STABILITY, COUPLING, AND COHESION OF OBJECT-ORIENTED SOFTWARE SYSTEMS

By

SAROSH JALAL KHAN

Bachelor of Engineering

in Computer Systems Engineering

N.E.D. University of Engineering and Technology

Karachi, Pakistan

1990

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
July 1993

OKLAHOMA STATE UNIVERSITY

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Thesis Approved:

M. Samadzadeh-Ha
Thesis Advisor

Blayne E. Mayfield

Huizhu Lu

Thomas C. Collins
Dean of the Graduate College

ACKNOWLEDGMENTS

I wish to express my sincere appreciation to Dr. Mansur H. Samadzadeh who always proved to be a continuous source of invaluable help and guidance throughout my graduate work. Without his close attention, critical evaluation, and immense dedication, this research work wouldn't have been possible.

I would also like to extend my appreciation to my other graduate committee members Drs. Blayne Mayfield and H. Lu. Their cooperation and suggestions helped me to stream through my research work with ample guidance.

I am also grateful to all the people and associations whom I contacted from time to time throughout the *internet* for their prompt reply to my queries.

Finally I extend my appreciation to my parents Mr. and Mrs. Kafeel A. Khan. Their love, supervision, and faith in my abilities was an inspiration and motivation of immeasurable value.

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CHAPTER I

INTRODUCTION

This thesis covers concepts related to software complexity in the context of software design and software maintenance issues. The intricate job of designing a software system requires innovation and profound thinking so as to develop a stable system that would incur a minimum of the inevitable costs due to maintenance in the later part of the life cycle of a system.

To achieve the goal of building a stable and maintainable software system, appropriate software engineering tools, techniques, and methodologies need to be followed closely. Some of the major software engineering concepts involved are briefly mentioned in this thesis. These concepts range from software quality features, viewed with reference to the users' perception of the system, to the design maintenance measures that should be taken into account during the software development process.

Software metrics are discussed in this thesis as design maintenance measures relevant to object-oriented designs. The study performed and reported as a part of this thesis, is aimed at judging the quality of software systems developed in a professional production environments. The techniques used to measure the size and complexity of software systems help to predict the future maintenance requirements. Adherence to and the use of design evaluation concepts discussed in this thesis should make systems more maintainable and easier to adapt to the changing requirements.

The discussion of design factors in this thesis focuses around and involves the emerging and somewhat nascent concepts of Object-Oriented Analysis (OOA) and Object-Oriented Design (OOD). The goal is to view the key issues of traditional design in the framework of the object-oriented paradigm.

The main question that arises is: Is it necessary to incorporate the relatively new object-oriented paradigm in the system design and analysis phases? This question can be answered by looking at some of the basic differences that exist between the object-oriented and traditional views of system development [Coad90] as discussed in the next chapter.

Chapter II is a discussion of software design approaches and some design issues that are relevant to the experiment performed in this study. Chapter III describes some of the software metrics used to analyze programs. The metrics suite includes the Stability$^+$ metric defined to measure the design stability of a program. Chapter IV describes the experimental process used to collect data resulting from using metrics discussed in this thesis. Chapter V discusses the analysis of the collected measurements of the design factors discussed in this thesis. Chapter VI summarizes and concludes with recommendations for future work.

CHAPTER II

SOFTWARE DESIGN APPROACHES AND ISSUES

2.1 Design Methodologies

Design is a multistep process in which representations of data structure, program structure as well as the description of procedures are formulated based on the requirements analysis phase of the software development life cycle [Coad90]. Design activities conducted during software development in general include data design, architectural design, procedural design, and interface design [Pressman92]. In the following subsections, a number of design methodologies are discussed.

2.1.1 Conventional Design Methodologies

Different design methodologies involve viewing a design specification from different perspectives. One such perspective is viewing a system in terms of the functions that the system is to perform, and beginning the design process by decomposing the system into a hierarchy of functions and sub-functions. This is a conventional design approach in which the focus is on the processing that is required by the system [Coad90].

Another perspective is viewing a system in terms of the information flow through the system. The information flow undergoes a series of transformations as it evolves from input to output [Pressman92]. This approach, which is called a data flow oriented design,

consists of a number of different mappings that transform the information flow through the program structure. Data flow diagram (DFD) is used as a graphical tool in a data flow oriented design to depict the flow of information through the system.

Data structure oriented design is another conventional design methodology which focuses on the information domain (similar to the data flow oriented design approach). However, in this case the design process utilizes the information structure rather than the information flow through the system.

In the next section, the object-oriented design method is defined which is used in this thesis to discuss the issues of coupling, cohesion, and stability.

2.1.2 Object-Oriented Design

The idea of object-oriented design originates from the concept of data structure-oriented design with the additional attributes of inheritance, classification, and communication of components in a software system [Coad90]. The design process involves the mapping of real-world objects into a framework of system objects with interactions among the objects as "natural" as they are in the real-world situation.

It is also customary in a real-world situation to perform actions on an entity (which, in the framework of software development, is a set of data structures) [Budd91]. For example, consider actions (functions) that could be performed on an automobile object. An automobile object is composed of a set of data structures and contains other objects such as wheel, steering, and engine.

The mapping of real-world entities to objects in the framework of software systems is quite natural and leads to the design process of decomposing the problem space into a

"set of objects" or Abstract Data Types (ADT) performing certain "actions" (functions) on their set of "data structures". The overall system is then designed and organized by defining the structure of the system in terms of classification and assembly structures [Coad90].

2.1.3 Which Design Method to Choose?

Different specifications of a given problem space (resulting from requirements analysis) can be used to make design decisions about a software system. A major point to consider here is that, when designing a system for a real-world situation, the norms and relationships of the actual world must be taken into account. A common observation is that during the life cycle of a system, the percentage of requirement changes is far greater than the percentage of data definition changes [Meyer80]. Here requirement changes means the changes that the users of a system may ask for during the testing or maintenance phase of the development life cycle. The requirement changes may involve adding a new feature or otherwise modifying the existing software product.

The process of modification in the maintenance phase may require restructuring of the information flow through a system. This observation motivates a system designer to base a system design on the data contained in the problem space, i.e., the information structure of a system rather than the information flow through a system [Coad90].

If the requirement changes are frequent, the use of information flow through a system as a primary structuring criterion may make a program structure brittle [Meyer80]. In such a situation, the object-oriented method of system design can be a better choice than the conventional methods. In this method, the program structure is based upon the objects (see APPENDIX A) that every system or a subsystem manipulates rather than the overall

functions that the system is meant to ensure. The objects are selected based upon the information structure of a system with additional attributes of inheritance, classification, and communication of components in a software system. The functional design comes later when the actions, which can be performed on the data structures contained in an object, are defined. Hence subsequent program changes will be limited to the boundaries of objects which are encapsulations of data structures and the functions defined on those data structures. This approach controls the ripple effect [Yau80] (see APPENDIX A) and confines the changes to a relatively small portion of the program.

The functional decomposition of a system (a necessary step of functional design) makes it strongly bound, thus making it difficult to alter in order to accommodate new features or to change with the changing requirements [Coad90]. The data flow design approach too has a strong functional emphasis and hence has the same rigidity to changes. The data structure oriented design approach, though similar to the object-oriented design approach, lacks abstraction and encapsulation (information hiding) [Coad90]. The object-oriented design approach, unlike data structure oriented design, encapsulates data items and processing rather than just processing alone, which results in better modularization of software.

The use of a streamlined object-oriented design process should result in a software system that is relatively easier to maintain. In the objects-oriented design approach, the objects are encapsulations of functions and data with maximum information hiding and autonomy of the respective parts. This can result in "loosely-coupled" objects interacting with one another with small and clear interfaces.

The above discussion maintains that if the changing requirements in the maintenance part of the system is the primary concern, the emphasis should be placed on designing a system with as many autonomous agents or objects as possible. These autonomous agents can then be assembled to build the entire system. The objects and the functions within the objects can be arranged in such a manner to attain a minimum amount of coupling and a maximum amount of cohesion for the overall stability of the system. The terms coupling and cohesion are discussed in the next section of this thesis and also mentioned in APPENDIX A.

2.2 Design Factors in the Object-Oriented Paradigm

Coupling, cohesion, and stability are three major design factors in any design methodology. Various types of coupling and cohesion were formulated by Stevens et al. [Stevens74] and later revised by Booch, Budd, Pressman, and others for object-oriented systems [Booch91][Budd91][Pressman92]. The notions of coupling, cohesion, and stability are described in the three subsections below.

2.2.1 Coupling

In order to define the notion of coupling, we need to first define connectivity. According to Pressman, "connectivity indicates the set of components that are directly invoked or used as data by a given component" [Pressman92]. For example, a module is connected to another module if it directly causes the other to begin execution, or accesses the other module's data elements. Coupling is hence defined as "a measure of interconnections among modules in a software structure" [Pressman92]. The complexity of

a system can be decreased by designing a system with weakest possible coupling [Stevens74].

Different types of coupling are discussed below [Budd91]. These types are arranged, according to their strengths of the association that they represent among modules in a system, form the highest to the lowest: internal, global, control, parameter, subclass.

Internal coupling occurs when the connection is to another module's internal data components. Hence a module can change the internal components of another module. For example, consider the following code segment.

```
class Terminal{
int term_address;
public:
  int get_term_address();
  void read_terminal();
}

class Commands{
public:
  void set_term_address(Terminal t);
  get_command(Terminal t);
}

class Data{
public:
  void set_term_address(Terminal t);
  get_data(Terminal t);
}
```

In the above code segment, the Data and Commands classes can set the value of the term_address in the class Terminal. This is an example of internal coupling when a class can change a variable defined in another class.

Global coupling occurs when a group of modules share a common area of storage or data region. This situation can results in an increase in complexity. This common area of storage is termed by Stevens et al. [Stevens74] as the common environment. The

common environment couples every module sharing it to every other such module without regard to the existence of a functional relationship or its absence. This results in strongly-coupled modules or objects.

Control coupling involves an element of control such as a switch, a flag, or a signal sent from one module to another, which may control a sequence of operations in the other module. Consider the following code segment for control coupling.

```
class Command {
  int terminal_address;
  int parse;
public:
  void execute_command();
  process_command(Terminal t, Files f);
};

class Files {
public:
  read_command(int parse);
  read_data();
};

void Command::process_command (Terminal t, Files f)
{
   t.read_terminal(terminal_address,parse);
   f.read_command(int parse);
}

void File::read_command (int parse, Terminal t, Files f)
{
   if (parse == TRUE){
   ...
   }
   if (parse == FALSE){
   ...
   }
}
```

In the above code segment, the parse control variable is passed from the process_command procedure to the read_command procedure. The read_command procedure receives the parse

variable and sends back a parsed or an unparsed command, depending upon the value of the parse control variable.

Parameter coupling is the most benign type and involves parameters passed during function calls. It is different from control coupled since the variables passed are only used for the function's own internal calculation. Parameters can also be passed back to the calling function.

Subclass coupling is encountered in object-oriented systems. It occurs in the class structure of the system where classes are bound by their inheritance hierarchy. An example can be the following code segment.

```
class Shape {
...
};
class 2D_Shape::public Shape{
...
};

class 3D_Shape::public Shape{
...
};
```

Classes 2D_Shape and 3D_Shape inherit functions and data variables from their common parent class Shape. Hence classes 2D_Shape and 3D_Shape are coupled to the class Shape. A change made in a member function of the class Shape may change the behavior of both classes 2D_Shape and 3D_Shape.

2.2.2 Cohesion

Cohesion is defined as "an indication of the strength of association among data elements and functions in a module" [Stevens74]. When defining classes, the attempt should be made to maximize binding (an indicator of cohesiveness of a module). Different types

of cohesion are given below [Budd91]. These types are arranged according to their strengths of association within a module or object. The following list is given from the lowest to the highest cohesion: coincidental, logical, temporal, communicational, sequential, functional, data.

Coincidental binding occurs when there is no meaningful relationship among the elements in a module. This kind of binding takes place if a program is split arbitrarily into parts for modularization [Stevens74]. For example consider the following class A.

```
class A{
 .
public:
  void get_terminal_address();
  void exec_command();
  void read_data();
}
```

In the above class, the member functions are not functionally related. Hence the class cannot be characterized as doing a single function, seen from a higher level of abstraction. The functions exec_command(), get_terminal_address(), and read_data() have coincidental cohesion.

Logical binding requires the functional elements to have some logical relationship in the module, e.g., a module having all the input/output operations as shown in the class A given below.

```
class A{
 .
public:
  void read_data();
  void read_command();
  void write_result();
}
```

Temporal binding occurs when the elements of a module must be used at approximately the same time, e.g., all initialization operations as depicted in the following class.

```
class A{
 .
public:
  ...
  void initialize_array();
  void initialize_table();
};
```

Communicational cohesion exists when the elements of a module or the methods in a class are grouped, say, because they access the same input/output data. The module acts as a manager for the data. The class A given below exhibits communicational cohesion, since it manipulates a single file through its member functions.

```
class A{
 .
public:
  ...
  void get_commands_from_file();
  void get_data_from_file();
};
```

In the case of *sequential cohesion*, the elements of a module are linked since they have to be executed in a particular order. The member functions in the following example of a class are grouped together since they perform a sequence of operations on the given data in the particular order given.

```
class A{
 .
public:
  get_data();
  process_data();
  print_data();
};
```

Functional cohesion and *data cohesion* are the types of cohesion required in a system to bind the objects strongly in a program structure. Functional cohesion occurs when the elements of modules (or the member functions of a class) are functionally related, i.e., when they are performing a single function. Data cohesion is typical of object-oriented systems [Budd91]. It occurs when a module defines internally a set of data values and export routines (public) that use the internal data structures [Coad90].

2.2.3 Stability

Design stability is defined as the resistance to the amplification of changes in a software system [Yau85]. Stability is one of the important quality attributes of program design [Yau80][Yau85][Smith92]. The stability of a program is affected by the ripple effect produced as a consequence of a program modification. Hence, stability can also be defined as "the resistance to the potential ripple effect that the program would have when it is modified" [Yau85].

A design stability measure called Stability^{+} was developed during this study, which is presented in Section 3.3 of this thesis report. This measure is based upon the assumptions (see APPENDIX A) that the different objects in a system make about one another. For example, lack of data abstraction and information hiding can result in modules possessing a large number of assumptions [Yau85]. Design stability can be calculated by measuring the assumptions that different objects in a software system makes about one another when they communicate through their public interfaces.

CHAPTER III

SOFTWARE METRICS

Software metrics can be classified as either process or product metrics [Conte86] depending upon whether they quantify the attributes of the development process and the development environment, or the attributes of the software product. Whether it is a process metric or a product metric, a software metric should accurately reflect the difficulty that a programmer or analyst encounters in performing such tasks as designing, coding, testing, or maintaining a software system. Software metrics help to quantify the various aspects of design complexity and program complexity [Samadzadeh89]. Several design metrics have been proposed for software systems. Some of these are generalizations of product metrics that have been widely used. In this study, it is assumed that one of the attributes of design quality can be measured based on the number of modifications made to a system after the individual modules have been coded, unit tested, and delivered for system integration. This constitutes a concrete process measure that was used in the experimental part of this study.

Product metrics were used in this study to find a number of quantifiable design attributes of an object-oriented system. This "backtracking" or hindsight analysis was necessitated due to lack of a standard design methodology for object-oriented systems and the fact that design documents for commercial products are generally not available. Product metrics are influenced by the design process employed during the development life cycle of a software system [Conte86]. Hence, measurements from the product metrics can be used

to evaluate and estimate the design process and the development techniques for a software system. The results of such evaluations can be subsequently used in a predictive or even prescriptive capacity.

3.1 Existing Metrics for Conventional Software Systems

Some of the established software product metrics used in the software development process are given here. The purpose is to compare and analyze the previously existing metrics when applied to object-oriented software systems.

The most well-known and widely-used metric for determining the size of a program is the lines of code metric (LOC). LOC is defined as [Conte86]:

> A line of code is any line of program text that is not a comment or a blank line, regardless of the number of statements or fragment of statements on the line. This specifically includes all lines containing program headers, declarations, and executable and non-executable statements.

Halstead defined a family of metrics called Software Science [Halstead77]. A computer program is considered in Software Science to be a collection of tokens that can be classified as either operators or operands. Software Science measures are functions of the counts of these tokens. The four basic counts defined by Halstead are: n_1: number of unique operators, n_2: number of unique operands, N_1: total occurrences of operators, and N_2: total occurrences of operands. Some of the metrics based on these counts are: Vocabulary: $n = n_1+n_2$, Length: $N = N_1+N_2$ as estimated by $n_1 \log_2 n_1 + n_2 \log_2 n_2$, and Volume: $V = N \log_2 n$.

Cyclomatic Complexity was introduced by McCabe [McCabe76] [McCabe89], whose objective was to determine the number of paths through a program that must be tested to

ensure complete coverage and to rate the difficulty of testing or understanding a program. McCabe's formula for cyclomatic the complexity number is defined as V(G) = e - n + 2p, where V(G) is the cyclomatic complexity, e is the number of edges, n is the number of nodes, and p is the number of connected components in the control flow graph of the program. It can be shown that another formula for V(G) is V(G) = DE + 1, where DE is the number of binary predicates in a program.

3.2 A Proposed Metrics Suite for O-O Designs

Object-oriented design can be classified into object design and method design [Booch91]. Objects design involves three definition steps: 1) objects, 2) attributes of objects, and 3) communication among objects. Method design involves defining the procedures that implement the attributes and operations exercised by the objects.

Some terms have to be defined first before discussing the metrics suite proposed for object-oriented designs [Chidamber91]. Objects in the following discussion are represented by a *class* [Stroustrup91]. An object is an abstract data type (ADT) consisting of data structures (attributes) and functions (operations) defined on those data structures.

In the following discussion of the object-oriented framework, properties of an object are represented by instance variables and methods.

3.2.1 Weighted Methods per Class

Consider a Class C1, with methods M_1, M_2, ..., M_n. Let c_1, c_2, ..., c_n be the static complexity of the methods. Then

$$WMC = \sum_{i=1}^{n} c_i$$

If the static complexities are assumed to be unity, then WMC = n, which is the number of methods. In this simple case it can be argued that the complexity of an object is determined by the cardinality of its set of operations. The cardinality of an object, in terms of the number of methods, indicates the amount of time and effort that would be required to develop and maintain the object. Larger number of methods in an object can have a cumulative effect on the complexity of the subclasses that inherit its methods. Objects having higher number of methods are likely to be more application specific, thus reducing the possibility of reuse in general.

3.2.2 Depth of Inheritance Tree

Depth of inheritance tree (DIT) represents the height of a class in the inheritance hierarchy. The DIT measure indicates the number of ancestor classes that can potentially affect each class. The scope of the attributes and operations of an object increases as it goes deeper in the inheritance hierarchy. The complexity of an object generally increases as the number of methods that it inherits from its ancestors increases. The DIT measure can be helpful in the design of a class with respect to the reuse of inherited methods.

3.2.3 Number of Children

The number of children (NOC) metric is the number of immediate subclasses subordinated to a class in the class hierarchy. This measure also relates to the scope of attributes and operations. It indicates how many subclasses are going to inherit the methods

of the parent class. The reusability of methods through inheritance increases if the class hierarchy has more depth than breadth. A better generalization and specialization structure requires classes that are higher up in the hierarchy, in order to have more subclasses than the classes that are lower in the hierarchy [Chidamber91]. A class having a larger number of subclasses may require intensive testing and debugging due to its potentially higher degree of subclass coupling (see Section 2.2.1).

3.2.4 Coupling Between Objects

For a class, coupling between objects (CBO) is a count of the number of non-inheritance related couples with other classes. A *couple* or a *connection* is established when an object acts upon another object, i.e., a method of one object uses the methods or the instance variables of another object [Chidamber91]. Excessive coupling among objects, outside of the inheritance hierarchy, in general defies modular design and hinders reuse. The more independent an object is, the easier it would be to reuse it in another application. Coupling increases the ripple effect (see the next section) as a result of a modification in one part of a program. Higher coupling could be a result of low encapsulation or low modularity in a design, which are important determinants of the quality of a software system. CBO can be used to determine how complex the testing of various parts of a design are likely to be. Hence this measure can be used to predict the future maintenance effort of a system.

3.3 A Stability Metric for O-O Designs

This section describes the Stability$^+$ metric used to measure the stability of the design of a program. The metrics is based upon the assumptions [Chanon74] that different objects in a program make about one another due to the connections or couples (see APPENDIX A) established as a result of parameter coupling. The stability, as defined earlier, is "the resistance to the potential ripple effect that the program would have when it is modified" [Yau85]. Hence the stability of a program is calculated in terms of the ripple effect produced as a consequence of a program modification. The ripple effect can be calculated by counting the number of assumptions (see APPENDIX A) that the different objects in a system make about one another. The lack of data abstraction and information hiding can result in strongly connected modules possessing a large number of assumptions [Yau85][Torres91].

In the derivation of the Stability$^+$ metric, each object or class is assumed to have attributes (instance variables) and operations (methods or member functions) that can be used by other classes in the system, here called the public interface of that class. The interfaces of the classes can be analyzed for calculating the assumptions that different classes make about one another due to parameter coupling (see Section 2.2.1).

In the rest of this section some terms are defined that are needed to describe the stability metric discussed in this section. The metric is originally derived by Yau and Collofello [Yau85] and is revised here to incorporate the terms and notions of the object-oriented paradigm.

Let C_i be the ith class in a design document, where $1 <= i <= n$, and n is the number of classes in the system. For each class C_i, identify the following interfaces:

C_c = {classes with which class C_i communicates}

C'_c = {classes that communicate with class C_i}.

Let M_{ci} = {m_j | m_j is the jth function of class C_i, where $1 <= j <= t_i$} and t_i is the total number of methods (public) in class C_i.

Assume that the system only has parameter coupling. Another type of coupling, specific to object-oriented programs, called subclass coupling (see section 2.2.1) is ignored here. The reason being that the stability metric is build around the notion of invocation complexity [McClure78]. Hence classes are assumed to communicate through non-inheritance related connections or couples.

Let N = {n_k | n_k is a function of classes in C_c U C'_c and $1 <= k <= t_c$} where t_c is the total number of methods (public) of classes in C_c U C'_c.

The methods involved in the interface of class C_i with classes in $C_cUC'_c$ are defined as follows.

Ic_im_j = {methods n_k belonging to N invoked by methods m_j of class C_i}

$I'c_im_j$ = {methods n_k belonging to N that invoke methods m_j of class C_i}

Two sets of interfaces can be defined as follows in terms of the parameters passed and received by the functions in Ic_im_j and $I'c_im_j$.

Pm_j,n_k = {parameters passed when invoking methods n_k of C_j by m_j of C_i}, where C_i is the class under consideration and C_j belongs to C_c, and n_k belongs to Ic_im_j. Similarly,

$P'm_j,n_k$ = {passed parameters returned from m_j of C_i to n_k of C_j},

where C_i is the class under consideration and C_j belongs to C'_c, and n_k belongs to $I'c_im_j$.

Stability$^+$, as mentioned earlier, is based upon the assumptions that different classes in a program make about one another. A class can make assumptions about the data (attributes) and functional (operational) elements of the class it is coupled to or communicates with. The assumptions for each class are calculated by totalling the assumptions for each variable type passed in and out of the public interface, and the assumptions that a class makes about the functions and data elements of classes that it communicates with. The idea is that a class with a higher number of operations (a larger public interface) has a larger assumption count due to the higher number of parameters being passed in and out of the public interface. The assumptions made by a class C_i about a parameter p can be determined by the following algorithm which is based on the algorithm given by Yau and Collofello [Yau85]:

(a) If parameter p is a class in the system, then increase the assumption count by the number of public member functions and instance variables in the class. The argument here is that the class C_i, whose stability is being analyzed, communicates with the class that is passed as a parameter through the public interface. The class C_i makes assumptions equal to the number of public member functions and data elements of the class that is passed as a parameter.

(b) If parameter p is a user-defined data type, then increment the assumption count by 1. This assumption count is essentially arbitrary and subject to further empirical study for a more accurate expected value.

(c) Increment the assumption count by 2 for each system-defined data type. In this case, one assumption is for the value that the parameter may have and the second is for the type of the parameter p.

Using the above algorithm, the assumptions made by class C_i about parameters in Pm_j,n_k can be calculated as follows.

TA = {total number of assumptions made by class C_i about Pm_j,n_k}

Using the same algorithm discussed above, the following set can also be calculated.

TA' = {total number of assumptions made by class C_i about $P'm_j,n_k$}

The ripple effect is defined in terms of the assumptions made by a class. The class under consideration is C_i. Hence the ripple effect due to a change made in class C_i is the sum of the assumptions made by C_i about Pm_j,n_k and the assumptions made by C_i about $P'm_j,n_k$. Let REC_i be the ripple effect due a change made in class C_i. Since, in the proposed metric, the ripple effect is calculated by counting the number of assumptions that the different objects in a system make about one another, therefore we have

$$REC_i = TA + TA'.$$

The design stability of a class C_i is defined as the reciprocal of the ripple effect due to that class plus 1. If DSC_i is the design stability of a class C_i, then

$$DSC_i = 1/(1+REC_i).$$

Note that if the ripple effect due to a change made in class C_i is equal to 0, i.e., if $REC_i = 0$, then the design stability of class C_i is equal to 1, i.e., $DSC_i = 1$.

A program's design stability (PDS) is the sum of the ripple effects due to all classes defined in the program, or

$$PDS = 1/(1+\Sigma REC_i)$$

where $1 <= i <= n$, C_i is the ith class in the system, and n is the total number of classes defined in the system.

The metrics described in this chapter are used in the experimental process discussed in Chapter IV to analyze software written for object-oriented applications. As discussed in the next chapter automated tools were employed to collect data for statistical analysis.

CHAPTER IV

EXPERIMENT FRAMEWORK

This chapter discusses the experimental process performed during this study, the experiment planning, software used for collecting data, and the data collection process. The experiment in this study involves the metrics analysis of object-oriented software systems written by professional programmers. The study follows the experimental framework described by Basili [Basili86][Smith92]. The study consists of four phases: 1) definition, 2) planning, 3) operation, and 4) interpretation. The following sections describes these phases.

4.1 Experiment Definition

The objective of this pilot experiment is to apply and test metrics, described in this thesis, for software systems resulting from object-oriented designs. This prototype empirical study is an attempt to validate a suite of metrics by applying them on widely distributed, commercially available object-oriented programs. The experiment also uses some previously existing product metrics for the purpose of comparison, and evaluates their validity for object-oriented software.

4.2 Experiment Planning

The experiment needed source code of professionally-written, widely-distributed object-oriented programs. The programs had to be of considerable complexity and length

to get significant results from the measurements. For this purpose, some of the source codes of programs available at various *ftp sites* throughout the *internet* were utilized. The source code search was done using the DYNIX/ptx operating system running on Sequent Symmetry S-81. The programs were downloaded on 3.5" diskettes for analysis using the MS-DOS operating system running on an IBM-PC.

4.2.1 Software Used in the Experiment

The programs used for analysis and application of software metrics were:

InterViews (versions 2.6, 3.0.1, 3.1)

Borland Turbo C++ Class Library (version 1.0.1)

GNU C++ Class Library (version 1.4)

The program names and their sources are given in TABLE I. Some of the bulk features related to the size of the programs are shown in TABLE II.

4.3 Experiment Operation

The following two subsections describe the tools developed during this research work to collect data as a result of applying the software metrics and the data collection process using these tools.

4.3.1 Programs Used to Collect Data

The data collected during this study was obtained partially from a pre-written software package and partially by tools developed as a part of the experiment.

The existing conventional product metrics (see Section 3.1) such as lines of code

TABLE I

TESTBED PROGRAM SOURCES

PROG NAME	VERSION	APPLICATION	SOURCE
InterViews	2.6	Graphical Interface for X Windows System	interviews@stanford.edu (developed by the MIT X Consortium)
InterViews	3.0.1	"	"
InterViews	3.1	"	"
Borland Turbo C++ Class Library	1.0.1	Class Library to Develop O-O Applications in C++	Borland International
GNU C++ Class Library	1.4	Class Library to Develop O-O Applications in GNU C++	julian.uwo.ca (developed by the Free Software Foundation)

(LOC), cyclomatic complexity (VG), Vocabulary (n), program length (N), and Volume (V) were calculated using *PC-METRIC* version 1.2 (Set Laboratories, Inc., Portland, OR) for C++ programs. The Stability+ (STAB), depth of inheritance tree (DIT), number of children (NOC), weighted methods per class (WMC), and coupling between objects (CBO) were calculated using tools developed during the experiment (see APPENDIX D).

The inputs to the *PC-METRIC* program are the header (*filename*.h) and the implementation (*filename*.cpp) files. The outputs of the program are the class report (*filename*.cls), complexity report (*filename*.rpt), and the class hierarchy (*filename*.cht) files.

TABLE II

TESTBED PROGRAM SIZES

PROG NAME	#CLASSES	SIZE (in Kbytes)	#IMPLEMEN-TATION FILES	#HEADER FILES
Interviews (2.6)	136	782K	77	69
InterViews (3.0.1)	100	520K	52	75
InterViews (3.1)	145	875K	66	76
Borland Turbo C++ Class Library (1.0.1)	30	251K	20	22
GNU C++ Class Library (1.4)	40	300K	40	35

Descriptions of these files is given in the next section.

PC-METRIC uses a file named CPPRESWO.TAB for a list of C++ operators (see APPENDIX C). Two other files, CPPNONEX.TAB and CPPTURNO.TAB, contain a sorted list of C++ nonexecutable words for standard C++ and TURBO C++ (see APPENDIX C). A number of the items in CPPRESWO.TAB are not part of standard C++, which are explained below.

In C++, a parenthesis has three uses: it can change the default ordering of arithmetic

operations, it follows a function call, or it follows a control statement [METRIC90]. To distinguish among these uses, three different parentheses are defined in the file CPPRESWO.TAB: "(" indicates an arithmetic parentheses, "(c" indicates a parentheses following a control statement, and "(p" indicates a parentheses following a function call. Each of these is a different use of parentheses and, therefore, each is considered to be a different operator.

In C++, the asterisk, *, has two uses: as a multiplication sign and as a pointer (see APPENDIX A) [METRIC90]. To distinguish between these uses, two asterisks are defined: "*" indicates multiplication and "*p" indicates a pointer. Since these have different meanings, each is counted as a different operator.

In C++, the ampersand, &, has two uses: as a unary **AND** operator and as an address operator [METRIC90]. To distinguish between these uses, two ampersands are defined: "&" indicating the unary **AND**, and "&p" indicating the address operator. Since these have different meanings, each is counted as a different operator.

Certain items in the list of reserved words are not counted. These are the items that must be paired with another item and consist of: }, |, **while** when associated with **do**, and ":" when associated with "?". Also not counted are the single quote, ', and the double quote, ". These signal the start of a string and are counted as part of the string.

Any statement preceded by one of the words in the CPPNONEX.TAB file or the CPPTURNO.TAB file is considered nonexecutable and, hence, ignored.

The following control structures increment the cyclomatic complexity count: **if, while** (unassociated with **do**), **do, for, ?:**, and **case**. Occurrences of **else** do not increment the count.

The *STABILITY-MET* program developed during this study is built around the algorithm originally developed by Yau and Collofello [Yau85] and modified here to account for the notions of object-oriented designs. The algorithm is modified based upon the amount of information passed in and out of the public interface of classes in a program. Each piece of information has its assumption count [Chanon74] which accumulates to give the potential ripple effect for the class. Stability is the inverse of the potential ripple effect [Yau85].

The inputs to the *STABILITY-MET* program are the header (*filename*.h) files and an assumption file (*filename*.list). The assumption file contains the assumptions recorded for each class and each data type (e.g., integer, character, etc.) in a program, because it is assumed that the parameters passed in and out of the public interface of a class can either be some other class or a data type. The formation of the assumption table in the filename.list is automated by a program called *GENLIST*. The assumption file generated by the *GENLIST* program is utilized by the *STABILITY-MET* program to calculate the Stability^{+} metric for the classes in a program whose stability is being measured.

The *INHERIT-MET* program calculates the depth of inheritance tree (DIT) and the number of children (NOC) for the classes in the program. It utilizes one of the output files called class hierarchy table (*filename*.cht), generated by *PC-METIRC*, to calculate the two metrics.

The *METHOD-MET* program extracts information about the number of methods and data items in the classes from the class report file (*filename*.cls) generated by *PC-METRIC* and calculates the weighted method per class (WMC) metric.

The *COUPLING-MET* program calculates the coupling between objects metric (CBO). The inputs to this program are the header (*filename*.h) files and a file containing the

names of all the classes in a program. The *COUPLING-MET* program then calculates the number of couples or connections for each class in a program by examining its public interface.

4.3.2 Data Collection Process

The programs used for analysis were arranged as multiple header files. In this style of program arrangement, a ".h" file and its associated ".cpp" file can be seen as a module in which the ".h" file specifies an interface and the ".cpp" file specifies an implementation [Stroustrup91]. The programs (implementation and header or interface files) were downloaded from the Computer Science Department computer (Sequent Symmetry S-81) to an IBM-PC through Kermit for analysis.

The files were first run through *PC-METRIC*. Three kind of files were generated that were used to calculate VG, n, N, VOL, and LOC metrics. The files are named complexity (*filename*.rpt), class (*filename*.cls), and class hierarchy (*filename*.cht) reports. The data contained in the files generated by *PC-METIRC* are described below.

The complexity report contains information pertinent to each member function. It includes the fields for function name, unique operators (n1), unique operands (n2), total operators (N1), total operands (N2), length (N), volume (V), cyclomatic complexity (VG), and the lines of code (LOC). The class report contains information pertinent to each class in the program being analyzed. It includes the field for class name, number of private protected, public, and total members. The class hierarchy report lists all base classes and their derived classes.

The *STAB-MET* program generates the stability report file named *stab.out*. This file

contains information pertinent to each class in the program being analyzed. It includes the fields for the class name being analyzed, the data type or class name passed as parameters for the class being analyzed, number of occurrence of a particular data type or class name, the assumption count for each parameter, the total assumption count for each parameter, the potential ripple effect, and the value of Stability^{+} metric for the class being analyzed.

The *INHERIT-MET* program uses the class hierarchy file (*filename*.cht) generated by the *PC-METRIC* program. It generates an output file named *inherit.out*. This file contains fields for the class name and the values for the DIT and NOC metrics.

The *COUPLING-MET* program generates the *coup.out* file. This file contains fields for the name of each class in a program and the names of classes to which that class is coupled. The total number of couples gives the value of the CBO metric for a particular class.

The *WMC-MET* program generates a binary file containing records for classes with fields for each metric being analyzed in this experiment. It also calculated the WMC metric for classes in a program and stores them in the output binary file called *met-table*.

The *SIGMA-MET* program uses the report file (*filename*.rpt) generated by the *PC-METRIC* program. This file contains the values of product metrics used for conventional programs, discussed in Section 3.1, for all the functions in a program. The SIGMA-MET program calculates these metrics for all the classes in a program. Each metric value for a class is obtained by adding the metric values for all member function in that particular class. Let M_m be the value of a particular metric for a member function M in a class C. If there are n member functions in a class C, then

$$C_m = \sum_{i=1}^{n} M_m^i$$

where C_m is the value of that particular metric for class C. The metrics used for this purpose are Lines of Code (LOC), Vocabulary (n), Length (N), Volume (V), and the Cyclomatic Complexity (VG).

The *GATHER* program uses the output files generated by the *STABILITY-MET*, *INHERIT-MET*, *COUPLING-MET*, *WMC-MET*, and *SIGMA-MET* programs and merges them into a single file named *metric.dat*, which is used as a part of the statistical analysis for the metrics described in this study.

Using the software metrics discussed in this study, the above steps of the experiment resulted in raw data and measurements for the test bed programs. The interpretation of the data collected is described in the next chapter.

CHAPTER V

MEASUREMENTS AND ANALYSIS

The data collected as a result of applying the software metrics to the testbed programs is of the ordinal scale. It means that the data can be ordered and has the properties of equality and rank. Other possible scales for data are nominal, interval, and ratio [Conte86]. Nominal scale data has the property of equality only. Interval scale data has meaningful differences and properties of equality and rank. Ratio scale data has the properties of equality, rank, meaningful differences, and meaningful ratios. In the case of ordinal scale data, average value is not very meaningful. Hence median and mode values are used for a particular metric in a population to describe the central tendency of the data. Spearman correlation was used because it is more appropriate for data that can be ranked [Conte86].

A total of 137 classes were analyzed for InterViews version 2.6. Table III shows the measurements. The columns are friend classes and functions (FRCLS and FRF), inline functions (INLF), private functions and variables (PRIF and PRIV), protected functions and variables (PROF and PROV), public functions and variables (PUBF and PUBV), total members (TOTMEM), and virtual functions (VIRF). The values of these variables for the classes in the system show non-zero skewness indicating that the mean probably cannot be a useful measure. The standard deviations were highest for the public and total members. Therefore, frequency distribution graphs for these member functions were analyzed and it

TABLE III

STATISTICS FOR CLASSES IN INTERVIEWS (VER. 2.6)

	FRCLS	FRF	INLF	PRIF	PRIV	PROF	PROV	PUBF	PUBV	TOTMEM	VIRF
# CASES	137	137	137	137	137	137	137	137	137	137	137
MINIMUM	0	0	0	0	0	0	0	0	0	0	0
MAXIMUM	5	1	10	21	22	16	11	64	12	109	15
MEAN	0.24	0.00	0.36	1.47	1.39	1.61	1.38	7.43	0.46	13.76	1.83
STAN DEV	0.69	0.08	1.38	2.93	3.38	2.88	2.32	9.83	1.84	15.59	2.68
SKEWNESS	3.72	11.57	5.01	3.51	3.87	2.50	1.87	3.24	4.54	2.99	2.09
KURTOSIS	17.31	132.00	26.69	15.46	17.19	6.89	2.91	12.64	21.00	11.85	5.25
MEDIAN	0	0	0	1	0	0	0	4	0	8	1

TABLE IV

CORRELATIONS BETWEEN SELECTED METRICS FOR INTERVIEWS (VER. 2.6)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
CBO	1.000										
DIT	0.150	1.000									
LOC	0.235	-0.541	1.000								
n	0.360	-0.406	0.917	1.000							
N	0.349	-0.372	0.909	0.964	1.000						
NOC	0.161	-0.050	0.107	0.052	0.026	1.000					
PUB	0.190	-0.471	0.746	0.784	0.687	0.061	1.000				
STAB	-0.553	-0.336	-0.207	-0.324	-0.315	-0.164	-0.175	1.000			
VG	0.287	-0.419	0.916	0.939	0.914	0.081	0.797	-0.265	1.000		
VOL	0.354	-0.355	0.894	0.949	0.996	0.011	0.650	-0.323	0.897	1.000	
WMC	0.234	-0.380	0.787	0.840	0.749	0.120	0.935	-0.313	0.862	0.714	1.000

TABLE V

STATISTICS OF THE MEASUREMENTS FOR INTERVIEWS (VER. 2.6)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
# OF CASES	119	119	119	119	119	119	119	119	119	119	119
MINIMUM	0	0	7	4	4	0	0	0.001	1.000	8	0
MAXIMUM	9	5	1067	1604	5786	14	64	1	227	31295	95
MEAN	1.87	2.09	126.32	188.29	469.43	0.79	8.44	0.05	22.38	2272	11.51
STAN DEV	1.41	1.42	170.16	263.03	767.79	2.11	10.15	0.18	32.40	4027	13.30
SKEWNESS	2.22	0.12	3.30	3.03	3.95	4.21	3.13	4.84	3.42	4.25	3.22
KURTOSIS	9.21	-0.84	13.52	10.78	20.39	20.82	11.48	22.39	14.84	23.47	13.73
MEDIAN	2	2	65	89	208	0	5	0	11	942	7

was found that most of the classes have 6 total and 4 public members. The Spearman correlation matrix in TABLE IV shows that, as expected, LOC has strong correlations with n, N, VG, VOL, WMC and the number of public members. WMC also has strong correlations with n, N, VG, and VOL. STAB (Stability$^+$) has a negative correlation with CBO (coupling between objects). This result supports the viewpoints expressed in this study about the effect of parameter coupling on program stability. The Stability$^+$ metric also shows negative correlations with the depth of inheritance tree (DIT) and the vocabulary of the system (n). This is in accordance with the derivation of stability in terms of the potential ripple effect as explained in Section 3.3 of this thesis report. TABLE V shows high values of the sum of cyclomatic complexities and volumes for the member functions in the classes being analyzed.

The collected data for InterViews (version 2.6) shows that there are 32 inheritance structures. The average number of children at each level for a class decreases as the depth of inheritance tree increases, showing that the inheritance tree is thicker at the top. The classes deep in the hierarchy have fewer number of children. This trend indicates that the classes higher up in the hierarchy are expected to be used more frequently and need extensive testing and debugging.

A total of 100 classes were analyzed for InterViews version 3.0.1. Table VI shows zero values for friend functions (FRF) which indicates better information hiding or encapsulation. There is a sharp increase in the number of virtual functions (VIRF) in version 3.0.1 as compared to version 2.6, which shows an increase in the degree of polymorphism in the inheritance structure. Table VII again shows a high negative correlation between Stability$^+$ (STAB) and the coupling between objects (CBO). Table VIII shows a better

TABLE VI

STATISTICS FOR CLASSES IN INTERVIEWS (VER. 3.0.1)

	FRCLS	FRF	INLF	PRIF	PRIV	PROF	PROV	PUBF	PUBV	TOTMEM	VIRF
# CASES	100	100	100	100	100	100	100	100	100	100	100
MINIMUM	0	0	0	0	0	0	0	0	0	1	0
MAXIMUM	1	0	2	8	15	8	0	94	20	96	67
MEAN	0.07	0.00	0.02	0.31	1.95	0.48	0.00	11.24	0.85	14.83	7.60
STAN DEV	0.25	0.00	0.20	1.07	2.61	1.11	0.00	13.59	3.27	15.17	10.72
SKEWNESS	3.37	0.00	9.84	5.02	2.76	4.12	0.00	3.08	4.80	2.59	2.90
KURTOSIS	9.36	0.00	95.01	28.92	8.80	21.65	0.00	13.15	23.16	8.86	10.26
MEDIAN	0	0	0	0	1	0	0	7	0	9	4

TABLE VII

CORRELATIONS BETWEEN SELECTED METRICS FOR INTERVIEWS (VER. 3.0.1)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
CBO	1.000										
DIT	0.386	1.000									
LOC	0.409	0.105	1.000								
n	0.491	0.191	0.623	1.000							
N	0.451	0.263	0.637	0.949	1.000						
NOC	0.107	-0.156	-0.273	-0.229	-0.287	1.000					
PUB	0.425	-0.289	0.430	0.395	0.242	0.068	1.000				
STAB	-0.902	-0.288	-0.480	-0.520	-0.490	-0.090	-0.516	1.000			
VG	0.417	0.117	0.593	0.946	0.889	-0.198	0.394	-0.452	1.000		
VOL	0.428	0.274	0.640	0.923	0.990	-0.300	0.230	-0.470	0.856	1.000	
WMC	0.429	-0.294	0.411	0.375	0.222	0.112	0.996	-0.518	0.370	0.207	1.000

TABLE VIII

STATISTICS OF THE MEASUREMENTS FOR INTERVIEWS (VER. 3.0.1)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
# OF CASES	59	59	59	59	59	59	59	59	59	59	59
MINIMUM	0	0	1	4	4	0	1	0.002	1	2	1
MAXIMUM	9	3	1108	719	1856	15	94	1.000	54	7903	96
MEAN	3.45	1.25	120.74	120.54	291.03	1.06	13.76	0.09	14.22	1371	14.51
STAN DEV	2.73	1.12	161.76	149.66	385.3	3.21	15.75	0.25	13.16	1905	16.47
SKEWNESS	0.31	0.29	4.27	2.20	2.26	3.32	2.82	3.07	1.27	2.13	2.68
KURTOSIS	-1.161	-1.284	22.189	4.934	5.480	9.799	10.138	7.94	1.180	4.40	8.96
MEDIAN	3	1	81	85	176	0	8	0.008	11	804	8

average stability of classes than the previous version 2.6. The average value of the CBO measure is higher in this version, which shows a higher amount of coupling. This result at first may seem to contradict with the lower stability in version 3.0.1. This discrepancy can be explained by looking at the values of the kurtosis and skewness for version 2.6. The kurtosis has a very high value of 9.212, showing that the distribution is more peaked than the normal distribution. In the case of version 3.0.1, a negative value of the kurtosis shows the relative flatness of the distribution. Moreover, the skewness in version 2.6 shows that the data is clustered more to the left of the mean, with most of the extreme values to the right. Hence, version 2.6 has a skewed distribution whereas version 3.0.1 is less skewed and closer to a normal distribution. Thus the coupling measure seems to be more uniform throughout the classes as opposed to having a few classes with very high amount of coupling indicating bad design. Lower stability in version 3.0.1 also indicates that less information is passed in and out of the public interfaces of the classes. This result is supported by the fact that the number of classes has decreased, showing a major structural design change from version 2.6 to version 3.0.1. This change in the design, as observed from the statistics, is also supported by analyzing the revision control system files (rcs files) of InterViews provided for this research by Mark A. Linton of Silicon Graphics [Linton93].

A total of 103 classes were analyzed for Interviews version 3.1. TABLE IX shows zero values for the friend functions (FRF) which indicates good information hiding or encapsulation. There is an even larger number of virtual functions (VIRF) than versions 2.6 and 3.0.1 indicating an increase in the degree of polymorphism in the inheritance hierarchies of the system. Table X again shows a very high negative correlation between Stability$^+$ (STAB), and coupling between objects (CBO). The WMC shows lower correlations with

TABLE IX

STATISTICS FOR CLASSES IN INTERVIEWS (VER. 3.1)

	FRCLS	FRF	INLF	PRIF	PRIV	PROF	PROV	PUBF	PUBV	TOTMEM	VIRF
# CASES	103	103	103	103	103	103	103	103	103	103	103
MINIMUM	0	0	0	0	0	0	0	0	0	1	0
MAXIMUM	1	0	2	8	15	8	0	98	32	100	71
MEAN	0.06	0.00	0.01	0.30	1.92	0.45	0.00	11.41	0.98	15.07	7.78
STAN DEV	0.25	0.00	0.19	1.04	2.57	1.07	0.00	13.90	4.20	15.61	10.99
SKEWNESS	3.43	0.00	10.00	5.20	2.83	4.41	0.00	3.18	5.64	2.62	3.01
KURTOSIS	9.78	0.00	98.01	31.01	9.25	24.87	0.000	14.05	33.72	9.04	11.32
MEDIAN	0	0	0	0	1	0	0	7	0	9	4

TABLE X

CORRELATIONS BETWEEN SELECTED METRICS FOR INTERVIEWS (VER. 3.1)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
CBO	1.000										
DIT	0.335	1.000									
LOC	0.305	0.002	1.000								
N	0.412	0.224	0.716	1.000							
NC	0.374	0.199	0.698	0.956	1.000						
NOC	0.043	-0.245	-0.071	-0.092	-0.170	1.000					
PUB	0.439	-0.091	0.578	0.526	0.408	0.144	1.000				
STAB	-0.907	-0.267	-0.389	-0.472	-0.434	-0.032	-0.546	1.000			
VG	0.328	0.149	0.700	0.954	0.911	-0.035	0.507	-0.391	1.000		
VOL	0.371	0.200	0.688	0.939	0.994	-0.192	0.402	-0.433	0.889	1.000	
WMC	0.447	-0.095	0.563	0.515	0.399	0.176	0.993	-0.551	0.495	0.389	1.000

TABLE XI

STATISTICS OF THE MEASUREMENTS FOR INTERVIEWS (VER. 3.1)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
# OF CASES	79	79	79	79	79	79	79	79	79	79	79
MINIMUM	0	0	1	4	4	0	0	0.001	1	2	0
MAXIMUM	9	6	997	965	1564	15	98	1.000	96	7693	100
MEAN	3.29	1.55	124.25	136.00	305.69	0.92	12.60	0.11	15.87	1424	13.30
STAN DEV	2.69	1.30	165.21	173.22	361.72	2.93	15.29	0.25	18.44	1750	15.87
SKEWNESS	0.48	0.68	3.32	2.48	1.74	3.90	2.92	2.73	2.43	1.79	2.810
KURTOSIS	-1.05	0.17	12.47	7.26	2.82	14.48	11.33	6.26	6.91	3.25	10.29
MEDIAN	2	1	81	81	193	0	7	0.009	11	869	7

N, VG, and VOL. Table XI shows a better average stability for classes than the previous versions.

The Borland Turbo C++ and GNU C++ class libraries also has high negative correlations between Stability+ (STAB) and the coupling between objects (CBO) metrics as shown in TABLE XIII and TABLE XVI. A total of 28 classes for Turbo C++ and 41 classes for GNU C++ were statistically analyzed as shown in TABLES XII and XV. It was observed from the frequency distributions that most of the classes in Turbo C++ have 8 public and total member functions. For GNU C++, the value of these numbers are 6 and 12, respectively. It can be seen from TABLE XII that the GNU C++ library has a very high number of friend functions as opposed to the InterViews or the Turbo C++ class library which indicates a lower level of encapsulation. GNU C++ also shows a low number of virtual functions suggesting less degree of polymorphism. This is also supported by the fact that the inheritance mechanism is scarcely used in the design with 2 being the maximum depth of classes in the inheritance hierarchies.

TABLES XIV and XVII show that classes in Turbo C++ are less coupled and more stable than classes in GNU C++. Turbo C++, like other software being analyzed, shows a strong correlation between Stability+ (STAB) and the public interface (PUB) of classes. This observation supports the notion that classes with large interfaces are potentially less stable than those with small public interfaces.

The statistical analysis presented in this chapter revealed some interesting results, observations and rules-of-thumb. The Stability+ metric proved to be an important measure in evaluating the design of a system. The Stability+ metric showed negative correlation with the coupling between objects (CBO) and the public interface of classes (PUB). Hence a

TABLE XII

STATISTICS FOR CLASSES IN BORLAND TURBO C++ CLASS LIBRARY (VER. 1.0.1)

	FRCLS	FRF	INLF	PRIF	PRIV	PROF	PROV	PUBF	PUBV	TOTMEM	VIRF
# CASES	28	28	28	28	28	28	28	28	28	28	28
MINIMUM	0	0	0	0	0	0	0	2	0	4	0
MAXIMUM	2	0	4	1	4	4	5	17	1	22	13
MEAN	0.28	0.00	1.17	0.07	1.21	0.35	0.21	8.50	0.03	10.39	5.39
STAN DEV	0.60	0.00	1.46	0.26	1.19	0.98	0.95	3.98	0.18	5.18	2.65
SKEWNESS	1.92	0.00	0.83	3.32	0.50	2.74	4.73	0.56	5.00	0.88	0.43
KURTOSIS	2.47	0.00	-0.82	9.07	-0.80	6.33	21.06	-0.25	23.03	-0.23	1.31
MEDIAN	0	0	0	0	1	0	0	7	0	9	5

TABLE XIII

CORRELATIONS BETWEEN SELECTED METRICS FOR BORLAND TURBO C++ CLASS LIBRARY (VER. 1.0.1)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
CBO	1.000										
DIT	-0.325	1.000									
LOC	-0.032	0.165	1.000								
n	-0.021	0.085	0.858	1.000							
N	-0.011	0.107	0.859	0.988	1.000						
NOC	-0.405	-0.149	-0.182	-0.107	-0.113	1.000					
PUB	-0.202	-0.041	0.620	0.720	0.697	0.123	1.000				
STAB	-0.849	0.157	-0.344	-0.323	-0.342	0.317	-0.035	1.000			
VG	-0.090	0.161	0.853	0.977	0.973	-0.121	0.711	-0.273	1.000		
VOL	0.016	0.152	0.837	0.950	0.979	-0.086	0.626	-0.375	0.935	1.000	
WMC	-0.223	-0.065	0.609	0.733	0.703	0.164	0.990	-0.013	0.717	0.634	1.000

TABLE XIV

STATISTICS OF THE MEASUREMENTS FOR BORLAND TURBO C++ CLASS LIBRARY (VER. 1.0.1)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
# OF CASES	26	26	26	26	26	26	26	26	26	26	26
MINIMUM	0	0	11	2	2	0	4	0.042	1	1	4
MAXIMUM	1	6	585	209	484	4	17	1.000	32	2291	17
MEAN	0.38	2.38	214.61	73.00	131.42	0.84	9.00	0.36	10.84	542.92	9.46
STAN DEV	0.49	1.41	161.72	52.37	121.33	1.37	3.67	0.34	7.56	559.58	4.15
SKEWNESS	0.47	0.67	0.92	0.89	1.38	1.50	0.80	0.99	1.32	1.59	0.81
KURTOSIS	-1.77	0.07	-0.34	0.25	1.37	0.80	-0.26	-0.50	1.40	2.18	-0.58
MEDIAN	0	2	147	62	92	0	8	0.200	9	376	8

TABLE XV

STATISTICS FOR CLASSES IN GNU C++ CLASS LIBRARY (VER. 1.4)

	FRCLS	FRF	INLF	PRIF	PRIV	PROF	PROV	PUBF	PUBV	TOTMEM	VIRF
# CASES	41	41	41	41	41	41	41	41	41	41	41
MINIMUM	0	0	0	0	0	0	0	0	0	1	0
MAXIMUM	2	52	21	5	9	3	6	64	6	68	13
MEAN	0.22	6.07	0.51	0.48	1.02	0.46	1.56	16.29	0.39	20.22	0.85
STAN DEV	0.52	12.68	3.28	1.24	1.94	0.84	1.79	16.10	1.26	16.59	2.09
SKEWNESS	2.32	2.17	6.16	2.53	2.45	1.78	0.99	1.48	3.53	1.43	4.95
KURTOSIS	4.43	4.05	36.02	5.10	6.08	2.23	0.05	1.21	11.68	1.16	26.15
MEDIAN	0	0	0	0	0	0	1	8	0	12	0

TABLE XVI

CORRELATIONS BETWEEN SELECTED METRIC FOR GNU C++ CLASS LIBRARY (VER. 1.4)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
CBO	1.000										
DIT	-0.499	1.000									
LOC	0.185	-0.453	1.000								
n	0.301	-0.561	0.925	1.000							
N	0.279	-0.571	0.923	0.943	1.000						
NOC	-0.265	-0.199	0.182	0.181	0.085	1.000					
PUB	0.694	-0.469	0.380	0.567	0.448	-0.186	1.000				
STAB	-0.844	0.516	-0.167	-0.335	-0.314	0.267	-0.759	1.000			
VG	0.332	-0.562	0.931	0.961	0.936	0.174	0.497	-0.345	1.000		
VOL	0.245	-0.556	0.907	0.920	0.993	0.050	0.415	-0.282	0.911	1.000	
WMC	0.657	-0.478	0.372	0.568	0.455	-0.206	0.987	-0.753	0.489	0.424	1.000

TABLE XVII

STATISTICS OF THE MEASUREMENTS FOR GNU C++ CLASS LIBRARY (VER. 1.4)

	CBO	DIT	LOC	n	N	NOC	PUB	STAB	VG	VOL	WMC
# OF CASES	38	38	38	38	38	38	38	38	38	38	38
MINIMUM	0	0	12	8	8	0	0	0	1	24	0
MAXIMUM	8	2	588	658	2581	2	64	1	140	14017	67
MEAN	3.28	0.47	107.94	127.71	334.34	0.15	16.81	0.10	20.65	1656	17.8
STAN DEV	2.03	0.55	125.72	156.45	504.42	0.43	16.58	0.18	29.51	2706	17.1
SKEWNESS	0.70	0.58	2.31	1.95	2.92	2.80	1.38	3.56	2.56	3.09	1.31
KURTOSIS	-0.71	-0.77	5.26	3.44	9.33	7.35	0.87	14.22	6.65	10.40	0.80
MEDIAN	2	0	73	60	198	0	8	0.073	10	955	8

system with highly connected objects and large interfaces is potentially less stable. This is due to the higher amount of information being passed in and out of the public interface of classes, which increases the potential ripple effect (see Section 3.3). The Stability$^+$ also has negative correlation with the depth of inheritance tree (DIT). This shows that the inheritance mechanism can reduce the stability of a system due to the increase in the parameter and subclass coupling between classes. This disadvantage is more than compensated by the advantages gained in terms of polymorphism and reusability.

The inheritance tree structures, as observed in the commercial software investigated, were thick at the top and thin at the bottom. The average depth of classes in the inheritance trees gets no bigger than 5 in the software analyzed during this study. This can be an indication that the complexity of a software increases as its inheritance structure gets deeper. This increase in complexity can be controlled by increasing the number of inheritance structures as opposed to having one big structure with classes buried at deeper levels. Hence 5 seems to be an optimal depth for a class in an inheritance structure.

The number of public member functions (public interface) as observed from the statistics obtained were quite uniform throughout the programs obtained from different sources. From the frequency distribution of public members in classes, it was observed that most of the classes had on the average 5 public members. The average of the mean values of the number of public members in classes was 11. A number more than this can increase the complexity of a class.

The use of friend functions were observed to be less in classes that were well encapsulated and less coupled. In all cases, weighted methods per class (WMC), which is a measure of the length of a class, shows strong positive correlations with measures

generally used for conventional software like cyclomatic complexity, volume, vocabulary, and the lines of code of a program. Apart from the observations and results obtained for the metric suite for object-oriented programs, the results also supported some previously established work and experimentation involving metrics for conventional programming [Samadzadeh89].

CHAPTER VI

SUMMARY, CONCLUSIONS, AND FUTURE WORK

In this thesis a suite of metrics for object-oriented software systems was discussed and used in an experiment. A brief review of software design factors was also presented. The design issues discussed are among the ones that affect the cost and maintenance effort of the resulting system. The object-oriented design approach helps to organize and systematize the design phase of the software development process. Object-oriented design, being still a relatively new technology, is in need of more generally accepted design principles. The experiment performed during this study was directed towards investigating some of the principles and guidelines used to design object-oriented systems. The experiment utilized some of the product metrics to find a number of quantifiable design attributes of an object-oriented system. The purpose of this "backtracking" or hindsight analysis was to use the software product itself to quantify the attributes of the design approach from which the software had evolved. Such an approach was necessitated due to lack of a standard design methodology for object-oriented designs and the fact that design documents for commercial software products are generally not available.

The objectives of this thesis included the following:

• *Developing* an algorithm to evaluate the stability of an object-oriented system. This objective involved extending and enhancing an existing algorithm for evaluating the stability of a software system.

• *Using* metrics analysis to measure some of the design factors used in the object-oriented approach. The study of design metrics is significant because of the fact that inheritance was included in the evaluation of the design of a system.

• *Validating* a suite of candidate metrics by applying them to working object-oriented software systems and comparing this suite of metrics with some previously established metrics.

• *Using* substantial (i.e., non-trivial) commercial software as a vehicle for analyzing coupling, cohesion, and stability using software metrics discussed in this thesis.

• *Developing* tools to automate the process of data collection as a result of applying the design metrics to the test bed programs.

The statistical analysis performed on the data collected (as a result of applying the software metrics) indicated a number of important results as discussed in the last chapter. The tool developed to measure Stability$^+$ was used for programs written in C++. Other programs were also written to collect data as a result of applying the suite of metrics discussed in this thesis to test bed programs.

The results of this research work can be applied to applications developed in the USE system (the Unified Simulation Environment, which is an object-oriented simulation/system design environment [Hassan92][Jhun92][Daily93]). Such applications can be scrutinized and optimized by performing coupling, cohesion, and stability analyses.

One area of future work could be modifying and enhancing the algorithm presented in this thesis, to measure the design stability (Stability$^+$) and incorporate subclass coupling for object-oriented designs. Another area of future work would be to analyze the impact of using templates and reflection on object-oriented designs.

The optimal depth of an inheritance structure was found to be 5 by analyzing the object-oriented software studied in this thesis. This observation can be further investigated by future experiments in object-oriented software systems.

Future large-scale experiments could also be performed to study the correlations between the statistics obtained by applying the software metrics and the changes made in successive versions of an object-oriented software.

The tools developed during this study to evaluate an object-oriented software can serve as a front end of a complete design evaluation/simulation system. The goal being to design and develop a simulation environment to be used for investigating the issues of reusability, extendibility, and maintainability for a general software development process.

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APPENDICES

APPENDIX A

GLOSSARY AND TRADEMARK INFORMATION

GLOSSARY

Abstract Data Type (ADT):	A mathematical model with a collection of function defined on that model (a collection of data structures and a collection of operations on those data structures).
Assembly Structure:	An assembly structure portrays a whole and its component parts.
Assumptions:	When modules communicate through their public interfaces, they expect certain values and types of parameters being passed or received. These suppositions about the expected value or type of the parameters are called assumptions.
Base Data Elements:	Single items (numbers, characters, etc.) that are associated with single identifiers on a one-to-one basis.
Binding:	An indication of the cohesiveness of a module.
Classification Structure:	The generalization and specialization of real world things arranged in a hierarchial fashion with the common characteristics in the generalized class and the extension of those characteristics in the specialized classes.
Cohesion:	An indication of the strength of the association among the data and functional elements comprising a module.
Connection:	A connection from one module to another is established if one invokes the other by accessing its data elements or functions.
Coupling:	An indication of the strength of the association established by connections among modules.
COUPLING-MET:	Name of the program to calculate the coupling between objects (CBO) metric.

CRC Card:	A conceptual card used in the design phase to document a class name, its responsibilities, and its collaborators.
INHERIT-MET:	Name of the program to calculate the depth of inheritance tree (DIT) and number of children (NOC) metrics.
Message Passing:	The process of presenting an object with a request to perform a specific action.
Module:	A module in an object-oriented environment is an object (which is an encapsulation of data and operations defined on that data).
Object:	Encapsulation of data and operations defined on that data (representation of an ADT).
Pointer:	A pointer is an address of an object in memory.
Potential Ripple Effect:	Total number of assumptions made by modules, which either invoke the module whose stability is being measured, share global data with the module, or are invoked by the module.
Private Data & Functions:	Private data elements or functions of an object can be used by only a few categories of functions, whose privileges include access to these data elements or functions.
Public Data & Functions:	Public data elements or functions of an object can be used by all other functions in a system.
Public Interface:	Set of operations defined in a class that are used as public functions by other classes in a system.
SIGMA-MET:	Program to calculate the sum of Lines of Code (LOC), Vocabulary (n), Length (N), Volume (V), and the Cyclomatic Complexity (VG) metrics for the member functions of a class.
Software Maintenance:	The process of error rectification, redesign or reimplementation during the life cycle of a software system.
Software Metrics:	This term refers to a broad range of measures for computer software.

Stability:	Resistance to the amplification of changes in a program or resistance to the potential ripple effect produced due to a modification made in the program.
STAB-MET:	Program to calculate the Stability^{+} (STAB) metric.
Static Complexity:	The perceived complexity of software that effects programmer performance in composing, comprehending, and modifying the software.
Static Object:	A static object in an object-oriented environment is a class type declaration as opposed to a dynamic object, which is an instance of that class type.
Structured Data Elements:	They consist of multiple data items that are related to one another in some specified manner. Each group of data items is associated with a particular identifier.
WMC-MET:	Name of the program to calculate the Weighted Methods per Class (WMC) metric.

TRADEMARK INFORMATION

DYNIX/ptx:	A registered trademark of the Sequent Computer System, Inc.
InterViews:	A registered trademark of Stanford University and Silicon Graphics, Inc.
MS-DOS:	A registered trademark of the Microsoft Corporation
PC-METRIC:	A registered trademark of Set Laboratories, Inc.
Sequent Symmetry S-81:	A registered trademark of the Sequent Computer System, Inc.
X Window System:	A registered trademark of the Massachusetts Institute of Technology.

APPENDIX B

COLLECTED DATA AND METRIC LISTINGS

The order for the following table is: class name, public variables, public functions, protected variables, protected functions, private variables, private functions, total members, inline members, virtual members, friend functions, friend classes.

Adjuster	0	8	7	8	0	1	24	0	3	0	0
Zoomer	0	3	0	1	1	1	6	0	0	0	0
Enlarger	0	3	0	0	0	1	4	0	0	0	0
Reducer	0	3	0	0	0	1	4	0	0	0	0
Mover	0	3	1	1	0	1	6	0	0	0	0
LeftMover	0	3	0	0	0	1	4	0	0	0	0
RightMover	0	3	0	0	0	1	4	0	0	0	0
UpMover	0	3	0	0	0	1	4	0	0	0	0
DownMover	0	3	0	0	0	1	4	0	0	0	0
Banner	4	5	7	4	0	0	20	0	0	0	0
Bitmap	0	24	0	0	0	0	24	0	0	1	0
BitmapRep	0	0	0	0	6	11	17	0	0	2	0
Border	0	0	1	4	0	0	5	0	1	0	0
HBorder	0	3	0	1	0	1	5	0	1	0	0
VBorder	0	3	0	1	0	1	5	0	1	0	0
Box	0	4	1	8	3	3	19	0	5	0	0
HBox	0	8	0	4	0	1	13	0	0	0	0
VBox	0	8	0	4	0	1	13	0	0	0	0
Brush	0	4	0	0	1	0	5	0	0	1	0
BrushRep	0	0	0	0	2	2	4	0	0	2	0
ButtonState	0	8	1	1	0	0	10	2	0	0	0
Button	0	11	6	4	0	1	22	0	4	0	0
TextButton	0	0	3	6	0	1	10	0	0	0	0
PushButton	0	7	0	2	0	1	10	0	3	0	0
RadioButton	0	7	0	2	0	1	10	0	3	0	0
CheckBox	0	9	0	2	1	1	13	0	5	0	0
Canvas	0	14	0	0	4	1	19	0	0	5	0
Catalog	0	5	0	0	7	1	13	0	0	0	0
ChiefDeputy	0	14	0	0	2	0	16	2	0	0	0
Color	0	9	3	0	0	0	12	0	0	0	0
ColorRep	0	0	0	0	1	6	7	0	0	1	0
Connection	0	14	4	2	0	0	20	1	0	0	0
Control	0	9	0	9	1	1	20	1	13	0	0
ControlState	0	14	5	2	0	0	21	10	2	0	0
Cursor	0	6	0	0	7	0	13	0	0	0	0
Deck	0	12	1	3	0	3	19	2	7	0	0
Deputy	0	5	1	1	0	0	7	1	0	0	0
Dialog	0	5	2	0	0	1	8	0	2	0	0
Event	9	6	0	0	4	6	25	1	0	2	0
FileBrowser	0	10	0	0	1	1	12	0	2	0	0
FileChooser	0	6	2	8	0	0	16	0	3	0	0
Font	0	12	0	0	0	3	15	0	0	1	0
FontRep	0	0	0	0	3	2	5	1	0	2	0
Frame	0	2	4	5	0	1	12	0	3	0	0
ShowFrame	0	5	0	2	0	1	8	4	3	0	0
TitleFrame	0	3	1	1	0	1	6	0	2	0	0
BorderFrame	0	3	0	1	1	1	6	0	2	0	0
ShadowFrame	0	2	0	1	0	1	4	0	1	0	0
MarginFrame	0	5	6	3	0	1	15	0	3	0	0
Glue	0	0	0	4	0	1	5	0	0	0	0
HGlue	0	6	0	0	0	1	7	0	0	0	0
VGlue	0	6	0	0	0	1	7	0	0	0	0
Interactor	0	64	7	10	7	21	109	0	15	3	0
MenuItem	0	4	0	0	0	1	5	0	0	0	0
Menu	0	17	0	6	8	1	32	7	8	0	0
MenuBar	0	4	1	0	0	1	6	0	1	0	0
PulldownMenu	0	4	0	0	0	1	5	0	0	0	0
PullrightMenu	0	4	0	0	0	1	5	0	0	0	0
PopupMenu	0	1	0	0	0	1	2	0	0	0	0
Message	0	4	1	2	0	1	8	0	4	0	0
Packet	1	0	0	0	0	0	1	0	0	0	0
Painter	0	57	11	0	1	10	79	0	0	1	0
Panner	0	3	1	1	2	1	8	0	1	0	0
Slider	0	9	0	2	20	12	43	0	7	0	0
Pattern	0	4	0	0	1	0	5	0	0	1	0
Perspective	12	10	0	0	0	0	22	0	0	0	0
PropertyDef	3	2	0	0	0	0	5	2	0	0	0
PropertySheet	0	16	0	0	3	1	20	0	0	0	0
Raster	0	10	1	0	0	0	11	0	0	1	0
RasterRep	0	0	0	0	3	7	10	0	0	2	0
Regexp	0	7	3	0	0	0	10	0	0	0	0
ReqErr	5	4	0	0	0	0	9	0	1	0	0
Resource	0	4	0	0	1	0	5	0	1	0	1

Rubberband	0	10	7	2	0	0	19	0	7	0	0
RubberEllipse	0	6	4	0	0	0	10	0	5	0	0
SlidingEllipse	0	4	2	0	0	0	6	0	3	0	0
RubberCircle	0	4	0	0	0	0	4	0	3	0	0
RubberPointList	0	2	3	1	0	0	6	0	0	0	0
RubberVertex	0	3	1	1	0	0	5	0	2	0	0
RubberHandles	0	3	1	0	0	0	4	0	2	0	0
RubberSpline	0	2	0	0	0	0	2	0	1	0	0
RubberClosedSpline	0	2	0	0	0	0	2	0	1	0	0
SlidingPointList	0	5	2	0	0	0	7	0	4	0	0
SlidingLineList	0	2	0	0	0	0	2	0	1	0	0
ScalingLineList	0	7	5	1	0	0	13	0	6	0	0
RotatingLineList	0	3	0	1	0	0	4	1	1	0	0
RubberGroup	0	18	0	0	0	0	18	0	6	0	0
RubberLine	0	4	4	0	0	0	8	0	3	0	0
RubberAxis	0	2	0	0	0	0	2	0	1	0	0
SlidingLine	0	2	2	0	0	0	4	0	1	0	0
ScalingLine	0	3	4	0	0	0	7	0	1	0	0
RotatingLine	0	4	4	1	0	0	9	0	1	0	0
RubberRect	0	4	4	0	0	0	8	0	3	0	0
RubberSquare	0	2	0	0	0	0	2	0	1	0	0
SlidingRect	0	2	2	0	0	0	4	0	1	0	0
StretchingRect	0	3	1	0	0	0	4	0	1	0	0
ScalingRect	0	3	4	0	0	0	7	0	1	0	0
RotatingRect	0	5	8	1	0	0	14	0	3	0	0
GrowingVertices	0	6	5	3	0	0	14	0	6	0	0
GrowingMultiLine	0	1	0	1	0	0	2	0	1	0	0
GrowingPolygon	0	1	0	1	0	0	2	0	1	0	0
GrowingBSpline	0	1	0	1	0	0	2	0	1	0	0
GrowingClosedBSpline	0	1	0	1	0	0	2	0	1	0	0
Scene	0	9	1	14	0	7	31	0	8	0	0
MonoScene	0	6	1	4	0	0	11	0	7	0	0
Scroller	0	0	7	7	0	1	15	0	1	0	0
HScroller	0	5	0	0	0	8	13	0	4	0	0
VScroller	0	5	0	0	0	8	13	0	4	0	0
Sensor	0	13	6	8	0	0	27	8	1	2	0
Shape	9	8	0	0	0	0	17	1	0	0	0
ObjectSpace	3	12	3	1	14	9	42	0	1	0	0
objectspace_Msg	0	0	0	0	0	0	0	0	0	0	0
SpaceManager	0	6	0	0	0	0	6	0	0	0	0
StringBrowser	0	21	8	16	14	6	65	0	8	0	0
StringChooser	0	8	3	7	0	1	19	0	8	0	0
StringEditor	1	10	9	5	0	1	26	0	6	0	0
StringPool	0	3	0	0	4	0	7	0	0	0	0
StringId	0	1	0	0	3	0	4	0	0	1	0
StringTable	0	6	0	0	3	2	11	0	0	0	0
ObjectStub	0	2	0	0	0	0	2	0	2	0	0
ViewList	0	0	0	0	2	0	2	0	0	2	0
Subject	0	7	1	0	0	0	8	0	3	1	0
InteractorItr	0	2	0	3	1	0	6	5	0	1	0
Table	0	5	0	0	3	2	10	0	0	0	0
ObjectTableEntry	0	0	0	0	4	1	5	0	0	1	0
ObjectTable	0	6	0	0	3	3	12	0	0	0	0
TextBuffer	0	40	3	0	3	0	46	0	2	0	0
TextDisplay	0	29	0	0	22	5	56	0	0	1	0
TextEditor	0	38	2	3	8	2	53	0	5	0	0
Transformer	0	31	0	0	6	1	38	0	0	0	0
TGlue	0	4	0	0	1	0	5	0	0	0	0
Tray	10	10	0	5	5	6	36	0	8	0	0
Viewport	0	24	2	3	2	2	33	0	5	0	0
PropertyData	3	0	0	0	0	0	3	0	0	0	0
OptionDesc	4	0	0	0	0	0	4	0	0	0	0
World	0	35	0	3	1	9	48	0	0	0	0
WorldView	0	23	0	11	1	1	36	1	2	0	0

The order for the following table is: class name, public members, weighted methods per class (WMC), depth of inheritance tree (DIT), number of children (NOC), Stability* (stab), vocabulary (n), length (N), lines of code (LOC), cyclomatic complexity (VG), volume (VOL), coupling between objects (CBO).

Adjuster	8	17	1	2	0.0034	238	450	309	34	1993	4
Zoomer	3	5	2	2	0.0039	48	120	30	5	509	2
Enlarger	3	4	3	0	0.0040	50	86	27	5	400	2
Reducer	3	4	3	0	0.0040	50	86	27	5	400	2
Mover	3	5	2	4	0.0039	58	119	34	11	550	2
LeftMover	3	4	3	0	0.0039	51	88	31	5	413	2
RightMover	3	4	3	0	0.0039	51	88	31	5	413	2
UpMover	3	4	3	0	0.0039	50	86	31	5	400	2
DownMover	3	4	3	0	0.0039	50	86	31	5	400	2
Banner	5	9	1	0	0.0147	158	359	94	18	1744	1

Bitmap	24	24	1	0	0.0116	251	348	180	26	1235	3
HBorder	3	5	2	0	0.0161	33	42	17	5	125	1
VBorder	3	5	2	0	0.0161	33	42	17	5	125	1
Box	4	15	2	2	0.0076	189	562	176	33	2787	1
HBox	8	13	3	1	0.0006	172	470	115	16	1995	1
VBox	8	13	3	0	0.0006	173	472	115	16	2008	1
Brush	4	4	1	0	0.1667	71	343	146	17	1892	0
ButtonState	8	9	2	0	0.0833	52	59	31	8	175	1
Button	11	16	1	1	0.0250	223	448	153	43	1893	2
PushButton	7	10	3	0	0.0042	127	456	81	13	2467	2
RadioButton	7	10	3	0	0.0042	35	35	33	7	84	2
CheckBox	9	12	3	0	0.0041	136	311	77	15	1434	2
Canvas	14	15	0	0	0.0556	155	354	136	25	1701	1
Catalog	5	6	0	0	0.1111	144	340	118	15	1566	1
ChiefDeputy	14	14	0	0	0.0345	185	337	157	19	1470	1
Color	9	9	1	0	0.0714	87	113	66	9	385	0
Connection	14	16	0	0	0.0833	309	630	185	34	2954	0
Control	9	19	3	2	0.0063	215	435	165	40	1791	3
ControlState	14	16	2	0	0.0233	60	109	38	11	384	2
Cursor	6	6	0	0	0.0071	147	322	62	8	1536	3
Deck	12	18	2	0	0.0047	328	937	174	33	4517	3
Deputy	5	6	0	1	0.0667	25	25	39	5	61	1
Dialog	5	6	3	1	0.0061	91	176	71	8	762	3
Event	6	12	0	0	0.0182	243	614	155	18	2978	2
FileBrowser	10	11	2	0	0.0323	130	223	97	16	930	1
FileChooser	6	14	5	0	0.0072	212	425	162	18	1835	0
Font	12	15	1	0	0.0200	89	157	48	12	651	0
Frame	2	8	3	3	0.0076	118	228	74	13	942	1
ShowFrame	5	8	4	2	0.0061	33	51	24	6	179	2
TitleFrame	3	5	5	0	0.0066	57	76	30	7	284	2
BorderFrame	3	5	5	0	0.0075	53	86	30	6	341	1
ShadowFrame	2	4	4	0	0.0076	69	459	71	19	2246	1
MarginFrame	5	9	4	0	0.0030	127	298	66	13	1343	1
HGlue	6	7	2	0	0.0078	62	83	24	7	275	1
VGlue	6	7	2	0	0.0078	62	83	24	7	275	1
Interactor	64	95	0	13	0.0013	1446	3574	1038	227	18076	9
MenuItem	4	5	4	0	0.0074	25	25	41	5	60	1
Menu	17	24	4	3	0.0041	217	386	93	21	1604	5
MenuBar	4	5	4	0	0.0833	34	43	15	5	125	1
PulldownMenu	4	5	5	0	0.0075	27	29	21	5	73	1
PullrightMenu	4	5	5	0	0.0075	27	29	21	5	73	1
PopupMenu	1	2	5	0	1.0000	14	18	7	2	53	0
Message	4	7	1	0	0.0476	119	273	81	12	1252	0
Painter	57	67	1	0	0.0014	1604	5786	1067	153	31295	9
Panner	3	5	3	0	0.0039	88	231	87	8	1079	2
Slider	9	23	1	0	0.0035	523	1366	259	51	6916	4
Perspective	10	10	1	0	0.0045	170	529	109	15	2222	2
PropertySheet	16	17	0	0	0.0345	380	1022	274	55	4989	1
Raster	10	10	1	0	0.0175	222	585	151	26	2921	3
Regexp	7	7	0	0	0.0345	121	478	129	20	2479	0
ReqErr	4	4	0	0	1.0000	29	39	43	6	133	0
Resource	4	4	0	14	1.0000	22	30	32	6	87	0
Rubberband	10	12	1	7	0.0068	121	208	196	19	813	2
RubberEllipse	6	6	2	2	0.0112	85	150	65	7	601	2
SlidingEllipse	4	4	3	0	0.0115	43	66	25	4	242	2
RubberCircle	4	4	3	0	0.0123	61	108	30	5	456	2
RubberPointList	2	3	2	3	0.0132	33	61	18	3	225	2
RubberVertex	3	4	3	3	0.0118	80	294	49	4	1450	2
RubberHandles	3	3	4	0	0.0125	67	205	48	9	993	2
RubberSpline	2	2	4	0	0.0130	45	165	32	6	885	2
RubberClosedSpline	2	2	4	0	0.0130	47	198	39	8	1077	2
SlidingPointList	5	5	3	1	0.0116	108	261	65	12	1235	2
SlidingLineList	2	2	4	0	0.0128	40	115	27	6	594	2
ScalingLineList	7	8	3	1	0.0114	121	196	49	12	804	2
RotatingLineList	3	4	4	0	0.0125	48	89	23	4	389	2
RubberGroup	18	18	2	0	0.0049	204	353	94	29	1323	3
RubberLine	4	4	2	4	0.0118	58	110	56	5	442	2
RubberAxis	2	2	3	0	0.0123	20	43	18	3	172	2
SlidingLine	2	2	3	0	0.0120	29	56	19	2	223	2
ScalingLine	3	3	3	0	0.0120	66	144	31	5	653	2
RotatingLine	4	5	3	0	0.0118	92	279	57	6	1295	2
RubberRect	4	4	2	4	0.0118	62	144	60	6	615	2
RubberSquare	2	2	3	0	0.0123	26	73	18	5	327	2
SlidingRect	2	2	3	0	0.0120	30	59	19	2	238	2
StretchingRect	3	3	3	0	0.0123	66	177	53	12	874	2
ScalingRect	3	3	3	0	0.0120	66	144	30	5	653	2
RotatingRect	5	6	2	0	0.0108	144	544	92	10	2740	2
GrowingVertices	6	9	2	4	0.0119	132	266	89	12	1114	2
GrowingMultiLine	1	2	3	0	0.0132	13	15	8	2	46	2
GrowingPolygon	1	2	3	0	0.0132	22	45	12	3	187	2
GrowingBSpline	1	2	3	0	0.0132	13	15	8	2	46	2

GrowingClosedBSpline	1	2	3	0	0.0132	13	15	8	2	46	2
Scene	9	30	1	5	0.0022	619	1710	403	84	9036	1
MonoScene	6	10	2	5	0.0050	100	162	64	18	604	3
HScroller	5	13	2	0	0.0035	308	907	167	34	4855	4
VScroller	5	13	2	0	0.0035	308	907	167	34	4855	4
Sensor	13	21	1	0	0.0286	307	780	277	62	4009	2
Shape	8	8	0	0	0.2000	58	88	56	7	289	0
ObjectSpace	12	22	2	0	0.0106	422	987	337	57	4583	2
SpaceManager	6	6	1	0	0.0200	131	259	60	10	1269	1
StringBrowser	21	43	1	1	0.0132	957	2292	625	116	11543	3
StringChooser	8	16	4	1	0.0222	208	387	133	28	1600	2
StringEditor	10	16	1	0	0.0227	453	1492	309	62	8083	2
StringPool	3	3	0	0	0.2500	46	86	62	4	375	0
StringId	1	1	0	0	1.0000	4	4	99	1	8	0
StringTable	6	8	0	0	0.1250	150	396	125	21	1879	0
ObjectStub	2	2	1	1	0.0526	8	8	33	3	10	1
Subject	7	7	1	2	0.0051	88	178	76	14	701	2
ObjectTable	6	9	0	0	0.0167	149	323	129	19	1410	2
TextBuffer	40	40	0	0	0.0114	587	1076	397	81	4655	1
TextDisplay	29	34	0	0	0.0074	896	2391	462	109	12431	2
TextEditor	38	43	1	0	0.0082	895	2437	530	96	12427	3
Transformer	31	32	1	0	0.0038	536	1610	336	37	6830	1
TGlue	4	4	0	0	0.1250	43	90	48	4	355	0
Tray	10	21	2	0	0.0005	365	1033	228	48	5004	5
Viewport	24	29	3	0	0.0032	422	841	191	34	3690	4
World	35	47	2	0	0.0010	828	2315	505	108	12092	3
WorldView	23	35	1	0	0.0097	598	1173	303	45	5367	3

CLASSNAME	n1	n2	N1	N2	N	V	VG	LOC
BitmapRep::BitmapRep	17	12	46	23	69	335	3	15
BitmapRep::BitmapRep	20	16	51	29	80	414	2	17
BitmapRep::BitmapRep	31	32	181	127	308	1841	4	33
BitmapRep::BitmapRep	25	27	179	107	286	1630	17	32
BitmapRep::BitmapRep	27	34	238	151	389	2307	3	44
BitmapRep::~BitmapRep	11	3	15	6	21	80	2	7
BitmapRep::Touch	12	4	15	7	22	88	2	6
BitmapRep::PutBit	13	8	20	11	31	136	2	6
BitmapRep::GetBit	15	9	25	12	37	170	2	8
BitmapRep::GetData	15	10	24	15	39	181	2	8
BitmapRep::GetMap	20	13	60	33	93	469	2	14
	206	168	854	521	1375	7651	41	190
Canvas::Canvas	3	7	9	8	17	56	1	31
Canvas::Canvas	12	9	31	14	45	198	1	9
Canvas::~Canvas	17	7	36	14	50	229	3	11
Canvas::WaitForCopy	26	26	117	72	189	1077	8	34
Canvas::SetBackground	12	6	17	6	23	96	2	5
Canvas::Clip	1	1	1	1	2	1	1	3
Canvas::NoClip	1	1	1	1	2	1	1	3
Canvas::ClipOn	1	1	1	1	2	1	1	3
Canvas::ClipOff	1	1	1	1	2	1	1	3
Canvas::IsClipped	3	1	3	1	4	8	1	3
Canvas::Map	1	1	1	1	2	1	1	3
	78	61	218	120	338	1669	21	108
Cursor::Cursor	16	12	49	20	69	332	1	10
Cursor::Cursor	13	14	37	22	59	281	1	10
Cursor::Cursor	12	10	32	16	48	214	1	8
Cursor::Id	20	18	63	36	99	520	2	17
Cursor::~Cursor	11	4	13	5	18	70	2	5
	72	58	194	99	293	1417	7	50
Event::Event	4	1	4	1	5	12	1	27
Event::~Event	3	1	3	1	4	8	1	3
Event::GetMotionInfo	7	13	26	21	47	203	1	11
Event::GetButtonInfo	11	18	35	29	64	311	1	13
Event::GetKeyInfo	20	23	74	50	124	673	3	27
Event::GetKeyState	6	16	36	28	64	285	1	9
Event::GetCrossingInfo	11	17	35	26	61	293	2	15
Event::FindWorld	13	8	22	11	33	145	2	9
	75	97	235	167	402	1930	12	114
Interactor::Listen	16	14	39	26	65	319	5	43
Interactor::Fileno	7	1	8	1	9	27	1	3

Interactor::GetEvent	40	58	331	203	534	3532	24	111
Interactor::Check	12	5	20	7	27	110	3	14
Interactor::CheckQueue	7	1	8	1	9	27	1	3
Interactor::SendRedraw	28	28	139	109	248	1440	5	44
Interactor::SendResize	12	13	32	26	58	269	2	11
Interactor::SendActivate	6	3	7	3	10	32	1	4
Interactor::SendDeactivate	6	3	7	3	10	32	1	4
Interactor::Poll	20	37	112	83	195	1137	2	29
Interactor::Flush	6	1	7	1	8	22	1	3
Interactor::Sync	7	2	8	2	10	32	1	3
Interactor::GetRelative	24	23	141	108	249	1383	8	48
Interactor::DoSetCursor	15	7	33	12	45	201	2	8
Interactor::DoSetName	8	5	11	5	16	59	1	3
Interactor::DoSetGroupLeader	14	9	32	17	49	222	2	6
Interactor::DoSetTransientFor	13	7	23	16	39	169	2	7
Interactor::DoSetIconName	8	5	11	5	16	59	1	3
Interactor::DoSetIconBitmap	11	6	26	10	36	147	1	5
Interactor::DoSetIconMask	11	6	26	10	36	147	1	5
Interactor::DoSetIconInteractor	16	10	38	20	58	273	2	7
Interactor::DoSetIconGeometry	12	6	28	10	38	158	1	5
Interactor::Iconify	18	27	70	50	120	659	2	22
Interactor::DeIconify	12	7	17	9	26	110	2	6
	329	284	1174	737	1911	10566	72	397
PainterRep::PainterRep	9	10	33	16	49	208	1	31
PainterRep::~PainterRep	7	3	15	4	19	63	1	4
PainterRep::PrepareFill	13	9	53	20	73	326	3	11
PainterRep::PrepareDash	15	18	143	64	207	1044	6	47
Painter::Painter	6	1	7	1	8	22	1	4
Painter::Painter	13	9	52	30	82	366	3	14
Painter::~Painter	5	7	21	7	28	100	1	9
Painter::FillBg	12	10	40	24	64	285	5	14
Painter::BgFilled	4	2	4	2	6	16	1	3
Painter::SetColors	17	10	86	34	120	571	4	27
Painter::SetPattern	12	6	30	13	43	179	4	13
Painter::SetBrush	13	8	36	19	55	242	4	13
Painter::SetFont	14	8	30	15	45	201	3	10
Painter::Clip	19	20	126	95	221	1168	4	33
Painter::NoClip	7	5	19	8	27	97	1	4
Painter::SetOverwrite	12	8	29	18	47	203	4	13
Painter::SetPlaneMask	7	5	19	8	27	97	1	4
Painter::Map	15	11	27	19	46	216	2	9
Painter::MapList	22	18	84	49	133	708	4	22
Painter::MapList	21	19	88	48	136	724	4	23
Painter::Begin_xor	13	8	67	31	98	430	2	11
Painter::End_xor	15	14	74	37	111	539	4	19
Painter::Stencil	38	35	453	194	647	4005	6	69
Painter::RasterRect	22	23	90	46	136	747	2	20
Painter::Text	45	43	348	205	553	3572	17	89
Painter::Point	9	11	23	16	39	169	1	6
Painter::MultiPoint	18	13	43	28	71	352	2	14
Painter::Line	9	15	34	25	59	271	1	9
Painter::Rect	22	27	108	83	191	1072	4	28
Painter::FillRect	23	27	110	85	195	1101	4	28
Painter::ClearRect	12	14	41	18	59	277	1	8
Painter::Circle	21	19	65	43	108	575	2	14
Painter::FillCircle	21	19	65	43	108	575	2	14
Painter::MultiLine	18	13	43	28	71	352	2	14
Painter::MultiLineNoMap	17	13	40	27	67	329	2	15
Painter::Polygon	23	14	62	44	106	552	3	18
Painter::FillPolygonNoMap	17	14	41	28	69	342	2	15
Painter::FillPolygon	19	15	45	30	75	382	2	14
Painter::Copy	35	60	437	269	706	4638	4	78
Painter::Read	1	1	1	1	2	1	1	5
Painter::Write	1	1	1	1	2	1	1	5
	642	586	3133	1776	4909	27118	122	801
RasterRep::RasterRep	3	6	7	6	13	41	1	5
RasterRep::RasterRep	12	13	29	17	46	214	1	8
RasterRep::RasterRep	15	8	41	26	67	303	4	13
RasterRep::~RasterRep	9	3	10	4	14	50	2	5
RasterRep::GetData	20	8	43	16	59	284	2	11
RasterRep::PutPixel	10	7	16	9	25	102	1	4
RasterRep::GetPixel	11	6	16	8	24	98	1	4
	80	51	162	86	248	1092	12	50
ReqErr::ReqErr	1	1	1	1	2	1	1	27
ReqErr::~ReqErr	7	2	8	3	11	35	2	5

ReqErr::Error	1	1	1	1	2	1	1	3
ReqErr::Install	11	5	16	8	24	96	2	8
	20	9	26	13	39	133	6	43
Scene::UserPlace	15	8	43	25	68	308	2	14
Scene::Place	18	14	49	34	83	415	2	16
Scene::MakeWindow	27	28	113	71	184	1064	6	37
Scene::SetWindowProperties	45	46	225	130	355	2310	12	81
Scene::DoMap	26	31	115	74	189	1102	6	30
Scene::Map	16	10	35	18	53	249	2	10
Scene::Unmap	23	27	85	54	139	784	2	23
Scene::Raise	11	4	20	6	26	102	1	4
Scene::Lower	11	4	20	6	26	102	1	4
Scene::Move	14	13	49	34	83	395	1	13
	206	185	754	452	1206	6831	35	232
Sensor::Interesting	24	27	102	51	153	868	10	60
	24	27	102	51	153	868	10	60
WindowMgrHints::WindowMgrHints	4	1	4	1	5	12	1	27
WindowMgrHints::WindowMgrHints	3	2	3	2	5	12	1	3
WindowMgrHints::WindowMgrHints	6	3	6	3	9	29	1	3
WindowMgrHints::~WindowMgrHints	3	1	3	1	4	8	1	3
WindowMgrHints::Set	5	3	6	3	9	27	1	3
WindowMgrHints::Compute	24	17	62	34	96	514	3	24
WindowMgrHints::WindowGroup	15	9	26	17	43	197	2	9
WindowMgrHints::IconPixmap	15	8	29	17	46	208	2	9
WindowMgrHints::IconMask	15	8	29	17	46	208	2	9
WindowMgrHints::IconWindow	16	10	29	18	47	221	2	12
WindowMgrHints::IconPosition	25	27	125	74	199	1134	7	33
WindowMgrHints::Squeeze	7	3	15	7	22	73	3	9
WindowMgrHints::Size	19	37	125	103	228	1324	3	40
WindowMgrHints::ClassHint	13	8	61	34	95	417	5	17
	170	137	523	331	854	4384	34	201
WorldRep::gethostname	8	1	10	3	13	41	1	34
	8	1	10	3	13	41	1	34
World::Init	42	48	250	110	360	2337	4	56
World::FinishInit	26	23	128	47	175	983	6	36
World::~World	7	2	12	4	16	51	1	5
World::SaveCommandLine	11	8	24	17	41	174	2	9
World::UserDefaults	6	2	7	2	9	27	1	3
World::FinishInsert	1	1	1	1	2	1	1	3
World::DoChange	19	14	47	29	76	383	3	11
World::DoRemove	6	1	7	1	8	22	1	3
World::Fileno	7	1	8	1	9	27	1	3
World::SetCurrent	3	2	3	2	5	12	1	3
World::SetRoot	5	4	5	4	9	29	1	3
World::SetScreen	4	3	4	3	7	20	1	3
World::NPlanes	9	1	12	2	14	47	1	3
World::NButtons	3	1	3	1	4	8	1	3
World::PixelSize	7	1	8	1	9	27	1	3
World::GetDefault	5	1	5	1	6	16	1	3
World::GetGlobalDefault	5	1	5	1	6	16	1	3
World::ParseGeometry	7	5	13	5	18	65	1	5
World::SetHint	17	45	211	115	326	1941	15	44
World::RingBell	12	4	24	8	32	128	3	7
World::SetKeyClick	10	6	14	8	22	88	1	6
World::SetAutoRepeat	10	2	18	3	21	75	2	7
World::SetFeedback	7	5	12	6	18	65	1	3
	229	181	821	372	1193	6542	51	225
WorldView::Init	17	16	62	31	93	469	1	35
WorldView::GrabMouse	14	14	31	15	46	221	2	11
WorldView::UngrabMouse	8	2	11	2	13	43	1	3
WorldView::GrabButton	11	14	28	15	43	200	1	8
WorldView::UngrabButton	9	6	15	6	21	82	1	3
WorldView::Lock	1	1	1	1	2	1	1	5
WorldView::Unlock	1	1	1	1	2	1	1	5
WorldView::ClearInput	8	2	11	2	13	43	1	3
WorldView::MoveMouse	10	9	23	14	37	157	1	6
WorldView::Map	9	3	12	3	15	54	1	3
WorldView::MapRaised	9	3	12	3	15	54	1	3
WorldView::Unmap	9	3	12	3	15	54	1	3

WorldView::Find	13	11	32	19	51	234	1	10
WorldView::Move	10	6	15	6	21	84	1	3
WorldView::Change	10	8	17	8	25	104	1	7
WorldView::Raise	9	3	12	3	15	54	1	3
WorldView::Lower	9	3	12	3	15	54	1	3
WorldView::Focus	15	8	22	12	34	154	3	9
WorldView::GetList	12	7	25	11	36	153	1	8
WorldView::GetInfo	14	17	50	35	85	421	1	15
WorldView::GetHints	19	30	92	73	165	926	3	29
WorldView::SetHints	14	15	36	26	62	301	1	12
WorldView::GetIcon	19	13	37	22	59	295	2	13
WorldView::AssignIcon	12	9	39	21	60	264	1	10
WorldView::UnassignIcon	12	9	21	12	33	145	1	7
WorldView::TransientOwner	12	6	18	9	27	113	2	7
WorldView::GetName	11	4	16	5	21	82	1	6
	297	223	663	361	1024	4763	34	230
Adjuster::Adjuster	5	2	5	2	7	20	1	177
Adjuster::Adjuster	6	3	8	3	11	35	1	4
Adjuster::Adjuster	5	2	5	2	7	20	1	3
Adjuster::Init	9	16	31	20	51	237	1	13
Adjuster::Reconfig	11	7	27	13	40	167	1	8
Adjuster::AutoRepeat	23	10	60	17	77	388	7	26
Adjuster::HandlePress	22	11	62	18	80	404	8	29
Adjuster::Flash	4	2	7	2	9	23	1	4
Adjuster::TimerOn	10	4	11	6	17	65	2	5
Adjuster::TimerOff	5	2	5	2	7	20	1	3
Adjuster::~Adjuster	4	1	4	1	5	12	1	3
Adjuster::Handle	13	7	30	7	37	160	3	13
Adjuster::Redraw	16	13	40	25	65	316	2	9
Adjuster::Reshape	7	6	12	9	21	78	1	3
Adjuster::Highlight	8	2	10	4	14	47	2	6
Adjuster::AdjustView	1	1	1	1	2	1	1	3
	149	89	318	132	450	1993	34	309
Zoomer::Zoomer	4	1	4	1	5	12	1	3
Zoomer::Zoomer	4	1	4	1	5	12	1	5
Zoomer::Zoomer	4	1	4	1	5	12	1	5
Zoomer::Init	5	3	6	3	9	27	1	4
Zoomer::AdjustView	14	11	55	41	96	446	1	13
Enlarger::Enlarger	4	1	4	1	5	12	1	3
Enlarger::Enlarger	4	1	4	1	5	12	1	3
Enlarger::Enlarger	4	1	4	1	5	12	1	3
Enlarger::Init	13	22	42	29	71	364	2	18
	56	42	127	79	206	909	10	57
Reducer::Reducer	4	1	4	1	5	12	1	3
Reducer::Reducer	4	1	4	1	5	12	1	3
Reducer::Reducer	4	1	4	1	5	12	1	3
Reducer::Init	13	22	42	29	71	364	2	18
	25	25	54	32	86	400	5	27
Mover::Mover	4	1	4	1	5	12	1	3
Mover::Mover	4	1	4	1	5	12	1	5
Mover::Mover	4	1	4	1	5	12	1	5
Mover::Init	5	3	6	3	9	27	1	4
Mover::AdjustView	18	17	60	35	95	487	7	17
	35	23	78	41	119	550	11	34
LeftMover::LeftMover	4	1	4	1	5	12	1	3
LeftMover::LeftMover	4	1	4	1	5	12	1	5
LeftMover::LeftMover	4	1	4	1	5	12	1	5
LeftMover::Init	13	23	43	30	73	377	2	18
	25	26	55	33	88	413	5	31
RightMover::RightMover	4	1	4	1	5	12	1	3
RightMover::RightMover	4	1	4	1	5	12	1	5
RightMover::RightMover	4	1	4	1	5	12	1	5
RightMover::Init	13	23	43	30	73	377	2	18
	25	26	55	33	88	413	5	31
UpMover::UpMover	4	1	4	1	5	12	1	3
UpMover::UpMover	4	1	4	1	5	12	1	5
UpMover::UpMover	4	1	4	1	5	12	1	5

UpMover::Init	13	22	42	29	71	364	2	18
	25	25	54	32	86	400	5	31
DownMover::DownMover	4	1	4	1	5	12	1	3
DownMover::DownMover	4	1	4	1	5	12	1	5
DownMover::DownMover	4	1	4	1	5	12	1	5
DownMover::Init	13	22	42	29	71	364	2	18
	25	25	54	32	86	400	5	31
Banner::Banner	5	3	6	3	9	27	1	27
Banner::Banner	6	4	9	4	13	43	1	4
Banner::Banner	6	3	9	3	12	38	1	4
Banner::Init	5	11	14	11	25	100	1	8
Banner::Reconfig	25	20	90	55	145	796	5	20
Banner::~Banner	4	1	4	1	5	12	1	3
Banner::Redraw	18	20	65	45	110	577	5	16
Banner::Resize	7	9	13	11	24	96	1	5
Banner::Update	9	2	14	2	16	55	2	7
	85	73	224	135	359	1744	18	94
Bitmap::Bitmap	5	2	5	2	7	20	1	27
Bitmap::Bitmap	6	6	9	6	15	54	1	3
Bitmap::Bitmap	6	3	6	3	9	29	1	3
Bitmap::Bitmap	7	3	7	4	11	37	1	3
Bitmap::~Bitmap	3	1	3	1	4	8	1	3
Bitmap::Map	6	1	6	1	7	20	1	3
Bitmap::Transform	8	4	11	7	18	65	1	5
Bitmap::Scale	11	4	16	7	23	90	1	6
Bitmap::Rotate	10	3	15	6	21	78	1	6
Bitmap::FlipHorizontal	8	4	11	7	18	65	1	5
Bitmap::FlipVertical	8	4	11	7	18	65	1	5
Bitmap::Invert	8	4	11	7	18	65	1	5
Bitmap::Rotate90	8	4	11	7	18	65	1	5
Bitmap::Rotate180	8	4	11	7	18	65	1	5
Bitmap::Rotate270	8	4	11	7	18	65	1	5
Bitmap::Contains	11	2	18	4	22	81	1	3
Bitmap::Peek	12	4	17	6	23	92	2	3
Bitmap::Poke	13	4	23	7	30	123	2	6
	146	61	202	96	298	1087	20	101
Border::Border	3	2	3	2	5	12	1	27
Border::Border	5	3	6	3	9	27	1	4
Border::Border	3	2	3	2	5	12	1	3
Border::Redraw	6	6	9	6	15	54	1	3
	17	13	21	13	34	105	4	37
HBorder::HBorder	4	1	4	1	5	12	1	3
HBorder::HBorder	4	1	4	1	5	12	1	3
HBorder::HBorder	5	1	7	1	8	21	1	4
HBorder::Init	4	1	4	1	5	12	1	3
HBorder::Reconfig	7	5	11	8	19	68	1	4
	24	9	30	12	42	125	5	17
VBorder::VBorder	4	1	4	1	5	12	1	3
VBorder::VBorder	4	1	4	1	5	12	1	3
VBorder::VBorder	5	1	7	1	8	21	1	4
VBorder::Init	4	1	4	1	5	12	1	3
VBorder::Reconfig	7	5	11	8	19	68	1	4
	24	9	30	12	42	125	5	17
Box::Box	3	5	7	6	13	39	1	29
Box::~Box	8	5	17	12	29	107	2	10
Box::Align	3	2	3	2	5	12	1	3
Box::DoInsert	10	8	27	19	46	192	2	15
Box::DoChange	4	1	4	1	5	12	1	3
Box::DoRemove	15	10	47	30	77	358	5	22
Box::Reconfig	4	1	4	1	5	12	1	3
Box::Resize	29	27	171	123	294	1707	9	61
Box::Draw	10	6	19	11	30	120	3	9
Box::GetComponents	15	11	27	19	46	216	3	11
Box::Head	3	1	3	1	4	8	1	3
Box::ComputeShape	1	1	1	1	2	1	1	4
Box::GetActual	1	1	1	1	2	1	1	1
Box::GetCanonical	1	1	1	1	2	1	1	1

Box::PlaceElement	1	1	1	1	2	1	1	1
	108	81	333	229	562	2787	33	176
HBox::Init	8	6	13	8	21	80	1	5
HBox::HBox	4	1	4	1	5	12	1	3
HBox::HBox	5	1	7	1	8	21	1	4
HBox::HBox	5	2	10	2	12	34	1	5
HBox::HBox	5	3	13	3	16	48	1	6
HBox::HBox	5	4	16	4	20	63	1	7
HBox::HBox	5	5	19	5	24	80	1	11
HBox::HBox	5	6	22	6	28	97	1	12
HBox::HBox	5	7	25	7	32	115	1	13
HBox::ComputeShape	17	16	88	66	154	777	2	22
HBox::GetActual	4	5	7	6	13	41	1	4
HBox::GetCanonical	5	13	31	30	61	254	1	8
HBox::PlaceElement	14	16	43	33	76	373	3	15
	87	85	298	172	470	1995	16	115
VBox::Init	8	6	13	8	21	80	1	5
VBox::VBox	4	1	4	1	5	12	1	3
VBox::VBox	5	1	7	1	8	21	1	4
VBox::VBox	5	2	10	2	12	34	1	5
VBox::VBox	5	3	13	3	16	48	1	6
VBox::VBox	5	4	16	4	20	63	1	7
VBox::VBox	5	5	19	5	24	80	1	11
VBox::VBox	5	6	22	6	28	97	1	12
VBox::VBox	5	7	25	7	32	115	1	13
VBox::ComputeShape	17	16	88	66	154	777	2	22
VBox::GetActual	4	5	7	6	13	41	1	4
VBox::GetCanonical	5	13	31	30	61	254	1	8
VBox::PlaceElement	14	17	44	34	78	386	3	15
	87	86	299	173	472	2008	16	115
ButtonState::ButtonState	5	2	6	2	8	22	1	8
ButtonState::ButtonState	6	3	7	3	10	32	1	4
ButtonState::ButtonState	5	2	6	2	8	22	1	4
ButtonState::SetValue	5	2	5	2	7	20	1	3
ButtonState::SetValue	4	1	4	1	5	12	1	3
ButtonState::operator=	5	2	5	2	7	20	1	3
ButtonState::Modify	8	2	10	4	14	47	2	6
Button::Button	5	2	5	2	7	20	1	8
Button::Button	6	3	8	3	11	35	1	4
Button::Button	5	2	5	2	7	20	1	3
Button::Init	11	15	34	18	52	244	1	13
Button::~Button	10	3	13	4	17	63	2	6
Button::Attach	11	5	23	10	33	132	2	12
Button::Detach	5	2	5	2	7	20	1	3
Button::Enable	9	4	14	5	19	70	3	8
Button::Disable	8	4	13	5	18	65	3	8
Button::Choose	12	9	31	15	46	202	5	15
Button::UnChoose	11	9	30	15	45	194	5	15
Button::SetDimensions	6	3	11	7	18	57	1	5
Button::Refresh	1	1	1	1	2	1	1	3
Button::Handle	17	13	80	37	117	574	11	33
Button::Press	10	3	14	4	18	67	2	7
Button::Update	14	4	23	8	31	129	3	10
	179	96	353	154	507	2068	51	184
TextButton::TextButton	4	1	4	1	5	12	1	3
TextButton::TextButton	4	1	4	1	5	12	1	5
TextButton::TextButton	4	1	4	1	5	12	1	5
TextButton::Init	5	6	10	7	17	59	1	6
TextButton::MakeBackground	14	5	42	15	57	242	1	12
TextButton::MakeShape	14	8	27	13	40	178	2	8
TextButton::~TextButton	4	2	7	2	9	23	1	4
	49	24	98	40	138	538	8	43
PushButton::PushButton	4	1	4	1	5	12	1	5
PushButton::PushButton	4	1	4	1	5	12	1	5
PushButton::PushButton	4	1	4	1	5	12	1	5
PushButton::PushButton	4	1	4	1	5	12	1	5
PushButton::PushButton	4	1	4	1	5	12	1	5
PushButton::PushButton	4	1	4	1	5	12	1	5
PushButton::Init	4	1	4	1	5	12	1	3
PushButton::Reconfig	13	7	26	9	35	151	2	8
PushButton::Redraw	7	6	12	6	18	67	1	4

PushButton::Refresh	24	35	198	170	368	2165	3	36
	72	55	264	192	456	2467	13	81
RadioButton::RadioButton	4	1	4	1	5	12	1	5
RadioButton::RadioButton	4	1	4	1	5	12	1	5
RadioButton::RadioButton	4	1	4	1	5	12	1	5
RadioButton::RadioButton	4	1	4	1	5	12	1	5
RadioButton::RadioButton	4	1	4	1	5	12	1	5
RadioButton::RadioButton	4	1	4	1	5	12	1	5
RadioButton::Init	4	1	4	1	5	12	1	3
	28	7	28	7	35	84	7	33
CheckBox::CheckBox	4	1	4	1	5	12	1	5
CheckBox::CheckBox	5	2	5	2	7	20	1	5
CheckBox::CheckBox	4	1	4	1	5	12	1	5
CheckBox::Init	5	3	6	3	9	27	1	4
CheckBox::Reconfig	12	4	21	6	27	108	2	8
CheckBox::Press	9	4	18	7	25	93	2	8
CheckBox::Update	12	4	19	6	25	100	2	11
CheckBox::Redraw	14	16	29	22	51	250	1	9
CheckBox::Refresh	16	20	86	71	157	812	4	22
	81	55	192	119	311	1434	15	77
Catalog::Catalog	16	7	28	15	43	195	2	34
Catalog::~Catalog	13	9	32	20	52	232	3	15
Catalog::Register	12	9	33	24	57	250	1	17
Catalog::UnRegister	19	9	53	37	90	433	4	23
Catalog::Find	16	11	32	21	53	252	3	12
Catalog::Hash	14	9	28	17	45	204	2	17
	90	54	206	134	340	1566	15	118
ChiefDeputy::ChiefDeputy	3	4	5	4	9	25	1	28
ChiefDeputy::~ChiefDeputy	5	1	6	1	7	18	1	4
ChiefDeputy::Sync	10	4	12	7	19	72	2	9
ChiefDeputy::Alloc	21	19	63	43	106	564	3	27
ChiefDeputy::PackString	7	2	9	3	12	38	1	9
ChiefDeputy::PackString	13	5	20	11	31	129	2	8
ChiefDeputy::Msg	5	4	7	4	11	35	1	8
ChiefDeputy::StringMsg	9	6	17	10	27	105	1	13
ChiefDeputy::IntegerMsg	9	6	16	8	24	94	1	10
ChiefDeputy::ReadReply	18	8	33	20	53	249	3	20
ChiefDeputy::GetReply	10	5	15	6	21	82	2	9
ChiefDeputy::GetString	7	4	10	7	17	59	1	12
	117	68	213	124	337	1470	19	157
Connection::Connection	4	2	4	2	6	16	1	3
Connection::Connection	3	7	9	8	17	56	1	9
Connection::~Connection	8	2	9	3	12	40	2	5
Connection::MakeSocket	22	16	52	27	79	415	3	21
Connection::CreateService	16	13	40	17	57	277	4	16
Connection::MakeLocalSocket	18	9	45	22	67	319	2	14
Connection::CreateLocalService	19	16	50	25	75	385	4	21
Connection::OpenService	16	12	38	17	55	264	3	16
Connection::OpenLocalService	15	11	36	18	54	254	3	17
Connection::AcceptClient	17	14	61	35	96	476	3	31
Connection::Close	9	3	11	5	16	57	2	6
Connection::Pending	12	5	15	7	22	90	2	8
Connection::Read	6	3	7	3	10	32	1	3
Connection::Write	6	3	7	3	10	32	1	3
Connection::WritePad	15	7	35	19	54	241	2	12
	186	123	419	211	630	2954	34	185
Control::Control	5	2	5	2	7	20	1	26
Control::Control	5	2	5	2	7	20	1	1
Control::Init	16	10	45	18	63	296	3	16
Control::~Control	6	1	6	1	7	20	1	3
Control::Handle	13	6	33	6	39	166	5	16
Control::Down	11	1	17	3	20	72	2	10
Control::Enter	9	1	12	2	14	47	2	5
Control::Leave	8	2	11	3	14	47	2	5
Control::Select	6	1	10	1	11	31	1	5
Control::Unselect	5	1	7	1	8	21	1	4
Control::Grab	16	6	31	12	43	192	3	11
Control::Skip	15	6	35	12	47	206	4	16
Control::IsGrabbing	16	7	52	22	74	335	6	23

Control::Up	16	6	41	17	58	259	4	16
Control::Open	1	1	1	1	2	1	1	1
Control::Close	1	1	1	1	2	1	1	1
Control::Do	1	1	1	1	2	1	1	1
Control::SetState	8	2	13	4	17	56	1	5
	158	57	326	109	435	1791	40	165
ControlState::ControlState	3	7	11	10	21	70	1	8
ControlState::~ControlState	1	1	1	1	2	1	1	1
ControlState::NotifySelection	10	3	23	10	33	122	4	11
ControlState::Push	5	3	7	4	11	33	1	4
ControlState::Pop	9	3	13	7	20	72	2	7
ControlState::Deactivate	11	4	15	7	22	86	2	7
	39	21	70	39	109	384	11	38
Cursor::Cursor	3	14	15	14	29	119	1	12
	3	14	15	14	29	119	1	12
Deck::Deck	4	1	4	1	5	12	1	3
Deck::Deck	5	1	7	1	8	21	1	4
Deck::Deck	4	1	4	1	5	12	1	3
Deck::Init	9	17	39	32	71	334	1	12
Deck::~Deck	10	5	23	15	38	148	2	11
Deck::Reconfig	16	20	100	71	171	884	2	22
Deck::FixPerspective	12	8	30	21	51	220	1	6
Deck::NewTop	14	8	30	20	50	223	3	11
Deck::DoInsert	12	9	33	22	55	242	2	12
Deck::DoRemove	15	8	38	23	61	276	3	16
Deck::Resize	22	27	105	81	186	1044	3	25
Deck::Draw	8	2	9	3	12	40	2	5
Deck::GetComponents	17	12	33	23	56	272	4	13
Deck::Adjust	19	13	70	47	117	585	3	17
Deck::Flip	7	3	10	3	13	43	1	5
Deck::FlipTo	13	6	25	13	38	161	3	9
	187	141	560	377	937	4517	33	174
Deputy::Deputy	3	2	3	2	5	12	1	27
Deputy::Deputy	3	2	3	2	5	12	1	3
Deputy::~Deputy	1	1	1	1	2	1	1	3
Deputy::Sync	5	1	5	1	6	16	1	3
Deputy::GetServer	6	1	6	1	7	20	1	3
	18	7	18	7	25	61	5	39
Dialog::Dialog	5	3	6	3	9	27	1	27
Dialog::Dialog	6	4	9	4	13	43	1	4
Dialog::Init	6	6	11	6	17	61	1	6
Dialog::Popup	17	11	45	24	69	332	2	15
Dialog::Accept	17	8	35	23	58	269	2	13
Dialog::Status	6	2	7	3	10	30	1	6
	57	34	113	63	176	762	8	71
FBDirectory::Count	3	1	3	1	4	8	1	26
FBDirectory::Append	5	2	5	2	7	20	1	1
FBDirectory::File	9	5	9	7	16	61	2	3
FBDirectory::FBDirectory	8	6	13	7	20	76	1	8
FBDirectory::~FBDirectory	4	1	4	1	5	12	1	3
FBDirectory::RealPath	12	4	18	7	25	100	2	10
FBDirectory::LoadDirectory	9	2	13	3	16	55	1	7
FBDirectory::Index	15	6	22	11	33	145	3	8
FBDirectory::Reset	19	9	42	20	62	298	3	12
FBDirectory::IsADirectory	12	6	13	7	20	83	1	4
FBDirectory::Home	7	3	7	5	12	40	2	5
FBDirectory::Normalize	26	8	76	32	108	549	4	25
FBDirectory::ValidDirectories	20	7	36	19	55	262	3	11
FBDirectory::InterpSlashSlash	16	5	27	16	43	189	3	8
FBDirectory::ElimDot	20	7	46	18	64	304	4	19
FBDirectory::ElimDotDot	20	6	36	16	52	244	3	15
FBDirectory::InterpTilde	22	13	58	35	93	477	6	21
FBDirectory::ExpandTilde	14	7	25	17	42	184	2	11
FBDirectory::Check	17	7	28	14	42	193	2	11
FBDirectory::Insert	21	8	49	26	75	364	3	16
FBDirectory::Remove	18	5	26	11	37	167	2	7
FBDirectory::Clear	9	4	14	9	23	85	2	6
FBDirectory::Position	13	5	21	11	32	133	3	10

	319	127	591	295	886	4049	55	247
FileBrowser::FileBrowser	5	1	7	1	8	21	1	8
FileBrowser::FileBrowser	5	1	7	1	8	21	1	7
FileBrowser::Init	8	3	13	4	17	59	1	4
FileBrowser::~FileBrowser	3	2	5	2	7	16	1	4
FileBrowser::IsADirectory	7	2	8	2	10	32	1	3
FileBrowser::SetDirectory	19	9	45	21	66	317	3	19
FileBrowser::ValidDirectories	6	2	6	2	8	24	1	3
FileBrowser::Normalize	6	2	6	2	8	24	1	3
FileBrowser::Path	9	3	11	5	16	57	2	5
FileBrowser::Update	23	9	49	20	69	345	3	16
	91	34	157	60	217	916	15	72
FileChooser::FileChooser	14	10	29	13	42	193	1	33
FileChooser::FileChooser	15	11	32	14	46	216	1	10
FileChooser::FileChooser	12	7	20	10	30	127	1	6
FileChooser::FileChooser	1	1	1	1	2	1	1	1
FileChooser::Init	13	6	41	14	55	234	3	12
FileChooser::SelectFile	5	2	5	2	7	20	1	7
FileChooser::UpdateEditor	15	3	37	6	43	179	2	11
FileChooser::UpdateBrowser	7	1	9	1	10	30	1	3
FileChooser::Accept	15	4	24	9	33	140	2	10
FileChooser::SetTitle	5	2	5	2	7	20	1	3
FileChooser::SetSubtitle	5	2	5	2	7	20	1	3
FileChooser::AddScroller	13	3	27	7	34	136	1	13
FileChooser::Interior	17	13	72	27	99	486	1	25
	137	65	307	108	415	1802	17	137
Frame::Frame	5	2	8	5	13	36	1	27
Frame::Frame	6	3	11	6	17	54	1	4
Frame::Frame	5	5	8	5	13	43	1	3
Frame::Frame	6	6	11	6	17	61	1	4
Frame::Init	9	11	19	12	31	134	2	10
Frame::Reconfig	8	8	13	9	22	88	1	5
Frame::Resize	9	9	17	9	26	108	1	4
Frame::Redraw	12	14	53	36	89	418	5	17
	60	58	140	88	228	942	13	74
ShowFrame::Init	6	2	7	3	10	30	1	9
ShowFrame::Handle	10	6	23	9	32	128	3	9
ShowFrame::HandleInput	5	2	5	2	7	20	1	3
ShowFrame::InsideFrame	1	1	1	1	2	1	1	3
	22	11	36	15	51	179	6	24
TitleFrame::TitleFrame	5	2	5	2	7	20	1	7
TitleFrame::TitleFrame	5	2	5	2	7	20	1	5
TitleFrame::Init	9	5	13	6	19	72	2	7
TitleFrame::Wrap	15	5	22	9	31	134	2	7
TitleFrame::InsideFrame	6	3	8	4	12	38	1	4
	40	17	53	23	76	284	7	30
BorderFrame::BorderFrame	4	1	4	1	5	12	1	7
BorderFrame::BorderFrame	4	1	4	1	5	12	1	5
BorderFrame::Init	5	3	6	3	9	27	1	4
BorderFrame::InsideFrame	6	5	9	6	15	52	1	4
BorderFrame::Redraw	14	10	34	18	52	238	2	10
	33	20	57	29	86	341	6	30
ShadowFrame::ShadowFrame	5	3	6	3	9	27	1	6
ShadowFrame::ShadowFrame	5	3	6	3	9	27	1	5
ShadowFrame::Init	11	9	30	15	45	194	4	15
ShadowFrame::Redraw	14	19	224	172	396	1998	13	45
	35	34	266	193	459	2246	19	71
MarginFrame::MarginFrame	5	2	9	6	15	42	1	7
MarginFrame::MarginFrame	5	2	9	6	15	42	1	5
MarginFrame::MarginFrame	5	3	9	6	15	45	1	5
MarginFrame::MarginFrame	5	3	9	6	15	45	1	3
MarginFrame::MarginFrame	5	6	9	6	15	52	1	6
MarginFrame::Init	6	14	22	19	41	177	1	9
MarginFrame::Reconfig	7	10	23	19	42	172	1	9
MarginFrame::Resize	21	26	79	59	138	767	5	21
MarginFrame::Redraw	1	1	1	1	2	1	1	1

	60	67	170	128	298	1343	13	66
Glue::Glue	4	1	4	1	5	12	1	28
Glue::Glue	5	1	7	1	8	21	1	4
Glue::Glue	4	1	4	1	5	12	1	3
Glue::Init	4	1	4	1	5	12	1	3
Glue::Redraw	1	1	1	1	2	1	1	6
	18	5	20	5	25	58	5	44
HGlue::HGlue	5	2	6	3	9	25	1	3
HGlue::HGlue	5	2	6	3	9	25	1	3
HGlue::HGlue	5	3	6	3	9	27	1	3
HGlue::HGlue	5	3	6	3	9	27	1	3
HGlue::HGlue	5	2	6	3	9	25	1	3
HGlue::HGlue	5	3	6	3	9	27	1	3
HGlue::Init	8	9	17	12	29	119	1	6
	38	24	53	30	83	275	7	24
VGlue::VGlue	5	2	6	3	9	25	1	3
VGlue::VGlue	5	2	6	3	9	25	1	3
VGlue::VGlue	5	3	6	3	9	27	1	3
VGlue::VGlue	5	3	6	3	9	27	1	3
VGlue::VGlue	5	2	6	3	9	25	1	3
VGlue::VGlue	5	3	6	3	9	27	1	3
VGlue::Init	8	9	17	12	29	119	1	6
	38	24	53	30	83	275	7	24
Interactor::Interactor	4	1	4	1	5	12	1	27
Interactor::Interactor	5	1	7	1	8	21	1	4
Interactor::Interactor	10	5	24	10	34	133	3	11
Interactor::Init	4	16	30	27	57	246	1	16
Interactor::~Interactor	6	5	16	5	21	73	1	8
Interactor::Read	18	10	46	21	67	322	5	26
Interactor::Select	27	27	102	60	162	932	6	46
Interactor::UnRead	11	7	22	16	38	158	2	8
Interactor::DiscardUnreadEvents	14	7	36	24	60	264	4	17
Interactor::Align	12	25	107	54	161	839	31	57
Interactor::Adjust	1	1	1	1	2	1	1	3
Interactor::Update	1	1	1	1	2	1	1	3
Interactor::Config	11	5	20	9	29	116	3	22
Interactor::RootConfig	22	31	111	67	178	1020	4	31
Interactor::DoConfig	32	19	104	56	160	908	7	48
Interactor::DefaultConfig	6	2	6	3	9	27	1	7
Interactor::GetAttribute	9	6	15	10	25	98	1	11
Interactor::IsMapped	7	4	7	5	12	42	1	3
Interactor::GetComponents	3	2	3	2	5	12	1	3
Interactor::Handle	1	1	1	1	2	1	1	3
Interactor::Draw	10	7	14	9	23	94	2	5
Interactor::Highlight	1	1	1	1	2	1	1	1
Interactor::Reconfig	1	1	1	1	2	1	1	1
Interactor::Redraw	1	1	1	1	2	1	1	3
Interactor::RedrawList	11	7	19	13	32	133	2	12
Interactor::Reshape	11	4	13	5	18	70	2	10
Interactor::Resize	1	1	1	1	2	1	1	1
Interactor::Activate	1	1	1	1	2	1	1	1
Interactor::Deactivate	1	1	1	1	2	1	1	1
Interactor::Root	15	5	32	17	49	212	4	13
Interactor::GetWorld	14	6	23	13	36	156	3	10
Interactor::Run	10	4	16	9	25	95	2	8
Interactor::QuitRunning	4	3	4	3	7	20	1	3
Interactor::SetClassName	10	4	14	7	21	80	2	7
Interactor::GetClassName	8	2	8	4	12	40	2	3
Interactor::SetInstance	10	4	14	7	21	80	2	7
Interactor::GetInstance	8	2	8	4	12	40	2	3
	321	230	834	471	1305	6252	106	443
TopLevel::TopLevel	3	17	27	26	53	229	1	15
	3	17	27	26	53	229	1	15
Interactor::GetTopLevel	8	2	10	4	14	47	2	6
Interactor::SetCursor	9	5	16	9	25	95	3	9
Interactor::GetCursor	7	3	7	5	12	40	2	3
Interactor::SetName	10	4	13	5	18	69	2	6
Interactor::GetName	7	3	7	5	12	40	2	3
Interactor::SetGeometry	6	2	6	2	8	24	1	7

Interactor::GetGeometry	7	3	7	5	12	40	2	3
	54	22	66	35	101	355	14	37
Interactor::SetTransientFor	10	4	13	5	18	69	2	6
Interactor::GetTransientFor	7	3	7	5	12	40	2	3
Interactor::SetIconName	10	4	13	5	18	69	2	6
Interactor::GetIconName	7	3	7	5	12	40	2	3
Interactor::SetIconBitmap	10	4	13	5	18	69	2	6
Interactor::GetIconBitmap	7	3	7	5	12	40	2	3
Interactor::SetIconMask	10	4	13	5	18	69	2	6
Interactor::GetIconMask	7	3	7	5	12	40	2	3
Interactor::SetIconInteractor	10	4	13	5	18	69	2	6
Interactor::GetIconInteractor	7	3	7	5	12	40	2	3
Interactor::SetIconGeometry	10	4	13	5	18	69	2	6
Interactor::GetIconGeometry	7	3	7	5	12	40	2	3
Interactor::SetStartIconic	6	2	6	2	8	24	1	3
Interactor::GetStartIconic	6	3	6	4	10	32	1	3
Interactor::PlaceIcon	14	4	24	8	32	133	3	14
	128	51	156	74	230	843	29	74
MenuItem::MenuItem	4	1	4	1	5	12	1	26
MenuItem::MenuItem	4	1	4	1	5	12	1	1
MenuItem::MenuItem	4	1	4	1	5	12	1	5
MenuItem::MenuItem	4	1	4	1	5	12	1	6
MenuItem::Init	4	1	4	1	5	12	1	3
	20	5	20	5	25	60	5	41
MenuShadow::MenuShadow	9	4	12	5	17	63	2	7
MenuShadow::Reconfig	14	8	24	13	37	165	2	9
MenuShadow::Resize	9	6	13	8	21	82	2	5
MenuShadow::Redraw	20	17	54	34	88	458	2	13
	52	35	103	60	163	768	8	34
Menu::Menu	4	1	4	1	5	12	1	2
Menu::Menu	4	1	4	1	5	12	1	1
Menu::Init	8	15	29	21	50	226	1	14
Menu::~Menu	5	2	6	2	8	22	1	4
Menu::SetBody	3	2	3	2	5	12	1	1
Menu::SetAlign	3	2	3	2	5	12	1	1
Menu::SetDepth	3	2	3	2	5	12	1	1
Menu::SetBodyState	7	2	10	4	14	44	1	5
Menu::SetScene	10	4	14	7	21	80	2	7
Menu::Include	13	4	22	8	30	123	2	8
Menu::Reconfig	8	2	12	2	14	47	1	5
Menu::Setup	9	9	19	13	32	133	1	6
Menu::Popup	18	9	33	17	50	238	2	11
Menu::Leave	1	1	1	1	2	1	1	1
Menu::Open	10	7	23	14	37	151	1	6
Menu::InsertBody	11	7	25	11	36	150	1	8
Menu::Close	17	13	43	24	67	329	2	12
	134	83	254	132	386	1604	21	93
MenuBar::MenuBar	4	1	4	1	5	12	1	2
MenuBar::MenuBar	5	1	7	1	8	21	1	1
MenuBar::Init	8	2	11	3	14	47	1	5
MenuBar::~MenuBar	4	1	4	1	5	12	1	3
MenuBar::Include	6	2	8	3	11	33	1	4
	27	7	34	9	43	125	5	15
PulldownMenu::PulldownMenu	4	1	4	1	5	12	1	2
PulldownMenu::PulldownMenu	4	1	4	1	5	12	1	5
PulldownMenu::PulldownMenu	4	1	4	1	5	12	1	5
PulldownMenu::PulldownMenu	4	1	4	1	5	12	1	5
PulldownMenu::Init	5	2	7	2	9	25	1	4
	21	6	23	6	29	73	5	21
PullrightMenu::PullrightMenu	4	1	4	1	5	12	1	2
PullrightMenu::PullrightMenu	4	1	4	1	5	12	1	5
PullrightMenu::PullrightMenu	4	1	4	1	5	12	1	5
PullrightMenu::PullrightMenu	4	1	4	1	5	12	1	5
PullrightMenu::Init	5	2	7	2	9	25	1	4
	21	6	23	6	29	73	5	21

PopupMenu::PopupMenu	4	1	4	1	5	12	1	2
PopupMenu::Init	7	2	11	2	13	41	1	5
	11	3	15	3	18	53	2	7
Message::Message	5	5	8	5	13	43	1	27
Message::Message	5	5	8	5	13	43	1	6
Message::Init	6	14	18	15	33	143	1	9
Message::Reconfig	15	13	49	32	81	389	3	15
Message::Realign	5	2	6	2	8	22	1	4
Message::Redraw	17	17	71	40	111	565	3	14
Message::Highlight	8	2	10	4	14	47	2	6
	61	58	170	103	273	1252	12	81
Brush::Brush	22	30	182	138	320	1824	14	66
Brush::Brush	6	5	9	6	15	52	1	4
Brush::~Brush	3	1	3	1	4	8	1	3
	31	36	194	145	339	1884	16	73
Color::Color	6	7	13	10	23	85	1	9
Color::Color	6	5	8	5	13	45	1	3
Color::Color	7	7	13	8	21	80	1	6
Color::Color	6	5	8	5	13	45	1	3
Color::Valid	5	3	5	3	8	24	1	3
Color::~Color	3	1	3	1	4	8	1	3
	33	28	50	32	82	287	6	27
Font::Font	10	1	13	3	16	55	2	8
Font::Font	13	5	28	12	40	167	3	12
Font::Lookup	18	11	44	22	66	321	3	16
Font::Height	4	2	4	2	6	16	1	3
Font::Index	7	3	10	4	14	47	1	3
Font::Valid	6	3	6	3	9	29	1	3
Font::Info	4	2	4	2	6	16	1	3
	62	27	109	48	157	651	12	48
Painter::Init	20	24	95	46	141	770	2	63
Painter::Copy	14	14	53	36	89	428	1	17
Painter::GetFgColor	3	1	3	1	4	8	1	3
Painter::GetBgColor	3	1	3	1	4	8	1	3
Painter::GetPattern	3	1	3	1	4	8	1	3
Painter::GetBrush	3	1	3	1	4	8	1	3
Painter::GetFont	3	1	3	1	4	8	1	3
Painter::SetStyle	3	2	3	2	5	12	1	3
Painter::GetStyle	3	1	3	1	4	8	1	3
Painter::SetTransformer	10	3	18	8	26	96	3	9
Painter::GetTransformer	3	1	3	1	4	8	1	3
Painter::MoveTo	3	4	5	4	9	25	1	4
Painter::GetPosition	3	4	5	4	9	25	1	4
Painter::SetOrigin	3	4	5	4	9	25	1	4
Painter::GetOrigin	3	4	5	4	9	25	1	4
Painter::Translate	13	5	19	10	29	121	3	8
Painter::Scale	13	5	19	10	29	121	3	8
Painter::Rotate	15	6	22	11	33	145	3	8
Painter::CurveTo	6	9	16	13	29	113	1	7
Painter::Text	8	6	14	9	23	88	1	5
Painter::Text	8	6	14	9	23	88	1	4
Painter::Text	6	4	10	5	15	50	1	3
Painter::Curve	8	22	55	43	98	481	1	14
Painter::BSpline	12	11	38	23	61	276	2	10
Painter::ClosedBSpline	12	11	38	23	61	276	2	10
Painter::FillBSpline	12	11	38	23	61	276	2	10
Painter::Map	7	8	16	12	28	109	1	7
Painter::Ellipse	14	29	108	95	203	1102	1	19
Painter::FillEllipse	14	29	108	95	203	1102	1	19
	228	228	725	496	1221	5810	41	261
Panner::Panner	5	2	5	2	7	20	1	27
Panner::Panner	6	3	8	3	11	35	1	4
Panner::Panner	8	4	11	5	16	57	1	5
Panner::Init	19	9	74	21	95	457	1	34
Panner::Reconfig	17	15	61	41	102	510	4	17
	55	33	159	72	231	1079	8	87
Slider::Slider	4	1	4	1	5	12	1	3

Slider::Slider	5	2	7	2	9	25	1	4
Slider::Slider	4	1	4	1	5	12	1	3
Slider::Init	12	19	41	25	66	327	1	13
Slider::Reconfig	18	10	34	18	52	250	1	10
Slider::Reshape	21	14	55	33	88	451	5	16
Slider::Draw	15	18	73	54	127	641	2	15
Slider::Redraw	8	6	16	7	23	88	1	5
Slider::ViewX	9	4	11	4	15	56	1	3
Slider::ViewY	9	4	11	4	15	56	1	3
Slider::SliderX	9	4	11	4	15	56	1	3
Slider::SliderY	9	4	11	4	15	56	1	3
Slider::Move	4	5	7	6	13	41	1	4
Slider::Inside	7	7	14	12	26	99	1	3
Slider::CalcLimits	9	20	42	33	75	364	1	10
Slider::Constrain	18	18	104	64	168	869	7	32
Slider::Slide	36	25	126	62	188	1115	4	32
Slider::Jump	20	28	121	87	208	1162	7	35
Slider::Handle	14	5	24	8	32	136	3	10
Slider::SizeKnob	14	14	37	22	59	284	2	10
Slider::Update	21	22	79	44	123	667	5	29
Slider::Resize	12	5	18	10	28	114	2	9
Slider::~Slider	7	2	9	2	11	35	1	4
	285	238	859	507	1366	6916	51	259
Perspective::Perspective	5	15	30	26	56	242	1	10
Perspective::Perspective	6	15	42	38	80	351	1	16
Perspective::~Perspective	8	4	14	10	24	86	2	9
Perspective::Init	3	10	13	12	25	93	1	5
Perspective::Attach	7	4	13	7	20	69	1	8
Perspective::Detach	14	7	45	30	75	329	4	21
Perspective::Update	9	5	15	9	24	91	2	7
Perspective::operator==	6	13	38	36	74	314	1	9
Perspective::operator!=	6	13	38	36	74	314	1	9
Perspective::operator=	7	13	41	36	77	333	1	15
	71	99	289	240	529	2222	15	109
PropList::PropList	4	4	9	4	13	39	1	8
PropList::PropList	3	2	3	2	5	12	1	3
PropList::~PropList	1	1	1	1	2	1	1	3
PropList::Append	4	3	13	12	25	70	1	6
PropList::Remove	4	2	7	6	13	34	1	4
PropList::Find	11	5	20	11	31	124	3	10
PropList::DeleteAll	9	4	21	11	32	118	2	10
	36	21	74	47	121	398	10	44
AttrList::AttrList	3	3	5	4	9	23	1	7
AttrList::AttrList	3	3	5	4	9	23	1	4
AttrList::FindAttr	13	9	31	22	53	236	3	12
	19	15	41	30	71	282	5	23
DirList::DirList	3	2	3	2	5	12	1	6
DirList::DirList	4	1	4	1	5	12	1	3
DirList::FindSubDir	12	9	25	16	41	180	3	11
DirList::~DirList	3	1	3	1	4	8	1	3
	22	13	35	20	55	212	6	23
PropDir::PropDir	5	6	15	6	21	73	1	10
PropDir::~PropDir	6	4	25	8	33	110	1	10
PropDir::MakeDirs	26	17	74	49	123	667	6	27
	37	27	114	63	177	850	8	47
PropPath::PropPath	5	6	9	7	16	55	1	8
	5	6	9	7	16	55	1	8
PropertySheet::PropertySheet	12	10	26	17	43	192	2	13
PropertySheet::~PropertySheet	8	6	16	11	27	103	2	9
PropertySheet::Get	17	16	79	50	129	651	8	32
PropertySheet::GetLocal	11	8	20	11	31	132	2	10
PropertySheet::MakeDir	15	9	32	19	51	234	2	16
PropertySheet::DoPut	25	23	76	47	123	687	5	29
PropertySheet::Find	16	12	49	31	80	385	5	23
PropertySheet::Push	12	12	39	31	70	321	2	18
PropertySheet::Pop	13	9	27	17	44	196	3	12
PropertySheet::Root	3	1	3	1	4	8	1	3

PropSheetBuf::PropSheetBuf	11	4	11	6	17	66	2	3
PropSheetBuf::~PropSheetBuf	6	2	7	3	10	30	2	5
	149	112	385	244	629	3005	36	173
PropertySheet::LoadProperty	22	17	144	56	200	1057	10	40
PropertySheet::LoadList	17	7	33	20	53	243	3	14
PropertySheet::LoadFile	22	17	74	41	115	608	6	32
	61	41	251	117	368	1908	19	86
Raster::Raster	26	14	86	48	134	713	5	45
Raster::Raster	6	8	11	8	19	72	1	4
Raster::Raster	27	14	89	50	139	745	5	23
Raster::~Raster	17	9	42	21	63	296	4	14
Raster::Peek	23	11	69	33	102	519	4	20
Raster::Poke	23	11	60	27	87	443	3	15
	122	67	357	187	544	2788	22	121
Regexp::Regexp	9	5	14	9	23	88	1	34
Regexp::Regexp	9	5	14	9	23	88	1	5
Regexp::~Regexp	3	1	3	1	4	8	1	3
Regexp::Search	27	21	180	115	295	1648	10	56
Regexp::Match	18	15	79	46	125	631	5	25
Regexp::BeginningOfMatch	3	1	3	1	4	8	1	3
Regexp::EndOfMatch	3	1	3	1	4	8	1	3
	72	49	296	182	478	2479	20	129
Resource::Resource	3	2	3	2	5	12	1	22
Resource::~Resource	1	1	1	1	2	1	1	1
Resource::Reference	3	1	3	1	4	8	1	1
Resource::Unreference	9	2	14	5	19	66	3	8
	16	6	21	9	30	87	6	32
Rubberband::Angle	16	11	39	23	62	295	4	41
Rubberband::Distance	7	2	8	4	12	38	1	6
Rubberband::Rubberband	11	11	25	15	40	178	2	12
Rubberband::Draw	1	1	1	1	2	1	1	3
Rubberband::Redraw	5	2	6	2	8	22	1	4
Rubberband::Erase	7	2	11	5	16	51	2	7
Rubberband::Track	10	4	17	8	25	95	2	8
Rubberband::~Rubberband	4	1	4	1	5	12	1	3
Rubberband::SetPainter	11	2	18	7	25	93	2	8
Rubberband::SetCanvas	3	2	3	2	5	12	1	3
	75	38	132	68	200	797	17	95
RubberEllipse::RubberEllipse	3	10	13	12	25	93	1	35
RubberEllipse::GetOriginal	3	8	9	8	17	59	1	6
RubberEllipse::GetCurrent	3	8	9	8	17	59	1	6
RubberEllipse::OriginalRadii	6	6	11	6	17	61	1	4
RubberEllipse::CurrentRadii	6	6	11	6	17	61	1	4
RubberEllipse::Draw	13	13	33	24	57	268	2	10
	34	51	86	64	150	601	7	65
SlidingEllipse::SlidingEllipse	3	6	7	6	13	41	1	8
SlidingEllipse::GetCurrent	5	15	17	18	35	151	1	9
SlidingEllipse::OriginalRadii	3	4	5	4	9	25	1	4
SlidingEllipse::CurrentRadii	3	4	5	4	9	25	1	4
	14	29	34	32	66	242	4	25
RubberCircle::RubberCircle	1	1	1	1	2	1	1	7
RubberCircle::OriginalRadii	9	10	20	17	37	157	1	7
RubberCircle::CurrentRadii	9	10	20	17	37	157	1	7
RubberCircle::Draw	12	9	20	12	32	141	2	9
	31	30	61	47	108	456	5	30
RubberPointList::Copy	10	6	25	12	37	148	1	7
RubberPointList::RubberPointLis	6	6	10	7	17	61	1	7
RubberPointList::~RubberPointLi	3	2	5	2	7	16	1	4
	19	14	40	21	61	225	3	18
RubberVertex::RubberVertex	4	6	9	8	17	56	1	9
RubberVertex::GetOriginal	6	8	12	9	21	80	1	5

RubberVertex::GetCurrent	7	10	18	15	33	135	1	7
RubberVertex::DrawSplineSection	13	26	133	90	223	1179	1	28
	30	50	172	122	294	1450	4	49
RubberHandles::RubberHandles	4	3	4	3	7	20	1	7
RubberHandles::Draw	20	16	65	46	111	574	5	23
RubberHandles::Track	13	11	48	39	87	399	3	18
	37	30	117	88	205	993	9	48
RubberSpline::RubberSpline	1	1	1	1	2	1	1	7
RubberSpline::Draw	22	21	98	65	163	884	5	25
	23	22	99	66	165	885	6	32
RubberClosedSpline::RubberClose	1	1	1	1	2	1	1	7
RubberClosedSpline::Draw	25	20	117	79	196	1076	7	32
	26	21	118	80	198	1077	8	39
SlidingPointList::SlidingPointL	3	6	9	8	17	54	1	10
SlidingPointList::GetOriginal	12	10	31	21	52	232	2	13
SlidingPointList::GetCurrent	6	6	10	7	17	61	1	4
SlidingPointList::Draw	23	15	69	44	113	593	5	21
SlidingPointList::Track	16	11	37	25	62	295	3	17
	60	48	156	105	261	1235	12	65
SlidingLineList::SlidingLineLis	1	1	1	1	2	1	1	6
SlidingLineList::Draw	23	15	69	44	113	593	5	21
	24	16	70	45	115	594	6	27
ScalingLineList::ScalingLineLis	10	14	24	19	43	197	2	11
ScalingLineList::~ScalingLineLi	3	2	5	2	7	16	1	4
ScalingLineList::Update	14	10	29	19	48	220	2	8
ScalingLineList::GetOriginal	6	6	10	7	17	61	1	4
ScalingLineList::GetCurrent	6	6	10	7	17	61	1	4
ScalingLineList::CurrentScaling	7	5	9	5	14	50	1	3
ScalingLineList::Track	11	4	20	8	28	109	2	9
ScalingLineList::Draw	10	7	14	8	22	90	2	6
	67	54	121	75	196	804	12	49
RotatingLineList::RotatingLineL	6	5	8	5	13	45	1	7
RotatingLineList::Update	14	13	37	27	64	304	2	13
RotatingLineList::CurrentAngle	6	4	8	4	12	40	1	3
	26	22	53	36	89	389	4	23
RubberList::RubberList	4	4	9	4	13	39	1	5
RubberList::~RubberList	10	4	22	13	35	133	3	13
RubberList::Append	5	3	13	10	23	69	1	8
RubberList::Prepend	5	3	13	10	23	69	1	8
RubberList::Delete	5	3	16	14	30	90	1	6
RubberList::Find	13	4	24	9	33	135	3	10
	42	21	97	60	157	535	10	50
RubberGroup::RubberGroup	4	2	5	2	7	18	1	4
RubberGroup::Draw	12	3	24	8	32	125	2	5
RubberGroup::Erase	12	3	24	8	32	125	2	5
RubberGroup::Track	13	5	25	10	35	146	2	5
RubberGroup::~RubberGroup	3	1	3	1	4	8	1	1
RubberGroup::SetPainter	13	5	28	11	39	163	2	7
RubberGroup::SetCanvas	13	5	28	11	39	163	2	7
RubberGroup::Append	8	6	29	14	43	164	4	16
RubberGroup::Remove	10	4	14	6	20	76	2	8
RubberGroup::RemoveCur	11	3	16	4	20	76	2	8
RubberGroup::SetCurrent	6	3	7	4	11	35	2	7
RubberGroup::GetCurrent	4	2	4	2	6	16	1	3
RubberGroup::First	7	3	9	4	13	43	1	4
RubberGroup::Last	7	3	9	4	13	43	1	4
RubberGroup::Next	7	3	9	4	13	43	1	4
RubberGroup::Prev	7	3	9	4	13	43	1	4
RubberGroup::AtEnd	4	2	4	2	6	16	1	1
RubberGroup::IsEmpty	6	1	6	1	7	20	1	1
	147	57	253	100	353	1323	29	94

RubberLine::RubberLine	3	10	13	12	25	93	1	35
RubberLine::GetOriginal	3	8	9	8	17	59	1	6
RubberLine::GetCurrent	3	8	9	8	17	59	1	6
RubberLine::Draw	12	11	29	22	51	231	2	9
	21	37	60	50	110	442	5	56
RubberAxis::RubberAxis	1	1	1	1	2	1	1	7
RubberAxis::GetCurrent	10	8	25	16	41	171	2	11
	11	9	26	17	43	172	3	18
SlidingLine::SlidingLine	3	6	9	8	17	54	1	10
SlidingLine::GetCurrent	5	15	19	20	39	169	1	9
	8	21	28	28	56	223	2	19
ScalingLine::ScalingLine	6	10	15	10	25	100	1	10
ScalingLine::GetCurrent	9	11	33	20	53	229	1	8
ScalingLine::CurrentScaling	17	13	40	26	66	324	3	13
	32	34	88	56	144	653	5	31
RotatingLine::Transform	8	10	23	16	39	163	1	12
RotatingLine::RotatingLine	3	8	9	8	17	59	1	9
RotatingLine::GetCurrent	17	22	90	71	161	851	2	24
RotatingLine::OriginalAngle	7	5	18	13	31	111	1	6
RotatingLine::CurrentAngle	7	5	18	13	31	111	1	6
	42	50	158	121	279	1295	6	57
RubberRect::RubberRect	3	10	13	12	25	93	1	35
RubberRect::GetOriginal	3	8	9	8	17	59	1	6
RubberRect::GetCurrent	3	8	9	8	17	59	1	6
RubberRect::Draw	16	11	49	36	85	404	3	13
	25	37	80	64	144	615	6	60
RubberSquare::RubberSquare	1	1	1	1	2	1	1	5
RubberSquare::GetCurrent	13	11	39	32	71	326	4	13
	14	12	40	33	73	327	5	18
SlidingRect::SlidingRect	3	6	9	8	17	54	1	9
SlidingRect::GetCurrent	6	15	21	21	42	184	1	10
	9	21	30	29	59	238	2	19
StretchingRect::StretchingRect	3	2	3	2	5	12	1	6
StretchingRect::GetCurrent	8	15	36	21	57	258	5	20
StretchingRect::CurrentStretchi	19	19	67	48	115	604	6	27
	30	36	106	71	177	874	12	53
ScalingRect::ScalingRect	6	10	15	10	25	100	1	9
ScalingRect::GetCurrent	9	11	33	20	53	229	1	8
ScalingRect::CurrentScaling	17	13	40	26	66	324	3	13
	32	34	88	56	144	653	5	30
RotatingRect::Transform	8	10	23	16	39	163	1	12
RotatingRect::RotatingRect	3	16	17	16	33	140	1	13
RotatingRect::GetOriginal	3	8	9	8	17	59	1	6
RotatingRect::GetCurrent	17	26	124	99	223	1210	2	33
RotatingRect::CurrentAngle	7	6	23	18	41	152	1	6
RotatingRect::Draw	24	16	105	86	191	1016	4	22
	62	82	301	243	544	2740	10	92
GrowingVertices::GrowingVertice	11	11	34	19	53	236	1	35
GrowingVertices::~GrowingVertic	3	2	5	2	7	16	1	4
GrowingVertices::GetOriginal	6	6	10	7	17	61	1	4
GrowingVertices::GetCurrent	6	6	10	7	17	61	1	4
GrowingVertices::CheckBufs	16	9	42	25	67	311	2	15
GrowingVertices::Copy	10	6	25	12	37	148	1	6
GrowingVertices::Draw	11	8	19	13	32	136	2	8
GrowingVertices::DrawVertices	1	1	1	1	2	1	1	1
GrowingVertices::AppendVertex	11	8	23	11	34	144	2	12
	75	57	169	97	266	1114	12	89

GrowingMultiLine::GrowingMultiL	1	1	1	1	2	1	1	5
GrowingMultiLine::DrawVertices	6	5	8	5	13	45	1	3
	7	6	9	6	15	46	2	8
GrowingPolygon::GrowingPolygon	1	1	1	1	2	1	1	5
GrowingPolygon::DrawVertices	12	8	26	17	43	186	2	7
	13	9	27	18	45	187	3	12
GrowingBSpline::GrowingBSpline	1	1	1	1	2	1	1	5
GrowingBSpline::DrawVertices	6	5	8	5	13	45	1	3
	7	6	9	6	15	46	2	8
GrowingClosedBSpline::GrowingCl	1	1	1	1	2	1	1	5
GrowingClosedBSpline::DrawVerti	6	5	8	5	13	45	1	3
	7	6	9	6	15	46	2	8
Scene::Scene	3	2	3	2	5	12	1	27
Scene::Scene	3	2	3	2	5	12	1	3
Scene::Assign	7	13	27	23	50	216	1	13
Scene::Insert	10	6	17	10	27	108	1	5
Scene::Insert	10	10	25	17	42	182	1	7
Scene::PrepareToInsert	13	6	16	8	24	102	2	5
Scene::DoAlign	10	17	73	38	111	528	19	36
Scene::Change	12	5	24	7	31	127	4	10
Scene::Remove	13	5	29	12	41	171	3	11
Scene::Orphan	21	10	50	30	80	396	4	19
Scene::DoInsert	1	1	1	1	2	1	1	1
Scene::DoChange	1	1	1	1	2	1	1	1
Scene::DoRemove	1	1	1	1	2	1	1	1
Scene::DoRaise	1	1	1	1	2	1	1	1
Scene::DoLower	1	1	1	1	2	1	1	1
Scene::DoMove	1	1	1	1	2	1	1	1
Scene::Wrap	3	1	3	1	4	8	1	8
Scene::Propagate	3	2	3	2	5	12	1	3
Scene::Highlight	21	8	43	24	67	325	4	18
	135	93	322	182	504	2205	49	171
MonoScene::MonoScene	3	2	3	2	5	12	1	10
MonoScene::MonoScene	3	2	3	2	5	12	1	3
MonoScene::~MonoScene	6	2	7	3	10	30	2	5
MonoScene::DoInsert	7	3	9	5	14	47	2	6
MonoScene::DoChange	4	1	4	1	5	12	1	3
MonoScene::DoRemove	3	2	3	2	5	12	1	3
MonoScene::Reconfig	10	3	12	4	16	59	2	5
MonoScene::Resize	11	7	23	11	34	142	3	8
MonoScene::Draw	9	3	13	4	17	61	2	6
MonoScene::GetComponents	11	8	31	20	51	217	3	15
	67	33	108	54	162	604	18	64
Scroller::Scroller	5	4	8	4	12	38	1	5
Scroller::Scroller	6	5	11	5	16	55	1	6
Scroller::Scroller	5	4	8	4	12	38	1	5
Scroller::Init	12	8	33	12	45	194	1	10
Scroller::~Scroller	7	2	9	2	11	35	1	4
Scroller::MakeBackground	10	4	19	9	28	107	1	7
Scroller::Resize	4	2	5	2	7	18	1	3
Scroller::Background	6	6	9	6	15	54	1	3
	55	35	102	44	146	539	8	43
HScroller::HScroller	4	1	4	1	5	12	1	3
HScroller::HScroller	4	1	4	1	5	12	1	3
HScroller::HScroller	5	1	7	1	8	21	1	6
HScroller::Init	4	1	4	1	5	12	1	3
HScroller::Reconfig	19	13	42	23	65	325	2	13
	36	17	61	27	88	382	6	28
VScroller::VScroller	4	1	4	1	5	12	1	3
VScroller::VScroller	4	1	4	1	5	12	1	3
VScroller::VScroller	5	1	7	1	8	21	1	6
VScroller::Init	4	1	4	1	5	12	1	3
VScroller::Reconfig	19	13	42	23	65	325	2	13
	36	17	61	27	88	382	6	28

HScroller::GetBarInfo	17	15	44	29	73	365	2	13
	17	15	44	29	73	365	2	13
VScroller::GetBarInfo	17	15	44	29	73	365	2	13
	17	15	44	29	73	365	2	13
HScroller::Bar	8	7	14	11	25	98	1	3
	8	7	14	11	25	98	1	3
VScroller::Bar	8	7	14	11	25	98	1	3
	8	7	14	11	25	98	1	3
HScroller::Outline	8	7	12	9	21	82	1	3
	8	7	12	9	21	82	1	3
VScroller::Outline	8	7	12	9	21	82	1	3
	8	7	12	9	21	82	1	3
HScroller::Border	7	5	10	7	17	61	1	3
	7	5	10	7	17	61	1	3
VScroller::Border	7	5	10	7	17	61	1	3
	7	5	10	7	17	61	1	3
HScroller::Sides	7	6	19	14	33	122	1	4
	7	6	19	14	33	122	1	4
VScroller::Sides	7	6	19	14	33	122	1	4
	7	6	19	14	33	122	1	4
HScroller::Redraw	8	8	22	14	36	144	1	9
	8	8	22	14	36	144	1	9
VScroller::Redraw	8	8	22	14	36	144	1	9
	8	8	22	14	36	144	1	9
HScroller::Handle	16	14	35	23	58	285	3	13
	16	14	35	23	58	285	3	13
VScroller::Handle	16	14	35	23	58	285	3	13
	16	14	35	23	58	285	3	13
HScroller::Slide	41	39	215	127	342	2162	10	52
	41	39	215	127	342	2162	10	52
VScroller::Slide	41	39	215	127	342	2162	10	52
	41	39	215	127	342	2162	10	52
HScroller::Update	26	16	133	81	214	1154	8	39
	26	16	133	81	214	1154	8	39
VScroller::Update	26	16	133	81	214	1154	8	39
	26	16	133	81	214	1154	8	39
Sensor::Sensor	10	9	22	15	37	157	2	35
Sensor::Sensor	11	10	34	27	61	268	2	13
Sensor::~Sensor	1	1	1	1	2	1	1	3
Sensor::Catch	15	31	82	44	126	696	12	42
Sensor::CatchButton	12	11	38	16	54	244	4	19
Sensor::CatchChannel	10	4	12	8	20	76	2	6
Sensor::CatchTimer	3	6	7	6	13	41	1	5
Sensor::Ignore	19	30	102	46	148	831	14	45
Sensor::IgnoreButton	27	16	85	34	119	646	9	33

Sensor::IgnoreChannel	14	5	24	12	36	153	3	10
Sensor::CatchRemote	3	2	3	2	5	12	1	3
Sensor::IgnoreRemote	4	2	4	2	6	16	1	3
	129	127	414	213	627	3141	52	217
Event::operator=	15	21	80	67	147	760	2	27
Event::GetAbsolute	15	10	35	19	54	251	3	10
Event::GetAbsolute	6	4	7	4	11	37	1	4
	36	35	122	90	212	1048	6	41
Shape::Shape	7	7	16	10	26	99	1	31
Shape::~Shape	1	1	1	1	2	1	1	3
Shape::Square	5	5	10	6	16	53	1	5
Shape::Rect	5	4	8	4	12	38	1	4
Shape::Rigid	3	8	9	8	17	59	1	6
Shape::SetUndefined	3	3	5	4	9	23	1	4
Shape::Defined	4	2	4	2	6	16	1	3
	28	30	53	35	88	289	7	56
ObjectSpace::ObjectSpace	5	3	8	4	12	36	1	8
ObjectSpace::ObjectSpace	17	7	34	15	49	225	2	17
ObjectSpace::~ObjectSpace	3	2	5	2	7	16	1	4
ObjectSpace::Init	9	15	29	22	51	234	1	19
ObjectSpace::Attach	9	4	11	7	18	67	2	9
ObjectSpace::Detach	14	5	24	12	36	153	3	16
ObjectSpace::Listen	9	2	11	3	14	48	2	8
ObjectSpace::Ready	15	7	21	10	31	138	2	14
ObjectSpace::CheckServer	15	5	21	9	30	130	2	11
ObjectSpace::StartServer	5	4	11	6	17	54	1	9
ObjectSpace::Add	9	7	31	26	57	228	2	15
ObjectSpace::Remove	9	7	33	24	57	228	3	15
ObjectSpace::CloseDown	11	4	19	7	26	102	1	9
ObjectSpace::AddClient	7	2	9	2	11	35	1	7
ObjectSpace::Dispatch	35	24	134	67	201	1182	12	49
ObjectSpace::CheckClients	20	12	50	31	81	405	3	24
ObjectSpace::Message	20	14	74	35	109	555	7	29
ObjectSpace::Map	7	3	7	3	10	33	1	6
ObjectSpace::Deliver	13	9	34	19	53	236	3	18
ObjectSpace::AddChannel	7	9	20	16	36	144	1	16
ObjectSpace::RemoveChannel	14	7	39	25	64	281	4	21
ObjectSpace::UsePath	5	2	5	2	7	20	1	6
ObjectSpace::Find	7	3	7	3	10	33	1	7
Messenger::Messenger	5	15	21	18	39	169	1	16
Messenger::~Messenger	3	2	5	2	7	16	1	4
Messenger::Run	9	3	20	3	23	82	3	13
Messenger::ReadData	21	12	40	24	64	323	4	22
Messenger::ProcessMessage	31	19	127	77	204	1151	9	52
Messenger::GrowBuffer	10	7	22	14	36	147	1	13
	344	215	872	488	1360	6471	76	457
SpaceManager::SpaceManager	22	13	54	24	78	400	2	17
SpaceManager::~SpaceManager	3	1	3	1	4	8	1	3
SpaceManager::UsePath	7	3	9	3	12	40	1	3
SpaceManager::Register	18	13	45	24	69	342	1	14
SpaceManager::UnRegister	8	3	13	4	17	59	1	4
SpaceManager::Find	26	14	54	25	79	420	4	19
	84	47	178	81	259	1269	10	60
StringBrowser::StringBrowser	5	6	9	6	15	52	1	29
StringBrowser::StringBrowser	6	7	12	7	19	70	1	7
StringBrowser::Init	15	34	63	39	102	573	1	29
StringBrowser::InitTextDisplay	20	13	45	25	70	353	3	14
StringBrowser::~StringBrowser	6	3	11	3	14	44	1	6
StringBrowser::Insert	16	12	41	25	66	317	2	15
StringBrowser::Remove	20	12	38	23	61	305	2	14
StringBrowser::Index	15	6	22	11	33	145	3	8
StringBrowser::String	9	5	9	7	16	61	2	3
StringBrowser::Clear	11	5	18	10	28	112	2	7
StringBrowser::Select	14	9	26	14	40	181	2	6
StringBrowser::Unselect	15	9	24	14	38	174	2	8
StringBrowser::Selection	6	5	9	5	14	48	1	3
StringBrowser::SelectionIndex	6	5	9	5	14	48	1	3
StringBrowser::Browse	6	6	11	9	20	72	1	6
StringBrowser::HandleDownEvent	15	9	43	20	63	289	5	16
StringBrowser::HandleKeyEvent	11	7	16	11	27	113	2	8
StringBrowser::Handle	18	7	45	18	63	293	6	23

StringBrowser::HandleChar	35	30	200	75	275	1656	19	70
StringBrowser::Adjust	11	6	13	8	21	86	1	5
StringBrowser::Reconfig	34	50	156	83	239	1528	3	39
StringBrowser::Resize	17	24	70	54	124	664	2	22
StringBrowser::Redraw	6	5	8	5	13	45	1	3
StringBrowser::Select	12	3	18	8	26	102	2	5
StringBrowser::SelectAll	13	9	25	17	42	187	2	6
StringBrowser::Unselect	12	3	18	8	26	102	2	5
StringBrowser::UnselectAll	7	5	11	8	19	68	1	4
StringBrowser::ScrollBy	7	4	7	4	11	38	1	3
StringBrowser::ScrollBy	7	3	7	3	10	33	1	3
StringBrowser::ScrollTo	12	13	30	20	50	232	1	11
StringBrowser::ScrollTo	20	12	44	32	76	380	4	12
StringBrowser::ScrollToView	14	6	30	17	47	203	3	9
StringBrowser::Locate	12	6	18	10	28	117	1	6
StringBrowser::Note	4	7	10	9	19	66	1	5
StringBrowser::DoubleClicked	15	15	33	21	54	265	2	10
StringBrowser::UpdateSelection	16	11	99	48	147	699	12	42
StringBrowser::LeftButtonDown	29	18	149	68	217	1205	10	47
StringBrowser::GrabScroll	14	7	34	19	53	233	2	15
StringBrowser::RateScroll	17	9	45	24	69	324	3	17
	528	406	1476	793	2269	11483	112	544
StringChooser::StringChooser	7	4	12	5	17	59	1	29
StringChooser::StringChooser	7	4	12	5	17	59	1	6
StringChooser::StringChooser	1	1	1	1	2	1	1	1
StringChooser::Init	7	6	12	7	19	70	1	6
StringChooser::Select	11	3	20	6	26	99	2	7
StringChooser::Select	6	3	6	3	9	29	1	1
StringChooser::SelectMessage	8	2	11	3	14	47	1	3
StringChooser::Message	5	2	5	2	7	20	1	1
StringChooser::Choice	6	1	6	1	7	20	1	1
StringChooser::Forward	15	8	30	22	52	235	2	8
StringChooser::Accept	24	12	77	31	108	558	5	34
StringChooser::Handle	5	2	5	2	7	20	1	3
StringChooser::SwitchFocus	12	5	29	13	42	172	3	12
StringChooser::CanFocus	5	3	6	4	10	30	1	3
StringChooser::HandleFocus	10	3	18	6	24	89	3	7
StringChooser::UpdateEditor	10	4	15	5	20	76	2	8
StringChooser::UpdateBrowser	5	1	5	1	6	16	1	3
	144	64	270	117	387	1600	28	133
streambuf::streambuf	3	8	13	12	25	86	1	35
streambuf::streambuf	6	4	7	4	11	37	1	4
streambuf::~streambuf	7	3	8	4	12	40	2	5
streambuf::fill	3	1	3	1	4	8	1	3
streambuf::flush	13	4	20	7	27	110	3	9
streambuf::sgetc	10	3	11	4	15	56	2	3
streambuf::snextc	12	4	13	5	18	72	2	3
streambuf::stossc	8	3	10	3	13	45	2	7
streambuf::sputbackc	8	3	9	4	13	45	2	5
streambuf::sputc	16	7	31	15	46	208	3	14
streambuf::setbuf	6	7	14	10	24	89	1	7
streambuf::allocate	11	9	28	18	46	199	3	14
	103	56	167	87	254	995	23	109
filebuf::filebuf	3	4	5	4	9	25	1	7
filebuf::filebuf	3	4	5	4	9	25	1	4
filebuf::filebuf	3	4	5	4	9	25	1	4
filebuf::filebuf	3	4	5	4	9	25	1	4
filebuf::~filebuf	4	1	4	1	5	12	1	3
filebuf::open	20	13	62	26	88	444	6	23
filebuf::close	9	4	13	5	18	67	2	7
filebuf::fill	24	14	60	31	91	478	5	21
filebuf::flush	23	14	65	31	96	500	7	25
	92	62	224	110	334	1601	25	98
circbuf::fill	3	1	3	1	4	8	1	7
circbuf::flush	13	5	22	9	31	129	3	10
	16	6	25	10	35	137	4	17
iostream::iostream	4	3	6	3	9	25	1	9
iostream::iostream	5	4	7	4	11	35	1	4
iostream::iostream	3	4	5	4	9	25	1	4
iostream::operator!	5	1	5	1	6	16	1	3
iostream::good	6	1	6	1	7	20	1	3

iostream::eof	7	2	8	2	10	32	1	3
iostream::fail	6	1	6	1	7	20	1	3
iostream::bad	7	2	8	2	10	32	1	3
	43	18	51	18	69	205	8	32
ostream::ostream	1	1	1	1	2	1	1	1
ostream::ostream	10	4	10	6	16	61	2	3
ostream::ostream	1	1	1	1	2	1	1	1
ostream::~ostream	4	1	4	1	5	12	1	3
ostream::operator<<	21	10	42	17	59	292	4	12
ostream::put	15	5	19	5	24	104	2	6
ostream::operator<<	14	4	21	6	27	113	2	8
ostream::operator<<	14	4	21	6	27	113	2	8
ostream::operator<<	14	4	21	6	27	113	2	8
ostream::operator<<	21	8	40	14	54	262	4	12
ostream::put	9	3	11	4	15	54	1	5
ostream::put	9	3	11	4	15	54	1	5
ostream::put	9	3	11	4	15	54	1	5
ostream::put	9	3	11	4	15	54	1	5
ostream::put	9	3	11	4	15	54	1	5
ostream::flush	8	1	9	1	10	32	1	4
	168	58	244	84	328	1374	27	91
istream::istream	3	4	5	4	9	25	1	4
istream::istream	11	7	15	11	26	108	2	5
istream::istream	3	4	5	4	9	25	1	4
istream::skip	4	4	7	6	13	39	1	5
istream::sync	9	3	15	4	19	68	3	8
	30	22	47	29	76	265	8	26
istream::operator>>	11	3	14	4	18	69	2	7
istream::operator>>	25	15	132	55	187	995	9	38
istream::operator>>	23	8	58	20	78	386	5	18
istream::operator>>	19	8	43	14	57	271	5	13
istream::get	25	17	75	35	110	593	5	26
istream::get	23	12	64	26	90	462	5	21
istream::get	8	4	13	5	18	65	1	7
istream::putback	8	2	9	2	11	37	1	4
istream::tie	4	3	5	3	8	22	1	5
	146	72	413	164	577	2900	34	139
StringEditor::StringEditor	5	3	6	3	9	27	1	29
StringEditor::StringEditor	6	4	9	4	13	43	1	6
StringEditor::Init	20	20	58	31	89	474	2	20
StringEditor::~StringEditor	10	5	16	6	22	86	2	8
StringEditor::Reconfig	26	37	123	55	178	1064	2	31
StringEditor::Resize	8	8	17	10	27	108	1	5
StringEditor::Redraw	7	7	13	8	21	80	1	4
StringEditor::Message	18	8	49	24	73	343	1	9
StringEditor::Select	5	1	5	2	7	18	1	3
StringEditor::Select	23	11	74	43	117	595	3	12
StringEditor::DoSelect	21	13	141	89	230	1170	10	36
StringEditor::Edit	6	6	11	9	20	72	1	6
StringEditor::Edit	7	3	11	3	14	47	1	5
StringEditor::Text	6	1	6	1	7	20	1	3
StringEditor::HandleChar	31	21	144	50	194	1106	15	50
StringEditor::InsertText	20	10	52	32	84	412	3	15
StringEditor::Handle	41	35	252	135	387	2418	16	67
	260	193	987	505	1492	8083	62	309
StringPool::StringPool	5	7	11	8	19	68	1	31
StringPool::~StringPool	3	2	5	2	7	16	1	8
StringPool::Append	17	12	38	22	60	291	2	23
	25	21	54	32	86	375	4	62
StringTable::StringTable	19	9	38	22	60	288	4	41
StringTable::~StringTable	3	1	3	1	4	8	1	3
StringTable::Probe	9	4	9	4	13	48	1	3
StringTable::Id	6	2	6	2	8	24	1	3
StringTable::Id	20	13	62	44	106	535	3	24
StringTable::Remove	5	2	5	2	7	20	1	3
StringTable::Remove	19	9	68	39	107	514	6	24
StringTable::Hash	19	10	54	37	91	442	4	24
	100	50	245	151	396	1879	21	125

ObjectStub::Message	1	1	1	1	2	1	1	27
ObjectStub::ChannelReady	1	1	1	1	2	1	1	3
ObjectStub::Clone	3	1	3	1	4	8	1	3
	5	3	5	3	8	10	3	33
Subject::Subject	3	2	3	2	5	12	1	27
Subject::~Subject	8	4	14	10	24	86	2	8
Subject::Attach	6	5	12	8	20	69	1	7
Subject::Detach	14	7	39	24	63	277	4	18
Subject::all	4	3	4	3	7	20	1	3
Subject::Notify	13	1	25	1	26	99	2	5
Subject::IsView	14	4	29	4	33	138	3	8
	62	26	126	52	178	701	14	76
ObjectTable::ObjectTable	16	7	28	15	43	195	2	40
ObjectTable::~ObjectTable	3	1	3	1	4	8	1	3
ObjectTable::Hash	8	5	12	6	18	67	1	3
ObjectTable::Start	7	3	7	3	10	33	1	3
ObjectTable::StartAddr	8	3	8	3	11	38	1	3
	42	19	58	28	86	341	6	52
ObjectTableEntry::Match	5	4	6	4	10	32	1	3
	5	4	6	4	10	32	1	3
ObjectTable::Add	9	9	25	18	43	179	1	15
ObjectTable::Find	13	6	25	14	39	166	3	14
ObjectTable::Remove	17	7	48	28	76	348	4	23
ObjectTable::RemoveAll	16	11	48	31	79	376	5	25
	55	33	146	91	237	1069	13	77
TextBuffer::TextBuffer	9	11	23	18	41	177	1	33
TextBuffer::~TextBuffer	4	1	4	1	5	12	1	3
TextBuffer::Search	7	5	9	5	14	50	1	5
TextBuffer::BackwardSearch	10	3	14	4	18	67	2	9
TextBuffer::ForwardSearch	10	3	14	4	18	67	2	9
TextBuffer::Match	7	4	8	4	12	42	1	5
TextBuffer::BackwardMatch	15	8	23	13	36	163	3	9
TextBuffer::ForwardMatch	8	5	9	5	14	52	1	4
TextBuffer::Insert	23	13	71	45	116	600	5	21
TextBuffer::Delete	26	12	82	50	132	693	6	23
TextBuffer::Copy	17	6	38	20	58	262	3	11
TextBuffer::Width	13	3	19	9	28	112	2	9
TextBuffer::LineIndex	18	5	35	13	48	217	4	16
TextBuffer::LinesBetween	21	10	58	28	86	426	5	21
TextBuffer::LineNumber	7	4	9	5	14	48	1	6
TextBuffer::LineOffset	10	3	12	8	20	74	3	3
TextBuffer::IsBeginningOfLine	9	4	9	5	14	52	1	4
TextBuffer::BeginningOfLine	12	4	15	8	23	92	2	7
TextBuffer::BeginningOfNextLine	13	7	20	11	31	134	2	10
TextBuffer::IsEndOfLine	8	4	8	5	13	47	1	4
TextBuffer::EndOfLine	12	6	19	10	29	121	2	10
TextBuffer::EndOfPreviousLine	11	3	13	7	20	76	2	7
TextBuffer::IsBeginningOfWord	12	3	15	5	20	78	1	4
TextBuffer::BeginningOfWord	14	3	23	8	31	127	2	7
TextBuffer::BeginningOfNextWord	15	4	24	9	33	140	2	7
TextBuffer::IsEndOfWord	13	4	16	6	22	90	1	4
TextBuffer::EndOfWord	15	4	24	9	33	140	2	7
TextBuffer::EndOfPreviousWord	14	3	23	8	31	127	2	7
	353	145	637	323	960	4286	61	265
TextDisplay::TextDisplay	9	24	52	43	95	479	1	48
TextDisplay::~TextDisplay	11	5	16	8	24	96	2	6
TextDisplay::Scroll	25	22	180	134	314	1744	9	46
TextDisplay::Draw	3	4	5	4	9	25	1	4
TextDisplay::LineHeight	3	2	3	2	5	12	1	3
TextDisplay::TabWidth	3	2	3	2	5	12	1	3
TextDisplay::Resize	7	13	18	16	34	147	1	7
TextDisplay::Bounds	3	8	9	8	17	59	1	6
TextDisplay::Redraw	28	19	86	48	134	744	5	21
TextDisplay::Size	20	11	72	36	108	535	3	18
TextDisplay::Line	21	7	46	21	67	322	4	15
TextDisplay::Index	4	2	4	2	6	16	1	3
TextDisplay::InsertLinesAfter	26	23	115	68	183	1027	5	26
TextDisplay::InsertLinesBefore	27	23	113	66	179	1010	5	26
TextDisplay::DeleteLinesAfter	30	19	108	63	171	960	4	23

TextDisplay::DeleteLinesBefore	30	19	103	58	161	904	4	23
TextDisplay::InsertText	22	21	63	36	99	537	6	21
TextDisplay::DeleteText	17	13	41	20	61	299	5	15
TextDisplay::ReplaceText	24	20	72	41	113	617	7	23
TextDisplay::Style	21	11	41	25	66	330	5	10
TextDisplay::AddStyle	21	11	41	25	66	330	5	10
TextDisplay::RemoveStyle	21	11	41	25	66	330	5	10
TextDisplay::CaretStyle	6	2	9	2	11	33	1	5
TextDisplay::Caret	6	4	11	4	15	50	1	6
TextDisplay::HideCaret	17	9	24	14	38	179	2	6
TextDisplay::ShowCaret	23	21	79	49	128	699	8	24
TextDisplay::Width	19	10	39	19	58	282	5	13
TextDisplay::Height	7	4	7	4	11	38	1	3
TextDisplay::LineNumber	12	8	23	13	36	156	2	8
TextDisplay::LineIndex	15	7	20	8	28	125	2	8
TextDisplay::Base	7	5	9	6	15	54	1	3
TextDisplay::Top	6	4	6	4	10	33	1	3
TextDisplay::Left	13	5	19	8	27	113	2	8
TextDisplay::Right	14	6	21	10	31	134	2	8
	521	375	1499	892	2391	12431	109	462
TextLine::TextLine	6	9	17	13	30	117	1	9
TextLine::~TextLine	3	2	5	2	7	16	1	4
TextLine::Offset	26	15	70	43	113	605	5	25
TextLine::Index	30	17	102	58	160	889	9	37
TextLine::Size	16	10	51	35	86	404	5	16
TextLine::Style	16	13	40	26	66	321	4	16
TextLine::AddStyle	17	13	44	30	74	363	4	16
TextLine::RemoveStyle	19	13	47	30	77	385	4	16
TextLine::Insert	28	26	156	108	264	1519	5	38
TextLine::Delete	29	25	162	113	275	1583	6	39
TextLine::Replace	12	13	38	26	64	297	1	16
TextLine::Draw	40	38	305	219	524	3294	15	81
	242	194	1037	703	1740	9793	60	313
TextEditor::TextEditor	5	4	7	4	11	35	1	4
TextEditor::TextEditor	6	5	10	5	15	52	1	4
TextEditor::Init	6	20	28	22	50	235	1	14
TextEditor::~TextEditor	5	2	6	2	8	22	1	4
TextEditor::Reconfig	27	43	139	72	211	1293	2	35
TextEditor::Resize	17	22	77	62	139	735	2	21
TextEditor::Redraw	10	8	17	10	27	113	2	6
TextEditor::Adjust	12	7	24	16	40	170	1	8
TextEditor::Edit	29	29	123	79	202	1183	2	30
TextEditor::InsertText	33	18	124	75	199	1129	5	28
TextEditor::DeleteText	35	19	130	78	208	1197	6	38
TextEditor::DeleteSelection	8	2	9	4	13	43	2	5
TextEditor::BeginningOfSelectio	6	2	7	2	9	27	1	3
TextEditor::EndOfSelection	6	2	7	2	9	27	1	3
TextEditor::BeginningOfWord	12	3	19	6	25	98	2	7
TextEditor::EndOfWord	12	3	19	6	25	98	2	7
TextEditor::BeginningOfLine	12	3	19	6	25	98	2	7
TextEditor::EndOfLine	12	3	19	6	25	98	2	7
TextEditor::BeginningOfText	6	1	7	1	8	22	1	3
TextEditor::EndOfText	6	1	7	1	8	22	1	3
TextEditor::ForwardCharacter	16	6	29	13	42	187	3	12
TextEditor::BackwardCharacter	16	6	29	13	42	187	3	12
TextEditor::ForwardLine	16	6	29	13	42	187	3	12
TextEditor::BackwardLine	17	6	32	14	46	208	3	12
TextEditor::ForwardWord	16	6	29	13	42	187	3	12
TextEditor::BackwardWord	17	6	32	14	46	208	3	12
TextEditor::ForwardPage	5	2	5	2	7	20	1	4
TextEditor::BackwardPage	5	2	5	2	7	20	1	4
TextEditor::ScrollToSelection	25	24	85	70	155	870	4	20
TextEditor::ScrollToView	16	11	29	30	59	281	6	7
TextEditor::ScrollBy	11	6	15	10	25	102	2	5
TextEditor::ScrollTo	14	17	49	31	80	396	1	13
TextEditor::Select	5	1	5	2	7	18	1	3
TextEditor::SelectMore	5	2	5	2	7	20	1	3
TextEditor::SelectAll	8	1	11	2	13	41	1	3
TextEditor::Select	23	16	211	114	325	1718	11	61
TextEditor::Locate	15	12	37	23	60	285	2	12
TextEditor::GrabScroll	17	9	48	29	77	362	2	16
TextEditor::RateScroll	20	10	53	28	81	397	3	18
	532	346	1536	884	2420	12391	92	478
Transformer::Transformer	10	10	36	28	64	277	2	35
Transformer::Transformer	5	12	16	12	28	114	1	8

Transformer::GetEntries	3	12	13	12	25	98	1	10
Transformer::Translate	3	4	5	4	9	25	1	4
Transformer::Scale	3	8	13	12	25	86	1	8
Transformer::Rotate	10	16	53	48	101	475	1	21
Transformer::Premultiply	7	9	47	46	93	372	1	15
Transformer::Postmultiply	7	8	48	47	95	371	1	16
Transformer::Invert	7	9	29	24	53	212	1	12
Transformer::Transform	7	10	19	15	34	139	1	5
Transformer::InvTransform	7	8	15	10	25	98	1	8
Transformer::InvTransform	7	8	15	10	25	98	1	8
Transformer::InvTransform	5	8	11	10	21	78	1	8
Transformer::TransformList	14	7	25	15	40	176	2	9
Transformer::TransformList	14	11	37	23	60	279	2	11
Transformer::InvTransformList	19	16	50	32	82	421	2	14
Transformer::InvTransformList	19	20	58	38	96	507	2	16
Transformer::TransformRect	10	12	85	36	121	540	1	12
Transformer::TransformRect	8	12	69	36	105	454	1	12
Transformer::InvTransformRect	10	12	85	36	121	540	1	14
Transformer::InvTransformRect	8	12	69	36	105	454	1	14
Transformer::operator==	6	7	20	18	38	141	1	6
Transformer::operator!=	6	7	20	18	38	141	1	6
Transformer::operator=	7	7	23	18	41	156	1	9
Transformer::Transform	7	10	17	12	29	119	1	4
Transformer::Transform	5	10	13	12	25	98	1	4
	214	265	891	608	1499	6469	31	289
TElement::TElement	3	7	8	7	15	50	1	6
TElement::TElement	3	7	8	7	15	50	1	5
TElement::TElement	3	6	8	7	15	48	1	5
TElement::~TElement	3	1	3	1	4	8	1	3
TElement::HSetShape	13	12	43	29	72	334	2	15
TElement::VSetShape	13	12	43	29	72	334	2	15
TElement::Series	13	7	49	41	90	389	4	20
TElement::Parallel	19	10	77	57	134	651	4	21
TElement::Reverse	6	7	17	14	31	115	1	10
TElement::Limit	8	3	10	4	14	48	1	3
	84	72	266	196	462	2027	18	103
TList::TList	4	4	9	4	13	39	1	2
TList::First	3	1	3	1	4	8	1	1
TList::Last	3	1	3	1	4	8	1	1
TList::End	4	1	4	1	5	12	1	1
TList::Next	3	1	3	1	4	8	1	1
TList::Prev	3	1	3	1	4	8	1	1
TList::Empty	5	1	5	1	6	16	1	1
TList::SetContents	3	2	3	2	5	12	1	1
TList::GetContents	3	1	3	1	4	8	1	1
TList::Append	5	3	13	10	23	69	1	6
TList::Prepend	5	3	13	10	23	69	1	6
TList::Remove	4	3	16	15	31	87	1	5
TList::~TList	12	1	17	2	19	70	2	9
TList::Delete	10	3	14	6	20	74	2	9
TList::Find	13	4	22	10	32	131	3	10
	80	30	131	66	197	619	19	55
TElementList::GetElem	6	1	7	1	8	22	1	2
TElementList::Append	1	1	1	1	2	1	1	1
TElementList::Remove	1	1	1	1	2	1	1	1
TElementList::Delete	1	1	1	1	2	1	1	1
TElementList::Includes	6	2	6	2	8	24	1	1
TElementList::First	7	1	8	1	9	27	1	2
TElementList::End	7	1	8	1	9	27	1	2
TElementList::Next	7	1	8	1	9	27	1	2
TElementList::Empty	6	1	6	1	7	20	1	1
TElementList::OnlyOne	10	1	12	1	13	45	1	1
TElementList::OnlyTwo	13	1	19	1	20	76	1	2
TElementList::TElementList	1	1	1	1	2	1	1	1
TElementList::Copy	15	2	27	7	34	139	2	9
TElementList::Includes	15	6	30	11	41	180	3	11
	96	21	135	31	166	591	17	37
TTermination::TTermination	3	8	9	8	17	59	1	9
	3	8	9	8	17	59	1	9
TLoop::TLoop	3	6	7	6	13	41	1	6

	3	6	7	6	13	41	1	6
TNode::Includes	6	3	7	4	11	35	1	3
TNode::Empty	7	2	10	2	12	38	1	1
TNode::SetPosition	3	2	3	2	5	12	1	1
TNode::GetPosition	3	1	3	1	4	8	1	1
TNode::LeftBottomElements	3	1	3	1	4	8	1	1
TNode::RightTopElements	3	1	3	1	4	8	1	1
TNode::TNode	3	6	7	6	13	41	1	5
TNode::TNode	12	10	49	18	67	299	4	18
TNode::~TNode	3	2	5	2	7	16	1	1
TNode::DeleteElements	14	3	31	10	41	168	2	9
	57	31	121	47	168	633	14	41
TNode::Degenerate	6	3	7	4	11	35	1	5
TNode::Degenerate	15	8	62	17	79	357	5	16
TNode::Series	15	6	45	12	57	250	3	13
TNode::Stub	14	5	44	11	55	234	3	11
TNode::Loop	15	6	33	12	45	198	3	11
	65	28	191	56	247	1074	15	56
TNodeList::Includes	7	2	7	2	9	29	1	2
TNodeList::GetNode	6	1	7	1	8	22	1	1
TNodeList::FoundParallel	10	3	20	8	28	104	1	7
TNodeList::Append	1	1	1	1	2	1	1	1
TNodeList::Remove	1	1	1	1	2	1	1	1
TNodeList::Delete	1	1	1	1	2	1	1	1
TNodeList::First	7	1	8	1	9	27	1	1
TNodeList::End	7	1	8	1	9	27	1	1
TNodeList::Next	7	1	8	1	9	27	1	1
TNodeList::Last	7	1	8	1	9	27	1	1
TNodeList::Empty	6	1	6	1	7	20	1	1
TNodeList::OnlyOne	10	1	12	1	13	45	1	1
TNodeList::Inverse	6	3	6	4	10	32	2	2
TNodeList::TNodeList	1	1	1	1	2	1	1	1
TNodeList::Copy	16	3	32	9	41	174	2	11
TNodeList::Include	26	4	92	28	120	589	6	30
TNodeList::Exclude	21	6	48	18	66	314	4	18
TNodeList::Degenerate	11	4	21	6	27	105	1	10
TNodeList::FoundTermination	21	14	64	34	98	503	4	25
TNodeList::FoundSeries	17	8	36	15	51	237	3	14
TNodeList::FoundStub	15	5	31	10	41	177	3	12
TNodeList::FoundParallel	16	6	32	11	43	192	3	12
TNodeList::FoundParallel	17	11	67	28	95	457	5	26
TNodeList::FoundCrossover	16	5	31	10	41	180	3	12
TNodeList::FoundLoop	19	9	46	21	67	322	3	16
TNodeList::FoundCrossover	19	12	77	32	109	540	5	28
TNodeList::OtherNode	16	5	33	12	45	198	3	12
TNodeList::RemoveTermination	10	4	17	9	26	99	1	8
TNodeList::RemoveSeries	17	8	47	24	71	330	3	19
TNodeList::Reverse	10	5	28	12	40	156	1	12
TNodeList::RemoveParallel	9	6	32	15	47	184	1	13
TNodeList::RemoveLoop	15	6	31	17	48	211	2	12
TNodeList::ReplaceTermination	22	12	64	37	101	514	2	18
TNodeList::ReplaceSeries	20	10	64	30	94	461	3	19
TNodeList::ReplaceParallel	9	5	24	11	35	133	1	13
TNodeList::ReplaceLoop	17	8	43	23	66	306	2	13
TNodeList::FindElements	21	7	57	29	86	413	3	24
TNodeList::FindElement	19	6	49	22	71	330	3	18
TNodeList::FindElements	18	9	43	21	64	304	4	21
TNodeList::FindElement	15	6	32	13	45	198	3	12
TNodeList::Nodes	20	9	47	24	71	345	4	17
	529	212	1282	546	1828	8336	93	467
TNodeList::ApplyToLoop	7	6	15	10	25	93	1	6
	7	6	15	10	25	93	1	6
TSolver::TSolver	4	11	16	11	27	105	1	8
TSolver::~TSolver	5	2	11	4	15	42	1	6
TSolver::DeleteNodesAndElements	18	4	50	17	67	299	3	17
TSolver::AddAlignment	16	10	74	38	112	526	3	23
TSolver::AddAlignment	20	13	84	48	132	666	4	26
TSolver::HOrder	11	10	27	22	49	215	3	11
TSolver::VOrder	11	10	27	22	49	215	3	11
TSolver::DeleteAlignmentsTo	12	9	81	46	127	558	1	25
TSolver::SetShape	14	6	45	18	63	272	3	19
TSolver::Solve	10	11	43	26	69	303	3	14

TSolver::CalcShape	12	23	69	56	125	641	3	18
TSolver::GetPlacement	9	11	23	15	38	164	1	8
TSolver::GetPlacement	14	13	37	26	63	300	2	17
TSolver::Solve	48	19	258	144	402	2439	12	63
TSolver::HConvert	14	11	55	34	89	413	3	20
TSolver::HConvert	13	7	32	18	50	216	3	14
TSolver::VConvert	14	11	55	34	89	413	3	20
TSolver::VConvert	13	7	32	18	50	216	3	14
TSolver::HAddAlignment	13	25	117	67	184	966	25	60
TSolver::VAddAlignment	13	25	117	67	184	966	25	60
TSolver::Include	11	10	58	37	95	417	4	19
TSolver::TrayNodes	13	8	28	17	45	198	2	12
TSolver::UpdateMagicNodes	5	6	11	6	17	59	1	4
TSolver::DeleteDanglingGlue	11	5	16	8	24	96	2	8
TSolver::BgFilter	6	3	6	4	10	32	2	3
	330	270	1372	803	2175	10737	116	500
TGlue::TGlue	5	12	22	19	41	168	1	11
TGlue::TGlue	5	13	22	19	41	171	1	9
TGlue::~TGlue	3	1	3	1	4	8	1	3
	13	26	47	39	86	347	3	23
Tray::TrayOrBg	6	2	7	3	10	30	1	2
Tray::Tray	4	1	4	1	5	12	1	3
Tray::Tray	5	2	7	2	9	25	1	4
Tray::Init	8	9	18	11	29	119	1	8
Tray::~Tray	9	7	25	16	41	164	3	14
Tray::ComponentBounds	12	12	35	25	60	275	2	12
Tray::CalcShape	17	8	41	19	60	279	2	13
Tray::Reconfig	10	6	18	10	28	112	2	8
Tray::DoInsert	11	8	28	19	47	200	2	13
Tray::DoChange	6	2	8	2	10	30	1	4
Tray::DoRemove	15	11	60	37	97	456	6	27
Tray::Resize	17	13	52	32	84	412	4	18
Tray::AlreadyInserted	12	9	28	16	44	193	4	14
Tray::PlaceElement	18	16	73	55	128	651	2	20
Tray::Draw	10	7	27	14	41	168	4	12
	160	113	431	262	693	3126	36	172
Tray::HBox	28	18	104	66	170	939	6	28
Tray::VBox	28	18	104	66	170	939	6	28
	56	36	208	132	340	1878	12	56
Viewport::Viewport	5	2	5	2	7	20	1	28
Viewport::Viewport	6	3	8	3	11	35	1	4
Viewport::Viewport	5	2	5	2	7	20	1	5
Viewport::Init	14	10	26	13	39	179	2	10
Viewport::~Viewport	4	2	7	2	9	23	1	4
Viewport::Redraw	6	6	9	6	15	54	1	3
Viewport::Reconfig	12	21	58	45	103	520	1	17
Viewport::DoMove	10	9	21	15	36	153	1	6
Viewport::Resize	16	15	52	28	80	396	1	12
Viewport::Adjust	12	17	41	29	70	340	1	18
Viewport::DoAdjust	18	25	95	67	162	879	5	24
Viewport::AdjustTo	5	4	7	4	11	35	1	3
Viewport::AdjustBy	11	4	19	4	23	90	1	3
Viewport::ScrollTo	7	2	11	2	13	41	1	3
Viewport::ScrollXTo	8	1	13	1	14	44	1	3
Viewport::ScrollYTo	8	1	13	1	14	44	1	3
Viewport::ScrollBy	10	2	17	2	19	68	1	3
Viewport::ScrollXBy	10	1	16	1	17	59	1	3
Viewport::ScrollYBy	10	1	16	1	17	59	1	3
Viewport::ZoomTo	7	2	11	2	13	41	1	3
Viewport::ZoomXTo	8	1	13	1	14	44	1	3
Viewport::ZoomYTo	8	1	13	1	14	44	1	3
Viewport::ZoomBy	10	2	17	2	19	68	1	3
Viewport::ZoomXBy	10	1	16	1	17	59	1	3
Viewport::ZoomYBy	10	1	16	1	17	59	1	3
Viewport::XPos	10	8	18	12	30	125	1	6
Viewport::YPos	10	8	18	12	30	125	1	6
Viewport::XMag	7	3	7	3	10	33	1	3
Viewport::YMag	7	3	7	3	10	33	1	3
	264	158	575	266	841	3690	34	191
World::World	10	5	22	7	29	113	1	7
World::World	10	6	27	10	37	148	1	10

World::World	20	14	47	24	71	361	2	14
World::World	8	4	15	4	19	68	1	8
World::Setup	20	9	43	20	63	306	4	16
World::LoadUserDefaults	17	9	45	21	66	310	4	19
World::ParseArgs	30	35	225	132	357	2150	20	76
World::InsertPopup	16	15	44	33	77	381	2	19
World::InsertPopup	7	5	11	6	17	61	1	4
World::InsertTransient	8	3	16	7	23	80	1	6
World::InsertTransient	9	6	19	10	29	113	1	8
World::InsertToplevel	7	3	12	5	17	56	1	5
World::InsertToplevel	8	6	15	8	23	88	1	7
World::InsertApplication	6	2	8	3	11	33	1	4
World::InsertApplication	7	5	11	6	17	61	1	6
World::InsertIcon	6	2	8	3	11	33	1	4
World::InsertIcon	7	5	11	6	17	61	1	6
World::DoInsert	22	11	67	42	109	550	3	20
World::GetGeometry	15	15	64	39	103	505	6	29
World::Width	4	2	4	2	6	16	1	3
World::Height	4	2	4	2	6	16	1	3
World::InvMapX	3	1	3	1	4	8	1	3
World::InvMapY	5	4	6	4	10	32	1	3
	249	169	727	395	1122	5550	57	280
WorldView::WorldView	14	8	34	16	50	223	2	37
WorldView::~WorldView	1	1	1	1	2	1	1	3
WorldView::InsertRemote	4	1	4	1	5	12	1	3
WorldView::ChangeRemote	5	5	8	5	13	43	1	5
WorldView::Choose	14	9	36	16	52	235	4	15
WorldView::FreeList	3	1	3	1	4	8	1	3
	41	25	86	40	126	522	10	66
Blanket::Blanket	3	4	5	4	9	25	1	4
Blanket::Reconfig	7	4	8	5	13	45	1	3
	10	8	13	9	22	70	2	7
WorldView::RedrawAll	9	3	16	7	23	82	1	7
	9	3	16	7	23	82	1	7

The order for the following table is: class name, public variables, public functions, protected variables, protected functions, private variables, private functions, total members, inline members, virtual members, friend functions, friend classes.

Action	0	1	0	2	0	0	3	0	2	0	0
Macro	0	9	0	0	1	0	10	0	8	0	0
Adjustable	0	25	0	0	1	0	26	0	24	0	0
Aggregate	0	16	0	0	1	0	17	0	15	0	0
Align	0	4	0	0	1	0	5	0	3	0	0
AllocationInfo	0	7	0	0	6	0	13	0	0	1	0
AllocationTable	0	7	0	0	1	0	8	0	6	0	0
ArrayCompositor	0	3	0	0	1	0	4	0	2	0	0
Background	0	5	0	0	1	0	6	0	4	0	0
Bitmap	0	34	0	1	1	0	36	0	12	0	0
Border	0	6	0	0	2	0	8	0	4	0	0
Box	0	11	0	0	1	0	12	0	9	0	0
Brush	0	7	0	1	1	1	10	0	2	0	0
Canvas	3	51	0	0	1	0	55	0	47	0	0
Character	0	7	0	0	10	0	17	0	6	0	0
Color	3	17	0	0	1	3	24	0	5	0	0
Compositor	0	3	0	0	0	0	3	0	2	0	0
Cursor	0	7	0	0	1	0	8	0	0	0	0
DebugGlyph	16	9	0	0	2	0	27	0	6	0	0
Deck	0	12	0	0	4	0	16	0	9	0	0
Dialog	0	6	0	0	2	0	8	0	5	0	0
Display	0	39	0	1	3	0	43	0	33	0	0
Event	20	40	0	0	3	8	71	0	34	1	0
FontFamily	0	5	0	0	1	2	8	0	3	0	0
FontBoundingBox	0	7	0	0	7	0	14	0	0	1	0
Font	0	25	0	1	1	0	27	0	11	1	0
CoordinateSpace	4	0	0	0	0	0	4	0	0	0	0
Requirement	0	14	0	0	4	0	18	0	0	0	0
Requisition	0	14	0	0	3	0	17	0	0	0	0
Allotment	0	12	0	0	3	0	15	0	0	0	0
Allocation	0	18	0	0	2	0	20	0	0	0	0
Extension	0	14	0	0	4	0	18	0	0	0	0
GLContext	0	3	0	0	1	0	4	0	2	0	0
Glue	0	5	0	0	1	0	6	0	3	0	0
Glyph	4	18	0	1	0	0	23	0	18	0	0
Group	0	5	0	0	5	0	10	0	3	0	0
Handler	0	1	0	2	0	0	3	0	2	0	0
Hit	0	23	0	1	1	1	26	0	20	0	0
Image	0	5	0	0	1	0	6	0	4	0	0
InputHandler	0	27	0	3	1	0	31	0	29	1	0
ActiveHandler	0	6	0	1	1	0	8	0	6	0	0
Label	0	8	0	0	9	1	18	0	5	0	0
Layout	0	3	0	1	0	0	4	0	3	0	0
LayoutKit	0	94	0	2	0	0	96	0	67	0	0
LRMarker	0	8	0	0	15	0	23	0	4	0	0
MonoGlyph	0	18	0	1	1	0	20	0	18	0	0
Observable	0	5	0	0	1	0	6	0	4	0	0
Observer	0	3	0	1	0	0	4	0	3	0	0
Page	0	27	0	0	4	0	31	0	16	0	0
Patch	0	12	0	0	4	0	16	0	7	0	0
Pattern	5	6	0	0	1	1	13	0	1	0	0
Placement	0	7	0	0	1	0	8	0	6	0	0
CenterLayout	0	4	0	0	3	0	7	0	3	0	0
FixedLayout	0	4	0	0	2	0	6	0	3	0	0
VariableLayout	0	4	0	0	3	0	7	0	3	0	0
NaturalLayout	0	4	0	0	2	0	6	0	3	0	0
MarginLayout	0	7	0	0	13	1	21	0	3	0	0
PolyGlyph	0	12	0	0	1	0	13	0	11	0	0
Printer	0	26	0	1	1	0	28	0	26	0	0
PSFont	0	8	0	0	1	0	9	0	6	0	0
Raster	0	17	0	1	1	0	19	0	12	0	0
Regexp	0	7	0	0	2	0	9	0	0	0	0
ReqErr	5	4	0	0	0	0	9	0	2	0	0
Resource	0	13	0	0	1	1	15	2	8	0	0
Rule	0	5	0	0	3	0	8	0	4	0	0
HRule	0	2	0	0	0	0	2	0	1	0	0
VRule	0	2	0	0	0	0	2	0	1	0	0
ScrollBox	0	0	0	5	0	0	5	0	4	0	0
TBScrollBox	0	23	0	0	1	3	27	0	22	0	0
SelectionManager	0	8	0	0	1	0	9	0	5	0	0
SelectionHandler	0	2	0	1	0	0	3	0	2	0	0
PropertyData	2	0	0	0	0	0	2	0	0	0	0
OptionDesc	4	0	0	0	0	0	4	0	0	0	0

Session	0	22	0	0	1	0	23	0	13	0	0
Shadow	0	7	0	0	4	5	16	0	6	0	0
SimpleCompositor	0	3	0	0	0	0	3	0	2	0	0
Stencil	0	5	0	0	2	0	7	0	4	0	0
Style	0	40	0	0	1	1	42	0	20	1	0
Superpose	0	4	0	0	2	0	6	0	3	0	0
Target	0	3	0	0	1	0	4	0	2	0	0
TelltaleState	19	7	0	0	2	0	28	0	5	0	0
Telltale	0	10	0	1	1	0	12	0	4	0	0
TelltaleGroup	0	4	0	0	1	0	5	0	3	0	0
TeXCompositor	0	3	0	0	1	0	4	0	2	0	0
TransformSetter	0	11	0	1	2	1	15	0	10	0	0
TransformFitter	0	2	0	1	0	0	3	0	2	0	0
TIFFRaster	0	1	0	0	0	0	1	0	0	0	0
Tile	0	4	0	0	2	0	6	0	3	0	0
TileReversed	0	4	0	0	2	0	6	0	3	0	0
TileFirstAligned	0	4	0	0	2	0	6	0	3	0	0
TileReversedFirst	0	4	0	0	2	0	6	0	3	0	0
Transformer	0	47	0	0	7	2	56	0	13	0	0
Window	0	34	0	8	1	0	43	0	38	1	0
ManagedWindow	0	13	0	3	1	0	17	0	14	0	0
ApplicationWindow	0	2	0	2	0	0	4	0	2	0	0
TopLevelWindow	0	4	0	1	0	0	5	0	3	0	0
TransientWindow	0	4	0	2	0	0	6	0	4	0	0
PopupWindow	0	2	0	1	0	0	3	0	1	0	0
IconWindow	0	2	0	1	0	0	3	0	1	0	0
XYMarker	0	7	0	0	8	0	15	0	4	0	0

The order for the following table is: class name, public members, weighted methods per class (WMC), depth of inheritance tree (DIT), number of children (NOC), Stability* (stab), vocabulary (n), length (N), lines of code (LOC), cyclomatic complexity (VG), volume (VOL), coupling between objects (CBO).

Action	1	3	1	1	1.0000	4	4	25	2	2	0
Macro	9	9	2	0	0.0909	63	100	27	8	399	1
Aggregate	16	16	2	0	0.0024	310	619	122	28	3009	7
Align	4	4	1	0	0.0127	98	447	100	10	2436	2
AllocationInfo	7	7	0	0	0.0667	29	29	223	7	60	1
ArrayCompositor	3	3	1	0	0.1429	35	64	41	4	287	0
Background	5	5	3	0	0.0041	76	185	61	9	804	6
Bitmap	34	35	1	0	0.0081	32	33	84	5	91	3
Border	6	6	3	0	0.0035	93	292	85	8	1303	6
Box	11	11	3	0	0.0018	425	1073	234	42	5387	9
Canvas	51	51	0	1	0.0025	4	4	109	1	8	7
Character	7	7	2	0	0.0032	130	305	80	11	1408	7
Compositor	3	3	0	3	0.1667	8	8	36	3	10	0
Cursor	7	7	0	0	0.0039	4	4	140	1	8	3
Deck	12	12	3	0	0.0031	290	499	134	29	2256	7
Display	39	40	0	0	0.0049	27	30	109	4	102	4
Event	40	48	0	0	0.0050	10	10	58	2	24	4
FontBoundingBox	7	7	0	0	1.0000	28	28	37	7	56	0
Requirement	14	14	0	0	0.0556	127	380	110	21	1658	1
Requisition	14	14	0	0	0.0137	96	126	44	20	395	2
Allotment	12	12	0	0	0.0625	89	142	34	15	492	1
Allocation	18	18	0	0	0.0135	131	184	47	26	616	2
Extension	14	14	0	0	0.0029	69	132	45	12	472	3
Glue	5	5	2	0	0.0086	33	39	43	5	121	4
Glyph	18	19	1	11	0.0024	79	116	54	19	379	8
Group	5	5	2	0	0.0085	110	241	77	14	1167	5
Handler	1	3	1	0	0.0164	4	4	28	2	2	1
Hit	23	25	0	0	0.0055	351	606	110	32	2670	4
Image	5	5	2	0	0.0053	88	199	71	10	864	5
Label	8	9	2	0	0.0025	174	428	102	12	1995	7
Layout	3	4	0	11	0.0127	8	8	32	4	4	2
LayoutKit	94	96	0	0	0.0037	237	266	389	26	862	8
LRMarker	8	8	3	0	0.0045	154	576	137	21	2818	5
MonoGlyph	18	19	2	13	0.0023	215	287	116	32	1060	8
Page	27	27	2	0	0.0023	576	1443	248	54	7636	8
Patch	12	12	3	0	0.0049	97	159	221	14	595	5
Pattern	6	7	1	0	1.0000	4	4	27	1	8	0
Printer	26	27	1	0	0.0047	563	1526	309	45	7903	6
PSFont	8	8	2	0	0.1250	107	229	81	15	1117	0
Raster	17	18	1	0	0.0312	17	19	134	3	48	1
Regexp	7	7	0	0	0.0769	178	592	149	29	3189	0
Resource	13	14	0	15	0.0250	109	199	76	17	857	1
Rule	5	5	2	2	0.0052	57	86	47	6	320	5
HRule	2	2	3	0	0.0476	4	4	2	2	2	1
VRule	2	2	3	0	0.0476	4	4	2	2	2	1
Session	22	22	0	0	0.0027	268	414	136	32	1716	5
Stencil	5	5	2	0	0.0044	85	203	69	8	875	6

Superpose	4	4	1	0	0.0106	82	299	1108	19	1342	3
Target	3	3	3	0	0.0084	52	174	58	11	930	4
TelltaleState	7	7	2	0	1.0000	4	4	282	1	8	0
TeXCompositor	3	3	1	0	0.1429	59	176	45	7	976	0
TransformSetter	11	13	3	1	0.0022	145	562	112	11	2968	8
TIFFRaster	1	1	0	0	0.5000	10	10	4	1	33	0
Tile	4	4	1	0	0.0127	108	602	120	16	3391	2
TileReversed	4	4	1	0	0.0127	108	605	97	16	3408	2
Transformer	47	49	1	0	0.0020	719	1856	514	53	7887	1
Window	34	42	0	2	0.0046	4	4	27	1	8	4
ManagedWindow	13	16	1	3	0.0118	4	4	1	1	8	3
XYMarker	7	7	3	0	0.0045	117	525	111	22	2462	5

CLASSNAME	n1	n2	N1	N2	N	V	VG	LOC
Action::Action	1	1	1	1	2	1	1	24
Action::~Action	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	25
Macro::Macro	8	6	18	6	24	91	1	7
Macro::~Macro	14	5	21	11	32	136	3	8
Macro::append	11	4	15	8	23	90	2	7
Macro::execute	11	4	14	7	21	82	2	5
	44	19	68	32	100	399	8	27
AggregateInfo::AggregateInfo	3	2	3	2	5	12	1	29
	3	2	3	2	5	12	1	29
Aggregate::Aggregate	5	2	5	2	7	20	1	3
Aggregate::~Aggregate	15	9	28	19	47	215	2	9
Aggregate::count	6	1	6	1	7	20	1	3
Aggregate::component	7	3	7	3	10	33	1	3
Aggregate::allotment	8	5	10	5	15	56	1	5
Aggregate::allot	10	7	13	8	21	86	1	4
Aggregate::change	1	1	1	1	2	1	1	1
Aggregate::append	9	5	12	7	19	72	1	6
Aggregate::prepend	9	5	12	7	19	72	1	6
Aggregate::insert	10	6	13	8	21	84	1	6
Aggregate::remove	8	5	10	5	15	56	1	5
Aggregate::replace	8	4	13	8	21	75	1	6
Aggregate::allocate	20	17	52	36	88	458	3	13
Aggregate::draw	21	17	60	37	97	509	4	16
Aggregate::print	21	17	60	37	97	509	4	16
Aggregate::pick	27	21	84	49	133	743	4	20
	185	125	386	233	619	3009	28	122
Align::Align	3	2	3	2	5	12	1	29
Align::~Align	1	1	1	1	2	1	1	1
Align::request	27	18	158	83	241	1324	3	40
Align::allocate	32	14	140	59	199	1099	5	30
	63	35	302	145	447	2436	10	100
ArrayCompositor::ArrayComposito	3	2	3	2	5	12	1	26
ArrayCompositor::~ArrayComposit	1	1	1	1	2	1	1	1
ArrayCompositor::compose	18	10	33	24	57	274	2	14
	22	13	37	27	64	287	4	41
Background::Background	6	3	7	4	11	35	1	30
Background::~Background	5	2	5	2	7	20	1	3
Background::allocate	8	4	11	6	17	61	1	4
Background::draw	14	10	43	32	75	344	3	12
Background::print	14	10	43	32	75	344	3	12
	47	29	109	76	185	804	9	61
Border::Border	6	5	9	6	15	52	1	31
Border::Border	6	5	9	6	15	52	1	5
Border::~Border	5	2	5	2	7	20	1	3
Border::allocate	8	4	11	6	17	61	1	4
Border::draw	15	11	66	53	119	559	2	21
Border::print	15	11	66	53	119	559	2	21
	55	38	166	126	292	1303	8	85

BoxAllocation::BoxAllocation	1	1	1	1	2	1	1	27
	1	1	1	1	2	1	1	27
Box::Box	6	10	17	12	29	116	1	8
Box::Box	10	20	87	42	129	633	11	42
Box::~Box	15	11	36	25	61	287	2	13
Box::count	6	1	6	1	7	20	1	3
Box::component	7	3	7	3	10	33	1	3
Box::allotment	8	5	10	5	15	56	1	3
Box::change	3	5	7	6	13	39	1	5
Box::append	9	12	23	16	39	171	1	11
Box::prepend	9	12	23	16	39	171	1	11
Box::insert	10	13	25	18	43	195	1	11
Box::remove	9	11	20	13	33	143	1	9
Box::replace	8	9	19	14	33	135	1	9
Box::request	23	19	62	41	103	555	4	18
Box::allocate	28	20	135	72	207	1156	3	37
Box::draw	21	17	58	34	92	483	4	16
Box::print	21	17	58	34	92	483	4	16
Box::pick	27	20	82	46	128	711	4	19
	220	205	675	398	1073	5387	42	234
LRBox::LRBox	1	1	1	1	2	1	1	6
LRBox::LRBox	1	1	1	1	2	1	1	7
LRBox::~LRBox	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	14
TBBox::TBBox	1	1	1	1	2	1	1	6
TBBox::TBBox	1	1	1	1	2	1	1	7
TBBox::~TBBox	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	14
Overlay::Overlay	1	1	1	1	2	1	1	7
Overlay::~Overlay	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	8
Center::Center	3	7	9	8	17	56	1	34
Center::Center	7	10	22	16	38	155	3	13
Center::~Center	1	1	1	1	2	1	1	1
Center::request	17	15	57	31	88	440	3	16
Center::allocate	19	14	75	34	109	550	3	16
Center::draw	6	3	6	3	9	29	1	3
Center::print	6	3	6	3	9	29	1	3
	59	53	176	96	272	1260	13	86
HCenter::HCenter	1	1	1	1	2	1	1	3
HCenter::~HCenter	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	4
VCenter::VCenter	1	1	1	1	2	1	1	3
VCenter::~VCenter	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	4
Character::Character	21	16	69	48	117	610	3	50
Character::~Character	5	3	9	4	13	39	1	4
Character::code	3	1	3	1	4	8	1	1
Character::request	8	8	25	14	39	156	1	6
Character::allocate	9	9	20	17	37	154	1	7
Character::pick	20	10	42	22	64	314	3	9
Character::draw	12	5	23	8	31	127	1	3
	78	52	191	114	305	1408	11	80
Compositor::Compositor	1	1	1	1	2	1	1	27
Compositor::~Compositor	1	1	1	1	2	1	1	1
Compositor::compose	3	1	3	1	4	8	1	8
	5	3	5	3	8	10	3	36
Deck::Deck	6	3	8	3	11	35	1	27
Deck::~Deck	15	9	28	19	47	215	2	9
Deck::card	3	1	3	1	4	8	1	3
Deck::flip_to	3	2	3	2	5	12	1	3

Deck::append	9	5	12	7	19	72	1	6
Deck::prepend	9	5	12	7	19	72	1	6
Deck::insert	10	6	13	8	21	84	1	6
Deck::remove	8	5	10	5	15	56	1	5
Deck::replace	8	4	13	8	21	75	1	6
Deck::count	6	1	6	1	7	20	1	3
Deck::component	7	3	7	3	10	33	1	3
Deck::request	22	14	57	33	90	465	3	15
Deck::allocate	19	13	36	26	62	310	4	10
Deck::draw	16	10	28	18	46	216	3	9
Deck::print	16	10	28	18	46	216	3	9
Deck::pick	20	13	42	25	67	338	3	11
Deck::allotment	6	3	6	3	9	29	1	3
	183	107	312	187	499	2256	29	134
Discretionary::Discretionary	9	8	27	16	43	176	3	36
Discretionary::Discretionary	9	11	43	22	65	281	5	21
Discretionary::~Discretionary	8	5	33	12	45	167	5	14
Discretionary::request	10	4	13	6	19	72	2	6
Discretionary::compose	7	10	32	13	45	184	5	13
	43	38	148	69	217	880	20	90
FixedSpan::FixedSpan	3	4	5	4	9	25	1	32
FixedSpan::~FixedSpan	1	1	1	1	2	1	1	1
FixedSpan::request	13	7	26	13	39	169	1	6
FixedSpan::allocate	14	9	32	16	48	217	1	7
FixedSpan::draw	6	3	6	3	9	29	1	3
FixedSpan::print	6	3	6	3	9	29	1	3
	43	27	76	40	116	470	6	52
Requirement::Requirement	18	15	126	78	204	1029	4	37
Requirement::equals	12	9	56	25	81	356	5	13
	30	24	182	103	285	1385	9	50
Requisition::Requisition	3	2	3	2	5	12	1	4
Requisition::Requisition	4	2	4	3	7	18	1	3
Requisition::equals	8	4	14	8	22	79	1	3
Requisition::require	8	6	16	7	23	88	3	10
Requisition::requirement	7	5	12	5	17	61	3	8
Requisition::requirement	7	5	12	5	17	61	3	8
	37	24	61	30	91	319	12	36
Allotment::equals	12	8	43	19	62	268	4	11
	12	8	43	19	62	268	4	11
Allocation::Allocation	1	1	1	1	2	1	1	2
Allocation::Allocation	1	1	1	1	2	1	1	1
Allocation::allot	7	6	14	8	22	81	3	7
Allocation::allotment	10	7	24	10	34	139	4	11
Allocation::allotment	10	7	24	10	34	139	4	11
Allocation::equals	8	4	14	8	22	79	1	3
	37	26	78	38	116	440	14	35
Extension::Extension	3	5	9	8	17	51	1	7
Extension::Extension	4	5	13	12	25	79	1	6
Extension::extent	8	9	20	11	31	127	3	12
Extension::get_extent	9	10	28	15	43	183	3	16
	24	29	70	46	116	440	8	41
Glue::Glue	7	7	13	7	20	76	1	33
Glue::Glue	3	2	3	2	5	12	1	3
Glue::~Glue	1	1	1	1	2	1	1	1
Glue::request	3	2	3	2	5	12	1	3
Glue::allocate	5	2	5	2	7	20	1	3
	19	14	25	14	39	121	5	43
HGlue::HGlue	1	1	1	1	2	1	1	1
HGlue::HGlue	1	1	1	1	2	1	1	1
HGlue::HGlue	1	1	1	1	2	1	1	3
HGlue::HGlue	1	1	1	1	2	1	1	3
HGlue::~HGlue	1	1	1	1	2	1	1	1

	5	5	5	5	10	5	5	9
VGlue::VGlue	1	1	1	1	2	1	1	1
VGlue::VGlue	1	1	1	1	2	1	1	1
VGlue::VGlue	1	1	1	1	2	1	1	3
VGlue::VGlue	1	1	1	1	2	1	1	3
VGlue::~VGlue	1	1	1	1	2	1	1	1
	5	5	5	5	10	5	5	9
Glyph::Glyph	1	1	1	1	2	1	1	27
Glyph::~Glyph	1	1	1	1	2	1	1	1
Glyph::request	1	1	1	1	2	1	1	1
Glyph::allocate	1	1	1	1	2	1	1	1
Glyph::draw	1	1	1	1	2	1	1	1
Glyph::print	5	2	5	2	7	20	1	1
Glyph::pick	17	7	40	17	57	261	2	7
Glyph::compose	8	4	9	5	14	50	2	3
Glyph::append	1	1	1	1	2	1	1	1
Glyph::prepend	1	1	1	1	2	1	1	1
Glyph::insert	1	1	1	1	2	1	1	1
Glyph::remove	1	1	1	1	2	1	1	1
Glyph::replace	1	1	1	1	2	1	1	1
Glyph::change	1	1	1	1	2	1	1	1
Glyph::count	3	1	3	1	4	8	1	1
Glyph::component	3	1	3	1	4	8	1	1
Glyph::allotment	3	3	4	4	8	21	1	4
	50	29	75	41	116	379	19	54
Group::Group	12	10	23	13	36	161	2	33
Group::~Group	9	3	11	4	15	54	2	6
Group::map	5	3	6	4	10	30	1	4
Group::request	18	12	42	25	67	329	4	13
Group::allocate	23	15	70	43	113	593	5	21
	67	43	152	89	241	1167	14	77
Handler::Handler	1	1	1	1	2	1	1	27
Handler::~Handler	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	28
HitImpl::HitImpl	6	13	22	19	41	174	1	38
HitImpl::~HitImpl	17	5	36	10	46	205	3	9
	23	18	58	29	87	379	4	47
Hit::Hit	3	2	3	2	5	12	1	1
Hit::Hit	9	6	21	14	35	137	1	6
Hit::Hit	6	3	8	5	13	41	1	3
Hit::Hit	6	5	8	5	13	45	1	3
Hit::~Hit	3	1	3	1	4	8	1	3
Hit::event	4	2	4	2	6	16	1	1
Hit::left	7	4	8	4	12	42	1	1
Hit::bottom	7	4	8	4	12	42	1	1
Hit::right	7	4	8	4	12	42	1	1
Hit::top	7	4	8	4	12	42	1	1
Hit::push_transform	10	6	15	9	24	96	1	5
Hit::transform	11	11	25	17	42	187	1	6
Hit::pop_transform	12	5	16	8	24	98	2	6
Hit::begin	8	16	31	25	56	257	1	10
Hit::target	19	20	50	33	83	439	2	13
Hit::end	21	20	71	47	118	632	5	20
Hit::remove	15	10	32	26	58	269	3	10
Hit::retarget	6	6	9	6	15	54	1	5
Hit::any	8	3	8	3	11	38	1	1
Hit::count	7	2	7	2	9	29	1	1
Hit::depth	7	4	8	4	12	42	1	3
Hit::target	8	4	8	4	12	43	1	3
Hit::index	8	4	8	4	12	43	1	3
Hit::handler	4	2	4	2	6	16	1	3
	203	148	371	235	606	2670	32	110
HitImpl::add_item	12	11	23	19	42	190	2	19
HitImpl::item	21	11	55	36	91	455	4	19
	33	22	78	55	133	645	6	38
Image::Image	9	3	11	5	16	57	2	32

Image::~Image	9	2	11	5	16	55	2	6
Image::request	13	11	49	36	85	390	2	18
Image::allocate	17	7	36	19	55	252	2	10
Image::draw	13	4	19	8	27	110	2	5
	61	27	126	73	199	864	10	71
Label::Label	7	7	17	10	27	103	1	33
Label::Label	7	7	17	10	27	103	1	7
Label::Label	8	8	18	11	29	116	1	9
Label::~Label	6	4	11	5	16	53	1	5
Label::request	17	13	53	38	91	447	2	12
Label::allocate	14	8	36	25	61	272	1	11
Label::draw	21	16	57	38	95	495	3	15
Label::pick	21	10	56	26	82	406	2	10
	101	73	265	163	428	1995	12	102
Layout::Layout	1	1	1	1	2	1	1	27
Layout::~Layout	1	1	1	1	2	1	1	1
Layout::request	1	1	1	1	2	1	1	1
Layout::allocate	1	1	1	1	2	1	1	3
	4	4	4	4	8	4	4	32
Listener::Listener	3	9	15	14	29	104	1	32
Listener::Listener	6	11	19	16	35	143	1	10
Listener::~Listener	6	4	9	6	15	50	1	5
Listener::target	7	3	11	6	17	56	1	5
Listener::target	3	1	3	1	4	8	1	1
Listener::motion	3	2	3	2	5	12	1	1
Listener::motion	3	1	3	1	4	8	1	1
Listener::key	3	2	3	2	5	12	1	1
Listener::key	3	1	3	1	4	8	1	1
Listener::button	9	12	46	25	71	312	7	22
Listener::button	10	12	38	20	58	259	7	17
Listener::caught	14	19	70	34	104	525	10	30
Listener::allocate	7	6	11	8	19	70	1	5
Listener::pick	17	9	37	18	55	259	2	10
Listener::picks	10	7	19	7	26	106	1	5
	104	99	290	161	451	1932	37	146
LRMarker::LRMarker	6	10	19	14	33	132	1	37
LRMarker::~LRMarker	6	5	11	6	17	59	1	5
LRMarker::unmark	8	5	14	9	23	85	2	6
LRMarker::bound	15	22	116	86	202	1052	7	25
LRMarker::mark	18	18	107	84	191	987	4	40
LRMarker::allocate	9	5	13	8	21	80	1	5
LRMarker::draw	12	15	52	37	89	423	5	19
	74	80	332	244	576	2818	21	137
Margin::Margin	3	14	25	24	49	200	1	32
Margin::Margin	3	15	25	24	49	204	1	6
Margin::Margin	3	17	25	24	49	212	1	9
Margin::Margin	3	24	25	24	49	233	1	12
Margin::~Margin	1	1	1	1	2	1	1	1
Margin::request	21	22	104	52	156	846	3	19
Margin::allocate	18	32	133	76	209	1180	1	17
Margin::draw	6	3	6	3	9	29	1	3
Margin::print	6	3	6	3	9	29	1	3
	64	131	350	231	581	2934	11	102
HMargin::HMargin	1	1	1	1	2	1	1	3
HMargin::HMargin	1	1	1	1	2	1	1	3
HMargin::HMargin	1	1	1	1	2	1	1	9
HMargin::~HMargin	1	1	1	1	2	1	1	1
	4	4	4	4	8	4	4	16
VMargin::VMargin	1	1	1	1	2	1	1	3
VMargin::VMargin	1	1	1	1	2	1	1	3
VMargin::VMargin	1	1	1	1	2	1	1	9
VMargin::~VMargin	1	1	1	1	2	1	1	1
	4	4	4	4	8	4	4	16
LMargin::LMargin	1	1	1	1	2	1	1	3
LMargin::LMargin	1	1	1	1	2	1	1	3

LMargin::~LMargin	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	7
RMargin::RMargin	1	1	1	1	2	1	1	3
RMargin::RMargin	1	1	1	1	2	1	1	3
RMargin::~RMargin	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	7
TMargin::TMargin	1	1	1	1	2	1	1	3
TMargin::TMargin	1	1	1	1	2	1	1	3
TMargin::~TMargin	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	7
BMargin::BMargin	1	1	1	1	2	1	1	3
BMargin::BMargin	1	1	1	1	2	1	1	3
BMargin::~BMargin	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	7
MonoGlyph::MonoGlyph	6	3	7	4	11	35	1	27
MonoGlyph::~MonoGlyph	5	2	5	2	7	20	1	3
MonoGlyph::body	7	3	11	6	17	56	1	5
MonoGlyph::body	3	1	3	1	4	8	1	1
MonoGlyph::request	8	3	9	4	13	45	2	5
MonoGlyph::allocate	9	5	11	6	17	65	2	5
MonoGlyph::draw	9	4	10	5	15	56	2	5
MonoGlyph::print	9	4	10	5	15	56	2	5
MonoGlyph::pick	11	7	21	12	33	138	2	7
MonoGlyph::append	8	3	9	4	13	45	2	5
MonoGlyph::prepend	8	3	9	4	13	45	2	5
MonoGlyph::insert	9	4	10	5	15	56	2	5
MonoGlyph::remove	8	3	9	4	13	45	2	5
MonoGlyph::replace	9	4	10	5	15	56	2	5
MonoGlyph::count	11	3	17	4	21	80	2	7
MonoGlyph::component	11	4	17	6	23	90	2	7
MonoGlyph::change	8	3	9	4	13	45	2	5
MonoGlyph::allotment	11	6	19	10	29	119	2	9
	150	65	196	91	287	1060	32	116
PageInfo::PageInfo	3	6	9	8	17	54	1	32
	3	6	9	8	17	54	1	32
Page::Page	7	6	13	7	20	74	1	6
Page::~Page	15	11	34	23	57	268	2	11
Page::left	6	1	6	1	7	20	1	1
Page::right	6	1	6	1	7	20	1	1
Page::bottom	6	1	6	1	7	20	1	1
Page::top	6	1	6	1	7	20	1	1
Page::x	6	1	6	1	7	20	1	1
Page::y	6	1	6	1	7	20	1	1
Page::show	22	10	49	23	72	360	4	16
Page::showing	9	5	10	5	15	57	1	3
Page::move	29	25	146	77	223	1283	4	32
Page::location	4	5	7	6	13	41	1	5
Page::count	6	1	6	1	7	20	1	3
Page::component	7	3	7	3	10	33	1	3
Page::allotment	8	5	10	5	15	56	1	3
Page::change	6	3	6	3	9	29	1	4
Page::append	9	9	21	16	37	154	1	9
Page::prepend	9	9	21	16	37	154	1	9
Page::insert	10	10	22	17	39	169	1	9
Page::remove	21	12	40	19	59	298	2	9
Page::replace	23	11	49	25	74	376	2	13
Page::request	8	3	9	4	13	45	2	5
Page::allocate	41	33	205	109	314	1950	7	47
Page::draw	25	18	73	41	114	619	5	16
Page::print	25	18	73	41	114	619	5	16
Page::pick	29	24	100	59	159	911	5	23
	349	227	937	506	1443	7636	54	248
Patch::Patch	3	2	3	2	5	12	1	29
Patch::~Patch	3	2	3	2	5	12	1	3
Patch::canvas	3	1	3	1	4	8	1	3
Patch::allocation	3	1	3	1	4	8	1	3
Patch::redraw	17	8	38	23	61	283	3	11

Patch::reallocate	9	6	19	11	30	117	1	6
Patch::repick	5	4	7	4	11	35	1	3
Patch::allocate	7	7	13	10	23	88	1	6
	50	31	89	54	143	563	10	64
Printer::Printer	8	19	47	41	88	418	1	20
Printer::~Printer	6	2	9	3	12	36	1	5
Printer::resize	12	10	26	16	42	187	1	9
Printer::prolog	3	9	15	14	29	104	1	9
Printer::epilog	7	9	16	12	28	112	1	9
Printer::comment	5	4	8	4	12	38	1	5
Printer::page	18	18	59	40	99	512	2	14
Printer::push_transform	15	9	34	18	52	238	1	9
Printer::pop_transform	13	7	24	11	35	151	1	8
Printer::transform	13	14	48	36	84	399	1	10
Printer::push_clipping	13	7	27	15	42	182	1	12
Printer::pop_clipping	11	6	20	10	30	123	1	7
Printer::new_path	5	2	6	2	8	22	1	5
Printer::move_to	5	5	9	5	14	47	1	5
Printer::line_to	5	5	9	5	14	47	1	5
Printer::curve_to	5	9	18	14	32	122	1	8
Printer::close_path	5	2	6	2	8	22	1	5
Printer::stroke	18	10	42	24	66	317	3	15
Printer::fill	17	8	30	16	46	214	2	11
Printer::clip	5	2	6	2	8	22	1	5
Printer::character	25	33	128	80	208	1218	9	44
Printer::flush	9	10	35	28	63	268	3	14
Printer::stencil	34	41	161	116	277	1725	6	43
Printer::image	28	37	134	95	229	1379	3	32
	285	278	917	609	1526	7903	45	309
PSFont::PSFont	27	23	101	58	159	897	7	61
PSFont::~PSFont	4	3	9	5	14	39	1	5
PSFont::name	4	2	4	2	6	16	1	1
PSFont::encoding	4	2	4	2	6	16	1	1
PSFont::size	4	2	4	2	6	16	1	1
PSFont::width	5	3	5	3	8	24	1	1
PSFont::width	7	3	7	3	10	33	1	1
PSFont::exists	9	5	14	6	20	76	2	10
	64	43	148	81	229	1117	15	81
PSFontImpl::psfile	15	9	32	15	47	215	2	11
	15	9	32	15	47	215	2	11
PointerHandler::PointerHandler	3	3	5	4	9	23	1	30
PointerHandler::~PointerHandler	1	1	1	1	2	1	1	1
PointerHandler::event	20	7	62	17	79	376	9	30
PointerHandler::sense	1	1	1	1	2	1	1	1
PointerHandler::press	8	5	13	6	19	70	1	6
PointerHandler::drag	1	1	1	1	2	1	1	1
PointerHandler::release	11	4	18	7	25	98	2	9
PointerHandler::commit	1	1	1	1	2	1	1	1
PointerHandler::abort	3	2	3	2	5	12	1	3
	49	25	105	40	145	583	18	82
Regexp::Regexp	9	7	16	11	27	108	1	7
Regexp::Regexp	9	7	16	11	27	108	1	6
Regexp::~Regexp	5	2	7	3	10	28	2	5
Regexp::Search	31	31	213	137	350	2084	17	96
Regexp::Match	20	16	63	41	104	538	4	23
Regexp::BeginningOfMatch	12	8	21	16	37	160	2	6
Regexp::EndOfMatch	12	9	21	16	37	163	2	6
	98	80	357	235	592	3189	29	149
Resource::Resource	3	2	3	2	5	12	1	24
Resource::~Resource	1	1	1	1	2	1	1	1
Resource::ref	8	4	10	6	16	57	1	4
Resource::unref	18	8	42	19	61	287	5	16
Resource::ref	8	2	9	3	12	40	2	5
Resource::unref	8	2	9	3	12	40	2	5
Resource::defer	10	4	16	8	24	91	2	8
Resource::flush	20	10	49	18	67	329	3	13
	76	33	139	60	199	857	17	76

Rule::Rule	6	7	11	8	19	70	1	32
Rule::~Rule	5	2	5	2	7	20	1	3
Rule::request	7	5	13	7	20	72	1	4
Rule::allocate	5	2	5	2	7	20	1	3
Rule::draw	14	4	25	8	33	138	2	5
	37	20	59	27	86	320	6	47
HRule::HRule	1	1	1	1	2	1	1	1
HRule::~HRule	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	2
VRule::VRule	1	1	1	1	2	1	1	1
VRule::~VRule	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	2
Sensor::Sensor	10	7	20	13	33	135	2	34
Sensor::Sensor	7	1	8	1	9	27	1	4
Sensor::Sensor	7	1	9	1	10	30	1	4
Sensor::~Sensor	1	1	1	1	2	1	1	1
Sensor::operator=	12	7	26	18	44	187	2	8
Sensor::init	7	10	53	24	77	315	1	16
Sensor::Catch	15	25	68	36	104	553	10	34
Sensor::CatchButton	12	11	38	16	54	244	4	19
Sensor::Ignore	19	24	88	38	126	684	12	38
Sensor::IgnoreButton	27	16	85	34	119	646	9	33
	117	103	396	182	578	2822	43	191
SessionIOHandler::SessionIOHand	3	4	5	4	9	25	1	43
SessionIOHandler::inputReady	6	3	7	3	10	32	1	4
	9	7	12	7	19	57	2	47
Session::Session	8	6	13	7	20	76	1	8
Session::~Session	3	1	3	1	4	8	1	3
Session::instance	4	1	4	1	5	12	1	1
Session::name	6	2	7	2	9	27	1	1
Session::classname	4	2	4	2	6	16	1	1
Session::argc	4	2	4	2	6	16	1	1
Session::argv	4	2	4	2	6	16	1	1
Session::style	9	4	15	7	22	81	2	7
Session::default_display	4	3	4	3	7	20	1	1
Session::default_display	4	2	4	2	6	16	1	1
Session::connect	13	5	17	9	26	108	2	7
Session::connect	13	5	17	9	26	108	2	7
Session::disconnect	24	9	47	19	66	333	3	12
	100	44	143	66	209	837	18	51
SessionRep::handle_display_inpu	13	6	25	9	34	144	4	12
	13	6	25	9	34	144	4	12
Session::run	13	8	22	12	34	149	2	13
Session::run_window	7	1	9	1	10	30	1	7
Session::quit	4	3	4	3	7	20	1	6
Session::done	4	2	4	2	6	16	1	6
Session::pending	11	5	16	9	25	100	2	11
Session::read	14	8	27	15	42	187	2	11
Session::read	20	12	43	26	69	345	3	19
	73	39	125	68	193	847	12	73
SessionRep::check	18	11	34	18	52	253	3	14
	18	11	34	18	52	253	3	14
Session::unread	5	1	5	1	6	16	1	6
Session::poll	5	1	5	1	6	16	1	6
	10	2	10	2	12	32	2	12
SessionRep::SessionRep	4	5	8	5	13	41	1	5
SessionRep::~SessionRep	6	3	7	3	10	32	1	4
SessionRep::init	20	13	49	28	77	388	3	26
SessionRep::parse_args	20	17	77	51	128	667	7	32
SessionRep::match	18	15	61	32	93	469	4	22
SessionRep::extract	20	22	85	49	134	723	7	35

SessionRep::bad_arg	10	6	19	7	26	104	1	13
SessionRep::next_arg	12	5	16	7	23	94	2	12
SessionRep::find_arg	14	8	24	14	38	169	3	13
SessionRep::init_style	11	7	22	11	33	138	1	11
SessionRep::set_style	21	10	57	25	82	406	2	20
SessionRep::load_props	16	9	29	16	45	209	3	9
SessionRep::load_app_defaults	13	10	42	23	65	294	2	10
SessionRep::load_environment	12	6	21	9	30	125	2	8
SessionRep::load_path	17	8	43	12	55	255	1	10
SessionRep::home	7	3	9	5	14	47	2	7
SessionRep::load_path	18	9	56	14	70	333	1	12
SessionRep::load_file	19	9	36	17	53	255	3	12
SessionRep::load_list	20	8	34	18	52	250	4	13
SessionRep::load_property	29	9	90	18	108	567	5	20
SessionRep::strip	19	6	35	20	55	255	3	8
SessionRep::missing_colon	1	1	1	1	2	1	1	4
SessionRep::bad_property_name	1	1	1	1	2	1	1	1
SessionRep::bad_property_value	1	1	1	1	2	1	1	1
SessionRep::find_name	21	13	61	23	84	427	5	26
SessionRep::init_display	20	12	57	23	80	400	4	23
	370	216	941	433	1374	6651	70	357
Stencil::Stencil	6	5	13	8	21	73	1	32
Stencil::~Stencil	5	3	9	4	13	39	1	4
Stencil::request	13	11	49	36	85	390	2	18
Stencil::allocate	17	7	36	19	55	252	2	10
Stencil::draw	13	5	20	9	29	121	2	5
	54	31	127	76	203	875	8	69
Strut::Strut	15	16	34	29	63	312	3	41
Strut::~Strut	5	2	5	2	7	20	1	3
Strut::request	8	10	25	14	39	163	1	6
Strut::allocate	5	2	5	2	7	20	1	3
	33	30	69	47	116	515	6	53
HStrut::HStrut	3	10	11	10	21	78	1	10
HStrut::~HStrut	1	1	1	1	2	1	1	1
HStrut::request	14	12	32	22	54	254	2	7
	18	23	44	33	77	333	4	18
VStrut::VStrut	3	10	11	10	21	78	1	9
VStrut::~VStrut	1	1	1	1	2	1	1	1
VStrut::request	14	12	32	22	54	254	2	7
	18	23	44	33	77	333	4	17
StyleAttribute::StyleAttribute	1	1	1	1	2	1	1	3
StyleAttribute::StyleAttribute	1	1	1	1	2	1	1	3
StyleAttribute::~StyleAttribute	3	1	3	1	4	8	1	3
StyleAttribute::name	3	1	3	1	4	8	1	1
StyleAttribute::value	4	1	4	1	5	12	1	1
StyleAttribute::priority	3	1	3	1	4	8	1	1
StyleAttribute::match	8	6	12	6	18	69	2	7
StyleAttribute::update	10	8	19	10	29	121	3	10
StyleAttribute::is_cached	5	2	5	2	7	20	1	3
	38	22	51	24	75	248	12	32
ValueString::ValueString	1	1	1	1	2	1	1	8
ValueString::~ValueString	4	1	4	1	5	12	1	4
ValueString::null_terminated	3	1	3	1	4	8	1	1
	8	3	8	3	11	21	3	13
StyleAttribute::parse_value	29	11	92	36	128	681	6	30
	29	11	92	36	128	681	6	30
StyleWildcardMatchQuality::Styl	1	1	1	1	2	1	1	1
StyleWildcardMatchQuality::~Sty	1	1	1	1	2	1	1	1
StyleWildcardMatchQuality::zero	5	1	5	1	6	16	1	1
StyleWildcardMatchQuality::push	6	6	11	8	19	68	1	6
StyleWildcardMatchQuality::pop	7	2	9	3	12	38	1	3
	20	11	27	14	41	124	5	12

Superpose::Superpose	11	13	159	44	203	931	11	1082
Superpose::~Superpose	9	5	16	10	26	99	2	7
Superpose::request	14	7	22	12	34	149	3	9
Superpose::allocate	14	9	22	14	36	163	3	10
	48	34	219	80	299	1342	19	1108
Target::Target	3	2	3	2	5	12	1	29
Target::~Target	1	1	1	1	2	1	1	1
Target::pick	28	17	119	48	167	917	9	28
	32	20	123	51	174	930	11	58
BreakSet::BreakSet	14	15	68	49	117	568	3	48
BreakSet::~BreakSet	5	3	9	7	16	48	1	5
BreakSet::add_break	15	15	44	36	80	393	3	18
BreakSet::no_break	3	6	7	6	13	41	1	5
TeXCompositor::TeXCompositor	3	2	3	2	5	12	1	3
TeXCompositor::~TeXCompositor	1	1	1	1	2	1	1	1
TeXCompositor::compose	23	29	93	76	169	963	5	41
	64	71	225	177	402	2026	15	121
TransformSetter::TransformSette	3	2	3	2	5	12	1	31
TransformSetter::~TransformSett	1	1	1	1	2	1	1	1
TransformSetter::request	19	16	103	53	156	800	1	15
TransformSetter::allocate	29	29	174	130	304	1781	5	44
TransformSetter::draw	10	4	18	7	25	95	1	6
TransformSetter::print	10	4	18	7	25	95	1	6
TransformSetter::pick	11	6	32	13	45	184	1	9
	83	62	349	213	562	2968	11	112
TIFFRasterImpl::TIFFRasterImpl	3	5	9	8	17	51	1	29
TIFFRasterImpl::~TIFFRasterImpl	3	4	9	4	13	36	1	6
	6	9	18	12	30	87	2	35
TIFFRaster::load	7	3	7	3	10	33	1	4
	7	3	7	3	10	33	1	4
TIFFRasterImpl::load	29	28	146	60	206	1202	14	58
TIFFRasterImpl::identify	14	13	44	21	65	309	5	19
TIFFRasterImpl::build_colormap	17	12	59	19	78	379	8	22
TIFFRasterImpl::load_pallette	13	9	26	16	42	187	3	11
TIFFRasterImpl::load_rgb	23	18	96	58	154	825	8	34
TIFFRasterImpl::colormap_raster	22	15	58	32	90	469	3	17
TIFFRasterImpl::rgb_raster	23	14	62	32	94	490	3	17
TIFFRasterImpl::color_to_gray	11	10	29	22	51	224	2	8
TIFFRasterImpl::is_8bitmap	12	9	24	16	40	176	3	8
TIFFRasterImpl::scale_map	12	8	33	23	56	242	2	7
TIFFRasterImpl::photometric	23	16	71	44	115	608	5	20
TIFFRasterImpl::gray_map	26	23	165	113	278	1561	11	41
	225	175	813	456	1269	6672	67	262
Tile::Tile	3	2	3	2	5	12	1	26
Tile::~Tile	1	1	1	1	2	1	1	1
Tile::request	28	17	165	81	246	1351	4	37
Tile::allocate	33	23	230	119	349	2027	10	56
	65	43	399	203	602	3391	16	120
TileReversed::TileReversed	3	2	3	2	5	12	1	3
TileReversed::~TileReversed	1	1	1	1	2	1	1	1
TileReversed::request	28	17	165	81	246	1351	4	37
TileReversed::allocate	33	23	232	120	352	2044	10	56
	65	43	401	204	605	3408	16	97
Transformer::Transformer	5	10	14	10	24	94	1	32
Transformer::Transformer	11	12	41	30	71	321	2	13
Transformer::Transformer	6	12	19	12	31	129	1	9
Transformer::~Transformer	1	1	1	1	2	1	1	1
Transformer::matrix	3	12	13	12	25	98	1	10
Transformer::update	6	9	15	13	28	109	1	6
Transformer::translate	5	4	8	4	12	38	1	5
Transformer::scale	5	8	16	12	28	104	1	9
Transformer::skew	6	6	10	6	16	57	1	5
Transformer::rotate	11	16	56	48	104	495	1	22

Transformer::premultiply	9	9	50	46	96	400	1	16
Transformer::postmultiply	9	8	51	47	98	401	1	17
Transformer::invert	9	9	32	24	56	234	1	13
Transformer::transform	5	9	13	12	25	95	1	5
Transformer::transform	5	10	13	12	25	98	1	4
Transformer::inverse_transform	5	8	11	10	21	78	1	8
Transformer::inverse_transform	5	8	11	10	21	78	1	10
Transformer::Transform	8	11	21	17	38	161	1	5
Transformer::InvTransform	8	9	17	12	29	119	1	8
Transformer::InvTransform	8	9	17	12	29	119	1	10
Transformer::InvTransform	5	8	11	10	21	78	1	8
Transformer::TransformList	14	7	25	15	40	176	2	9
Transformer::TransformList	14	11	37	23	60	279	2	11
Transformer::InvTransformList	19	17	51	34	85	439	2	14
Transformer::InvTransformList	19	21	59	40	99	527	2	16
Transformer::TransformRect	11	13	77	44	121	555	1	14
Transformer::TransformRect	9	13	57	40	97	433	1	14
Transformer::InvTransformRect	11	13	77	44	121	555	1	14
Transformer::InvTransformRect	9	13	57	40	97	433	1	14
Transformer::operator==	6	7	20	18	38	141	1	6
Transformer::operator!=	6	7	20	18	38	141	1	6
Transformer::operator=	9	7	26	18	44	176	1	10
Transformer::Transform	8	11	19	14	33	140	1	6
Transformer::Transform	5	10	13	12	25	98	1	4
	275	338	978	720	1698	7400	39	354
World::World	3	3	5	4	9	23	1	30
World::World	11	8	21	9	30	127	1	9
World::~World	3	1	3	1	4	8	1	3
World::session	3	1	3	1	4	8	1	1
World::display	3	1	3	1	4	8	1	1
World::name	6	1	6	1	7	20	1	1
World::classname	6	1	6	1	7	20	1	1
World::argc	6	1	6	1	7	20	1	1
World::argv	6	1	6	1	7	20	1	1
World::style	6	1	6	1	7	20	1	3
World::property_value	12	4	19	7	26	104	2	7
World::property_is_on	8	1	10	1	11	35	1	3
World::font	7	1	8	1	9	27	1	1
World::foreground	7	1	8	1	9	27	1	1
World::background	7	1	8	1	9	27	1	1
World::shaped_windows	7	1	8	1	9	27	1	3
World::double_buffered	7	1	8	1	9	27	1	3
World::flush	5	1	5	1	6	16	1	1
World::sync	5	1	5	1	6	16	1	1
World::width	6	1	6	1	7	20	1	1
World::height	6	1	6	1	7	20	1	1
World::pwidth	6	1	6	1	7	20	1	1
World::pheight	6	1	6	1	7	20	1	1
World::run	5	1	5	1	6	16	1	1
World::quit	5	1	5	1	6	16	1	1
World::done	6	1	6	1	7	20	1	1
World::pending	6	1	6	1	7	20	1	1
World::read	5	2	5	2	7	20	1	1
World::read	7	4	8	4	12	42	1	3
World::unread	5	2	5	2	7	20	1	1
World::poll	5	2	5	2	7	20	1	1
World::RingBell	5	2	5	2	7	20	1	1
World::SetKeyClick	5	2	5	2	7	20	1	1
World::SetAutoRepeat	5	2	5	2	7	20	1	1
World::SetFeedback	6	3	6	3	9	29	1	1
World::SetScreen	5	2	5	2	7	20	1	1
World::current	16	8	32	14	46	211	2	10
World::make_current	11	11	27	17	44	196	1	9
	239	79	298	96	394	1350	40	110
XYMarker::XYMarker	6	9	17	12	29	113	1	33
XYMarker::~XYMarker	6	4	13	8	21	70	1	6
XYMarker::unmark	8	7	13	8	21	82	2	6
XYMarker::mark	17	14	209	124	333	1650	12	46
XYMarker::allocate	16	8	37	19	56	257	1	7
XYMarker::draw	11	11	40	25	65	290	5	13
	64	53	329	196	525	2462	22	111

The order for the following table is: class name, public variables, public functions,protected variables, protected functions, private variables, private functions, total members, inline members, virtual members, friend functions, friend classes.

Action	0	1	0	2	0	0	3	0	2	0	0
Macro	0	9	0	0	1	0	10	0	8	0	0
Adjustable	0	28	0	0	1	0	29	0	27	0	0
Aggregate	0	16	0	0	1	0	17	0	15	0	0
Align	0	4	0	0	1	0	5	0	3	0	0
AllocationInfo	0	7	0	0	6	0	13	0	0	1	0
AllocationTable	0	7	0	0	1	0	8	0	6	0	0
ArrayCompositor	0	3	0	0	1	0	4	0	2	0	0
Background	0	5	0	0	1	0	6	0	4	0	0
Bitmap	0	34	0	1	1	0	36	0	12	0	0
Border	0	6	0	0	2	0	8	0	4	0	0
Box	0	11	0	0	1	0	12	0	9	0	0
Brush	0	7	0	1	1	1	10	0	2	0	0
Canvas	3	52	0	0	1	0	56	0	48	0	0
Character	0	7	0	0	10	0	17	0	6	0	0
Color	3	17	0	0	1	3	24	0	5	0	0
Compositor	0	3	0	0	0	0	3	0	2	0	0
Cursor	0	7	0	0	1	0	8	0	0	0	0
DebugGlyph	32	10	0	0	2	1	45	0	7	0	0
Deck	0	12	0	0	4	0	16	0	9	0	0
Dialog	0	8	0	0	2	0	10	0	5	0	0
Display	0	39	0	1	3	0	43	0	33	0	0
Drag	0	14	0	1	1	0	16	0	13	0	0
DragZone	0	10	0	1	1	0	12	0	9	0	0
DragZoneSink	0	6	0	0	2	0	8	0	5	0	0
Event	20	41	0	0	3	8	72	0	35	1	0
FontFamily	0	5	0	0	1	2	8	0	3	0	0
FontBoundingBox	0	7	0	0	7	0	14	0	0	1	0
Font	0	25	0	1	1	0	27	0	11	1	0
CoordinateSpace	4	0	0	0	0	0	4	0	0	0	0
Requirement	0	14	0	0	4	0	18	0	0	0	0
Requisition	0	14	0	0	3	0	17	0	0	0	0
Allotment	0	12	0	0	3	0	15	0	0	0	0
Allocation	0	18	0	0	2	0	20	0	0	0	0
Extension	0	14	0	0	4	0	18	0	0	0	0
GLContext	0	3	0	0	1	0	4	0	2	0	0
Glue	0	5	0	0	1	0	6	0	3	0	0
Glyph	4	18	0	1	0	0	23	0	18	0	0
Group	0	5	0	0	5	0	10	0	3	0	0
Handler	0	1	0	2	0	0	3	0	2	0	0
Hit	0	23	0	1	1	1	26	0	20	0	0
Image	0	5	0	0	1	0	6	0	4	0	0
InputHandler	0	32	0	0	1	0	33	0	31	1	0
ActiveHandler	0	6	0	1	1	0	8	0	6	0	0
Label	0	8	0	0	9	1	18	0	5	0	0
Layout	0	3	0	1	0	0	4	0	3	0	0
LayoutKit	0	98	0	2	0	0	100	0	71	0	0
LRMarker	0	8	0	0	15	0	23	0	4	0	0
MonoGlyph	0	18	0	1	1	0	20	0	18	0	0
Observable	0	5	0	0	1	0	6	0	4	0	0
Observer	0	3	0	1	0	0	4	0	3	0	0
Page	0	27	0	0	4	0	31	0	16	0	0
Patch	0	12	0	0	4	0	16	0	7	0	0
Pattern	5	6	0	0	1	1	13	0	1	0	0
Placement	0	7	0	0	1	0	8	0	6	0	0
CenterLayout	0	4	0	0	2	0	6	0	3	0	0
FixedLayout	0	4	0	0	2	0	6	0	3	0	0
VariableLayout	0	4	0	0	3	0	7	0	3	0	0
NaturalLayout	0	4	0	0	2	0	6	0	3	0	0
MarginLayout	0	7	0	0	13	1	21	0	3	0	0
PolyGlyph	0	12	0	0	1	0	13	0	11	0	0
Printer	0	26	0	1	1	0	28	0	26	0	0
PSFont	0	8	0	0	1	0	9	0	6	0	0
Raster	0	17	0	1	1	0	19	0	12	0	0
Regexp	0	7	0	0	2	0	9	0	0	0	0
ReqErr	5	4	0	0	0	0	9	0	2	0	0
Resource	0	13	0	0	1	1	15	2	8	0	0
Rule	0	5	0	0	3	0	8	0	4	0	0
HRule	0	2	0	0	0	0	2	0	1	0	0
VRule	0	2	0	0	0	0	2	0	1	0	0
ScrollBox	0	0	0	5	0	0	5	0	4	0	0
TBScrollBox	0	23	0	0	1	3	27	0	22	0	0
SelectionManager	0	8	0	0	1	0	9	0	5	0	0

SelectionHandler	0	2	0	1	0	0	3	0	2	0	0
PropertyData	2	0	0	0	0	0	2	0	0	0	0
OptionDesc	4	0	0	0	0	0	4	0	0	0	0
Session	0	22	0	0	1	0	23	0	13	0	0
Shadow	0	7	0	0	4	5	16	0	6	0	0
SimpleCompositor	0	3	0	0	0	0	3	0	2	0	0
Stencil	0	5	0	0	2	0	7	0	4	0	0
Style	0	43	0	0	1	1	45	0	23	1	0
Superpose	0	4	0	0	2	0	6	0	3	0	0
Target	0	3	0	0	1	0	4	0	2	0	0
TelltaleState	19	7	0	0	2	0	28	0	5	0	0
Telltale	0	10	0	1	1	0	12	0	4	0	0
TelltaleGroup	0	4	0	0	1	0	5	0	3	0	0
TeXCompositor	0	3	0	0	1	0	4	0	2	0	0
TransformSetter	0	11	0	1	2	1	15	0	10	0	0
TransformFitter	0	2	0	1	0	0	3	0	2	0	0
TIFFRaster	0	1	0	0	0	0	1	0	0	0	0
Tile	0	4	0	0	2	0	6	0	3	0	0
TileReversed	0	4	0	0	2	0	6	0	3	0	0
TileFirstAligned	0	4	0	0	2	0	6	0	3	0	0
TileReversedFirst	0	4	0	0	2	0	6	0	3	0	0
Transformer	0	49	0	0	7	1	57	0	13	0	0
Window	0	34	0	8	1	0	43	0	38	1	0
ManagedWindow	0	13	0	3	1	0	17	0	14	0	0
ApplicationWindow	0	2	0	2	0	0	4	0	2	0	0
TopLevelWindow	0	4	0	1	0	0	5	0	3	0	0
TransientWindow	0	4	0	2	0	0	6	0	4	0	0
PopupWindow	0	2	0	1	0	0	3	0	1	0	0
IconWindow	0	2	0	1	0	0	3	0	1	0	0
XYMarker	0	7	0	0	8	0	15	0	4	0	0

The order for the following table is: class name, public members, weighted methods per class (WMC), depth of inheritance tree (DIT), number of children (NOC), Stability* (stab), vocabulary (n), length (N), lines of code (LOC), cyclomatic complexity (VG), volume (VOL), coupling between objects (CBO).

Action	1	3	1	1	1.0000	4	4	25	2	2	0
Macro	9	9	2	0	0.0909	143	252	63	18	1046	1
Adjustable	28	28	0	1	0.1111	262	366	113	34	1356	1
Aggregate	16	16	2	0	0.0024	296	560	115	28	2658	7
Align	4	4	1	0	0.0123	102	421	93	10	2319	2
AllocationInfo	7	7	0	0	0.0667	29	29	151	7	60	1
ArrayCompositor	3	3	1	0	0.1429	36	93	247	4	363	0
Background	5	5	3	0	0.0040	68	126	49	6	510	6
Bitmap	34	35	1	0	0.0079	32	33	84	5	91	3
Border	6	6	3	0	0.0035	87	292	67	6	1260	6
Box	11	11	3	0	0.0018	251	594	164	34	2936	9
Canvas	52	52	0	1	0.0024	4	4	109	1	8	7
Character	7	7	2	0	0.0031	136	315	82	11	1484	7
Compositor	3	3	0	3	0.1667	8	8	36	3	10	0
Cursor	7	7	0	0	0.0039	4	4	140	1	8	3
DebugGlyph	10	11	3	0	1.0000	205	379	115	18	1748	0
Deck	12	12	3	0	0.0030	201	351	111	25	1643	7
Dialog	8	8	4	0	0.0072	128	289	145	13	1382	3
Display	39	40	0	0	0.0048	27	30	31	4	102	4
Event	41	49	0	0	0.0049	10	10	109	2	24	4
FontBoundingBox	7	7	0	0	1.0000	28	28	37	7	56	0
Extension	14	14	0	0	0.0028	170	468	81	16	1969	3
Glue	5	5	2	0	0.0085	35	41	18	5	130	4
Glyph	18	19	1	11	0.0024	105	160	66	23	565	8
Group	5	5	2	0	0.0084	110	241	77	14	1167	5
Handler	1	3	1	0	0.0161	4	4	28	2	2	1
Hit	23	25	0	0	0.0052	436	1080	187	46	5302	4
Image	5	5	2	0	0.0052	88	197	71	10	859	5
InputHandler	32	32	3	2	0.0011	451	917	226	61	4184	8
ActiveHandler	6	7	4	0	0.0081	50	86	31	11	324	1
Label	8	9	2	0	0.0024	204	472	997	13	2209	7
Layout	3	4	0	11	0.0123	8	8	32	4	4	2
LayoutKit	98	100	0	0	0.0032	965	1329	728	94	4661	7
LRMarker	8	8	3	0	0.0045	163	592	149	22	2879	5
MonoGlyph	18	19	2	15	0.0023	243	350	132	35	1333	8
Observable	5	5	0	1	0.1429	94	300	756	13	1089	1
Observer	3	4	0	1	0.0909	8	8	4	4	4	1
Page	27	27	2	0	0.0022	495	1202	225	52	6223	8
Patch	12	12	3	0	0.0048	126	187	233	16	743	5
Pattern	6	7	1	0	1.0000	4	4	27	1	8	0
Placement	7	7	3	0	0.0029	114	193	71	12	830	8
CenterLayout	4	4	1	0	0.0122	45	80	19	4	324	2
FixedLayout	4	4	1	0	0.0123	40	59	20	4	216	2
VariableLayout	4	4	1	0	0.0123	33	49	20	4	181	2

NaturalLayout	4	4	1	0	0.0123	24	30	16	4	90	2
MarginLayout	7	8	1	0	0.0123	191	582	84	12	2857	2
PolyGlyph	12	12	2	3	0.0104	193	318	98	18	1398	1
Printer	26	27	1	0	0.0046	581	1540	332	48	7963	6
PSFont	8	8	2	0	0.1250	107	229	81	15	1117	0
Raster	17	18	1	0	0.0312	17	19	134	3	48	1
Regexp	7	7	0	0	0.0769	178	592	149	29	3189	0
Resource	13	14	0	15	0.0250	142	258	93	23	1098	1
Rule	5	5	2	2	0.0051	55	82	45	5	294	5
HRule	2	2	3	0	0.0476	4	4	2	2	2	1
VRule	2	2	3	0	0.0476	4	4	2	2	2	1
TBScrollBox	23	26	6	0	0.0035	423	922	203	43	4470	6
Session	22	22	0	0	0.0027	268	424	138	32	1764	5
Shadow	7	12	3	0	0.0028	225	641	139	19	3126	8
SimpleCompositor	3	3	1	0	0.1667	49	141	61	9	754	0
Stencil	5	5	2	0	0.0044	85	201	69	8	869	6
Style	43	44	1	0	0.0041	753	1564	371	96	7622	2
Superpose	4	4	1	0	0.0104	81	213	88	19	940	3
Target	3	3	3	0	0.0083	51	186	60	11	990	4
TelltaleState	7	7	2	0	0.5000	74	107	339	12	403	0
Telltale	10	11	4	0	0.0312	41	56	19	5	180	2
TelltaleGroup	4	4	1	0	0.0189	35	53	18	7	197	1
TeXCompositor	3	3	1	0	0.1429	59	176	45	7	976	0
TransformSetter	11	13	3	1	0.0022	167	475	123	14	2369	8
TransformFitter	2	3	4	0	0.0435	39	107	20	4	530	1
TIFFRaster	1	1	0	0	0.5000	8	8	4	1	24	0
Tile	4	4	1	0	0.0123	75	354	60	12	1990	2
TileReversed	4	4	1	0	0.0123	75	355	61	12	1996	2
TileFirstAligned	4	4	1	0	0.0123	108	602	97	16	3391	2
TileReversedFirst	4	4	1	0	0.0123	108	605	99	16	3408	2
Transformer	49	50	1	0	0.0020	414	979	376	39	3840	1
Window	34	42	0	2	0.0045	4	4	27	1	8	4
ManagedWindow	13	16	1	3	0.0118	4	4	1	1	8	3
XYMarker	7	7	3	0	0.0045	25	50	39	2	183	5

CLASSNAME	n1	n2	N1	N2	N	V	VG	LOC
Action::Action	1	1	1	1	2	1	1	24
Action::~Action	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	25
Macro::Macro	10	6	36	17	53	212	5	17
Macro::~Macro	17	5	32	7	39	174	2	7
Macro::prepend	7	3	9	4	13	43	1	4
Macro::append	7	3	9	4	13	43	1	4
Macro::insert	8	4	10	5	15	54	1	4
Macro::remove	16	6	24	12	36	161	2	7
Macro::count	6	1	6	1	7	20	1	3
Macro::action	15	6	23	12	35	154	2	9
Macro::execute	18	5	34	7	41	185	3	8
	104	39	183	69	252	1046	18	63
Adjustable::Adjustable	14	13	32	22	54	257	2	36
Adjustable::~Adjustable	11	9	17	12	29	125	2	7
Adjustable::observable	6	4	6	4	10	33	1	3
Adjustable::attach	6	2	7	2	9	27	1	3
Adjustable::detach	6	2	7	2	9	27	1	3
Adjustable::lower	3	1	3	1	4	8	1	1
Adjustable::upper	7	1	8	2	10	30	1	1
Adjustable::length	7	1	8	2	10	30	1	1
Adjustable::cur_lower	3	1	3	1	4	8	1	1
Adjustable::cur_upper	7	1	8	2	10	30	1	3
Adjustable::cur_length	7	1	8	2	10	30	1	3
Adjustable::small_scroll	6	5	6	5	11	38	1	3
Adjustable::small_scroll	6	4	6	4	10	33	1	3
Adjustable::large_scroll	6	5	6	5	11	38	1	3
Adjustable::large_scroll	16	11	24	15	39	185	2	7
Adjustable::begin_adjustment	1	1	1	1	2	1	1	1
Adjustable::commit_adjustment	1	1	1	1	2	1	1	1
Adjustable::abort_adjustment	1	1	1	1	2	1	1	1
Adjustable::scroll_forward	8	1	10	3	13	41	1	3
Adjustable::scroll_backward	8	1	10	3	13	41	1	3
Adjustable::page_forward	8	1	10	3	13	41	1	3
Adjustable::page_backward	8	1	10	3	13	41	1	3
Adjustable::scroll_to	1	1	1	1	2	1	1	1
Adjustable::scale_to	1	1	1	1	2	1	1	1
Adjustable::zoom_to	1	1	1	1	2	1	1	1

Adjustable::constrain	13	5	25	15	40	167	3	9
Adjustable::notify	6	1	7	1	8	22	1	3
Adjustable::notify_all	12	5	16	8	24	98	2	5
	180	82	243	123	366	1356	34	113
AggregateInfo::AggregateInfo	3	2	3	2	5	12	1	29
	3	2	3	2	5	12	1	29
Aggregate::Aggregate	5	2	5	2	7	20	1	3
Aggregate::~Aggregate	15	9	28	19	47	215	2	9
Aggregate::count	6	1	6	1	7	20	1	3
Aggregate::component	7	3	7	3	10	33	1	3
Aggregate::allotment	8	5	10	5	15	56	1	5
Aggregate::allot	10	7	13	8	21	86	1	4
Aggregate::change	1	1	1	1	2	1	1	1
Aggregate::append	9	5	12	7	19	72	1	6
Aggregate::prepend	9	5	12	7	19	72	1	6
Aggregate::insert	10	6	13	8	21	84	1	6
Aggregate::remove	8	5	10	5	15	56	1	5
Aggregate::replace	8	4	13	8	21	75	1	6
Aggregate::allocate	19	16	47	32	79	405	3	13
Aggregate::draw	18	15	45	31	76	383	4	13
Aggregate::print	18	13	41	27	68	337	4	12
Aggregate::pick	27	21	84	49	133	743	4	20
	178	118	347	213	560	2658	28	115
Align::Align	3	2	3	2	5	12	1	29
Align::~Align	1	1	1	1	2	1	1	1
Align::request	26	23	121	94	215	1207	3	33
Align::allocate	32	14	140	59	199	1099	5	30
	62	40	265	156	421	2319	10	93
ArrayCompositor::ArrayComposito	4	2	32	2	34	88	1	232
ArrayCompositor::~ArrayComposit	1	1	1	1	2	1	1	1
ArrayCompositor::compose	18	10	33	24	57	274	2	14
	23	13	66	27	93	363	4	247
Background::Background	6	3	7	4	11	35	1	30
Background::~Background	5	2	5	2	7	20	1	3
Background::allocate	8	4	12	7	19	68	1	4
Background::draw	17	6	38	16	54	244	2	8
Background::print	13	4	26	9	35	143	1	4
	49	19	88	38	126	510	6	49
BevelFrame::BevelFrame	3	10	11	10	21	78	1	35
BevelFrame::~BevelFrame	1	1	1	1	2	1	1	1
BevelFrame::request	20	12	63	28	91	455	5	17
BevelFrame::allocate	19	9	45	20	65	312	3	13
BevelFrame::draw	18	10	45	21	66	317	3	14
BevelFrame::print	18	10	45	21	66	317	3	14
BevelFrame::pick	17	10	42	19	61	290	3	12
BevelFrame::draw_frame	1	1	1	1	2	1	1	1
BevelFrame::thickness	8	3	9	5	14	48	2	3
BevelFrame::allocate_body	28	28	140	87	227	1318	7	34
	133	94	402	213	615	3137	29	144
Bevel::Bevel	6	9	21	14	35	137	1	13
Bevel::~Bevel	5	4	13	6	19	60	1	5
Bevel::draw_frame	11	7	25	10	35	146	1	5
Bevel::rect	17	15	136	81	217	1085	2	46
Bevel::left_arrow	18	16	158	90	248	1262	1	46
Bevel::right_arrow	18	16	159	91	250	1272	1	40
Bevel::up_arrow	18	17	158	90	248	1272	1	40
Bevel::down_arrow	18	17	159	91	250	1282	1	40
Bevel::diamond	15	17	139	86	225	1125	1	42
	126	118	968	559	1527	7641	10	277
Border::Border	6	5	9	6	15	52	1	31
Border::Border	6	5	9	6	15	52	1	5
Border::~Border	5	2	5	2	7	20	1	3
Border::allocate	8	4	12	7	19	68	1	4
Border::draw	12	11	64	54	118	534	1	12
Border::print	12	11	64	54	118	534	1	12

	49	38	163	129	292	1260	6	67
Box::Box	5	9	16	13	29	110	1	34
Box::Box	10	19	86	43	129	627	11	42
Box::~Box	4	3	9	5	14	39	1	6
Box::request	9	4	13	6	19	70	2	7
Box::allocate	6	4	7	4	11	37	1	3
Box::draw	22	16	52	32	84	441	4	16
Box::print	22	16	52	32	84	441	4	16
Box::pick	32	20	97	47	144	821	4	20
Box::undraw	12	6	17	8	25	104	2	7
Box::modified	5	1	5	1	6	16	1	3
Box::allotment	14	12	31	18	49	230	3	10
	141	110	385	209	594	2936	34	164
BoxImpl::request	18	14	43	29	72	360	3	14
BoxImpl::info	22	11	71	37	108	545	4	20
BoxImpl::offset_allocate	27	22	81	47	128	719	3	20
BoxImpl::full_allocate	28	19	99	58	157	872	5	26
BoxImpl::invalidate	4	4	7	5	12	36	1	5
	99	70	301	176	477	2532	16	85
Browser::Browser	8	8	19	11	30	120	1	36
Browser::~Browser	6	4	11	5	16	53	1	5
Browser::append_selectable	5	2	5	2	7	20	1	3
Browser::replace_selectable	7	3	10	5	15	50	1	4
Browser::remove_selectable	5	2	5	2	7	20	1	3
Browser::state	6	2	6	2	8	24	1	3
Browser::select	15	7	34	16	50	223	5	13
Browser::active	13	6	23	10	33	140	1	6
Browser::selected	3	1	3	1	4	8	1	3
Browser::choose	10	4	12	5	17	65	2	5
Browser::cancel	8	2	9	3	12	40	2	5
Browser::press	13	3	24	4	28	112	2	7
Browser::drag	16	4	35	6	41	177	3	11
Browser::release	9	2	12	2	14	48	2	5
Browser::double_click	4	1	4	1	5	12	1	3
Browser::update	4	1	4	1	5	12	1	3
	132	52	216	76	292	1124	26	115
Button::Button	9	5	18	9	27	103	1	35
Button::~Button	8	3	14	5	19	66	1	5
Button::state	14	3	25	10	35	143	2	9
Button::state	3	1	3	1	4	8	1	1
Button::action	10	3	15	8	23	85	2	7
Button::action	3	1	3	1	4	8	1	1
Button::enter	13	5	19	9	28	117	2	6
Button::leave	13	5	19	9	28	117	2	6
Button::press	13	5	19	9	28	117	2	6
Button::release	19	17	90	48	138	713	7	24
Button::update	4	1	4	1	5	12	1	3
	109	49	229	110	339	1489	22	103
Character::Character	24	18	75	50	125	674	3	52
Character::~Character	5	3	9	4	13	39	1	4
Character::code	3	1	3	1	4	8	1	1
Character::request	8	8	25	14	39	156	1	6
Character::allocate	9	10	21	18	39	166	1	7
Character::pick	20	10	42	22	64	314	3	9
Character::draw	12	5	23	8	31	127	1	3
	81	55	198	117	315	1484	11	82
Compositor::Compositor	1	1	1	1	2	1	1	27
Compositor::~Compositor	1	1	1	1	2	1	1	1
Compositor::compose	3	1	3	1	4	8	1	8
	5	3	5	3	8	10	3	36
DebugGlyph::DebugGlyph	3	4	5	4	9	25	1	32
DebugGlyph::~DebugGlyph	1	1	1	1	2	1	1	1
DebugGlyph::request	15	10	32	12	44	204	2	10
DebugGlyph::allocate	16	12	34	14	48	231	2	10
DebugGlyph::draw	22	15	61	24	85	443	3	18
DebugGlyph::print	16	11	33	13	46	219	2	10
DebugGlyph::pick	20	14	54	20	74	376	2	14

DebugGlyph::undraw	9	4	10	4	14	52	2	5
DebugGlyph::print_requirement	10	2	20	5	25	90	1	6
DebugGlyph::print_allotment	9	2	16	4	20	69	1	6
DebugGlyph::heading	6	3	9	3	12	38	1	3
	127	78	275	104	379	1748	18	115
Deck::Deck	4	4	6	4	10	30	1	27
Deck::~Deck	1	1	1	1	2	1	1	1
Deck::card	3	1	3	1	4	8	1	3
Deck::flip_to	5	2	6	2	8	22	1	4
Deck::request	24	18	70	41	111	599	4	20
Deck::allocate	18	9	31	17	48	228	3	16
Deck::draw	16	7	23	11	34	154	3	8
Deck::print	16	7	23	11	34	154	3	8
Deck::pick	21	10	37	18	55	272	3	10
Deck::undraw	15	5	22	9	31	134	3	8
Deck::modified	3	2	3	2	5	12	1	3
Deck::allotment	6	3	6	3	9	29	1	3
	132	69	231	120	351	1643	25	111
DialogKit::DialogKit	8	3	10	4	14	48	1	36
DialogKit::~DialogKit	3	1	3	1	4	8	1	3
DialogKit::instance	10	2	15	4	19	68	2	6
	21	6	28	9	37	124	4	45
DialogKitImpl::make_kit	4	1	4	1	5	12	1	11
	4	1	4	1	5	12	1	11
DialogKit::widget_kit	4	2	4	2	6	16	1	3
DialogKit::field_editor	8	3	12	3	15	52	1	5
DialogKit::field_editor	7	3	10	3	13	43	1	5
DialogKit::make_field_editor	3	1	3	1	4	8	1	6
DialogKit::file_chooser	8	3	12	3	15	52	1	5
DialogKit::file_chooser	7	3	10	3	13	43	1	5
DialogKit::make_file_chooser	3	1	3	1	4	8	1	6
	40	16	54	16	70	222	7	35
DialogHandler::DialogHandler	3	2	3	2	5	12	1	2
DialogHandler::~DialogHandler	1	1	1	1	2	1	1	1
DialogHandler::event	6	3	7	3	10	32	1	4
	10	6	11	6	17	45	3	7
Dialog::Dialog	1	1	1	1	2	1	1	2
Dialog::~Dialog	1	1	1	1	2	1	1	1
Dialog::post_for_aligned	28	8	75	23	98	507	1	14
Dialog::post_at_aligned	22	8	55	17	72	353	1	15
Dialog::run	25	9	62	22	84	427	6	21
Dialog::dismiss	3	4	5	4	9	25	1	4
	80	31	199	68	267	1314	11	57
FileBrowser::FileBrowser	32	33	109	68	177	1066	3	55
FileBrowser::~FileBrowser	4	2	6	3	9	23	1	4
FileBrowser::press	22	20	98	45	143	771	4	26
FileBrowser::drag	31	22	96	43	139	796	5	27
FileBrowser::release	23	18	68	31	99	530	4	21
FileBrowser::keystroke	15	10	27	15	42	195	3	10
FileBrowser::focus_in	14	4	23	8	31	129	2	9
FileBrowser::focus_out	9	4	11	4	15	56	1	5
FileBrowser::select	7	4	8	5	13	45	1	5
FileBrowser::adjustable	4	2	4	2	6	16	1	3
FileBrowser::refresh	9	3	13	5	18	65	1	4
	170	122	463	229	692	3692	26	169
FileBrowserImpl::rate_scroll_ti	15	11	23	14	37	174	1	8
FileBrowserImpl::open	15	6	23	12	35	154	2	7
FileBrowserImpl::cancel	5	1	5	1	6	16	1	3
FileBrowserImpl::scroll_to_firs	8	2	11	3	14	47	1	3
FileBrowserImpl::scroll_to_last	7	3	8	3	11	37	1	3
FileBrowserImpl::select_all	1	1	1	1	2	1	1	1
FileBrowserImpl::unselect_all	6	2	6	2	8	24	1	3
FileBrowserImpl::next_focus	5	1	5	1	6	16	1	3
FileBrowserImpl::select_previou	22	9	50	22	72	357	4	14
FileBrowserImpl::select_next	25	8	62	25	87	439	4	19

FileBrowserImpl::select_top	6	2	8	2	10	30	1	3
FileBrowserImpl::select_bottom	6	2	8	2	10	30	1	3
FileBrowserImpl::scroll_down	5	2	5	2	7	20	1	3
FileBrowserImpl::scroll_up	5	2	5	2	7	20	1	3
FileBrowserImpl::page_down	5	2	5	2	7	20	1	3
FileBrowserImpl::page_up	5	2	5	2	7	20	1	3
FileBrowserImpl::half_page_down	15	8	26	17	43	195	2	7
FileBrowserImpl::half_page_up	15	8	26	17	43	195	2	7
	171	72	282	130	412	1795	27	96
FileChooser::FileChooser	12	8	23	12	35	151	1	35
FileChooser::~FileChooser	6	1	7	2	9	25	1	4
FileChooser::selected	4	2	4	2	6	16	1	3
FileChooser::reread	10	2	13	3	16	57	2	6
FileChooser::dismiss	16	6	21	10	31	138	2	7
	48	19	68	29	97	387	7	55
FileChooserImpl::init	21	20	65	36	101	541	2	27
FileChooserImpl::free	8	7	19	9	28	109	1	8
FileChooserImpl::build	67	70	407	186	593	4209	7	110
FileChooserImpl::clear	16	8	31	18	49	225	2	9
FileChooserImpl::load	40	33	150	70	220	1362	4	34
FileChooserImpl::add_filter	24	20	79	35	114	622	1	24
FileChooserImpl::filtered	17	8	38	18	56	260	3	10
FileChooserImpl::accept_browser	28	14	100	48	148	798	4	29
FileChooserImpl::cancel_browser	6	4	7	4	11	37	1	4
FileChooserImpl::accept_editor	22	9	44	17	61	302	2	12
FileChooserImpl::cancel_editor	5	2	5	2	7	20	1	3
FileChooserImpl::accept_filter	5	1	7	1	8	21	1	4
FileChooserImpl::chdir	16	7	29	12	41	185	2	12
	275	203	981	456	1437	8691	31	286
FileChooserAction::FileChooserA	1	1	1	1	2	1	1	2
FileChooserAction::~FileChooser	1	1	1	1	2	1	1	1
FileChooserAction::execute	1	1	1	1	2	1	1	1
	3	3	3	3	6	3	3	4
FieldStringEditor::FieldStringE	7	7	13	9	22	84	1	35
FieldStringEditor::~FieldString	5	2	5	2	7	20	1	3
FieldStringEditor::print	23	14	56	30	86	448	2	13
FieldStringEditor::pick	17	6	44	13	57	258	2	10
FieldStringEditor::press	17	9	37	15	52	244	4	15
FieldStringEditor::do_select	28	15	85	46	131	711	4	23
FieldStringEditor::do_grab_scro	22	16	77	43	120	630	2	19
FieldStringEditor::do_rate_scro	28	20	99	55	154	860	3	25
FieldStringEditor::keystroke	12	5	14	7	21	86	1	4
FieldStringEditor::cursor_on	8	4	9	4	13	47	2	5
FieldStringEditor::cursor_off	8	4	9	4	13	47	2	5
FieldStringEditor::focus_in	1	1	1	1	2	1	1	1
FieldStringEditor::focus_out	1	1	1	1	2	1	1	1
FieldStringEditor::cut	9	3	10	4	14	50	1	3
FieldStringEditor::paste	1	1	1	1	2	1	1	3
FieldStringEditor::Reconfig	19	7	46	17	63	296	1	11
	206	115	507	252	759	3784	29	176
FieldEditor::FieldEditor	12	6	21	8	29	121	1	8
FieldEditor::~FieldEditor	8	5	20	10	30	111	1	8
FieldEditor::undraw	7	2	9	2	11	35	1	5
FieldEditor::press	5	3	6	3	9	27	1	3
FieldEditor::drag	1	1	1	1	2	1	1	1
FieldEditor::release	1	1	1	1	2	1	1	1
FieldEditor::keystroke	12	3	19	3	22	86	2	7
FieldEditor::focus_in	10	4	16	6	22	84	1	6
FieldEditor::focus_out	9	3	19	6	25	90	1	7
FieldEditor::field	5	3	6	3	9	27	1	3
FieldEditor::field	8	4	13	4	17	61	1	4
FieldEditor::select	5	3	6	3	9	27	1	3
FieldEditor::select	6	4	7	4	11	37	1	3
FieldEditor::edit	5	2	6	2	8	22	1	3
FieldEditor::edit	6	5	8	5	13	45	1	3
FieldEditor::edit	9	6	15	6	21	82	1	4
FieldEditor::text	9	3	14	6	20	72	1	4
	118	58	187	73	260	929	18	73
FieldEditorImpl::build	30	25	84	42	126	728	2	28

FieldEditorImpl::blink_cursor	16	9	31	13	44	204	3	12
FieldEditorImpl::stop_blinking	10	5	14	5	19	74	1	5
	56	39	129	60	189	1006	6	45
FieldButton::FieldButton	6	5	9	6	15	52	1	6
FieldButton::~FieldButton	5	2	5	2	7	20	1	3
FieldButton::Notify	16	9	35	13	48	223	5	23
	27	16	49	21	70	295	7	32
FieldEditorAction::FieldEditorA	1	1	1	1	2	1	1	2
FieldEditorAction::~FieldEditor	1	1	1	1	2	1	1	1
FieldEditorAction::accept	1	1	1	1	2	1	1	1
FieldEditorAction::cancel	1	1	1	1	2	1	1	1
	4	4	4	4	8	4	4	5
Requirement::Requirement	18	15	126	78	204	1029	4	60
Requirement::equals	12	9	56	25	81	356	5	13
	30	24	182	103	285	1385	9	73
Requisition::Requisition	3	2	3	2	5	12	1	4
Requisition::Requisition	4	2	4	3	7	18	1	3
Requisition::equals	8	4	14	8	22	79	1	3
Requisition::require	8	6	16	7	23	88	3	10
Requisition::requirement	12	7	22	9	31	132	4	12
Requisition::requirement	12	7	22	9	31	132	4	12
	47	28	81	38	119	461	14	44
Allotment::equals	12	8	41	19	60	259	4	10
	12	8	41	19	60	259	4	10
Allocation::Allocation	1	1	1	1	2	1	1	2
Allocation::Allocation	1	1	1	1	2	1	1	1
Allocation::allot	7	6	14	8	22	81	3	7
Allocation::allotment	10	7	24	10	34	139	4	11
Allocation::allotment	10	7	24	10	34	139	4	11
Allocation::equals	8	4	14	8	22	79	1	3
	37	26	78	38	116	440	14	35
Extension::Extension	3	5	9	8	17	51	1	7
Extension::Extension	4	5	13	12	25	79	1	6
Extension::operator=	4	5	13	12	25	79	1	6
Extension::transform_xy	18	18	86	59	145	750	3	18
Extension::set	10	2	20	5	25	90	1	3
Extension::set_xy	6	14	24	25	49	212	1	11
Extension::clear	4	5	11	8	19	60	1	6
Extension::merge	9	6	29	20	49	191	1	6
Extension::merge	10	2	20	5	25	90	1	3
Extension::merge_xy	9	15	40	33	73	335	1	11
	77	77	265	187	452	1937	12	77
Glyph::Glyph	1	1	1	1	2	1	1	27
Glyph::~Glyph	1	1	1	1	2	1	1	1
Glyph::request	1	1	1	1	2	1	1	1
Glyph::allocate	1	1	1	1	2	1	1	1
Glyph::draw	1	1	1	1	2	1	1	1
Glyph::print	5	2	5	2	7	20	1	1
Glyph::pick	17	7	40	17	57	261	2	7
Glyph::undraw	15	7	26	14	40	178	3	9
Glyph::clone	3	1	3	1	4	8	1	3
Glyph::compose	8	4	9	5	14	50	2	3
Glyph::append	1	1	1	1	2	1	1	1
Glyph::prepend	1	1	1	1	2	1	1	1
Glyph::insert	1	1	1	1	2	1	1	1
Glyph::remove	1	1	1	1	2	1	1	1
Glyph::replace	1	1	1	1	2	1	1	1
Glyph::change	1	1	1	1	2	1	1	1
Glyph::count	3	1	3	1	4	8	1	1
Glyph::component	3	1	3	1	4	8	1	1
Glyph::allotment	3	3	4	4	8	21	1	4
	68	37	104	56	160	565	23	66
Group::Group	12	10	23	13	36	161	2	33

Group::~Group	9	3	11	4	15	54	2	6
Group::map	5	3	6	4	10	30	1	4
Group::request	18	12	42	25	67	329	4	13
Group::allocate	23	15	70	43	113	593	5	21
	67	43	152	89	241	1167	14	77
Handler::Handler	1	1	1	1	2	1	1	27
Handler::~Handler	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	28
HitImpl::init	6	27	52	50	102	515	1	44
HitImpl::free	13	13	51	34	85	400	6	17
	19	40	103	84	187	915	7	61
Hit::Hit	9	6	24	14	38	148	1	7
Hit::Hit	6	3	11	5	16	51	1	4
Hit::Hit	6	5	11	5	16	55	1	4
Hit::Hit	3	2	3	2	5	12	1	1
Hit::~Hit	10	3	12	5	17	63	2	6
Hit::init	11	3	17	5	22	84	2	7
Hit::event	4	2	4	2	6	16	1	1
Hit::left	7	2	7	2	9	29	1	1
Hit::bottom	7	2	7	2	9	29	1	1
Hit::right	7	2	7	2	9	29	1	1
Hit::top	7	2	7	2	9	29	1	1
Hit::push_transform	21	9	54	40	94	461	3	15
Hit::transform	10	16	81	65	146	686	1	12
Hit::pop_transform	7	4	9	6	15	52	2	6
Hit::begin	22	24	74	59	133	735	3	24
Hit::target	28	32	143	109	252	1489	7	41
Hit::end	18	21	57	45	102	539	5	20
Hit::remove	21	14	49	38	87	446	4	13
Hit::retarget	6	7	10	7	17	63	1	5
Hit::any	6	4	6	4	10	33	1	1
Hit::count	5	3	5	3	8	24	1	1
Hit::depth	13	6	18	12	30	127	2	6
Hit::target	8	4	8	4	12	43	1	3
Hit::index	8	4	8	4	12	43	1	3
Hit::handler	4	2	4	2	6	16	1	3
	254	182	636	444	1080	5302	46	187
HitImpl::add_item	12	12	29	23	52	238	3	21
HitImpl::item	29	20	91	63	154	865	6	32
HitImpl::area	6	4	7	5	12	40	1	4
	47	36	127	91	218	1143	10	57
Image::Image	9	3	11	5	16	57	2	32
Image::~Image	9	2	11	5	16	55	2	6
Image::request	13	11	49	36	85	390	2	18
Image::allocate	17	8	37	20	57	265	2	10
Image::draw	12	4	17	6	23	92	2	5
	60	28	125	72	197	859	10	71
InputHandler::InputHandler	9	3	11	4	15	54	1	30
InputHandler::~InputHandler	17	6	29	10	39	176	2	7
InputHandler::handler	3	1	3	1	4	8	1	3
InputHandler::parent	4	2	4	2	6	16	1	3
InputHandler::style	4	2	4	2	6	16	1	3
InputHandler::append_input_hand	11	5	15	8	23	92	2	6
InputHandler::remove_input_hand	12	7	31	17	48	204	3	11
InputHandler::remove_all_input_	6	4	9	5	14	47	1	5
InputHandler::input_handler_cou	7	2	7	2	9	29	1	3
InputHandler::input_handler	7	3	7	3	10	33	1	3
InputHandler::focus	18	10	44	25	69	332	4	14
InputHandler::next_focus	19	11	61	33	94	461	5	20
InputHandler::prev_focus	19	11	62	34	96	471	5	20
InputHandler::allocate	11	6	18	10	28	114	1	5
InputHandler::draw	17	8	28	15	43	200	2	7
InputHandler::pick	29	21	95	55	150	847	7	23
InputHandler::undraw	18	11	48	21	69	335	4	14
InputHandler::canvas	11	4	14	7	21	82	2	4
InputHandler::transformer	7	1	9	1	10	30	1	3
InputHandler::allocation	7	1	9	1	10	30	1	3
InputHandler::redraw	14	4	21	7	28	117	2	7
InputHandler::repick	19	7	47	17	64	301	2	13

InputHandler::move	1	1	1	1	2	1	1	1
InputHandler::press	1	1	1	1	2	1	1	1
InputHandler::drag	1	1	1	1	2	1	1	1
InputHandler::release	1	1	1	1	2	1	1	1
InputHandler::keystroke	10	5	12	6	18	70	2	6
InputHandler::double_click	1	1	1	1	2	1	1	1
InputHandler::focus_in	4	1	4	1	5	12	1	1
InputHandler::focus_out	1	1	1	1	2	1	1	1
InputHandler::allocation_change	1	1	1	1	2	1	1	1
InputHandler::inside	13	5	16	8	24	100	1	5
	303	148	615	302	917	4184	61	226
InputHandlerImpl::InputHandlerI	14	16	34	23	57	280	2	16
InputHandlerImpl::~InputHandler	6	3	7	3	10	32	1	4
InputHandlerImpl::info	26	18	90	46	136	742	6	36
InputHandlerImpl::most_recent_i	13	6	27	14	41	174	3	10
InputHandlerImpl::reset	3	3	5	4	9	23	1	4
InputHandlerImpl::event	16	10	45	21	66	310	5	21
InputHandlerImpl::down	19	10	51	21	72	350	5	19
InputHandlerImpl::motion	9	3	14	5	19	68	2	7
InputHandlerImpl::up	18	10	39	20	59	284	3	13
InputHandlerImpl::inside	37	20	112	45	157	916	4	25
	161	99	424	202	626	3179	32	155
ActiveHandler::ActiveHandler	3	2	3	2	5	12	1	4
ActiveHandler::~ActiveHandler	1	1	1	1	2	1	1	1
ActiveHandler::undraw	9	3	13	4	17	61	2	7
ActiveHandler::move	16	6	39	14	53	236	4	14
ActiveHandler::drag	4	1	4	1	5	12	1	3
ActiveHandler::enter	1	1	1	1	2	1	1	1
ActiveHandler::leave	1	1	1	1	2	1	1	1
	35	15	62	24	86	324	11	31
Label::Label	8	7	20	10	30	117	1	919
Label::Label	8	7	20	10	30	117	1	8
Label::Label	9	8	21	11	32	131	1	10
Label::~Label	6	5	13	6	19	66	1	6
Label::compute_metrics	21	14	55	29	84	431	2	16
Label::request	14	11	34	24	58	269	2	8
Label::allocate	9	10	21	18	39	166	1	5
Label::draw	19	18	58	39	97	505	2	14
Label::pick	21	9	60	23	83	407	2	11
	115	89	302	170	472	2209	13	997
Layout::Layout	1	1	1	1	2	1	1	27
Layout::~Layout	1	1	1	1	2	1	1	1
Layout::request	1	1	1	1	2	1	1	1
Layout::allocate	1	1	1	1	2	1	1	3
	4	4	4	4	8	4	4	32
LayoutKit::LayoutKit	1	1	1	1	2	1	1	4
LayoutKit::~LayoutKit	1	1	1	1	2	1	1	1
LayoutKit::instance	9	2	13	4	17	59	2	6
LayoutKit::box	6	2	6	2	8	24	1	3
LayoutKit::hbox	9	3	13	3	16	57	1	6
LayoutKit::hbox	8	11	18	11	29	123	1	8
LayoutKit::vbox	9	3	13	3	16	57	1	6
LayoutKit::vbox	8	11	18	11	29	123	1	8
LayoutKit::hbox_first_aligned	9	3	13	3	16	57	1	9
LayoutKit::hbox_first_aligned	8	11	18	11	29	123	1	8
LayoutKit::vbox_first_aligned	9	3	13	3	16	57	1	9
LayoutKit::vbox_first_aligned	8	11	18	11	29	123	1	8
LayoutKit::vscrollbox	5	1	5	1	6	16	1	3
LayoutKit::overlay	10	13	26	13	39	176	1	12
LayoutKit::deck	5	1	5	1	6	16	1	3
LayoutKit::deck	10	13	22	15	37	167	1	8
	115	90	203	94	297	1180	17	102
LayoutKitImpl::add	9	12	83	41	124	545	11	37
	9	12	83	41	124	545	11	37
LayoutKit::back	6	3	7	3	10	32	1	3
LayoutKit::front	6	3	7	3	10	32	1	3
LayoutKit::between	6	3	7	3	10	32	1	3

LayoutKit::glue	6	5	9	5	14	48	1	6
LayoutKit::glue	5	1	5	1	6	16	1	3
LayoutKit::hglue	6	4	9	5	14	47	1	3
LayoutKit::hglue	6	5	9	5	14	48	1	3
LayoutKit::hglue	6	5	9	5	14	48	1	3
LayoutKit::hglue	6	5	9	5	14	48	1	5
LayoutKit::hspace	6	4	9	5	14	47	1	3
LayoutKit::vglue	6	4	9	5	14	47	1	3
LayoutKit::vglue	6	5	9	5	14	48	1	3
LayoutKit::vglue	6	5	9	5	14	48	1	5
LayoutKit::vglue	6	5	9	5	14	48	1	5
LayoutKit::vspace	6	4	9	5	14	47	1	3
LayoutKit::shape_of	6	1	6	2	8	22	1	3
LayoutKit::shape_of_xy	6	2	6	2	8	24	1	3
LayoutKit::discretionary	6	2	6	2	8	24	1	3
LayoutKit::discretionary	6	5	9	5	14	48	1	5
LayoutKit::strut	6	4	8	4	12	40	1	5
LayoutKit::hstrut	6	5	9	5	14	48	1	6
LayoutKit::vstrut	6	5	9	5	14	48	1	6
LayoutKit::spaces	6	4	8	4	12	40	1	5
LayoutKit::center	8	5	15	5	20	74	1	9
LayoutKit::center_dimension	7	3	9	3	12	40	1	5
LayoutKit::hcenter	6	3	7	3	10	32	1	3
LayoutKit::vcenter	6	3	7	3	10	32	1	3
LayoutKit::fixed	8	5	15	5	20	74	1	9
LayoutKit::fixed_dimension	7	3	9	3	12	40	1	5
LayoutKit::hfixed	6	3	7	3	10	32	1	3
LayoutKit::vfixed	6	3	7	3	10	32	1	3
	191	117	262	122	384	1286	31	130
LayoutKit::hnatural	6	3	7	3	10	32	1	3
LayoutKit::vnatural	6	3	7	3	10	32	1	3
LayoutKit::margin	7	2	8	2	10	32	1	3
LayoutKit::margin	7	3	9	3	12	40	1	5
LayoutKit::margin	7	5	11	5	16	57	1	8
LayoutKit::margin	7	13	19	13	32	138	1	15
LayoutKit::hmargin	6	3	9	5	14	44	1	3
LayoutKit::hmargin	6	4	9	5	14	47	1	5
LayoutKit::hmargin	6	8	17	13	30	114	1	11
LayoutKit::vmargin	6	3	9	5	14	44	1	3
LayoutKit::vmargin	6	4	9	5	14	47	1	5
LayoutKit::vmargin	6	8	17	13	30	114	1	11
LayoutKit::lmargin	6	3	9	5	14	44	1	3
LayoutKit::lmargin	6	5	17	13	30	104	1	5
LayoutKit::rmargin	6	3	9	5	14	44	1	3
LayoutKit::rmargin	6	5	17	13	30	104	1	5
LayoutKit::bmargin	6	3	9	5	14	44	1	3
LayoutKit::bmargin	6	5	17	13	30	104	1	5
LayoutKit::tmargin	6	3	9	5	14	44	1	3
LayoutKit::tmargin	6	5	17	13	30	104	1	5
	124	91	235	147	382	1333	20	107
Discretionary::Discretionary	9	8	27	16	43	176	3	14
Discretionary::Discretionary	9	11	43	22	65	281	5	21
Discretionary::~Discretionary	8	5	33	12	45	167	5	14
Discretionary::request	10	4	13	6	19	72	2	6
Discretionary::compose	7	10	32	13	45	184	5	13
	43	38	148	69	217	880	20	68
Glue::Glue	7	7	13	7	20	76	1	8
Glue::Glue	3	2	3	2	5	12	1	3
Glue::~Glue	1	1	1	1	2	1	1	1
Glue::request	3	2	3	2	5	12	1	3
Glue::allocate	6	3	6	3	9	29	1	3
	20	15	26	15	41	130	5	18
Space::Space	21	20	58	46	104	557	3	22
Space::~Space	5	3	9	4	13	39	1	4
Space::request	10	10	27	16	43	186	1	6
Space::allocate	6	3	6	3	9	29	1	3
Space::pick	19	9	37	19	56	269	3	8
Space::draw	20	12	43	29	72	360	3	11
	81	57	180	117	297	1440	12	54
Strut::Strut	19	15	40	25	65	331	3	16
Strut::~Strut	5	2	5	2	7	20	1	3

Strut::request	8	10	25	14	39	163	1	6
Strut::allocate	6	3	6	3	9	29	1	3
	38	30	76	44	120	543	6	28
HStrut::HStrut	3	10	11	10	21	78	1	10
HStrut::~HStrut	1	1	1	1	2	1	1	1
HStrut::request	14	12	32	22	54	254	2	7
	18	23	44	33	77	333	4	18
VStrut::VStrut	3	10	11	10	21	78	1	9
VStrut::~VStrut	1	1	1	1	2	1	1	1
VStrut::request	14	12	32	22	54	254	2	7
	18	23	44	33	77	333	4	17
LayoutLayer::undraw	9	4	21	7	28	104	3	9
	9	4	21	7	28	104	3	9
ShapeOf::ShapeOf	6	5	13	8	21	73	1	7
ShapeOf::~ShapeOf	5	3	9	4	13	39	1	4
ShapeOf::request	15	6	42	18	60	264	4	15
	26	14	64	30	94	376	6	26
LRMarker::LRMarker	6	10	19	14	33	132	1	37
LRMarker::~LRMarker	6	5	11	6	17	59	1	5
LRMarker::unmark	8	5	14	9	23	85	2	6
LRMarker::bound	15	22	120	86	206	1073	7	33
LRMarker::mark	18	18	107	84	191	987	4	40
LRMarker::allocate	9	5	14	9	23	88	1	5
LRMarker::draw	12	15	52	37	89	423	5	19
LRMarker::undraw	6	3	7	3	10	32	1	4
	80	83	344	248	592	2879	22	149
MenuItem::MenuItem	6	6	11	8	19	68	1	32
MenuItem::MenuItem	8	8	15	10	25	100	1	7
MenuItem::MenuItem	15	9	30	15	45	206	2	11
MenuItem::~MenuItem	9	6	24	10	34	133	1	8
MenuItem::init	10	5	20	9	29	113	1	7
MenuItem::body	3	1	3	1	4	8	1	1
MenuItem::action	7	3	11	6	17	56	1	5
MenuItem::menu	14	6	28	13	41	177	2	10
MenuItem::update	5	1	5	1	6	16	1	3
	77	45	147	73	220	877	11	84
Menu::Menu	8	15	30	24	54	244	1	13
Menu::~Menu	15	5	30	7	37	160	2	7
Menu::append_item	7	3	12	4	16	53	1	5
Menu::prepend_item	7	3	12	4	16	53	1	5
Menu::insert_item	8	4	14	6	20	72	1	5
Menu::remove_item	5	3	9	4	13	39	1	5
Menu::replace_item	20	6	40	18	58	273	2	10
Menu::item_count	6	2	7	2	9	27	1	4
Menu::item	12	5	19	9	28	114	2	7
Menu::select	14	5	23	11	34	144	2	8
Menu::open	38	25	151	68	219	1309	6	30
Menu::close	22	16	60	31	91	478	5	18
Menu::selected	4	2	4	2	6	16	1	3
Menu::unselect	10	3	14	6	20	74	2	7
Menu::press	12	5	17	7	24	98	2	7
Menu::drag	32	12	110	36	146	797	6	28
Menu::release	47	31	288	124	412	2590	15	76
	267	145	840	363	1203	6541	51	238
MenuImpl::selected_menu	13	6	18	9	27	115	2	8
MenuImpl::save_cursor	12	6	24	9	33	138	2	8
MenuImpl::restore_cursor	9	4	13	5	18	67	2	6
MenuImpl::grab	11	4	14	5	19	74	2	6
MenuImpl::ungrab	10	4	13	5	18	69	2	6
MenuImpl::menu_cursor	9	3	11	5	16	57	2	6
	64	27	93	38	131	520	12	40
MFDialogKit::MFDialogKit	1	1	1	1	2	1	1	27
MFDialogKit::~MFDialogKit	1	1	1	1	2	1	1	1

MFDialogKit::make_field_editor	6	4	8	4	12	40	1	5
MFDialogKit::make_file_chooser	6	4	8	4	12	40	1	5
	14	10	18	10	28	82	4	38
MFKitInfo::style	3	1	3	1	4	8	1	27
MFKitInfo::thickness	3	1	3	1	4	8	1	1
MFKitInfo::toggle_scale	3	1	3	1	4	8	1	1
MFKitInfo::radio_scale	3	1	3	1	4	8	1	1
MFKitInfo::mover_size	3	1	3	1	4	8	1	1
MFKitInfo::slider_size	3	1	3	1	4	8	1	1
MFKitInfo::flat	3	1	3	1	4	8	1	1
MFKitInfo::light	3	1	3	1	4	8	1	1
MFKitInfo::dull	3	1	3	1	4	8	1	1
MFKitInfo::dark	3	1	3	1	4	8	1	1
MFKitInfo::gray_out	3	1	3	1	4	8	1	1
	33	11	33	11	44	88	11	37
MFKitFrame::info	4	1	4	1	5	12	1	1
	4	1	4	1	5	12	1	1
MFKit::MFKit	18	11	34	17	51	248	2	7
MFKit::~MFKit	3	1	3	1	4	8	1	3
MFKit::gui	3	1	3	1	4	8	1	1
MFKit::style_changed	29	12	124	38	162	868	7	27
MFKit::outset_frame	13	4	24	7	31	127	1	6
MFKit::inset_frame	13	4	24	7	31	127	1	6
MFKit::bright_inset_frame	11	7	25	11	36	150	1	7
MFKit::menubar_look	9	3	14	5	19	68	1	5
MFKit::pulldown_look	7	1	8	1	9	27	1	5
MFKit::menubar_item_look	12	8	20	11	31	134	1	7
MFKit::menu_item_look	8	4	13	6	19	68	1	6
MFKit::check_menu_item_look	23	15	55	25	80	420	1	12
MFKit::radio_menu_item_look	23	14	55	25	80	417	1	12
MFKit::menu_item_separator_look	10	4	17	7	24	91	1	10
MFKit::push_button_look	13	10	26	21	47	213	1	11
MFKit::default_button_look	9	4	12	4	16	59	1	5
MFKit::palette_button_look	6	2	6	2	8	24	1	3
MFKit::check_box_look	14	8	28	12	40	178	1	11
MFKit::radio_button_look	14	8	28	12	40	178	1	11
MFKit::slider_look	29	16	78	31	109	599	3	26
MFKit::scroll_bar_look	44	25	201	102	303	1851	3	58
MFKit::panner_look	9	3	12	3	15	54	1	5
MFKit::enlarger_look	3	1	3	1	4	8	1	3
MFKit::reducer_look	3	1	3	1	4	8	1	3
MFKit::up_mover_look	9	4	9	4	13	48	1	3
MFKit::down_mover_look	9	4	9	4	13	48	1	3
MFKit::left_mover_look	9	4	9	4	13	48	1	3
MFKit::right_mover_look	9	4	9	4	13	48	1	3
	362	183	852	367	1219	6125	39	262
MFKitFrame::MFKitFrame	6	9	17	12	29	113	1	12
MFKitFrame::~MFKitFrame	5	3	9	4	13	39	1	4
MFKitFrame::draw	18	7	37	12	49	228	2	8
MFKitFrame::pick	20	10	52	23	75	368	3	11
MFKitFrame::draw_frame	21	13	72	31	103	524	3	16
	70	42	187	82	269	1272	10	51
MFKitMenuItem::MFKitMenuItem	6	3	7	4	11	35	1	5
MFKitMenuItem::~MFKitMenuItem	5	2	5	2	7	20	1	3
MFKitMenuItem::draw	10	6	13	6	19	76	2	5
MFKitMenuItem::pick	10	8	15	8	23	96	2	5
	31	19	40	20	60	227	6	18
MFKitForeground::MFKitForegroun	6	3	7	4	11	35	1	5
MFKitForeground::~MFKitForegrou	5	2	5	2	7	20	1	3
MFKitForeground::draw	13	4	26	9	35	143	1	4
	24	9	38	15	53	198	3	12
MFKitImpl::make_mover	18	12	78	38	116	569	1	15
MFKitImpl::make_slider	15	5	28	9	37	160	1	9
	33	17	106	47	153	729	2	24
MFKitInfo::MFKitInfo	7	3	10	4	14	47	1	6

MFKitInfo::~MFKitInfo	6	2	8	2	10	30	1	4
MFKitInfo::load	22	31	105	59	164	939	2	25
MFKitInfo::unload	5	6	21	10	31	107	1	7
	40	42	144	75	219	1123	5	42
MonoGlyph::MonoGlyph	6	3	7	4	11	35	1	27
MonoGlyph::~MonoGlyph	5	2	5	2	7	20	1	3
MonoGlyph::body	12	4	19	9	28	112	2	8
MonoGlyph::body	3	1	3	1	4	8	1	1
MonoGlyph::request	10	4	15	6	21	80	2	7
MonoGlyph::allocate	11	6	19	10	29	119	2	7
MonoGlyph::draw	11	5	17	8	25	100	2	7
MonoGlyph::print	11	5	17	8	25	100	2	7
MonoGlyph::pick	11	7	21	12	33	138	2	7
MonoGlyph::undraw	8	2	9	3	12	40	2	5
MonoGlyph::append	8	3	9	4	13	45	2	5
MonoGlyph::prepend	8	3	9	4	13	45	2	5
MonoGlyph::insert	9	4	10	5	15	56	2	5
MonoGlyph::remove	8	3	9	4	13	45	2	5
MonoGlyph::replace	9	4	10	5	15	56	2	5
MonoGlyph::count	11	3	17	4	21	80	2	7
MonoGlyph::component	11	4	17	6	23	90	2	7
MonoGlyph::change	8	3	9	4	13	45	2	5
MonoGlyph::allotment	11	6	19	10	29	119	2	9
	171	72	241	109	350	1333	35	132
MonoKitInfo::style	3	1	3	1	4	8	1	27
MonoKitInfo::thickness	3	1	3	1	4	8	1	1
MonoKitInfo::toggle_scale	3	1	3	1	4	8	1	1
MonoKitInfo::radio_scale	3	1	3	1	4	8	1	1
MonoKitInfo::mover_size	3	1	3	1	4	8	1	1
MonoKitInfo::slider_size	3	1	3	1	4	8	1	1
MonoKitInfo::flat	3	1	3	1	4	8	1	1
MonoKitInfo::light	3	1	3	1	4	8	1	1
MonoKitInfo::dull	3	1	3	1	4	8	1	1
MonoKitInfo::dark	3	1	3	1	4	8	1	1
MonoKitInfo::gray_out	3	1	3	1	4	8	1	1
	33	11	33	11	44	88	11	37
Observable::Observable	4	2	133	2	135	349	1	720
Observable::~Observable	20	4	37	8	45	206	3	9
Observable::attach	11	6	18	11	29	119	2	8
Observable::detach	19	5	41	8	49	225	4	11
Observable::notify	19	4	35	7	42	190	3	8
	73	21	264	36	300	1089	13	756
Observer::Observer	1	1	1	1	2	1	1	1
Observer::~Observer	1	1	1	1	2	1	1	1
Observer::update	1	1	1	1	2	1	1	1
Observer::disconnect	1	1	1	1	2	1	1	1
	4	4	4	4	8	4	4	4
OL_FieldEditor::OL_FieldEditor	13	6	25	12	37	157	1	36
OL_FieldEditor::~OL_FieldEditor	5	3	9	4	13	39	1	4
OL_FieldEditor::request	17	5	35	12	47	210	1	6
OL_FieldEditor::allocate	23	11	68	28	96	488	1	10
OL_FieldEditor::pick	6	5	8	5	13	45	1	3
OL_FieldEditor::draw	16	13	68	46	114	554	1	8
	80	43	213	107	320	1493	6	67
OLDialogKit::OLDialogKit	1	1	1	1	2	1	1	1
OLDialogKit::~OLDialogKit	1	1	1	1	2	1	1	1
OLDialogKit::make_field_editor	6	4	8	4	12	40	1	5
OLDialogKit::make_file_chooser	6	4	8	4	12	40	1	5
	14	10	18	10	28	82	4	12
OL_Specs::OL_Specs	26	74	198	115	313	2080	6	71
OL_Specs::~OL_Specs	5	2	5	2	7	20	1	3
OL_Specs::to_coord	4	2	4	2	6	16	1	3
OL_Specs::font	3	1	3	1	4	8	1	3
OL_Specs::anchor_height	6	2	6	2	8	24	1	3
OL_Specs::anchor_rule	6	2	6	2	8	24	1	3
OL_Specs::anchor_to_side_gap	6	2	6	2	8	24	1	3
OL_Specs::anchor_width	7	3	8	4	12	40	1	3

OL_Specs::arrow_length	6	2	6	2	8	24	1	3
OL_Specs::button_default_ring_r	8	4	8	4	12	43	1	3
OL_Specs::button_gap	6	2	6	2	8	24	1	3
OL_Specs::button_height	6	2	6	2	8	24	1	3
OL_Specs::button_radius	7	3	7	3	10	33	1	3
OL_Specs::button_vertical_margi	7	3	7	3	10	33	1	3
OL_Specs::button_rule_width	5	1	5	1	6	16	1	3
OL_Specs::cable_gap	6	2	6	2	8	24	1	3
OL_Specs::cable_width	7	3	10	6	16	53	1	3
OL_Specs::channel_cap_width	7	3	7	3	10	33	1	3
OL_Specs::channel_gap	6	2	6	2	8	24	1	3
OL_Specs::channel_highlight	5	1	5	1	6	16	1	3
OL_Specs::channel_length	7	3	10	6	16	53	1	3
OL_Specs::channel_rule	6	2	6	2	8	24	1	3
OL_Specs::channel_width	6	2	6	2	8	24	1	3
OL_Specs::checkbox_thickness	6	2	6	2	8	24	1	3
OL_Specs::checkbox_width	6	2	6	2	8	24	1	3
OL_Specs::checkmark_height	6	2	6	2	8	24	1	3
OL_Specs::checkmark_width	8	4	10	6	16	57	1	3
OL_Specs::dragbox_length	6	2	6	2	8	24	1	3
OL_Specs::dragbox_width	6	2	6	2	8	24	1	3
OL_Specs::elevator_length	6	2	6	2	8	24	1	3
OL_Specs::elevator_width	7	3	8	4	12	40	1	3
OL_Specs::elevator_to_anchor_ga	6	2	6	2	8	24	1	3
OL_Specs::elevator_to_side_gap	6	2	6	2	8	24	1	3
OL_Specs::gauge_cap_width	7	3	7	3	10	33	1	3
OL_Specs::gauge_end_width	7	3	7	3	10	33	1	3
OL_Specs::gauge_indent	9	4	10	5	15	56	1	3
OL_Specs::gauge_origin	6	2	6	2	8	24	1	3
OL_Specs::gauge_rule	6	2	6	2	8	24	1	3
OL_Specs::gauge_shimmer_gap	5	1	5	1	6	16	1	3
OL_Specs::gauge_shimmer_width	5	1	5	1	6	16	1	3
OL_Specs::gauge_width	6	2	6	2	8	24	1	3
OL_Specs::gauge_min_length	6	1	8	1	9	25	1	3
OL_Specs::menu_bmargin	7	3	7	3	10	33	1	3
OL_Specs::menu_button_height	6	2	6	2	8	24	1	3
OL_Specs::menu_hmargin	6	2	6	2	8	24	1	3
OL_Specs::menu_mark_gap	6	2	6	2	8	24	1	3
OL_Specs::menu_mark_height	6	2	6	2	8	24	1	3
OL_Specs::menu_mark_width	9	5	10	7	17	65	1	5
OL_Specs::menu_pushpin_gap	7	3	8	4	12	40	1	3
OL_Specs::menu_pushpin_height	6	2	6	2	8	24	1	3
	331	186	518	241	759	3482	55	220
OL_Specs::setting_vertical_marg	7	3	7	3	10	33	1	3
OL_Specs::setting_horizontal_ma	6	2	6	2	8	24	1	3
OL_Specs::shaft_length	7	3	10	6	16	53	1	3
OL_Specs::shaft_gap	6	2	6	2	8	24	1	3
OL_Specs::tick_length	6	2	6	2	8	24	1	3
	32	12	35	15	50	158	5	15
OL_AbbrevMenuButton::OL_AbbrevM	21	15	76	34	110	569	3	21
OL_AbbrevMenuButton::request	8	4	17	6	23	82	1	6
OL_AbbrevMenuButton::allocate	6	3	6	3	9	29	1	5
OL_AbbrevMenuButton::draw	25	36	193	128	321	1904	6	40
	60	58	292	171	463	2584	11	72
OL_Anchor::OL_Anchor	5	2	5	2	7	20	1	5
OL_Anchor::~OL_Anchor	5	2	5	2	7	20	1	3
OL_Anchor::allocate	6	3	6	3	9	29	1	3
OL_Anchor::request	9	6	23	12	35	137	1	6
OL_Anchor::draw	21	16	72	34	106	552	2	14
	46	29	111	53	164	758	6	31
OL_Button::OL_Button	30	22	92	50	142	809	3	28
OL_Button::~OL_Button	5	3	9	4	13	39	1	4
OL_Button::allocate	8	4	12	7	19	68	1	4
OL_Button::draw	32	23	107	52	159	919	5	25
OL_Button::pick	17	7	40	17	57	261	2	7
OL_Button::draw_background	14	7	25	10	35	154	2	9
OL_Button::fill	17	11	46	25	71	341	1	10
OL_Button::draw_frame	22	16	83	47	130	682	2	18
OL_Button::path	13	15	144	101	245	1178	1	36
OL_Button::top_path	11	15	80	59	139	653	1	18
OL_Button::bottom_path	11	15	80	59	139	653	1	18
	180	138	718	431	1149	5757	20	177

OL_CheckMark::OL_CheckMark	17	9	33	16	49	230	2	15
OL_CheckMark::~OL_CheckMark	5	3	9	4	13	39	1	4
OL_CheckMark::request	14	5	28	12	40	170	1	6
OL_CheckMark::allocate	8	8	19	15	34	136	1	4
OL_CheckMark::draw	17	14	35	18	53	263	3	8
	61	39	124	65	189	838	8	37
OL_ElevatorGlyph::OL_ElevatorGl	5	2	5	2	7	20	1	10
OL_ElevatorGlyph::~OL_ElevatorG	5	2	5	2	7	20	1	3
OL_ElevatorGlyph::request	13	8	28	15	43	189	2	7
OL_ElevatorGlyph::allocate	14	6	32	15	47	203	1	9
OL_ElevatorGlyph::draw	32	53	308	213	521	3339	22	74
OL_ElevatorGlyph::undraw	3	2	3	2	5	12	1	3
OL_ElevatorGlyph::flip_to	9	5	15	8	23	88	3	8
OL_ElevatorGlyph::inside	16	7	35	17	52	235	1	6
OL_ElevatorGlyph::backward_arro	23	14	56	36	92	479	2	10
OL_ElevatorGlyph::forward_arrow	23	14	56	36	92	479	2	10
OL_ElevatorGlyph::less_than	14	4	25	6	31	129	2	7
OL_ElevatorGlyph::greater_than	14	4	25	6	31	129	2	7
OL_ElevatorGlyph::forward_arrow	15	5	27	8	35	151	2	7
OL_ElevatorGlyph::backward_arro	15	5	27	8	35	151	2	7
OL_ElevatorGlyph::index	3	1	3	1	4	8	1	1
	204	132	650	375	1025	5632	45	169
OL_Indicator::OL_Indicator	1	1	1	1	2	1	1	3
	1	1	1	1	2	1	1	3
OL_Frame::draw_background	12	3	24	6	30	117	1	3
	12	3	24	6	30	117	1	3
OL_Gauge::OL_Gauge	7	2	7	2	9	29	1	5
OL_Gauge::~OL_Gauge	10	3	11	4	15	56	2	5
OL_Gauge::request	16	7	42	13	55	249	2	12
OL_Gauge::allocate	6	3	6	3	9	29	1	3
OL_Gauge::draw	39	54	459	317	776	5074	14	95
OL_Gauge::update	5	1	5	1	6	16	1	3
OL_Gauge::disconnect	6	3	7	3	10	32	1	4
	89	73	537	343	880	5485	22	127
OL_MenuMark::OL_MenuMark	18	21	84	43	127	671	3	29
OL_MenuMark::~OL_MenuMark	5	2	5	2	7	20	1	3
OL_MenuMark::request	10	2	21	4	25	90	1	4
OL_MenuMark::allocate	6	3	6	3	9	29	1	3
OL_MenuMark::draw	16	19	55	37	92	472	2	12
	55	47	171	89	260	1282	8	51
OL_Mover::OL_Mover	21	25	75	43	118	652	5	30
OL_Mover::~OL_Mover	5	2	5	2	7	20	1	3
OL_Mover::request	8	4	17	6	23	82	1	7
OL_Mover::allocate	6	3	6	3	9	29	1	3
OL_Mover::draw	26	25	158	98	256	1452	5	25
	66	59	261	152	413	2235	13	68
OL_Pushpin::OL_Pushpin	5	2	5	2	7	20	1	5
OL_Pushpin::~OL_Pushpin	5	2	5	2	7	20	1	3
OL_Pushpin::execute	18	8	40	14	54	254	3	12
	28	12	50	18	68	294	5	20
OL_PushpinLook::OL_PushpinLook	18	11	34	18	52	253	2	12
OL_PushpinLook::~OL_PushpinLook	5	2	5	2	7	20	1	3
OL_PushpinLook::request	8	4	17	6	23	82	1	6
OL_PushpinLook::allocate	6	3	6	3	9	29	1	3
OL_PushpinLook::draw	12	6	44	17	61	254	4	15
OL_PushpinLook::draw_pinned	13	14	51	33	84	399	1	8
OL_PushpinLook::draw_unpinned	13	14	51	33	84	399	1	8
	75	54	208	112	320	1436	11	55
OL_Scrollbar::OL_Scrollbar	8	3	10	3	13	45	1	10
OL_Scrollbar::~OL_Scrollbar	10	3	11	4	15	56	2	5
OL_Scrollbar::allocation_change	10	7	16	9	25	102	1	7
OL_Scrollbar::press	12	4	25	9	34	136	2	8
OL_Scrollbar::drag	11	3	19	7	26	99	2	6

OL_Scrollbar::release	14	4	53	18	71	296	5	14
OL_Scrollbar::update	16	7	38	13	51	231	2	13
OL_Scrollbar::disconnect	3	2	3	2	5	12	1	3
	84	33	175	65	240	977	16	66
OL_Slider::OL_Slider	8	3	10	3	13	45	1	9
OL_Slider::~OL_Slider	10	3	11	4	15	56	2	5
OL_Slider::allocation_changed	8	5	12	7	19	70	1	5
OL_Slider::press	18	6	36	14	50	229	2	11
OL_Slider::drag	10	4	15	5	20	76	2	6
OL_Slider::release	10	4	21	7	28	107	2	8
OL_Slider::update	16	6	30	11	41	183	2	11
OL_Slider::disconnect	3	2	3	2	5	12	1	3
	83	33	138	53	191	778	13	58
OL_Setting::OL_Setting	29	19	88	47	135	754	3	28
OL_Setting::~OL_Setting	5	2	5	2	7	20	1	3
	34	21	93	49	142	774	4	31
	0	0	0	0	0	0	0	0
Page::top	6	1	6	1	7	20	1	1
Page::x	6	1	6	1	7	20	1	1
Page::y	6	1	6	1	7	20	1	1
Page::show	16	8	31	17	48	220	4	13
Page::showing	9	5	10	5	15	57	1	3
Page::move	24	24	111	67	178	994	4	28
Page::location	4	5	7	6	13	41	1	5
Page::count	6	1	6	1	7	20	1	3
Page::component	7	3	7	3	10	33	1	3
Page::allotment	8	5	10	5	15	56	1	3
Page::change	6	3	6	3	9	29	1	4
Page::append	9	9	21	16	37	154	1	9
Page::prepend	9	9	21	16	37	154	1	9
Page::insert	10	10	22	17	39	169	1	9
Page::remove	15	10	23	13	36	167	2	8
Page::replace	18	9	31	19	50	238	2	10
Page::request	8	3	9	4	13	45	2	5
Page::allocate	36	32	170	99	269	1638	7	45
Page::draw	21	18	58	38	96	507	5	16
Page::print	21	18	58	38	96	507	5	16
Page::undraw	16	12	41	25	66	317	4	14
Page::pick	29	18	98	49	147	817	5	19
	290	205	758	444	1202	6223	52	225
Patch::Patch	3	2	3	2	5	12	1	29
Patch::~Patch	1	1	1	1	2	1	1	1
Patch::redraw	10	5	12	7	19	74	2	6
Patch::reallocate	17	9	33	16	49	230	2	14
Patch::repick	14	8	26	13	39	174	2	9
Patch::allocate	9	8	18	12	30	123	1	7
Patch::draw	10	4	12	5	17	65	2	6
Patch::undraw	6	3	7	3	10	32	1	4
	70	40	112	59	171	711	12	76
Placement::Placement	3	2	3	2	5	12	1	29
Placement::~Placement	3	1	3	1	4	8	1	3
Placement::request	12	6	20	10	30	125	2	7
Placement::allocate	14	8	27	12	39	174	2	8
Placement::draw	14	7	26	11	37	163	2	8
Placement::print	14	7	26	11	37	163	2	8
Placement::pick	14	9	28	13	41	185	2	8
	74	40	133	60	193	830	12	71
CenterLayout::CenterLayout	3	4	5	4	9	25	1	4
CenterLayout::~CenterLayout	1	1	1	1	2	1	1	1
CenterLayout::request	8	5	11	6	17	63	1	6
CenterLayout::allocate	16	7	37	15	52	235	1	8
	28	17	54	26	80	324	4	19
FixedLayout::FixedLayout	3	4	5	4	9	25	1	4
FixedLayout::~FixedLayout	1	1	1	1	2	1	1	1
FixedLayout::request	10	6	19	10	29	116	1	8

FixedLayout::allocate	9	6	12	7	19	74	1	7
	23	17	37	22	59	216	4	20
VariableLayout::VariableLayout	3	6	7	6	13	41	1	7
VariableLayout::~VariableLayout	1	1	1	1	2	1	1	1
VariableLayout::request	13	7	22	10	32	138	1	7
VariableLayout::allocate	1	1	1	1	2	1	1	5
	18	15	31	18	49	181	4	20
NaturalLayout::NaturalLayout	3	4	5	4	9	25	1	4
NaturalLayout::~NaturalLayout	1	1	1	1	2	1	1	1
NaturalLayout::request	8	5	11	6	17	63	1	6
NaturalLayout::allocate	1	1	1	1	2	1	1	5
	13	11	18	12	30	90	4	16
MarginLayout::MarginLayout	3	14	25	24	49	200	1	6
MarginLayout::MarginLayout	3	15	25	24	49	204	1	6
MarginLayout::MarginLayout	3	17	25	24	49	212	1	8
MarginLayout::MarginLayout	3	24	25	24	49	233	1	11
MarginLayout::~MarginLayout	1	1	1	1	2	1	1	1
MarginLayout::request	15	17	83	36	119	595	3	18
MarginLayout::allocate	19	27	123	64	187	1033	1	18
MarginLayout::span	19	10	48	30	78	379	3	16
	66	125	355	227	582	2857	12	84
PolyGlyph::PolyGlyph	5	2	5	2	7	20	1	29
PolyGlyph::~PolyGlyph	17	5	32	8	40	178	2	7
PolyGlyph::undraw	18	7	37	11	48	223	3	9
PolyGlyph::append	12	8	21	12	33	143	1	7
PolyGlyph::prepend	11	7	16	9	25	104	1	6
PolyGlyph::insert	12	7	17	10	27	115	1	6
PolyGlyph::remove	17	9	30	16	46	216	2	10
PolyGlyph::replace	20	10	43	23	66	324	3	14
PolyGlyph::change	4	1	4	1	5	12	1	3
PolyGlyph::count	7	2	7	2	9	29	1	3
PolyGlyph::component	7	3	7	3	10	33	1	3
PolyGlyph::modified	1	1	1	1	2	1	1	1
	131	62	220	98	318	1398	18	98
PolyGlyphImpl::PolyGlyphImpl	1	1	1	1	2	1	1	1
	1	1	1	1	2	1	1	1
Printer::Printer	8	19	47	41	88	418	1	20
Printer::~Printer	6	2	9	3	12	36	1	5
Printer::to_pixels	3	1	3	1	4	8	1	1
Printer::to_coord	3	1	3	1	4	8	1	1
Printer::to_pixels_coord	3	1	3	1	4	8	1	1
Printer::resize	12	10	26	16	42	187	1	9
Printer::prolog	3	9	15	14	29	104	1	9
Printer::epilog	7	9	16	12	28	112	1	9
Printer::comment	5	4	8	4	12	38	1	5
Printer::page	18	18	59	40	99	512	2	14
Printer::push_transform	16	9	35	18	53	246	1	9
Printer::pop_transform	13	7	24	11	35	151	1	8
Printer::transform	13	14	48	36	84	399	1	10
Printer::push_clipping	14	7	28	15	43	189	1	12
Printer::pop_clipping	11	6	20	10	30	123	1	7
Printer::new_path	5	2	6	2	8	22	1	5
Printer::move_to	5	5	9	5	14	47	1	5
Printer::line_to	5	5	9	5	14	47	1	5
Printer::curve_to	5	9	18	14	32	122	1	8
Printer::close_path	5	2	6	2	8	22	1	5
Printer::stroke	18	10	42	24	66	317	3	15
Printer::fill	17	8	30	16	46	214	2	11
Printer::clip	5	2	6	2	8	22	1	5
Printer::character	25	33	128	80	208	1218	9	48
Printer::flush	9	10	35	28	63	268	3	14
Printer::stencil	34	43	161	116	277	1736	6	51
Printer::image	28	39	134	95	229	1389	3	40
	296	285	928	612	1540	7963	48	332
PSFont::PSFont	27	23	101	58	159	897	7	61
PSFont::~PSFont	4	3	9	5	14	39	1	5
PSFont::name	4	2	4	2	6	16	1	1

PSFont::encoding	4	2	4	2	6	16	1	1
PSFont::size	4	2	4	2	6	16	1	1
PSFont::width	5	3	5	3	8	24	1	1
PSFont::width	7	3	7	3	10	33	1	1
PSFont::exists	9	5	14	6	20	76	2	10
	64	43	148	81	229	1117	15	81
PSFontImpl::psfile	15	9	32	15	47	215	2	11
	15	9	32	15	47	215	2	11
Regexp::Regexp	9	7	16	11	27	108	1	7
Regexp::Regexp	9	7	16	11	27	108	1	6
Regexp::~Regexp	5	2	7	3	10	28	2	5
Regexp::Search	31	31	213	137	350	2084	17	96
Regexp::Match	20	16	63	41	104	538	4	23
Regexp::BeginningOfMatch	12	8	21	16	37	160	2	6
Regexp::EndOfMatch	12	9	21	16	37	163	2	6
	98	80	357	235	592	3189	29	149
Resource::Resource	3	2	3	2	5	12	1	24
Resource::~Resource	1	1	1	1	2	1	1	1
Resource::ref	8	4	10	6	16	57	1	4
Resource::unref	15	5	26	14	40	173	3	10
Resource::unref_deferred	19	8	46	20	66	314	5	17
Resource::cleanup	1	1	1	1	2	1	1	1
Resource::ref	8	2	9	3	12	40	2	5
Resource::unref	8	2	9	3	12	40	2	5
Resource::unref_deferred	8	2	9	3	12	40	2	5
Resource::defer	10	4	16	8	24	91	2	8
Resource::flush	20	10	49	18	67	329	3	13
	101	41	179	79	258	1098	23	93
Rule::Rule	6	7	11	8	19	70	1	32
Rule::~Rule	5	2	5	2	7	20	1	3
Rule::request	7	5	13	7	20	72	1	4
Rule::allocate	6	3	6	3	9	29	1	3
Rule::draw	11	3	21	6	27	103	1	3
	35	20	56	26	82	294	5	45
HRule::HRule	1	1	1	1	2	1	1	1
HRule::~HRule	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	2
VRule::VRule	1	1	1	1	2	1	1	1
VRule::~VRule	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	2
ScrollBox::ScrollBox	1	1	1	1	2	1	1	27
ScrollBox::~ScrollBox	1	1	1	1	2	1	1	1
ScrollBox::shown	8	2	8	3	11	37	1	3
ScrollBox::first_shown	3	1	3	1	4	8	1	3
ScrollBox::last_shown	6	1	6	1	7	20	1	3
TBScrollBox::TBScrollBox	8	10	24	17	41	171	1	9
TBScrollBox::~TBScrollBox	3	1	3	1	4	8	1	3
TBScrollBox::request	27	27	119	72	191	1099	5	35
TBScrollBox::allocate	15	14	43	25	68	330	3	17
TBScrollBox::draw	29	15	87	32	119	650	4	18
TBScrollBox::pick	32	17	102	38	140	786	4	20
TBScrollBox::undraw	7	4	8	4	12	42	1	4
TBScrollBox::modified	4	3	4	3	7	20	1	3
TBScrollBox::shown	7	4	8	6	14	48	1	4
TBScrollBox::first_shown	4	2	4	2	6	16	1	4
TBScrollBox::last_shown	5	3	5	3	8	24	1	4
TBScrollBox::allotment	13	8	21	14	35	154	2	8
TBScrollBox::lower	5	1	5	1	6	16	1	3
TBScrollBox::upper	7	1	8	1	9	27	1	3
TBScrollBox::length	6	1	7	1	8	22	1	3
TBScrollBox::cur_lower	8	2	9	2	11	37	1	4
TBScrollBox::cur_upper	8	3	10	3	13	45	1	4
TBScrollBox::cur_length	7	3	8	4	12	40	1	4
TBScrollBox::scroll_forward	8	1	9	2	11	35	1	3
TBScrollBox::scroll_backward	7	1	8	2	10	30	1	3
TBScrollBox::page_forward	8	1	9	2	11	35	1	3
TBScrollBox::page_backward	7	1	8	2	10	30	1	3

TBScrollBox::scroll_to	12	10	22	17	39	174	1	7
TBScrollBox::impl	8	2	11	4	15	50	2	7
TBScrollBox::scroll_by	7	5	10	7	17	61	1	4
TBScrollBox::do_scroll	20	11	63	42	105	520	4	23
	291	157	634	314	948	4537	48	240
TBScrollBoxImpl::check	16	11	26	16	42	200	2	9
TBScrollBoxImpl::refresh	8	5	14	6	20	74	1	7
TBScrollBoxImpl::reallocate	37	40	151	101	252	1579	7	45
TBScrollBoxImpl::redraw	8	3	9	4	13	45	2	5
TBScrollBoxImpl::undraw_range	14	10	26	16	42	193	3	9
	83	69	226	143	369	2091	15	75
SessionIOHandler::SessionIOHand	3	4	5	4	9	25	1	43
SessionIOHandler::inputReady	6	3	7	3	10	32	1	4
	9	7	12	7	19	57	2	47
Session::Session	8	6	13	7	20	76	1	8
Session::~Session	3	1	3	1	4	8	1	3
Session::instance	4	1	4	1	5	12	1	1
Session::name	6	2	7	2	9	27	1	1
Session::classname	4	2	4	2	6	16	1	1
Session::argc	4	2	4	2	6	16	1	1
Session::argv	4	2	4	2	6	16	1	1
Session::style	9	4	15	7	22	81	2	7
Session::default_display	4	3	4	3	7	20	1	1
Session::default_display	4	2	4	2	6	16	1	1
Session::connect	13	5	17	9	26	108	2	7
Session::connect	13	5	17	9	26	108	2	7
Session::disconnect	24	9	47	19	66	333	3	12
	100	44	143	66	209	837	18	51
SessionRep::handle_display_inpu	15	6	33	9	42	184	5	19
	15	6	33	9	42	184	5	19
Session::run	13	8	22	12	34	149	2	13
Session::run_window	7	1	9	1	10	30	1	7
Session::quit	4	3	4	3	7	20	1	6
Session::done	4	2	4	2	6	16	1	6
Session::pending	11	5	16	9	25	100	2	11
Session::read	14	8	30	17	47	210	2	13
Session::read	20	12	46	28	74	370	3	19
	73	39	131	72	203	895	12	75
SessionRep::check	18	11	34	18	52	253	3	14
	18	11	34	18	52	253	3	14
Session::unread	5	1	5	1	6	16	1	6
Session::poll	5	1	5	1	6	16	1	6
	10	2	10	2	12	32	2	12
SessionRep::SessionRep	4	5	8	5	13	41	1	5
SessionRep::~SessionRep	17	8	38	10	48	223	2	10
SessionRep::init	20	13	49	28	77	388	3	26
SessionRep::parse_args	20	17	77	51	128	667	7	32
SessionRep::match	18	15	61	32	93	469	4	22
SessionRep::extract	20	22	85	49	134	723	7	36
SessionRep::bad_arg	10	6	19	7	26	104	1	13
SessionRep::next_arg	12	5	16	7	23	94	2	12
SessionRep::find_arg	14	8	24	14	38	169	3	13
SessionRep::init_style	11	7	22	11	33	138	1	11
SessionRep::set_style	21	12	64	29	93	469	2	21
SessionRep::load_props	16	9	29	16	45	209	3	9
SessionRep::load_app_defaults	13	10	42	23	65	294	2	10
SessionRep::load_environment	14	6	23	9	32	138	2	8
SessionRep::load_path	18	8	44	13	57	268	1	10
SessionRep::home	7	3	9	5	14	47	2	7
SessionRep::load_path	19	9	57	15	72	346	1	12
SessionRep::find_name	21	13	61	23	84	427	5	26
SessionRep::init_display	20	12	57	23	80	400	4	23
SessionRep::connect	14	4	25	8	33	138	1	7
	309	192	810	378	1188	5752	54	313

Shadow::Shadow	6	9	13	10	23	90	1	35
Shadow::~Shadow	5	2	5	2	7	20	1	3
Shadow::request	10	4	19	6	25	95	1	5
Shadow::compute_requirement	17	5	54	21	75	334	3	12
Shadow::allocate	10	5	20	8	28	109	1	6
Shadow::draw	29	28	178	100	278	1622	5	39
Shadow::draw_shadow	12	5	25	10	35	143	1	7
Shadow::draw_body	6	3	6	3	9	29	1	3
Shadow::print	16	7	42	10	52	235	1	10
Shadow::pick	8	6	16	6	22	84	1	5
Shadow::compute_allocation	8	3	15	4	19	66	1	4
Shadow::compute_allotment	16	5	48	20	68	299	2	10
	143	82	441	200	641	3126	19	139
SimpleCompositor::SimpleComposi	1	1	1	1	2	1	1	24
SimpleCompositor::~SimpleCompos	1	1	1	1	2	1	1	1
SimpleCompositor::compose	22	23	78	59	137	752	7	36
	24	25	80	61	141	754	9	61
Slider::Slider	7	21	48	45	93	447	1	44
Slider::~Slider	7	8	33	19	52	203	1	10
Slider::normal_thumb	9	5	28	17	45	171	1	9
Slider::visible_thumb	8	4	13	8	21	75	1	6
Slider::old_thumb	10	6	18	11	29	116	1	7
Slider::minimum_thumb_size	4	2	4	2	6	16	1	3
Slider::request	7	7	19	9	28	107	1	5
Slider::allocate	8	4	12	7	19	68	1	4
Slider::draw	17	6	52	19	71	321	2	10
Slider::undraw	10	5	25	11	36	141	3	10
Slider::move	20	12	45	24	69	345	4	13
Slider::press	34	28	155	80	235	1399	6	32
Slider::drag	20	13	51	26	77	388	3	14
Slider::release	23	13	71	35	106	548	5	22
Slider::allocation_changed	4	1	4	1	5	12	1	3
Slider::update	9	1	12	1	13	43	2	5
Slider::forward_stepper	8	4	13	8	21	75	1	6
Slider::backward_stepper	8	4	13	8	21	75	1	6
Slider::move_to	1	1	1	1	2	1	1	1
Slider::allocate_thumb	1	1	1	1	2	1	1	1
Slider::apply_adjustment	1	1	1	1	2	1	1	1
Slider::do_adjustment	8	4	10	5	15	54	2	7
Slider::allot_thumb_major_axis	26	17	99	67	166	901	4	34
Slider::allot_thumb_minor_axis	8	3	19	6	25	86	1	5
Slider::redraw_thumb	5	2	6	2	8	22	1	3
Slider::reallocate_thumb	13	7	23	11	34	147	1	7
	276	180	776	425	1201	5763	48	268
SliderImpl::hit_thumb	22	9	58	24	82	406	3	13
	22	9	58	24	82	406	3	13
XSlider::XSlider	14	7	31	16	47	206	1	8
XSlider::~XSlider	10	3	11	4	15	56	2	5
XSlider::move_to	11	6	14	9	23	94	1	4
XSlider::allocate_thumb	12	6	31	10	41	171	1	10
XSlider::disconnect	3	2	3	2	5	12	1	3
XSlider::apply_adjustment	5	3	6	3	9	27	1	3
	55	27	96	44	140	566	7	33
YSlider::YSlider	14	7	31	16	47	206	1	8
YSlider::~YSlider	10	3	11	4	15	56	2	5
YSlider::move_to	11	6	14	9	23	94	1	4
YSlider::allocate_thumb	12	6	31	10	41	171	1	10
YSlider::disconnect	3	2	3	2	5	12	1	3
YSlider::apply_adjustment	5	3	6	3	9	27	1	3
	55	27	96	44	140	566	7	33
XYSlider::XYSlider	8	6	17	8	25	95	1	7
XYSlider::~XYSlider	10	5	21	8	29	113	3	8
XYSlider::move_to	11	11	27	18	45	201	1	10
XYSlider::allocate_thumb	11	9	34	13	47	203	1	13
XYSlider::disconnect	3	3	5	4	9	23	1	4
XYSlider::apply_adjustment	5	5	11	6	17	56	1	4
	48	39	115	57	172	691	8	46

SMFKitInfo::style	3	1	3	1	4	8	1	27
SMFKitInfo::thickness	3	1	3	1	4	8	1	1
SMFKitInfo::check_scale	3	1	3	1	4	8	1	1
SMFKitInfo::radio_scale	3	1	3	1	4	8	1	1
SMFKitInfo::mover_size	3	1	3	1	4	8	1	1
SMFKitInfo::slider_size	3	1	3	1	4	8	1	1
SMFKitInfo::color	4	2	4	2	6	16	1	1
SMFKitInfo::checkmark	3	1	3	1	4	8	1	1
SMFKitInfo::shadow1	3	1	3	1	4	8	1	1
SMFKitInfo::shadow2	3	1	3	1	4	8	1	1
SMFKitFrame::state	3	1	3	1	4	8	1	1
SMFKitFrame::info	4	1	4	1	5	12	1	1
	38	13	38	13	51	108	12	38
SMFKitGlyph::info	4	1	4	1	5	12	1	1
	4	1	4	1	5	12	1	1
SMFKitRadioFlag::state	3	1	3	1	4	8	1	1
	3	1	3	1	4	8	1	1
SMFKit::SMFKit	18	11	34	17	51	248	2	7
SMFKit::~SMFKit	3	1	3	1	4	8	1	3
SMFKit::gui	3	1	3	1	4	8	1	1
SMFKit::style_changed	29	12	124	38	162	868	7	27
SMFKit::outset_frame	10	4	14	5	19	72	1	7
SMFKit::inset_frame	10	4	14	5	19	72	1	7
SMFKit::bright_inset_frame	11	7	19	10	29	121	1	7
SMFKit::menubar_look	9	3	14	5	19	68	1	5
SMFKit::pulldown_look	12	6	22	8	30	125	1	10
SMFKit::pullright_look	11	5	18	6	24	96	1	8
SMFKit::menubar_item_look	8	6	12	6	18	69	1	5
SMFKit::menu_item_look	7	4	8	4	12	42	1	4
SMFKit::check_menu_item_look	11	5	21	8	29	116	1	9
SMFKit::radio_menu_item_look	11	5	21	8	29	116	1	9
SMFKit::menu_item_separator_loo	10	4	17	7	24	91	1	10
SMFKit::push_button_look	8	4	11	4	15	54	1	4
SMFKit::default_button_look	13	8	23	10	33	145	1	6
SMFKit::check_box_look	12	6	29	12	41	171	1	14
SMFKit::palette_button_look	11	10	30	15	45	198	1	13
SMFKit::radio_button_look	11	5	23	8	31	124	1	12
SMFKit::slider_look	26	14	71	29	100	532	3	24
SMFKit::scroll_bar_look	36	27	158	85	243	1452	3	45
SMFKit::panner_look	11	7	18	9	27	113	1	7
SMFKit::enlarger_look	3	1	3	1	4	8	1	4
SMFKit::reducer_look	3	1	3	1	4	8	1	4
SMFKit::up_mover_look	10	5	15	7	22	86	1	6
SMFKit::down_mover_look	10	5	15	7	22	86	1	6
SMFKit::left_mover_look	10	5	15	7	22	86	1	6
SMFKit::right_mover_look	10	5	15	7	22	86	1	6
	337	181	773	331	1104	5269	40	276
SMFKitImpl::SMFKitImpl	6	4	8	4	12	40	1	5
SMFKitImpl::~SMFKitImpl	15	4	29	5	34	144	2	6
SMFKitImpl::match	14	9	29	21	50	226	1	7
SMFKitImpl::make_thumb	15	11	44	21	65	306	1	12
SMFKitImpl::shade	24	20	98	69	167	912	2	22
	74	48	208	120	328	1628	7	52
SMFKitInfo::SMFKitInfo	7	3	10	4	14	47	1	6
SMFKitInfo::~SMFKitInfo	6	2	8	2	10	30	1	4
SMFKitInfo::load	28	68	238	150	388	2555	4	58
	41	73	256	156	412	2632	6	68
SMFKitButtonFrame::SMFKitButton	1	1	1	1	2	1	1	5
SMFKitButtonFrame::~SMFKitButto	1	1	1	1	2	1	1	1
SMFKitButtonFrame::pick	17	7	40	17	57	261	2	7
SMFKitButtonFrame::draw_frame	14	12	34	22	56	263	1	24
	33	21	76	41	117	526	5	37
SMFKitPushButtonFrame::SMFKitPu	7	4	8	5	13	45	1	8
SMFKitPushButtonFrame::~SMFKitP	1	1	1	1	2	1	1	1
SMFKitPushButtonFrame::request	13	8	37	19	56	246	2	11
	21	13	46	25	71	292	4	20

SMFKitMenuItemFrame::SMFKitMenu	1	1	1	1	2	1	1	4
SMFKitMenuItemFrame::~SMFKitMen	1	1	1	1	2	1	1	1
SMFKitMenuItemFrame::draw_frame	24	18	66	36	102	550	2	20
	26	20	68	38	106	552	4	25
SMFKitGlyph::SMFKitGlyph	6	3	7	4	11	35	1	5
SMFKitGlyph::~SMFKitGlyph	5	2	5	2	7	20	1	3
SMFKitGlyph::allocate	6	3	6	3	9	29	1	3
	17	8	18	9	27	84	3	11
SMFKitCheckmark::SMFKitCheckmar	6	5	13	8	21	73	1	9
SMFKitCheckmark::~SMFKitCheckma	5	3	9	4	13	39	1	4
SMFKitCheckmark::request	17	6	36	12	48	217	1	7
SMFKitCheckmark::draw	15	5	38	9	47	203	2	7
	43	19	96	33	129	532	5	27
SMFKitIndicator::SMFKitIndicato	6	3	7	4	11	35	1	7
SMFKitIndicator::~SMFKitIndicat	5	2	5	2	7	20	1	3
SMFKitIndicator::request	6	2	8	2	10	30	1	3
SMFKitIndicator::draw	18	12	47	26	73	358	1	26
	35	19	67	34	101	443	4	39
SMFKitRadioFlag::SMFKitRadioFla	6	5	13	8	21	73	1	9
SMFKitRadioFlag::~SMFKitRadioFl	5	3	9	4	13	39	1	4
SMFKitRadioFlag::request	15	7	32	12	44	196	1	7
SMFKitRadioFlag::draw	14	8	40	16	56	250	1	24
	40	23	94	40	134	558	4	44
SMFKitRadioItem::SMFKitRadioIte	1	1	1	1	2	1	1	4
SMFKitRadioItem::~SMFKitRadioIt	1	1	1	1	2	1	1	1
SMFKitRadioItem::draw	11	4	15	4	19	74	2	5
	13	6	17	6	23	76	4	10
SMFKitThumb::SMFKitThumb	3	6	7	6	13	41	1	8
SMFKitThumb::~SMFKitThumb	1	1	1	1	2	1	1	1
SMFKitThumb::draw	37	42	492	309	801	5049	8	70
	41	49	500	316	816	5091	10	79
SMFKitDefaultArrow::SMFKitDefau	6	3	7	4	11	35	1	7
SMFKitDefaultArrow::~SMFKitDefa	5	2	5	2	7	20	1	3
SMFKitDefaultArrow::request	22	16	71	39	110	577	2	15
SMFKitDefaultArrow::draw	23	23	100	73	173	956	1	25
	56	44	183	118	301	1588	5	50
Stencil::Stencil	6	5	13	8	21	73	1	32
Stencil::~Stencil	5	3	9	4	13	39	1	4
Stencil::request	13	11	49	36	85	390	2	18
Stencil::allocate	17	8	37	20	57	265	2	10
Stencil::draw	12	5	18	7	25	102	2	5
	53	32	126	75	201	869	8	69
Stepper::Stepper	13	11	30	18	48	220	1	37
Stepper::~Stepper	3	1	3	1	4	8	1	3
Stepper::press	6	2	8	2	10	30	1	4
Stepper::release	6	2	8	2	10	30	1	4
Stepper::start_stepping	12	5	17	6	23	94	2	6
Stepper::stop_stepping	7	2	8	2	10	32	1	3
Stepper::tick	9	4	13	4	17	63	1	4
	56	27	87	35	122	477	8	61
UpArrow::draw	19	9	51	27	78	375	1	12
	19	9	51	27	78	375	1	12
DownArrow::draw	19	9	51	27	78	375	1	12
	19	9	51	27	78	375	1	12
LeftArrow::draw	19	9	51	27	78	375	1	12
	19	9	51	27	78	375	1	12

RightArrow::draw	19	9	51	27	78	375	1	12
	19	9	51	27	78	375	1	12
ValueString::ValueString	1	1	1	1	2	1	1	8
ValueString::~ValueString	3	1	3	1	4	8	1	4
ValueString::null_terminated	3	1	3	1	4	8	1	1
	7	3	7	3	10	17	3	13
StyleRep::parse_value	29	11	105	41	146	777	7	34
	29	11	105	41	146	777	7	34
Style::Style	5	2	5	2	7	20	1	3
Style::Style	6	2	7	2	9	27	1	3
Style::Style	8	3	10	3	13	45	1	4
Style::Style	9	3	12	3	15	54	1	4
Style::Style	31	13	99	50	149	813	7	29
Style::~Style	12	5	16	8	24	98	2	7
	71	28	149	68	217	1057	13	50
StyleRep::StyleRep	3	11	17	16	33	126	1	10
StyleRep::~StyleRep	27	20	130	42	172	955	8	33
	30	31	147	58	205	1081	9	43
Style::name	4	2	4	2	6	16	1	1
Style::name	7	3	9	5	14	47	1	5
Style::alias	13	5	22	10	32	133	2	8
Style::alias_count	9	4	10	6	16	59	2	4
Style::alias	15	7	23	13	36	161	2	7
Style::name	5	1	6	1	7	18	1	1
Style::alias	5	1	6	1	7	18	1	1
Style::parent	4	2	4	2	6	16	1	1
Style::append	22	10	56	25	81	405	4	22
Style::remove	23	8	51	14	65	322	4	16
Style::children	10	6	12	8	20	80	2	7
Style::child	15	7	23	13	36	161	2	10
Style::attribute	6	4	7	4	11	37	1	6
	138	60	233	104	337	1473	24	89
StyleRep::add_attribute	46	34	268	153	421	2662	14	78
StyleRep::parse_name	31	17	89	46	135	754	7	32
StyleRep::find_separator	13	8	23	14	37	163	3	14
StyleRep::match_name	21	9	52	17	69	339	5	25
StyleRep::same_path	18	5	59	9	68	308	4	18
StyleRep::delete_path	17	5	34	8	42	187	3	9
StyleRep::clear_info	1	1	1	1	2	1	1	4
StyleRep::modify	18	7	42	10	52	241	4	11
StyleRep::update	12	5	21	7	28	114	3	10
	177	91	589	265	854	4769	44	201
Style::remove_attribute	35	18	126	49	175	1002	8	34
	35	18	126	49	175	1002	8	34
StyleRep::delete_attribute	16	11	44	26	70	333	2	13
	16	11	44	26	70	333	2	13
Style::attribute_count	10	6	12	8	20	80	2	7
Style::attribute	18	14	35	21	56	280	2	13
Style::attribute	6	3	10	3	13	41	1	6
Style::remove_attribute	5	1	6	1	7	18	1	3
Style::load_file	20	8	37	17	54	260	3	13
Style::load_list	20	7	33	17	50	238	4	13
Style::load_property	28	9	95	23	118	615	5	21
	107	48	228	90	318	1532	18	76
StyleRep::strip	19	6	35	20	55	255	3	8
StyleRep::missing_colon	1	1	1	1	2	1	1	4
StyleRep::bad_property_name	1	1	1	1	2	1	1	1
StyleRep::bad_property_value	1	1	1	1	2	1	1	1
	22	9	38	23	61	258	6	14

Style::add_trigger	16	9	32	16	48	223	3	10
Style::remove_trigger	23	15	58	33	91	478	5	23
Style::add_trigger_any	11	4	15	8	23	90	2	7
Style::remove_trigger_any	17	8	32	17	49	228	3	11
	67	36	137	74	211	1019	13	51
StyleRep::finish_match	19	9	36	19	55	264	3	18
	19	9	36	19	55	264	3	18
Style::find_attribute	7	2	8	2	10	32	1	6
Style::find_attribute	9	4	11	6	17	63	1	4
Style::find_attribute	7	2	8	2	10	32	1	3
Style::find_attribute	9	4	11	6	17	63	1	4
Style::find_attribute	7	2	8	2	10	32	1	3
Style::find_attribute	34	24	135	60	195	1142	11	38
Style::find_attribute	7	2	8	2	10	32	1	3
Style::value_is_on	12	6	20	9	29	121	2	7
Style::value_is_on	6	1	7	1	8	22	1	3
	98	47	216	90	306	1539	20	71
Superpose::Superpose	10	13	73	44	117	529	11	62
Superpose::~Superpose	9	5	16	10	26	99	2	7
Superpose::request	14	7	22	12	34	149	3	9
Superpose::allocate	14	9	22	14	36	163	3	10
	47	34	133	80	213	940	19	88
Target::Target	3	2	3	2	5	12	1	29
Target::~Target	1	1	1	1	2	1	1	1
Target::pick	26	18	119	60	179	977	9	30
	30	21	123	63	186	990	11	60
TelltaleState::TelltaleState	3	4	5	4	9	25	1	28
TelltaleState::~TelltaleState	4	1	4	1	5	12	1	3
TelltaleState::set	16	7	27	14	41	185	4	10
TelltaleState::test	6	2	6	3	9	27	1	3
TelltaleState::join	10	3	14	6	20	74	2	7
TelltaleState::leave_group	11	3	14	5	19	72	2	6
	50	20	70	33	103	395	11	57
Telltale::Telltale	9	3	12	5	17	61	1	6
Telltale::~Telltale	8	2	10	3	13	43	1	4
Telltale::state	7	3	11	6	17	56	1	5
Telltale::state	3	1	3	1	4	8	1	1
Telltale::disconnect	3	2	3	2	5	12	1	3
	30	11	39	17	56	180	5	19
TelltaleGroup::TelltaleGroup	3	2	3	2	5	12	1	4
TelltaleGroup::~TelltaleGroup	1	1	1	1	2	1	1	1
TelltaleGroup::update	13	6	22	13	35	149	3	8
TelltaleGroup::remove	6	3	7	4	11	35	2	5
	23	12	33	20	53	197	7	18
ChoiceItem::ChoiceItem	4	1	4	1	5	12	1	4
ChoiceItem::ChoiceItem	7	6	16	8	24	89	1	7
ChoiceItem::ChoiceItem	7	27	72	48	120	610	1	45
ChoiceItem::~ChoiceItem	1	1	1	1	2	1	1	1
ChoiceItem::init	18	11	31	16	47	228	2	8
ChoiceItem::look	24	15	69	40	109	576	6	23
ChoiceItem::look	14	7	18	10	28	123	2	6
ChoiceItem::update	16	7	22	11	33	149	2	6
	91	75	233	135	368	1788	16	100
BreakSet::BreakSet	14	15	68	49	117	568	3	48
BreakSet::~BreakSet	5	3	9	7	16	48	1	5
BreakSet::add_break	15	15	44	36	80	393	3	18
BreakSet::no_break	3	6	7	6	13	41	1	5
TeXCompositor::TeXCompositor	3	2	3	2	5	12	1	3
TeXCompositor::~TeXCompositor	1	1	1	1	2	1	1	1
TeXCompositor::compose	23	29	93	76	169	963	5	41
	64	71	225	177	402	2026	15	121

TransformSetter::TransformSette	1	1	1	1	2	1	1	27
TransformSetter::TransformSette	3	2	3	2	5	12	1	5
TransformSetter::~TransformSett	1	1	1	1	2	1	1	1
TransformSetter::transformer	3	1	3	1	4	8	1	3
TransformSetter::transformer	3	1	3	1	4	8	1	3
TransformSetter::transformer	3	2	3	2	5	12	1	3
TransformSetter::request	27	31	176	105	281	1646	1	33
TransformSetter::allocate	12	6	20	10	30	125	2	14
TransformSetter::draw	9	4	15	7	22	81	1	5
TransformSetter::print	9	4	15	7	22	81	1	5
TransformSetter::pick	12	8	43	15	58	251	1	11
TransformSetter::push_transform	8	5	19	6	25	93	1	8
TransformSetter::transform	8	2	12	3	15	50	1	5
	99	68	314	161	475	2369	14	123
TransformFitter::TransformFitte	1	1	1	1	2	1	1	2
TransformFitter::~TransformFitt	1	1	1	1	2	1	1	1
TransformFitter::transform	24	11	79	24	103	528	2	17
	26	13	81	26	107	530	4	20
TIFFRasterImpl::TIFFRasterImpl	1	1	1	1	2	1	1	24
TIFFRasterImpl::~TIFFRasterImpl	1	1	1	1	2	1	1	1
	2	2	2	2	4	2	2	25
TIFFRaster::load	6	2	6	2	8	24	1	4
	6	2	6	2	8	24	1	4
TIFFRasterImpl::load	42	34	212	103	315	1968	19	71
TIFFRasterImpl::gt	46	38	250	137	387	2474	22	100
TIFFRasterImpl::setorientation	19	17	60	28	88	455	10	29
TIFFRasterImpl::gtTileContig	31	27	137	92	229	1341	9	46
TIFFRasterImpl::gtTileSeparate	31	33	178	118	296	1776	11	59
TIFFRasterImpl::gtStripContig	32	28	116	75	191	1128	8	36
TIFFRasterImpl::gtStripSeparate	30	30	137	88	225	1329	9	46
TIFFRasterImpl::makebwmap	29	24	135	65	200	1146	6	49
TIFFRasterImpl::makecmap	29	25	143	67	210	1209	7	56
TIFFRasterImpl::put8bitcmaptile	14	8	22	11	33	147	2	28
TIFFRasterImpl::put4bitcmaptile	15	10	26	14	40	186	2	19
TIFFRasterImpl::put2bitcmaptile	15	10	26	14	40	186	2	19
TIFFRasterImpl::put1bitcmaptile	15	10	26	14	40	186	2	19
TIFFRasterImpl::put1bitbwtile	15	10	26	14	40	186	2	19
TIFFRasterImpl::put2bitbwtile	15	10	26	14	40	186	2	19
TIFFRasterImpl::put4bitbwtile	15	10	26	14	40	186	2	19
TIFFRasterImpl::putRGBcontig8bi	19	12	68	42	110	545	5	31
TIFFRasterImpl::putRGBcontig16b	18	12	71	44	115	564	6	33
TIFFRasterImpl::putRGBseparate8	19	11	75	35	110	540	5	27
TIFFRasterImpl::putRGBseparate1	19	11	77	38	115	564	6	28
TIFFRasterImpl::putRGBgreytile	15	10	32	18	50	232	3	20
TIFFRasterImpl::pickTileContigC	15	23	107	41	148	777	14	33
TIFFRasterImpl::pickTileSeparat	8	4	13	4	17	61	2	12
	506	407	1989	1090	3079	17372	156	818
Tile::Tile	3	2	3	2	5	12	1	1
Tile::~Tile	1	1	1	1	2	1	1	1
Tile::request	6	6	10	7	17	61	1	6
Tile::allocate	33	23	218	112	330	1916	9	52
	43	32	232	122	354	1990	12	60
TileReversed::TileReversed	3	2	3	2	5	12	1	1
TileReversed::~TileReversed	1	1	1	1	2	1	1	1
TileReversed::request	6	6	10	7	17	61	1	6
TileReversed::allocate	33	23	218	113	331	1922	9	53
	43	32	232	123	355	1996	12	61
TileFirstAligned::TileFirstAlig	3	2	3	2	5	12	1	3
TileFirstAligned::~TileFirstAli	1	1	1	1	2	1	1	1
TileFirstAligned::request	28	17	165	81	246	1351	4	37
TileFirstAligned::allocate	33	23	230	119	349	2027	10	56
	65	43	399	203	602	3391	16	97
TileReversedFirstAligned::TileR	3	2	3	2	5	12	1	5
TileReversedFirstAligned::~Tile	1	1	1	1	2	1	1	1
TileReversedFirstAligned::reque	28	17	165	81	246	1351	4	37

TileReversedFirstAligned::alloc	33	23	232	120	352	2044	10	56
	65	43	401	204	605	3408	16	99
Transformer::Transformer	5	10	14	10	24	94	1	32
Transformer::Transformer	7	7	25	18	43	164	1	7
Transformer::Transformer	6	12	19	12	31	129	1	9
Transformer::~Transformer	1	1	1	1	2	1	1	1
Transformer::operator==	9	9	33	24	57	238	3	13
Transformer::operator!=	10	9	34	24	58	246	3	13
Transformer::operator=	9	7	26	18	44	176	1	10
Transformer::matrix	3	12	13	12	25	98	1	10
Transformer::update	6	9	15	13	28	109	1	6
Transformer::translate	5	4	8	4	12	38	1	5
Transformer::scale	5	8	16	12	28	104	1	9
Transformer::skew	6	6	10	6	16	57	1	5
Transformer::rotate	11	16	56	48	104	495	1	22
Transformer::premultiply	9	9	50	46	96	400	1	16
Transformer::postmultiply	9	8	51	47	98	401	1	17
Transformer::invert	9	9	32	24	56	234	1	13
Transformer::transform	5	9	13	12	25	95	1	5
Transformer::transform	5	10	13	12	25	98	1	4
Transformer::inverse_transform	5	8	11	10	21	78	1	8
Transformer::inverse_transform	5	8	11	10	21	78	1	10
	130	171	451	363	814	3333	24	215
XYMarker::XYMarker	6	9	17	12	29	113	1	33
XYMarker::~XYMarker	6	4	13	8	21	70	1	6
XYMarker::unmark	9	8	17	10	27	110	3	8
XYMarker::mark	17	14	209	124	333	1650	12	46
XYMarker::allocate	15	6	33	16	49	215	1	7
XYMarker::draw	11	11	32	21	53	236	3	9
XYMarker::undraw	6	3	7	3	10	32	1	4
	70	55	328	194	522	2426	22	113

Borland Turbo C++ Class Library (version 1.0.1)

The order for the following table is: class name, public variables, public functions,protected variables, protected functions, private variables, private functions, total members, inline members, virtual members, friend functions, friend classes.

AbstractArray	0	15	5	2	0	0	22	4	9	1	0
ArrayIterator	0	6	0	0	2	0	8	0	5	0	0
Array	0	7	0	0	0	0	7	1	4	0	0
Association	0	11	0	0	2	0	13	4	7	0	0
HashTable	0	9	0	0	2	1	12	0	8	0	0
HashTableIterator	0	5	0	0	3	1	9	0	4	0	0
Bag	0	4	0	0	0	0	4	1	3	0	0
Collection	0	10	0	0	0	0	10	1	9	0	0
Container	0	17	1	0	0	0	18	3	13	1	0
ContainerIterator	0	5	0	0	0	0	5	0	5	0	0
DoubleList	0	17	0	0	2	0	19	3	7	1	0
DoubleListIterator	0	7	0	0	2	0	9	0	5	0	0
Deque	0	12	0	0	1	0	13	4	5	0	0
Dictionary	0	7	0	0	0	0	7	1	4	0	0
DoubleListElement	0	2	0	0	3	0	5	2	0	2	0
String	1	10	0	0	2	0	13	0	7	0	0
BaseDate	0	12	0	4	3	0	19	0	6	0	0
Date	0	7	0	0	0	0	7	0	3	0	0
List	0	10	0	0	1	0	11	3	5	1	0
ListIterator	0	6	0	0	2	0	8	0	5	0	0
ListElement	0	2	0	0	2	0	4	2	0	2	0
BaseTime	0	14	0	3	4	0	21	0	6	0	0
Time	0	6	0	0	0	0	6	0	3	0	0
Queue	0	9	0	0	1	0	10	3	5	0	0
Set	0	5	0	0	0	0	5	1	4	0	0
Sortable	0	7	0	1	0	0	8	0	8	0	0
SortedArray	0	7	0	0	1	0	8	0	5	0	0
Stack	0	9	0	0	1	0	10	0	6	0	0

The order for the following table is: class name, public members, weighted methods per class (WMC), depth of inheritance tree (DIT), number of children (NOC), Stability' (stab), vocabulary (n), length (N), lines of code (LOC), cyclomatic complexity (VG), volume (VOL), coupling between objects (CBO).

AbstractArray	15	17	3	2	0.1429	209	484	528	32	2291	0
ArrayIterator	6	6	1	0	0.0625	39	50	119	6	180	1
Array	7	7	4	0	0.2000	65	98	305	10	411	0
Association	11	11	1	0	0.0833	47	64	126	7	206	1
HashTable	9	10	3	1	0.3333	102	140	500	13	550	0
HashTableIterator	5	6	1	0	0.1250	86	170	110	10	755	1
Bag	4	4	4	1	0.5000	10	10	60	3	17	0
Collection	10	10	2	4	0.5000	33	52	92	5	215	0
Container	17	17	1	4	0.0556	163	322	413	21	1455	1
ContainerIterator	5	5	0	4	1.0000	2	2	11	1	1	0
DoubleList	17	17	3	0	0.2500	170	392	585	29	1688	0
DoubleListIterator	7	7	1	0	0.0526	73	111	184	9	453	1
Deque	12	12	2	0	1.0000	76	100	141	10	368	0
Dictionary	7	7	6	0	0.1250	43	60	113	6	219	1
String	10	10	2	0	0.0417	123	204	410	14	823	1
BaseDate	12	16	2	1	0.3333	108	188	121	15	665	0
Date	7	7	3	0	0.1000	33	44	65	7	134	1
List	10	10	3	0	0.5000	79	171	217	13	716	0
ListIterator	6	6	1	0	0.0909	42	56	210	6	210	1
BaseTime	14	17	2	1	0.2000	122	252	379	18	916	0
Time	6	6	3	0	0.1000	46	87	157	8	384	1
Queue	9	9	2	0	1.0000	43	55	135	7	185	0
Set	5	5	5	1	0.5000	22	27	80	5	78	0
Sortable	7	8	1	3	1.0000	6	6	51	2	9	0
SortedArray	7	7	4	0	0.2000	96	203	314	16	981	0
Stack	9	9	2	0	1.0000	60	69	154	9	206	0

CLASSNAME	n1	n2	N1	N2	N	V	VG	LOC
AbstractArray::AbstractArray	12	11	28	15	43	195	2	81
AbstractArray::~AbstractArray	13	4	22	10	32	131	3	15
AbstractArray::detach	20	8	40	19	59	284	5	49
AbstractArray::detach	11	6	21	13	34	139	3	36
AbstractArray::hashValue	5	1	5	1	6	16	1	12
AbstractArray::reallocate	25	17	77	40	117	631	5	70
AbstractArray::isEqual	19	9	74	36	110	529	7	57

AbstractArray::initIterator	9	1	11	1	12	40	1	12
AbstractArray::printContentsOn	21	7	44	17	61	293	4	53
	135	64	322	152	474	2258	31	385
ArrayIterator::~ArrayIterator	1	1	1	1	2	1	1	11
ArrayIterator::operatorint	5	3	5	3	8	24	1	12
ArrayIterator::restart	4	3	4	3	7	20	1	13
ArrayIterator::operator++	14	6	22	9	31	134	2	22
	24	13	32	16	48	179	5	58
Array::~Array	1	1	1	1	2	1	1	40
Array::isA	3	1	3	1	4	8	1	12
Array::nameOf	3	1	3	1	4	8	1	12
Array::add	17	8	26	15	41	190	3	40
Array::addAt	16	8	26	15	41	188	3	36
	40	19	59	33	92	395	9	140
Association::~Association	1	1	1	1	2	1	1	42
Association::isA	3	1	3	1	4	8	1	12
Association::nameOf	3	1	3	1	4	8	1	12
Association::printOn	7	7	19	11	30	114	1	22
Association::hashValue	6	1	6	1	7	20	1	13
Association::isEqual	9	3	10	3	13	47	1	13
Association::isAssociation	3	1	3	1	4	8	1	12
	32	15	45	19	64	206	7	126
Bag::~Bag	1	1	1	1	2	1	1	36
Bag::isA	3	1	3	1	4	8	1	12
Bag::nameOf	3	1	3	1	4	8	1	12
	7	3	7	3	10	17	3	60
Collection::~Collection	1	1	1	1	2	1	1	38
Collection::findMember	16	7	29	13	42	190	3	37
Collection::hasMember	6	2	6	2	8	24	1	17
	23	10	36	16	52	215	5	92
Container::Container	13	4	15	6	21	86	2	66
Container::~Container	1	1	1	1	2	1	1	14
Container::forEach	16	5	20	8	28	123	2	43
Container::firstThat	18	8	33	15	48	226	3	60
Container::lastThat	19	9	42	20	62	298	3	60
Container::isEqual	19	8	67	27	94	447	4	65
Container::printOn	21	4	37	12	49	228	3	47
Container::printHeader	5	2	6	2	8	22	1	22
Container::printSeparator	3	2	3	2	5	12	1	18
Container::printTrailer	3	2	3	2	5	12	1	18
	118	45	227	95	322	1455	21	413
ContainerIterator::~ContainerIt	1	1	1	1	2	1	1	11
	1	1	1	1	2	1	1	11
DoubleList::~DoubleList	9	5	13	9	22	84	2	56
DoubleList::isA	3	1	3	1	4	8	1	12
DoubleList::nameOf	3	1	3	1	4	8	1	12
DoubleList::add	4	1	4	1	5	12	1	23
DoubleList::addAtHead	12	8	25	16	41	177	2	31
DoubleList::addAtTail	12	8	25	16	41	177	2	31
DoubleList::detach	5	2	5	2	7	20	1	33
DoubleList::detachFromHead	16	11	69	42	111	528	7	90
DoubleList::detachFromTail	16	11	69	42	111	528	7	90
DoubleList::initIterator	9	1	11	1	12	40	1	12
DoubleList::initReverseIterator	10	2	12	2	14	50	1	12
DoubleList::hashValue	5	1	5	1	6	16	1	12
	104	52	244	134	378	1648	27	414
DoubleListIterator::operatorint	5	2	5	2	7	20	1	12
DoubleListIterator::operator++	14	8	24	12	36	161	2	36
DoubleListIterator::restart	3	2	3	2	5	12	1	12
DoubleListIterator::operator--	14	8	24	12	36	161	2	29
DoubleListIterator::~DoubleList	1	1	1	1	2	1	1	11
	37	21	57	29	86	355	7	100

Deque::~Deque	1	1	1	1	2	1	1	43
Deque::isA	3	1	3	1	4	8	1	12
Deque::nameOf	3	1	3	1	4	8	1	12
Deque::getLeft	13	5	19	9	28	117	2	19
Deque::getRight	13	5	19	9	28	117	2	19
Deque::initIterator	9	2	11	2	13	45	1	12
Deque::initReverseIterator	10	3	12	3	15	56	1	12
Deque::hashValue	5	1	5	1	6	16	1	12
	57	19	73	27	100	368	10	141
Dictionary::~Dictionary	1	1	1	1	2	1	1	40
Dictionary::isA	3	1	3	1	4	8	1	12
Dictionary::nameOf	3	1	3	1	4	8	1	12
Dictionary::lookup	10	5	17	8	25	98	1	23
Dictionary::add	14	4	20	5	25	104	2	26
	31	12	44	16	60	219	6	113
HashTable::~HashTable	1	1	1	1	2	1	1	49
HashTable::isA	3	1	3	1	4	8	1	12
HashTable::nameOf	3	1	3	1	4	8	1	12
HashTable::add	17	6	26	12	38	172	2	38
HashTable::detach	14	7	19	11	30	132	2	34
HashTable::hashValue	5	1	5	1	6	16	1	12
HashTable::findMember	14	6	21	11	32	138	2	43
HashTable::initIterator	9	2	11	2	13	45	1	12
	66	25	89	40	129	520	11	212
HashTableIterator::HashTableIte	10	8	22	9	31	129	1	22
HashTableIterator::operator++	10	2	13	2	15	54	2	15
HashTableIterator::preIterate	21	10	57	25	82	406	5	36
HashTableIterator::operatorint	5	2	5	2	7	20	1	13
HashTableIterator::restart	11	7	25	10	35	146	1	24
	57	29	122	48	170	755	10	110
BaseDate::~BaseDate	1	1	1	1	2	1	1	21
BaseDate::isEqual	8	5	20	12	32	118	1	14
BaseDate::isLessThan	10	5	36	20	56	219	3	17
BaseDate::hashValue	6	3	7	3	10	32	1	12
	25	14	64	36	100	370	6	64
Date::~Date	1	1	1	1	2	1	1	11
Date::printOn	10	7	20	8	28	114	1	21
Date::isA	3	1	3	1	4	8	1	12
Date::nameOf	3	1	3	1	4	8	1	12
	17	10	27	11	38	131	4	56
List::~List	9	5	13	9	22	84	2	49
List::add	9	6	14	9	23	90	1	23
List::detach	16	10	63	37	100	470	6	89
List::isA	3	1	3	1	4	8	1	16
List::nameOf	3	1	3	1	4	8	1	16
List::hashValue	5	1	5	1	6	16	1	12
List::initIterator	9	1	11	1	12	40	1	12
	54	25	112	59	171	716	13	217
ListIterator::~ListIterator	1	1	1	1	2	1	1	11
ListIterator::operatorint	4	2	4	2	6	16	1	14
ListIterator::operator++	14	8	24	12	36	161	2	23
ListIterator::restart	3	2	3	2	5	12	1	12
	22	13	32	17	49	190	5	60
BaseTime::isEqual	8	6	26	16	42	160	1	45
BaseTime::isLessThan	11	6	57	32	89	364	5	26
BaseTime::hashValue	6	4	8	4	12	40	1	12
	25	16	91	52	143	564	7	83
Time::printOn	17	15	52	21	73	365	3	28
Time::isA	3	1	3	1	4	8	1	12
Time::nameOf	3	1	3	1	4	8	1	12
	23	17	58	23	81	381	5	52

Object::~Object	1	1	1	1	2	1	1	51
Object::isSortable	3	1	3	1	4	8	1	20
Object::isAssociation	3	1	3	1	4	8	1	20
Object::operatornew	7	3	9	4	13	43	2	29
Object::forEach	6	2	8	2	10	30	1	34
Object::firstThat	11	3	20	3	23	88	2	50
Object::lastThat	7	3	7	3	10	33	1	37
	38	14	51	15	66	211	9	241
Error::~Error	1	1	1	1	2	1	1	11
Error::operatordelete	1	1	1	1	2	1	1	11
Error::isA	3	1	3	1	4	8	1	12
Error::nameOf	3	1	3	1	4	8	1	12
Error::printOn	3	2	3	2	5	12	1	18
Error::hashValue	3	1	3	1	4	8	1	14
Error::isEqual	6	1	6	1	7	20	1	28
	20	8	20	8	28	58	7	106
Queue::~Queue	1	1	1	1	2	1	1	53
Queue::get	13	5	19	9	28	117	2	26
Queue::isA	3	1	3	1	4	8	1	16
Queue::nameOf	3	1	3	1	4	8	1	16
Queue::hashValue	5	1	5	1	6	16	1	12
Queue::initIterator	7	2	9	2	11	35	1	12
	32	11	40	15	55	185	7	135
Set::~Set	1	1	1	1	2	1	1	36
Set::isA	3	1	3	1	4	8	1	12
Set::nameOf	3	1	3	1	4	8	1	12
Set::add	10	2	13	4	17	61	2	20
	17	5	20	7	27	78	5	80
Sortable::~Sortable	1	1	1	1	2	1	1	35
Sortable::isSortable	3	1	3	1	4	8	1	16
	4	2	4	2	6	9	2	51
SortedArray::~SortedArray	1	1	1	1	2	1	1	39
SortedArray::add	30	13	67	33	100	543	5	53
SortedArray::detach	17	12	49	29	78	379	6	43
SortedArray::isA	3	1	3	1	4	8	1	16
SortedArray::nameOf	3	1	3	1	4	8	1	16
	54	28	123	65	188	939	14	167
Stack::~Stack	1	1	1	1	2	1	1	41
Stack::push	5	2	5	2	7	20	1	19
Stack::pop	9	3	13	6	19	68	1	14
Stack::top	6	1	6	1	7	20	1	12
Stack::isEmpty	6	1	6	1	7	20	1	12
Stack::initIterator	9	2	11	2	13	45	1	12
Stack::isA	3	1	3	1	4	8	1	16
Stack::nameOf	3	1	3	1	4	8	1	16
Stack::hashValue	5	1	5	1	6	16	1	12
	47	13	53	16	69	206	9	154
String::String	9	3	13	8	21	75	1	51
String::~String	3	1	3	1	4	8	1	13
String::isEqual	12	4	18	8	26	104	1	21
String::isLessThan	10	4	12	5	17	65	1	19
String::isA	3	1	3	1	4	8	1	16
String::nameOf	3	1	3	1	4	8	1	16
String::hashValue	13	7	22	16	38	164	2	19
String::printOn	3	2	3	2	5	12	1	18
String::operator=	18	4	31	14	45	201	3	33
	74	27	108	56	164	645	12	206

The order for the following table is: class name, public variables, public functions,protected variables, protected functions, private variables, private functions, total members, inline members, virtual members, friend functions, friend classes.

ACG	0	4	0	0	9	0	13	0	3	0	0
AllocRing	0	6	0	0	5	1	12	0	0	0	0
Binomial	0	6	2	0	0	0	8	0	1	0	0
BitSetBit	0	7	2	0	0	0	9	0	0	0	0
BitSet	0	29	1	0	0	0	30	0	0	0	16
BitStrBit	1	6	2	0	0	0	9	0	0	0	0
BitSubString	0	6	3	2	0	0	11	0	0	2	0
BitString	0	64	1	3	0	0	68	0	0	2	26
BitPattern	2	7	0	0	0	0	9	0	0	0	3
CursesWindow	0	54	6	1	0	0	61	0	0	0	0
DiscreteUniform	0	6	0	0	3	0	9	0	1	0	0
Erlang	0	6	4	1	0	0	11	0	1	0	0
filebuf	2	13	0	0	0	0	15	0	0	0	0
Fix	0	22	0	0	1	2	25	0	0	0	44
Fix16	0	19	0	0	1	5	25	0	0	1	20
Fix32	0	19	0	0	1	4	24	0	0	1	21
Fix24	0	19	0	0	1	4	24	0	0	1	20
Fix48	0	17	0	0	1	3	21	0	0	1	17
Geometric	0	4	1	0	0	0	5	0	1	0	0
GetOpt	6	2	0	0	6	1	15	0	0	0	0
HyperGeometric	0	6	3	1	0	0	10	0	1	0	0
Integer	0	38	1	0	0	0	39	0	0	0	52
Normal	0	6	3	0	2	0	11	0	1	0	0
LogNormal	0	6	2	1	0	0	9	0	1	0	0
MLCG	0	8	0	0	4	0	12	0	2	0	0
NegativeExpntl	0	4	1	0	0	0	5	0	1	0	0
Obstack	0	26	6	2	2	0	36	0	0	0	0
PlotFile	0	46	0	3	0	0	49	21	0	0	0
Poisson	0	4	1	0	0	0	5	0	1	0	0
RNG	0	5	0	0	2	0	7	0	2	0	0
Rational	0	19	2	1	0	0	22	0	0	0	29
RandomInteger	0	16	3	1	0	0	20	0	0	0	0
SFile	0	11	1	0	0	0	12	0	0	0	0
SampleHistogram	0	9	3	0	0	0	12	0	2	0	0
SampleStatistic	0	12	5	0	0	0	17	0	2	0	0
Uniform	0	6	0	0	3	0	9	0	1	0	0
Weibull	0	6	3	1	0	0	10	0	1	0	0
whitespace	0	0	0	0	1	0	1	0	0	0	0
istream	0	51	5	2	0	0	58	0	0	0	1
ostream	0	48	3	0	0	0	51	0	0	1	0
streambuf	5	25	0	0	0	0	30	0	13	0	0

The order for the following table is: class name, public members, weighted methods per class (WMC), depth of inheritance tree (DIT), number of children (NOC), Stability* (stab), vocabulary (n), length (N), lines of code (LOC), cyclomatic complexity (VG), volume (VOL), coupling between objects (CBO).

ACG	4	4	1	0	0.5000	122	395	105	13	2060	1
AllocRing	6	7	0	0	0.3333	108	247	86	17	1060	1
Binomial	6	6	1	0	0.1000	19	31	26	3	132	3
BitSet	29	29	0	0	0.0009	474	1568	400	90	8349	5
BitSubString	6	8	0	0	0.0141	95	509	66	13	2616	2
BitString	64	67	0	0	0.0002	658	2581	588	140	14017	7
BitPattern	7	7	0	0	0.0046	117	694	167	34	4004	5
CursesWindow	54	55	0	0	0.0046	274	659	231	30	3294	4
DiscreteUniform	6	6	1	0	0.1000	8	8	21	1	24	2
Erlang	6	7	1	0	0.1000	21	30	25	2	132	2
filebuf	13	13	1	0	0.0909	151	288	108	29	1361	2
Fix	22	24	0	0	0.0007	30	35	12	3	124	6
Fix16	19	24	0	0	0.0011	34	67	50	6	272	5
Fix32	19	23	0	0	0.0011	34	67	27	6	272	6
Fix24	19	23	0	0	0.0011	44	94	52	7	436	6
Fix48	17	20	0	0	0.0012	56	175	42	9	915	5
Geometric	4	4	1	0	0.1250	17	23	22	2	94	2
GetOpt	2	3	0	0	0.2500	105	473	227	27	2601	2
HyperGeometric	6	7	1	0	0.1000	15	18	21	1	70	2
Integer	38	38	0	0	0.0002	32	59	17	3	256	6
Normal	6	6	1	1	0.1000	36	116	52	4	600	2
LogNormal	6	7	2	0	0.1000	12	14	24	1	50	2
MLCG	8	8	1	0	0.1667	65	222	80	12	1045	1
NegativeExpntl	4	4	1	0	0.1250	11	13	20	1	45	2

Obstack	26	28	0	0	0.0556	162	376	98	14	1839	2
PlotFile	46	49	1	0	0.0208	244	323	140	28	1110	2
Poisson	4	4	1	0	0.1250	19	27	28	2	115	2
RNG	5	5	0	2	1.0000	40	142	94	4	756	0
Rational	19	20	0	0	0.0008	119	274	96	17	1345	7
SFile	11	11	1	0	0.0909	24	24	38	6	50	3
SampleHistogram	9	9	1	0	0.0179	246	526	149	36	2390	3
SampleStatistic	12	12	0	1	0.2000	272	452	128	34	1906	3
Uniform	6	6	1	0	0.1000	11	12	20	1	42	2
Weibull	6	7	1	0	0.1000	16	20	25	1	80	2
istream	51	53	0	0	0.0020	580	1284	444	98	6215	8
ostream	48	48	0	0	0.0156	260	349	153	28	1281	6
streambuf	25	25	0	1	0.0556	161	255	110	31	996	2

CLASSNAME	n1	n2	N1	N2	N	V	VG	LOC
ACG::ACG	19	13	49	34	83	415	3	31
ACG::reset	24	18	88	60	148	798	5	37
ACG::~ACG	6	2	7	4	11	33	2	6
ACG::asLong	19	21	95	58	153	814	3	31
	68	54	239	156	395	2060	13	105
AllocRing::AllocRing	9	6	17	13	30	117	2	26
AllocRing::find	13	7	24	14	38	164	4	10
AllocRing::clear	13	7	30	22	52	225	3	13
AllocRing::free	9	4	13	9	22	81	2	9
AllocRing::~AllocRing	4	1	4	1	5	12	1	4
AllocRing::contains	6	2	6	2	8	24	1	4
AllocRing::alloc	18	9	52	40	92	437	4	20
	72	36	146	101	247	1060	17	86
Binomial::operator	13	6	22	9	31	132	3	26
	13	6	22	9	31	132	3	26
BitSet::error	5	3	6	3	9	27	1	23
BitSet::empty	17	7	31	18	49	225	4	10
BitSet::count	24	13	84	51	135	703	9	36
BitSet::set	21	10	38	21	59	292	4	17
BitSet::clear	23	9	38	20	58	290	4	13
BitSet::invert	19	8	29	17	46	219	3	7
BitSet::set	31	17	88	50	138	771	6	30
BitSet::clear	33	16	93	50	143	803	6	30
BitSet::invert	30	16	86	47	133	735	5	29
BitSet::test	27	16	109	61	170	922	10	43
BitSet::next	28	16	167	104	271	1480	17	70
BitSet::previous	27	17	179	117	296	1616	17	77
BitSet::last	14	6	17	8	25	108	2	7
BitSet::OK	13	8	21	15	36	158	2	8
	312	162	986	582	1568	8349	90	400
BitString::error	5	3	6	3	9	27	1	23
BitString::count	28	14	137	87	224	1208	12	54
BitString::set	19	7	28	15	43	202	3	6
BitString::assign	22	8	43	21	64	314	4	9
BitString::clear	20	7	29	15	44	209	3	6
BitString::clear	11	4	13	6	19	74	2	5
BitString::set	18	6	30	14	44	202	3	8
BitString::invert	19	7	28	15	43	202	3	6
BitString::set	29	16	80	45	125	686	5	23
BitString::clear	30	15	84	45	129	708	5	23
BitString::invert	30	16	86	47	133	735	5	26
BitString::test	27	14	103	57	160	857	8	34
BitString::next	28	16	200	127	327	1785	19	77
BitString::previous	27	15	175	113	288	1553	16	71
BitString::search	33	31	389	238	627	3762	31	133
	346	179	1431	848	2279	12524	120	504
BitPattern::search	32	29	318	193	511	3031	23	115
	32	29	318	193	511	3031	23	115
BitString::match	25	22	124	74	198	1100	11	49
	25	22	124	74	198	1100	11	49

BitPattern::match	23	21	105	64	169	923	9	46
	23	21	105	64	169	923	9	46
BitSubString::operator=	23	13	122	92	214	1106	5	28
BitSubString::operator=	25	12	146	113	259	1349	6	30
	48	25	268	205	473	2455	11	58
BitString::at	6	2	6	2	8	24	1	4
BitString::before	6	2	6	2	8	24	1	4
BitString::after	10	4	11	6	17	65	1	4
BitString::at	8	4	8	4	12	43	1	5
BitString::before	6	2	6	2	8	24	1	5
	36	14	37	16	53	180	5	22
BitString::after	13	6	16	11	27	115	2	6
BitString::OK	12	5	16	8	24	98	2	7
	25	11	32	19	51	213	4	13
BitSubString::OK	15	7	21	15	36	161	2	8
	15	7	21	15	36	161	2	8
BitPattern::OK	9	3	10	4	14	50	2	6
	9	3	10	4	14	50	2	6
Complex::error	4	2	5	2	7	18	1	4
Complex::operator=	18	11	48	32	80	389	2	13
Complex::operator=	11	5	15	7	22	88	2	6
	33	18	68	41	109	495	5	23
CursesWindow::scanw	17	15	43	31	74	370	2	51
CursesWindow::mvscanw	18	17	53	37	90	462	3	31
CursesWindow::printw	15	13	38	25	63	303	1	18
CursesWindow::mvprintw	19	17	50	33	83	429	2	23
CursesWindow::CursesWindow	13	15	31	19	50	240	3	15
CursesWindow::CursesWindow	9	8	17	11	28	114	2	10
CursesWindow::CursesWindow	22	20	60	39	99	534	4	30
CursesWindow::kill_subwindows	13	7	34	22	56	242	4	14
CursesWindow::~CursesWindow	23	13	77	39	116	600	9	39
	149	125	403	256	659	3294	30	231
DiscreteUniform::operator	6	2	6	2	8	24	1	21
	6	2	6	2	8	24	1	21
ExceptionHandler::ExceptionHand	17	5	29	7	36	161	3	18
ExceptionHandler::~ExceptionHan	5	2	5	2	7	20	1	4
	22	7	34	9	43	181	4	22
Erlang::operator	15	6	21	9	30	132	2	25
	15	6	21	9	30	132	2	25
File::initialize	3	7	11	10	21	70	1	4
File::reinitialize	18	24	76	35	111	599	9	26
File::open	20	9	38	15	53	257	3	13
File::open	11	3	16	4	20	76	1	7
File::open	9	3	13	3	16	57	1	7
File::open	12	4	18	4	22	88	1	7
File::close	18	8	36	17	53	249	4	20
File::remove	10	2	13	4	17	61	1	5
File::File	4	1	4	1	5	12	1	4
File::File	6	3	9	3	12	38	1	5
File::File	6	2	8	2	10	30	1	5
File::File	6	2	8	2	10	30	1	5
File::File	5	1	7	1	8	21	1	5
File::File	24	24	73	53	126	704	5	46
File::~File	6	1	7	1	8	22	1	5
File::setname	18	4	30	14	44	196	4	14
File::setbuf	19	7	42	7	49	230	5	31
File::setbuf	13	4	23	4	27	110	2	14
File::error	14	8	28	13	41	183	3	13
File::check_state	11	4	23	7	30	117	4	12

File::put	11	3	13	3	16	61	1	4
File::get	27	7	82	31	113	575	6	38
File::getline	25	7	51	18	69	345	4	21
File::readline	28	13	84	41	125	670	8	41
File::gets	17	4	25	4	29	127	2	13
File::scan	16	6	28	11	39	174	2	16
File::form	13	6	23	11	34	144	1	16
	370	167	789	319	1108	5246	74	397
filebuf::filebuf	1	1	1	1	2	1	1	18
filebuf::filebuf	1	1	1	1	2	1	1	2
filebuf::filebuf	1	1	1	1	2	1	1	2
filebuf::is_open	3	1	3	1	4	8	1	4
filebuf::close	9	4	11	5	16	59	2	7
filebuf::open	21	16	55	26	81	422	6	22
filebuf::open	3	1	3	1	4	8	1	4
filebuf::open	3	1	3	1	4	8	1	4
filebuf::open	3	1	3	1	4	8	1	4
filebuf::open	3	1	3	1	4	8	1	4
filebuf::underflow	20	11	39	23	62	307	5	13
filebuf::overflow	28	11	60	38	98	518	7	20
filebuf::~filebuf	4	1	4	1	5	12	1	4
	100	51	187	101	288	1361	29	108
Fix::error	4	2	5	2	7	18	1	4
Fix::range_error	4	2	5	2	7	18	1	4
Fix::operator%=	13	5	16	5	21	88	1	4
	21	9	26	9	35	124	3	12
Fix16::assign	14	8	36	17	53	236	4	41
	14	8	36	17	53	236	4	41
Fix32::assign	14	8	36	17	53	236	4	19
Fix16::overflow	4	2	5	2	7	18	1	5
	18	10	41	19	60	254	5	24
Fix32::overflow	4	2	5	2	7	18	1	4
	4	2	5	2	7	18	1	4
Fix16::range_error	4	2	5	2	7	18	1	4
	4	2	5	2	7	18	1	4
Fix32::range_error	4	2	5	2	7	18	1	4
	4	2	5	2	7	18	1	4
Fix24::assign	19	13	52	28	80	400	5	43
	19	13	52	28	80	400	5	43
Fix48::assign	24	20	97	64	161	879	7	34
Fix24::overflow	4	2	5	2	7	18	1	5
	28	22	102	66	168	897	8	39
Fix48::overflow	4	2	5	2	7	18	1	4
	4	2	5	2	7	18	1	4
Fix24::range_error	4	2	5	2	7	18	1	4
	4	2	5	2	7	18	1	4
Fix48::range_error	4	2	5	2	7	18	1	4
	4	2	5	2	7	18	1	4
Geometric::operator	12	5	16	7	23	94	2	22
	12	5	16	7	23	94	2	22
GetOpt::GetOpt	11	19	31	24	55	270	3	37
GetOpt::exchange	14	6	38	21	59	255	1	19
GetOpt::operator	26	29	219	140	359	2076	23	171

	51	54	288	185	473	2601	27	227
HyperGeometric::operator	11	4	14	4	18	70	1	21
	11	4	14	4	18	70	1	21
	0	0	0	0	0	0	0	0
Integer::OK	14	10	29	21	50	229	2	13
Integer::error	5	3	6	3	9	27	1	4
	19	13	35	24	59	256	3	17
LogNormal::operator	10	2	12	2	14	50	1	24
	10	2	12	2	14	50	1	24
MLCG::MLCG	5	4	8	4	12	38	1	25
MLCG::reset	17	10	77	54	131	623	7	34
MLCG::asLong	13	16	45	34	79	384	4	21
	35	30	130	92	222	1045	12	80
NegativeExpntl::operator	9	2	11	2	13	45	1	20
	9	2	11	2	13	45	1	20
Normal::operator	20	16	73	43	116	600	4	52
	20	16	73	43	116	600	4	52
Obstack::Obstack	4	10	13	12	25	95	1	24
Obstack::_free	18	16	50	36	86	438	4	21
Obstack::newchunk	17	17	51	42	93	473	2	19
Obstack::finish	12	8	24	17	41	177	2	9
Obstack::contains	14	8	23	17	40	178	2	7
Obstack::OK	21	17	50	41	91	478	3	18
	86	76	211	165	376	1839	14	98
PlotFile::PlotFile	1	1	1	1	2	1	1	26
PlotFile::~PlotFile	1	1	1	1	2	1	1	1
PlotFile::PlotFile	1	1	1	1	2	1	1	2
PlotFile::PlotFile	1	1	1	1	2	1	1	2
PlotFile::PlotFile	1	1	1	1	2	1	1	2
PlotFile::PlotFile	1	1	1	1	2	1	1	2
PlotFile::open	9	4	11	4	15	56	1	5
PlotFile::open	9	3	10	3	13	47	1	4
PlotFile::open	9	3	10	3	13	47	1	4
PlotFile::open	8	2	9	2	11	37	1	4
PlotFile::setbuf	8	2	9	2	11	37	1	4
PlotFile::setbuf	9	3	10	3	13	47	1	4
PlotFile::cmd	8	2	9	2	11	37	1	5
PlotFile::operator<<	11	5	19	8	27	108	1	11
PlotFile::operator<<	8	2	9	2	11	37	1	5
PlotFile::arc	6	7	11	7	18	67	1	6
PlotFile::box	6	4	26	16	42	140	1	8
PlotFile::circle	6	4	8	4	12	40	1	4
PlotFile::cont	6	3	7	3	10	32	1	4
PlotFile::dot	14	7	22	8	30	132	2	7
PlotFile::erase	5	1	5	1	6	16	1	4
PlotFile::label	6	3	7	3	10	32	1	4
PlotFile::line	6	5	9	5	14	48	1	5
PlotFile::linemod	6	3	7	3	10	32	1	4
PlotFile::move	6	3	7	3	10	32	1	4
PlotFile::point	6	3	7	3	10	32	1	4
PlotFile::space	6	5	9	5	14	48	1	5
	164	80	227	96	323	1110	28	140
Poisson::operator	13	6	18	9	27	115	2	28
	13	6	18	9	27	115	2	28
RNG::RNG	**20**	**20**	**78**	**64**	**142**	**756**	**4**	**94**
	20	20	78	64	142	756	4	94
Rational::error	5	3	6	3	9	27	1	20

Rational::normalize	17	8	36	18	54	251	4	18
Rational::invert	13	7	30	16	46	199	3	14
Rational::Rational	26	19	78	53	131	719	7	36
Rational::OK	15	6	23	11	34	149	2	8
	76	43	173	101	274	1345	17	96
	0	0	0	0	0	0	0	0
SFile::SFile	1	1	1	1	2	1	1	17
SFile::~SFile	1	1	1	1	2	1	1	1
SFile::SFile	3	2	3	2	5	12	1	5
SFile::SFile	3	2	3	2	5	12	1	5
SFile::SFile	3	2	3	2	5	12	1	5
SFile::SFile	3	2	3	2	5	12	1	5
	14	10	14	10	24	50	6	38
SampleStatistic::error	4	2	5	2	7	18	1	4
SampleStatistic::reset	4	8	11	9	20	72	1	6
SampleStatistic::operator+=	10	7	19	15	34	139	3	8
SampleStatistic::mean	9	4	14	5	19	70	2	9
SampleStatistic::var	12	5	22	9	31	127	2	9
SampleStatistic::stdDev	14	3	24	5	29	119	2	8
SampleStatistic::confidence	19	8	30	13	43	204	3	10
SampleStatistic::confidence	19	8	30	13	43	204	3	10
	91	45	155	71	226	953	17	64
SampleHistogram::SampleHistogra	17	14	58	42	100	495	4	23
SampleHistogram::~SampleHistogr	6	4	9	4	13	43	2	7
SampleHistogram::operator+=	15	7	24	12	36	161	3	9
SampleHistogram::similarSamples	11	6	20	11	31	127	3	8
SampleHistogram::printBuckets	12	11	29	21	50	226	3	10
SampleHistogram::reset	15	5	22	11	33	143	3	9
	76	47	162	101	263	1195	18	66
SampleHistogram::SampleHistogra	17	14	58	42	100	495	4	40
SampleHistogram::~SampleHistogr	6	4	9	4	13	43	2	7
SampleHistogram::operator+=	15	7	24	12	36	161	3	9
SampleHistogram::similarSamples	11	6	20	11	31	127	3	8
SampleHistogram::printBuckets	12	11	29	21	50	226	3	10
SampleHistogram::reset	15	5	22	11	33	143	3	9
	76	47	162	101	263	1195	18	83
SampleStatistic::error	4	2	5	2	7	18	1	4
SampleStatistic::reset	4	8	11	9	20	72	1	6
SampleStatistic::operator+=	10	7	19	15	34	139	3	8
SampleStatistic::mean	9	4	14	5	19	70	2	9
SampleStatistic::var	12	5	22	9	31	127	2	9
SampleStatistic::stdDev	14	3	24	5	29	119	2	8
SampleStatistic::confidence	19	8	30	13	43	204	3	10
SampleStatistic::confidence	19	8	30	13	43	204	3	10
	91	45	155	71	226	953	17	64
String::error	5	4	8	4	12	38	1	25
String::search	20	8	57	28	85	409	7	22
String::search	24	13	114	58	172	896	10	35
String::match	25	10	74	44	118	605	8	21
	74	35	253	134	387	1948	26	103
SubString::assign	27	16	147	90	237	1286	6	32
	27	16	147	90	237	1286	6	32
String::_gsub	36	20	185	119	304	1765	11	72
String::_gsub	37	20	176	116	292	1703	10	70
String::del	20	7	40	21	61	290	2	11
String::del	5	2	5	2	7	20	1	6
String::del	5	2	5	2	7	20	1	6
String::del	9	2	21	4	25	86	1	4
String::del	9	2	21	4	25	86	1	4
String::del	7	3	11	3	14	47	1	4
String::at	6	2	6	2	8	24	1	7
String::operator	6	2	6	2	8	24	1	4
String::before	6	2	6	2	8	24	1	4

```
    String::through    7    3    7    3   10   33    1    4
      String::after   10    2   12    4   16   57    1    4
       String::from    8    1    9    2   11   35    1    4
         String::at    8    2    9    2   11   37    1    5
         String::at    8    2    9    2   11   37    1    5
         String::at    6    2    6    2    8   24    1    6
         String::at    6    2    6    2    8   24    1    6
         String::at    6    2    6    2    8   24    1    5
     String::before    6    2    6    2    8   24    1    5
     String::before    6    2    6    2    8   24    1    5
     String::before    6    2    6    2    8   24    1    6
     String::before    6    2    6    2    8   24    1    5
     String::before    6    2    6    2    8   24    1    6
    String::through   12    3   14    6   20   78    2    6
    String::through   12    3   14    6   20   78    2    6
                     ---------------------------------------
                     259   96  604  318  922 4636   48  270

      String::after   12    3   14    6   20   78    2    7
      String::after   12    3   14    6   20   78    2    7
       String::from    8    1    9    2   11   35    1    5
       String::from    8    1    9    2   11   35    1    5
       String::from    8    1    9    2   11   35    1    6
       String::from    8    1    9    2   11   35    1    5
       String::from    8    1    9    2   11   35    1    6
       String::freq   16    4   32   11   43  186    3    8
       String::freq   16    4   32   11   43  186    3    7
       String::freq   14    4   25   10   35  146    3    6
       String::freq   15    5   27   11   38  164    3    7
         String::OK   13    7   20   14   34  147    2    8
                     ---------------------------------------
                     138   35  209   79  288 1160   23   77

    SubString::OK    14    6   21   12   33  143    2    8
                     ---------------------------------------
                      14    6   21   12   33  143    2    8

  Uniform::operator   8    3    9    3   12   42    1   20
                     ---------------------------------------
                      8    3    9    3   12   42    1   20

  Weibull::operator  12    4   16    4   20   80    1   25
                     ---------------------------------------
                     12    4   16    4   20   80    1   25


   istream::istream   1    1    1    1    2    1    1   38
   istream::istream  14    6   25   15   40  173    2   14
  istream::~istream   5    2    5    2    7   20    2    4
   istream::istream   6    4    7    4   11   37    1    5
   istream::istream   6    3    6    3    9   29    1    5
   istream::istream   6    3    6    3    9   29    1    5
   istream::istream   5    2    5    2    7   20    1    6
   istream::istream   5    2    5    2    7   20    1    5
   istream::istream   6    4    7    4   11   37    1    5
      istream::open   9    5   11    5   16   61    1    4
      istream::open   9    4   10    4   14   52    1    4
      istream::open   9    4   10    4   14   52    1    4
      istream::open   8    3    9    3   12   42    1    4
      istream::open   9    4   10    4   14   52    1    4
       istream::get  18    7   36   11   47  218    4   16
istream::operator>>  21    6   40   12   52  247    5   11
istream::operator>>  11    3   12    3   15   57    2    5
       istream::get  25    7   76   26  102  510    7   34
istream::operator>>  27    7   74   20   94  478    7   31
   istream::getline  22    7   46   14   60  291    4   15
  istream::readline  28   12   83   40  123  655    8   41
      istream::gets  13    3   16    3   19   76    1    7
istream::operator>>  28   12  103   37  140  745   11   44
istream::operator>>  27   10   72   22   94  490    8   28
istream::operator>>  31   23  173   76  249 1433   15   69
istream::operator>>   9    2   13    3   16   55    1    4
istream::operator>>   9    3   14    4   18   65    1    4
istream::operator>>   9    2   13    3   16   55    1    4
istream::operator>>   9    3   14    4   18   65    1    4
istream::operator>>   9    2   13    3   16   55    1    4
      istream::name   6    1    6    1    7   20    1    4
     istream::error   5    1    5    1    6   16    1    4
       istream::tie   4    3    5    3    8   22    1    4
    istream::_flush   8    2    8    3   11   37    2    4
                     ---------------------------------------
```

	417	163	939	345	1284	6215	98	444
ostream::ostream	1	1	1	1	2	1	1	20
ostream::ostream	14	6	32	19	51	220	2	16
ostream::ostream	6	4	7	4	11	37	1	5
ostream::ostream	6	3	6	3	9	29	1	5
ostream::ostream	6	3	6	3	9	29	1	5
ostream::ostream	5	2	5	2	7	20	1	5
ostream::ostream	5	2	5	2	7	20	1	5
ostream::ostream	6	4	7	4	11	37	1	5
ostream::~ostream	5	2	5	2	7	20	2	4
ostream::open	9	5	11	5	16	61	1	4
ostream::open	9	4	10	4	14	52	1	4
ostream::open	9	4	10	4	14	52	1	4
ostream::open	8	3	9	3	12	42	1	4
ostream::open	9	4	10	4	14	52	1	4
ostream::form	15	12	38	24	62	295	1	18
ostream::operator<<	7	1	8	1	9	27	1	4
ostream::operator<<	7	2	9	2	11	35	1	4
ostream::operator<<	7	1	8	1	9	27	1	4
ostream::operator<<	7	2	9	2	11	35	1	4
ostream::operator<<	6	1	7	1	8	22	1	4
ostream::operator<<	6	1	7	1	8	22	1	4
ostream::operator<<	7	1	8	1	9	27	1	4
ostream::operator<<	6	1	7	1	8	22	1	4
ostream::operator<<	8	4	13	4	17	61	1	5
ostream::name	6	1	6	1	7	20	1	4
ostream::error	5	1	5	1	6	16	1	4
	185	75	249	100	349	1281	28	153

streambuf::streambuf	1	1	1	1	2	1	1	19
streambuf::streambuf	1	1	1	1	2	1	1	3
streambuf::~streambuf	8	3	8	4	12	42	2	4
streambuf::doallocate	13	8	22	16	38	167	2	9
streambuf::setbuf	13	10	23	16	39	176	2	9
streambuf::name	3	1	3	1	4	8	1	4
streambuf::overflow	14	7	22	11	33	145	4	5
streambuf::underflow	3	1	3	1	4	8	1	4
streambuf::sputs	15	4	35	12	47	200	5	12
streambuf::sputsn	16	5	31	10	41	180	4	9
streambuf::is_open	3	1	3	1	4	8	1	4
streambuf::close	3	1	3	1	4	8	1	4
streambuf::error	4	1	4	1	5	12	1	4
streambuf::open	3	1	3	1	4	8	1	4
streambuf::open	3	1	3	1	4	8	1	4
streambuf::open	3	1	3	1	4	8	1	4
streambuf::open	3	1	3	1	4	8	1	4
streambuf::open	3	1	3	1	4	8	1	4
	112	49	174	81	255	996	31	110

APPENDIX C

C++ RESERVED AND NON-EXECUTABLE WORD LISTS

C++ RESERVED WORD LIST

```
!
!=
"
%
%=
&
&&
&=
&p
'
(
(c
(p
)
*
*=
*p
+
++
+=
,
-
--
-=
->
.
/
/=
:
::
;
<
<<
<<=
<=
=
==
>
>=
>>
>>=
?
break
case
cerr
cin
continue
cout
default
delete
delete2
do
else
entry
for
goto
if
new
return
sizeof
this
while
[
]
^
^=
{
|
|=
||
}
~
```

C++ NON-EXECUTABLE WORD LIST

asm
auto
char
class
const
double
enum
extern
FILE
float
friend
inline
int
istream
long
operator
ostream
overload
private
private:
protected
protected:
public
public:
register
short
signed
static
struct
typedef
union
unsigned
virtual
void
volatile

TURBO C++ NON-EXECUTABLE WORD LIST

_cs
_ds
_es
_export
_loadds
_saveregs
_seg
_ss
asm
auto
cdecl
char
class
const
double
enum
extern
FILE
far
float
friend
huge
inline
int
interrupt
istream
long
near
operator
ostream
overload
pascal
private
private:
protected
protected:
public
public:
register
short
signed
static
struct
typedef
union
unsigned
virtual
void
volatile

APPENDIX D

PROGRAM LISTINGS

```
/*********************************************************************
*                      Stability+ Metric (C)                         *
*********************************************************************
*       File:    stab-generator.cpp                                  *
*       Author:  Sarosh J. Khan                                      *
*       Date:    93/03/16                                            *
*       Class:   COMSC 5000 - Thesis                                 *
*       Advisor: Dr. Mansur Samadzadeh                               *
*********************************************************************
*                                                                    *
* This program calculates the stability of a class in terms of       *
* the parameters (parameter coupling) passed in and out of the       *
* public interface. The input to this program is a assumption file   *
* which is generated earlier by "genlist.cpp" program. The           *
* assumption list has all the types and classes in a program under   *
* consideration and its assumption count. This file can be updated   *
* manually if later changes are made in the program and more types   *
* are introduced.                                                    *
*********************************************************************/

#include <stdio.h>
#include <iostream.h>
#include <string.h>
#include <stdlib.h>

#define  DEBUG1     1           // used for displaying the output
#define  DEBUG2     1           // in different formats using
#define  DEBUG3     1           // conditional compilation
#define  TRUE       1
#define  FALSE      0
#define  MAX_ITEMS  150
#define  BUFF_LEN   120
#define  NAME_LEN   30
#define  MAX_LINES  100
#define  COMMA      ','
#define  UNDERSCORE '_'
#define  SPACE      ' '
#define  OPENBRA    '('
#define  CLOSEBRA   ')'
#define  CAPSBEGIN  65          // beginning of capital letters
#define  CAPSEND    90          // end of capital letters
#define  SMALLBEGIN 97          // beginning of small letters
#define  SMALLEND   122         // end of small letters

#undef   DEBUG1                 // used for conditional compilation
#undef   DEBUG2
#undef   DEBUG3

struct assumption {             // structure to store the type and
  char type[NAME_LEN];          // assumption count of a parameter
  int  count;
};

struct types_found {            // structure to store the types of
  char type[NAME_LEN];          // parameters found, their number of
  int  number_occurences;       // occurences, their validity, and
  int  valid;                   // number of assumptions
  int  assumptions;
};

struct input {                  // structure to store the input lines
  char *input_line;             // from the file being analyzed
};

class SFile {                   // Source file class
  input* input_lines[MAX_LINES];// array of pointers to input
  int   number_lines_read;      // count of lines read
  char  filename[NAME_LEN];     // file name being analyzed
public:
  SFile();
  ~SFile();
  void ScanInputFile (char* INPfilename);
  void GetLinesRead (input** lines_read, int& count_read);
private:
  void GetSourceLines (char* temp, int& block_comments);
  int BlankLine (char* temp);
  void CheckEnd (char* temp, int& block_comments);

};
class stability_generator {             // stability generator class
  assumption assumption_list[MAX_ITEMS]; // to hold assumption list
```

```
  types_found scanned_list[MAX_ITEMS];   // to hold types found
  int number_types;                      // number of types given
  int number_found;                      // number of types found
  input* public_block[MAX_LINES];
  int file_index;                        // file index for input file
  int block_len;                         // length of block of input
public:
  stability_generator();
  void GetAssumptionList(char* ASSfilename);
  void GenerateStability(SFile& SF);
private:
  void DoLexical(void);
  void CalculateStability(void);
  void PrintStat(char* classname);
  void InitializePublicBlock(void);
  void ExtractClassInterface(input** lines_read, int count_read,
                             char* classname);
  int GetParameterList (char* temp, char* par_list);
  char* GetToken(char* token);
};

//*************************************************************************
//            Source File Class Member Functions                          *
//*************************************************************************
//-------------------------------------------------------------------------
// NAME:    Sfile::Sfile()
// PURPOSE: Constructor for the class SFile (source file).
//-------------------------------------------------------------------------
SFile::SFile()
{
  input* temp;

  number_lines_read = 0;
  for (int i = 0; i < MAX_LINES; i++)
  {
    temp = new input;                    // dynamic allocation
    temp -> input_line = new char[BUFF_LEN];
    input_lines[i] = temp;
  }

  for (i = 0; i < MAX_LINES; i++)        // initialize the array
  {
    strcpy (input_lines[i]->input_line, "\0");
  }
}

//-------------------------------------------------------------------------
// NAME:    SFile::~SFile()
// PURPOSE: Destructor for the class SFile.
//-------------------------------------------------------------------------
SFile::~SFile()
{
  for (int i = 0; i < MAX_LINES; i++)
  {                                      // return the memory area
    delete (input_lines[i] -> input_line);
    delete (input_lines[i]);
  }
}

//-------------------------------------------------------------------------
// NAME:    SFile::ScanInputFile()
// PURPOSE: This function reads the source input file line by line
//          and ignores the comments.
//-------------------------------------------------------------------------
void SFile::ScanInputFile(char* INPfilename)
{
  FILE* input_file;                      // file pointer for input file
  char temp[BUFF_LEN];                   // temporary array
  int block_comments = FALSE;            // boolean variable

  if ((input_file=fopen(INPfilename, "r")) == NULL)
  {
    cout << "cannot open the header file" << "\n";
    exit(1);
  }

  strcpy (filename, INPfilename);
  while ((fgets (temp, BUFF_LEN, input_file)) != NULL)
  {
    if (block_comments == TRUE)
      CheckEnd (temp, block_comments);   // check for the end of block
```

```
    else                                    // of comments
      GetSourceLines (temp, block_comments);
  }
}

//---------------------------------------------------------------------
// NAME:    SFile::CheckEnd ()
// PURPOSE: This procedure checks the end of a block of comments.
//---------------------------------------------------------------------
void SFile::CheckEnd (char* temp, int& block_comments)
{
  for (int i = 0; i <= strlen(temp); i++)
  {
    if ((temp[i] == '*' )&&(temp[i+1] == '/'))
      block_comments = FALSE;
  }
}

//---------------------------------------------------------------------
// NAME:    SFile::GetSourceLines()
// PURPOSE: This routine gets rid of comments and blank lines, and
//          stores the rest in a program memory area.
//---------------------------------------------------------------------
void SFile::GetSourceLines(char* temp, int& block_comments)
{
  int flag = FALSE;                         // boolean for checking
                                            // the end of comment block
  for (int i = 0; (i < strlen(temp))&&(flag == FALSE); i++)
  {
    if (temp[i] == '\n')
      flag = TRUE;
    if ((temp[i] == '/') && (temp[i+1] == '/'))
      flag = TRUE;
    if ((temp[i] == '/') && (temp[i+1] == '*'))
    {
      flag = TRUE;
      int j = i+1;
      block_comments = TRUE;
      while (temp[j] != '\0')
      {
        if ((temp[j] == '*')&&(temp[j+1] == '/'))
        block_comments = FALSE;
        j++;
      }
    }
  }
  temp[i-1] = '\0';
  if (!BlankLine (temp))
  {
    if ((number_lines_read+1) > MAX_LINES)
    {
      cout << "Analysis Aborted! -- File " << filename << " too big\n";
      exit (1);
    }
    strcpy (input_lines[number_lines_read]->input_line, temp);
    number_lines_read++;
  }
}

//---------------------------------------------------------------------
// NAME:    SFile::BlankLine()
// PURPOSE: This function checks if a given line is blank or not.
//          It returns 0 if it is a blank and 1 if it is not.
//---------------------------------------------------------------------
int SFile::BlankLine (char* temp)
{
  for (int i = 0; i < strlen(temp); i++)
  {
    if (temp[i] != ' ')
      return (0);
  }
  return (1);
}

//---------------------------------------------------------------------
// NAME:    SFile::GetLinesRead ()
// PURPOSE: This functions exports the valid lines of code read from
//          the source file.
//---------------------------------------------------------------------
void SFile::GetLinesRead (input** lines_read, int& count_read)
{
```

```
  for (int i = 0; i < number_lines_read; i++)
    strcpy (lines_read[i]->input_line, input_lines[i]->input_line);
  count_read = number_lines_read;
}

//*********************************************************************
//              Stability Genarator Member Functions                  *
//*********************************************************************
//---------------------------------------------------------------------
// NAME:    stability-generator::stability_generator()
// PURPOSE: Constructor for the class stability_generator.
//---------------------------------------------------------------------
stability_generator::stability_generator()
{
  input* temp;
  number_types = 0;                       // initialize variables
  number_found = 0;                       // in the class
  block_len = 0;                          // stability_generator
  file_index = 0;

  for (int i = 0; i < MAX_ITEMS; i++)     // initialization
  {
    strcpy (assumption_list[i].type, "\0");
    assumption_list[i].count = 0;
    strcpy (scanned_list[i].type, "\0");
    scanned_list[i].number_occurences = 0;
    scanned_list[i].valid = FALSE;
    scanned_list[i].assumptions = 0;
  }

  for (i = 0; i < MAX_LINES; i++)
  {
    temp = new input;
    temp -> input_line = new char[BUFF_LEN];
    public_block[i] = temp;
  }

  for (i = 0; i < MAX_LINES; i++)
  {
    strcpy (public_block[i]->input_line, "\0");
  }

}

//---------------------------------------------------------------------
// NAME:    stability_generator::GetAssumptionList()
// PURPOSE: This procedure gets the types and their assumption counts
//          from the input file provided. It also records the number
//          of assumptions read and stores them in number_types.
//---------------------------------------------------------------------
void stability_generator::GetAssumptionList (char* ASSfilename)
{
  FILE* assumption_file;  // file index to assumption file
  int index = 0;          // variable to count number of types
  char temp[BUFF_LEN];    // temporary char array
  char* p;                // char pointer

  if ((assumption_file=fopen(ASSfilename, "r")) == NULL)
  {
    cout << "cannot open the assumption file" << "\n";
    exit(1);
  }

  while ((fgets (temp, BUFF_LEN, assumption_file)) != NULL)
  {
    p = strtok (temp, " \0");
    strcpy (assumption_list[index].type, p); // reads assumption type
    p = strtok ('\0', " \0");
    assumption_list[index].count = atoi(p);  // reads assumption count
    index++;
  }
  number_types = index;
}

//---------------------------------------------------------------------
// NAME:    stability_generator::GenerateStability()
// PURPOSE: This procedure communicates with the SFile class to get
//          the valid lines of input read from the source file.
//---------------------------------------------------------------------
void stability_generator::GenerateStability(SFile& SF)
{
```

```
  input* lines_read[MAX_LINES];  // array of pointers to input
  int count_read;                // count of input lines read
  char classname[NAME_LEN];      // array for class name
  input* temp;                   // pointer to input (struct type)

  for (int i = 0; i < MAX_LINES; i++)
  {
    temp = new input;
    temp -> input_line = new char[BUFF_LEN];
    lines_read[i] = temp;
  }
  for (i = 0; i < MAX_LINES; i++)
  {
    strcpy (lines_read[i]->input_line, "\0");
  }

  SF.GetLinesRead (lines_read, count_read);  //communicates with SFile

  #ifdef DEBUG1
  cout << "****************************************" << "\n";
  cout << " The valid source lines read for analysis " << "\n";
  cout << "****************************************" << "\n";
  cout << "Number of lines read: " << count_read << "\n";
  for (i = 0; i < count_read; i++)
    cout << lines_read[i]->input_line << "\n";
  #endif

  while (file_index != count_read) {     // loop to perform analysis
    InitializePublicBlock();             // on file being analyzed
    ExtractClassInterface (lines_read, count_read, classname);
    if (block_len > 0) {                 // If the class has a public
      DoLexical();                       // interface then perform
      CalculateStability ();             // the three operations
      PrintStat (classname);
    }
  }
}

//---------------------------------------------------------------------
// NAME:    stability_generator::InitializePublicBlock()
// PURPOSE: This functions initializes the structure for storing the
//          public block for the next input block.
//---------------------------------------------------------------------
void stability_generator::InitializePublicBlock()
{
  block_len = 0;
  for (int i = 0; i < MAX_LINES; i++)
   strcpy (public_block[i]->input_line, "\0");

  number_found = 0;
  for (i = 0; i < MAX_ITEMS; i++)
  {
    strcpy (scanned_list[i].type, "\0");
    scanned_list[i].number_occurences = 0;
    scanned_list[i].valid = FALSE;
    scanned_list[i].assumptions = 0;
  }
}

//---------------------------------------------------------------------
// NAME:    stability_generator::ExtractClassInterface()
// PURPOSE: This procedure the public interfaces of classes for
//          analysis
//---------------------------------------------------------------------
void stability_generator::ExtractClassInterface(input** lines_read, int count_read, char*
classname)
{
  int interface_area = FALSE; // boolean to check for the public
                              // interface area of a class
  char* token_start;           // char pointer to check the start
                              // of an interface area
  char* token_end;             // to check end of interface area
  char* token_class;           // char pointer
  char temp[BUFF_LEN];         // temporary character array
  int done = FALSE;

  #ifdef DEBUG1                // for output showing the part
                              // of file having a class
  cout << "****************************************" << "\n";
  cout << " The Part of the File having a Class  " << "\n";
  cout << "****************************************" << "\n";
```

```
  #endif

  for (int i = file_index; (i < count_read) && (done == FALSE); i++)
  {
    #ifdef DEBUG1
    cout << lines_read[i]->input_line << "\n";
    #endif

    strcpy (public_block[i]->input_line, lines_read[i]->input_line);
    strcpy (temp, lines_read[i]->input_line);
    token_class = strtok (temp, " \0");
    if ((strcmp (token_class, "class")) == 0) {
      if ((strstr (lines_read[i]->input_line, "{")) != NULL)
      {
        token_class = strtok ('\0', ":{\0");
        strcpy (classname, token_class);
      }
    }

    strcpy (temp, lines_read[i]->input_line);
    token_start = strtok (temp, " :\0");
    if ((strcmp (token_start, "public")) == 0)
      interface_area = TRUE;

    // check for the end of the interface area
    strcpy (temp, lines_read[i]->input_line);
    token_end = strtok (temp, " \0");
    if ((strcmp(token_end, "protected:")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "protected")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "private")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "private:")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "};")) == 0){
      done = TRUE;
      interface_area = FALSE;
    }

    if (interface_area)                  // store the line read
    {
      strcpy (public_block[block_len]->input_line, lines_read[i]->input_line);
      block_len++;
    }
  }
  file_index = i;

  #ifdef DEBUG1                          // to display the lines read
  cout << "**************************************" << "\n";
  cout << " The Interface Extracted for Analysis " << "\n";
  cout << "**************************************" << "\n";
  for (i = 0; i < block_len; i++)
  {
    cout << public_block[i]->input_line;
    cout << "\n";
  }
  #endif
}

//---------------------------------------------------------------------
// NAME:    stability_generator::DoLexical()
// PURPOSE: This procedure does lexical analysis on the block of the
//          interface area.
//---------------------------------------------------------------------
void stability_generator::DoLexical (void)
{
  char* token;
  char par_list[BUFF_LEN]; // array to hold the parameter list
  int index;
  int parameters = FALSE;  // boolean to check if there are 1
                           // or more parameters
  int found = FALSE;
  int open = FALSE;        // check for open bracket
  char temp[BUFF_LEN];
  char* parameter_type;

  for (int i = 0; i < block_len; i++)
  {
    parameters = FALSE;
    strcpy (temp, public_block[i]->input_line);
```

```
    #ifdef DEBUG2
    cout << "************************************************\n";
    cout << "LINE ANALYZED: " << temp;
    cout << "\n";
    #endif

    strcpy (par_list, "\0");
    if ((strstr (temp, "(")) != NULL)
      open = TRUE;
    if ((strstr (temp, ")")) != NULL)
      open = FALSE;
    if (((strstr (temp, "(")) != NULL) || ((strstr (temp, ")")) != NULL)
        || (open == TRUE))
      parameters = GetParameterList (temp, par_list);

    #ifdef DEBUG2
    cout << "PARAMETER LIST:" << par_list << "\n";
    cout << "************************************************\n";
    #endif
    if (parameters)                          // if parameters found
    {
      while ((parameter_type = GetToken(par_list)) != NULL)
      {
        found = FALSE;
        for (int i = 0; i < number_found; i++)
        {
          if ((strcmp (parameter_type, scanned_list[i].type)) == 0)
          {
            found = TRUE;                    // if already present
            scanned_list[i].number_occurences++;
          }
        }
        if (!found)
        {
          strcpy (scanned_list[number_found].type, parameter_type);
          scanned_list[number_found].number_occurences++;
          number_found++;
        }
      }
    }
  }
}

//=====================================================================
// NAME:    stability_generator::GetParameterList()
// PURPOSE: Gets the parameter list from the public interface of a
//          class.
//=====================================================================
int stability_generator::GetParameterList (char* temp, char* par_list)
{
  int len_str;                // length of the parameter list
  int index = 0;              // index to a character array
  int local_index = 0;        // index to a character array
  char local_str[BUFF_LEN];   // temporary character array
  static int open = FALSE;    // boolean to check for open bracket

  len_str = strlen(temp);
  if (len_str == 0)
    cout << "Invalid line of input for Lexical Analysis" << "\n";
  else
  {
    while ((temp[index] != OPENBRA) && (index < len_str) && (open == FALSE))
      index++;
    if ((temp[index] == OPENBRA) || (open = TRUE)) // if already open
    {                                              // or open bracket
      if ((temp[index+1] == CLOSEBRA)||(temp[index] == CLOSEBRA)){
        return (0);                                // if no arguments
      }
      else
      {
        if (temp[index] == OPENBRA)
          index++;
        while ((temp[index] != CLOSEBRA) && (index < len_str))
        {
          local_str[local_index++] = temp[index];  // store an argument
          index++;
        }
        if (temp[index] == CLOSEBRA)
        {
          open = FALSE;
          local_str[local_index] = '\0';
```

```
          strcpy (par_list, local_str);
          return (1);
        }
        else {
          open = TRUE;
          if (local_index > 0) {                    // if a argument is
            local_str[local_index] = '\0';          // then store it
            strcpy (par_list, local_str);
            return (1);
          }
          else
            return (0);
        }
      }
    }
    else
      return (0);
  }
}

//-------------------------------------------------------------------
// NAME:    stability_generator::GetToken()
// PURPOSE: This procedure gets the next type from the string of
//          tokens provided and returns a pointer to that type.
//-------------------------------------------------------------------
char* stability_generator::GetToken (char* token)
{
  char temp[BUFF_LEN];          // temporary array to store token
  char rest_string[BUFF_LEN];  // char array to store the remaining
                               // string
  char type_found[NAME_LEN];    // array to store a type found
  int next = FALSE;
  int index = 0;
  int count = 0;

  type_found[0] = '\0';
  rest_string[0] = '\0';
  strcpy (temp, token);


  for (int i = 0; (i < strlen(temp)) && (next == FALSE); i++)
  {
    if (temp[i] == SPACE)                   // separated by space
    {
      if (count > 0)
      {
        for (int k = i; k < strlen(temp); k++)
        {
          rest_string[index++] = temp[k];
        }
        rest_string[index] = '\0';
        if ((strcmp (rest_string, "const")) != 0)
          next = TRUE;
      }
    }
    else if (temp[i] == COMMA)              // check for delimiter
    {
      next = TRUE;
      for (int j = i+1; j < strlen(temp); j++)
      {
        rest_string[index++] = temp[j];
      }
      rest_string[index] = '\0';
    }
    else
    {                                       // for all other characters
      if (((temp[i] >= CAPSBEGIN) && (temp[i] <= CAPSEND)) ||
          ((temp[i] >= SMALLBEGIN) && (temp[i] <= SMALLEND)) ||
          (temp[i] == UNDERSCORE))
        type_found[count++] = temp[i];
    }
  }
  type_found[count] = '\0';

  #ifdef DEBUG2                             // for long version of output
  cout << "====================================" << "\n";
  cout << " TOKEN: " << type_found << "\n";
  cout << "====================================" << "\n";
  #endif

  strcpy (token, rest_string);
```

```
  if (type_found[0] != '\0')
    return (type_found);
  else
    return (NULL);
}

//---------------------------------------------------------------------
// NAME:    stability_generator::CalculateStability()
// PURPOSE: It calculates the assumptions for a given class in terms
//          of parameter coupling.
//---------------------------------------------------------------------
void stability_generator::CalculateStability()
{
  int tot_assumptions = 0; // count of number of assumptions
  int done = FALSE;        // boolean for loop condition

  for (int i = 0; i < number_found; i++)
  {
    done = FALSE;
    for (int j = 0; (j < number_types) && (done == FALSE); j++)
    {
      if ((strcmp(scanned_list[i].type, assumption_list[j].type)) == 0)
      {
        done = TRUE;
        scanned_list[i].valid = TRUE;
        tot_assumptions = (assumption_list[j].count)*
                          (scanned_list[i].number_occurences);
        scanned_list[i].assumptions = tot_assumptions;
      }
    }
  }
}

//---------------------------------------------------------------------
// NAME:    stability_generator::PrintStat()
// PURPOSE: This procedure prints the statistics for the source file
//          analyzed.
//---------------------------------------------------------------------
void stability_generator::PrintStat (char* classname)
{
  int   TOTAL = 0;
  #ifdef DEBUG3
  int   print_len = 0;

  cout << "Stability Generator (C++)" << "\n";
  cout << "Stability Report For Class: " << classname << "\n";
  cout << "-----------------------------------" << "\n";
  cout << "\n";

  cout << "=====================================\n";
  cout << "        LIST OF TYPES FOUND          " << "\n";
  cout << "=====================================\n";
  cout << "TYPE                ";
  cout << "NUM_OCC             ";
  cout << "TOT_ASS" << "\n";
  for (int i = 0; i < number_found; i++)
  {
    if (scanned_list[i].valid == TRUE)
    {
      cout << scanned_list[i].type;
      print_len = 22 - (strlen (scanned_list[i].type));
      cout.width(print_len);
      cout << scanned_list[i].number_occurences;
      cout.width(19);
      cout << scanned_list[i].assumptions << "\n";
      TOTAL += scanned_list[i].assumptions;
    }
  }
  if (TOTAL == 0)
    cout << "NONE" << "\n";
  #else
  cout.width(35);
  cout << classname << "  ";
  for (int i = 0; i < number_found; i++)
  {
    if (scanned_list[i].valid == TRUE)
      TOTAL += scanned_list[i].assumptions;
  }
  cout << 1/((1.0*TOTAL)+1) << "\n";
  #endif
```

```
  #ifdef DEBUG3
  cout << "-----------------------------------------" << "\n";
  cout << "POTENTIAL RIPPLE EFFECT:                 " << TOTAL << "\n";
  cout << "STABILITY IN TERMS OF PARAMETER COUPLING: " << 1/((1.0*TOTAL)+1);
  cout << "\n";
  cout << "\n";
  #endif
}

//---------------------------------------------------------------------
// Main creates stability generator and source file classes and calls
// its public member functions to calculate stability.
//---------------------------------------------------------------------
main (int argc, char** argv)
{
  stability_generator SG;                // create a class SG
  SFile SF;                              // create a class SF

  if (argc < 3)
    cout << "Error -- Wrong number of command line parameters\n";

  SG.GetAssumptionList (argv[1]);        // get asumption list
  SF.ScanInputFile (argv[2]);            // scan the input file
  SG.GenerateStability(SF);              // calculate stability
}
```

```
/*********************************************************************
*                    Coupling+ Metric (C)                            *
*********************************************************************
*       File:    coupling-generator.cpp                              *
*       Author:  Sarosh J. Khan                                      *
*       Date:    93/03/16                                            *
*       Class:   COMSC 5000 - Thesis                                 *
*       Advisor: Dr. Mansur Samadzadeh                               *
*********************************************************************
*                                                                   *
* This program calculates the coupling between classes (CBO) metric *
* as defined by Chidamber and Kemerer [Chidamber91].                *
* The input to this program is a list of classes in a file which is *
* generated earlier by "genlist.cpp" program.                       *
*                                                                   *
*********************************************************************/

#include <stdio.h>
#include <iostream.h>
#include <string.h>
#include <stdlib.h>

#define  DEBUG1       1          // used for conditional compilation
#define  DEBUG2       1          // used for conditional compilation
#define  DEBUG3       1          // used for conditional compilation
#define  TRUE         1
#define  FALSE        0
#define  MAX_CLASSES  150
#define  BUFF_LEN     120
#define  NAME_LEN     30
#define  MAX_LINES    100
#define  COMMA        ','
#define  UNDERSCORE   '_'
#define  SPACE        ' '
#define  OPENBRA      '('
#define  CLOSEBRA     ')'
#define  CAPSBEGIN    65         // beginning of ascii code for caps
#define  CAPSEND      90         // ending of ascii code for caps
#define  SMALLBEGIN   97         // beginning of ascii code for small
                                 // letters
#define  SMALLEND     122        // ending of ascii code for small
                                 // letters
#undef   DEBUG1
#undef   DEBUG2
#undef   DEBUG3

struct classes {                 // structure store the names of classes
  char classname[NAME_LEN];      // in a program
};

struct classes_found {           // structure to store the classes
  char classname[NAME_LEN];      // found in the public interface
  int  number_occurences;        // their number of occurences and
  int  valid;                    // validity
};

struct input {                   // structure to store the input lines
  char *input_line;
};

class SFile {                      // Source File class
  input* input_lines[MAX_LINES]; // array of pointers of input type
  int   number_lines_read;       // lines read from source file
  char filename[NAME_LEN];       // name of source file
public:
  SFile();
  ~SFile();
  void ScanInputFile (char* INPfilename);
  void GetLinesRead (input** lines_read, int& count_read);
private:
  void GetSourceLines (char* temp, int& block_comments);
  int BlankLine (char* temp);
  void CheckEnd (char* temp, int& block_comments);

};
class coupling_generator {               // the coupling generator class
  classes class_list [MAX_CLASSES];      // list of classes array
  classes_found scanned_list[MAX_CLASSES]; // list of classes found
  int number_classes;                    // number of types given
  int number_found;                      // number of types found in source
  input* public_block[MAX_LINES];        // area to store public block
```

```
  int file_index;                          // index to assumption file
  int block_len;                           // length of block read
public:
  coupling_generator();
  void GetClassList(char* ASSfilename);
  void GenerateCoupling(SFile& SF);
private:
  void DoLexical(void);
  void GetValidClasses(void);
  void PrintStat(char* classname);
  void InitializePublicBlock(void);
  void ExtractClassInterface(input** lines_read, int count_read, char* classname);
  int GetParameterList (char* temp, char* par_list);
  char* GetToken(char* token);
};

//*********************************************************************
//            Source File Class Member Functions                      *
//*********************************************************************
//---------------------------------------------------------------------
// NAME:    Sfile::Sfile()
// PURPOSE: Constructor for the class SFile (source file).
//---------------------------------------------------------------------
SFile::SFile()
{
  input* temp;

  number_lines_read = 0;
  for (int i = 0; i < MAX_LINES; i++)
  {
    temp = new input;
    temp -> input_line = new char[BUFF_LEN];
    input_lines[i] = temp;
  }

  for (i = 0; i < MAX_LINES; i++)
  {
    strcpy (input_lines[i]->input_line, "\0");
  }
}

//---------------------------------------------------------------------
// NAME:    SFile::~SFile()
// PURPOSE: This procedure returns the memory area allocated to the
//          program as a result of dynamic allocation.
//---------------------------------------------------------------------
SFile::~SFile()
{
  for (int i = 0; i < MAX_LINES; i++)
  {
    delete (input_lines[i] -> input_line);
    delete (input_lines[i]);
  }
}

//---------------------------------------------------------------------
// NAME:    SFile::ScanInputFile()
// PURPOSE: This function reads the source input file line by line.
//---------------------------------------------------------------------
void SFile::ScanInputFile(char* INPfilename)
{
  FILE* input_file;
  char temp[BUFF_LEN];
  int block_comments = FALSE;    // boolean to indicate the block of
                                 // comments

  if ((input_file=fopen(INPfilename, "r")) == NULL)
  {
    cout << "cannot open the header file" << "\n";
    exit(1);
  }

  strcpy (filename, INPfilename);
  while ((fgets (temp, BUFF_LEN, input_file)) != NULL)
  {
    if (block_comments == TRUE)
      CheckEnd (temp, block_comments);
    else
      GetSourceLines (temp, block_comments);
  }
}
```

```
//-------------------------------------------------------------------
// NAME:    SFile::CheckEnd ()
// PURPOSE: This procedure checks the end of a block of comments.
//-------------------------------------------------------------------
void SFile::CheckEnd (char* temp, int& block_comments)
{
  for (int i = 0; i <= strlen(temp); i++)
  {
    if ((temp[i] == '*' )&&(temp[i+1] == '/'))
      block_comments = FALSE;
  }
}

//-------------------------------------------------------------------
// NAME:    SFile::GetSourceLines()
// PURPOSE: This routine gets rid of comments and blank lines and
//          stores the rest in a program memory area.
//-------------------------------------------------------------------
void SFile::GetSourceLines(char* temp, int& block_comments)
{
  int flag = FALSE;

  for (int i = 0; (i < strlen(temp))&&(flag == FALSE); i++)
  {
    if (temp[i] == '\n')
      flag = TRUE;
    if ((temp[i] == '/') && (temp[i+1] == '/'))
      flag = TRUE;
    if ((temp[i] == '/') && (temp[i+1] == '*'))
    {
      flag = TRUE;
      int j = i+1;
      block_comments = TRUE;
      while (temp[j] != '\0')
      {
       if ((temp[j] == '*')&&(temp[j+1] == '/'))
         block_comments = FALSE;
       j++;
      }
    }
  }
  temp[i-1] = '\0';
  if (!BlankLine (temp))
  {
    if ((number_lines_read+1) > MAX_LINES)
    {
      cout << "Analysis Aborted! -- File " << filename << " too long\n";
      exit (1);
    }
    strcpy (input_lines[number_lines_read]->input_line, temp);
    number_lines_read++;
  }
}

//-------------------------------------------------------------------
// NAME:    SFile::BlankLine()
// PURPOSE: This function checks if a given line is blank or not.
//-------------------------------------------------------------------
int SFile::BlankLine (char* temp)
{
  for (int i = 0; i < strlen(temp); i++)
  {
    if (temp[i] != ' ')
      return (0);
  }
  return (1);
}

//-------------------------------------------------------------------
// NAME:    SFile::GetLinesRead ()
// PURPOSE: This function exports the valid lines of code read from
//          the source file.
//-------------------------------------------------------------------
void SFile::GetLinesRead (input** lines_read, int& count_read)
{
  for (int i = 0; i < number_lines_read; i++)
    strcpy (lines_read[i]->input_line, input_lines[i]->input_line);
  count_read = number_lines_read;
}

//*******************************************************************
```

```
//              Coupling Genarator Member Functions                *
//*****************************************************************
//-----------------------------------------------------------------
// NAME:    coupling-generator::coupling_generator()
// PURPOSE: Constructor for the class coupling_generator.
//-----------------------------------------------------------------
coupling_generator::coupling_generator()
{
  input* temp;            // used in dynamic allocation

  // initialization
  number_classes = 0;
  number_found = 0;
  block_len = 0;
  file_index = 0;

  for (int i = 0; i < MAX_CLASSES; i++)
  {
    strcpy (class_list[i].classname, "\0");
    strcpy (scanned_list[i].classname, "\0");
    scanned_list[i].number_occurences = 0;
    scanned_list[i].valid = FALSE;
  }

  for (i = 0; i < MAX_LINES; i++)        // dynamic allocation
  {
    temp = new input;
    temp -> input_line = new char[BUFF_LEN];
    public_block[i] = temp;
  }

  for (i = 0; i < MAX_LINES; i++)
  {
    strcpy (public_block[i]->input_line, "\0");
  }
}

//-----------------------------------------------------------------
// NAME:    coupling_generator::GetClassList()
// PURPOSE: This procedure gets the types and their assumption count
//          from the input file provided.
//-----------------------------------------------------------------
void coupling_generator::GetClassList (char* filename)
{
  FILE* class_file;
  int index = 0;
  char temp[BUFF_LEN];
  char* p;

  if ((class_file=fopen(filename, "r")) == NULL)
  {
    cout << "cannot open the class list file" << "\n";
    exit(1);
  }

  while ((fgets (temp, BUFF_LEN, class_file)) != NULL)
  {
    p = strtok (temp, " \0");
    strcpy (class_list[index].classname, p);
    index++;
  }
  number_classes = index;
}

//-----------------------------------------------------------------
// NAME:    coupling_generator::GenerateCoupling()
// PURPOSE: This procedure communicates with the SFile class to get
//          the valid lines of input read from the source file.
//-----------------------------------------------------------------
void coupling_generator::GenerateCoupling(SFile& SF)
{
  input* lines_read[MAX_LINES];  // array of pointers of type input
                                 // to hold input lines read
  int count_read;
  char classname[NAME_LEN];
  input* temp;

  for (int i = 0; i < MAX_LINES; i++)
  {
    temp = new input;
    temp -> input_line = new char[BUFF_LEN];
```

```
    lines_read[i] = temp;
  }
  for (i = 0; i < MAX_LINES; i++)
  {
    strcpy (lines_read[i]->input_line, "\0");
  }

  SF.GetLinesRead (lines_read, count_read);  //communicates with SFile

  #ifdef DEBUG1
  cout << "****************************************" << "\n";
  cout << " The valid source lines read for analysis " << "\n";
  cout << "****************************************" << "\n";
  cout << "Number of lines read: " << count_read << "\n";
  for (i = 0; i < count_read; i++)
    cout << lines_read[i]->input_line << "\n";
  #endif

  while (file_index != count_read) {
    InitializePublicBlock();
    ExtractClassInterface (lines_read, count_read, classname);
    if (block_len > 0) {
      DoLexical();
      GetValidClasses();
      PrintStat (classname);
    }
  }
}

//---------------------------------------------------------------------
// NAME:    coupling_generator::InitializePublicBlock()
// PURPOSE: This procedure initializes the public block for the
//          next block of input.
//---------------------------------------------------------------------
void coupling_generator::InitializePublicBlock()
{
  block_len = 0;
  for (int i = 0; i < MAX_LINES; i++)
   strcpy (public_block[i]->input_line, "\0");

  number_found = 0;
  for (i = 0; i < MAX_CLASSES; i++)
  {
    strcpy (scanned_list[i].classname, "\0");
    scanned_list[i].number_occurences = 0;
    scanned_list[i].valid = FALSE;
  }
}

//---------------------------------------------------------------------
// NAME:    coupling_generator::ExtractClassInterface()
// PURPOSE: This procedure extracts the part of the class containing
//          the public interface.
//---------------------------------------------------------------------
void coupling_generator::ExtractClassInterface(input** lines_read, int count_read, char*
classname)
{
  int interface_area = FALSE;   // indicates the public area of a class
  char* token_start;
  char* token_end;
  char* token_class;
  char temp[BUFF_LEN];
  int done = FALSE;

  #ifdef DEBUG1
  cout << "****************************************" << "\n";
  cout << " The Part of the File having a Class  " << "\n";
  cout << "****************************************" << "\n";
  #endif

  for (int i = file_index; (i < count_read) && (done == FALSE); i++)
  {
    #ifdef DEBUG1
    cout << lines_read[i]->input_line << "\n";
    #endif

    strcpy (public_block[i]->input_line, lines_read[i]->input_line);
    strcpy (temp, lines_read[i]->input_line);
    token_class = strtok (temp, " \0");
    if ((strcmp (token_class, "class")) == 0) {
      if ((strstr (lines_read[i]->input_line, "{")) != NULL)
```

```
      {
        token_class = strtok ('\0', ":{\0");
        strcpy (classname, token_class);
      }
    }

    strcpy (temp, lines_read[i]->input_line);
    token_start = strtok (temp, " :\0");
    if ((strcmp (token_start, "public")) == 0)
      interface_area = TRUE;

    strcpy (temp, lines_read[i]->input_line);
    token_end = strtok (temp, " \0");
    if ((strcmp(token_end, "protected:")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "protected")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "private")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "private:")) == 0)
      interface_area = FALSE;
    if ((strcmp(token_end, "};")) == 0){
      done = TRUE;                    // one class read
      interface_area = FALSE;
    }

    if (interface_area)
    {
      strcpy (public_block[block_len]->input_line, lines_read[i]->input_line);
      block_len++;
    }
  }
  file_index = i;

  #ifdef DEBUG1
  cout << "************************************" << "\n";
  cout << " The Interface Extracted for Analysis " << "\n";
  cout << "************************************" << "\n";
  for (i = 0; i < block_len; i++)
  {
    cout << public_block[i]->input_line;
    cout << "\n";
  }
  #endif
}

//---------------------------------------------------------------------
// NAME:    coupling_generator::DoLexical()
// PURPOSE: This procedure does lexical analysis on the block of the
//          interface area.
//---------------------------------------------------------------------
void coupling_generator::DoLexical (void)
{
  char* token;
  char par_list[BUFF_LEN];  // parameter list to be parsed
  int index;
  int parameters = FALSE;
  int found = FALSE;
  int open = FALSE;         // open bracket indicator
  char temp[BUFF_LEN];
  char* parameter_type;     // parameter type found from parameter list

  for (int i = 0; i < block_len; i++)
  {
    parameters = FALSE;
    strcpy (temp, public_block[i]->input_line);

    #ifdef DEBUG2
    cout << "************************************************\n";
    cout << "LINE ANALYZED: " << temp;
    cout << "\n";
    #endif

    strcpy (par_list, "\0");
    if ((strstr (temp, "(")) != NULL)
      open = TRUE;
    if ((strstr (temp, ")")) != NULL)
      open = FALSE;
    if (((strstr (temp, "(")) != NULL) || ((strstr (temp, ")")) != NULL)
       || (open == TRUE))
      parameters = GetParameterList (temp, par_list);
```

```
    #ifdef DEBUG2          // shows the parameters found if needed
                           // in the output
    cout << "PARAMETER LIST:" << par_list << "\n";
    cout << "**************************************************\n";
    #endif

    if (parameters)        // if parameters found in the interface
    {
      while ((parameter_type = GetToken(par_list)) != NULL)
      {                    // while more tokens exist
        found = FALSE;
        for (int i = 0; i < number_found; i++)
        {                  // store in the list of parameters
          if ((strcmp (parameter_type, scanned_list[i].classname)) == 0)
          {
            found = TRUE;
            scanned_list[i].number_occurences++;
          }
        }
        if (!found)
        {
          strcpy (scanned_list[number_found].classname, parameter_type);
          scanned_list[number_found].number_occurences++;
          number_found++;
        }
      }
    }
  }
}

//=====================================================================
// NAME:    coupling_generator::GetParameterList()
// PURPOSE: This procedure gets the parameter list of a member
//          function in the public interface of a class.
//=====================================================================
int coupling_generator::GetParameterList (char* temp, char* par_list)
{
  int len_str;
  int index = 0;
  int local_index = 0;
  char local_str[BUFF_LEN];
  static int open = FALSE;

  len_str = strlen(temp);
  if (len_str == 0)
    cout << "Invalid line of input for Lexical Analysis" << "\n";
  else
  {
    while ((temp[index] != OPENBRA) && (index < len_str) && (open == FALSE))
      index++;
    if ((temp[index] == OPENBRA) || (open = TRUE))
    {
      if ((temp[index+1] == CLOSEBRA)||(temp[index] == CLOSEBRA)){
        return (0);
      }
      else
      {
        if (temp[index] == OPENBRA)
          index++;
        while ((temp[index] != CLOSEBRA) && (index < len_str))
        {
          local_str[local_index++] = temp[index];
          index++;
        }
        if (temp[index] == CLOSEBRA)
        {
          open = FALSE;
          local_str[local_index] = '\0';
          strcpy (par_list, local_str);
          return (1);
        }
        else {
          open = TRUE;
          if (local_index > 0) {
            local_str[local_index] = '\0';
            strcpy (par_list, local_str);
            return (1);
          }
          else
            return (0);
```

```
        }
      }
    }
    else
      return (0);
  }
}

//-------------------------------------------------------------------
// NAME:    coupling_generator::GetToken()
// PURPOSE: This procedure gets the next type from the string of
//          token provided and returns pointer to that type.
//-------------------------------------------------------------------
char* coupling_generator::GetToken (char* token)
{
  char temp[BUFF_LEN];
  char rest_string[BUFF_LEN];
  char type_found[NAME_LEN];
  int next = FALSE;
  int index = 0;
  int count = 0;

  type_found[0] = '\0';
  rest_string[0] = '\0';
  strcpy (temp, token);


  for (int i = 0; (i < strlen(temp)) && (next == FALSE); i++)
  {
    if (temp[i] == SPACE)
    {
      if (count > 0)
      {
        for (int k = i; k < strlen(temp); k++)
        {
          rest_string[index++] = temp[k];
        }
        rest_string[index] = '\0';
        if ((strcmp (rest_string, "const")) != 0)
          next = TRUE;
      }
    }
    else if (temp[i] == COMMA)
    {
      next = TRUE;
      for (int j = i+1; j < strlen(temp); j++)
      {
        rest_string[index++] = temp[j];
      }
      rest_string[index] = '\0';
    }
    else
    {                              // read all other legal characters
      if (((temp[i] >= CAPSBEGIN) && (temp[i] <= CAPSEND)) ||
          ((temp[i] >= SMALLBEGIN) && (temp[i] <= SMALLEND)) ||
          (temp[i] == UNDERSCORE))
        type_found[count++] = temp[i];
    }
  }
  type_found[count] = '\0';

  #ifdef DEBUG2
  cout << "====================================" << "\n";
  cout << " TOKEN: " << type_found << "\n";
  cout << "====================================" << "\n";
  #endif

  strcpy (token, rest_string);
  if (type_found[0] != '\0')
    return (type_found);
  else
    return (NULL);
}

//-------------------------------------------------------------------
// NAME:    coupling_generator::GetValidClasses()
// PURPOSE: It calculates the assumptions for a given class in terms
//          of parameter coupling.
//-------------------------------------------------------------------
void coupling_generator::GetValidClasses()
{
```

```
  int done = FALSE;

  for (int i = 0; i < number_found; i++)
  {
    done = FALSE;
    for (int j = 0; (j < number_classes) && (done == FALSE); j++)
    {
      if ((strcmp(scanned_list[i].classname, class_list[j].classname)) == 0)
      {
        done = TRUE;
        scanned_list[i].valid = TRUE;
      }
    }
  }
}

//--------------------------------------------------------------------
// NAME:    coupling_generator::PrintStat()
// PURPOSE: This procedure prints the statistics for the source file
//          analyzed.
//--------------------------------------------------------------------
void coupling_generator::PrintStat (char* classname)
{
  int cl_found = 0;          // number of classes found
  #ifdef DEBUG3
  int   print_len = 0;

  cout << "Coupling Generator (C++)" << "\n";
  cout << "Coupling Report For Class: " << classname << "\n";
  cout << "-----------------------------------" << "\n";
  cout << "\n";

  cout << "=====================================\n";
  cout << "        LIST OF CLASSES FOUND         " << "\n";
  cout << "=====================================\n";
  cout << "CLASS               ";
  cout << "NUM_OCC             ";
  cout << "\n";

  for (int i = 0; i < number_found; i++)
  {
    if (scanned_list[i].valid == TRUE)
    {
      cl_found++;
      cout << scanned_list[i].classname;
      print_len = 22 - (strlen (scanned_list[i].classname));
      cout.width(print_len);
      cout << scanned_list[i].number_occurences;
      cout << "\n";
    }
  }
  if (cl_found == 0)
    cout << "NONE" << "\n";
  else
    cout << "COUPLING COUNT = " << cl_found << "\n";
  #else
  cout << classname;
  for (int i = 0; i < number_found; i++)
  {
    if (scanned_list[i].valid == TRUE){
      cl_found++;
    }
  }
  cout.width(35-strlen(classname));
  cout << cl_found << "\n";
  #endif
}

//--------------------------------------------------------------------
// Main creates the coupling generator and source file classes and
// calls public member functions of these classes to generate CBO.
//--------------------------------------------------------------------
main (int argc, char** argv)
{
  coupling_generator CG;          // coupling generator class
  SFile SF;                       // source file class

  if (argc < 3)
    cout << "Error -- Wrong number of command line parameters\n";

  CG.GetClassList (argv[1]);      // get the list of the classes
```

```
  SF.ScanInputFile (argv[2]);      // scan the input file for classes
  CG.GenerateCoupling(SF);         // calculate coupling between classes
}
```

```
/*********************************************************************
*                        WMC Metric (C)                              *
*********************************************************************
*  File:         coupling-generator.cpp                              *
*  Author:       Sarosh J. Khan                                      *
*  Date:         93/03/16                                            *
*  Class:        COMSC 5000 - Thesis                                 *
*  Advisor:      Dr. Mansur Samadzadeh                               *
*********************************************************************
*                                                                    *
* This program calculates the weighted methods per class metric as   *
* defined by Chidamber and Kemerer [Chidamber91].                    *
* The input to this program is a class report file generated         *
* earlier by pc-metric program. This program creates a output        *
* binary file and stores the array of structures in the file.        *
* This output file is later used ny the sigma_met program to store   *
* the values obtained by applying the metrics on each class.         *
*********************************************************************/

#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#define MAXCLASSES 150

struct met{
  char classname[50];      // class name
  int pub;                 // number of public members
  int wmc;                 // weighted methods per class
  int dit;                 // DIT of each class
  int noc;                 // NOC of each class
  float stab;              // stability of each class
  int n;                   // vocabulary
  int N;                   // length
  int LOC;                 // lines of code
  int VG;                  // cyclomatic complexity
  int vol;                 // volume
};
void MakeClassDataFile (int* number_of_samples);
void CalculateWMC (int number_of_samples);

//---------------------------------------------------------------------
// Main calls the functions to calculate WMC and generate the output
// data file.
//---------------------------------------------------------------------
main ()
{
  int number_of_samples = 0;

  MakeClassDataFile (&number_of_samples);
  CalculateWMC (number_of_samples);
}

//---------------------------------------------------------------------
// Name:    CalculateWMC()
// Purpose: Calculate the WMC metric.
//---------------------------------------------------------------------
void CalculateWMC (int number_of_samples) {
  met metrictbl[MAXCLASSES];
  char buffer1[100];
  char* p;
  char classname[50];
  FILE* fp_cls;
  FILE* fpout;
  FILE* fpout2;
  int pub_func = 0;
  int pro_func = 0;
  int pri_func = 0;
  int tot_mem = 0;
  int sample_number = 0;
  int index = 0;

  fp_cls = fopen ("cls.dat", "r");     // input file
  fpout = fopen ("met.dat", "w");      // output file for values of WMC
  fpout2 = fopen ("mettbl", "wb");     // output binary file

  fprintf (fpout, "CLASSNAME           PUB      WMC      \n");

  for (int i = 0; i < MAXCLASSES; i++)
  {
    strcpy (metrictbl[i].classname, "\0");
    metrictbl[i].pub = 0;
```

```
      metrictbl[i].wmc = 0;
      metrictbl[i].dit = 0;
      metrictbl[i].noc = 0;
      metrictbl[i].stab = 0.0;
      metrictbl[i].n = 0;
      metrictbl[i].N = 0;
      metrictbl[i].LOC = 0;
      metrictbl[i].VG = 0;
      metrictbl[i].vol = 0;
    }

    while (sample_number <= number_samples){
      sample_number++;
      fgets (buffer1, 100, fp_cls);

      p = strtok (buffer1, " \0");
      strcpy (classname, p);
      p = strtok ('\0', " \0");
      p = strtok ('\0', " \0");
      pub_func = atoi(p);

      p = strtok ('\0', " \0");
      p = strtok ('\0', " \0");
      pro_func = atoi(p);

      p = strtok ('\0', " \0");
      p = strtok ('\0', " \0");
      pri_func = atoi(p);

      p = strtok ('\0', " \0");
      tot_mem = pub_func + pro_func + pri_func;

      strcpy (metrictbl[index].classname, classname);
      metrictbl[index].pub = pub_func;
      metrictbl[index++].wmc = tot_mem;

      fprintf (fpout, "%20s%8d%8d\n", classname, pub_func, tot_mem);
    }
    for (i = 0; i < MAXCLASSES; i++)
    {
      printf ("%30s  ",metrictbl[i].classname);
      printf ("%3d", metrictbl[i].pub);
      printf ("%3d", metrictbl[i].wmc);
      printf ("%3d", metrictbl[i].dit);
      printf ("%3d", metrictbl[i].noc);
      printf ("%3f", metrictbl[i].stab);
      printf ("%3d", metrictbl[i].n);
      printf ("%3d", metrictbl[i].N);
      printf ("%3d", metrictbl[i].VG);
      printf ("%3d\n", metrictbl[i].vol);
    }

    fwrite (metrictbl, sizeof(met), MAXCLASSES, fpout2);
}

//---------------------------------------------------------------------
// Name:    MakeClassDataFile()
// Purpose: Use the file generated by the pc-metric program to
//          extract useful information and generate another file to
//          be used to calculate WMC.
//---------------------------------------------------------------------
void MakeClassDataFile (int* number_of_samples)
{
  char buffer[200];
  char temp[200];
  char* p;
  FILE* fp;
  FILE* fpout;
  int token = 0;

  fp = fopen ("cls", "r");
  fpout = fopen ("cls.dat", "w");

  while ((fgets (buffer, 200, fp)) != NULL) {
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
```

```
    fgets (buffer, 200, fp);

    while ((strcmp (buffer, "\n")) != 0) {
      (*number_of_samples)++;
      p = strtok (buffer, " \0");
      token = 0;
      while (p != NULL)
      {
        token++;
       if (token == 1)
         fprintf (fpout, "%15s", p);
       if ((p[0] >= 48) && (p[0] <= 57))
       {
         fprintf (fpout, "%4s", p);
       }
       else;
       p = strtok ('\0', " \0");
      }
      fgets (buffer, 200, fp);
    }
    fgets (buffer, 200, fp);
  }
}
```

```
/*********************************************************************
*  File:         sigma-met.cpp                                       *
*  Author:       Sarosh J. Khan                                      *
*  Date:         93/03/16                                            *
*  Class:        COMSC 5000 - Thesis                                 *
*  Advisor:      Dr. Mansur Samadzadeh                               *
*********************************************************************
*                                                                   *
* This program calculates the sum of the metric values for the      *
* member function of each class. The metrics used in calculations   *
* are Lines of Code (LOC), Vocabulary (n), Length (N), Volume (V)   *
* and the Cyclomatic Complexity (VG). It uses the report file       *
* generated by pc-metric program. The output is the sigma.out       *
* file containing fields for classname and the values of each       *
* metric for that calss.                                            *
*********************************************************************/

#include <stdio.h>
#include <string.h>
#include <stdlib.h>

main ()
{
  char buffer[200];
  char temp[200];
  char* p;
  FILE* fp;
  FILE* fpout;
  int token = 0;
  int tem = 0;
  int tot_n1 = 0;
  int tot_n2 = 0;
  int tot_N1 = 0;
  int tot_N2 = 0;
  int tot_N = 0;
  int tot_V = 0;
  int tot_VG = 0;
  int tot_LOC = 0;
  char* curr;
  char* curr_temp;
  char* last;
  char* last_temp;

  strcpy (curr, "\0");
  strcpy (curr_temp, "\0");
  strcpy (last, "\0");
  strcpy (last_temp, "\0");
  fp = fopen ("repoi.rpt", "r");
  fpout = fopen ("repoi.met", "w");

  fprintf (fpout, "           CLASSNAME    n      N1     N2     N     V     VG      LOC\n");
  fprintf (fpout, "           ==========================================================\n");
  while ((fgets (buffer, 200, fp)) != NULL) {
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);
    fgets (buffer, 200, fp);

    while ((strcmp (buffer, "\n")) != 0) {
      if ((strstr (buffer, "::")) != NULL)
      {
        strcpy (last_temp, buffer);
        last = strtok (last_temp, "::");
        p = strtok (buffer, " (\0");
        token = 0;
        if ((strcmp (last, curr)) != 0){
          fprintf (fpout, "%20s  ", last);
        }
        token++;
        while (p != NULL)
        {
          if ((p[0] >= 48) && (p[0] <= 57))
            token++;
          if (((p[0] >= 48) && (p[0] <= 57)) && ((token == 2) ||
             (token == 3) || (token == 4) || (token == 5) ||
             (token == 6) || (token == 9) ||
             (token == 11) || (token == 13)))
          {
```

```
        switch(token) {       // count of token from each line
          case 2:
            tem = atoi(p);
            tot_n1+=tem;       // total unique operators
            break;
          case 3:
            tem = atoi(p);
            tot_n2+=tem;       // total unique operands
            break;
          case 4:
            tem = atoi(p);
            tot_N1+=tem;       // total operators
            break;
          case 5:
            tem = atoi(p);
            tot_N2+=tem;       // total operands
            break;
          case 6:
            tem = atoi(p);
            tot_N+=tem;        // total length
            break;
          case 9:
            tem = atoi(p);
            tot_V+=tem;        // total volume
            break;
          case 11:
            tem = atoi(p);
            tot_VG+=tem;       // total cyclomatic complexity
            break;
          case 13:
            tem = atoi(p);
            tot_LOC+=tem;      // total lines of code
            break;
          default :
          ;
        }
      }
      else;
      p = strtok ('\0', " (\0");
    }
    strcpy (buffer, "\0");
    fgets (buffer, 200, fp);
    if ((strstr (buffer, "::"))!=NULL)
    {
      strcpy (curr_temp, buffer);
      curr = strtok (curr_temp, "::");
      if ((strcmp (last, curr)) != 0)
      {
        fprintf (fpout, "%5d  %5d  %5d  %5d  %5d  %3d  %5d\n\n",
                 tot_n1+tot_n2, tot_N1, tot_N2, tot_N, tot_V, tot_VG, tot_LOC);
        tem = 0;
        tot_n1 = 0;
        tot_n2 = 0;
        tot_N1 = 0;
        tot_N2 = 0;
        tot_N = 0;
        tot_V = 0;
        tot_VG = 0;
        tot_LOC = 0;
        strcpy (curr, "\0");
      }
    }
    else{
      strcpy (curr, "\0");
      fprintf (fpout, "%5d  %5d  %5d  %5d  %5d  %3d  %5d\n\n",
               tot_n1+tot_n2, tot_N1, tot_N2, tot_N, tot_V, tot_VG, tot_LOC);
      tem = 0;
      tot_n1 = 0;
      tot_n2 = 0;
      tot_N1 = 0;
      tot_N2 = 0;
      tot_N = 0;
      tot_V = 0;
      tot_VG = 0;
      tot_LOC = 0;
    }
  }
  else {
    strcpy (curr, "\0");
    fgets (buffer, 200, fp);
  }
```

```
    }
    tem = 0;                        // reinitialize all variables
    tot_n1 = 0;
    tot_n2 = 0;
    tot_N1 = 0;
    tot_N2 = 0;
    tot_N = 0;
    tot_V = 0;
    tot_VG = 0;
    tot_LOC = 0;
    strcpy (curr, "\0");
    strcpy (curr_temp, "\0");
    strcpy (last, "\0");
    strcpy (last_temp, "\0");

    strcpy (buffer, "\0");
    fgets (buffer, 200, fp);        // get the next line of input
  }
}
```

VITA

Sarosh Jalal Khan

Candidate of the Degree of

Master of Science

Thesis: STABILITY, COUPLING, AND COHESION OF OBJECT-ORIENTED SOFTWARE SYSTEMS

Major Field: Computer Science

Biographical:

Personal Data: Born in Beijing, China, April 30, 1965, son of Kafeel Ahmad Khan and Kaniz Fatima.

Education: Graduated from D. J. Sindh Govt. Science College, Karachi, Pakistan, in May 1984; received Bachelor of Engineering Degree in Computer Systems Engineering from N.E.D. University of Engineering and Technology, Pakistan, in March 1990; completed requirements for the Master of Science degree at Oklahoma State University in July 1993.

Professional Experience: Teaching Assistant, Computer Science Department, Oklahoma State University, May 1991 to May 1993. Development Engineer, Digital Communications (pvt) Ltd., Karachi, Pakistan, July 1990 to December 1990.