Object Oriented Software Engineering
SE – 5ᵗʰ Semester

TERM ASSIGNMENT

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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.

System **modeling** is the process of developing abstract **models** of a system, with each **model** presenting a different view or perspective of that system. It is about representing a system using some kind of graphical notation, which is now almost always based on notations in the Unified **Modeling** Language (UML)

The **coding** is the process of transforming the design of a system into a computer language format. This **coding** phase of **software** development is concerned with **software** translating design specification into the source code.

Both are necessary to be done but modeling is really essential and it is in first position when deploying a software system

It totally depends upon the project to carried out by project manager

As we have different types of models some of them are the following ….

- A. **Waterfall Model.**
- B. **Evolutionary Prototyping Model.**

    C. **Spiral Method (SDM)**

    D. **Iterative and Incremental Method.**

    E. **Agile development.**

These above models are used for different project some of them refers to model the system first but some of them refers to code first

1. Waterfall model (SDLC)

In waterfall model we collect requirements then requirement analysis then system design and then implementation and coding

2. Evolutionary Prototyping model

Evolutionary prototyping is a software development method where the developer or development team first constructs a prototype. After receiving initial feedback from the customer, subsequent prototypes are produced, each with additional functionality or improvements, until the final product emerges.

3. Spiral method

The spiral model combines the idea of iterative development with the systematic, controlled aspects of the waterfall model. This Spiral model is a combination of iterative development process model and sequential linear development model i.e. the waterfall model with a very high emphasis on risk analysis. It allows incremental releases of the product or incremental refinement through each iteration around the spiral.

4. Iterative and incremental model

n the Iterative model, iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed.

An iterative life cycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which is then reviewed to identify further requirements. This process is then repeated, producing a new version of the software at the end of each iteration of the model.

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.

Answer: After the implementation of software. Engineers try to test their software whether all parts of software are working or not.

Because number of techniques are used

Software testing is really required to point out the **defects** and errors that were made during the **development phases**.

> **Example**: Programmers may make a mistake during the implementation of the software. There could be many reasons for this like lack of experience of the programmer, lack of knowledge of the programming language, insufficient experience in the domain, incorrect implementation of the algorithm due to complex logic or simply human error.

Therefor they are in numbers as I told that testing techniques are very important for all parts of software we can manage from testing due to that there are in so many numbers.

Popular Testing techniques

1. **Unit Testing**

   Unit testing is **important** because it is one of the earliest testing efforts performed on the code and the earlier defects are detected, the easier they are to fix. Early bug-detection is also the most cost-effective for a project, with code fixes becoming more expensive the later they're found in the lifecycle

2. Integration Testing

       Helps in better test coverage too and improves test gaps.

       Tests are more reliable and easy to isolate the failures.

       Majorly helps to build real-time use cases during the end to end testing.

       Integration tests catch system-level issues, such as a broken database schema, mistaken cache integration, and so on.

3. **System Testing.**

       System Testing is perform as the first level of testing where the System is

       tested as a whole. ... c) System Testing enables you to test, validate and verify

       both the Application Architecture and Business requirements

4. **Interface Testing.**

       Ensuring that the most **important** functions of the GUI work properly before

       releasing the product is imperative, and if conducted diligently, UI **testing** may

       save you and your team members a lot of embarrassment.

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.