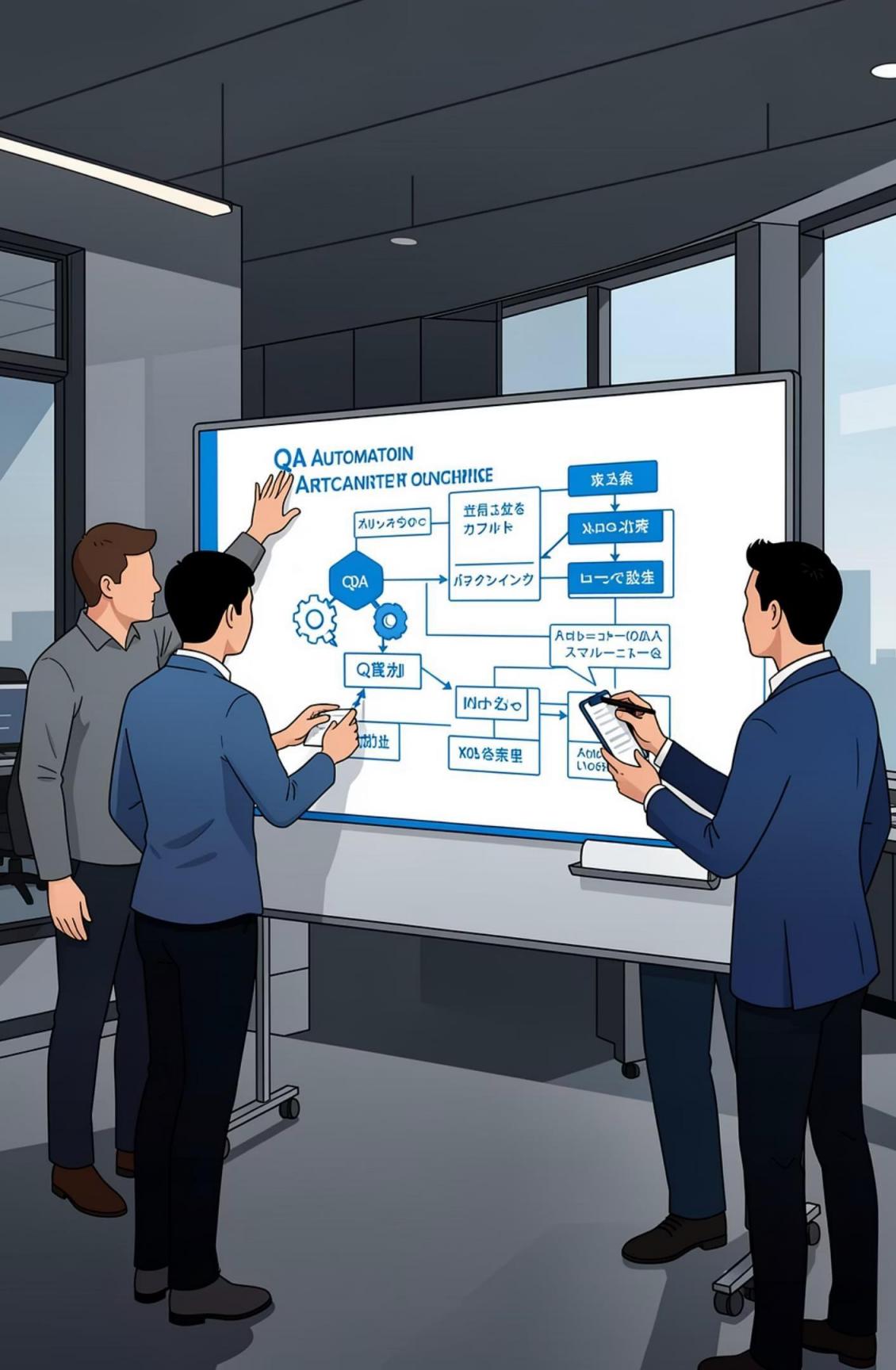




# Booking Website Automation Framework

Airbnb Booking automation built with  
Selenium, TestNG, Cucumber BDD, POM, Allure Reports,  
Log4j2 using Java + Maven.

Apoorv Vikram Singh  
Coforge GET  
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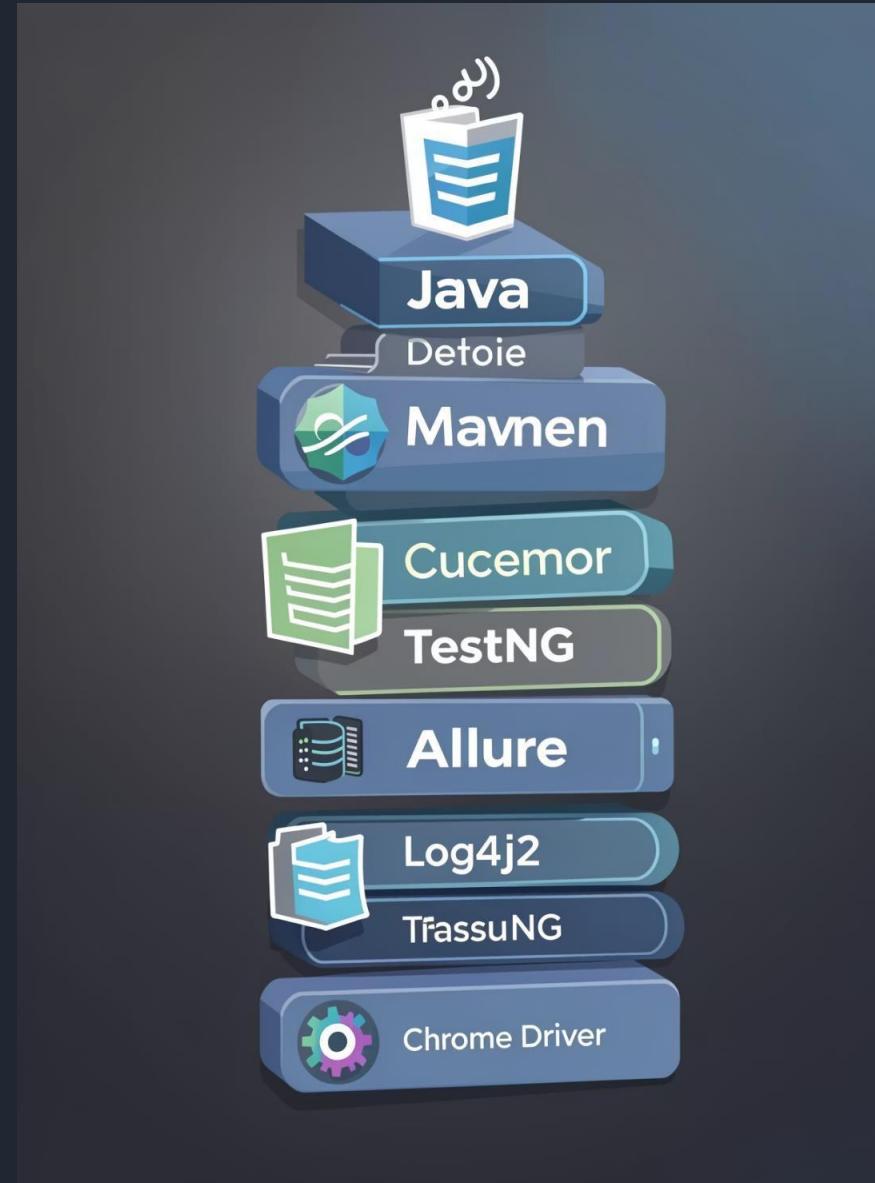
# Project Objective

Automate Core Flow  
Search, date selection and results validation on a booking site.

Framework  
Deliver readable tests, reusable components, Reports, screenshots, and logs.

Tools & Practices  
Java ,Cucumber BDD, POM, TestNG, Allure, Log4j2 for maintainability and visibility.

# Tools & Technologies



## Java + Maven

Language and build tool driving the framework.



## Selenium WebDriver

Browser automation for end-to-end tests.



## Cucumber BDD

Readable Gherkin scenarios for collaboration.



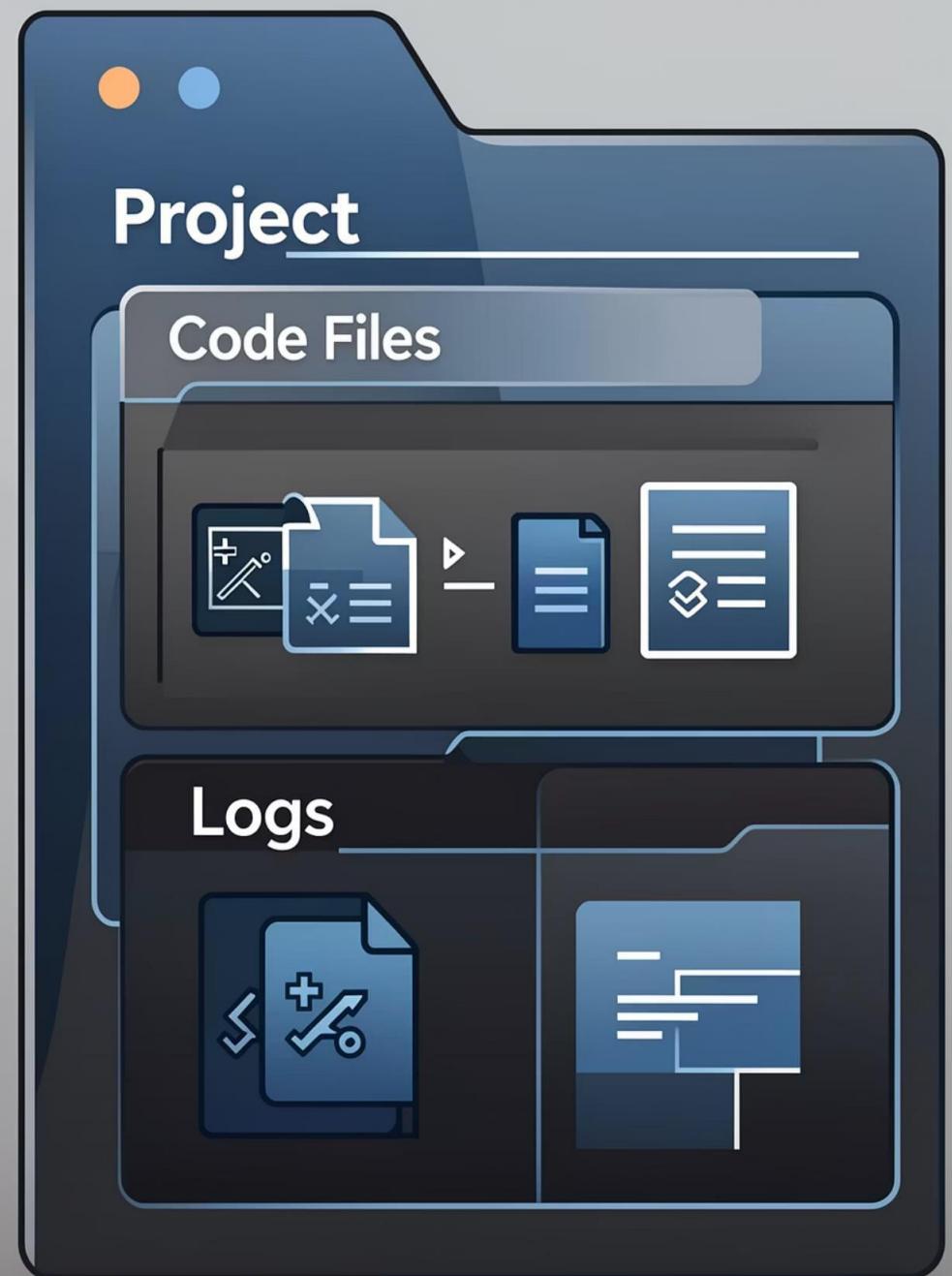
## Allure & Log4j2

Rich reporting plus structured logging for debugging.

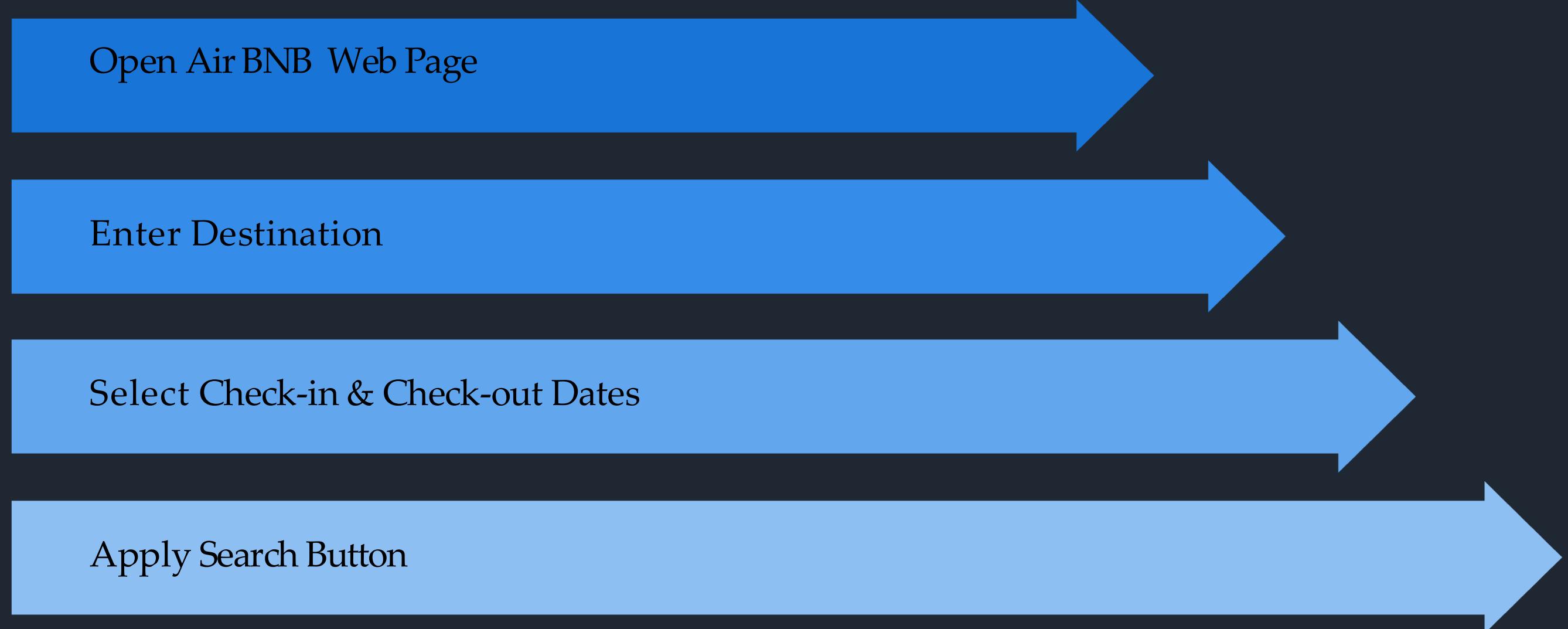
# Framework Architecture

Key folders: src/main/java (base, pageObject), src/test/java (cucumber options, hooks, stepdefinitions), src/test/resources (features, log4j2.xml, data.properties), logs (automation.log, error.log).

```
Final_Project_01
├── src/main/java
│   ├── base      → Base.java (WebDriver reference)
│   └── pageObject → HomePage.java (POM methods)
├── src/test/java
│   ├── cucumberoption → TestRunner.java (Cucumber + TestNG)
│   ├── hooks       → TestHooks.java (Before/After, screenshots, logs)
│   └── stepdefinition → BookingSteps.java (step definitions)
├── src/test/resources
│   ├── features    → booking_search_and_filter.feature
│   ├── log4j2.xml   → Log configuration
│   └── data.properties → URL, test data
└── logs          → automation.log, error.log
```

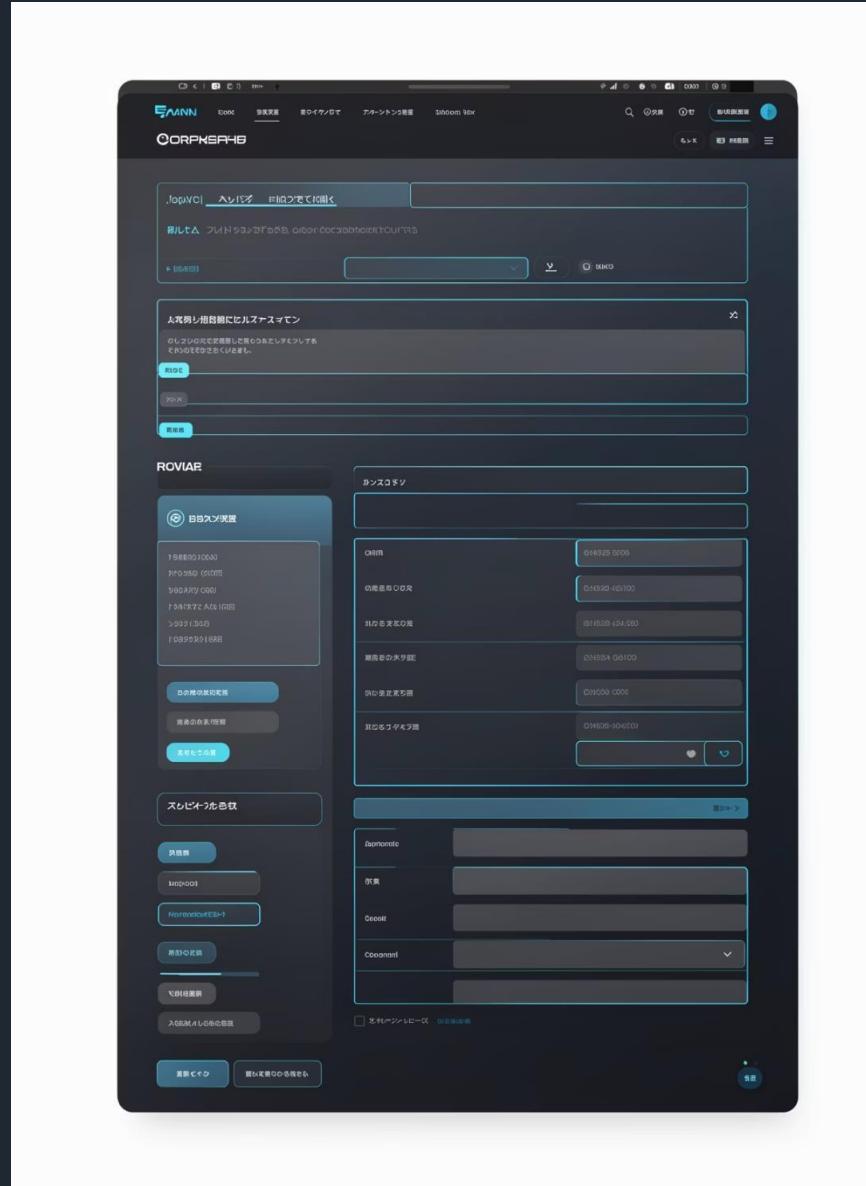


# Cucumber : Feature & Scenario



Gherkin steps cover opening the page, searching 'Goa', selecting check-in/out and apply search results.

# Page Object Model (POM)



## HomePage.java

Centralizes locators (XPaths) and reusable methods: `openCalendar()`, `clickByXpath()`, `selectDates()`, `enterDestination()`, `clickSearch()`.

## Benefits

Reusability, reduced duplication, easier maintenance, and clearer test code.

## Core Concept of POM

- Promotes code reusability across multiple test cases.
- Significantly reduces duplicate code, making the framework lean.
- Simplifies maintenance efforts when UI changes occur, as only page object classes need updates.
- Enhances overall test readability and understanding

# Step Definitions & Hooks

## BookingSteps.java

Implements search, date selection, price filter, and result validation using POM methods.

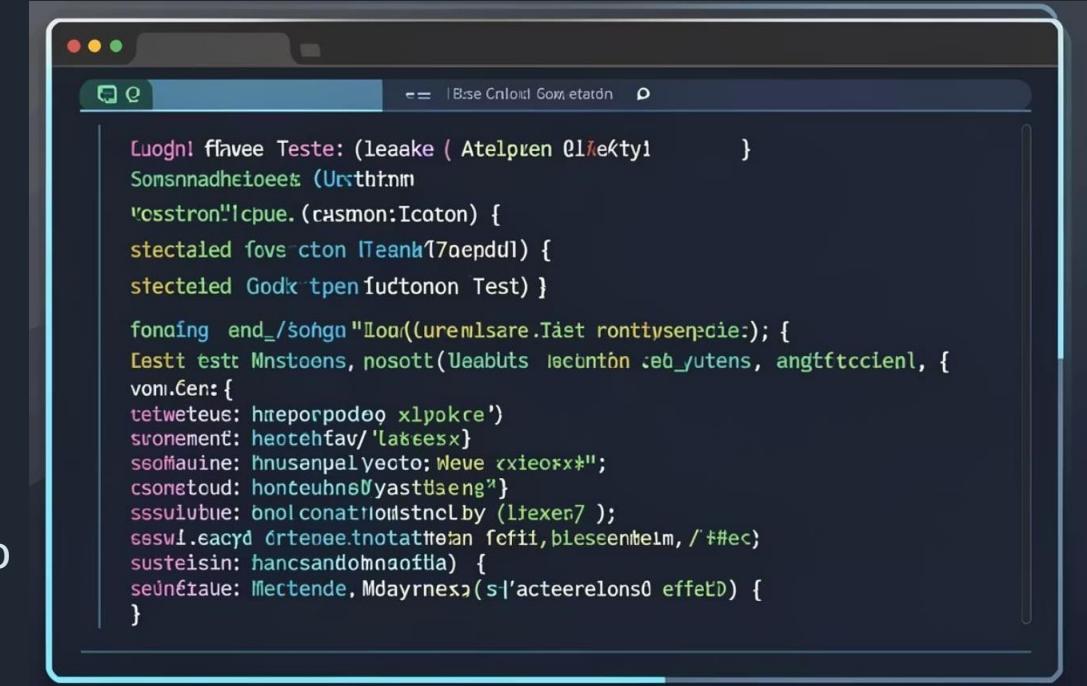
BookingSteps.java Responsibilities Manages various actions:

- Interactions with search boxes.
- Date selection logic.
- Applying price filters.
- Validation of test results.

Crucially, it calls POM methods to maintain a clean separation of concerns between test logic and page interactions

## TestHooks

Manages WebDriver lifecycle, attaches screenshots & logs to Allure, logs scenario status.

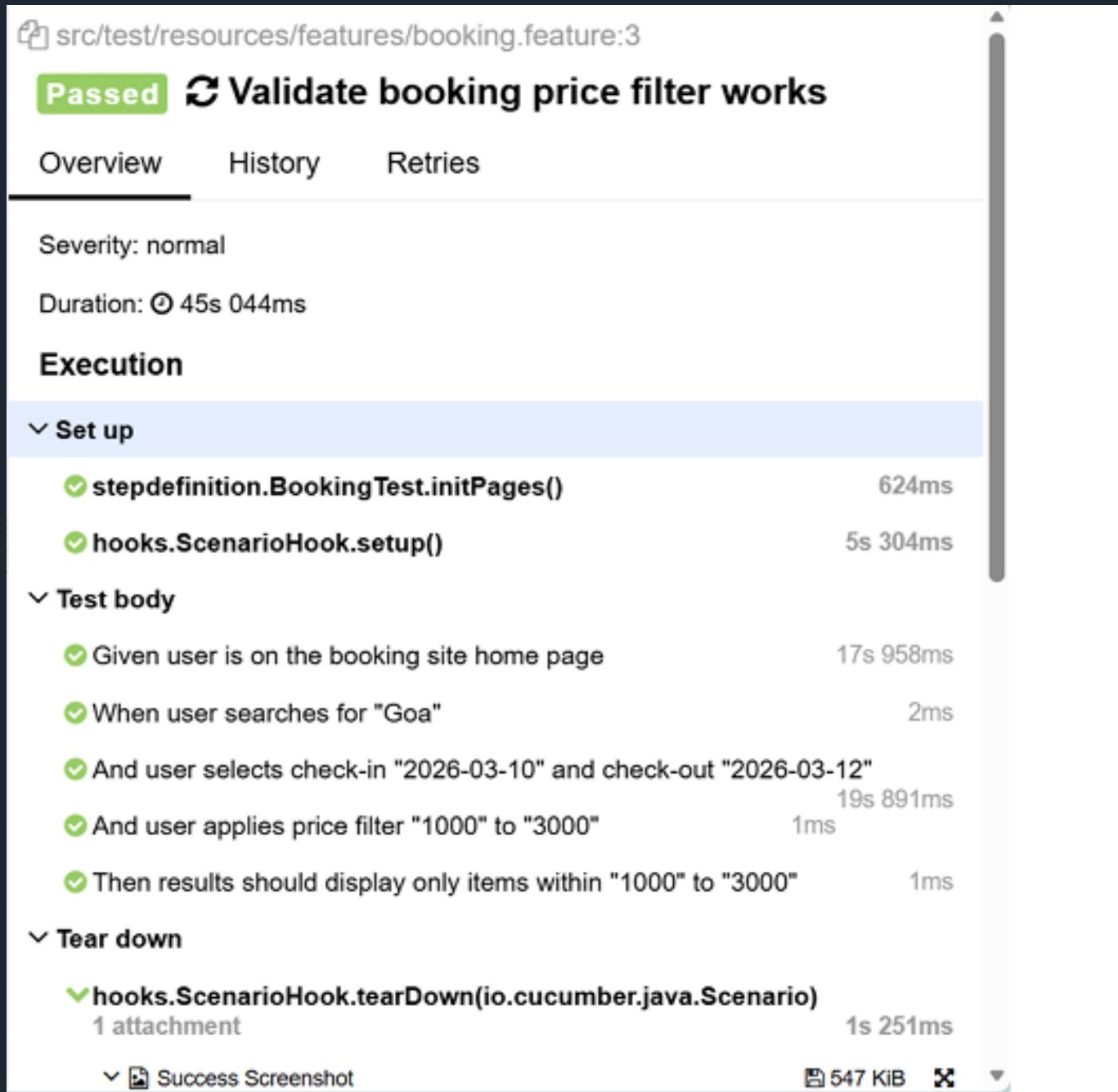


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}
```

TestHooks.java Responsibilities Manages various actions:

- WebDriver initialization before scenarios.
- Proper WebDriver termination after scenarios.
- Capturing screenshots on both test success and failure.
- Attaching logs and screenshots directly to Allure reports.
- Logging scenario statuses for clear execution flow tracking

# Allure Reporting



- Dependency: allure-cucumber7-jvm
- Attached screenshots on pass & fail
- Attached automation logs
- Command: allure serve target/allure-results

# Allure Report: Screenshot For Success Case:

The screenshot shows an Allure report interface for a booking functionality suite. The left sidebar lists navigation options: Overview, Categories, Suites, Graphs, Timeline, Behaviors, Packages, and an English language switch. The main content area displays the 'Suites' section with a summary table and a detailed view of a test case.

order	name	duration	status
0	0	1	0

Status: 0 0 1 0 0 Marks: ● ✘ ○ ✅ ❌ ❎

**Booking functionality**

#1 Validate booking price filter works (45s 044ms)

**Test body**

- Given user is on the booking site home page (17s 958ms)
- When user searches for "Goa" (2ms)
- And user selects check-in "2026-03-10" and check-out "2026-03-12" (19s 891ms)
- And user applies price filter "1000" to "3000" (1ms)
- Then results should display only items within "1000" to "3000" (1ms)

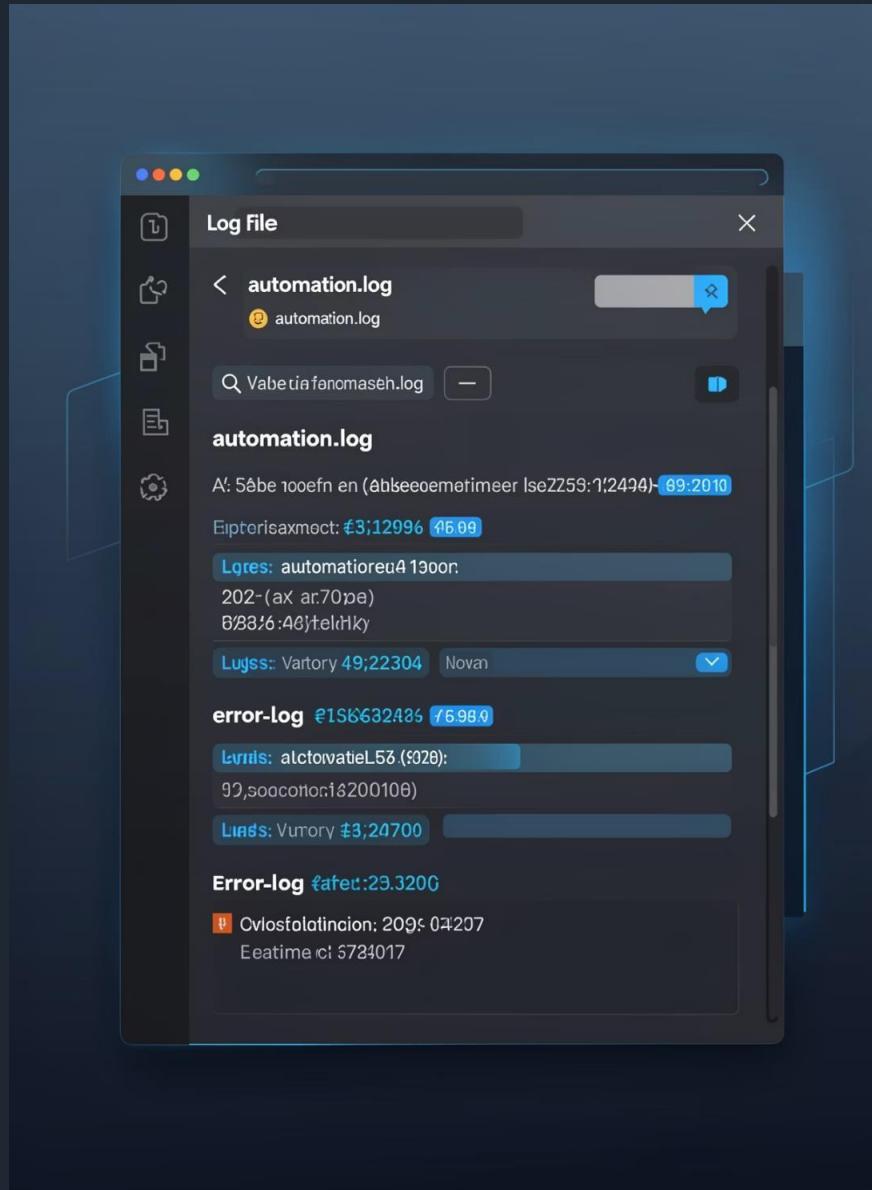
**Tear down**

hooks.ScenarioHook.tearDown(io.cucumber.java.Scenario) (1s 251ms)  
1 attachment

Success Screenshot (547 KiB)

A screenshot of an Airbnb search results page for Goa, showing a modal overlay with the message: "Now you'll see one price for your trip, all fees included." The modal has a "Got it" button.

# Logging with Log4j2



- Files

automation.log (INFO/WARN/ERROR)  
and error.log (errors only).

- Captured Events

Browser launch, navigation, clicks,  
date selection, failures, Closing.

- Benefits

Simplifies debugging, supports development and production diagnostics, integrates with Allure.

A screenshot of a terminal window showing log output. The logs are timestamped and categorized by logger:

```
File Edit View
2026-02-14 01:32:00 INFO [hooks.ScenarioHook] Launching Chrome Browser
2026-02-14 01:32:05 INFO [stepdefinition.BookingTest] Opening Airbnb website
2026-02-14 01:32:10 INFO [stepdefinition.BookingTest] Searching Destinations
2026-02-14 01:32:20 INFO [stepdefinition.BookingTest] Typed destination: Goa
2026-02-14 01:32:27 INFO [stepdefinition.BookingTest] Selected Checkin dates
2026-02-14 01:32:33 INFO [stepdefinition.BookingTest] Selected Checkout dates
2026-02-14 01:32:40 INFO [stepdefinition.BookingTest] Clicked on Searched Button
2026-02-14 01:32:44 INFO [hooks.ScenarioHook] Scenario PASSED: Validate booking price filter works
2026-02-14 01:32:44 INFO [hooks.ScenarioHook] Closing browser...
```

# Problem Faces during this project:

- **Unstable XPaths & Dynamic Elements**

**Issues selecting dates, search fields, and filters due to changing DOM.**

- **Driver & Hook Initialization Errors**

**Faced multiple NullPointerException because WebDriver and POM were not initialized in correct order.**

- **Cucumber Step & POM Mismatches**

**Incorrect step parameters and wrong method mapping caused test failures.**

- **Reporting & Logging Setup Issues**

**Allure reports not generating and Log4j2 logs not appearing due to incorrect configuration.**

- **Data & Integration Challenges**

**Handling date formats, test data inputs, and integrating CSV while keeping project stable.**



# Achievements & Outcome

## Final Outcome

### BDD Scenarios with Gherkin

Test cases are written in human-readable Gherkin, ensuring easy understanding and collaboration.

### Robust Page Object Model

A well-structured POM ensures maintainability, reusability, and reduced code duplication.

### Comprehensive Logging System

Detailed Log4j2 integration for efficient debugging and tracking of execution flow.

### Automated Screenshots

Screenshots captured on both pass and fail scenarios, crucial for visual verification.

### Interactive Allure Reports

Visually rich and detailed reports provide quick insights into test results and quality metrics.

### Clean and Scalable Architecture

The framework is designed with a clear folder structure, making it easy to extend and adapt.

### Real-World Booking Site Automation

Successfully automates a complex booking workflow, demonstrating practical application.



## What We Learned

XPath crafting, POM design, Cucumber glue code, TestNG execution, Allure generation, log-driven debugging, Maven dependency management.

## Successful Automation

Automated booking workflow validated: search 'Goa', dates 2026-03-10 to 2026-03-12, scenario passed in 45s 044ms.

- Search → Dates → Price filter → Validation with screenshots and logs.

# Thank You !!!