.014	0.518	0.521	1486.45	57.8	37.11	9.25	27.86	8.88	0.32	57.8	0.32	58.12	1411.34	3.52	1414.85	62.24	59.75	388.83	2.18	9.25E+09	2.79E+10	0.32627	13.0983	102.23	4.78
1446	6709	##########	29.02	22.8	22.44	0	8.43	10.03	0.43	57.85	0	2368.93	961.43	7396.78	13658.56	0.3	0.219	0.227	3.014	0.518	0.521	1486.45	57.85	37.88	10.03	27.86	8.43	0.43	57.85	0.43	58.27	1412.54	4.62	1417.16	67.45	56.74	389.16	2.87	1E+10	2.79E+10	0.26574	12.80415	60.44	3.72
1447	6710	##########	30.04	20.94	21.85	0	9.11	9.09	0.33	58.09	0	2357.09	896.13	7340.72	14748.98	0.3	0.219	0.227	3.014	0.518	0.521	1486.45	58.09	36.94	9.09	27.86	9.11	0.33	58.09	0.33	58.42	1418.57	3.54	1422.11	61.13	61.29	390.82	2.2	9.09E+09	2.79E+10	0.33909	13.41112	115.07	5.03
1448	6741	##########	32.35	18.4	26.07	0	10.12	6.13	0.51	56.81	0	2445.37	592.61	7178.4	15484.66	0.3	0.187	0.192	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.51	56.81	0.51	57.32	1387.19	5.54	1392.73	41.23	68.07	382.18	3.44	6.13E+09	2.79E+10	0.36358	15.25552	350.26	15.31
1449	6742	##########	29.1	23.1	24.9	0	8.19	9.62	0.61	57.03	0	2377.61	903.33	7352.19	14377.59	0.3	0.187	0.192	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.61	57.03	0.61	57.64	1392.52	6.66	1399.17	64.71	55.1	383.64	4.13	9.62E+09	2.79E+10	0.20843	13.19592	82.2	3.89
1450	6743	##########	29.78	20.84	22.56	0	9.1	8.94	0.41	57.83	0	2421.39	860.66	7378.56	14471.35	0.3	0.187	0.192	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.1	0.41	57.83	0.41	58.24	1412.11	4.46	1416.57	60.15	61.19	389.04	2.77	8.94E+09	2.79E+10	0.31582	13.55167	119.2	5.3
1451	6744	##########	28.34	22.66	21.84	0	8.59	9.83	0.53	57.91	0	2394.17	947.66	7426.73	13284.63	0.3	0.187	0.192	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.59	0.53	57.91	0.53	58.45	1414.12	5.78	1419.9	66.16	57.77	389.6	3.59	9.83E+09	2.79E+10	0.25161	13.26668	70.82	4.21
1452	6745	##########	29.41	20.97	20.98	0	9.37	8.8	0.42	58.24	0	2378.62	872.31	7360.61	14876.64	0.3	0.187	0.192	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.37	0.42	58.24	0.42	58.66	1422.22	4.52	1426.75	59.22	63.04	391.83	2.81	8.8E+09	2.79E+10	0.32906	13.90737	134.22	5.52
1453	6796	##########	31.57	18.28	25.66	0	10.08	6.2	0.62	56.82	0	2446.91	607.03	7200.17	15426.49	0.3	0.187	0.192	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.08	0.62	56.82	0.62	57.44	1387.51	6.71	1394.22	41.71	67.8	382.26	4.17	6.2E+09	2.79E+10	0.33414	15.44248	339.14	15.18
1454	6797	##########	28.4	25.14	24.66	0	8.15	9.67	0.72	57	0	2378.28	907.36	7360.49	14962.17	0.3	0.187	0.192	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.72	57	0.72	57.72	1391.81	7.78	1399.59	65.03	54.8	383.45	4.83	9.67E+09	2.79E+10	0.18102	13.45368	79.63	3.76
1455	6798	##########	29.23	22.86	22.37	0	9.04	9.01	0.49	57.81	0	2421.42	866.18	7387.74	14097.2	0.3	0.187	0.192	3.814	0.582	0.571	1486.45	57.81	36.87	9.01	27.86	9.04	0.49	57.81	0.49	58.3	1411.57	5.33	1416.9	60.62	60.81	388.89	3.31	9.01E+09	2.79E+10	0.28932	13.67465	115.31	5.16
1456	6799	##########	27.71	22.71	21.68	0	8.53	9.88	0.63	57.86	0	2395.03	950.2	7433.39	13936.6	0.3	0.187	0.192	3.814	0.582	0.571	1486.45	57.86	37.73	9.88	27.86	8.53	0.63	57.86	0.63	58.5	1412.95	6.86	1419.81	66.43	57.41	389.27	4.26	9.88E+09	2.79E+10	0.22421	13.47762	68.61	4.08
1457	6800	##########	28.84	20.97	20.78	0	9.32	8.86	0.5	58.22	0	2377.19	877.47	7368.8	14375.22	0.3	0.187	0.192	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.32	0.5	58.22	0.5	58.72	1421.67	5.44	1427.11	59.63	62.68	391.68	3.38	8.86E+09	2.79E+10	0.30275	14.03318	129.82	5.4
1458	6801	##########	33.42	16.26	25.5	0	10.28	6.21	0.28	57.17	0	2424.3	608.05	7157.29	15389.2	0.3	0.187	0.192	2.783	0.58	0.571	1486.45	57.17	34.07	6.21	27.86	10.28	0.28	57.17	0.28	57.45	1396.05	2.98	1399.03	41.81	69.15	384.62	1.85	6.21E+09	2.79E+10	0.43839	14.98714	338.13	15.18
1459	6802	##########	30.34	23.13	24.57	0	8.33	9.67	0.37	57.33	0	2365.54	908.2	7334.72	13999.02	0.3	0.187	0.192	2.783	0.58	0.571	1486.45	57.33	37.53	9.67	27.86	8.33	0.37	57.33	0.37	57.7	1400.02	3.98	1404	65.07	56.06	385.71	2.47	9.67E+09	2.79E+10	0.27865	12.64906	79.35	3.76
1460	6803	##########	30.49	20.86	21.77	0	9.26	9.01	0.23	58.2	0	2409.63	866.95	7362.39	14054.79	0.3	0.187	0.192	2.783	0.58	0.571	1486.45	58.2	36.87	9.01	27.86	9.26	0.23	58.2	0.23	58.43	1421.17	2.5	1423.67	60.64	62.33	391.54	1.55	9.01E+09	2.79E+10	0.3811	13.36717	115.12	5.16
1461	6804	##########	29.44	20.7	21.41	0	8.74	9.88	0.31	58.23	0	2382.03	951.03	7407.31	14038.27	0.3	0.187	0.192	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.31	58.23	0.31	58.53	1421.83	3.33	1425.16	66.47	58.79	391.72	2.07	9.88E+09	2.79E+10	0.3199	12.85012	68.35	4.08
1462	6805	##########	30.18	20.97	20.32	0	9.52	8.87	0.23	58.58	0	2368.4	878.2	7344.54	14016.5	0.3	0.187	0.192	2.783	0.58	0.571	1486.45	58.58	36.73	8.87	27.86	9.52	0.23	58.58	0.23	58.82	1430.51	2.53	1433.03	59.67	64.08	394.11	1.57	8.87E+09	2.79E+10	0.3933	13.71153	129.63	5.4
1463	6811	##########	33.59	17.8	28.36	0	9.6	6.51	0.39	56.31	0	2199.64	841.04	7087.78	15642.5	0.3	0.187	0.192	3.014	0.518	0.521	1486.45	56.31	34.37	6.51	27.86	9.6	0.39	56.31	0.39	56.7	1375.12	4.18	1379.3	43.83	64.56	378.85	2.6	6.51E+09	2.79E+10	0.36777	14.42239	300.87	14.81
1464	6812	##########	29.79	23.21	25.27	0	8.07	9.84	0.49	57.04	0	2354.03	923.47	7331.92	13468.72	0.3	0.187	0.192	3.014	0.518	0.521	1486.45	57.04	37.7	9.84	27.86	8.07	0.49	57.04	0.49	57.53	1392.94	5.25	1398.2	66.21	54.31	383.76	3.26	9.84E+09	2.79E+10	0.22644	12.66683	70.17	3.39
1465	6813	##########	30.27	20.87	22.95	0	8.89	9.25	0.32	57.81	0	2394.37	886.25	7357.6	14849.64	0.3	0.187	0.192	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.32	57.81	0.32	58.13	1411.68	3.42	1415.11	62.24	59.81	388.93	2.13	9.25E+09	2.79E+10	0.32892	13.07843	102.23	4.78
1466	6814	##########	29.08	22.8	22.43	0	8.44	10.03	0.42	57.86	0	2369.43	961.43	7397.28	13651.6	0.3	0.187	0.192	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.42	57.86	0.42	58.27	1412.83	4.5	1417.33	67.45	56.79	389.24	2.8	1E+10	2.79E+10	0.26853	12.77274	60.44	3.72
1467	6815	##########	30.08	20.94	21.82	0	9.12	9.09	0.32	58.11	0	2357.56	896.13	7341.2	14629.47	0.3	0.187	0.192	3.014	0.518	0.521	1486.45	58.11	36.94	9.09	27.86	9.12	0.32	58.11	0.32	58.43	1418.94	3.45	1422.39	61.13	61.35	390.92	2.14	9.09E+09	2.79E+10	0.34168	13.39146	115.07	5.03
1468	6846	##########	32.23	18.4	26.11	0	10.1	6.13	0.54	56.78	0	2444.5	592.61	7177.59	15404.68	0.3	0.266	0.277	3.524	0.591	0.591	1486.45	56.78	33.99	6.13	27.86	10.1	0.54	56.78	0.54	57.31	1386.37	5.81	1392.19	41.23	67.92	381.95	3.61	6.13E+09	2.79E+10	0.35805	15.30997	350.26	15.31
1469	6847	##########	28.92	23.1	24.88	0	8.17	9.62	0.65	57	0	2376.45	903.33	7351.03	14554.85	0.3	0.266	0.277	3.524	0.591	0.591	1486.45	57	37.48	9.62	27.86	8.17	0.65	57	0.65	57.65	1391.96	6.99	1398.95	64.71	54.99	383.49	4.34	9.62E+09	2.79E+10	0.20198	13.29411	82.2	3.89
1470	6848	##########	29.67	20.84	22.6	0	9.07	8.94	0.44	57.8	0	2420.15	860.66	7377.28	14252.07	0.3	0.266	0.277	3.524	0.591	0.591	1486.45	57.8	36.8	8.94	27.86	9.07	0.44	57.8	0.44	58.23	1411.31	4.71	1416.03	60.15	61.05	388.82	2.93	8.94E+09	2.79E+10	0.30974	13.61035	119.2	5.3
1471	6849	##########	28.18	22.66	21.84	0	8.57	9.83	0.56	57.88	0	2392.96	947.66	7425.51	13473.41	0.3	0.266	0.277	3.524	0.591	0.591	1486.45	57.88	37.69	9.83	27.86	8.57	0.56	57.88	0.56	58.45	1413.47	6.1	1419.57	66.16	57.65	389.42	3.79	9.83E+09	2.79E+10	0.24529	13.35056	70.82	4.21
1472	6850	##########	29.3	20.97	21.02	0	9.35	8.8	0.44	58.21	0	2377.48	872.31	7359.44	14605.68	0.3	0.266	0.277	3.524	0.591	0.591	1486.45	58.21	36.66	8.8	27.86	9.35	0.44	58.21	0.44	58.65	1421.42	4.78	1426.21	59.22	62.89	391.61	2.97	8.8E+09	2.79E+10	0.32308	13.96572	134.22	5.52
1473	6901	##########	31.43	18.28	25.68	0	10.06	6.2	0.65	56.79	0	2446.09	607.03	7199.43	15511.24	0.3	0.266	0.277	3.814	0.582	0.571	1486.45	56.79	34.06	6.2	27.86	10.06	0.65	56.79	0.65	57.44	1386.77	7.01	1393.79	41.71	67.65	382.06	4.36	6.2E+09	2.79E+10	0.32877	15.50556	339.14	15.18
1474	6902	##########	28.21	25.14	24.64	0	8.13	9.67	0.75	56.98	0	2377.14	907.36	7359.35	14968.21	0.3	0.266	0.277	3.814	0.582	0.571	1486.45	56.98	37.52	9.67	27.86	8.13	0.75	56.98	0.75	57.73	1391.26	8.14	1399.39	65.03	54.7	383.3	5.05	9.67E+09	2.79E+10	0.17473	13.55909	79.63	3.76
1475	6903	##########	29.1	22.86	22.39	0	9.02	9.01	0.52	57.78	0	2420.2	866.18	7386.49	14059.55	0.3	0.266	0.277	3.814	0.582	0.571	1486.45	57.78	36.87	9.01	27.86	9.02	0.52	57.78	0.52	58.3	1410.86	5.62	1416.47	60.62	60.68	388.7	3.49	9.01E+09	2.79E+10	0.2834	13.74256	115.31	5.16
1476	6904	##########	27.54	22.71	21.67	0	8.52	9.88	0.66	57.84	0	2393.82	950.2	7432.18	14129.85	0.3	0.266	0.277	3.814	0.582	0.571	1486.45	57.84	37.73	9.88	27.86	8.52	0.66	57.84	0.66	58.5	1412.35	7.2	1419.55	66.43	57.3	389.11	4.47	9.88E+09	2.79E+10	0.21805	13.57005	68.61	4.08
1477	6905	##########	28.71	22.97	20.8	0	9.3	8.86	0.53	58.19	0	2376.08	877.47	7367.67	14337.23	0.3	0.266	0.277	3.814	0.582	0.571	1486.45	58.19	36.72	8.86	27.86	9.3	0.53	58.19	0.53	58.72	1420.95	5.72	1426.67	59.63	62.54	391.48	3.55	8.86E+09	2.79E+10	0.29692	14.10035	129.82	5.4
1478	6906	##########	33.36	16.26	25.59	0	10.25	6.21	0.29	57.13	0	2423.34	608.05	7156.37	15616.7	0.3	0.266	0.277	2.783	0.58	0.571	1486.45	57.13	34.07	6.21	27.86	10.25	0.29	57.13	0.29	57.42	1395.02	3.18	1398.2	41.81	68.97	384.33	1.97	6.21E+09	2.79E+10	0.43249	15.01053	338.13	15.18
1479	6907	##########	30.21	23.13	24.6	0	8.31	9.67	0.39	57.3	0	2364.35	908.2	7333.53	13908.21	0.3	0.266	0.277	2.783	0.58	0.571	1486.45	57.3	37.53	9.67	27.86	8.31	0.39	57.3	0.39	57.7	1399.3	4.25	1403.56	65.07	55.93	385.51	2.64	9.67E+09	2.79E+10	0.27172	12.72186	79.35	3.76
1480	6908	##########	30.43	20.86	21.86	0	9.24	9.01	0.25	58.16	0	2408.37	866.95	7361.08	14465.23	0.3	0.266	0.277	2.783	0.58	0.571	1486.45	58.16	36.87	9.01	27.86	9.24	0.25	58.16	0.25	58.41	1420.19	2.7	1422.89	60.64	62.15	391.27	1.67	9.01E+09	2.79E+10	0.37477	13.39496	115.12	5.16
1481	6909	##########	29.34	20.7	21.46	0	8.72	9.88	0.33	58.19	0	2380.79	951.03	7406.05	14105.57	0.3	0.266	0.277	2.783	0.58	0.571	1486.45	58.19	37.74	9.88	27.86	8.72	0.33	58.19	0.33	58.52	1421	3.58	1424.57	66.47	58.64	391.49	2.22	9.88E+09	2.79E+10	0.31317	12.90553	68.35	4.08
1482	6910	##########	30.11	20.97	20.4	0	9.5	8.87	0.25	58.54	0	2367.23	878.2	7343.33	14198.12	0.3	0.266	0.277	2.783	0.58	0.571	1486.45	58.54	36.73	8.87	27.86	9.5	0.25	58.54	0.25	58.79	1429.54	2.73	1432.27	59.67	63.91	393.84	1.69	8.87E+09	2.79E+10	0.38707	13.73959	129.63	5.4
1483	6916	##########	33.49	17.8	28.41	0	9.57	6.51	0.41	56.28	0	2198.74	841.04	7086.9	15342.47	0.3	0.266	0.277	3.014	0.518	0.521	1486.45	56.28	34.37	6.51	27.86	9.57	0.41	56.28	0.41	56.69	1374.31	4.42	1378.74	43.83	64.41	378.63	2.75	6.51E+09	2.79E+10	0.36192	14.47028	300.87	14.81
1484	6917	##########	29.63	23.21	25.26	0	8.06	9.84	0.51	57.02	0	2352.88	923.47	7330.78	13683.26	0.3	0.266	0.277	3.014	0.518	0.521	1486.45	57.02	37.7	9.84	27.86	8.06	0.51	57.02	0.51	57.54	1392.39	5.58	1397.97	66.21	54.2	383.61	3.46	9.84E+09	2.79E+10	0.21945	12.75885	70.17	3.39
1485	6918	##########	30.18	20.87	23	0	8.87	9.25	0.34	57.78	0	2393.14	886.25	7356.34	14716.15	0.3	0.266	0.277	3.014	0.518	0.521	1486.45	57.78	37.11	9.25	27.86	8.87	0.34	57.78	0.34	58.12	1410.89	3.65	1414.55	62.24	59.67	388.71	2.27	9.25E+09	2.79E+10	0.32251	13.12774	102.23	4.78
1486	6919	##########	28.95	22.8	22.45	0	8.42	10.03	0.44	57.83	0	2368.21	961.43	7396.06	13659.77	0.3	0.266	0.277	3.014	0.518	0.521	1486.45	57.83	37.88	10.03	27.86	8.42	0.44	57.83	0.44	58.27	1412.12	4.79	1416.91	67.45	56.66	389.04	2.97	1E+10	2.79E+10	0.26178	12.85013	60.44	3.72
1487	6920	##########	29.99	20.94	21.88	0	9.1	9.09	0.34	58.07	0	2356.42	896.13	7340.04	14868.13	0.3	0.266	0.277	3.014	0.518	0.521	1486.45	58.07	36.94	9.09	27.86	9.1	0.34	58.07	0.34	58.41	1418.06	3.68	1421.74	61.13	61.2	390.68	2.28	9.09E+09	2.79E+10	0.33542	13.44024	115.07	5.03
1488	6951	##########	32.36	18.4	26.07	0	10.12	6.13	0.51	56.81	0	2445.42	592.61	7178.46	15488	0.3	0.182	0.187	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.51	56.81	0.51	57.32	1387.24	5.52	1392.76	41.23	68.08	382.19	3.43	6.13E+09	2.79E+10	0.36392	15.25226	350.26	15.31
1489	6952	##########	29.1	23.1	24.9	0	8.19	9.62	0.61	57.03	0	2377.68	903.33	7352.25	14366.4	0.3	0.182	0.187	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.61	57.03	0.61	57.64	1392.55	6.64	1399.19	64.71	55.11	383.65	4.12	9.62E+09	2.79E+10	0.20882	13.1901	82.2	3.89
1490	6953	##########	29.79	20.84	22.56	0	9.1	8.94	0.41	57.83	0	2421.46	860.66	7378.64	14478.37	0.3	0.182	0.187	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.1	0.41	57.83	0.41	58.24	1412.15	4.44	1416.6	60.15	61.2	389.06	2.76	8.94E+09	2.79E+10	0.31619	13.54825	119.2	5.3
1491	6954	##########	28.35	22.66	21.84	0	8.59	9.83	0.53	57.91	0	2394.25	947.66	7426.81	13272.81	0.3	0.182	0.187	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.59	0.53	57.91	0.53	58.45	1414.16	5.76	1419.93	66.16	57.78	389.61	3.58	9.83E+09	2.79E+10	0.25199	13.26172	70.82	4.21
1492	6955	##########	29.42	20.97	20.97	0	9.37	8.8	0.42	58.25	0	2378.69	872.31	7360.68	14888.66	0.3	0.182	0.187	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.37	0.42	58.25	0.42	58.66	1422.28	4.51	1426.79	59.22	63.05	391.84	2.8	8.8E+09	2.79E+10	0.32942	13.90395	134.22	5.52
1493	7006	##########	31.58	18.28	25.66	0	10.08	6.2	0.62	56.82	0	2446.96	607.03	7200.22	15422.42	0.3	0.182	0.187	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.08	0.62	56.82	0.62	57.44	1387.55	6.69	1394.24	41.71	67.8	382.28	4.16	6.2E+09	2.79E+10	0.33447	15.43876	339.14	15.18
1494	7007	##########	28.41	25.14	24.66	0	8.15	9.67	0.72	57	0	2378.34	907.36	7360.56	14954.91	0.3	0.182	0.187	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.72	57	0.72	57.72	1391.85	7.76	1399.61	65.03	54.81	383.46	4.82	9.67E+09	2.79E+10	0.1814	13.4474	79.63	3.76
1495	7008	##########	29.24	22.86	22.37	0	9.04	9.01	0.49	57.81	0	2421.49	866.18	7387.81	14094.23	0.3	0.182	0.187	3.814	0.582	0.571	1486.45	57.81	36.87	9.01	27.86	9.04	0.49	57.81	0.49	58.3	1411.6	5.31	1416.91	60.62	60.82	388.9	3.3	9.01E+09	2.79E+10	0.28968	13.67058	115.31	5.16
1496	7009	##########	27.72	22.71	21.68	0	8.54	9.88	0.63	57.86	0	2395.1	950.2	7433.46	13928.63	0.3	0.182	0.187	3.814	0.582	0.571	1486.45	57.86	37.73	9.88	27.86	8.54	0.63	57.86	0.63	58.5	1412.98	6.84	1419.82	66.43	57.42	389.28	4.25	9.88E+09	2.79E+10	0.22458	13.47214	68.61	4.08
1497	7010	##########	28.84	20.97	20.78	0	9.32	8.86	0.5	58.22	0	2377.25	877.47	7368.87	14370.26	0.3	0.182	0.187	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.32	0.5	58.22	0.5	58.72	1421.71	5.42	1427.13	59.63	62.69	391.69	3.37	8.86E+09	2.79E+10	0.3031	14.02923	129.82	5.4
1498	7011	##########	33.42	16.26	25.49	0	10.28	6.21	0.27	57.17	0	2424.36	608.05	7157.35	15370.15	0.3	0.182	0.187	2.783	0.58	0.571	1486.45	57.17	34.07	6.21	27.86	10.28	0.27	57.17	0.27	57.45	1396.11	2.97	1399.08	41.81	69.16	384.63	1.85	6.21E+09	2.79E+10	0.43874	14.98587	338.13	15.18
1499	7012	##########	30.34	23.13	24.57	0	8.33	9.67	0.37	57.34	0	2365.61	908.2	7334.79	13997.15	0.3	0.182	0.187	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.33	0.37	57.34	0.37	57.7	1400.08	3.96	1404.03	65.07	56.07	385.73	2.46	9.67E+09	2.79E+10	0.27906	12.64485	79.35	3.76
1500	7013	##########	30.5	20.86	21.76	0	9.27	9.01	0.23	58.2	0	2409.71	866.95	7362.47	14044.93	0.3	0.182	0.187	2.783	0.58	0.571	1486.45	58.2	36.87	9.01	27.86	9.27	0.23	58.2	0.23	58.43	1421.22	2.49	1423.71	60.64	62.34	391.55	1.54	9.01E+09	2.79E+10	0.38148	13.3656	115.12	5.16
1501	7014	##########	29.44	20.7	21.4	0	8.74	9.88	0.31	58.23	0	2382.11	951.03	7407.39	14027.89	0.3	0.182	0.187	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.31	58.23	0.31	58.54	1421.88	3.32	1425.2	66.47	58.8	391.73	2.06	9.88E+09	2.79E+10	0.32031	12.84691	68.35	4.08
1502	7015	##########	30.18	20.97	20.31	0	9.53	8.87	0.23	58.59	0	2368.47	878.2	7344.61	14004.29	0.3	0.182	0.187	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.23	58.59	0.23	58.82	1430.58	2.52	1433.09	59.67	64.09	394.13	1.56	8.87E+09	2.79E+10	0.39367	13.70997	129.63	5.4
1503	7021	##########	33.59	17.8	28.35	0	9.6	6.51	0.38	56.32	0	2199.69	841.04	7087.83	15642.07	0.3	0.182	0.187	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.38	56.32	0.38	56.7	1375.17	4.17	1379.34	43.83	64.57	378.87	2.59	6.51E+09	2.79E+10	0.36813	14.41944	300.87	14.81
1504	7022	##########	29.8	23.21	25.27	0	8.07	9.84	0.48	57.05	0	2354.09	923.47	7331.99	13455.63	0.3	0.182	0.187	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.48	57.05	0.48	57.53	1393	5.24	1398.23	66.21	54.32	383.78	3.25	9.84E+09	2.79E+10	0.22686	12.66138	70.17	3.39
1505	7023	##########	30.28	20.87	22.94	0	8.89	9.25	0.31	57.81	0	2394.45	886.25	7357.67	14851.86	0.3	0.182	0.187	3.014	0.518	0.521	1486.45	57.81	37.11	9.25	27.86	8.89	0.31	57.81	0.31	58.13	1411.74	3.41	1415.15	62.24	59.82	388.94	2.12	9.25E+09	2.79E+10	0.32931	13.07559	102.23	4.78
1506	7024	##########	29.08	22.8	22.43	0	8.44	10.03	0.41	57.86	0	2369.5	961.43	7397.35	13652.12	0.3	0.182	0.187	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.41	57.86	0.41	58.27	1412.87	4.49	1417.36	67.45	56.8	389.25	2.79	1E+10	2.79E+10	0.26893	12.76821	60.44	3.72
1507	7025	##########	30.08	20.94	21.82	0	9.12	9.09	0.32	58.11	0	2357.63	896.13	7341.27	14613.72	0.3	0.182	0.187	3.014	0.518	0.521	1486.45	58.11	36.94	9.09	27.86	9.12	0.32	58.11	0.32	58.43	1418.98	3.43	1422.42	61.13	61.36	390.94	2.13	9.09E+09	2.79E+10	0.34205	13.38868	115.07	5.03
1508	7056	##########	32.39	18.4	26.06	0	10.13	6.13	0.5	56.82	0	2445.71	592.61	7178.74	15520.98	0.3	0.159	0.163	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.13	0.5	56.82	0.5	57.32	1387.48	5.44	1392.92	41.23	68.12	382.26	3.38	6.13E+09	2.79E+10	0.36554	15.23681	350.26	15.31
1509	7057	##########	29.15	23.1	24.91	0	8.2	9.62	0.6	57.03	0	2378.02	903.33	7352.59	14311.9	0.3	0.159	0.163	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.2	0.6	57.03	0.6	57.64	1392.71	6.54	1399.25	64.71	55.14	383.7	4.06	9.62E+09	2.79E+10	0.21071	13.16192	82.2	3.89
1510	7058	##########	29.83	20.84	22.55	0	9.1	8.94	0.4	57.84	0	2421.82	860.66	7379.01	14513.73	0.3	0.159	0.163	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.4	57.84	0.4	58.24	1412.37	4.37	1416.74	60.15	61.24	389.12	2.71	8.94E+09	2.79E+10	0.31797	13.53169	119.2	5.3
1511	7059	##########	28.39	22.66	21.83	0	8.59	9.83	0.52	57.92	0	2394.6	947.66	7427.16	13280.37	0.3	0.159	0.163	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.52	57.92	0.52	58.44	1414.34	5.68	1420.02	66.16	57.81	389.66	3.53	9.83E+09	2.79E+10	0.25384	13.23769	70.82	4.21
1512	7060	##########	29.44	20.97	20.96	0	9.38	8.8	0.41	58.26	0	2379.02	872.31	7361.02	14965.3	0.3	0.159	0.163	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.41	58.26	0.41	58.67	1422.52	4.44	1426.96	59.22	63.09	391.91	2.76	8.8E+09	2.79E+10	0.33118	13.88767	134.22	5.52
1513	7111	##########	31.62	18.28	25.65	0	10.08	6.2	0.61	56.83	0	2447.25	607.03	7200.48	15444.94	0.3	0.159	0.163	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.61	56.83	0.61	57.44	1387.76	6.61	1394.37	41.71	67.85	382.34	4.1	6.2E+09	2.79E+10	0.33604	15.42079	339.14	15.18
1514	7112	##########	28.47	25.14	24.67	0	8.15	9.67	0.71	57.01	0	2378.67	907.36	7360.88	14914.28	0.3	0.159	0.163	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.71	57.01	0.71	57.71	1391.99	7.66	1399.65	65.03	54.84	383.5	4.75	9.67E+09	2.79E+10	0.18324	13.41681	79.63	3.76
1515	7113	##########	29.28	22.86	22.36	0	9.05	9.01	0.48	57.82	0	2421.82	866.18	7388.17	14063.8	0.3	0.159	0.163	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.48	57.82	0.48	58.3	1411.81	5.23	1417.05	60.62	60.86	388.96	3.25	9.01E+09	2.79E+10	0.29141	13.65125	115.31	5.16
1516	7114	##########	27.77	22.71	21.69	0	8.54	9.88	0.62	57.87	0	2395.46	950.2	7433.82	13886.06	0.3	0.159	0.163	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.62	57.87	0.62	58.49	1413.15	6.75	1419.9	66.43	57.45	389.33	4.19	9.88E+09	2.79E+10	0.22639	13.44551	68.61	4.08
1517	7115	##########	28.88	20.97	20.77	0	9.32	8.86	0.49	58.23	0	2377.58	877.47	7369.2	14329.82	0.3	0.159	0.163	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.49	58.23	0.49	58.72	1421.93	5.34	1427.27	59.63	62.73	391.75	3.32	8.86E+09	2.79E+10	0.30481	14.01015	129.82	5.4
1518	7116	##########	33.44	16.26	25.46	0	10.29	6.21	0.27	57.19	0	2424.68	608.05	7157.66	15297.29	0.3	0.159	0.163	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.45	1396.39	2.92	1399.31	41.81	69.21	384.71	1.81	6.21E+09	2.79E+10	0.44046	14.97969	338.13	15.18
1519	7117	##########	30.38	23.13	24.56	0	8.34	9.67	0.36	57.35	0	2365.95	908.2	7335.13	13983.03	0.3	0.159	0.163	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.7	1400.3	3.88	1404.18	65.07	56.11	385.79	2.41	9.67E+09	2.79E+10	0.28109	12.62449	79.35	3.76
1520	7118	##########	30.51	20.86	21.73	0	9.27	9.01	0.22	58.21	0	2410.05	866.95	7362.85	13988.79	0.3	0.159	0.163	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.22	58.21	0.22	58.44	1421.52	2.43	1423.95	60.64	62.39	391.63	1.51	9.01E+09	2.79E+10	0.38333	13.35837	115.12	5.16
1521	7119	##########	29.47	20.7	21.38	0	8.75	9.88	0.3	58.24	0	2382.47	951.03	7407.76	13962.12	0.3	0.159	0.163	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.3	58.24	0.3	58.54	1422.14	3.25	1425.39	66.47	58.84	391.81	2.02	9.88E+09	2.79E+10	0.32228	12.83172	68.35	4.08
1522	7120	##########	30.2	20.97	20.28	0	9.53	8.87	0.23	58.6	0	2368.81	878.2	7344.96	13948.04	0.3	0.159	0.163	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.53	0.23	58.6	0.23	58.82	1430.87	2.46	1433.33	59.67	64.14	394.21	1.53	8.87E+09	2.79E+10	0.39548	13.70258	129.63	5.4
1523	7126	##########	33.63	17.8	28.34	0	9.61	6.51	0.38	56.33	0	2199.95	841.04	7088.08	15647.25	0.3	0.159	0.163	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.38	56.33	0.38	56.7	1375.4	4.1	1379.5	43.83	64.62	378.93	2.54	6.51E+09	2.79E+10	0.36984	14.40596	300.87	14.81
1524	7127	##########	29.84	23.21	25.27	0	8.08	9.84	0.48	57.05	0	2354.43	923.47	7332.31	13390.46	0.3	0.159	0.163	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.08	0.48	57.05	0.48	57.53	1393.19	5.15	1398.33	66.21	54.35	383.83	3.2	9.84E+09	2.79E+10	0.22889	12.63495	70.17	3.39
1525	7128	##########	30.3	20.87	22.93	0	8.9	9.25	0.31	57.82	0	2394.81	886.25	7358.04	14806.18	0.3	0.159	0.163	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.31	57.82	0.31	58.13	1411.98	3.34	1415.33	62.24	59.86	389.01	2.08	9.25E+09	2.79E+10	0.33118	13.06197	102.23	4.78
1526	7129	##########	29.13	22.8	22.42	0	8.45	10.03	0.41	57.87	0	2369.85	961.43	7397.7	13658.69	0.3	0.159	0.163	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.28	1413.11	4.4	1417.51	67.45	56.84	389.32	2.73	1E+10	2.79E+10	0.2709	12.74639	60.44	3.72
1527	7130	##########	30.11	20.94	21.79	0	9.13	9.09	0.31	58.12	0	2357.97	896.13	7341.61	14547.1	0.3	0.159	0.163	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.31	58.12	0.31	58.43	1419.25	3.37	1422.61	61.13	61.41	391.01	2.09	9.09E+09	2.79E+10	0.34389	13.37527	115.07	5.03
1528	7161	##########	32.32	18.4	26.08	0	10.11	6.13	0.52	56.8	0	2445.06	592.61	7178.11	15443.37	0.3	0.213	0.22	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.52	56.8	0.52	57.32	1386.93	5.63	1392.56	41.23	68.02	382.11	3.49	6.13E+09	2.79E+10	0.36175	15.27325	350.26	15.31
1529	7162	##########	29.04	23.1	24.9	0	8.18	9.62	0.62	57.02	0	2377.23	903.33	7351.81	14437.73	0.3	0.213	0.22	3.524	0.591	0.591	1486.45	57.02	37.48	9.62	27.86	8.18	0.62	57.02	0.62	57.64	1392.33	6.77	1399.09	64.71	55.06	383.59	4.2	9.62E+09	2.79E+10	0.20629	13.22815	82.2	3.89
1530	7163	##########	29.75	20.84	22.57	0	9.09	8.94	0.42	57.82	0	2420.98	860.66	7378.14	14437.1	0.3	0.213	0.22	3.524	0.591	0.591	1486.45	57.82	36.8	8.94	27.86	9.09	0.42	57.82	0.42	58.24	1411.84	4.54	1416.38	60.15	61.14	388.97	2.82	8.94E+09	2.79E+10	0.31381	13.57073	119.2	5.3
1531	7164	##########	28.29	22.66	21.84	0	8.58	9.83	0.54	57.9	0	2393.77	947.66	7426.33	13348.93	0.3	0.213	0.22	3.524	0.591	0.591	1486.45	57.9	37.69	9.83	27.86	8.58	0.54	57.9	0.54	58.45	1413.9	5.88	1419.78	66.16	57.73	389.54	3.65	9.83E+09	2.79E+10	0.24951	13.29415	70.82	4.21
1532	7165	##########	29.37	20.97	20.99	0	9.36	8.8	0.43	58.23	0	2378.25	872.31	7360.23	14819.44	0.3	0.213	0.22	3.524	0.591	0.591	1486.45	58.23	36.66	8.8	27.86	9.36	0.43	58.23	0.43	58.66	1421.95	4.61	1426.56	59.22	62.99	391.75	2.86	8.8E+09	2.79E+10	0.32707	13.92659	134.22	5.52
1533	7216	##########	31.53	18.28	25.67	0	10.07	6.2	0.63	56.81	0	2446.62	607.03	7199.91	15444.9	0.3	0.213	0.22	3.814	0.582	0.571	1486.45	56.81	34.06	6.2	27.86	10.07	0.63	56.81	0.63	57.44	1387.25	6.81	1394.07	41.71	67.75	382.19	4.23	6.2E+09	2.79E+10	0.33236	15.46316	339.14	15.18
1534	7217	##########	28.34	25.14	24.65	0	8.14	9.67	0.73	56.99	0	2377.9	907.36	7360.12	14959.53	0.3	0.213	0.22	3.814	0.582	0.571	1486.45	56.99	37.52	9.67	27.86	8.14	0.73	56.99	0.73	57.72	1391.62	7.9	1399.52	65.03	54.77	383.4	4.9	9.67E+09	2.79E+10	0.17894	13.48829	79.63	3.76
1535	7218	##########	29.19	22.86	22.38	0	9.03	9.01	0.5	57.8	0	2421.02	866.18	7387.33	14098.01	0.3	0.213	0.22	3.814	0.582	0.571	1486.45	57.8	36.87	9.01	27.86	9.03	0.5	57.8	0.5	58.3	1411.32	5.43	1416.75	60.62	60.76	388.83	3.37	9.01E+09	2.79E+10	0.28736	13.69691	115.31	5.16
1536	7219	##########	27.65	22.71	21.68	0	8.53	9.88	0.64	57.86	0	2394.63	950.2	7432.99	14012.47	0.3	0.213	0.22	3.814	0.582	0.571	1486.45	57.86	37.73	9.88	27.86	8.53	0.64	57.86	0.64	58.5	1412.76	6.97	1419.74	66.43	57.38	389.22	4.33	9.88E+09	2.79E+10	0.22217	13.50792	68.61	4.08
1537	7220	##########	28.8	20.97	20.79	0	9.31	8.86	0.51	58.21	0	2376.82	877.47	7368.43	14383.12	0.3	0.213	0.22	3.814	0.582	0.571	1486.45	58.21	36.72	8.86	27.86	9.31	0.51	58.21	0.51	58.72	1421.41	5.53	1426.94	59.63	62.63	391.61	3.43	8.86E+09	2.79E+10	0.30082	14.05513	129.82	5.4
1538	7221	##########	33.4	16.26	25.53	0	10.27	6.21	0.28	57.16	0	2423.96	608.05	7156.96	15506.81	0.3	0.213	0.22	2.783	0.58	0.571	1486.45	57.16	34.07	6.21	27.86	10.27	0.28	57.16	0.28	57.44	1395.69	3.05	1398.74	41.81	69.09	384.52	1.89	6.21E+09	2.79E+10	0.43643	14.99445	338.13	15.18
1539	7222	##########	30.3	23.13	24.58	0	8.33	9.67	0.38	57.32	0	2365.15	908.2	7334.33	14008.15	0.3	0.213	0.22	2.783	0.58	0.571	1486.45	57.32	37.53	9.67	27.86	8.33	0.38	57.32	0.38	57.7	1399.78	4.07	1403.85	65.07	56.02	385.65	2.52	9.67E+09	2.79E+10	0.27635	12.67264	79.35	3.76
1540	7223	##########	30.47	20.86	21.79	0	9.26	9.01	0.24	58.19	0	2409.21	866.95	7361.96	14140.11	0.3	0.213	0.22	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.26	0.24	58.19	0.24	58.42	1420.86	2.57	1423.43	60.64	62.27	391.45	1.59	9.01E+09	2.79E+10	0.37901	13.37584	115.12	5.16
1541	7224	##########	29.4	20.7	21.43	0	8.73	9.88	0.31	58.22	0	2381.62	951.03	7406.9	14096.79	0.3	0.213	0.22	2.783	0.58	0.571	1486.45	58.22	37.74	9.88	27.86	8.73	0.31	58.22	0.31	58.53	1421.54	3.41	1424.96	66.47	58.74	391.64	2.12	9.88E+09	2.79E+10	0.31767	12.8679	68.35	4.08
1542	7225	##########	30.16	20.97	20.35	0	9.52	8.87	0.24	58.57	0	2368.01	878.2	7344.14	14081.75	0.3	0.213	0.22	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.52	0.24	58.57	0.24	58.81	1430.19	2.59	1432.79	59.67	64.02	394.03	1.61	8.87E+09	2.79E+10	0.39124	13.72036	129.63	5.4
1543	7231	##########	33.55	17.8	28.38	0	9.59	6.51	0.39	56.3	0	2199.34	841.04	7087.49	15486.42	0.3	0.213	0.22	3.014	0.518	0.521	1486.45	56.3	34.37	6.51	27.86	9.59	0.39	56.3	0.39	56.7	1374.84	4.26	1379.1	43.83	64.52	378.77	2.65	6.51E+09	2.79E+10	0.36584	14.43766	300.87	14.81
1544	7232	##########	29.73	23.21	25.26	0	8.07	9.84	0.5	57.04	0	2353.65	923.47	7331.54	13540.85	0.3	0.213	0.22	3.014	0.518	0.521	1486.45	57.04	37.7	9.84	27.86	8.07	0.5	57.04	0.5	57.53	1392.75	5.37	1398.11	66.21	54.28	383.71	3.33	9.84E+09	2.79E+10	0.22412	12.69701	70.17	3.39
1545	7233	##########	30.25	20.87	22.97	0	8.88	9.25	0.32	57.8	0	2393.97	886.25	7357.18	14678.26	0.3	0.213	0.22	3.014	0.518	0.521	1486.45	57.8	37.11	9.25	27.86	8.88	0.32	57.8	0.32	58.12	1411.4	3.5	1414.9	62.24	59.76	388.85	2.17	9.25E+09	2.79E+10	0.3268	13.09429	102.23	4.78
1546	7234	##########	29.04	22.8	22.44	0	8.44	10.03	0.42	57.85	0	2369.03	961.43	7396.88	13655.38	0.3	0.213	0.22	3.014	0.518	0.521	1486.45	57.85	37.88	10.03	27.86	8.44	0.42	57.85	0.42	58.27	1412.6	4.59	1417.2	67.45	56.75	389.18	2.85	1E+10	2.79E+10	0.26629	12.79783	60.44	3.72
1547	7235	##########	30.04	20.94	21.84	0	9.11	9.09	0.33	58.1	0	2357.19	896.13	7340.82	14724.16	0.3	0.213	0.22	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.11	0.33	58.1	0.33	58.42	1418.64	3.52	1422.17	61.13	61.3	390.84	2.19	9.09E+09	2.79E+10	0.3396	13.40715	115.07	5.03
1548	7266	##########	32.37	18.4	26.07	0	10.12	6.13	0.51	56.81	0	2445.48	592.61	7178.49	15490.6	0.3	0.179	0.184	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.51	56.81	0.51	57.32	1387.27	5.51	1392.78	41.23	68.08	382.2	3.42	6.13E+09	2.79E+10	0.3641	15.2505	350.26	15.31
1549	7267	##########	29.11	23.1	24.9	0	8.19	9.62	0.61	57.03	0	2377.72	903.33	7352.29	14360.29	0.3	0.179	0.184	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.61	57.03	0.61	57.64	1392.57	6.63	1399.2	64.71	55.11	383.66	4.11	9.62E+09	2.79E+10	0.20903	13.18692	82.2	3.89
1550	7268	##########	29.8	20.84	22.55	0	9.1	8.94	0.41	57.83	0	2421.5	860.66	7378.68	14481.25	0.3	0.179	0.184	3.524	0.591	0.591	1486.45	57.83	36.8	8.94	27.86	9.1	0.41	57.83	0.41	58.24	1412.17	4.44	1416.6	60.15	61.2	389.06	2.75	8.94E+09	2.79E+10	0.31639	13.54637	119.2	5.3
1551	7269	##########	28.36	22.66	21.84	0	8.59	9.83	0.53	57.91	0	2394.29	947.66	7426.85	13266.33	0.3	0.179	0.184	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.59	0.53	57.91	0.53	58.44	1414.18	5.75	1419.93	66.16	57.78	389.61	3.57	9.83E+09	2.79E+10	0.25219	13.25899	70.82	4.21
1552	7270	##########	29.42	20.97	20.97	0	9.37	8.8	0.42	58.25	0	2378.73	872.31	7360.72	14895.93	0.3	0.179	0.184	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.37	0.42	58.25	0.42	58.66	1422.31	4.5	1426.81	59.22	63.05	391.85	2.8	8.8E+09	2.79E+10	0.32962	13.90209	134.22	5.52
1553	7321	##########	31.59	18.28	25.66	0	10.08	6.2	0.62	56.82	0	2446.99	607.03	7200.25	15421.22	0.3	0.179	0.184	3.814	0.582	0.571	1486.45	56.82	34.06	6.2	27.86	10.08	0.62	56.82	0.62	57.44	1387.57	6.68	1394.26	41.71	67.81	382.28	4.15	6.2E+09	2.79E+10	0.33465	15.43673	339.14	15.18
1554	7322	##########	28.42	25.14	24.66	0	8.15	9.67	0.72	57	0	2378.38	907.36	7360.59	14950.75	0.3	0.179	0.184	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.72	57	0.72	57.72	1391.86	7.75	1399.62	65.03	54.81	383.47	4.81	9.67E+09	2.79E+10	0.18161	13.44397	79.63	3.76
1555	7323	##########	29.25	22.86	22.37	0	9.04	9.01	0.49	57.81	0	2421.53	866.18	7387.85	14091.64	0.3	0.179	0.184	3.814	0.582	0.571	1486.45	57.81	36.87	9.01	27.86	9.04	0.49	57.81	0.49	58.3	1411.63	5.3	1416.93	60.62	60.82	388.91	3.29	9.01E+09	2.79E+10	0.28988	13.6684	115.31	5.16
1556	7324	##########	27.73	22.71	21.69	0	8.54	9.88	0.63	57.87	0	2395.14	950.2	7433.5	13924.11	0.3	0.179	0.184	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.63	57.87	0.63	58.5	1412.99	6.83	1419.82	66.43	57.42	389.29	4.24	9.88E+09	2.79E+10	0.22479	13.46905	68.61	4.08
1557	7325	##########	28.85	20.97	20.78	0	9.32	8.86	0.5	58.22	0	2377.29	877.47	7368.91	14367.18	0.3	0.179	0.184	3.814	0.582	0.571	1486.45	58.22	36.72	8.86	27.86	9.32	0.5	58.22	0.5	58.72	1421.74	5.41	1427.15	59.63	62.69	391.7	3.36	8.86E+09	2.79E+10	0.30329	14.02707	129.82	5.4
1558	7326	##########	33.42	16.26	25.49	0	10.28	6.21	0.27	57.18	0	2424.4	608.05	7157.38	15359.64	0.3	0.179	0.184	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.27	57.18	0.27	57.45	1396.14	2.97	1399.11	41.81	69.17	384.64	1.84	6.21E+09	2.79E+10	0.43894	14.98517	338.13	15.18
1559	7327	##########	30.35	23.13	24.57	0	8.34	9.67	0.36	57.34	0	2365.65	908.2	7334.83	13996.3	0.3	0.179	0.184	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.34	0.36	57.34	0.36	57.7	1400.1	3.95	1404.05	65.07	56.07	385.73	2.45	9.67E+09	2.79E+10	0.27929	12.64255	79.35	3.76
1560	7328	##########	30.5	20.86	21.76	0	9.27	9.01	0.23	58.2	0	2409.75	866.95	7362.51	14038.27	0.3	0.179	0.184	2.783	0.58	0.571	1486.45	58.2	36.87	9.01	27.86	9.27	0.23	58.2	0.23	58.43	1421.26	2.48	1423.74	60.64	62.34	391.56	1.54	9.01E+09	2.79E+10	0.38169	13.36476	115.12	5.16
1561	7329	##########	29.45	20.7	21.4	0	8.74	9.88	0.31	58.23	0	2382.15	951.03	7407.43	14019.39	0.3	0.179	0.184	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.31	58.23	0.31	58.54	1421.91	3.31	1425.22	66.47	58.8	391.74	2.05	9.88E+09	2.79E+10	0.32053	12.84517	68.35	4.08
1562	7330	##########	30.18	20.97	20.31	0	9.53	8.87	0.23	58.59	0	2368.51	878.2	7344.65	13997.61	0.3	0.179	0.184	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.23	58.59	0.23	58.82	1430.61	2.51	1433.12	59.67	64.09	394.14	1.56	8.87E+09	2.79E+10	0.39387	13.70911	129.63	5.4
1563	7336	##########	33.6	17.8	28.35	0	9.6	6.51	0.38	56.32	0	2199.72	841.04	7087.85	15642.32	0.3	0.179	0.184	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.38	56.32	0.38	56.7	1375.19	4.16	1379.35	43.83	64.58	378.87	2.58	6.51E+09	2.79E+10	0.36833	14.41791	300.87	14.81
1564	7337	##########	29.8	23.21	25.27	0	8.07	9.84	0.48	57.05	0	2354.13	923.47	7332.02	13448.33	0.3	0.179	0.184	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.07	0.48	57.05	0.48	57.53	1393.01	5.23	1398.24	66.21	54.32	383.78	3.25	9.84E+09	2.79E+10	0.22709	12.6584	70.17	3.39
1565	7338	##########	30.28	20.87	22.94	0	8.89	9.25	0.31	57.82	0	2394.49	886.25	7357.71	14844.76	0.3	0.179	0.184	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.89	0.31	57.82	0.31	58.13	1411.77	3.4	1415.18	62.24	59.83	388.95	2.11	9.25E+09	2.79E+10	0.32952	13.07405	102.23	4.78
1566	7339	##########	29.09	22.8	22.43	0	8.44	10.03	0.41	57.86	0	2369.54	961.43	7397.39	13652.26	0.3	0.179	0.184	3.014	0.518	0.521	1486.45	57.86	37.88	10.03	27.86	8.44	0.41	57.86	0.41	58.27	1412.9	4.48	1417.38	67.45	56.8	389.26	2.78	1E+10	2.79E+10	0.26916	12.76573	60.44	3.72
1567	7340	##########	30.08	20.94	21.81	0	9.12	9.09	0.32	58.11	0	2357.67	896.13	7341.31	14604.79	0.3	0.179	0.184	3.014	0.518	0.521	1486.45	58.11	36.94	9.09	27.86	9.12	0.32	58.11	0.32	58.43	1419	3.43	1422.43	61.13	61.37	390.94	2.13	9.09E+09	2.79E+10	0.34226	13.38715	115.07	5.03
1568	7371	##########	32.4	18.4	26.06	0	10.13	6.13	0.5	56.82	0	2445.74	592.61	7178.76	15528.01	0.3	0.157	0.161	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.13	0.5	56.82	0.5	57.32	1387.49	5.44	1392.92	41.23	68.12	382.26	3.37	6.13E+09	2.79E+10	0.36568	15.23549	350.26	15.31
1569	7372	##########	29.15	23.1	24.91	0	8.2	9.62	0.6	57.04	0	2378.04	903.33	7352.62	14307.17	0.3	0.157	0.161	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.6	57.04	0.6	57.64	1392.73	6.53	1399.26	64.71	55.14	383.7	4.06	9.62E+09	2.79E+10	0.21087	13.15949	82.2	3.89
1570	7373	##########	29.82	20.84	22.55	0	9.1	8.94	0.4	57.84	0	2421.85	860.66	7379.04	14517.19	0.3	0.157	0.161	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.4	57.84	0.4	58.24	1412.39	4.36	1416.76	60.15	61.25	389.12	2.71	8.94E+09	2.79E+10	0.31812	13.53028	119.2	5.3
1571	7374	##########	28.39	22.66	21.83	0	8.59	9.83	0.52	57.92	0	2394.63	947.66	7427.2	13282.77	0.3	0.157	0.161	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.52	57.92	0.52	58.44	1414.36	5.67	1420.03	66.16	57.82	389.66	3.52	9.83E+09	2.79E+10	0.254	13.23562	70.82	4.21
1572	7375	##########	29.45	20.97	20.96	0	9.38	8.8	0.41	58.26	0	2379.05	872.31	7361.05	14966.56	0.3	0.157	0.161	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.41	58.26	0.41	58.67	1422.54	4.43	1426.97	59.22	63.09	391.92	2.75	8.8E+09	2.79E+10	0.33133	13.88628	134.22	5.52
1573	7426	##########	31.62	18.28	25.65	0	10.09	6.2	0.61	56.83	0	2447.27	607.03	7200.51	15443.86	0.3	0.157	0.161	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.09	0.61	56.83	0.61	57.44	1387.78	6.6	1394.38	41.71	67.85	382.34	4.1	6.2E+09	2.79E+10	0.33618	15.41923	339.14	15.18
1574	7427	##########	28.47	25.14	24.67	0	8.15	9.67	0.71	57.01	0	2378.7	907.36	7360.91	14910.37	0.3	0.157	0.161	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.71	57.01	0.71	57.71	1392.01	7.65	1399.65	65.03	54.84	383.5	4.75	9.67E+09	2.79E+10	0.1834	13.41418	79.63	3.76
1575	7428	##########	29.28	22.86	22.36	0	9.05	9.01	0.48	57.82	0	2421.87	866.18	7388.21	14068.2	0.3	0.157	0.161	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.48	57.82	0.48	58.3	1411.83	5.23	1417.06	60.62	60.86	388.97	3.25	9.01E+09	2.79E+10	0.29156	13.64959	115.31	5.16
1576	7429	##########	27.77	22.71	21.69	0	8.54	9.88	0.62	57.87	0	2395.49	950.2	7433.85	13882.13	0.3	0.157	0.161	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.62	57.87	0.62	58.49	1413.17	6.74	1419.91	66.43	57.46	389.33	4.18	9.88E+09	2.79E+10	0.22654	13.44324	68.61	4.08
1577	7430	##########	28.89	20.97	20.77	0	9.32	8.86	0.49	58.23	0	2377.61	877.47	7369.22	14333.19	0.3	0.157	0.161	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.49	58.23	0.49	58.72	1421.95	5.33	1427.29	59.63	62.73	391.75	3.31	8.86E+09	2.79E+10	0.30495	14.00851	129.82	5.4
1578	7431	##########	33.44	16.26	25.46	0	10.29	6.21	0.27	57.19	0	2424.71	608.05	7157.69	15285.17	0.3	0.157	0.161	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.46	1396.42	2.91	1399.33	41.81	69.22	384.72	1.81	6.21E+09	2.79E+10	0.44061	14.97916	338.13	15.18
1579	7432	##########	30.38	23.13	24.56	0	8.34	9.67	0.36	57.35	0	2365.98	908.2	7335.16	13982.72	0.3	0.157	0.161	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.36	57.35	0.36	57.7	1400.32	3.87	1404.19	65.07	56.11	385.79	2.41	9.67E+09	2.79E+10	0.28127	12.62273	79.35	3.76
1580	7433	##########	30.51	20.86	21.73	0	9.27	9.01	0.22	58.22	0	2410.11	866.95	7362.88	13983.83	0.3	0.157	0.161	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.27	0.22	58.22	0.22	58.44	1421.54	2.43	1423.97	60.64	62.39	391.64	1.51	9.01E+09	2.79E+10	0.38349	13.35775	115.12	5.16
1581	7434	##########	29.48	20.7	21.38	0	8.75	9.88	0.3	58.24	0	2382.5	951.03	7407.79	13956.41	0.3	0.157	0.161	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.3	58.24	0.3	58.54	1422.16	3.24	1425.4	66.47	58.85	391.81	2.01	9.88E+09	2.79E+10	0.32245	12.83042	68.35	4.08
1582	7435	##########	30.21	20.97	20.28	0	9.53	8.87	0.23	58.6	0	2368.84	878.2	7344.99	13943.25	0.3	0.157	0.161	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.53	0.23	58.6	0.23	58.82	1430.89	2.45	1433.34	59.67	64.14	394.22	1.52	8.87E+09	2.79E+10	0.39564	13.70201	129.63	5.4
1583	7441	##########	33.62	17.8	28.34	0	9.61	6.51	0.38	56.33	0	2199.97	841.04	7088.1	15648.03	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.38	56.33	0.38	56.7	1375.42	4.09	1379.51	43.83	64.63	378.93	2.54	6.51E+09	2.79E+10	0.36999	14.40482	300.87	14.81
1584	7442	##########	29.84	23.21	25.27	0	8.08	9.84	0.47	57.05	0	2354.46	923.47	7332.34	13384.8	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.05	37.7	9.84	27.86	8.08	0.47	57.05	0.47	57.53	1393.2	5.14	1398.34	66.21	54.36	383.83	3.19	9.84E+09	2.79E+10	0.22907	12.63264	70.17	3.39
1585	7443	##########	30.31	20.87	22.92	0	8.9	9.25	0.31	57.83	0	2394.84	886.25	7358.07	14797.87	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.31	57.83	0.31	58.13	1412.01	3.34	1415.35	62.24	59.87	389.02	2.07	9.25E+09	2.79E+10	0.33134	13.06081	102.23	4.78
1586	7444	##########	29.13	22.8	22.42	0	8.45	10.03	0.41	57.87	0	2369.88	961.43	7397.73	13659.6	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.41	57.87	0.41	58.28	1413.13	4.39	1417.53	67.45	56.84	389.32	2.73	1E+10	2.79E+10	0.27107	12.74452	60.44	3.72
1587	7445	##########	30.11	20.94	21.79	0	9.13	9.09	0.31	58.12	0	2358	896.13	7341.64	14543.13	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.31	58.12	0.31	58.43	1419.26	3.36	1422.63	61.13	61.41	391.01	2.09	9.09E+09	2.79E+10	0.34404	13.37412	115.07	5.03
1588	7476	##########	32.32	18.4	26.08	0	10.11	6.13	0.52	56.8	0	2445.1	592.61	7178.15	15446.94	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.52	56.8	0.52	57.32	1386.97	5.62	1392.58	41.23	68.02	382.12	3.49	6.13E+09	2.79E+10	0.362	15.27081	350.26	15.31
1589	7477	##########	29.05	23.1	24.9	0	8.19	9.62	0.62	57.02	0	2377.28	903.33	7351.86	14429.64	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	57.02	37.48	9.62	27.86	8.19	0.62	57.02	0.62	57.64	1392.35	6.75	1399.1	64.71	55.07	383.6	4.19	9.62E+09	2.79E+10	0.20658	13.22377	82.2	3.89
1590	7478	##########	29.76	20.84	22.57	0	9.09	8.94	0.42	57.82	0	2421.04	860.66	7378.2	14441.93	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	57.82	36.8	8.94	27.86	9.09	0.42	57.82	0.42	58.24	1411.88	4.53	1416.41	60.15	61.15	388.98	2.81	8.94E+09	2.79E+10	0.31408	13.56812	119.2	5.3
1591	7479	##########	28.29	22.66	21.84	0	8.58	9.83	0.54	57.9	0	2393.83	947.66	7426.38	13340.34	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	57.9	37.69	9.83	27.86	8.58	0.54	57.9	0.54	58.45	1413.93	5.87	1419.8	66.16	57.73	389.55	3.65	9.83E+09	2.79E+10	0.2498	13.29043	70.82	4.21
1592	7480	##########	29.38	20.97	20.99	0	9.36	8.8	0.42	58.23	0	2378.3	872.31	7360.28	14825.88	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	58.23	36.66	8.8	27.86	9.36	0.42	58.23	0.42	58.66	1421.99	4.6	1426.59	59.22	62.99	391.76	2.85	8.8E+09	2.79E+10	0.32735	13.92378	134.22	5.52
1593	7531	##########	31.53	18.28	25.66	0	10.07	6.2	0.63	56.81	0	2446.66	607.03	7199.94	15442.7	0.3	0.209	0.216	3.814	0.582	0.571	1486.45	56.81	34.06	6.2	27.86	10.07	0.63	56.81	0.63	57.44	1387.29	6.8	1394.09	41.71	67.76	382.21	4.22	6.2E+09	2.79E+10	0.3326	15.46034	339.14	15.18
1594	7532	##########	28.35	25.14	24.65	0	8.14	9.67	0.73	56.99	0	2377.95	907.36	7360.17	14957.04	0.3	0.209	0.216	3.814	0.582	0.571	1486.45	56.99	37.52	9.67	27.86	8.14	0.73	56.99	0.73	57.72	1391.66	7.88	1399.54	65.03	54.77	383.41	4.89	9.67E+09	2.79E+10	0.17922	13.48358	79.63	3.76
1595	7533	##########	29.2	22.86	22.38	0	9.03	9.01	0.5	57.8	0	2421.07	866.18	7387.38	14099.32	0.3	0.209	0.216	3.814	0.582	0.571	1486.45	57.8	36.87	9.01	27.86	9.03	0.5	57.8	0.5	58.3	1411.34	5.41	1416.76	60.62	60.77	388.83	3.36	9.01E+09	2.79E+10	0.28762	13.69389	115.31	5.16
1596	7534	##########	27.66	22.71	21.68	0	8.53	9.88	0.64	57.86	0	2394.69	950.2	7433.05	13999.1	0.3	0.209	0.216	3.814	0.582	0.571	1486.45	57.86	37.73	9.88	27.86	8.53	0.64	57.86	0.64	58.5	1412.78	6.96	1419.74	66.43	57.38	389.23	4.32	9.88E+09	2.79E+10	0.22244	13.50376	68.61	4.08
1597	7535	##########	28.8	20.97	20.79	0	9.31	8.86	0.51	58.21	0	2376.87	877.47	7368.48	14383.89	0.3	0.209	0.216	3.814	0.582	0.571	1486.45	58.21	36.72	8.86	27.86	9.31	0.51	58.21	0.51	58.72	1421.45	5.52	1426.97	59.63	62.64	391.62	3.43	8.86E+09	2.79E+10	0.30108	14.05208	129.82	5.4
1598	7536	##########	33.4	16.26	25.52	0	10.27	6.21	0.28	57.16	0	2424.01	608.05	7157	15489.62	0.3	0.209	0.216	2.783	0.58	0.571	1486.45	57.16	34.07	6.21	27.86	10.27	0.28	57.16	0.28	57.44	1395.74	3.04	1398.78	41.81	69.1	384.53	1.89	6.21E+09	2.79E+10	0.4367	14.99343	338.13	15.18
1599	7537	##########	30.3	23.13	24.58	0	8.33	9.67	0.37	57.33	0	2365.2	908.2	7334.38	14004.63	0.3	0.209	0.216	2.783	0.58	0.571	1486.45	57.33	37.53	9.67	27.86	8.33	0.37	57.33	0.37	57.7	1399.81	4.05	1403.87	65.07	56.02	385.66	2.52	9.67E+09	2.79E+10	0.27666	12.66941	79.35	3.76
1600	7538	##########	30.47	20.86	21.79	0	9.26	9.01	0.24	58.19	0	2409.27	866.95	7362.02	14116.96	0.3	0.209	0.216	2.783	0.58	0.571	1486.45	58.19	36.87	9.01	27.86	9.26	0.24	58.19	0.24	58.43	1420.91	2.55	1423.46	60.64	62.28	391.47	1.59	9.01E+09	2.79E+10	0.37929	13.37464	115.12	5.16
1601	7539	##########	29.41	20.7	21.42	0	8.73	9.88	0.31	58.22	0	2381.68	951.03	7406.95	14088.39	0.3	0.209	0.216	2.783	0.58	0.571	1486.45	58.22	37.74	9.88	27.86	8.73	0.31	58.22	0.31	58.53	1421.58	3.4	1424.98	66.47	58.75	391.65	2.11	9.88E+09	2.79E+10	0.31797	12.86546	68.35	4.08
1602	7540	##########	30.15	20.97	20.34	0	9.52	8.87	0.24	58.57	0	2368.07	878.2	7344.19	14073.19	0.3	0.209	0.216	2.783	0.58	0.571	1486.45	58.57	36.73	8.87	27.86	9.52	0.24	58.57	0.24	58.81	1430.24	2.59	1432.83	59.67	64.03	394.04	1.61	8.87E+09	2.79E+10	0.39152	13.71914	129.63	5.4
1603	7546	##########	33.56	17.8	28.37	0	9.59	6.51	0.39	56.3	0	2199.38	841.04	7087.53	15503.36	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	56.3	34.37	6.51	27.86	9.59	0.39	56.3	0.39	56.7	1374.89	4.25	1379.14	43.83	64.52	378.79	2.64	6.51E+09	2.79E+10	0.3661	14.43553	300.87	14.81
1604	7547	##########	29.74	23.21	25.27	0	8.07	9.84	0.49	57.04	0	2353.7	923.47	7331.6	13531.04	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	57.04	37.7	9.84	27.86	8.07	0.49	57.04	0.49	57.53	1392.77	5.35	1398.12	66.21	54.28	383.71	3.32	9.84E+09	2.79E+10	0.22443	12.69291	70.17	3.39
1605	7548	##########	30.24	20.87	22.96	0	8.88	9.25	0.32	57.8	0	2394.02	886.25	7357.24	14686.07	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	57.8	37.11	9.25	27.86	8.88	0.32	57.8	0.32	58.12	1411.44	3.49	1414.92	62.24	59.77	388.86	2.17	9.25E+09	2.79E+10	0.32709	13.09212	102.23	4.78
1606	7549	##########	29.05	22.8	22.44	0	8.44	10.03	0.42	57.85	0	2369.08	961.43	7396.93	13654.53	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	57.85	37.88	10.03	27.86	8.44	0.42	57.85	0.42	58.27	1412.64	4.58	1417.22	67.45	56.75	389.19	2.84	1E+10	2.79E+10	0.2666	12.79442	60.44	3.72
1607	7550	##########	30.05	20.94	21.84	0	9.11	9.09	0.32	58.1	0	2357.24	896.13	7340.87	14710.75	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	58.1	36.94	9.09	27.86	9.11	0.32	58.1	0.32	58.42	1418.68	3.51	1422.2	61.13	61.31	390.85	2.18	9.09E+09	2.79E+10	0.33988	13.405	115.07	5.03
1608	7581	##########	32.28	18.4	26.09	0	10.11	6.13	0.53	56.79	0	2444.62	592.61	7177.53	15469.91	0.3	0.233	0.241	3.524	0.591	0.591	1486.45	56.79	33.99	6.13	27.86	10.11	0.53	56.79	0.53	57.32	1386.75	5.71	1392.46	41.23	67.98	382.06	3.54	6.13E+09	2.79E+10	0.36082	15.30512	350.26	15.31
1609	7582	##########	28.99	23.1	24.88	0	8.18	9.62	0.63	57.02	0	2379.01	903.33	7354.18	14486.21	0.3	0.233	0.241	3.524	0.591	0.591	1486.45	57.02	37.48	9.62	27.86	8.18	0.63	57.02	0.63	57.65	1392.24	6.87	1399.11	64.71	55.04	383.57	4.26	9.62E+09	2.79E+10	0.20509	13.26939	82.2	3.89
1610	7583	##########	29.71	20.84	22.58	0	9.08	8.94	0.43	57.81	0	2422.73	860.66	7380.47	14338.62	0.3	0.233	0.241	3.524	0.591	0.591	1486.45	57.81	36.8	8.94	27.86	9.08	0.43	57.81	0.43	58.24	1411.67	4.62	1416.28	60.15	61.11	388.92	2.87	8.94E+09	2.79E+10	0.31273	13.60296	119.2	5.3
1611	7584	##########	28.24	22.66	21.83	0	8.58	9.83	0.55	57.9	0	2395.55	947.66	7428.69	13399.88	0.3	0.233	0.241	3.524	0.591	0.591	1486.45	57.9	37.69	9.83	27.86	8.58	0.55	57.9	0.55	58.45	1413.79	5.98	1419.77	66.16	57.7	389.51	3.71	9.83E+09	2.79E+10	0.24835	13.33206	70.82	4.21
1612	7585	##########	29.33	20.97	21	0	9.36	8.8	0.43	58.22	0	2379.92	872.31	7362.47	14718.44	0.3	0.233	0.241	3.524	0.591	0.591	1486.45	58.22	36.66	8.8	27.86	9.36	0.43	58.22	0.43	58.66	1421.77	4.68	1426.45	59.22	62.96	391.7	2.91	8.8E+09	2.79E+10	0.32604	13.95904	134.22	5.52
1613	7636	##########	31.48	18.28	25.66	0	10.07	6.2	0.64	56.8	0	2446.24	607.03	7199.39	15472.03	0.3	0.233	0.241	3.814	0.582	0.571	1486.45	56.8	34.06	6.2	27.86	10.07	0.64	56.8	0.64	57.44	1387.1	6.9	1394	41.71	67.72	382.15	4.29	6.2E+09	2.79E+10	0.33147	15.49684	339.14	15.18
1614	7637	##########	28.28	25.14	24.64	0	8.14	9.67	0.74	56.99	0	2379.67	907.36	7362.48	14967.69	0.3	0.233	0.241	3.814	0.582	0.571	1486.45	56.99	37.52	9.67	27.86	8.14	0.74	56.99	0.74	57.73	1391.53	8	1399.53	65.03	54.75	383.37	4.97	9.67E+09	2.79E+10	0.17778	13.53103	79.63	3.76
1615	7638	##########	29.15	22.86	22.37	0	9.03	9.01	0.51	57.79	0	2422.76	866.18	7389.65	14089.35	0.3	0.233	0.241	3.814	0.582	0.571	1486.45	57.79	36.87	9.01	27.86	9.03	0.51	57.79	0.51	58.3	1411.19	5.51	1416.7	60.62	60.74	388.79	3.42	9.01E+09	2.79E+10	0.28632	13.73101	115.31	5.16
1616	7639	##########	27.6	22.71	21.67	0	8.53	9.88	0.65	57.85	0	2396.4	950.2	7435.34	14075.28	0.3	0.233	0.241	3.814	0.582	0.571	1486.45	57.85	37.73	9.88	27.86	8.53	0.65	57.85	0.65	58.5	1412.63	7.07	1419.7	66.43	57.35	389.19	4.39	9.88E+09	2.79E+10	0.22105	13.54748	68.61	4.08
1617	7640	##########	28.76	22.97	20.79	0	9.31	8.86	0.52	58.2	0	2378.49	877.47	7370.66	14376.6	0.3	0.233	0.241	3.814	0.582	0.571	1486.45	58.2	36.72	8.86	27.86	9.31	0.52	58.2	0.52	58.72	1421.27	5.61	1426.88	59.63	62.6	391.57	3.48	8.86E+09	2.79E+10	0.29981	14.08958	129.82	5.4
1618	7641	##########	33.37	16.26	25.55	0	10.26	6.21	0.29	57.15	0	2423.5	608.05	7156.35	15586.86	0.3	0.233	0.241	2.783	0.58	0.571	1486.45	57.15	34.07	6.21	27.86	10.26	0.29	57.15	0.29	57.43	1395.48	3.1	1398.59	41.81	69.05	384.46	1.93	6.21E+09	2.79E+10	0.43541	15.01904	338.13	15.18
1619	7642	##########	30.26	23.13	24.58	0	8.32	9.67	0.38	57.32	0	2366.95	908.2	7336.73	14066.34	0.3	0.233	0.241	2.783	0.58	0.571	1486.45	57.32	37.53	9.67	27.86	8.32	0.38	57.32	0.38	57.7	1399.65	4.15	1403.79	65.07	55.99	385.61	2.57	9.67E+09	2.79E+10	0.27504	12.70826	79.35	3.76
1620	7643	##########	30.44	20.86	21.81	0	9.25	9.01	0.24	58.18	0	2410.98	866.95	7364.31	14298.98	0.3	0.233	0.241	2.783	0.58	0.571	1486.45	58.18	36.87	9.01	27.86	9.25	0.24	58.18	0.24	58.42	1420.65	2.62	1423.28	60.64	62.23	391.4	1.63	9.01E+09	2.79E+10	0.37789	13.40075	115.12	5.16
1621	7644	##########	29.37	20.7	21.43	0	8.73	9.88	0.32	58.21	0	2383.41	951.03	7409.27	14150.03	0.3	0.233	0.241	2.783	0.58	0.571	1486.45	58.21	37.74	9.88	27.86	8.73	0.32	58.21	0.32	58.53	1421.36	3.49	1424.84	66.47	58.71	391.59	2.16	9.88E+09	2.79E+10	0.31643	12.89942	68.35	4.08
1622	7645	##########	30.13	20.97	20.36	0	9.51	8.87	0.24	58.56	0	2369.71	878.2	7346.41	14135.41	0.3	0.233	0.241	2.783	0.58	0.571	1486.45	58.56	36.73	8.87	27.86	9.51	0.24	58.56	0.24	58.81	1429.98	2.65	1432.63	59.67	63.98	393.97	1.65	8.87E+09	2.79E+10	0.39015	13.74575	129.63	5.4
1623	7651	##########	33.52	17.8	28.38	0	9.58	6.51	0.4	56.3	0	2201.46	841.04	7090.26	15473.06	0.3	0.233	0.241	3.014	0.518	0.521	1486.45	56.3	34.37	6.51	27.86	9.58	0.4	56.3	0.4	56.7	1374.66	4.33	1379	43.83	64.48	378.73	2.69	6.51E+09	2.79E+10	0.36483	14.46832	300.87	14.81
1624	7652	##########	29.68	23.21	25.25	0	8.06	9.84	0.5	57.03	0	2355.46	923.47	7333.95	13598.72	0.3	0.233	0.241	3.014	0.518	0.521	1486.45	57.03	37.7	9.84	27.86	8.06	0.5	57.03	0.5	57.54	1392.66	5.46	1398.12	66.21	54.26	383.69	3.39	9.84E+09	2.79E+10	0.22279	12.73694	70.17	3.39
1625	7653	##########	30.21	20.87	22.97	0	8.88	9.25	0.33	57.79	0	2395.74	886.25	7359.55	14766.59	0.3	0.233	0.241	3.014	0.518	0.521	1486.45	57.79	37.11	9.25	27.86	8.88	0.33	57.79	0.33	58.12	1411.23	3.57	1414.8	62.24	59.73	388.8	2.22	9.25E+09	2.79E+10	0.32565	13.12428	102.23	4.78
1626	7654	##########	28.99	22.8	22.43	0	8.43	10.03	0.43	57.84	0	2370.83	961.43	7399.27	13692.72	0.3	0.233	0.241	3.014	0.518	0.521	1486.45	57.84	37.88	10.03	27.86	8.43	0.43	57.84	0.43	58.28	1412.48	4.68	1417.16	67.45	56.72	389.15	2.91	1E+10	2.79E+10	0.26503	12.83431	60.44	3.72
1627	7655	##########	30.01	20.94	21.85	0	9.11	9.09	0.33	58.09	0	2358.9	896.13	7343.1	14847.05	0.3	0.233	0.241	3.014	0.518	0.521	1486.45	58.09	36.94	9.09	27.86	9.11	0.33	58.09	0.33	58.42	1418.44	3.59	1422.03	61.13	61.27	390.79	2.23	9.09E+09	2.79E+10	0.3385	13.43752	115.07	5.03
1628	7686	##########	32.33	18.4	26.07	0	10.12	6.13	0.52	56.81	0	2444.98	592.61	7177.86	15498.85	0.3	0.196	0.202	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.52	56.81	0.52	57.32	1387.11	5.58	1392.69	41.23	68.05	382.15	3.47	6.13E+09	2.79E+10	0.36326	15.27677	350.26	15.31
1629	7687	##########	29.06	23.1	24.89	0	8.19	9.62	0.62	57.03	0	2379.17	903.33	7354.23	14403	0.3	0.196	0.202	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.62	57.03	0.62	57.64	1392.47	6.71	1399.18	64.71	55.09	383.63	4.17	9.62E+09	2.79E+10	0.20795	13.22127	82.2	3.89



1857	8866	##########	26.26	19.57	18.73	0	10.34	7.29	1.01	58.31	0	2505.66	798.83	7478.06	17174.11	0.3	0.234	0.242	3.644	0.52	0.331	1486.45	58.31	35.15	7.29	27.86	10.34	1.01	58.31	1.01	59.32	1423.93	10.92	1434.85	49.06	69.53	392.3	6.78	7.29E+09	2.79E+10	0.26698	16.5192	227.18	13.09
1858	8871	##########	29.2	15.53	18.2	0	10.71	7.32	0.44	58.96	0	2441.72	840.06	7424.68	16130.42	0.3	0.234	0.242	2.613	0.518	0.331	1486.45	58.96	35.18	7.32	27.86	10.71	0.44	58.96	0.44	59.4	1439.75	4.76	1444.51	49.23	72.07	396.66	2.96	7.32E+09	2.79E+10	0.40147	15.60392	225.49	13.09
1859	8876	##########	29.88	13.53	15.86	0	11.21	7.32	0.18	59.81	0	2445.08	840.06	7425.24	13486.9	0.3	0.234	0.242	1.931	0.517	0.331	1486.45	59.81	35.18	7.32	27.86	11.21	0.18	59.81	0.18	59.99	1460.59	1.92	1462.51	49.23	75.39	402.4	1.19	7.32E+09	2.79E+10	0.51068	15.83219	225.49	13.09
1860	8881	##########	27.53	17.33	17.71	0	10.38	7.8	0.66	58.89	0	2470.47	839.38	7464.62	15742.02	0.3	0.234	0.242	3.014	0.497	0.281	1486.45	58.89	35.65	7.8	27.86	10.38	0.66	58.89	0.66	59.55	1438.13	7.12	1445.25	52.46	69.84	396.21	4.42	7.8E+09	2.79E+10	0.33189	15.68888	188.15	12.34
1861	8886	##########	29.07	15.33	15.03	0	11.02	7.8	0.22	60	0	2474.02	839.38	7464.01	14386.01	0.3	0.234	0.242	2.051	0.496	0.281	1486.45	60	35.65	7.8	27.86	11.02	0.22	60	0.22	60.22	1465.03	2.37	1467.4	52.46	74.16	403.62	1.47	7.8E+09	2.79E+10	0.48131	15.55603	188.15	12.34
1862	8891	##########	29.48	9.47	13.43	0	11.44	7.67	0.06	60.57	0	2417.78	866.44	7401.69	7149.23	0.3	0.234	0.242	1.309	0.5	0.28	1486.45	60.57	35.53	7.67	27.86	11.44	0.06	60.57	0.06	60.62	1478.94	0.61	1479.55	51.61	76.97	407.46	0.38	7.67E+09	2.79E+10	0.5987	16.49119	196.94	12.38
1863	8896	##########	27.52	21.34	19.98	0	10.94	5.87	1.04	57.96	0	2569.14	616.91	7401.03	17303.17	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.96	33.73	5.87	27.86	10.94	1.04	57.96	1.04	58.99	1415.21	11.22	1426.43	39.5	73.59	389.9	6.97	5.87E+09	2.79E+10	0.29804	17.26434	399.64	15.32
1864	8901	##########	30.75	17.31	20.58	0	11.14	5.88	0.49	58.29	0	2549.98	617.91	7359.06	16296.95	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.29	33.74	5.88	27.86	11.14	0.49	58.29	0.49	58.77	1423.28	5.27	1428.55	39.57	74.94	392.12	3.27	5.88E+09	2.79E+10	0.41906	16.29471	398.37	15.32
1865	8906	##########	31.55	15.31	18.39	0	11.61	5.88	0.21	59.11	0	2497.89	688.06	7357.64	14345.28	0.3	0.234	0.242	2.101	0.579	0.571	1486.45	59.11	33.74	5.88	27.86	11.61	0.21	59.11	0.21	59.32	1443.39	2.31	1445.7	39.57	78.1	397.66	1.44	5.88E+09	2.79E+10	0.52344	16.47846	398.37	15.32
1866	8911	##########	30.86	18.72	24.43	0	10.29	6.14	0.67	57.1	0	2450.41	663.13	7261.38	15586.92	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.1	34	6.14	27.86	10.29	0.67	57.1	0.67	57.77	1394.28	7.29	1401.57	41.32	69.23	384.13	4.53	6.14E+09	2.79E+10	0.33768	15.80639	353.98	14.95
1867	8912	##########	28.74	23	24.2	0	8.7	8.85	0.72	57.12	0	2411.12	853.51	7364.3	14835.21	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.12	36.71	8.85	27.86	8.7	0.72	57.12	0.72	57.84	1394.71	7.83	1402.54	59.56	58.52	384.25	4.86	8.85E+09	2.79E+10	0.2288	14.12456	123.43	5.18
1868	8913	##########	29.01	20.85	21.71	0	9.52	8.34	0.56	57.92	0	2450.09	816.33	7388.57	14471.73	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.92	36.2	8.34	27.86	9.52	0.56	57.92	0.56	58.48	1414.26	6.11	1420.37	56.1	64.03	389.63	3.79	8.34E+09	2.79E+10	0.30815	14.47088	155.44	6.3
1869	8914	##########	28.02	22.67	21.44	0	9.06	9.04	0.66	57.91	0	2425.66	891.42	7428.8	13790.4	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.91	36.9	9.04	27.86	9.06	0.66	57.91	0.66	58.56	1414	7.11	1421.1	60.85	60.95	389.56	4.41	9.04E+09	2.79E+10	0.26166	14.19776	113.7	5.39
1870	8915	##########	28.53	21	20.06	0	9.76	8.29	0.57	58.35	0	2411.15	826.2	7370.19	14825.65	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	58.35	36.15	8.29	27.86	9.76	0.57	58.35	0.57	58.92	1424.8	6.19	1430.99	55.77	65.63	392.54	3.84	8.29E+09	2.79E+10	0.31756	14.76634	168.28	6.43
1871	8916	##########	32.51	16.72	21.92	0	10.91	6.14	0.22	58.17	0	2452.51	663.13	7258.65	14391.7	0.3	0.234	0.242	2.051	0.517	0.521	1486.45	58.17	34	6.14	27.86	10.91	0.22	58.17	0.22	58.39	1420.35	2.43	1422.79	41.32	73.4	391.31	1.51	6.14E+09	2.79E+10	0.48644	15.68316	353.98	14.95
1872	8917	##########	30.79	21	22.86	0	9.13	8.85	0.28	57.87	0	2392.13	853.51	7331.66	14806.13	0.3	0.234	0.242	2.051	0.517	0.521	1486.45	57.87	36.71	8.85	27.86	9.13	0.28	57.87	0.28	58.15	1413.06	3	1416.06	59.56	61.42	389.31	1.86	8.85E+09	2.79E+10	0.36386	13.47909	123.43	5.18
1873	8918	##########	30.38	18.85	19.81	0	10.01	8.34	0.2	58.75	0	2432.14	816.33	7357.06	14058.71	0.3	0.234	0.242	2.051	0.517	0.521	1486.45	58.75	36.2	8.34	27.86	10.01	0.2	58.75	0.2	58.95	1434.53	2.17	1436.7	56.1	67.33	395.22	1.34	8.34E+09	2.79E+10	0.43762	14.29563	155.44	6.3
1874	8921	##########	32.58	10.89	19.24	0	11.45	6.08	0.06	59.03	0	2406.64	718.87	7244.3	6923.65	0.3	0.234	0.242	1.309	0.519	0.521	1486.45	59.03	33.94	6.08	27.86	11.45	0.06	59.03	0.06	59.08	1441.35	0.61	1441.96	40.91	77.01	397.1	0.38	6.08E+09	2.79E+10	0.60938	16.77508	363.57	14.97
1875	8926	##########	18.26	24.6	9.99	0	12.08	5.52	2.14	59.62	0	3262.43	312.15	7980.48	17314.39	0.3	0.197	0.203	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.86	23.18	1479.04	37.12	81.28	401.1	14.4	5.52E+09	2.79E+10	0.1947	20.62711	485.48	15.87
1876	8931	##########	18.29	24.6	10	0	12.08	5.52	2.14	59.62	0	3262.43	312.15	7980.36	17309.27	0.3	0.197	0.203	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.85	23.14	1478.99	37.12	81.28	401.09	14.37	5.52E+09	2.79E+10	0.1952	20.61811	485.48	15.87
1877	9031	##########	18.09	24.6	9.92	0	12.07	5.52	2.17	59.61	0	3262.45	312.15	7980.71	17428.68	0.3	0.288	0.301	5.838	0.66	0.66	1486.45	59.61	33.38	5.52	27.86	12.07	2.17	59.61	2.17	61.78	1455.65	23.5	1479.16	37.12	81.22	401.04	14.59	5.52E+09	2.79E+10	0.19258	20.68361	485.48	15.87
1878	9036	##########	18.11	24.6	9.94	0	12.07	5.52	2.17	59.61	0	3262.44	312.15	7980.59	17408.69	0.3	0.288	0.301	5.831	0.66	0.66	1486.45	59.61	33.38	5.52	27.86	12.07	2.17	59.61	2.17	61.78	1455.63	23.46	1479.09	37.12	81.22	401.03	14.57	5.52E+09	2.79E+10	0.19307	20.67467	485.48	15.87
1879	9136	##########	18.21	24.6	9.98	0	12.08	5.52	2.15	59.62	0	3262.35	312.15	7980.43	17346.16	0.3	0.221	0.229	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.15	59.62	2.15	61.76	1455.75	23.27	1479.03	37.12	81.26	401.07	14.45	5.52E+09	2.79E+10	0.194	20.64202	485.48	15.87
1880	9141	##########	18.24	24.6	9.99	0	12.08	5.52	2.14	59.62	0	3262.35	312.15	7980.31	17328.11	0.3	0.221	0.229	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.75	23.22	1478.97	37.12	81.26	401.07	14.42	5.52E+09	2.79E+10	0.1945	20.63302	485.48	15.87
1881	9241	##########	18.28	24.6	9.99	0	12.08	5.52	2.14	59.62	0	3262.46	312.15	7980.49	17307.85	0.3	0.188	0.194	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.89	23.15	1479.04	37.12	81.28	401.1	14.38	5.52E+09	2.79E+10	0.19495	20.62164	485.48	15.87
1882	9246	##########	18.31	24.6	10.01	0	12.08	5.52	2.13	59.62	0	3262.45	312.15	7980.37	17303.68	0.3	0.188	0.194	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.13	59.62	2.13	61.75	1455.89	23.1	1478.99	37.12	81.28	401.1	14.35	5.52E+09	2.79E+10	0.19545	20.61262	485.48	15.87
1883	9346	##########	18.12	24.6	9.93	0	12.08	5.52	2.16	59.61	0	3262.47	312.15	7980.7	17400.73	0.3	0.269	0.28	5.838	0.66	0.66	1486.45	59.61	33.38	5.52	27.86	12.08	2.16	59.61	2.16	61.78	1455.7	23.44	1479.13	37.12	81.24	401.05	14.55	5.52E+09	2.79E+10	0.19306	20.67216	485.48	15.87
1884	9351	##########	18.15	24.6	9.95	0	12.07	5.52	2.16	59.61	0	3262.47	312.15	7980.58	17380.67	0.3	0.269	0.28	5.831	0.66	0.66	1486.45	59.61	33.38	5.52	27.86	12.07	2.16	59.61	2.16	61.77	1455.69	23.38	1479.08	37.12	81.23	401.05	14.52	5.52E+09	2.79E+10	0.19355	20.66312	485.48	15.87
1885	9451	##########	18.28	24.6	10	0	12.08	5.52	2.14	59.62	0	3262.47	312.15	7980.5	17305.67	0.3	0.183	0.188	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.9	23.13	1479.04	37.12	81.29	401.11	14.37	5.52E+09	2.79E+10	0.19509	20.61865	485.48	15.87
1886	9456	##########	18.31	24.6	10.01	0	12.08	5.52	2.13	59.62	0	3262.46	312.15	7980.38	17301.95	0.3	0.183	0.188	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.13	59.62	2.13	61.75	1455.9	23.09	1478.98	37.12	81.29	401.11	14.34	5.52E+09	2.79E+10	0.19558	20.60963	485.48	15.87
1887	9556	##########	18.34	24.6	10.01	0	12.09	5.52	2.13	59.63	0	3262.41	312.15	7980.38	17304.58	0.3	0.16	0.164	5.838	0.66	0.66	1486.45	59.63	33.38	5.52	27.86	12.09	2.13	59.63	2.13	61.75	1455.99	23.05	1479.04	37.12	81.31	401.13	14.31	5.52E+09	2.79E+10	0.19572	20.60413	485.48	15.87
1888	9561	##########	18.37	24.6	10.03	0	12.09	5.52	2.12	59.63	0	3262.51	312.15	7980.39	17371.63	0.3	0.16	0.164	5.831	0.66	0.66	1486.45	59.63	33.38	5.52	27.86	12.09	2.12	59.63	2.12	61.75	1455.98	23	1478.98	37.12	81.3	401.13	14.28	5.52E+09	2.79E+10	0.19621	20.59506	485.48	15.87
1889	9661	##########	18.22	24.6	9.98	0	12.08	5.52	2.15	59.62	0	3262.38	312.15	7980.45	17338.5	0.3	0.215	0.222	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.15	59.62	2.15	61.76	1455.79	23.25	1479.04	37.12	81.26	401.08	14.44	5.52E+09	2.79E+10	0.1942	20.63797	485.48	15.87
1890	9666	##########	18.25	24.6	10	0	12.08	5.52	2.14	59.62	0	3262.37	312.15	7980.33	17322.29	0.3	0.215	0.222	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.77	23.2	1478.97	37.12	81.26	401.07	14.41	5.52E+09	2.79E+10	0.19469	20.62896	485.48	15.87
1891	9766	##########	18.29	24.6	10	0	12.08	5.52	2.13	59.62	0	3262.47	312.15	7980.5	17303.81	0.3	0.181	0.186	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.13	59.62	2.13	61.76	1455.91	23.12	1479.04	37.12	81.29	401.11	14.36	5.52E+09	2.79E+10	0.19516	20.61702	485.48	15.87
1892	9771	##########	18.32	24.6	10.01	0	12.08	5.52	2.13	59.62	0	3262.47	312.15	7980.38	17301.47	0.3	0.181	0.186	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.13	59.62	2.13	61.75	1455.91	23.08	1478.98	37.12	81.29	401.11	14.33	5.52E+09	2.79E+10	0.19565	20.60799	485.48	15.87
1893	9871	##########	18.34	24.6	10.01	0	12.09	5.52	2.13	59.63	0	3262.41	312.15	7980.38	17306.34	0.3	0.158	0.162	5.838	0.66	0.66	1486.45	59.63	33.38	5.52	27.86	12.09	2.13	59.63	2.13	61.75	1456	23.04	1479.04	37.12	81.31	401.13	14.31	5.52E+09	2.79E+10	0.19577	20.60286	485.48	15.87
1894	9876	##########	18.37	24.6	10.03	0	12.09	5.52	2.12	59.63	0	3262.51	312.15	7980.39	17393.44	0.3	0.158	0.162	5.831	0.66	0.66	1486.45	59.63	33.38	5.52	27.86	12.09	2.12	59.63	2.12	61.75	1455.98	23	1478.98	37.12	81.3	401.13	14.28	5.52E+09	2.79E+10	0.19627	20.59379	485.48	15.87
1895	9976	##########	18.23	24.6	9.98	0	12.08	5.52	2.14	59.62	0	3262.39	312.15	7980.46	17334.38	0.3	0.211	0.218	5.838	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.8	23.24	1479.04	37.12	81.27	401.08	14.43	5.52E+09	2.79E+10	0.1943	20.63577	485.48	15.87
1896	9981	##########	18.26	24.6	10	0	12.08	5.52	2.14	59.62	0	3262.39	312.15	7980.34	17319.27	0.3	0.211	0.218	5.831	0.66	0.66	1486.45	59.62	33.38	5.52	27.86	12.08	2.14	59.62	2.14	61.76	1455.8	23.19	1478.98	37.12	81.26	401.08	14.4	5.52E+09	2.79E+10	0.1948	20.62675	485.48	15.87
1897	17651	##########	17.34	24	3.55	0	13.3	5.33	1.93	61.51	0	3320.67	312.15	8272.09	17888.53	0.3	0.234	0.242	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.3	1.93	61.51	1.93	63.45	1502.07	20.94	1523	35.86	89.46	413.83	13	5.33E+09	2.79E+10	0.26543	21.30702	562.16	15.97
1898	17656	##########	17.8	22.72	8.09	0	12.38	5.55	2.1	60.16	0	3305.96	312.15	8043.15	17409.85	0.3	0.234	0.242	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.1	60.16	2.1	62.26	1468.98	22.76	1491.74	37.36	83.28	404.71	14.13	5.55E+09	2.79E+10	0.20489	20.8961	480.68	15.56
1899	17661	##########	24.21	22.64	14.18	0	11.87	5.57	1.31	59.25	0	2886.32	312.15	7640.84	17013.99	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	59.25	33.43	5.57	27.86	11.87	1.31	59.25	1.31	60.56	1446.85	14.17	1461.02	37.5	79.86	398.61	8.8	5.57E+09	2.79E+10	0.29753	18.70595	476.68	15.57
1900	17666	##########	27.4	18.63	13.84	0	12.24	5.58	0.71	59.87	0	2724.25	312.15	7638.33	17021.99	0.3	0.234	0.242	2.733	0.59	0.591	1486.45	59.87	33.43	5.58	27.86	12.24	0.71	59.87	0.71	60.59	1462.04	7.71	1469.75	37.52	82.37	402.8	4.78	5.58E+09	2.79E+10	0.4144	17.81077	476.24	15.57
1901	17671	##########	21.22	20.17	13.05	0	11.1	6.91	1.62	59.27	0	2661.81	765.58	7681.79	14346.49	0.3	0.234	0.242	3.814	0.521	0.331	1486.45	59.27	34.77	6.91	27.86	11.1	1.62	59.27	1.62	60.89	1447.41	17.52	1464.94	46.52	74.65	398.77	10.88	6.91E+09	2.79E+10	0.21018	18.66777	263.96	13.23
1902	17676	##########	26.01	18.11	14.32	0	11.32	6.96	0.82	59.65	0	2574.55	813.66	7597.07	17076.76	0.3	0.234	0.242	2.783	0.518	0.331	1486.45	59.65	34.82	6.96	27.86	11.32	0.82	59.65	0.82	60.47	1456.59	8.86	1465.44	46.83	76.18	401.3	5.5	6.96E+09	2.79E+10	0.34813	17.04065	260.44	13.23
1903	17681	##########	27.83	16.11	12.39	0	11.85	6.96	0.38	60.56	0	2579.03	813.66	7598.48	16136.21	0.3	0.234	0.242	2.101	0.517	0.331	1486.45	60.56	34.82	6.96	27.86	11.85	0.38	60.56	0.38	60.93	1478.7	4.08	1482.78	46.83	79.7	407.39	2.53	6.96E+09	2.79E+10	0.4704	16.71904	260.44	13.23
1904	17686	##########	22.15	20.15	13.85	0	11.03	6.93	1.49	59.17	0	2580.38	812.3	7616.26	14737.9	0.3	0.234	0.242	3.644	0.52	0.331	1486.45	59.17	34.79	6.93	27.86	11.03	1.49	59.17	1.49	60.67	1444.9	16.18	1461.08	46.65	74.23	398.08	10.05	6.93E+09	2.79E+10	0.22607	18.31672	262.47	13.23
1905	17691	##########	26.59	18.11	13.98	0	11.44	6.96	0.69	59.85	0	2575.44	813.66	7597.1	16548.55	0.3	0.234	0.242	2.613	0.518	0.331	1486.45	59.85	34.82	6.96	27.86	11.44	0.69	59.85	0.69	60.54	1461.49	7.51	1468.99	46.83	76.96	402.65	4.66	6.96E+09	2.79E+10	0.37722	16.88907	260.44	13.23
1906	17696	##########	28.04	14.11	11.62	0	12	6.96	0.29	60.84	0	2580.55	813.66	7599.38	15868.22	0.3	0.234	0.242	1.931	0.517	0.331	1486.45	60.84	34.82	6.96	27.86	12	0.29	60.84	0.29	61.13	1485.51	3.18	1488.69	46.83	80.76	409.26	1.97	6.96E+09	2.79E+10	0.50332	16.79085	260.44	13.23
1907	17701	##########	24.41	19.79	13.66	0	11.05	7.44	1.01	59.66	0	2551.13	850.65	7602.97	17310.83	0.3	0.234	0.242	3.014	0.497	0.281	1486.45	59.66	35.3	7.44	27.86	11.05	1.01	59.66	1.01	60.66	1456.75	10.9	1467.64	50.05	74.32	401.34	6.77	7.44E+09	2.79E+10	0.29838	17.17285	217.22	12.49
1908	17706	##########	27.2	15.79	11.16	0	11.77	7.44	0.36	60.9	0	2557.95	850.65	7605.98	16069.01	0.3	0.234	0.242	2.051	0.496	0.281	1486.45	60.9	35.3	7.44	27.86	11.77	0.36	60.9	0.36	61.26	1487.15	3.85	1490.99	50.05	79.19	409.72	2.39	7.44E+09	2.79E+10	0.46959	16.5517	217.22	12.49
1909	17711	##########	28.16	9.97	9.44	0	12.26	7.31	0.09	61.59	0	2493.39	866.18	7519.01	8336.28	0.3	0.234	0.242	1.309	0.5	0.28	1486.45	61.59	35.16	7.31	27.86	12.26	0.09	61.59	0.09	61.69	1504.06	0.98	1505.04	49.16	82.47	414.38	0.61	7.31E+09	2.79E+10	0.60745	17.28055	227.87	12.52
1910	17716	##########	22.74	22.44	13.44	0	11.82	5.63	1.53	59.25	0	3124.23	312.15	7775.02	14460.43	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	59.25	33.48	5.63	27.86	11.82	1.53	59.25	1.53	60.78	1446.81	16.56	1463.38	37.85	79.54	398.6	10.28	5.63E+09	2.79E+10	0.26082	19.17873	461.69	15.44
1911	17721	##########	27.41	20.41	14.82	0	12.03	5.64	0.76	59.57	0	2673.64	312.15	7568.23	17076.76	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.03	0.76	59.57	0.76	60.33	1454.6	8.26	1462.85	37.91	80.95	400.75	5.13	5.64E+09	2.79E+10	0.39627	17.70331	460.16	15.44
1912	17726	##########	29.01	16.41	12.65	0	12.57	5.64	0.35	60.51	0	2708.18	312.15	7604.06	16136.21	0.3	0.234	0.242	2.101	0.579	0.571	1486.45	60.51	33.49	5.64	27.86	12.57	0.35	60.51	0.35	60.86	1477.67	3.77	1481.43	37.91	84.57	407.1	2.34	5.64E+09	2.79E+10	0.51633	17.56921	460.16	15.44
1913	17731	##########	27.44	19.67	19.7	0	11.01	5.86	1.03	58.04	0	2592.65	613.73	7422.57	17310.83	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	58.04	33.72	5.86	27.86	11.01	1.03	58.04	1.03	59.06	1417.21	11.12	1428.34	39.41	74.07	390.45	6.91	5.86E+09	2.79E+10	0.30567	17.31002	408.42	15.08
1914	17736	##########	30.37	17.67	17.37	0	11.71	5.86	0.36	59.25	0	2537.13	684.53	7414.97	16069.01	0.3	0.234	0.242	2.051	0.517	0.521	1486.45	59.25	33.72	5.86	27.86	11.71	0.36	59.25	0.36	59.61	1446.76	3.92	1450.68	39.41	78.79	398.59	2.44	5.86E+09	2.79E+10	0.47606	16.70619	408.42	15.08
1915	17741	##########	30.92	11.88	14.33	0	12.34	5.8	0.09	60.3	0	2539.27	676.39	7396.92	8768.32	0.3	0.234	0.242	1.309	0.519	0.521	1486.45	60.3	33.66	5.8	27.86	12.34	0.09	60.3	0.09	60.39	1472.42	0.97	1473.39	39.05	83.03	405.66	0.6	5.8E+09	2.79E+10	0.62041	17.62598	420.02	15.1
1916	17756	##########	17.37	24	3.56	0	13.3	5.33	1.93	61.51	0	3320.76	312.15	8272.14	17990.92	0.3	0.197	0.203	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.3	1.93	61.51	1.93	63.44	1502.1	20.89	1522.99	35.86	89.47	413.84	12.97	5.33E+09	2.79E+10	0.26584	21.29463	562.16	15.97
1917	17761	##########	17.84	22.72	8.11	0	12.38	5.55	2.1	60.16	0	3305.92	312.15	8043.05	17479.92	0.3	0.197	0.203	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.1	60.16	2.1	62.25	1469.01	22.7	1491.7	37.36	83.28	404.72	14.09	5.55E+09	2.79E+10	0.20528	20.88354	480.68	15.56
1918	17861	##########	17.29	24	3.54	0	13.29	5.33	1.94	61.51	0	3320.48	312.15	8271.92	17765.55	0.3	0.288	0.301	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.29	1.94	61.51	1.94	63.45	1501.96	21.03	1522.99	35.86	89.44	413.8	13.06	5.33E+09	2.79E+10	0.26465	21.32434	562.16	15.97
1919	17866	##########	17.74	22.72	8.07	0	12.38	5.55	2.11	60.15	0	3305.92	312.15	8043.17	17334.64	0.3	0.288	0.301	4.602	0.589	0.591	1486.45	60.15	33.41	5.55	27.86	12.38	2.11	60.15	2.11	62.27	1468.9	22.86	1491.76	37.36	83.26	404.69	14.2	5.55E+09	2.79E+10	0.20414	20.91395	480.68	15.56
1920	17966	##########	17.35	24	3.56	0	13.3	5.33	1.93	61.51	0	3320.65	312.15	8272.02	17917.31	0.3	0.221	0.229	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.3	1.93	61.51	1.93	63.44	1502.04	20.92	1522.96	35.86	89.46	413.82	12.99	5.33E+09	2.79E+10	0.26545	21.30236	562.16	15.97
1921	17971	##########	17.82	22.72	8.1	0	12.38	5.55	2.1	60.16	0	3305.88	312.15	8043.02	17428.86	0.3	0.221	0.229	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.1	60.16	2.1	62.26	1468.96	22.75	1491.71	37.36	83.27	404.71	14.12	5.55E+09	2.79E+10	0.2049	20.89156	480.68	15.56
1922	18071	##########	17.39	24	3.57	0	13.3	5.33	1.92	61.52	0	3320.8	312.15	8272.18	18020.05	0.3	0.188	0.194	4.552	0.66	0.66	1486.45	61.52	33.19	5.33	27.86	13.3	1.92	61.52	1.92	63.44	1502.13	20.85	1522.98	35.86	89.48	413.84	12.95	5.33E+09	2.79E+10	0.26599	21.29176	562.16	15.97
1923	18076	##########	17.85	22.72	8.11	0	12.38	5.55	2.09	60.16	0	3305.93	312.15	8043.06	17503.48	0.3	0.188	0.194	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.09	60.16	2.09	62.25	1469.02	22.68	1491.7	37.36	83.29	404.72	14.08	5.55E+09	2.79E+10	0.20541	20.88057	480.68	15.56
1924	18176	##########	17.31	24	3.54	0	13.3	5.33	1.94	61.51	0	3320.55	312.15	8271.98	17805.52	0.3	0.269	0.28	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.3	1.94	61.51	1.94	63.45	1501.99	20.99	1522.99	35.86	89.44	413.81	13.04	5.33E+09	2.79E+10	0.26492	21.31837	562.16	15.97
1925	18181	##########	17.76	22.72	8.08	0	12.38	5.55	2.11	60.16	0	3305.94	312.15	8043.17	17357.93	0.3	0.269	0.28	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.11	60.16	2.11	62.26	1468.93	22.83	1491.76	37.36	83.26	404.7	14.18	5.55E+09	2.79E+10	0.2044	20.90786	480.68	15.56
1926	18281	##########	17.4	24	3.57	0	13.3	5.33	1.92	61.52	0	3320.82	312.15	8272.2	18037.47	0.3	0.183	0.188	4.552	0.66	0.66	1486.45	61.52	33.19	5.33	27.86	13.3	1.92	61.52	1.92	63.44	1502.13	20.85	1522.97	35.86	89.48	413.84	12.94	5.33E+09	2.79E+10	0.26606	21.2902	562.16	15.97
1927	18286	##########	17.85	22.72	8.11	0	12.38	5.55	2.09	60.16	0	3305.94	312.15	8043.06	17535.02	0.3	0.183	0.188	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.09	60.16	2.09	62.25	1469.03	22.67	1491.7	37.36	83.29	404.72	14.08	5.55E+09	2.79E+10	0.20548	20.87896	480.68	15.56
1928	18386	##########	17.41	24	3.57	0	13.3	5.33	1.92	61.52	0	3320.93	312.15	8272.3	18139.76	0.3	0.16	0.164	4.552	0.66	0.66	1486.45	61.52	33.19	5.33	27.86	13.3	1.92	61.52	1.92	63.44	1502.18	20.81	1522.99	35.86	89.49	413.86	12.92	5.33E+09	2.79E+10	0.26642	21.28261	562.16	15.97
1929	18391	##########	17.88	22.72	8.12	0	12.38	5.55	2.09	60.16	0	3305.96	312.15	8043.07	17626.92	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.09	60.16	2.09	62.25	1469.07	22.63	1491.7	37.36	83.3	404.74	14.05	5.55E+09	2.79E+10	0.20582	20.87107	480.68	15.56
1930	18491	##########	17.35	24	3.56	0	13.3	5.33	1.93	61.51	0	3320.68	312.15	8272.06	17936.62	0.3	0.215	0.222	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.3	1.93	61.51	1.93	63.44	1502.05	20.91	1522.96	35.86	89.46	413.82	12.99	5.33E+09	2.79E+10	0.26556	21.30027	562.16	15.97
1931	18496	##########	17.81	22.72	8.1	0	12.38	5.55	2.1	60.16	0	3305.89	312.15	8043.03	17441.27	0.3	0.215	0.222	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.1	60.16	2.1	62.26	1468.98	22.73	1491.71	37.36	83.28	404.71	14.12	5.55E+09	2.79E+10	0.205	20.88936	480.68	15.56
1932	18596	##########	17.4	24	3.57	0	13.3	5.33	1.92	61.52	0	3320.84	312.15	8272.21	18047.35	0.3	0.181	0.186	4.552	0.66	0.66	1486.45	61.52	33.19	5.33	27.86	13.3	1.92	61.52	1.92	63.44	1502.14	20.84	1522.98	35.86	89.48	413.85	12.94	5.33E+09	2.79E+10	0.2661	21.28935	562.16	15.97
1933	18601	##########	17.85	22.72	8.11	0	12.38	5.55	2.09	60.16	0	3305.94	312.15	8043.06	17550.41	0.3	0.181	0.186	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.09	60.16	2.09	62.25	1469.04	22.67	1491.71	37.36	83.29	404.73	14.08	5.55E+09	2.79E+10	0.20552	20.87807	480.68	15.56
1934	18701	##########	17.41	24	3.57	0	13.3	5.33	1.92	61.52	0	3320.94	312.15	8272.31	18173.42	0.3	0.158	0.162	4.552	0.66	0.66	1486.45	61.52	33.19	5.33	27.86	13.3	1.92	61.52	1.92	63.44	1502.18	20.8	1522.98	35.86	89.49	413.86	12.92	5.33E+09	2.79E+10	0.26645	21.28195	562.16	15.97
1935	18706	##########	17.88	22.72	8.12	0	12.38	5.55	2.09	60.16	0	3305.96	312.15	8043.07	17624.88	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.09	60.16	2.09	62.25	1469.07	22.63	1491.69	37.36	83.3	404.73	14.05	5.55E+09	2.79E+10	0.20585	20.8704	480.68	15.56
1936	18806	##########	17.36	24	3.56	0	13.3	5.33	1.93	61.51	0	3320.69	312.15	8272.07	17947.48	0.3	0.211	0.218	4.552	0.66	0.66	1486.45	61.51	33.19	5.33	27.86	13.3	1.93	61.51	1.93	63.44	1502.06	20.91	1522.96	35.86	89.46	413.82	12.98	5.33E+09	2.79E+10	0.26562	21.29912	562.16	15.97
1937	18811	##########	17.82	22.72	8.1	0	12.38	5.55	2.1	60.16	0	3305.9	312.15	8043.04	17448.74	0.3	0.211	0.218	4.602	0.589	0.591	1486.45	60.16	33.41	5.55	27.86	12.38	2.1	60.16	2.1	62.26	1468.98	22.73	1491.7	37.36	83.28	404.71	14.11	5.55E+09	2.79E+10	0.20506	20.88817	480.68	15.56

ID	seeID	timeStamp	consumpti	comfort	cost	Enduse_H	Enduse_C	Enduse_In	Enduse_H	Total_End	Demand_E	Demand_E	Demand_E
1	1	########	25.25	21.26	19.04	0	10.93	5.78	1.4	57.88	0	2986.71	312.15
2	6	########	25.27	21.26	19.05	0	10.93	5.78	1.4	57.88	0	2986.7	312.15
3	11	########	28.93	19.26	20.5	0	11.01	5.78	0.83	58	0	2973.11	312.15
4	16	########	28.99	20.46	22.83	0	10.42	6.1	0.92	57.3	0	2826.57	312.15
5	17	########	26.6	25.11	23.7	0	8.19	9.61	0.99	57.01	0	2411.88	901.13
6	18	########	27.79	22.85	21.54	0	9.1	8.93	0.71	57.83	0	2654.81	763.7
7	19	########	25.96	24.68	20.69	0	8.58	9.82	0.89	57.9	0	2427.51	945.47
8	20	########	27.23	22.98	19.62	0	9.41	8.79	0.73	58.32	0	2407.45	870.39
9	21	########	32.27	18.4	26	0	10.12	6.13	0.52	56.82	0	2445.79	592.61
10	22	########	29	23.1	24.81	0	8.2	9.62	0.63	57.04	0	2379.38	903.33
11	23	########	29.71	20.84	22.49	0	9.1	8.94	0.42	57.84	0	2423.09	860.66
12	24	########	28.25	22.66	21.75	0	8.59	9.83	0.54	57.93	0	2395.91	947.66
13	25	########	29.33	20.97	20.9	0	9.37	8.8	0.43	58.25	0	2380.28	872.31
14	26	########	33.36	16.39	24.95	0	10.42	6.13	0.26	57.33	0	2394.88	659.53
15	27	########	30.39	23.09	24.42	0	8.39	9.62	0.35	57.39	0	2368.17	903.57
16	28	########	30.52	20.84	21.6	0	9.34	8.94	0.22	58.25	0	2412.57	860.88
17	29	########	29.46	20.66	21.19	0	8.8	9.84	0.3	58.29	0	2385	947.9
18	30	########	30.18	18.97	20.06	0	9.6	8.8	0.23	58.66	0	2370.5	872.52

227	631	########	25.36	21.26	19.08	0	10.94	5.78	1.38	57.88	0	2986.61	312.15	7578.82	17301.16	0.3	0.183	0.188	5.838	0.66	0.66	1486.45	57.88	33.64	5.78	27.86	10.94	1.38	57.88	1.38	59.27	1413.46	15	1428.46	38.87	73.58	389.42	9.31	5.78E+09	2.79E+10	0.24232	18.03421	410.79	15.74
228	636	########	25.38	21.26	19.08	0	10.94	5.78	1.38	57.89	0	2986.6	312.15	7578.71	17411.9	0.3	0.183	0.188	5.831	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.38	57.89	1.38	59.27	1413.47	14.97	1428.44	38.87	73.58	389.42	9.29	5.78E+09	2.79E+10	0.24278	18.02719	410.79	15.74
229	641	########	29.02	19.26	20.51	0	11.02	5.78	0.81	58.02	0	2973.06	312.15	7545.65	16878.44	0.3	0.183	0.188	4.552	0.66	0.66	1486.45	58.02	33.64	5.78	27.86	11.02	0.81	58.02	0.81	58.83	1416.68	8.79	1425.46	38.87	74.16	390.3	5.46	5.78E+09	2.79E+10	0.34057	16.83396	410.79	15.74
230	646	########	29.09	20.46	22.85	0	10.43	6.1	0.9	57.31	0	2826.47	312.15	7347.71	16910.48	0.3	0.183	0.188	4.602	0.589	0.591	1486.45	57.31	33.95	6.1	27.86	10.43	0.9	57.31	0.9	58.21	1399.47	9.79	1409.26	41	70.17	385.56	6.08	6.1E+09	2.79E+10	0.28935	16.42606	352.91	15.3
231	647	########	26.72	25.11	23.76	0	8.2	9.61	0.97	57.01	0	2412.06	901.13	7410.29	14712.35	0.3	0.183	0.188	4.602	0.589	0.591	1486.45	57.01	37.46	9.61	27.86	8.2	0.97	57.01	0.97	57.98	1392.2	10.5	1402.7	64.62	55.15	383.56	6.52	9.61E+09	2.79E+10	0.13329	14.25782	82.93	3.89
232	648	########	27.88	22.85	21.56	0	9.11	8.93	0.69	57.84	0	2654.68	763.7	7520.26	14792.31	0.3	0.183	0.188	4.602	0.589	0.591	1486.45	57.84	36.79	8.93	27.86	9.11	0.69	57.84	0.69	58.54	1412.4	7.52	1419.92	60.08	61.26	389.12	4.67	8.93E+09	2.79E+10	0.24354	14.2711	119.7	5.3
233	649	########	26.08	24.68	20.73	0	8.59	9.82	0.87	57.9	0	2427.77	945.47	7484.49	15472.18	0.3	0.183	0.188	4.602	0.589	0.591	1486.45	57.9	37.68	9.82	27.86	8.59	0.87	57.9	0.87	58.78	1413.86	9.48	1423.34	66.07	57.77	389.53	5.88	9.82E+09	2.79E+10	0.17633	14.21142	71.51	4.2
234	650	########	27.33	22.98	19.64	0	9.42	8.79	0.72	58.33	0	2407.67	870.39	7419.52	14937.22	0.3	0.183	0.188	4.602	0.589	0.591	1486.45	58.33	36.64	8.79	27.86	9.42	0.72	58.33	0.72	59.05	1424.38	7.75	1432.12	59.12	63.37	392.42	4.81	8.79E+09	2.79E+10	0.25733	14.65694	134.71	5.53
235	651	########	32.36	18.4	26	0	10.13	6.13	0.51	56.83	0	2445.88	592.61	7179.02	15555.5	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.73	5.49	1393.22	41.23	68.15	382.33	3.41	6.13E+09	2.79E+10	0.36617	15.27642	350.26	15.31
236	652	########	29.11	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.6	903.33	7354.82	14347.82	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.06	6.59	1399.65	64.71	55.18	383.8	4.09	9.62E+09	2.79E+10	0.21157	13.2037	82.2	3.89
237	653	########	29.78	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2423.37	860.66	7381.19	14553.01	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.67	4.41	1417.09	60.15	61.28	389.2	2.74	8.94E+09	2.79E+10	0.31866	13.57174	119.2	5.3
238	654	########	28.35	22.66	21.77	0	8.6	9.83	0.53	57.93	0	2396.17	947.66	7429.37	13320.77	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53	57.93	0.53	58.46	1414.69	5.72	1420.41	66.16	57.86	389.75	3.55	9.83E+09	2.79E+10	0.25461	13.27892	70.82	4.21
239	655	########	29.41	20.97	20.9	0	9.38	8.8	0.41	58.27	0	2380.51	872.31	7363.13	15005.09	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.41	58.27	0.41	58.68	1422.81	4.48	1427.3	59.22	63.13	391.99	2.78	8.8E+09	2.79E+10	0.33185	13.92795	134.22	5.52
240	661	########	29.24	19.04	22.34	0	9.7	7.69	0.66	57.67	0	2397.2	792.18	7311.04	15151.9	0.3	0.183	0.188	3.814	0.521	0.331	1486.45	57.67	35.55	7.69	27.86	9.7	0.66	57.67	0.66	58.32	1408.18	7.12	1415.29	51.75	65.25	387.96	4.42	7.69E+09	2.79E+10	0.2973	15.02111	193.8	12.93
241	662	########	27.16	25.8	22.87	0	8.04	10.3	0.75	57.44	0	2371.53	964.61	7407.87	14939.49	0.3	0.183	0.188	3.814	0.521	0.331	1486.45	57.44	38.16	10.3	27.86	8.04	0.75	57.44	0.75	58.19	1402.65	8.16	1410.81	69.3	54.08	386.44	5.07	1.03E+10	2.79E+10	0.15839	13.41563	45.38	1.84
242	663	########	27.62	23.29	19.87	0	8.87	9.92	0.52	58.44	0	2414.54	940.83	7451.65	13945.14	0.3	0.183	0.188	3.814	0.521	0.331	1486.45	58.44	37.78	9.92	27.86	8.87	0.52	58.44	0.52	58.97	1427.11	5.66	1432.77	66.76	59.67	393.18	3.51	9.92E+09	2.79E+10	0.2652	13.49413	65.89	3.15
243	664	########	26.72	23.44	20.46	0	8.38	10.42	0.67	58.15	0	2382.72	989.05	7454.14	14143.31	0.3	0.183	0.188	3.814	0.521	0.331	1486.45	58.15	38.28	10.42	27.86	8.38	0.67	58.15	0.67	58.83	1420.05	7.27	1427.32	70.1	56.39	391.23	4.52	1.04E+10	2.79E+10	0.20103	13.40279	39.11	2.19
244	665	########	27.31	23.18	18.48	0	9.11	9.78	0.53	58.81	0	2471.81	913.48	7500.36	14122.27	0.3	0.183	0.188	3.814	0.521	0.331	1486.45	58.81	37.63	9.78	27.86	9.11	0.53	58.81	0.53	59.34	1435.94	5.75	1441.69	65.78	61.3	395.61	3.57	9.78E+09	2.79E+10	0.2788	13.82006	74.17	3.54
245	676	########	29.69	17.02	22.7	0	9.67	7.71	0.6	57.63	0	2388.82	793.2	7296.92	14948.91	0.3	0.183	0.188	3.644	0.52	0.331	1486.45	57.63	35.57	7.71	27.86	9.67	0.6	57.63	0.6	58.22	1407.14	6.46	1413.6	51.86	65.04	387.67	4.01	7.71E+09	2.79E+10	0.31031	14.84251	192.82	12.93
246	706	########	31.58	18.28	25.59	0	10.09	6.2	0.61	56.84	0	2447.46	607.03	7200.84	15495.45	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.46	1388.05	6.66	1394.71	41.71	67.88	382.42	4.13	6.2E+09	2.79E+10	0.33672	15.45983	339.14	15.18
247	707	########	28.42	25.14	24.6	0	8.16	9.67	0.71	57.02	0	2380.25	907.36	7363.1	14932.68	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.38	7.71	1400.09	65.03	54.88	383.61	4.79	9.67E+09	2.79E+10	0.18417	13.45747	79.63	3.76
248	708	########	29.23	22.86	22.3	0	9.05	9.01	0.49	57.83	0	2423.38	866.18	7390.34	14144.88	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.11	5.28	1417.39	60.62	60.9	389.04	3.28	9.01E+09	2.79E+10	0.29215	13.69093	115.31	5.16
249	709	########	27.72	22.71	21.62	0	8.55	9.88	0.63	57.89	0	2397.01	950.2	7436.01	13905.74	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.63	57.89	0.63	58.51	1413.49	6.8	1420.29	66.43	57.5	389.42	4.22	9.88E+09	2.79E+10	0.22721	13.48591	68.61	4.08
250	710	########	28.84	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.07	877.47	7371.3	14415.53	0.3	0.183	0.188	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.21	5.39	1427.59	59.63	62.77	391.82	3.35	8.86E+09	2.79E+10	0.30553	14.05009	129.82	5.4
251	711	########	33.41	16.26	25.42	0	10.29	6.21	0.27	57.19	0	2424.85	608.05	7157.95	15378.82	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.27	57.19	0.27	57.47	1396.62	2.95	1399.58	41.81	69.25	384.78	1.83	6.21E+09	2.79E+10	0.44099	15.01878	338.13	15.18
252	712	########	30.34	23.13	24.49	0	8.35	9.67	0.36	57.36	0	2367.57	908.2	7337.4	14065.14	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.65	3.93	1404.57	65.07	56.15	385.89	2.44	9.67E+09	2.79E+10	0.28182	12.66793	79.35	3.76
253	713	########	30.48	20.86	21.68	0	9.28	9.01	0.23	58.23	0	2411.64	866.95	7365.05	14048.76	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.23	58.23	0.23	58.45	1421.78	2.47	1424.25	60.64	62.42	391.71	1.53	9.01E+09	2.79E+10	0.38394	13.39758	115.12	5.16
254	714	########	29.44	20.7	21.33	0	8.75	9.88	0.3	58.25	0	2384.06	951.03	7409.98	14033.15	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.3	58.25	0.3	58.56	1422.43	3.29	1425.72	66.47	58.88	391.89	2.04	9.88E+09	2.79E+10	0.32293	12.87321	68.35	4.08
255	715	########	30.17	20.97	20.23	0	9.54	8.87	0.23	58.61	0	2370.32	878.2	7347.09	14007.93	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.23	58.61	0.23	58.84	1431.1	2.5	1433.6	59.67	64.17	394.28	1.55	8.87E+09	2.79E+10	0.39608	13.74208	129.63	5.4
256	721	########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2201.85	841.04	7090.66	15667.38	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.71	4.14	1379.85	43.83	64.66	379.01	2.57	6.51E+09	2.79E+10	0.37046	14.44631	300.87	14.81
257	722	########	29.79	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.04	923.47	7334.58	13439.16	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.57	5.2	1398.77	66.21	54.4	383.94	3.23	9.84E+09	2.79E+10	0.22973	12.6786	70.17	3.39
258	723	########	30.27	20.87	22.87	0	8.9	9.25	0.31	57.84	0	2396.38	886.25	7360.26	14883.24	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.9	0.31	57.84	0.31	58.15	1412.27	3.39	1415.65	62.24	59.91	389.09	2.1	9.25E+09	2.79E+10	0.33186	13.10241	102.23	4.78
259	724	########	29.09	22.8	22.36	0	8.46	10.03	0.41	57.88	0	2371.45	961.43	7399.95	13723.9	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.46	0.41	57.88	0.41	58.29	1413.44	4.45	1417.89	67.45	56.88	389.41	2.76	1E+10	2.79E+10	0.27165	12.78907	60.44	3.72
260	725	########	30.07	20.94	21.74	0	9.13	9.09	0.31	58.13	0	2359.5	896.13	7343.76	14638.81	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.45	1419.51	3.41	1422.92	61.13	61.44	391.08	2.12	9.09E+09	2.79E+10	0.34456	13.41603	115.07	5.03
261	736	########	25.41	21.26	19.09	0	10.94	5.78	1.37	57.89	0	2986.64	312.15	7578.78	17541.62	0.3	0.16	0.164	5.838	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.37	57.89	1.37	59.26	1413.59	14.9	1428.49	38.87	73.61	389.45	9.25	5.78E+09	2.79E+10	0.24341	18.0114	410.79	15.74
262	741	########	25.43	21.26	19.1	0	10.94	5.78	1.37	57.89	0	2986.62	312.15	7578.67	17538.58	0.3	0.16	0.164	5.831	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.37	57.89	1.37	59.26	1413.59	14.86	1428.45	38.87	73.61	389.45	9.23	5.78E+09	2.79E+10	0.24387	18.00435	410.79	15.74
263	746	########	29.07	19.26	20.51	0	11.03	5.78	0.8	58.02	0	2973.09	312.15	7545.61	16852.66	0.3	0.16	0.164	4.552	0.66	0.66	1486.45	58.02	33.64	5.78	27.86	11.03	0.8	58.02	0.8	58.83	1416.86	8.7	1425.56	38.87	74.2	390.35	5.4	5.78E+09	2.79E+10	0.34183	16.8135	410.79	15.74
264	751	########	29.14	20.46	22.86	0	10.43	6.1	0.89	57.32	0	2826.47	312.15	7347.63	16884.87	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	57.32	33.95	6.1	27.86	10.43	0.89	57.32	0.89	58.21	1399.61	9.69	1409.31	41	70.2	385.6	6.02	6.1E+09	2.79E+10	0.29058	16.40315	352.91	15.3
265	752	########	26.77	25.11	23.77	0	8.2	9.61	0.96	57.02	0	2412.15	901.13	7410.31	14654.81	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	57.02	37.46	9.61	27.86	8.2	0.96	57.02	0.96	57.98	1392.29	10.4	1402.68	64.62	55.17	383.58	6.46	9.61E+09	2.79E+10	0.13471	14.22436	82.93	3.89
266	753	########	27.92	22.85	21.56	0	9.11	8.93	0.69	57.85	0	2654.64	763.7	7520.12	14732.66	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	57.85	36.79	8.93	27.86	9.11	0.69	57.85	0.69	58.53	1412.55	7.44	1419.98	60.08	61.29	389.16	4.62	8.93E+09	2.79E+10	0.2449	14.24607	119.7	5.3
267	754	########	26.13	24.68	20.75	0	8.59	9.82	0.86	57.9	0	2427.88	945.47	7484.54	15417.67	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	57.9	37.68	9.82	27.86	8.59	0.86	57.9	0.86	58.77	1413.96	9.37	1423.33	66.07	57.79	389.55	5.82	9.82E+09	2.79E+10	0.17773	14.18063	71.51	4.2
268	755	########	27.37	22.98	19.65	0	9.42	8.79	0.71	58.34	0	2407.77	870.39	7419.56	14875.73	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	58.34	36.64	8.79	27.86	9.42	0.71	58.34	0.71	59.04	1424.53	7.66	1432.19	59.12	63.4	392.47	4.76	8.79E+09	2.79E+10	0.25867	14.63208	134.71	5.53
269	756	########	32.39	18.4	26	0	10.14	6.13	0.5	56.84	0	2446.09	592.61	7179.2	15598.21	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	56.84	33.99	6.13	27.86	10.14	0.5	56.84	0.5	57.34	1387.92	5.42	1393.33	41.23	68.19	382.38	3.36	6.13E+09	2.79E+10	0.36756	15.25844	350.26	15.31
270	757	########	29.16	23.1	24.85	0	8.21	9.62	0.6	57.05	0	2379.72	903.33	7354.86	14273.21	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.21	0.6	57.05	0.6	57.65	1393.19	6.5	1399.68	64.71	55.21	383.83	4.03	9.62E+09	2.79E+10	0.21318	13.17412	82.2	3.89
271	758	########	29.81	20.84	22.48	0	9.11	8.94	0.4	57.86	0	2423.51	860.66	7381.27	14576.11	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.86	36.8	8.94	27.86	9.11	0.4	57.86	0.4	58.26	1412.87	4.34	1417.21	60.15	61.32	389.25	2.7	8.94E+09	2.79E+10	0.32018	13.55275	119.2	5.3
272	759	########	28.39	22.66	21.77	0	8.6	9.83	0.52	57.94	0	2396.3	947.66	7429.43	13345.59	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.52	57.94	0.52	58.46	1414.85	5.64	1420.48	66.16	57.89	389.8	3.5	9.83E+09	2.79E+10	0.25618	13.25315	70.82	4.21
273	760	########	29.44	20.97	20.89	0	9.39	8.8	0.41	58.27	0	2380.63	872.31	7363.18	15017.89	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.39	0.41	58.27	0.41	58.68	1422.98	4.41	1427.4	59.22	63.16	392.04	2.74	8.8E+09	2.79E+10	0.33336	13.9093	134.22	5.52
274	766	########	29.28	19.04	22.34	0	9.7	7.69	0.65	57.68	0	2397.37	792.18	7311.18	15128.99	0.3	0.16	0.164	3.814	0.521	0.331	1486.45	57.68	35.55	7.69	27.86	9.7	0.65	57.68	0.65	58.32	1408.34	7.03	1415.38	51.75	65.29	388.01	4.37	7.69E+09	2.79E+10	0.29863	14.99878	193.8	12.93
275	767	########	27.21	25.8	22.89	0	8.04	10.3	0.74	57.44	0	2371.63	964.61	7407.9	14942.73	0.3	0.16	0.164	3.814	0.521	0.331	1486.45	57.44	38.16	10.3	27.86	8.04	0.74	57.44	0.74	58.19	1402.71	8.06	1410.77	69.3	54.1	386.45	5.01	1.03E+10	2.79E+10	0.15996	13.3823	45.38	1.84
276	768	########	27.66	23.29	19.87	0	8.87	9.92	0.51	58.45	0	2414.66	940.83	7451.7	13886.6	0.3	0.16	0.164	3.814	0.521	0.331	1486.45	58.45	37.78	9.92	27.86	8.87	0.51	58.45	0.51	58.96	1427.26	5.58	1432.84	66.76	59.71	393.22	3.46	9.92E+09	2.79E+10	0.26668	13.4707	65.89	3.15
277	769	########	26.77	23.44	20.47	0	8.39	10.42	0.66	58.16	0	2382.84	989.05	7454.19	14104.39	0.3	0.16	0.164	3.814	0.521	0.331	1486.45	58.16	38.28	10.42	27.86	8.39	0.66	58.16	0.66	58.82	1420.16	7.18	1427.34	70.1	56.42	391.26	4.46	1.04E+10	2.79E+10	0.20256	13.37283	39.11	2.19
278	770	########	27.35	23.18	18.48	0	9.12	9.78	0.52	58.81	0	2471.63	913.48	7500.05	14114.24	0.3	0.16	0.164	3.814	0.521	0.331	1486.45	58.81	37.63	9.78	27.86	9.12	0.52	58.81	0.52	59.34	1436.11	5.67	1441.77	65.78	61.34	395.65	3.52	9.78E+09	2.79E+10	0.28025	13.79688	74.17	3.54
279	781	########	29.73	17.02	22.7	0	9.67	7.71	0.59	57.63	0	2389.01	793.2	7297.08	14920.32	0.3	0.16	0.164	3.644	0.52	0.331	1486.45	57.63	35.57	7.71	27.86	9.67	0.59	57.63	0.59	58.22	1407.33	6.38	1413.71	51.86	65.07	387.73	3.96	7.71E+09	2.79E+10	0.31167	14.82107	192.82	12.93
280	811	########	31.62	18.28	25.59	0	10.1	6.2	0.61	56.85	0	2447.66	607.03	7201.01	15483.01	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	56.85	34.06	6.2	27.86	10.1	0.61	56.85	0.61	57.46	1388.2	6.58	1394.78	41.71	67.92	382.46	4.08	6.2E+09	2.79E+10	0.33806	15.43959	339.14	15.18
281	812	########	28.47	25.14	24.61	0	8.16	9.67	0.7	57.03	0	2380.36	907.36	7363.14	14896.05	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.03	37.52	9.67	27.86	8.16	0.7	57.03	0.7	57.73	1392.47	7.61	1400.08	65.03	54.91	383.63	4.73	9.67E+09	2.79E+10	0.18573	13.42608	79.63	3.76
282	813	########	29.27	22.86	22.3	0	9.06	9.01	0.48	57.84	0	2423.51	866.18	7390.41	14100.44	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.84	36.87	9.01	27.86	9.06	0.48	57.84	0.48	58.32	1412.27	5.2	1417.48	60.62	60.93	389.09	3.23	9.01E+09	2.79E+10	0.29362	13.66943	115.31	5.16
283	814	########	27.77	22.71	21.62	0	8.55	9.88	0.62	57.89	0	2397.13	950.2	7436.06	13843.25	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.62	57.89	0.62	58.51	1413.64	6.71	1420.35	66.43	57.52	389.47	4.16	9.88E+09	2.79E+10	0.22874	13.45806	68.61	4.08
284	815	########	28.88	20.97	20.7	0	9.33	8.86	0.49	58.25	0	2379.18	877.47	7371.35	14357.79	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	58.25	36.72	8.86	27.86	9.33	0.49	58.25	0.49	58.74	1422.41	5.31	1427.72	59.63	62.8	391.88	3.3	8.86E+09	2.79E+10	0.30698	14.02883	129.82	5.4
285	816	########	33.42	16.26	25.4	0	10.3	6.21	0.27	57.21	0	2425.08	608.05	7158.16	15288.46	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	57.21	34.07	6.21	27.86	10.3	0.27	57.21	0.27	57.47	1396.87	2.9	1399.77	41.81	69.29	384.84	1.8	6.21E+09	2.79E+10	0.44247	15.00906	338.13	15.18
286	817	########	30.37	23.13	24.49	0	8.35	9.67	0.36	57.37	0	2367.68	908.2	7337.44	14003.81	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	57.37	37.53	9.67	27.86	8.35	0.36	57.37	0.36	57.72	1400.83	3.85	1404.68	65.07	56.19	385.93	2.39	9.67E+09	2.79E+10	0.28356	12.6453	79.35	3.76
287	818	########	30.49	20.86	21.66	0	9.29	9.01	0.22	58.23	0	2411.78	866.95	7365.13	13990.75	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.29	0.22	58.23	0.22	58.46	1422.01	2.42	1424.43	60.64	62.47	391.77	1.5	9.01E+09	2.79E+10	0.38553	13.387	115.12	5.16
288	819	########	29.46	20.7	21.32	0	8.76	9.88	0.3	58.26	0	2384.19	951.03	7410.05	13970.58	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.26	37.74	9.88	27.86	8.76	0.3	58.26	0.3	58.56	1422.63	3.22	1425.85	66.47	58.92	391.94	2	9.88E+09	2.79E+10	0.32463	12.85531	68.35	4.08
289	820	########	30.18	20.97	20.21	0	9.55	8.87	0.23	58.62	0	2370.45	878.2	7347.15	13949.85	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	58.62	36.73	8.87	27.86	9.55	0.23	58.62	0.23	58.84	1431.37	2.44	1433.82	59.67	64.22	394.35	1.52	8.87E+09	2.79E+10	0.39764	13.73137	129.63	5.4
290	826	########	33.61	17.8	28.27	0	9.62	6.51	0.38	56.35	0	2201.85	841.04	7090.57	15674.41	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	56.35	34.37	6.51	27.86	9.62	0.38	56.35	0.38	56.72	1375.92	4.07	1380	43.83	64.7	379.07	2.53	6.51E+09	2.79E+10	0.37193	14.42997	300.87	14.81
291	827	########	29.84	23.21	25.2	0	8.09	9.84	0.47	57.08	0	2356.15	923.47	7334.61	13376.08	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.08	37.7	9.84	27.86	8.09	0.47	57.08	0.47	57.55	1393.71	5.11	1398.81	66.21	54.43	383.97	3.17	9.84E+09	2.79E+10	0.23147	12.65056	70.17	3.39
292	828	########	30.3	20.87	22.86	0	8.91	9.25	0.31	57.84	0	2396.52	886.25	7360.33	14824.9	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.46	3.32	1415.79	62.24	59.94	389.14	2.06	9.25E+09	2.79E+10	0.33346	13.08608	102.23	4.78
293	829	########	29.13	22.8	22.35	0	8.46	10.03	0.4	57.89	0	2371.57	961.43	7400	13729.18	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	57.89	37.88	10.03	27.86	8.46	0.4	57.89	0.4	58.29	1413.61	4.37	1417.98	67.45	56.91	389.46	2.71	1E+10	2.79E+10	0.27334	12.76526	60.44	3.72
294	830	########	30.1	20.94	21.73	0	9.14	9.09	0.31	58.14	0	2359.61	896.13	7343.81	14581.46	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	58.14	36.94	9.09	27.86	9.14	0.31	58.14	0.31	58.45	1419.72	3.35	1423.07	61.13	61.48	391.14	2.08	9.09E+09	2.79E+10	0.34613	13.39976	115.07	5.03
295	841	########	25.28	21.26	19.07	0	10.93	5.78	1.4	57.88	0	2986.52	312.15	7578.81	16850.8	0.3	0.215	0.222	5.838	0.66	0.66	1486.45	57.88	33.64	5.78	27.86	10.93	1.4	57.88	1.4	59.27	1413.27	15.13	1428.41	38.87	73.54	389.36	9.4	5.78E+09	2.79E+10	0.2408	18.0641	410.79	15.74
296	846	########	25.3	21.26	19.07	0	10.93	5.78	1.39	57.88	0	2986.51	312.15	7578.7	16933.52	0.3	0.215	0.222	5.831	0.66	0.66	1486.45	57.88	33.64	5.78	27.86	10.93	1.39	57.88	1.39	59.27	1413.28	15.1	1428.38	38.87	73.54	389.37	9.38	5.78E+09	2.79E+10	0.24126	18.05706	410.79	15.74
297	851	########	28.97	19.26	20.51	0	11.02	5.78	0.82	58.01	0	2972.96	312.15	7545.63	16912.63	0.3	0.215	0.222	4.552	0.66	0.66	1486.45	58.01	33.64	5.78	27.86	11.02	0.82	58.01	0.82	58.83	1416.41	8.91	1425.32	38.87	74.11	390.23	5.53	5.78E+09	2.79E+10	0.33883	16.86092	410.79	15.74
298	856	########	29.03	20.46	22.85	0	10.42	6.1	0.92	57.3	0	2826.42	312.15	7347.76	16943.86	0.3	0.215	0.222	4.602	0.589	0.591	1486.45	57.3	33.95	6.1	27.86	10.42	0.92	57.3	0.92	58.22	1399.25	9.91	1409.17	41	70.12	385.5	6.16	6.1E+09	2.79E+10	0.28763	16.45614	352.91	15.3
299	857	########	26.64	25.11	23.73	0	8.19	9.61	0.98	57.01	0	2411.89	901.13	7410.2	14791.88	0.3	0.215	0.222	4.602	0.589	0.591	1486.45	57.01	37.46	9.61	27.86	8.19	0.98	57.01	0.98	57.99	1392.07	10.64	1402.71	64.62	55.12	383.52	6.61	9.61E+09	2.79E+10	0.13131	14.30217	82.93	3.89
300	858	########	27.82	22.85	21.56	0	9.1	8.93	0.71	57.83	0	2654.69	763.7	7520.38	14868.16	0.3	0.215	0.222	4.602	0.589	0.591	1486.45	57.83	36.79	8.93	27.86	9.1	0.71	57.83	0.71	58.54	1412.16	7.64	1419.8	60.08	61.22	389.06	4.74	8.93E+09	2.79E+10	0.24166	14.3042	119.7	5.3
301	859	########	26.01	24.68	20.72	0	8.58	9.82	0.89	57.89	0	2427.57	945.47	7484.37	15543.54	0.3	0.215	0.222	4.602	0.589	0.591	1486.45	57.89	37.68	9.82	27.86	8.58	0.89	57.89	0.89	58.78	1413.69	9.6	1423.3	66.07	57.73	389.48	5.96	9.82E+09	2.79E+10	0.17437	14.25211	71.51	4.2
302	860	########	27.27	22.98	19.64	0	9.41	8.79	0.73	58.32	0	2407.48	870.39	7419.39	15015.69	0.3	0.215	0.222	4.602	0.589	0.591	1486.45	58.32	36.64	8.79	27.86	9.41	0.73	58.32	0.73	59.05	1424.14	7.87	1432.01	59.12	63.33	392.36	4.88	8.79E+09	2.79E+10	0.25546	14.68966	134.71	5.53
303	861	########	32.31	18.4	26.01	0	10.12	6.13	0.52	56.82	0	2445.58	592.61	7178.73	15546.55	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.44	5.6	1393.04	41.23	68.1	382.25	3.47	6.13E+09	2.79E+10	0.36425	15.29993	350.26	15.31
304	862	########	29.04	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.42	903.33	7354.71	14416.34	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.86	6.72	1399.58	64.71	55.15	383.74	4.17	9.62E+09	2.79E+10	0.20935	13.24269	82.2	3.89
305	863	########	29.74	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.15	860.66	7381.02	14513.6	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.39	4.51	1416.9	60.15	61.23	389.12	2.8	8.94E+09	2.79E+10	0.31655	13.59656	119.2	5.3
306	864	########	28.29	22.66	21.77	0	8.59	9.83	0.54	57.93	0	2395.96	947.66	7429.23	13324.96	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.46	1414.46	5.84	1420.3	66.16	57.81	389.69	3.63	9.83E+09	2.79E+10	0.25242	13.31278	70.82	4.21
307	865	########	29.37	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.32	872.31	7363	14933.31	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.53	4.58	1427.1	59.22	63.08	391.91	2.84	8.8E+09	2.79E+10	0.32977	13.95266	134.22	5.52
308	871	########	29.19	19.04	22.34	0	9.69	7.69	0.67	57.66	0	2396.93	792.18	7310.8	15184.13	0.3	0.215	0.222	3.814	0.521	0.331	1486.45	57.66	35.55	7.69	27.86	9.69	0.67	57.66	0.67	58.33	1407.92	7.23	1415.15	51.75	65.21	387.89	4.49	7.69E+09	2.79E+10	0.29545	15.0504	193.8	12.93
309	872	########	27.09	25.8	22.86	0	8.03	10.3	0.76	57.44	0	2371.36	964.61	7407.79	14988.47	0.3	0.215	0.222	3.814	0.521	0.331	1486.45	57.44	38.16	10.3	27.86	8.03	0.76	57.44	0.76	58.2	1402.48	8.29	1410.77	69.3	54.05	386.39	5.15	1.03E+10	2.79E+10	0.15621	13.45977	45.38	1.84
310	873	########	27.57	23.29	19.87	0	8.86	9.92	0.53	58.43	0	2414.34	940.83	7451.51	13902.26	0.3	0.215	0.222	3.814	0.521	0.331	1486.45	58.43	37.78	9.92	27.86	8.86	0.53	58.43	0.53	58.97	1426.89	5.77	1432.66	66.76	59.63	393.12	3.58	9.92E+09	2.79E+10	0.26314	13.52504	65.89	3.15
311	874	########	26.66	25.44	20.44	0	8.38	10.42	0.68	58.15	0	2382.53	989.05	7454.03	14236.26	0.3	0.215	0.222	3.814	0.521	0.331	1486.45	58.15	38.28	10.42	27.86	8.38	0.68	58.15	0.68	58.83	1419.88	7.4	1427.27	70.1	56.36	391.18	4.59	1.04E+10	2.79E+10	0.19889	13.44231	39.11	2.19
312	875	########	27.26	23.18	18.48	0	9.11	9.78	0.54	58.79	0	2473.01	913.48	7501.55	14053.1	0.3	0.215	0.222	3.814	0.521	0.331	1486.45	58.79	37.63	9.78	27.86	9.11	0.54	58.79	0.54	59.34	1435.68	5.86	1441.54	65.78	61.26	395.54	3.64	9.78E+09	2.79E+10	0.27677	13.85072	74.17	3.54
313	886	########	29.64	17.02	22.71	0	9.66	7.71	0.61	57.62	0	2388.55	793.2	7296.67	14977.55	0.3	0.215	0.222	3.644	0.52	0.331	1486.45	57.62	35.57	7.71	27.86	9.66	0.61	57.62	0.61	58.22	1406.89	6.57	1413.45	51.86	64.99	387.6	4.08	7.71E+09	2.79E+10	0.30842	14.87058	192.82	12.93
314	916	########	31.52	18.28	25.6	0	10.08	6.2	0.63	56.83	0	2447.17	607.03	7200.57	15479.49	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.77	6.78	1394.55	41.71	67.83	382.34	4.21	6.2E+09	2.79E+10	0.33486	15.48643	339.14	15.18
315	917	########	28.34	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2380.07	907.36	7363	15014.1	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.19	7.84	1400.03	65.03	54.85	383.55	4.87	9.67E+09	2.79E+10	0.18201	13.49897	79.63	3.76
316	918	########	29.18	22.86	22.31	0	9.04	9.01	0.5	57.82	0	2423.17	866.18	7390.19	14140.74	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.86	5.39	1417.24	60.62	60.85	388.97	3.35	9.01E+09	2.79E+10	0.2901	13.71921	115.31	5.16
317	919	########	27.65	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2396.81	950.2	7435.87	13998.26	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.29	6.92	1420.21	66.43	57.46	389.37	4.3	9.88E+09	2.79E+10	0.22509	13.5227	68.61	4.08
318	920	########	28.79	20.97	20.72	0	9.32	8.86	0.51	58.23	0	2378.88	877.47	7371.18	14421.05	0.3	0.215	0.222	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.96	5.49	1427.45	59.63	62.72	391.76	3.41	8.86E+09	2.79E+10	0.30351	14.07799	129.82	5.4
319	921	########	33.38	16.26	25.45	0	10.28	6.21	0.28	57.18	0	2424.51	608.05	7157.62	15510.44	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.27	3.03	1399.3	41.81	69.18	384.68	1.88	6.21E+09	2.79E+10	0.43893	15.03088	338.13	15.18
320	922	########	30.29	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.37	908.2	7337.27	14078.57	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.38	4.03	1404.41	65.07	56.11	385.81	2.5	9.67E+09	2.79E+10	0.27941	12.69772	79.35	3.76
321	923	########	30.45	20.86	21.71	0	9.27	9.01	0.23	58.21	0	2411.42	866.95	7364.88	14131.67	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.45	1421.46	2.54	1424.01	60.64	62.36	391.62	1.58	9.01E+09	2.79E+10	0.38173	13.41099	115.12	5.16
322	924	########	29.39	20.7	21.35	0	8.74	9.88	0.31	58.24	0	2383.84	951.03	7409.83	14104.3	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.74	0.31	58.24	0.31	58.55	1422.11	3.38	1425.49	66.47	58.83	391.8	2.1	9.88E+09	2.79E+10	0.32059	12.89668	68.35	4.08
323	925	########	30.14	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2370.12	878.2	7346.95	14085.88	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.77	2.57	1433.35	59.67	64.11	394.18	1.6	8.87E+09	2.79E+10	0.39391	13.75579	129.63	5.4
324	931	########	33.54	17.8	28.3	0	9.6	6.51	0.39	56.33	0	2201.8	841.04	7090.72	15667.91	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.72	1375.42	4.23	1379.65	43.83	64.6	378.93	2.63	6.51E+09	2.79E+10	0.36843	14.4675	300.87	14.81
325	932	########	29.73	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2355.86	923.47	7334.48	13522.39	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.35	5.31	1398.67	66.21	54.36	383.88	3.3	9.84E+09	2.79E+10	0.22733	12.71549	70.17	3.39
326	933	########	30.23	20.87	22.88	0	8.9	9.25	0.32	57.82	0	2396.17	886.25	7360.11	14986.31	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.9	0.32	57.82	0.32	58.14	1411.99	3.47	1415.46	62.24	59.85	389.01	2.16	9.25E+09	2.79E+10	0.32964	13.12377	102.23	4.78
327	934	########	29.03	22.8	22.37	0	8.45	10.03	0.42	57.87	0	2371.25	961.43	7399.82	13729.27	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.16	4.55	1417.71	67.45	56.84	389.33	2.83	1E+10	2.79E+10	0.26932	12.82046	60.44	3.72
328	935	########	30.03	20.94	21.76	0	9.13	9.09	0.32	58.12	0	2359.3	896.13	7343.64	14750.16	0.3	0.215	0.222	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.23	3.5	1422.73	61.13	61.39	391	2.17	9.09E+09	2.79E+10	0.34238	13.43713	115.07	5.03
329	946	########	25.36	21.26	19.08	0	10.94	5.78	1.38	57.89	0	2986.61	312.15	7578.82	17344.38	0.3	0.181	0.186	5.838	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.38	57.89	1.38	59.27	1413.49	14.99	1428.47	38.87	73.58	389.42	9.31	5.78E+09	2.79E+10	0.24245	18.03164	410.79	15.74
330	951	########	25.38	21.26	19.09	0	10.94	5.78	1.38	57.89	0	2986.6	312.15	7578.71	17460.48	0.3	0.181	0.186	5.831	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.38	57.89	1.38	59.27	1413.48	14.95	1428.44	38.87	73.58	389.42	9.29	5.78E+09	2.79E+10	0.24291	18.02462	410.79	15.74
331	956	########	29.03	19.26	20.51	0	11.02	5.78	0.81	58.02	0	2973.06	312.15	7545.65	16875.54	0.3	0.181	0.186	4.552	0.66	0.66	1486.45	58.02	33.64	5.78	27.86	11.02	0.81	58.02	0.81	58.83	1416.7	8.78	1425.48	38.87	74.17	390.31	5.45	5.78E+09	2.79E+10	0.34072	16.83167	410.79	15.74
332	961	########	29.1	20.46	22.86	0	10.43	6.1	0.9	57.31	0	2826.47	312.15	7347.71	16907.6	0.3	0.181	0.186	4.602	0.589	0.591	1486.45	57.31	33.95	6.1	27.86	10.43	0.9	57.31	0.9	58.21	1399.47	9.78	1409.25	41	70.17	385.56	6.07	6.1E+09	2.79E+10	0.28949	16.42351	352.91	15.3
333	962	########	26.72	25.11	23.76	0	8.2	9.61	0.97	57.01	0	2412.07	901.13	7410.29	14706.87	0.3	0.181	0.186	4.602	0.589	0.591	1486.45	57.01	37.46	9.61	27.86	8.2	0.97	57.01	0.97	57.98	1392.21	10.49	1402.7	64.62	55.16	383.56	6.51	9.61E+09	2.79E+10	0.13345	14.25405	82.93	3.89
334	963	########	27.89	22.85	21.56	0	9.11	8.93	0.69	57.84	0	2654.68	763.7	7520.25	14785.61	0.3	0.181	0.186	4.602	0.589	0.591	1486.45	57.84	36.79	8.93	27.86	9.11	0.69	57.84	0.69	58.54	1412.41	7.51	1419.93	60.08	61.27	389.13	4.66	8.93E+09	2.79E+10	0.2437	14.26828	119.7	5.3
335	964	########	26.08	24.68	20.73	0	8.59	9.82	0.87	57.9	0	2427.78	945.47	7484.49	15466.04	0.3	0.181	0.186	4.602	0.589	0.591	1486.45	57.9	37.68	9.82	27.86	8.59	0.87	57.9	0.87	58.78	1413.88	9.47	1423.34	66.07	57.77	389.53	5.88	9.82E+09	2.79E+10	0.17649	14.20798	71.51	4.2
336	965	########	27.33	22.98	19.64	0	9.42	8.79	0.71	58.33	0	2407.68	870.39	7419.52	14930.4	0.3	0.181	0.186	4.602	0.589	0.591	1486.45	58.33	36.64	8.79	27.86	9.42	0.71	58.33	0.71	59.05	1424.4	7.74	1432.14	59.12	63.38	392.43	4.81	8.79E+09	2.79E+10	0.25748	14.65415	134.71	5.53
337	966	########	32.36	18.4	26	0	10.13	6.13	0.51	56.83	0	2445.91	592.61	7179.04	15558.26	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.75	5.48	1393.23	41.23	68.16	382.33	3.4	6.13E+09	2.79E+10	0.36633	15.2744	350.26	15.31
338	967	########	29.11	23.1	24.84	0	8.2	9.62	0.61	57.05	0	2379.62	903.33	7354.83	14341.97	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1393.08	6.58	1399.66	64.71	55.19	383.8	4.09	9.62E+09	2.79E+10	0.21176	13.20039	82.2	3.89
339	968	########	29.78	20.84	22.48	0	9.11	8.94	0.41	57.85	0	2423.39	860.66	7381.2	14556.86	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.69	4.41	1417.1	60.15	61.29	389.2	2.74	8.94E+09	2.79E+10	0.31883	13.56961	119.2	5.3
340	969	########	28.35	22.66	21.76	0	8.6	9.83	0.53	57.94	0	2396.18	947.66	7429.38	13322.67	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.53	57.94	0.53	58.46	1414.71	5.72	1420.42	66.16	57.86	389.76	3.55	9.83E+09	2.79E+10	0.25479	13.27602	70.82	4.21
341	970	########	29.41	20.97	20.9	0	9.38	8.8	0.41	58.27	0	2380.53	872.31	7363.13	15006.3	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	58.27	36.66	8.8	27.86	9.38	0.41	58.27	0.41	58.68	1422.83	4.47	1427.31	59.22	63.13	392	2.78	8.8E+09	2.79E+10	0.33202	13.92585	134.22	5.52
342	976	########	29.25	19.04	22.34	0	9.7	7.69	0.66	57.67	0	2397.22	792.18	7311.05	15149.15	0.3	0.181	0.186	3.814	0.521	0.331	1486.45	57.67	35.55	7.69	27.86	9.7	0.66	57.67	0.66	58.33	1408.2	7.11	1415.31	51.75	65.26	387.97	4.41	7.69E+09	2.79E+10	0.29745	15.01861	193.8	12.93
343	977	########	27.17	25.8	22.87	0	8.04	10.3	0.75	57.44	0	2371.54	964.61	7407.88	14940.05	0.3	0.181	0.186	3.814	0.521	0.331	1486.45	57.44	38.16	10.3	27.86	8.04	0.75	57.44	0.75	58.19	1402.66	8.15	1410.81	69.3	54.08	386.44	5.06	1.03E+10	2.79E+10	0.15857	13.4119	45.38	1.84
344	978	########	27.62	23.29	19.87	0	8.87	9.92	0.52	58.44	0	2414.56	940.83	7451.65	13942.4	0.3	0.181	0.186	3.814	0.521	0.331	1486.45	58.44	37.78	9.92	27.86	8.87	0.52	58.44	0.52	58.97	1427.13	5.65	1432.78	66.76	59.68	393.18	3.51	9.92E+09	2.79E+10	0.26537	13.4915	65.89	3.15
345	979	########	26.73	23.44	20.46	0	8.38	10.42	0.67	58.15	0	2382.73	989.05	7454.15	14139.48	0.3	0.181	0.186	3.814	0.521	0.331	1486.45	58.15	38.28	10.42	27.86	8.38	0.67	58.15	0.67	58.82	1420.06	7.26	1427.32	70.1	56.4	391.23	4.51	1.04E+10	2.79E+10	0.2012	13.39943	39.11	2.19
346	980	########	27.32	23.18	18.48	0	9.11	9.78	0.53	58.81	0	2471.79	913.48	7500.33	14140.79	0.3	0.181	0.186	3.814	0.521	0.331	1486.45	58.81	37.63	9.78	27.86	9.11	0.53	58.81	0.53	59.34	1435.96	5.74	1441.71	65.78	61.31	395.62	3.56	9.78E+09	2.79E+10	0.27896	13.81746	74.17	3.54
347	991	########	29.7	17.02	22.7	0	9.67	7.71	0.6	57.63	0	2388.85	793.2	7296.95	14945.78	0.3	0.181	0.186	3.644	0.52	0.331	1486.45	57.63	35.57	7.71	27.86	9.67	0.6	57.63	0.6	58.22	1407.17	6.45	1413.62	51.86	65.04	387.68	4	7.71E+09	2.79E+10	0.31047	14.84012	192.82	12.93
348	1021	########	31.58	18.28	25.59	0	10.09	6.2	0.61	56.84	0	2447.48	607.03	7200.86	15494.46	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.61	56.84	0.61	57.46	1388.07	6.65	1394.72	41.71	67.89	382.42	4.13	6.2E+09	2.79E+10	0.33688	15.45756	339.14	15.18
349	1022	########	28.42	25.14	24.6	0	8.16	9.67	0.71	57.02	0	2380.27	907.36	7363.11	14929.13	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.71	57.02	0.71	57.73	1392.39	7.7	1400.08	65.03	54.89	383.61	4.78	9.67E+09	2.79E+10	0.18435	13.45395	79.63	3.76
350	1023	########	29.24	22.86	22.3	0	9.05	9.01	0.49	57.83	0	2423.39	866.18	7390.35	14143.44	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.83	36.87	9.01	27.86	9.05	0.49	57.83	0.49	58.32	1412.13	5.27	1417.4	60.62	60.9	389.05	3.27	9.01E+09	2.79E+10	0.29232	13.68852	115.31	5.16
351	1024	########	27.73	22.71	21.62	0	8.55	9.88	0.63	57.89	0	2397.03	950.2	7436.02	13902.04	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.63	57.89	0.63	58.51	1413.51	6.79	1420.3	66.43	57.5	389.43	4.21	9.88E+09	2.79E+10	0.22739	13.48279	68.61	4.08
352	1025	########	28.85	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.08	877.47	7371.31	14413.03	0.3	0.181	0.186	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5	58.24	0.5	58.74	1422.24	5.38	1427.62	59.63	62.77	391.83	3.34	8.86E+09	2.79E+10	0.30569	14.0477	129.82	5.4
353	1026	########	33.41	16.26	25.41	0	10.29	6.21	0.27	57.2	0	2424.88	608.05	7157.97	15370.56	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	57.2	34.07	6.21	27.86	10.29	0.27	57.2	0.27	57.47	1396.65	2.95	1399.6	41.81	69.25	384.78	1.83	6.21E+09	2.79E+10	0.44115	15.0177	338.13	15.18
354	1027	########	30.34	23.13	24.49	0	8.35	9.67	0.36	57.36	0	2367.58	908.2	7337.4	14056.9	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	57.36	37.53	9.67	27.86	8.35	0.36	57.36	0.36	57.72	1400.67	3.92	1404.59	65.07	56.16	385.89	2.43	9.67E+09	2.79E+10	0.28202	12.66538	79.35	3.76
355	1028	########	30.48	20.86	21.68	0	9.28	9.01	0.23	58.23	0	2411.66	866.95	7365.06	14041.94	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.23	36.87	9.01	27.86	9.28	0.23	58.23	0.23	58.45	1421.8	2.46	1424.27	60.64	62.43	391.71	1.53	9.01E+09	2.79E+10	0.38412	13.3964	115.12	5.16
356	1029	########	29.43	20.7	21.33	0	8.75	9.88	0.3	58.25	0	2384.07	951.03	7409.99	14027.36	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.3	58.25	0.3	58.56	1422.45	3.28	1425.73	66.47	58.89	391.89	2.04	9.88E+09	2.79E+10	0.32313	12.8712	68.35	4.08
357	1030	########	30.16	20.97	20.23	0	9.54	8.87	0.23	58.61	0	2370.34	878.2	7347.1	14001.17	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	58.61	36.73	8.87	27.86	9.54	0.23	58.61	0.23	58.84	1431.14	2.49	1433.63	59.67	64.18	394.28	1.55	8.87E+09	2.79E+10	0.39626	13.74095	129.63	5.4
358	1036	########	33.58	17.8	28.28	0	9.61	6.51	0.38	56.34	0	2201.85	841.04	7090.65	15667.71	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	56.34	34.37	6.51	27.86	9.61	0.38	56.34	0.38	56.72	1375.73	4.14	1379.87	43.83	64.66	379.02	2.57	6.51E+09	2.79E+10	0.37063	14.44449	300.87	14.81
359	1037	########	29.8	23.21	25.19	0	8.09	9.84	0.48	57.07	0	2356.05	923.47	7334.59	13432.12	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.09	0.48	57.07	0.48	57.55	1393.59	5.19	1398.78	66.21	54.4	383.94	3.22	9.84E+09	2.79E+10	0.22993	12.67545	70.17	3.39
360	1038	########	30.27	20.87	22.87	0	8.91	9.25	0.31	57.84	0	2396.4	886.25	7360.27	14876.78	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.29	3.38	1415.67	62.24	59.91	389.09	2.1	9.25E+09	2.79E+10	0.33204	13.10058	102.23	4.78
361	1039	########	29.09	22.8	22.36	0	8.46	10.03	0.41	57.88	0	2371.47	961.43	7399.95	13724.06	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.46	0.41	57.88	0.41	58.29	1413.46	4.44	1417.9	67.45	56.88	389.41	2.76	1E+10	2.79E+10	0.27185	12.78641	60.44	3.72
362	1040	########	30.08	20.94	21.74	0	9.13	9.09	0.31	58.13	0	2359.51	896.13	7343.77	14630.22	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.31	58.13	0.31	58.45	1419.54	3.4	1422.94	61.13	61.44	391.09	2.11	9.09E+09	2.79E+10	0.34474	13.41421	115.07	5.03
363	1051	########	25.42	21.26	19.09	0	10.94	5.78	1.37	57.89	0	2986.64	312.15	7578.77	17539.87	0.3	0.158	0.162	5.838	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.37	57.89	1.37	59.26	1413.61	14.89	1428.49	38.87	73.61	389.45	9.24	5.78E+09	2.79E+10	0.2435	18.00941	410.79	15.74
364	1056	########	25.44	21.26	19.1	0	10.94	5.78	1.37	57.89	0	2986.62	312.15	7578.66	17536.83	0.3	0.158	0.162	5.831	0.66	0.66	1486.45	57.89	33.64	5.78	27.86	10.94	1.37	57.89	1.37	59.26	1413.6	14.85	1428.45	38.87	73.61	389.45	9.22	5.78E+09	2.79E+10	0.24396	18.00229	410.79	15.74
365	1061	########	29.07	19.26	20.51	0	11.03	5.78	0.8	58.02	0	2973.09	312.15	7545.61	16850.41	0.3	0.158	0.162	4.552	0.66	0.66	1486.45	58.02	33.64	5.78	27.86	11.03	0.8	58.02	0.8	58.83	1416.87	8.69	1425.56	38.87	74.2	390.35	5.4	5.78E+09	2.79E+10	0.34194	16.81171	410.79	15.74
366	1066	########	29.15	20.46	22.86	0	10.44	6.1	0.89	57.32	0	2826.47	312.15	7347.62	16882.65	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	57.32	33.95	6.1	27.86	10.44	0.89	57.32	0.89	58.21	1399.62	9.69	1409.3	41	70.2	385.6	6.01	6.1E+09	2.79E+10	0.29069	16.40116	352.91	15.3
367	1067	########	26.78	25.11	23.78	0	8.2	9.61	0.96	57.02	0	2412.16	901.13	7410.31	14649.79	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	57.02	37.46	9.61	27.86	8.2	0.96	57.02	0.96	57.98	1392.29	10.39	1402.68	64.62	55.17	383.58	6.45	9.61E+09	2.79E+10	0.13483	14.22147	82.93	3.89
368	1068	########	27.93	22.85	21.57	0	9.11	8.93	0.69	57.85	0	2654.64	763.7	7520.1	14727.49	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	57.85	36.79	8.93	27.86	9.11	0.69	57.85	0.69	58.53	1412.56	7.43	1419.99	60.08	61.3	389.17	4.61	8.93E+09	2.79E+10	0.24502	14.24388	119.7	5.3
369	1069	########	26.14	24.68	20.75	0	8.59	9.82	0.86	57.9	0	2427.89	945.47	7484.54	15412.63	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	57.9	37.68	9.82	27.86	8.59	0.86	57.9	0.86	58.77	1413.96	9.36	1423.32	66.07	57.79	389.55	5.81	9.82E+09	2.79E+10	0.17785	14.17798	71.51	4.2
370	1070	########	27.38	22.98	19.65	0	9.43	8.79	0.71	58.34	0	2407.78	870.39	7419.56	14870.3	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	58.34	36.64	8.79	27.86	9.43	0.71	58.34	0.71	59.04	1424.55	7.65	1432.2	59.12	63.41	392.47	4.75	8.79E+09	2.79E+10	0.25878	14.62993	134.71	5.53
371	1071	########	32.39	18.4	26	0	10.14	6.13	0.5	56.84	0	2446.11	592.61	7179.22	15609.06	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	56.84	33.99	6.13	27.86	10.14	0.5	56.84	0.5	57.34	1387.94	5.41	1393.35	41.23	68.19	382.38	3.36	6.13E+09	2.79E+10	0.36767	15.25687	350.26	15.31
372	1072	########	29.16	23.1	24.85	0	8.21	9.62	0.6	57.05	0	2379.73	903.33	7354.87	14268.7	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.21	0.6	57.05	0.6	57.65	1393.19	6.49	1399.68	64.71	55.21	383.83	4.03	9.62E+09	2.79E+10	0.21332	13.17157	82.2	3.89
373	1073	########	29.82	20.84	22.47	0	9.12	8.94	0.4	57.86	0	2423.52	860.66	7381.27	14577.08	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.86	36.8	8.94	27.86	9.12	0.4	57.86	0.4	58.26	1412.89	4.34	1417.22	60.15	61.32	389.26	2.69	8.94E+09	2.79E+10	0.32031	13.55111	119.2	5.3
374	1074	########	28.39	22.66	21.77	0	8.6	9.83	0.52	57.94	0	2396.31	947.66	7429.43	13347.74	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.94	37.69	9.83	27.86	8.6	0.52	57.94	0.52	58.46	1414.86	5.63	1420.49	66.16	57.89	389.8	3.5	9.83E+09	2.79E+10	0.25632	13.25091	70.82	4.21
375	1075	########	29.44	20.97	20.89	0	9.39	8.8	0.41	58.28	0	2380.64	872.31	7363.19	15017.87	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	58.28	36.66	8.8	27.86	9.39	0.41	58.28	0.41	58.68	1423	4.41	1427.4	59.22	63.16	392.04	2.74	8.8E+09	2.79E+10	0.33348	13.90764	134.22	5.52
376	1081	########	29.29	19.04	22.34	0	9.7	7.69	0.65	57.68	0	2397.39	792.18	7311.19	15126.05	0.3	0.158	0.162	3.814	0.521	0.331	1486.45	57.68	35.55	7.69	27.86	9.7	0.65	57.68	0.65	58.32	1408.36	7.02	1415.38	51.75	65.29	388.01	4.36	7.69E+09	2.79E+10	0.29874	14.99683	193.8	12.93
377	1082	########	27.22	25.8	22.89	0	8.04	10.3	0.74	57.44	0	2371.63	964.61	7407.9	14942.79	0.3	0.158	0.162	3.814	0.521	0.331	1486.45	57.44	38.16	10.3	27.86	8.04	0.74	57.44	0.74	58.19	1402.73	8.05	1410.78	69.3	54.1	386.46	5	1.03E+10	2.79E+10	0.16009	13.37942	45.38	1.84
378	1083	########	27.66	23.29	19.87	0	8.88	9.92	0.51	58.45	0	2414.67	940.83	7451.71	13886.9	0.3	0.158	0.162	3.814	0.521	0.331	1486.45	58.45	37.78	9.92	27.86	8.88	0.51	58.45	0.51	58.96	1427.27	5.57	1432.84	66.76	59.71	393.22	3.46	9.92E+09	2.79E+10	0.26681	13.46866	65.89	3.15
379	1084	########	26.78	23.44	20.47	0	8.39	10.42	0.66	58.16	0	2382.85	989.05	7454.2	14100.73	0.3	0.158	0.162	3.814	0.521	0.331	1486.45	58.16	38.28	10.42	27.86	8.39	0.66	58.16	0.66	58.82	1420.17	7.17	1427.34	70.1	56.42	391.26	4.45	1.04E+10	2.79E+10	0.20269	13.37024	39.11	2.19
380	1085	########	27.35	23.18	18.48	0	9.12	9.78	0.52	58.81	0	2471.61	913.48	7500.02	14115.18	0.3	0.158	0.162	3.814	0.521	0.331	1486.45	58.81	37.63	9.78	27.86	9.12	0.52	58.81	0.52	59.34	1436.12	5.66	1441.78	65.78	61.34	395.66	3.52	9.78E+09	2.79E+10	0.28037	13.79485	74.17	3.54
381	1096	########	29.74	17.02	22.7	0	9.67	7.71	0.59	57.63	0	2389.03	793.2	7297.09	14917.95	0.3	0.158	0.162	3.644	0.52	0.331	1486.45	57.63	35.57	7.71	27.86	9.67	0.59	57.63	0.59	58.22	1407.34	6.37	1413.71	51.86	65.07	387.73	3.95	7.71E+09	2.79E+10	0.31178	14.81921	192.82	12.93
382	1126	########	31.62	18.28	25.59	0	10.1	6.2	0.61	56.85	0	2447.67	607.03	7201.02	15481.6	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	56.85	34.06	6.2	27.86	10.1	0.61	56.85	0.61	57.46	1388.22	6.57	1394.8	41.71	67.92	382.46	4.08	6.2E+09	2.79E+10	0.33818	15.43783	339.14	15.18
383	1127	########	28.48	25.14	24.62	0	8.16	9.67	0.7	57.03	0	2380.37	907.36	7363.14	14892.6	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.03	37.52	9.67	27.86	8.16	0.7	57.03	0.7	57.73	1392.47	7.6	1400.08	65.03	54.91	383.63	4.72	9.67E+09	2.79E+10	0.18586	13.42336	79.63	3.76
384	1128	########	29.27	22.86	22.3	0	9.06	9.01	0.48	57.84	0	2423.52	866.18	7390.42	14103.81	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.84	36.87	9.01	27.86	9.06	0.48	57.84	0.48	58.32	1412.28	5.2	1417.48	60.62	60.93	389.09	3.23	9.01E+09	2.79E+10	0.29375	13.66757	115.31	5.16
385	1129	########	27.77	22.71	21.62	0	8.55	9.88	0.62	57.89	0	2397.14	950.2	7436.06	13839.7	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	57.89	37.73	9.88	27.86	8.55	0.62	57.89	0.62	58.51	1413.65	6.7	1420.35	66.43	57.53	389.47	4.16	9.88E+09	2.79E+10	0.22887	13.45566	68.61	4.08
386	1130	########	28.89	20.97	20.7	0	9.34	8.86	0.49	58.25	0	2379.18	877.47	7371.35	14358.47	0.3	0.158	0.162	3.814	0.582	0.571	1486.45	58.25	36.72	8.86	27.86	9.34	0.49	58.25	0.49	58.74	1422.43	5.3	1427.73	59.63	62.8	391.89	3.29	8.86E+09	2.79E+10	0.3071	14.02698	129.82	5.4
387	1131	########	33.42	16.26	25.39	0	10.3	6.21	0.27	57.21	0	2425.1	608.05	7158.18	15276.31	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	57.21	34.07	6.21	27.86	10.3	0.27	57.21	0.27	57.47	1396.9	2.9	1399.8	41.81	69.29	384.85	1.8	6.21E+09	2.79E+10	0.44259	15.00819	338.13	15.18
388	1132	########	30.37	23.13	24.49	0	8.35	9.67	0.35	57.37	0	2367.69	908.2	7337.44	13999.89	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	57.37	37.53	9.67	27.86	8.35	0.35	57.37	0.35	57.72	1400.85	3.85	1404.69	65.07	56.19	385.94	2.39	9.67E+09	2.79E+10	0.2837	12.64333	79.35	3.76
389	1133	########	30.49	20.86	21.66	0	9.29	9.01	0.22	58.24	0	2411.8	866.95	7365.14	13985.92	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.24	36.87	9.01	27.86	9.29	0.22	58.24	0.22	58.46	1422.03	2.41	1424.44	60.64	62.47	391.78	1.5	9.01E+09	2.79E+10	0.38566	13.38608	115.12	5.16
390	1134	########	29.46	20.7	21.31	0	8.76	9.88	0.3	58.26	0	2384.2	951.03	7410.06	13964.77	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.26	37.74	9.88	27.86	8.76	0.3	58.26	0.3	58.56	1422.66	3.22	1425.88	66.47	58.92	391.95	2	9.88E+09	2.79E+10	0.32477	12.85375	68.35	4.08
391	1135	########	30.19	20.97	20.21	0	9.55	8.87	0.23	58.62	0	2370.46	878.2	7347.16	13945.02	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	58.62	36.73	8.87	27.86	9.55	0.23	58.62	0.23	58.84	1431.39	2.44	1433.83	59.67	64.22	394.36	1.51	8.87E+09	2.79E+10	0.39777	13.73042	129.63	5.4
392	1141	########	33.61	17.8	28.26	0	9.62	6.51	0.38	56.35	0	2201.85	841.04	7090.56	15675.33	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	56.35	34.37	6.51	27.86	9.62	0.38	56.35	0.38	56.72	1375.94	4.07	1380.01	43.83	64.7	379.08	2.53	6.51E+09	2.79E+10	0.37205	14.42854	300.87	14.81
393	1142	########	29.84	23.21	25.2	0	8.09	9.84	0.47	57.08	0	2356.15	923.47	7334.61	13370.43	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.08	37.7	9.84	27.86	8.09	0.47	57.08	0.47	57.55	1393.72	5.1	1398.82	66.21	54.43	383.98	3.17	9.84E+09	2.79E+10	0.23162	12.64813	70.17	3.39
394	1143	########	30.29	20.87	22.85	0	8.91	9.25	0.31	57.84	0	2396.53	886.25	7360.33	14816.45	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.84	37.11	9.25	27.86	8.91	0.31	57.84	0.31	58.15	1412.49	3.32	1415.81	62.24	59.95	389.15	2.06	9.25E+09	2.79E+10	0.3336	13.08464	102.23	4.78
395	1144	########	29.12	22.8	22.36	0	8.46	10.03	0.4	57.89	0	2371.58	961.43	7400	13730.24	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.89	37.88	10.03	27.86	8.46	0.4	57.89	0.4	58.29	1413.62	4.36	1417.98	67.45	56.92	389.46	2.71	1E+10	2.79E+10	0.27348	12.76319	60.44	3.72
396	1145	########	30.1	20.94	21.73	0	9.14	9.09	0.31	58.14	0	2359.62	896.13	7343.81	14584.39	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	58.14	36.94	9.09	27.86	9.14	0.31	58.14	0.31	58.45	1419.74	3.34	1423.08	61.13	61.48	391.15	2.08	9.09E+09	2.79E+10	0.34626	13.39834	115.07	5.03
397	1156	########	25.29	21.26	19.07	0	10.93	5.78	1.4	57.88	0	2986.54	312.15	7578.82	16898.04	0.3	0.211	0.218	5.838	0.66	0.66	1486.45	57.88	33.64	5.78	27.86	10.93	1.4	57.88	1.4	59.27	1413.29	15.12	1428.41	38.87	73.54	389.37	9.39	5.78E+09	2.79E+10	0.24098	18.06067	410.79	15.74
398	1161	########	25.31	21.26	19.08	0	10.93	5.78	1.39	57.88	0	2986.53	312.15	7578.71	16982.91	0.3	0.211	0.218	5.831	0.66	0.66	1486.45	57.88	33.64	5.78	27.86	10.93	1.39	57.88	1.39	59.27	1413.3	15.08	1428.38	38.87	73.54	389.37	9.37	5.78E+09	2.79E+10	0.24144	18.05362	410.79	15.74
399	1166	########	28.97	19.26	20.51	0	11.02	5.78	0.82	58.01	0	2972.97	312.15	7545.63	16908.82	0.3	0.211	0.218	4.552	0.66	0.66	1486.45	58.01	33.64	5.78	27.86	11.02	0.82	58.01	0.82	58.83	1416.45	8.89	1425.34	38.87	74.12	390.24	5.52	5.78E+09	2.79E+10	0.33903	16.85787	410.79	15.74
400	1171	########	29.03	20.46	22.85	0	10.42	6.1	0.91	57.3	0	2826.43	312.15	7347.76	16940.05	0.3	0.211	0.218	4.602	0.589	0.591	1486.45	57.3	33.95	6.1	27.86	10.42	0.91	57.3	0.91	58.22	1399.27	9.9	1409.17	41	70.13	385.51	6.15	6.1E+09	2.79E+10	0.28783	16.4527	352.91	15.3
401	1172	########	26.64	25.11	23.74	0	8.19	9.61	0.98	57.01	0	2411.91	901.13	7410.22	14782.82	0.3	0.211	0.218	4.602	0.589	0.591	1486.45	57.01	37.46	9.61	27.86	8.19	0.98	57.01	0.98	57.99	1392.09	10.62	1402.71	64.62	55.13	383.53	6.6	9.61E+09	2.79E+10	0.13154	14.29711	82.93	3.89
402	1173	########	27.82	22.85	21.56	0	9.1	8.93	0.7	57.83	0	2654.69	763.7	7520.37	14860.03	0.3	0.211	0.218	4.602	0.589	0.591	1486.45	57.83	36.79	8.93	27.86	9.1	0.7	57.83	0.7	58.54	1412.2	7.63	1419.83	60.08	61.23	389.07	4.74	8.93E+09	2.79E+10	0.24188	14.30043	119.7	5.3
403	1174	########	26.02	24.68	20.72	0	8.58	9.82	0.88	57.9	0	2427.6	945.47	7484.38	15535.49	0.3	0.211	0.218	4.602	0.589	0.591	1486.45	57.9	37.68	9.82	27.86	8.58	0.88	57.9	0.88	58.78	1413.72	9.59	1423.31	66.07	57.74	389.49	5.95	9.82E+09	2.79E+10	0.1746	14.24745	71.51	4.2
404	1175	########	27.27	22.98	19.64	0	9.41	8.79	0.72	58.32	0	2407.51	870.39	7419.41	15006.99	0.3	0.211	0.218	4.602	0.589	0.591	1486.45	58.32	36.64	8.79	27.86	9.41	0.72	58.32	0.72	59.05	1424.16	7.85	1432.02	59.12	63.34	392.36	4.88	8.79E+09	2.79E+10	0.25568	14.68593	134.71	5.53
405	1176	########	32.31	18.4	26.02	0	10.12	6.13	0.52	56.82	0	2445.62	592.61	7178.77	15546.83	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	56.82	33.99	6.13	27.86	10.12	0.52	56.82	0.52	57.34	1387.47	5.58	1393.05	41.23	68.11	382.25	3.47	6.13E+09	2.79E+10	0.36447	15.29724	350.26	15.31
406	1177	########	29.05	23.1	24.83	0	8.2	9.62	0.62	57.04	0	2379.44	903.33	7354.73	14408.54	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.62	57.04	0.62	57.66	1392.88	6.7	1399.59	64.71	55.15	383.75	4.16	9.62E+09	2.79E+10	0.20961	13.23823	82.2	3.89
407	1178	########	29.75	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.18	860.66	7381.05	14517.67	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.42	4.5	1416.92	60.15	61.24	389.13	2.79	8.94E+09	2.79E+10	0.3168	13.59375	119.2	5.3
408	1179	########	28.29	22.66	21.76	0	8.59	9.83	0.54	57.93	0	2395.99	947.66	7429.25	13316.72	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.59	0.54	57.93	0.54	58.46	1414.49	5.83	1420.32	66.16	57.82	389.7	3.62	9.83E+09	2.79E+10	0.25268	13.30892	70.82	4.21
409	1180	########	29.37	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.35	872.31	7363.01	14943.05	0.3	0.211	0.218	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42	58.26	0.42	58.68	1422.57	4.57	1427.14	59.22	63.08	391.92	2.84	8.8E+09	2.79E+10	0.33001	13.94985	134.22	5.52
410	1186	########	29.2	19.04	22.34	0	9.69	7.69	0.67	57.66	0	2396.96	792.18	7310.83	15181.03	0.3	0.211	0.218	3.814	0.521	0.331	1486.45	57.66	35.55	7.69	27.86	9.69	0.67	57.66	0.67	58.33	1407.95	7.22	1415.17	51.75	65.21	387.9	4.48	7.69E+09	2.79E+10	0.29566	15.04705	193.8	12.93
411	1187	########	27.1	25.8	22.86	0	8.03	10.3	0.76	57.44	0	2371.38	964.61	7407.8	14982.23	0.3	0.211	0.218	3.814	0.521	0.331	1486.45	57.44	38.16	10.3	27.86	8.03	0.76	57.44	0.76	58.2	1402.52	8.27	1410.79	69.3	54.05	386.4	5.14	1.03E+10	2.79E+10	0.15647	13.45473	45.38	1.84
412	1188	########	27.58	23.29	19.87	0	8.86	9.92	0.53	58.44	0	2414.37	940.83	7451.53	13912.33	0.3	0.211	0.218	3.814	0.521	0.331	1486.45	58.44	37.78	9.92	27.86	8.86	0.53	58.44	0.53	58.97	1426.92	5.76	1432.68	66.76	59.63	393.12	3.57	9.92E+09	2.79E+10	0.26338	13.52153	65.89	3.15
413	1189	########	26.67	25.44	20.45	0	8.38	10.42	0.68	58.15	0	2382.55	989.05	7454.05	14225.24	0.3	0.211	0.218	3.814	0.521	0.331	1486.45	58.15	38.28	10.42	27.86	8.38	0.68	58.15	0.68	58.83	1419.9	7.38	1427.28	70.1	56.36	391.19	4.58	1.04E+10	2.79E+10	0.19914	13.4378	39.11	2.19
414	1190	########	27.27	23.18	18.49	0	9.11	9.78	0.54	58.8	0	2472.99	913.48	7501.52	14061.45	0.3	0.211	0.218	3.814	0.521	0.331	1486.45	58.8	37.63	9.78	27.86	9.11	0.54	58.8	0.54	59.33	1435.7	5.84	1441.55	65.78	61.26	395.54	3.63	9.78E+09	2.79E+10	0.27701	13.84724	74.17	3.54
415	1201	########	29.65	17.02	22.71	0	9.66	7.71	0.6	57.62	0	2388.58	793.2	7296.7	14974.35	0.3	0.211	0.218	3.644	0.52	0.331	1486.45	57.62	35.57	7.71	27.86	9.66	0.6	57.62	0.6	58.22	1406.91	6.55	1413.47	51.86	64.99	387.61	4.07	7.71E+09	2.79E+10	0.30864	14.86738	192.82	12.93
416	1231	########	31.53	18.28	25.6	0	10.08	6.2	0.62	56.83	0	2447.21	607.03	7200.61	15505.75	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.62	56.83	0.62	57.46	1387.81	6.76	1394.57	41.71	67.84	382.35	4.2	6.2E+09	2.79E+10	0.33508	15.48342	339.14	15.18
417	1232	########	28.35	25.14	24.58	0	8.15	9.67	0.72	57.01	0	2380.1	907.36	7363.02	15013.54	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.72	57.01	0.72	57.74	1392.22	7.83	1400.05	65.03	54.85	383.56	4.86	9.67E+09	2.79E+10	0.18227	13.49424	79.63	3.76
418	1233	########	29.19	22.86	22.3	0	9.05	9.01	0.5	57.82	0	2423.19	866.18	7390.21	14143.74	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.5	57.82	0.5	58.32	1411.9	5.38	1417.27	60.62	60.85	388.98	3.34	9.01E+09	2.79E+10	0.29034	13.71601	115.31	5.16
419	1234	########	27.66	22.71	21.61	0	8.54	9.88	0.64	57.88	0	2396.83	950.2	7435.89	13987.51	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.64	57.88	0.64	58.52	1413.32	6.91	1420.22	66.43	57.46	389.38	4.29	9.88E+09	2.79E+10	0.22534	13.51851	68.61	4.08
420	1235	########	28.8	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2378.91	877.47	7371.2	14423.76	0.3	0.211	0.218	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.99	5.48	1427.47	59.63	62.72	391.77	3.4	8.86E+09	2.79E+10	0.30375	14.07482	129.82	5.4
421	1236	########	33.39	16.26	25.44	0	10.28	6.21	0.28	57.18	0	2424.55	608.05	7157.66	15493.76	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	57.18	34.07	6.21	27.86	10.28	0.28	57.18	0.28	57.46	1396.32	3.02	1399.34	41.81	69.19	384.69	1.87	6.21E+09	2.79E+10	0.43917	15.02952	338.13	15.18
422	1237	########	30.3	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.4	908.2	7337.29	14075.18	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37	57.35	0.37	57.72	1400.41	4.02	1404.42	65.07	56.11	385.82	2.49	9.67E+09	2.79E+10	0.2797	12.69433	79.35	3.76
423	1238	########	30.46	20.86	21.71	0	9.27	9.01	0.23	58.21	0	2411.44	866.95	7364.9	14118.72	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.23	58.21	0.23	58.45	1421.5	2.53	1424.04	60.64	62.37	391.63	1.57	9.01E+09	2.79E+10	0.38199	13.40954	115.12	5.16
424	1239	########	29.4	20.7	21.35	0	8.75	9.88	0.31	58.24	0	2383.87	951.03	7409.85	14095.75	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.24	37.74	9.88	27.86	8.75	0.31	58.24	0.31	58.55	1422.14	3.37	1425.51	66.47	58.84	391.81	2.09	9.88E+09	2.79E+10	0.32086	12.89401	68.35	4.08
425	1240	########	30.14	20.97	20.26	0	9.53	8.87	0.24	58.59	0	2370.15	878.2	7346.97	14077.31	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.81	2.57	1433.37	59.67	64.12	394.19	1.59	8.87E+09	2.79E+10	0.39417	13.75424	129.63	5.4
426	1246	########	33.55	17.8	28.29	0	9.6	6.51	0.39	56.33	0	2201.81	841.04	7090.71	15667.34	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.6	0.39	56.33	0.39	56.72	1375.47	4.22	1379.69	43.83	64.61	378.95	2.62	6.51E+09	2.79E+10	0.36867	14.46516	300.87	14.81
427	1247	########	29.74	23.21	25.19	0	8.08	9.84	0.49	57.06	0	2355.88	923.47	7334.5	13512.98	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.49	57.06	0.49	57.55	1393.38	5.3	1398.68	66.21	54.37	383.88	3.29	9.84E+09	2.79E+10	0.22761	12.71128	70.17	3.39
428	1248	########	30.23	20.87	22.88	0	8.9	9.25	0.32	57.83	0	2396.2	886.25	7360.13	14962.85	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.32	57.83	0.32	58.14	1412.02	3.46	1415.48	62.24	59.86	389.02	2.15	9.25E+09	2.79E+10	0.3299	13.12136	102.23	4.78
429	1249	########	29.04	22.8	22.37	0	8.45	10.03	0.42	57.87	0	2371.28	961.43	7399.84	13726.97	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.42	57.87	0.42	58.29	1413.19	4.54	1417.73	67.45	56.84	389.34	2.82	1E+10	2.79E+10	0.26959	12.81691	60.44	3.72
430	1250	########	30.03	20.94	21.75	0	9.13	9.09	0.32	58.12	0	2359.33	896.13	7343.65	14736.34	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.13	0.32	58.12	0.32	58.44	1419.27	3.49	1422.75	61.13	61.4	391.01	2.17	9.09E+09	2.79E+10	0.34263	13.43473	115.07	5.03
431	1281	########	32.28	18.4	26.02	0	10.12	6.13	0.52	56.81	0	2445.43	592.61	7178.6	15523.71	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	56.81	33.99	6.13	27.86	10.12	0.52	56.81	0.52	57.34	1387.33	5.65	1392.98	41.23	68.08	382.22	3.51	6.13E+09	2.79E+10	0.36328	15.3176	350.26	15.31
432	1282	########	29.01	23.1	24.81	0	8.2	9.62	0.63	57.04	0	2379.36	903.33	7354.7	14441.85	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.04	37.48	9.62	27.86	8.2	0.63	57.04	0.63	57.67	1392.84	6.78	1399.62	64.71	55.13	383.73	4.21	9.62E+09	2.79E+10	0.20831	13.26951	82.2	3.89
433	1283	########	29.72	20.84	22.5	0	9.1	8.94	0.42	57.84	0	2423.05	860.66	7380.97	14425.96	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.84	36.8	8.94	27.86	9.1	0.42	57.84	0.42	58.26	1412.31	4.56	1416.88	60.15	61.21	389.1	2.83	8.94E+09	2.79E+10	0.3155	13.61572	119.2	5.3
434	1284	########	28.26	22.66	21.76	0	8.59	9.83	0.54	57.92	0	2395.9	947.66	7429.22	13352.3	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	57.92	37.69	9.83	27.86	8.59	0.54	57.92	0.54	58.47	1414.39	5.9	1420.3	66.16	57.8	389.67	3.66	9.83E+09	2.79E+10	0.25137	13.33688	70.82	4.21
435	1285	########	29.34	20.97	20.91	0	9.37	8.8	0.43	58.25	0	2380.26	872.31	7362.97	14817.53	0.3	0.234	0.242	3.524	0.591	0.591	1486.45	58.25	36.66	8.8	27.86	9.37	0.43	58.25	0.43	58.68	1422.41	4.63	1427.04	59.22	63.05	391.88	2.88	8.8E+09	2.79E+10	0.32873	13.9719	134.22	5.52
436	1336	########	31.5	18.28	25.59	0	10.08	6.2	0.63	56.83	0	2447.03	607.03	7200.44	15468.74	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	56.83	34.06	6.2	27.86	10.08	0.63	56.83	0.63	57.46	1387.68	6.84	1394.52	41.71	67.81	382.31	4.24	6.2E+09	2.79E+10	0.33395	15.50546	339.14	15.18
437	1337	########	28.31	25.14	24.57	0	8.15	9.67	0.73	57.01	0	2380.02	907.36	7363	14990.23	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.01	37.52	9.67	27.86	8.15	0.73	57.01	0.73	57.74	1392.14	7.91	1400.05	65.03	54.84	383.54	4.91	9.67E+09	2.79E+10	0.18103	13.52679	79.63	3.76
438	1338	########	29.16	22.86	22.31	0	9.04	9.01	0.5	57.82	0	2423.09	866.18	7390.17	14117.94	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.04	0.5	57.82	0.5	58.32	1411.77	5.44	1417.22	60.62	60.83	388.95	3.38	9.01E+09	2.79E+10	0.28911	13.74003	115.31	5.16
439	1339	########	27.62	22.71	21.6	0	8.54	9.88	0.65	57.87	0	2396.75	950.2	7435.87	14031.02	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.54	0.65	57.87	0.65	58.52	1413.23	6.99	1420.22	66.43	57.44	389.35	4.34	9.88E+09	2.79E+10	0.2241	13.54806	68.61	4.08
440	1340	########	28.76	20.97	20.71	0	9.32	8.86	0.51	58.23	0	2378.82	877.47	7371.16	14402.16	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	58.23	36.72	8.86	27.86	9.32	0.51	58.23	0.51	58.74	1421.89	5.55	1427.44	59.63	62.7	391.74	3.45	8.86E+09	2.79E+10	0.30253	14.09861	129.82	5.4
441	1341	########	33.36	16.26	25.46	0	10.28	6.21	0.28	57.17	0	2424.31	608.05	7157.42	15582.17	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	57.17	34.07	6.21	27.86	10.28	0.28	57.17	0.28	57.46	1396.1	3.07	1399.16	41.81	69.15	384.63	1.91	6.21E+09	2.79E+10	0.43783	15.04217	338.13	15.18
442	1342	########	30.26	23.13	24.5	0	8.34	9.67	0.38	57.34	0	2367.31	908.2	7337.26	14091.72	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	57.34	37.53	9.67	27.86	8.34	0.38	57.34	0.38	57.72	1400.28	4.09	1404.37	65.07	56.09	385.78	2.54	9.67E+09	2.79E+10	0.27823	12.72047	79.35	3.76
443	1343	########	30.43	20.86	21.72	0	9.27	9.01	0.24	58.21	0	2411.33	866.95	7364.84	14252.16	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.21	36.87	9.01	27.86	9.27	0.24	58.21	0.24	58.44	1421.3	2.59	1423.89	60.64	62.33	391.57	1.61	9.01E+09	2.79E+10	0.38059	13.42419	115.12	5.16
444	1344	########	29.37	20.7	21.35	0	8.74	9.88	0.32	58.23	0	2383.77	951.03	7409.81	14138.04	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.23	37.74	9.88	27.86	8.74	0.32	58.23	0.32	58.55	1421.99	3.43	1425.43	66.47	58.81	391.77	2.13	9.88E+09	2.79E+10	0.3194	12.91567	68.35	4.08
445	1345	########	30.12	20.97	20.27	0	9.53	8.87	0.24	58.59	0	2370.05	878.2	7346.92	14122.59	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	58.59	36.73	8.87	27.86	9.53	0.24	58.59	0.24	58.83	1430.61	2.62	1433.23	59.67	64.08	394.14	1.63	8.87E+09	2.79E+10	0.39279	13.76892	129.63	5.4
446	1351	########	33.52	17.8	28.3	0	9.6	6.51	0.4	56.32	0	2201.89	841.04	7090.89	15619.33	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	56.32	34.37	6.51	27.86	9.6	0.4	56.32	0.4	56.72	1375.28	4.28	1379.57	43.83	64.57	378.9	2.66	6.51E+09	2.79E+10	0.36741	14.48446	300.87	14.81
447	1352	########	29.7	23.21	25.18	0	8.08	9.84	0.5	57.06	0	2355.81	923.47	7334.49	13556.06	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.06	37.7	9.84	27.86	8.08	0.5	57.06	0.5	57.56	1393.29	5.38	1398.68	66.21	54.35	383.86	3.34	9.84E+09	2.79E+10	0.22617	12.74191	70.17	3.39
448	1353	########	30.2	20.87	22.89	0	8.89	9.25	0.32	57.82	0	2396.1	886.25	7360.08	14915.73	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.82	37.11	9.25	27.86	8.89	0.32	57.82	0.32	58.14	1411.87	3.52	1415.39	62.24	59.83	388.98	2.19	9.25E+09	2.79E+10	0.32851	13.14153	102.23	4.78
449	1354	########	29.01	22.8	22.36	0	8.45	10.03	0.43	57.87	0	2371.19	961.43	7399.81	13731.19	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.87	37.88	10.03	27.86	8.45	0.43	57.87	0.43	58.29	1413.06	4.61	1417.68	67.45	56.82	389.31	2.86	1E+10	2.79E+10	0.26817	12.84382	60.44	3.72
450	1355	########	30.01	20.94	21.76	0	9.12	9.09	0.33	58.12	0	2359.24	896.13	7343.62	14821.22	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	58.12	36.94	9.09	27.86	9.12	0.33	58.12	0.33	58.44	1419.11	3.55	1422.66	61.13	61.36	390.97	2.2	9.09E+09	2.79E+10	0.34128	13.45472	115.07	5.03
451	1386	########	32.33	18.4	26.01	0	10.13	6.13	0.51	56.83	0	2445.81	592.61	7178.96	15545.4	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	56.83	33.99	6.13	27.86	10.13	0.51	56.83	0.51	57.34	1387.59	5.54	1393.13	41.23	68.13	382.29	3.44	6.13E+09	2.79E+10	0.36531	15.28788	350.26	15.31
452	1387	########	29.07	23.1	24.83	0	8.2	9.62	0.61	57.05	0	2379.73	903.33	7355.04	14378.34	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.05	37.48	9.62	27.86	8.2	0.61	57.05	0.61	57.66	1392.97	6.65	1399.62	64.71	55.17	383.77	4.13	9.62E+09	2.79E+10	0.21056	13.22219	82.2	3.89
453	1388	########	29.76	20.84	22.49	0	9.11	8.94	0.41	57.85	0	2423.47	860.66	7381.38	14535.99	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.85	36.8	8.94	27.86	9.11	0.41	57.85	0.41	58.26	1412.55	4.46	1417	60.15	61.26	389.16	2.77	8.94E+09	2.79E+10	0.31771	13.58371	119.2	5.3

454	1389	########	28.32	22.66	21.77	0	8.6	9.83	0.53	57.93	0	2396.28	947.66	7429.57	13310.12	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	57.93	37.69	9.83	27.86	8.6	0.53
455	1390	########	29.39	20.97	20.91	0	9.38	8.8	0.42	58.26	0	2380.62	872.31	7363.32	14990.04	0.3	0.197	0.203	3.524	0.591	0.591	1486.45	58.26	36.66	8.8	27.86	9.38	0.42
456	1441	########	31.55	18.28	25.59	0	10.09	6.2	0.62	56.84	0	2447.39	607.03	7200.78	15501.89	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	56.84	34.06	6.2	27.86	10.09	0.62
457	1442	########	28.38	25.14	24.59	0	8.16	9.67	0.72	57.02	0	2380.38	907.36	7363.32	14947.46	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.02	37.52	9.67	27.86	8.16	0.72
458	1443	########	29.21	22.86	22.31	0	9.05	9.01	0.49	57.82	0	2423.49	866.18	7390.54	14148.33	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.82	36.87	9.01	27.86	9.05	0.49
459	1444	########	27.69	22.71	21.61	0	8.54	9.88	0.63	57.88	0	2397.13	950.2	7436.21	13922.34	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	57.88	37.73	9.88	27.86	8.54	0.63
460	1445	########	28.82	20.97	20.71	0	9.33	8.86	0.5	58.24	0	2379.18	877.47	7371.5	14423.53	0.3	0.197	0.203	3.814	0.582	0.571	1486.45	58.24	36.72	8.86	27.86	9.33	0.5
461	1446	########	33.39	16.26	25.43	0	10.29	6.21	0.28	57.19	0	2424.76	608.05	7157.87	15434.38	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	57.19	34.07	6.21	27.86	10.29	0.28
462	1447	########	30.31	23.13	24.5	0	8.34	9.67	0.37	57.35	0	2367.69	908.2	7337.61	14064.16	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	57.35	37.53	9.67	27.86	8.34	0.37
463	1448	########	30.47	20.86	21.7	0	9.27	9.01	0.23	58.22	0	2411.75	866.95	7365.24	14082.07	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.22	36.87	9.01	27.86	9.27	0.23
464	1449	########	29.41	20.7	21.34	0	8.75	9.88	0.31	58.25	0	2384.17	951.03	7410.19	14063.53	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.25	37.74	9.88	27.86	8.75	0.31
465	1450	########	30.16	20.97	20.25	0	9.53	8.87	0.23	58.6	0	2370.43	878.2	7347.28	14043.29	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	58.6	36.73	8.87	27.86	9.53	0.23
466	1456	########	33.56	17.8	28.29	0	9.61	6.51	0.39	56.33	0	2202.03	841.04	7090.95	15665.65	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	56.33	34.37	6.51	27.86	9.61	0.39
467	1457	########	29.77	23.21	25.19	0	8.08	9.84	0.48	57.07	0	2356.17	923.47	7334.8	13475.9	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.07	37.7	9.84	27.86	8.08	0.48
468	1458	########	30.25	20.87	22.88	0	8.9	9.25	0.32	57.83	0	2396.49	886.25	7360.46	14916.26	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.83	37.11	9.25	27.86	8.9	0.32
469	1459	########	29.06	22.8	22.36	0	8.45	10.03	0.42	57.88	0	2371.57	961.43	7400.16	13724.27	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.88	37.88	10.03	27.86	8.45	0.42
470	1460	########	30.05	20.94	21.75	0	9.13	9.09	0.32	58.13	0	2359.61	896.13	7343.96	14688.11	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	58.13	36.94	9.09	27.86	9.13	0.32
471	1491	########	32.19	18.4	26.02	0	10.11	6.13	0.54	56.8	0	2445.28	592.61	7178.59	15475.1	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	56.8	33.99	6.13	27.86	10.11	0.54
472	1492	########	28.89	23.1	24.78	0	8.19	9.62	0.65	57.03	0	2379.21	903.33	7354.76	14548.06	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.03	37.48	9.62	27.86	8.19	0.65
473	1493	########	29.63	20.84	22.5	0	9.09	8.94	0.44	57.82	0	2422.85	860.66	7380.95	14281.9	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.82	36.8	8.94	27.86	9.09	0.44
474	1494	########	28.15	22.66	21.74	0	8.58	9.83	0.56	57.91	0	2395.72	947.66	7429.23	13465.51	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	57.91	37.69	9.83	27.86	8.58	0.56
475	1495	########	29.26	20.97	20.92	0	9.36	8.8	0.44	58.24	0	2380.09	872.31	7362.99	14641.5	0.3	0.288	0.301	3.524	0.591	0.591	1486.45	58.24	36.66	8.8	27.86	9.36	0.44
476	1546	########	31.4	18.28	25.59	0	10.07	6.2	0.65	56.81	0	2446.91	607.03	7200.47	15588.5	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	56.81	34.06	6.2	27.86	10.07	0.65
477	1547	########	28.18	25.14	24.53	0	8.15	9.67	0.75	57	0	2379.88	907.36	7363.08	14999.78	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57	37.52	9.67	27.86	8.15	0.75
478	1548	########	29.07	22.86	22.29	0	9.03	9.01	0.52	57.8	0	2422.9	866.18	7390.16	14186.89	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.8	36.87	9.01	27.86	9.03	0.52
479	1549	########	27.51	22.71	21.57	0	8.53	9.88	0.66	57.87	0	2396.57	950.2	7435.89	14146.45	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.87	37.73	9.88	27.86	8.53	0.66

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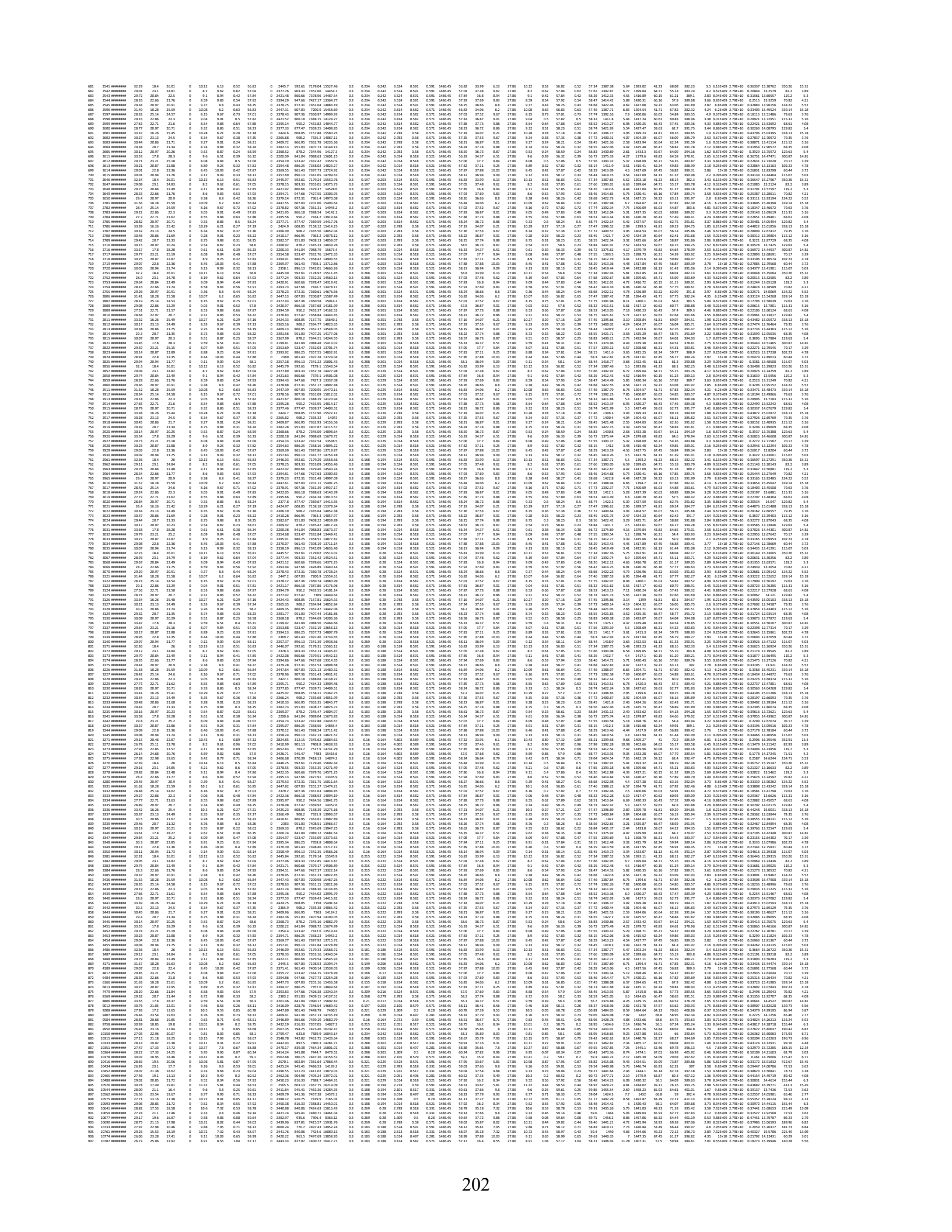

908	10805	########	28.59	21	20.07	0	9.76	8.29	0.56	58.36	0	2411.44	826.2	7370.42	14812.6	0.3	0.183	0.188	3.014	0.518	0.521	1486.45	58.36	36.15	8.29	27.86	9.76	0.56	58.36	0.56	58.92	1425	6.07	1431.07	55.77	65.67	392.59	3.77	8.29E+09	2.79E+10	0.31931	14.73335	168.28	6.43
909	10838	########	28	22.98	20.46	0	9.88	7.95	0.71	58.12	0	2599.86	770.7	7496.9	14926.9	0.3	0.16	0.164	3.524	0.591	0.591	1486.45	58.12	35.81	7.95	27.86	9.88	0.71	58.12	0.71	58.83	1419.23	7.67	1426.9	53.49	66.47	391.01	4.76	7.95E+09	2.79E+10	0.29687	15.1885	181.73	6.84
910	10867	########	28.04	23.38	19.97	0	8.99	9.68	0.49	58.44	0	2410.84	921.23	7435.13	14153.89	0.3	0.16	0.164	2.613	0.518	0.331	1486.45	58.44	37.54	9.68	27.86	8.99	0.49	58.44	0.49	58.94	1427.13	5.33	1432.46	65.14	60.45	393.18	3.31	9.68E+09	2.79E+10	0.2886	13.71356	78.73	3.38
911	10879	########	26.09	23.28	17.41	0	9.11	10.03	0.64	58.99	0	2420.38	961.5	7497.85	13848.54	0.3	0.16	0.164	3.014	0.497	0.281	1486.45	58.99	37.88	10.03	27.86	9.11	0.64	58.99	0.64	59.63	1440.47	6.94	1447.41	67.45	61.29	396.86	4.31	1E+10	2.79E+10	0.25897	14.10819	60.29	3.01
912	10892	########	26.77	25.06	22.93	0	8.91	8.55	1.03	57.17	0	2443.47	827.07	7400.86	16372.39	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.17	36.4	8.55	27.86	8.91	1.03	57.17	1.03	58.21	1396.12	11.21	1407.33	57.5	59.96	384.64	6.96	8.55E+09	2.79E+10	0.18369	15.18029	140.28	5.56
913	10910	########	28.62	21	20.06	0	9.77	8.29	0.56	58.36	0	2411.61	826.2	7370.6	14799.77	0.3	0.16	0.164	3.014	0.518	0.521	1486.45	58.36	36.15	8.29	27.86	9.77	0.56	58.36	0.56	58.92	1425.15	6.01	1431.16	55.77	65.7	392.63	3.73	8.29E+09	2.79E+10	0.32033	14.71985	168.28	6.43
914	10958	########	27.36	21.02	16.86	0	9.76	9.31	0.45	59.31	0	2456.13	897.5	7483.07	14894.34	0.3	0.215	0.222	2.783	0.518	0.331	1486.45	59.31	37.16	9.31	27.86	9.76	0.45	59.31	0.45	59.76	1448.22	4.85	1453.07	62.61	65.68	398.99	3.01	9.31E+09	2.79E+10	0.34124	14.34885	99.16	4.48
915	10977	########	29.08	21.38	18.61	0	9.33	9.68	0.23	59.04	0	2396.58	921.23	7411.04	13865.32	0.3	0.215	0.222	1.931	0.517	0.331	1486.45	59.04	37.54	9.68	27.86	9.33	0.23	59.04	0.23	59.27	1441.7	2.45	1444.14	65.14	62.74	397.19	1.52	9.68E+09	2.79E+10	0.38656	13.50641	78.73	3.38
916	10990	########	27.47	19.1	13.13	0	10.3	9.49	0.2	60.52	0	2462.34	904.98	7495.21	13943.66	0.3	0.215	0.222	2.051	0.496	0.281	1486.45	60.52	37.35	9.49	27.86	10.3	0.2	60.52	0.2	60.72	1477.74	2.18	1479.92	63.87	69.31	407.12	1.35	9.49E+09	2.79E+10	0.44185	14.49602	89.42	4.08
917	11003	########	29.4	20.95	20.02	0	10.05	8.04	0.42	58.5	0	2575.43	780.15	7467.69	15523.42	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.5	35.9	8.04	27.86	10.05	0.42	58.5	0.42	58.91	1428.42	4.52	1432.95	54.09	67.62	393.54	2.81	8.04E+09	2.79E+10	0.37241	14.70249	175.47	6.71
918	11046	########	28.72	19.5	20.56	0	10.99	5.81	0.86	57.96	0	2570.31	602.84	7381.83	17040.92	0.3	0.181	0.186	3.524	0.591	0.591	1486.45	57.96	33.67	5.81	27.86	10.99	0.86	57.96	0.86	58.82	1415.29	9.31	1424.6	39.09	73.92	389.92	5.78	5.81E+09	2.79E+10	0.33327	16.89329	412.67	15.45
919	11069	########	28.09	21.1	16.4	0	9.61	9.8	0.25	59.61	0	2411.87	945.41	7463.38	14252.39	0.3	0.181	0.186	2.101	0.517	0.331	1486.45	59.61	37.66	9.8	27.86	9.61	0.25	59.61	0.25	59.86	1455.6	2.67	1458.27	65.93	64.62	401.02	1.66	9.8E+09	2.79E+10	0.39172	13.74108	72.53	3.62
920	11087	########	26.57	23.54	19.68	0	8.77	9.93	0.71	58.33	0	2409.81	941.36	7457.39	14558.82	0.3	0.181	0.186	3.014	0.497	0.281	1486.45	58.33	37.79	9.93	27.86	8.77	0.71	58.33	0.71	59.04	1424.29	7.68	1431.98	66.8	59	392.4	4.77	9.93E+09	2.79E+10	0.2259	14.05392	65.46	2.77
921	11100	########	27.7	13.16	11.37	0	10.72	9.41	0.05	61.12	0	2388.15	920.75	7419.92	7140.82	0.3	0.181	0.186	1.309	0.5	0.28	1486.45	61.12	37.27	9.41	27.86	10.72	0.05	61.12	0.05	61.17	1492.36	0.57	1492.94	63.29	72.12	411.15	0.36	9.41E+09	2.79E+10	0.55391	15.28366	94.12	4.13
922	11118	########	29.06	20.85	21.72	0	9.52	8.34	0.55	57.93	0	2450.41	816.33	7388.83	14446.74	0.3	0.181	0.186	3.014	0.518	0.521	1486.45	57.93	36.2	8.34	27.86	9.52	0.55	57.93	0.55	58.48	1414.47	5.99	1420.46	56.1	64.08	389.69	3.72	8.34E+09	2.79E+10	0.31003	14.43652	155.44	6.3
923	11151	########	28.75	19.5	20.56	0	10.99	5.81	0.85	57.97	0	2570.01	602.84	7381.39	17019.84	0.3	0.158	0.162	3.524	0.591	0.591	1486.45	57.97	33.67	5.81	27.86	10.99	0.85	57.97	0.85	58.82	1415.43	9.25	1424.68	39.09	73.94	389.96	5.74	5.81E+09	2.79E+10	0.33419	16.87967	412.67	15.45
924	11174	########	28.1	21.1	16.39	0	9.61	9.8	0.24	59.62	0	2412.04	945.41	7463.54	14155.52	0.3	0.158	0.162	2.101	0.517	0.331	1486.45	59.62	37.66	9.8	27.86	9.61	0.24	59.62	0.24	59.86	1455.75	2.63	1458.38	65.93	64.65	401.07	1.64	9.8E+09	2.79E+10	0.3928	13.73482	72.53	3.62
925	11192	########	26.61	23.54	19.68	0	8.77	9.93	0.7	58.33	0	2409.95	941.36	7457.52	14509.9	0.3	0.158	0.162	3.014	0.497	0.281	1486.45	58.33	37.79	9.93	27.86	8.77	0.7	58.33	0.7	59.04	1424.4	7.61	1432.01	66.8	59.02	392.43	4.73	9.93E+09	2.79E+10	0.22694	14.03669	65.46	2.77
926	11205	########	27.7	13.16	11.34	0	10.73	9.41	0.05	61.13	0	2388.31	920.75	7420.08	7105.74	0.3	0.158	0.162	1.309	0.5	0.28	1486.45	61.13	37.27	9.41	27.86	10.73	0.05	61.13	0.05	61.18	1492.61	0.56	1493.17	63.29	72.16	411.22	0.35	9.41E+09	2.79E+10	0.55501	15.29292	94.12	4.13
927	11233	########	30.44	12.91	17.52	0	10.5	8.26	0.05	59.49	0	2422.5	809.61	7326.96	7047.98	0.3	0.158	0.162	1.309	0.519	0.521	1486.45	59.49	36.12	8.26	27.86	10.5	0.05	59.49	0.05	59.54	1452.59	0.55	1453.14	55.59	70.65	400.19	0.34	8.26E+09	2.79E+10	0.55424	15.18113	160.17	6.34
928	11277	########	28.89	21.38	19.04	0	9.23	9.68	0.29	58.87	0	2400.24	921.23	7417.24	15057.75	0.3	0.211	0.218	2.101	0.517	0.331	1486.45	58.87	37.54	9.68	27.86	9.23	0.29	58.87	0.29	59.16	1437.61	3.09	1440.71	65.14	62.09	396.07	1.92	9.68E+09	2.79E+10	0.36034	13.50221	78.73	3.38
929	11295	########	27.98	19.03	13.5	0	10.46	9.18	0.16	60.45	0	2397.38	903.8	7429.15	13444.2	0.3	0.211	0.218	1.931	0.517	0.331	1486.45	60.45	37.04	9.18	27.86	10.46	0.16	60.45	0.16	60.62	1476.14	1.78	1477.92	61.76	70.36	406.68	1.1	9.18E+09	2.79E+10	0.46811	14.69987	107.34	4.69
930	11308	########	27.93	17.2	12.64	0	10.5	9.53	0.05	60.78	0	2448.11	901.43	7449.05	7418.87	0.3	0.211	0.218	1.309	0.5	0.28	1486.45	60.78	37.39	9.53	27.86	10.5	0.05	60.78	0.05	60.83	1484.15	0.58	1484.73	64.13	70.67	408.89	0.36	9.53E+09	2.79E+10	0.54427	14.99588	86.94	3.87
931	11326	########	30.88	18.72	24.44	0	10.29	6.14	0.67	57.1	0	2450.3	663.13	7261.18	15554.38	0.3	0.211	0.218	3.014	0.518	0.521	1486.45	57.1	34	6.14	27.86	10.29	0.67	57.1	0.67	57.77	1394.32	7.24	1401.56	41.32	69.24	384.14	4.5	6.14E+09	2.79E+10	0.33824	15.79105	353.98	14.95
932	11379	########	26.92	23.1	17.69	0	9.26	9.8	0.53	59.01	0	2424.01	945.41	7484.99	14190.38	0.3	0.234	0.242	2.783	0.518	0.331	1486.45	59.01	37.66	9.8	27.86	9.26	0.53	59.01	0.53	59.55	1440.99	5.78	1446.77	65.93	62.3	397	3.59	9.8E+09	2.79E+10	0.2942	14.00977	72.53	3.62
933	11398	########	28.24	19.02	14.83	0	10.23	9.31	0.16	60.1	0	2438.63	897.5	7453.1	12989.09	0.3	0.234	0.242	1.931	0.517	0.331	1486.45	60.1	37.16	9.31	27.86	10.23	0.16	60.1	0.16	60.26	1467.61	1.75	1469.36	62.61	68.85	404.33	1.09	9.31E+09	2.79E+10	0.45876	14.40583	99.16	4.48
934	11416	########	27.53	21.34	19.99	0	10.94	5.87	1.03	57.95	0	2569.06	616.91	7400.97	17303.11	0.3	0.234	0.242	3.814	0.582	0.571	1486.45	57.95	33.73	5.87	27.86	10.94	1.03	57.95	1.03	58.99	1415.18	11.21	1426.39	39.5	73.59	389.89	6.96	5.87E+09	2.79E+10	0.29793	17.25664	399.64	15.32
935	11434	########	28.02	22.67	21.45	0	9.06	9.04	0.66	57.91	0	2424.59	891.42	7427.41	13789.36	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	57.91	36.9	9.04	27.86	9.06	0.66	57.91	0.66	58.56	1413.98	7.1	1421.08	60.85	60.94	389.56	4.41	9.04E+09	2.79E+10	0.26155	14.18966	113.7	5.39
936	11487	########	28.91	21.38	19.03	0	9.23	9.68	0.28	58.88	0	2399.26	921.23	7415.93	14990.15	0.3	0.197	0.203	2.101	0.517	0.331	1486.45	58.88	37.54	9.68	27.86	9.23	0.28	58.88	0.28	59.16	1437.76	3.06	1440.82	65.14	62.11	396.11	1.9	9.68E+09	2.79E+10	0.36117	13.49131	78.73	3.38
937	11505	########	27.98	19.03	13.48	0	10.46	9.18	0.16	60.46	0	2396.45	903.8	7427.9	13358.12	0.3	0.197	0.203	1.931	0.517	0.331	1486.45	60.46	37.04	9.18	27.86	10.46	0.16	60.46	0.16	60.62	1476.3	1.76	1478.05	61.76	70.39	406.73	1.09	9.18E+09	2.79E+10	0.46887	14.69489	107.34	4.69
938	11518	########	27.93	17.2	12.61	0	10.51	9.53	0.05	60.79	0	2447.31	901.43	7447.99	7378.01	0.3	0.197	0.203	1.309	0.5	0.28	1486.45	60.79	37.39	9.53	27.86	10.51	0.05	60.79	0.05	60.84	1484.34	0.57	1484.91	64.13	70.7	408.94	0.35	9.53E+09	2.79E+10	0.54503	14.99866	86.94	3.87
939	11536	########	30.91	18.72	24.44	0	10.3	6.14	0.66	57.11	0	2450.48	663.13	7261.42	15524.58	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	57.11	34	6.14	27.86	10.3	0.66	57.11	0.66	57.77	1394.43	7.19	1401.62	41.32	69.26	384.17	4.47	6.14E+09	2.79E+10	0.33893	15.77643	353.98	14.95
940	11604	########	27.22	21.1	17.45	0	9.33	9.8	0.47	59.13	0	2420.36	945.41	7479.02	14500.44	0.3	0.288	0.301	2.613	0.518	0.331	1486.45	59.13	37.66	9.8	27.86	9.33	0.47	59.13	0.47	59.6	1443.95	5.06	1449.01	65.93	62.76	397.82	3.14	9.8E+09	2.79E+10	0.31465	13.92877	72.53	3.62
941	11627	########	26.57	25.06	22.87	0	8.9	8.55	1.07	57.16	0	2441.64	827.07	7398.82	16554.69	0.3	0.288	0.301	3.814	0.582	0.571	1486.45	57.16	36.4	8.55	27.86	8.9	1.07	57.16	1.07	58.23	1395.78	11.57	1407.34	57.5	59.88	384.54	7.18	8.55E+09	2.79E+10	0.1792	15.27717	140.28	5.56
942	11645	########	28.46	21	20.06	0	9.75	8.29	0.58	58.34	0	2409.76	826.2	7368.53	14826.88	0.3	0.288	0.301	3.014	0.518	0.521	1486.45	58.34	36.15	8.29	27.86	9.75	0.58	58.34	0.58	58.92	1424.57	6.31	1430.88	55.77	65.59	392.47	3.92	8.29E+09	2.79E+10	0.31547	14.79233	168.28	6.43
943	11718	########	26.41	21.15	16.42	0	9.59	9.61	0.56	59.33	0	2449.99	921.34	7500.77	14780.24	0.3	0.221	0.229	3.014	0.497	0.281	1486.45	59.33	37.47	9.61	27.86	9.59	0.56	59.33	0.56	59.89	1448.71	6.03	1454.75	64.67	64.51	399.13	3.75	9.61E+09	2.79E+10	0.3034	14.39838	82.6	3.82
944	11746	########	30.88	18.72	24.44	0	10.29	6.14	0.67	57.1	0	2450.38	663.13	7261.35	15553.41	0.3	0.221	0.229	3.014	0.518	0.521	1486.45	57.1	34	6.14	27.86	10.29	0.67	57.1	0.67	57.77	1394.32	7.25	1401.57	41.32	69.24	384.14	4.5	6.14E+09	2.79E+10	0.33802	15.79092	353.98	14.95
945	11799	########	26.98	23.1	17.69	0	9.27	9.8	0.52	59.02	0	2424.38	945.41	7485.33	14177.97	0.3	0.188	0.194	2.783	0.518	0.331	1486.45	59.02	37.66	9.8	27.86	9.27	0.52	59.02	0.52	59.54	1441.18	5.67	1446.85	65.93	62.35	397.05	3.52	9.8E+09	2.79E+10	0.2961	13.98049	72.53	3.62
946	11827	########	28.57	21.54	18.27	0	9.21	9.93	0.27	59.09	0	2389.76	941.36	7423.59	14583.84	0.3	0.188	0.194	2.051	0.496	0.281	1486.45	59.09	37.79	9.93	27.86	9.21	0.27	59.09	0.27	59.36	1442.99	2.91	1445.9	66.8	61.95	397.55	1.81	9.93E+09	2.79E+10	0.36182	13.40366	65.46	2.77
947	11845	########	28.82	21.15	17.96	0	10.33	8.02	0.42	59.04	0	2440.44	837.81	7416.04	15944.15	0.3	0.188	0.194	2.783	0.58	0.571	1486.45	59.04	35.87	8.02	27.86	10.33	0.42	59.04	0.42	59.46	1441.7	4.56	1446.25	53.93	69.47	397.19	2.83	8.02E+09	2.79E+10	0.38315	15.01915	189.96	6.82
948	11908	########	28.16	19.02	15.36	0	10.12	9.31	0.21	59.91	0	2441.8	897.5	7458.81	14237.96	0.3	0.269	0.28	2.101	0.517	0.331	1486.45	59.91	37.16	9.31	27.86	10.12	0.21	59.91	0.21	60.13	1463.02	2.31	1465.33	62.61	68.07	403.07	1.43	9.31E+09	2.79E+10	0.43216	14.31797	99.16	4.48
949	11941	########	27.48	21.34	19.97	0	10.93	5.87	1.04	57.95	0	2569.01	616.91	7400.99	17324.34	0.3	0.269	0.28	3.814	0.582	0.571	1486.45	57.95	33.73	5.87	27.86	10.93	1.04	57.95	1.04	58.99	1415.07	11.31	1426.37	39.5	73.56	389.86	7.02	5.87E+09	2.79E+10	0.29683	17.27982	399.64	15.32
950	11994	########	26.91	22.68	20.32	0	9.36	8.71	0.82	58.06	0	2458.36	865.17	7462.01	15009.11	0.3	0.183	0.188	3.524	0.591	0.591	1486.45	58.06	36.56	8.71	27.86	9.36	0.82	58.06	0.82	58.88	1417.72	8.89	1426.61	58.58	62.95	390.59	5.52	8.71E+09	2.79E+10	0.24715	14.90719	133.39	5.92
951	12027	########	29.1	21.38	18.59	0	9.33	9.68	0.22	59.05	0	2395.72	921.23	7409.85	13797.51	0.3	0.183	0.188	1.931	0.517	0.331	1486.45	59.05	37.54	9.68	27.86	9.33	0.22	59.05	0.22	59.27	1441.99	2.39	1444.38	65.14	62.79	397.27	1.48	9.68E+09	2.79E+10	0.38821	13.4918	78.73	3.38
952	12045	########	27.7	13.16	11.37	0	10.72	9.41	0.05	61.12	0	2387.19	920.75	7418.68	7147.8	0.3	0.183	0.188	1.309	0.5	0.28	1486.45	61.12	37.27	9.41	27.86	10.72	0.05	61.12	0.05	61.17	1492.37	0.57	1492.95	63.29	72.12	411.16	0.36	9.41E+09	2.79E+10	0.55385	15.28017	94.12	4.13
953	12093	########	24.84	22.99	18.37	0	9.98	7.92	1.15	58.28	0	2883.8	749.82	7821.5	17354.44	0.3	0.16	0.164	4.602	0.589	0.591	1486.45	58.28	35.78	7.92	27.86	9.98	1.15	58.28	1.15	59.43	1423.07	12.49	1435.57	53.28	67.14	392.06	7.76	7.92E+09	2.79E+10	0.2123	16.42478	182.94	6.85
954	12116	########	29.84	15.53	16.5	0	11.08	7.32	0.22	59.6	0	2444.34	840.06	7425.05	14395.66	0.3	0.16	0.164	2.101	0.517	0.331	1486.45	59.6	35.18	7.32	27.86	11.08	0.22	59.6	0.22	59.83	1455.43	2.41	1457.85	49.23	74.57	400.98	1.5	7.32E+09	2.79E+10	0.48531	15.66726	225.49	13.09
955	12134	########	28.24	19.1	15.93	0	9.71	9.8	0.19	59.79	0	2407.42	945.41	7456.09	13090.84	0.3	0.16	0.164	1.931	0.517	0.331	1486.45	59.79	37.66	9.8	27.86	9.71	0.19	59.79	0.19	59.98	1459.92	2.04	1461.96	65.93	65.35	402.21	1.27	9.8E+09	2.79E+10	0.41862	13.7776	72.53	3.62
956	12152	########	26.77	25.06	22.93	0	8.91	8.55	1.03	57.17	0	2442.51	827.07	7399.59	16367.72	0.3	0.16	0.164	3.814	0.582	0.571	1486.45	57.17	36.4	8.55	27.86	8.91	1.03	57.17	1.03	58.21	1396.12	11.2	1407.33	57.5	59.96	384.64	6.96	8.55E+09	2.79E+10	0.18368	15.17309	140.28	5.56
957	12205	########	27.25	21.18	18.25	0	10.16	7.93	0.73	58.68	0	2548.73	742.82	7462.56	15335.12	0.3	0.215	0.222	3.524	0.591	0.591	1486.45	58.68	35.79	7.93	27.86	10.16	0.73	58.68	0.73	59.42	1432.96	7.95	1440.91	53.37	68.33	394.79	4.93	7.93E+09	2.79E+10	0.30469	15.56556	196.73	6.96
958	12244	########	26.03	23.28	17.4	0	9.1	10.03	0.65	58.98	0	2419	961.5	7496.2	13854.63	0.3	0.215	0.222	3.014	0.497	0.281	1486.45	58.98	37.88	10.03	27.86	9.1	0.65	58.98	0.65	59.63	1440.24	7.07	1447.32	67.45	61.25	396.79	4.39	1E+10	2.79E+10	0.25677	14.14058	60.29	3.01
959	12261	########	30.78	17.31	20.59	0	11.14	5.88	0.48	58.29	0	2549.99	617.91	7359.07	16266.72	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	58.29	33.74	5.88	27.86	11.14	0.48	58.29	0.48	58.77	1423.33	5.22	1428.55	39.57	74.96	392.13	3.24	5.88E+09	2.79E+10	0.41969	16.27865	398.37	15.32
960	12325	########	27.08	21.03	15.52	0	10	9.18	0.45	59.66	0	2470.86	877.94	7483.06	15265.48	0.3	0.181	0.186	2.783	0.518	0.331	1486.45	59.66	37.04	9.18	27.86	10	0.45	59.66	0.45	60.11	1456.88	4.86	1461.74	61.76	67.26	401.38	3.02	9.18E+09	2.79E+10	0.3517	14.61852	107.34	4.69
961	12353	########	27.77	19.15	14.42	0	10.09	9.61	0.19	60.18	0	2432.25	921.34	7469.61	13970.98	0.3	0.181	0.186	2.051	0.496	0.281	1486.45	60.18	37.47	9.61	27.86	10.09	0.19	60.18	0.19	60.37	1469.6	2.07	1471.67	64.67	67.89	404.88	1.28	9.61E+09	2.79E+10	0.4352	14.20142	82.6	3.82
962	12406	########	24.04	21.57	15.96	0	11.4	5.78	1.43	58.67	0	3068.71	312.15	7697.68	14242.75	0.3	0.158	0.162	4.602	0.589	0.591	1486.45	58.67	33.64	5.78	27.86	11.4	1.43	58.67	1.43	60.1	1432.72	15.47	1448.18	38.91	76.68	394.72	9.6	5.78E+09	2.79E+10	0.24753	18.57153	416	15.44
963	12444	########	27.35	21.1	17.44	0	9.35	9.8	0.44	59.16	0	2421.37	945.41	7479.93	14660.69	0.3	0.158	0.162	2.613	0.518	0.331	1486.45	59.16	37.66	9.8	27.86	9.35	0.44	59.16	0.44	59.6	1444.58	4.78	1449.36	65.93	62.88	397.99	2.97	9.8E+09	2.79E+10	0.31998	13.85175	72.53	3.62
964	12482	########	28.85	23	24.23	0	8.71	8.85	0.7	57.13	0	2410.61	853.51	7363.41	14694.05	0.3	0.158	0.162	3.014	0.518	0.521	1486.45	57.13	36.71	8.85	27.86	8.71	0.7	57.13	0.7	57.83	1394.96	7.61	1402.57	59.56	58.57	384.32	4.73	8.85E+09	2.79E+10	0.2318	14.05799	123.43	5.18
965	12535	########	27.05	21.03	15.52	0	9.99	9.18	0.45	59.66	0	2471.02	877.94	7483.35	15256.67	0.3	0.211	0.218	2.783	0.518	0.331	1486.45	59.66	37.04	9.18	27.86	9.99	0.45	59.66	0.45	60.11	1456.73	4.93	1461.65	61.76	67.23	401.34	3.06	9.18E+09	2.79E+10	0.35049	14.63481	107.34	4.69
966	12563	########	27.75	19.15	14.44	0	10.09	9.61	0.19	60.17	0	2432	921.34	7469.37	14022.5	0.3	0.211	0.218	2.051	0.496	0.281	1486.45	60.17	37.47	9.61	27.86	10.09	0.19	60.17	0.19	60.37	1469.39	2.11	1471.49	64.67	67.85	404.82	1.31	9.61E+09	2.79E+10	0.43389	14.20786	82.6	3.82
967	12621	########	28.68	19.5	20.59	0	10.98	5.81	0.87	57.95	0	2568.92	602.84	7380.22	17058.18	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	57.95	33.67	5.81	27.86	10.98	0.87	57.95	0.87	58.81	1414.97	9.39	1424.36	39.09	73.87	389.83	5.83	5.81E+09	2.79E+10	0.33123	16.89221	412.67	15.45
968	12654	########	27.31	21.1	17.48	0	9.34	9.8	0.45	59.14	0	2421.97	945.41	7480.99	14433.34	0.3	0.209	0.216	2.613	0.518	0.331	1486.45	59.14	37.66	9.8	27.86	9.34	0.45	59.14	0.45	59.59	1444.13	4.89	1449.02	65.93	62.8	397.86	3.04	9.8E+09	2.79E+10	0.31662	13.86468	72.53	3.62
969	12692	########	28.78	23	24.24	0	8.7	8.85	0.72	57.11	0	2411.23	853.51	7364.49	14794.73	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	57.11	36.71	8.85	27.86	8.7	0.72	57.11	0.72	57.83	1394.61	7.76	1402.36	59.56	58.51	384.22	4.82	8.85E+09	2.79E+10	0.22845	14.08581	123.43	5.18
970	12745	########	27.09	21.03	15.55	0	9.99	9.18	0.45	59.66	0	2470.39	877.94	7482.51	15139.48	0.3	0.179	0.184	2.783	0.518	0.331	1486.45	59.66	37.04	9.18	27.86	9.99	0.45	59.66	0.45	60.1	1456.71	4.86	1461.57	61.76	67.23	401.33	3.02	9.18E+09	2.79E+10	0.35079	14.60379	107.34	4.69
971	12773	########	27.77	19.15	14.45	0	10.09	9.61	0.19	60.18	0	2433.14	921.34	7470.88	13947.27	0.3	0.179	0.184	2.051	0.496	0.281	1486.45	60.18	37.47	9.61	27.86	10.09	0.19	60.18	0.19	60.37	1469.42	2.06	1471.48	64.67	67.87	404.83	1.28	9.61E+09	2.79E+10	0.43432	14.18197	82.6	3.82
972	12846	########	28.86	17.53	18.62	0	10.6	7.32	0.53	58.77	0	2439.34	840.06	7422.78	15681.01	0.3	0.252	0.261	2.783	0.518	0.331	1486.45	58.77	35.18	7.32	27.86	10.6	0.53	58.77	0.53	59.3	1435.11	5.71	1440.82	49.23	71.32	395.38	3.55	7.32E+09	2.79E+10	0.37378	15.64696	225.49	13.09
973	12879	########	27.78	21.28	15.84	0	9.55	10.03	0.25	59.76	0	2400.83	961.5	7465.07	14140.11	0.3	0.252	0.261	2.051	0.496	0.281	1486.45	59.76	37.88	10.03	27.86	9.55	0.25	59.76	0.25	60	1459.2	2.66	1461.85	67.45	64.26	402.02	1.65	1E+10	2.79E+10	0.38697	13.64683	60.29	3.01
974	12967	########	28	23.38	20	0	8.98	9.68	0.5	58.43	0	2410.54	921.23	7434.97	14103.48	0.3	0.199	0.206	2.613	0.518	0.331	1486.45	58.43	37.54	9.68	27.86	8.98	0.5	58.43	0.5	58.93	1426.76	5.42	1432.18	65.14	60.39	393.08	3.37	9.68E+09	2.79E+10	0.28576	13.71736	78.73	3.38
975	13010	########	28.58	21	20.09	0	9.76	8.29	0.56	58.35	0	2411.32	826.2	7370.43	14729.6	0.3	0.199	0.206	3.014	0.518	0.521	1486.45	58.35	36.15	8.29	27.86	9.76	0.56	58.35	0.56	58.91	1424.78	6.11	1430.89	55.77	65.64	392.53	3.79	8.29E+09	2.79E+10	0.31768	14.72302	168.28	6.43
976	13078	########	28.28	19.02	14.82	0	10.24	9.31	0.15	60.11	0	2439.7	897.5	7454.37	13380.95	0.3	0.172	0.176	1.931	0.517	0.331	1486.45	60.11	37.16	9.31	27.86	10.24	0.15	60.11	0.15	60.26	1467.82	1.67	1469.49	62.61	68.89	404.39	1.04	9.31E+09	2.79E+10	0.46031	14.37535	99.16	4.48
977	13146	########	28.64	19.5	20.59	0	10.98	5.81	0.87	57.94	0	2568.64	602.84	7379.95	17076.66	0.3	0.237	0.246	3.524	0.591	0.591	1486.45	57.94	33.67	5.81	27.86	10.98	0.87	57.94	0.87	58.81	1414.83	9.46	1424.29	39.09	73.84	389.79	5.88	5.81E+09	2.79E+10	0.3301	16.9069	412.67	15.45
978	13194	########	27.79	21.28	15.84	0	9.55	10.03	0.24	59.76	0	2400.9	961.5	7465.1	14119.98	0.3	0.237	0.246	2.051	0.496	0.281	1486.45	59.76	37.88	10.03	27.86	9.55	0.24	59.76	0.24	60.01	1459.31	2.63	1461.94	67.45	64.28	402.05	1.63	1E+10	2.79E+10	0.38769	13.64369	60.29	3.01
979	13272	########	28.94	21.38	19.06	0	9.23	9.68	0.28	58.88	0	2400.03	921.23	7416.89	14746.57	0.3	0.168	0.172	2.101	0.517	0.331	1486.45	58.88	37.54	9.68	27.86	9.23	0.28	58.88	0.28	59.15	1437.66	3.01	1440.67	65.14	62.1	396.08	1.87	9.68E+09	2.79E+10	0.36134	13.45937	78.73	3.38
980	13356	########	28.78	19.5	20.6	0	10.99	5.81	0.85	57.96	0	2569.24	602.84	7380.42	17008.67	0.3	0.148	0.151	3.524	0.591	0.591	1486.45	57.96	33.67	5.81	27.86	10.99	0.85	57.96	0.85	58.81	1415.21	9.22	1424.43	39.09	73.92	389.9	5.72	5.81E+09	2.79E+10	0.33359	16.85681	412.67	15.45
981	13388	########	27.71	21.02	16.57	0	9.85	9.31	0.37	59.46	0	2453	897.5	7477.42	15602.29	0.3	0.148	0.151	2.613	0.518	0.331	1486.45	59.46	37.16	9.31	27.86	9.85	0.37	59.46	0.37	59.83	1451.87	3.98	1455.85	62.61	66.27	400	2.47	9.31E+09	2.79E+10	0.3653	14.23302	99.16	4.48
982	13412	########	26.79	25.06	22.96	0	8.91	8.55	1.03	57.17	0	2443.08	827.07	7400.34	16383.95	0.3	0.148	0.151	3.814	0.582	0.571	1486.45	57.17	36.4	8.55	27.86	8.91	1.03	57.17	1.03	58.2	1395.97	11.18	1407.15	57.5	59.94	384.6	6.94	8.55E+09	2.79E+10	0.18315	15.15722	140.28	5.56
983	13494	########	27.33	21.1	17.48	0	9.34	9.8	0.45	59.14	0	2422.04	945.41	7481.02	14448.73	0.3	0.194	0.2	2.613	0.518	0.331	1486.45	59.14	37.66	9.8	27.86	9.34	0.45	59.14	0.45	59.59	1444.21	4.86	1449.06	65.93	62.82	397.89	3.01	9.8E+09	2.79E+10	0.31737	13.85727	72.53	3.62
984	13532	########	28.81	23	24.24	0	8.7	8.85	0.71	57.11	0	2411.29	853.51	7364.51	14766.66	0.3	0.194	0.2	3.014	0.518	0.521	1486.45	57.11	36.71	8.85	27.86	8.7	0.71	57.11	0.71	57.83	1394.67	7.72	1402.39	59.56	58.52	384.24	4.79	8.85E+09	2.79E+10	0.22918	14.0751	123.43	5.18
985	13605	########	28	19.03	13.5	0	10.46	9.18	0.16	60.46	0	2397.22	903.8	7428.85	13097.22	0.3	0.166	0.17	1.931	0.517	0.331	1486.45	60.46	37.04	9.18	27.86	10.46	0.16	60.46	0.16	60.62	1476.27	1.72	1477.99	61.76	70.39	406.72	1.07	9.18E+09	2.79E+10	0.46914	14.66927	107.34	4.69
986	13689	########	27.04	23.1	17.73	0	9.27	9.8	0.51	59.02	0	2425.23	945.41	7486.34	14084.75	0.3	0.146	0.15	2.783	0.518	0.331	1486.45	59.02	37.66	9.8	27.86	9.27	0.51	59.02	0.51	59.53	1441.16	5.57	1446.74	65.93	62.35	397.05	3.46	9.8E+09	2.79E+10	0.29684	13.94122	72.53	3.62
987	13741	########	30.98	18.72	24.47	0	10.3	6.14	0.65	57.11	0	2449.39	663.13	7259.9	15426.46	0.3	0.146	0.15	3.014	0.518	0.521	1486.45	57.11	34	6.14	27.86	10.3	0.65	57.11	0.65	57.76	1394.49	7.07	1401.56	41.32	69.28	384.19	4.39	6.14E+09	2.79E+10	0.33989	15.73401	353.98	14.95
988	13809	########	27.33	21.1	17.48	0	9.34	9.8	0.45	59.14	0	2422.05	945.41	7481.02	14451.3	0.3	0.191	0.197	2.613	0.518	0.331	1486.45	59.14	37.66	9.8	27.86	9.34	0.45	59.14	0.45	59.59	1444.23	4.85	1449.08	65.93	62.82	397.89	3.01	9.8E+09	2.79E+10	0.31751	13.85585	72.53	3.62
989	13847	########	28.81	23	24.24	0	8.7	8.85	0.71	57.12	0	2411.3	853.51	7364.51	14761.31	0.3	0.191	0.197	3.014	0.518	0.521	1486.45	57.12	36.71	8.85	27.86	8.7	0.71	57.12	0.71	57.83	1394.68	7.71	1402.39	59.56	58.52	384.24	4.79	8.85E+09	2.79E+10	0.22932	14.07301	123.43	5.18
990	13930	########	27.46	19.1	13.15	0	10.3	9.49	0.2	60.51	0	2462.23	904.98	7495.2	13970.85	0.3	0.227	0.235	2.051	0.496	0.281	1486.45	60.51	37.35	9.49	27.86	10.3	0.2	60.51	0.2	60.71	1477.54	2.2	1479.74	63.87	69.28	407.07	1.37	9.49E+09	2.79E+10	0.44031	14.47845	89.42	4.08
991	13988	########	27.96	22.98	20.48	0	9.87	7.95	0.72	58.11	0	2599.31	770.7	7496.37	14912.72	0.3	0.192	0.198	3.524	0.591	0.591	1486.45	58.11	35.81	7.95	27.86	9.87	0.72	58.11	0.72	58.83	1418.96	7.76	1426.72	53.49	66.41	390.93	4.82	7.95E+09	2.79E+10	0.29468	15.19757	181.73	6.84
992	14041	########	27.58	21.34	20.02	0	10.94	5.87	1.03	57.95	0	2569.12	616.91	7400.98	17275.42	0.3	0.192	0.198	3.814	0.582	0.571	1486.45	57.95	33.73	5.87	27.86	10.94	1.03	57.95	1.03	58.98	1415.15	11.12	1426.27	39.5	73.6	389.88	6.9	5.87E+09	2.79E+10	0.2984	17.22615	399.64	15.32
993	14129	########	28.2	19.1	16.03	0	9.69	9.8	0.2	59.74	0	2406.38	945.41	7455.15	13634.59	0.3	0.278	0.29	1.931	0.517	0.331	1486.45	59.74	37.66	9.8	27.86	9.69	0.2	59.74	0.2	59.95	1458.88	2.22	1461.1	65.93	65.16	401.93	1.38	9.8E+09	2.79E+10	0.41184	13.78618	72.53	3.62
994	14227	########	27.97	23.38	19.99	0	8.97	9.68	0.51	58.43	0	2409.45	921.23	7433.52	14157.85	0.3	0.215	0.223	2.613	0.518	0.331	1486.45	58.43	37.54	9.68	27.86	8.97	0.51	58.43	0.51	58.93	1426.69	5.48	1432.17	65.14	60.38	393.06	3.4	9.68E+09	2.79E+10	0.28504	13.73556	78.73	3.38
995	14305	########	27.28	21.18	18.28	0	10.16	7.93	0.73	58.68	0	2548.35	742.82	7462.02	15273.09	0.3	0.184	0.189	3.524	0.591	0.591	1486.45	58.68	35.79	7.93	27.86	10.16	0.73	58.68	0.73	59.41	1432.93	7.89	1440.82	53.37	68.34	394.78	4.9	7.93E+09	2.79E+10	0.30489	15.54066	196.73	6.96
996	14373	########	29.06	20.85	21.74	0	9.52	8.34	0.55	57.92	0	2449.43	816.33	7387.61	14411.92	0.3	0.184	0.189	3.014	0.518	0.521	1486.45	57.92	36.2	8.34	27.86	9.52	0.55	57.92	0.55	58.47	1414.34	6	1420.34	56.1	64.05	389.66	3.73	8.34E+09	2.79E+10	0.30903	14.42607	155.44	6.3
997	14526	########	28.92	17.53	18.59	0	10.61	7.32	0.51	58.79	0	2441.23	840.06	7424.95	15818.08	0.3	0.179	0.184	2.783	0.518	0.331	1486.45	58.79	35.18	7.32	27.86	10.61	0.51	58.79	0.51	59.3	1435.56	5.57	1441.13	49.23	71.4	395.5	3.46	7.32E+09	2.79E+10	0.37701	15.62369	225.49	13.09
998	14569	########	25.96	22.7	19.93	0	9.3	8.77	0.96	58.03	0	2457.88	869.87	7471.33	16151.1	0.3	0.179	0.184	3.814	0.582	0.571	1486.45	58.03	36.63	8.77	27.86	9.3	0.96	58.03	0.96	59	1417.07	10.44	1427.51	59.02	62.55	390.41	6.48	8.77E+09	2.79E+10	0.21528	15.22329	129.28	5.78
999	14667	########	29.17	19.6	16.77	0	9.6	9.86	0.07	59.67	0	2382.65	935.6	7395.7	9147.03	0.3	0.157	0.16	1.309	0.5	0.28	1486.45	59.67	37.72	9.86	27.86	9.6	0.07	59.67	0.07	59.74	1457.02	0.77	1457.79	66.32	64.59	401.42	0.48	9.86E+09	2.79E+10	0.47914	13.78898	69.23	2.79
1000	14745	########	27.91	19.03	14.04	0	10.35	9.18	0.21	60.27	0	2477.25	877.94	7486.53	14099.45	0.3	0.209	0.216	2.101	0.517	0.331	1486.45	60.27	37.04	9.18	27.86	10.35	0.21	60.27	0.21	60.48	1471.64	2.29	1473.93	61.76	69.62	405.44	1.42	9.18E+09	2.79E+10	0.44206	14.57996	107.34	4.69
1001	14793	########	29.04	20.85	21.74	0	9.52	8.34	0.56	57.91	0	2449.21	816.33	7387.4	14419.18	0.3	0.209	0.216	3.014	0.518	0.521	1486.45	57.91	36.2	8.34	27.86	9.52	0.56	57.91	0.56	58.47	1414.2	6.06	1420.26	56.1	64.03	389.62	3.76	8.34E+09	2.79E+10	0.3079	14.44049	155.44	6.3
1002	14896	########	30.93	18.72	24.46	0	10.29	6.14	0.66	57.1	0	2450.49	663.13	7261.41	15478.88	0.3	0.177	0.181	3.014	0.518	0.521	1486.45	57.1	34	6.14	27.86	10.29	0.66	57.1	0.66	57.76	1394.39	7.16	1401.55	41.32	69.26	384.16	4.45	6.14E+09	2.79E+10	0.3388	15.75813	353.98	14.95
1003	14979	########	27.83	21.28	15.78	0	9.57	10.03	0.23	59.79	0	2400.47	961.5	7464.17	14012.25	0.3	0.155	0.158	2.051	0.496	0.281	1486.45	59.79	37.88	10.03	27.86	9.57	0.23	59.79	0.23	60.02	1459.92	2.52	1462.44	67.45	64.38	402.22	1.56	1E+10	2.79E+10	0.39187	13.63167	60.29	3.01
1004	15077	########	26.53	23.54	19.68	0	8.77	9.93	0.72	58.32	0	2408.66	941.36	7456.01	14625.04	0.3	0.206	0.212	3.014	0.497	0.281	1486.45	58.32	37.79	9.93	27.86	8.77	0.72	58.32	0.72	59.04	1424.09	7.76	1431.85	66.8	58.97	392.34	4.82	9.93E+09	2.79E+10	0.22382	14.0631	65.46	2.77
1005	15110	########	28.56	21	20.09	0	9.76	8.29	0.57	58.35	0	2410.33	826.2	7369.08	14774.33	0.3	0.206	0.212	3.014	0.518	0.521	1486.45	58.35	36.15	8.29	27.86	9.76	0.57	58.35	0.57	58.91	1424.76	6.13	1430.9	55.77	65.63	392.53	3.81	8.29E+09	2.79E+10	0.31746	14.73372	168.28	6.43
1006	15212	########	28.73	23	24.25	0	8.69	8.85	0.73	57.1	0	2409.51	853.51	7362.15	14869.73	0.3	0.232	0.24	3.014	0.518	0.521	1486.45	57.1	36.71	8.85	27.86	8.69	0.73	57.1	0.73	57.83	1394.28	7.87	1402.15	59.56	58.45	384.13	4.89	8.85E+09	2.79E+10	0.22638	14.11169	123.43	5.18
1007	15280	########	27.35	21.03	15.27	0	10.07	9.18	0.39	59.78	0	2471.39	877.94	7482.56	15751.99	0.3	0.195	0.201	2.613	0.518	0.331	1486.45	59.78	37.04	9.18	27.86	10.07	0.39	59.78	0.39	60.17	1459.85	4.19	1464.04	61.76	67.72	402.2	2.6	9.18E+09	2.79E+10	0.37128	14.54978	107.34	4.69
1008	15409	########	25.78	22.7	19.94	0	9.28	8.77	1	58	0	2456.36	869.87	7469.53	16341.82	0.3	0.284	0.297	3.814	0.582	0.571	1486.45	58	36.63	8.77	27.86	9.28	1	58	1	59	1416.31	10.79	1427.1	59.02	62.41	390.2	6.7	8.77E+09	2.79E+10	0.20963	15.3052	129.28	5.78
1009	15511	########	27.53	21.34	20.04	0	10.93	5.87	1.04	57.94	0	2568.6	616.91	7400.31	17290.93	0.3	0.219	0.227	3.814	0.582	0.571	1486.45	57.94	33.73	5.87	27.86	10.93	1.04	57.94	1.04	58.97	1414.78	11.23	1426.01	39.5	73.53	389.78	6.97	5.87E+09	2.79E+10	0.29653	17.24375	399.64	15.32
1010	15619	########	25.94	22.7	19.96	0	9.29	8.77	0.97	58.02	0	2457.39	869.87	7470.63	16176.24	0.3	0.187	0.192	3.814	0.582	0.571	1486.45	58.02	36.63	8.77	27.86	9.29	0.97	58.02	0.97	58.99	1416.83	10.48	1427.32	59.02	62.51	390.34	6.51	8.77E+09	2.79E+10	0.21416	15.23081	129.28	5.78
1011	15737	########	28.69	23	24.25	0	8.68	8.85	0.74	57.09	0	2409.16	853.51	7361.79	14933.68	0.3	0.266	0.277	3.014	0.518	0.521	1486.45	57.09	36.71	8.85	27.86	8.68	0.74	57.09	0.74	57.83	1394.11	7.97	1402.09	59.56	58.41	384.08	4.95	8.85E+09	2.79E+10	0.22463	14.13814	123.43	5.18
1012	15895	########	27.1	21.03	15.56	0	9.99	9.18	0.45	59.65	0	2469.84	877.94	7481.68	15217.91	0.3	0.159	0.163	2.783	0.518	0.331	1486.45	59.65	37.04	9.18	27.86	9.99	0.45	59.65	0.45	60.1	1456.65	4.84	1461.5	61.76	67.23	401.31	3.01	9.18E+09	2.79E+10	0.35109	14.59775	107.34	4.69
1013	16034	########	28.23	17.33	14.23	0	9.96	9.96	0.06	60.35	0	2413.14	945.08	7443.04	8049.12	0.3	0.213	0.22	1.309	0.5	0.28	1486.45	60.35	37.82	9.96	27.86	9.96	0.06	60.35	0.06	60.41	1473.58	0.69	1474.27	67.02	66.98	405.98	0.43	9.96E+09	2.79E+10	0.50262	14.18943	63.79	3.03
1014	16117	########	28.01	23.38	20.02	0	8.97	9.68	0.5	58.42	0	2409.33	921.23	7433.16	14133	0.3	0.179	0.184	2.613	0.518	0.331	1486.45	58.42	37.54	9.68	27.86	8.97	0.5	58.42	0.5	58.92	1426.65	5.41	1432.07	65.14	60.38	393.05	3.36	9.68E+09	2.79E+10	0.28595	13.71196	78.73	3.38
1015	16160	########	28.59	21	20.11	0	9.75	8.29	0.56	58.34	0	2410.14	826.2	7368.68	14775.72	0.3	0.179	0.184	3.014	0.518	0.521	1486.45	58.34	36.15	8.29	27.86	9.75	0.56	58.34	0.56	58.91	1424.69	6.09	1430.78	55.77	65.63	392.51	3.78	8.29E+09	2.79E+10	0.31787	14.71734	168.28	6.43
1016	16298	########	27.93	22.98	20.51	0	9.86	7.95	0.72	58.1	0	2598.49	770.7	7495.31	14945.42	0.3	0.209	0.216	3.524	0.591	0.591	1486.45	58.1	35.81	7.95	27.86	9.86	0.72	58.1	0.72	58.82	1418.62	7.83	1426.45	53.49	66.36	390.84	4.86	7.95E+09	2.79E+10	0.29312	15.20768	181.73	6.84
1017	16451	########	29.51	9.47	13.51	0	11.43	7.67	0.06	60.55	0	2416.98	866.44	7400.62	7190.67	0.3	0.233	0.241	1.309	0.5	0.28	1486.45	60.55	35.53	7.67	27.86	11.43	0.06	60.55	0.06	60.6	1478.44	0.62	1479.06	51.61	76.9	407.32	0.38	7.67E+09	2.79E+10	0.59697	16.45684	196.94	12.38
1018	16509	########	26.88	22.68	20.35	0	9.35	8.71	0.83	58.04	0	2458.92	865.17	7462.71	15054.04	0.3	0.196	0.202	3.524	0.591	0.591	1486.45	58.04	36.56	8.71	27.86	9.35	0.83	58.04	0.83	58.87	1417.29	8.98	1426.27	58.58	62.88	390.47	5.58	8.71E+09	2.79E+10	0.24501	14.92364	133.39	5.92
1019	16737	########	28.88	21.38	19.09	0	9.22	9.68	0.29	58.86	0	2399.85	921.23	7416.7	14959.49	0.3	0.221	0.228	2.101	0.517	0.331	1486.45	58.86	37.54	9.68	27.86	9.22	0.29	58.86	0.29	59.15	1437.19	3.14	1440.33	65.14	62.02	395.95	1.95	9.68E+09	2.79E+10	0.35818	13.49559	78.73	3.38
1020	16855	########	27.36	21.03	15.26	0	10.07	9.18	0.39	59.79	0	2471.4	877.94	7482.49	15747.43	0.3	0.188	0.193	2.613	0.518	0.331	1486.45	59.79	37.04	9.18	27.86	10.07	0.39	59.79	0.39	60.17	1459.93	4.18	1464.11	61.76	67.73	402.22	2.59	9.18E+09	2.79E+10	0.37191	14.55623	107.34	4.69
1021	16998	########	28.97	20.85	21.78	0	9.5	8.34	0.58	57.89	0	2449.69	816.33	7388.07	14465.98	0.3	0.268	0.279	3.014	0.518	0.521	1486.45	57.89	36.2	8.34	27.86	9.5	0.58	57.89	0.58	58.47	1413.59	6.24	1419.83	56.1	63.92	389.45	3.87	8.34E+09	2.79E+10	0.30455	14.48687	155.44	6.3
1022	16999	########	27.96	22.67	21.49	0	9.04	9.04	0.67	57.88	0	2425.28	891.42	7428.32	13888.83	0.3	0.268	0.279	3.014	0.518	0.521	1486.45	57.88	36.9	9.04	27.86	9.04	0.67	57.88	0.67	58.55	1413.38	7.26	1420.64	60.85	60.84	389.39	4.51	9.04E+09	2.79E+10	0.2579	14.22118	113.7	5.39
1023	17000	########	28.48	21	20.12	0	9.74	8.29	0.58	58.32	0	2410.78	826.2	7369.72	14808.53	0.3	0.268	0.279	3.014	0.518	0.521	1486.45	58.32	36.15	8.29	27.86	9.74	0.58	58.32	0.58	58.91	1424.14	6.33	1430.47	55.77	65.52	392.36	3.93	8.29E+09	2.79E+10	0.314	14.78242	168.28	6.43
1024	17076	########	29.1	15.33	15.06	0	11.02	7.8	0.21	59.99	0	2473.6	839.38	7463.31	14315.26	0.3	0.183	0.188	2.051	0.496	0.281	1486.45	59.99	35.65	7.8	27.86	11.02	0.21	59.99	0.21	60.21	1464.98	2.32	1467.3	52.46	74.16	403.61	1.44	7.8E+09	2.79E+10	0.48193	15.52858	188.15	12.34
1025	17181	########	29.1	15.33	15.04	0	11.03	7.8	0.21	60	0	2473.8	839.38	7463.51	14279.03	0.3	0.159	0.163	2.051	0.496	0.281	1486.45	60	35.65	7.8	27.86	11.03	0.21	60	0.21	60.21	1465.19	2.28	1467.47	52.46	74.2	403.67	1.42	7.8E+09	2.79E+10	0.48307	15.52581	188.15	12.34
1026	17191	########	27.62	21.34	20.04	0	10.94	5.87	1.02	57.95	0	2568.82	616.91	7400.41	17253.9	0.3	0.159	0.163	3.814	0.582	0.571	1486.45	57.95	33.73	5.87	27.86	10.94	1.02	57.95	1.02	58.97	1415.17	11.05	1426.22	39.5	73.6	389.89	6.86	5.87E+09	2.79E+10	0.29925	17.21322	399.64	15.32
1027	17296	########	27.53	21.34	20.03	0	10.93	5.87	1.04	57.94	0	2568.47	616.91	7400.08	17287.6	0.3	0.214	0.221	3.814	0.582	0.571	1486.45	57.94	33.73	5.87	27.86	10.93	1.04	57.94	1.04	58.98	1414.86	11.22	1426.08	39.5	73.54	389.8	6.97	5.87E+09	2.79E+10	0.29701	17.25021	399.64	15.32
1028	17311	########	30.88	18.72	24.48	0	10.28	6.14	0.67	57.09	0	2449.72	663.13	7260.41	15556.5	0.3	0.214	0.221	3.014	0.518	0.521	1486.45	57.09	34	6.14	27.86	10.28	0.67	57.09	0.67	57.76	1393.95	7.29	1401.23	41.32	69.18	384.04	4.52	6.14E+09	2.79E+10	0.33664	15.78836	353.98	14.95
1029	17312	########	28.76	23	24.25	0	8.69	8.85	0.72	57.1	0	2410.93	853.51	7363.92	14821.92	0.3	0.214	0.221	3.014	0.518	0.521	1486.45	57.1	36.71	8.85	27.86	8.69	0.72	57.1	0.72	57.83	1394.39	7.83	1402.21	59.56	58.47	384.16	4.86	8.85E+09	2.79E+10	0.22754	14.10842	123.43	5.18
1030	17313	########	29.03	20.85	21.77	0	9.51	8.34	0.56	57.9	0	2449.91	816.33	7388.21	14444.15	0.3	0.214	0.221	3.014	0.518	0.521	1486.45	57.9	36.2	8.34	27.86	9.51	0.56	57.9	0.56	58.47	1413.92	6.1	1420.02	56.1	63.98	389.54	3.79	8.34E+09	2.79E+10	0.30704	14.45254	155.44	6.3
1031	17314	########	28.04	22.67	21.5	0	9.05	9.04	0.66	57.89	0	2425.49	891.42	7428.44	13778.08	0.3	0.214	0.221	3.014	0.518	0.521	1486.45	57.89	36.9	9.04	27.86	9.05	0.66	57.89	0.66	58.55	1413.63	7.11	1420.74	60.85	60.89	389.46	4.41	9.04E+09	2.79E+10	0.26047	14.18079	113.7	5.39
1032	17315	########	28.55	21	20.12	0	9.75	8.29	0.57	58.34	0	2410.97	826.2	7369.83	14799.56	0.3	0.214	0.221	3.014	0.518	0.521	1486.45	58.34	36.15	8.29	27.86	9.75	0.57	58.34	0.57	58.91	1424.46	6.18	1430.65	55.77	65.58	392.45	3.84	8.29E+09	2.79E+10	0.31646	14.74789	168.28	6.43
1033	17376	########	29.25	15.53	18.23	0	10.71	7.32	0.43	58.96	0	2441.27	840.06	7423.94	16082.68	0.3	0.18	0.185	2.613	0.518	0.331	1486.45	58.96	35.18	7.32	27.86	10.71	0.43	58.96	0.43	59.39	1439.67	4.68	1444.35	49.23	72.07	396.63	2.91	7.32E+09	2.79E+10	0.4021	15.5684	225.49	13.09
1034	17401	########	27.59	21.34	20.04	0	10.94	5.87	1.03	57.95	0	2568.68	616.91	7400.28	17266.74	0.3	0.18	0.185	3.814	0.582	0.571	1486.45	57.95	33.73	5.87	27.86	10.94	1.03	57.95	1.03	58.98	1415.05	11.11	1426.16	39.5	73.58	389.85	6.9	5.87E+09	2.79E+10	0.29841	17.22724	399.64	15.32
1035	17486	########	29.92	13.53	15.85	0	11.21	7.32	0.17	59.82	0	2444.86	840.06	7424.74	13974.27	0.3	0.157	0.161	1.931	0.517	0.331	1486.45	59.82	35.18	7.32	27.86	11.21	0.17	59.82	0.17	59.99	1460.81	1.84	1462.65	49.23	75.44	402.46	1.14	7.32E+09	2.79E+10	0.51259	15.80796	225.49	13.09
1036	17521	########	30.95	18.72	24.47	0	10.29	6.14	0.66	57.1	0	2450.12	663.13	7260.79	15483.84	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.1	34	6.14	27.86	10.29	0.66	57.1	0.66	57.76	1394.33	7.13	1401.47	41.32	69.25	384.14	4.43	6.14E+09	2.79E+10	0.33918	15.75402	353.98	14.95
1037	17522	########	28.85	23	24.26	0	8.7	8.85	0.71	57.11	0	2411.15	853.51	7364.04	14711.85	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.11	36.71	8.85	27.86	8.7	0.71	57.11	0.71	57.82	1394.67	7.65	1402.32	59.56	58.52	384.24	4.75	8.85E+09	2.79E+10	0.23037	14.06254	123.43	5.18
1038	17523	########	29.09	20.85	21.75	0	9.52	8.34	0.55	57.92	0	2450.17	816.33	7388.39	14422.1	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.92	36.2	8.34	27.86	9.52	0.55	57.92	0.55	58.47	1414.3	5.96	1420.26	56.1	64.05	389.65	3.7	8.34E+09	2.79E+10	0.30973	14.41735	155.44	6.3
1039	17524	########	28.11	22.67	21.5	0	9.06	9.04	0.64	57.91	0	2425.72	891.42	7428.59	13658.25	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	57.91	36.9	9.04	27.86	9.06	0.64	57.91	0.64	58.55	1413.98	6.95	1420.93	60.85	60.96	389.56	4.32	9.04E+09	2.79E+10	0.26323	14.13898	113.7	5.39
1040	17525	########	28.61	21	20.1	0	9.76	8.29	0.56	58.35	0	2411.2	826.2	7369.98	14787.31	0.3	0.157	0.161	3.014	0.518	0.521	1486.45	58.35	36.15	8.29	27.86	9.76	0.56	58.35	0.56	58.91	1424.85	6.04	1430.89	55.77	65.65	392.55	3.75	8.29E+09	2.79E+10	0.31913	14.7125	168.28	6.43
1041	17556	########	28.67	19.5	20.6	0	10.97	5.81	0.87	57.94	0	2569.64	602.84	7381	17057.77	0.3	0.21	0.217	3.524	0.591	0.591	1486.45	57.94	33.67	5.81	27.86	10.97	0.87	57.94	0.87	58.81	1414.78	9.44	1424.22	39.09	73.83	389.78	5.86	5.81E+09	2.79E+10	0.33075	16.90927	412.67	15.45
1042	17611	########	27.54	21.34	20.03	0	10.93	5.87	1.03	57.94	0	2568.5	616.91	7400.1	17285.4	0.3	0.21	0.217	3.814	0.582	0.571	1486.45	57.94	33.73	5.87	27.86	10.93	1.03	57.94	1.03	58.98	1414.88	11.21	1426.09	39.5	73.55	389.81	6.96	5.87E+09	2.79E+10	0.29716	17.24778	399.64	15.32
1043	17666	########	27.4	18.63	13.84	0	12.24	5.58	0.71	59.87	0	2724.25	312.15	7638.33	17021.99	0.3	0.234	0.242	2.733	0.59	0.591	1486.45	59.87	33.43	5.58	27.86	12.24	0.71	59.87	0.71	60.59	1462.04	7.71	1469.75	37.52	82.37	402.8	4.78	5.58E+09	2.79E+10	0.4144	17.81077	476.24	15.57
1044	17681	########	27.83	16.11	12.39	0	11.85	6.96	0.38	60.56	0	2579.03	813.66	7598.48	16136.21	0.3	0.234	0.242	2.101	0.517	0.331	1486.45	60.56	34.82	6.96	27.86	11.85	0.38	60.56	0.38	60.93	1478.7	4.08	1482.78	46.83	79.7	407.39	2.53	6.96E+09	2.79E+10	0.4704	16.71904	260.44	13.23
1045	17721	########	27.41	20.41	14.82	0	12.03	5.64	0.76	59.57	0	2673.64	312.15	7568.23	17076.76	0.3	0.234	0.242	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.03	0.76	59.57	0.76	60.33	1454.6	8.26	1462.85	37.91	80.95	400.75	5.13	5.64E+09	2.79E+10	0.39627	17.70331	460.16	15.44
1046	17726	########	29.01	16.41	12.65	0	12.57	5.64	0.35	60.51	0	2708.18	312.15	7604.06	16136.21	0.3	0.234	0.242	2.101	0.579	0.571	1486.45	60.51	33.49	5.64	27.86	12.57	0.35	60.51	0.35	60.86	1477.67	3.77	1481.43	37.91	84.57	407.1	2.34	5.64E+09	2.79E+10	0.51633	17.56921	460.16	15.44
1047	17731	########	27.44	19.67	19.7	0	11.01	5.86	1.03	58.04	0	2592.65	613.73	7422.57	17310.83	0.3	0.234	0.242	3.014	0.518	0.521	1486.45	58.04	33.72	5.86	27.86	11.01	1.03	58.04	1.03	59.06	1417.21	11.12	1428.34	39.41	74.07	390.45	6.91	5.86E+09	2.79E+10	0.30567	17.31002	408.42	15.08
1048	17736	########	30.37	17.67	17.37	0	11.71	5.86	0.36	59.25	0	2537.13	684.53	7414.97	16069.01	0.3	0.234	0.242	2.051	0.517	0.521	1486.45	59.25	33.72	5.86	27.86	11.71	0.36	59.25	0.36	59.61	1446.76	3.92	1450.68	39.41	78.79	398.59	2.44	5.86E+09	2.79E+10	0.47606	16.70619	408.42	15.08
1049	17741	########	30.92	11.88	14.33	0	12.34	5.8	0.09	60.3	0	2539.27	676.39	7396.92	8768.32	0.3	0.234	0.242	1.309	0.519	0.521	1486.45	60.3	33.66	5.8	27.86	12.34	0.09	60.3	0.09	60.39	1472.42	0.97	1473.39	39.05	83.03	405.66	0.6	5.8E+09	2.79E+10	0.62041	17.62598	420.02	15.1
1050	17771	########	27.42	18.63	13.84	0	12.25	5.58	0.71	59.88	0	2724.63	312.15	7638.72	17008.81	0.3	0.197	0.203	2.733	0.59	0.591	1486.45	59.88	33.43	5.58	27.86	12.25	0.71	59.88	0.71	60.58	1462.12	7.66	1469.78	37.52	82.38	402.82	4.76	5.58E+09	2.79E+10	0.415	17.79914	476.24	15.57
1051	17806	########	24.45	19.79	13.67	0	11.05	7.44	1	59.66	0	2551.06	850.65	7602.83	17299.02	0.3	0.197	0.203	3.014	0.497	0.281	1486.45	59.66	35.3	7.44	27.86	11.05	1	59.66	1	60.66	1456.8	10.84	1467.64	50.05	74.34	401.35	6.73	7.44E+09	2.79E+10	0.29892	17.15862	217.22	12.49
1052	17826	########	27.43	20.41	14.82	0	12.03	5.64	0.76	59.57	0	2674.02	312.15	7568.63	17064	0.3	0.197	0.203	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.03	0.76	59.57	0.76	60.33	1454.65	8.21	1462.86	37.91	80.96	400.76	5.1	5.64E+09	2.79E+10	0.39686	17.69131	460.16	15.44
1053	17831	########	29.02	16.41	12.64	0	12.57	5.64	0.34	60.52	0	2708.61	312.15	7604.52	16123.03	0.3	0.197	0.203	2.101	0.579	0.571	1486.45	60.52	33.49	5.64	27.86	12.57	0.34	60.52	0.34	60.86	1477.78	3.74	1481.52	37.91	84.6	407.14	2.32	5.64E+09	2.79E+10	0.51699	17.56254	460.16	15.44
1054	17836	########	27.48	19.67	19.71	0	11.01	5.86	1.02	58.04	0	2592.6	613.73	7422.44	17299.02	0.3	0.197	0.203	3.014	0.518	0.521	1486.45	58.04	33.72	5.86	27.86	11.01	1.02	58.04	1.02	59.06	1417.26	11.07	1428.33	39.41	74.08	390.46	6.87	5.86E+09	2.79E+10	0.30621	17.29596	408.42	15.08
1055	17876	########	27.36	18.63	13.84	0	12.24	5.58	0.72	59.87	0	2723.58	312.15	7637.59	17040.84	0.3	0.288	0.301	2.733	0.59	0.591	1486.45	59.87	33.43	5.58	27.86	12.24	0.72	59.87	0.72	60.59	1461.88	7.78	1469.66	37.52	82.34	402.75	4.83	5.58E+09	2.79E+10	0.41335	17.82572	476.24	15.57
1056	17931	########	27.38	20.41	14.82	0	12.03	5.64	0.77	59.56	0	2672.98	312.15	7567.52	17095.09	0.3	0.288	0.301	2.783	0.58	0.571	1486.45	59.56	33.49	5.64	27.86	12.03	0.77	59.56	0.77	60.33	1454.44	8.33	1462.77	37.91	80.92	400.71	5.17	5.64E+09	2.79E+10	0.39522	17.71913	460.16	15.44
1057	17936	########	28.99	16.41	12.66	0	12.57	5.64	0.35	60.51	0	2707.46	312.15	7603.27	16153.36	0.3	0.288	0.301	2.101	0.579	0.571	1486.45	60.51	33.49	5.64	27.86	12.57	0.35	60.51	0.35	60.86	1477.47	3.82	1481.29	37.91	84.53	407.05	2.37	5.64E+09	2.79E+10	0.51518	17.57655	460.16	15.44
1058	17981	########	27.4	18.63	13.85	0	12.24	5.58	0.71	59.87	0	2724.3	312.15	7638.36	17017.55	0.3	0.221	0.229	2.733	0.59	0.591	1486.45	59.87	33.43	5.58	27.86	12.24	0.71	59.87	0.71	60.58	1462.03	7.69	1469.72	37.52	82.37	402.8	4.78	5.58E+09	2.79E+10	0.41448	17.80554	476.24	15.57
1059	18006	########	26.6	18.11	13.99	0	11.44	6.96	0.69	59.85	0	2575.31	813.66	7596.91	16541.15	0.3	0.221	0.229	2.613	0.518	0.331	1486.45	59.85	34.82	6.96	27.86	11.44	0.69	59.85	0.69	60.54	1461.47	7.49	1468.96	46.83	76.96	402.64	4.65	6.96E+09	2.79E+10	0.3773	16.8837	260.44	13.23
1060	18036	########	27.42	20.41	14.82	0	12.03	5.64	0.76	59.57	0	2673.7	312.15	7568.27	17072.49	0.3	0.221	0.229	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.03	0.76	59.57	0.76	60.33	1454.58	8.24	1462.82	37.91	80.95	400.74	5.12	5.64E+09	2.79E+10	0.39634	17.69801	460.16	15.44
1061	18041	########	29.02	16.41	12.65	0	12.57	5.64	0.35	60.51	0	2708.26	312.15	7604.12	16131.79	0.3	0.221	0.229	2.101	0.579	0.571	1486.45	60.51	33.49	5.64	27.86	12.57	0.35	60.51	0.35	60.86	1477.67	3.76	1481.43	37.91	84.58	407.11	2.33	5.64E+09	2.79E+10	0.51643	17.56518	460.16	15.44
1062	18086	########	27.43	18.63	13.84	0	12.25	5.58	0.71	59.88	0	2724.75	312.15	7638.86	17005.57	0.3	0.188	0.194	2.733	0.59	0.591	1486.45	59.88	33.43	5.58	27.86	12.25	0.71	59.88	0.71	60.58	1462.16	7.65	1469.81	37.52	82.39	402.83	4.75	5.58E+09	2.79E+10	0.41518	17.79675	476.24	15.57
1063	18146	########	29.02	16.41	12.64	0	12.58	5.64	0.34	60.52	0	2708.74	312.15	7604.66	16119.76	0.3	0.188	0.194	2.101	0.579	0.571	1486.45	60.52	33.49	5.64	27.86	12.58	0.34	60.52	0.34	60.86	1477.81	3.73	1481.54	37.91	84.6	407.14	2.32	5.64E+09	2.79E+10	0.51719	17.5615	460.16	15.44
1064	18151	########	27.48	19.67	19.71	0	11.01	5.86	1.02	58.04	0	2592.62	613.73	7422.47	17296.13	0.3	0.188	0.194	3.014	0.518	0.521	1486.45	58.04	33.72	5.86	27.86	11.01	1.02	58.04	1.02	59.06	1417.28	11.06	1428.34	39.41	74.08	390.47	6.87	5.86E+09	2.79E+10	0.30639	17.29283	408.42	15.08
1065	18191	########	27.38	18.63	13.84	0	12.24	5.58	0.72	59.87	0	2723.81	312.15	7637.85	17034.39	0.3	0.269	0.28	2.733	0.59	0.591	1486.45	59.87	33.43	5.58	27.86	12.24	0.72	59.87	0.72	60.58	1461.93	7.75	1469.68	37.52	82.35	402.77	4.81	5.58E+09	2.79E+10	0.41371	17.82054	476.24	15.57
1066	18221	########	28.03	14.11	11.63	0	12	6.96	0.3	60.83	0	2580.47	813.66	7599.32	15886.58	0.3	0.269	0.28	1.931	0.517	0.331	1486.45	60.83	34.82	6.96	27.86	12	0.3	60.83	0.3	61.13	1485.4	3.21	1488.61	46.83	80.73	409.24	1.99	6.96E+09	2.79E+10	0.50257	16.7953	260.44	13.23
1067	18251	########	29	16.41	12.66	0	12.57	5.64	0.35	60.51	0	2707.71	312.15	7603.54	16147.74	0.3	0.269	0.28	2.101	0.579	0.571	1486.45	60.51	33.49	5.64	27.86	12.57	0.35	60.51	0.35	60.86	1477.52	3.8	1481.32	37.91	84.55	407.06	2.36	5.64E+09	2.79E+10	0.51558	17.57406	460.16	15.44
1068	18296	########	27.44	18.63	13.84	0	12.25	5.58	0.71	59.88	0	2724.81	312.15	7638.93	17003.82	0.3	0.183	0.188	2.733	0.59	0.591	1486.45	59.88	33.43	5.58	27.86	12.25	0.71	59.88	0.71	60.58	1462.17	7.64	1469.81	37.52	82.39	402.83	4.74	5.58E+09	2.79E+10	0.41528	17.79544	476.24	15.57
1069	18351	########	27.44	20.41	14.82	0	12.04	5.64	0.76	59.57	0	2674.2	312.15	7568.83	17059.19	0.3	0.183	0.188	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.04	0.76	59.57	0.76	60.33	1454.7	8.19	1462.89	37.91	80.97	400.78	5.09	5.64E+09	2.79E+10	0.39714	17.68738	460.16	15.44
1070	18356	########	29.03	16.41	12.64	0	12.58	5.64	0.34	60.52	0	2708.81	312.15	7604.74	16117.98	0.3	0.183	0.188	2.101	0.579	0.571	1486.45	60.52	33.49	5.64	27.86	12.58	0.34	60.52	0.34	60.86	1477.84	3.72	1481.56	37.91	84.61	407.15	2.31	5.64E+09	2.79E+10	0.5173	17.56092	460.16	15.44
1071	18456	########	27.45	20.41	14.82	0	12.04	5.64	0.75	59.58	0	2674.5	312.15	7569.17	17050.89	0.3	0.16	0.164	2.783	0.58	0.571	1486.45	59.58	33.49	5.64	27.86	12.04	0.75	59.58	0.75	60.33	1454.76	8.16	1462.92	37.91	80.99	400.79	5.07	5.64E+09	2.79E+10	0.3976	17.68052	460.16	15.44
1072	18461	########	29.03	16.41	12.62	0	12.58	5.64	0.34	60.53	0	2709.14	312.15	7605.11	16109.15	0.3	0.16	0.164	2.101	0.579	0.571	1486.45	60.53	33.49	5.64	27.86	12.58	0.34	60.53	0.34	60.87	1477.97	3.7	1481.67	37.91	84.63	407.19	2.3	5.64E+09	2.79E+10	0.51781	17.55795	460.16	15.44
1073	18506	########	27.41	18.63	13.84	0	12.24	5.58	0.71	59.87	0	2724.39	312.15	7638.46	17015.18	0.3	0.215	0.222	2.733	0.59	0.591	1486.45	59.87	33.43	5.58	27.86	12.24	0.71	59.87	0.71	60.58	1462.06	7.68	1469.75	37.52	82.37	402.81	4.77	5.58E+09	2.79E+10	0.41462	17.80381	476.24	15.57
1074	18561	########	27.43	20.41	14.82	0	12.03	5.64	0.76	59.57	0	2673.79	312.15	7568.37	17070.18	0.3	0.215	0.222	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.03	0.76	59.57	0.76	60.33	1454.6	8.23	1462.84	37.91	80.95	400.75	5.11	5.64E+09	2.79E+10	0.39648	17.69616	460.16	15.44
1075	18566	########	29.02	16.41	12.65	0	12.57	5.64	0.35	60.52	0	2708.36	312.15	7604.23	16129.46	0.3	0.215	0.222	2.101	0.579	0.571	1486.45	60.52	33.49	5.64	27.86	12.57	0.35	60.52	0.35	60.86	1477.7	3.75	1481.45	37.91	84.58	407.11	2.33	5.64E+09	2.79E+10	0.51659	17.56455	460.16	15.44
1076	18611	########	27.43	18.63	13.84	0	12.25	5.58	0.7	59.88	0	2724.85	312.15	7638.97	17002.87	0.3	0.181	0.186	2.733	0.59	0.591	1486.45	59.88	33.43	5.58	27.86	12.25	0.7	59.88	0.7	60.58	1462.17	7.64	1469.81	37.52	82.4	402.83	4.74	5.58E+09	2.79E+10	0.41533	17.79472	476.24	15.57
1077	18666	########	27.45	20.41	14.82	0	12.04	5.64	0.76	59.57	0	2674.23	312.15	7568.87	17058.26	0.3	0.181	0.186	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.04	0.76	59.57	0.76	60.33	1454.7	8.19	1462.89	37.91	80.97	400.78	5.08	5.64E+09	2.79E+10	0.39719	17.68661	460.16	15.44
1078	18671	########	29.03	16.41	12.63	0	12.58	5.64	0.34	60.52	0	2708.84	312.15	7604.78	16117	0.3	0.181	0.186	2.101	0.579	0.571	1486.45	60.52	33.49	5.64	27.86	12.58	0.34	60.52	0.34	60.86	1477.85	3.72	1481.57	37.91	84.61	407.15	2.31	5.64E+09	2.79E+10	0.51735	17.5606	460.16	15.44
1079	18716	########	27.45	18.63	13.84	0	12.25	5.58	0.7	59.88	0	2725.15	312.15	7639.3	16994.59	0.3	0.158	0.162	2.733	0.59	0.591	1486.45	59.88	33.43	5.58	27.86	12.25	0.7	59.88	0.7	60.58	1462.25	7.61	1469.86	37.52	82.41	402.86	4.72	5.58E+09	2.79E+10	0.41579	17.7884	476.24	15.57
1080	18771	########	27.46	20.41	14.82	0	12.04	5.64	0.75	59.58	0	2674.53	312.15	7569.2	17050.17	0.3	0.158	0.162	2.783	0.58	0.571	1486.45	59.58	33.49	5.64	27.86	12.04	0.75	59.58	0.75	60.33	1454.77	8.15	1462.92	37.91	80.99	400.8	5.06	5.64E+09	2.79E+10	0.39764	17.67993	460.16	15.44
1081	18776	########	29.03	16.41	12.62	0	12.58	5.64	0.34	60.53	0	2709.17	312.15	7605.14	16108.36	0.3	0.158	0.162	2.101	0.579	0.571	1486.45	60.53	33.49	5.64	27.86	12.58	0.34	60.53	0.34	60.87	1477.97	3.7	1481.67	37.91	84.63	407.19	2.3	5.64E+09	2.79E+10	0.51785	17.55768	460.16	15.44
1082	18821	########	27.41	18.63	13.84	0	12.24	5.58	0.71	59.88	0	2724.44	312.15	7638.51	17013.88	0.3	0.211	0.218	2.733	0.59	0.591	1486.45	59.88	33.43	5.58	27.86	12.24	0.71	59.88	0.71	60.58	1462.07	7.68	1469.75	37.52	82.37	402.81	4.77	5.58E+09	2.79E+10	0.4147	17.80286	476.24	15.57
1083	18876	########	27.42	20.41	14.82	0	12.03	5.64	0.76	59.57	0	2673.84	312.15	7568.42	17068.92	0.3	0.211	0.218	2.783	0.58	0.571	1486.45	59.57	33.49	5.64	27.86	12.03	0.76	59.57	0.76	60.33	1454.62	8.23	1462.84	37.91	80.96	400.75	5.11	5.64E+09	2.79E+10	0.39656	17.69516	460.16	15.44
1084	18881	########	29.02	16.41	12.65	0	12.57	5.64	0.35	60.52	0	2708.41	312.15	7604.29	16128.15	0.3	0.211	0.218	2.101	0.579	0.571	1486.45	60.52	33.49	5.64	27.86	12.57	0.35	60.52	0.35	60.86	1477.72	3.75	1481.47	37.91	84.58	407.12	2.33	5.64E+09	2.79E+10	0.51667	17.56415	460.16	15.44

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