

STLC - Software Testing Life Cycle

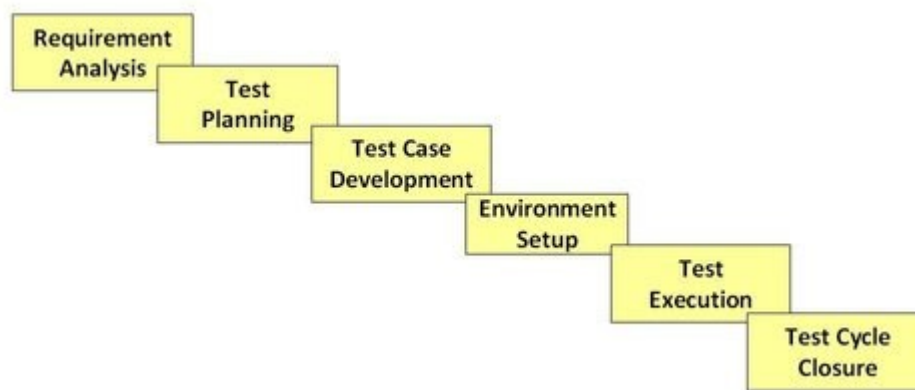
Contrary to popular belief, Software Testing is not a just a single activity.

What is Software Testing Life Cycle (STLC)?

Software Testing Life Cycle (STLC) is defined as a sequence of activities conducted to perform Software Testing.

It consists of series of activities carried out methodologically to help certify your software product.

Diagram - Different stages in Software Test Life Cycle



Each of these stages have a definite Entry and Exit criteria; , Activities & Deliverables associated with it.

What is Entry and Exit Criteria?

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

You have Entry and Exit Criteria for all levels in the Software Testing Life Cycle (STLC)

In an Ideal world you will not enter the next stage until the exit criteria for the previous stage is met. But practically this is not always possible. So for this tutorial, we will focus on activities and deliverables for the different stages in STLC life cycle. Lets look into them in detail.

Requirement Analysis

During this phase, test team studies the requirements from a testing point of view to identify the testable requirements.

The QA team may interact with various stakeholders (Client, Business Analyst, Technical Leads, System Architects etc) to understand the requirements in detail.

Requirements could be either Functional (defining what the software must do) or Non Functional (defining system performance /security availability)

Automation feasibility for the given testing project is also done in this stage.

Activities

- Identify types of tests to be performed.
- Gather details about testing priorities and focus.
- Prepare [Requirement Traceability Matrix \(RTM\)](#).
- Identify test environment details where testing is supposed to be carried out.
- Automation feasibility analysis (if required).

Deliverables

- RTM
- Automation feasibility report. (if applicable)

Test Planning

Typically , in this stage, a Senior QA manager will determine effort and cost estimates for the project and would prepare and finalize the Test Plan. In this phase, Test Strategy is also determined.

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

- [Test plan](#) /strategy document.
- [Effort estimation](#) document.

Test Case Development

This phase involves creation, verification and rework of test cases & test scripts. [Test data](#) , is identified/created and is reviewed and then reworked as well.

Activities

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

Deliverables

- Test cases/scripts
- Test data

Test Environment Setup

Test environment decides the software and hardware conditions under which a work product is tested. Test environment set-up is one of the critical aspects of testing process and **can be done in**

parallel with Test Case Development Stage. Test team may not be involved in this activity if the customer/development team provides the test environment in which case the test team is required to do a readiness check (smoke testing) of the given environment.

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

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

Test Execution

During this phase the testers will carry out the testing based on the test plans and the test cases prepared. Bugs will be reported back to the development team for correction and retesting will be performed.

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](#) fixes
- Track the defects to closure

Deliverables

- Completed RTM with execution status
- Test cases updated with results
- Defect reports

Test Cycle Closure

Testing team will meet , discuss and analyze testing artifacts to identify strategies that have to be implemented in future, taking lessons from the current test cycle. The idea is to remove the process bottlenecks for future test cycles and share best practices for any similar projects in future.

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

- Test Closure report
- Test metrics

Finally, **summary** of STLC Phases along with Entry and Exit Criteria

STLC Stage	Entry Criteria	Activity	Exit Criteria	Deliverables
Requirement Analysis	<p>Requirements Document available (both functional and non functional)</p> <p>Acceptance criteria defined.</p> <p>Application architectural document available.</p>	<p>Analyse business functionality to know the business modules and module specific functionalities.</p> <p>Identify all transactions in the modules.</p> <p>Identify all the user profiles.</p> <p>Gather user interface/ authentication, geographic spread requirements.</p> <p>Identify types of tests to be performed.</p> <p>Gather details about testing priorities and focus.</p> <p>Prepare Requirement Traceability Matrix (RTM).</p> <p>Identify test environment details where testing is supposed to be carried out.</p> <p>Automation feasibility analysis (if required).</p>	<p>Signed off RTM</p> <p>Test automation feasibility report signed off by the client</p>	<p>RTM</p> <p>Automation feasibility report (if applicable)</p>
Test Planning	<p>Requirements Documents</p> <p>Requirement Traceability matrix.</p> <p>Test automation feasibility document.</p>	<p>Analyze various testing approaches available</p> <p>Finalize on the best suited approach</p> <p>Preparation of test plan/strategy document for various types of testing</p> <p>Test tool selection</p>	<p>Approved test plan/strategy document.</p> <p>Effort estimation document signed off.</p>	<p>Test plan/strategy document.</p> <p>Effort estimation document.</p>

STLC Stage	Entry Criteria	Activity	Exit Criteria	Deliverables
		<p>Test effort estimation</p> <p>Resource planning and determining roles and responsibilities.</p>		
Test case development	<p>Requirements Documents</p> <p>RTM and test plan</p> <p>Automation analysis report</p>	<p>Create test cases, test design, automation scripts (where applicable)</p> <p>Review and baseline test cases and scripts</p> <p>Create test data</p>	<p>Reviewed and signed test Cases/scripts</p> <p>Reviewed and signed test data</p>	<p>Test cases/scripts</p> <p>Test data</p>
Test Environment setup	<p>System Design and architecture documents are available</p> <p>Environment set-up plan is available</p>	<p>Understand the required architecture, environment set-up</p> <p>Prepare hardware and software development requirement list</p> <p>Finalize connectivity requirements</p> <p>Prepare environment setup checklist</p> <p>Setup test Environment and test data</p> <p>Perform smoke test on the build</p> <p>Accept/reject the build depending on smoke test result</p>	<p>Environment setup is working as per the plan and checklist</p> <p>Test data setup is complete</p> <p>Smoke test is successful</p>	<p>Environment ready with test data set up</p> <p>Smoke Test Results.</p>
Test Execution	<p>Baselined RTM, Test Plan, Test case/scripts are available</p> <p>Test environment is ready</p> <p>Test data set up is done</p>	<p>Execute tests as per plan</p> <p>Document test results, and log defects for failed cases</p> <p>Update test plans/test cases, if necessary</p> <p>Map defects to test cases in RTM</p>	<p>All tests planned are executed</p> <p>Defects logged and tracked to closure</p>	<p>Completed RTM with execution status</p> <p>Test cases updated with results</p>

STLC Stage	Entry Criteria	Activity	Exit Criteria	Deliverables
	Unit/Integration test report for the build to be tested is available	Retest the defect fixes Regression Testing of application Track the defects to closure		Defect reports
Test Cycle closure	Testing has been completed Test results are available Defect logs are available	Evaluate cycle completion criteria based on - Time, Test coverage , Cost , Software Quality , Critical Business Objectives 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	Test Closure report signed off by client	Test Closure report Test metrics