

Multiple Choice Questions and Answers:

1. Which of the following is a non-functional requirement?
 1. The system shall display the user's profile after login
 2. The system shall process 10,000 transactions per second
 3. The system shall allow users to reset their password
 4. The system shall support user authentication

Answer: 2. The system shall process 10,000 transactions per second

2. Which of the following is NOT an advantage of Agile methodology?
 1. Increased flexibility
 2. Faster delivery of working software
 3. Extensive upfront documentation
 4. Better responsiveness to change

Answer: 3. Extensive upfront documentation

3. In software testing, unit testing is concerned with:
 1. Testing the entire system
 2. Testing individual modules or components
 3. Testing the system's integration with external systems
 4. Testing the system's performance under load

Answer: 2. Testing individual modules or components

4. Which software development model is also called the "linear sequential model"?
 1. Spiral Model
 2. Waterfall Model
 3. Agile Model
 4. V-Model

Answer: 2. Waterfall Model

5. Which of the following is an example of white-box testing?
 1. Regression testing
 2. Equivalence partitioning
 3. Code coverage analysis
 4. Usability testing

Answer: 3. Code coverage analysis

Answers to Provided Questions:

What is the difference between functional and non-functional requirements?

- *Functional requirements* specify what the system should do, such as tasks, functions, or behaviors.
- *Non-functional requirements* define the quality attributes, performance, and constraints, such as speed, security, and reliability.

How does the waterfall model differ from the agile model?

- *Waterfall Model*: A linear and sequential approach where each phase must be completed before the next begins.
- *Agile Model*: An iterative and incremental approach that allows for flexibility and changes throughout the project lifecycle.

What is the purpose of software testing, and what are its main levels?

- *Purpose*: To identify defects and ensure that the software meets the specified requirements.
- *Main Levels*: Unit testing, integration testing, system testing, acceptance testing.

What are the characteristics of good software?

- *Characteristics*: Usability, reliability, maintainability, performance, and scalability.

How do version control systems help in software development?

- *Version Control Systems* help manage changes to source code, facilitate team collaboration, and track the history of modifications.

What is the role of a software architect in a development team?

- *Software Architect* is responsible for designing the overall structure of the software system, making high-level design choices, and ensuring that the architecture aligns with business needs.

What is the difference between verification and validation?

- *Verification*: Ensures the product is built correctly according to specifications.
- *Validation*: Ensures the product meets the needs and expectations of the user.

What are software design patterns, and why are they important?

- *Software Design Patterns* are reusable solutions to common problems in software design. They provide standardized best practices that can improve code efficiency and maintainability.

What are the main challenges of software maintenance?

- *Challenges*: Bug fixing, adapting to new environments, improving performance, and ensuring security.

How does continuous integration (CI) improve software quality?

- *Continuous Integration* improves software quality by automatically testing and integrating code changes, reducing integration issues, and ensuring a consistent codebase.

What is technical debt, and how can it affect a project?

- *Technical Debt*: The cost of additional rework caused by choosing an easy solution now instead of a better approach that takes longer.
- It can lead to increased maintenance costs and reduced quality.

What are the advantages of using microservices over monolithic architecture?

- *Advantages*: Scalability, flexibility, easier deployment, and better fault isolation.

What is the purpose of requirement elicitation?

- *Purpose*: To gather and define the requirements of a system from stakeholders to ensure the final product meets their needs.

How does user-centered design influence software development?

- *User-Centered Design* focuses on usability and user experience, ensuring that the final product is intuitive, accessible, and meets user needs.

What are the trade-offs between time, cost, and quality in software projects?

- *Trade-offs*: Increasing quality may increase time and cost, while reducing time or cost may impact quality.

What is the difference between black-box and white-box testing?

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