

Angular Advanced - Firebase – Realtime databases



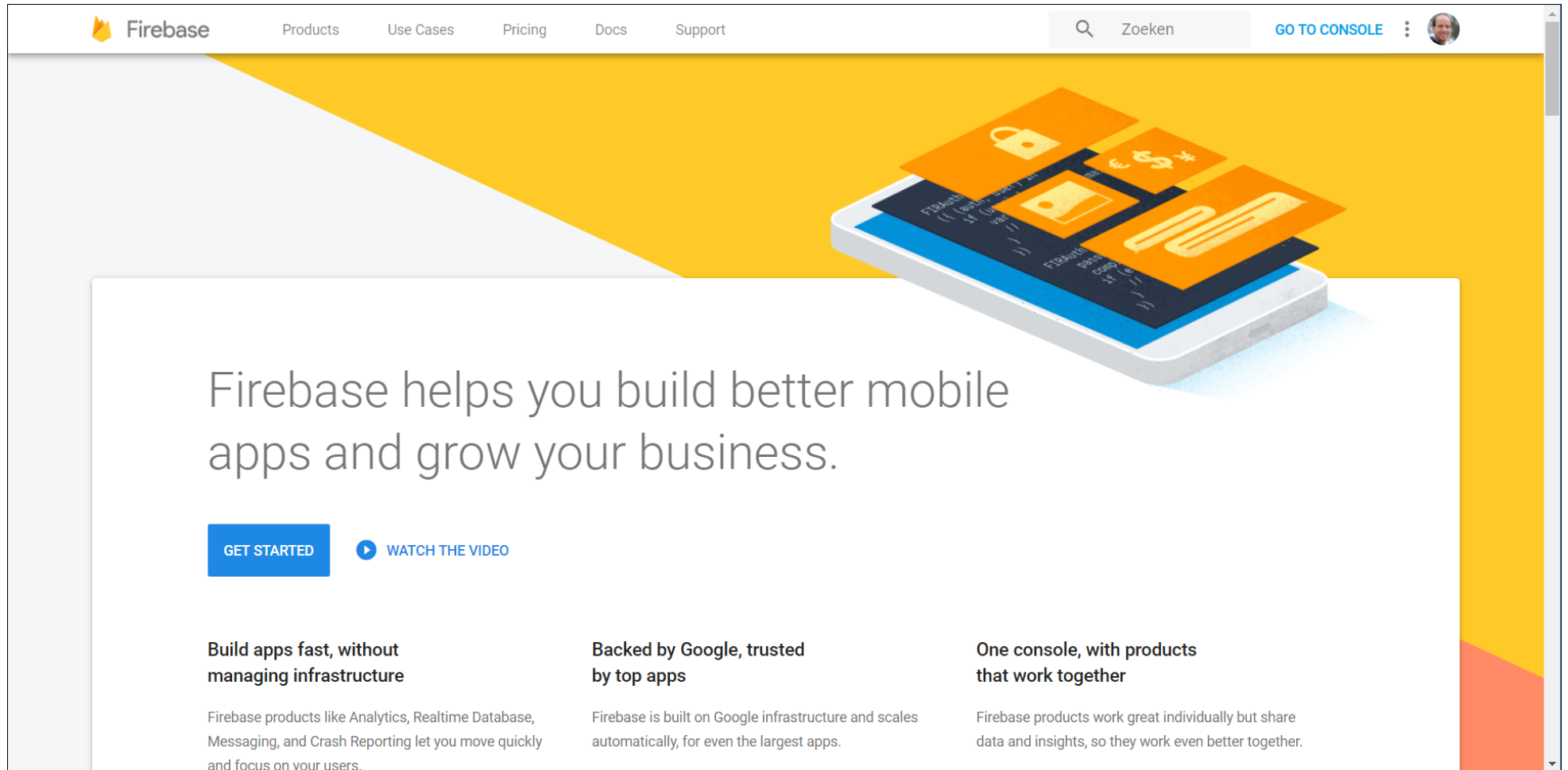
Peter Kassenaar –
info@kassenaar.com



Firestore – Realtime database

- Free, online cloud database
- NoSQL database
- Feed it just JSON
- No need to setup structure or tables
- Relies *heavily* on observables
- All connected clients get latest data
- Served over websockets, `WS://`

<https://firebase.google.com/>



The screenshot shows the Firebase website homepage. At the top is a navigation bar with the Firebase logo, links for Products, Use Cases, Pricing, Docs, and Support, a search bar with the text 'Zoeken', a 'GO TO CONSOLE' link, and a user profile icon. The main hero section features a large yellow background with a 3D illustration of a smartphone displaying various app icons like a lock, currency symbols, a document, and a list. Below this, the headline reads 'Firebase helps you build better mobile apps and grow your business.' There are two buttons: 'GET STARTED' and 'WATCH THE VIDEO'. The page is divided into three columns, each with a heading and a paragraph of text.

Build apps fast, without managing infrastructure

Firebase products like Analytics, Realtime Database, Messaging, and Crash Reporting let you move quickly and focus on your users.

Backed by Google, trusted by top apps

Firebase is built on Google infrastructure and scales automatically, for even the largest apps.

One console, with products that work together

Firebase products work great individually but share data and insights, so they work even better together.

More than just a database....

The screenshot shows the Firebase website homepage. At the top is a navigation bar with the Firebase logo, links for Products, Use Cases, Pricing, Docs, and Support, a search bar with the text 'Zoeken', a 'GO TO CONSOLE' button, and a user profile icon. Below the navigation bar are two large illustrations: one on the left showing a laptop with code and a smartphone with a checkmark, and one on the right showing a laptop with a line graph and a person holding a smartphone. The main content is divided into two columns. The left column is titled 'Develop & test your app' and contains eight items: Realtime Database, Authentication, Cloud Storage, Test Lab for Android, Crash Reporting, Cloud Functions, Hosting, and Performance Monitoring. The right column is titled 'Grow & engage your audience' and contains six items: Google Analytics, Dynamic Links, Invites, AdMob, Cloud Messaging, Remote Config, App Indexing, and AdWords. Each item has an icon and a brief description.

Develop & test your app

- Realtime Database**
Store and sync app data in milliseconds
- Authentication**
Authenticate users simply and securely
- Cloud Storage**
Store and serve files at Google scale
- Test Lab for Android**
Test your app on devices hosted by Google
- Crash Reporting**
Find and prioritize bugs; fix them faster
- Cloud Functions**
Run mobile backend code without managing servers
- Hosting**
Deliver web app assets with speed and security
- Performance Monitoring**
Gain insight into your app's performance

Grow & engage your audience

- Google Analytics**
Get free and unlimited app analytics
- Dynamic Links**
Drive growth by using deep links with attribution
- Invites**
Make it easy to share your app and content
- AdMob**
Maximize revenue with in-app ads
- Cloud Messaging**
Send targeted messages and notifications
- Remote Config**
Modify your app without deploying a new version
- App Indexing**
Drive search traffic to your mobile app
- AdWords**
Drive installs with targeted ad campaigns

Two flavours:

1. Realtime Database

- Just one giant JSON-tree of data
- 'Old'

2. Cloud Firestore

- JSON Document collections, like MongoDB, CouchDB, Cassandra, etc.
- 'New' (as of October 2017)
- Still in beta



Steps:

1. Set up Firebase Project ('old skool' Realtime Database version)
2. Set up Angular Project
3. Enhance Angular Project with code
 - CRUD operations
4. Add Authentication
 - Custom Login
 - Social Login
5. Enhance Angular Project
 - Guards, (re-)routing
 - ...

Steps 3-5 can be switched!

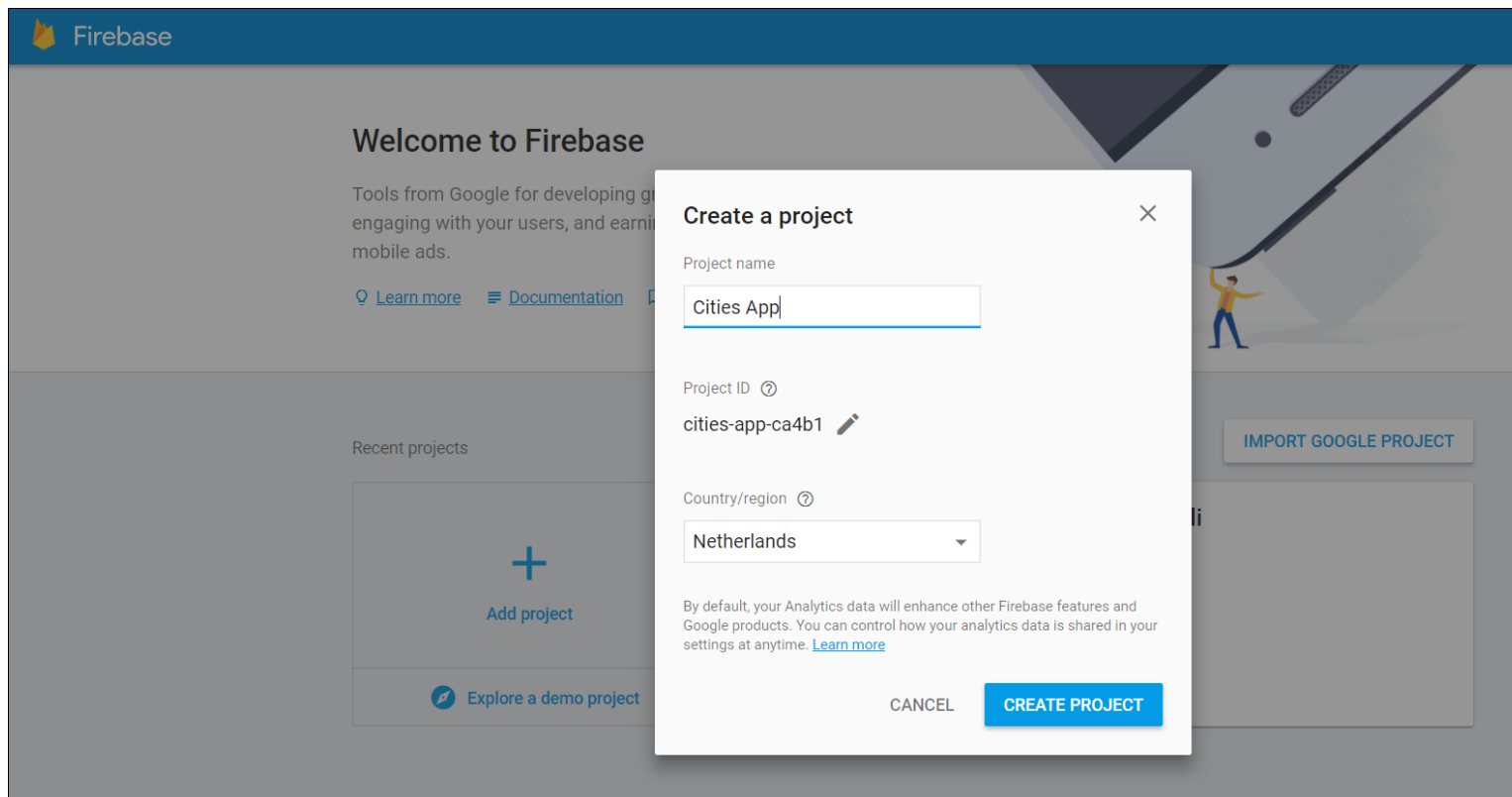


Set up the Firebase Project

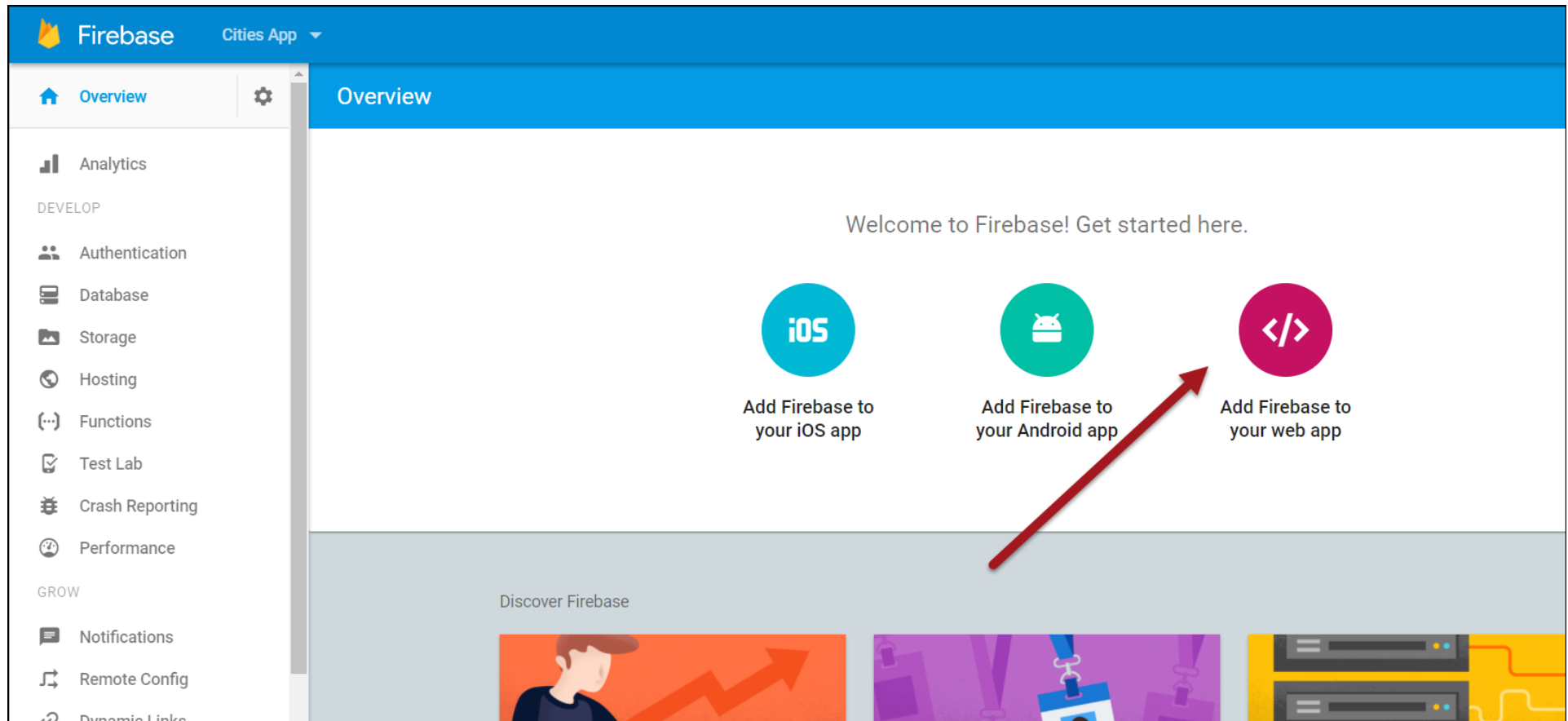
Create account, work with Firebase Console

Set up Firebase Project

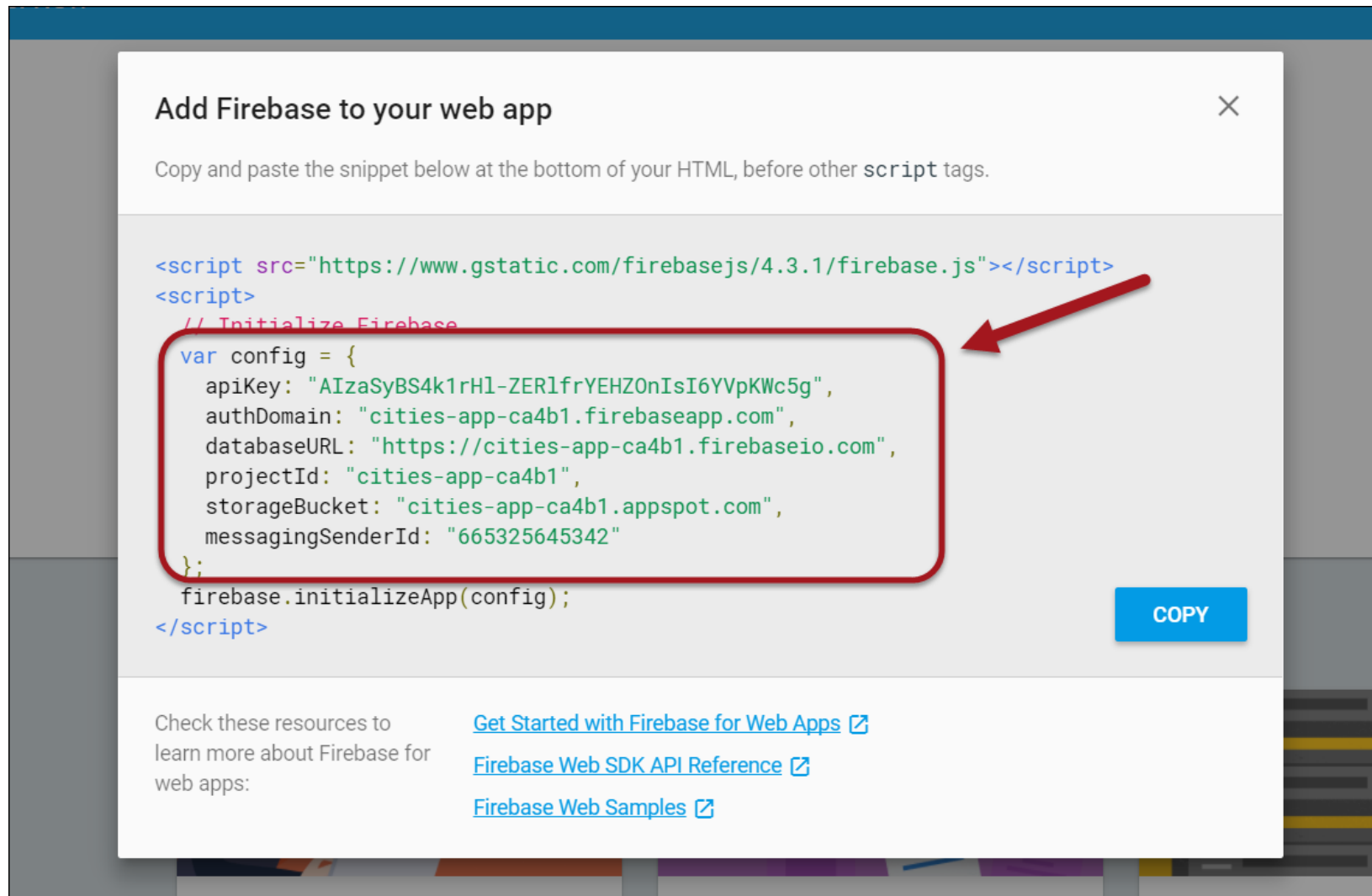
- Go to <https://firebase.google.com/>
- Log in with your Google Account, click Go To Console
- Create New Project, and give it a name.



Add Firebase to web app



Copy configuration information



Add Firebase to your web app ×

Copy and paste the snippet below at the bottom of your HTML, before other `script` tags.

```
<script src="https://www.gstatic.com/firebasejs/4.3.1/firebase.js"></script>
<script>
  // Initialize Firebase
  var config = {
    apiKey: "AIzaSyBS4k1rHl-ZERlfrYEHZOnIsI6YVpKWc5g",
    authDomain: "cities-app-ca4b1.firebaseio.com",
    databaseURL: "https://cities-app-ca4b1.firebaseio.com",
    projectId: "cities-app-ca4b1",
    storageBucket: "cities-app-ca4b1.appspot.com",
    messagingSenderId: "665325645342"
  };
  firebase.initializeApp(config);
</script>
```

COPY

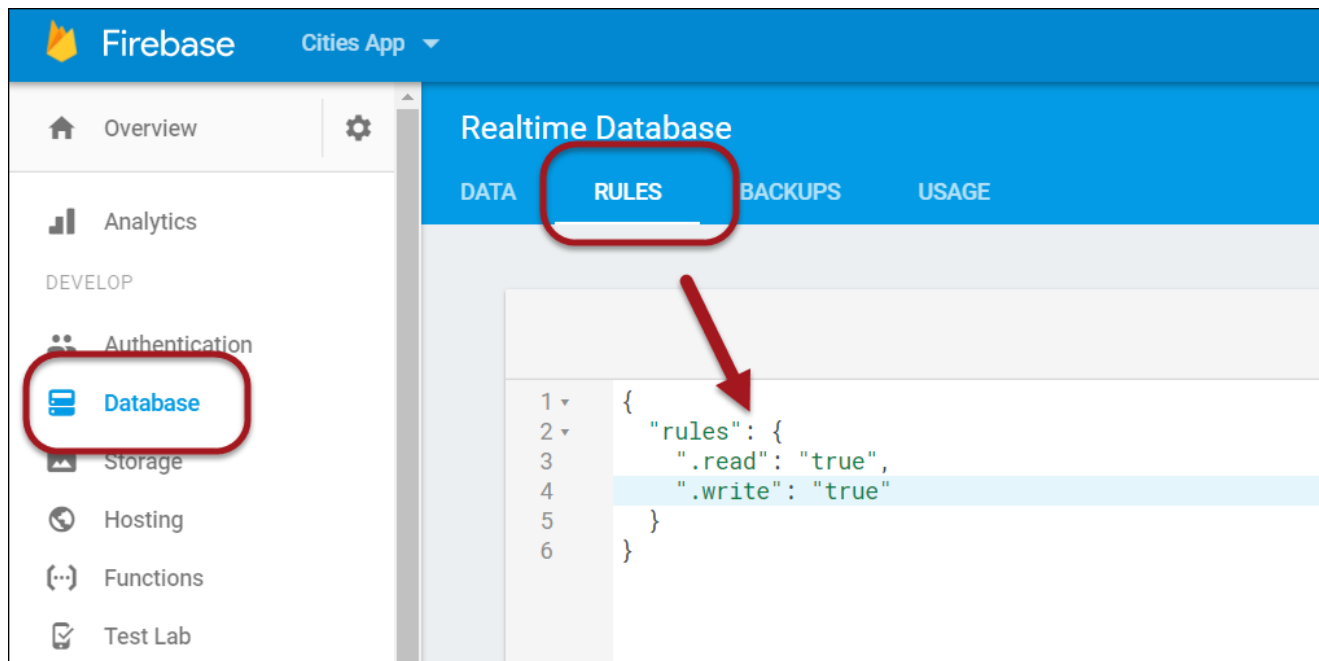
Check these resources to learn more about Firebase for web apps:

- [Get Started with Firebase for Web Apps](#)
- [Firebase Web SDK API Reference](#)
- [Firebase Web Samples](#)

Store this in a text file or snippet, for later reference and use in your Angular App

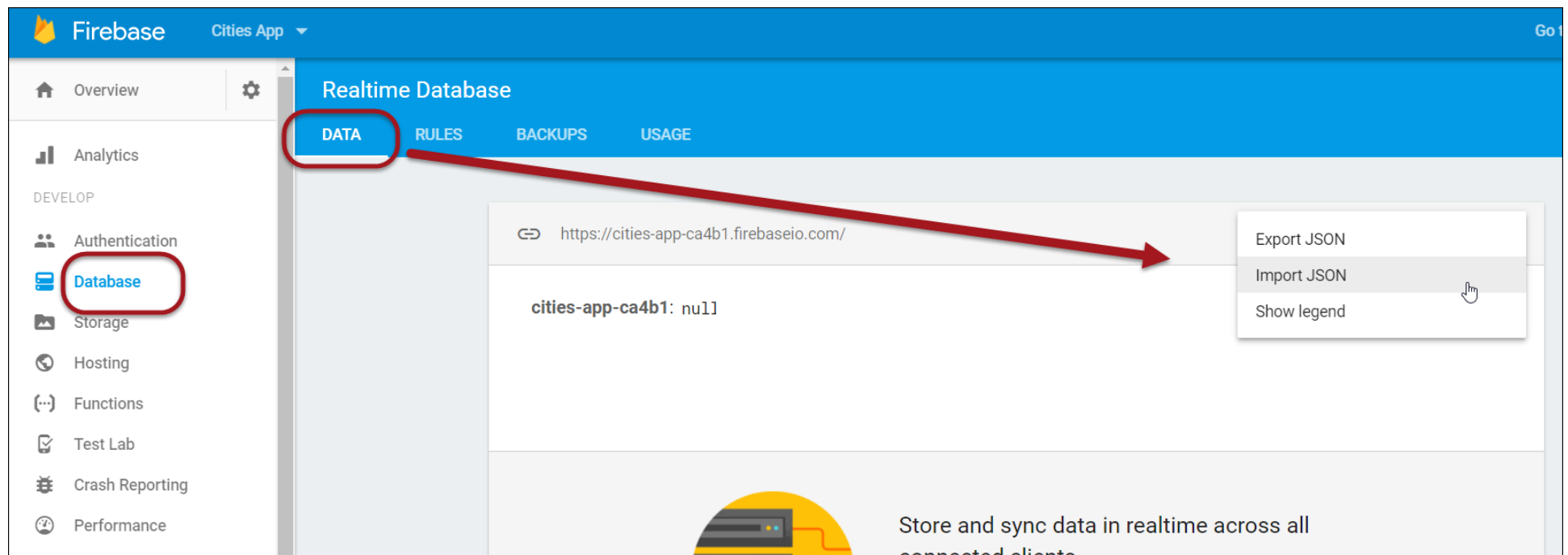
Set database rules

- We're not authenticating users for now – we will later on.
 - DON'T do this in production. This is for development purposes only
- Go to Database, Rules tab.
- Change `.read/.write` values to `true`.



Seed database

- Not absolutely necessary, we do it to have some data to display
- Firebase can import and export `.json`-files
- Add `cities.json` to the database



Firestore

Cities App

Overview

Analytics

DEVELOP

Authentication

Database

Storage

Hosting

Functions

Test Lab

Crash Reporting

Performance

GROW

Notifications

Remote Config

Dynamic Links

Realtime Database

DATA RULES BACKUPS USAGE

<https://cities-app-ca4b1.firebaseio.com/>

```
cities-app-ca4b1
├── cities
│   ├── 0
│   │   ├── highlights: "Martinitoren"
│   │   ├── id: 1
│   │   ├── name: "Groningen"
│   │   ├── province: "Groningen"
│   │   └── rating: 0
│   └── 1
│       ├── highlights: "Stadhuis"
│       ├── id: 2
│       ├── name: "Hengelo"
│       └── province: "Overijssel"
└── ...
```

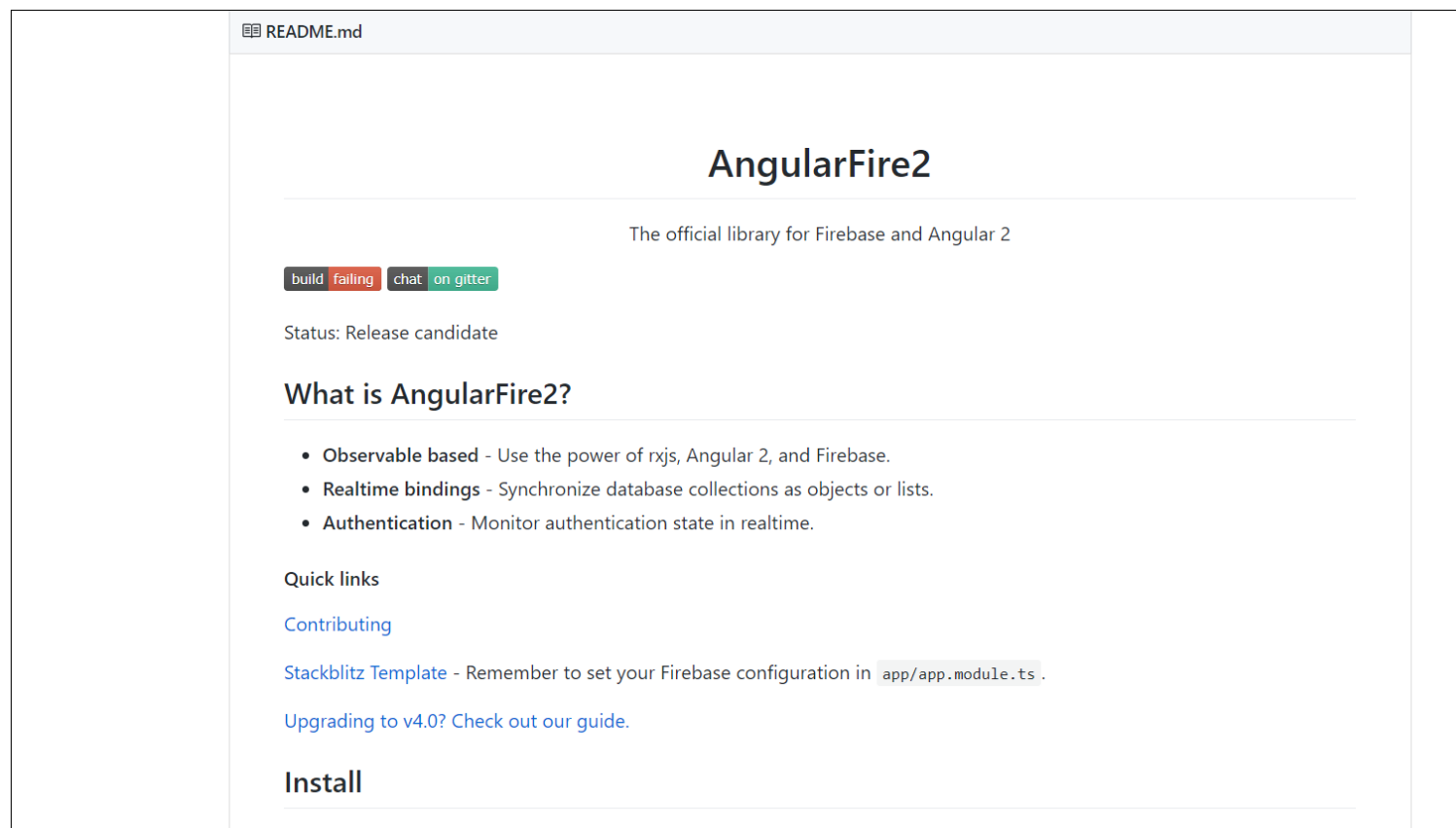


Setting up Angular Project

Create new project, add Firebase and AngularFire

AngularFire2

- AngularFire is the Angular Connector to Firebase
- You COULD do this by hand, but using AngularFire it's much easier
- <https://github.com/angular/angularfire2>



New Project using the CLI

- Create a new Angular Project using the CLI
 - We also added Bootstrap and Font-awesome for styling
- Inside the project folder, run
- `npm install firebase angularfire2 --save`

Install

```
npm install firebase angularfire2 --save
```

Defining Firebase Settings

- Tell Angular which modules to import and what configuration settings to use
- AngularFire is split up into separate modules:
 - `AngularFireModule`
 - `AngularFireDatabaseModule`
 - `AngularFireAuthModule`
- In `app.module.ts` also add firebase configuration you saved earlier

```

...
// Firebase stuff
import {AngularFireModule} from 'angularfire2';
import {AngularFireDatabaseModule} from 'angularfire2/database';
import {FormsModule} from '@angular/forms';
import {HttpModule} from '@angular/http';

// Initialize Firebase
let firebaseConfig = {
  apiKey      : "AIzaSyBS4k1rHKUY-ERlfrYEHZ0nIsI6YVpKWc5g",
  authDomain  : "cities-app-ca4b2.firebaseio.com",
  databaseURL  : "https://cities-app-ca4b1.firebaseio.com",
  projectId   : "cities-app-ca4b2",
  storageBucket : "cities-app-ca4b2.appspot.com",
  messagingSenderId: "66532564234612"
};

@NgModule({
  imports      : [
    BrowserModule,
    FormsModule,
    HttpModule,
    AngularFireModule.initializeApp(firebaseConfig),
    AngularFireDatabaseModule
  ],
  ...
})
export class AppModule {
}

```

Show data in component

Delete default stuff in `AppComponent.ts`

```
import {Component, OnInit} from '@angular/core';
import {
  AngularFireDatabase, FirebaseListObservable
} from 'angularfire2/database';
```

Import Firebase stuff

```
@Component({
  selector    : 'app-root',
  templateUrl: './app.component.html'
})
```

```
export class AppComponent implements OnInit {
  cities$: FirebaseListObservable<any[]>;
```

Create Observable

```
  constructor(private af: AngularFireDatabase) {
  }
```

Inject
AngularFireDatabase

```
  ngOnInit() {
    this.cities$ = this.af.list('/cities');
  }
```

Get Cities

```
}
```

HTML

```
<!--Fetch a list of cities from Fireabse -->
<h1>List of Cities from Firebase</h1>
<ul class="list-group">
  <li class="list-group-item"
    *ngFor="let city of cities$ | async">
    {{ city.id}} - {{ city.name}}
  </li>
</ul>
```

List of Cities from Firebase

1 - Groningen

2 - Hengelo

3 - Den Haag

4 - Enschede

5 - Heerlen

AngularFireDatabase options

- Fetch data
 - Fetch as Object, import `FirebaseObjectObservable`
 - Fetch as List, import `FirebaseListObservable`
- You get the same data, in different formatting, with different methods

API Summary

The table below highlights some of the common methods on the `FirebaseObjectObservable`.

method	
<code>set(value: any)</code>	Replaces the current value in the database with the new value specified as the parameter. This is called a destructive update .
<code>update(value: Object)</code>	Updates the current value in the database with the new value specified as the parameter. This is called a non-destructive update . Only the key level are not replaced.
<code>remove()</code>	Deletes all data in the database.

API Summary

The table below highlights some of the common methods on the `FirebaseListObservable`.

method	
<code>push(value: any)</code>	Creates a new record on the list, using the Realtime Database's push-ids.
<code>update(keyRefOrSnap: string)</code>	Updates the item by key. If no parameter is provided, the entire list will be updated.
<code>remove(key: string?)</code>	Deletes the item by key. If no parameter is provided, the entire list will be deleted.

AngularFire Documentation

```
items: FirebaseListObservable<any[]>;
constructor(db: AngularFireDatabase) {
  this.items = db.list('/items');
}
```

Developer Guide

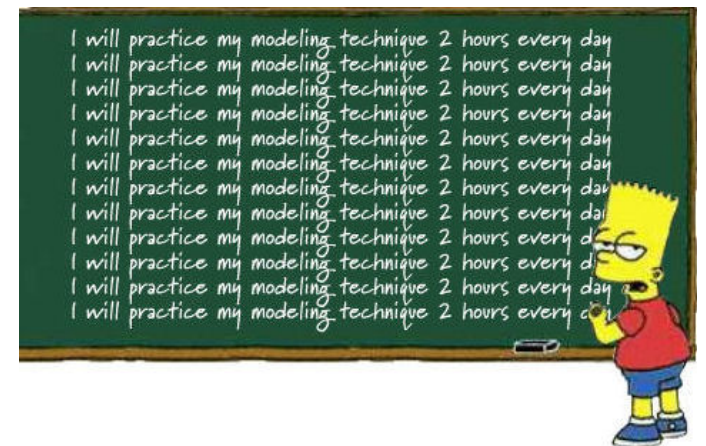
If you want to get started quickly on building with AngularFire2, check out our 5 step developer guide that will teach you everything you need to know to be productive with AngularFire2.

1. [Installation & Setup](#)
2. [Retrieving data as objects - FirebaseObjectObservable](#)
3. [Retrieving data as lists - FirebaseListObservable](#)
4. [Querying lists](#)
5. [User Authentication - FirebaseAuthentication](#)
6. [Using AngularFire2 with Ionic 2](#)
7. [Using AngularFire2 with Ionic 3 and Angular 4](#)
8. [Deploying AngularFire2 to FirebaseHosting](#)

Sparse, but it will get you started: <https://github.com/angular/angularfire2>

Workshop

- Get yourself a Firebase account and create project in the console
- Don't forget to set `.read/.write` values to `true` (for the moment)
- Create a new, empty Angular CLI - project
- Add Firebase + AngularFire to it
- Get data from database and show it in the UI
- Experiment with different options for `FirebaseObjectObservable` and `FirebaseListObservable` (for example: querying a List)
- <https://github.com/angular/angularfire2>
- Example: `/500-Firebase`



AngularFire

AngularFire

The official library for Firebase and Angular

build

passing

chat

on gitter

Status: Release candidate

What is AngularFire?

- **Observable based** - Use the power of RxJS, Angular, and Firebase.
- **Realtime bindings** - Synchronize data in realtime.
- **Authentication** - Log users in with a variety of providers and monitor authentication state in realtime.
- **Offline Data** - Store data offline automatically with AngularFirestore.
- **ngrx friendly** - Integrate with ngrx using AngularFire's action based APIs.

Quick links

[Contributing](#)

[Stackblitz Template](#) - Remember to set your Firebase configuration in `app/app.module.ts`.

[Upgrading to v5.0?](#) Check out our guide.


Having troubles? Get help on the [Firebase Mailing List](#) (officially supported), the [Firebase Community Slack](#) (look for the `#angularfire2` room), [Gitter](#), or [Stack Overflow](#).

<https://github.com/angular/angularfire2>

AngularFirestore.com - tutorials

AngularFirestore

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Detailed code snippets and examples designed to help you build and ship real-world apps for web, mobile, and desktop.

🖥 Videos

Fast-paced video lessons covering beginner, intermediate, and advanced topics about app development

⚙ Slack Discussion

Join the Angular Firestore Slack team to connect with developers working with the same technology stack and get 1-on-1 project consulting.

<https://angularfirebase.com/>