

Mobile Application Development

Produced
by

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Android & Firebase

Part 4

Firebase Integration





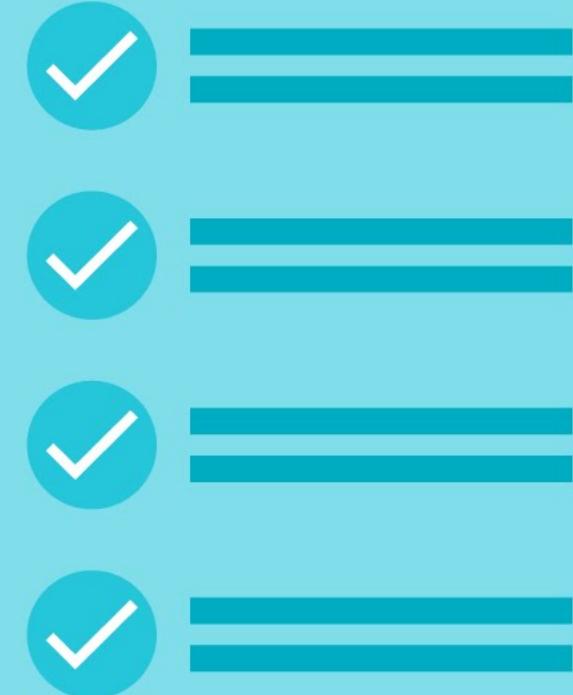
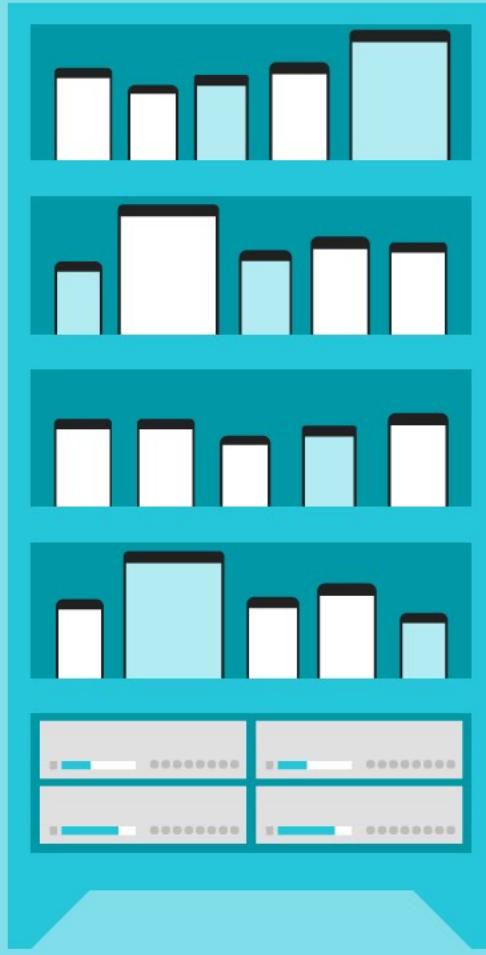
Agenda

- ❑ Firebase history
- ❑ The all new Firebase
- ❑ Real-time database
- ❑ Authentication
- ❑ Storage
- ❑ Remote config
- ❑ Hosting
- ❑ Crash reporting
- ❑ Test lab
- ❑ Firebase cloud messaging
- ❑ Dynamic links
- ❑ App indexing
- ❑ Analytics
- ❑ CoffeeMate Highlights & Demos along the way...



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Test Lab for Android

Test virtually on
popular REAL
devices



Firebase test lab for android

- ❑ Cloud based infrastructure for testing android apps.
- ❑ Test across variety of devices and device configurations.
- ❑ Test results include logs, videos and screenshots.
- ❑ Integrate with android studio and CI systems easily.



S R T E

console.firebaseio.google.com/project/coffeematefbi/testlab/histories https://coffeematefbi.firebaseioapp.com

Firebase CoffeeMateFBI - Test Lab for Android - Firebase console

Overview TESTS TEMPLATES

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Test Lab for Android

TESTS TEMPLATES

Test your Android apps against a wide range of devices

[Learn more](#) [View the docs](#)

RUN YOUR FIRST TEST



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console.firebaseio.google.com/project/coffeematefbi/testlab/run

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Test Lab ← Run a test ?

Choose test type

Robo test

The [Robo test](#) automatically explores your app on a wide array of devices to find defects and report any crashes that occur. Robo test doesn't require you to write app tests.

Instrumentation test

Run the [Espresso](#), [Robotium](#) or [UIAutomator 2.0](#) test that you have written to test your app on a wide array of devices.

Game Loop

A [Game Loop](#) runs specific activities that receive a custom intent.

i Robo test is compatible with apps that use elements from the Android UI framework
If your app uses other UI frameworks (like Unity), the test may only explore your app's first screen.

LEARN MORE

CONTINUE



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Test Lab ← Run a Robo test ?

1 Configure test 2 Select dimensions

Upload your app's APK, then select the dimensions that you want to test.

App APK

app-debug.apk BROWSE

CONTINUE

This screenshot shows the Firebase Test Lab interface for running a Robo test. The left sidebar lists various Firebase services, with 'Test Lab' selected. The main area is titled 'Run a Robo test' and displays a two-step process: 'Configure test' (selected) and 'Select dimensions'. It prompts the user to upload their app's APK, which is currently set to 'app-debug.apk'. A 'CONTINUE' button is visible at the bottom right of the configuration step.



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Firebase CoffeeMateFBI ▾ Test Lab > Run a Robo test Go to docs

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Configure test Select dimensions

Select the devices, API levels, orientations and locales that you want to run your test on. You must select at least one of each dimension.

You have a daily quota of 5 physical and 10 virtual device test executions that is refreshed at (12.00 a.m. PST)

UPGRADE

Physical devices

Nexus 7 (2013) ASUS
 19 21

Pixel Google
 25 26

HTC One (M8) HTC
 19

Nexus 9 HTC
 21

Huawei Mate 9 HUAWEI
 24

LG G3 LG
 19

LG G4 LG



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Nexus 4 LG
 19 21 22

Nexus 5 LG
 19 21 22 23

Nexus 5X LG
 23 24 25 26

Nexus 6 Motorola
 21 22 23 24 25

Nexus 10 Samsung
 19 21 22

Orientation

Landscape

Portrait

Locales

English, Ireland (en_IE) [X](#)

Add a locale

Advanced options

Save template 5 devices , 1 orientation , 1 locale

START 5 TESTS



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Test Lab for Android

Want unlimited tests? [Upgrade](#)

CoffeeMateFBI

Test matrix	Test type	Started	Total executions	Issues
Matrix No.564145	Robo	10 minutes ago	1	—
Matrix No.721474	Robo	27 minutes ago	3	3 executions crashed
Matrix No.560501	Robo	2 days ago	2	2 executions crashed
Matrix No.738507	Robo	2 days ago	5	1 execution crashed

RUN A TEST



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Test Lab > CoffeeMateFBI ← Matrix No.721474 ?

⚠ Robo test, 28 minutes ago ⓘ

Test execution	Duration	Locale	Orientation	Issues
⚠ Nexus 9, Virtual, API Level 25	14 sec	English, Ireland	Portrait	Crashed
⚠ Pixel, API Level 26	1 min 36 sec	English, Ireland	Portrait	Crashed
⚠ Nexus 6P, Virtual, API Level 26	21 sec	English, Ireland	Portrait	Crashed



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Test Lab > CoffeeMateFBI > Matrix No.721474 ← Robo test, Nexus 9, Virtual, API Level 25 ?

App crashed during testing

⚠ Failed 21/09/2017, 08:13 14 sec English, Ireland Portrait **VIEW SOURCE FILES**

TEST ISSUES LOGS SCREENSHOTS ACTIVITY MAP VIDEOS PERFORMANCE

java.lang.RuntimeException: Unable to instantiate application ie.cmfbi.main.CoffeeMateApp: java.lang.ClassNotFoundException: Didn't find class "ie.cmfbi.main.CoffeeMateApp" on path: DexPathList[[zip file "/data/app/ie.cmfbi-1/base.apk"],nativeLibraryDirectories=[/data/app/ie.cmfbi-1/lib/x86, /system/lib, /vendor/lib]]

FATAL EXCEPTION: main
Process: ie.cmfbi, PID: 7486
java.lang.RuntimeException: Unable to instantiate application ie.cmfbi.main.CoffeeMateApp:
java.lang.ClassNotFoundException: Didn't find class "ie.cmfbi.main.CoffeeMateApp" on path: DexPathList[[zip file "/data/app/ie.cmfbi-1/base.apk"],nativeLibraryDirectories=[/data/app/ie.cmfbi-1/lib/x86, /system/lib, /vendor/lib]]
at android.app.LoadedApk.makeApplication(LoadedApk.java:802)
at android.app.ActivityThread.handleBindApplication(ActivityThread.java:5377)
at android.app.ActivityThread.-wrap2(ActivityThread.java)
at android.app.ActivityThread\$H.handleMessage(ActivityThread.java:1545)
at android.os.Handler.dispatchMessage(Handler.java:102)
at android.os.Looper.loop(Looper.java:154)
at android.app.ActivityThread.main(ActivityThread.java:6119)
at java.lang.reflect.Method.invoke(Native Method)
at com.android.internal.os.ZygoteInit\$MethodAndArgsCaller.run(ZygoteInit.java:886)
at com.android.internal.os.ZygoteInit.main(ZygoteInit.java:776)
Caused by: java.lang.ClassNotFoundException: Didn't find class "ie.cmfbi.main.CoffeeMateApp" on path:



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Test Lab > CoffeeMateFBI > Matrix No.721474 ← Robo test, Nexus 9, Virtual, API Level 25 ?

App crashed during testing

⚠ Failed 21/09/2017, 08:13 14 sec English, Ireland Portrait **VIEW SOURCE FILES**

TEST ISSUES **LOGS** SCREENSHOTS ACTIVITY MAP VIDEOS PERFORMANCE

Warning and higher Styled

E 03:16:35.504 **memtrack** Couldn't load memtrack module (No such file or directory)

E 03:16:35.504 **android.os.Debug** failed to load memtrack module: -2

W 03:16:35.624 **dex2oat** Mismatch between dex2oat instruction set features (ISA: X86 Feature string: smp,ssse3,sse4.1,sse4.2,-avx,-avx2,lock_add,popcnt) and those of dex2oat executable (ISA: X86 Feature string: smp,ssse3,sse4.1,sse4.2,-avx,-avx2,-lock_add,popcnt) for the command line:

/system/bin/dex2oat --zip-fd=6 --zip-location=base.apk --oat-fd=7 --oat-location=/data/app/vmdl1711355130.tmp/oat/x86/base.odex --instruction-set=x86 --instruction-set-variant=silversmont --instruction-set-features=default --runtime-arg -Xms64m --runtime-arg -Xmx512m --compiler-filter=interpret-only --swap-fd=8

E 03:16:35.625 **cutils-trace** Error opening trace file: Permission denied (13)

W 03:16:35.799 **PackageManager** Not granting permission android.permission.SET_ANIMATION_SCALE to package com.google.android.apps.mtaas.tools (protectionLevel=50 flags=0x3808be44)



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Test Lab > CoffeeMateFBI > Matrix No.721474 ← Robo test, Nexus 9, Virtual, API Level 25 ?

⚠ App crashed during testing

⚠ Failed 21/09/2017, 08:13 14 sec English, Ireland Portrait VIEW SOURCE FILES

TEST ISSUES LOGS SCREENSHOTS ACTIVITY MAP VIDEOS PERFORMANCE

Device Details

Manufacturer	unknown
Brand	generic
Model	GCE x86 phone
Device	gce_x86
Release version	7.1.1
SDK version	25
Play Services	11302470
Version Code	

CoffeeMateFBI has stopped

Open app again

7641e57f.png



S R T E

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Test Lab > CoffeeMateFBI ← Matrix No.564145 ?

Robo test, Just now ⓘ

Failed	Passed	Skipped	Inconclusive
0	1	0	0

Test execution	Duration	Locale	Orientation	Issues
Nexus 9, Virtual, API Level 25	—	English, Ireland	Portrait	—



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Test Lab > CoffeeMateFBI > Matrix No.564145 ← Robo test, Nexus 9, Virtual, API Level 25

Passed 21/09/2017, 08:30 1 min 20 sec English, Ireland Portrait

VIEW SOURCE FILES

LOGS SCREENSHOTS ACTIVITY MAP VIDEOS PERFORMANCE

The screenshots show the CoffeeMate app's sign-in screen. The first screenshot shows the initial sign-in prompt with 'Please Sign in with your Google Account Below' and two buttons: 'Sign In' and 'Disconnect Account'. The second and third screenshots show a modal dialog titled 'Choose account for CoffeeMateFBI' listing three accounts: '7HBWIEYTZXNG83QGJKWCBAZQ' (selected), '03gcloudtestlabaccounts.com', and 'THBNEYT2DHB3QGJKWCBAZQ' (disabled). The modal also includes an 'Add account' button.



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W 03:34:02.983 (9) **Finsky(4672): [1] c...** No account configured on this device.

W 03:34:02.989 **Finsky(4672): [1] c...** No account configured on this device.

W 03:34:02.990 (4) **Finsky(4672): [1] c...** No account configured on this device.

W 03:34:02.999 **System** ClassLoader referenced unknown path: /system/priv-app/DownloadProvider/lib/x86

W 03:34:03.005 ClassLoader referenced unknown path: /system/priv-app/MediaProvider/lib/x86

W 03:34:03.006 (2) **Finsky(4672): [292]...** No account configured on this device.

E 03:34:03.027 Finsky(4672): [1] c... onConnectionFailed: ConnectionResult{statusCode=API_UNAVAILABLE, resolution=null, message=null}

W 03:34:03.041 **dex2oat** Mismatch between dex2oat instruction set features (ISA: X86 Feature string: smp,ssse3,sse4.1,sse4.2,-avx,-avx2,lock_add,popcnt) and those of dex2oat executable (ISA: X86 Feature string: smp,ssse3,sse4.1,sse4.2,-avx,-avx2,-lock_add,popcnt) for the command line:

/system/bin/dex2oat --zip-fd=6 --zip-location=base.apk --oat-fd=7 --oat-location=/data/app/vmdl1010021910.tmp/oat/x86/base.odex --instruction-set=x86 --instruction-set-variant=silvermont --instruction-set-features=default --runtime-arg -Xms64m --runtime-arg -Xmx512m --compiler-filter=interpret-only --swap-fd=8

W 03:34:03.041 **dex2oat**

E 03:34:03.041 **cutils-trace** Error opening trace file: Permission denied (13)

W 03:34:03.047 (2) **Finsky(4672): [1] c...** No account configured on this device.

W 03:34:03.054 (4) ... No account configured on this device.

W 03:34:03.214 **PackageManager** Not granting permission android.permission.SET_ANIMATION_SCALE to package com.google.android.apps.mtaas.tools (protectionLevel=50 flags=0x3808be44)



Test Lab



Quick DEMO... (Video)



Pricing

	SPARK Free	FLAME \$25 per month	BLAZE Pay as you go
	Generous limits for hobbyists	Predictable pricing for growing apps	Commodity pricing for apps at scale
Included Free	Analytics, App Indexing, Authentication, Cloud Messaging, Crash Reporting, Dynamic Links, Invites, Notifications & Remote Config	✓	✓
Test Lab	Daily quota or hourly rate	15 tests per day ³	15 tests per day ³ hourly, per device ⁴



Thanks!



A black and white cartoon illustration of a hand with three fingers pointing towards a smiling sun. The sun has a face with two dots for eyes and a wide smile. It is surrounded by small clouds. The drawing is done in a simple, hand-drawn style.



Some important points though....

- ❑ Do not think RDBMS, think JSON. How data should be structured is very important.
- ❑ Firebase has a recycler view, that integrates with real time database smoothly without any listeners.
- ❑ Test lab which is available in paid plan (Blaze), is an amazing feature for testing your app on different real and virtual devices.
- ❑ Set developer mode to true when testing remote config.



References & Links

- ❑ [Presentation by Kaushal Dhruw & Shakti Moyal 2016](#)
- ❑ <https://firebase.google.com>
- ❑ Demo app available at <https://goo.gl/WBP5fR>



Questions?