### ****STLC (Software Testing Life Cycle)****

**STLC (Software Testing Life Cycle)** is the process followed by testing teams to ensure that a software application is of high quality and works as expected. It's a step-by-step approach that guides testers from the beginning to the end of the testing phase, helping them plan, execute, and evaluate tests systematically.

In simple terms, STLC is like a checklist for testing the software to find bugs and make sure it meets the requirements before it’s released.

### ****Phases of STLC and Documents Required****

### ****1. Requirement Analysis****

**Objective**: Understand the requirements of the software and determine what needs to be tested.

**Key Activities**:

* Analyzing the business and functional requirements.
* Identifying testable requirements and potential test scenarios.

**Documents Required**:

* **Requirement Traceability Matrix (RTM)**: Maps each requirement to its corresponding test cases.
* **Test Plan**: A high-level document that outlines the strategy, scope, resources, and schedule for testing.
* **Test Strategy Document**: Defines the overall testing approach, types of testing to be performed, and the testing tools to be used.

### ****2. Test Planning****

**Objective**: Create a detailed plan that defines the testing approach and resources needed.

**Key Activities**:

* Preparing the test plan, which includes the scope of testing, timelines, and roles.
* Identifying the resources, both human and technical, required for the testing process.

**Documents Required**:

* **Test Plan Document**: Specifies the testing approach, testing levels, testing types, testing schedule, and the team members involved.
* **Risk-based Test Plan**: Identifies the risks involved in the project and assigns priority to tests based on the risk level.

### ****3. Test Design****

**Objective**: Design the test cases and test scripts that will be executed during the testing phase.

**Key Activities**:

* Writing detailed test cases based on the requirements.
* Preparing test data and deciding how to execute each test case.
* Designing test scripts for automation, if applicable.

**Documents Required**:

* **Test Case Document**: Contains individual test cases with specific inputs, expected results, and execution conditions.
* **Test Data Document**: Defines the data required for running the test cases.
* **Test Scripts (for automation)**: Code or scripts for automated testing tools that will run the test cases automatically.

### ****4. Test Environment Setup****

**Objective**: Set up the environment where the testing will be executed.

**Key Activities**:

* Preparing the hardware, software, and network configurations needed for testing.
* Ensuring that the test environment mirrors the production environment as closely as possible.

**Documents Required**:

* **Test Environment Setup Document**: Describes the configuration of the test environment, including hardware and software requirements.
* **System/Network Configuration Document**: Details the system setup, server configurations, network setup, etc., required for the testing.

### ****5. Test Execution****

**Objective**: Execute the test cases and report the results.

**Key Activities**:

* Running the test cases in the prepared test environment.
* Logging defects if any issues are found during testing.
* Verifying that the software behaves as expected and identifying discrepancies.

**Documents Required**:

* **Test Execution Report**: A document that records the execution status of each test case (pass, fail, blocked, etc.).
* **Defect Report**: A report detailing any defects or issues encountered during testing, including their severity and steps to reproduce.
* **Test Case Execution Logs**: Logs that show which tests were executed, their outcomes, and any discrepancies found.

### ****6. Defect Reporting and Tracking****

**Objective**: Track and manage defects found during the test execution phase.

**Key Activities**:

* Reporting defects found during test execution.
* Tracking the resolution of defects and retesting the fixed issues.

**Documents Required**:

* **Defect Report**: A document that lists defects discovered during testing, including severity, status (open, fixed, closed), and a detailed description.
* **Defect Status Report**: Provides updates on the defect resolution process, showing which defects have been fixed and which are still outstanding.
* **Defect Tracking Sheet**: A spreadsheet or tool used to track the status and resolution of each defect.

### ****7. Test Closure****

**Objective**: Conclude the testing phase and prepare a report summarizing the testing activities.

**Key Activities**:

* Closing out the testing process after all tests have been executed.
* Preparing test summary reports to summarize the testing efforts, results, and overall quality of the software.

**Documents Required**:

* **Test Summary Report**: Summarizes the overall testing process, including the tests executed, the outcomes, and any remaining issues.
* **Test Closure Report**: Includes a formal conclusion of the testing phase, lessons learned, and suggestions for improvements.
* **Test Completion Checklist**: A checklist to ensure that all testing activities have been completed and all necessary documents are in place.

### ****Summary of STLC Phases and Documents****:

| ****Phase**** | ****Objective**** | ****Documents Required**** |
| --- | --- | --- |
| **1. Requirement Analysis** | Analyze requirements to determine what to test. | - Requirement Traceability Matrix (RTM)  - Test Plan  - Test Strategy Document |
| **2. Test Planning** | Create a detailed plan for testing, including scope, resources, and schedule. | - Test Plan Document  - Risk-based Test Plan |
| **3. Test Design** | Write detailed test cases, prepare test data, and design automation scripts. | - Test Case Document  - Test Data Document  - Test Scripts (for automation) |
| **4. Test Environment Setup** | Prepare the environment (hardware, software, network) for testing. | - Test Environment Setup Document  - System/Network Configuration Document |
| **5. Test Execution** | Run the test cases and log the results. | - Test Execution Report  - Defect Report  - Test Case Execution Logs |
| **6. Defect Reporting and Tracking** | Track and manage defects found during testing. | - Defect Report  - Defect Status Report  - Defect Tracking Sheet |
| **7. Test Closure** | Conclude the testing phase and prepare a summary report. | - Test Summary Report  - Test Closure Report  - Test Completion Checklist |

### ****STLC vs SDLC****

While **SDLC (Software Development Life Cycle)** focuses on the entire software development process from start to finish, **STLC** is specifically focused on the testing phase. STLC ensures that the testing process is systematic, covering all aspects of verification and validation of the software before it is released.