

Mobile App Development

Continuous assessment Test 5 – CAT5

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1. Setting up remote notifications in Firebase

1.1 Get the FMC token:

2025-05-13 19:43:37.723 15694-15694 Messages

com.uoc.fragments1

D FCM Token: eKm4w4LWScaMx59c3d0GQD:APA91bEFn10kFBsv0jCwmn0hNd7yXmKJaXvV7vWM-L5fPDAH7vHVab78tTEc7B

1.2 Build message in Firebase and send a test notification using the above obtained token:

1 Notification


Notification title ⓘ

Test

Notification text

Test message for CAT5

Notification image (optional) ⓘ

Example: <https://yourapp.com/image.png> 

Notification name (optional) ⓘ


Nico

Device preview

This preview provides a general idea of how your message will appear on a mobile device. Actual message rendering will vary depending on the device. Test with a real device for actual results.

Send test message

Initial state Expanded view




Test on device


You can test this campaign by entering or selecting the [FCM registration tokens](#) of your development device below.


Add an FCM registration token

Recently Used ⓘ



eKm4w4LWScaMx59c3d0GQD:APA91bEFn10kFBsv0jCwmn0hNd7yXmKJaXvV7vWM-L5fPDAH7vHVab78tTEc7B5mTYhVxK1sNL015mLskDUCCliI7AhZiMgGyXr67BN4rtzkW8-g0PpH0Us

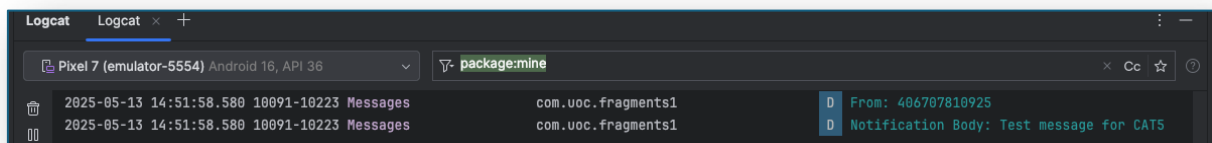
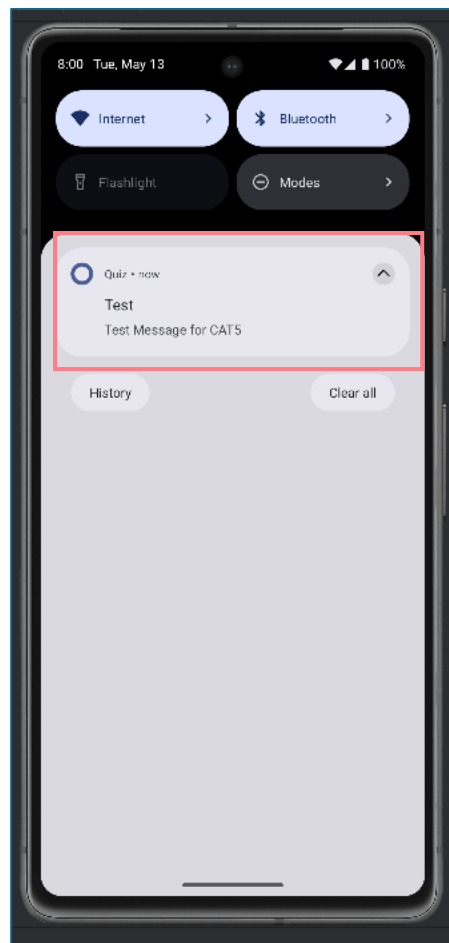




Cancel

Test

1.3 Received notification:



2. Opening an app when clicking on a notification

2.1 Build test notification with specific parameters and send new test notification:

1

Notification

Notification title ?

Important Notification

Notification text

Click to open the app and see the notification

Notification image (optional) ?

Example: <https://yourapp.com/image.png>

Notification name (optional) ?

Enter optional name

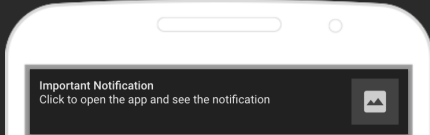
Device preview

This preview provides a general idea of how your message will appear on a mobile device. Actual message rendering will vary depending on the device. Test with a real device for actual results.

Send test message

Initial state

Expanded view



Android

5

Additional options (optional)

All fields optional

Android Notification Channel ?

quiz

Custom data ?

msg

Message from Firebase CAT5

Key

Value

Sound

Disabled

Expires ?

4

Weeks

Test on device

You can test this campaign by entering or selecting the [FCM registration tokens](#) of your development device below.

Add an FCM registration token

Recently Used ?

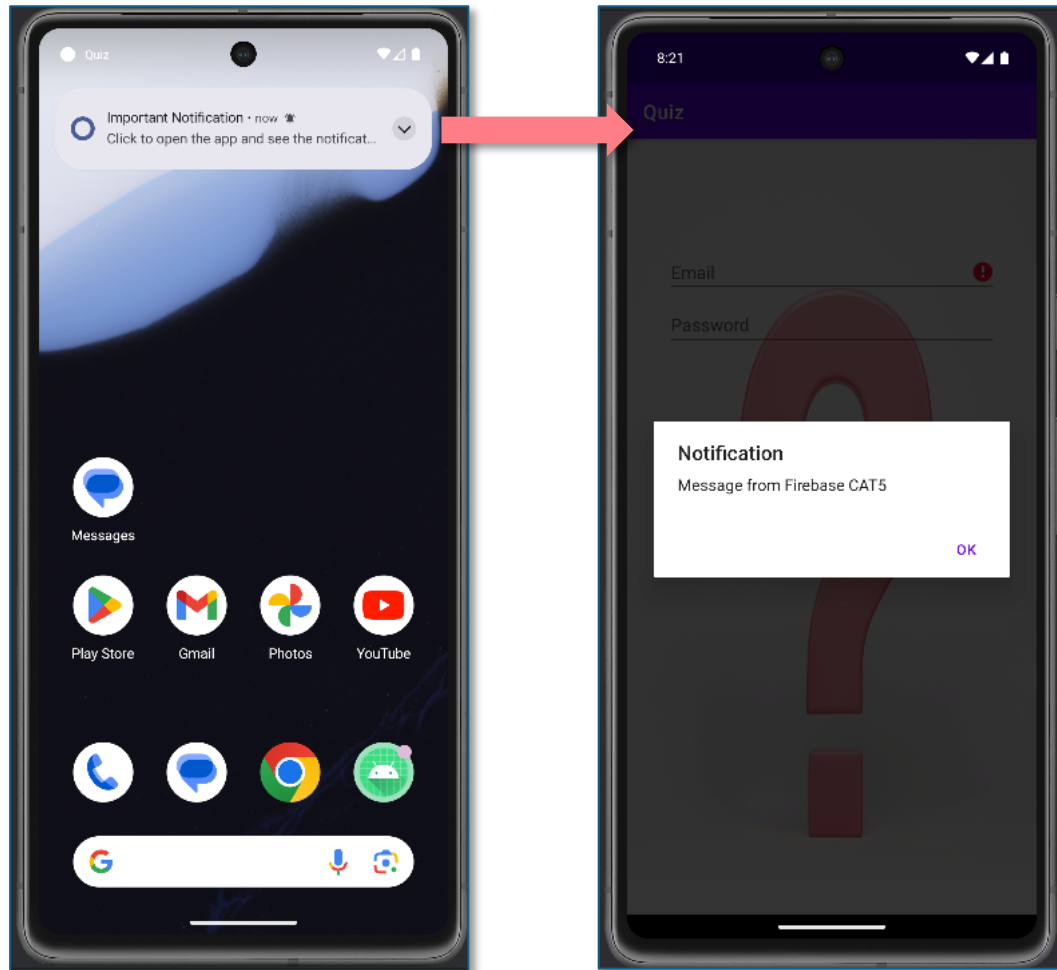
☒

eKm4w4LWScaMx59c3d0GQD:APA91bEFn10kFBsv0jCwmn0hNd7yXmKJaXvV7vWM-L5fPDAH7vHVab78tTEc7B5mTYhVxK1sNL015mLskDUCCliI7AhZiMgGyXr67BN4rtzkW8-g0PpH0Us

Cancel

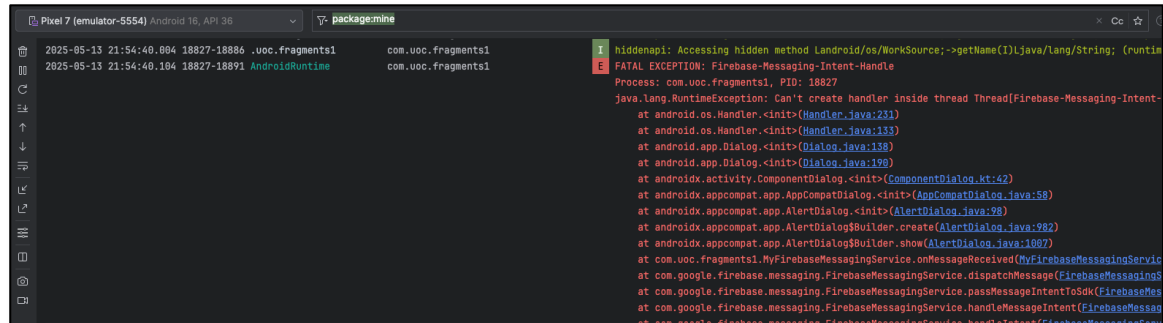
Test

2.2 Click on the received notification to see key value message created:



3. Concurrent programming

3.1 If we run the first code we obtained the following error:



3.2 We can see in the code all the steps follow to reproduce the error and resolve it using concurrency:

```

override fun onMessageReceived(remoteMessage: RemoteMessage) {
    val title = remoteMessage.notification?.title ?: "No title"
    val body = remoteMessage.notification?.body ?: "No body"

    // BEGIN-CODE-UOC-CAT5-3A
    // Reproducing the error AlertDialog directly from background thread
    /*
    val builder = AlertDialog.Builder(MainActivity.gmainActivity)
    builder.setTitle(title)
    builder.setMessage(body)
    builder.setPositiveButton("OK") { dialog, _ -> dialog.dismiss() }
    builder.show()
    */
    // END-CODE-UOC-CAT5-3A

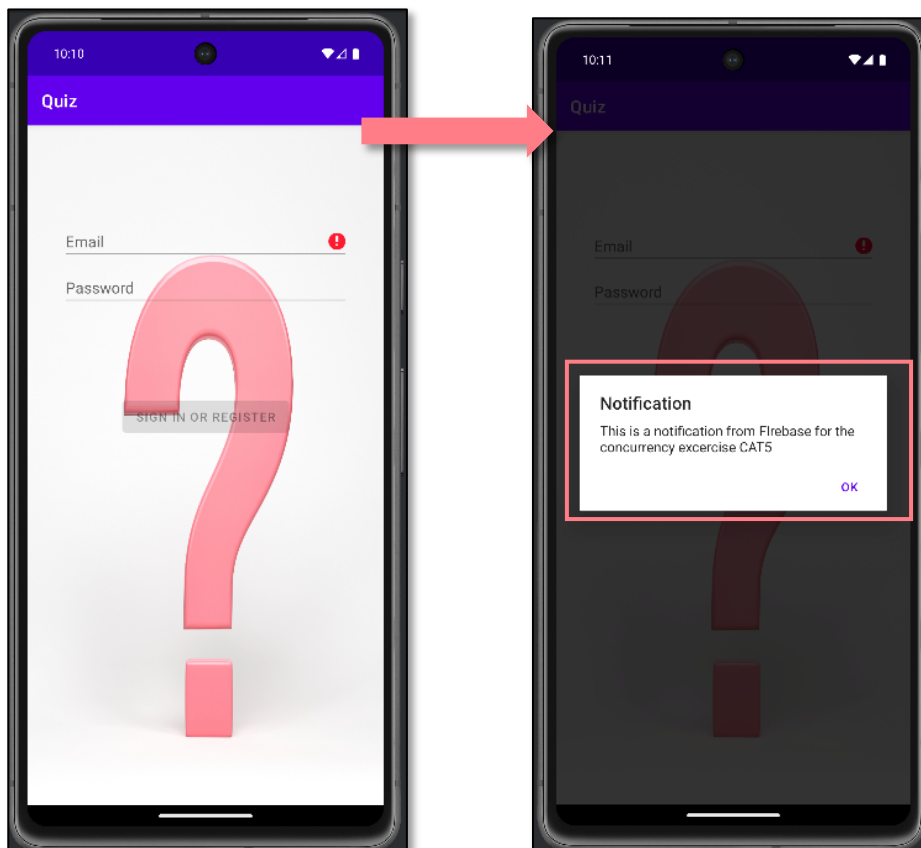
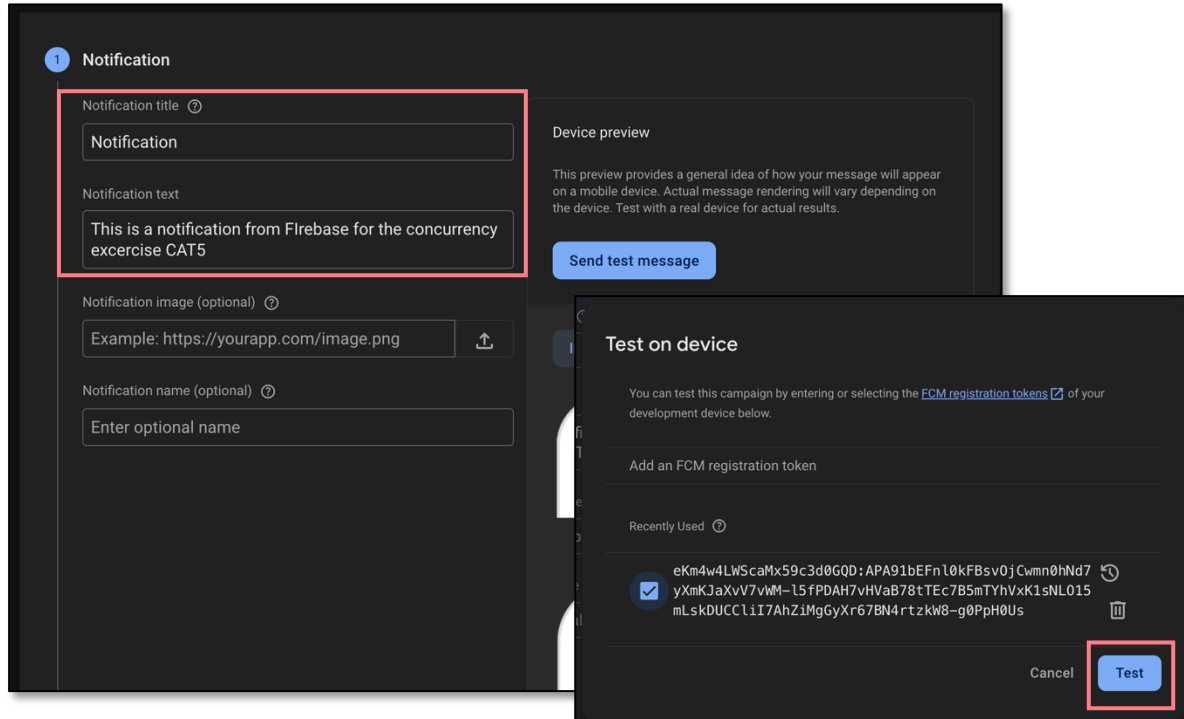
    // BEGIN-CODE-UOC-CAT5-3B
    // Why this fails:
    // ERROR: CalledFromWrongThreadException.
    // Android not allow updating the UI from background threads.
    // The onMessageReceived is being executed in a background thread,
    // and AlertDialogs must be created on the main thread.
    // This is doing to crash the app.
    // END-CODE-UOC-CAT5-3B

    // BEGIN-CODE-UOC-CAT5-3C
    // Correct using coroutine on main thread as explained in the wiki
    GlobalScope.launch(Dispatchers.Main) {
        val builder = AlertDialog.Builder(MainActivity.gmainActivity)
        builder.setTitle(title)
        builder.setMessage(body)
        builder.setPositiveButton("OK") { dialog, _ -> dialog.dismiss() }

        builder.show()
    }
    // END-CODE-UOC-CAT5-3C

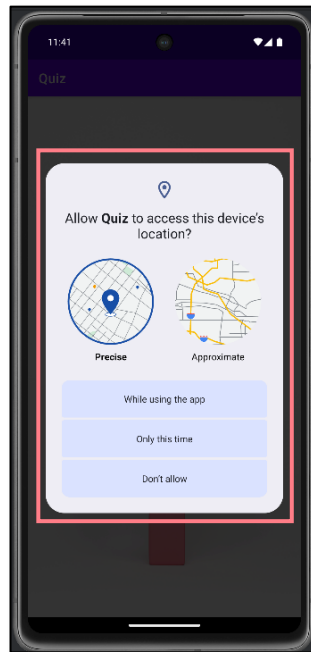
```

3.3 Now, with the concurrency code applied, we build a new test message and ensure the notification is being extracting the title and the body and keeping the app in the main plane:



4. Geolocation and maps

4.1 Permission requested to the user:



4.2 Coordinates obtained with FusedLocationProviderClient:

```
2025-05-13 23:42:04.893 19955-19955 Location com.uoc.fragments1 D Latitude: 37.4219983, Longitude: -122.084
```

4.3 Theory answers:

```
// BEGIN-GEOLOCATION-3
/*
location.distanceTo will give the straight line distance in meters but
it not indicates the actual walking distance to the point.
It is useful for basic estimation in navigation, but if we want
the walking distance calculation, we will need the layout of the streets.
*/
// END-GEOLOCATION-3

// BEGIN-GEOLOCATION-4
/*
To get the accurate layout for calculating the walking distance, we need to
use a routing API like Google Maps Directions API that supports the walking mode.
This API considers streets and constrains needed for walking distance calculation.
As the statement mentions, it is a paid service and requires billing enabled
in Google Cloud.
*/
// END-GEOLOCATION-4
```