

Notes by Care Link Educational Hub

Unit 1: Introduction to Software Development

Multiple Choice Questions Correct Options with One-Line Explanations

Software Development

1. What is the main goal of software development?

- a) Design hardware
- b) Create task-specific programs**
- c) Manage databases
- d) Develop marketing plans

Correct option: b) Create task-specific programs

Explanation: Software development creates programs that perform particular tasks and solve user problems.

Introduction to SDLC

2. Which phase of the SDLC involves understanding user needs and expectations?

- a) Design
- b) Testing
- c) Requirement Gathering**
- d) Deployment

Correct option: c) Requirement Gathering

Explanation: Requirement Gathering collects and records what users need from the software.

3. What is a framework in software development?

- a) A language
- b) Coding rules
- c) Testing tool
- d) Pre-built structure**

Correct option: d) Pre-built structure

Explanation: A framework gives developers ready-made structures and components for building software.

4. Which of the following is a web development framework?

- a) Java
- b) Python
- c) Django**
- d) MySQL

Correct option: c) Django

Explanation: Django is a framework that provides tools and structures for creating websites.

5. What is the benefit of using frameworks in development?

- a) Slower development
- b) More bugs
- c) Faster development with reusable parts**
- d) Less security

Correct option: c) Faster development with reusable parts

Explanation: Reusable components help developers build software more quickly and consistently.

6. Which of the following is a functional requirement?

- a) The system should be fast
- b) The system should allow user login**
- c) The system should be secure
- d) The system should be scalable

Correct option: b) The system should allow user login

Explanation: A functional requirement describes an action the system must perform, such as allowing users to log in.

7. Which of the following is a non-functional requirement?

- a) User registrations

b) Data encryption

- c) Online payment
- d) Report generation

Correct option: b) Data encryption

Explanation: Data encryption is a security quality or constraint that explains how the system should protect information.

8. What is the purpose of the Design phase in the SDLC?

- a) To write code
- b) To gather user feedback
- c) To create a blueprint of the system**
- d) To test the software

Correct option: c) To create a blueprint of the system

Explanation: The Design phase prepares the system plan, structure, and layout before coding begins.

9. Which SDLC phase involves installing the software for users?

- a) Testing
- b) Coding
- c) Deployment**
- d) Maintenance

Correct option: c) Deployment

Explanation: Deployment installs and releases the completed software so users can access it.

10. Which SDLC phase includes continuous updates and bug fixes?

- a) Design
- b) Development
- c) Maintenance**
- d) Requirement Gathering

Correct option: c) Maintenance

Explanation: Maintenance keeps software useful by adding updates and fixing problems after release.

11. Which of the following helps ensure that software meets user expectations?

- a) Debugging
- b) Testing**
- c) Deployment
- d) Documentation

Correct option: b) Testing

Explanation: Testing checks whether the software works correctly and satisfies user needs.

12. Which SDLC phase creates visual models of the system?

- a) Requirement Gathering
- b) Design**
- c) Coding
- d) Testing

Correct option: b) Design

Explanation: Designers use diagrams and models to show the system structure before it is built.

13. Which of the following is NOT part of the SDLC?

- a) Requirement Gathering
- b) Coding
- c) Marketing**
- d) Testing

Correct option: c) Marketing

Explanation: Marketing is not one of the six standard SDLC phases listed in the exercise.

14. Which phase comes after Testing in the SDLC?

- a) Requirement Gathering
- b) Deployment**
- c) Design
- d) Debugging

Correct option: b) Deployment

Explanation: After testing is completed, the software is normally deployed for users.

15. Which of the following is a reason for testing software?

- a) To make it look better
- b) To find and fix bugs early**
- c) To delay delivery
- d) To increase costs

Correct option: b) To find and fix bugs early

Explanation: Early testing finds problems when they are easier, faster, and cheaper to correct.

Software Development Methodologies

16. Why is the Waterfall model not suitable for dynamic projects?

- a) It requires too many resources
- b) It follows a rigid, linear approach**
- c) It lacks documentation
- d) It is outdated

Correct option: b) It follows a rigid, linear approach

Explanation: Waterfall makes changes difficult because each phase is completed before the next one starts.

17. In Agile methodology, work is divided into short cycles called:

- a) Phases
- b) Sprints**
- c) Stages
- d) Modules

Correct option: b) Sprints

Explanation: Agile teams develop and review work in short periods called sprints.

18. Which of the following is a key practice in Agile?

- a) Sequential planning
- b) Fixed scope
- c) Continuous integration**
- d) No feedback loops

Correct option: c) Continuous integration

Explanation: Continuous integration regularly combines code and tests it to find problems quickly.

19. Which Agile practice involves writing tests before code?

- a) Pair Programming
- b) Continuous Integration
- c) Test-Driven Development**
- d) Documentation First

Correct option: c) Test-Driven Development

Explanation: Test-Driven Development starts with tests that guide the code being written.

20. Which Agile practice involves two developers working together?

- a) Test-Driven Development
- b) Pair Programming**
- c) Sprint Planning
- d) Daily Standups

Correct option: b) Pair Programming

Explanation: Pair programming is a practice in which two developers work together on the same code.

21. What is the main disadvantage of the Waterfall model?

- a) High cost
- b) Lack of flexibility**
- c) Poor documentation
- d) Slow development

Correct option: b) Lack of flexibility

Explanation: Waterfall does not easily accept changes after a phase has been completed.

22. Which model works well for small projects with fixed requirements?

- a) Agile
- b) Spiral
- c) Waterfall**

d) DevOps

Correct option: c) Waterfall

Explanation: Waterfall suits small projects where the requirements are clear and unlikely to change.

23. Which methodology emphasises customer collaboration and responding to change?

a) Waterfall

b) V-model

c) Agile

d) RAD

Correct option: c) Agile

Explanation: Agile works closely with customers and adjusts the product when requirements change.

24. Which model supports iterative development?

a) Waterfall

b) Agile

c) V-model

d) None of the above

Correct option: b) Agile

Explanation: Agile develops software repeatedly in small cycles and improves it after feedback.

25. Which of the following helps in managing large-scale software projects?

a) Frameworks

b) Methodologies

c) Tools

d) All of the above

Correct option: d) All of the above

Explanation: Frameworks, methodologies, and tools each help organise and control large software projects.

Project Planning

26. What is risk assessment in software projects?

a) Writing code

b) Identifying potential threats

c) Creating diagrams

d) Managing teams

Correct option: b) Identifying potential threats

Explanation: Risk assessment finds possible events that could harm a project and studies their effects.

27. What is the first step in risk management?

a) Analysing impact

b) Monitoring risks

c) Identifying risks

d) Mitigating risks

Correct option: c) Identifying risks

Explanation: A team must first know what risks exist before it can analyse or reduce them.

28. Which activity happens during the Execution phase?

a) Gathering requirements

b) Writing code and building software

c) Planning timelines

d) Testing software

Correct option: b) Writing code and building software

Explanation: Execution is the stage where the planned software is actually developed.

29. What is the purpose of project planning?

a) To ignore user needs

b) To define goals, roles, and timelines

c) To skip testing

d) To reduce team size

Correct option: b) To define goals, roles, and timelines

Explanation: Project planning gives the team clear goals, responsibilities, schedules, and required work.

30. Which factor affects software cost estimation?

- a) Team size
- b) Number of stakeholders
- c) Technology stack
- d) All of the above**

Correct option: d) All of the above

Explanation: Team size, stakeholders, and the chosen technology can all affect the total project cost.

31. Which of the following is a quality-assurance activity?

- a) Coding
- b) Code reviews and testing**
- c) Marketing
- d) Hiring

Correct option: b) Code reviews and testing

Explanation: Code reviews and testing help find defects and check that software meets required standards.

Graphical Representation of Software Systems

32. What is the role of UML in software development?

- a) Writing code
- b) Managing team communication
- c) Visualising system design**
- d) Deploying software

Correct option: c) Visualising system design

Explanation: UML uses standard diagrams to show and explain the design and behaviour of a system.

33. Which UML diagram shows how users interact with the system?

- a) Class Diagram
- b) Use Case Diagram**
- c) Sequence Diagram
- d) Activity Diagram

Correct option: b) Use Case Diagram

Explanation: A Use Case Diagram shows the users and the actions they perform with the system.

34. Which UML diagram represents the structure of a system using classes and objects?

- a) Use Case Diagram
- b) Class Diagram**
- c) Sequence Diagram
- d) Activity Diagram

Correct option: b) Class Diagram

Explanation: A Class Diagram displays classes, their details, and relationships between objects.

35. What is the purpose of a Sequence Diagram?

- a) Show data flow
- b) Show object interactions**
- c) Model workflows
- d) Define system limits

Correct option: b) Show object interactions

Explanation: A Sequence Diagram shows the order in which objects exchange messages over time.

36. What does an Activity Diagram illustrate?

- a) System architecture
- b) Flow of activities in a process**
- c) Code structure
- d) Database schema

Correct option: b) Flow of activities in a process

Explanation: An Activity Diagram shows steps, decisions, and the flow of work in a process.

37. Which of the following is a static diagram in UML?

- a) Sequence Diagram
- b) Use Case Diagram
- c) Activity Diagram

d) Class Diagram

Correct option: d) Class Diagram

Explanation: A Class Diagram shows a relatively fixed structure of classes and relationships.

38. Which of the following is a dynamic diagram in UML?

- a) Class Diagram
- b) Use Case Diagram
- c) Sequence Diagram**
- d) Component Diagram

Correct option: c) Sequence Diagram

Explanation: A Sequence Diagram is dynamic because it shows interactions and messages changing over time.

Introduction to Design Patterns

39. Which of the following best describes a design pattern?

- a) New language
- b) Reusable solution**
- c) Type of database
- d) Testing method

Correct option: b) Reusable solution

Explanation: A design pattern is a reusable plan for solving a common software-design problem.

40. Which design pattern ensures that only one instance of a class exists?

- a) Factory
- b) Strategy
- c) Singleton**
- d) Observer

Correct option: c) Singleton

Explanation: The Singleton pattern restricts a class to one shared object in the program.

41. Which design pattern allows interchangeable algorithms at run time?

- a) Singleton
- b) Factory
- c) Strategy**
- d) Observer

Correct option: c) Strategy

Explanation: The Strategy pattern lets a program select between different algorithms while it runs.

42. Which design pattern helps notify multiple objects about changes in one object?

- a) Factory
- b) Strategy
- c) Observer**
- d) Singleton

Correct option: c) Observer

Explanation: The Observer pattern informs dependent objects when the main object changes.

43. Which design pattern provides a way to create objects without exposing the creation logic?

- a) Singleton
- b) Factory**
- c) Strategy
- d) Observer

Correct option: b) Factory

Explanation: The Factory pattern creates the required object while hiding the details of how it is made.

Software Debugging and Testing

44. What is debugging in software development?

- a) Writing new code
- b) Finding and fixing errors in code**
- c) Planning software features
- d) Deploying software

Correct option: b) Finding and fixing errors in code

Explanation: Debugging locates the cause of a problem and corrects the code so the program works properly.

45. What is the main purpose of testing in software development?

- a) To write better code
- b) To find bugs and ensure quality**
- c) To document requirements
- d) To plan timelines

Correct option: b) To find bugs and ensure quality

Explanation: Testing checks the software for defects and confirms that it meets quality expectations.

46. Which type of testing checks individual components of software?

- a) Integration Testing
- b) System Testing
- c) Unit Testing**
- d) Acceptance Testing

Correct option: c) Unit Testing

Explanation: Unit testing checks small individual parts of a program, such as a single function.

47. Which testing level checks how different modules work together?

- a) Unit Testing
- b) Integration Testing**
- c) System Testing
- d) Acceptance Testing

Correct option: b) Integration Testing

Explanation: Integration testing checks whether separate modules work correctly when connected.

48. Which testing checks the entire system as a whole?

- a) Unit Testing
- b) Integration Testing
- c) System Testing**
- d) Debugging

Correct option: c) System Testing

Explanation: System testing examines the complete application and its overall behaviour.

49. Who usually performs Acceptance Testing?

- a) Developers
- b) Testers
- c) End-users**
- d) Managers

Correct option: c) End-users

Explanation: End-users or clients perform acceptance testing to decide whether the software meets their needs.

Software Development Tools

50. What is the purpose of source-code repositories?

- a) To write code
- b) To store and track code changes**
- c) To compile code
- d) To deploy applications

Correct option: b) To store and track code changes

Explanation: A repository keeps code versions and records changes so developers can collaborate safely.

51. Which platform is commonly used for version control?

- a) Visual Studio
- b) GitHub**
- c) Notepad++
- d) MySQL

Correct option: b) GitHub

Explanation: GitHub stores code repositories and helps teams track and manage version changes.

52. Which of the following is an online computing platform?

- a) Visual Studio
- b) Repl.it**

- c) PyCharm
- d) Eclipse

Correct option: b) Repl.it

Explanation: Repl.it is an online platform where code can be written and run through a web browser.

53. Which of the following is an offline computing platform?

- a) Gitpod
- b) Repl.it
- c) Local installation of an IDE**
- d) Cloud

Correct option: c) Local installation of an IDE

Explanation: A locally installed IDE runs on the user's computer without requiring an online platform.

54. What is an IDE?

- a) A code writer
- b) Tools in one interface**
- c) Testing framework
- d) Deployment tool

Correct option: b) Tools in one interface

Explanation: An IDE combines tools such as an editor, compiler, and debugger in one application.

55. Which IDE is commonly used for Python development?

- a) Visual Studio
- b) PyCharm**
- c) Notepad++
- d) GDB

Correct option: b) PyCharm

Explanation: PyCharm is an IDE designed especially for writing and managing Python programs.

56. Which tool translates high-level code line by line?

- a) Compiler
- b) Interpreter**
- c) Assembler
- d) Debugger

Correct option: b) Interpreter

Explanation: An interpreter translates and executes high-level code one line at a time.

57. Which tool translates the entire code at once?

- a) Interpreter
- b) Compiler**
- c) Editor
- d) Debugger

Correct option: b) Compiler

Explanation: A compiler translates a complete program before the program is run.

58. What is the purpose of a debugger?

- a) To write code
- b) To find and fix errors**
- c) To design interfaces
- d) To manage databases

Correct option: b) To find and fix errors

Explanation: A debugger helps developers examine a running program and correct its errors.

59. Which of the following is a code editor?

- a) GCC
- b) GDB
- c) VS Code**
- d) Python

Correct option: c) VS Code

Explanation: VS Code is a code editor used to write and edit programs in many languages.

60. Which of the following is a compiler?

- a) Python interpreter

b) GCC

c) GDB

d) VS Code

Correct option: b) GCC

Explanation: GCC is a compiler collection that translates languages such as C and C++ into executable code.

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