

Below is an overview of project structures and usage for various automation frameworks spanning **web, mobile, and API testing with different languages and tools**. Customise these templates based on your project's needs.

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1. Selenium + BDD (Cucumber) + TestNG + POM + Java (Web Automation)

Project Structure:

SeleniumBDD_Web/

```
├── src
│   ├── main
│   │   ├── java
│   │   │   ├── pageObjects
│   │   │   │   ├── LoginPage.java
│   │   │   │   └── HomePage.java
│   │   └── test
│   │       ├── java
│   │       │   ├── stepDefinitions
│   │       │   │   ├── Hooks.java
│   │       │   │   └── LoginSteps.java
│   │       │   ├── runners
│   │       │   │   └── TestRunner.java
│   │       └── features
│   │           └── login.feature
│   ├── pom.xml
│   └── testng.xml
```

Usage:

- **Page Objects:** Encapsulate UI elements and actions.
 - **Step Definitions:** Map Gherkin steps to Selenium methods.
 - **Test Runner & TestNG:** Execute tests and generate reports.
 - **BDD Feature Files:** Write human-readable test scenarios.
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2. Appium + BDD (Cucumber) + TestNG + POM + Java (Mobile Automation)

Project Structure:

AppiumBDD_Mobile/

```
├── src
│   ├── main
│   │   └── java
│   │       ├── pageObjects
│   │       │   ├── LoginPage.java
│   │       │   └── HomePage.java
│   │       ├── utils
│   │       └── AppiumUtils.java
│   └── test
│       ├── java
│       │   ├── stepDefinitions
│       │   │   ├── Hooks.java
│       │   │   └── LoginSteps.java
│       │   ├── runners
│       │   └── TestRunner.java
│       ├── features
│       └── login.feature
├── pom.xml
└── testng.xml
```

Usage:


- **Page Objects:** Represent mobile screens with Appium locators.
- **Utils:** Configure Appium driver capabilities.
- **Step Definitions & Feature Files:** Define mobile test scenarios.
- **TestNG:** Runs tests on mobile devices/emulators.

3. Rest Assured + BDD (Cucumber) + TestNG + POM + Java (API Automation)

Project Structure:

RestAssuredBDD_API/

```
├── src
│   ├── test
│   │   ├── java
│   │   │   ├── stepDefinitions
│   │   │   │   ├── Hooks.java
│   │   │   │   └── ApiSteps.java
│   │   │   ├── runners
│   │   │   │   └── TestRunner.java
│   │   │   ├── features
│   │   │   │   └── apiTesting.feature
│   │   │   └── utils
│   │   │       └── ApiUtils.java
│   ├── pom.xml
│   └── testng.xml
```



Usage:

- **API Utils:** Helper methods to build and send API requests using Rest Assured.
 - **Step Definitions:** Implement BDD steps that interact with APIs.
 - **Feature Files:** Define API scenarios (GET, POST, PUT, DELETE).
 - **TestNG & Cucumber:** Manage test execution and reporting.
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4. Selenium + BDD (Behave) + Pytest + POM + Python (Web Automation)

Project Structure:

PytestBDD_Web/

```
|— pages
|   |— base_page.py
|   |— login_page.py
|— features
|   |— login.feature
|   |— steps
|       |— __init__.py
|       |— login_steps.py
|— tests
|   |— test_runner.py # Could simply run behave from command line
|— conftest.py      # Pytest fixtures if needed
|— pytest.ini
|— requirements.txt
```

Usage:

- **Pages:** Define POM classes for web pages.
 - **Feature Files & Steps:** Write BDD scenarios in Gherkin and implement them using Behave.
 - **Pytest:** Can be used alongside Behave for fixtures and parallel execution.
 - **Configuration:** Use `pytest.ini` and `conftest.py` to manage settings and fixtures.
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5. Appium + BDD (Behave) + Pytest + POM + Python (Mobile Automation)

Project Structure:

PytestBDD_Mobile/

```
|— pages
|   |— base_page.py
|   |— login_page.py
|— features
|   |— login.feature
|   |— steps
|       |— __init__.py
|       |— login_steps.py
|— tests
|   |— test_runner.py
|— utils
|   |— appium_utils.py
|— conftest.py
|— pytest.ini
|— requirements.txt
```

Usage:

- **Pages:** Define mobile page objects with Appium locators.
 - **Utils:** Configure Appium driver and capabilities.
 - **Feature Files & Steps:** Write mobile test scenarios in Gherkin.
 - **Pytest Fixtures:** Set up and tear down mobile sessions.
 - **Run Tests:** Execute Behave scenarios using Pytest command-line.
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6. Rest + BDD (Behave) + Pytest + POM + Python (API Automation)

Project Structure:

PytestBDD_API/

```
|— features
|   |— api.feature
|   |   |— steps
|   |       |— __init__.py
|   |       |— api_steps.py
|— tests
|   |— test_runner.py
|— utils
|   |— api_utils.py
|— conftest.py
|— pytest.ini
|— requirements.txt
```

Usage:

- **Utils:** Implement functions to send API requests (using requests library).
 - **Feature Files:** Define API test scenarios in Gherkin.
 - **Step Definitions:** Implement steps to call APIs and validate responses.
 - **Pytest Fixtures:** Manage API session or test data.
 - **Run Tests:** Use `pytest` or `behave` to execute tests.
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7. Cypress + BDD + POM (Web Automation with JavaScript)

Project Structure:

cypress-bdd-web/

```
├── cypress
│   ├── integration
│   │   └── features
│   │       └── login.feature
│   ├── support
│   │   ├── pageObjects
│   │   │   └── loginPage.js
│   │   ├── step_definitions
│   │   └── loginSteps.js
├── package.json
├── cypress.json
└── README.md
```

Usage:

- **Feature Files:** Write BDD scenarios in Gherkin.
 - **Step Definitions:** Map Gherkin steps to Cypress commands.
 - **Page Objects:** Create reusable components for UI interactions.
 - **Run Tests:** Execute using Cypress Test Runner or via CLI.
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8. Cypress + BDD + POM + API (API Automation with Cypress and JavaScript)

Project Structure:

cypress-bdd-api/

```
|— cypress
|   |— integration
|   |   |— features
|   |   |   |— login.feature    # Web feature scenarios
|   |   |   |— api.feature      # API test scenarios
|   |   |— support
|   |   |   |— pageObjects
|   |   |   |   |— loginPage.js  # POM file for web interactions
|   |   |   |   |— step_definitions
|   |   |   |       |— loginSteps.js  # Step definitions for web tests
|   |   |   |       |— apiSteps.js    # Step definitions for API tests (using Cypress
|   |   |   |       |— commands and cy.request())
|   |— package.json
|   |— cypress.json            # Global configuration for Cypress
|— README.md
```

Usage:

- **Web & API Tests:** Write separate feature files for UI and API.
 - **Step Definitions:** Implement actions using Cypress for UI and HTTP calls for API tests.
 - **Page Objects:** Reuse selectors and actions across tests.
 - **Run Tests:** Cypress Test Runner for UI; use plugins or custom commands for API testing.
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9. WebdriverIO + BDD + Selenium + Appium (Web and Mobile with JavaScript)

Project Structure:

webdriverio-bdd/

```
|— test
|   |— features
|   |   |— login.feature
|   |— stepDefinitions
|   |   |— login.steps.js
|   |— pageobjects
|   |   |— login.page.js
|   |   |— home.page.js
|— wdio.conf.js
|— package.json
|— README.md
```

Usage:

- **Web & Mobile Automation:** Use Selenium for web and Appium for mobile.
 - **BDD with Cucumber:** Write features in Gherkin.
 - **Step Definitions:** Implement steps using WebdriverIO commands.
 - **Page Objects:** Centralize element selectors and actions.
 - **Configuration:** Use `wdio.conf.js` to define capabilities and test suites.
 - **Run Tests:** Use WebdriverIO CLI to execute tests.
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10. Playwright + BDD (Cucumber/Pytest-BDD) - Unified for Web, Mobile, API, Accessibility, Load, & Performance

Project Structure:

playwright-bdd/

```
|— src
|   |— test
|   |   |— features
|   |   |   |— web.feature      # Web UI scenarios
|   |   |   |— mobile.feature  # Mobile emulation scenarios
|   |   |   |— api.feature     # API testing scenarios
|   |   |— stepDefinitions
|   |   |   |— webSteps.ts      # Steps for web testing using Playwright commands
|   |   |   |— mobileSteps.ts  # Steps for mobile testing (using viewport
emulation or real device capabilities)
|   |   |   |— apiSteps.ts     # Steps for API testing using Playwright's request
API
|   |   |— pages
|   |   |   |— webPage.ts      # Page Object Model for web pages
|   |   |   |— mobilePage.ts   # POM for mobile pages (or responsive views)
|   |   |   |— apiHelper.ts    # Utility functions for API requests and validations
|   |— playwright.config.ts    # Global configuration for Playwright tests (multiple
projects, timeouts, reporters, etc.)
|— package.json
|— tsconfig.json
```

Usage:

- **Unified Framework:** One framework to test Web UI, Mobile Web (using mobile emulation), API endpoints, accessibility, load, and performance.
- **Feature Files:** Separate features for web, mobile, and API.
- **Step Definitions:** Implement tests in TypeScript.

- **Page Objects:** Maintainable POM for different testing domains.
 - **Playwright Config:** Define projects, browsers, and parallelism.
 - **Run Tests:** Use `npx playwright test` to execute all tests.
 - **CI/CD Integration:** Integrate with GitHub Actions, Jenkins, etc.
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11. Spring Boot + Java + Selenium + POM – Web Automation with Spring Boot Java

Project Structure:

springboot-selenium/

```
|— src
|   |— main
|   |   |— java
|   |   |   |— com/example/pages
|   |   |       |— BasePage.java    # Common Selenium functions
|   |   |       |— LoginPage.java   # Page Object for Login page
|   |   |   |— resources
|   |   |       |— application.properties # Spring Boot configuration
|   |   |— test
|   |       |— java
|   |       |   |— com/example/tests
|   |       |       |— LoginTest.java    # Selenium test using TestNG/JUnit
|   |       |       |— TestRunner.java   # Test suite configuration
|   |— pom.xml                                # Maven configuration and dependencies (Spring Boot,
|   |                                           Selenium, TestNG/JUnit, etc.)
|   |— README.md
```

Usage:

- **Spring Boot Application:** Acts as the backend or serves the web app.
 - **Page Objects:** Encapsulate UI interactions.
 - **Test Classes:** Use Selenium WebDriver with JUnit/TestNG.
 - **Maven (pom.xml):** Manage dependencies and build lifecycle.
 - **Test Runner:** Execute tests against the deployed Spring Boot application.
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Final Note

Each framework is tailored to a specific testing domain (web, mobile, API) and uses a combination of BDD, POM, and test runners (TestNG/Pytest) to enhance maintainability, readability, and scalability.

These project structures serve as starting points. Customize them further based on:

- **Team preferences**
 - **Project complexity**
 - **Tool integrations (CI/CD, reporting, etc.)**
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Happy Learning! 🌸
