



Software QA *Syllabus*

Total Credit: 40 Hrs

Theory: 20 Hrs

Lab: 20 Hrs

COURSE OBJECTIVES

1. To study fundamental concepts in Software Quality Assurance, including software testing objectives, process, criteria, strategies, and methods.
2. To learn how to design test cases and test data, conduct testing operations, manage software problems and defects.
3. To understand software test automation with practical examples..
4. To learn how to perform security testing and performance testing in software.

THEORY

Session 1: Introduction to QA

- Importance of QA, QA as a career
- Difference between Project and Product
- Difference between Quality Assurance and Quality Control
- Manual and Automation testing
- Roles and Responsibilities of Business Analyst, Developers, Architects, Project Managers, QA.
- Test Team(QA Manager, QA Lead, QA Engineer, Release Engineer)

Session 2: Software Development Life Cycles (SDLC)

- Software Development Life Cycle Stages
- Agile Methodologies
- Software Testing Life Cycles
- Types of Testing
- Test Platforms(Development, QC, UAT, Production)
- Defects(Identification, Logging, Life Cycle, Priority)
- Defect Life Cycle

Session 3: Quality Assurance phases.

- Feature Requirement Analysis
- Test Plan
- Test Scenario
- Test Cases
- Test Data
- Test Script
- Decision Table
- Test Result
- QA Process Cycle

Session 4: Python Programming Basics

- Comment in python
- Main Function
- Function Definition and Function Call
- If-else, for loop
- Indent
- Assert
- Try-except in python

Session 4: Automation Testing – Basics

- Introduction to Automation Testing
- What is Automation testing
- Benefits of Automation Testing
- Introduction to Selenium

- Xpath and its types and examples
- Webdriver and its action

Session 5: Automation Testing – Advanced

- Introduction to Automation Framework
- Accessing Multi URL via Automation
- Read input parameters from Excel
- Importing Data from Web(Web Scraping)
- Write Web data to Excel.
- Read keyword and XPATH from Excel file
- Write Automation Test Result to Excel file

Session 6: Test Script, Database and SQL - Basics

- Importance of SQL in Quality Assurance
- Introduction to the database.
- Database Verification and Validation
- MySQL Database, Comparison with Popular Databases “ Oracle, MS SQL Server, IBM DB2
- Structured Query Language (SQL)
- Data Definition Language (DDL)
- Data Manipulation Language (DML)
- Introduction to Tables, Rows, Columns
- What are a Foreign Key, Primary Key and Unique Key
- What are DDL and DML, (DML) Select, Update, Delete and Insert Into statements
- (DDL) Create, Alter, Drop statements.

Session 7: Performance Test - Basics

- Performance testing and its importance in QA
- Types of Performance Testing
- API Testing with GET, POST, Delete, and PUT methods
- Common Performance Problems
- Performance Testing Process
- Example Performance Test Cases
- Performance Test Using JMeter

- Performance Test report generation

Session 8: Security Test- Basics

- Security testing and its importance in QA
- Types of Security Testing(
- Authentication and Authorization
- Example Test Scenarios for Security Testing
- Methodologies/ Approach / Techniques for Security Testing
- SQL Injection and XSS (cross-site scripting)

LAB Work

1. Test scenario preparation.
2. Test case preparation.
3. Test Data Preparation.
4. Decision Table Preparation
5. BDD Examples Practice
6. Test Script Preparation(SQL)
7. Browsing web via Automation.
8. Data validation via Automation.
9. Web scraping using selenium.
10. Accessing multiple URL using selenium
11. Create keyword driven Automation framework
12. Create Automation test result in Excel.
13. Performance test using JMeter