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SDLC (**Software Development Life Cycle**) is a systematic process used for developing software applications. The goal of SDLC is to minimize project risk through forward planning so that software meets customer expectations during production and beyond.

It consists of a series of well-defined stages that guide the development team through the creation of a software product from initial concept to deployment and maintenance.

The SDLC typically consists of several phases, which may vary slightly depending on the methodology used (e.g., Agile, Waterfall, V-Model, Spiral, DevOps)

The various phases of SDLC:

Phase 1: Requirement Analysis

The development team collects requirements from several stakeholders such customer, internal and external experts and managers to create a software requirement specification document.

This phase involves defining the project's objective, scope, requirement, and creating a plan for development.

Stake holders determine the feasibility, cost, and time estimates.

Phase 2: System Design

Creating a blueprint for the system includes architecture, database, user interface design, and data models.

Design is further divided into two subcategories:

- High-level design (overall system architecture)
- Low-level design (detailed design for individual components).

Phase 3: Development

During this phase, the actual coding and programming take place.

They analyze the requirements to identify smaller coding tasks they can do daily to achieve the result.

Developers write the code based on the design specifications.

Phase 4: Testing

The development team combines automation and manual testing to check the software for bugs.

After the software is developed, it undergoes various testing phases (unit testing, integration testing, system testing, etc.) to identify and fix defects.

This ensures the software meets the desired quality and works as expected.

Phase 5: Deployment

Once the software passes all tests, it is deployed to the production environment.

The software that customers use is called production, while other copies are said to be in the build environment or testing environment.

Users begin using the system in real world conditions.

Phase 6: Maintenance

After deployment, the software enters the maintenance phase.

This involves fixing any bugs that emerge, adding a new feature, and ensuring the software continues to function well as the environment changes.

Need of SDLC:

SDLC provides a systematic and organized approach to software development, ensuring that every phase is well planned and executed. This minimizes confusion and mismanagement by setting clear objectives and responsibility at each stage.

By breaking down the development process into distinct phases, SDLC provides transparency and clear visibility of progress. Stakeholders can track the progress, identify potential issues early on, and have better control over the project.

The SDLC process emphasizes quality at every stage, from planning through design, coding, testing, and maintenance. By systematically checking the software at each stage, it helps identify defects early, reducing the cost of fixing issues in later stages.

SDLC ensures better communication between all stakeholders, including developers, project manager, clients and testers. Clear documentation, regular updates, and phase-based review help maintain alignment across teams.