**Software Testing Life Cycle (STLC)** is a sequence of specific activities conducted during the testing process to ensure software quality goals are met. STLC involves both verification and validation activities. Contrary to popular belief, Software Testing is not just a single/isolate activity, i.e. testing. It consists of a series of activities carried out methodologically to help certify your software product.

STLC Model Phases

1. Requirement Analysis
2. Test Planning
3. Test case development
4. Test Environment setup
5. Test Execution
6. Test Cycle closure

**Entry Criteria:** Entry Criteria gives the prerequisite items that must be completed before testing can begin.

**Exit Criteria:** Exit Criteria defines the items that must be completed before testing can be concluded

**Requirement Phase Testing** also known as Requirement Analysis in which test team studies the requirements from a testing point of view to identify testable requirements and the QA team may interact with various stakeholders to understand requirements in detail. Requirements could be either functional or non-functional. Automation feasibility for the testing project is also done in this stage.

**Test Planning in STLC** is a phase in which a Senior QA manager determines the test plan strategy along with efforts and cost estimates for the project. Moreover, the resources, test environment, test limitations and the testing schedule are also determined. The Test Plan gets prepared and finalized in the same phase.

**Test Planning Activities**

* Preparation of test plan/strategy document for various types of testing
* Test tool selection
* Test effort estimation
* Resource planning and determining roles and responsibilities.
* Training requirement

**Deliverables of Test Planning**

* Test plan/strategy document.
* [Effort estimation](https://www.guru99.com/an-expert-view-on-test-estimation.html) document.

**Test Case Development Phase** involves the creation, verification and rework of test cases & test scripts after the test plan is ready. Initially, the [Test data](https://www.guru99.com/software-testing-test-data.html) is identified then created and reviewed and then reworked based on the preconditions. Then the QA team starts the development process of test cases for individual units.

**Test Case Development Activities**

* Create test cases, automation scripts (if applicable)
* Review and baseline test cases and scripts
* Create test data (If Test Environment is available)

**Deliverables of Test Case Development**

* Test cases/scripts
* Test data

**Test Environment Setup** decides the software and hardware conditions under which a work product is tested. It is one of the critical aspects of the testing process and can be done in parallel with the Test Case Development Phase. Test team may not be involved in this activity if the development team provides the test environment. The test team is required to do a readiness check (smoke testing) of the given environment.

**Test Environment Setup Activities**

* Understand the required architecture, environment set-up and prepare hardware and software requirement list for the Test Environment.
* Setup test Environment and test data
* Perform smoke test on the build

**Deliverables of Test Environment Setup**

* Environment ready with test data set up
* Smoke Test Results.

**Test Execution Phase** is carried out by the testers in which testing of the software build is done based on test plans and test cases prepared. The process consists of test script execution, test script maintenance and bug reporting. If bugs are reported then it is reverted back to development team for correction and retesting will be performed.

**Test Execution Activities**

* Execute tests as per plan
* Document test results, and log defects for failed cases
* Map defects to test cases in RTM
* Retest the [Defect](https://www.guru99.com/defect-management-process.html) fixes
* Track the defects to closure

**Deliverables of Test Execution**

* Completed RTM with the execution status
* Test cases updated with results
* Defect reports

**Test Cycle Closure phase** is completion of test execution which involves several activities like test completion reporting, collection of test completion matrices and test results. Testing team members meet, discuss and analyze testing artifacts to identify strategies that have to be implemented in future, taking lessons from current test cycle. The idea is to remove process bottlenecks for future test cycles.

**Test Cycle Closure Activities**

* Evaluate cycle completion criteria based on Time, Test coverage, Cost,Software, Critical Business Objectives, Quality
* Prepare test metrics based on the above parameters.
* Document the learning out of the project
* Prepare Test closure report
* Qualitative and quantitative reporting of quality of the work product to the customer.
* Test result analysis to find out the defect distribution by type and severity.

**Deliverables of Test Cycle Closure**

* Test Closure report
* Test metrics

**Software testing principles:**

A diagram of a test

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* **Testing shows the presence of defects**: Testing identifies the existence of flaws or defects in software.
* **Exhaustive testing is impossible**: It's impractical to test every possible input and scenario.
* **Early testing**: Start testing as early as possible in the software development life cycle.
* **Defect clustering**: A small number of modules typically contain the majority of defects.
* **Pesticide paradox**: Repeated testing can become less effective as previously found defects are fixed.
* **Testing is context-dependent**: Testing approaches should be tailored to the specific project and requirements.
* **Absence-of-errors fallacy**: The absence of detected errors doesn't guarantee software readiness; it must meet user requirements.