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**Assignment #2**

**Course:**

Software Quality Engineering

**Topic:**

**LAYP   
(UI Testing Automation Framwork)**

**Submitted by:**

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# Project Overview

This project is designed to automate the testing of Daraz.pk using Java, Maven, and Cucumber for Behavior-Driven Development (BDD). The framework follows a **Page Object Model (POM)** design and integrates **Cucumber for BDD**, **MariaDB for data storage**, and **Cucumber HTML Reporting** for test execution results.

## Features:

* **Scalable Web UI Automation Framework**
* **Supports Gherkin for writing BDD tests**
* **Data-driven testing using MariaDB**
* **HTML Reporting for test results**

# Prerequisites

## 1. Install Java

Ensure that you have **Java 1.8** or higher installed. You can check the version by running:

If you don’t have it installed, download and install it from the [Oracle website](https://www.oracle.com/java/technologies/javase-jdk11-downloads.html).

## 2. Install Maven

Maven is required for managing project dependencies and running the tests. You can check if Maven is installed by running:

* mvn -version

If Maven is not installed, download it from [Maven’s official website](https://maven.apache.org/install.html).

## 3. Install Eclipse IDE

Download and install Eclipse IDE if not already installed.

# Project Setup

## 1. Clone the Repository

Open Eclipse and clone the GitHub repository where your project is hosted. Follow these steps:

1. Go to **File > Import > Git > Projects from Git**.
2. Choose **Clone URI**, and paste the repository URL.
3. Click **Next** and follow the instructions to clone the project into your workspace.

## 2. Import as Maven Project

After cloning, ensure that the project is imported as a Maven project:

1. Right-click on the project in the **Project Explorer** and select **Configure > Convert to Maven Project** (if it's not already).
2. Ensure that the pom.xml is properly loaded, as it defines all dependencies.

## 3. Install Dependencies

Once the project is imported, Maven should automatically download all necessary dependencies. You can force this process by running:

* **In Eclipse**: Right-click the project > **Maven > Update Project**.
* **Using Terminal**: Navigate to the project root and run:
* mvn clean install

## 4. Configure MariaDB (Optional for Data-Driven Testing)

If your test cases depend on **MariaDB**, ensure that MariaDB is installed and running. To set up MariaDB:

1. Download and install MariaDB from here.
2. Create a database for your tests and update the DatabaseConnection.java file with your connection details (username, password, and database URL).

# Running Tests in Eclipse

## 1. Running All Tests

To run all test cases at once:

1. Navigate to the src/test/resources/features directory where your Gherkin .feature files are stored.
2. Right-click on the feature file (or the entire features folder) and choose **Run As > Cucumber Feature**.

## 2. Running Specific Tests

To run a specific test, follow the same steps as above, but select the specific feature file (e.g., Login.feature).

## 3. Running Tests via Maven

If you prefer to run the tests through Maven, open a terminal in the project directory and run the following command:

* mvn test

This command will execute all the tests and generate a Cucumber report.

## 4. Viewing Reports

After running the tests, the Cucumber HTML report will be generated in the target/cucumber-reports directory.

* Navigate to target/cucumber-reports.
* Open the index.html file to view the detailed HTML report.

This report will show which tests passed, which failed, and will include logs and screenshots (if applicable).

# Troubleshooting

## 1. Maven Build Issues

If Maven is not able to resolve dependencies, try the following:

* Ensure that you have an active internet connection for Maven to download dependencies.
* Use **Maven > Update Project** from Eclipse to force Maven to re-download dependencies.

## 2. Database Connection Issues

If you encounter issues connecting to **MariaDB**, check the following:

* Ensure MariaDB is running.
* Verify the connection details (username, password, and database URL) in your db.properties file.
* Test the connection manually to ensure that MariaDB accepts connections.

## 3. Tests Failing

If specific tests are failing:

* Review the logs in the target/cucumber-reports folder for any specific errors.
* Ensure the environment (browser, MariaDB, etc.) is properly configured.

# Project Structure

Here is a brief explanation of the project structure:

## Files and Folders

* **pom.xml**: Manages dependencies, plugins, and project build lifecycle.
* **src/test/resources/features**: Contains the .feature files written in Gherkin.
* **src/test/java**: Contains the step definition files that bind the Gherkin scenarios to Java code.
* **target/cucumber-reports**: The generated HTML reports after test execution.

# Best Practices

* **Modular Design**: The project follows the **Page Object Model (POM)** pattern, where page-specific methods are abstracted into separate classes to ensure reusability.
* **BDD with Cucumber**: All tests are written in Gherkin for clear communication and collaboration between stakeholders.
* **Data-Driven Testing**: Use the Scenario Outline feature in Cucumber and integrate **MariaDB** for dynamic test data.