

Mobile Application Development

Produced
by

David Drohan (ddrohan@wit.ie)

Department of Computing & Mathematics
Waterford Institute of Technology

<http://www.wit.ie>



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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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Hosting



The new VPS in town...



Firebase Hosting

- ❑ Firebase hosting provides a fast and secure static hosting for your web app.
- ❑ It is a production grade web content hosting.
- ❑ No need to look for any other VPS solution
- ❑ Hosting gives a subdomain of “firebaseapp.com”
- ❑ You can also get a custom domain.
- ❑ Install firebase CLI and deploy in a matter of seconds.
- ❑ Also suited for progressive web apps



Deploy Your Site In Seconds

- ❑ Install npm.
 - `npm install -g firebase-tools`
- ❑ Install firebase CLI
 - `firebase init`
- ❑ Initialize your app
 - `firebase init`
- ❑ Set root folder and put your static content there.
- ❑ Deploy
 - `firebase deploy`



Firebase Hosting



Quick DEMO...



The screenshot shows the Firebase Hosting dashboard. On the left, a sidebar lists various services: Overview, Analytics, Authentication, Database, Storage, **Hosting** (which is highlighted with a red box), Functions, Test Lab, Crash Reporting, Performance, Notifications, Remote Config, and Dynamic Links. At the bottom of the sidebar, it says "Spark Free \$0/month" and has an "UPGRADE" button. The main content area is titled "Hosting" and has tabs for "DASHBOARD" and "USAGE". It features a large image of Earth with a signal icon, followed by the text: "Deploy web and mobile web apps in seconds using a secure global content delivery network". Below this are links to "Learn more" and "View the docs", and a prominent blue "GET STARTED" button.



Safari browser window showing the Firebase Hosting setup process:

The URL in the address bar is `console.firebaseio.google.com/project/coffeematefbi/hosting`.

The page title is "CoffeeMateFBI - Hosting - Firebase console".

The left sidebar shows the following navigation:

- Overview
- Analytics
- DEVELOP
 - Authentication
 - Database
 - Storage
 - Hosting**
 - Functions
 - Test Lab
 - Crash Reporting
 - Performance
- GROW
 - Notifications
 - Remote Config
 - Dynamic Links

The main content area is titled "Set up hosting" and is divided into two steps:

- 1 Install
- 2 Deploy

The "Install" step instructions state: "To host your site, you need to install Firebase command line tools using npm ([Node.js](#))". Below this is a terminal-style code block showing the command: `$ npm install -g firebase-tools`. A note below the command says: "Doesn't work? You may need to [change npm permissions](#)".

If you've previously installed Firebase command line tools, run the install command again to make sure that you have the latest version.

At the bottom right of the modal are "CANCEL" and "CONTINUE" buttons.



S W R E

console.firebaseio.google.com/project/coffeematefbi/hosting

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CoffeeMateFBI - Hosting - Firebase console

Firebase CoffeeMateFBI Overview Hosting Analytics DASHBOARD USAGE ?

DEVELOP Authentication Database Storage Hosting Functions Test Lab Crash Reporting Performance GROW Notifications Remote Config Dynamic Links

Spark Free \$0/month UPGRADE

Set up hosting

1 Install 2 Deploy

Open a terminal window and navigate to or create a directory for your site

Sign in to Google: `$ firebase login`

Initiate your project: `$ firebase init`

Add your static files to your deploy directory (the default is public)

Deploy your website: `$ firebase deploy`

FINISH

A modal dialog box titled "Set up hosting" is displayed over the Firebase Hosting dashboard. The dialog is divided into two sections: "Install" (step 1) and "Deploy" (step 2). It provides terminal commands for each step. Step 1 includes "Sign in to Google" and "Initiate your project". Step 2 includes "Add your static files to your deploy directory" and "Deploy your website". A large blue "FINISH" button is at the bottom right of the dialog.



S W R

console.firebaseio.google.com/project/coffeematefbi/hosting/main

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CoffeeMateFBI - Hosting - Firebase console

Firebase CoffeeMateFBI Overview Go to docs :

Analytics

DEVELOP

Authentication

Database

Storage

Hosting

Functions

Test Lab

Crash Reporting

Performance

GROW

Notifications

Remote Config

Dynamic Links

Spark Free \$0/month UPGRADE

HOSTING

Domain

coffeematefbi.firebaseioapp.com Default CONNECT DOMAIN

Deployment history

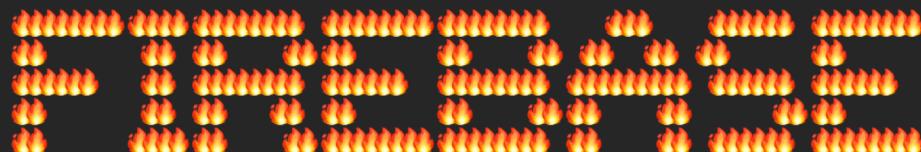
Waiting for your first deploy INSTRUCTIONS

This screenshot shows the Firebase Hosting dashboard for the project "CoffeeMateFBI". The left sidebar lists various Firebase services. The "Hosting" section is selected and highlighted in blue. The main area displays the "Domain" section, which lists "coffeematefbi.firebaseioapp.com" as a default domain. A red box highlights this domain entry. Below it is the "Deployment history" section, which currently says "Waiting for your first deploy" and includes a "INSTRUCTIONS" button.



```
contributors.txt credits topic01-overview-and-tools topic04-google-services  
course.md public-site topic02-ui-design topic05-firebase  
courseurl topic00-profile topic03-networking topic06-future-trends  
[davesmbp:msc-mad ddrohan$ cd ..  
[davesmbp:github ddrohan$ ls  
android-apps-development.png intro.to.android.jpeg mad2.png mobile-app-dev-2016 wit-data-structures  
ddrohan.github.io labs.png mad3.png mobile-app-dev-2017 wit-mad-1  
ds.png mad-2016 mad4.png mobile-app-dev-edel.zip wit-wad  
header.png mad.png mad5.png msc-mad  
ict mad1.png mobile-app-dev-1.jpg wad.png  
[davesmbp:github ddrohan$ cd ict  
[davesmbp:ict ddrohan$ ls  
public-site  
[davesmbp:ict ddrohan$ ls  
public  
[davesmbp:ict ddrohan$ firebase login  
Already logged in as daveydrohan@gmail.com  
davesmbp:ict ddrohan$ firebase init
```

Update available: 3.12.0 (current: 3.9.1)
Run `npm install -g firebase-tools` to update.



You're about to initialize a Firebase project in this directory:

`/Users/ddrohan/Library/Mobile Documents/com~apple~CloudDocs/_wit/github/ict`

? Which Firebase CLI features do you want to setup for this folder? Press Space to select features, then Enter to confirm your choices.

- Database: Deploy Firebase Realtime Database Rules
- Functions: Configure and deploy Cloud Functions
- Hosting: Configure and deploy Firebase Hosting sites



FIREBASE

You're about to initialize a Firebase project in this directory:

```
/Users/ddrohan/Library/Mobile Documents/com~apple~CloudDocs/_wit/github/ict
```

? Which Firebase CLI features do you want to setup for this folder? Press Space to select features, then Enter to confirm your choices. Hosting: Configure and deploy Firebase Hosting sites

Project Setup

First, let's associate this project directory with a Firebase project. You can create multiple project aliases by running `firebase use --add`, but for now we'll just set up a default project.

? Select a default Firebase project for this directory: CoffeeMateFBI (coffeematefbi)

Hosting Setup

Your `public` directory is the folder (relative to your project directory) that will contain Hosting assets to be uploaded with `firebase deploy`. If you have a build process for your assets, use your build's output directory.

```
? What do you want to use as your public directory? public
? Configure as a single-page app (rewrite all urls to /index.html)? No
✓ Wrote public/404.html
? File public/index.html already exists. Overwrite? No
i Skipping write of public/index.html

i Writing configuration info to firebase.json...
i Writing project information to .firebaserc...

✓ Firebase initialization complete!
```

```
davesmbp:ict ddrohan$
```

```
ict — node /usr/local/bin/firebase deploy — 180x40
You're about to initialize a Firebase project in this directory:
/Users/ddrohan/Library/Mobile Documents/com~apple~CloudDocs/_wit/github/ict
? Which Firebase CLI features do you want to setup for this folder? Press Space to select features, then Enter to confirm your choices. Hosting: Configure and deploy Firebase Hosting sites
== Project Setup

First, let's associate this project directory with a Firebase project.
You can create multiple project aliases by running firebase use --add,
but for now we'll just set up a default project.

? Select a default Firebase project for this directory: CoffeeMateFBI (coffeematefbi)

== Hosting Setup

Your public directory is the folder (relative to your project directory) that
will contain Hosting assets to be uploaded with firebase deploy. If you
have a build process for your assets, use your build's output directory.

[?] What do you want to use as your public directory? public
[?] Configure as a single-page app (rewrite all urls to /index.html)? No
✓ Wrote public/404.html
[?] File public/index.html already exists. Overwrite? No
i Skipping write of public/index.html

i Writing configuration info to firebase.json...
i Writing project information to .firebaserc...

✓ Firebase initialization complete!
davesmbp:ict ddऽrohan$ firebase deploy

== Deploying to 'coffeematefbi'...
i deploying hosting
i hosting: preparing public directory for upload...
```



? Select a default Firebase project for this directory: CoffeeMateFBI (coffeematefbi)

== Hosting Setup

Your **public** directory is the folder (relative to your project directory) that will contain Hosting assets to be uploaded with **firebase deploy**. If you have a build process for your assets, use your build's output directory.

```
[?] What do you want to use as your public directory? public
[?] Configure as a single-page app (rewrite all urls to /index.html)? No
✓ Wrote public/404.html
[?] File public/index.html already exists. Overwrite? No
i Skipping write of public/index.html
```

```
i Writing configuration info to firebase.json...
i Writing project information to .firebaserc...
```

```
✓ Firebase initialization complete!
[davesmbp:ict ddrohan$ firebase deploy
```

== Deploying to 'coffeematefbi'...

```
i deploying hosting
i hosting: preparing public directory for upload...
```

```
Error: An unexpected error has occurred.
[davesmbp:ict ddrohan$ firebase deploy
```

== Deploying to 'coffeematefbi'...

```
i deploying hosting
i hosting: preparing public directory for upload...
✓ hosting: 313 files uploaded successfully
i starting release process (may take several minutes)...
✓ Deploy complete!
```

```
Project Console: https://console.firebaseio.google.com/project/coffeematefbi/overview
Hosting URL: https://coffeematefbi.firebaseioapp.com
[davesmbp:ict ddrohan$
```



S R T E

console.firebaseio.google.com/project/coffeematefbi/hosting/main

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CoffeeMateFBI – Hosting – Firebase console https://coffeematefbi.firebaseioapp.com +

Firebase

CoffeeMateFBI

Overview

Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting**
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links

EARN

- AdMob

Spark
Free \$0/month **UPGRADE**

Hosting

DASHBOARD USAGE

Domain

CONNECT DOMAIN

Domain	Type	Status
coffeematefbi.firebaseioapp.com		Default

Deployment history

Status	Time:	Deploy	Files
Current	19 Sep 2017 13:12	daveydrohan@gmail.com oGfeBP	313

Rows per page: 10 1-1 of 1

A red rectangular box highlights the "Deployment history" section of the Firebase Hosting dashboard.

coffeematefbi.firebaseio.com

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S R T + https://coffeematefbi.firebaseio.com

CoffeeMateFBI – Hosting – Firebase console

Mobile Application Development

Module Home

David Drohan
(ddrohan@wit.ie), Eamonn de Leastar
(edeleastar@tssg.wit.ie) & John Fitzgerald
(johnfitzgerald@outlook.com).
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Module Overview & Background

1: Android Overview & Tools

2: UI Design & App Structure

3: Multithreading & Networking

Android introduced a new user interface language to the world, one that is gradually evolving in flexibility and expressiveness. The first application we will build exhibits a range of new concepts you may not have come across before. Here we tour this app in detail, exploring each of the artifacts we have composed, and attempt to get a sense of how they fit together to form a running app.

Here we discuss app design in general, the frameworks available to the app developer and the different approaches that can be followed in the design and development of a mobile app. We begin with some of the more common widgets and complete the material with some of the more advanced UI artifacts used in the design of android apps, focusing on the android UI guidelines for effective navigation.

In this section we take a brief look at persistence within an Android app (via SQLite) but focus mainly on how the Android OS implements multithreading and deals with running tasks in the background. We also investigate the different approaches available to the developer for making http calls and API requests.





S R T E CoffeeMateFBI – Hosting – Firebase console https://coffeematefbi.firebaseioapp.com https://www.jumpyjosh.com

Firebase

CoffeeMateFBI

Overview Analytics DEVELOP Authentication Database Storage Hosting Functions Test Lab Crash Reporting Performance GROW Notifications Remote Config Dynamic Links EARN AdMob Spark Free \$0/month UPGRADE

Hosting

DASHBOARD USAGE

Domain

Domain	Type	Status
coffeematefbi.firebaseioapp.com	Default	
jumpyjosh.com ↳ www.jumpyjosh.com	Redirect	Connected
www.jumpyjosh.com	Custom	Connected

CONNECT DOMAIN

Deployment history

Status	Time:	Deploy	Files
★ Current	19 Sep 2017 13:12	daveydrohan@gmail.com oGfeBP	313

Rows per page: 10 1-1 of 1 < >



www.jumpyjosh.com

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Mobile Application Development

Module Home

David Drohan (ddrohan@wit.ie), Eamonn de Leastar (edeleastar@tsg.wit.ie) & John Fitzgerald (johnfitzgerald@outlook.com). Creative Commons License

15 8

Module Overview & Background

Here you'll find a brief talk about myself, my background and what this Module will cover in the different sections.

1: Android Overview & Tools

Android introduced a new user interface language to the world, one that is gradually evolving in flexibility and expressiveness. The first application we will build exhibits a range of new concepts you may not have come across before. Here we tour this app in detail, exploring each of the artifacts we have composed, and attempt to get a sense of how they fit together to form a running app.

2: UI Design & App Structure

Here we discuss app design in general, the frameworks available to the app developer and the different approaches that can be followed in the design and development of a mobile app. We begin with some of the more common widgets and complete the material with some of the more advanced UI artifacts used in the design of android apps, focusing on the android UI guidelines for effective navigation.

3: Multithreading & Networking

In this section we take a brief look at persistence within an Android app (via SQLite) but focus mainly on how the Android OS implements multithreading and deals with running tasks in the background. We also investigate the different approaches available to the developer for making http calls and API requests.

4: Google Services

5: Firebase

6: Future Trends



Pricing

Products	Spark Plan Generous limits for hobbyists Free	Flame Plan Fixed pricing for growing apps \$25/month	Blaze Plan Calculate pricing for apps at scale Pay as you go
Free Products Authentication (except Phone Auth), Analytics, App Indexing, Dynamic Links, Invites, Remote Config, Cloud Messaging (FCM), Performance Monitoring, and Crash Reporting.	Included	Included Free	Included Free
Hosting GB stored GB transferred Custom domain & SSL	1 GB 10 GB/month 	10 GB 50 GB/month 	\$0.026/GB \$0.15/GB



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 artist's initials 'mc' are written in the bottom right corner of the sun's path.



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?