Angular 10 Firestore CRUD: add/get/update/delete documents with AngularFireStore

Last modified: December 10, 2020 (https://bezkoder.com/angular-10-firestore-crud-angularfire/) bezkoder (https://bezkoder.com/author/bezkoder/) Angular (https://bezkoder.com/category/angular/), Firebase (https://bezkoder.com/category/firebase/)

In this tutorial, I will show you how to build Angular 10 CRUD App with Firebase Cloud Firestore that uses `AngularFireStore` service to get/add/update/delete documents in a collection.

Related Posts:
– Angular 10 Firebase CRUD Realtime DB | AngularFireDatabase (https://bezkoder.com/angular-10-firebase-crud/)
– Angular 10 Firebase Storage: File Upload/Display/Delete example (https://bezkoder.com/firebase-storage-angular-10-file-upload/)
– Angular 10 CRUD Application example with Web API (https://bezkoder.com/angular-10-crud-app/)

Newer version: Angular 11 Firestore CRUD example (https://bezkoder.com/angular-11-firestore-crud-angularfirestore/)

Contents [hide]

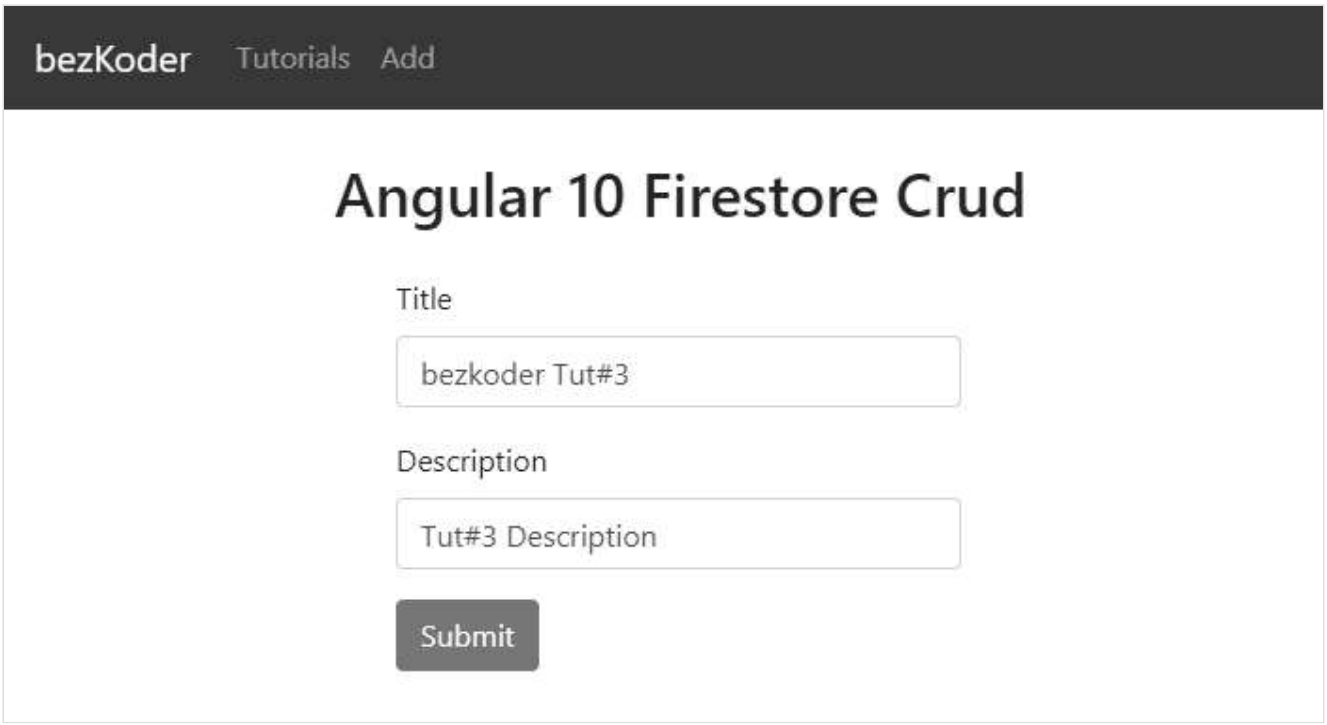
Angular 10 Firestore CRUD Overview

We're gonna build an Angular 10 Firestore App using @angular/fire (https://github.com/angular/angularfire) library in which:

- Each Tutorial has id, title, description, published status.
- We can create, retrieve, update, delete Tutorials.

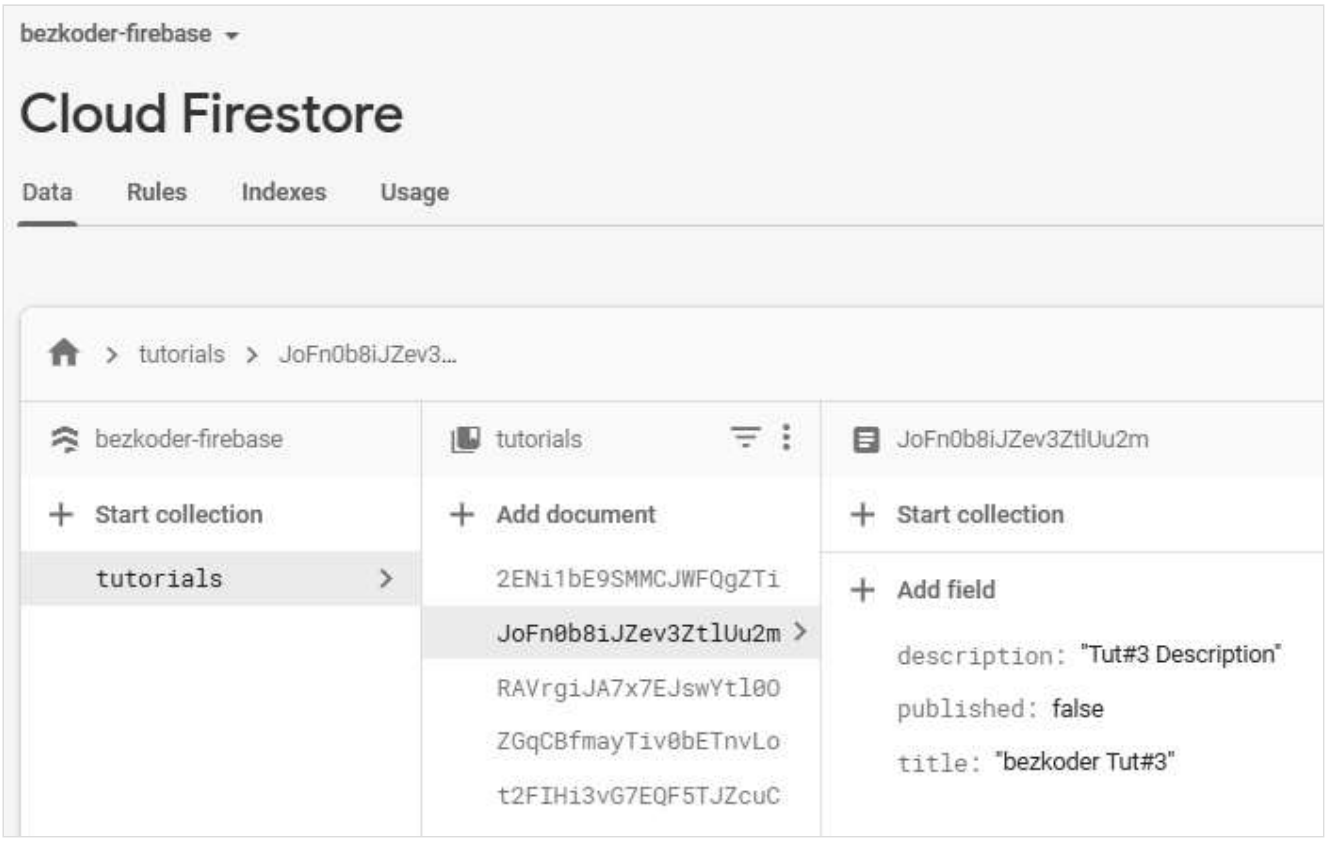
Here are the screenshots:

– Create a new Tutorial:

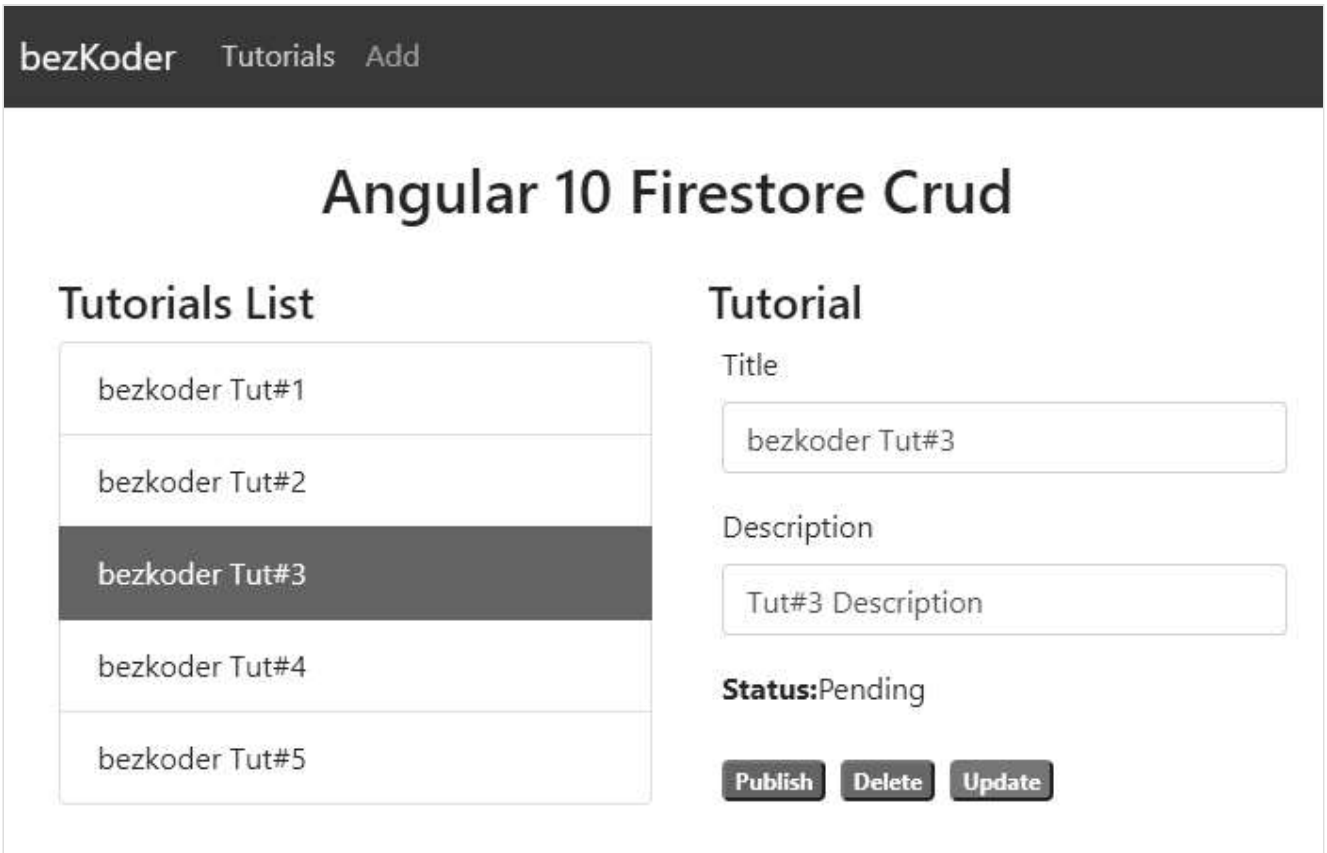


Cloud Firestore after the

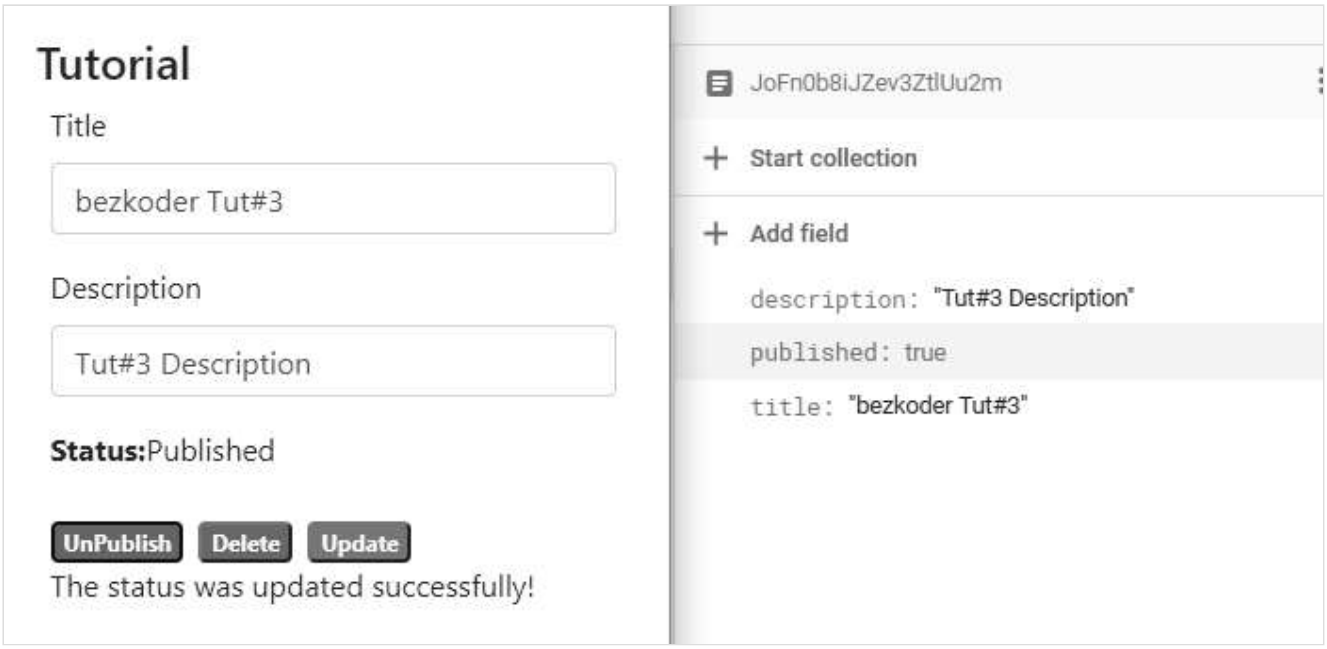
Create Operations:



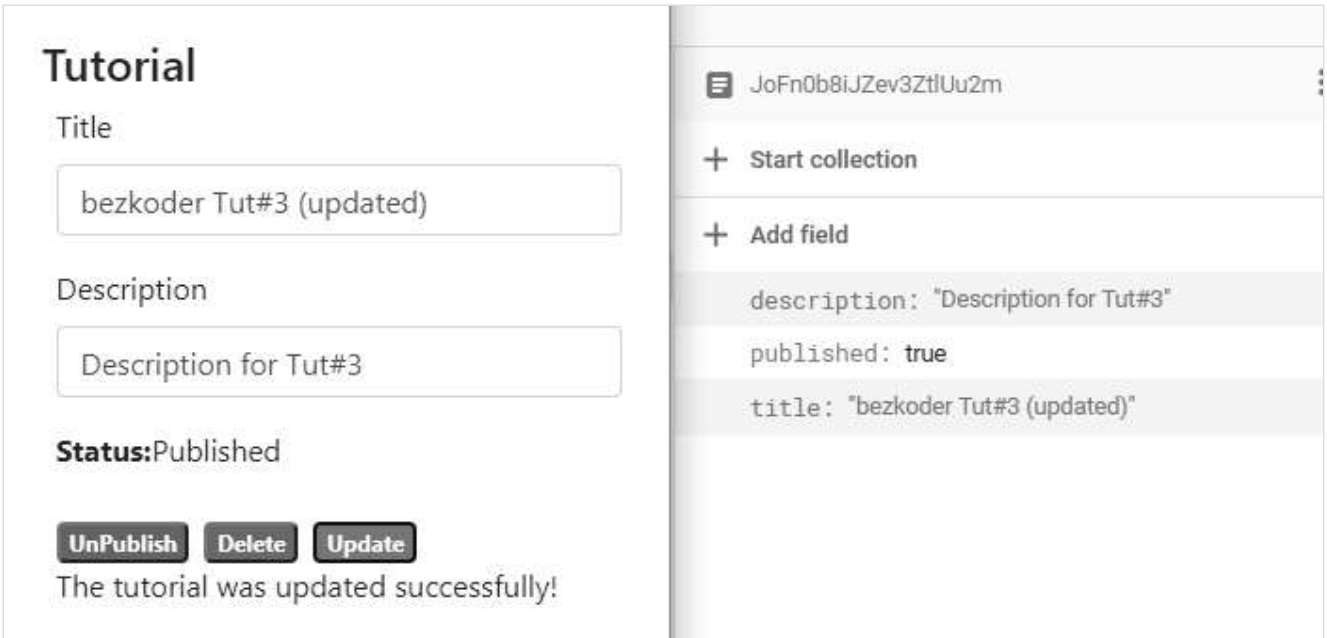
– Retrieve all Tutorials, the details will show when clicking on any Tutorial:



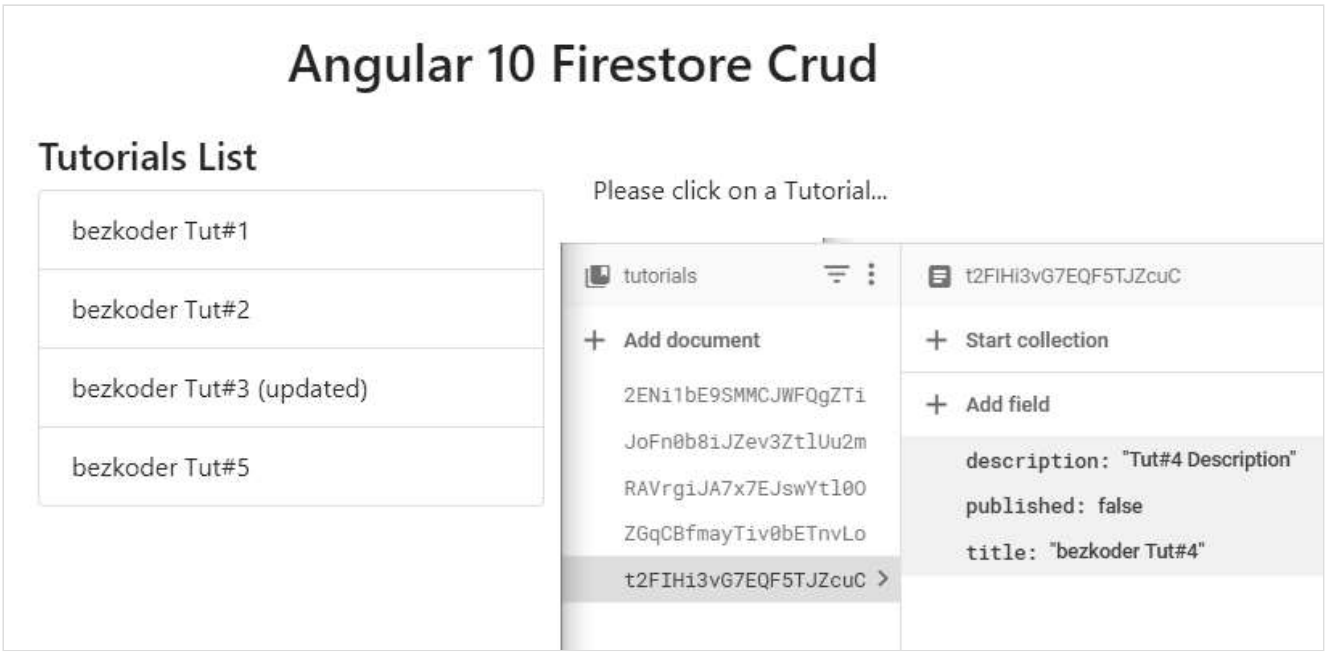
– Change status to **Published**/**Pending** using **Publish**/**UnPublish** button:



– Update the Tutorial details with **Update** button:



– Delete the Tutorial using Delete button:



AngularFireStore service

`@angular/fire` provides `AngularFireStore` service that allows us to work with the Firebase Firestore. It's an efficient, low-latency solution for apps that require synced states across clients in realtime.

```
import { AngularFireStore } from '@angular/fire/store';

export class TutorialService {
  constructor(private db: AngularFireStore) { }
}
```

AngularFireStore for Document

The `AngularFirestoreDocument` is a service for manipulating and streaming document data which is created via `AngularFireStore` service.

– Create a document binding/ Retrieve:

```
tutorial: AngularFirestoreDocument<any>;
// db: AngularFireStore
this.tutorial = db.doc('tutorial');

// or
Observable<any> tutorial = db.doc('tutorial').valueChanges();
```

– Create/Update a document:

```
const tutRef = db.doc('tutorial');

// set() for destructive updates
tutRef.set({ title: 'zkoder Tutorial'});
```

– Update a document:

```
const tutRef= db.doc('tutorial');
tutRef.update({ url: 'bezkoder.com/zkoder-tutorial' });
```

– Delete a document:

```
const tutRef = db.doc('tutorial');
tutRef.delete();
```

AngularFireStore for Collection

Through the `AngularFireStore` service, we can create `AngularFirestoreCollection` service that helps to synchronize data as collection.

– Create a collection binding/ Retrieve:
+ Get an `Observable` of data as a synchronized array of JSON objects without snapshot metadata.

```
tutorials: Observable<any[]>;
// db: AngularFireStore
this.tutorials = db.collection('tutorials').valueChanges();
```

+ Get an `Observable` of data as a synchronized array of `DocumentChangeAction[]` with metadata (the underyling `DocumentReference` and snapshot id):

```
tutorials: Observable<any[]>;
this.tutorials = db.collection('tutorials').snapshotChanges();
```

– Create a collection and add a new document:

```
const tutorialsRef = db.collection('tutorials');
const tutorial = { title: 'zkoder Tutorial', url: 'bezkoder.com/zkoder-tutorial' };
tutorialsRef.add({ ...tutorial });
```

– Update a collection:
+ destructive update using `set()` : delete everything currently in place, then save the new value

```
const tutorialsRef = db.collection('tutorials');
tutorialsRef.doc('id').set({ title: 'zkoder Tut#1', url: 'bezkoder.com/zkoder-tut-1'
```

+ non-destructive update using `update()` : only updates the specified values

```
const tutorialsRef = db.collection('tutorials');
tutorialsRef.doc('id').update({ title: 'zkoder new Tut#1' });
```

– Delete a document in collection:

```
const tutorialsRef = db.collection('tutorials');
tutorialsRef.doc('id').delete();
```

– Delete entire collection: Deleting Firestore collections from a Web client is not recommended.
You can find the solution here (https://firebase.google.com/docs/firestore/solutions/delete-collections).

Technology

- Angular 10
- firebase 7
- @angular/fire 6
- rxjs 6

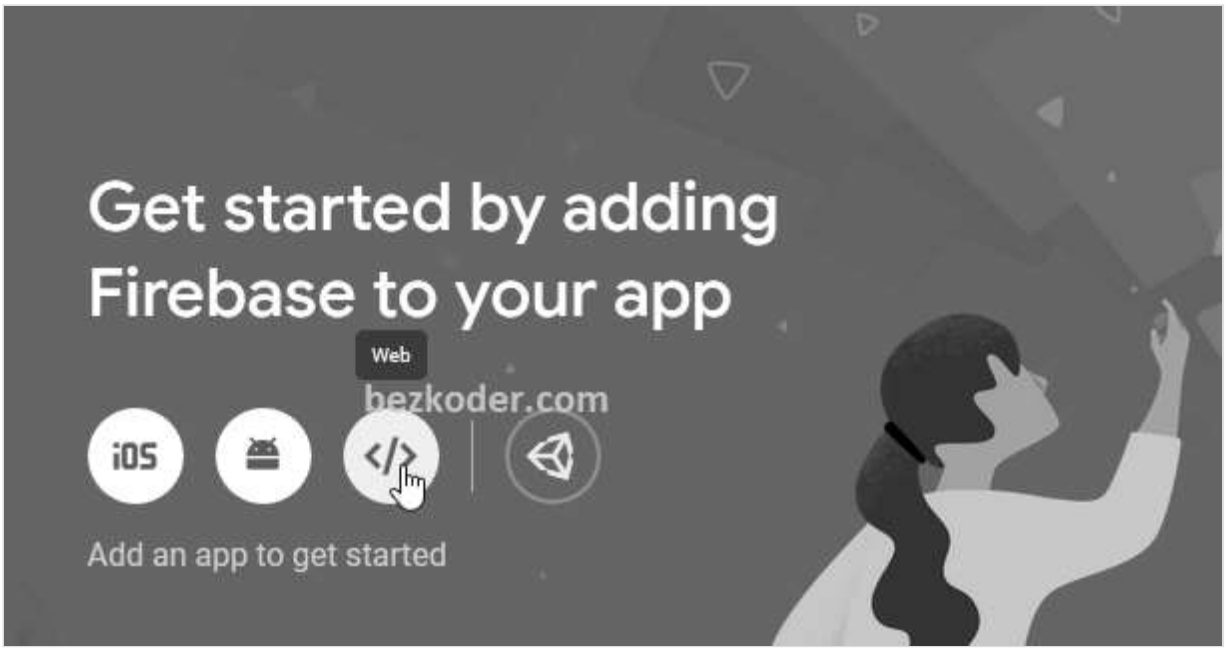
Setup the Firebase Project

Go to Firebase Console (https://console.firebase.google.com/), login with your Google Account, then click on Add Project.

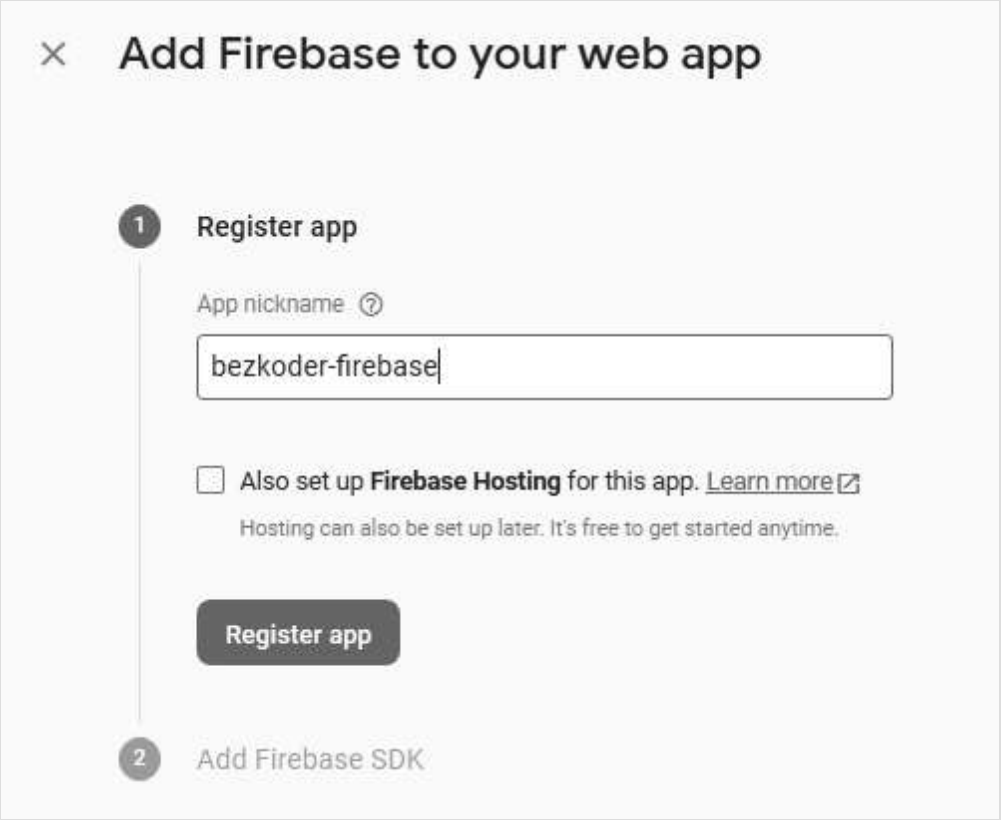
You will see the window like this:

Enter Project name, set Project Id and click on **Continue.**
Turn off *Enable Google Analytics for this project*, then click **Create Project.**

Now, browser turns into following view:



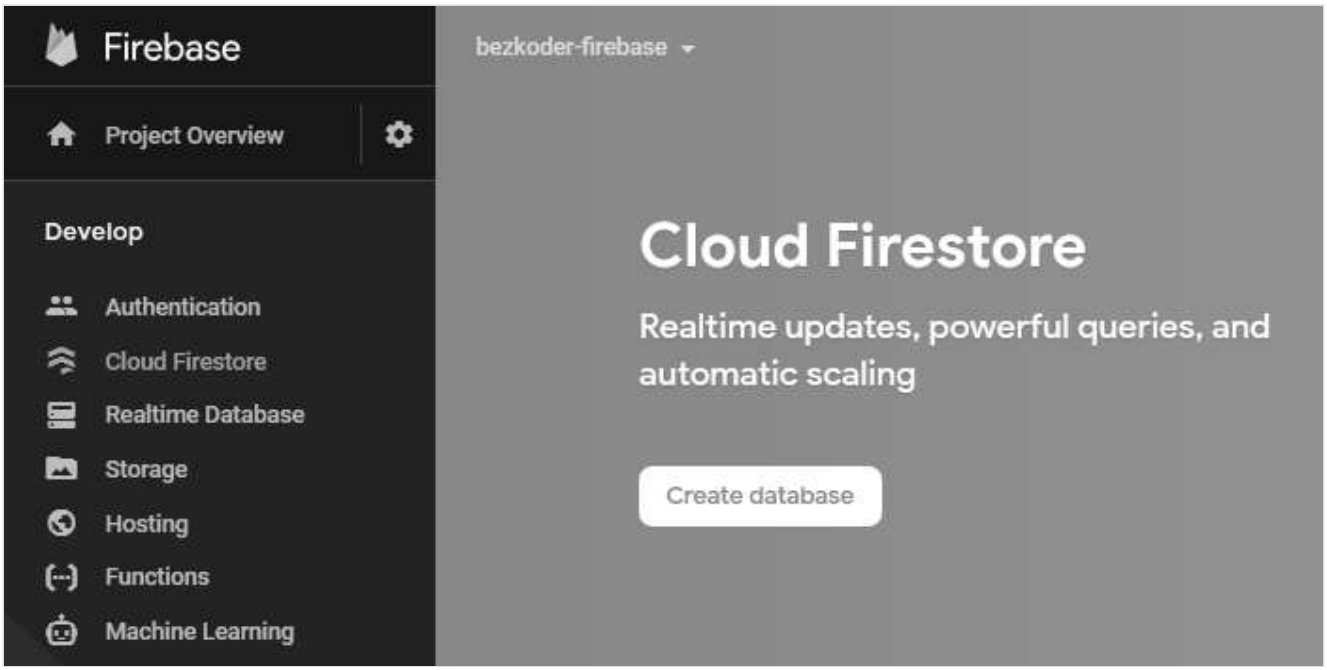
If you don't see it, just choose Project **Overview.**
Click on **Web App**, a window will be shown:



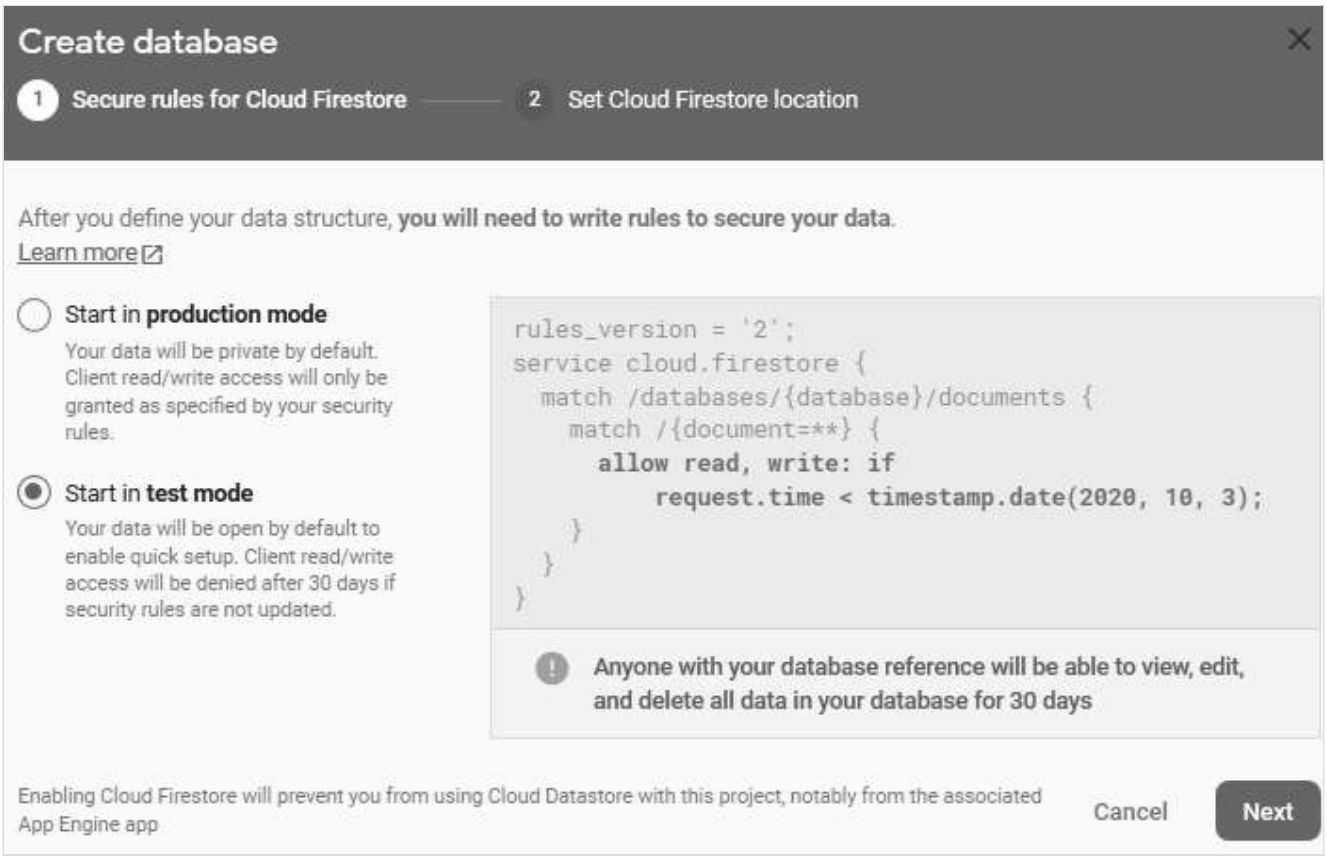
Set the nickname and choose **Register App** for next step.

Copy the script for later use.

Choose **Cloud Firestore** on the left (list of Firebase features) -> **Create Database.**

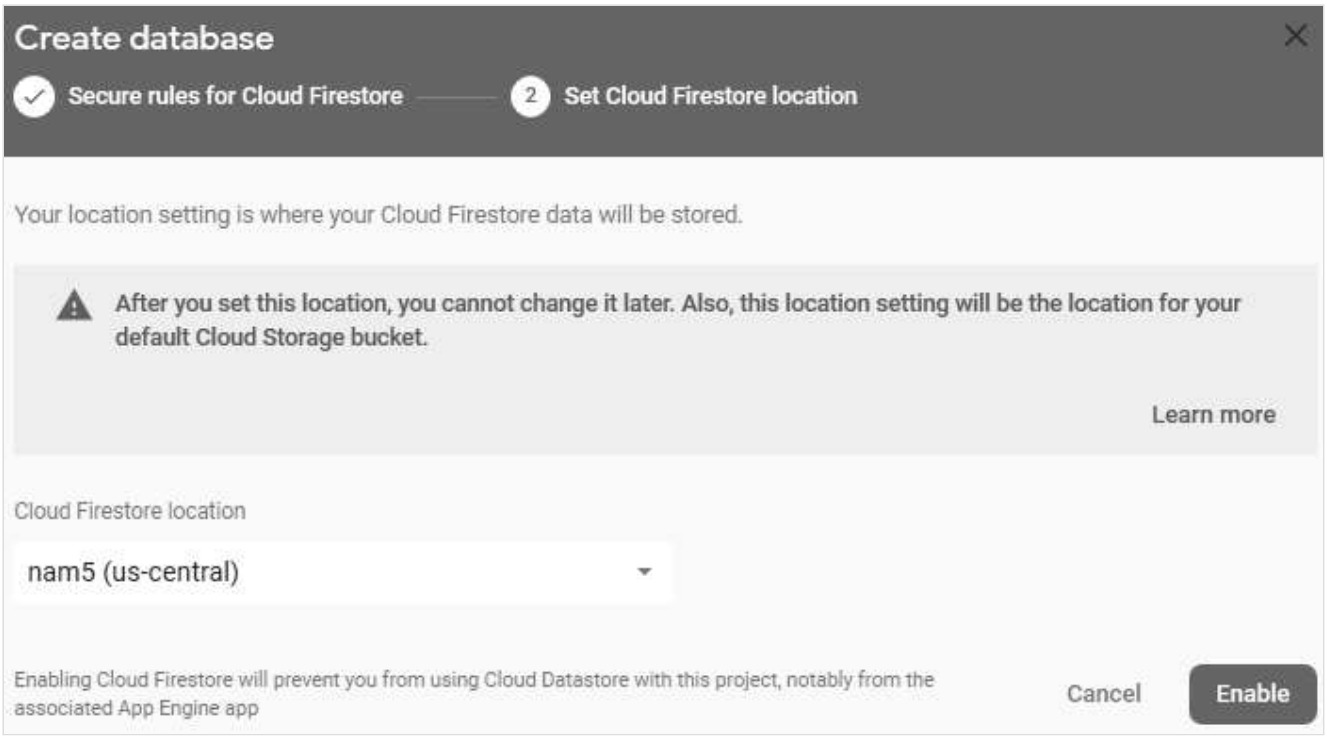


In this tutorial, we don't implement Authentication, so let's choose **test mode**:



Or if you come from another situation, just open Tab **Rules**, then change `allow read, write` value to `true`.

Finally, we need to set Cloud Firestore Location:



Setup Angular 10 Project

Let's open cmd and use Angular CLI to create a new Angular Project as following command:

```
ng new Angular10FirestoreCrud
? Would you like to add Angular routing? Yes
? Which stylesheet format would you like to use? CSS
```

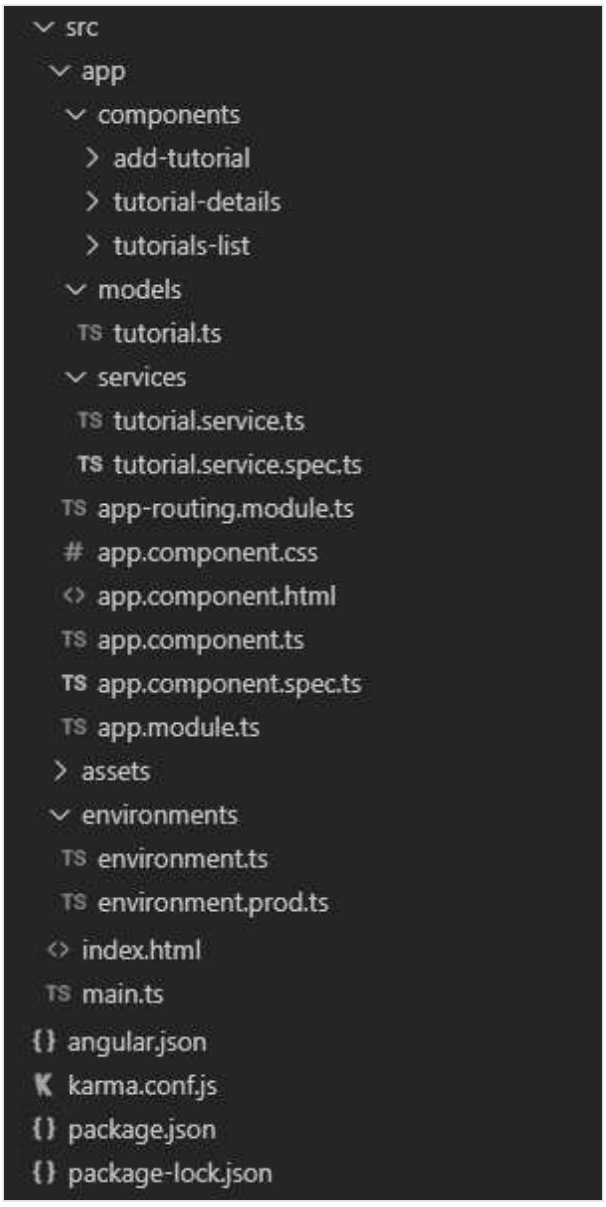
We also need to generate some Components and Services:

```
ng g s services/tutorial

ng g c components/add-tutorial
ng g c components/tutorial-details
ng g c components/tutorials-list
```

Now you can see that our project directory structure looks like this.

Project Structure



Let me explain it briefly.

- `environment.ts` configures information to connect with Firebase Project.
- `models/tutorial.ts` defines data model class.
- `services/tutorial.service.ts` exports `TutorialService` that uses `@angular/fire`'s `AngularFireStore` to interact with Firebase FireStore.
- There are 3 components that uses `TutorialService`:
  - `add-tutorial` for creating new item
  - `tutorials-list` contains list of items, parent of `tutorial-details`
  - `tutorial-details` shows item details
- `app-routing.module.ts` defines routes for each component.
- `app.component` contains router view and navigation bar.
- `app.module.ts` declares Angular components and imports necessary environment & modules.

Integrate Firebase into Angular 10 App

First run the command: `npm install firebase @angular/fire`.

Open **src**/**environments**/*environment.ts*, add Firebase configuration that we have saved when Popup window was shown:

```
export const environment = {
  production: false,
  firebase: {
    apiKey: 'xxx',
    authDomain: 'bezkoder-firebase.firebaseapp.com',
    databaseURL: 'https://bezkoder-firebase.firebaseio.com',
    projectId: 'bezkoder-firebase',
    storageBucket: 'bezkoder-firebase.appspot.com',
    messagingSenderId: 'xxx',
    appId: 'xxx'
  }
};
```

Open *app.module.ts*, import `AngularFireModule`, `AngularFirestoreModule` and `environment`:

```
import { BrowserModule } from '@angular/platform-browser';
import { NgModule } from '@angular/core';
import { FormsModule } from '@angular/forms';

import { AngularFireModule } from '@angular/fire';
import { AngularFirestoreModule } from '@angular/fire/firestore';
import { environment } from '../environments/environment';

import { AppRoutingModule } from './app-routing.module';
import { AppComponent } from './app.component';
import { AddTutorialComponent } from './components/add-tutorial/add-tutorial.compone
import { TutorialDetailsComponent } from './components/tutorial-details/tutorial-det
import { TutorialsListComponent } from './components/tutorials-list/tutorials-list.c

@NgModule({
  declarations: [
    AppComponent,
    AddTutorialComponent,
    TutorialDetailsComponent,
    TutorialsListComponent
  ],
  imports: [
    BrowserModule,
    AppRoutingModule,
    FormsModule,
    AngularFireModule.initializeApp(environment.firebase),
    AngularFirestoreModule, // for firestore
  ],
  providers: [],
  bootstrap: [AppComponent]
})
export class AppModule { }
```

Define Model Class

Let's create `Tutorial` class with 4 fields: `id`, `title`, `description`, `published`.

models/*tutorial.ts*

```
export default class Tutorial {
  id: string;
  title: string;
  description: string;
  published = false;
}
```

Create Data Service

This service will use `AngularFirestore` and `AngularFirestoreCollection` to interact with Firebase Firestore. It contains necessary functions for CRUD operations.

services/*tutorial.service.ts*

```
import { Injectable } from '@angular/core';
import { AngularFirestore, AngularFirestoreCollection } from '@angular/fire/firestor
import Tutorial from '../models/tutorial';

@Injectable({
  providedIn: 'root'
})
export class TutorialService {

  private dbPath = '/tutorials';

  tutorialsRef: AngularFirestoreCollection<Tutorial> = null;

  constructor(private db: AngularFirestore) {
    this.tutorialsRef = db.collection(this.dbPath);
  }

  getAll(): AngularFirestoreCollection<Tutorial> {
    return this.tutorialsRef;
  }

  create(tutorial: Tutorial): any {
    return this.tutorialsRef.add({ ...tutorial });
  }

  update(id: string, data: any): Promise<void> {
    return this.tutorialsRef.doc(id).update(data);
  }

  delete(id: string): Promise<void> {
    return this.tutorialsRef.doc(id).delete();
  }
}
```

Component for creating Document

This component has a Form to submit new Tutorial with 2 fields: `title` & `description`. It calls `TutorialService.create()` method.

components/**add-tutorial**/*add-tutorial.component.ts*

```
import { Component, OnInit } from '@angular/core';
import { TutorialService } from 'src/app/services/tutorial.service';
import Tutorial from 'src/app/models/tutorial';

@Component({
  selector: 'app-add-tutorial',
  templateUrl: './add-tutorial.component.html',
  styleUrls: ['./add-tutorial.component.css']
})
export class AddTutorialComponent implements OnInit {

  tutorial: Tutorial = new Tutorial();
  submitted = false;

  constructor(private tutorialService: TutorialService) { }

  ngOnInit(): void {
  }

  saveTutorial(): void {
    this.tutorialService.create(this.tutorial).then(() => {
      console.log('Created new item successfully!');
      this.submitted = true;
    });
  }

  newTutorial(): void {
    this.submitted = false;
    this.tutorial = new Tutorial();
  }
}
```

components/**add-tutorial**/*add-tutorial.component.html*

```
<div class="submit-form">
  <div *ngIf="!submitted">
    <div class="form-group">
      <label for="title">Title</label>
      <input
        type="text"
        class="form-control"
        id="title"
        required
        [(ngModel)]="tutorial.title"
        name="title"
      />
    </div>

    <div class="form-group">
      <label for="description">Description</label>
      <input
        class="form-control"
        id="description"
        required
        [(ngModel)]="tutorial.description"
        name="description"
      />
    </div>

    <button (click)="saveTutorial()" class="btn btn-success">Submit</button>
  </div>

  <div *ngIf="submitted">
    <h4>You submitted successfully!</h4>
    <button class="btn btn-success" (click)="newTutorial()">Add</button>
  </div>
</div>
```

Component for List of Documents Display

This component calls `TutorialService` methods:

- `getAll()`
- `deleteAll()`

components/**tutorials-list**/*tutorials-list.component.ts*

```
import { Component, OnInit } from '@angular/core';
import { TutorialService } from 'src/app/services/tutorial.service';
import { map } from 'rxjs/operators';

@Component({
  selector: 'app-tutorials-list',
  templateUrl: './tutorials-list.component.html',
  styleUrls: ['./tutorials-list.component.css']
})
export class TutorialsListComponent implements OnInit {

  tutorials: any;
  currentTutorial = null;
  currentIndex = -1;
  title = '';

  constructor(private tutorialService: TutorialService) { }

  ngOnInit(): void {
    this.retrieveTutorials();
  }

  refreshList(): void {
    this.currentTutorial = null;
    this.currentIndex = -1;
    this.retrieveTutorials();
  }

  retrieveTutorials(): void {
    this.tutorialService.getAll().snapshotChanges().pipe(
      map(changes =>
        changes.map(c =>
          ({ id: c.payload.doc.id, ...c.payload.doc.data() })
        )
      )
    ).subscribe(data => {
      this.tutorials = data;
    });
  }

  setActiveTutorial(tutorial, index): void {
    this.currentTutorial = tutorial;
    this.currentIndex = index;
  }
}
```

In the code above, to get the `id` of each item, we use `snapshotChanges()` with RxJS `map()` operator. This `id` is unique and important for update operation.

We also have `refreshList()` function for every time delete operation is done.

components/**tutorials-list**/*tutorials-list.component.html*

```
<div class="list row">
  <div class="col-md-6">
    <h4>Tutorials List</h4>
    <ul class="list-group">
      <li
        class="list-group-item"
        *ngFor="let tutorial of tutorials; let i = index"
        [class.active]="i == currentIndex"
        (click)="setActiveTutorial(tutorial, i)"
      >
        {{ tutorial.title }}
      </li>
    </ul>
  </div>
  <div class="col-md-6">
    <div *ngIf="currentTutorial">
      <app-tutorial-details
        (refreshList)="refreshList()"
        [tutorial]="currentTutorial"
      ></app-tutorial-details>
    </div>

    <div *ngIf="!currentTutorial">
      <br />
      <p>Please click on a Tutorial...</p>
    </div>
  </div>
</div>
```

You can see that when we click on any item, `setActiveTutorial()` function will be invoked to change current active Tutorial, which data is passed to `tutorial-details` component.

Component for Document details

This component is the child of `tutorial-list`. It bind `tutorial` data and emit `refreshList` event to the parent.

For getting update, delete the Tutorial, we're gonna use two `TutorialService` methods:

- `update()`
- `delete()`

components/**tutorial-details**/*tutorial-details.component.ts*

```
import { Component, OnInit, Input, OnChanges, Output, EventEmitter } from '@angular/
import { TutorialService } from 'src/app/services/tutorial.service';
import Tutorial from 'src/app/models/tutorial';

@Component({
  selector: 'app-tutorial-details',
  templateUrl: './tutorial-details.component.html',
  styleUrls: ['./tutorial-details.component.css']
})
export class TutorialDetailsComponent implements OnInit, OnChanges {

  @Input() tutorial: Tutorial;
  @Output() refreshList: EventEmitter<any> = new EventEmitter();
  currentTutorial: Tutorial = null;
  message = '';

  constructor(private tutorialService: TutorialService) { }

  ngOnInit(): void {
    this.message = '';
  }

  ngOnChanges(): void {
    this.message = '';
    this.currentTutorial = { ...this.tutorial };
  }

  updatePublished(status): void {
    this.tutorialService.update(this.currentTutorial.id, { published: status })
      .then(() => {
        this.currentTutorial.published = status;
        this.message = 'The status was updated successfully!';
      })
      .catch(err => console.log(err));
  }

  updateTutorial(): void {
    const data = {
      title: this.currentTutorial.title,
      description: this.currentTutorial.description
    };

    this.tutorialService.update(this.currentTutorial.id, data)
      .then(() => this.message = 'The tutorial was updated successfully!')
      .catch(err => console.log(err));
  }
```

```
  deleteTutorial(): void {
    this.tutorialService.delete(this.currentTutorial.id)
      .then(() => {
        this.refreshList.emit();
        this.message = 'The tutorial was updated successfully!';
      })
      .catch(err => console.log(err));
  }
}
```

components/**tutorial-details**/*tutorial-details.component.html*

```
<div *ngIf="currentTutorial" class="edit-form">
  <h4>Tutorial</h4>
  <form>
    <div class="form-group">
      <label for="title">Title</label>
      <input
        type="text"
        class="form-control"
        id="title"
        [(ngModel)]="currentTutorial.title"
        name="title"
      />
    </div>
    <div class="form-group">
      <label for="description">Description</label>
      <input
        type="text"
        class="form-control"
        id="description"
        [(ngModel)]="currentTutorial.description"
        name="description"
      />
    </div>

    <div class="form-group">
      <label><strong>Status:</strong></label>
      {{ currentTutorial.published ? "Published" : "Pending" }}
    </div>
  </form>

  <button
    class="badge badge-primary mr-2"
    *ngIf="currentTutorial.published"
    (click)="updatePublished(false)"
  >
    UnPublish
  </button>
  <button
    *ngIf="!currentTutorial.published"
    class="badge badge-primary mr-2"
    (click)="updatePublished(true)"
  >
    Publish
  </button>

  <button class="badge badge-danger mr-2" (click)="deleteTutorial()">
```

```
      Delete
    </button>

    <button type="submit" class="badge badge-success" (click)="updateTutorial()">
      Update
    </button>
    <p>{{ message }}</p>
  </div>

  <div *ngIf="!currentTutorial">
    <br />
    <p>Cannot access this Tutorial...</p>
  </div>
```

Define Routes for App Routing Module

There are 2 main routes:

- `/add` for `add-tutorial` component
- `/tutorials` for `tutorials-list` component

app-routing.module.ts

```
import { NgModule } from '@angular/core';
import { Routes, RouterModule } from '@angular/router';

import { TutorialsListComponent } from './components/tutorials-list/tutorials-list.c
import { AddTutorialComponent } from './components/add-tutorial/add-tutorial.compone

const routes: Routes = [
  { path: '', redirectTo: 'tutorials', pathMatch: 'full' },
  { path: 'tutorials', component: TutorialsListComponent },
  { path: 'add', component: AddTutorialComponent }
];

@NgModule({
  imports: [RouterModule.forRoot(routes)],
  exports: [RouterModule]
})
export class AppRoutingModule { }
```

Add Navbar and Router View to Angular Firebase App

Let's open **src**/*app.component.html*, this `App` component is the root container for our application, it will contain a `nav` element.

```
<div>
  <nav class="navbar navbar-expand navbar-dark bg-dark">
    <a href="#" class="navbar-brand">bezKoder</a>
    <div class="navbar-nav mr-auto">
      <li class="nav-item">
        <a routerLink="tutorials" class="nav-link">Tutorials</a>
      </li>
      <li class="nav-item">
        <a routerLink="add" class="nav-link">Add</a>
      </li>
    </div>
  </nav>

  <div class="container mt-3">
    <h2>{{ title }}</h2>
    <router-outlet></router-outlet>
  </div>
</div>
```

Run & Check

You can run this App with command: `ng serve`.
Open browser with url: `http://localhost:4200/` and check the result.

Conclusion

Today we've built an Angular 10 CRUD Application successfully working with Firebase Firestore using `AngularFireStore` from `@angular/fire` library. Now we can display, modify, delete documents and collection at ease.

If you want to work with Firebase Realtime Database instead, please visit:
Angular 10 Firebase CRUD Realtime DB | AngularFireDatabase (https://bezkoder.com/angular-10-firebase-crud/)

Or File upload:
Firebase Storage + Angular 10: File Upload/Display/Delete example (https://bezkoder.com/firebase-storage-angular-10-file-upload/)

You can also find how to create Angular HTTP Client for working with Restful API in:
Angular 10 CRUD Application example with Web API (https://bezkoder.com/angular-10-crud-app/)

Happy learning, see you again!

Further Reading

- Angular Template Syntax (https://angular.io/guide/template-syntax)
- Angular Router Guide (https://angular.io/guide/router)
- https://www.npmjs.com/package/@angular/fire (https://www.npmjs.com/package/@angular/fire)
- Firebase Web Get Started (https://firebase.google.com/docs/database/web/start)
- @angular/fire Firestore docs (https://github.com/angular/angularfire/tree/master/docs/firestore)

Fullstack CRUD Application:

- Angular 10 + Node.js Express + MySQL example (https://bezkoder.com/angular-10-node-js-express-mysql/)
- Angular 10 + Node.js Express + MongoDB example (https://bezkoder.com/angular-10-mongodb-node-express/)
- Angular 10 + Node.js Express + PostgreSQL example (https://bezkoder.com/angular-10-node-express-postgresql/)
- Angular 10 + Spring Boot + MySQL example (https://bezkoder.com/angular-10-spring-boot-crud/)
- Angular 10 + Spring Boot + PostgreSQL example (https://bezkoder.com/angular-10-spring-boot-postgresql/)
- Angular 10 + Spring Boot + MongoDB example (https://bezkoder.com/angular-10-spring-boot-mongodb/)
- Angular 10 + Django example (https://bezkoder.com/django-angular-10-crud-rest-framework/)

Newer version: Angular 11 Firestore CRUD with AngularFireStore (https://bezkoder.com/angular-11-firestore-crud-angularfirestore/)

Source Code

You can find the complete source code for this tutorial on Github (https://github.com/bezkoder/angular-10-firestore-crud).