

ISTQB Foundation Level – Software Testing Fundamentals

1. Introduction to Software Testing

Software testing is a process used to help identify defects, ensure quality, and verify that the product meets user requirements. It involves planning, designing, executing, and evaluating test cases. Testing is essential because software defects can lead to system failures, financial losses, or even safety hazards.

Testing improves software quality by detecting and preventing defects early in the Software Development Life Cycle (SDLC). It ensures that the developed software is functional, reliable, secure, and user-friendly.

2. Why is Testing Necessary?

Defects can exist in software due to human errors, misunderstood requirements, environmental issues, or design flaws. These defects can lead to:

- Financial loss (e-commerce failures)
- Reputation damage
- Legal consequences due to non-compliance
- Safety risks in critical systems

3. Quality, Errors, Defects, and Failures

- Error: Human mistake during coding or design
- Defect: The variance found in software due to an error
- Failure: The behavior of software that does not meet expectation
- Quality: The degree to which software meets user expectations

4. Seven Testing Principles

1. Testing shows presence of defects

2. Exhaustive testing is impossible
3. Early testing saves time and money
4. Defects cluster together
5. Pesticide paradox
6. Testing is context dependent
7. Absence of errors fallacy

5. Software Development Life Cycle (SDLC) and Testing

- Requirement Analysis
- Design and Architecture
- Coding and Development
- Testing Phase
- Deployment & Maintenance

6. Test Levels

- Unit Testing
- Integration Testing
- System Testing
- Acceptance Testing

7. Types of Testing

- Functional Testing
- Non-functional Testing
- Maintenance Testing

8. Static vs Dynamic Testing

- Static Testing: Reviews, walkthroughs, inspections
- Dynamic Testing: Execution of tests

9. Defect Lifecycle

New → Assigned → In Progress → Fixed → Retest → Closed → Reopened

10. Test Closure Activities

- Finalizing deliverables
- Summary reports
- Lessons learned