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Ternopil Ivan Puluj National Technical University

Faculty of Computer Information Systems and Software Engineering

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Computer Science Department

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QUALIFYING PAPER

For the degree of

Bachelor thesis

(degree name)

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Submitted by: fourth year student IV, group ICH-43
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ASSIGNMENT
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ANNOTATION

The goal of this graduation project was to create an online purchasing system that would automate the job of a clothes company.

The goal of the project and the tasks completed are described in the thesis's introduction.

To achieve this purpose, the following work was completed: a research of the topic area, followed by the construction of a technical job for software development based on the study's findings.

Databases based on the MongoDB document-oriented database management system, a server based on Node.js + Express, and a web application based on React.js were built as a consequence of this effort.

This graduation project resulted in the creation of an online apparel shopping and ordering business.

CONTENT

INTRODUCTION	9
1 WEBSITE DEVELOPMENT	11
1.1 Concept of the site	11
1.2 Steps to Build a Website.....	11
1.3 Website creation technology	12
1.4 PHP Code Script.....	12
1.5 Java Script.....	13
1.6 HTML	14
1.7 DBMS and MySQL	15
2 GENERAL CHARACTERISTICS OF A SITE OF A CLOTHING STORE	17
2.1 Concept of an Online Store	17
2.2 The purpose of an online store	17
2.3 Online Store Design.....	19
2.4 Importance of design of an online store	20
2.5 A successful design for the online store	21
2.6 Research and Analytics	22
2.7 AIDA	23
2.8 Usability.....	23
2.9 Design	25
2.10 Appearance and Colours.....	26
3 CREATION OF ONLINE PURCHASING SYSTEM	28
3.1 Problem Statement.....	29
3.2 Terms and abbreviations.....	29
3.3 Psychology of buyers of Online Stores	30
3.4 Functionality	32
3.5 Technologies for the design development.....	32
3.6 Architecture of web applications.....	34

3.7 Practical Part.....	36
3.8 Use case diagram	39
3.9 Sequence diagram.....	39
3.10 The web application’s functionality	40
4 OCCUPATIONAL HEALTH AND EMERGENCY SAFETY	50
4.1 Computers and Your Health	50
4.2 Computer health related problems and how tips on how to solve them ...	53
4.3 Conclusions.....	55
CONCLUSIONS	57
REFERENCES	58
APPENDIX	

INTRODUCTION

The Internet has seen considerable developments in recent years. Sites, which were formerly just a place to put static content, have evolved into multipurpose, interactive platforms for delivering a variety of information.

The importance of the research topic stems from the necessity to examine existing strategies for developing corporate and information resources in order to determine the most efficient strategy for doing so. The goal of this research is to figure out how to produce successful development approaches for building competent corporate and informative Internet resources. The approaches for developing websites are viewed as a collection of techniques and development tools.

All website development methods can be classified into two categories. The first category offers techniques for generating handwritten websites using HTML and other programming languages. A static website can be created with just HTML and CSS. However, if a more complex and dynamic site is required, programming languages are linked here. PHP, Java script, and APS.NET are the most often used programming languages for website building. The second group of site development techniques is the most straightforward to implement. Because it does not necessitate a great deal of programming skills. The site developer is given the option of building sites using the graphical interface of specific tools or content management systems (CMS).

When creating a website, it's important to keep the aesthetic in mind. After all, the user is more concerned with the site's outside shell, that is, its design and usability, rather than the site's complexity. The first thing a user notices is the design. If the user is unable to locate the information he requires owing to the site's intricacy, he will navigate to another site. It is vital to create the site with ergonomics in mind in order for the user to have an effective engagement with it. Ergonomics ensure that the user is comfortable while viewing the page, which helps to keep the user engaged.

The focus of this course is on learning how to create a website for a clothing store. In addition, the course work focuses on the development of their own website, which allows a

user who wants to buy a product in a specific store to learn more about it and get a price quote.

1 WEBSITE DEVELOPMENT

1.1 Concept of the site

A site, or website, is a collection of logically related web pages that also serves as the repository for server content. A site on the Internet is typically an assortment of connected data with a unique address that is viewed as a whole by the user. Websites are named after the HTTP protocol, which is used to access them.

A website, as a collection of electronic documents (data and code files), can belong to an individual or an organization and be accessed through a network or locally on a single computer using a shared domain name and IP address. According to an article in the journal "Economy and Law," each site has its own name, which should not be mistaken with a domain name. The site is a composite work from the standpoint of copyright; as a result, the name of the site, like the names of all other works, is protected.

The World Wide Web is made up of all of these sites, where communication (web) combines fragments of information from around the world into an unified whole - a database and communications system on a global scale. The HTTP protocol was created specifically for direct client access to server-side webpages

1.2 Steps to Build a Website

The following are the main steps in the building of a website:

Development of a project. The aim of the prospective project, the tasks it should address, and the methods for doing them are all determined at this stage.

Design and navigation. The appearance of a website is determined by design, and the first thing a user notices is the appearance of the application. Creating page sketches,

producing a logo, designing the user interface and its placement on the page, and other tasks may be included in this stage.

Layout. Markup language description of the project elements' structure in compliance with the provided standard.

Programming. This is a term used to describe the process of developing software. Making an "active" application that can both display and receive data from the user.

Installation. Installing the project after copying it to the functional server. As we known, setting up the server for site security.

Testing and debugging. This project will be tested for errors, to ensure that the application is functioning properly, and to address any issues that are discovered.

1.3 Website creation technology

Almost all medium-sized businesses now have their own websites. Those who do not have a website aspire to build one. And, more recently, the majority of people have realized that creating a website is not an easy task. In order to develop a nice, functional website, you'll need to understand a few website-building tools. After all, the website serves as both a business card and a primary source of advertising and information, as rule, for the company. As a result, the question of how to create a good site that will justify the investment of financial resources emerges.

1.4 PHP Code Script

This are a scripting computer language for creating, as you see, HTML pages and interacting, as we know, with databases on a server of web type. It is currently supported by practically all hosting firms, and it is part, as we know, of the "standard" set of tools for building websites ("LAMP - Linux, Apache, MySQL, PHP"). This language is almost the most popular in the field of technologies for constructing websites due to its simplicity, speed of execution, rich functionality, and release of source codes based on the PHP

license. When a kernel and plug-ins, or "extensions," are present, it differs: for working with databases, sockets, dynamic graphics, cryptographic libraries, PDF documents, and so on. . It is possible, as we know, to add a new extension and link it. PHP is a powerful programming language with a wide variety of features. Because, as we know, PHP is generally used, as rule, to create "server-side scripts", it can do all, as we know, of the functions that, as rule, any other CGI program can (for example, process form data, generate "dynamic pages", receive, send cookies). "PHP", on the other hand, enables, as we know, you to do a wide range of tasks.

The three, as rule, areas where PHP, as we know, is most widely utilized are:

Script generated for execution on the server.

Creating scripts, as we know, for use on the command line.

Creating, as rule, graphical user interfaces, as we know, on the client side.

"PHP" is also, as we know, a programming language that allows you to perform the following:

Linux, different Unix variations (along with "HP-UX", "Solaris", and "OpenBSD"), "Microsoft Windows", "Mac OS X", "RISC OS", and a variety of other operating systems are all supported.

As we know, web servers are supported ("PHP" is accessible as a module through most servers, and PHP could be used as a CGI processor on those that follow the CGI standard); a significant number of databases are supported.

As rule, supports "DBX" (otherwise you can connect with any, as we know, database which supports DBX); "ODBC" (thus you can connect, as we know, with any database).

1.5 Java Script

Although it is still a relatively new programming language, it is already quite popular in the field of web technologies. It is currently in the process of being completed.

It's continually getting better and better. The technical committee is working on important improvements, such as mechanisms for creating scripting for usage on the Internet and better synchronization with other major standards like the World Wide Web Consortium and the Wireless Application Protocol Forum. Java Script has already had a significant impact on the development of website-building technology.

The third edition of ECMA-262 is currently in use, with powerful regular expressions, improved string handling, new control instructions, tighter error detection, formatting for numeric output, and minor adjustments pending multilingual and future input language development.

1.6 HTML

This language is fundamental in the field of web technology because it is reasonably simple to learn. However, extreme simplicity might be a drawback. HTML (Hypertext Markup Language - hypertext markup language) completely fitted the requirements of the early period of technological progress for producing websites, but as it evolved, severe problems occurred. HTML offers the following features:

- Create forms for sending requests to remote computers to search for information, make reservations, order items, and so on.

- get information from the Web via hypertext links at the push of a button.

- publish network documents with headlines, text, tables, lists, photographs, and so on.

- spreadsheets, video clips, audio clips, and other software applications can all be included right in their documents.

HTML's development has a long and illustrious history. The creators attempted to make HTML pages viewable by all browsers and computer platforms in each iteration. The HTML language is used to create and design text pages for reading on the Internet with the

help of special applications called browsers (the most popular of which are Netscape Navigator and Internet Explorer) (by Microsoft).

In this example, a page refers to a distinct file that contains specific tags that tell the browser how the text in the file should be displayed on the screen and printed. There may also be links to files containing graphic images, which will appear with the text when accessed.

To create an “HTML” , as we know, file, you don't need a complex word processor; the Notepad editor, for example, is more convenient. The info, as we know, of “HTML” pages is given in hypertext form, which means that there are markers in the document displayed on the computer that can be clicked to travel to another part of the same page or to another website.

1.7 DBMS and MySQL

SQL (Structured Query Language) is a relational database query language. It gives users the ability to interact with databases (view, search, add, manage data). MySQL is a SQL database server that can handle multiple users and threads. When it comes to storing images and files, it has good speed and flexibility. MySQL follows the ANSI 92 SQL standard.

Its advantages are as follows:

support for many simultaneous queries (multithreading).

the ability to record fixed and variable length data.

connection optimization by merging various data sets in a single pass.

adjustable password and access system.

ODBC driver with source.

The content is recorded in ISO8859 1 format.

interface with the C and Perl programming languages.

a table that is simple to manage (including the addition and removal of keys and fields).

up to 16 keys in the table (each key has up to 15 fields).

support for key fields as well as special fields in the CREATE statement.

support for numbers from 1 to 4 bytes long (ints, floats, doubles, fixed), variable length strings, and timestamps.

a utility for examining and repairing tables known as isamchk.

a fast thread-based memory system.

when working with strings, the case of characters in the processed strings is unimportant.

Not only do aliases apply to tables, but they also apply to individual columns within a table.

There is, as we know, a default value for every field. Any subset of fields can be used with INSERT.

MySQL's key advantages are speed, stability, and ease of use.

2 GENERAL CHARACTERISTICS OF A SITE OF A CLOTHING STORE

2.1 Concept of an Online Store

Online stores are highly popular nowadays, and they are used as a platform for both expanding sales and beginning a business from the ground up. Simultaneously, it is very impossible to discover truly relevant information on what an online store is, why it is needed, what it entails, how to manage its operations, and a variety of other critical details. On one hand, a large number of articles about internet retailers have been written, but they include relatively little truly relevant information. Now, I'm not talking about professional technical publications; there's a lot of knowledge here. And, for the most part, the queries posed by potential online business owners go unaddressed.

An online store is a part of a trade enterprise or a trade organization that is designed to provide the buyer with information necessary for making a purchase via the Internet, such as about the range of goods, prices, to receive messages from buyers via the Internet about the intention to purchase goods, and to ensure the seller or his contractor can deliver goods to the buyer's specified address or to the pick-up point. The selling of goods in this situation imposes limitations on the commodities sold.

2.2 The purpose of an online store

Why is an online store even required? Is this merely a fashion tribute or a new trade direction? In actuality, it's just another tool for running a profitable company. Why not grow your own distribution channels while lowering costs and expanding your consumer base to an almost limitless number of people if you already have a store?

When you create an online store, you'll be able to take advantage of numerous additional perks that aren't available when you trade offline (off the Internet):

Create an online showcase where the buyer can learn about your entire product line in depth: consider it from various perspectives (the most profitable in your opinion), gather convincing information about the product (which in a physical store is dependent on the seller's competence and desire to provide quality service to a potential client).

create a personal database of potential clients and work with them even if they have not yet purchased anything.

create a personal database of potential clients and work with them even if they have not yet purchased anything;

The online store is operational while you are "asleep." Agree to have a store that is open 24 hours a day, 7 days a week, on holidays, without pauses or weekends, and is capable of informing potential customers about the goods, prices, packaging, terms of sale, and delivery, among other things.

Reduce the store's labor by a large amount. You will not be required to pay for the services of sellers because the online store will fulfill all of their functions in the best possible manner, including exhibiting the goods, informing about the benefits and costs, and accepting the client's order.

You gain a competitive advantage against stores with comparable profiles since, in addition to everything else, you can offer the most convenient service to every client (constantly, quickly, informatively, and if desired, even with home delivery).

If you don't already have an offline store and wish to create one online, first decide on your future field of business. Before beginning the activity, everyone is overly affected by emotions such as dreams and wants, so maintain control and follow a pre-determined strategy.

In such instances, having complete confidence in your own business, believing in your own success, imagining yourself as the store owner, sorting items and taking the first order will be equally vital. This is not to be confused with an irrational ambition to become wealthy and famous. Prepare a name ahead of time; it should be brief, memorable, and lovely. There will be no provocations, black branding, or anything like that.

2.3 Online Store Design

Introduction

In recent years, an increasing number of individuals have begun to purchase online. The percentage of such transactions is increasing year after year and is gaining traction. 22 million people in Russia shop online (according to Data Insight 2013). Almost everything can now be purchased through the Internet, and all of the items that we used to buy at marketplaces and supermarkets can now be found and purchased without leaving our homes. From huge global giants like Amazon, EBay, Alibaba, and others, where you can discover a broad variety of product groupings, to tiny themed stores, the scale of online retailers varies greatly. There is a lot of rivalry in this industry, as there is in any retail enterprise. It is now easier than it was 10-15 years ago to build and launch an internet business. Although there are an increasing number of online retailers, just a few stand out. A couple of them have a high conversion rate and hence huge earnings.

What is the key to unlocking this mystery? How do you establish a successful internet store? It is vital to establish an appealing shell and look, in addition to a well-thought-out plan and strong marketing. According to statistics, a person determines whether or not to stay on a website in a matter of seconds (on a subconscious level). We can't tell the difference between "beautiful" and "ugly" merely by looking at something, but our subconscious mind can. In this scenario, you have a choice of staying on the site or continuing to shop at other online businesses. It makes no difference whether the person decides for himself, "Yes, everything is clear and simple, this store can be trusted," or the subconscious does it for him; our goal is to keep a person on the site, whether it is a potential buyer who is purposefully looking for a specific product, or a simple user who came to the site by accident. Our job is to keep both of them occupied, to develop a positive impression of the store in their minds, to build trust, and to persuade them to make a purchase. So, not now, but later.

There are probably few people who, upon entering a new internet store for the first time, realize that they urgently need to acquire an electric harvester, and that life without it

is dull. No way! However, it is critical to make the shop memorable and intuitive so that a person visiting for the first time feels at ease, can quickly locate the item or information he requires, and does not find himself in circumstances from which he cannot see a way out. Everything should be very straightforward and easy to comprehend. If it worked, the procedure began. The person will remember the store and will return for it later, even if they have not made a purchase yet. Then it's critical not to frighten away our consumer in any manner and to guide him to the end goal: making a purchase that he'll be happy with.

In this situation, he'll almost certainly become a frequent customer. And now we have a happy customer who will tell his friends and acquaintances about our great internet business. All that's left is to keep the service at its peak, provide attractive circumstances, and foster client loyalty. Sales and earnings will rise as more frequent consumers are delighted with their purchases.

2.4 Importance of design of an online store

Now, instead of talking about everything, we'll concentrate on just one aspect of running a successful internet store, Design. Let's discuss about the interface, or visual shell.

Let's start with the reality that any online store's principal purpose is to sell. Design's objective is to assist the shop in selling something to the customer. Research and analytics, engineering, design, layout, programming, quality control, project launch, advertising, and support are common steps in the creation of an online business.

Despite the fact that there are numerous steps to the creative process, a basic user will not notice analytics, design, layout, or programming at the end of the day. These are critical and essential operations without which the site would not function properly; nonetheless, a typical user may be unaware of them; however, we, the developers, are aware of them. The design, as well as the ease or difficulty of usage, will be visible to a basic user. This is where the user interface, design, and usability come into play. Our aim will be met if we use good design to boost sales.

As previously said, the design is the first thing a visitor notices while accessing the site. He'll come across usability, ease of use, and other essential aspects later, but the first thing he notices on accessing a site (particularly a new site that he hasn't seen before) is undoubtedly the design. This is the most significant aspect of the site since it establishes a person's initial impression, which must not be sullied. As Coco Chanel once said, "you never have a second chance to create a first impression."

2.5 A successful design for the online store

The first thing we must acknowledge is that we are designing for a broad audience. Users of internet retailers come in a wide range of ages, perspectives, preferences, and socioeconomic standing. Of course, there are niche web retailers catering to a certain demographic, but they are the exception rather than the rule. In addition to the originality we discussed before, it's critical that our design is universal and intelligible to every user, whether a hip adolescent, a successful businessman, or a caring senior citizen. Our website should be easily understood by everyone. Everyone is different and has their own preferences and viewpoints. However, design, like every other creative form, has its own classics, which endure beyond the years.

As the phrase goes, "fashion comes and goes, but style remains." In the digital sector, too, fashion determines new design trends. Something is important today, but it will be obsolete tomorrow. However, if we want to be more versatile, we must focus on what each of us recognizes, regardless of time or fashion trends. This is a timeless example. It's all around us. Simplicity and richness, consistent colors, basic forms, and meticulous attention to detail. It will continue to be relevant. Take, for example, vintage black Mercedes-Benz automobiles. One of them was driven by Stirlitz, and now, leaders of state and others travel in it. To be fashionable, a Mercedes does not have to be painted red with white polka dots. It's a classic, a design standard, a brand statement, something that's always been relevant, something that'll always be on par with and one step ahead of any other design.

Web design has its own set of classics. Use basic geometric forms for elements, calm, non-flashy hues, appropriate color schemes, and information that isn't overburdened. When there's nothing left to take away, you've got a good design. What is a sculptor's process? He takes a stone block and removes all of the unneeded parts. This notion is unmistakably applicable to effective web design. It's also important to keep in mind the design's logic and accuracy. A person will intuitively recognize the proper design since it emphasizes the most essential aspect of the site, its goal. First and foremost, there are the Golden Section laws, Fibonacci proportions, and modular grids.

Let's look at the key steps of designing a design, as well as the various pieces that make it up.

2.6 Research and Analytics

Before we begin to design a visual image for our business, we must first do analytical study and pick the target audience, comprehend the market, and investigate the prospective store's subject. For what purpose is it? To create the best design, we need to know who we're designing an online shop for, who our target audience is, and how they act. A designer must be aware of the age, gender, social class, professional activity, and other characteristics of the individuals who will be shopping at the store.

Designers do not perform analytical research; this is often done by marketers. Instead, the designer gets the results of the study immediately and incorporates them into his work. We won't go over this in great depth right now, but it's something to keep in mind.

Design as a marketing tool

Internet marketing, as we all know, is a strategy for growing a business on the Internet by employing a collection of tools. Customers must be enticed and kept. It plays a critical part in attaining our objectives, and many strategies and words used in design come from this source, namely Internet marketing.

2.7 AIDA

AIDA is a marketing model. Attention, Interest, Desire, and Action are the letters that make up this acronym (Attention, Interest, Desire, Action). The basic order of events that might occur when a customer interacts with advertising, and in our instance, with information on the site's pages, is its principal. We can "sell in four steps" with this approach.

This model, for example, will have a glance on the product page, and the customer will have to hit the "Buy" button in four stages. Accent placement, sales messages, and other factors will have to drive him to this conclusion. This approach also applies on another page, which appears to be a long way from a purchase. With a testimonial page for instance, we motivate the user to post his own review by allowing him to browse other people's evaluations. But that isn't all. We also need sales, conversion, and profit; we can't just let the visitor leave. We may provide an additional incentive to the "contribute review" form by duplicating product categories in the footer, which is generally positioned at the bottom of the page. A user may have overlooked something or gone unnoticed throughout his visit to the site, but he can suddenly "catch on" to a category of things that piques his interest.

More than 30% of visitors abandon some of their purchases without completing it, according to data. They alter their views, get distracted, or their reasoning is flawed. AIDA is a program that can help you lower this proportion. This will surely help you meet your site's objectives and boost conversions. However, this essay is about design, not marketing, so let's move on.

2.8 Usability

The first basic rule is to follow the user's expectations. People should be familiar with the arrangement of the elements. Do not make a person think again; everything must be found in the same areas as before. Any user, skilled or inexperienced, should be able to

navigate around our store. According to the "fool's rule," if a fool knows something, the others will undoubtedly comprehend it as well. Do you believe you've figured out who you need to concentrate on? The site's structure should be easy to understand and navigate. The site should be easy to navigate, with no obstacles or "how do I get out of here?" issues. The user should always be aware of where the information he requires is stored and how to get it.

Situations under which people behave (User Story). This stage is for identifying logical faults, prioritizing, and improving our solutions. A user's step-by-step journey, or how a person arrives at goals on the site, is depicted in behavior scenarios. In our example, this is the road to buy, and these scenarios outline in detail the choices for consumers to solve certain challenges. Analyzing user behavior on site pages, such as what actions are taken, how much time is spent, what draws attention, and so on, is a part of thinking through behavior scenarios. This is used before the prototype phase to better understand how to design and to assess the completed layouts: have we taken everything into consideration, have we done everything right from a usability standpoint?

In our situation, behavior scenarios might have varied logics depending on whether the user comes to the shop through the home page, a search engine, a social network, a banner, or another source. According to inFOLIO Data Group research, search engines were the most common method of searching for items in 2012, with 92 percent of the audience using them. If a person, for example, used a search engine to find a certain product and ended up on our site, he will be directed to the product page, the category page, or the review article page. In a nutshell, I'm close to achieving my aim. However, if he is visiting us for the first time, he may have reservations about the store's reliability. He could be interested in the "About the store" or "Contacts" sections to ensure that the store is "alive" and that he will not be duped. Our consumer appears to have strayed from the intended path and exited the product page. That is why several possibilities of behavior are considered, from which we should draw design inspiration. If our consumer is on the contact page, for example, use the "recently seen items" box to remind him of his goal.

He'll see a picture of what he's searching for, remember that he wants to buy it, and go back to his original aim.

Journey Map: this depicts a user's purchase trip. It can begin with merely an idea for buying something and then illustrate how to solve this problem. This diagram depicts the key steps clients take during the decision-making process. The many elements that arise at each phase are also depicted on this map. The production of such cards, among other things, is the development of customer experience.

Why are we describing all of this in a design article? The notion is that a designer should see himself or herself not only as a designer, but also as a marketer, usability expert, and buyer. When we've completed research, examined the target audience, devised a marketing strategy, and are ready to create a design, our designer must base his work on the outcomes of the previous phases. How do you create and design on top of the foundation that has already been laid? Since this is all a team effort, it must be consistent and connected.

2.9 Design

One of the most crucial and hardest elements of website development is design. The design determines the efficiency of future development phases as well as the ultimate output. Designing a site at an early stage helps you to organize your work and observe how a project will evolve over time. As a result, we have the option to complete the project development with the fewest losses possible, therefore conserving resources as a developer and as a client.

What is the point of design? Many individuals still begin creating without first designing and this is completely incorrect. It always results in unending revision and never leads to success. Let's look at the fundamental design and prototyping chores.

A designer, no matter how skilled, cannot be capable of knowing everything. As you are aware, success is only possible when each specialist does his or her job well and is not scattered in his or her attempts to know and do everything. This is a specialized field of

study. The norms and regulations of usability are recognizable to the designer, but not to the extent that the designer is aware of them. As a result, beginning with design is always a good idea.

Why is it unachievable without the use of design? The designer, in the course of his job, discusses with the customer and fully understands his aims and objectives. The designer establishes the site's intricacy and size, as well as the business logic. Then he conducts prototyping and layouts, based on which the design will be completed. These layouts consider everything that should be on each page of the site, displaying all of the necessary features.

A single page takes a lot longer to create than a single prototype. If the designer created the design first and then tried to get the customer to accept it, defects, missing or unneeded features would continually emerge during the development process. Design is a delicate and time-consuming endeavor, and creating a new design element takes time. It would be a long, fruitless procedure with no positive outcomes. As a result, creating pages is required. Because prototypes are schematics, they take significantly less time to make. Their function is to display how the page will seem in the future, but without the design. Show all required pieces and their approximate locations. As a result, the designer will be able to focus entirely on the design and will not be concerned about forgetting or missing something. As you can see, design plays a critical role, and we cannot do without it if we want to create a high-quality and efficient website.

2.10 Appearance and Colours

An excellent store design is discreet. "Good design can be seen right away." As Joe Sparano put it, great design is "invisible." The user's attention should not be diverted from examining items, researching information, or making purchases because of the design. However, the user's emotions must be evoked by the design in order for him to make a purchase. These are the two sides of the coin that are at odds: how can you produce a design that is not just invisible but also emotional? We'll try to respond to this question in

the following paragraphs. Many people make the mistake of adding attractive photos, animation, and other "bells and whistles" to an online store's design, but what is our goal? Remember, we create for consumers, not for a customer. And, because this is an online store where items are sold (and they are the most essential thing here), we need to place them in the center, with the design in the background as a complement to and completion of the total picture.

3 CREATION OF ONLINE PURCHASING SYSTEM

This chapter outlines the development of an online shopping service. Because of the numerous advantages and benefits, an increasing number of consumers claim they prefer online buying over traditional transactions. In recent years, the decision-making process of buyers has shifted drastically. Before speaking with the vendor, buyers perform considerable research online. Buyers are increasingly making more direct purchases online and through their smartphones, rather than visiting traditional retail locations. Business is considerably easier and faster because to the Internet. As a result, people's business practices have changed, with a rapidly rising global trend toward online purchasing, or e-commerce.

By minimizing phone calls concerning availability, specs, opening hours, and other information easily available on business and product websites, online purchasing may save time for both the customer and the seller.

The purpose of this project is to develop a real-time purchasing system.

Every day, the value of digital retailers grows. Since the Internet has become ingrained in our daily lives.

The following tasks were assigned in order to attain this goal:

- Research the psychology of shopping online.
- Select the most appropriate project solution.
- Implement the website's core functions: order and delivery.
- Create the most user-friendly and convenient interface possible.

3.1 Problem Statement

It is important to provide an Internet service that allows customers to purchase things from the shop in real time. The main purpose of the Internet service is to make it easier for purchasers of this online business to organize their purchases. A shopping cart should be available for the user to add things that he intends to purchase. The shopping cart must be empty once the goods has been ordered. The system should provide a simple search function for products, with the ability to filter goods by price. A vital purpose of the service is to allow the system administrator to update information about items, add and delete goods, and see the order list. The service should be quick and have a user-friendly graphical interface.

The following steps are involved in creating an Internet service for managing real-time purchases:

Researching the psychology of online customers.

Developing technological specs.

Creating a database to record data about items, system administrators, and orders.

Work on the project's server side.

-Creation of a React-based web application.

Buyers and the system administrator are the end users of an online shopping internet service.

3.2 Terms and abbreviations

The table below- Table 1- lists the words used during the development process, as well as terms relating to implementation and technology.

Table 1- Terms and Description

Term or Abbreviation	Description
----------------------	-------------

DB	Database
NoSQL	Not Only Structured Query Language
UML	Unified Modeling Language
HTML	HyperText Markup Language
CSS	Cascading Style Sheets
DBMS	Database Management System
MERN	Mongo-Express-React-Node

3.3 Psychology of buyers of Online Stores

People are increasingly preferring to make purchases on the Internet, according to statistics, therefore knowing the customer of an online company is becoming increasingly crucial. Customers who spend more time on social media are more likely to make impulsive purchases online: they are more likely to become consumer-oriented and have greater identity uncertainty. Stocks and sales, without surprise, influence impulsive buying. Shoppers are more inclined to add impulsive purchases to their cart when the total amount spent on other things grows. More intriguingly, site design plays a part; a more appealing website is more likely to induce impulsive purchases.

Furthermore, shoppers make a purchase choice in less than 90 seconds. Buyers are also worried about the resource's overall pace. When a product page takes longer than 3 seconds to load, 57% of users abandon the page, and 80% of those who abandon the page never return.

To encourage impulse purchases:
 make sure the site is simple to use,
 has a clear user experience
 loads rapidly.

These characteristics influence sales by assisting customers in finding what they are seeking for more quickly and increasing the possibility of making a purchase.

The color of your website can have a little impact on how your users perceive it, especially if you utilize blue. When compared to hues of yellow, shades of blue tend to boost "feeling of flow," which is a combination of website enjoyment and attentiveness. Shades of blue have also been shown to increase customer loyalty regardless of product price, whereas shades of red cause shoppers to be more price sensitive due to the connotation of "sales" and price reductions; this conclusion is stronger for a bright red background than for a dark red background.

Organizing items into categories gives the impression of more variety while also making it easier for buyers to locate what they're searching for fast. According to research, more variety may lead to a better shopping experience, which means customers are more inclined to return. According to recent study, site navigation has a significant impact on visitors and can influence their purchase intent. You should carefully evaluate the design of your links; they should, on average, assist clients in finding the information they want in three clicks or fewer.

At the last stage of the conversion journey, the bounce rate averages 67.4 percent.

According to the findings of the study:

41% of buyers abandon the product due to additional costs;

29% of buyers are afraid of mandatory registration;

11% of buyers are perplexed by incomprehensible delivery terms;

10% of buyers believe the ordering and payment process is too long;

1% of buyers cited other reasons for interrupting the order.

In general, 24% of online shops require registration. By allowing customers to checkout as guests, ASOS, for example, was able to slash its bounce rate in half. The top 100 ecommerce sites have an average checkout and checkout procedure of 5.08 steps. Ordering in online retailers should take no more than 5 steps. Furthermore, 50% of online retailers request the same information repeatedly. Customers can better navigate while ordering using easy-to-understand call-to-action buttons. The "next," "continue," and "next" buttons should be visible and clickable.

The order status bar informs customers of their current position.

The order page should be designed in a basic, clear, and straightforward manner so that the consumer is not confused throughout the purchase process. For purchasers to change their orders, there should be a "Back" button.

3.4 Functionality

The system must include the following features:

- The client's search and viewing of items;
- the client's viewing of broad information about the product, its description, and images;

adding and removing items from the shopping basket that you are interested in

the client reading the list of items in the basket and the total price

the option to select the color and size of the order's products

the option to choose the product category of interest

Sorting items by size, color, and cost

categorizing items according to their name and price

making an order for items to be purchased

An administrator's login form

a separate form for the administrator at his entry

a list of all products in a suitable format for the administrator

the ability for the administrator to delete and edit products (viewing of the list of added, modified, and removed goods by the administrator)

the administrator examining the list of client orders and customer details

3.5 Technologies for the design development

The design element was created using the following technologies:

1. MongoDB is an open source document database that provides data permanence in your application and is built for developer scalability and flexibility. MongoDB is a database that bridges the gap between quick and scalable key-value stores and feature-rich relational databases. MongoDB stores JSON documents in collections with dynamic schemas, rather than rows and columns, as a relational database does. The MongoDB Document Data Model makes it simple to store and aggregate data of any type without sacrificing extensive validation rules, flexible data access, or rich indexing capabilities. You may alter the schema dynamically without losing data, which is critical for fast-growing applications.

For high availability and scalability, it can scale within and beyond geographically distributed data centers. The database expands quickly as your deployments grow, with no downtime or changes to your application.

2. Facebook's React (also known as ReactJS) is a JavaScript library for designing interactive and reactive user interfaces. React, like Angular, divides an external application into components. Each component can have its own state, and the parent can send that information to its children, who can then use callback functions to convey changes to the parent. JSX, a JavaScript extension that allows you to incorporate HTML syntax in your code, is commonly used to create React components.

3. Redux Library - a JavaScript template for managing the state of an application. For front-end development, it's most commonly used with React or Angular. Contains a number of features that make transferring warehouse data across context easier. Dan Abramov and Andrew Clark came up with the idea.

4. Node.js is a JavaScript runtime for your back-end project (via Express). The Node.js programming language is based on Google's V8 JavaScript engine, which is utilized in Chrome browsers. It also offers a variety of modules that provide the functionality needed to build online applications, such as HTTP networking protocols. The npm tool may be used to install third-party modules, such as the MongoDB driver. Instead of halting and waiting for a response, Node.js is an asynchronous event-driven technique in

which an application makes a request and then continues working on other relevant activities. The application is notified of the findings through a callback after the requested task has been completed. This enables the completion of a large number of processes in parallel, which is critical when expanding applications. MongoDB was created to be used asynchronously, which makes it ideal for Node.js applications.

5. Express.js is a web framework that allows you to run JavaScript code. In the Node.js environment, Express functions as a module. Express may route requests to the areas of your application where you want them to go (or to different applications running in the same environment). In Express, you may execute the application's whole business logic as well as build the final HTML that will be shown by the user's browser. Express, on the other hand, can simply provide a REST API, allowing an external application to access resources such as a database.

6. Mongoose - A simple document - oriented method for modeling application data is provided by Mongoose. It comes pre-loaded with inline type casting, validation, query construction, business logic hooks, and more.

7. Nodemon is a program that assists in the development of js-based node.applications by restarting the node app when it detects file changes in the directory.

8. Morgan is a middleware for Node.js that logs HTTP requests.

9. React-router is a collection of navigation components that may be used to build an application declaratively. React Router works anywhere React is rendering, whether you want your web app to have prominent URLs or composite navigation in React Native.

3.6 Architecture of web applications

A web application architecture is a structure that connects and interacts application components such the user, as we know, interface, server, and databases. The notion of a browser user running an application that can run across numerous websites is compatible with web application architecture.

Web application architectures may be described as follows:

Almost user accesses a specific URL that the browser has discovered and requested.

Data is delivered from the server, as we know, to the browser across the network, and the browser then executes it so that it, as we know, can display the requested page.

The page is seen and interacted with by the user.

All of the subcomponents and external application interchangeability for the complete application are included, as we know, in the application architecture of website. Applications are viewed as crucial to the transformative process as the world of technology continues to change. The “front-end” and server capabilities of current application design and development are continually being upgraded. Many methods to application development design are emerging on the backend or server side to meet and solve contemporary development demands, such as micro services, server architectures, and single page apps.

The digital structure of a web application is created by a number of components. UI application components and structural components are the two types of components. Webpages are UI application elements.

The structural elements that form the true heart of the application development process are as follows:

“A client or a web browser”.

“Server for web applications”.

“Server for databases”.

A web browser, as a client, is a program that allows a user to interact with the functionality of an online application. This client-facing content may be created using HTML, JavaScript, and CSS, and does not require any operating system customization. The end-user interface with the program is mostly managed by the web browser or client. The web application server, which may be written in PHP, Python, Java, Ruby,.NET, Node.js, and other languages, handles business logic and data persistence. To handle multi-tier applications, it includes at least one centralized hub or control center.

As we know, database server is in charge of supplying and storing, as rule, the application's data. It can also supply business logic and other data that the web application server can handle.

A web server's primary function is to fulfill client, as we know, requests for a website. Clients are often browsers and mobile apps that submit requests for page resources or REST APIs via secure HTTP.

The Node.js web application architecture has emerged as a viable option for developing online applications. For addressing design and structural needs in an application development architecture, more and more developers are becoming familiar with the Node.js framework. Node.js is written in JavaScript and uses the same technology as the web interface components, allowing back-end services and web interface user interfaces to be developed by the same developers. The

Node.js web application architecture makes the development environment quick and efficient, establishing it as a major participant in the market. Node.js was built with integration in mind from the start, which is why so many businesses use it to connect numerous services and systems through a single user interface. Consistency, code exchange and reuse, simple knowledge transfer, and a plethora of free tools are all features of the Node.js web application architecture.

When developing a strong online application, these advantages give flexibility and efficiency.

3.7 Practical Part

Models of logical and physical databases

The database's logical model shows the relationships between entities as well as the names of entities and their properties in plain language. The database's physical model depicts the entities in the form that they will be stored in the database.

Model of the logical database

The logical database model (see Figure 3.1) has four entities: "Administrator", "Products", "Orders" and "Journal".

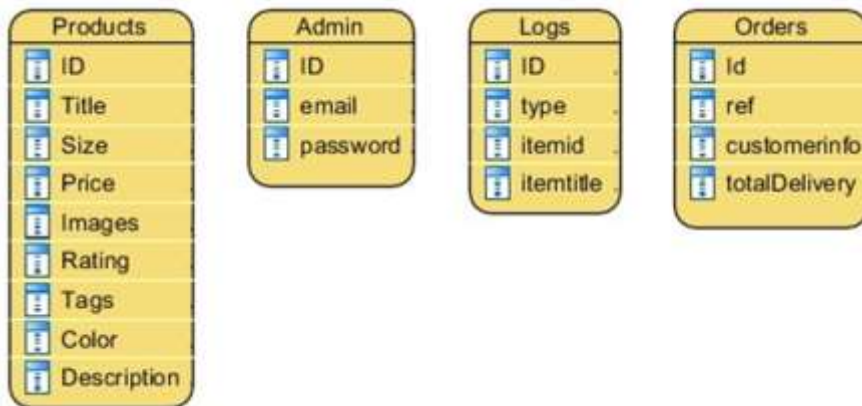


Figure 3.1 - Model of the Logical base

1. The "Admin" entity keeps track of the administrator's information in the system database. It has properties like admin id, email (for admin login), and password (for logging into the system).

2. The "Products" entity is used to keep track of a list of items. Product id, title – product name, size – product dimensions, price – product price, pictures – product images, rating – product ratings, tags – product categories, color – product colors, and description – product description are some of the properties.

3. Entity "Logs" - records the history of products changes, additions, and deletions. Has id attributes; type - the kind of action conducted by the administrator; time - the time the action was taken by the administrator; itemid - the item id; itemtitle - the product's name

4. Information about orders placed by system customers is stored in the "Orders" object. It has the following attributes: id – order identifier; ref – product information; customerinfo – client information; totalamount – order price information.

The database's physical model.

All database objects are represented in the physical model. Intermediate tables and attribute data types are depicted in the physical model. "Administrator," "Products,"

"Journal," and "Orders" are the four key tables in the physical model. It is depicted in the diagram (see Figure 3.2).

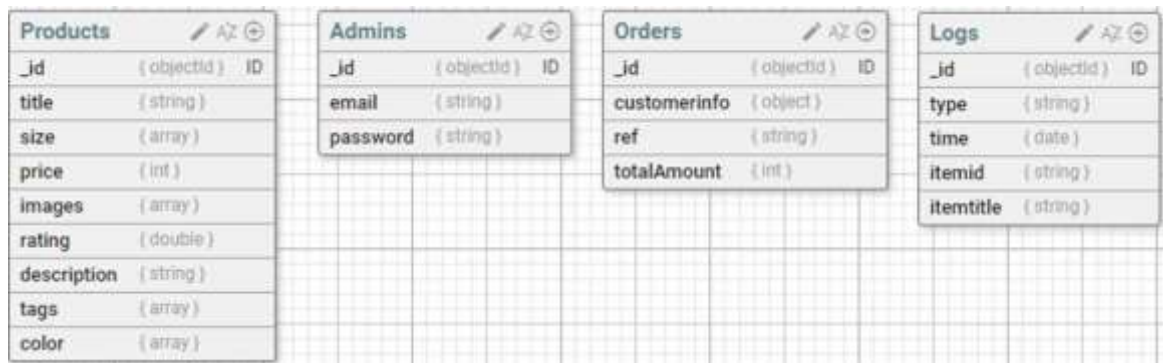


Figure 3.2- The physical model of the database

1. The characteristics of the "Admin" collection are as follows:

- id (int) – primary key administrator id;
- email (String) – administrator login email;
- id (int) – primary key administrator id;

2. The properties of the "Products" collection are as follows:

- id (ObjectId) – product id, primary key
- title (String) – product name
- price (Int32) – price of the product
- size (Array) – array of product sizes
- images (Array) – array of links to images
- rating (Double) – product rating
- description (String) – product description
- tags (Array) – array of product categories
- color (Array) – array of product colors.

3. The following properties apply to the "Orders" collection:

- id (ObjectId) – primary key for the order
- customerinfo (Object) – information about the customer who placed the – id (ObjectId) – primary key for the order
- ref (String) – information about the ordered product
- totalAmount (Int32) – order total.

4. The following properties apply to the "Logs" collection:

- id (ObjectId) – request id, main key;

- type (String) – type of action done by the administrator
- itemid (String) – item id
- itemtitle (String) – item title
- time (Date) – time at which the operation was done

3.8 Use case diagram

The customer's interaction with the system is depicted in the use case diagram (see Figure 3.3).

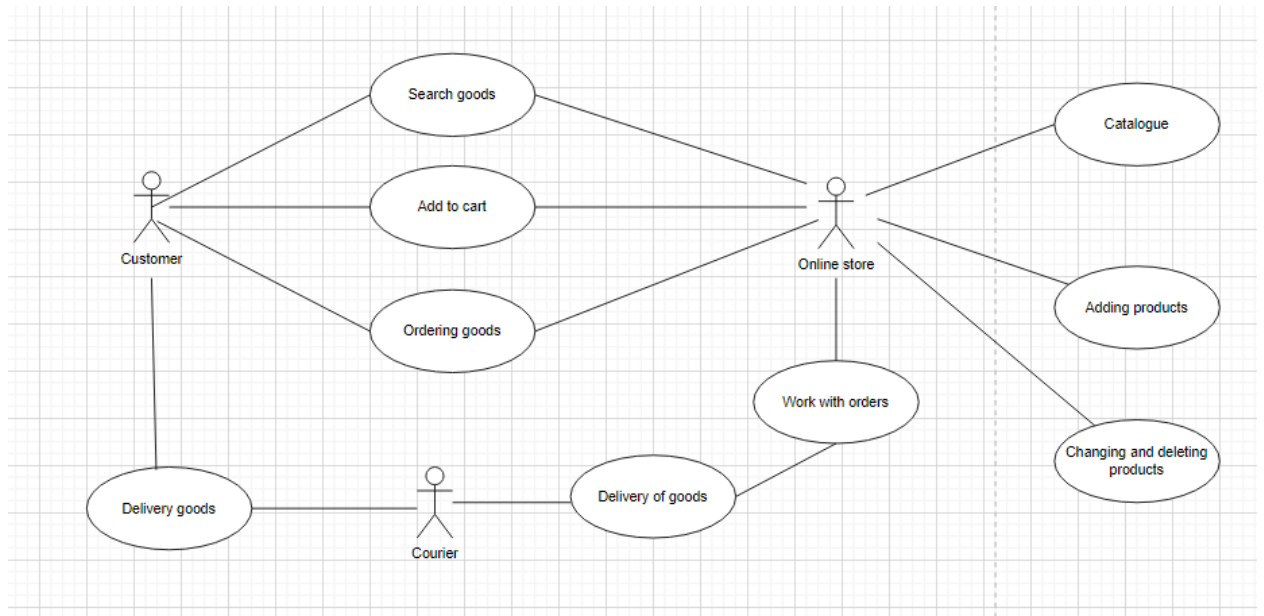


Figure 3.3- Diagram of system use case

3.9 Sequence diagram

The sequence diagram illustrates the dynamic interaction of things (see Figure 3.4).

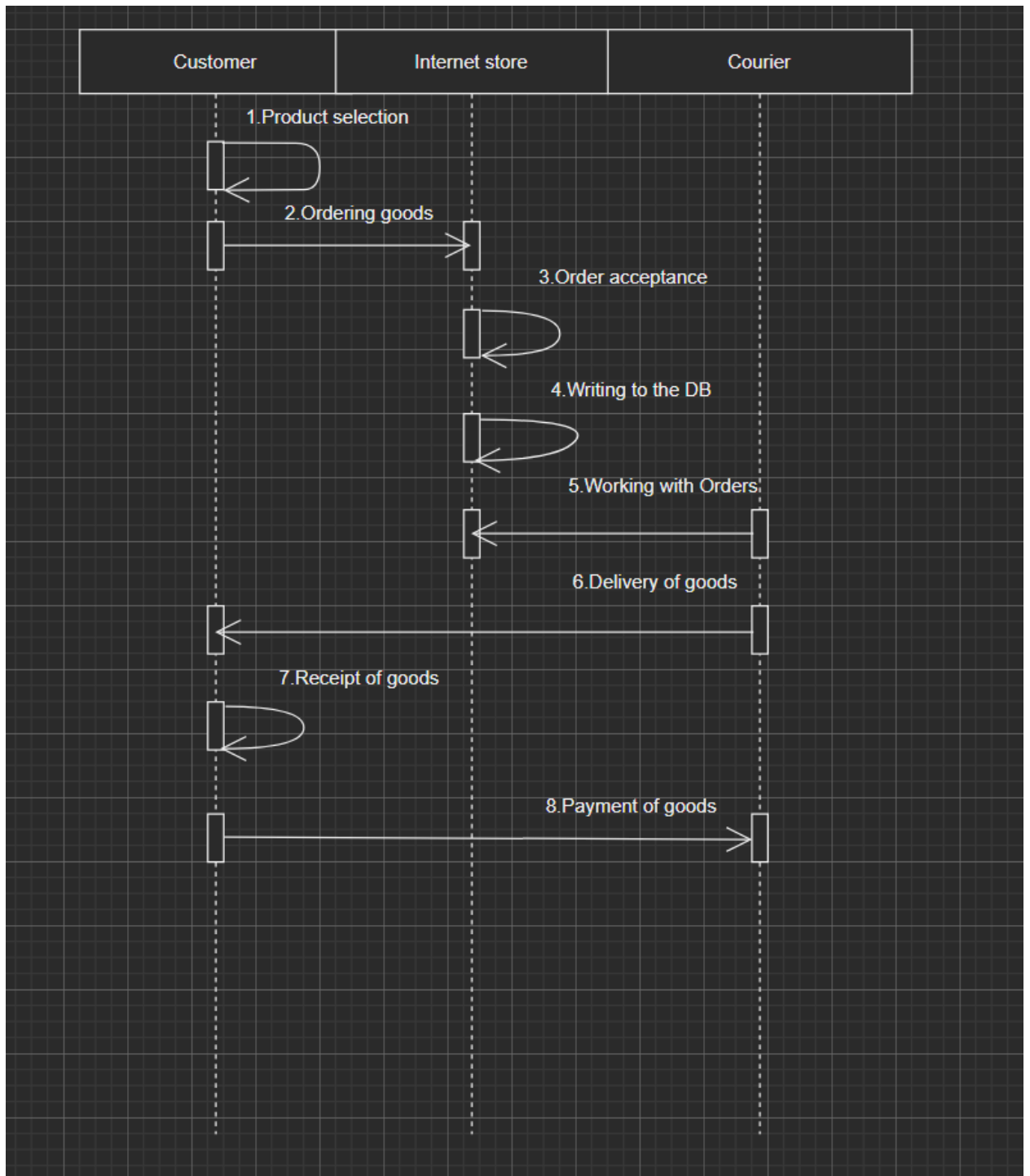


Figure 3.4 - Sequence diagram

3.10 The web application's functionality

The main page appears when you access the site in a browser.

1. The main page (as seen in Figure 3.6) is the first page the client sees when he visits the site. He may pick the outfits he would want to order from this page.



Figure 3.6- The main page

2. The page that the user sees when heading to the men's clothes category option (see Figure 3.7) He may pick from four different outfits here.



Figure 3.7- Men's clothing category selection page

3. The page for choosing the women's clothes category (see Figure 3.8) - the page that the customer sees when switching to the women's clothing category. He can pick from four different types of clothing here.



Figure 3.8- Women's clothing category selection page

4. Men's clothes viewing and selection page (see Figure 3.9) - the client may sort the items by price and name. The client has the option of filtering by apparel categories, sizes, and price.

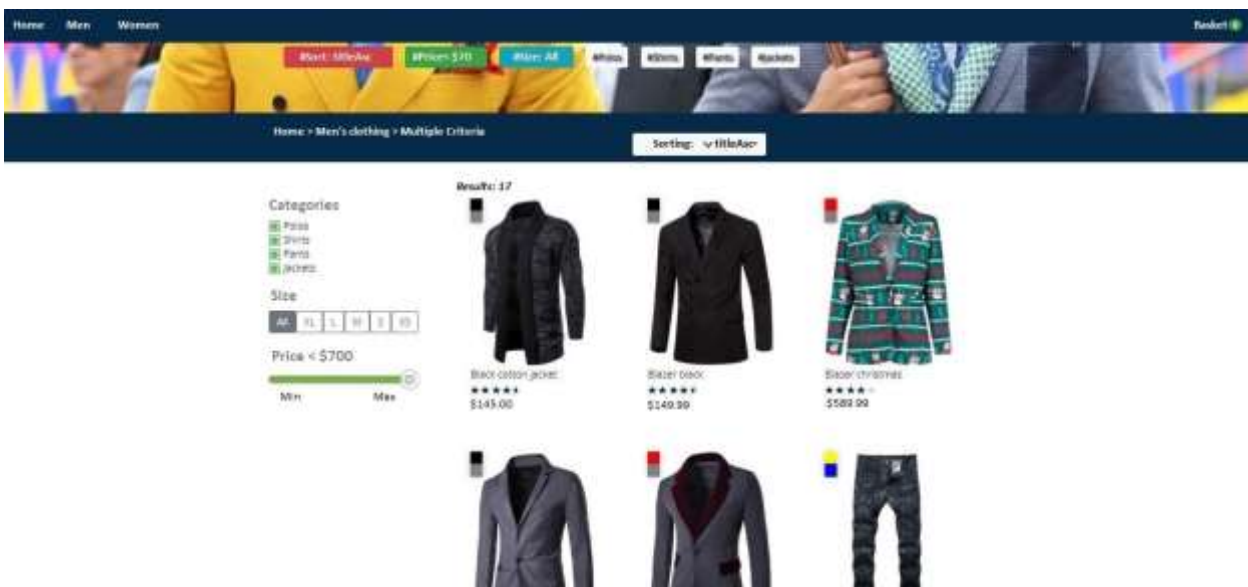


Figure 3.9- Men's clothes browsing and selection page

5. Women's clothes viewing and selection page (see Figure 3.10) - the client may sort the items by price and name. The client has the option of filtering by apparel categories, sizes, and price.

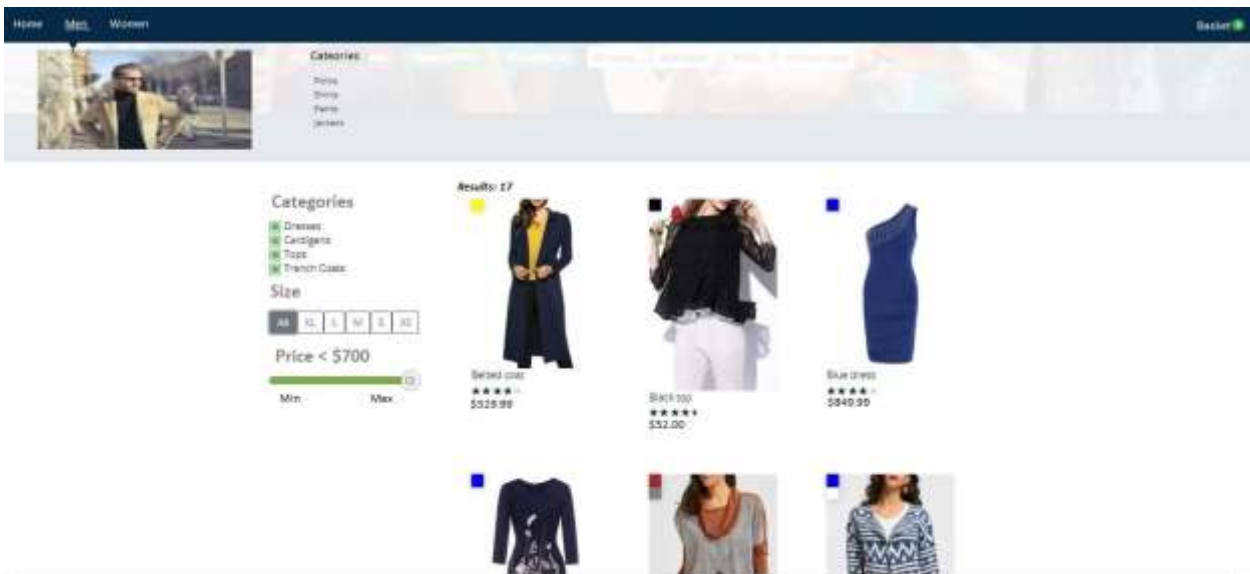


Figure 3.10- Page for viewing women's clothing

6. Product view page (see Figure 3.11) - examine a product's description and image. The client may also check the product's pricing and rating on this page. The client must select the color and size of the items before proceeding with the order.



Figure 3.11: Product view page.

7. The window that displays when adding items to the cart (see Figure 3.12) - the window that opens when adding items to the cart, from which the client can navigate to the order page, the cart, or shut the window.



Figure 3.12 - Window that appears when adding to cart.

8. Product order page (see Figure 3.13) - this is the page where you may place orders for items. The client sees the order data here, and then he must type his e-mail address, as well as his name and address for delivery of the items. He must then confirm his order.

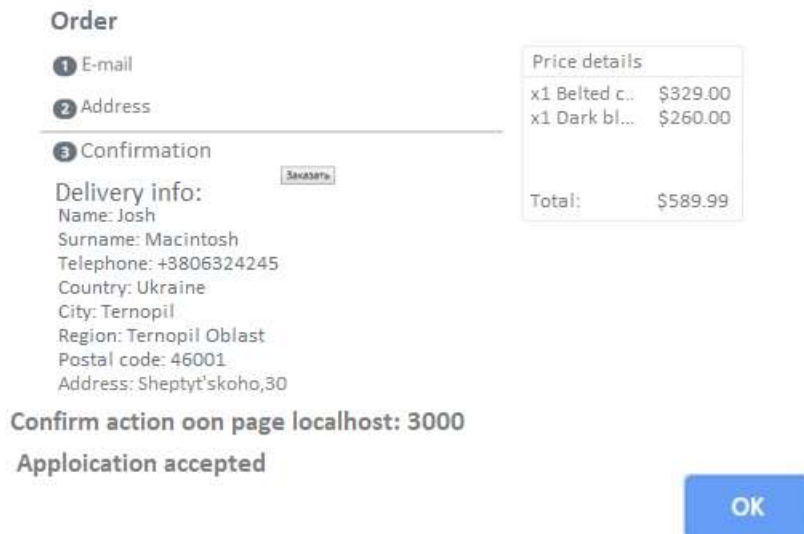


Figure 3.13: Product order page.

9. Product cart page (see Figure 3.14) - a list of goods added to the basket by the consumer. The customer can adjust the amount of a certain item here. In addition, the client has the option of removing a single product.

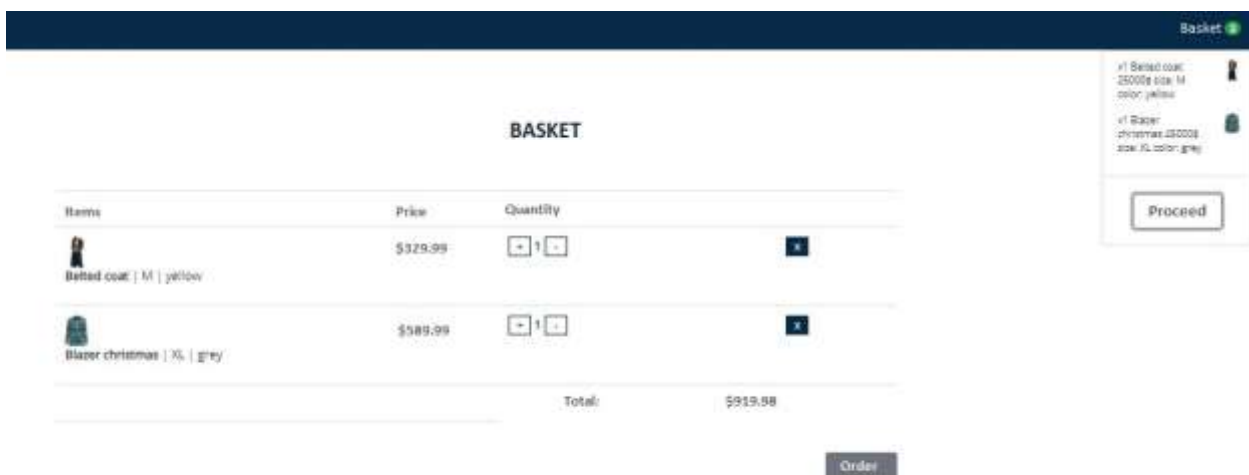


Figure 3.14: Page of the Shopping Cart

To access the admin panel, visit this page (see Figure 14) - Visit <http://localhost:3000/admin> to access the admin panel. You'll be asked to log in as an administrator after that.

Login to admin panel

Username

Password

Login

Figure 3.15: Admin panel page

11. Admin page (see Figure 3.16) - access the product list, from which administrators can delete or update products.

ID	Name	Price	Color	Weight	Tags	Size	Description	Edit	Delete
1	Pinked	\$72.00	pink	36 / L / M / S / XS /	Tags	4	Long sleeve polo shirt...	<input type="checkbox"/>	<input type="checkbox"/>
2	Yellow pant	\$47.00	yellow	36 / L /	Tags	4	Elastic at the bottom of...	<input type="checkbox"/>	<input type="checkbox"/>
3	Blue & yellow pant	\$85.00	yellow / blue	36 / M / L /	Tags	3	Italian brand kappo pants...	<input type="checkbox"/>	<input type="checkbox"/>
4	Dark blue jeans	\$260.00	blue	36 / L /	Tags	3	Beautiful dark jeans in blue deni...	<input type="checkbox"/>	<input type="checkbox"/>
5	Blue cotton jacket	\$145.00	blue / white	36 / XS / M / L /	Tags	3	Reimagined versatile style in a...	<input type="checkbox"/>	<input type="checkbox"/>
6	Modern an shirt	\$50.00	yellow / blue / black / green	36 / L / XS /	Tags	4	A short-sleeved T-shirt in a straight...	<input type="checkbox"/>	<input type="checkbox"/>
7	Black cotton jacket	\$145.00	black / grey	36 / XS / M / L /	Tags	3	A great option for everyday wear in...	<input type="checkbox"/>	<input type="checkbox"/>
8	Black tank	\$149.99	black / grey	36 / XS / L /	Tags	3	A timeless workwear design...	<input type="checkbox"/>	<input type="checkbox"/>
9	Black christmas	\$589.99	black / grey	36 / L / M /	Tags	4	Christmas season has arrived...	<input type="checkbox"/>	<input type="checkbox"/>
10	Water grey	\$45.00	black / grey	36 / L / XS /	Tags	2	You'll feel like you're the best...	<input type="checkbox"/>	<input type="checkbox"/>
11	Black pants grey	\$40.00	black / grey	36 / L / M /	Tags	4	Create a lasting impression in this...	<input type="checkbox"/>	<input type="checkbox"/>
12	Blue dress	\$849.99	blue	36 / L / M /	Tags	3	Blue is your favorite color? So...	<input type="checkbox"/>	<input type="checkbox"/>
13	White dress	\$60.00	white	L / M / XS /	Tags	3	The epitome of classic summer dress...	<input type="checkbox"/>	<input type="checkbox"/>
14	Polka orange shirt	\$200.00	yellow / blue	36 / L / S /	Tags	2	Inspired from bestselling M.M...	<input type="checkbox"/>	<input type="checkbox"/>
15	Blue dress with flowers	\$80.00	blue	L / M / S /	Tags	3	Get a lovely look for an evening...	<input type="checkbox"/>	<input type="checkbox"/>
16	Colorful hand print shirt	\$70.00	yellow / blue / black / green	36 / L / M / S /	Tags	3	The standard, traditional T-shirt for...	<input type="checkbox"/>	<input type="checkbox"/>
17	Three shirt	\$80.00	yellow / blue / black / green	36 / L / XS /	Tags	3	Edge-to-edge front print makes a big...	<input type="checkbox"/>	<input type="checkbox"/>
18	Caroline pants	\$100.00	grey / white / grey	36 / L / M /	Tags	3	Designed to last in look as well...	<input type="checkbox"/>	<input type="checkbox"/>
19	Shower top	\$40.00	black / grey	36 / M / XS /	Tags	3	crafted in viscose and features a...	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3.16: The page for the administrator

12. Add new product page (see Figure 3.17) - this page allows the administrator to create a new product by entering the product's name, price, and other information.

Add new item History change

Add new item

Item name
Venetto shirt

Price
5000

Available colours
red

Available sizes
L

Category
Shirts

Images
https://a.lmcdn.ru/product/U/N/UN012EMDXDC5_8592507_1_v1.jpg

Description
Composition: Cotton- 100%
Item size: M INT
Model parameters: 102-82-102
Article UNO12EMDXDC5

Save

Figure 3.17- Add a new product page.

As you can see, the product has been added to the list of products (see Figure 3.18).

Figure 3.18- Additions to the product list

13. "History of Changes" page (see Figure 3.19) - this page provides information on goods that have been updated, withdrawn, or added.

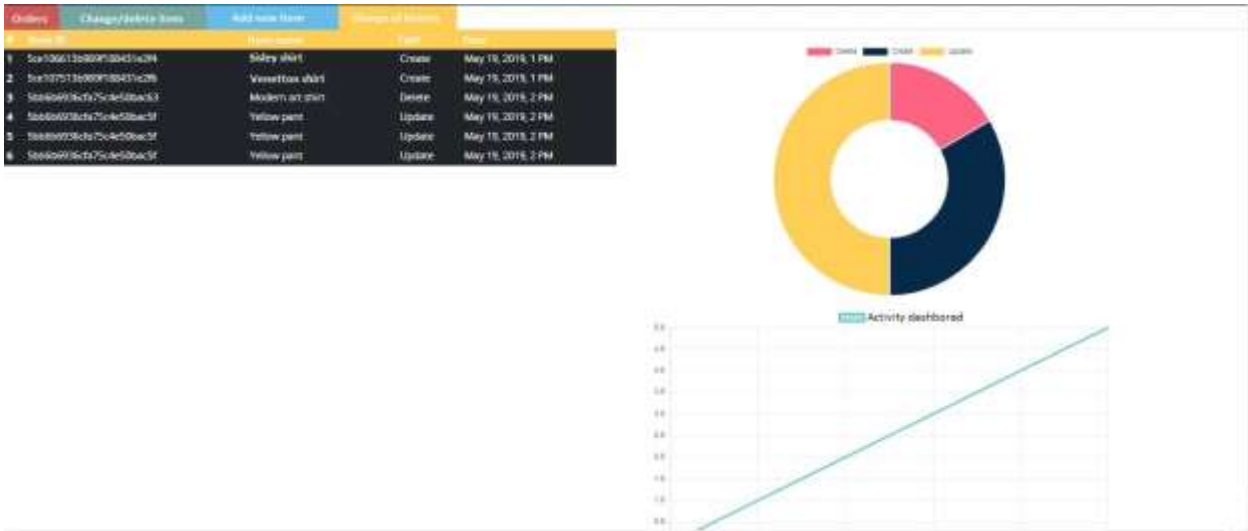


Figure 3.19 - Page "Changes in History"

14. Product editing and deletion window (see Figure 3.20) - the administrator can update the product or confirm the deletion from this window.

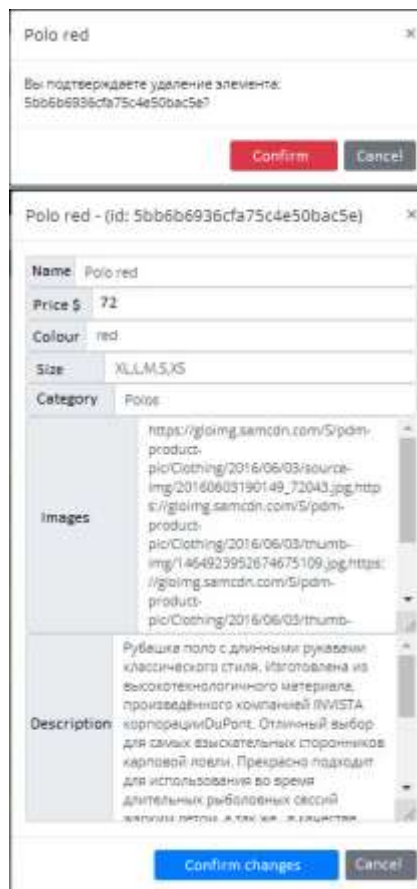


Figure 3.21- Windows when modifying and removing a product

15. Order list window (see Figure 3.21) - this window displays a list of orders as well as information about the client who placed the order.



#	Date	Order	Order price	Email	Surname	Name	Country	City	Region	Postal code	Telephone	Address
1	2019-05-10T00:55:13.326Z	x1[Belted coat(S, yellow)] \$529.99) x1[Dark jean(XS, blue)] \$260.00)	\$589.99	JohnMac@gmail.com	Macintosh	John	Ukraine	Terнопil	Terнопil Oblast	46001	+3806324245	Sheptyts'koho,30

Figure 3.22: The window with the order list

4 OCCUPATIONAL HEALTH AND EMERGENCY SAFETY

4.1 Computers and Your Health

Over the past twenty years a great many questions have arisen concerning the links that may exist between the use of computers and the health and safety of those who use them. Some health effects -- such as joint pain and eye strain following an extended period huddled typing at a screen and keyboard -- are recognised as an actuality by many. However, proving with any degree of certainty the longer-term health impacts of computer use remains problematic. Not least this is because widespread computer use is still a relatively modern phenomenon, with the boundaries between computers and other electronic devices also continuing to blur.

Current UK legislation, for example, makes it clear that use of a computer should not induce a fit in an epileptic. However, given that it is also accepted in the UK that watching flashing video images on a television can induce such a fit, it becomes immediately obvious that both current guidance and legislation are inadequate. The existing Display Screen Equipment Regulations 1992 were written at a time when viewing a photograph -- let alone a movie or TV programme -- on a computer was not possible. At the time, any health risks associated with mobile phones or wireless computer networks were also yet to be aired. Hence, whilst the following does report the current legislation and guidance in respect of the use of computer equipment, its historical context also needs to be remembered.

The health problems most highly associated with the use of computer equipment are upper limb disorders, eye problems, stress and fatigue, and skin complaints. **Upper limb disorders** is a term used to describe a range of conditions affecting the fingers, hands, arms and shoulders. Such conditions may range from mild aches and pains, through to chronic tissue and/or muscular complaints. Repetitive strain injury (RSI) is one such condition. This is attributed to the excessive performance of repetitive, dextrous operations. As a

result of such repetitive activity, tenosynovitis (swollen muscles) or carpal tunnel syndrome (swollen tendons) may develop.

Repetitive strain injury can result from prolonged high-speed typing, intensive use of a mouse, or indeed the long-term use of a computer gaming control pad. Early signs of repetitive strain injury include a tingling or numbness in the finger or fingers impacted, and pain or even swelling across the hands and even upper arms. In the United States, the National Institute of Occupational Health has reported that 40 per cent of people working predominantly with computers suffer some RSI symptoms, with over ten per cent experiencing constant discomfort.

The potential for RSI to develop or to be further inflamed can fairly easily be reduced by varying work patterns to provide breaks for those involved in constant typing. Adopting a range of postures across the working day can also help to reduce potential long-term musculoskeletal problems, and as can be associated with the maintenance of a prolonged static posture. Indeed, contrary to what much early workstation advice may have preached, there is absolutely not one best position to adopt when using any form of computer equipment long-term. You can find some tips for overcoming RSI in my Beating RSI video.

Whether or not **eye problems** result from short- or long-term computer use remains a matter of debate. However, any form of excessive close work where the eyes are forced to focus at a fairly fixed distance on a relatively bounded location is likely to cause at least short-term eye strain and discomfort. This is simply because such activity is not what our eyes were ever "intended" to do! Indeed, I remember once asking an optician if computer use damages the eyes. In line with UK Government advice, he informed me that computer use could not result in eye complaints. He then immediately advised me never to use a computer continuously for more than an hour and a half!

Whilst the link between long-term eye problems is officially disputed (even if the practical experiences of those who work on a computer all day suggests otherwise), short-term computer related eye problems are undeniable. These tend to be associated with sore

eyes, headaches, blurred or softened vision, and sometimes a residual after-image experienced for short periods.

As with the measures that can be taken to avoid repetitive strain injury, changes to work patterns to allow breaks, as well as posture changes to avoid focusing from the same fixed distance for very long periods, can be fairly effective in combating eye problems. Most people also find that flat screen (TFT) displays tend to be more comfortable to use for long periods. Large screens also tend to induce less eye strain than small displays, as they encourage the user to look around the display (moving both their head and their eyes), rather than just focusing continually on one location.

Many people find using a computer for long periods results in excessive **stress and fatigue**. This can be as a result of the involved high levels of dextrous activity and visual concentration. As already noted these are not a "natural" form of human activity, and hence a potential source of stress. Some people also find computer use uncomfortable or annoying when they are having to conform to software or hardware that constrains how they want to get something done, or which constantly crashes or causes them to constantly wait for actions to complete. Technology capable of doing the job can avoid the latter (if available!), whilst a varied work routine with appropriate breaks is once again at least a partial answer.

Finally, a small number of people experience **skin complaints** associated with longer-term computer use. Such conditions can include itching, rashes on the neck, face or hands, and dry skin. Quite why this may be is again debated, though potentially skin complaints may be a result of electrostatic discharges (created within laser printers and cathode ray tube (CRT) display screens), and/or the dry air and static electricity that builds up in offices filled with computer equipment. Appropriate ventilation is of course always a good idea and may lessen the problem. The use of humidifiers and antistatic matting may also be of assistance. However, many people apparently only even realise that computer use has been affecting their skin following an extended vacation or change of job to a different working environment.

According to current official UK medical research, the electromagnetic radiation emitted by cathode ray tube computer monitors has no health implications, with no subsequently related risks of increased miscarriages or birth defects being associated with visual display unit usage by pregnant women. (This said, official guidance does suggest that pregnant women anxious about computer use should be given the opportunity to voice their concerns). In practice, most (if not all) CRT displays have not been replaced with flat TFT screens, so at least removing the possibility of any CRT radiation risks to most users.

4.2 Computer health related problems and how tips on how to solve them

Upper and Lower Back Pain

When sat in your desk chair, your spine should be in an upright position. Avoid slouching down into your chair or leaning forward onto the desk, as this can cause strains, aches and pains. Your lower back (lumbar) should be supported by the chair or a cushion so that sitting upright doesn't feel uncomfortable or unnatural.

To help keep your back free of strain:

- Stand up and walk around every hour or so, so that you're not sat in the same position all day.
- Slowly lean your torso over to one side of the chair and then the other to stretch your sides and spine.
- Stand up and put your hands together, elbows out, then slowly twist to the left and then to the right.

Also, keep your neck straight as much as possible. **Your eyes should be level with the top of your monitor.** Adjust the tilt and height of your screen or your chair if you need to and, if you have a laptop, you should use a stand to raise it up. If you ever have to angle your head upwards or downwards to see the screen, then tension can build up in your neck and cause headaches and fatigue.

Repetitive Strain Injury (RSI)

There should be enough room in front of your keyboard to support both your forearms and your wrists on the desk. Push your computer screen and your keyboard back a bit if necessary. This desk support helps prevent your arms from becoming tired or achy. When typing, keep your wrists straight. If you have to bend your wrists upwards to reach the keyboard then use a wrist support, otherwise you are at risk from a repetitive strain injury.

To keep your arms and wrists ache-free:

- Reach your arms out in front of you and draw big circles with your wrists, first in one direction and then the other.
- Stretch your arms out to the side as far as you can and then above your head as high as you can to stretch your arms, wrists and back.
- Interlock your fingers and then push them out in front of you, with palms facing out.

Strain in Legs and Feet

Your desk chair should be positioned so that you can sit comfortably with your feet flat on the floor and your lower legs vertical. Use a footrest underneath your desk if you need more support, or if the chair is putting pressure on your thighs. Make sure that there's enough space to change position and stretch your legs out every now and then, too.

To prevent stiff legs, ankles and feet:

- Rotate your ankles round in circles under the desk, first one way and then the other.
- Stand up and march on the spot for 30 seconds to improve the blood flow in your legs.
- Stand on your tiptoes and stretch upwards, as tall as you can, to release some of the tension in your ankles, legs, back, arms and neck.

Eye Strain and Headaches

Prolonged use of a screen can cause visual fatigue and eye strain, so it's important to look after your eye health.

If your job involves working with a display screen for the majority of your day, whether it's a desktop computer or a tablet, then your employer is required to provide you with eye tests so you can make sure you're able to see the screen clearly and work comfortably.

If an eye test shows that you need glasses specifically for computer work, then your employer is required to pay for the basic frames and lenses under the Health and Safety (Display Screen Equipment) Regulations 1992.

To reduce the risks of visual problems:

- Reposition the screen to avoid glare from lights or windows.
- Keep the screen clean and use a desk lamp to make it easier to see.
- Ensure the screen colours are easy to look at, and that the characters are sharp and legible.
- Look away from the screen into the distance for a few moments to relax your eyes. Use the 20-20-20 rule for this: focus on something 20 metres away for 20 seconds every 20 minutes.

4.3 Conclusions

Given the variety and intensity of computer usage in the modern world and workplace, display screen equipment health and safety is a very significant issue. In some respects it involves the application of common sense in ensuring that computer use is sustainably comfortable and carried out under as close to optimal conditions as possible. However, there are potentially also significant legal implications for employers who do not adequately comply with the law.

Beyond the employer, taking all reasonable measures to avoid computer related disorders is also of significant importance to individuals whether or not they are classed at work as display screen equipment users. Relatively few people alive today have had more than twenty years experience of working with computers, and nobody has spent an average full working or domestic life interacting with digital technology to the extent that many people now do every day. The long-term implications of computer usage on our health and

welfare -- physically, mentally and even socially -- cannot therefore yet be fully appreciated. Regardless of any regulation, careful, limited and regularly-interrupted computer use is therefore probably the best advice and practice for us all.

CONCLUSIONS

The project "Website development of the online clothing store "SoloClothing"" was successfully completed. The project created with care and accuracy, while also being efficient and labor-saving. The goal of this project was to create a web application that could be used to shop for garments in an online store.

This project has provided me with useful information and practical expertise on a variety of issues, including React web programming and MongoDB database administration. Furthermore, the project provided us with knowledge about the project's development phases and the software development life cycle.

This project provided me with a lot of satisfaction since I was able to create an application that can be used at any neighboring store or brand store that sells various sorts of apparel. There are a lot of new ideas for this project's future development. To fully support the online shop, a variety of functionalities may be added to this system in the future.

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APPENDIX

```

    router.get('/productsdata', (req, res)=> { ModelProducts.find((err, x) => { err ?
res.status(500).send(err) : res.json(x)
    })
  })

```

```

router.get('/productsdata/:id', (req, res)=> {
  ModelProducts.findById(req.params.id)
    .then(x => {
      if (!x) return res.status(404).end() return res.json(x)
    })
    .catch(err => next(err))
  })

```

```

router.post('/update/item', (req, res, next)=> {
  const { id, title, price, color, size, tags, images, description } = req.body
  ModelProducts.findById(id, (err, model) => {
    if (err) return handleError(err);

    model.set({ title, price, color, size, tags, images, description });
    model.save(function (err, updatedItem) { if (err) return console.log(err);
      next();
    });
  }).then(()=>{
    const logUpdate = new ModelLog({ type: 'Update', time: new Date(),
itemid: id, itemtitle: title
  });
    logUpdate.save(function(err, logSaved){
      if(err){return next(err);}
      res.end();
    });
  });

```

```

});
  }).catch(err => next(err));
})

router.post('/add/item', (req, res, next)=> {
  const { title, price, description, size, tags, images, color } = req.body
  const newItem = new ModelProducts({ title, price, color, size,
tags, images, description
  });
  newItem.save((err, saveditem) => { if (err) return console.log(err);
  next();
  })
  const logAdd = new ModelLog({
  type: 'Create', time: new Date(), itemid: newItem._id, itemtitle:
title
  });
  logAdd.save(function(err, logSaved){
  if(err){return next(err);} res.end();
  });
  })

router.post('/add/orders', (req, res, next)=> {
  const { ref, customerinfo, order, totalDelivery, totalAmount } = req.body
const newOrder = new ModelOrders({ ref,
  customerinfo, order, totalDelivery,
  totalAmount
  });

```

```

newOrder.save((err, saveditem) => {

    if (err) return console.log(err);    res.end();
})
})

router.get('/orders', (req, res)=> {    ModelOrders.find((err, x) => {    err ?
res.status(500).send(err) :    res.json(x)
    })
})

router.post('/delete/item', (req, res, next)=> {
    const { id, title } = req.body
    ModelProducts.findByIdAndRemove(id, (err, model) => {    if (err) return
handleError(err);    res.send('item: '+id+' deleted');
    })
    .then()=>{
        const logDelete = new ModelLog({
            type: 'Delete',    time: new Date(),    itemid: id,    itemtitle: title
        });
        logDelete.save(function(err, logSaved){
            if(err){return next(err);}
            res.end();
        });
    }).catch(err => next(err));
});

```

```

router.get('/log', (req, res)=> { ModelLog.find((err, x) => { err ?
res.status(500).send(err) :
  res.json(x)
})
})

```

```

router.get('/secret', passport.authenticate('jwt', {session: false}), (req, res)=>
{ продолжение приложения

```

```

  res.json({ authorization: true });
});
router.post('/signin', passport.authenticate('local', { session:false}),
Authentication.signin);

```

```

router.post('/signup', Authentication.signup);

```

```

module.exports = router;

```

2. Клиентская часть:

```

const Router = () => (
  <div>
    <NavbarContainer />
    <Switch>
      <Route exact path="/" component={HomepageContainer} />
      <Route exact path="/productslist" component={ItemsListContainer} />
      <Route exact path="/item/:id/:item" component={ItemContainer} />
      <Route exact path="/checkout" component={CheckoutContainer} />
    </Switch>
  </div>
)

```

```
<Route exact path='/cart' component={ CartContainer} />
<Route exact path='/productslist/:gender'
component={ ItemsListContainer} />
<Route exact path='/category/:gender'
component={ ItemsListGenderHomepage} />
<Route exact path='/admin' component={ AdminContainer} />
<Route exact path='/dashboard' component={ Secret} />
<Route component={ Empty} />
</Switch>
<Footer />
</div>
);
```