**Chapter No 08  
 Testing**

**8. Testing**

Testing is the process of checking if the Road Sync app is working properly. It helps in finding and fixing any bugs or issues that might affect the app’s performance. By testing, the speed and overall quality of the app can be improved. This makes sure that all users, like travelers, fleet managers, and administrators, have a smooth and easy experience.

**8.1 Test Cases**

Test cases are simple situations or conditions made to check if a software or app is working properly. They are used to give input to the system and see if the output is what we expect. This helps developers and testers know if the software meets the needed requirements. By running these test cases, they can make sure the software works well, gives a good experience to users, and helps find and fix any problems.

**User Module Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| # | **Test Case** | **Description** | **Status** |
| 1 | Register / Login | Verify user registration and login | Pass |
| 2 | Trip Creation | User can create a new trip with details | Pass |
| 3 | Join Trip with Code | Another user can join using the invite code | Pass |
| 4 | Real-time Location Sharing | User location updates in real-time on the map | Pass |
| 5 | Geofencing Alerts | Users alerted when leaving 3km radius | Pass |
| 6 | Send Notification | Users can send alerts to other trip members | Pass |
| 7 | Offline Location Storage | Location stored when offline and syncs later | Pass |
| 8 | Emergency Alert | User can send SOS alert | Pass |
| 9 | Trip History | User can see past trips and route data | Pass |
| 10 | Logout | Proper session termination | Pass |

**Admin Panel Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Test Case** | **Description** | **Status** |
| 1 | Admin Login | Secure access to admin dashboard | Pass |
| 2 | User Management | Admin can view and manage registered users | Pass |
| 3 | Trip Monitoring | Admin can view ongoing trip | Pass |
| 4 | View Trip | View trip details | Pass |

**8.2 Detailed Test Cases**

|  |
| --- |
| **Test Case** ID: TC\_01 **test designed by**:  **Test Priority**: High **test designed date:**  **TC\_01 - Register / Login** **test executed by:**  **Module**: Register / Login **test execution date:**  **Description**: Verify user registration and login works properly |

|  |
| --- |
| **Pre-Condition**:  User has no existing account or has registered. |

**Table 8.1singup**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| 1 | Open app and navigate to registration screen | - | Registration screen displayed | Displayed | Pass |
| 2 | Enter valid user details | Name, Email, Password | Details accepted | Accepted | Pass |
| 3 | Click register | - | Account created and user logged in | Success | Pass |
| 4 | Logout | - | User logged out | Success | Pass |
| 5 | Login with created credentials | Email, Password | User logged in successfully | Success | Pass |

|  |
| --- |
| **Post-Condition:**  User account created and accessible. |

**8.1.2 \_trip creation**

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| --- |
| **TC\_02** - Trip Creation **Test Designed By: [Your Name]**  **Test Case ID:** TC\_02 **Test Execution Date: [Date]**  **Module**: Trip Creation  **Test Priority**: High  **Description:** User can create a new trip with correct details. |

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| --- |
| **Pre-Condition:**  User must be logged in and connected to the internet. |

**Table :8.2 trip creation**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| 1 | Navigate to trip creation screen | - | Trip creation screen opened | Opened | Pass |
| 2 | Enter trip name | Weekend Ride | Trip name accepted | Accepted | Pass |
| 3 | Select start and end locations | Location A, Location B | Locations set correctly | Set | Pass |
| 4 | Click create | - | Trip created and user added as admin | Created | Pass |

|  |
| --- |
| **Post-Condition:**  **Trip visible in user dashboard and Firebase.** |

**8.1.3 invite & join trip**

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| --- |
| TC\_03 - Invite & Join Trip **Test Designed By: [Your Name]**  **Test Case ID:** TC\_03 **Test Execution Date: [Date]**  **Module:** Invite & Join Trip  **Test Priority**: High  **Description**: Users can join an existing trip using an invite code. |

|  |
| --- |
| **Pre-Condition:**  User must be logged in and have a valid invite code |

**Table:8.3 invite & join trip**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| 1 | Open app and navigate to join trip screen | - | Join trip screen opened | Opened | Pass |
| 2 | Enter valid invite code | ABC123 | Code accepted | Accepted | Pass |
| 3 | Click join | - | User added to trip | Added | Pass |

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|  |
| --- |
| **Post-Condition:**  User included in trip group and location sharing enabled. |

**8.1.4 real-time location sharing**

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| --- |
| **TC\_04 -** Real-time Location Sharing **Test Designed By: [Your Name]**  **Test Case ID:** TC\_04 **Test Execution Date: [Date]**  **Module:** Real-time Location Sharing  **Test Priority:** High  **Description:** User location updates in real-time on the trip map |

|  |
| --- |
| **Pre-Condition:**  User is part of an active trip and location permissions are granted. |

**Table:8.4 real\_time location sharing**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| 1 | Start trip and enable location sharing | - | Location sharing enabled | Enabled | Pass |
| 2 | Move device physically | - | Location marker moves on map | Moves | Pass |
| 3 | Verify other users' locations update | - | Locations visible on map | Visible | Pass |

|  |
| --- |
| **Post-Condition:**  Real-time locations synced and displayed. |

**8.1.5 Geofencing Alerts**

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| **TC\_05 -** Geofencing Alerts **Test Designed By: [Your Name]**  **Test Case ID:** TC\_05 **Test Execution Date: [Date]**  **Module:** Geofencing Alerts  **Test Priority**: Medium  **Description:** Users get alerted when leaving the 3km trip radius. |

|  |
| --- |
| **Pre-Condition:**  User must be part of an active trip with geofencing enabled. |

**Table: 8.5geafencing alerts**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| 1 | Start trip with geofencing enabled | - | Geofence active | Active | Pass |
| 2 | Move device outside 3km radius | - | Alert notification received | Received | Pass |
| 3 | Return inside radius | - | Alert cleared | Cleared | Pass |

|  |
| --- |
| **Post-Condition:**  Geofence alerts function correctly. |

**8.1.6 send notification**

|  |
| --- |
| TC\_06 - Send Notification  Test Case ID: TC\_06  Module: Send Notification  Test Priority: Medium  Test Designed By: [Your Name]  Test Execution Date: [Date]  Description: Users can send notifications to other trip members. |

|  |
| --- |
| **Pre-Condition:**  User must be in an active trip with network access. |

**Table:8.5 send notification**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| 1 | Open notification panel | - | Notification panel displayed | Displayed | Pass |
| 2 | Compose message | Meet at gas station | Message ready | Ready | Pass |
| 3 | Send notification | - | Notification received by members | Received | Pass |

|  |
| --- |
| **Post-Condition:**  Notifications delivered successfully. |

**8.1.7 Offline Location Storage**

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| --- |
| TC\_07 - Offline Location Storage  Test Case ID: TC\_07  Module: Offline Location Storage  Test Priority: Medium  Test Designed By: [Your Name]  Test Execution Date: [Date]  Description: Location data stored offline and synced when online. |

|  |
| --- |
| **Pre-Condition:**  User has network interruption during trip. |

**Table:8.7 Offline Location Storage**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Start trip and enable offline mode | - | Offline mode active | Active | Pass |
| 2 | Move device while offline | - | Location data stored locally | Stored | Pass |
| 3 | Reconnect to network | - | Stored data synced to server | Synced | Pass |

Post-Condition: Offline data synced correctly.

TC\_08 - Emergency Alert

Test Case ID: TC\_08

Module: Emergency Alert

Test Priority: High

Test Designed By: [Your Name]

Test Execution Date: [Date]

Description: Users can send emergency SOS alerts to all trip members.

Pre-Condition: User is part of active trip.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Open emergency alert screen | - | Screen displayed | Displayed | Pass |
| 2 | Send SOS alert | - | Alert sent to trip members | Sent | Pass |
| 3 | Members receive and acknowledge alert | - | Alert acknowledged | Acknowledged | Pass |

Post-Condition: Emergency alert feature works as expected.

TC\_09 - Trip History

Test Case ID: TC\_09

Module: Trip History

Test Priority: Low

Test Designed By: [Your Name]

Test Execution Date: [Date]

Description: Users can view past trips and route analytics.

Pre-Condition: User has completed at least one trip.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Open trip history screen | - | History screen displayed | Displayed | Pass |
| 2 | Select past trip | - | Trip details shown | Shown | Pass |
| 3 | View analytics and reports | - | Data visible | Visible | Pass |

Post-Condition: Trip history displayed accurately.

TC\_10 - Logout

Test Case ID: TC\_10

Module: Logout

Test Priority: High

Test Designed By: [Your Name]

Test Execution Date: [Date]

Description: Users can successfully log out of the application.

Pre-Condition: User is logged in.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Navigate to logout option | - | Logout option visible | Visible | Pass |
| 2 | Click logout | - | User session terminated | Terminated | Pass |
| 3 | Return to login screen | - | Login screen displayed | Displayed | Pass |

Post-Condition: User logged out successfully.

TC\_11 - Admin Login

Test Case ID: TC\_11

Module: Admin Login

Test Priority: High

Test Designed By: [Your Name]

Test Execution Date: [Date]

Description: Admin can securely login to the admin dashboard.

Pre-Condition: Admin has valid credentials.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Open admin login screen | - | Login screen displayed | Displayed | Pass |
| 2 | Enter valid admin credentials | Admin user, password | Credentials accepted | Accepted | Pass |
| 3 | Access dashboard | - | Dashboard displayed | Displayed | Pass |

Post-Condition: Admin logged in successfully.

TC\_12 - User Management

Test Case ID: TC\_12

Module: User Management

Test Priority: Medium

Test Designed By: [Your Name]

Test Execution Date: [Date]

Description: Admin can view, edit, or remove registered users.

Pre-Condition: Admin is logged in.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Open user management panel | - | User list displayed | Displayed | Pass |
| 2 | Select user | - | User details opened | Opened | Pass |
| 3 | Change user active and inactive status | - | Changes saved | Saved/Changed | Pass |

Post-Condition: User data managed successfully.

TC\_13 - Trip Monitoring

Test Case ID: TC\_13

Module: Trip Monitoring

Test Priority: Medium

Test Designed By: [Your Name]

Test Execution Date: [Date]

Description: Admin views all trips with details, and can logout after reviewing.

Pre-Condition: Admin is logged in.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Test Step | Test Data | Expected Result | Actual Result | Status |
| 1 | Access trip dashboard | - | Dashboard opened | Opened | Pass |
| 2 | Select a trip from the list | - | Trip details shown | Displayed | Pass |
| 3 | Admin can Logout from admin panel | - | Admin successfully logged out | Logged out | Pass |

Post-Condition: Admin has viewed trips and logged out successfully.

//////////////////////////////////////////////////////////////////////////

YAHAN SY MAZEED DATA CHYE HO TU UTHA LAINA  
Chapter 8

Testing

8.1 Test Cases Summary

| **#** | **Test Case** | **Description** | **Status** |
| --- | --- | --- | --- |
| TC\_01 | Register / Login | Verify user registration and login functionality | Pass |
| TC\_02 | Trip Creation | User can create a new trip with all required details | Pass |
| TC\_03 | Join Trip with Code | User joins existing trip using invite code | Pass |
| TC\_04 | Real-time Location Sharing | Location updates correctly on map | Pass |
| TC\_05 | Geofencing Alerts | Alerts when users exit 3km radius | Pass |
| TC\_06 | Send Notification | Users send notifications to trip members | Pass |
| TC\_07 | Offline Location Storage | Location saved offline and synced later | Pass |
| TC\_08 | Emergency Alert | SOS alerts sent to trip members | Pass |
| TC\_09 | Trip History | View past trips and analytics | Pass |
| TC\_10 | Logout | Proper logout and session termination | Pass |
| TC\_11 | Admin Login | Secure login for admin panel | Pass |
| TC\_12 | User Management | Admin manages users (view/edit/delete) | Pass |
| TC\_13 | Trip Monitoring | Admin views live trips and alerts | Pass |
| TC\_14 | Trip Analytics | Admin views trip history and statistics | Pass |

8.2 Detailed Test Cases

TC\_01 - Register / Login

**Description:** Verify registration and login for new and returning users.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Launch app and open registration screen | - | Registration screen displayed | Displayed | Pass |
| 2 | Enter valid name, email, password | John Doe, john@example.com, pass123 | Fields accepted | Accepted | Pass |
| 3 | Submit registration | - | Account created, user logged in | Success | Pass |
| 4 | Logout | - | User logged out | Success | Pass |
| 5 | Open login screen | - | Login screen displayed | Displayed | Pass |
| 6 | Enter valid email and password | john@example.com, pass123 | User logged in | Success | Pass |
| 7 | Attempt login with wrong password | john@example.com, wrongpass | Error message shown | Error shown | Pass |
| 8 | Try login with unregistered email | jane@example.com, pass123 | Error message shown | Error shown | Pass |

**Post-Condition:** User accounts created and login functionality validated.

TC\_02 - Trip Creation

**Description:** User creates new trip with proper details.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Navigate to trip creation screen | - | Trip creation screen displayed | Displayed | Pass |
| 2 | Input trip name | "Weekend Road Sync" | Trip name accepted | Accepted | Pass |
| 3 | Select valid start location | "City A" | Start location accepted | Accepted | Pass |
| 4 | Select valid end location | "City B" | End location accepted | Accepted | Pass |
| 5 | Click Create | - | Trip saved and shown on dashboard | Saved | Pass |
| 6 | Enter empty trip name | "" | Validation error displayed | Error shown | Pass |
| 7 | Select invalid location | Null or empty | Validation error displayed | Error shown | Pass |

**Post-Condition:** New trip created and saved.

TC\_03 - Join Trip with Code

**Description:** User joins an existing trip using a valid invite code.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open join trip screen | - | Join trip screen displayed | Displayed | Pass |
| 2 | Enter valid invite code | "RS2025" | Code accepted | Accepted | Pass |
| 3 | Click Join | - | User added to trip group | Added | Pass |
| 4 | Enter invalid invite code | "INVALID" | Error message shown | Error shown | Pass |

**Post-Condition:** User successfully joins or receives error.

TC\_04 - Real-time Location Sharing

**Description:** Location updates accurately in real-time.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Start trip and enable location sharing | - | Location sharing activated | Activated | Pass |
| 2 | Move physically | - | Location marker updates | Updates | Pass |
| 3 | Check trip members’ locations | - | All members' markers visible | Visible | Pass |
| 4 | Disable location sharing | - | Location updates stop | Stopped | Pass |

**Post-Condition:** Real-time sharing works correctly.

TC\_05 - Geofencing Alerts

**Description:** Alert sent if user exits 3km radius.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Enable geofencing | - | Geofence activated | Activated | Pass |
| 2 | Move outside 3km radius | - | Alert notification received | Received | Pass |
| 3 | Return inside radius | - | Alert cleared | Cleared | Pass |

**Post-Condition:** Geofence alerts function.

TC\_06 - Send Notification

**Description:** Users send notifications to group members.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open notification panel | - | Panel opens | Opened | Pass |
| 2 | Write message | "Meet at gas station" | Message ready | Ready | Pass |
| 3 | Send notification | - | Message delivered to members | Delivered | Pass |

**Post-Condition:** Notifications delivered.

TC\_07 - Offline Location Storage

**Description:** Location stored offline and synced later.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Disable internet | - | Offline mode activates | Activated | Pass |
| 2 | Move device | - | Location saved locally | Saved | Pass |
| 3 | Reconnect internet | - | Stored locations synced | Synced | Pass |

**Post-Condition:** Offline locations synced.

TC\_08 - Emergency Alert

**Description:** SOS alert sent to trip members.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open emergency alert screen | - | Screen displayed | Displayed | Pass |
| 2 | Send SOS alert | - | Alert sent to members | Sent | Pass |
| 3 | Members acknowledge alert | - | Alert acknowledged | Acknowledged | Pass |

**Post-Condition:** Emergency alert sent and acknowledged.

TC\_09 - Trip History

**Description:** View completed trips and analytics.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open trip history screen | - | Screen displayed | Displayed | Pass |
| 2 | Select past trip | - | Trip details shown | Shown | Pass |
| 3 | View analytics | - | Analytics displayed | Displayed | Pass |

**Post-Condition:** Trip history displayed.

TC\_10 - Logout

**Description:** Logout terminates user session properly.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Navigate to logout | - | Logout option visible | Visible | Pass |
| 2 | Click logout | - | Session terminated | Terminated | Pass |
| 3 | Redirect to login screen | - | Login screen displayed | Displayed | Pass |

**Post-Condition:** User logged out.

#### TC\_11 - Admin Login

**Description:** Admin login validated.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open admin login screen | - | Login screen displayed | Displayed | Pass |
| 2 | Enter valid credentials | admin@example.com, pass123 | Access granted | Granted | Pass |
| 3 | Access dashboard | - | Dashboard displayed | Displayed | Pass |

**Post-Condition:** Admin logged in.

### TC\_12 - User Management (Updated)

**Description:** Admin can view all users, see their details, and change user status.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open user management panel | - | User list displayed | Displayed | Pass |
| 2 | Select a user from the list | - | User details displayed | Displayed | Pass |
| 3 | Change user status | Activate / Deactivate | Status updated | Updated | Pass |
| 4 | Save changes | - | Changes saved successfully | Saved | Pass |

**Post-Condition:** User status updated and saved correctly.

### TC\_13 - Trip Monitoring (Updated)

**Description:** Admin views all trips with details, and can logout after reviewing.

| **Step** | **Test Step** | **Test Data** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | Open trip monitoring dashboard | - | Dashboard with all trips displayed | Displayed | Pass |
| 2 | Select a trip from the list | - | Trip details shown | Displayed | Pass |
| 3 | Logout from admin panel | - | Admin successfully logged out | Logged out | Pass |

**Post-Condition:** Admin has viewed trips and logged out successfully.