

Final Test Report – LIRAM Auto Catalog System

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Introduction:

This report outlines the results of software testing activities performed for the LIRAM Auto Catalog system, a Java-based desktop application that allows users to browse, compare, and favourite vehicles. The goal of this report is to demonstrate thorough testing via unit tests, integration tests, and manual system tests. All critical features have been validated to ensure that the software meets its intended functional requirements.

Unit Testing:

For this project, unit tests were implemented using the JUnit framework to validate the functionality of core classes, such as Vehicle, VehicleDatabase, and UserAuthService.

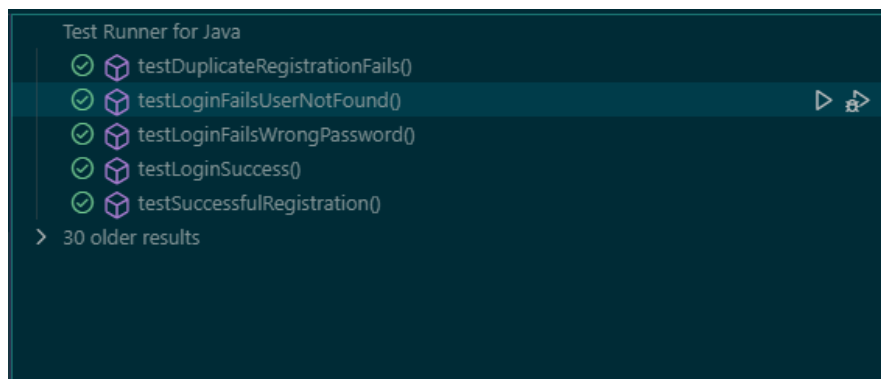
What was tested:

- ***VehicleTest.java*** verified that all vehicles loaded from cars.json have correct make, model, year, price, fuel type, and reviews. Specific test methods were written for each car entry to ensure data integrity
- ***VehicleDatabaseTest.java*** ensured that the vehicle list is successfully loaded and not empty
- ***UserAuthServiceTest.java*** validated user registration and login logic, including success scenarios and expected failure conditions (e.g., duplicate registration, wrong password, non-existent user)

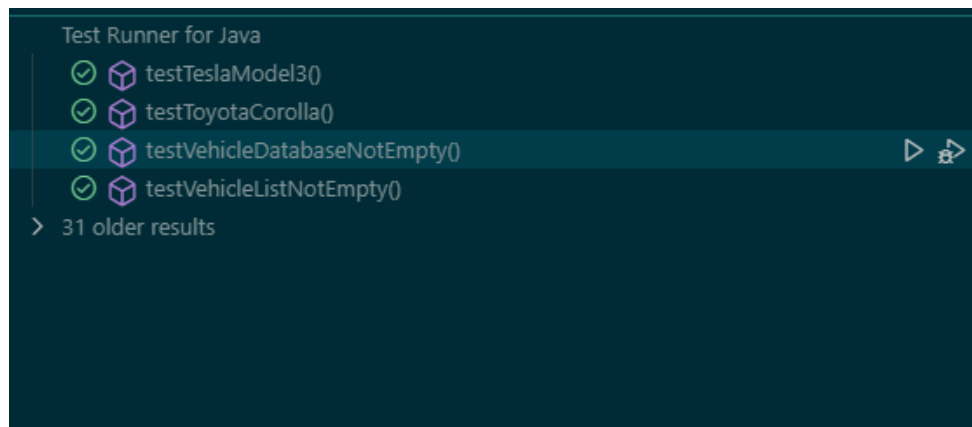
Purpose:

These tests confirm that the building blocks of the system operate correctly before integrating them together. All unit tests passed successfully, which increases confidence in the correctness of the application's core logic.

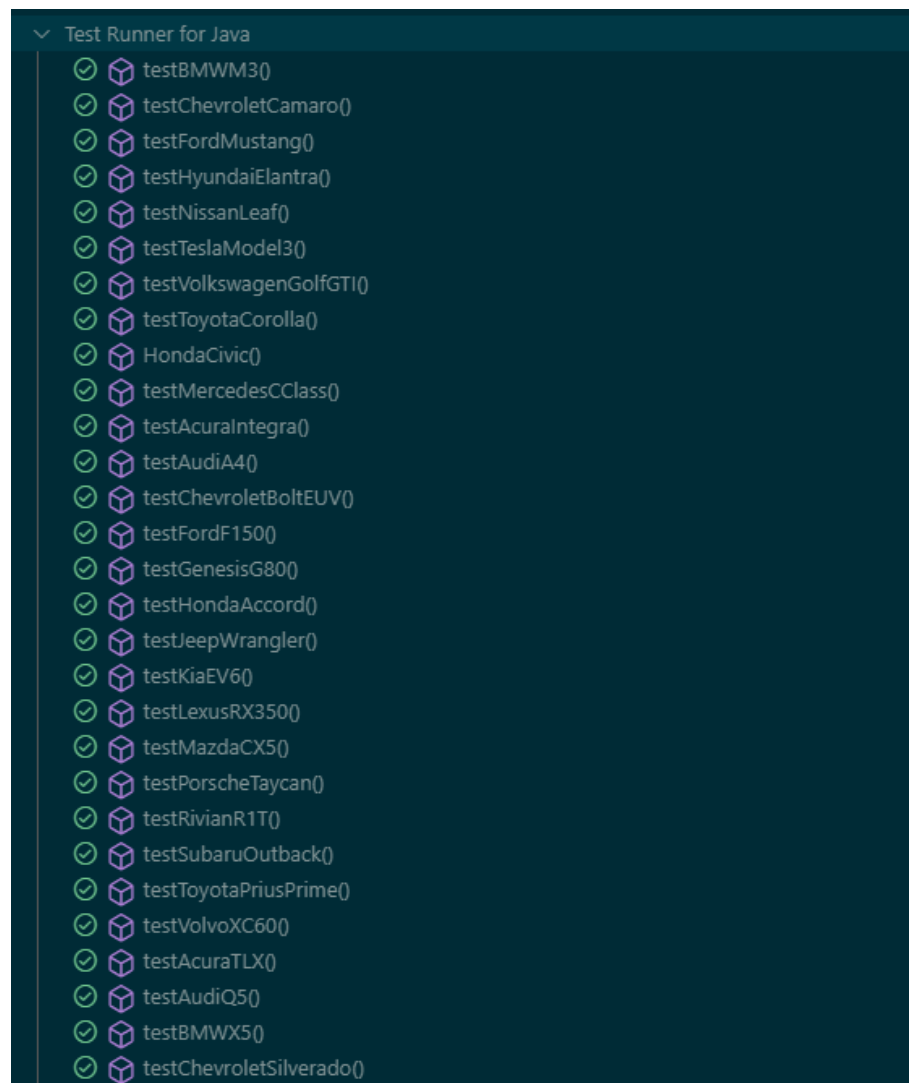
UserAuthServiceTest.java:

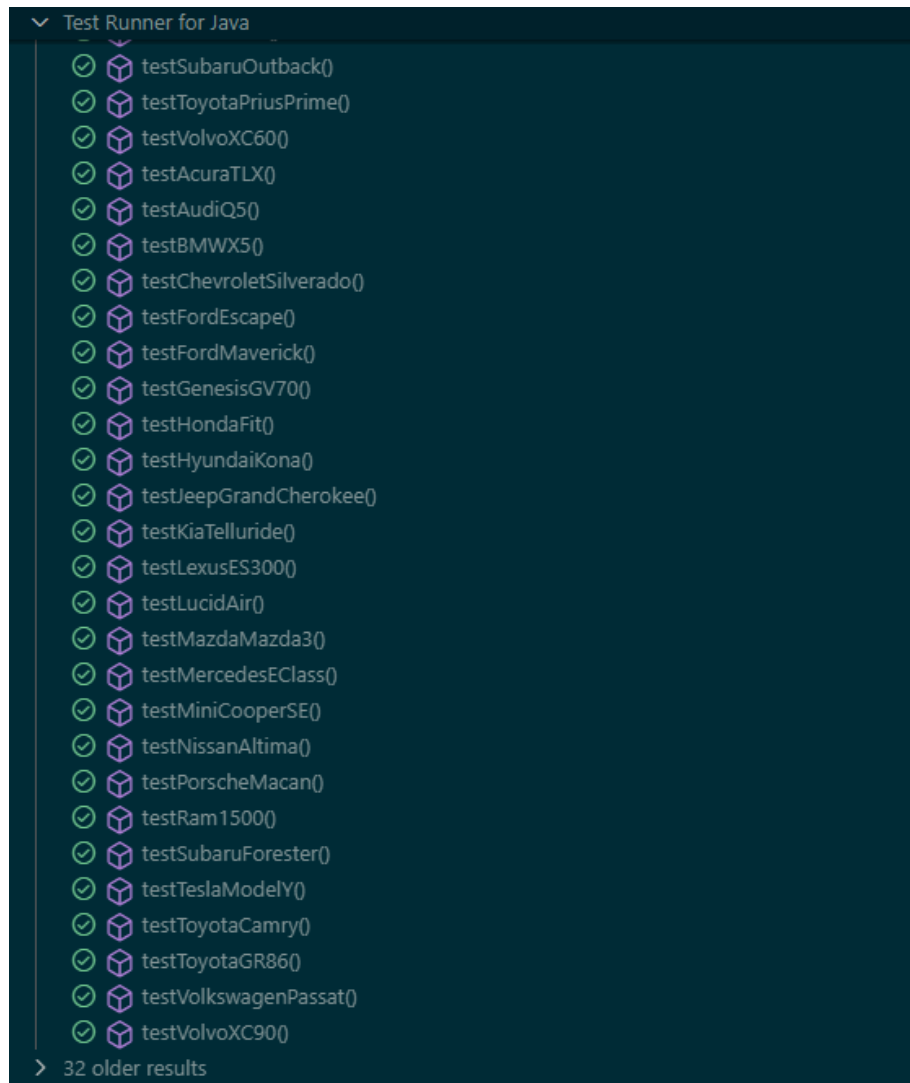


VehicleDatabaseTest.java:



VehicleTest.java:





Integration Tests:

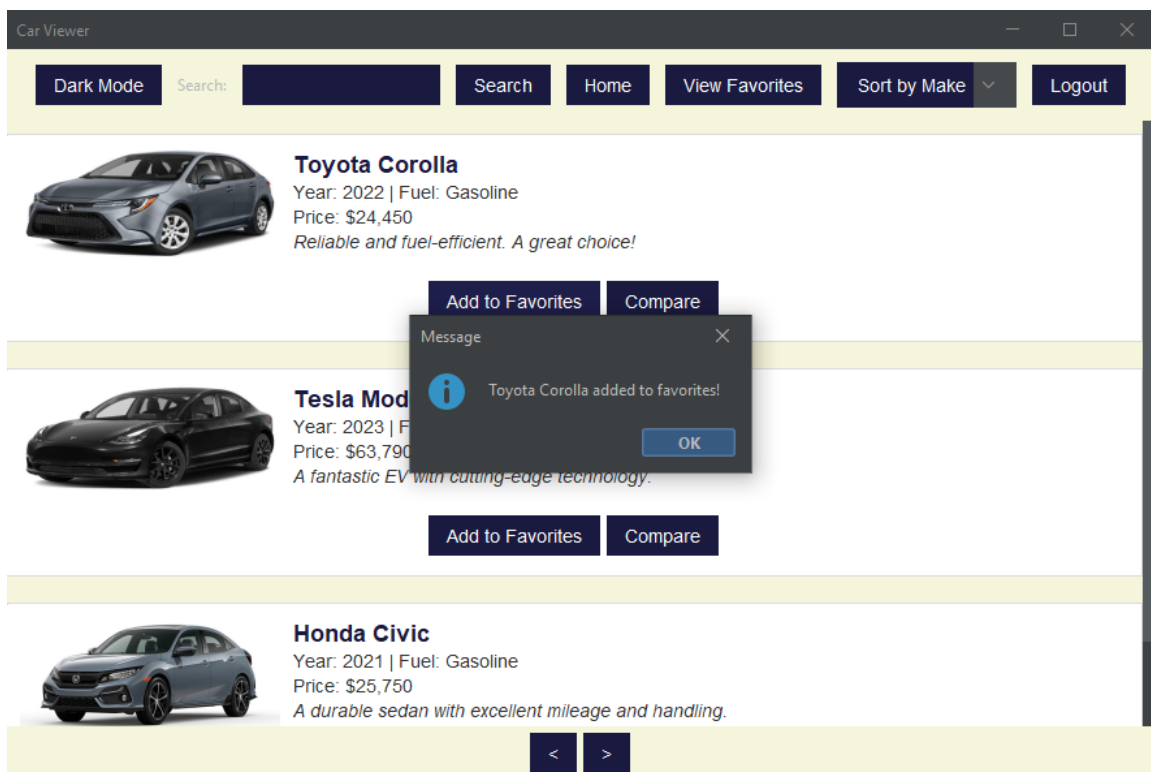
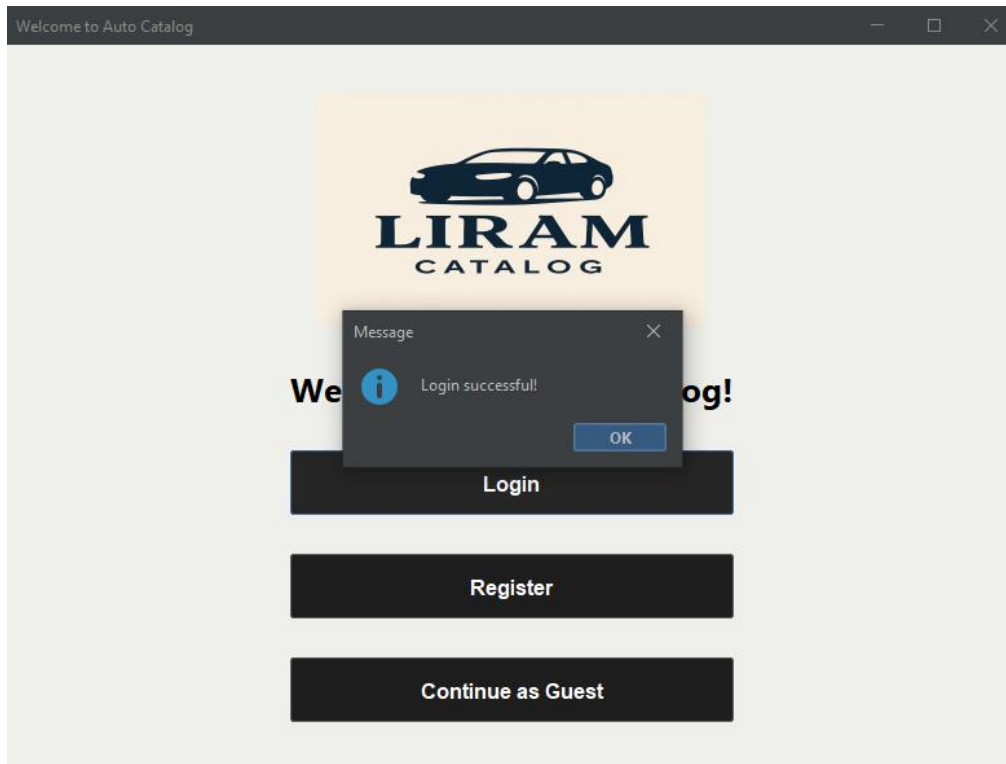
Integration testing examines the interaction between multiple components or subsystems to ensure they work together correctly. These tests validate functional use cases that rely on multiple classes cooperating.

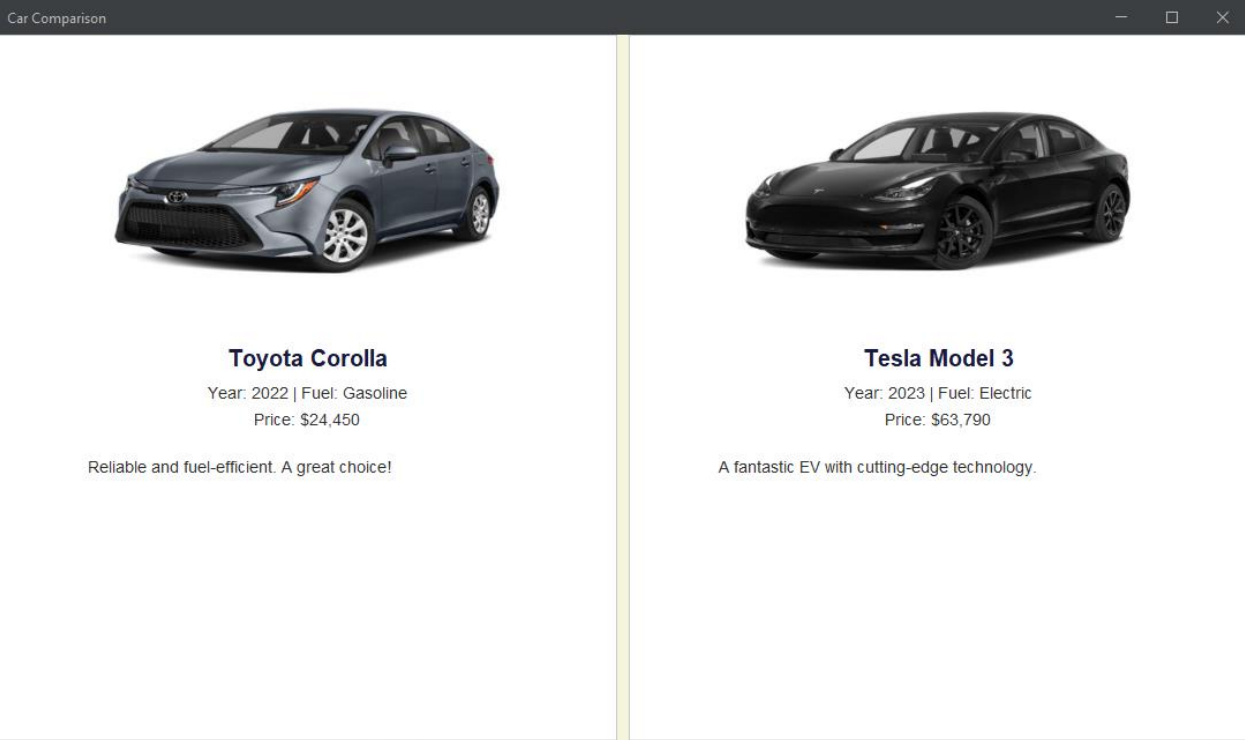
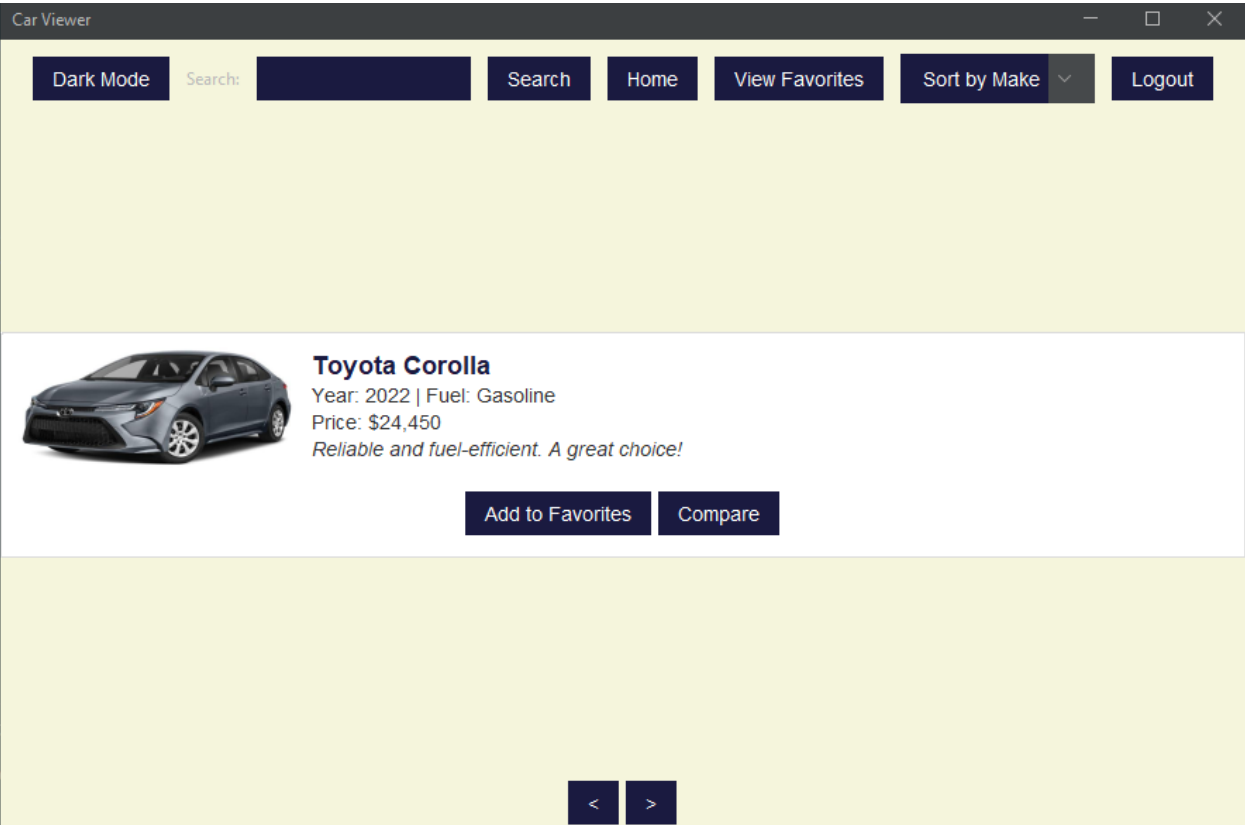
What was tested:

- **IT-01** – Login updates the session: Ensures *LoginScreen*, *Session*, and *UserAuthService* coordinate to update the active user on successful login
- **IT-02** – Adding to Favourites updates the correct user profile: Validates that clicking “Add to Favourites” updates the logged-in user’s list through *CarViewer*, *Session.currentUser*, and *UserDatabase*
- **IT-03** – Compare feature works across windows: Tests the interaction between *CarViewer* and *CarComparisonWindow*, confirming that both selected vehicles are passed and displayed side-by-side

Purpose:

These tests ensure that the flow of data and control across modules functions seamlessly, which is critical for features that span multiple files and classes.





System Tests:

System testing simulates real-world usage of the application to ensure that all major features work end-to-end. These are manual GUI-based tests performed through the application's user interface, closely matching how an actual user would interact with the system.

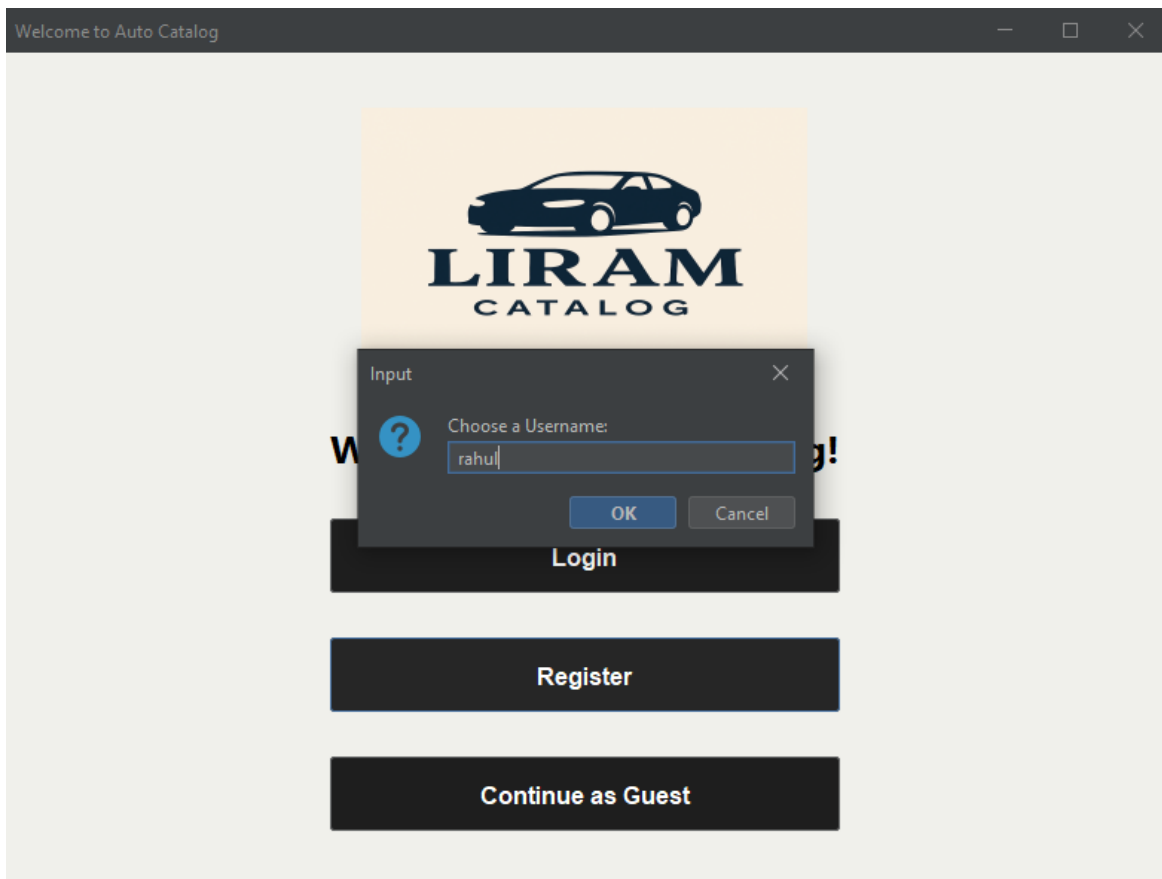
What was tested:

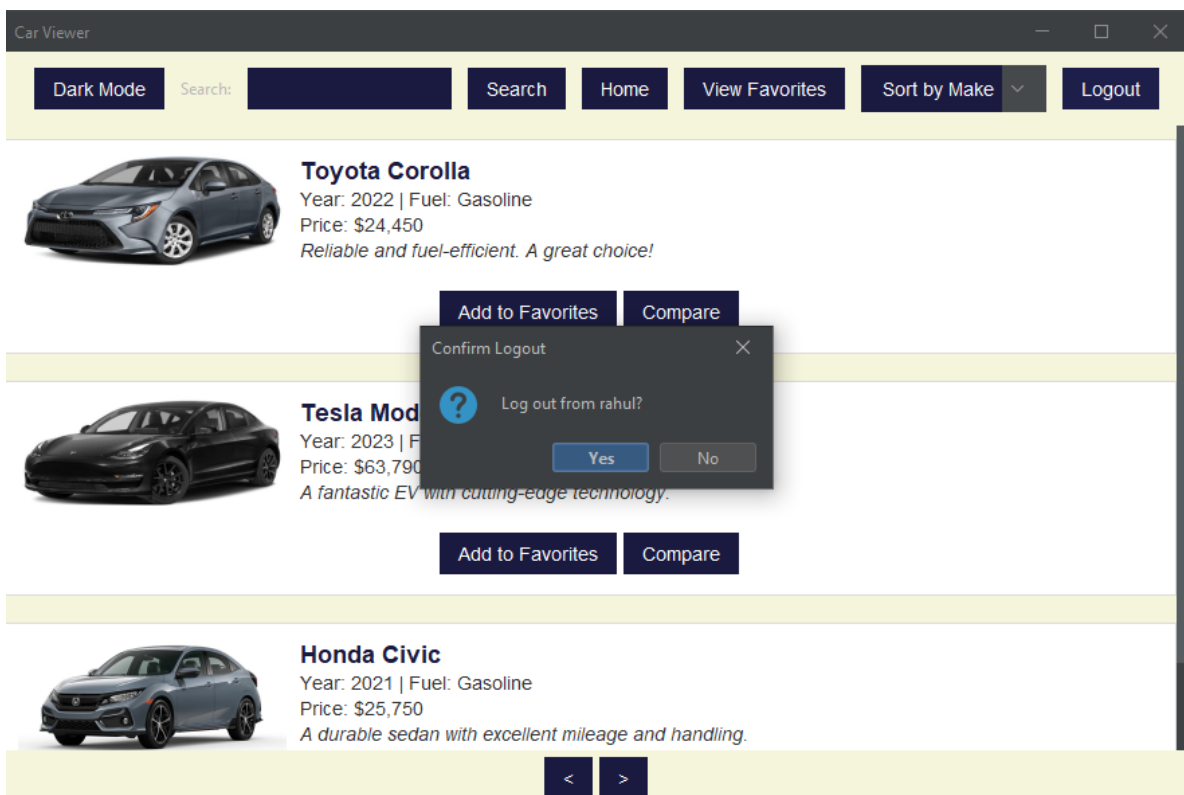
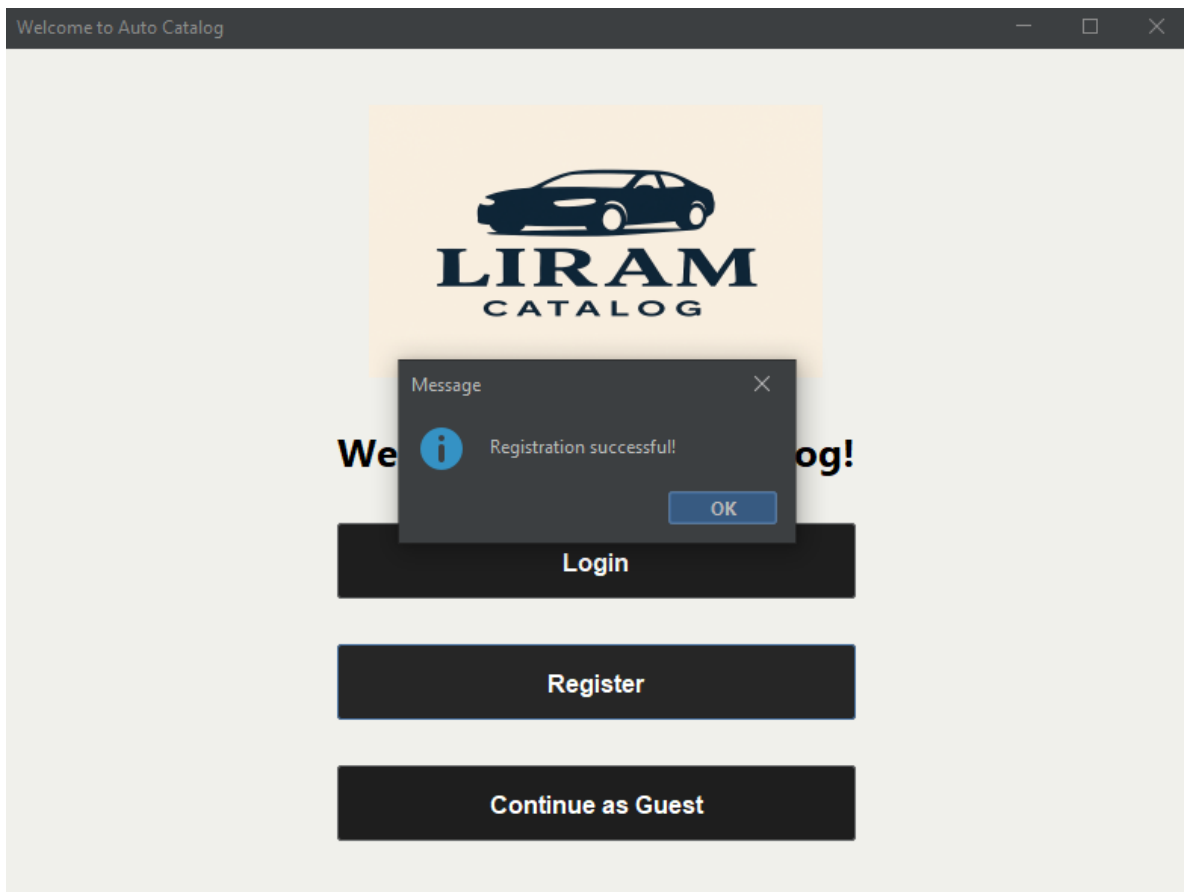
- **ST-01** – User Registration and Login: Verified that users can register, log in, view the catalog, and log out properly.
- **ST-02** – Guest Restrictions: Confirmed that guests cannot use features like adding to favorites (a message is shown instead).
- **ST-03** – Search, Sort, and Theme Toggle: Ensured that search results update in real time, sort dropdowns rearrange listings correctly, and dark mode toggles the entire UI's appearance

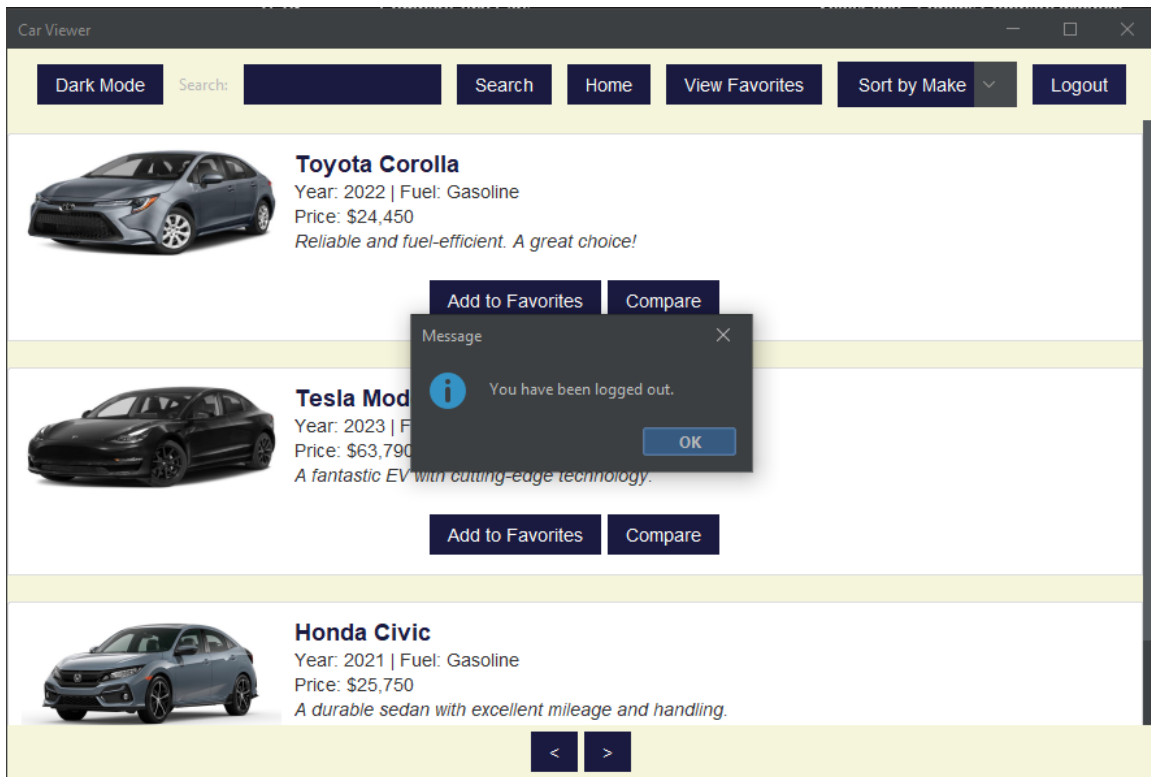
Evidence:

Annotated screenshots were captured for each scenario to visually demonstrate the expected behaviour and support the test case validation.

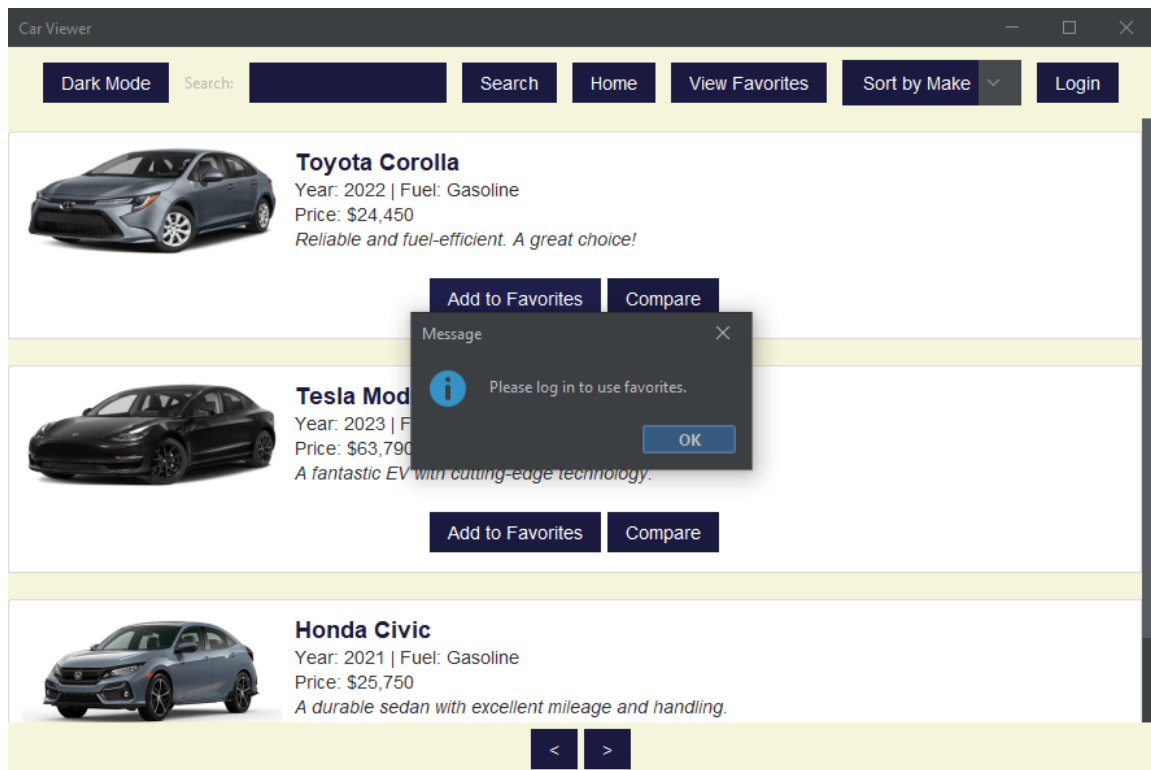
- Registration, Login, and Logout:







- Guests cannot use Favourites



- Searching (Tesla)

Car Viewer

Dark Mode

Search: Tesla


Search

Home

View Favorites

Sort by Make

Login



Tesla Model 3


Year: 2023 | Fuel: Electric

Price: \$63,790

A fantastic EV with cutting-edge technology.

Add to Favorites

Compare



Tesla Model Y

Year: 2022 | Fuel: Electric

Price: \$87,500

Spacious electric SUV with autopilot features.

Add to Favorites

Compare

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- Sorting by Make, Year, Price

Car Viewer

Dark Mode

Search: Tesla


Search

Home

View Favorites

Sort by Make

Login



Acura TLX


Year: 2022 | Fuel: Gasoline

Price: \$53,400

Performance sedan with premium features.

Add to Favorites

Compare



Acura Integra


Year: 2023 | Fuel: Gasoline

Price: \$42,550

A revived classic with sporty appeal.

Add to Favorites

Compare



Audi A4

Year: 2022 | Fuel: Gasoline

Price: \$47,200

A refined European sedan with advanced features.

Add to Favorites

Compare

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Car Viewer

Dark Mode

Search: Tesla


Search

Home

View Favorites

Sort by Year


Login



Honda Fit
Year: 2019 | Fuel: Gasoline
Price: \$18,990
Compact yet versatile hatchback.

Add to Favorites


Compare



Toyota Camry
Year: 2020 | Fuel: Gasoline
Price: \$31,550
Smooth drive and reliable performance.

Add to Favorites

Compare



Nissan Altima
Year: 2020 | Fuel: Gasoline
Price: \$33,100
Mid-size sedan with a comfy interior.

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Car Viewer

Dark Mode

Search: Tesla


Search

Home

View Favorites

Sort by Price


Login



Honda Fit
Year: 2019 | Fuel: Gasoline
Price: \$18,990
Compact yet versatile hatchback.

Add to Favorites


Compare



Hyundai Elantra
Year: 2022 | Fuel: Hybrid
Price: \$22,099
A compact sedan with modern features and hybrid efficiency.

Add to Favorites

Compare

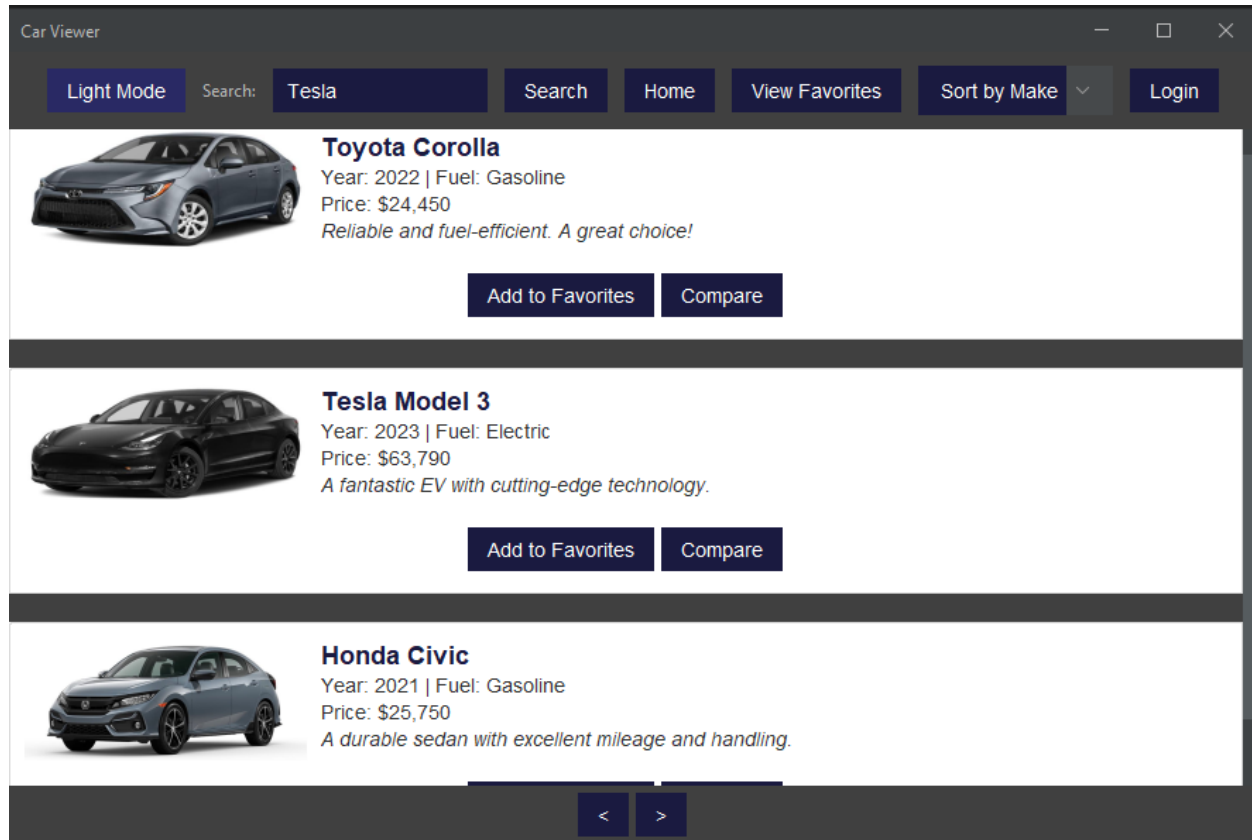


Toyota Corolla
Year: 2022 | Fuel: Gasoline
Price: \$24,450
Reliable and fuel-efficient. A great choice!

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- Dark Mode



Conclusion:

All unit, integration, and system tests were executed and passed successfully. Based on the results, the LIRAM Auto Catalog system has met the functional requirements outlined in the previous phases and is ready for deployment. All critical workflows, including user authentication, vehicle browsing, sorting, and comparison, were verified manually and programmatically.