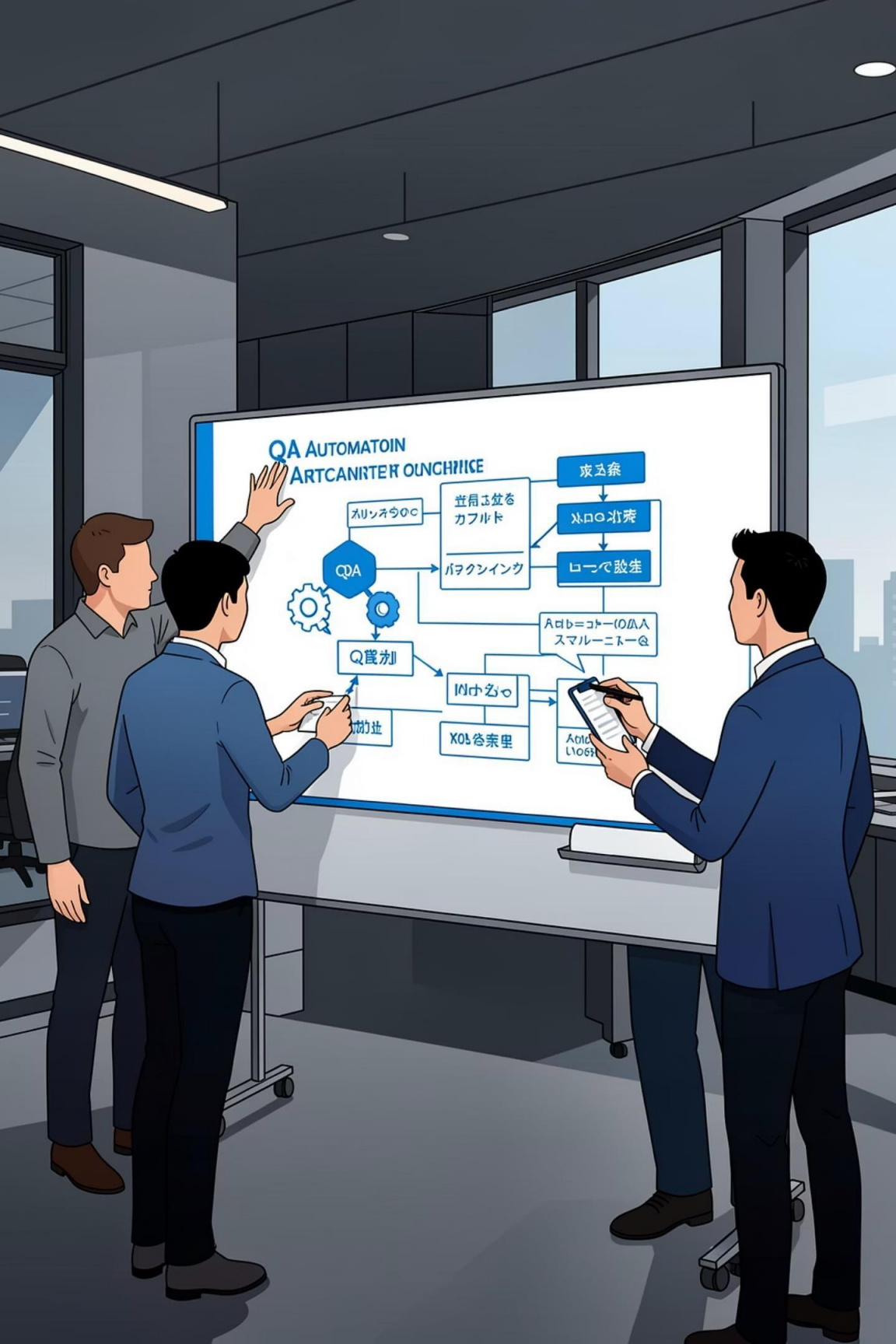


Booking Website Automation Framework

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

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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.



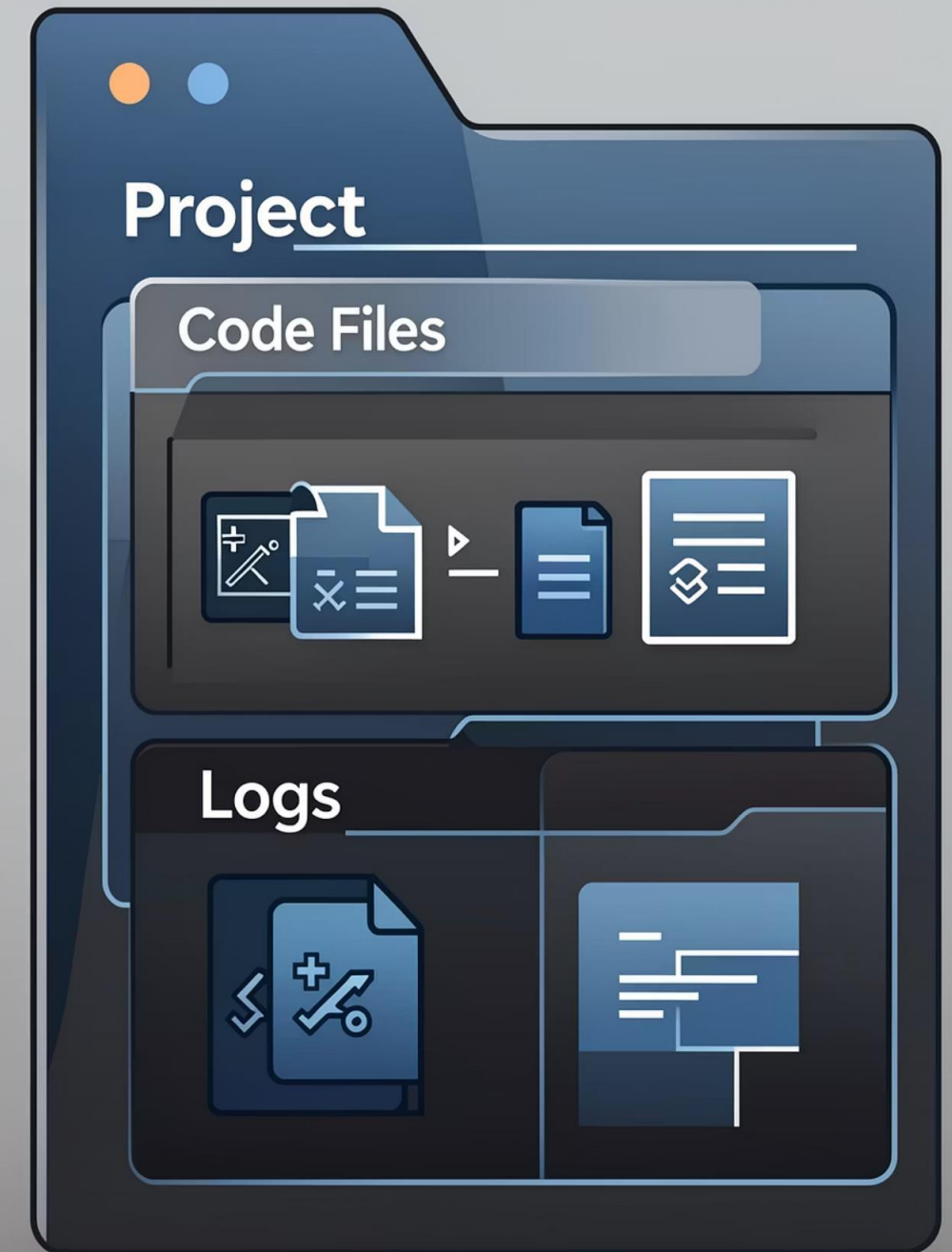
Allure & Log4j2

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

Open Air BNB Web Page

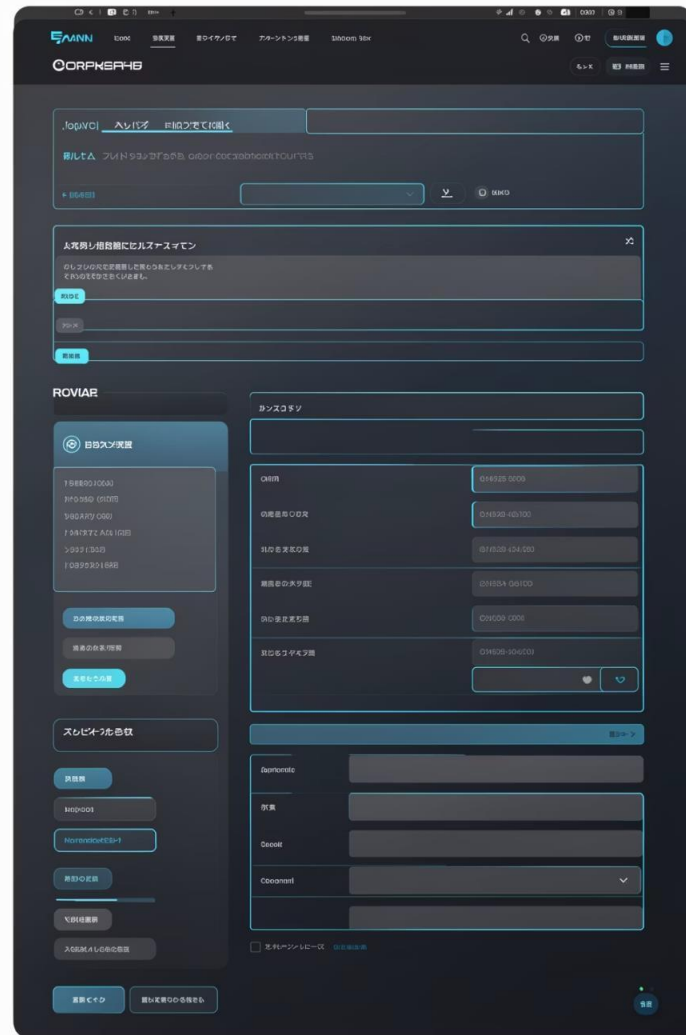
Enter Destination

Select Check-in & Check-out Dates

Apply Search Button

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

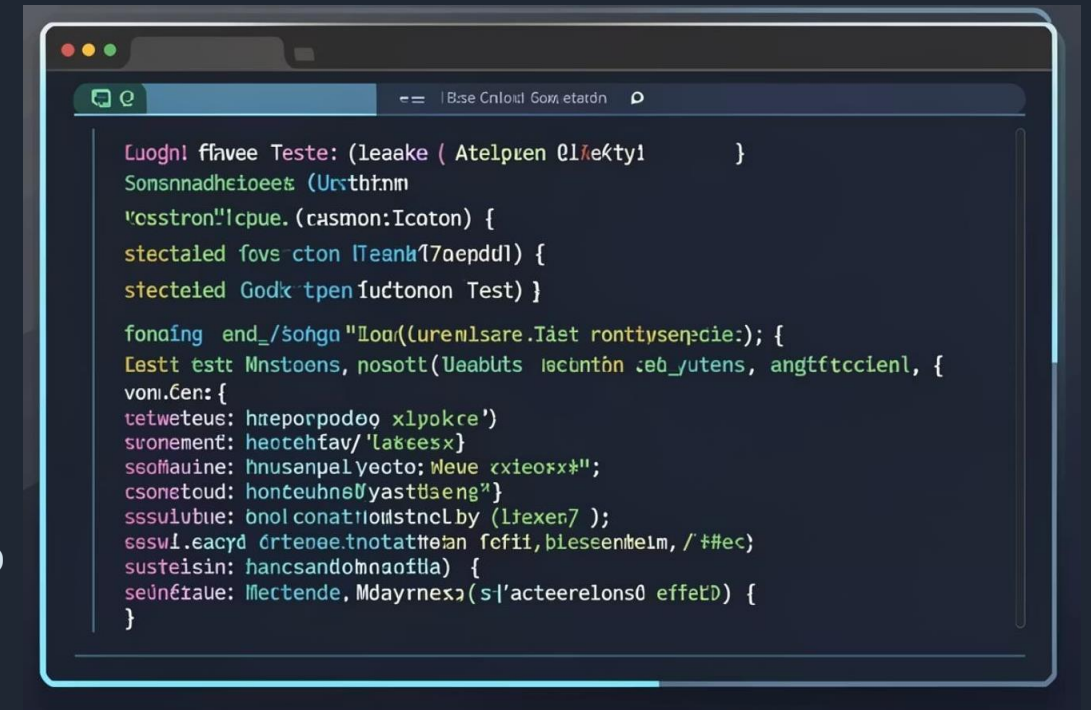
Step Definitions & Hooks

BookingSteps.java

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

TestHooks

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



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.java Management Handles critical lifecycle events:

- 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

src/test/resources/features/booking.feature:3

Passed **Validate booking price filter works**

Overview History Retries

Severity: normal

Duration: ⌚ 45s 044ms

Execution

▼ Set up

- ✔ stepdefinition.BookingTest.initPages() 624ms
- ✔ hooks.ScenarioHook.setup() 5s 304ms

▼ 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

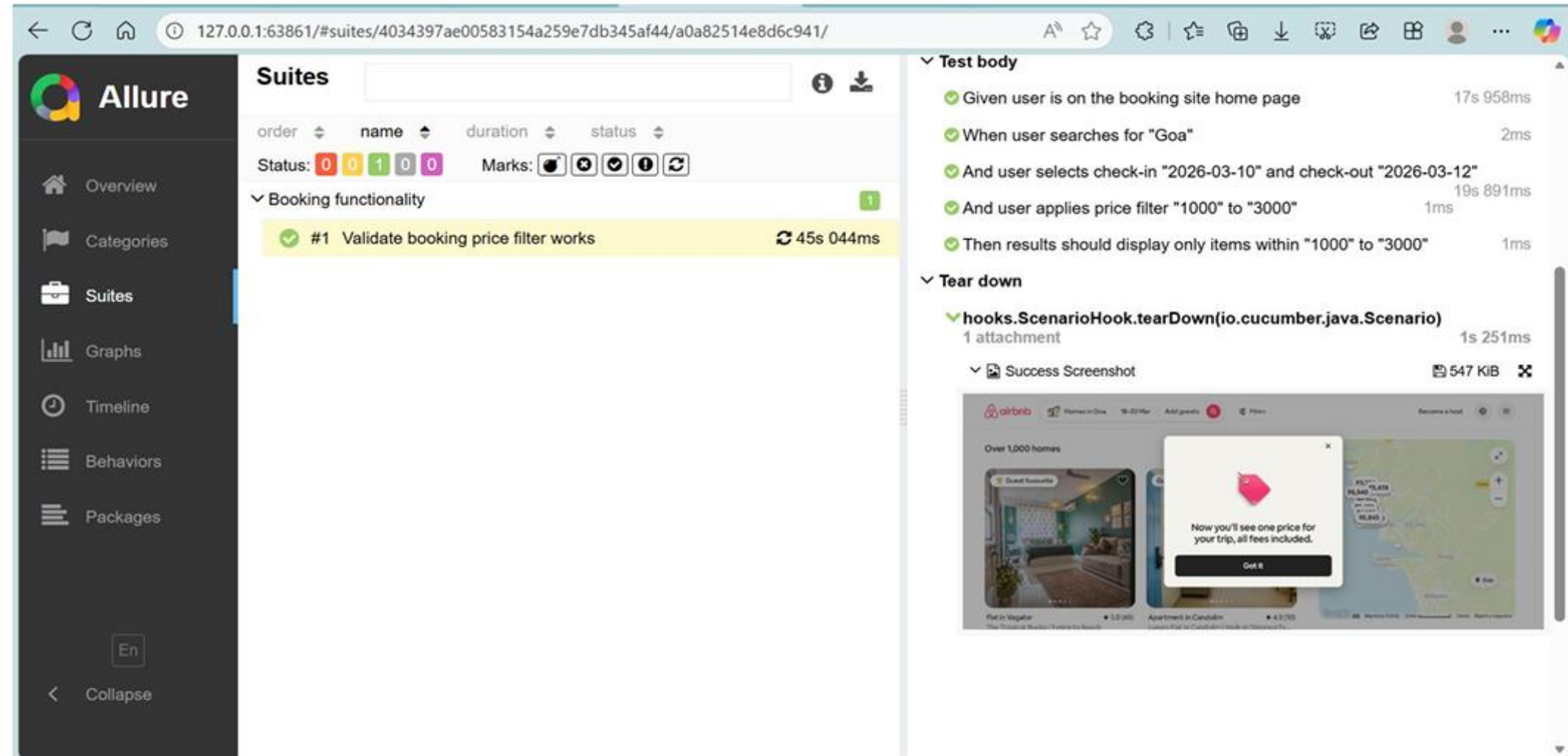
- ✔ hooks.ScenarioHook.tearDown(io.cucumber.java.Scenario) 1s 251ms

1 attachment

▼ Success Screenshot 547 KiB

- 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 displays the Allure Report interface for a specific test suite. The left sidebar contains navigation links: Overview, Categories, Suites, Graphs, Timeline, Behaviors, and Packages. The main content area is titled 'Suites' and shows a table of test results. The table has columns for order, name, duration, and status. The first test case, '#1 Validate booking price filter works', is highlighted in yellow and shows a status of 'Pass' (green circle) and a duration of '45s 044ms'. The right sidebar shows the 'Test body' section, which includes a list of steps: '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), and 'Then results should display only items within "1000" to "3000"' (1ms). Below the test body, the 'Tear down' section shows a hook: 'hooks.ScenarioHook.tearDown(io.cucumber.java.Scenario)' (1s 251ms). A 'Success Screenshot' is attached, showing a screenshot of the Airbnb website with a modal overlay that reads: 'Now you'll see one price for your trip, all fees included. Get it'.

127.0.0.1:63861/#suites/4034397ae00583154a259e7db345af44/a0a82514e8d6c941/

Allure

Overview
Categories
Suites
Graphs
Timeline
Behaviors
Packages

En
Collapse

Suites

order name duration status

Status: 0 0 1 0 0 Marks: [Icons]

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

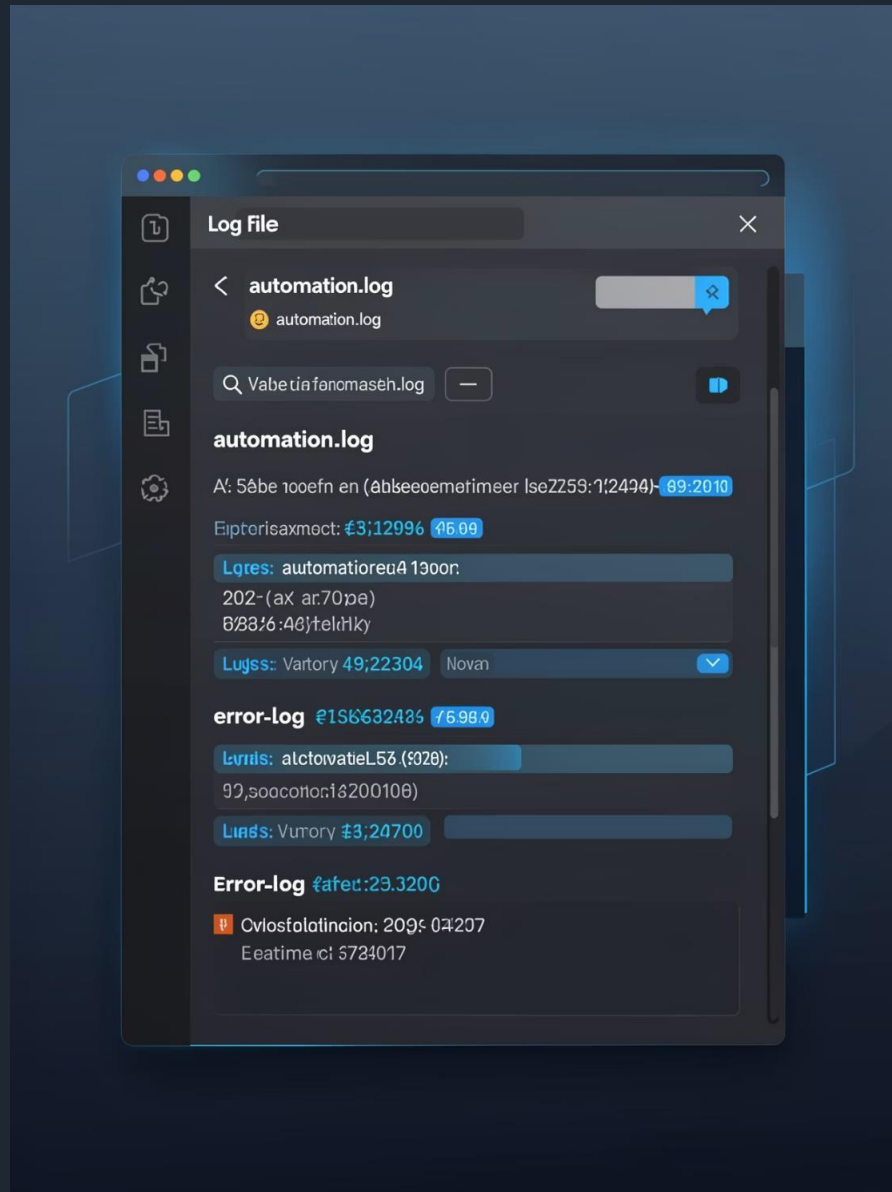
Success Screenshot 547 KiB

airbnb

Over 1,000 homes

Now you'll see one price for your trip, all fees included. Get it

Logging with Log4j2



- Files

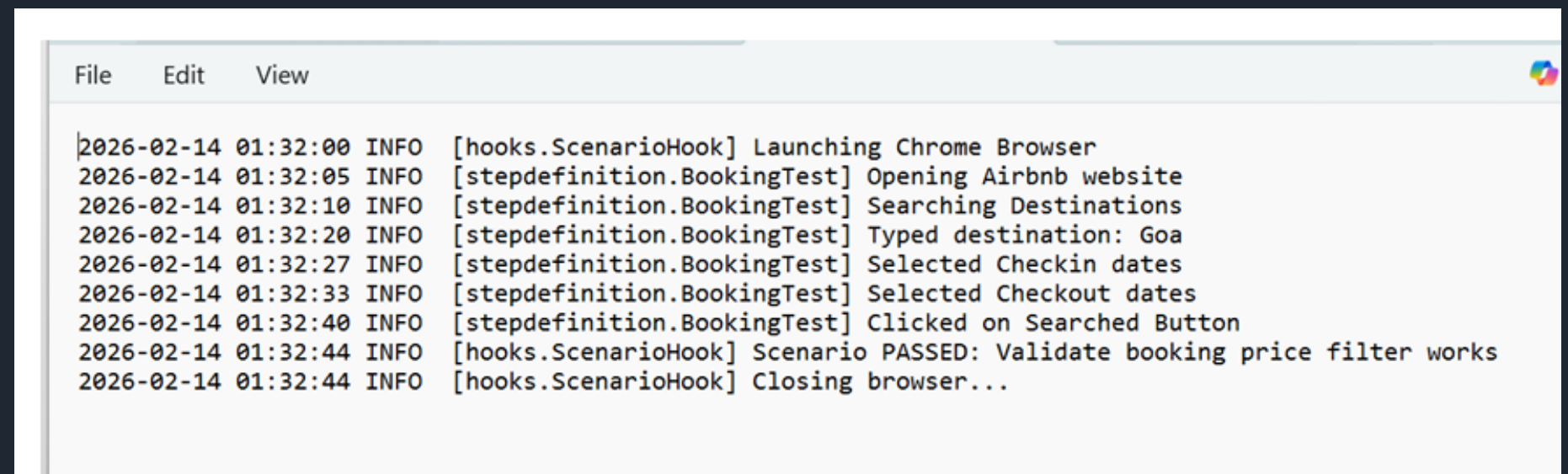
automation.log (INFO/WARN/ERROR)
and error.log (errors only).

- Benefits

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

- Captured Events

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



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 !!!