**Selenium v4 Test Automation Framework**

**🚀 Overview**

This project is a **Selenium v4 Test Automation Framework** designed for **web applications**. It is built using **Java 17.0.12 (LTS)** and **Apache Maven 3.9.9**, leveraging **TestNG** and **BDD** for structured and scalable test execution. The framework implements industry best practices, including the **Page Object Model (POM)**, **Factory & Singleton patterns**, and **self-healing capabilities** via Healenium.

**🎯 Key Features**

* **Selenium v4 support** with enhanced WebDriver capabilities
* **Page Object Model (POM)** for maintainability and scalability
* **TestNG integration** for parallel execution and reporting
* **Self-healing tests** with Healenium for resilient automation
* **Log4j logging** for detailed execution logs
* **Extent Reports** for comprehensive test execution reports
* **Parameterized tests** for data-driven execution
* **Maven build management** for dependency and execution control
* **Parallel execution support** for faster test execution
* **Re-run failed tests** automatically
* **Configurable test execution** using config.properties

**🏗️ Project Structure**

YourProject/

│── src/

│ ├── main/

│ │ ├── java/

│ │ │ ├── base/ # Base classes for WebDriver setup

│ │ │ ├── factory/ # Driver factory for WebDriver initialization

│ │ │ ├── pages/ # Page Object Model classes

│ │ │ ├── utils/ # Utility classes for common functions

│ │ ├── resources/

│ │ ├── config/

│ │ ├── config.properties ✅ (Configuration settings)

│── src/

│ ├── test/

│ │ ├── java/

│ │ │ ├── tests/ # Test classes with TestNG annotations

│── test-output/ # TestNG reports output

│── pom.xml # Maven build file

│── README.md # Project documentation

**🔧 Setup Instructions**

**1️⃣ Prerequisites**

Ensure you have the following installed on your machine:

* **Java 17.0.12 (LTS)**
* **Apache Maven 3.9.9**
* **Google Chrome & ChromeDriver**
* **IDE (IntelliJ IDEA / Eclipse)**

**2️⃣ Clone the Repository**

git clone https://github.com/your-repo/selenium-framework.git

cd selenium-framework

**3️⃣ Install Dependencies**

Run the following Maven command to install all dependencies:

mvn clean install

**4️⃣ Configure config.properties**

Modify src/main/resources/config/config.properties to set browser and execution settings:

browser=chrome

url=https://example.com

implicitWait=10

**🏃 Running Tests**

**Run All Tests**

mvn test

**Run Specific Test Class**

mvn -Dtest=LoginTest test

**Run Tests in Parallel**

Modify testng.xml to enable parallel execution.

**📜 Logging & Reporting**

**1️⃣ Log4j Logs**

* All execution logs are stored in the logs/ folder.

**2️⃣ Extent Reports**

* After execution, open the HTML report at:
* target/extent-reports/ExtentReport.html

**🛠️ Troubleshooting**

**1️⃣ WebDriver Not Found Error**

Ensure the chromedriver is placed in the drivers/ folder or set up WebDriverManager:

WebDriverManager.chromedriver().setup();

**2️⃣ TestNG Import Issue**

Ensure pom.xml contains the correct TestNG dependency:

<dependency>

<groupId>org.testng</groupId>

<artifactId>testng</artifactId>

<version>7.7.0</version>

<scope>test</scope>

</dependency>

**🎯 Future Enhancements**

* ✅ Integration with CI/CD pipelines (Jenkins/GitHub Actions)
* ✅ Mobile testing integration using Appium
* ✅ Database testing support

**🤝 Contributing**

Feel free to submit pull requests or raise issues!

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📌 Happy Testing! 🚀