



TESTING TOOLS

(Manual Testing | Core Java | Selenium | TestNG)

MANUAL TESTING

♣ Introduction of Software Testing

- What is testing?
- What to be tested in now-a-days Web/mobile applications?
- What is difference Manual Testing and Automation?
- Explain below terminologies?
 1. Project
 2. Product
 3. Error
 4. Defect/Bug/Fault
 5. Failure

- Software Testing Principles

♣ SDLC Models

- Waterfall Model
- V-Model
- Incremental Iterative Models
- Agile Methodology
- Introducing Agile Process
- Agile Manifesto
- Agile Principles

♣ Software Testing Methods

- White Box Testing
- Black Box Testing
- Grey Box Testing
- Agile Testing
- Ad Hoc Testing

♣ Software Testing Life Cycle (STLC)

- Requirement Analysis
- Test Planning
- Test Scenario/ Test Case Design
- Test Environment Setup
- Test Execution
- Test Closure

♣ Test process Documents

- Test plan
- Test scenarios
- Test Case
- Test case Design Techniques
 1. Equivalence Partitioning
 2. Boundary Value analyses
 3. Decision Table
 4. Error Guessing
- RTM (Requirement Traceability Matrix)
- Defect Report

♣ Defect

- How to raise a defect
- Defect Tracking and Management
- Defect Life Cycle
- Priority VS Severity
- Triage Team
- Deferred defects
- Defect Reports

♣ Test Case Authoring

- Functional Test case
- Review of Test case.
- Walkthroughs
- Inspection
- Peer Review

♣ Agile Methodology (Scrum Framework)

- Introduction to Scrum Framework
 - What is scrum?
 - For what kind of projects scrum is suitable?
 - For what kind of projects scrum is not suitable?
 - Discussion on Sprint Planning
 - Discussion on story cards

♣ Components of Scrum Framework

- Scrum Roles
- Scrum Artifacts
- Scrum Events

♣ Scrum Roles and Responsibilities

- Product Owner
- Scrum Master
- Scrum Development team

♣ **Scrum Artifacts**

- Product Backlog
- Sprint Backlog
- Burn down Chart Scrum
- Events or Ceremonies

♣ **Sprint Planning Meeting**

- Daily Scrum Meeting
- Sprint Review Meeting
- Sprint Retrospective Meeting

♣ **Test/Project Management Tool: JIRA**

- Importance of JIRA and How to Install JIRA
- What are the features of JIRA?
- How to create a JIRA Project.
- Adding Users tour JIRA Account
- Importance of Defect Life Cycle and
- Understanding the various stages/states of a defect.
- Converting a Defect Life Cycle into JIRA workflow for a project
- Adding Bugs to the JIRA Project
- Attaching screenshots to the Bugs in JIRA
- Assigning, Closing, Adding comments etc. to the JIRA bugs.
- Creating and Customizing JIRA Dashboard.

♣ **DATA BASE TESTING:**

- Introduction to database testing
- Why to test and what to test in a database
- Differences between UI and Database testing
- How to test a database
- SQL Concepts
- Types of SQL statements
 1. Data Definition Language
 2. Data Manipulation Language
 3. Data Control Language

♣ **Important SQL Commands**

♣ **SQL in detail**

- DESC/SHOW
- COUNT
- DISTINCT
- WHERE
- OPERATORS IN SQL
- AND & OR
- TOP
- ORDER BY
- GROUP BY/HAVING
- INSERT INTO/SELECT INTO
- UPDATE/ALTER
- DELETE/TRUNCATE/DROP
- ALIASES
- JOINS
- UNION/INTERSECT/EXCEPT
- CREATE
- DATA TYPES
- NULL VALUES
- INDEXES
- VIEWS
- DATE FUNCTIONS
- TEMPORARY TABLES
- SUB QUERIES

PRE- SELENIUM

♣ Core Java Programming

- Introduction to Java
- History & Features of Java
- JDK, JRE, JVM overview
- JDK Directory Structure
- Basic Java Program through command prompt

♣ Installation and Setup:

- Download and install JDK/JRE
- Set Environment variables
- Download Eclipse IDE
- Coding standards followed in Eclipse
- Naming standards followed in Eclipse
- Features of Eclipse IDE

♣ Packages

- Introduction to packages
- Need for packages
- Package declaration in java
- Import statement in java
- Static import in java
- Resolving name clashes in packages

♣ Data-types:

- Primitive Datatypes
- Datatype Declarations
- Datatype Ranges and its calculation
- Memory allocation for each Datatype
- Variable Names Conventions
- Numeric Literals, Character Literals
- String Literals
- Arrays
- Array of Object References
- Enumerated Data Types
- Non-Primitive Datatypes

♣ Operators:

- Expressions in Java
- Assignment Operator
- Arithmetic Operators
- Relational Operators
- Logical Operators
- Conditional Operators
- Operator Precedence
- Implicit Type Conversions
- Upcasting and down casting
- Type conversion

♣ Conditional Control Statements

- Flowchart for conditional statements
- If statement
- If-else statement
- If-else-if statement
- Switch statement
- String in switch case

♣ Looping Control Statements

- For loop
- While loop
- Do-while loop
- Unconditional Control Statements/Jump Statements
- break statement
- labelled break statement
- return statement
- continue statement

♣ Scanner class:

- Diff between Scanner and Buffered Reader
- Methods to get Primitive datatypes
- Match method
- Delimiter method

♣ OOPS and its application in Java:

- Classes and Objects
- Defining a class;
- Defining instance variables and methods
- Defining a class, variable and method in Java
- Method Signature; method call
- Creating objects out of a class
- Method calls via object references

♣ Abstraction

- Interfaces and Abstract classes
- Abstract and non-abstract methods

♣ Inheritance

- Extends and implements keywords in Java
- Super class and Sub class
- This keyword, super keyword in Java for inheritance
- Concrete classes in Java

♣ Polymorphism:

- Compile time polymorphism -- Overloading of methods
- Run time polymorphism -- Overriding of methods

- Method Overriding rules and method overloading rules
- Introduction to Object class and it's methods

♣ **Encapsulation:**

- Protection of data
- Getters/Setters
- Memory management in Java

♣ **De-bugging:**

- Launching and debugging java code
- Breakpoints
- Debug perspective
- Stepping commands
- Trace point, Trigger point

♣ **Access Modifiers in Java**

- Role of access modifiers
- Private access modifier
- Role of private constructor
- Default access modifier
- Protected access modifier
- Public access modifier
- Access Modifier with Method Overriding

♣ **Types of variable:**

- Variable
- Variable memory storage
- Static variable
- Local variable
- global/instance variable

♣ **Constructor:**

- Constructor
- Default constructor
- Parameterized constructor
- Difference between Constructor and Method

♣ **String**

- String datatype
- String declaration
- String Tokenizer
- String methods
- String types
- String memory allocation
- Manipulations in string
- Interfaces and classes in String

♣ **Arrays**

- Declaration
- Instantiation

- Initialization of Java Array
- Single dimensional Array
- Multi-dimensional Array

♣ **Collection**

- Java Collection Framework
- Hierarchy of Collection Framework
- Collection interface
- Iterator interface
- Methods of collection interface
- List
- Set
- Collections utility class

♣ **Map**

- Introduction to Map interface
- Methods in Map
- Iterating a Map
- Map hierarchy
- HashMap

♣ **Exception handling**

- Exception types
- Usage of Try
- Usage of Catch
- Usage of Throw
- Usage of Throws
- Usage of Finally
- Built-in Exceptions,
- Creating own Exception classes

♣ Java programs:

- Check the given number is odd or not
- Check the given number is even or not
- Print first 100 odd numbers
- Print first 100 even numbers
- Count the no. of even numbers from 1 to 100
- Count the no. of odd numbers from 1 to 100
- Find the factorial of a given number
- Generating Fibonacci series
- Find the reverse of the given number
- Check the given number is palindrome or not
- Check the given number is Armstrong or not
- Find the sum of the digits in a number
- Find the number of digits in a number
- Find the product of digits in a number
- Find the reverse of the string
- Check the given string is palindrome or not
- Print each word's first letter of the given string in capital number
- Print the duplicate numbers in array
- Print the Unique elements in array
- Remove the duplicate character in string
- Remove the duplicate words in string
- Write code to print patterns
- Pre-increment post increment example
- prime number or not
- Anagram or not
- Usage of Collections.min(),max() and sort()
- Usage of Arrays.min(),max() and sort()
- Print numbers as String

SELENIUM:

♣ Selenium Introduction

- Types of Applications (Desktop, Web, Mobile, Hybrid)
- Software Testing Methods (Manual and Test Automation).
- Selenium Introduction
- Selenium Components

♣ WebDriver

- Third party drivers and plugins
- Driver requirements
- What is WebDriver
- Selenium Architecture
- Simple Program in Selenium WebDriver
- WebDriver methods

♣ Types of Browser Launch

- Desired Capability
- Downloading driver file
- Downloading selenium jar file
- Chrome Browser Launching
- Safari Browser Launching
- Internet Explorer Browser Launching
- Firefox Browser Launching

♣ Locators

- Inspecting elements in different browsers .
- Id
- name
- className
- xpath
- tagName
- linkText
- partiallyLinkText
- cssSelector

♣ Types of Xpath's

- Relative Xpath
- Absolute Xpath
- Difference between Absolute Xpath and Relative Xpath
- Limitations in Absolute xpath
- Advantages of using Relative xpath

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♣ Xpath writing techniques

- Contains Xpath
- Text Xpath
- Text Contains Xpath
- Attribute with contains
- Following
- Ancestor
- Child
- Preceding
- Following-sibling
- Parent
- Self
- Descendant

♣ Web Element

- What are Web Elements in Selenium
- Different types of Web Elements
- Operations performed on the Web Elements
- How to locate the Web Elements on the web page
- Different WebElement methods
- Difficulties while handling web Elements

♣ WebDriver Commands

- Fetching a web page
- Locating elements and sending user inputs
- Clearing User inputs
- Fetching data over any web element
- Performing Click event
- Navigating backward in browser history
- Navigating forward in browser history
- Refresh/ Reload a web page
- Closing Windows
- Closing Browser
- Handling Windows
- Handling Frames
- Handling Drag and Drop

♣ Actions

- Drag and Drop
- Mouse Hover Action
- Right Click
- Double Click

- Performing Multiple Actions

♣ Waits

- Need for Waits
- Static waits
- Dynamic waits
- Implicit Waits & Explicit Waits
- Fluent Waits
- WebDriver Waits

♣ JavaScript

- WebElement Highlighting
- Click Operation
- Fetching the Data from WebElement
- Sending the Inputs to WebElement
- Scrolling Operations
- Highlighting a WebElement

♣ Scroll Up/Scroll Down

- Scroll the web page by pixel
- Scroll the web page by the visibility of the element
- Scroll down the web page at the bottom of the page
- Horizontal scroll on the web page
- Multiple Scroll
- Scroll By coordinates

♣ Frames

- Need for Frames
- Identifying a Frame
- Switching to Frames using Selenium WebDriver
- Different ways of switching
- Dynamic frames handling
- Frames Size
- Concept of Nested Frames

♣ Windows Handling

- Importance of Windows Handling
- Handling the Multiple Windows
- Windows Handling using Set
- Windows Handling using List

♣ Web Table

- Analyzing Web Table structure in DOM
- Handling multiple web tables in a page
- Dynamically changing Web Table handling
- Extracting values from web Table
- Analyzing the Tag names
- Different Scenarios with Web Table

♣ Dynamic Web Table

- Handling Dynamic Tables In Selenium
- Analyzing the Dynamic Web Table
- Analyzing the HTML Tags in Dynamic Web Table
- Different Scenario with Dynamic Web Table

♣ Screenshot

- Need of Screenshot in Automation testing
- Capture Screenshot in Selenium
- Capture Full Page Screenshot
- Taking a Screenshot of a particular element of the page
- Taking a Screenshot with different file formats
- Random name generation for screenshots

♣ Links

- Identifying URL
- Validating URL
- To Find a broken links
- HTTP response code
- Collect all the links in the web page

♣ Dropdown

- Select class in Selenium WebDriver
- Different Select commands
- Multiple Select commands
- Deselect Commands
- Get All options
- Dropdown without Select tag
- Handling dropdown with values changing its position dynamically.

♣ File Upload/File Download

- Uploading files in Selenium WebDriver using Sendkeys
- Uploading files in Selenium WebDriver using Robot Class
- Download files in Selenium WebDriver using Sendkeys
- Download files in Selenium WebDriver using Robot Class

Frameworks:

♣ TESTNG Framework:

- TESTNG with Selenium
- Advantages of TESTNG over JUnit
- TESTNG Annotation & API
- Create TESTNG Suite
- TESTNG Parameterized Test
- Parameters
- Data Provider
- Re-running failed Test Case
- TESTNG Assert
- Hard Assert
- Soft Assert
- Run Multiple test case
- Customized, PDF & Email TESTNG reports in selenium web Driver
- TESTNG Ignore Test

♣ Data Driven:

- Data Driven Explanation
- Excel Types
- Apache poi-ooxml
- Interface , class , methods in apache poi-ooxml
- Read Data from excel
- Write data in excel
- update data in excel
- Creation of Automation scripts reading data from excel

♣ Keyword-driven framework

- Introduction to keyword-driven framework
- Function Library.
- Excel Sheet To Store Keywords.
- Design Test Case Template.
- Object Repository for Locators.
- Test Scripts or Driver Script.
- Retrieving data using keywords

♣ Hybrid framework

- Components of Hybrid Driven Framework
- Function Library
- Excel Sheet to store Keywords
- Design Test Case Template
- Object Repository for Elements/Locators
- Test Scripts or Driver Script

♣ **POM Framework:**

- Page Object Model
- Advantages of POM
- Implementing POM
- Object repository creation
- Page Factory
- POM Annotation
- Getters and setters

♣ **Cucumber Framework:**

- BDD Introduction
- Cucumber Introduction
- How to download & Installation plugin
- Gherkin Language
- Feature files
- Test Runner with junit
- Step Definition
- Scenario and Scenario Outline
- Back Ground and Hooks
- Base Class and POM Integration
- Cucumber Options
- Reports
- Rerun failed scenarios

♣ **Maven**

- Introduction to Apache Maven
- Maven Dependencies
- Maven Plugins
- Controlling The Build
- Maven Release Process
- Deploying to a Repository

♣ **Git**

- Introduction To Git
- Working Locally With Git
- Working Remotely With Git
- Branching, Merging And Rebasing With Git
- Using The GitHub Website
- GitHub For Windows Basics
- Teamwork With GitHub For Windows
- Social Coding With GitHub

♣ **Jenkins**

- Continuous Integration or Continuous Deployment concepts
- Installing and Configuring Jenkins
- Freestyle Project Configuration
- Jenkins Pipelines
 - Testing With Jenkins
 - Pipeline Enhancements o Multi-branch Pipelines and Code Promotion

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