What is SDLC?

SDLC (Software Development Life Cycle) refers to the structured process of developing software, from the initial idea to the final product. Here are the key points:

1. **Phases**: SDLC consists of several phases including Planning, Design, Development, Testing, Deployment, and Maintenance, ensuring systematic and efficient software development.
2. **Purpose**: It helps in delivering high-quality software in a predictable, cost-effective, and timely manner, while minimizing risks and ensuring that requirements are met.
3. **Models**: Common SDLC models include Waterfall, Agile, Iterative, and V-Model, each suited to different project needs and methodologies.

What are the phases of SDLC?

Requirement Gathering & Analysis:

- In this phase, the project's requirements are gathered from stakeholders and analyzed to understand the objectives and constraints. The goal is to document what the software must do.

System Design:

- Based on the requirements, a blueprint of the system is created, specifying the architecture, components, interfaces, and data flow. This phase results in a detailed design document.

Implementation (Coding/Development):

- The actual source code is written based on the system design. Developers translate the design into a working system using the chosen programming languages and technologies.

Testing:

- The software is tested to ensure it meets the defined requirements and is free of bugs or defects. Various testing methods like unit testing, integration testing, and user acceptance testing (UAT) are performed.

Deployment:

- After successful testing, the software is deployed to the production environment, where it becomes available for use by the end-users.

Maintenance & Support:

- Post-deployment, the software enters the maintenance phase where it is updated, patched, or enhanced based on user feedback, bug reports, or changing requirements.

Different Types of SDLC?

- **Waterfall**: Rigid and sequential.
- **Agile**: Flexible, iterative, and collaborative.
- **Iterative**: Repeated development cycles.
- **V-Model**: Parallel testing and development.
- **Spiral**: Focus on risk management with iterative cycles.
- **Big Bang**: Unstructured, often risky approach.
- **Incremental**: Development in small, manageable parts.
- **RAD**: Fast development with prototypes.
- **DevOps**: Focus on continuous integration and collaboration.

What is Waterfall Model?

- **Description**: The Waterfall model is a **linear and sequential** approach, where each phase must be completed before the next one begins. It follows a strict order: Requirements → Design → Implementation → Testing → Deployment → Maintenance.
- **Pros**: Simple, easy to understand and manage, clear project scope and objectives.
- **Cons**: Inflexible to changes during the process, difficult to go back to previous phases.

What is the difference between Waterfall and Agile?

- **Approach**: Waterfall is **sequential**, while Agile is **iterative**.
- **Flexibility**: Waterfall is **rigid**; Agile is **flexible** and can accommodate changes throughout the project.
- **Customer Involvement**: Waterfall has **limited involvement** (mainly at the start and end), while Agile has **continuous customer feedback**.
- **Delivery**: Waterfall delivers the final product **at the end**, while Agile delivers working software **incrementally** after each sprint.
- **Risk and Testing**: Waterfall has **late testing** and higher risk of discovering issues late; Agile has **continuous testing**, reducing risk.

What is Scrum and Kanban?

- **Scrum** is a structured, **time-boxed framework** with specific roles, ceremonies, and iterations, suitable for **complex projects** needing regular feedback and adjustment.

- **Kanban** is a more **flexible** and **continuous flow** system, ideal for teams seeking **ongoing improvement** and **optimization of work** with minimal restrictions on work cycles.

Agile Ceremonies?

Agile Ceremonies (also called Agile Meetings or Agulations) are specific rituals or events in Agile frameworks, particularly in Scrum, that help facilitate collaboration, communication, and the smooth functioning of the development process. These ceremonies create opportunities for the team to inspect and adapt their work, ensuring that the project is progressing effectively and aligning with the customer's needs.

Standup?

A **Standup** (often called the **Daily Standup** or **Daily Scrum**) is a brief, daily meeting in Agile teams, particularly in **Scrum**, to synchronize and update the progress of work. It's designed to ensure that everyone is aligned and to quickly identify any obstacles that might be hindering progress.

Backlog Refinement?

Backlog Refinement (also called Backlog Grooming) is a key activity in Agile methodologies, particularly in Scrum, where the team works to review, prioritize, and clarify the items in the Product Backlog. The goal is to ensure the backlog is well-organized, up-to-date, and ready for future sprints.

Sprint Planning?

Sprint Planning is one of the core ceremonies in Scrum and marks the beginning of a Sprint. During this ceremony, the Scrum Team collaboratively plans the work that will be accomplished in the upcoming sprint (usually 1-4 weeks). The focus is on defining the Sprint Goal and selecting work from the Product Backlog to create a Sprint Backlog for the sprint.