Software Engineering : IT 314

Lab-1

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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: Agile Model

   Reason: The Agile model is the best fit for the Web-site development of an online store with a long list of desired features and frequent releases. Its iterative and incremental nature allows the team to prioritize features, respond to customer demands, and ensure rapid releases.

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

   Answer: V-Model

   Reason: The V-Model is the appropriate choice for this safety-critical system, such as anti-lock braking in a car. With a strong focus on testing and verification at each stage, it ensures better quality control and reliability.

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: Big Bang Model

   Reason: The Big Bang model is the most appropriate for this scenario, where the existing system is entirely replaced. With a full transition and implementation in one go, the Big Bang model simplifies the process.

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: V-Model

    Reason: The V-Model is the appropriate choice for this safety-critical missile guidance system. With the need for accurate target identification, thorough testing and verification at each stage ensure reliability and precision.

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: V-Model

    Reason: The V-Model is suitable for this safety-critical software for the ECG machine. With the critical nature of medical equipment, the V-Model's emphasis on thorough testing and verification ensures accuracy and reliability.

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.