

Mobile Application Development

Produced
by

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Android & Firebase

Part 4

Firebase Integration





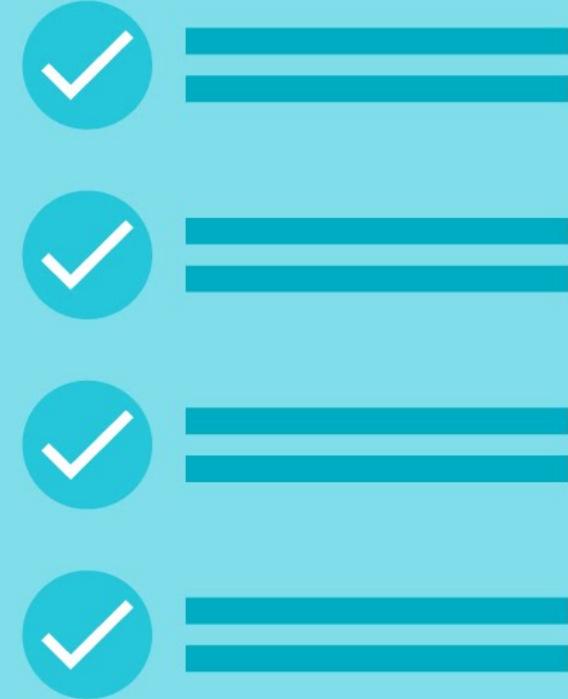
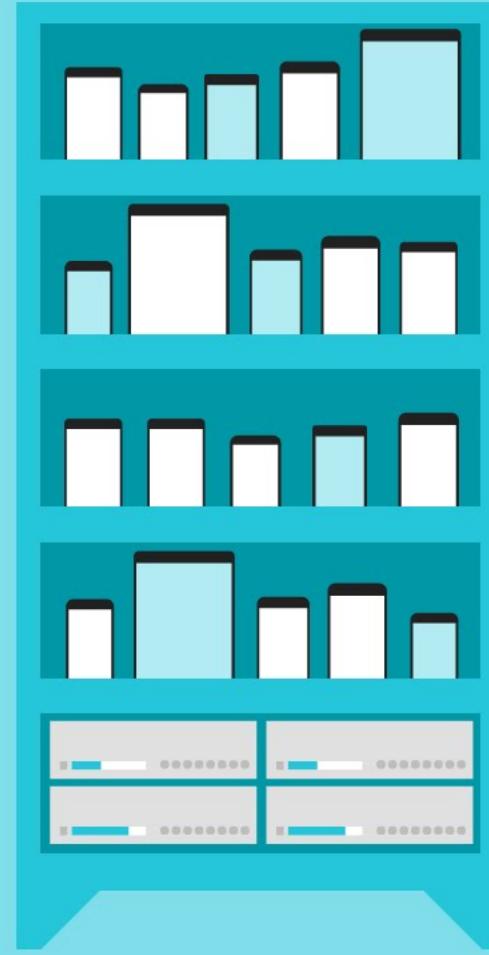
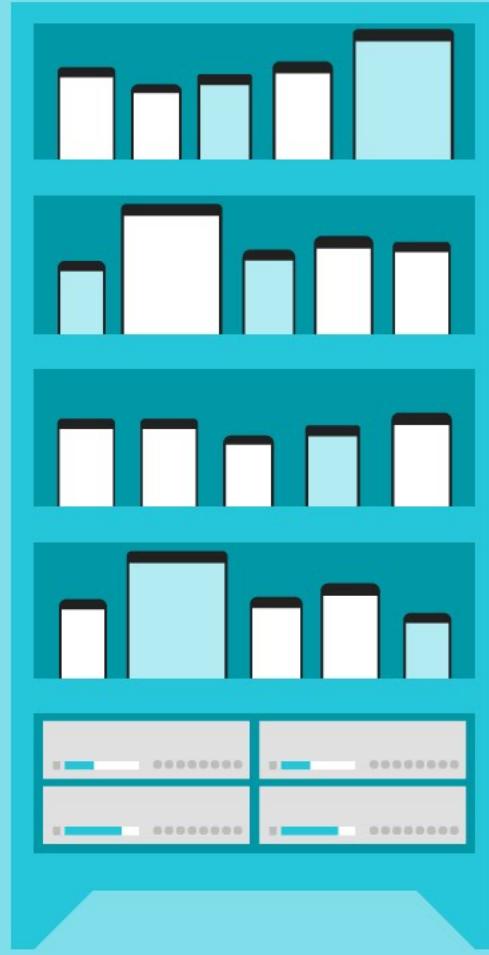
Agenda

- ❑ Firebase history
- ❑ The all new Firebase
- ❑ Real-time database
- ❑ Firestore
- ❑ 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

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CoffeeMateFBI – Test Lab for Android – Firebase console https://coffeematefbi.firebaseioapp.com +

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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



S R T E

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

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Test Lab ← Run a test ?

Choose test type

Robo test Instrumentation test Game Loop

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.

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

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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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 'Test Lab' section of the Firebase console. On the left sidebar, under the 'DEVELOP' category, the 'Test Lab' option is selected and highlighted in blue. A modal window titled 'Run a Robo test' is open, showing step 1: 'Configure test'. It asks the user to upload their app's APK, which is currently set to 'app-debug.apk'. There is a 'BROWSE' button to change the file. A 'CONTINUE' button is at the bottom right of the modal. The URL in the browser bar is 'console.firebaseio.google.com/project/coffeematefbi/testlab/run/robo'.



S R T E

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

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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)

Add a locale

Advanced options

Save template 5 devices , 1 orientation , 1 locale



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Test Lab for Android

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CoffeeMateFBI RUN A TEST

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



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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 > CoffeeMateFB1 > 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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Firebase CoffeeMateFBI Overview Analytics

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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⚠ 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 03:17

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←



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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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console.firebaseio.google.com/project/coffeematefbi/testlab/histories/bh...

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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 screenshot shows three mobile device screens from a test run. The first screen displays the 'CoffeeMate' logo and a sign-in prompt: 'Please Sign in with your Google Account Below'. It includes a 'Sign In' button and a 'Disconnect Account' option. The second and third screens show a 'Choose account for CoffeeMateFBI' dialog box, listing two accounts: '7H8WEIYTZXNG83QGJKWCB4ZQ' and '7H8WEIYTZXNG83QGJKWCB4ZQ'. Both screens also show the 'CoffeeMate' logo at the top.



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S R T E https://coffeematefbi.firebaseioapp.com/

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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:

W 03:34:03.041 dex2oat /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

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	
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 face. The face is circular with two dots for eyes, a wide smile, and small puffs of hair. Below the face is a small signature that appears to read "mc".



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?