Project 4 – Test Case Automation

1. Objective

Develop an automation framework that seamlessly retrieves, executes, and reports test cases based on data from Jira and code from a Git repository, eliminating the need for manual intervention.

2. Functional Requirements

- **Test Case Extraction**
    - Automatically fetch test case details and status from Jira based on predefined criteria (e.g., status, tags, or assigned users).
    - Retrieve corresponding test scripts or related code from the Git repository, linked via Jira tickets or identifiers.
- **Test Automation Execution**
    - Execute test scripts automatically in a specified test environment or local setup.
    - Support multiple test frameworks (e.g., Selenium, JUnit, TestNG, etc.).
    - Handle parallel execution for efficiency.
- **Integration & Orchestration**
    - Integrate with CI/CD pipelines (e.g., Jenkins, GitHub Actions) for trigger-based automation.
    - Automate the process of updating Jira tickets with test execution results, including logs and screenshots if applicable.
    - Pull latest code changes from Git before execution to ensure testing of the most recent code.
- **Reporting**
    - Generate detailed test execution reports with pass/fail status, error logs, and screenshots.
    - Log activities and outcomes for audit purposes.
    - Send notifications (via email, Slack, etc.) upon test completion, including summary reports.

3. Non-Functional Requirements

- **Reliability**
    - Ensure automatic retries or error handling for transient failures.
- **Scalability**
    - Support large volumes of test cases and codebases.
- **Security**

- o Securely manage credentials/access tokens for Jira and Git integrations.
- **Performance**
  - o Minimize delays in fetching, executing, and reporting.

4. Deliverables

- Automated script/configuration files for fetching Jira data.
- Scripts or tools for pulling code from Git.
- Test execution engine setup with configurations.
- Integration scripts for CI/CD pipelines.
- Documentation:
  - o Setup instructions.
  - o Usage guidelines.
  - o Troubleshooting tips.