

100 MCQs on Software Engineering & SDLC Phases

Evolution of Software (Questions 1-12)

1. Which of the following best describes the primary goal of the first-generation software (1950s)?

- a) User-friendly interfaces
- b) Scientific calculations and data processing
- c) Business process automation
- d) Cloud computing

2. During which decade did object-oriented programming emerge as a dominant paradigm?

- a) 1960s
- b) 1970s
- c) 1980s
- d) 1990s

3. The term "software engineering" was first coined at the:

- a) NATO Software Engineering Conference in 1968
- b) ARPANET development in 1969
- c) IBM Annual Meeting in 1972
- d) Stanford University Research Symposium in 1965

4. Which programming paradigm introduced the concept of "inheritance"?

- a) Procedural programming
- b) Functional programming
- c) Object-oriented programming
- d) Logic programming

5. The Waterfall model of software development was formally described by:

- a) Winston Royce in 1970
- b) Fred Brooks in 1975
- c) Barry Boehm in 1981
- d) Kent Beck in 1999

6. Which of the following is NOT considered a part of the evolution of software development methodologies?

- a) Structured programming
- b) Binary programming
- c) Agile development
- d) DevOps

7. The Y2K problem was related to:

- a) Software security vulnerabilities
- b) Date representation in software
- c) Memory allocation issues
- d) Network protocol failures

8. Which programming language is considered one of the earliest high-level languages?

- a) FORTRAN
- b) Python
- c) C++
- d) Java

9. The concept of software reuse became prominent during which decade?

- a) 1960s
- b) 1970s
- c) 1980s
- d) 1990s

10. Which of the following represents a shift from traditional software development to modern approaches?

- a) Moving from mainframe to client-server architecture
- b) Moving from monolithic to microservices architecture
- c) Moving from web-based to terminal-based applications
- d) Moving from high-level to assembly languages

11. The era of mobile app development primarily began with:

- a) The launch of the Apple App Store in 2008
- b) The introduction of Java in 1995
- c) The development of Android in 2003
- d) The release of Windows CE in 1996

12. Which concept emerged as a response to the "software crisis" of the 1960s and 1970s?

- a) Extreme Programming
- b) Software Engineering
- c) Cloud Computing
- d) Machine Learning

Life Cycle Phases (Questions 13-24)

13. How many primary phases are typically included in the traditional SDLC?

- a) 3
- b) 5
- c) 7
- d) 9

14. Which of the following is NOT a standard phase in most SDLC models?

- a) Requirements gathering

- b) Design
- c) Marketing
- d) Testing

15. The SDLC phase that involves determining the feasibility of a project is:

- a) Planning
- b) Implementation
- c) Maintenance
- d) Testing

16. In which phase of SDLC is the project schedule created?

- a) Requirements analysis
- b) Planning
- c) Design
- d) Testing

17. The phase that focuses on fixing bugs and addressing issues after the software is deployed is:

- a) Testing
- b) Deployment
- c) Maintenance
- d) Implementation

18. In iterative development models, which phase is repeated multiple times?

- a) Planning only
- b) All phases
- c) Development and testing
- d) Maintenance only

19. Which SDLC model explicitly includes risk analysis as a separate phase?

- a) Waterfall
- b) Spiral
- c) V-model
- d) Agile

20. The "V-model" in SDLC emphasizes the relationship between:

- a) Verification and validation phases
- b) Virtual and visual design elements
- c) Value and volume of code
- d) Vendor and version control

21. Which phase of SDLC typically has the highest cost impact if errors are discovered?

- a) Requirements analysis
- b) Design
- c) Implementation
- d) Maintenance

22. The concept of "sprints" is associated with which SDLC approach?

- a) Waterfall
- b) Spiral
- c) Agile/Scrum
- d) V-model

23. Which SDLC phase focuses on converting the design specifications into actual code?

- a) Implementation
- b) Design
- c) Testing
- d) Deployment

24. In the DevOps approach to SDLC, which of the following is emphasized?

- a) Sequential phases with clear handoffs
- b) Continuous integration and delivery
- c) Limited interaction between development and operations
- d) Extended planning phases

Planning Analysis (Questions 25-36)

25. Which of the following is NOT typically included in project planning?

- a) Resource allocation
- b) Risk assessment
- c) Code debugging
- d) Schedule development

26. SWOT analysis in project planning stands for:

- a) Software Work Order Tracking
- b) Strengths, Weaknesses, Opportunities, Threats
- c) System Workflow Organization Template
- d) Structured Work Order Taxonomy

27. Which of the following is a key output of the planning phase?

- a) User manual
- b) Source code
- c) Project plan
- d) System architecture

28. The critical path in project planning refers to:

- a) The most expensive components to develop
- b) The sequence of tasks that determines the minimum project duration

- c) The most technically challenging aspects of the project
- d) The highest priority features to implement

29. Which estimation technique involves comparing the project with similar past projects?

- a) Function Point Analysis
- b) COCOMO model
- c) Analogous estimation
- d) Bottom-up estimation

30. The process of identifying potential risks and determining their impact is known as:

- a) Risk assessment
- b) SWOT analysis
- c) Feasibility study
- d) Scope creep analysis

31. Which of the following is NOT a typical constraint considered during project planning?

- a) Budget
- b) Timeline
- c) Marketing strategy
- d) Resource availability

32. A feasibility study typically addresses which types of feasibility?

- a) Technical, economic, and operational
- b) Technical, logical, and physical
- c) Economic, strategic, and tactical
- d) Operational, functional, and structural

33. Which planning technique uses a hierarchical decomposition of the work to be executed?

- a) Gantt chart
- b) Work Breakdown Structure (WBS)

- c) PERT chart
- d) Resource leveling

34. The concept of "scope creep" refers to:

- a) Gradually reducing project scope to meet deadlines
- b) Uncontrolled changes or continuous growth in project scope
- c) Planning for future expansion of the software
- d) Delivering features in small increments

35. Which planning analysis tool is best suited for visualizing task dependencies and critical paths?

- a) PERT chart
- b) Pie chart
- c) Bar graph
- d) Histogram

36. In project planning, ROI stands for:

- a) Range Of Investment
- b) Return On Investment
- c) Risk Of Implementation
- d) Rate Of Integration

Requirements Analysis (Questions 37-48)

37. Which of the following is NOT a common technique for gathering requirements?

- a) Interviews
- b) Observations
- c) Code reviews
- d) Focus groups

38. Functional requirements specify:

- a) How the system should perform
- b) What the system should do
- c) When the system should be deployed
- d) Where the system should be used

39. Non-functional requirements primarily address:

- a) Specific features the system should have
- b) System qualities like performance and security
- c) Business logic and rules
- d) User interface elements

40. Which of the following is an example of a non-functional requirement?

- a) The system shall allow users to log in
- b) The system shall process transactions within 3 seconds
- c) The system shall calculate tax based on location
- d) The system shall allow admin to create new users

41. A use case diagram is part of which modeling language?

- a) XML
- b) UML
- c) HTML
- d) SQL

42. Which requirements specification approach uses the format "As a [role], I want [feature] so that [benefit]"?

- a) Use cases
- b) User stories
- c) Functional requirements
- d) Data flow diagrams

43. Requirements traceability refers to:

- a) The ability to track a requirement from origin to implementation and testing
- b) The process of tracking time spent on implementing each requirement
- c) Ranking requirements by implementation difficulty
- d) Tracking which team member suggested each requirement

44. CRUD is commonly used in requirements analysis to refer to:

- a) Create, Read, Update, Delete operations
- b) Critical Requirements Under Development
- c) Customer Requirements Usage Document
- d) Centralized Requirements Utilization Database

45. Which of the following is NOT a characteristic of a good requirement?

- a) Verifiable
- b) Technical
- c) Clear
- d) Feasible

46. The primary purpose of requirement prioritization is to:

- a) Determine the order of implementation based on value and constraints
- b) Identify which requirements are easiest to implement
- c) Estimate the cost of each requirement
- d) Identify which team members should implement each requirement

47. A requirements baseline is:

- a) The minimum set of features needed for the software to function
- b) The approved and reviewed set of requirements that serves as the basis for further development
- c) The set of requirements identified at the start of the project
- d) The requirements from a previous similar project used for comparison

48. Which of the following techniques is best suited for eliciting requirements when users are geographically dispersed?

- a) Observation
- b) JAD sessions
- c) Surveys
- d) Contextual inquiry

Design and Prototyping (Questions 49-60)

49. Which architectural pattern separates an application into three interconnected parts?

- a) Microservices
- b) MVC (Model-View-Controller)
- c) Client-Server
- d) Peer-to-Peer

50. Low-fidelity prototypes are characterized by:

- a) Highly detailed visual elements
- b) Complete functionality
- c) Simple, often hand-drawn representations
- d) Production-ready code

51. Which design principle emphasizes that classes should have only one reason to change?

- a) DRY (Don't Repeat Yourself)
- b) KISS (Keep It Simple, Stupid)
- c) SRP (Single Responsibility Principle)
- d) YAGNI (You Aren't Gonna Need It)

52. Which UML diagram best represents the behavior of objects over time?

- a) Class diagram
- b) Sequence diagram

- c) Use case diagram
- d) Activity diagram

53. The process of hiding implementation details and exposing only functionality is known as:

- a) Inheritance
- b) Polymorphism
- c) Encapsulation
- d) Abstraction

54. Which design approach focuses on identifying objects first, then defining their behavior?

- a) Functional design
- b) Object-oriented design
- c) Structured design
- d) Aspect-oriented design

55. Wireframing is primarily used to:

- a) Define the database schema
- b) Outline the basic structure and layout of interfaces
- c) Document system architecture
- d) Define system behavior

56. Which of the following is NOT a common type of prototype?

- a) Throwaway prototype
- b) Evolutionary prototype
- c) Horizontal prototype
- d) Recursive prototype

57. The design pattern that provides a simplified interface to a complex system is called:

- a) Adapter pattern

- b) Facade pattern
- c) Decorator pattern
- d) Composite pattern

58. Which of the following best describes cohesion in software design?

- a) The degree to which elements within a module belong together
- b) The number of connections between modules
- c) The level of abstraction in the design
- d) The efficiency of the algorithms used

59. What does the acronym SOLID in software design principles stand for?

- a) Scalable Object-Linked Integrated Design
- b) Single responsibility, Open-closed, Liskov substitution, Interface segregation, Dependency inversion
- c) Systematic Object Layout for Iterative Development
- d) Simplified Operation with Logical Interface Design

60. Which prototyping approach builds only selected parts of the system in full detail?

- a) Horizontal prototyping
- b) Vertical prototyping
- c) Throwaway prototyping
- d) Incremental prototyping

Development of the Application (Questions 61-72)

61. Which of the following is NOT a common programming paradigm?

- a) Object-oriented programming
- b) Functional programming
- c) Recursive programming
- d) Procedural programming

62. Code refactoring refers to:

- a) Adding new features to existing code
- b) Restructuring code without changing its behavior
- c) Converting code from one language to another
- d) Removing unused code from the codebase

63. Which of the following is a best practice in code development?

- a) Writing lengthy methods to minimize file count
- b) Using generic variable names
- c) Following consistent naming conventions
- d) Minimizing comments to improve performance

64. Pair programming is a practice where:

- a) Two separate teams work on the same module
- b) Two developers work on the same code simultaneously
- c) One developer writes code while another writes tests
- d) Code is written once and then duplicated

65. Which version control operation creates a copy of the repository?

- a) Commit
- b) Clone
- c) Push
- d) Pull

66. Continuous Integration (CI) primarily focuses on:

- a) Regularly merging code changes into a central repository
- b) Continuously deploying code to production
- c) Integrating various programming languages
- d) Integrating user feedback into development

67. Which of the following is NOT typically a concern during the development phase?

- a) Code quality
- b) Performance optimization
- c) Marketing strategy
- d) Following coding standards

68. Technical debt refers to:

- a) The cost of purchasing development tools
- b) The implied cost of additional work caused by choosing a quick solution now
- c) The salary paid to technical team members
- d) The cost of maintaining legacy systems

69. Which development approach emphasizes writing tests before writing the implementation code?

- a) Test-driven development (TDD)
- b) Behavior-driven development (BDD)
- c) Feature-driven development (FDD)
- d) Model-driven development (MDD)

70. A code smell is:

- a) A technique to identify plagiarized code
- b) A surface indication that usually corresponds to a deeper problem in the code
- c) A measure of code complexity
- d) A method to detect security vulnerabilities

71. What does IDE stand for in software development?

- a) Integrated Development Environment
- b) Interface Design Engine
- c) Interactive Development Experience
- d) Intelligent Debugging Entity

72. Which development practice involves gradually adding features to a working system?

- a) Big bang integration
- b) Incremental development
- c) Parallel development
- d) Rapid application development

Testing and Deployment (Questions 73-84)

73. Which testing type focuses on verifying that integrated components work together?

- a) Unit testing
- b) Integration testing
- c) System testing
- d) Acceptance testing

74. Alpha testing is typically performed by:

- a) End users at their own sites
- b) Internal testers in a development environment
- c) External testers at the developer's site
- d) Automated testing tools

75. Which of the following is NOT a black-box testing technique?

- a) Boundary value analysis
- b) Code coverage analysis
- c) Equivalence partitioning
- d) Decision table testing

76. Regression testing is primarily concerned with:

- a) Testing new features
- b) Ensuring previously working features still work after changes

- c) Testing the user interface
- d) Testing system performance

77. The practice of automatically deploying code to production after it passes automated tests is known as:

- a) Continuous Integration
- b) Continuous Deployment
- c) Continuous Testing
- d) Continuous Monitoring

78. Which of the following is NOT a typical deployment strategy?

- a) Blue-Green deployment
- b) Canary deployment
- c) Rainbow deployment
- d) Rolling deployment

79. Test-driven development (TDD) follows which cycle?

- a) Design, Code, Test, Refactor
- b) Test, Code, Design, Deploy
- c) Red, Green, Refactor
- d) Plan, Implement, Verify, Maintain

80. Which of the following metrics measures the percentage of code executed during testing?

- a) Code quality
- b) Code coverage
- c) Code complexity
- d) Code churn

81. Load testing is primarily concerned with:

- a) Testing the software with various data inputs
- b) Testing the software's behavior under expected usage conditions
- c) Testing the software's security features
- d) Testing the software's user interface

82. Which deployment approach runs the new and old versions of an application simultaneously?

- a) Big bang deployment
- b) Blue-green deployment
- c) Sequential deployment
- d) Phased deployment

83. Smoke testing refers to:

- a) Basic tests to verify that the build is stable enough for further testing
- b) Testing under extreme conditions
- c) Testing for fire hazards in hardware
- d) Testing with invalid inputs

84. Which of the following is NOT typically included in a deployment plan?

- a) Rollback procedures
- b) Marketing strategy
- c) Deployment schedule
- d) Environment configuration

Project Management (Questions 85-100)

85. What does the acronym PMI stand for in project management?

- a) Project Management Initiative
- b) Project Management Institute

- c) Project Management International
- d) Project Management Innovation

86. Agile project management emphasizes:

- a) Comprehensive documentation
- b) Following a set plan
- c) Responding to change
- d) Contract negotiation

87. Which of the following is NOT one of the five process groups in the PMBOK Guide?

- a) Initiating
- b) Planning
- c) Coding
- d) Closing

88. The triple constraint in project management consists of:

- a) Time, Cost, Scope
- b) Quality, Risk, Resources
- c) Planning, Execution, Control
- d) People, Process, Technology

89. In Scrum, the team member who ensures the team follows Scrum practices is the:

- a) Product Owner
- b) Scrum Master
- c) Project Manager
- d) Team Lead

90. Which project management methodology emphasizes visual workflow and limiting work in progress?

- a) Waterfall

- b) Kanban
- c) PRINCE2
- d) Critical Path Method

91. A burndown chart in agile project management shows:

- a) The project budget consumption over time
- b) The remaining work over time
- c) The team's skill improvement over time
- d) The number of bugs fixed over time

92. Which of the following is NOT typically a role in Scrum?

- a) Product Owner
- b) Scrum Master
- c) Project Manager
- d) Development Team

93. A retrospective meeting in agile focuses on:

- a) Planning the next sprint
- b) Reviewing what went well and what could be improved
- c) Demonstrating completed work to stakeholders
- d) Assigning tasks to team members

94. The process of assigning resources to tasks is known as:

- a) Resource allocation
- b) Task management
- c) Timeline planning
- d) Budget control

95. Which project management approach emphasizes delivering the minimum viable product first?

- a) Traditional waterfall
- b) Lean/Agile
- c) Critical chain
- d) PRINCE2

96. Stakeholder management involves:

- a) Managing the expectations and engagement of people affected by the project
- b) Managing the financial aspects of the project
- c) Managing the technical requirements of the project
- d) Managing the project team

97. The concept of "velocity" in agile project management refers to:

- a) How quickly the team responds to changes
- b) The amount of work a team completes in a sprint
- c) The speed of the development server
- d) The rate at which new features are requested

98. Which of the following is NOT typically included in a project charter?

- a) Project purpose
- b) Key stakeholders
- c) Detailed technical specifications
- d) Success criteria

99. Change management in project management primarily deals with:

- a) Controlling version changes in the code
- b) Handling organizational changes resulting from the project
- c) Managing how changes to project scope are requested and implemented
- d) Changing team members during the project

100. The primary purpose of a project kick-off meeting is to:

- a) Sign contracts with vendors
- b) Establish the project objectives, scope, and introduce team members
- c) Complete the project planning
- d) Review the final deliverables