Introduction to QA

Nature of the course: Theory + Practical

Total hours per day: 2 hours

Course duration: 4 weeks

Course Summary

The course is structured to assist students in learning key topics in Software Quality Assurance, such as software testing objectives, processes, criteria, strategies, and methodologies. The course also covers subjects like how to create test cases and test data, how to execute testing operations, how to manage software problems and defects, software test automation using real-world examples, and how to perform software security and performance testing.

Completion Criteria

After fulfilling all of the following criteria, the student will be deemed to have finished the Module:

1. Has attended 90% of all classes held
2. Has received an average grade of 80% on all assignments
3. Has received an average of 60% in assessments
4. The tutor believes the student has grasped all of the concepts and is ready to go on to the second module.

Required Text Books

1. Software Testing and Quality Assurance: Theory and Practice
2. Testing Computer Software

Prerequisites

- Fundamental understanding of programming, bits/bytes, procedures, classes, and computer architecture. It's absolutely acceptable if you only have a theoretical understanding of programming, but you should be certain about what programming is and what you intend to gain from this session.
- If you are only interested in theory and have no interest/patience in spending at least 10 hours every week throughout the duration of the course, then this course might not be for you.
- If you have absolutely no idea about programming or do not see yourself doing programming in the next six -odd months, then this class may not be for you!

Course Details

WEEK 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)

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

WEEK 2

Quality Assurance phases

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

Python Programming Basics

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

Automation Testing – Basics

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

- Introduction to Selenium
- Xpath and its types and examples
- Web driver and its action

WEEK 3
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

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 â€" 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

WEEK 4
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

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

- Test scenario preparation
- Test case preparation
- Test Data Preparation
- Decision Table Preparation
- BDD Examples Practice
- Test Script Preparation (SQL)
- Browsing web via Automation
- Data validation via Automation
- Web scraping using selenium
- Accessing multiple URL using selenium
- Create keyword driven Automation framework
- Create Automation test result in Excel
- Performance test using JMeter

Learning Outcomes

- Learn how to create and implement a software quality assurance plan for all software initiatives
- How to form a software quality assurance team and manage it
- How to monitor and maintain quality, create and maintain relevant metrics
- Learn how to implement a software quality assurance program in an agile context including iterative and incremental development