



Sessional Assignment

Course Name: OOSE

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BS (SE) Section: A

Submitted To:

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Object Oriented Software Engineering

SE - 5th Semester

TERM ASSIGNMENT

Question #1 (10 Marks)

In Software Engineering, there is not a single answer to the question “What should be done first, Coding or Modeling?”. Elaborate different scenarios in which all the answers to this questions are justified.

Question #2 (10 Marks)

When carrying out Testing of a Software, a number of techniques are used. Why are they so many in number? Name a few popular Testing Techniques in Software Engineering and state the importance of each one.

Instructions for Assignment Submission

1. Write your names and Ids at the top of each paper of answer sheet.
2. Scan / Take Photo of each paper and save each photo with a number. E.g. photo of page 1 of answer sheet be saved with name 1.jpg, then 2.jpg and so on.
3. Put all answer photos in a folder, name the folder with your Roll Number, Name and Subject Name, e.g. “11512 - Sanaa Jeehan - OOSE”. Alternately, you can also make a PDF file of all the pictures and name it as explained.
4. Zip the folder and upload.

Question #1:

In software engineering both the techniques are followed which are modeling based and coding based. Normally the projects are model based because model-based projects are well defined and it is easy for the developers to understand each and every phase regarding to the project, modeling makes a complex project look easy.

But sometimes coding is set as first priority that can be due to shortage of time and due to quick deployment. This scenario may end up with errors and failures, as the developer do not have a clear view of requirements and the system.

Project scenario in which modeling comes first:

1. Projects for the final year students, in which students are supposed make a project. Those projects are model based projects because before getting into the project, students have to gather all the information regarding their project title. In which students:
 - Gathers all the requirements.
 - Feasibility study.
 - System analysis.
 - Design the software.
 - Coding.
 - Testing.
 - Integration.
 - Implementation.
 - Deployment.
2. When a software house is making a project for an organization, first the team will make a model of that specific project and will check out that how that organization used to work? Why they need the software for their organization? In general, the team will gather all the information about requirements to make a better image and ease to their task. After the team gets into the big picture, they will divide specific jobs for specific developers, that will help to manage the time and resources.

Project scenario in which coding comes first:

1. let suppose if a client approaches a software engineer, the client has no knowledge of software, how it works? What are the requirements? what is happening at the backend? Etc. And the client wants a real quick solution for turning his paper work into software. Then in this case the developer may start the project without modeling it. The requirements of the client will be dealt with in the coding process. This scenario is like code and deploy, basically this approach is just for simple and specific project. A complicated project cannot be accomplished under this approach.
2. Sometimes in universities when a project deadline is near to close and the students are very late, they do not have much time for modeling their project. What they do, they start the coding phase without modeling and when ever they proceed in different phases, they model it as a task

has been accomplished. After the project completion, they build model of their project in order to inform the teachers and supervisors.

Question #2:

There are a lot of software testing techniques, they are required to point out defects and errors which were made during the development phase and a software is followed under those techniques. These techniques help by reducing the cost, enhancing performance, durability, dependency etc.

It is very important to ensure the quality of the software, and if these testing techniques are not applied on the software. The product may end up as failure and in order for recovery, that can be expensive.

Testing techniques are:

- **Alpha Testing:**

It is the most common type of testing used in the Software industry. The objective of this testing is to identify all possible issues or defects before releasing it into the market or to the user.

Alpha Testing is carried out at the end of the software development phase but before the Beta Testing. Still, minor design changes may be made as a result of such testing.

Alpha Testing is conducted at the developer's site. In-house virtual user environment can be created for this type of testing.

- **Acceptance Testing:**

An Acceptance Test is performed by the client and verifies whether the end to end the flow of the system is as per the business requirements or not and if it is as per the needs of the end-user. Client accepts the software only when all the features and functionalities work as expected.

It is the last phase of the testing, after which the software goes into production. This is also called User Acceptance Testing (UAT).

- **Ad-hoc Testing:**

The name itself suggests that this testing is performed on an Ad-hoc basis i.e. with no reference to the test case and also without any plan or documentation in place for such type of testing.

The objective of this testing is to find the defects and break the application by executing any flow of the application or any random functionality.

Ad-hoc Testing is an informal way of finding defects and can be performed by anyone in the project. It is difficult to identify defects without a test case but sometimes it is possible that defects found during ad-hoc testing might not have been identified using existing test cases.

- **Accessibility Testing:**

The aim of Accessibility Testing is to determine whether the software or application is accessible for disabled people or not.

Here, disability means deaf, color blind, mentally disabled, blind, old age and other disabled groups. Various checks are performed such as font size for visually disabled, color and contrast for color blindness, etc.

- **Beta Testing:**

Beta Testing is a formal type of Software Testing which is carried out by the customer. It is performed in the Real Environment before releasing the product to the market for the actual end-users.

Beta Testing is carried out to ensure that there are no major failures in the software or product and it satisfies the business requirements from an end-user perspective. Beta Testing is successful when the customer accepts the software.

Usually, this testing is typically done by end-users or others. It is the final testing done before releasing an application for commercial purpose. Usually, the Beta version of the software or product released is limited to a certain number of users in a specific area.

So, end-user actually uses the software and shares the feedback to the company. Company then takes necessary action before releasing the software to the worldwide.

- **Back-end Testing:**

Whenever an input or data is entered on front-end application, it stores in the database and the testing of such database is known as Database Testing or Backend Testing.

There are different databases like SQL Server, MySQL, and Oracle, etc. Database Testing involves testing of table structure, schema, stored procedure, data structure and so on.

In Back-end Testing GUI is not involved, testers are directly connected to the database with proper access and testers can easily verify data by running a few queries on the database.

There can be issues identified like data loss, deadlock, data corruption etc. during this back-end testing and these issues are critical to fixing before the system goes live into the production environment

- **Browser Compatibility Testing:**

It is a subtype of Compatibility Testing (which is explained below) and is performed by the testing team.

Browser Compatibility Testing is performed for web applications and it ensures that the software can run with the combination of different browser and operating system. This type of testing also validates whether web application runs on all versions of all browsers or not.

- **Backward Compatibility Testing:**

It is a type of testing which validates whether the newly developed software or updated software works well with the older version of the environment or not.

Backward Compatibility Testing checks whether the new version of the software works properly with file format created by an older version of the software; it also works well with data tables, data files, data structure created by the older version of that software.

If any of the software is updated then it should work well on top of the previous version of that software.

- **Black Box Testing:**

Internal system design is not considered in this type of testing. Tests are based on the requirements and functionality.

Detailed information about the advantages, disadvantages, and types of Black box Testing can be seen [here](#).

- **Boundary Value Testing:**

This type of testing checks the behavior of the application at the boundary level.

Boundary Value Testing is performed for checking if defects exist at boundary values. Boundary Value Testing is used for testing a different range of numbers. There is an upper and lower boundary for each range and testing is performed on these boundary values.

If testing requires a test range of numbers from 1 to 500 then Boundary Value Testing is performed on values at 0, 1, 2, 499, 500 and 501.

