Example M5: Testing and Code Review

1. Change History

Change Date	Modified Sections	Rationale
None		

2. Back-end Test Specification: APIs

2.1 Test Locations

Interface	Describe Group Location, No Mocks	Describe Group Location, With Mocks	Mocked Components
POST /users/register	`backend/tests/userNM.test.js#L35`	`backend/tests/mocked/userM.test.js#L65`	Database (MySQL)
GET /users/:id	`backend/tests/userNM.test.js#L80`	`backend/tests/mocked/userM.test.js#L100`	Database (MySQL)
PUT /users/:id	`backend/tests/userNM.test.js#L120`	`backend/tests/mocked/userM.test.js#L150`	Database (MySQL)
DELETE /users/:id	`backend/tests/userNM.test.js#L160`	`backend/tests/mocked/userM.test.js#L200`	Database (MySQL)
GET /recommendations/:userId	`backend/tests/recommendationNM.test.js#L35`	`backend/tests/recommendationM.test.js#L65`	User Service (API), Listings Service (API)
POST /price-suggestions	`backend/tests/recommendationNM.test.js#L90`	`backend/tests/recommendationM.test.js#L130`	eBay API (SerpAPI)
GET /price-comparison/:itemId	`backend/tests/recommendationNM.test.js#L150`	`backend/tests/recommendationM.test.js#L200`	Listings Service (API), eBay API (SerpAPI)
POST /chat/start	`backend/chat-service/test/chat.mock.test.ts#L13`	`backend/chat-service/test/chat.test.ts#L17`	Database (MySQL)
GET /chat/:chatId	`backend/chat-service/test/chat.mock.test.ts#L47`	`backend/chat-service/test/chat.test.ts#L46`	Database (MySQL)
GET /chat/user/:userId	`backend/chat-service/test/chat.mock.test.ts#L86`	`backend/chat-service/test/chat.test.ts#L73`	Database (MySQL)
POST /chat/:chatId/message	`backend/chat-service/test/chat.mock.test.ts#L114`	`backend/chat-service/test/chat.test.ts#L88`	Database (MySQL)
POST /listings	`backend/marketplace-service/test/listings.test.ts#L48`	`backend/marketplace-service/test/listings.mock.test.ts#L37`	Database (MySQL)
GET /listings	`backend/marketplace-service/test/listings.test.ts#L84`	`backend/marketplace-service/test/listings.mock.test.ts#L74`	Database (MySQL)
GET /listings/:id	`backend/marketplace-service/test/listings.test.ts#L105`	`backend/marketplace-service/test/listings.mock.test.ts#L74`	Database (MySQL)
PUT /listings/:id	`backend/marketplace-service/test/listings.test.ts#L131-L182`	`backend/marketplace-service/test/listings.mock.test.ts#L144`	Database (MySQL)
DELETE /listings/:id	`backend/marketplace-service/test/listings.test.ts#L193`	`backend/marketplace-service/test/listings.mock.test.ts#L202`	Database (MySQL)

2.2 Test Results

```
----------|---------|----------|---------|---------|-------------------
File      | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
----------|---------|----------|---------|---------|-------------------
All files |   90.9  |   67.34  |  94.11  |  90.15  |
 index.js |   90.9  |   67.34  |  94.11  |  90.15  | ...39,149-150,207-208,229-230,248-249,
----------|---------|----------|---------|---------|-------------------

Test Suites: 2 passed, 2 total
Tests:       16 passed, 16 total
Snapshots:   0 total
Time:        1.825 s, estimated 2 s
```

```
---------------|---------|----------|---------|---------|-------------------
File           | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
---------------|---------|----------|---------|---------|-------------------
All files      |  91.48  |    70    |   100   |  91.48  |
 userRoutes.js |  91.48  |    70    |   100   |  91.48  | 47-51
---------------|---------|----------|---------|---------|-------------------

Test Suites: 1 passed, 1 total
Tests:       11 passed, 11 total
Snapshots:   0 total
Time:        5.473 s
```

```
File          | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
--------------|---------|----------|---------|---------|-------------------
All files     |   100   |   100    |   100   |   100   |
 chatRoutes.ts|   100   |   100    |   100   |   100   |
--------------|---------|----------|---------|---------|-------------------

Test Suites: 2 passed, 2 total
Tests:       13 passed, 13 total
Snapshots:   0 total
Time:        3.37 s
```

```
File          | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
--------------|---------|----------|---------|---------|-------------------
All files     |  95.86  |  79.16   |  96.15  |  97.1   |
 listings.ts  |  95.86  |  79.16   |  96.15  |  97.1   | 26-27,266-267
--------------|---------|----------|---------|---------|-------------------

Test Suites: 2 passed, 2 total
Tests:       24 passed, 24 total
Snapshots:   0 total
Time:        5.896 s, estimated 6 s
```

Some of the lines are not covered since they are server or database validation check, which cannot be caught by test suites.

3. Back-end Test Specification: Tests of Non-Functional Requirements

Non-Functional Requirement	Location in Git
User Service Response Time	`tests/performance.test.js`
Recommendation Enginep Response Time	`test/recommendation-engine-performance.test.js`

Performance testing evaluated the user service's response times and scalability across multiple scenarios. Tests included single requests (GET/POST), concurrent handling (10 simultaneous requests), sustained load (50 sequential requests), and rapid sequential access (20 quick requests). Individual requests occasionally exceeded the 50ms threshold (GET: 62ms, POST: 58ms), while the service maintained excellent performance under load with 5-6ms average response times. The system processed concurrent requests efficiently and demonstrated consistent performance during the 50-request load test, with maximum response time of 9ms. These metrics indicate a well-architected service suitable for scaling in production environments. Testing utilized a mock database implementation to isolate application logic performance.

The performance tests evaluated two aspects of the recommendation service: single request response times and concurrent load handling. Single requests performed well (under 200ms), but the service struggled under load with 50 concurrent requests, showing higher average response times (recommendations: 2019ms, price suggestions: 467ms, price comparison: 666ms) than the target of 300ms. This indicates the service works well for individual users but may need optimization for high-traffic scenarios.

4. Front-end Test Specification

4.1. The location of your front-end test suite

The front-end Espresso test suite files are located at:

- `frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/ChatActivityTest.kt`
- `frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/ItemActivityTest.kt`
- `frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/MainScreenTest.kt`
- `frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/PostActivityTest.kt`
- `frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/ProfileActivityTest.kt`

4.2. Tests

Use Case: View Product Details

Expected Behaviors:

Scenario Steps	Test Case Steps
1. User opens product detail screen	Launch `ItemActivity` with product details intent
2. Product title, description, price, and image are displayed	Check title, description, price, image visibility

Test Logs:

- `shouldDisplayProductDetails()`
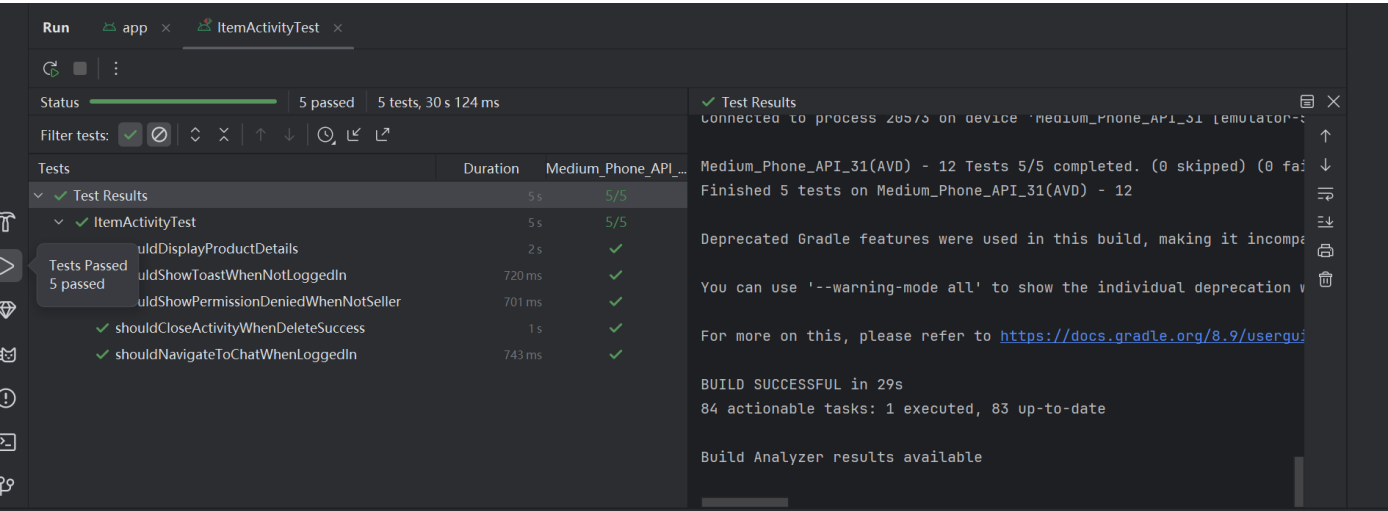
Use Case: Delete Product

Expected Behaviors:

Scenario Steps	Test Case Steps
1. User clicks delete button	Simulate click on delete button
2. If not seller, system denies deletion	Check for content description message "You do not have permission to delete"
3. If seller, product is deleted, activity closes	Check activity state is DESTROYED after deletion

Test Logs:

- shouldShowPermissionDeniedWhenNotSeller()
- shouldCloseActivityWhenDeleteSuccess()
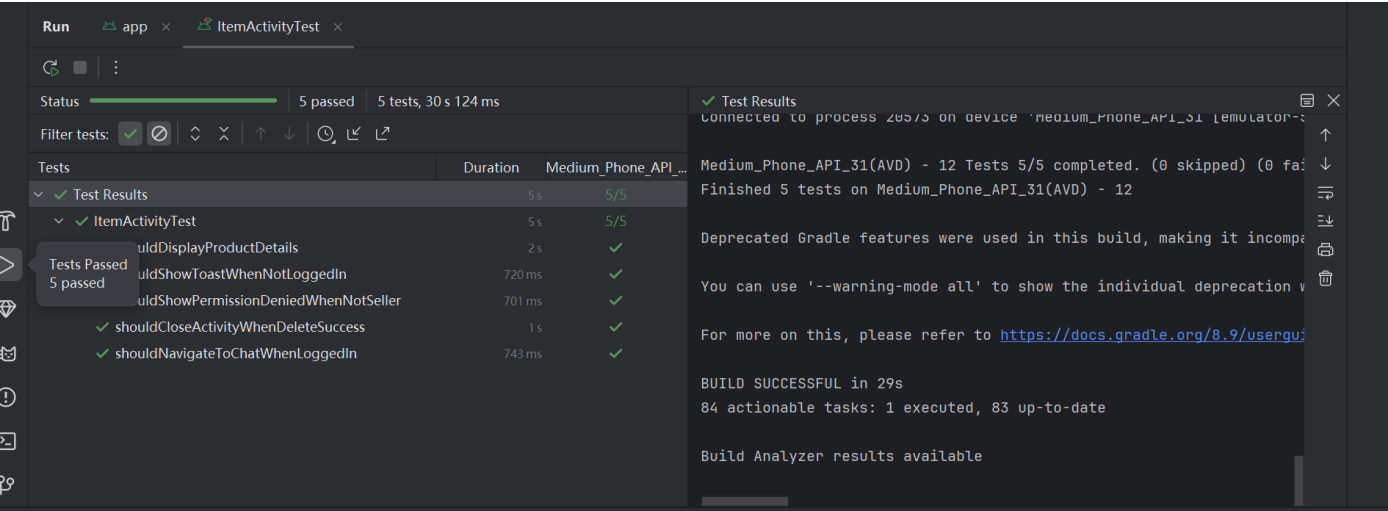
Use Case: Initiate Chat from Product

Expected Behaviors:

Scenario Steps	Test Case Steps
1. Logged-in user clicks "I Want It"	Simulate logged-in state and click "I Want It" button
2. ChatActivity is launched	Verify ChatActivity intent triggered
3a. Not logged-in user clicks "I Want It"	Simulate not logged-in state and click "I Want It" button
3a1. System shows toast message	Check for toast message "You haven't logged in yet"

Test Logs:

- shouldNavigateToChatWhenLoggedIn()
- shouldShowToastWhenNotLoggedIn()
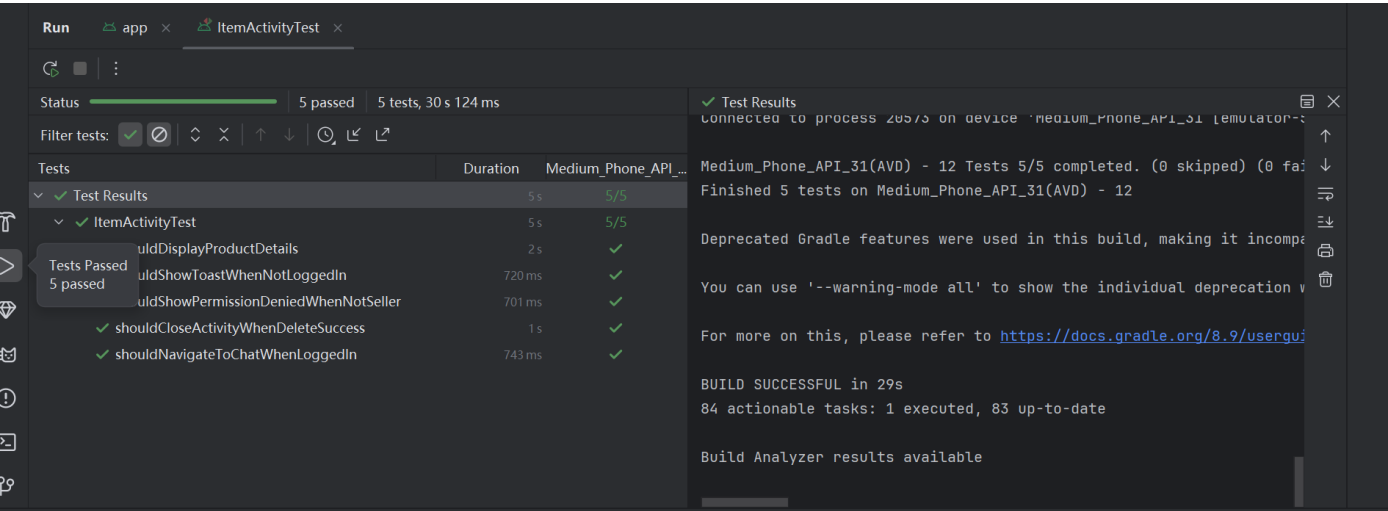
Use Case: Home Screen Navigation

Expected Behaviors:

Scenario Steps	Test Case Steps
1. App loads main screen	Launch `MainActivity`
2. Loading indicator is displayed	Check loading indicator visibility
3. Bottom navigation bar buttons are displayed	Check buttons: Home, Categories, Messages, User
4. User clicks pagination buttons	Click "Next Page" and "Last Page" buttons

Test Logs:

- `testLoadingState()`
- `testBottomNavigationBarDisplay()`
- `testProductPaginationButtonDisplay()`
- `testNextPage()`
- `testLastPage()`
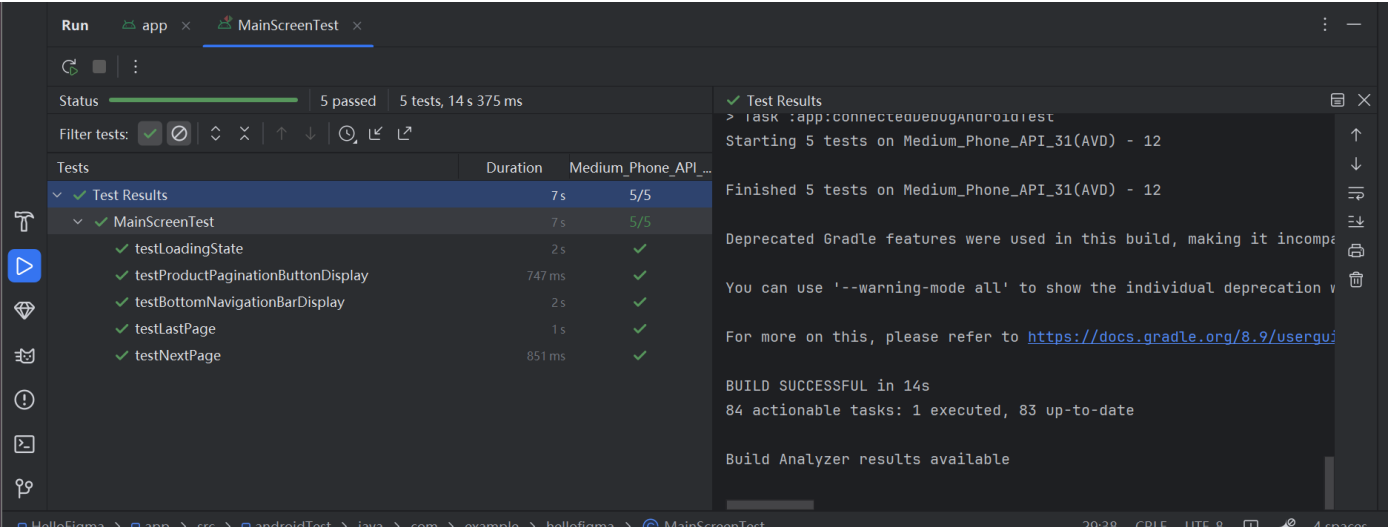
Use Case: Post New Product

Expected Behaviors:

Scenario Steps	Test Case Steps
1. User opens post activity	Launch `PostActivity`
2. All fields and buttons displayed	Check presence of title, description, price, location options, post button, etc.
3. User leaves fields empty and tries posting	Click post button, check error messages
4. User progressively fills fields, system validates each	Enter title, description, price one by one, check corresponding validations

Test Logs:
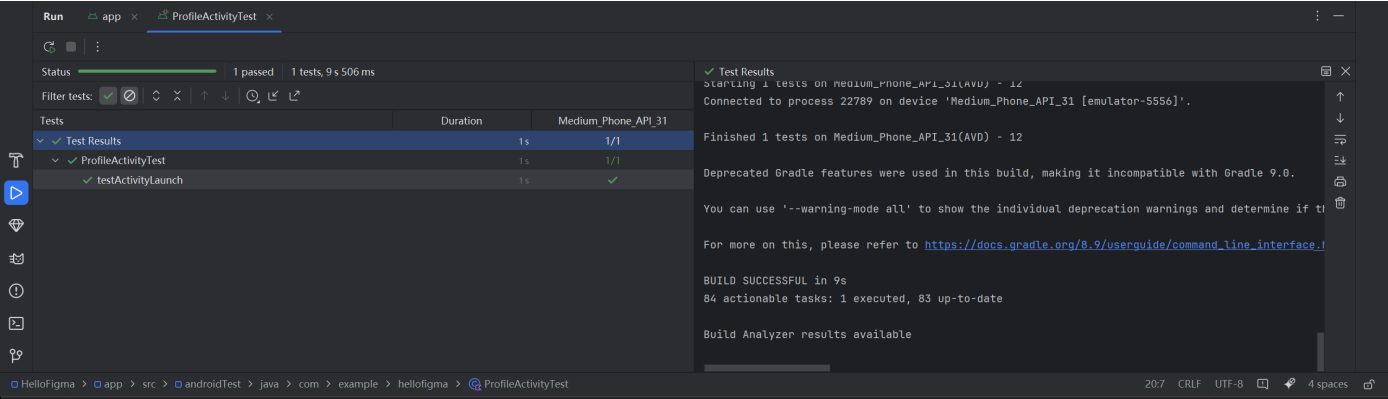
- `testActivityLaunch()`
- `testFormValidation()`
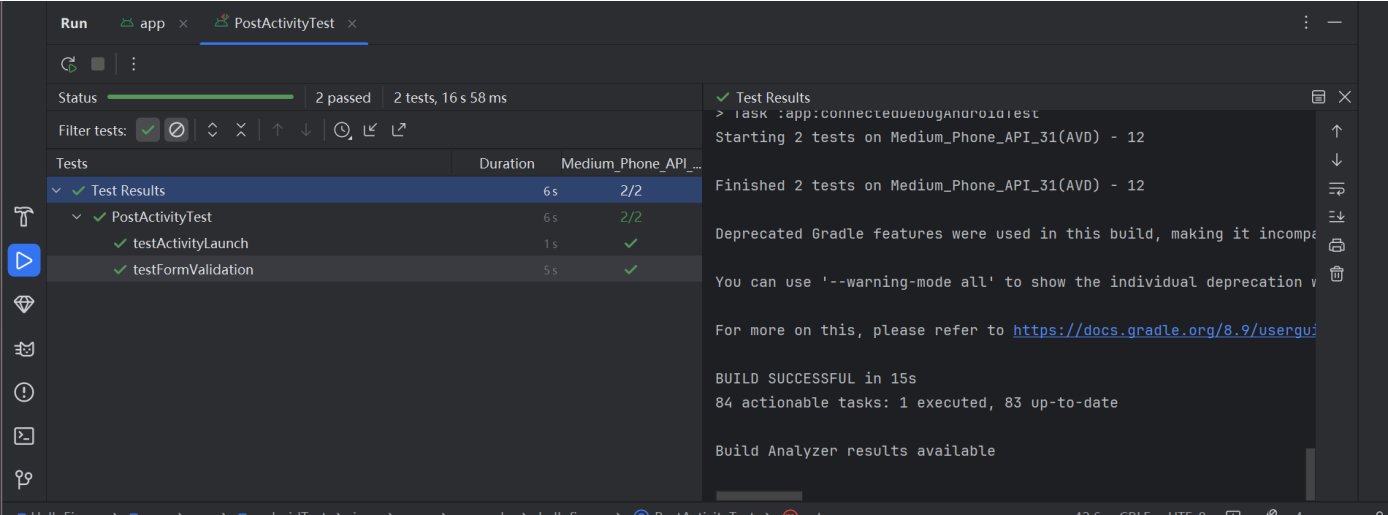
Use Case: View Profile

Expected Behaviors:

Scenario Steps	Test Case Steps
1. User opens profile screen	Launch `ProfileActivity`
2. Profile screen loads successfully	Verify ProfileActivity launched correctly

Test Logs:

- `testActivityLaunch()`

4.3. Espresso Execution Logs

The automated test execution logs:

```
PS C:\UBC\CPEN321\ReX\frontend\HelloFigma> ./gradlew connectedAndroidTest
Starting a Gradle Daemon, 2 incompatible Daemons could not be reused, use --status for details

> Configure project :app
WARNING: The option setting 'android.defaults.buildfeatures.buildconfig=true' is deprecated.
The current default is 'false'.
It will be removed in version 9.0 of the Android Gradle plugin.
To keep using this feature, add the following to your module-level build.gradle files:
    android.buildFeatures.buildConfig = true
or from Android Studio, click: `Refactor` > `Migrate BuildConfig to Gradle Build Files`.

> Task :app:kaptGenerateStubsDebugKotlin
w: Kapt currently doesn't support language version 2.0+. Falling back to 1.9.

> Task :app:compileDebugKotlin
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:25:8 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : AbstractSafeParc
elable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:27:8 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSafeParc
elable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:68:19 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSafePar
celable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:68:47 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSafePar
celable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:92:28 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : AbstractSafePar
celable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:99:56 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : AbstractSafePar
celable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:101:26 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : AbstractSafePa
rcelable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:111:42 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : AbstractSafePa
rcelable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainActivity.kt:124:36 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : AbstractSafePa
rcelable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt:334:47 '@Deprecated(...) @NonNull() static fun create(): LocationRequest' is deprecated. Depre
cated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt:335:13 'var priority: Int' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt:335:40 '@Deprecated(...) static field PRIORITY_HIGH_ACCURACY: Int' is deprecated. Deprecated i
n Java.
```

```
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt:336:13 'var interval: Long' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt:378:22 '@Deprecated(...) @Nullable() fun getFromLocation(p0: Double, p1: Double, p2: Int): (Mu
tableList<Address!>?..List<Address!>?)' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:59:8 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSafeP
arcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:96:13 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSafe
Parcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:96:41 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSafe
Parcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:182:28 '@property:Deprecated(...) val Icons.Filled.ExitToApp: ImageVector' is deprecated. U
se the AutoMirrored version at Icons.AutoMirrored.Filled.ExitToApp.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:205:45 '@property:Deprecated(...) val Icons.Filled.ExitToApp: ImageVector' is deprecated. U
se the AutoMirrored version at Icons.AutoMirrored.Filled.ExitToApp.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:219:43 '@property:Deprecated(...) val Icons.Filled.List: ImageVector' is deprecated. Use th
e AutoMirrored version at Icons.AutoMirrored.Filled.List.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:269:45 '@property:Deprecated(...) val Icons.Filled.KeyboardArrowRight: ImageVector' is depr
ecated. Use the AutoMirrored version at Icons.AutoMirrored.Filled.KeyboardArrowRight.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:305:25 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSaf
eParcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ProfileActivity.kt:305:53 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : AbstractSaf
eParcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/StorageActivity.kt:144:38 '@Deprecated(...) @Nullable() fun getFromLocation(p0: Double, p1: Double, p2: Int):
(MutableList<Address!>?..List<Address!>?)' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/message/ChatActivity.kt:165:44 '@property:Deprecated(...) val Icons.Filled.ArrowBack: ImageVector' is deprecat
ed. Use the AutoMirrored version at Icons.AutoMirrored.Filled.ArrowBack.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/message/ChatActivity.kt:218:57 '@property:Deprecated(...) val Icons.Filled.Send: ImageVector' is deprecated. U
se the AutoMirrored version at Icons.AutoMirrored.Filled.Send.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/message/MessageActivity.kt:112:44 '@property:Deprecated(...) val Icons.Filled.ArrowBack: ImageVector' is depre
cated. Use the AutoMirrored version at Icons.AutoMirrored.Filled.ArrowBack.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/viewmodel/ProfileViewModel.kt:10:8 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : Ab
stractSafeParcelable, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/main/java/com/example/hellofigma/viewmodel/ProfileViewModel.kt:57:45 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInAccount : A
bstractSafeParcelable, ReflectedParcelable' is deprecated. Deprecated in Java.
```

```
> Task :app:kaptGenerateStubsDebugAndroidTestKotlin
w: Kapt currently doesn't support language version 2.0+. Falling back to 1.9.

> Task :app:compileDebugAndroidTestKotlin
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/ProfileActivityTest.kt:8:8 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : Abs
tractSafeParcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/ProfileActivityTest.kt:31:13 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : A
bstractSafeParcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.
w: file:///C:/UBC/CPEN321/ReX/frontend/HelloFigma/app/src/androidTest/java/com/example/hellofigma/ProfileActivityTest.kt:31:41 '@Deprecated(...) @SafeParcelable.Class(...) class GoogleSignInOptions : A
bstractSafeParcelable, Api.ApiOptions.Optional, ReflectedParcelable' is deprecated. Deprecated in Java.

> Task :app:connectedDebugAndroidTest
Starting 15 tests on Medium_Phone_API_31(AVD) - 12

Medium_Phone_API_31(AVD) - 12 Tests 1/15 completed. (0 skipped) (0 failed)
Medium_Phone_API_31(AVD) - 12 Tests 4/15 completed. (0 skipped) (0 failed)
Medium_Phone_API_31(AVD) - 12 Tests 9/15 completed. (0 skipped) (0 failed)
Medium_Phone_API_31(AVD) - 12 Tests 13/15 completed. (0 skipped) (0 failed)
Finished 15 tests on Medium_Phone_API_31(AVD) - 12

Deprecated Gradle features were used in this build, making it incompatible with Gradle 9.0.

You can use '--warning-mode all' to show the individual deprecation warnings and determine if they come from your own scripts or plugins.

For more on this, please refer to https://docs.gradle.org/8.9/userguide/command_line_interface.html#sec:command_line_warnings in the Gradle documentation.

BUILD SUCCESSFUL in 3m 12s
84 actionable tasks: 26 executed, 58 up-to-date
PS C:\UBC\CPEN321\ReX\frontend\HelloFigma>
```

5. Automated Code Review Results

5.1. Commit Hash Where Codacy Ran

84ad512ad0aa18d8728b10a310c2102c5dd9b6e4

5.2. Unfixed Issues per Codacy Category

8 total issues

Category	Total
Error prone	8

5.3. Unfixed Issues per Codacy Code Pattern

All issues	8

Code patterns	
One method should have one respons...	6
Others	2

5.4. Justifications for Unfixed Issues

Code Pattern: Method too long / Function too long

1. **The function `onCreate` is too long (161). The maximum length is 60.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt`
   - **Justification:** The `onCreate` function in `PostActivity` is responsible for setting up the entire activity UI components, permission handling, click listeners, and initial data bindings. Breaking it up further would fragment related UI logic and reduce code readability. Given Android's standard practice for activity setup in `onCreate`, we consider this acceptable.

2. **The function `ChatScreen` is too long (94). The maximum length is 60.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/message/ChatActivity.kt`
   - **Justification:** `ChatScreen` is a Jetpack Compose function responsible for rendering complex UI with multiple conditional UI elements and listeners. Breaking it down further would lead to many small, tightly coupled composables, harming readability and increasing unnecessary overhead. Thus, keeping it intact preserves UI flow clarity.

3. **The function `MainCard` is too long (128). The maximum length is 60.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainScreen.kt`
   - **Justification:** `MainCard` defines the primary card UI in the home screen, including layout, styling, and event handlers. Due to Compose's declarative nature, breaking it apart negatively impacts the card's consistency and readability. The length stems from Compose's DSL, not poor logic separation.

4. **The function `onCreate` is too long (106). The maximum length is 60.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/CategoryActivity.kt`
   - **Justification:** Similar to the previous `onCreate`, it initializes UI components, adapters, listeners, and binds the category data. Splitting into smaller methods would introduce unnecessary indirection and harm maintainability.

5. **The function `getChatList` is too long (69). The maximum length is 60.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/message/repository/ChatRepository.kt`
   - **Justification:** `getChatList` encapsulates data fetching, processing, and state management logic essential for chat UI. Breaking it into smaller methods reduces cohesion and increases overhead due to tightly coupled logic.

6. **The function `onCreate` is too long (92). The maximum length is 60.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/ItemActivity.kt`
   - **Justification:** It handles view initialization, event listeners, and binding product data. Splitting this standard `onCreate` setup would unnecessarily fragment tightly related initialization code.

Code Pattern: Too many parameters

1. **The function `ChatScreen` has too many parameters. The current threshold is set to 6.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/message/ChatActivity.kt`
   - **Justification:** `ChatScreen` requires multiple parameters to display accurate chat content (userId, chatId, otherUserId, otherUserName, ViewModel, callback). Reducing the parameter count is not feasible without sacrificing the composable's clarity or functionality. Using a data class to wrap parameters would add unnecessary complexity.

Code Pattern: Cyclomatic complexity

1. **Method `MainCard` has a cyclomatic complexity of 19 (limit is 8).**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/MainScreen.kt`
   - **Justification:** The complexity arises from UI conditionals (e.g., user state, product availability). Reducing conditionals would require splitting UI logic unnaturally across files, reducing maintainability and readability.

Code Pattern: Expression with labels

1. **Expression with labels increase complexity and affect maintainability.**

   - **Location in Git:** `frontend/HelloFigma/app/src/main/java/com/example/hellofigma/PostActivity.kt`
   - **Justification:** Labels (`return@setOnClickListener`) are standard in Kotlin Android development to manage nested lambdas, especially within UI event listeners. Removing them would lead to unclear control flow, contrary to Kotlin's design idioms.

Code Pattern: typescript eslint: No var requires

1. **Require statement not part of import statement.**

- **Location in Git:** `backend/user-service/server.js` and `backend/user-service/userRoutes.js` and `backend/user-service/userRoutes.js`
  - **Justification:** Codacy is enforcing the typescript eslint: No var requires rule while it is actually this rule has been deprecated in favour of the @typescript-eslint/no-require-imports rule.