Software Testing Fundamentals

Introduction to Software Testing, Importance of Testing, SDLC and STLC phases, Testing principles, Manual Testing vs Automation Testing, Levels of testing such as Unit, Integration, System and UAT, Types of testing including Functional and Non-Functional testing.

Manual Testing

Requirement analysis, understanding BRD and SRS documents, Test planning activities, Test plan and Test strategy, Test scenario and test case creation, Test case design techniques, Test execution process, Defect life cycle, Severity vs Priority, RTM, Agile and Scrum methodology, Sprint testing and UAT.

Java Programming for Automation

Java environment setup, Basics of Java, Variables, Data types, Operators, Conditional statements, Loops, Methods, Object-Oriented Programming concepts including Class, Object, Inheritance, Polymorphism, Encapsulation and Abstraction, Exception handling, Collections framework and File handling.

Automation Testing Concepts

What is Automation testing, Benefits and limitations, Automation testing life cycle, Tool selection criteria, Types of automation frameworks and best practices.

Selenium WebDriver

Selenium architecture, WebDriver components, Browser drivers, Locators strategies such as ID, Name, XPath and CSS selectors, Handling WebElements, Wait mechanisms, Alerts, Frames, Windows, Mouse and keyboard actions, JavaScript Executor, File upload and download, Taking screenshots.

TestNG Framework

TestNG introduction, Annotations, Assertions, Test execution flow, Test suites and grouping, Parameterization and data providers, Parallel execution, Listeners, Retry failed test cases and reporting.

Framework Design

Need for framework, Page Object Model, Page Factory, Data-driven framework, Keyword-driven framework, Hybrid framework, Reusable utilities, Framework folder structure and best practices.

Build, Version Control & CI/CD

Maven project setup, pom.xml understanding, Dependency management, Build lifecycle, Git basics, Branching and merging, GitHub workflow, Jenkins installation, Creating Jenkins jobs, CI/CD pipeline integration.

API & Database Testing Basics

Introduction to API testing, REST and SOAP concepts, HTTP methods and status codes, Request and response validation, Authentication concepts, SQL basics, Database connectivity and data validation using automation.

Reporting, Logging & Real-Time Project

Test execution reports, Extent reports, Logging using Log4j, Screenshot capture on failures, End-to-end real-time project implementation, Framework maintenance, Challenges and solutions, Interview preparation and real-time scenarios.