

The Following tools and technologies have been used in this project to automate the given scenario:

1. Programming Language

- Java: The core programming language used to write the API automation.

2. API Testing Framework

- RestAssured: A popular library for testing RESTful APIs in Java. It simplifies interaction with HTTP requests and responses.

3. Testing Framework

- TestNG: A testing framework used to structure the test cases, execute tests, and generate test reports. It allows for assertions and organizes tests into suites and test cases.

4. Build Automation Tool

- Maven: A project management and build tool used for dependency management, compilation, and running the project. Maven simplifies the handling of libraries like RestAssured and TestNG.

5. JSON Parsing Library

- Gson: A Java library provided by Google to convert Java objects to JSON and vice versa. Used to deserialize the JSON responses from the APIs into Java objects.

6. Version Control

- GitHub (or similar): A platform for hosting the code repository, version control, and collaboration. This is where the project is stored and shared for assessment.

7. HTTP APIs

- JSONPlaceholder APIs: The APIs (like `/users` and `/todos`) from JSONPlaceholder were used for simulating the user and task data in the project.

8. Integrated Development Environment (IDE)

- IntelliJ IDEA (or Eclipse): A Java IDE that can be used to write, test, and debug the project code efficiently.

9. Build Tools and Commands

- Maven commands: Commands like `mvn clean install` and `mvn test` are used to compile the project and run the test cases.

10. Assertions

- TestNG Assertions: These are used to validate the business logic in test cases (for example, checking if the task completion percentage is greater than 50%).

Summary of Tools and Technologies:

1. Java – Programming language.
2. RestAssured – API testing library.
3. TestNG – Testing framework.
4. Maven – Build automation and dependency management.
5. Gson – JSON parsing library.
6. GitHub – Version control and code hosting platform.
7. JSONPlaceholder – Public API for testing.
8. IntelliJ IDEA/Eclipse – IDE for development.
9. Maven Commands – Commands for building and running the project.
10. TestNG Assertions – To validate the test logic.

These tools and technologies ensure an efficient, modular, and automated solution for API testing.