Que-3 . What is SDLC? Explain each phase of SDLC

SDLC stands for Software Development Life Cycle. It's a systematic process used by software developers to design, develop, test, and deploy software applications. The SDLC consists of several phases, each with its own objectives and activities. Here's an overview of the typical phases of the SDLC:

1. \*\*Planning:\*\* In this initial phase, project stakeholders define the scope, objectives, and requirements of the software project. This involves gathering information about user needs, business goals, and technical constraints. The planning phase sets the foundation for the entire project and involves creating a project plan, establishing timelines, and allocating resources.

2. \*\*Analysis:\*\* During the analysis phase, software requirements are thoroughly examined and documented. This includes understanding user needs, identifying system functionalities, and defining the data structures and processing requirements. The goal is to create a detailed specification that serves as a blueprint for the development process.

3. \*\*Design:\*\* In the design phase, the system architecture and software design are created based on the requirements gathered in the analysis phase. This involves defining the overall structure of the software, including the user interface, data models, algorithms, and system components. The design phase may produce various types of documentation, such as architectural diagrams, flowcharts, and data models.

4. \*\*Implementation (Coding):\*\* The implementation phase involves translating the design specifications into actual software code. Developers write, test, and debug the code according to the design requirements. This phase may also involve integrating third-party components, libraries, or frameworks, as well as following coding standards and best practices.

5. \*\*Testing:\*\* In the testing phase, the software is systematically evaluated to ensure that it meets quality and performance standards. Different types of testing, such as unit testing, integration testing, system testing, and acceptance testing, are conducted to identify and fix defects and verify that the software behaves as expected. Test cases are executed, and any issues are documented and addressed.

6. \*\*Deployment:\*\* Once the software has been thoroughly tested and approved, it's deployed to the production environment for end users to access and use. This involves installing the software on servers or client devices, configuring the system settings, and ensuring that it's operational and accessible. Deployment may also involve data migration, user training, and transitioning from old systems to new ones.

7. \*\*Maintenance:\*\* The maintenance phase involves ongoing support and enhancement of the software after it has been deployed. This includes addressing user feedback, fixing bugs, implementing updates and patches, and adding new features or functionality as needed. Maintenance activities help ensure that the software remains effective, reliable, and secure over time.

These phases are typically sequential, with each phase building upon the results of the previous one. However, in agile methodologies, such as Scrum or Kanban, the SDLC may be iterative, with shorter development cycles and frequent feedback loops to adapt to changing requirements and priorities..