

TEST PLAN AND TEST RESULTS

Introduction

The purpose of this Test Plan is to define the testing strategy, scope, objectives, and test cases for the **CarCare – Vehicle Maintenance & Service Management System**.

The goal is to ensure that all modules function correctly, meet user requirements, and work smoothly across devices.

Scope of Testing In Scope

The following features will be tested:

- User Authentication
- Vehicle Management
- Mileage Updates
- Dashboard Display
- Service Booking (Step 1 → Step 2 → Step 3)
- Garage Finder
- Notifications
- Expenses Tracking
- Service History
- Profile Settings
- Mechanic dashboard full implementation

Out of Scope

- Payment gateway
- Full Maps integration (coming soon)

Testing Types

The project covers the following test types:

Functional Testing

Ensures each feature behaves as expected.

Integration Testing

Tests the interaction between frontend, Firestore, and Firebase services.

UI/UX Testing

Confirms layout, navigation, and responsiveness.

Performance Testing

Checks loading time of Dashboard, Garages, and Book Service screens.

Smoke Testing

Basic checks after each deployment.

Testing Environment

- **Frontend:** React + TypeScript (Firebase Hosting)
- **Backend:** Firebase Cloud Functions
- **Database:** Firestore NoSQL
- **Devices Tested:** Android mobile, Chrome desktop browser
- **Tools Used:**
 - Browser DevTools ○ Postman (for API verification when needed) ○ Firebase Emulator Suite

Test Cases

Below are the core test cases grouped by module.

A. Authentication Test Cases

TC ID Test Case	Steps	Expected Result
TC-A1 Login with valid credentials	Enter email + password → Sign In	Redirect to dashboard
TC-A2 Login with invalid credentials	Enter wrong password	Error message shown
TC-A3 Signup new user	Enter details → Submit	User created & logged in
TC-A4 Forgot password	Click "Forgot password"	Reset link sent

B. Vehicle Management Test Cases

TC ID Test Case	Steps	Expected Result
TC-V1 Add Vehicle	Enter brand/model/year → Save	Vehicle appears in dashboard
TC-V2 Update Mileage	Open vehicle → Update mileage	New mileage visible in dashboard
TC-V3 View Vehicle List	Open Dashboard	All vehicles displayed

C. Service Booking Test Cases

TC ID Test Case	Steps	Expected Result
TC-S1 Select Service	Choose service from list	Price & duration displayed
TC-S2 Select Date & Time	Choose date → Select slot	Slot highlighted
TC-S3 Confirm Booking	Review summary → Confirm	Booking stored in Firestore
TC-S4 Back navigation	Click Back button	Returns to previous booking step

D. Garage Finder Test Cases

TC ID Test Case	Steps	Expected Result
TC-G1 Search Garages	Enter search term	Garages filtered
TC-G2 Near Me	Click "Near Me"	Nearby garages shown
TC-G3 Book Now	Click Book Now	Redirects to booking flow

E. Expenses Module

TC ID Test Case	Steps	Expected Result
TC-E1 Add Expense	Enter amount/category → Save	Expense added
TC-E2 View Expenses	Open expense page	Monthly chart visible
TC-E3 Scan Receipt	Click Scan button	Image picker opens

F. Notifications

TC ID Test Case	Steps	Expected Result
TC-N1 View notifications	Open notifications page	All reminders visible
TC-N2 Receive booking alert	Make a booking	Notification generated

Test Results Summary Total Test Cases Executed: 39

Passed: 36 Failed: 3

(These will be fixed in Sprint 4.)

Failed Test Case Log

TC ID Issue	Root Cause	Status
TC-G1 Search not filtering correctly	Case sensitivity in search query	Fix in progress
TC-E3 Scan receipt fails on some devices	Camera permission not granted	Fix planned
TC-N2 Notification delay	Slow Firebase Cloud Function trigger	Under investigation

Conclusion

The overall system is **stable, functional, and meets major requirements.**

Major workflows like authentication, vehicle management, service booking, and expenses work smoothly. Minor issues identified during testing will be resolved in the next sprint cycle.