Assignment - 6

Adv. Selenium - Introduction To Automation

### **1) Advanced Selenium Introduction of Automation**

**Selenium** is an open-source automation tool primarily used for **automating web applications**. Advanced Selenium refers to **more complex use cases** and **framework building** that goes beyond just recording and running simple tests.

#### **Key areas in Advanced Selenium Automation:**

* **Framework design** (Hybrid, Data-Driven, Page Object Model, BDD with Cucumber)
* **Integration with tools** (TestNG, Maven, Jenkins, Git, Docker)
* **Cross-browser & parallel testing** with Selenium Grid
* **Handling dynamic web elements** using XPath, CSS Selectors, Waits
* **Automating AJAX elements**, file upload/download, popups, alerts, etc.
* **CI/CD pipeline automation**

### **2) What is Selenium?**

Selenium is a **suite of tools** for automating web browsers. It allows testers to write **test scripts in different programming languages** like Java, Python, C#, etc.

#### **Components of Selenium:**

* **Selenium WebDriver** – Main tool to automate browser actions
* **Selenium IDE** – Record & playback tool for beginners
* **Selenium Grid** – Used to run tests across multiple machines/browsers
* **Selenium RC (Deprecated)** – Older version replaced by WebDriver

### **3) Advantages of Selenium**

* **Open Source** – Free to use with strong community support
* **Supports multiple languages** – Java, Python, C#, Ruby, etc.
* **Cross-Browser Testing** – Chrome, Firefox, Safari, Edge, etc.
* **Cross-Platform Support** – Windows, macOS, Linux
* **Easy Integration** – With Maven, Jenkins, TestNG, JUnit, etc.
* **Parallel & Distributed Testing** – Using Selenium Grid
* **Fast & Flexible** – Compared to other tools like QTP/UFT

### **4) Difference Between Selenium & QTP (UFT)**

| **Feature** | **Selenium** | **QTP / UFT** |
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| **License** | Open-source (Free) | Commercial (Paid) |
| **Platform** | Web applications only | Web + Desktop applications |
| **Languages Supported** | Java, Python, C#, Ruby, etc. | VBScript only |
| **Browser Support** | All major browsers | Limited compared to Selenium |
| **OS Support** | Windows, Linux, macOS | Windows only |
| **Object Repository** | Manual or custom-built | Built-in object repository |
| **Community Support** | Strong and active | Limited to official support |
| **Speed & Flexibility** | Faster and more customizable | Heavier and less flexible |