Analysis of Quality of Object Oriented Systems using Object Oriented Metrics

ABSTRACT:
Measurement is fundamental to any engineering discipline. There is considerable evidence that object-oriented design metrics can be used to make quality management decisions. This leads to substantial cost savings in allocation of resources for testing or estimation of maintenance effort for a project. C++ has always been the most preferred language of choice for many object oriented systems and many object oriented metrics have been proposed for it. This paper focuses on an empirical evaluation of object oriented metrics in C++. Two projects have been considered as inputs for the study – the first project is a Library management system for a college and the second is a graphical editor which can be used to describe and create a scene. The metric values have been calculated using a semi automated tool. The resulting values have been analyzed to provide significant insight about the object oriented characteristics of the projects.

Existing Systems:
1. Structural metrics are calculated from the source code such as references and data sharing between methods of a class belong together for cohesion.
2. It defines and measure relationships among the methods of a class based on the number of pairs of methods that share instance or class variables one way or another for cohesion.

Disadvantage
- Lacking of high cohesion

Proposed System:
1. In proposed System unstructural information is retrieved from the source code like comments and identifiers.
2. Information is retrieved from the source code using Latent Semantic Indexing.
3. With the help of C3 and existing metrics we are achieving the high cohesion and low coupling.

Advantage
- We can predict the fault prediction using high cohesion

System Requirements:

Hardware Requirements:
- PROCESSOR : PENTIUM III 866 MHz
- RAM : 128 MB DD RAM
- MONITOR : 15” COLOR
- HARD DISK : 20 GB
- FLOPPY DRIVE : 1.44 MB
- CDDRIVE : LG 52X
- KEYBOARD : STANDARD 102 KEYS
- MOUSE : 3 BUTTONS

Software Requirements:
- LANGUAGE : JAVA
- FRONT-END TOOL : SWING
- OPERATING SYSTEM : WINDOWS-XP

Modules
- Retrieving the structured information.
- Check the availability of structured information for your source code.
- Apply the LCOM5 formula for structured information.
- Analyze about the comments i.e. unstructured information.
- Index Searching
Module Description

Module-1:
In this module we are going to take the structured information like identifiers, (Example Variables). Invocation of declared methods and declared constructors. Here the Java program should be well compiled and it should be valid comments.

Module-2:
In this module deals we are going to search the declared variables among all the classes. Because the main theme of the declaring class variable is, it should be used in all methods. So that the declared variables are found among all the methods.

Module-3:
In this module we are going to apply the LCOM5 (Lack of cohesion in methods) formula. If the result is equal to one means, the class is less cohesive according to the structured information.

Module-4:
Here we are going to retrieve the index terms based on that comments which are present in all the methods. Comments are useful information according to the software engineer. In concept oriented analysis we are taking the comments. Based on the comments we are going to measure the class is cohesive or not.

Module-5:
In this module we are going to check the index terms among the comments which are present in all the comments.

Module-6:
In this module we are going to apply the conceptual similarity formula. Based on the result we can say the class is cohesive or less cohesive according to concept oriented.

Module-7:

In this module we are going to compare the two results. Based on the results we can say that cohesion according to structure oriented and unstructured oriented.

REFERENCE: