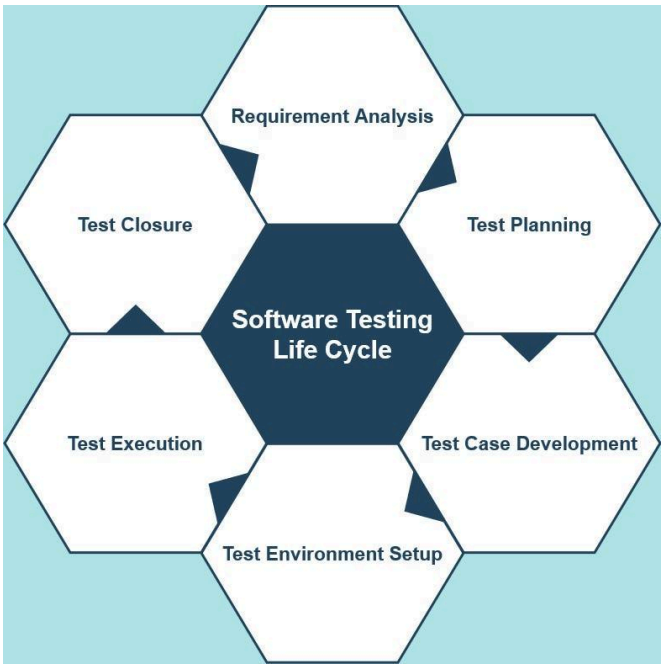
The Software Testing Life Cycle (STLC) is a systematic process that involves various activities to ensure the quality of software. STLC is an integral part of the Software Development Life Cycle (SDLC) and focuses specifically on the testing phases. Here's a detailed look at each phase of the STLC:



STLC Phase –

1. **Requirement Analysis**
2. **Test Planning**
3. **Test Case Development**
4. **Test Environment Setup**
5. **Test Execution**
6. **Test Cycle Closure**

1. Requirement Analysis

Objective:

- Understand the testing requirements based on the Software Requirement Specification (SRS) document.

Activities:

- Review and analyze requirements.
- Identify testable and non-testable requirements.
- Engage with stakeholders to clarify doubts and gather additional information.
- Prepare the Requirement Traceability Matrix (RTM) to map requirements to test cases.

Deliverables:

- Requirement Traceability Matrix (RTM).
- Clarification document (if needed).

2. Test Planning

Objective:

- Define the scope and approach for testing activities.

Activities:

- Develop the Test Plan document outlining the test strategy.
- Identify resources, tools, and training needs.
- Estimate test effort and schedule timelines.
- Define test objectives and criteria for test completion.
- Conduct risk analysis and mitigation planning.

Deliverables:

- Test Plan document.
- Effort estimation document.
- Risk analysis report.

3. Test Case Development

Objective:

- Create detailed test cases and test scripts.

Activities:

- Write test cases based on requirement documents.
- Design test data for test case execution.
- Review and baseline test cases and scripts.
- Develop automation scripts if applicable.

Deliverables:

- Test cases and test scripts.
- Test data.
- Automation scripts (if applicable).

4. Test Environment Setup

Objective:

- Prepare the test environment to execute test cases.

Activities:

- Identify the required hardware and software for the test environment.
- Configure the test environment according to specifications.
- Install necessary applications and databases.
- Validate the environment setup with smoke testing.

Deliverables:

- Test environment setup documentation.
- Smoke test results.

5. Test Execution

Objective:

- Execute test cases and log defects.

Activities:

- Execute test cases as per the test plan.
- Log and report defects found during test execution.
- Retest the defects once fixed.
- Conduct regression testing to ensure that fixes do not affect existing functionalities.

Deliverables:

- Test execution logs.
- Defect reports.
- Updated RTM with execution status.

6. Test Cycle Closure

Objective:

- Conclude testing activities and prepare closure documents.

Activities:

- Analyze test results and metrics.
- Prepare test summary and closure reports.
- Conduct retrospective meetings to discuss lessons learned and process improvements.
- Archive test artifacts for future reference.

Deliverables:

- Test summary report.
- Test closure report.
- Retrospective report.

Key Aspects of STLC

1. Requirement Traceability Matrix (RTM):
    - A document that maps and traces user requirements with test cases to ensure all requirements are covered by tests.
2. Test Plan:
    - A document that describes the scope, approach, resources, and schedule of testing activities. It includes test objectives, deliverables, risk analysis, and resource planning.
3. Defect Life Cycle:
    - The journey of a defect from its identification to closure, including stages like New, Assigned, Open, Fixed, Retested, and Closed.
4. Types of Testing:
    - Various types of testing can be performed during STLC, such as unit testing, integration testing, system testing, acceptance testing, performance testing, and security testing.

Importance of STLC

- Quality Assurance: Ensures that the product meets the specified requirements and quality standards.
- Early Bug Detection: Helps in identifying defects early in the development process, reducing the cost of fixing them.
- Risk Mitigation: Identifies potential risks and issues early, allowing for proactive mitigation strategies.
- Process Improvement: Provides opportunities to improve testing processes through retrospectives and lessons learned.

By following a structured STLC, organizations can ensure a systematic approach to testing, leading to high-quality software products that meet customer expectations and requirements.