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Domain: Testing

SOFTWARE TESTING LIFE CYCLE

The Software Testing Life Cycle (STLC) is a systematic approach to testing a software application to ensure it meets the requirements and is free of defects.

It is used to ensure that software is high quality, reliable and meets the needs of the end users.

Importance of STLC:

- Defect Prevention: Helps in identifying and resolving defects early in the development cycle, reducing costs.
- Standardized process: Provides a repeatable process for consistent results.
- Stakeholder Confidence: Ensures stakeholders trust the system's reliability and performance.
- Alignment with SDLC: Complements the software development life cycle for seamless project execution.

SDLC Phases

1. Requirements Analysis

- In this initial phase, the quality assurance team reviews the software requirements Specification (SRS) and other related documents to understand what needs to be tested.
- Identify Testable Requirements.
- Finally, the **Quality Assurance team** created a **Requirement Traceability Matrix (RTM)** to map requirements to test cases.

2. Test Planning

- The testing team defines testing scope and objectives.
- Identifies the testing environment and resources needed, and estimates the time and cost required for testing.

- They also assign roles and responsibilities and review and approve the test plan.
- Finally, the **testing manager** will create a **Test Plan Development.**

3. Test case development

- In this phase, the testing team writes detailed test cases and prepares the required test data.
- The test cases are reviewed and validated to ensure they provide adequate coverage of the software.
- It includes

  Test suite – It is a combination of all test cases.

  Test case – Conditions which are satisfied.
- Finally, the **test lead** will create a **test cases and test data document**.

4. Environment setup

- This phase involves setting up the necessary hardware, software, and network configurations for testing.
- This phase can be started along with test case development.
- Ensuring the testing environment mirrors the production setup.
- This phase verifies the access and permission.
- The deliverables will be the **Environment setup checklist and Readiness confirmation** is done by the **testing team**.

5. Test Execution

- During the Test Execution phase, the testing team executes the test cases and logs any defects found.
- They also prepare test data, set up the test environment, and analyze the test results. Defects are retested to ensure they have been fixed correctly.
- Here **Tester** will do a **Defect Report**, Document defects with steps to reproduce, Screenshots and logs, Severity and Priority.

6. Test Closure

- The final phase of the STLC is Test Closure, where all testing-related activities are completed and documented.
- Evaluates the test coverage and analyzes key metrics like defect density, defect leakage and test effectiveness.
- Finaly, the **Testing Manager and Quality Assurance team** will create a **Test summary Report**, and **lessons learned Document**.

ADVANTAGES OF STLC:

- Improves overall software quality.
- Reduces the number of software defects.
- Increases reliability.
- Cost Effectiveness.