

Week 1 Training Module – Applied SDLC, Agile, and Testing Methodology

Quick Revision – SDLC (Short Notes)

What is SDLC?

- SDLC stands for **Software Development Life Cycle**.
- It's a structured process followed to **develop high-quality software** that meets customer expectations, within time and budget.
- It ensures a **systematic approach** from idea to deployment and maintenance.

Phases of SDLC:

1. Requirement Gathering

- Understand **what the client needs**.
- Categorized into:
 -  **Functional Requirements**: What the system **should do** (e.g., user login, data saving).
 -  **Non-Functional Requirements**: How the system should **perform** (e.g., speed, security, scalability).

2. Design

- Plan the **architecture** of the software.
- Use **UML Diagrams**:
 -  **Structural Diagrams**: Class Diagram, Component Diagram
 -  **Behavioural Diagrams**: Use Case Diagram, Sequence Diagram

3. Development

- **Code** the application using selected languages and tools.
- Based on the design blueprint.

4. Testing

- Detect and fix bugs.
- Verify that software matches the **requirements**.
- Methods: Unit testing, Integration testing, System testing, Acceptance testing.

5. Deployment

- Release the software for **production use**.

6. Maintenance

- Ongoing support: **bug fixes, updates, feature enhancements**.

SDLC Models

 Model	 Use Case	 Pros	 Cons
Waterfall	Simple, well-defined scope	Easy to manage	No flexibility, no going back
V-Model	Testing is a high priority	Early test planning	No backward movement
Spiral	Large, high-risk projects	Focus on risk analysis	Expensive, complex
Iterative	Gradual project improvement	Early working software	High resource usage
Agile	Changing requirements	Adaptive, fast	Requires frequent communication

Documentation in SDLC:

-  **SRS (Software Requirement Specification):**
A detailed document capturing all **functional & non-functional** requirements.
-  **Design Document:**
Explains **system architecture**, technologies, and design diagrams.
-  **Test Plan:**
Defines **testing strategy**, objectives, scope, schedule, resources.
-  **User Manual:**
Guide for **end-users** to interact with the software.

Real-World Application:

- Use **Waterfall** for **well-defined projects** like billing systems.
- Use **Agile** for **startups or iterative app development**.
- Use **Spiral** for **risky defines/aerospace projects**.
- Use **Iterative** when you want frequent improvements (e.g., ERP systems).

Some Best MCQs on SDLC – with Explanations

1. What does SDLC stand for?

- a) System Design Life Cycle
- b) Software Development Life Cycle
- c) Software Design Logic Chart
- d) System Development Logic Code

 **Answer:** b

 **Explanation:** SDLC stands for Software Development Life Cycle – the standard process for building software.

2. Which is the first phase of SDLC?

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

 **Answer:** b

 *Explanation:* SDLC starts with understanding client needs, i.e., Requirement Gathering.

3. Functional and Non-functional requirements are collected during which phase?

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

 **Answer:** c

4. UML diagrams are used in which phase?

- a) Testing
- b) Design
- c) Development
- d) Maintenance

 **Answer:** b

5. Which model is best when requirements are well-defined and stable?

- a) Agile
- b) Spiral
- c) Waterfall
- d) Iterative

 **Answer:** c

6. What is the main drawback of the Waterfall model?

- a) Requires too much documentation
- b) No client involvement
- c) No backward movement possible
- d) No testing involved

 **Answer:** c

7. Which SDLC model incorporates risk analysis at each stage?

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

 **Answer:** d

8. Which SDLC model is test-driven?

- a) Agile
- b) Spiral
- c) V-Model
- d) Iterative

 **Answer:** c

9. What is the purpose of an SRS document?

- a) To guide developers to write test cases
- b) To design architecture
- c) To specify system functionality and requirements

- d) To write user manuals

Answer: c

10. In which phase is code written?

- a) Development
- b) Design
- c) Testing
- d) Requirement Gathering

Answer: a

11. Agile methodology follows:

- a) Linear approach
- b) Risk-focused approach
- c) Incremental and iterative approach
- d) Non-flexible development

Answer: c

12. Which phase ensures the software is defect-free?

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

Answer: c

13. Which document provides detailed testing procedures?

- a) User Manual
- b) SRS
- c) Design Document
- d) Test Plan

Answer: d

14. What happens in the maintenance phase?

- a) New software is developed
- b) Errors are fixed and improvements are made
- c) Software is designed
- d) Requirements are gathered again

Answer: b

15. In Agile, customer involvement is:

- a) Not required
- b) At the beginning only
- c) Continuous throughout
- d) Only during testing

Answer: c

16. Which phase involves creating the software architecture and design documents?

- a) Requirement Gathering
- b) Testing
- c) Design
- d) Development

Answer: c

 *Explanation:* The Design phase defines system architecture using tools like UML diagrams.

17. Which model is also known as the “Linear Sequential” model?

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

Answer: c

 *Explanation:* Waterfall is linear and progresses step-by-step.

18. What does a Use Case Diagram represent?

- a) Code logic
- b) Data flow
- c) User interactions with the system
- d) Server architecture

Answer: c

 *Explanation:* Use case diagrams show how users interact with system functionalities.

19. The primary focus of the V-Model is:

- a) Client involvement
- b) Parallel development and testing
- c) Risk analysis
- d) Prototyping

Answer: b

20. Which SDLC model is best suited when requirements keep changing?

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

Answer: b

 *Explanation:* Agile is designed to handle evolving or unclear requirements.

21. What kind of diagram is a Sequence Diagram?

- a) Structural UML
- b) Behavioral UML
- c) Functional Requirement
- d) Architectural Blueprint

Answer: b

 *Explanation:* Sequence Diagrams represent interactions over time, thus behavioral.

22. Which document acts as a contract between the client and development team?

- a) Test Plan
- b) User Manual
- c) SRS
- d) Component Diagram

Answer: c

 *Explanation:* The SRS document outlines all system requirements.

23. Iterative models allow:

- a) Development in a single phase
- b) Multiple cycles of the entire SDLC
- c) Testing only after full implementation
- d) Design skipping

Answer: b

24. Who is responsible for defining the system's functional requirements?

- a) Test Engineer
- b) End User
- c) Business Analyst
- d) Designer

Answer: c

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

- a) Login functionality
- b) Data encryption
- c) Payment processing
- d) Search feature

Answer: b

 *Explanation:* Security is a non-functional aspect.

26. Which model requires prototyping before development begins?

- a) Agile
- b) Spiral
- c) V-Model
- d) Iterative

Answer: b

27. What is the main focus of the Maintenance phase?

- a) Designing new features
- b) Developing SRS
- c) Fixing bugs and updates
- d) Creating test cases

Answer: c

28. Which model is most preferred when working on large-scale projects with high risk?

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

Answer: c

29. In SDLC, the output of the Design phase becomes the input for:

- a) Maintenance
- b) Testing
- c) Development
- d) Requirement Gathering

Answer: c

30. Which is NOT a typical activity in the Testing phase?

- a) Unit testing
- b) Integration testing
- c) Refactoring code
- d) Bug reporting

Answer: c

31. Who typically writes the test plan document?

- a) Project Manager
- b) Client
- c) Tester/QA
- d) Developer

Answer: c

32. What is the main goal of the Requirement Gathering phase?

- a) Build architecture
- b) Write code
- c) Understand client expectations
- d) Deploy the application

Answer: c

33. Which SDLC model is called “document-driven”?

- a) Agile
- b) Waterfall
- c) Iterative
- d) Spiral

Answer: b

34. The feedback loop is strongest in which model?

- a) Waterfall
- b) Agile
- c) V-Model
- d) Linear Model

Answer: b

35. In Agile SDLC, software is delivered:

- a) Only after final development
- b) After integration testing
- c) In small, incremental releases
- d) At project closure

Answer: c