Software Development Life Cycle (SDLC)

1. Requirement Gathering and Analysis

Goal: Understand what the client or user wants from the software.

Activities:

- Meetings with stakeholders

- Gathering business and technical requirements

- Feasibility study (technical, operational, financial)

Deliverables: Software Requirement Specification (SRS) document

2. System Design

Goal: Create the architecture of the system based on requirements.

Activities:

- High-level design (HLD): Architecture, technologies, data flow

- Low-level design (LLD): Database design, module specs

- UI/UX mockups or wireframes

Deliverables: Design documents, wireframes, data models

3. Implementation (Coding)

Goal: Translate design into working code.

Activities:

- Developers write code using chosen technologies

- Unit testing of components

- Code reviews and version control

Deliverables: Source code, unit test reports

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4. Testing

Goal: Verify that the software works as expected and is bug-free.

Activities:

- Functional testing (e.g., UI, API, business logic)

- Non-functional testing (e.g., performance, security)

- Regression testing and bug fixing

Deliverables: Test cases, defect logs, test summary reports

5. Deployment

Goal: Make the software live for end-users.

Activities:

- Prepare deployment plan

- Release software to production environment

- Monitoring for post-deployment issues

Deliverables: Deployed application, deployment logs

6. Maintenance and Support

Goal: Keep the software up-to-date and functional after release.

Activities:

- Bug fixing

- Performance tuning

- Feature enhancements

- Regular updates and patches

Deliverables: Updated documentation, patch releases, support logs

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Common SDLC Models:

- Waterfall: Linear, step-by-step

- Agile: Iterative, with continuous feedback

- Spiral: Combines iterative nature with risk analysis

- V-Model: Emphasizes testing at each development stage

- DevOps: Focuses on continuous integration and deployment