Software Architecture and Design

Lab Manual

Software Quality Model Check – Week 3 Lab

Made By:

M Faizan Khan

Session: Fall 2024

(South China Normal University, China)

Week 3 - Lab

Objectives

- This lab is focused on checking the Software Quality Models.
- This is a group Lab you can divide your self in the group of three.
- You can also do that lab alone. It depends upon you.

Lab Outcome

- Students will gain hands-on experience in developing a simple software system.
- Students will learn to evaluate software quality using a standardized model.
- Students will understand the trade-offs and decisions involved in software architecture.

Introduction to Software Quality Models and Good Design

Software Quality Models: provide a framework for understanding, assessing, and improving the quality of software systems. These models help define what "quality" means in the context of software, breaking it down into various attributes that can be measured, analyzed, and improved. Good software design is essential to achieving high-quality software, and quality models provide the criteria and guidelines needed to evaluate and enhance this design.

Two of the foundational software quality models are McCall's Quality Model and Perry's Quality Model. Both models aim to provide a structured way to assess software quality, but they approach the problem differently based on their respective goals and contexts.

Lab Tasks

Lab Task Introduction and Specification

Lab Overview:

Divide your self in to the groups of two or three and create a basic software application (like a **to-do list app** or a **simple calculator**). Later evaluate your application against the software quality model to assess various quality characteristics, such as functionality, usability, performance efficiency, and maintainability.

Step for the Lab:

1. Design a Simple application:

- Each group will design and develop a basic software application with a simple GUI (Graphical User Interface). This could be a to-do list app, a basic calculator, or a simple note-taking app.
- Students should implement basic functionality that demonstrates different software qualities (e.g., data input validation for functionality, a user-friendly interface for usability).

2. **Evaluation against Quality Models:**

3. Design a Simple application:

Students will evaluate their applications based on selected quality characteristics from the Software Quality models. For instance:

- **Functionality:** Does the app perform the tasks it was designed to do? Are there any missing or malfunctioning features?
- **Usability:** Is the app easy to use? Is the user interface intuitive and accessible?
- **Performance Efficiency:** How quickly does the app respond to user inputs? Does it perform well under different conditions?

Maintainability: Is the code well-structured and documented? How easy is it to modify or extend the application?