

Unit Testing (Jest framework)

All tests use Jest as the testing framework with extensive mocking for Firebase services and React Native components.

Test Suites

1. Firestore user management | 4 tests

- **Create user profile:** Validates user profile creation in Firestore
- **Get user profile:** Tests retrieval of user profile data
- **Update user profile:** Verifies profile updates (name, photo URL)
- **User preferences:** Tests preference updates

2. Firebase authentication | 5 tests

- **Login success:** Valid credential authentication
- **Login failure:** Invalid credential handling
- **User registration:** New user account creation
- **Registration conflicts:** Email already exists scenarios
- **Logout:** Successful user sign-out

3. Review input validation | 9 tests

- **Rating validation:** Ensures ratings are between 1-5 stars
- **Comment validation:** Enforces minimum and maximum characters
- **POI ID validation:** Requires valid Point of Interest identifiers
- **Multiple error handling:** Tests combined validation failures

4. POI search and filter | 4 tests

- **Search by name:** Text POI searching
- **Filter by category:** Category-based filtering (Food & Drink, Parking, Sports)
- **Filter by rating:** Minimum rating requirements
- **Combined filters:** Multiple filter combinations

5. Main app components | 3 tests

- **Component import:** Validates app component structure
- **Performance monitoring:** Firebase Performance integration
- **Authentication mock:** Firebase Auth service availability

Mock services configs:

- **Firebase services:** App, Auth, Firestore, Storage, Performance
- **React navigation:** Stack and tab navigators
- **React Native components:** Maps, screens, safe area, status bar
- **Third-party libraries:** Gesture handler, vector icons

Test configs:

- **Framework:** Jest with React Native preset
- **Environment:** Node.js test environment
- **Coverage:** Comprehensive component and service testing
- **Execution Time:** ~1 second for full test suite

Summary

Category	Tested components	Test count
Data Layer	User profiles, POI data	8
Authentication	Login, registration, logout	5
Validation	Review input validation	9
Search and filter	POI discovery functions	4
Integraiton	App components and Firebase initialisation	3

Results

```
PS C:\Users\azims\Projects\CSE3MAD-LTBA> npm test

> LaTrobeBundooraApp@0.0.1 test
> jest

PASS android/app/src/__tests__/App.test.js
PASS android/app/src/__tests__/auth.test.js
PASS android/app/src/__tests__/reviewValidation.test.js
PASS android/app/src/__tests__/userData.test.js
PASS android/app/src/__tests__/poiSearch.test.js

Test Suites: 5 passed, 5 total
Tests:       25 passed, 25 total
Snapshots:   0 total
Time:        0.878 s, estimated 1 s
Ran all test suites.
```