

### Software Testing course objectives

- Finding defects which may get created by the programmer while developing the software.
- Gaining confidence in and providing information about the level of quality.
- To prevent defects.
- To make sure that the end result meets the business and user requirements.
- To ensure that it satisfies the BRS that is Business Requirement Specification and SRS that is System Requirement Specifications.
- To gain the confidence of the customers by providing them a quality product.

### Course Duration: 60 Hours

#### Manual Testing

- **Introduction to testing**
- **Verification vs validation**
- **Types of Applications**
- **Probabilities of getting an error in an application**
- **SDLC – Software Development Life Cycle**
  - Waterfall
  - Prototype
  - Spiral
  - Incremental (Agile methodology and Scrum Framework)
  - V-Model
- **Advantages and Disadvantages of each software development life cycle**
- **Principles of Testing**
- **STLC –Software Testing Life Cycle**
- **Difference between Test case, Use case and Scenario.**
- **How to prepare test plan and strategy**
- **How to Prepare a test case template?**
- **Difference between Error, bug, defect, and failure**
- **Test Case Design Technique**
  - Boundary Value Analysis
  - Equivalence Partitioning
  - Decision Table
  - State Transition Diagram
  - Use Case Testing
- **Bug Life cycle**
- **How to Prepare the Bug template?**
- **Bug Tracking tool**
- **Types of Testing**
- **Difference between Static and Dynamic testing**
- **Difference between Functional and Non-functional testing**
- **Black box testing and its types**
- **White box testing and its types**
- **System Integration Testing vs User Acceptance Testing**

- **Entry Criteria and Exit Criteria**
- **Test Environment and Test data preparation**
- **Flow graph notations**
  - Statement coverage
  - Branch Coverage
  - path coverage
  - Cyclometric Complexity
- **Integration testing**
  - Big Bang Integration
  - Incremental Approach – Top-Down, Bottom-up, and Hybrid
- **Requirement traceability matrix**

## SQL

- **SQL Tutorial**
  - Introduction to SQL
  - SQL Syntax
  - SQL Data Types
  - SQL Operators
- **SQL Database**
  - SQL CREATE Database
  - SQL DROP Database
  - SQL RENAME Database
  - SQL SELECT Database
- **SQL Table**
  - What is Table
  - SQL TABLE Variable
  - SQL CREATE TABLE
  - SQL DROP TABLE
  - SQL DELETE TABLE
  - SQL RENAME TABLE
  - SQL TRUNCATE TABLE
  - SQL COPY TABLE
  - SQL TEMP TABLE
  - SQL ALTER TABLE
- **SQL Insert**
  - INSERT Statement
  - INSERT INTO Values
  - INSERT INTO SELECT
  - INSERT Multiple Rows
- **SQL Select**
  - SELECT Statement
  - SQL SELECT UNIQUE
  - SQL SELECT DISTINCT
  - SQL SELECT COUNT
  - SQL SELECT TOP
  - SQL SELECT FIRST
  - SQL SELECT LAST
  - SQL SELECT RANDOM
  - SQL SELECT AS
  - SQL SELECT IN
  - SQL SELECT Multiple

- SQL SELECT DATE
- SQL SELECT SUM
- SQL SELECT NULL
- **SQL Clause**
  - SQL WHERE
  - SQL AND
  - SQL OR
  - SQL WITH
  - SQL AS
- **SQL Order By**
  - ORDER BY Clause
  - ORDER BY ASC
  - ORDER BY DESC
  - ORDER BY RANDOM
  - ORDER BY LIMIT
  - ORDER BY Multiple Cols
- **SQL Update**
  - UPDATE Statement
  - SQL UPDATE JOIN
  - SQL UPDATE DATE
- **SQL Delete**
  - DELETE Statement
  - SQL DELETE TABLE
  - SQL DELETE ROW
  - SQL DELETE All Rows
  - DELETE Duplicate Rows
  - SQL DELETE DATABASE
  - SQL DELETE VIEW
  - SQL DELETE JOIN
- **SQL Join**
  - SQL JOIN
  - SQL Outer Join
  - SQL Left Join
  - SQL Right Join
  - SQL Full Join
  - SQL Cross Join
- **SQL Keys**
  - Primary Key
  - Foreign Key
  - Composite Key
  - Unique Key
  - Alternate Key
- **SQL Difference**
  - SQL vs NoSQL

## Python

- **Introduction to Python.**
  - Installation & Environment settings.
  - Introduction to Shell.
- **Variables, Keywords, Data types and Identifiers.**
  - Variables
  - Keywords
  - Data types
  - Identifiers
- **String, List, Set, Tuple and Dictionary and Slicing**
  - String Data types
  - List Data types
  - Set Data types
  - Tuple Data types
  - Dictionary Data types
  - Slicing
- **Operators**
  - Arithmetic Operators
  - Logical Operators
  - Relational Operators
  - Bitwise operators
  - Assignment Operators
  - Membership Operators
  - Identity Operators
- **Control Statements**
  - Decisional Statements
  - Looping Statements
  - Break, Continue and Pass
- **Input and Print Statements**
  - Input statements
  - Print statements
- **Functions or Methods**
  - Types of Functions
  - Recursion
  - Arguments
  - Packing and unpacking(varargs)
- **Oops**
  - Class, Objects
  - Inheritance
  - Method Overriding
  - Access Specifies
- **File Handling and Json**
  - Flat File Handling
  - Json
  - Pickle
- **Exception Handling**
  - Try
  - Except and final

- Custom Exceptions
- Raising Exceptions
- Assertions
- **Comprehension**
  - List Comprehension
- **Decorators**
  - Method
  - Class Level
- **Map, Filter and Lambda Expressions**
- **Iterators and Generators**

## Selenium Introduction

- **Introduction**
  - Selenium Introduction
  - What is Selenium and Why Selenium
  - Use of Automation Testing?
  - Explanation of Selenium and its advantages
  - Differences between Selenium and QTP
  - Selenium Components
  - Introduction of selenium Components
- **Execution steps**
  - Environment setup (python, PyCharm, Selenium and etc.,)
  - Introduction with Python and PyCharm
  - First Script on Selenium
- **Selenium- Web Driver**
  - Introduction to Web driver and Remote vs. Local
  - Guide to install Web driver
  - Creating your first script on Web driver
  - Accessing Forms in Web driver
  - Accessing Links and Table content in Web driver
  - Remote web driver
- **Automation Framework**
  - Advanced Web element access method- Contains, Sibling, Ancestor and etc.,
  - Framework designing methods
  - Framework adaptation
  - Feature Testing Automation
  - Report Generation out of Automation
  - Real time Automation and the Challenges
- **PyAutoGUI – Controlling Mouse and Keyboard**
  - Introduction to pyautogui
  - Accessing Flash content using pyautogui
  - Controlling Keyboard and Mouse events on web driver
- **Selenium IDE and RC Introduction**
  - Installing Selenium IDE
  - “Selenese” – Selenium Commands

- Actions, Asserts, Assessors.
- Developing Test Cases & Test Suites with Selenium-IDE
- Introduction to Selenium RC
- **Installations**
  - eclipse-Oxygen
  - JDK 1.8
  - Firefox 47.0.1, firebug and file path
  - Set up TestNG, Maven and Selenium (2.53.1 &3.0 +) for eclipse
- **Selenium WebDriver 2.0 and 3.0 Introduction**
  - Selenium WebDriver Introduction
  - WebDriver Vs RC
  - Download and Configure WebDriver with Eclipse
  - Simple Testcase
  - Open and Close Browser
  - Cross Browser Testing – Firefox, IE, Chrome, Edge.
  - UI elements Locators.
  - Identifying Web Element using id, name, link text, Partial Link Text class Name,
  - XPath, CSS Selector and Tag Name.
  - Handling various Web Element using WebDriver
  - Handling Mouse movements and Keyboard Events
  - Gecko-Drive
- **Verification Commands**
  - How to get Title
  - How to get Current URL
  - How to get PageSource
  - How to get Window Handel
  - How to get Text
  - How to get Attributes
- **Validation commands**
  - Is Selected
  - Is Enabled
  - Is Displayed
- **How to operate with Web Table**
- **How to Handel Alerts in webpage**
- **Switch Commands:**
  - How to switch windows or Tabs.
  - How to switch Alerts
- **How to operate with calendars**
- **Synchronization Commands**
  - a. Thread sleep ();
  - b. Implicit Wait
  - c. Explicit Wait
- **File uploading using Auto-It and Robot.**
- **Testing Framework and Tools**
  - Introduction of the Testing framework
  - Types of frameworks
  - Tools for developing Test Framework
  - TestNG introduction and Configuration with eclipse
  - TestNG Annotations and Data Providers
  - Creating Test Suit with TestNG

- **Framework**
  - modular Frame work
  - POM
  - Data driven
  - parametrization
  - Hybrid Framework
  
- **Develop Hybrid Framework**
  - Developing Hybrid Framework for Web Application using WebDriver /TestNG and Maven
  - Use external Data for Testing (Excel sheet, XML files, Property file)
  - Reading and understanding reports
  - Screenshots of failed Test case
  
- **Configuration Management**
  - Jenkins Installation
  - Maven Installation
  - Dependencies and configure Maven Project
  - Integrate Maven projects in Jenkins.