IT314 Software Engineering

Lab-1 Report

Software Process Models

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1. 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.
   Waterfall Model
   The data processing project is an existing manual system. There would be no changes and thus a step by step approach would work which is allowed in the waterfall model.

   (b) A data entry system for office staff who have never used computers before. The user interface and user-friendliness are extremely important.
   Prototype Model
   The system requires a strong user interface. Thus the prototype model would be suitable. The model also allows continuous feedback during development phase.

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

Spiral Model

The Spiral model allows for iterative development, enabling the team to incrementally add new features satisfying the requirement of the spreadsheet system..

(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.

Agile Model

The Agile model ensures adaptive planning and more changes, making it easier to respond to changing business needs and the presence of the development team also supports the model.

(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.

Iterative Model

The Iterative model involves building the software in small increments, with each increment adding new functionality to the system. Thus website would be an iterative model which would allow subsequent iterations based on customer feedback.

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

Spiral Model

The project has fixed requirements with scope of future updates for software improvements. Thus it is a spiral model as it also a combination of waterfall and iterative model.

(g) A virtual reality system to support software maintenance

Iterative Model

The incremental model allows user interaction thus helping in getting user feedback and thus improve the system.

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

Incremental Model

The incremental model is suited for replacement of an existing system. It ensures the core functionality remains the same even after incrementing the existing features.

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

Iterative Model

The Iterative model involves developing the software in small, manageable increments. It also allows user feedback at various stages. Thus, the railway system would be iterative system.

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

Spiral Model

The spiral model ensures risk handling and is favoured for larger projects. The flexibility and user interaction also helps. Thus the spiral model suits the missile guidance system.

(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.

Iterative Model

In situations where emergency changes are required, the Iterative model allows for a rapid response. The flexibility in requirements and iterative development also favours the system.

(l) Software for ECG machine.

Spiral Model

The risk driven and iterative approach of spiral model facilitates the software. It also allows testing, validation and feedback which can make the ECG machine more efficient for medical use.

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

Waterfall Model

The requirements of the project are small scale and no changes in requirement once decided that are all properties of waterfall model. Thus, the project is a waterfall model.