Software Engineering : IT 314

Lab-1

August 1, 2023

Om Gor (202101484)

Answers and Reasons for Generic Software Process Models

1. A simple data processing project.

   Answer: Waterfall Model

   Reason: The Waterfall model is suitable for a simple data processing project because it works well for well-understood problems with minimal or no changes in requirements. It provides a high-level view of the development process with a sequence of activities, ensuring a systematic approach and better quality control.

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

   Answer: Prototyping Model

   Reason: The Prototyping model is appropriate for this data entry system as it helps to understand the requirements better and allows for regular feedback. Given the importance of user interface and user-friendliness, building prototypes will ensure that the system aligns with user needs and expectations.

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

   Answer: Evolutionary Prototyping

   Reason: The Evolutionary Prototyping model suits this spreadsheet system since it allows for progressive development with a focus on better resource utilization and flexibility. The system can evolve based on user feedback and incorporate the desirable features using the existing basic features as a foundation.

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

   Answer: Incremental Model (Evolutionary Model)

   Reason: The Incremental model, also known as the Evolutionary model, is the most suitable for this web-based system with rapidly changing requirements. It allows the team to deliver incrementally and accommodate changes efficiently, making it ideal for a new business venture.

5. A Web-site for an online 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.

   Answer: Iterative Model

   Reason: Iterative development allows for frequent releases and adaptability to evolving requirements, making it the best choice for the online store website with a long list of desired features and a need for quick updates.

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

   Answer: Spiral

Reason: The Spiral model is well-suited for safety-critical systems like anti-lock braking in a car, as it emphasizes risk analysis and iterative development with frequent testing and validation, ensuring high-quality control and continuous improvement during the development process.

7. A virtual reality system to support software maintenance.

   Answer: Incremental Model

   Reason: The Incremental model is well-suited for this virtual reality system as it allows gradual development and integration of new features, making it suitable to support software maintenance.

8. A university accounting system that replaces an existing system.

   Answer: Incremental Model

   Reason: The Incremental model is suitable for replacing an existing system like a university accounting system because it allows for the new system to be developed and implemented in stages. This approach enables a smooth transition from the old system to the new one, minimizing disruption and risks associated with a complete overhaul.

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

   Answer: Spiral Model

   Reason: The Spiral model suits this interactive system, allowing iterative development, risk analysis, and continuous feedback. The complex domain of public transportation benefits from the adaptability and systematic approach of the Spiral model.

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

    Answer: Prototype

    Reason: Developing a software for a missile guidance system requires precise target identification and accuracy. The Prototype model allows for a quick creation of a working model to demonstrate and validate the target identification capabilities. This approach helps in gathering feedback early, refining requirements, and ensuring the accuracy and effectiveness of the final system

11. 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.

    Answer: Prototyping Model

    Reason: The Prototyping model is ideal for making emergency changes while ensuring consistency between requirements and system implementation. It allows for quick development of prototypes to validate changes before full implementation, reducing the risk of inconsistencies.

12. Software for ECG machine.

    Answer: Spiral

    Reason: Developing software for an ECG machine involves critical medical applications where safety and accuracy are paramount. The Spiral model is well-suited for such projects as it emphasizes risk analysis, iterative development, and extensive testing

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

    Answer: Waterfall Model

    Reason: The Waterfall model is appropriate for this well-understood project with no changes in requirements. Its linear approach is suitable for straightforward projects without the need for frequent iterations or changes.