Firebase

Android
-
Firebase

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MS-Teams: 2sf3ph4, List, github
borovan 'at' ii.fmph.uniba.sk

- **Room**
  - **@Database**
  - **@Entity**
  - **@Dao**

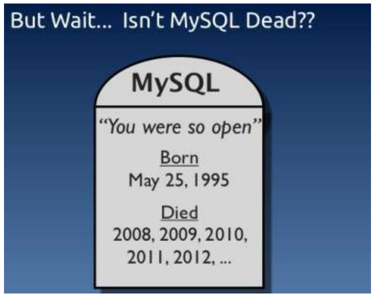
- **Firebase**
  - **Authentification**
    - **Email/Password, Google, FB, Twitter**
  - **Realdatabase**
  - **Storage**
  - **Push notifications**

Kam (inam) uložiť naše dáta

W - Windows
A - Apache
M - MySql
P - Php
WAMP - Server

- máme vlastný server – protokol najčastejšie http-https
  - najčastejšie (v bakalárkach) AMP – Apache-MySQL-PHP, prip. java-servlets
  - tak trochu doba minulá...

  LinuxDays 2017:
  MySQL sežere Vaše data
  David Karban



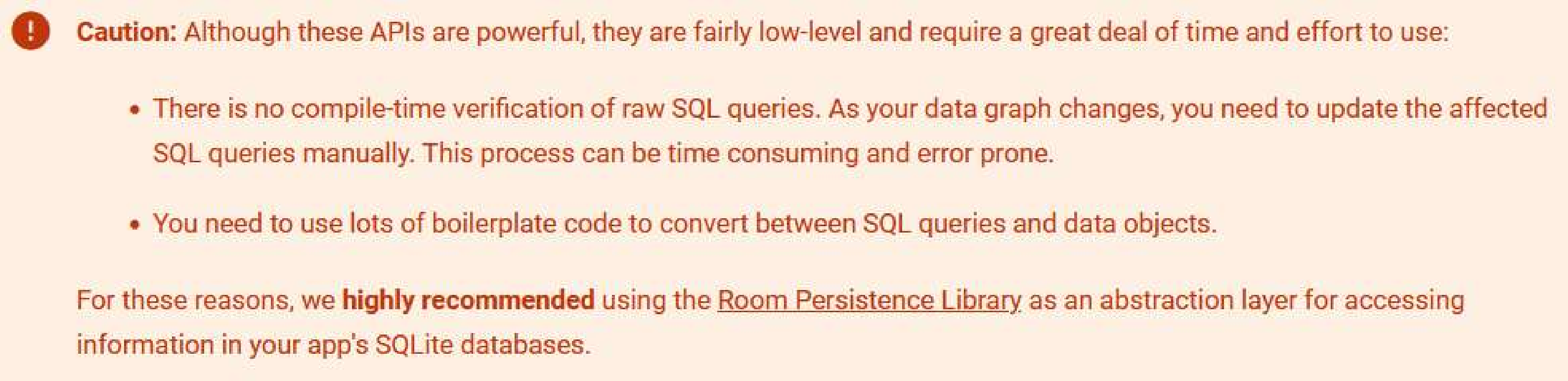
bude:

- lokálne
  - SQLite https://developer.android.com/training/data-storage/sqlite
  - Room https://developer.android.com/topic/libraries/architecture/room
- cloudové úložiská a ich služby
  - Relačné - tabuľkovo orientované
    Parse.com http://parseplatform.org/ (kúpil Facebook)
  - Nerelačné - noSQL – json
    firebase.com (Google)

SQLite vs. Room

SQLite databáza:

- obsahovala veľa *boilerplate* kódu
- operácie, ktoré blokovali main-thread
- sql dotazy, ktoré sa konštruujú v run-time (nie sú predkompilované)



Caution: Although these APIs are powerful, they are fairly low-level and require a great deal of time and effort to use:

- There is no compile-time verification of raw SQL queries. As your data graph changes, you need to update the affected SQL queries manually. This process can be time consuming and error prone.
- You need to use lots of boilerplate code to convert between SQL queries and data objects.

For these reasons, we **highly recommended** using the Room Persistence Library as an abstraction layer for accessing information in your app's SQLite databases.

od 2017 Android má Room, ktorá umožňuje:

- používať komponenty Room (kapt - anotácie @Entity, @Dao, @Database)
- udržiavať relácie medzi entitami (kľúče - keys)
- spúšťať DB operácie mimo main-thread, prirodzene pomocou corutín
- je to odporúčaná náhrada za bývalú SQLite (existuje v Androide od API-1)

Room

```
build.gradle (project)
plugins {
    kotlin("jvm") version "2.0.21"
    alias(libs.plugins.android.application) apply false
    alias(libs.plugins.kotlin.android) apply false
    id("com.google.devtools.ksp") version "2.0.21-1.0.27" apply false
}
```

```
build.gradle (module:app)
dependencies {
  val room_version = "2.6.1"
  ksp("androidx.room:room-compiler:$room_version")
  implementation("androidx.room:room-ktx:$room_version")
}
```

```
build.gradle (module:app)
plugins {
    alias(libs.plugins.android.application)
    alias(libs.plugins.kotlin.android)
    id("com.google.devtools.ksp")
}
```

Anotácie:

- @Database – abstraktná trieda RoomDatabase
  - Room.databaseBuilder() persistentná inštancia, dáta existujú aj po skončení procesu,
  - Room.inMemoryDatabaseBuilder() – dáta zmiznú, keď proces zanikne
- @Entity – tabuľky v SQL databáze

```
@Entity
data class Student ( … )
```

- @DAO – data access object – metódy na prístup k databáze

```
@Dao
interface StudentDAO {
    @Query("SELECT * FROM Student WHERE name = :name")
    suspend fun getName(name: String): Student?
```

https://developer.android.com/topic/libraries/architecture/room

RoomDB

malý príklad

- vytvoríme aplikáciu na registrovanie študentov s funkciami:
  - signup/login/logout/delete
- v návrhovom vzore MVVM
- s použitím corutín

Najprv si:

- obohatíme build.gradle (module:app) o
- Room –používame plugin ksp (com.google.devtools.ksp)

```
build.gradle (module:app)
dependencies {
 val room_version = "2.6.1"
 ksp("androidx.room:room-compiler:$room_version")
 implementation("androidx.room:room-ktx:$room_version")
```

- plugins

```
plugins {
    alias(libs.plugins.android.application)
    alias(libs.plugins.kotlin.android)
    id("com.google.devtools.ksp")
}
```

Project:CoroutinesDB_KSP2.zip

@Entity

```
@Entity
data class Student (
    val isic             : String,
    val name             : String,
    val passwordHash     : Int,
    @ColumnInfo(passwordHash = "password_hash")
    val description      : String) {
    @PrimaryKey(autoGenerate = true)
    var id: Long = 0
}
```

mapovanie kotlinovskej položky passwordHash na stĺpec tabuľky **Student** s názvom password_hash

autoGenerate - autoincrement primary key – najčastejšie sa implementuje ako SEQUENCE (Oracle, Postgre), resp. MS-SQL

```
CREATE TABLE (
  ID_column INT NOT NULL IDENTITY(1,1) PRIMARY KEY
```

https://developer.android.com/reference/androidx/room/Entity

Project:CoroutinesDB_KSP2.zip

@Entity

foreignKeys/Embedded

```kotlin
@Entity
data class User(
    @PrimaryKey val userId: Long,
    val name: String,
    val age: Int
)
```

```kotlin
@Entity(foreignKeys = [
   ForeignKey(
     entity = User::class,
     parentColumns = ["userId"],
     childColumns = ["userOwnerId"],
     onDelete = CASCADE)]
)
data class Library(
   @PrimaryKey
   val libraryId: Long,
   val title: String,
   val userOwnerId: Long
)
data class UserAndLibrary(
   @Embedded val user: User,
   @Relation(
     parentColumn = "userId",
     entityColumn = "userOwnerId"
   )
   val library: Library
)
```

https://medium.com/@tonyowen/room-entity-annotations-379150e1ca82

Project:CoroutinesDB_KSP2.zip

@Dao

data access object

```
@Dao
interface StudentDAO {
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun insert(student: Student): Long

    @Query("SELECT * FROM Student WHERE name = :name")
    suspend fun getName(name: String): Student?

    @Query("SELECT * FROM Student WHERE id = :id")
    suspend fun getID(id: Long): Student?

    @Query("SELECT * FROM Student WHERE isic = :isic")
    suspend fun getISIC(isic: String): Student?

    @Query("DELETE FROM Student WHERE id = :id")
    suspend fun deleteID(id: Long)

    @Insert
    suspend fun insertAll(vararg students: Student)

    @Delete
    suspend fun delete(student: Student)
}
```

Project:CoroutinesDB_KSP2.zip

@Database

```
@Database(entities = arrayOf(Student::class), version = 1)
abstract class StudentDatabaseEasy: RoomDatabase() {
    abstract fun studentDAO(): StudentDAO

    fun getInstance(context: Context) = Room.databaseBuilder(
           context.applicationContext,
           StudentDatabaseEasy::class.java,
          "studentdatabase"
    ).build()
}
signup:
coroutineScope.launch {
    if (db.getName(name) != null || db.getISIC(isic) != null) {
        withContext(Dispatchers.Main) {
          error.value = "Student already exists"
        }
    } else {
        val studentId = db.insert(
                Student(isic, name, password.hashCode(), desc))
} }
```

Project:CoroutinesDB_KSP2.zip

@Database

```
val coroutineScope = CoroutineScope(Dispatchers.IO)
```

```
fun login(name: String, password: String) {
   coroutineScope.launch {
   val student = db.getName(name)
   if (student == null)
      withContext(Dispatchers.Main) {
        error.value = "Student not found"
      }
   else {
      if (student.passwordHash == password.hashCode()) {
         Status.login(student)
         withContext(Dispatchers.Main) {
           logged.value = true
         }
      } else {
         withContext(Dispatchers.Main) {
           error.value = "Password is incorrect"
}  }  }  }
```

Project:CoroutinesDB_KSP2.zip

Rozsiahlejší príklad @Entity

```
@Entity(foreignKeys = [ForeignKey(
        entity = Company::class,
        parentColumns = ["id"],
        childColumns = ["company_id"],
        onDelete = ForeignKey.CASCADE)])

data class Employee (
    @ColumnInfo(name = "name")
    val name: String,

    @ColumnInfo(name = "company_id")
    val companyId : Int = 0)
{
    @PrimaryKey(autoGenerate = true)
    @ColumnInfo(name = "id")
    val employeeId : Int = 0
}
```

```
@Entity(tableName = "Department")
class Department(
        @ColumnInfo(name = "name")
        val name: String,

        @ColumnInfo(name = "company_id")
        val companyId : Int = 0
) {
    @PrimaryKey(autoGenerate = true)
    @ColumnInfo(name = "id")
    var id = 0
}
```

```
@Entity(tableName = "Company")
data class Company (
    @ColumnInfo(name = "name")
    val name: String,

    @ColumnInfo(name = "date_updated")
    @TypeConverters(DateConverter::class)
    val itemUpdatedDate: Date? = null,

    @Embedded
    private val location: Location? = null,

    @Embedded(prefix = "hq_")
    private val headLocation: Location? = null,

    @Ignore
    val picture: Bitmap? = null
) {
    @PrimaryKey
    @ColumnInfo(name = "id")
    val companyId = 0
}
```

```
@Entity(primaryKeys = ["id", "code"])
class Office {
    val id : Int = 0
    var code: String
}
```

Project:CoroutinesDB_KSP2.zip

Rozsiahlejší príklad @Dao

```
@Dao
interface EmployeeDao {
    @get:Query("SELECT * FROM Employee")
    val allEmployees: LiveData<List<Employee?>?>?

    @RawQuery
    fun getAllEmployeesWithLimit(query: String?): List<Employee?>?
    @Insert
    fun insertEmployee(employee: Employee?)
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    fun insertAll(employees: List<Employee?>?)
    @Update
    fun updateEmployee(employee: Employee?)
    @Delete
    fun deleteEmployee(employee: Employee?)
}
```

```
@Dao
abstract class DepartmentDao {
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    abstract fun insertAll(departments: List<Department?>?)
    @Insert
    abstract fun insert(product: Department?)
    @Delete
    abstract fun delete(product: Department?)
    @Transaction
    fun insertAndDeleteInTransaction(
                newDepartment: Department?,
                oldDepartment: Department?) {
        insert(newDepartment)
        delete(oldDepartment)
    }
}
```

```
@Dao
interface CompanyDao {
    @get:Query("SELECT * FROM Company")
    val allCompanies: LiveData<List<Company?>?>?


    @get:Query("SELECT * FROM Company ORDER BY name")
    val allCompaniesOrdered: LiveData<List<Company?>?>?


    @Insert
    fun insertCompany(company: Company?)
    @Query(
     "SELECT * FROM Company WHERE name LIKE :companyName")
    fun getCompanies(
              companyName: String?):
              LiveData<List<Company?>?>?
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    fun insertAll(companies: List<Company?>?)
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    fun insertAll(vararg companies: Company?)
    @Update
    fun updateCompany(company: Company?)
    @Update
    fun updateCompanies(vararg company: Company?)
    @Delete
    fun deleteCompany(company: Company?)
    @Delete
    fun deleteCompanies(vararg company: Company?)
}
```

Project:CoroutinesDB_KSP2.zip

Ďalšie čítanie - Room

tutoriály - odporúčané

- **Migrate from kapt to KSP**
  https://developer.android.com/build/migrate-to-ksp
- **Room Persistence Library: Introduction**:
  https://medium.com/@magdamiu/android-room-persistence-library-97ad0d25668e
- **Room Persistence Library: Entity, Dao, Database**:
  https://medium.com/@magdamiu/android-room-components-5a7458b99191
- **Room Persistence Library: Relations**:
  https://medium.com/@magdamiu/android-room-persistence-library-relations-75bbe02e8522
- **Room Persistence Library: Queries and Migration Support**:
  https://magdamiu.medium.com/android-room-persistence-library-queries-and-migration-support-a9f21d2dc9d8

Cvičenie

úvod si pozrite v cvičení

Vytvorte aplikáciu, ktorá slúži na **evidenciu známok študentov** s nasledujúcimi entitami (verím, že tomu zápisu rozumiete). Máte urobiť Room model a minimálne základne GUI, aby bolo jasné, že viete pracovať s Room.

Základná verzia na hodnotenie:

- vie pridať položku do troch tabuliek (delete nemusíte riešiť), Znamky sú statický číselník,
- zobrazuje počet študentov, predmetov a hodnotení.

Bonus: [1 bod] nejaký listview zobrazuje všetky hodnotenia, v ľub. poradí, bez filtrov,

Bonus: [1 bod] viete zmazať študenta/predment, ktorý už má hodnotenie, CASCADE...

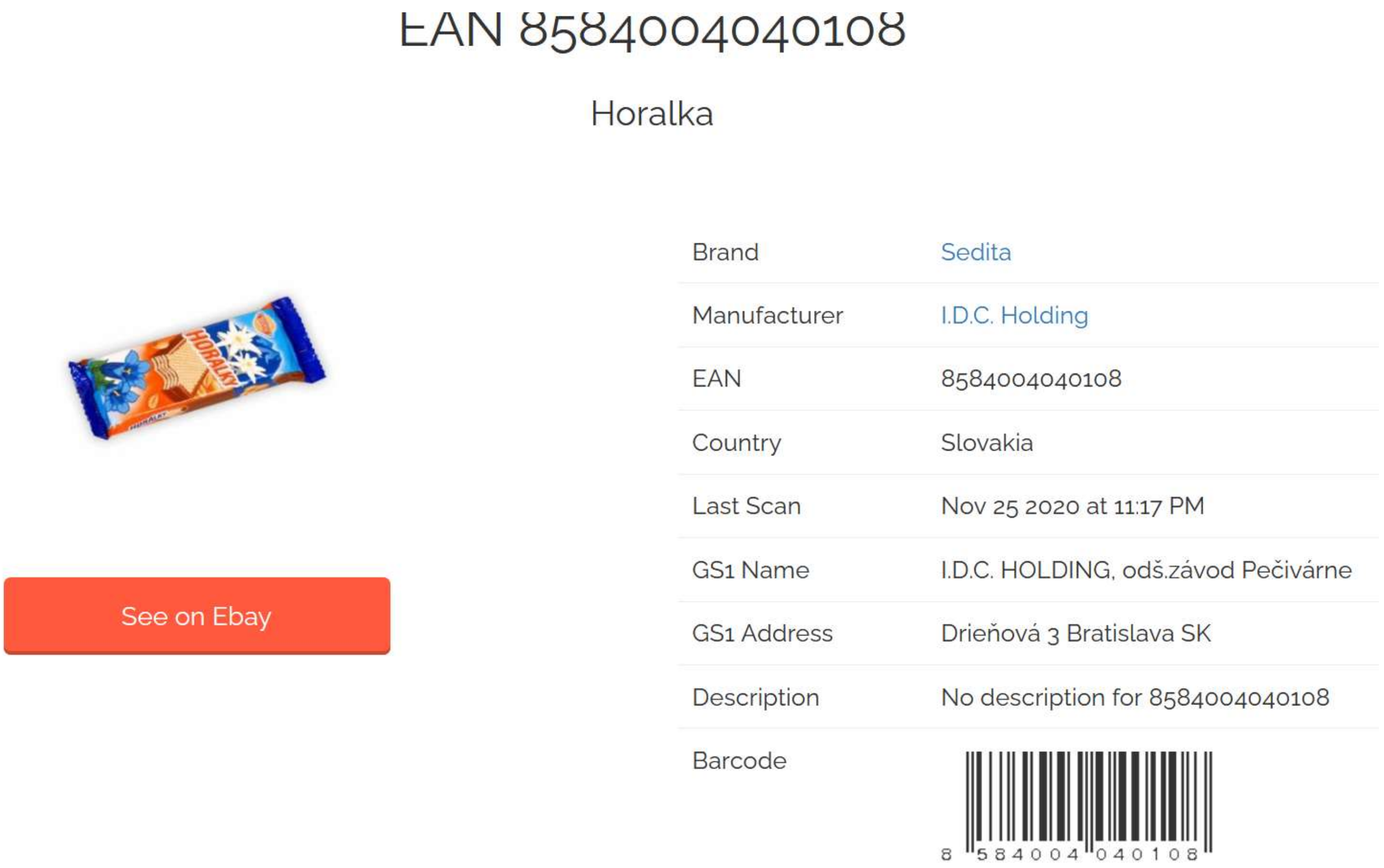
```
drop table Student;
create table Student (
  id NUMBER GENERATED BY DEFAULT ON NULL AS IDENTITY,
  isic varchar(20) not null,
  meno varchar(20),
  priezvisko varchar(30),
  CONSTRAINT sid_pk PRIMARY KEY (id),
  CONSTRAINT isic_pk UNIQUE (isic)
);
insert into Student (isic, meno, priezvisko)
      values ('123456789', 'Sansa', 'Starkova');
commit;
drop table predmet;
create table Predmet (
  id NUMBER GENERATED BY DEFAULT ON NULL AS IDENTITY,
  kod varchar(20) not null,
  nazov varchar(80),
  CONSTRAINT pid_pk PRIMARY KEY (ID),
  CONSTRAINT kod_pk UNIQUE (kod)
);
insert into Predmet (kod, nazov)
       values ('1-AIN-472/12‘,
  'Vývoj mobilných aplikácií, zimný semester 2020/2021');
commit;
```

```
create table Znamka (
  ID NUMBER GENERATED BY DEFAULT ON NULL AS IDENTITY,
  text varchar(5),
  CONSTRAINT zid_pk PRIMARY KEY (ID),
  CONSTRAINT text_pk UNIQUE (text)
);
insert into Znamka (text) values ('A');
insert into Znamka (text) values ('B');
insert into Znamka (text) values ('C');
insert into Znamka (text) values ('D');
insert into Znamka (text) values ('E');
insert into Znamka (text) values ('Fx');
create table Hodnotenie (
  studentID NUMBER,
  predmetID NUMBER,
  znamkaID NUMBER,
  CONSTRAINT fk_student FOREIGN KEY (studentID)
             REFERENCES Student(ID),
  CONSTRAINT fk_predmet FOREIGN KEY (predmetID)
             REFERENCES Predmet(ID),
  CONSTRAINT fk_znamka FOREIGN KEY (znamkaID)
             REFERENCES Znamka(ID)
);
```

Project:CvicenieC_KSP.zip

Cvičenie - C

Malá evidencia produktov pomocou bar-code scannera



EAN 8584004040108

Horalka

Brand	Sedita
Manufacturer	I.D.C. Holding
EAN	8584004040108
Country	Slovakia
Last Scan	Nov 25 2020 at 11:17 PM
GS1 Name	I.D.C. HOLDING, odš.závod Pečivárne
GS1 Address	Drieňová 3 Bratislava SK
Description	No description for 8584004040108
Barcode	8 584004 040108

Project:BarCodeScan.zip

Parse + facebook

Parse vs. Parse Server

- API pre komunikáciu mobilných/web aplikácií, ukladanie/zdieľanie dát
- podporoval PUSH notifikácie pomocou Google Cloud Messaging (GCM) vaša aplikácia dostane notifikáciu zo servera, ak iný užívateľ vyvolá event

Parse

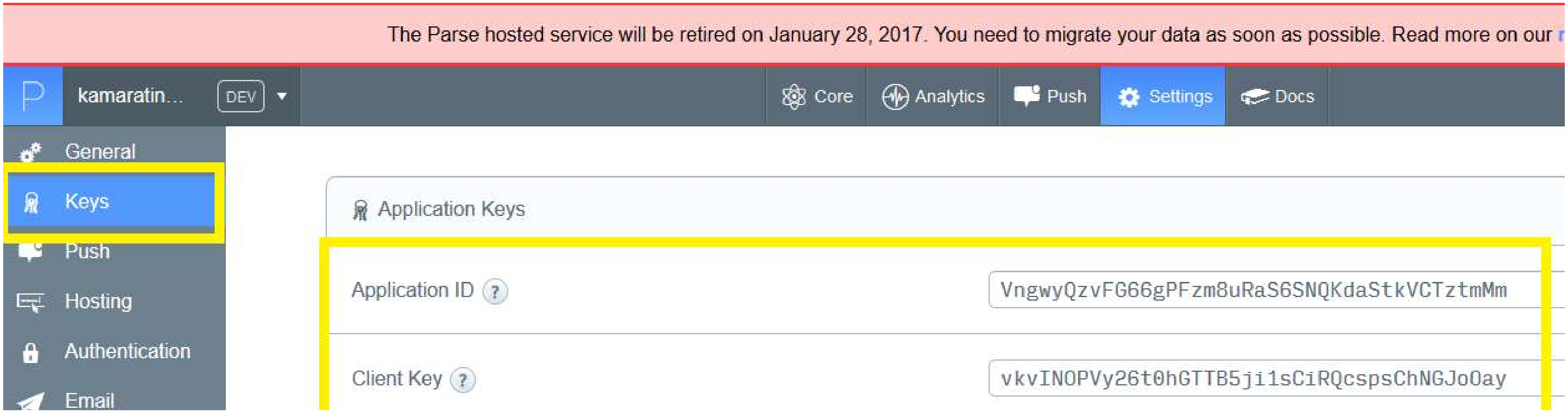
Docs Blog Community Back Us

The Complete Application Stack

Parse.com kúpený FB 2013 (free) končí v 2017 ☹

Ponúka migráciu na open-source Parse Server

- s veľmi podobným API ☺ .net
- na vlastnom serveri, s infraštruktúrou Node.js + MongoDB + Python


The Parse hosted service will be retired on January 28, 2017. You need to migrate your data as soon as possible. Read more on our r

Application Keys

Application ID	VngwyQzvFG66gPFzm8uRaS6SNQKdaStkVCTztmMm
Client Key	vkvINOPVy26t0hGTTB5ji1sCiRQcspsChNGJo0ay

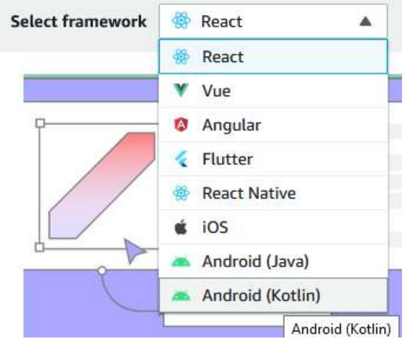
Alternatívy

(k Parse Server)

Veci zadarmo sú (často) síce najlepšie, ale zase pomíjivé

Treba pozrieť konkurenciu:

- Amazon AWS – iOS, Android, Web, ReactNative, ...
  https://aws.amazon.com/amplify/
  - Authentication
  - File Storage
  - Analytics
  - Notifications

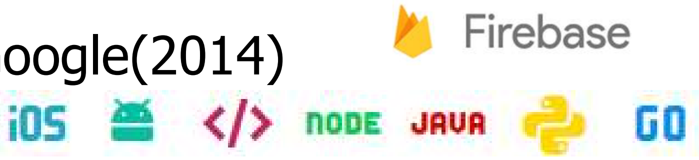


- MS Azure Mobile App SDK – iOS, Android, Xamarin, Cordova, …
  https://docs.microsoft.com/en-us/azure/app-service-mobile/app-service-mobile-android-how-to-use-client-library
  - Databases
    - Azure SQL
    - Azure CosmosDB
    - Azure PostgreSQL
    - Azure for MariaDB
  - Analytics

- Firebase – iOS, Android, Flutter, Web, …
  - realtime JSON oriented DB,
  - PUSH notifikácie, analytics, REST API

Firebase

Startup Firebase(2011) kúpil Google(2014)

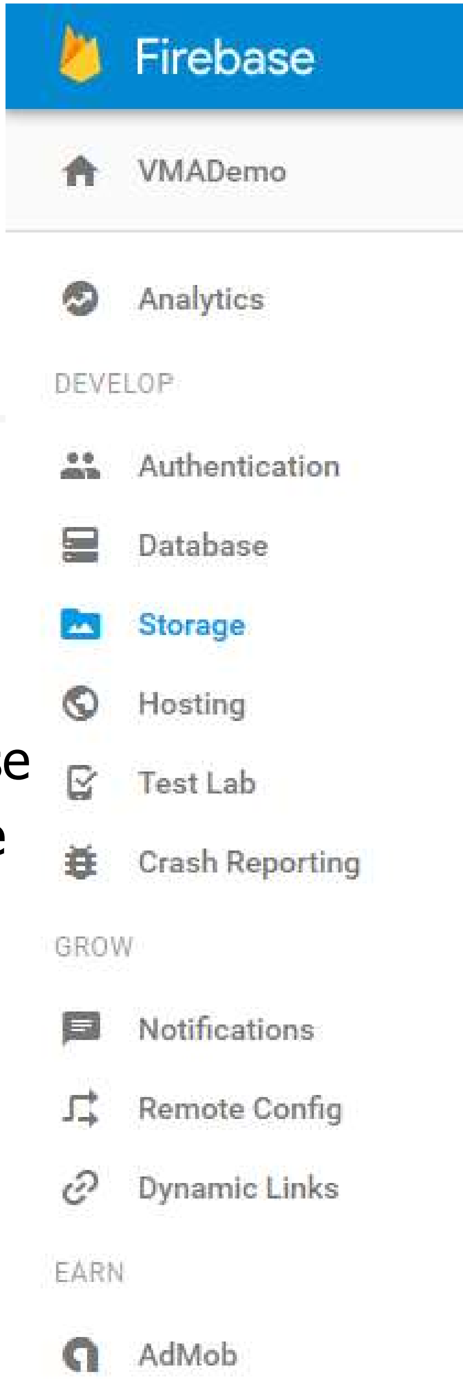


Ponúka služby/servisy:

- Authentification – FB/Google/Twitter/FirebaseEmail
- Realtime database – non sql store & synchronized database
- Cloud Firestore – realtime scalabe database, works off-line
- File storage – secure upload & download files
- Test lab for Android – rôzne virtuálne zariadenia
- Firebase local emulator – WebApp/Android/iOS
- Cloud messaging – push notifikácie pomocou
  Google Cloud Messaging/Firebase Cloud Messaging
- Cloud Functions – runs backend scripts on Google servers
- Crash reporting
- Analytics

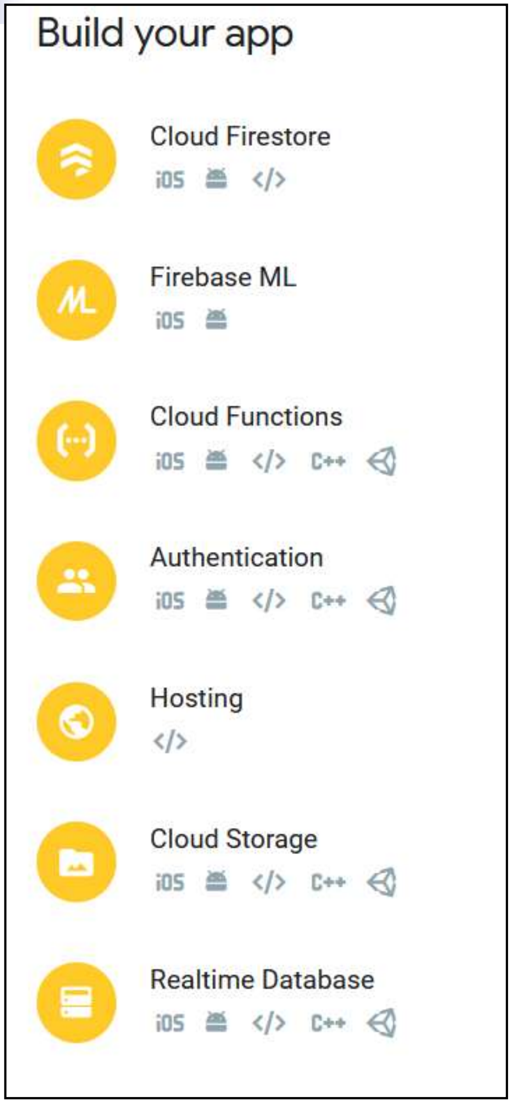
...

https://firebase.google.com/docs?authuser=0



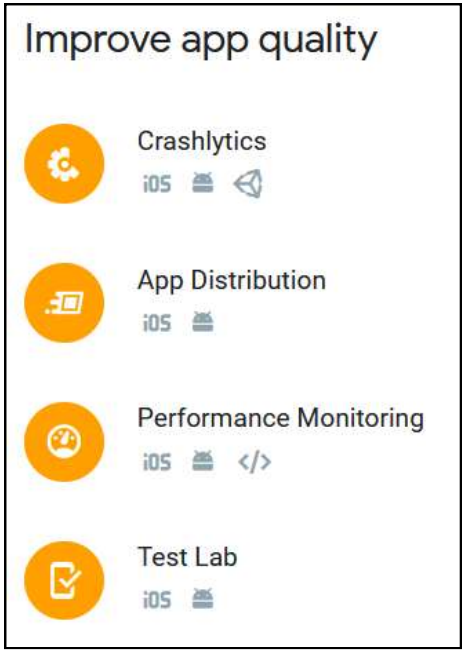
Firebase Products

and development platforms



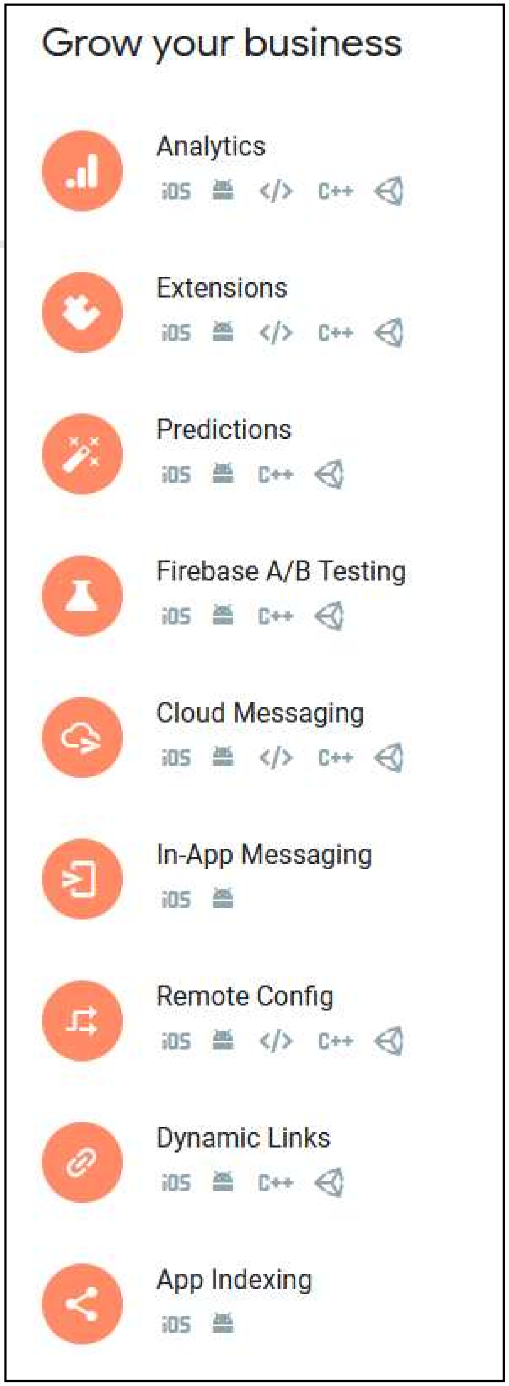
Build your app

- Cloud Firestore
  iOS </>
- Firebase ML
  iOS
- Cloud Functions
  iOS </> C++
- Authentication
  iOS </> C++
- Hosting
  </>
- Cloud Storage
  iOS </> C++
- Realtime Database
  iOS </> C++



Improve app quality

- Crashlytics
  iOS
- App Distribution
  iOS
- Performance Monitoring
  iOS </>
- Test Lab
  iOS

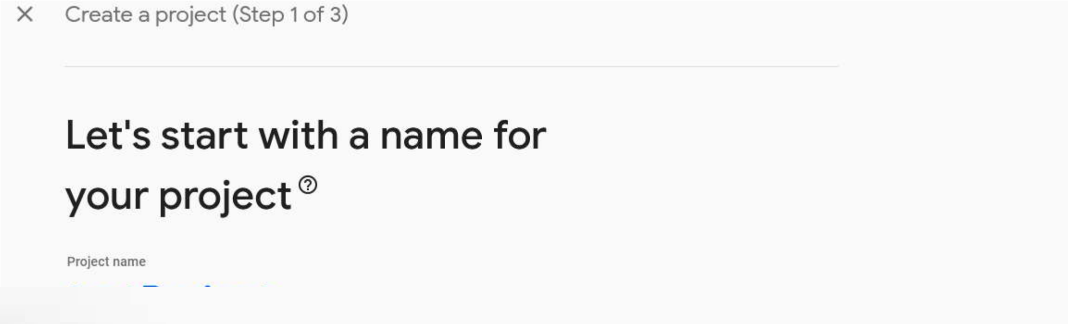


Grow your business

- Analytics
  iOS </> C++
- Extensions
  iOS </> C++
- Predictions
  iOS C++
- Firebase A/B Testing
  iOS C++
- Cloud Messaging
  iOS </> C++
- In-App Messaging
  iOS
- Remote Config
  iOS </> C++
- Dynamic Links
  iOS C++
- App Indexing
  iOS

Firebase Console

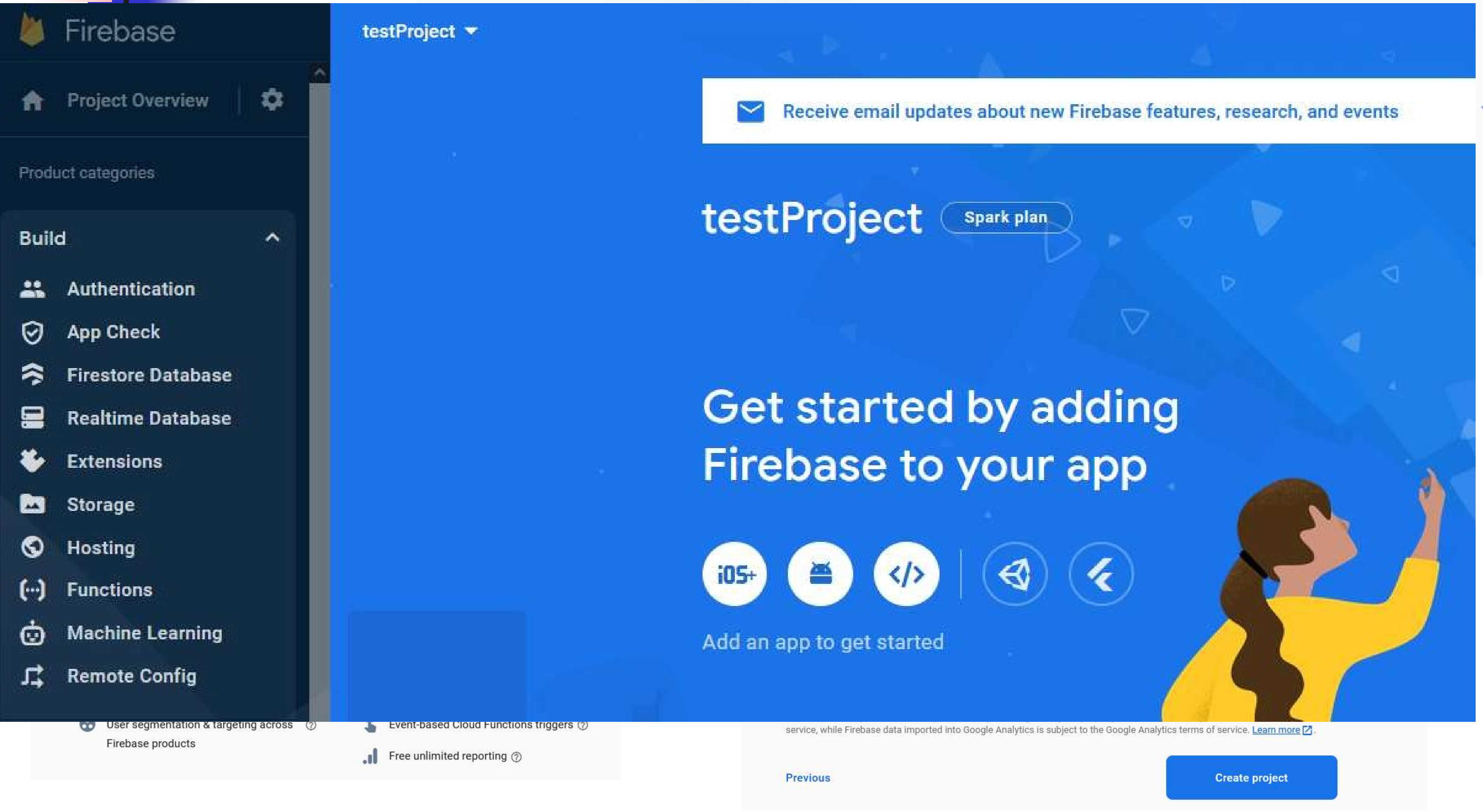
prvý dotyk



Create a project (Step 1 of 3)

Let's start with a name for your project

Project name



Receive email updates about new Firebase features, research, and events

testProject

Get started by adding Firebase to your app

Add an app to get started

User segmentation & targeting across Firebase products

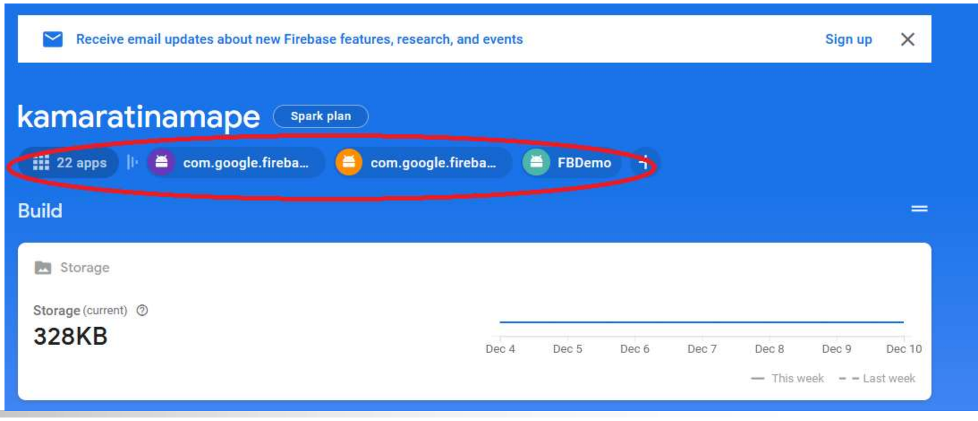
Event-based Cloud Functions triggers

Free unlimited reporting

service, while Firebase data imported into Google Analytics is subject to the Google Analytics terms of service. Learn more.

Firebase Console

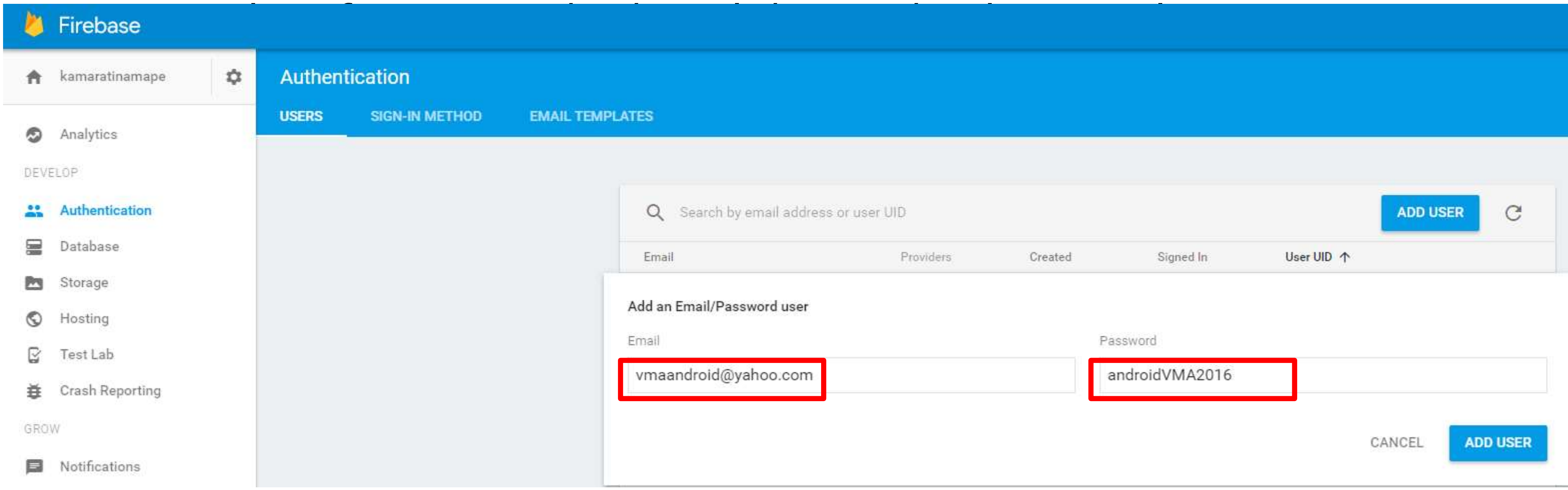
v tejto prezentácii


Receive email updates about new Firebase features, research, and events

kamaratinamape

Storage (current) 328KB

https://console.firebase.google.com/project/kamaratinamape/database/data



Add an Email/Password user

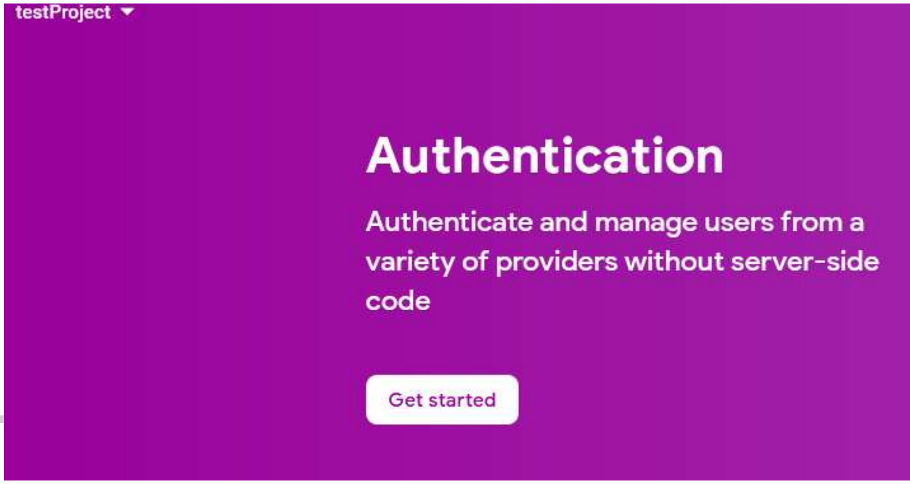
Email: vmaandroid@yahoo.com

Password: androidVMA2016

- ukážky sú robené pomocou tohoto účtu
- login a password vidíte v obrázku
- ale obávam sa, že to na inom zariadení bude chcieť potvrdenie tel.čísla ☹

https://console.firebase.google.com/project/kamaratinamape/database/data
Použite iný/váš účet
vmaandroid@yahoo.com
androidVMA2016

Authentication


testProject ▾

Authentication

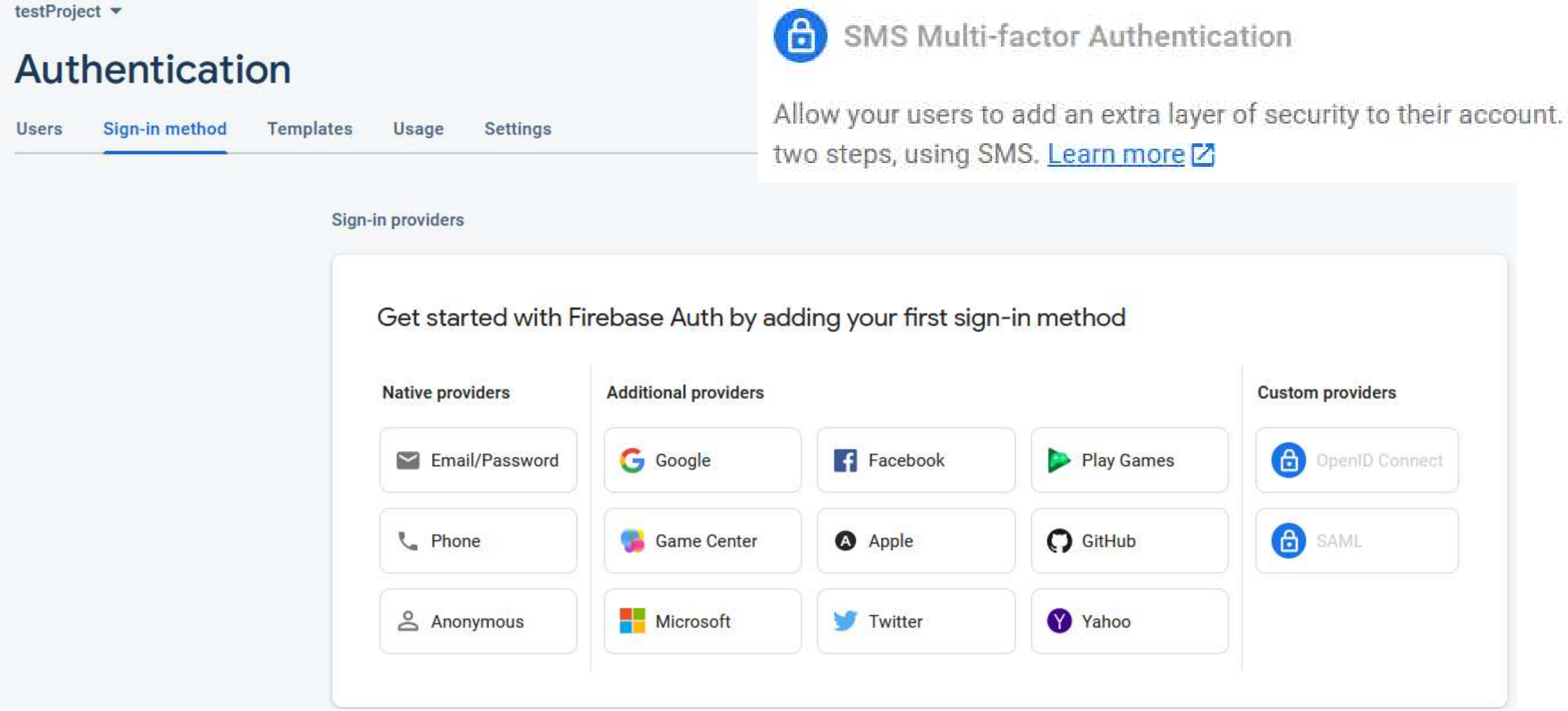
Authenticate and manage users from a variety of providers without server-side code

Get started

Autentifikácia

Sign-in metódy:

- vlastná autentifikácia cez email/password
  - môžete definovať viacero email-účtov (signup/signin)
- cez FB/Google/Twitter/GitHub/...


testProject ▾

Authentication

Users | Sign-in method | Templates | Usage | Settings

SMS Multi-factor Authentication

Allow your users to add an extra layer of security to their account. two steps, using SMS. Learn more

Sign-in providers

Get started with Firebase Auth by adding your first sign-in method

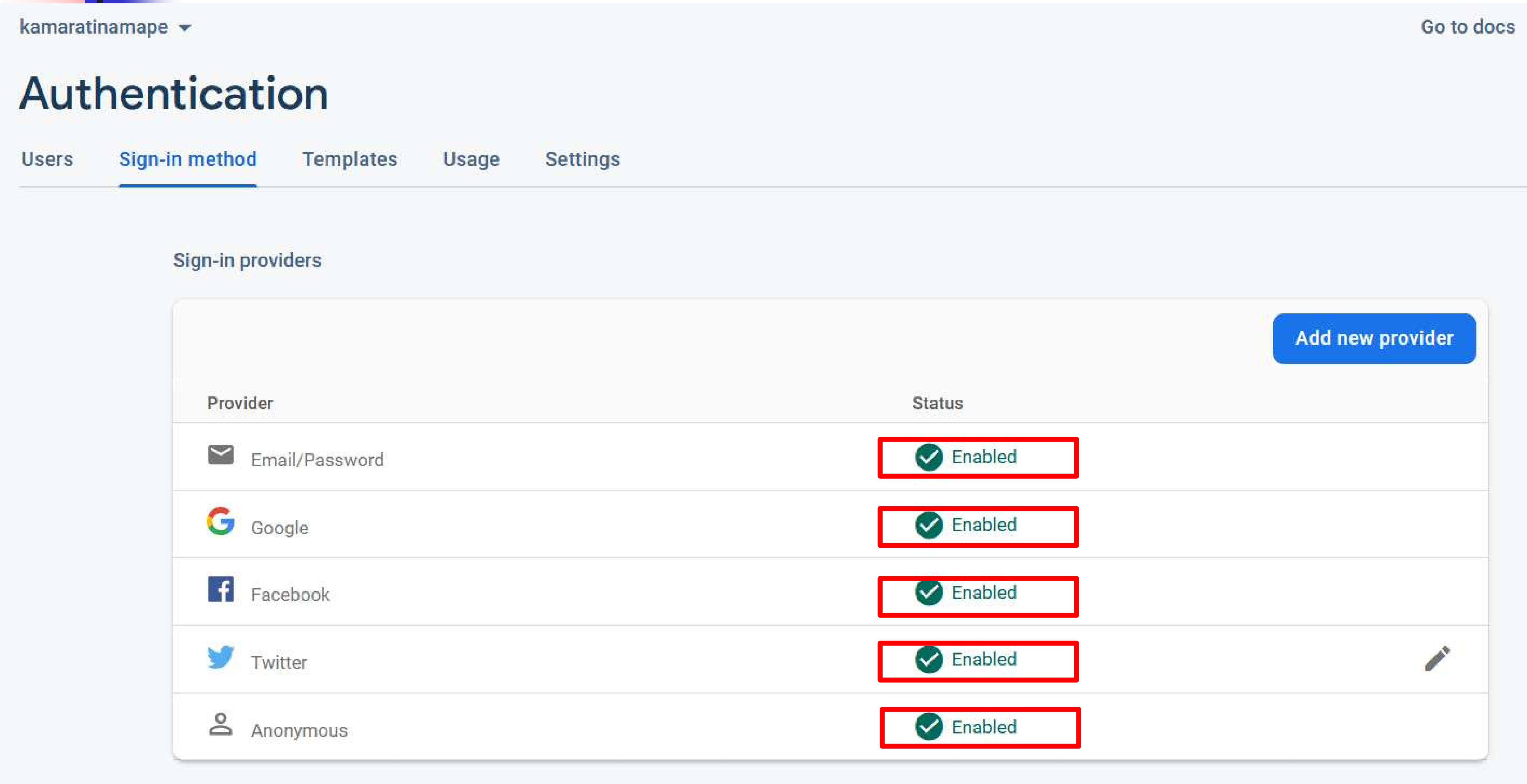
Native providers	Additional providers			Custom providers
Email/Password	Google	Facebook	Play Games	OpenID Connect
Phone	Game Center	Apple	GitHub	SAML
Anonymous	Microsoft	Twitter	Yahoo	

Authentication

iOS </> C++

Sign-in methods

https://console.firebase.google.com/u/1/project/kamaratinamape/authentication/providers



kamaratinamape ▾

Go to docs

Authentication

Users | Sign-in method | Templates | Usage | Settings

Sign-in providers

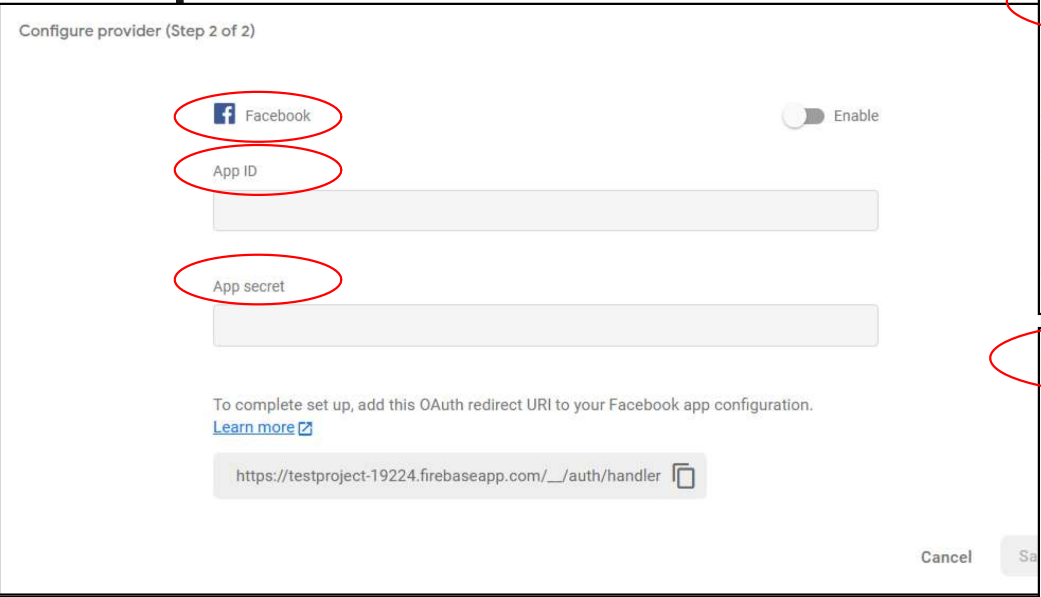
Add new provider

Provider	Status
✉ Email/Password	✓ Enabled
Google	✓ Enabled
Facebook	✓ Enabled
Twitter	✓ Enabled
Anonymous	✓ Enabled

Authentication

Sign-in methods

https://console.firebase.google.com/u/1/project/kamaratinamape/authentication/providers



Configure provider (Step 2 of 2)

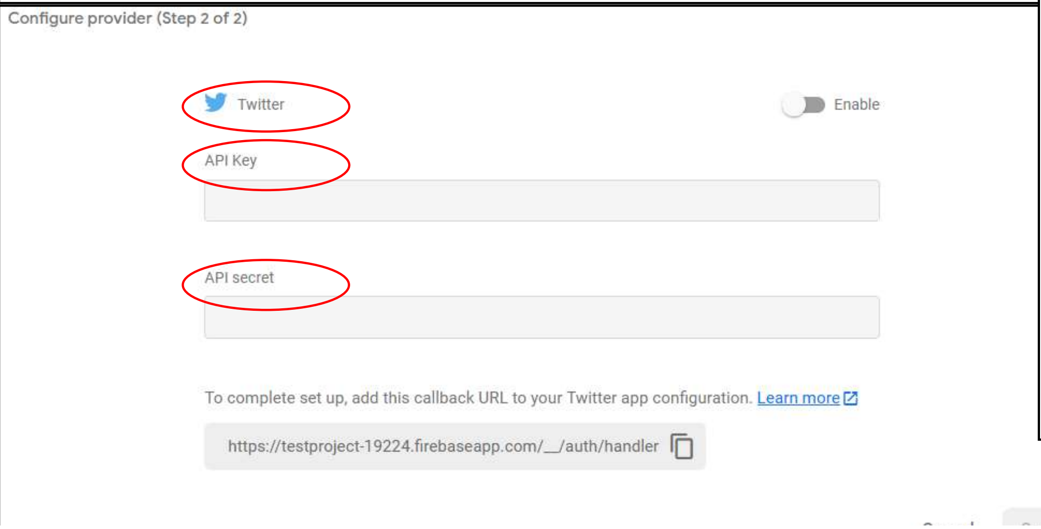
Facebook ○ Enable

App ID

App secret

To complete set up, add this OAuth redirect URI to your Facebook app configuration. Learn more

https://testproject-19224.firebaseapp.com/__/auth/handler



Configure provider (Step 2 of 2)

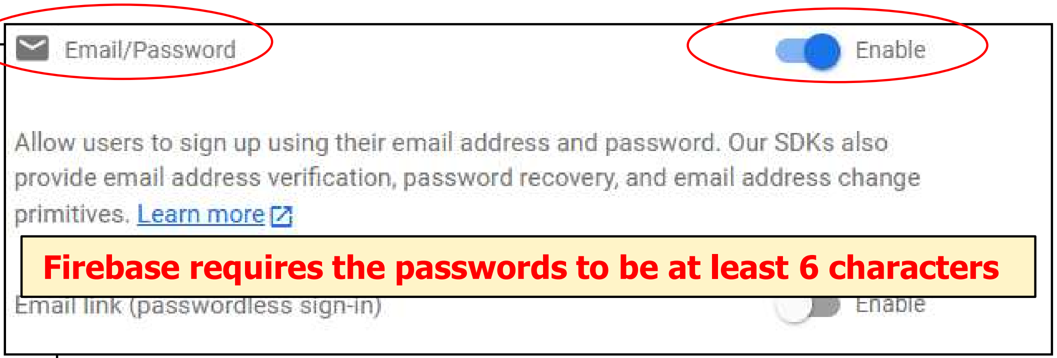
Twitter ○ Enable

API Key

API secret

To complete set up, add this callback URL to your Twitter app configuration. Learn more

https://testproject-19224.firebaseapp.com/__/auth/handler

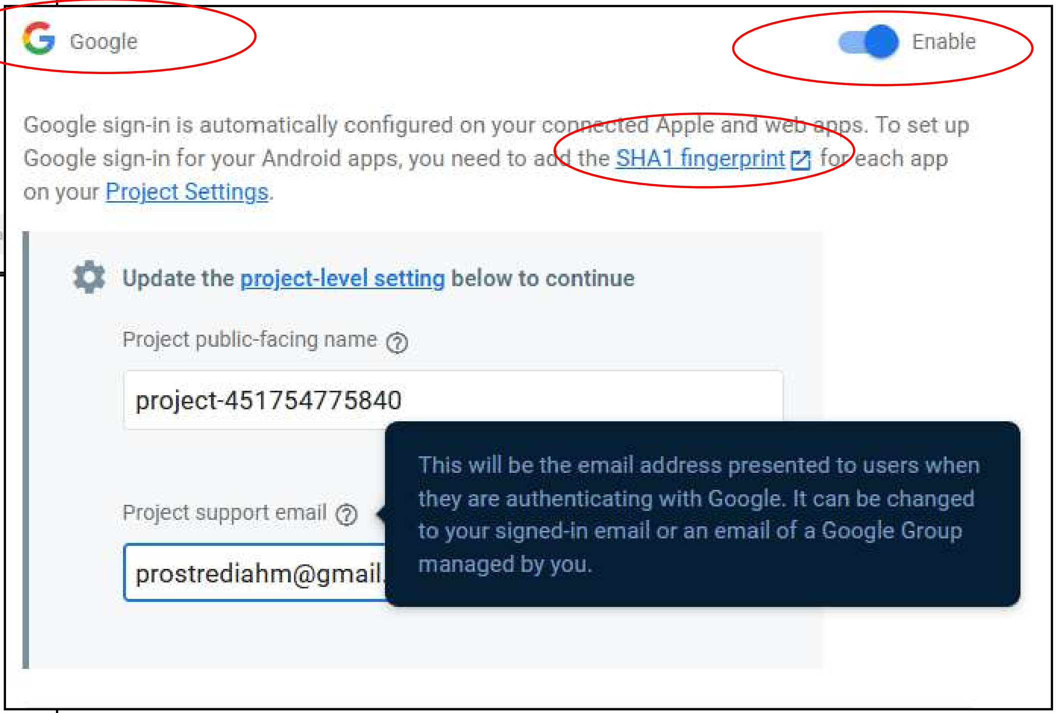


Email/Password ● Enable

Allow users to sign up using their email address and password. Our SDKs also provide email address verification, password recovery, and email address change primitives. Learn more

Firebase requires the passwords to be at least 6 characters

Email link (passwordless sign-in) ○ Enable



Google ● Enable

Google sign-in is automatically configured on your connected Apple and web apps. To set up Google sign-in for your Android apps, you need to add the SHA1 fingerprint for each app on your Project Settings.

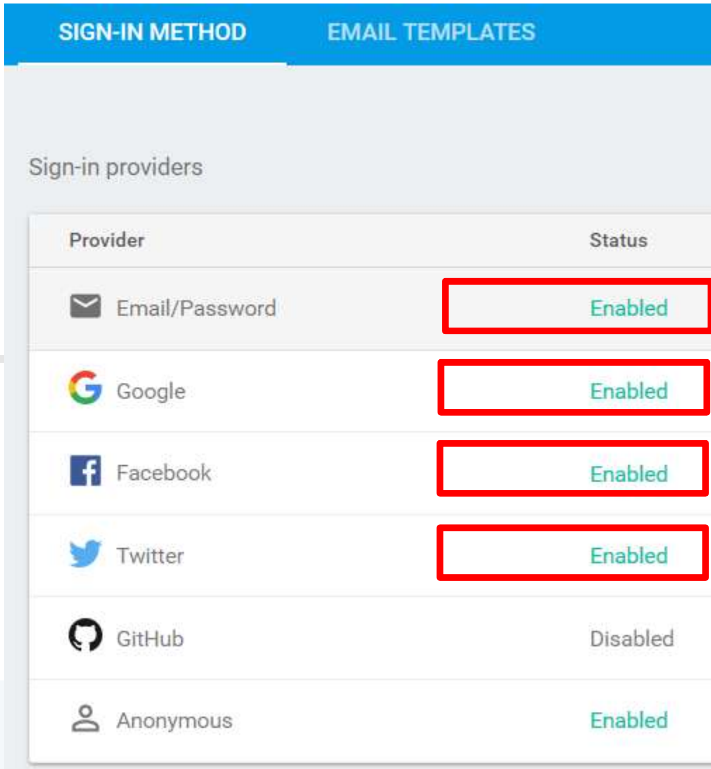
Update the project-level setting below to continue

Project public-facing name: project-451754775840

Project support email: prostrediahm@gmail.

This will be the email address presented to users when they are authenticating with Google. It can be changed to your signed-in email or an email of a Google Group managed by you.

Autentifikácia



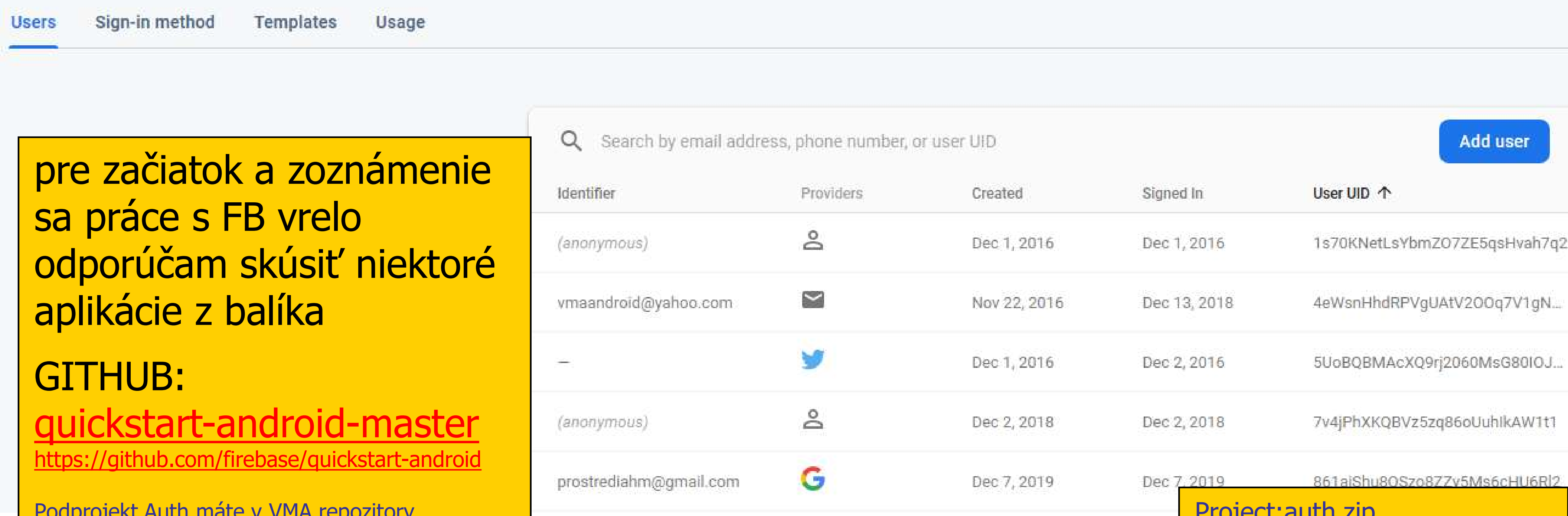
SIGN-IN METHOD EMAIL TEMPLATES

Sign-in providers

Provider	Status
✉ Email/Password	Enabled
G Google	Enabled
f Facebook	Enabled
🐦 Twitter	Enabled
GitHub	Disabled
👤 Anonymous	Enabled

Sign-in metódy:

- vlastná autentifikácia cez email/password
  - môžete definovať viacero email-účtov
- cez FB/Google/Twitter



Authentication

Users Sign-in method Templates Usage

Search by email address, phone number, or user UID

Add user

Identifier	Providers	Created	Signed In	User UID ↑
(anonymous)	👤	Dec 1, 2016	Dec 1, 2016	1s70KNetLsYbmZO7ZE5qsHvah7q2
vmaandroid@yahoo.com	✉	Nov 22, 2016	Dec 13, 2018	4eWsnHhdRPVgUAtV2OOq7V1gN...
–	🐦	Dec 1, 2016	Dec 2, 2016	5UoBQBMAcXQ9rj2060MsG80IOJ...
(anonymous)	👤	Dec 2, 2018	Dec 2, 2018	7v4jPhXKQBVz5zq86oUuhIkAW1t1
prostrediahm@gmail.com	G	Dec 7, 2019	Dec 7, 2019	861aiShu8OSzo8ZZv5Ms6cHU6Rl2

pre začiatok a zoznámenie sa práce s FB vrelo odporúčam skúsiť niektoré aplikácie z balíka

GITHUB:
quickstart-android-master
https://github.com/firebase/quickstart-android

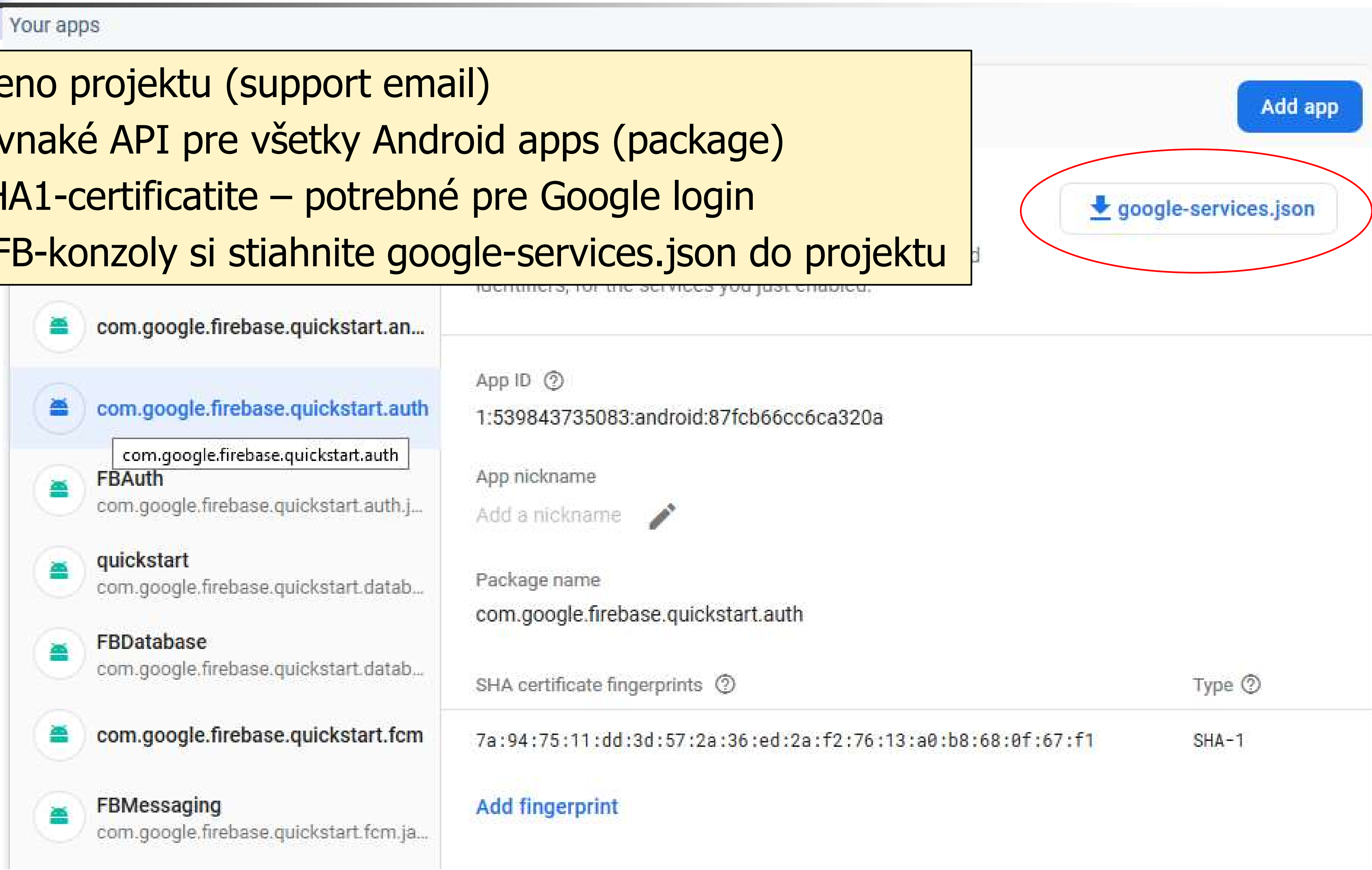
Podprojekt Auth máte v VMA repozitory

Project:auth.zip
https://github.com/firebase/quickstart-android

Project Setting

https://console.firebase.google.com/u/0/project/kamaratinamape/settings/general/android:com.example.firebasedemo1

- meno projektu (support email)
- rovnaké API pre všetky Android apps (package)
- SHA1-certificatite – potrebné pre Google login
- z FB-konzoly si stiahnite google-services.json do projektu



com.google.firebase.quickstart.an...

com.google.firebase.quickstart.auth

com.google.firebase.quickstart.auth

FBAuth
com.google.firebase.quickstart.auth.j...

quickstart
com.google.firebase.quickstart.datab...

FBDatabase
com.google.firebase.quickstart.datab...

com.google.firebase.quickstart.fcm

FBMessaging
com.google.firebase.quickstart.fcm.ja...

App ID
1:539843735083:android:87fcb66cc6ca320a

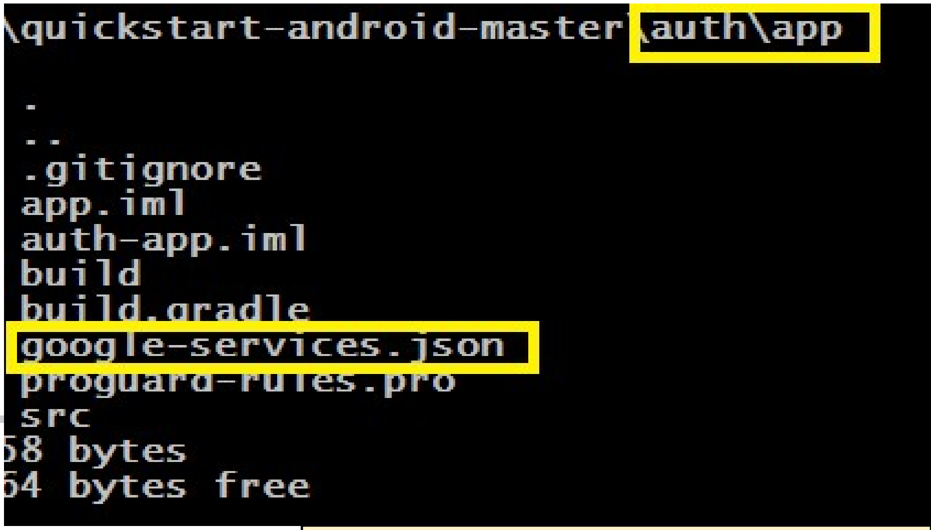
App nickname
Add a nickname

Package name
com.google.firebase.quickstart.auth

SHA certificate fingerprints	Type
7a:94:75:11:dd:3d:57:2a:36:ed:2a:f2:76:13:a0:b8:68:0f:67:f1	SHA-1

Add fingerprint

google-services .json



```
\quickstart-android-master\auth\app

 .
 ..
 .gitignore
 app.iml
 auth-app.iml
 build
 build.gradle
 google-services.json
 proguard-rules.pro
 src
58 bytes
64 bytes free
```

Tento súbor potrebujete mať v projekte, stiahnite a do pod-adresára \app

```
{"project_info": {
    "project_number": "539843735083",
    "firebase_url": "https://kamaratinamape.firebaseio.com",
    "project_id": "kamaratinamape",
    "storage_bucket": "kamaratinamape.appspot.com"
  },
  "client": [
    {"client_info": {
        "mobilesdk_app_id": "1:539843735083:android:e4c17d2977753b25",
        "android_client_info": {"package_name": "sk.uniba.fmph.dai.borovan.fbdemo"
        }
      },
      "oauth_client": [{
          "client_id": "539843735083-e4n6dg61g1npk7uka8ebf2rhcmg4t7v1.apps.googleusercontent.com",
          "client_type": 3
        }
      ],
      "api_key": [ { "current_key": "AIzaSyCbfmtnNkbnhjlqanA051uSfQl1_PTjPa8“ } ],
      "services": {
        "analytics_service": {"status": 1 },
        "appinvite_service": {"status": 1,"other_platform_oauth_client": [] },
        "ads_service": { "status": 2 }
      }
    }
  ],
  "configuration_version": "1"
}
```

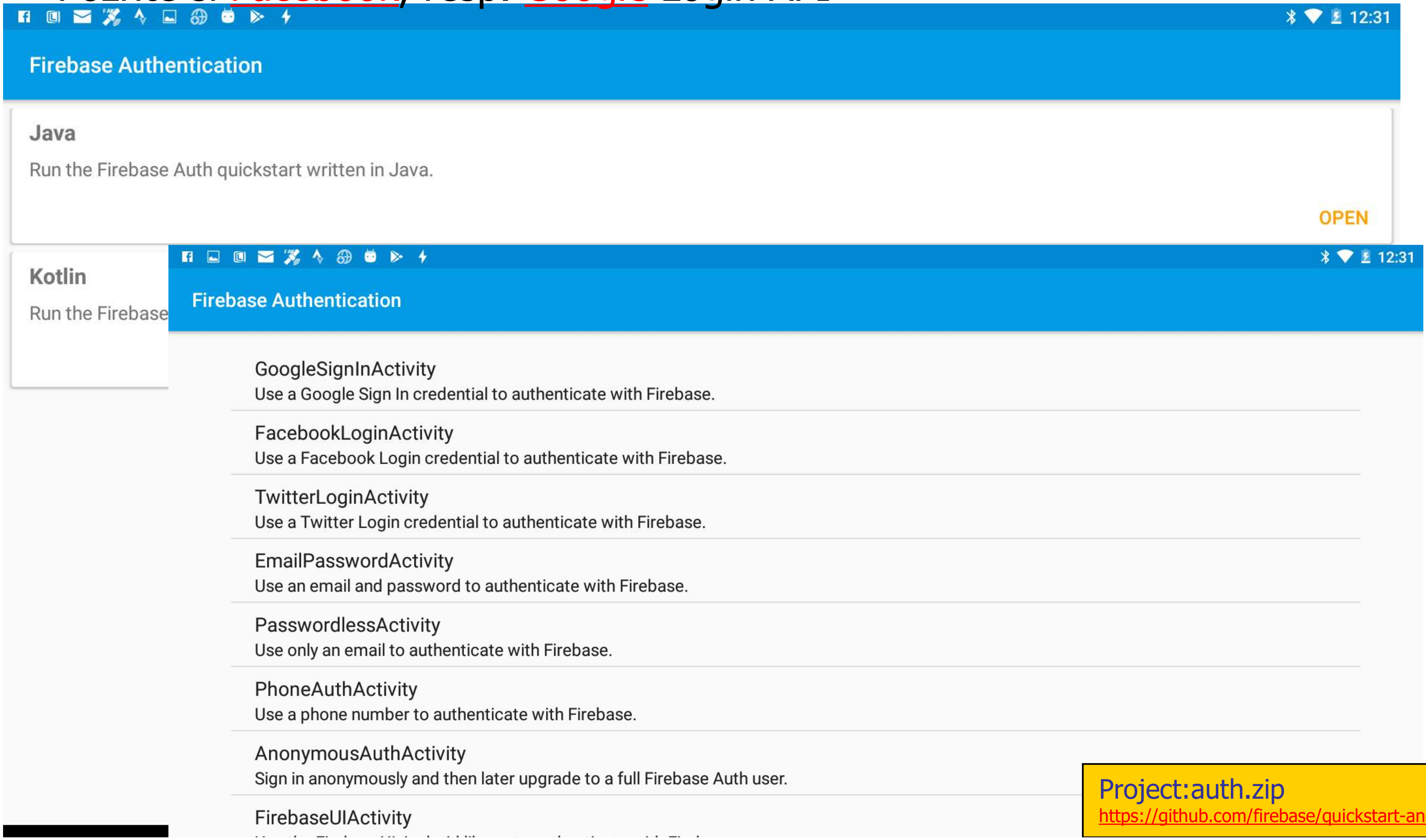
Project:auth.zip

https://github.com/firebase/quickstart-android

Authentication

Iná autentifikácia

Pozrite si Facebook, resp. Google Login API



Firebase Authentication

Java

Run the Firebase Auth quickstart written in Java.

Kotlin

Run the Firebase

Firebase Authentication

GoogleSignInActivity
Use a Google Sign In credential to authenticate with Firebase.

FacebookLoginActivity
Use a Facebook Login credential to authenticate with Firebase.

TwitterLoginActivity
Use a Twitter Login credential to authenticate with Firebase.

EmailPasswordActivity
Use an email and password to authenticate with Firebase.

PasswordlessActivity
Use only an email to authenticate with Firebase.

PhoneAuthActivity
Use a phone number to authenticate with Firebase.

AnonymousAuthActivity
Sign in anonymously and then later upgrade to a full Firebase Auth user.

FirebaseUIActivity

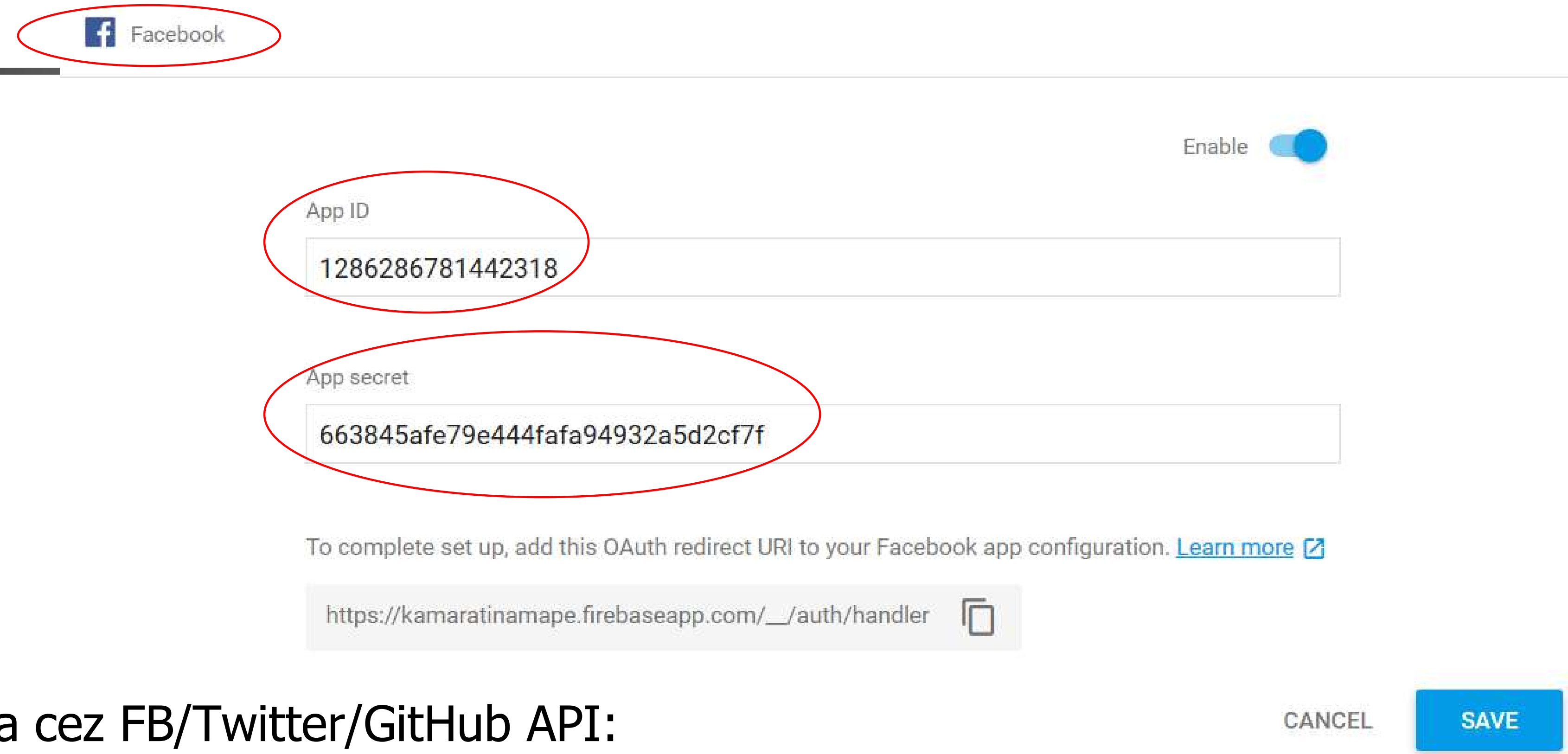
Project:auth.zip
https://github.com/firebase/quickstart-android

Authentication

iOS </> C++

Autentifikácia cez FaceBook

https://firebase.google.com/docs/auth/android/facebook-login



Enable

App ID

1286286781442318

App secret

663845afe79e444fafa94932a5d2cf7f

To complete set up, add this OAuth redirect URI to your Facebook app configuration. Learn more

https://kamaratinamape.firebaseapp.com/__/auth/handler

Autentifikácia cez FB/Twitter/GitHub API:

- predpokladá, že registrujete aplikáciu na FB/Twitter/Git developerskej konzole

napr. https://developers.facebook.com/apps/1286286781442318/settings/basic/

- kde dostanete nejakú analógiu APP ID/Secret key
- tú/tie zapíšete do Firebase API vašej Firebase appky
- Firebase vám vygeneruje **google-services.json**, ktorý zakompilujete do .apk

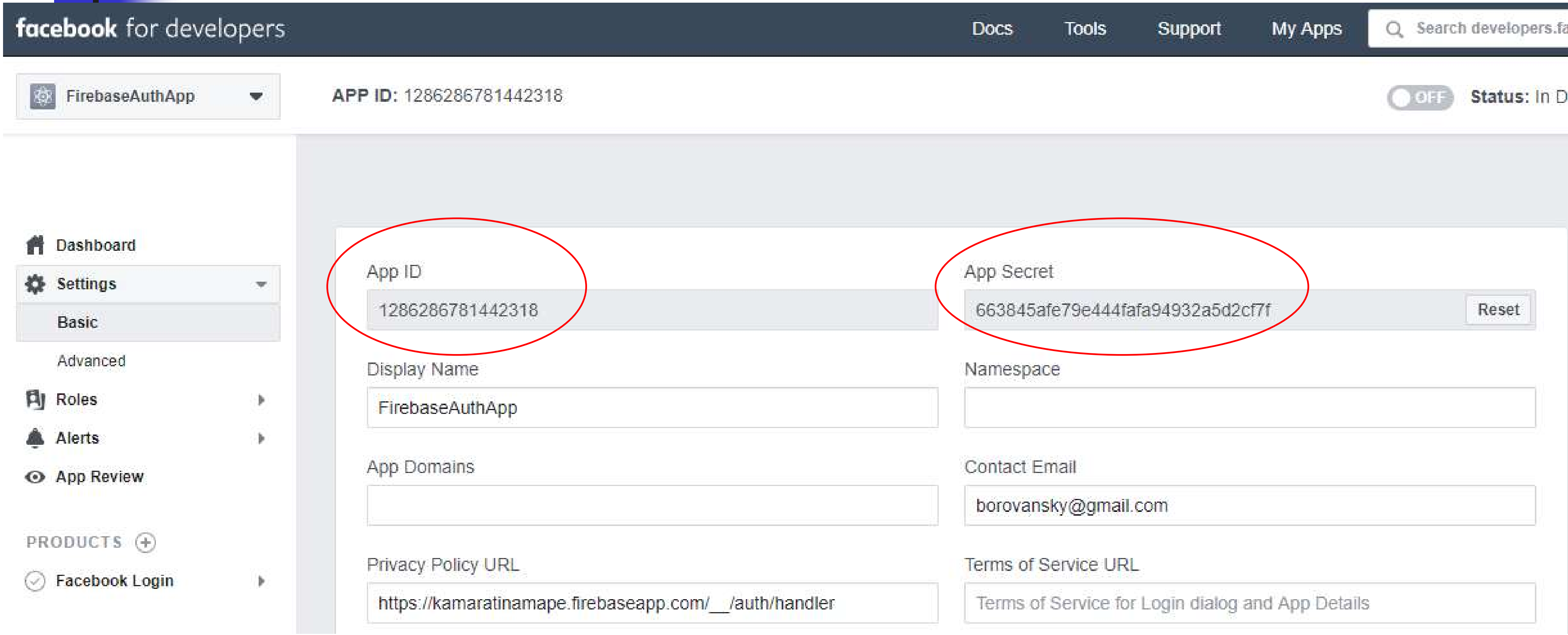
Project:auth.zip
https://github.com/firebase/quickstart-android

Authentication

iOS </> C++

Facebook for developers

(dev konzola od FB)



FirebaseAuthApp

APP ID: 1286286781442318

App ID: 1286286781442318

App Secret: 663845afe79e444fafa94932a5d2cf7f

Display Name: FirebaseAuthApp

Namespace:

App Domains:

Contact Email: borovansky@gmail.com

Privacy Policy URL: https://kamaratinamape.firebaseapp.com/__/auth/handler

Terms of Service URL: Terms of Service for Login dialog and App Details

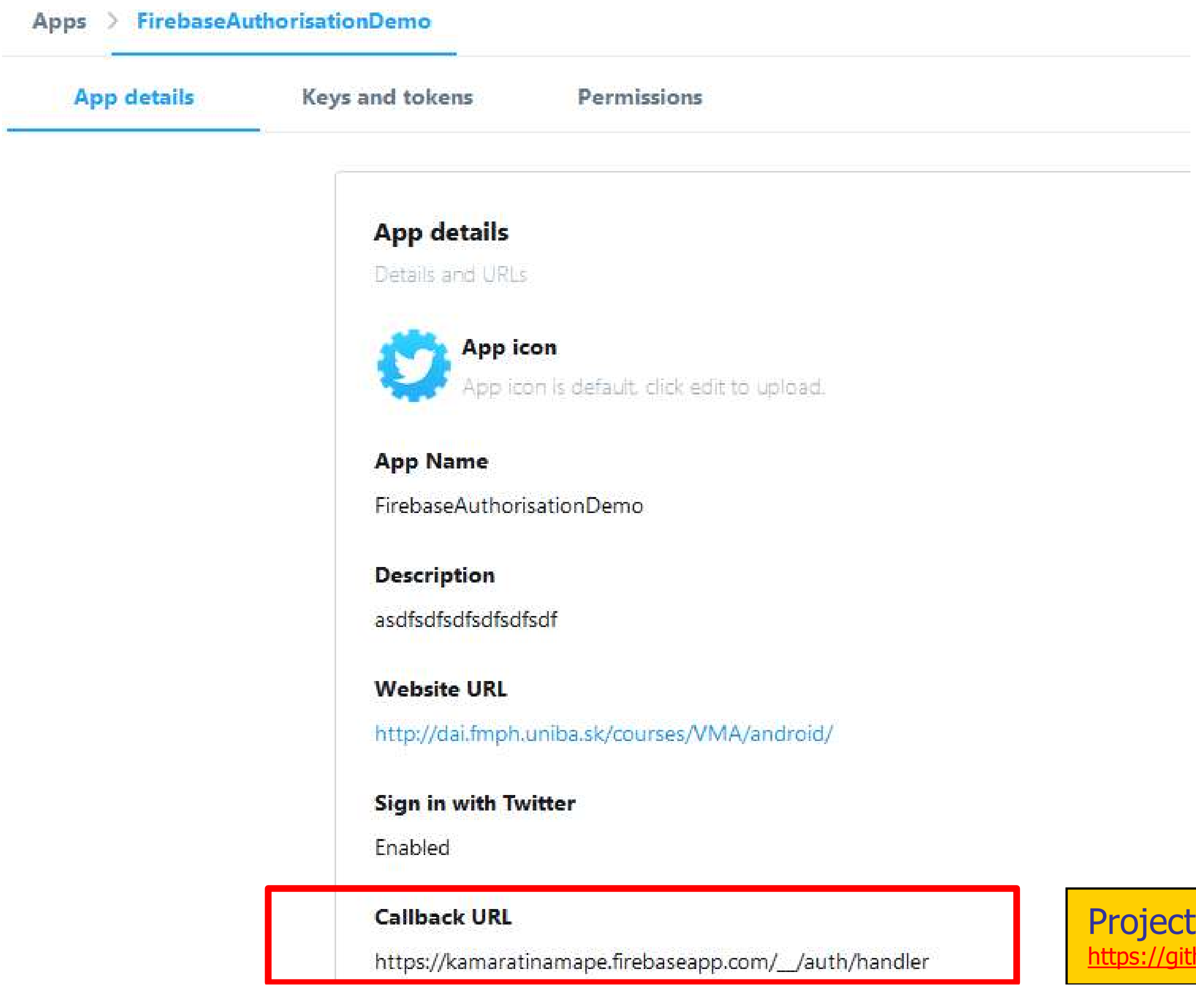
https://developers.facebook.com/apps/1286286781442318/settings/basic/

Autentifikácia cez Twitter

https://firebase.google.com/docs/auth/android/twitter-login

https://developer.twitter.com/en/apps/13160641

Na Twitter developerskej konzole musíte registrovat’ applikáciu, a získat’e Consumer API keys a Access token, ten prezradíte Firebase Console



App details

Details and URLs

App icon

App icon is default, click edit to upload.

App Name

FirebaseAuthorisationDemo

Description

asdfsdfsdfsdfsdfsdf

Website URL

http://dai.fmph.uniba.sk/courses/VMA/android/

Sign in with Twitter

Enabled

Callback URL

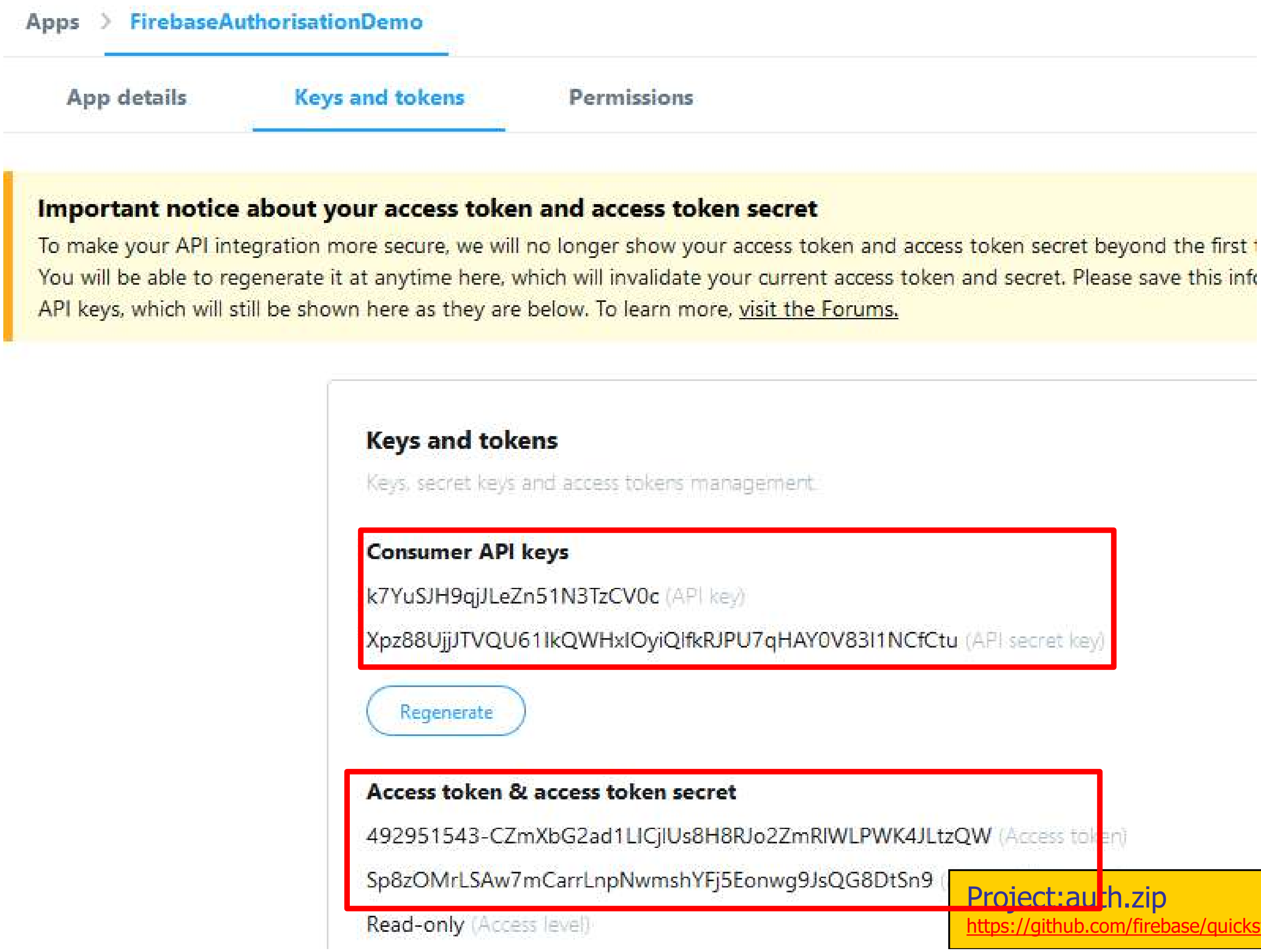
https://kamaratinamape.firebaseapp.com/__/auth/handler

Project:auth.zip

https://github.com/firebase/quickstart-android

Autentifikácia cez Twitter

https://developer.twitter.com/en/apps/13160641



Apps > FirebaseAuthorisationDemo

Important notice about your access token and access token secret

To make your API integration more secure, we will no longer show your access token and access token secret beyond the first t
You will be able to regenerate it at anytime here, which will invalidate your current access token and secret. Please save this info
API keys, which will still be shown here as they are below. To learn more, visit the Forums.

Keys and tokens

Keys, secret keys and access tokens management.

Consumer API keys

k7YuSJH9qjJLeZn51N3TzCV0c (API key)

Xpz88UjjJTVQU61IkQWHxIOyiQIfkRJPU7qHAY0V83I1NCfCtu (API secret key)

Access token & access token secret

492951543-CZmXbG2ad1LICjIUs8H8RJo2ZmRIWLPWK4JLtzQW (Access token)

Sp8zOMrLSAw7mCarrLnpNwmshYFj5Eonwg9JsQG8DtSn9 (

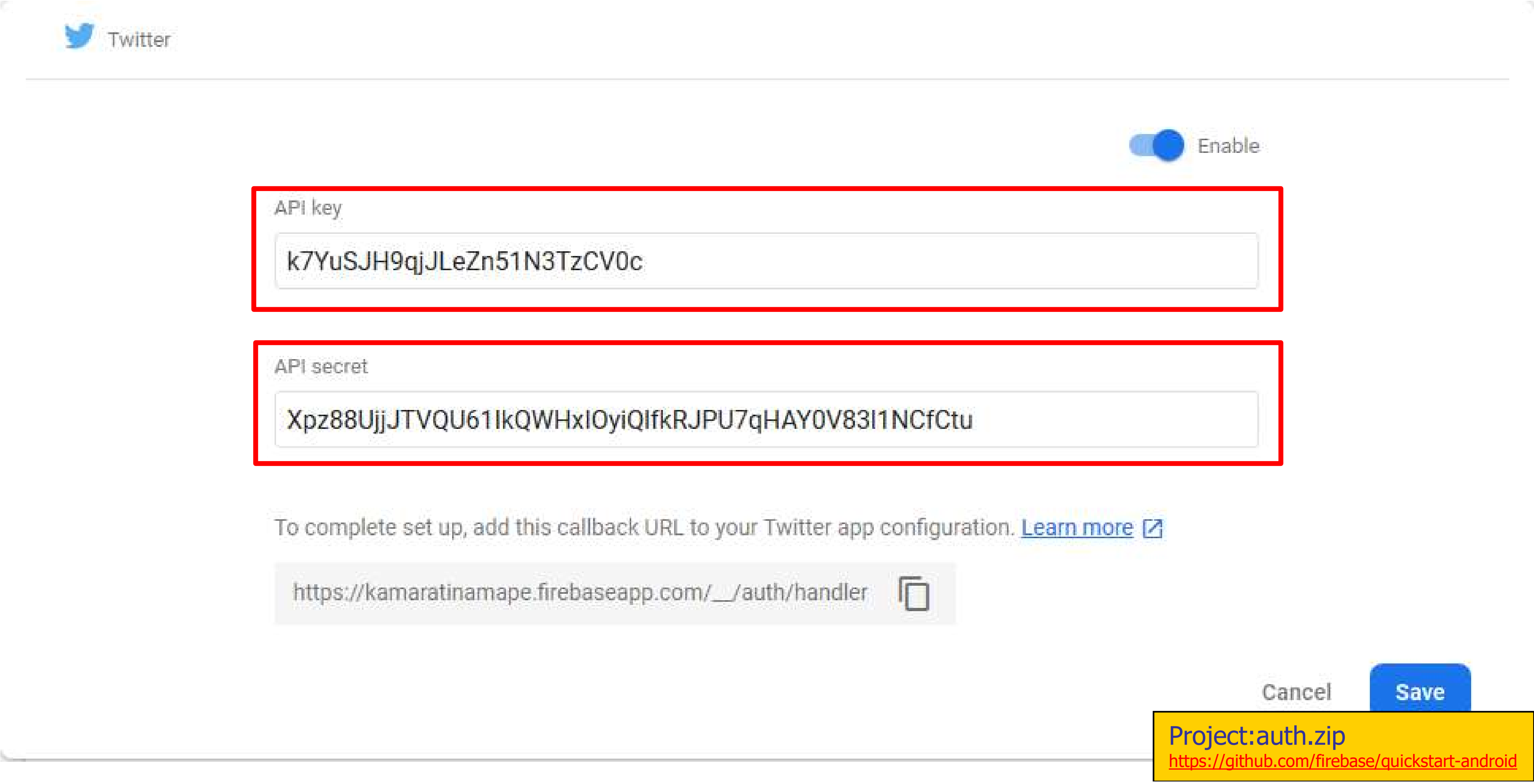
Read-only (Access level)

Project:auth.zip
https://github.com/firebase/quickstart-android

Autentifikácia cez Twitter

https://developer.twitter.com/en/apps/13160641

API KEY a SECRET treba vložiť do Firebase Console pre Twitter Authentification



API key

k7YuSJH9qjJLeZn51N3TzCV0c

API secret

Xpz88UjjJTVQU61IkQWHxlOyiQlfkRJPU7qHAY0V83l1NCfCtu

To complete set up, add this callback URL to your Twitter app configuration. Learn more

https://kamaratinamape.firebaseapp.com/__/auth/handler

Project:auth.zip
https://github.com/firebase/quickstart-android

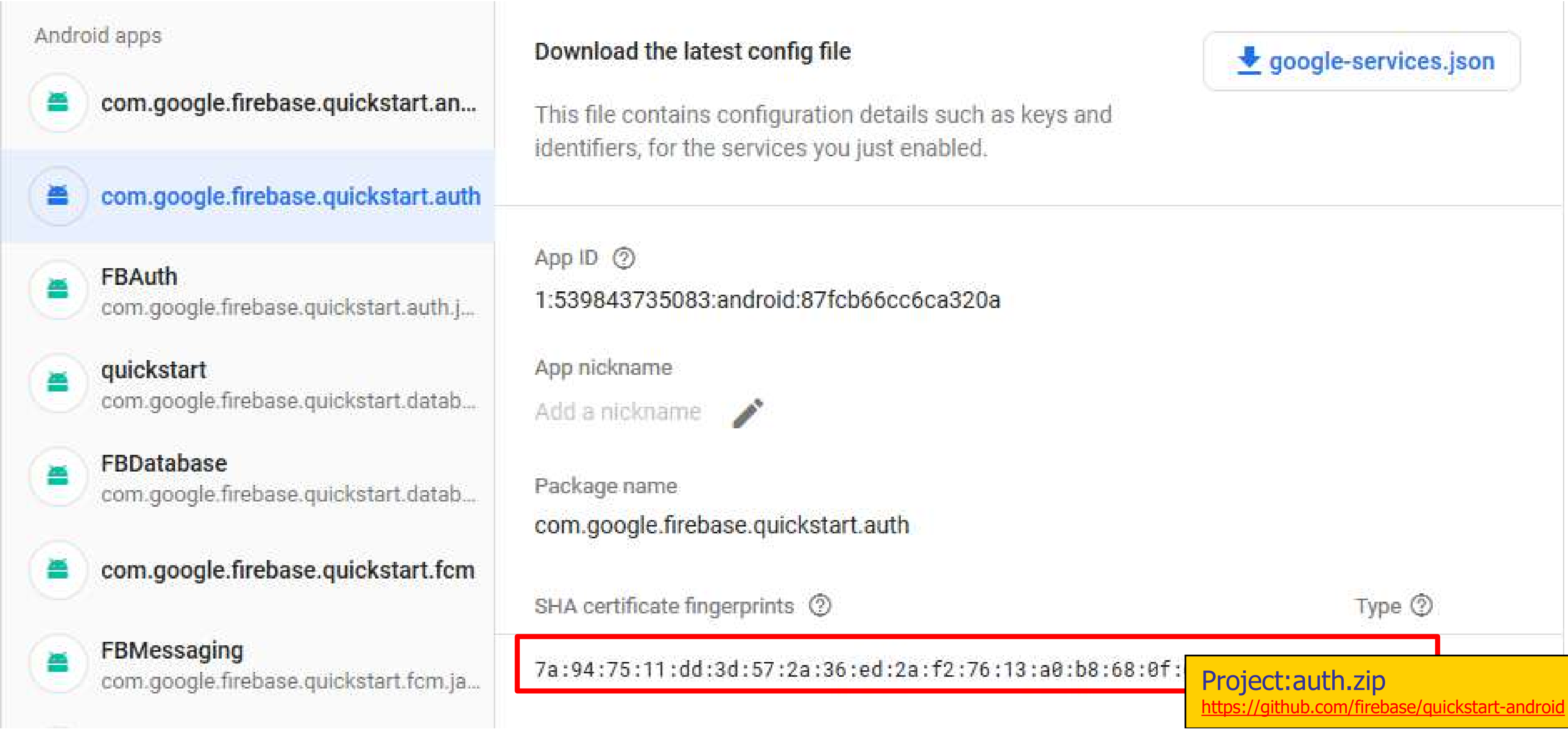
Authentication

Autentifikácia cez Google

https://developers.google.com/android/guides/client-auth

Musíte do Firebase projektu/aplikácie vložiť svoj SHA1 kľúč (viac bolo minule)

Google sign-in is automatically configured on your connected iOS and web apps. To set up Google sign-in for your Android apps, you need to add the SHA1 fingerprint for each app Project Settings.



Android apps

- com.google.firebase.quickstart.an...
- com.google.firebase.quickstart.auth
- FBAuth
com.google.firebase.quickstart.auth.j...
- quickstart
com.google.firebase.quickstart.datab...
- FBDatabase
com.google.firebase.quickstart.datab...
- com.google.firebase.quickstart.fcm
- FBMessaging
com.google.firebase.quickstart.fcm.ja...

Download the latest config file

This file contains configuration details such as keys and identifiers, for the services you just enabled.

App ID
1:539843735083:android:87fcb66cc6ca320a

App nickname
Add a nickname

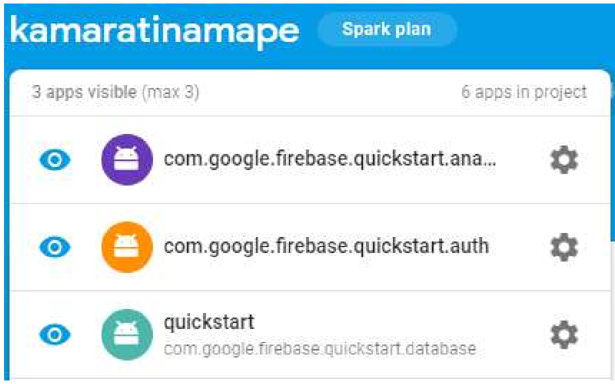
Package name
com.google.firebase.quickstart.auth

SHA certificate fingerprints | Type

```
7a:94:75:11:dd:3d:57:2a:36:ed:2a:f2:76:13:a0:b8:68:0f:
```

Project:auth.zip
https://github.com/firebase/quickstart-android

Authentication



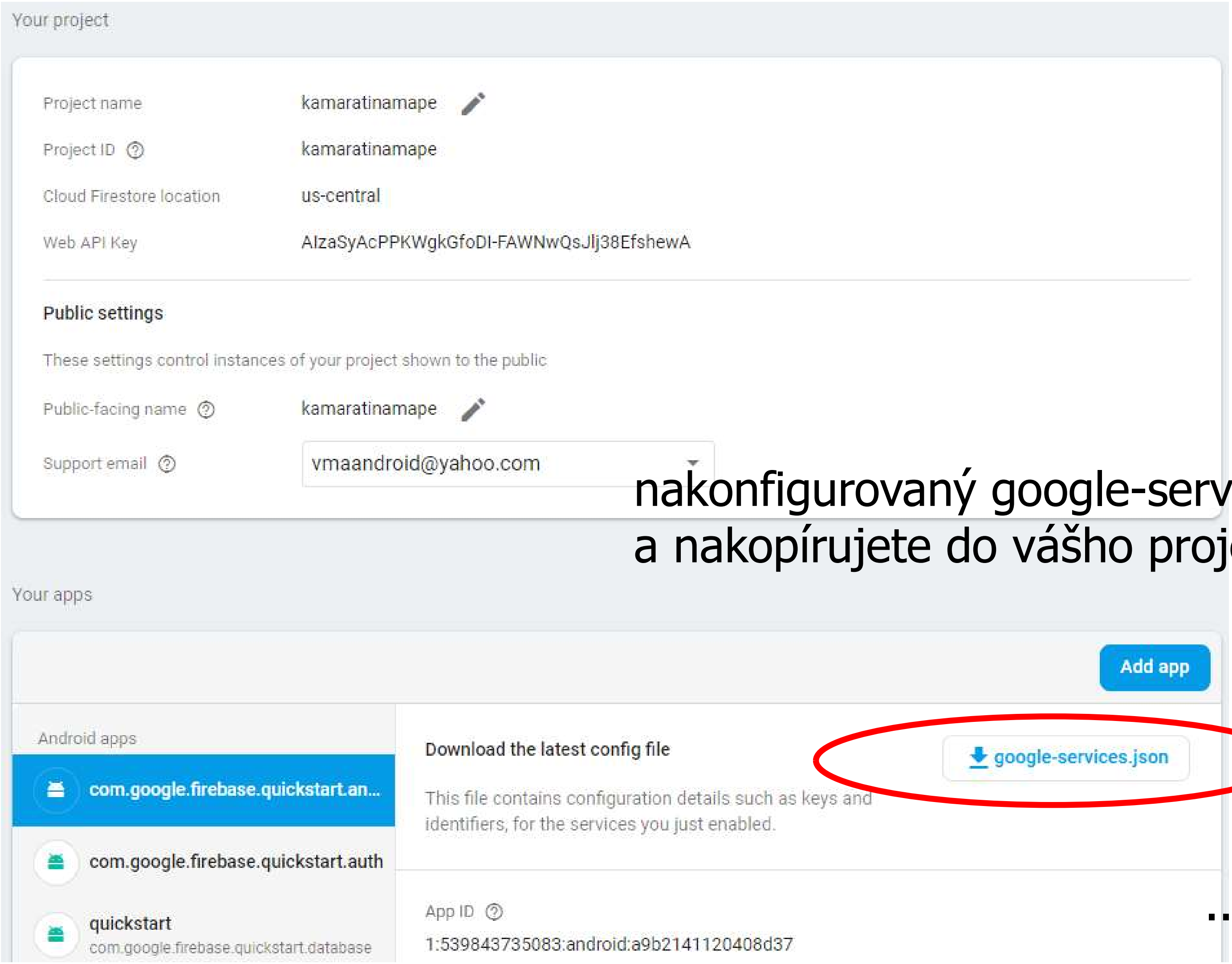
kamaratinamape Spark plan

3 apps visible (max 3) 6 apps in project

- com.google.firebase.quickstart.ana...
- com.google.firebase.quickstart.auth
- quickstart com.google.firebase.quickstart.database

Registrovanie appky

v project settings registrujete aplikáciu



Your project

Project name	kamaratinamape
Project ID	kamaratinamape
Cloud Firestore location	us-central
Web API Key	AIzaSyAcPPKWgkGfoDI-FAWNwQsJlj38EfshewA

Public settings

These settings control instances of your project shown to the public

Public-facing name	kamaratinamape
Support email	vmaandroid@yahoo.com

Your apps

Android apps

- com.google.firebase.quickstart.an...
- com.google.firebase.quickstart.auth
- quickstart com.google.firebase.quickstart.database

Download the latest config file

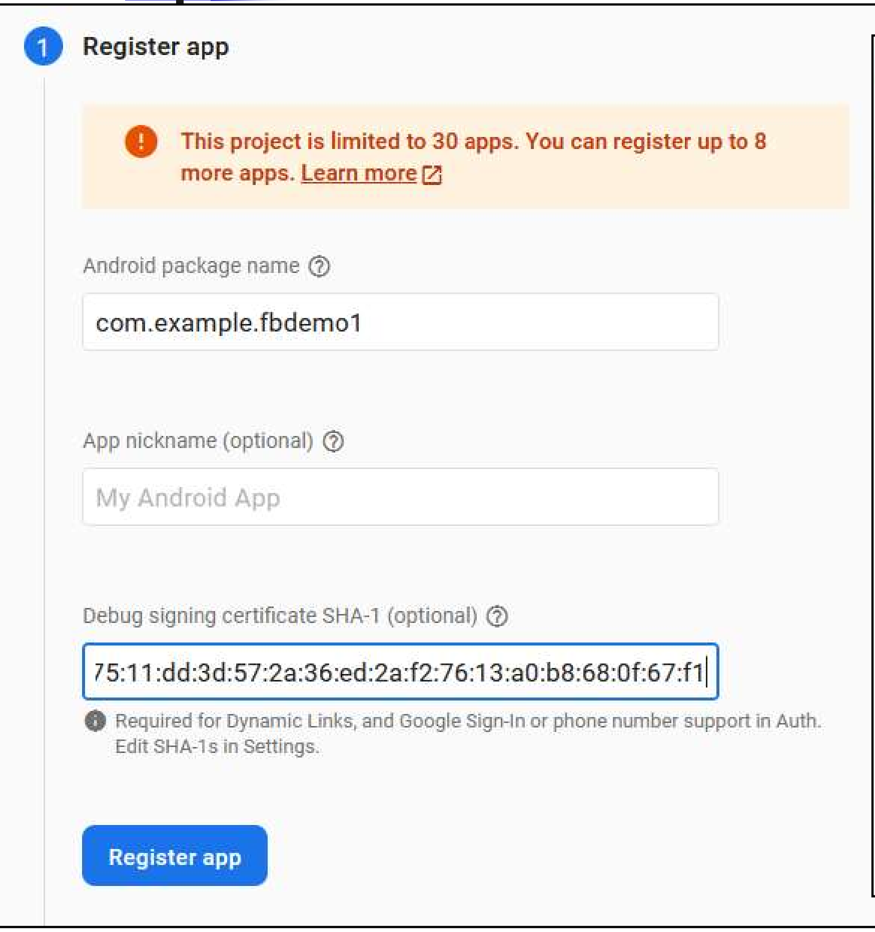
This file contains configuration details such as keys and identifiers, for the services you just enabled.

App ID 1:539843735083:android:a9b2141120408d37

nakonfigurovaný google-services.json stiahnete a nakopírujete do vášho projektu, do ...app/

... a skompilujete

Registrovanie appky



1 **Register app**

This project is limited to 30 apps. You can register up to 8 more apps. Learn more

Android package name

com.example.fbdemo1

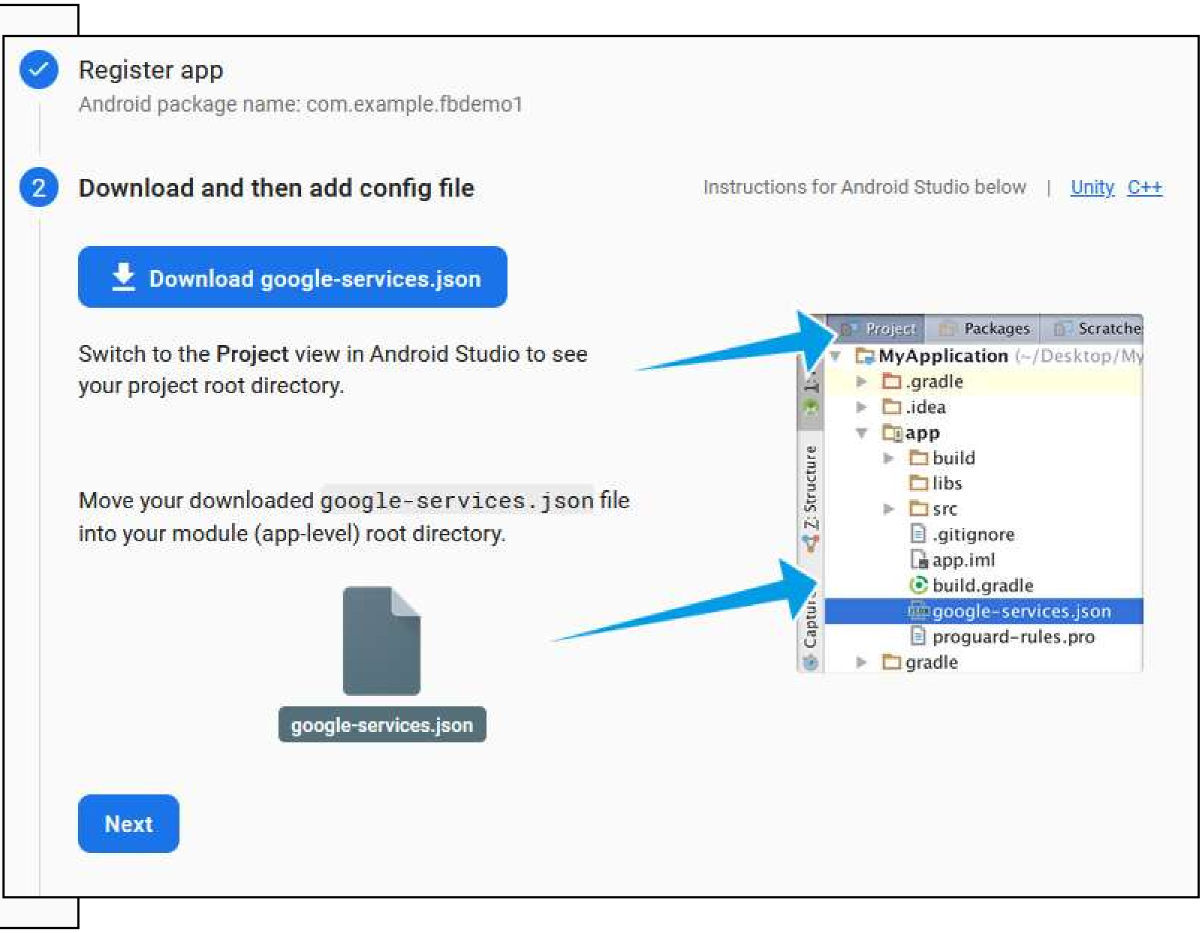
App nickname (optional)

My Android App

Debug signing certificate SHA-1 (optional)

75:11:dd:3d:57:2a:36:ed:2a:f2:76:13:a0:b8:68:0f:67:f1

Required for Dynamic Links, and Google Sign-In or phone number support in Auth. Edit SHA-1s in Settings.



Register app

Android package name: com.example.fbdemo1

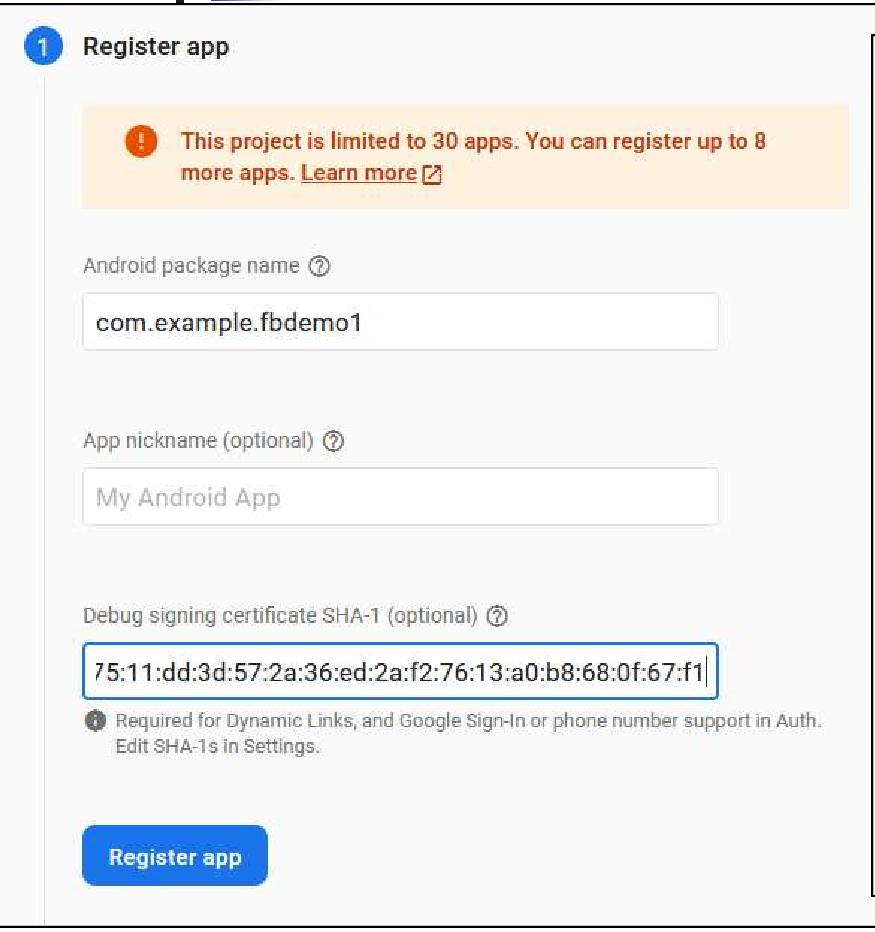
2 **Download and then add config file**

Instructions for Android Studio below | Unity C++

Switch to the **Project** view in Android Studio to see your project root directory.

Move your downloaded `google-services.json` file into your module (app-level) root directory.

Registrovanie appky



1 **Register app**

This project is limited to 30 apps. You can register up to 8 more apps. Learn more

Android package name ⓘ

com.example.fbdemo1

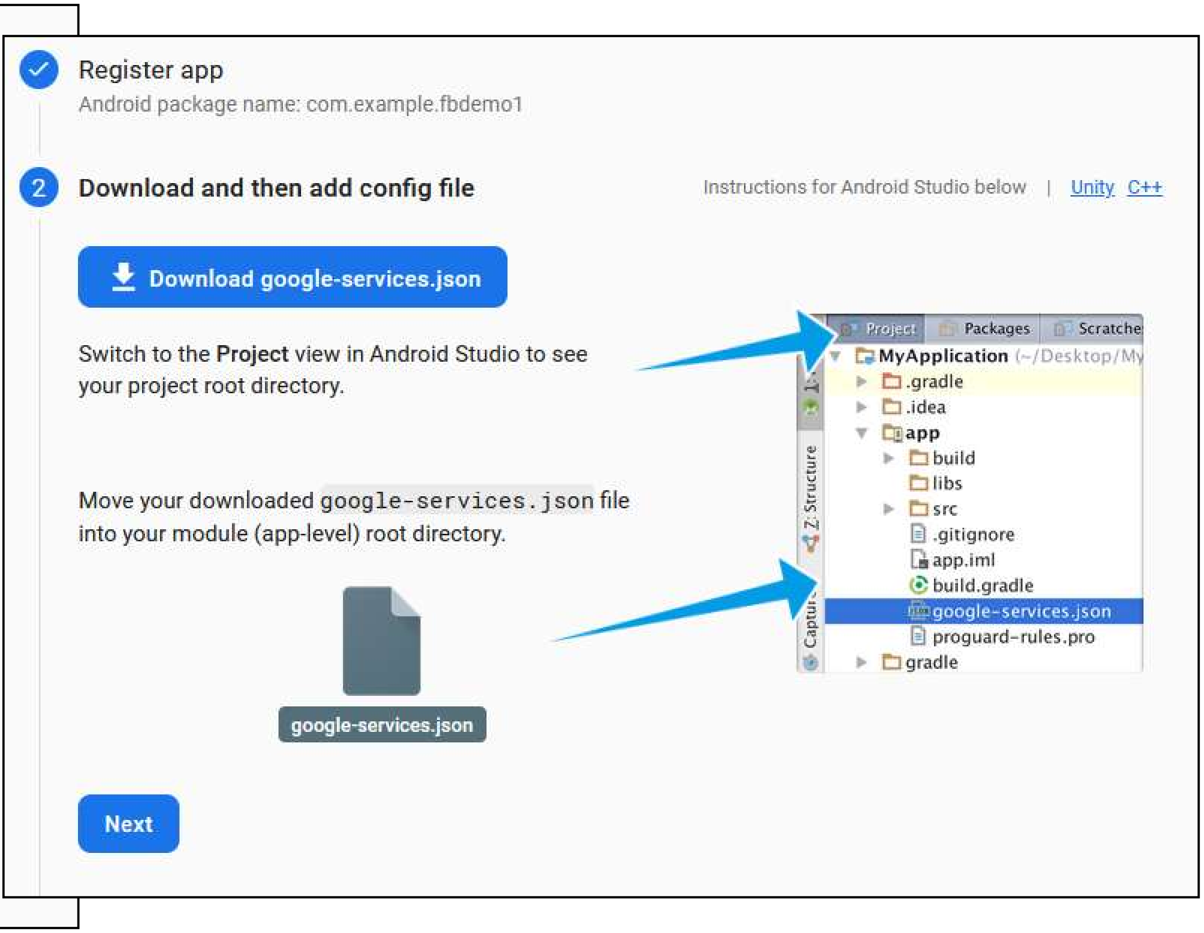
App nickname (optional) ⓘ

My Android App

Debug signing certificate SHA-1 (optional) ⓘ

75:11:dd:3d:57:2a:36:ed:2a:f2:76:13:a0:b8:68:0f:67:f1

Required for Dynamic Links, and Google Sign-In or phone number support in Auth. Edit SHA-1s in Settings.



✓ Register app

Android package name: com.example.fbdemo1

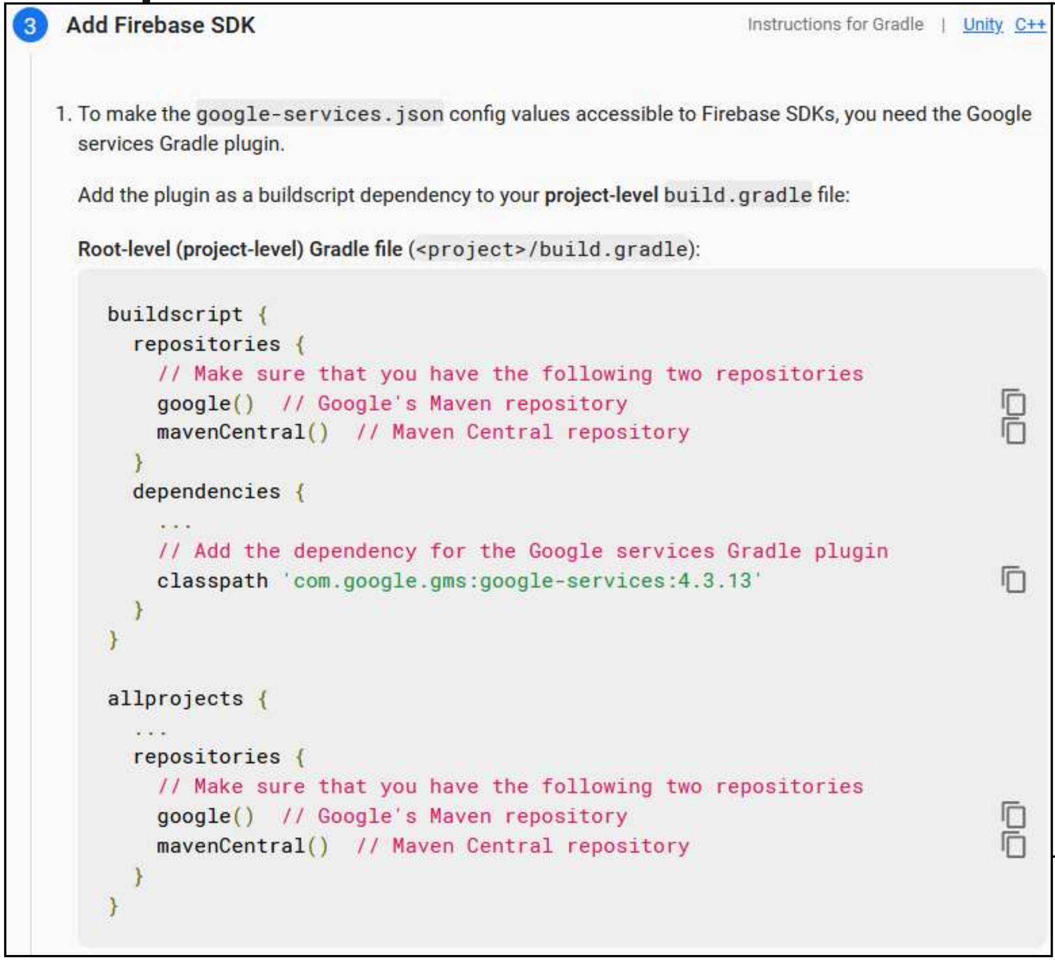
2 **Download and then add config file**

Instructions for Android Studio below | Unity C++

Switch to the **Project** view in Android Studio to see your project root directory.

Move your downloaded `google-services.json` file into your module (app-level) root directory.

Registrovanie appky

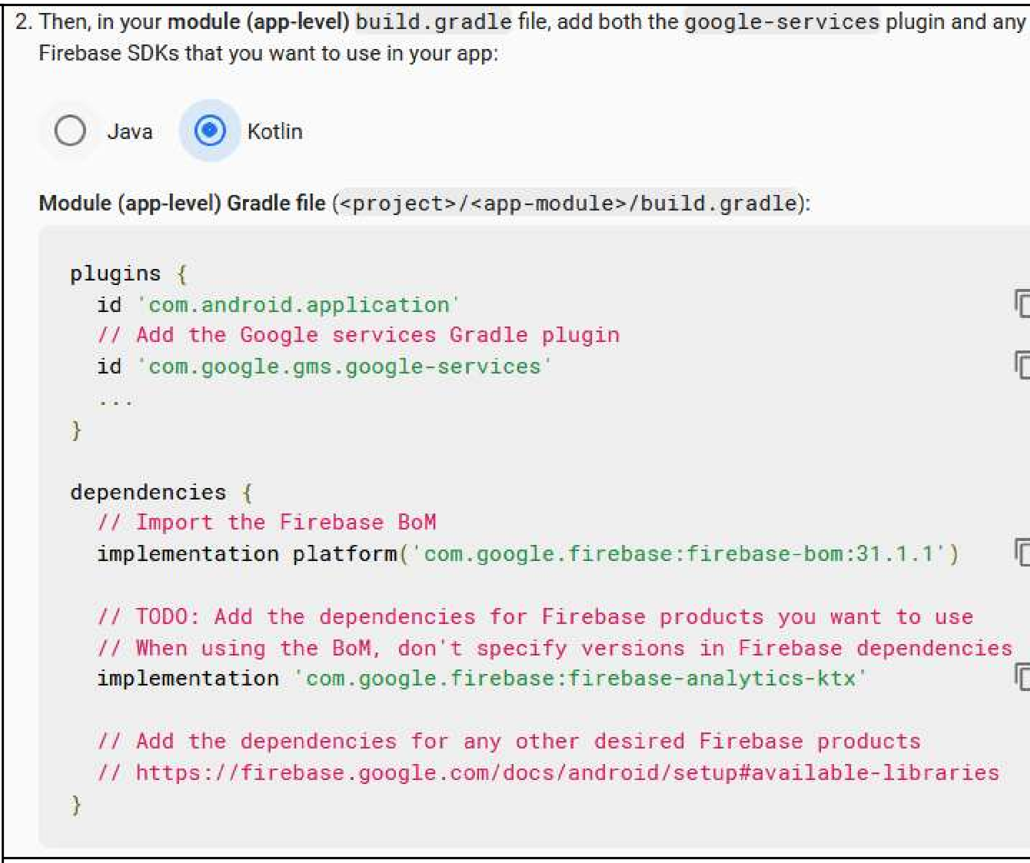


1. To make the `google-services.json` config values accessible to Firebase SDKs, you need the Google services Gradle plugin.

   Add the plugin as a buildscript dependency to your **project-level** `build.gradle` file:

   Root-level (project-level) Gradle file (`<project>/build.gradle`):

```
buildscript {
  repositories {
    // Make sure that you have the following two repositories
    google()  // Google's Maven repository
    mavenCentral()  // Maven Central repository
  }
  dependencies {
    ...
    // Add the dependency for the Google services Gradle plugin
    classpath 'com.google.gms:google-services:4.3.13'
  }
}

allprojects {
  ...
  repositories {
    // Make sure that you have the following two repositories
    google()  // Google's Maven repository
    mavenCentral()  // Maven Central repository
  }
}
```

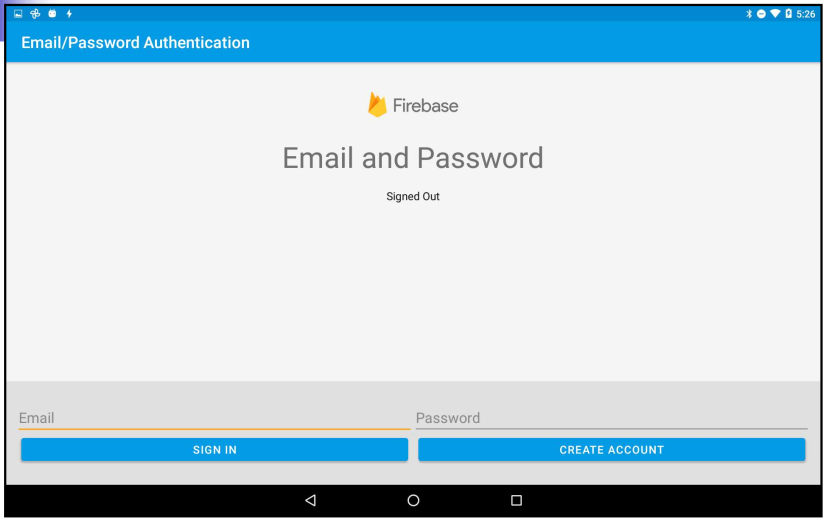


2. Then, in your **module (app-level)** `build.gradle` file, add both the `google-services` plugin and any Firebase SDKs that you want to use in your app:

   ○ Java ● Kotlin

   Module (app-level) Gradle file (`<project>/<app-module>/build.gradle`):

```
plugins {
  id 'com.android.application'
  // Add the Google services Gradle plugin
  id 'com.google.gms.google-services'
  ...
}

dependencies {
  // Import the Firebase BoM
  implementation platform('com.google.firebase:firebase-bom:31.1.1')

  // TODO: Add the dependencies for Firebase products you want to use
  // When using the BoM, don't specify versions in Firebase dependencies
  implementation 'com.google.firebase:firebase-analytics-ktx'

  // Add the dependencies for any other desired Firebase products
  // https://firebase.google.com/docs/android/setup#available-libraries
}
```

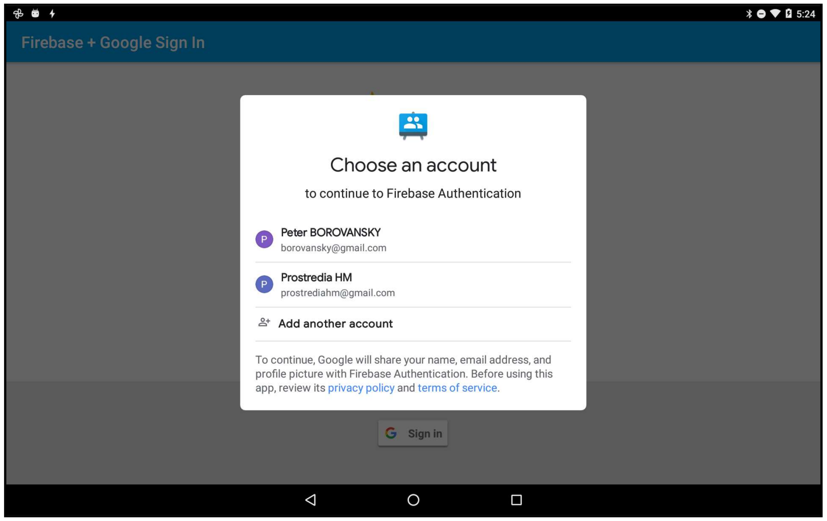


Email/Password Authentication

Firebase

Email and Password

Signed Out



Firebase + Google Sign In

Choose an account

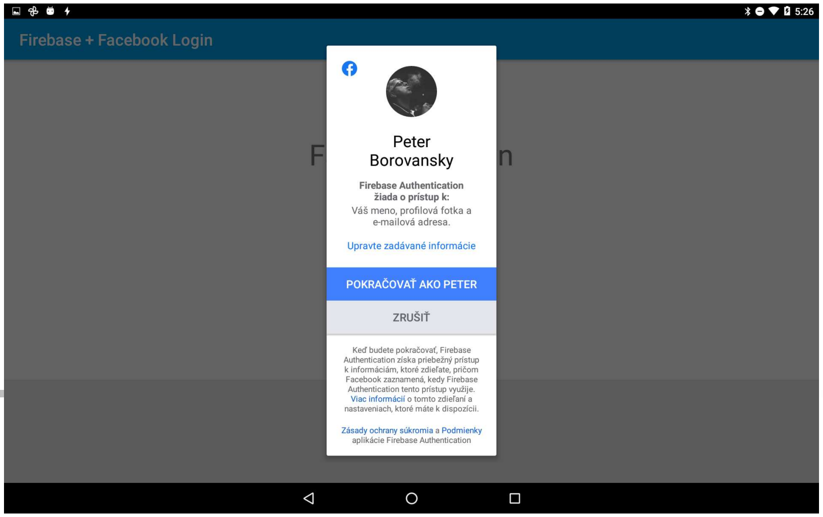
to continue to Firebase Authentication

Peter BOROVANSKY
borovansky@gmail.com

Prostredia HM
prostrediahm@gmail.com

Add another account

To continue, Google will share your name, email address, and profile picture with Firebase Authentication. Before using this app, review its privacy policy and terms of service.



Firebase + Facebook Login

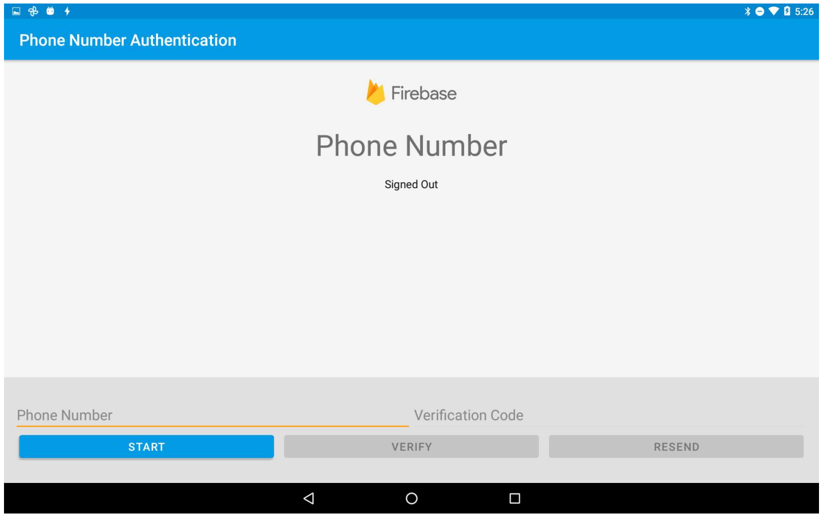
Peter Borovansky

Firebase Authentication žiada o prístup k:
Váš meno, profilová fotka a e-mailová adresa.

Upravte zadávané informácie

Keď budete pokračovať, Firebase Authentication získa priebežný prístup k informáciám, ktoré zdieľate, pričom Facebook zaznamená, kedy Firebase Authentication tento prístup využije. Viac informácií o tomto zdieľaní a nastaveniach, ktoré máte k dispozícii.

Zásady ochrany súkromia a Podmienky aplikácie Firebase Authentication

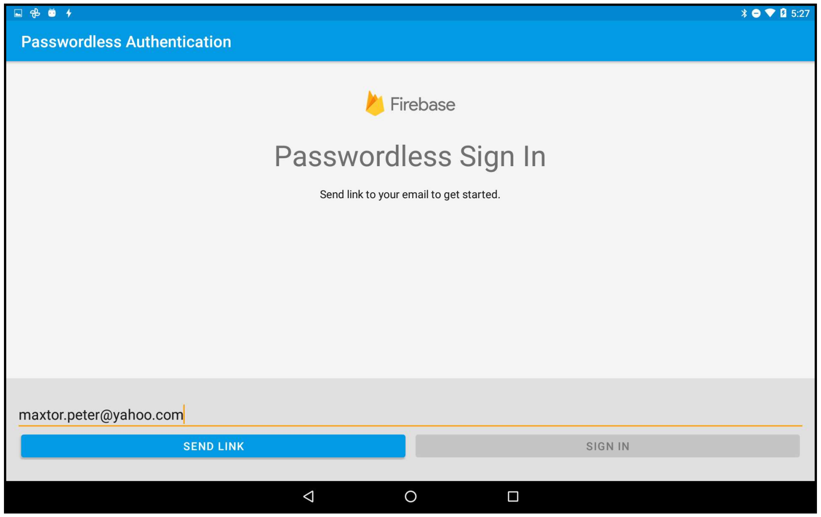


Phone Number Authentication

Firebase

Phone Number

Signed Out



Passwordless Authentication

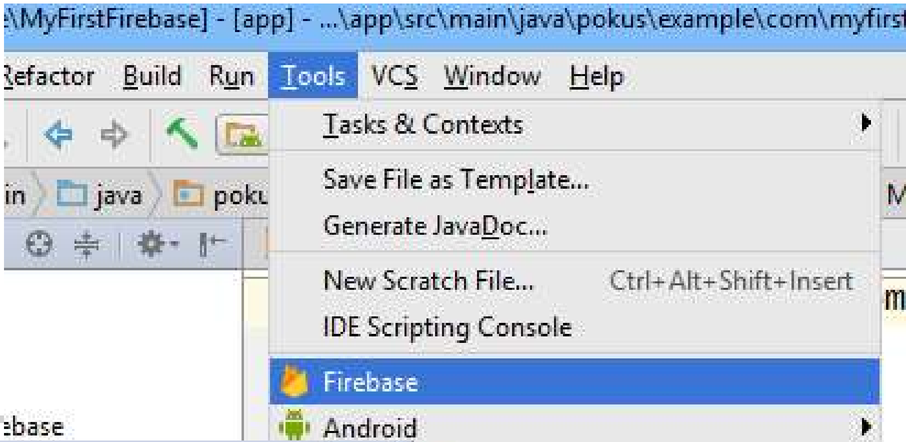
Firebase

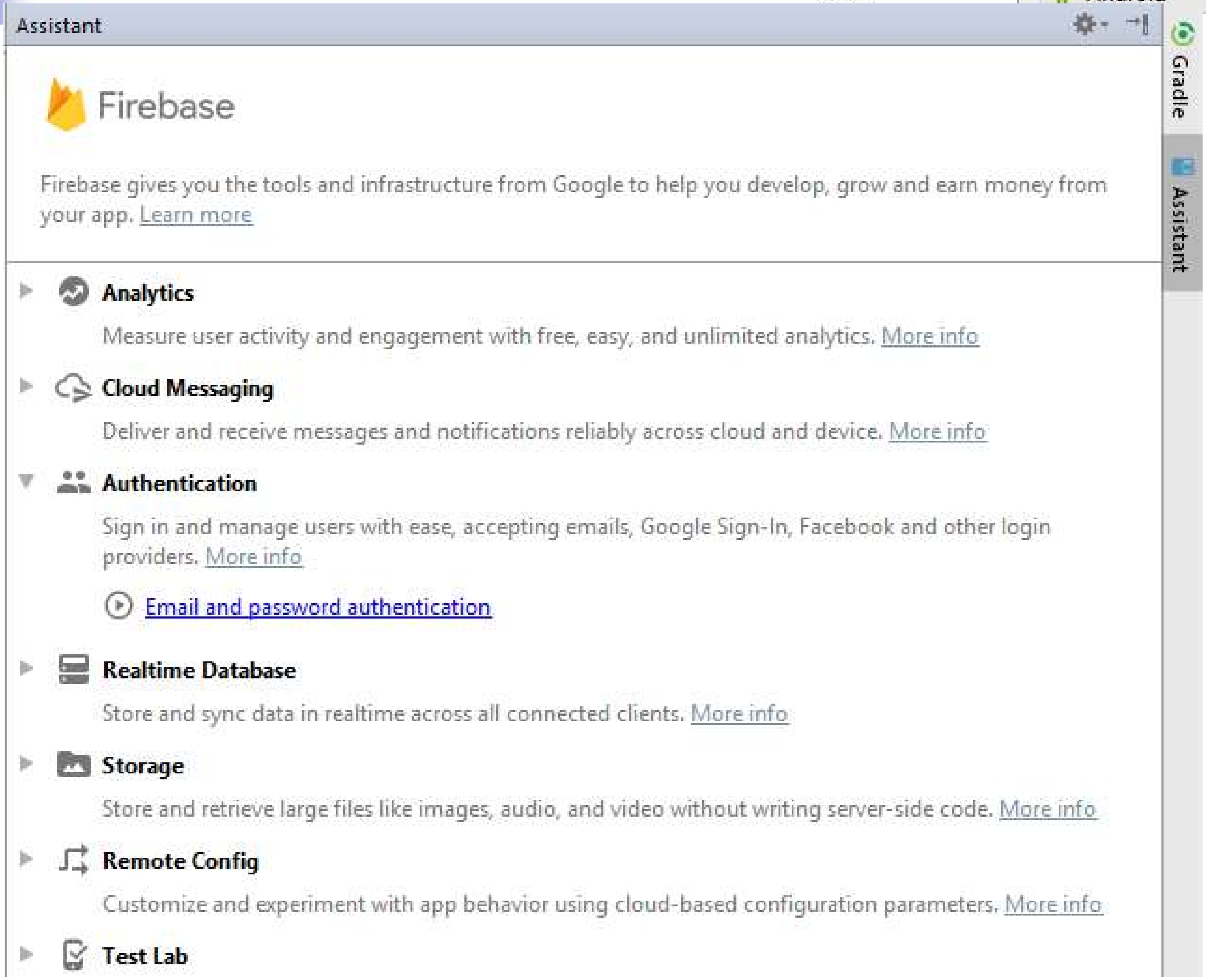
Passwordless Sign In

Send link to your email to get started.

maxtor.peter@yahoo.com

Firebase podpora v AS





Firebase

Firebase gives you the tools and infrastructure from Google to help you develop, grow and earn money from your app. Learn more

Analytics

Measure user activity and engagement with free, easy, and unlimited analytics. More info

Cloud Messaging

Deliver and receive messages and notifications reliably across cloud and device. More info

Authentication

Sign in and manage users with ease, accepting emails, Google Sign-In, Facebook and other login providers. More info

Email and password authentication

Realtime Database

Store and sync data in realtime across all connected clients. More info

Storage

Store and retrieve large files like images, audio, and video without writing server-side code. More info

Remote Config

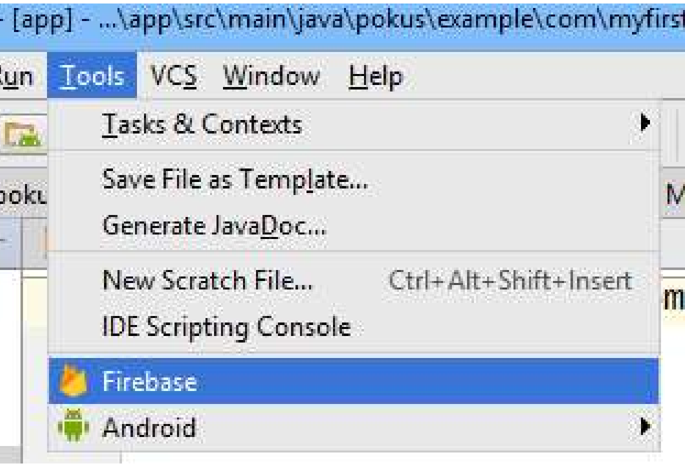
Customize and experiment with app behavior using cloud-based configuration parameters. More info

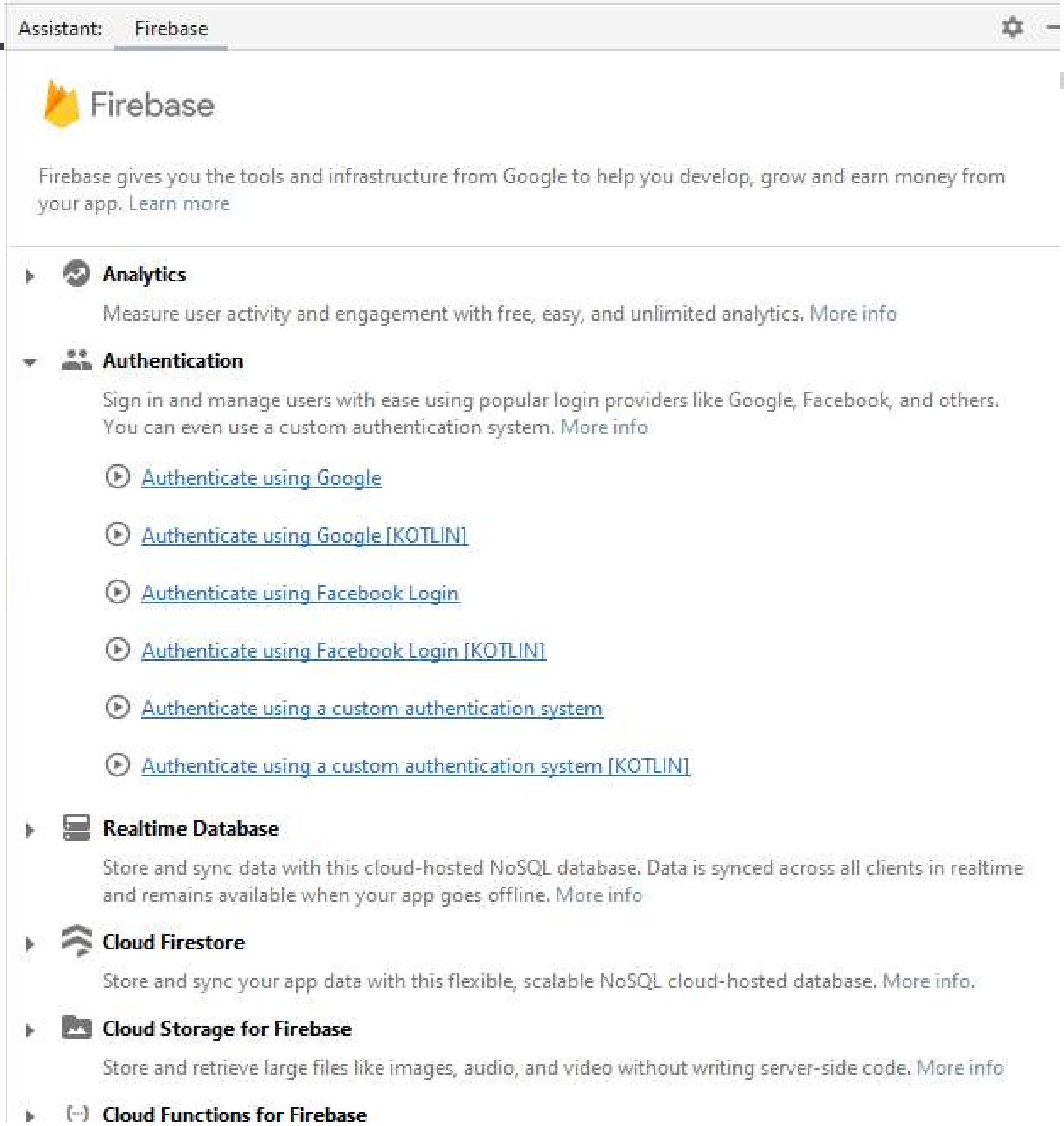
Test Lab

Project:FBDemo1

Authentication

Firebase v AS





Assistant: Firebase

Firebase

Firebase gives you the tools and infrastructure from Google to help you develop, grow and earn money from your app. Learn more

Analytics

Measure user activity and engagement with free, easy, and unlimited analytics. More info

Authentication

Sign in and manage users with ease using popular login providers like Google, Facebook, and others. You can even use a custom authentication system. More info

- Authenticate using Google
- Authenticate using Google [KOTLIN]
- Authenticate using Facebook Login
- Authenticate using Facebook Login [KOTLIN]
- Authenticate using a custom authentication system
- Authenticate using a custom authentication system [KOTLIN]

Realtime Database

Store and sync data with this cloud-hosted NoSQL database. Data is synced across all clients in realtime and remains available when your app goes offline. More info

Cloud Firestore

Store and sync your app data with this flexible, scalable NoSQL cloud-hosted database. More info.

Cloud Storage for Firebase

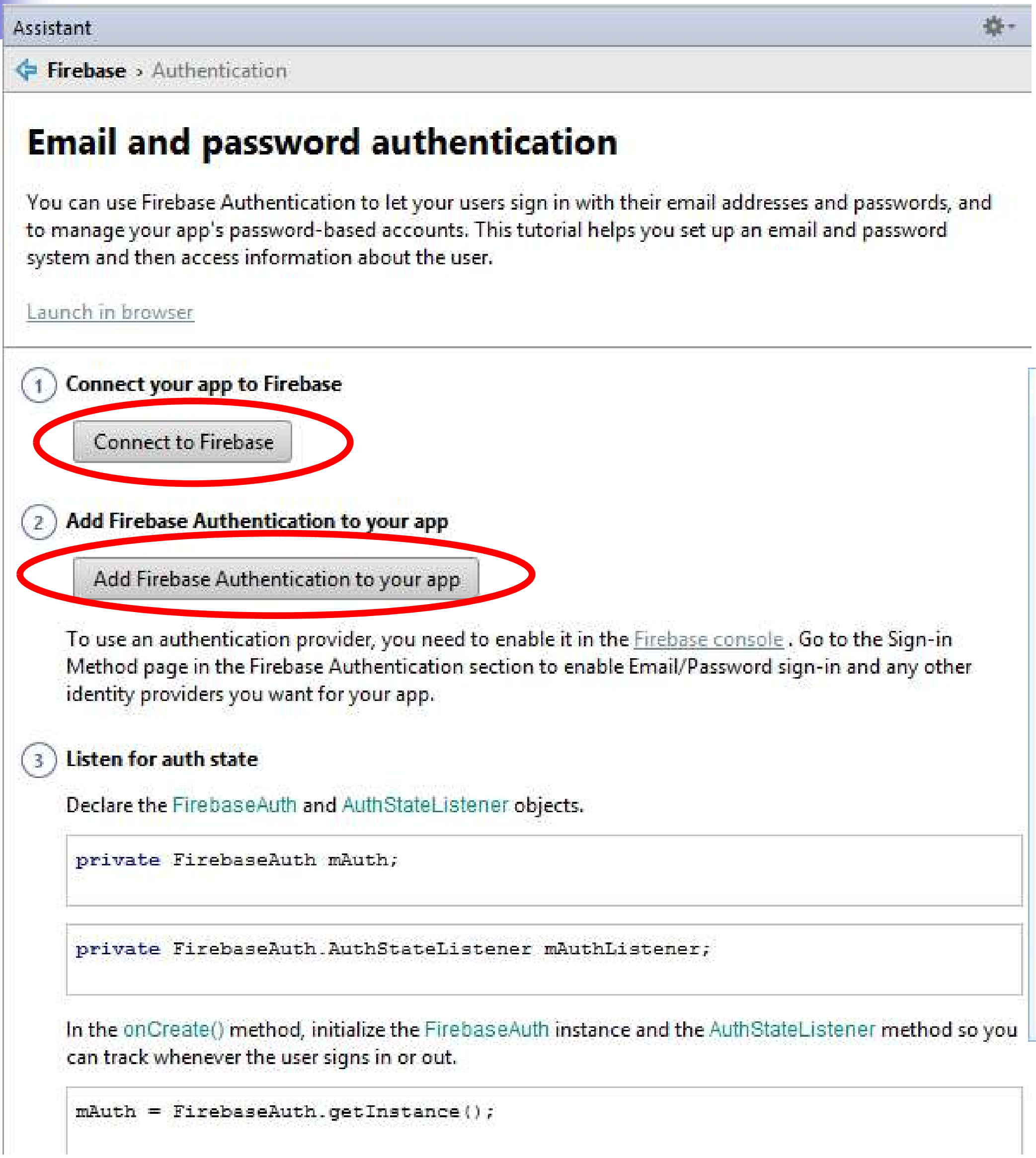
Store and retrieve large files like images, audio, and video without writing server-side code. More info

Cloud Functions for Firebase

Project:FBDemo1

Autentifikačný kit v AS

Ponúka vám to step-by-step návod na vytvorenie rôznych typov Firebase aplikácií



Email and password authentication

You can use Firebase Authentication to let your users sign in with their email addresses and passwords, and to manage your app's password-based accounts. This tutorial helps you set up an email and password system and then access information about the user.

Launch in browser

1. Connect your app to Firebase

   Connect to Firebase

2. Add Firebase Authentication to your app

   Add Firebase Authentication to your app

   To use an authentication provider, you need to enable it in the Firebase console . Go to the Sign-in Method page in the Firebase Authentication section to enable Email/Password sign-in and any other identity providers you want for your app.

3. Listen for auth state

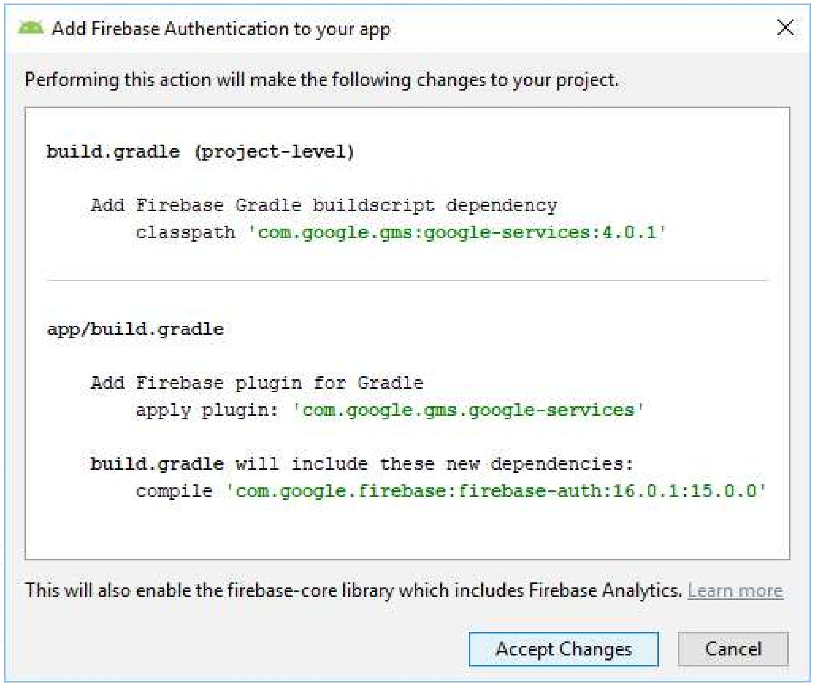
   Declare the FirebaseAuth and AuthStateListener objects.

```
private FirebaseAuth mAuth;
```

```
private FirebaseAuth.AuthStateListener mAuthListener;
```

In the onCreate() method, initialize the FirebaseAuth instance and the AuthStateListener method so you can track whenever the user signs in or out.

```
mAuth = FirebaseAuth.getInstance();
```



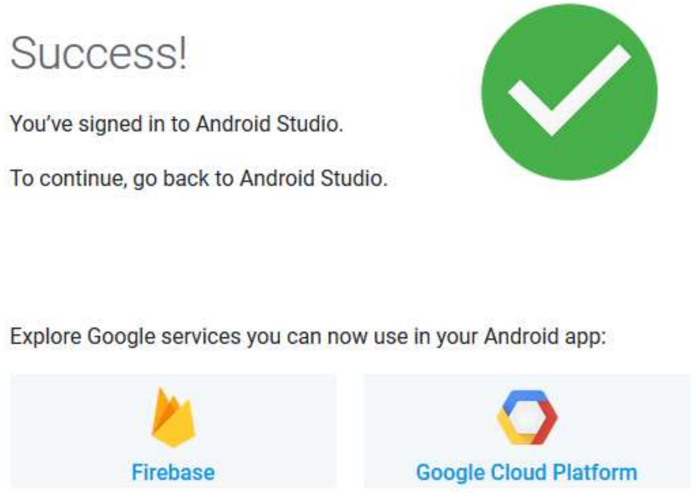
Performing this action will make the following changes to your project.

```
build.gradle (project-level)

    Add Firebase Gradle buildscript dependency
        classpath 'com.google.gms:google-services:4.0.1'

app/build.gradle

    Add Firebase plugin for Gradle
        apply plugin: 'com.google.gms.google-services'

    build.gradle will include these new dependencies:
        compile 'com.google.firebase:firebase-auth:16.0.1:15.0.0'
```

This will also enable the firebase-core library which includes Firebase Analytics. Learn more

Project:FBDemo1

1) Connect your app to Firebase

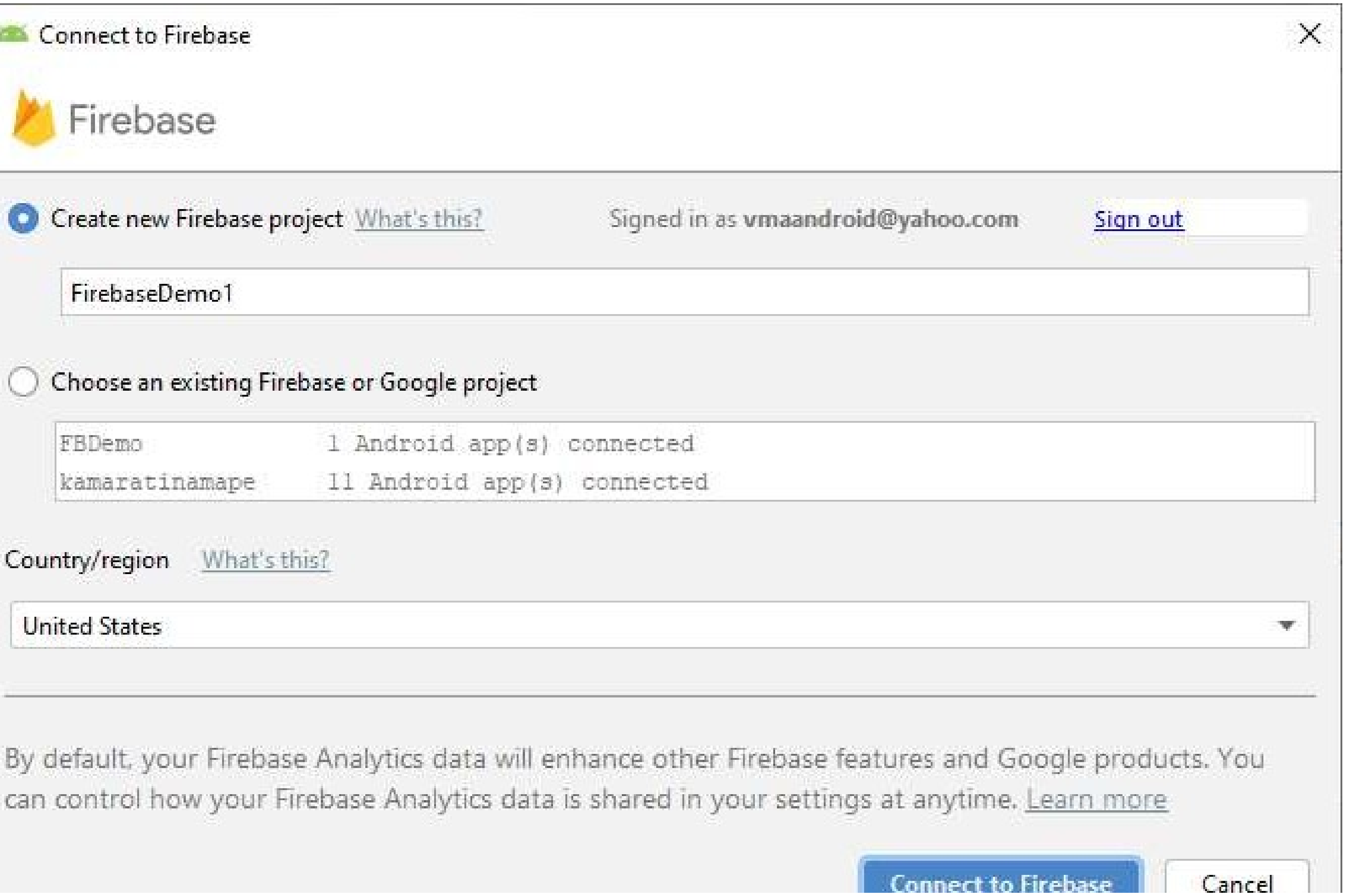


Success!

You've signed in to Android Studio.

To continue, go back to Android Studio.

Explore Google services you can now use in your Android app:



Connect to Firebase

Firebase

● Create new Firebase project What's this? Signed in as **vmaandroid@yahoo.com** Sign out

FirebaseDemo1

○ Choose an existing Firebase or Google project

```
FBDemo              1 Android app(s) connected
kamaratinamape      11 Android app(s) connected
```

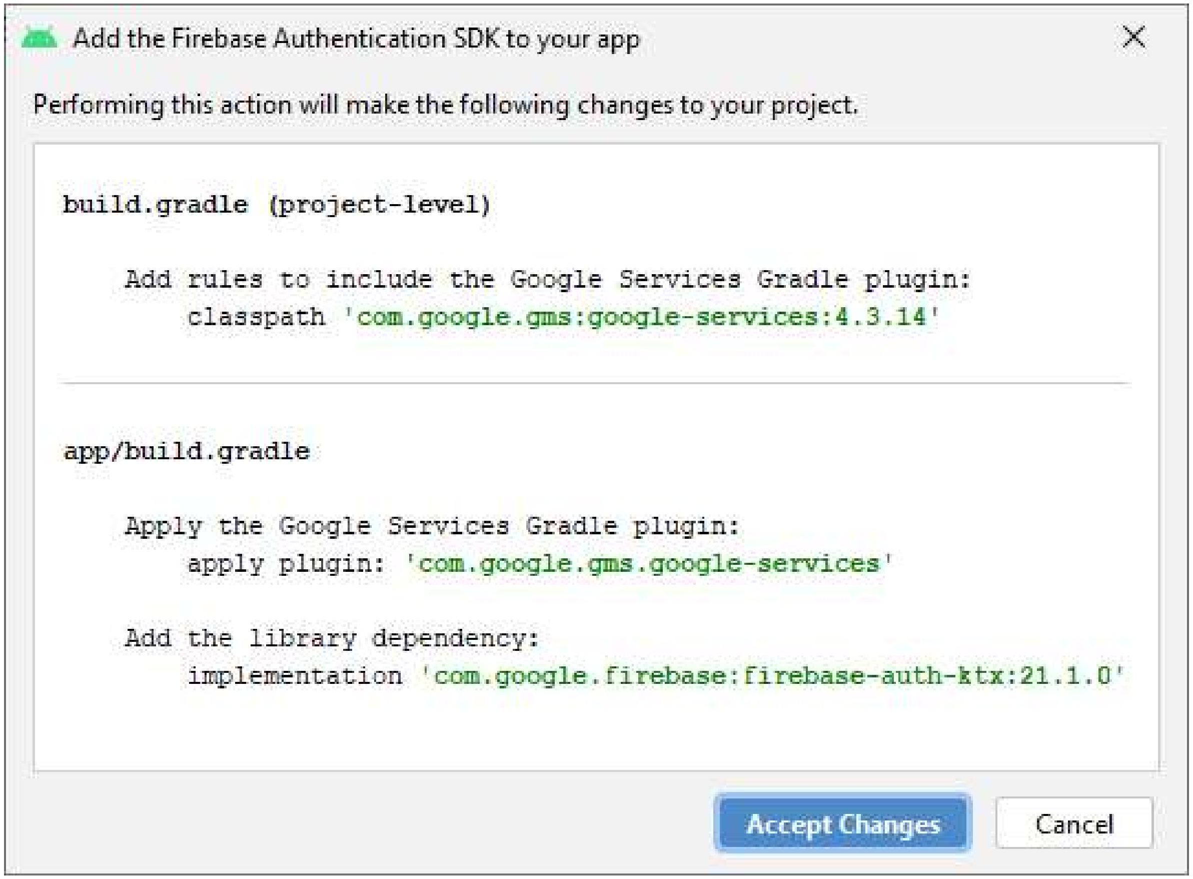
Country/region What's this?

United States ▾

By default, your Firebase Analytics data will enhance other Firebase features and Google products. You can control how your Firebase Analytics data is shared in your settings at anytime. Learn more

Project:FBDemo1

2) Add Firebase Auth to your app



Performing this action will make the following changes to your project.

```
build.gradle (project-level)

    Add rules to include the Google Services Gradle plugin:
        classpath 'com.google.gms:google-services:4.3.14'

app/build.gradle

    Apply the Google Services Gradle plugin:
        apply plugin: 'com.google.gms.google-services'

    Add the library dependency:
        implementation 'com.google.firebase:firebase-auth-ktx:21.1.0'
```

Project:FBDemo1

build.grade (app)

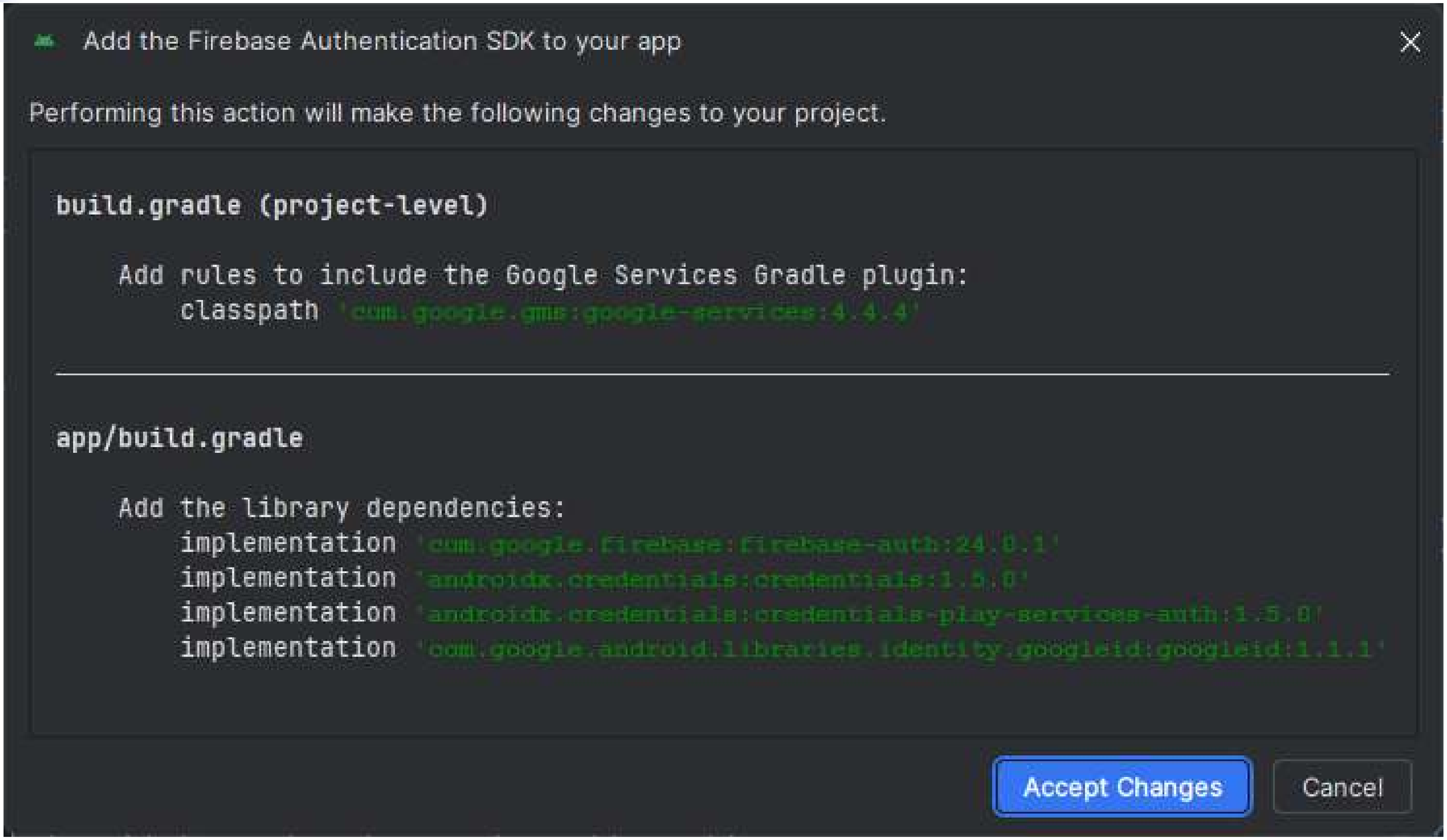
```
dependencies {
 …
    implementation 'com.google.firebase:firebase-auth-ktx:21.1.0'
}
```

```
buildscript {
    dependencies {
        classpath 'com.google.gms:google-services:4.4.0'
    }
}
plugins {
    id 'com.android.application' version '7.3.1' apply false
    id 'com.android.library' version '7.3.1' apply false
    id 'org.jetbrains.kotlin.android' version '1.7.20' apply false
}
```

```
plugins {
    id 'com.android.application'
    id 'kotlin-android'
    id 'com.google.gms.google-services'
}
```

Project:FBDemo1

Project:FirebaseDemo1



Add the Firebase Authentication SDK to your app

Performing this action will make the following changes to your project.

```
build.gradle (project-level)

    Add rules to include the Google Services Gradle plugin:
        classpath 'com.google.gms:google-services:4.4.4'

app/build.gradle

    Add the library dependencies:
        implementation 'com.google.firebase:firebase-auth:24.0.1'
        implementation 'androidx.credentials:credentials:1.5.0'
        implementation 'androidx.credentials:credentials-play-services-auth:1.5.0'
        implementation 'com.google.android.libraries.identity.googleid:googleid:1.1.1'
```

Firebase Email Authentification

sign-up new user

```
lateinit var mAuth: FirebaseAuth
. . .
mAuth.createUserWithEmailAndPassword(email, password)
  .addOnCompleteListener(this, object:
     OnCompleteListener<AuthResult> {
        override fun onComplete(task: Task<AuthResult>) {
            if (task.isSuccessful()) { // Sign in success, update
              Log.d(TAG, "createUserWithEmail:success")
              val user = mAuth.currentUser
            } else { // If sign in fails,
              Log.w(TAG, "createUserWithEmail:failure",
                   task.getException())
            }
        }
    })
```

Project:FBDemo1	Project:FirebaseDemo111

Firebase Email Authentification

sign-in an existing user

```
lateinit var mAuth: FirebaseAuth
. . .
mAuth.signInWithEmailAndPassword(email, password)
    .addOnCompleteListener(this) { task ->
       if (task.isSuccessful) { // Sign in success
            Log.d(TAG, "signInWithEmail:success")
            val user = mAuth.currentUser
       } else { // If sign in fails
            Log.w(TAG, "signInWithEmail:failure", task.exception)
        }
}
```

Project:FirebaseDemo111

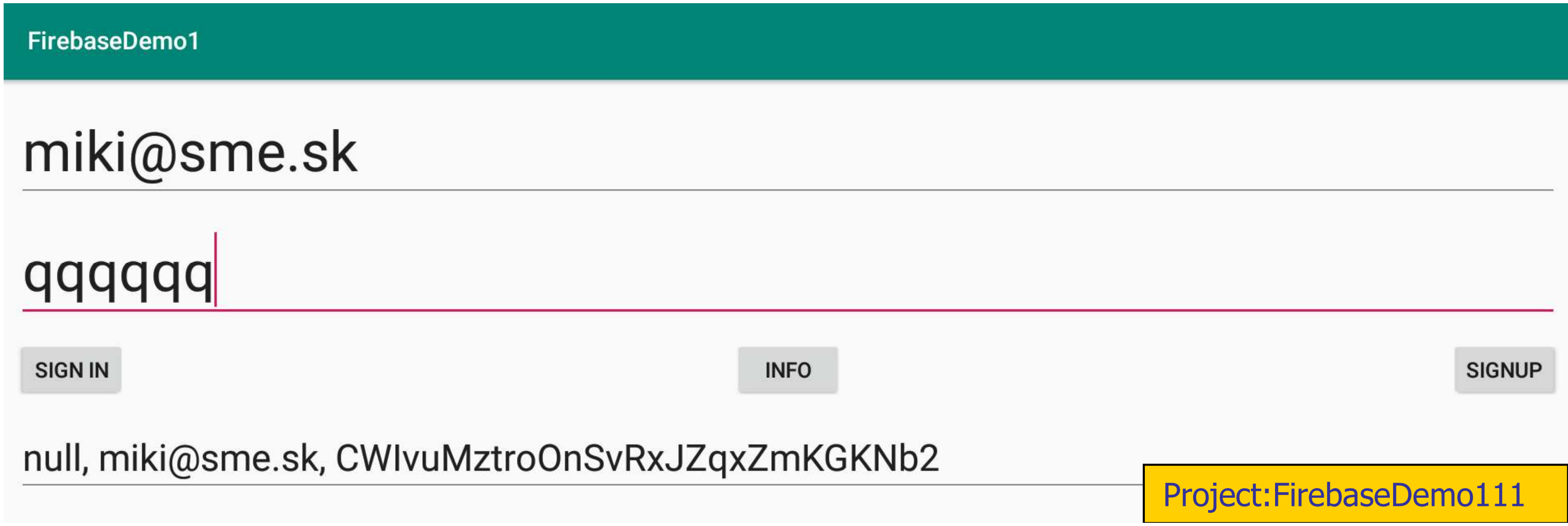
Authentication

iOS </> C++

Firebase Email Authentification

get user info

```
val user = FirebaseAuth.getInstance().currentUser
if (user != null) { // Name, email address, and profile photo Url
    val name = user.displayName
    val email = user.email
    val photoUrl: Uri? = user.photoUrl
    val emailVerified = user.isEmailVerified
    val uid = user.uid
    infoTV.setText("$name, $email, $uid")
}
```



miki@sme.sk

qqqqqq

null, miki@sme.sk, CWIvuMztroOnSvRxJZqxZmKGKNb2

Project:FirebaseDemo111

Firebase ako databáza

- noSQL databázy
- **Realtime Database** (efektívna pre mobilné app, synchronizácia)
  - ukladanie a synchronizácia v reálnom čase so všetkými pripojenými klientami
  - všetky dáta sú jeden veľký json dátový strom (JSON Tree)
  - existuje dávno, je stabilná, **regionálne** má veľmi slušnú latenciu

- **Cloud Firestore** (novinka)
  - Realtime updates, powerful queries, automatic scaling
  - dáta sú v kolekciách, hierarchicky organizované, sub-kolekcie, ...
  - novinka, beta r.2018, scalability, prepojenie cez viaceré dátové centrá

Obe podporujú offline support pre mobilných klientov (Android, iOS, web)
- zmeny počas off-line sa ukladajú do cache a synchronizujú, keď on-line

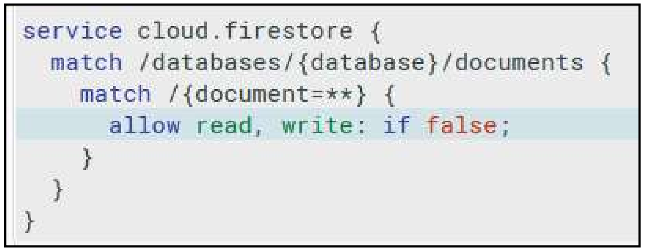
Realtime Database

iOS </> C++

FireStore Database

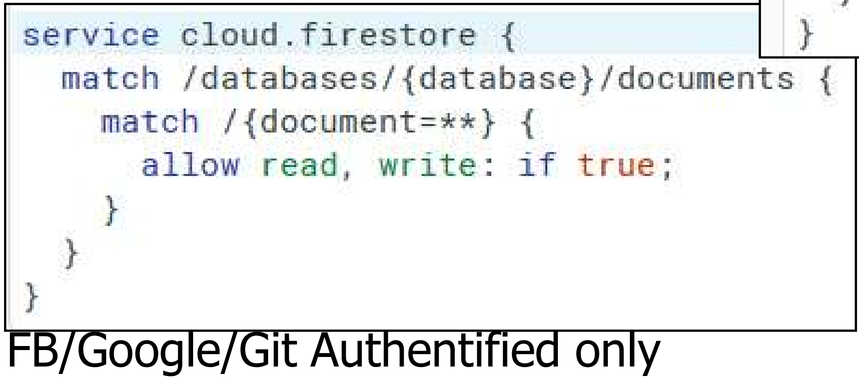
nosql databáza - rules

- Default, no access, only FB console



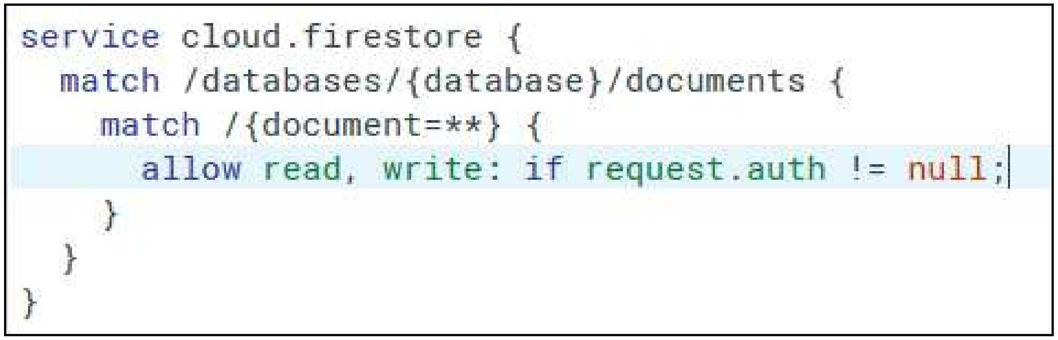
```
service cloud.firestore {
  match /databases/{database}/documents {
    match /{document=**} {
      allow read, write: if false;
    }
  }
}
```

- Public, anyone can...

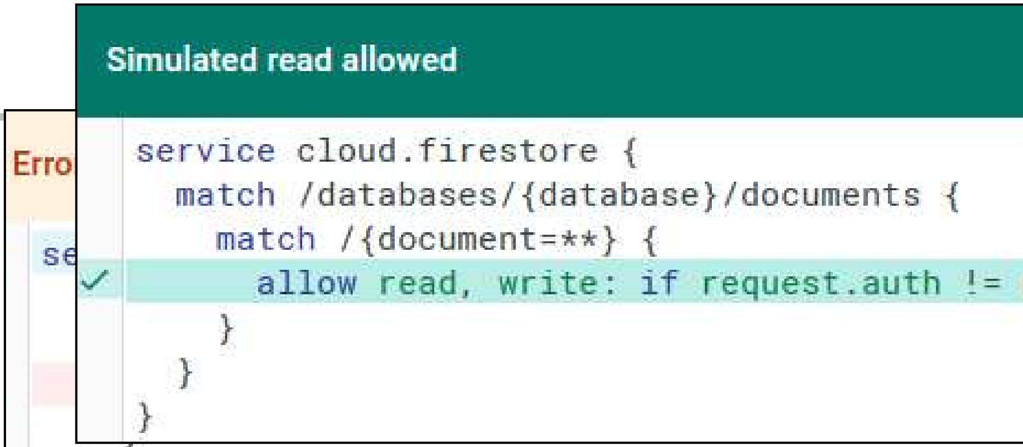


```
service cloud.firestore {
  match /databases/{database}/documents {
    match /{document=**} {
      allow read, write: if true;
    }
  }
}
```

- FB/Google/Git Authentified only

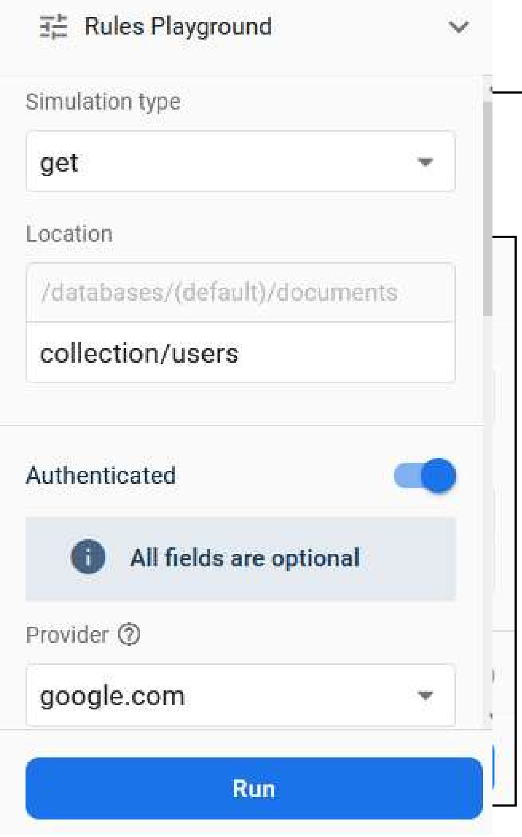


```
service cloud.firestore {
  match /databases/{database}/documents {
    match /{document=**} {
      allow read, write: if request.auth != null;
    }
  }
}
```



Simulated read allowed

```
service cloud.firestore {
  match /databases/{database}/documents {
    match /{document=**} {
      allow read, write: if request.auth !=
    }
  }
}
```



Rules Playground

Simulation type: get

Location: /databases/(default)/documents collection/users

Authenticated: on

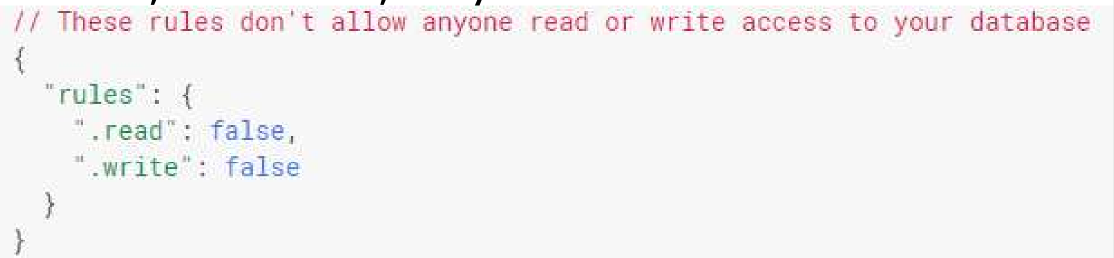
All fields are optional

Provider: google.com

Realtime Database

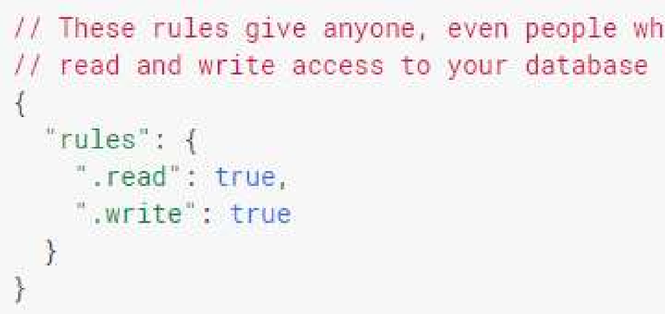
nosql databáza - rules

- Default, no access, only FB console



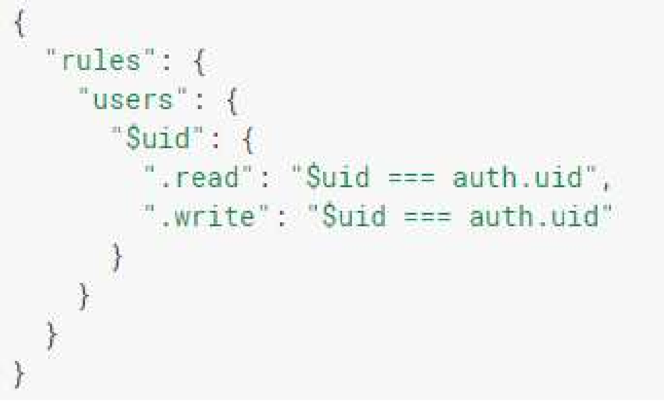
```
// These rules don't allow anyone read or write access to your database
{
  "rules": {
    ".read": false,
    ".write": false
  }
}
```

- Public, anyone can...

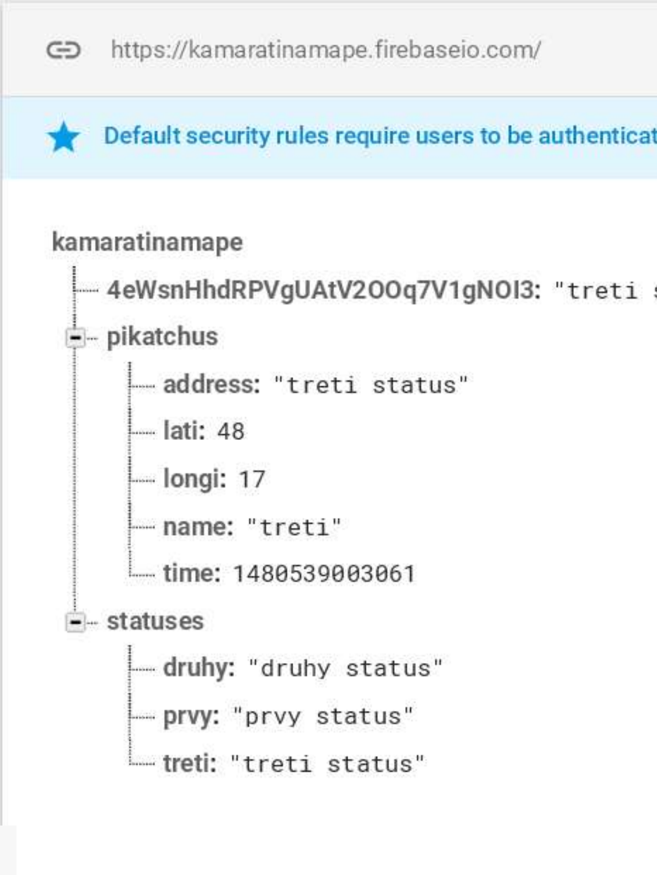


```
// These rules give anyone, even people who are not users of your app,
// read and write access to your database
{
  "rules": {
    ".read": true,
    ".write": true
  }
}
```

- FB/Google/Git Authentified only



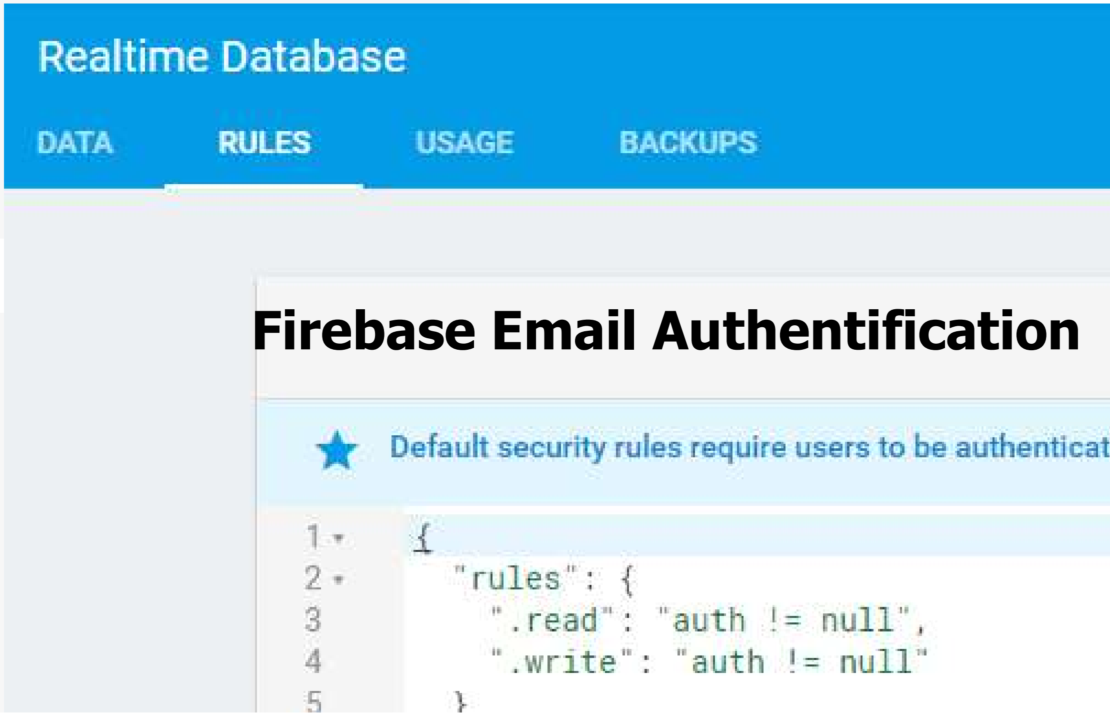
```
{
  "rules": {
    "users": {
      "$uid": {
        ".read": "$uid === auth.uid",
        ".write": "$uid === auth.uid"
      }
    }
  }
}
```



https://kamaratinamape.firebaseio.com/

★ Default security rules require users to be authenticat

```
kamaratinamape
├─ 4eWsnHhdRPVgUAtV2OOq7V1gNOI3: "treti s
├─ pikatchus
│   ├─ address: "treti status"
│   ├─ lati: 48
│   ├─ longi: 17
│   ├─ name: "treti"
│   └─ time: 1480539003061
└─ statuses
    ├─ druhy: "druhy status"
    ├─ prvy: "prvy status"
    └─ treti: "treti status"
```



Firebase Email Authentification

★ Default security rules require users to be authenticat

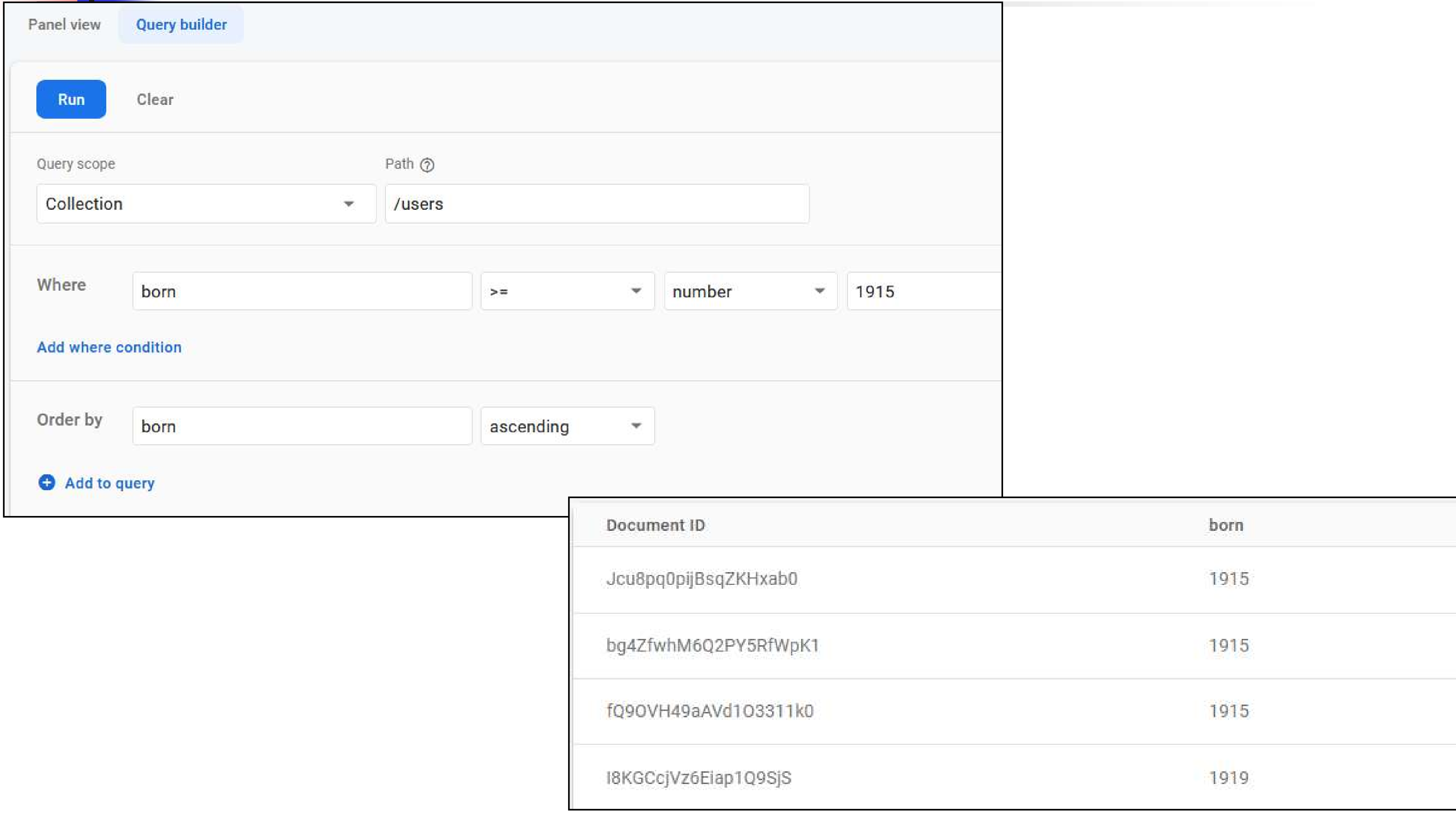
```
{
  "rules": {
    ".read": "auth != null",
    ".write": "auth != null"
  }
```

Realtime Database

iOS </> C++

Realtime Database

nosql databáza - rules



Query scope: Collection

Path: /users

Where: born >= number 1915

Order by: born ascending

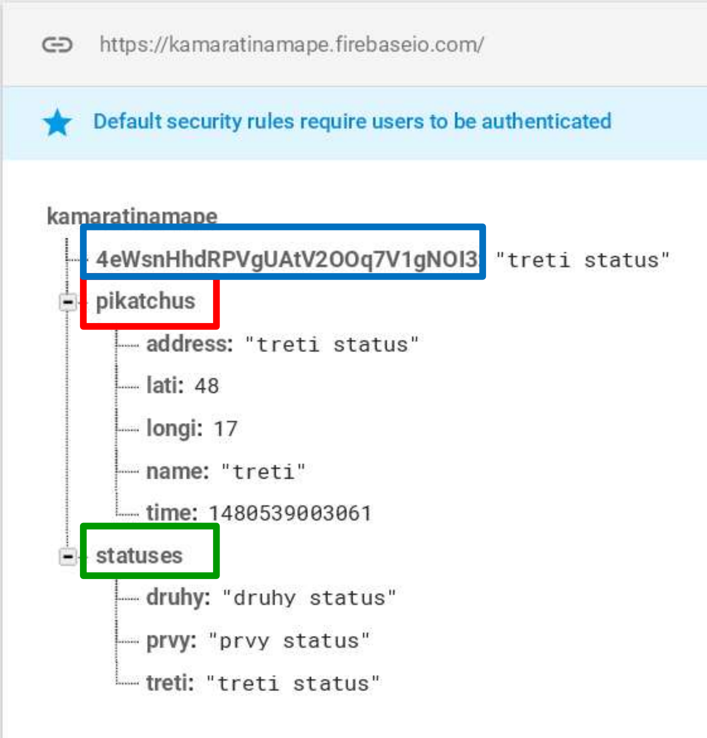
Document ID	born
Jcu8pq0pijBsqZKHxab0	1915
bg4ZfwhM6Q2PY5RfWpK1	1915
fQ9OVH49aAVd1O3311k0	1915
I8KGCcjVz6Eiap1Q9SjS	1919

Realtime Database

iOS </> C++

Realtime Database

zápis dát



https://kamaratinamape.firebaseio.com/

★ Default security rules require users to be authenticated

```
kamaratinamape
├ 4eWsnHhdRPVgUAtV2OOq7V1gNOI3: "treti status"
├ pikatchus
│  ├ address: "treti status"
│  ├ lati: 48
│  ├ longi: 17
│  ├ name: "treti"
│  └ time: 1480539003061
└ statuses
   ├ druhy: "druhy status"
   ├ prvy: "prvy status"
   └ treti: "treti status"
```

```
databaseReference = FirebaseDatabase
        .getInstance()
        .reference
```

→ object

```
databaseReference.child("pikatchus")
    .setValue(Pokemon(name, address, lati, longi))
```

```
class Pokemon : Serializable
```

```
globalState == mutableMapOf<String,String>()
globalState[name]=status          // prvy -> prvy status
```

→ kolekcia

```
databaseReference.child("statuses").setValue(globalState)
```

```
val user = firebaseAuth.currentUser
if (user != null) { // ak je user nalogovaný
```

→ uid

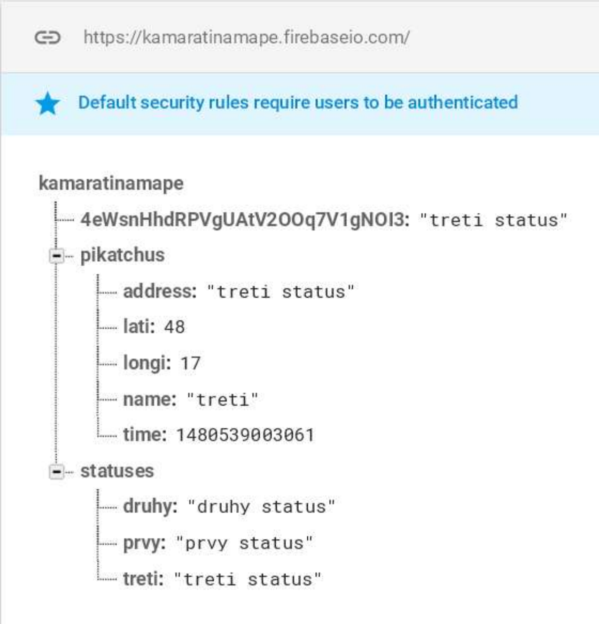
```
    databaseReference.child(user.uid).setValue(status)
}
```

Project:FirebaseDemo3.zip

Realtime Database

Realtime Database

čítanie dát - synchronizácia


https://kamaratinamape.firebaseio.com/

Default security rules require users to be authenticated

```
kamaratinamape
├── 4eWsnHhdRPVgUAtV2OOq7V1gNOI3: "treti status"
├── pikatchus
│   ├── address: "treti status"
│   ├── lati: 48
│   ├── longi: 17
│   ├── name: "treti"
│   └── time: 1480539003061
└── statuses
    ├── druhy: "druhy status"
    ├── prvy: "prvy status"
    └── treti: "treti status"
```

Pri akejkoľvek zmene sa zavolá listener

po zápise

```
databaseReference.addValueEventListener(
  object:ValueEventListener() {
    override fun onDataChange(dataSnapshot:DataSnapshot) {
      for (child in dataSnapshot.children){ % toto sú zmeny
        val o = child.value        % (child.key, child.value)
        val str = "changed " + child.key + " is: "
        val o = child.value         % zmenil sa (key,o=value)
        if (o is Pokemon)           % zmenil sa objekt
          statusMemo.append("Pokemon has ")
        Log.d(TAG, child.key)
        editTextMemo.append(
           "changed ${child.key} is: ${o.toString()}\n")
      }
    }
  })
```

object

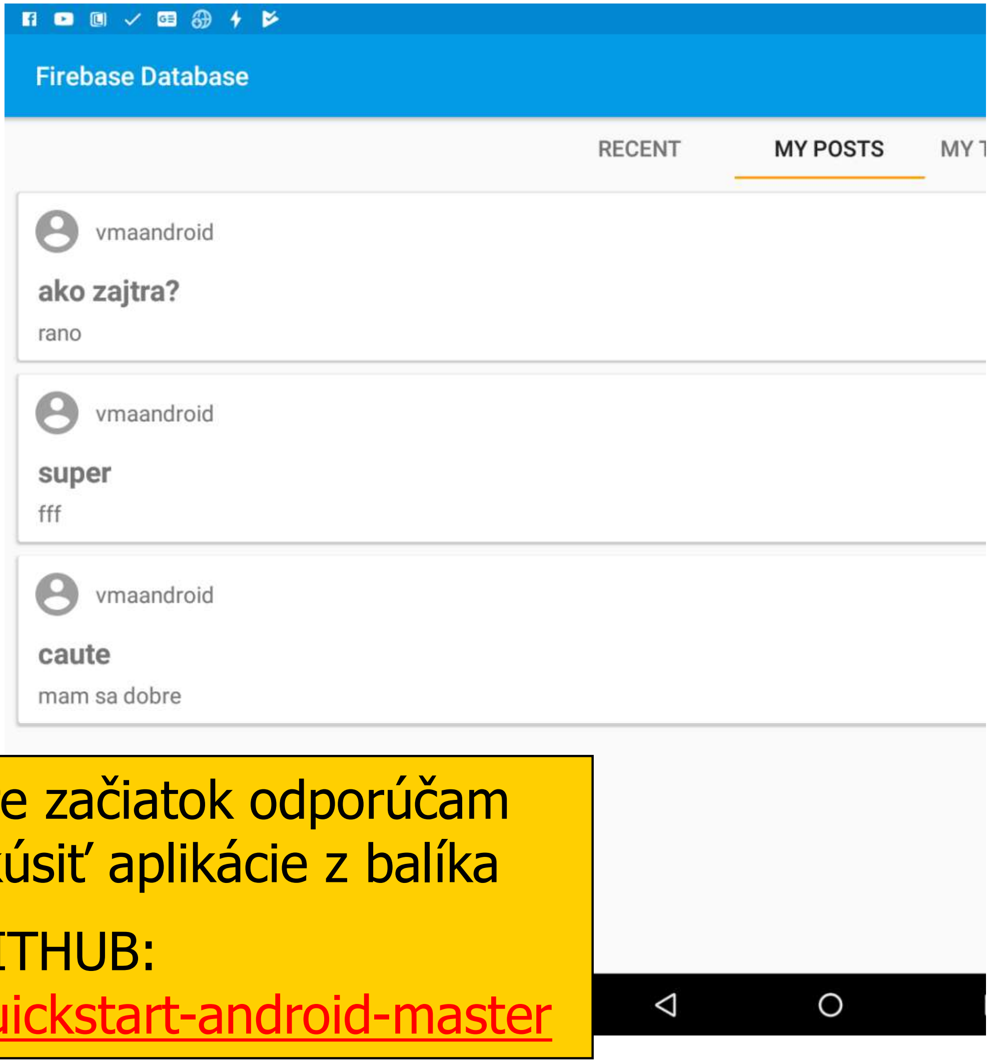
Project:FirebaseDemo3.zip

Realtime Database

iOS </> C++

Firebase DB

vyskúšajte si hotovú appku



vmaandroid

ako zajtra?

rano

vmaandroid

super

fff

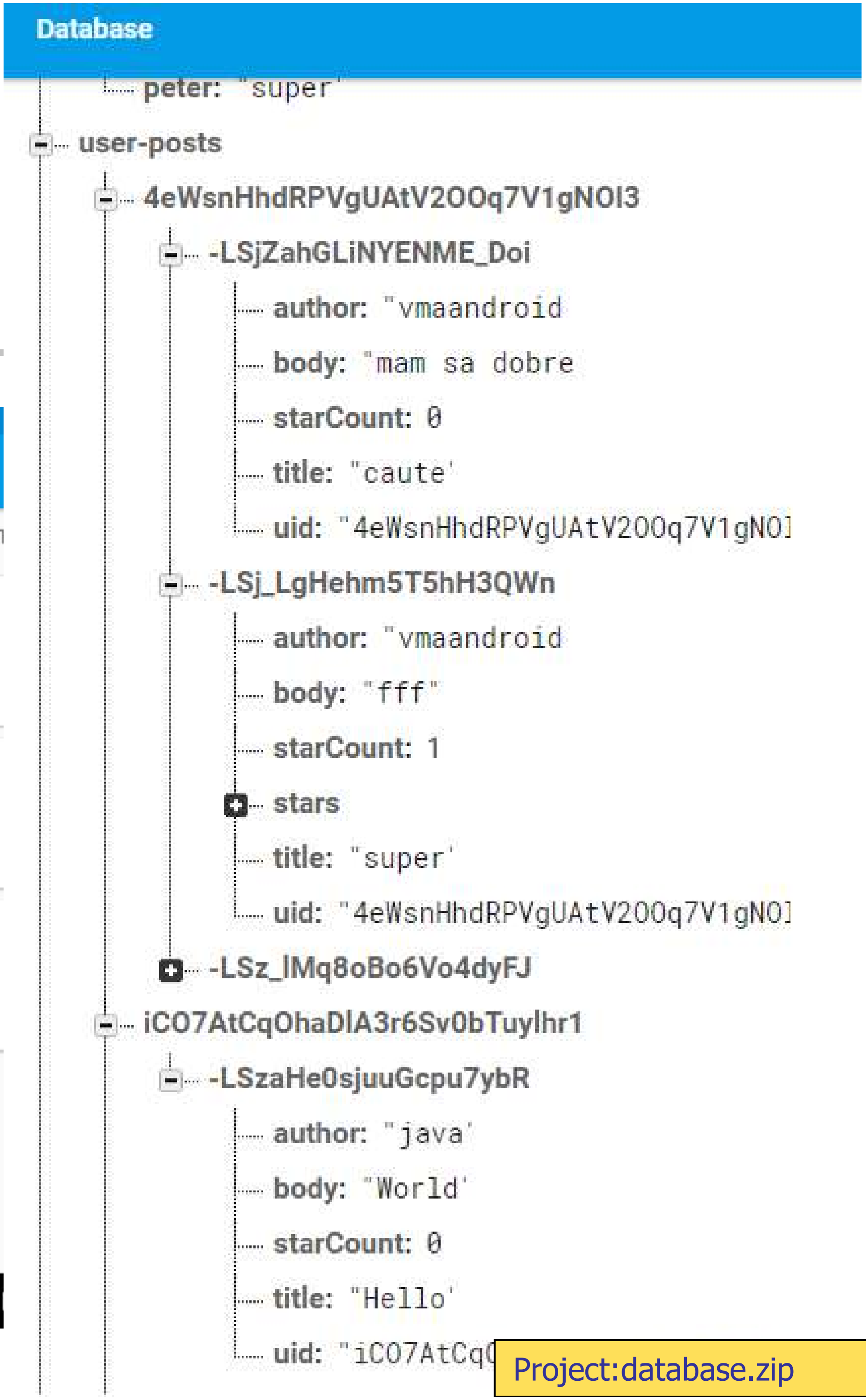
vmaandroid

caute

mam sa dobre

pre začiatok odporúčam skúsiť aplikácie z balíka

GITHUB: quickstart-android-master



```
    peter: "super'
user-posts
  4eWsnHhdRPVgUAtV2OOq7V1gNOI3
    -LSjZahGLiNYENME_Doi
      author: "vmaandroid
      body: "mam sa dobre
      starCount: 0
      title: "caute'
      uid: "4eWsnHhdRPVgUAtV200q7V1gNOI
    -LSj_LgHehm5T5hH3QWn
      author: "vmaandroid
      body: "fff"
      starCount: 1
      stars
      title: "super'
      uid: "4eWsnHhdRPVgUAtV200q7V1gNOI
    -LSz_lMq8oBo6Vo4dyFJ
  iCO7AtCqOhaDlA3r6Sv0bTuylhr1
    -LSzaHe0sjuuGcpu7ybR
      author: "java'
      body: "World'
      starCount: 0
      title: "Hello'
      uid: "iCO7AtCq(
```

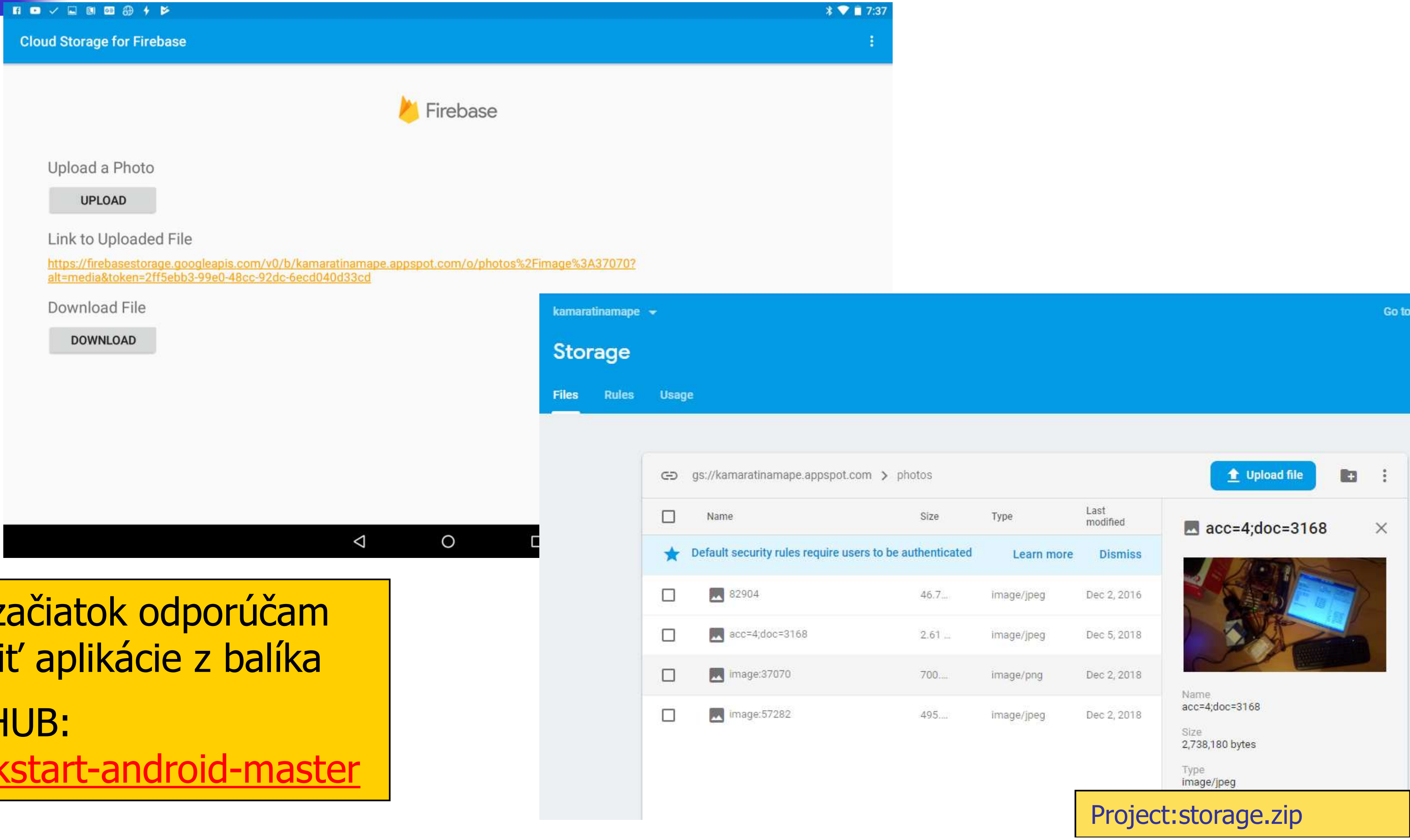
Project:database.zip

Cloud Firestore

iOS </>

Firebase Storage

vyskúšajte si hotovú appku



7:37

Cloud Storage for Firebase

Firebase

Upload a Photo

UPLOAD

Link to Uploaded File

https://firebasestorage.googleapis.com/v0/b/kamaratinamape.appspot.com/o/photos%2Fimage%3A37070?alt=media&token=2ff5ebb3-99e0-48cc-92dc-6ecd040d33cd

Download File

DOWNLOAD

kamaratinamape

Go to

Storage

Files Rules Usage

gs://kamaratinamape.appspot.com > photos

Upload file

Default security rules require users to be authenticated Learn more Dismiss

Name	Size	Type	Last modified
82904	46.7...	image/jpeg	Dec 2, 2016
acc=4;doc=3168	2.61 ...	image/jpeg	Dec 5, 2018
image:37070	700....	image/png	Dec 2, 2018
image:57282	495....	image/jpeg	Dec 2, 2018

acc=4;doc=3168

Name
acc=4;doc=3168

Size
2,738,180 bytes

Type
image/jpeg

pre začiatok odporúčam skúsiť aplikácie z balíka

GITHUB: quickstart-android-master

Project:storage.zip

Cloud Messaging

Firebase Cloud Messaging

(vyskúšajte si)

pre začiatok odporúčam skúsiť aplikácie z balíka

GITHUB: quickstart-android-master

- Firebase Messaging – push notifikácie
- cross-platform (iOS, Android, …)
- payload of up to 4kB to client app.

- Notification messages – when app is in the **background**

```
{"message":{
   "token":" chLzRZ59Svk:APA91bGEy41ulMs3qQnThxYL6VWJAOu61pIHWkGTUEHQe4rWlyWL9yutLHxiwmgYdstis7T54I68yKhwZj95TnKXjUynd4rt2oLQ1gPAaIa249g2-h4MKSg7Xkgie8uCVPx8sbB_itLr",
   "notification":{
     "title":"Notification Test",
     "body":"test"
} } }
```

- Data messages – key/value pairs received in a callback function.

```
{"message":{
   "token":" chLzRZ59Svk:APA91bGEy41ulMs3qQnThxYL6VWJAOu61pIHWkGTUEHQe4rWlyWL9yutLHxiwmgYdstis7T54I68yKhwZj95TnKXjUynd4rt2oLQ1gPAaIa249g2-h4MKSg7Xkgie8uCVPx8sbB_itLr",
   "data":{
     "Nick" : "Peter",
     "body" : "teacher",
     "Room" : "I-18"
} } }
```

Project:messaging.zip

Cloud Messaging

Firebase Cloud Messaging

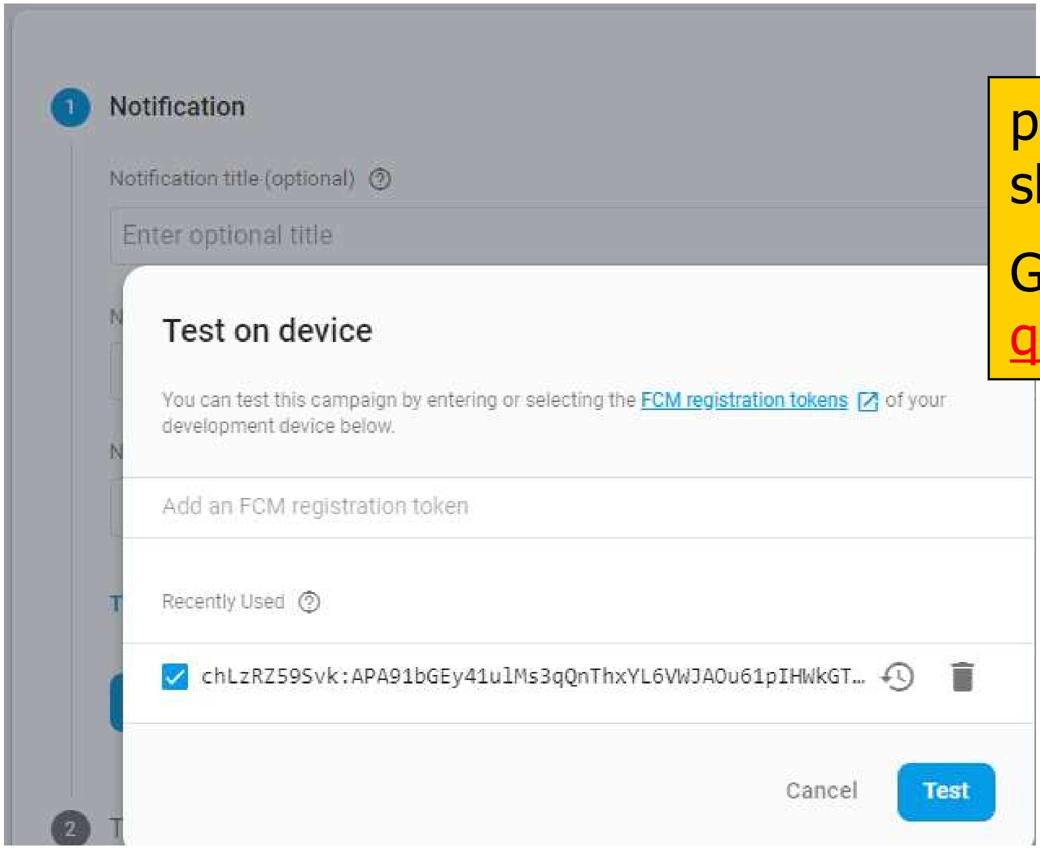
(vyskúšajte si)

Device Token

InstanceID Token:

chLzRZ59Svk:APA91bGEy41ulMs3qQnThxYL6VWJAOu61pIHWkGTUEHQe4rWlyWL9yutLHxiwmgYdstis7T54I68yKhwZj95TnKXjUynd4rt2oLQ1gPAaIa249g2-h4MKSg7Xkgie8uCVPx8sbB_itLr

Sending a test message from Firebase Console (app is in background!)



1 Notification

Notification title (optional)

Enter optional title

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

☑ chLzRZ59Svk:APA91bGEy41ulMs3qQnThxYL6VWJAOu61pIHWkGT…

pre začiatok odporúčam skúsiť aplikácie z balíka

GITHUB: quickstart-android-master

Project:messaging.zip