IT-314 Software Engineering

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Lab Report : 1

Lab Group: 2

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Lab 1: Choosing Software Process Models:

Giving reasons for your answer by taking examples (features, non-functional aspects,domain) based on the type of system being developed, suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following system.

a) A simple data processing project.

- Software Process Model: Waterfall Model
- Reason: The Waterfall Model is appropriate for straightforward projects with clear requirements and a logical progression of tasks. In projects involving data processing, the requirements are frequently crystal clear, and there is a logical progression from gathering requirements to design, implementation, testing, and maintenance.

b) A data entry system for office staff who have never used computers before.The user interface and user-friendliness are extremely important.

- Software Process Model: Prototyping Model
- Reason: Use of a prototyping model (We give a dummy Model of project which can help users to understand their needs well and when that dummy model is satisfied users need then we start development part of project) can be advantageous as UI(User Interface) is very important in it, and it works well with novice users (office staff) who have no prior experience, as user interface and user-friendliness are extremely important.

c) A spreadsheet system that has some basic features and many other desirable features that use these basic features.

- Software Process Model: Incremental Model
- Reason:The incremental model is appropriate for projects where new features expand on earlier iterations. The spreadsheet system in this situation can be developed incrementally, starting with the fundamental features and progressively introducing more appealing features in succeeding increments. This kind of project is well suited for an incremental model because it can be used to develop projects piecemeal and use basic functionality to build better ones. For upcoming updates, the fundamental features created in earlier stages can be reused.

d) A web-based system for a new business where requirements are changing fast and where an in-house development team is available for all aspects of the Project.

- Software Process Model: Agile Model
- Reason: The agile model, which emphasizes people over process and uses an iterative process, closely matches the project's requirements. Additionally, a development team that works in-house is available, making it simple to handle the new requirements.

e) A Web-site for an on-line store which has a long list of desired features it wants to add, and it wants a new release with new features to be done very frequently.

- Software Process Model: Incremental Model
- Reason: This type of project is well suited for an incremental model because it allows for step-by-step project development ,faster changing requirements and the use of basic functionality to create better projects. For upcoming releases of new features, the fundamental features that were initially desired and built can be reused. Additional users visit the online store's website, so their feedback is equally crucial for every iteration of the project.

f) A system to control anti-lock braking in a car.

- Software Process Model: Spiral Model

- Reason: The passenger's safety is crucial for the anti-lock braking in a car. As a result, we can perform risk assessments frequently using the Spiral Model. The process is also iterative because new features must be added based on experience or incidents. Multiple iterations, therefore, enable logical system enhancement.

g) A virtual reality system to support software maintenance.

- Software Process Model: Incremental or Synchronize and Stabilize Model
- Reason: Our goal in this system is to keep the software up to date. Therefore, in maintenance, We must routinely check for updates and take the necessary action. As a result, we can use the incremental or synchronize and stabilize model, which periodically checks to see if the requirements have been met and releases the model after each build.

h) A university accounting system that replaces an existing system.

- Software Process Model: Waterfall Model
- Reason: It is simpler to identify the necessary changes and new requirements because the system already exists. Therefore, the waterfall model is the best choice for this task because there is already a fixed set of requirements.This model is logical, intuitive, and incredibly simple to use.Using the waterfall model greatly meets the needs of the project because it is a well-understood, logical, and intuitive problem. It also offers the project better quality control.

i) An interactive system that allows railway passengers to find train times from terminals installed in stations.

- Software Process Model: Evolutionary Prototype Model
- Reason: Using an evolutionary prototyping model can be advantageous because user interface and usability are crucial and are crucial for the passenger to locate the trains. Additionally, it functions well for inexperienced users (such as passengers) who may lack prior knowledge. Additionally, it can be revised and expanded rather than having to be completely rewritten each time.

j) Company has asked you to develop software for a missile guidance system that can identify a target accurately.

- Software Process Model: Spiral Model
- Reason: The iterative nature of software development projects can be accurately reflected by the spiral model, which also helps to reduce risk and improve project visibility. Using a spiral model can be advantageous because risk needs to be significantly reduced in missile guidance systems in order to accurately identify targets.

k) When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Choose a process model for making these modifications that ensures that the requirements documents and the system implementation do not become inconsistent.

- Software Process Model: Agile Model
- Reason: The agile model, which emphasizes people over process and uses an iterative process, closely matches the project's requirements because it puts a strong emphasis on the code. Agile is the best option because it allows for changes to be made at any time, even when they are urgent and before approval.

l) Software for ECG machines.

- Software Process Model: Waterfall Model
- Reason: The Waterfall model can be applied in this situation because the software developer for the ECG machine is already aware of all the requirements. It is logical and intuitive as well as effective when applied to previously known requirements and well-understood problems.

m) A small scale well understood project (no changes in requirement will be there once decided).

- Software Process Model: Waterfall Model
- Reason: We can use the waterfall model because it satisfies all the requirements of the project description because it is a small, well-understood project and there are no changes to the requirements, i.e., all the requirements are known in advance.