IT314 - Software Engineering

Lab-1

Choosing Software Process Model

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Solution:

a) A simple data processing project. -> Waterfall Model

As it is a simple data processing project, requirements will be given in advance with minimal or no changes. It will be simple and easy to explain to customers.

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

The data entry system for office staff is a project for complete computer beginners and to cater this need prototyping model can be used as it is a system with novice users and the User Interface is quite important for user friendliness.

And the project could be achieved with quick design, developing a prototype and could be refined according to the needs of the users.

c) A spreadsheet system that has some basic features and many other desirable features that use these basic features. -> Incremental and Waterfall Model

The spreadsheet system is a project having some basic features which are predefined requirements. These software requirements could be achieved by the waterfall model. And as new features and other desirable changes need to be added

which require building a newer version. This can be achieved by an incremental model. Hence, Incremental and waterfall models are appropriate modeling techniques.

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. -> Spiral Incremental Model

The web based system for new business is a spiral incremental model because as the requirements are changing fast, it is a type of unclear requirements and hence new functionality can be added on every iteration by measuring the risk and specific experience. A good project is visibility is available for the new business and can suggest the requirements according to the needs.

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.-> Incremental and Prototyping Model

As it is the website of an online store, a good user interface of a long list of desired features is necessary . When we want to add new features, it could be easily added using the incremental model. Hence, the user experience of customers can be achieved by Prototype Model and frequent changes can be achieved by Incremental Model.

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

The most appropriate generic software process model for controlling anti-lock braking in a car is the Waterfall Model. The anti-lock braking is a safety-critical system. In the waterfall model, for proper functioning of the anti-locking system of the car, the analysis and design requirements should be achieved without any flaws before the system implementation.

g) A virtual reality system to support software maintenance -> Incremental Model

The most appropriate software process model for virtual reality systems to support software maintenance is the Incremental Model. The system requirements keep on changing and it can not be presumed before the implementation and it even requires complex programming for the software.

h) A university accounting system that replaces an existing system -> Waterfall Model

A university accounting system that replaces an existing system is developed using the Waterfall Model. Because of the existing system, the system requirements can be predicted. The requirements are stable and reusable

i) An interactive system that allows railway passenger to find train times from terminals installed in stations. -> Prototyping Model

The most appropriate software model for an interactive travel planning system is the prototype model. The requirements of the user may change and fast delivery is essential to be implemented. The prototype model will save the development time to focus on essential functions first.

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

The missile guidance system that can identify a target accurately can be developed using the Waterfall Model. It is a government and defense project with pre-determined requirements. In this application, all the requirements are to be delivered on time.

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. -> Incremental Model

As the emergency changes have to be made to the systems, it has to be modified before requirements have been approved. This requirement can be achieved using the Incremental model.

l) Software for ECG machines. -> Waterfall Model

The most suitable model for development of ECG machines will be the waterfall model. As ECG machines are a safety-critical system, the analysis and design requirements must be appropriate such that there are no flaws in measurement. Hence, ECG Software is achieved using the Waterfall Model.

m) Software for ECG machines. -> Waterfall Model

A small scale well understood project in which all the requirements are decided and need not to be changed. This type of project can be made using the Waterfall Model. As this is a small scale project, a large team would not be required.