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Full Stack Web Development

Supplementary material Firebase

Job Connector Program

Outline

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- Social media login with Firebase
- Push notification with Firebase

Firebase

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Google Firebase is a Google-backed application development software that enables developers to develop iOS, Android and Web apps. Firebase provides tools for tracking analytics, reporting and fixing app crashes, creating marketing and product experiment.

Firebase

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Firebase offers a number of services, including:

- Analytics – Google Analytics for Firebase offers free, unlimited reporting on as many as 500 separate events. Analytics presents data about user behavior in iOS and Android apps, enabling better decision-making about improving performance and app marketing.
- Authentication – Firebase Authentication makes it easy for developers to build secure authentication systems and enhances the sign-in and onboarding experience for users. This feature offers a complete identity solution, supporting email and password accounts, phone auth, as well as Google, Facebook, GitHub, Twitter login and more.
- Cloud messaging – Firebase Cloud Messaging (FCM) is a cross-platform messaging tool that lets companies reliably receive and deliver messages on iOS, Android and the web at no cost.
- Realtime database – the Firebase Realtime Database is a cloud-hosted NoSQL database that enables data to be stored and synced between users in real time. The data is synced across all clients in real time and is still available when an app goes offline.

Firebase

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- Crashlytics – Firebase Crashlytics is a real-time crash reporter that helps developers track, prioritize and fix stability issues that reduce the quality of their apps. With crashlytics, developers spend less time organizing and troubleshooting crashes and more time building features for their apps.
- Performance – Firebase Performance Monitoring service gives developers insight into the performance characteristics of their iOS and Android apps to help them determine where and when the performance of their apps can be improved.
- Test lab – Firebase Test Lab is a cloud-based app-testing infrastructure. With one operation, developers can test their iOS or Android apps across a variety of devices and device configurations. They can see the results, including videos, screenshots and logs, in the Firebase console.

Firebase

Social Media Login with Firebase

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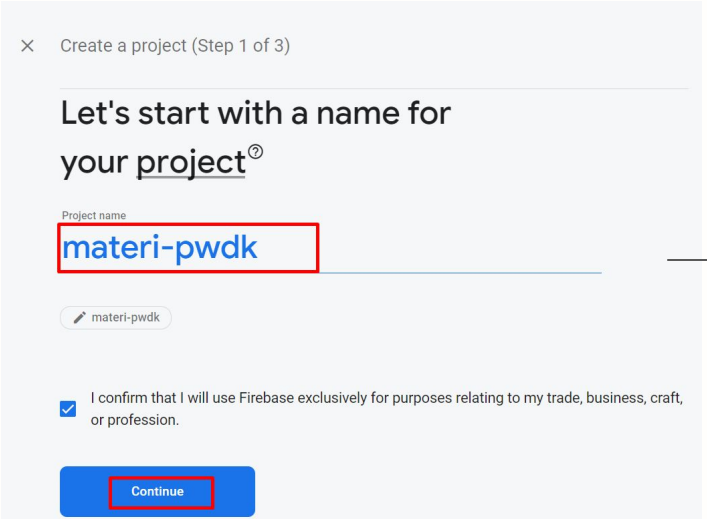
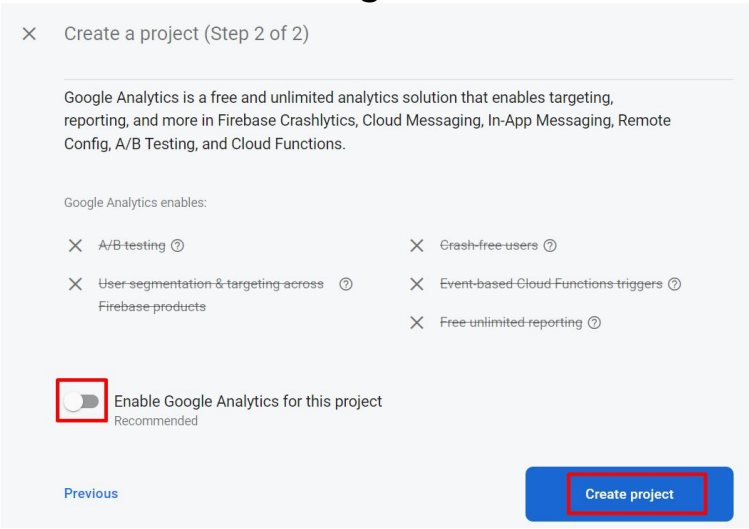
Setting up Firebase - navigate your browser to Firebase Console. Make sure you are logged into your Google account.

Click on Add project and you should be presented with the following screen:





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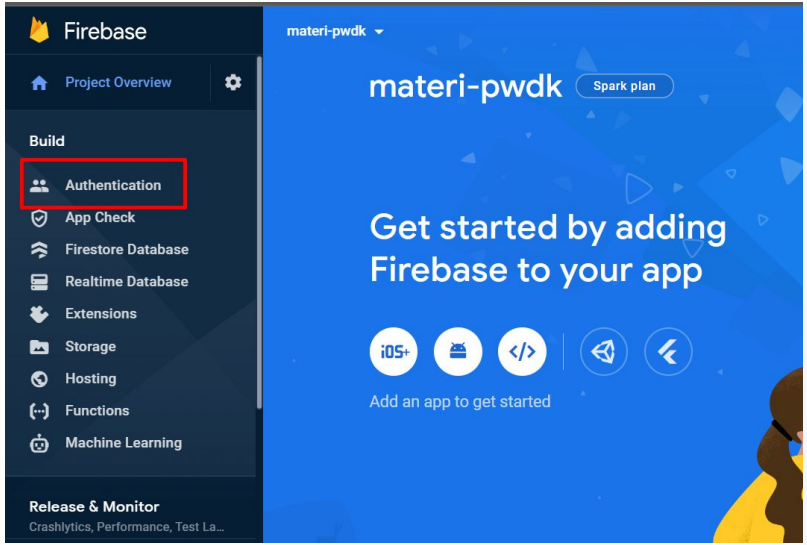
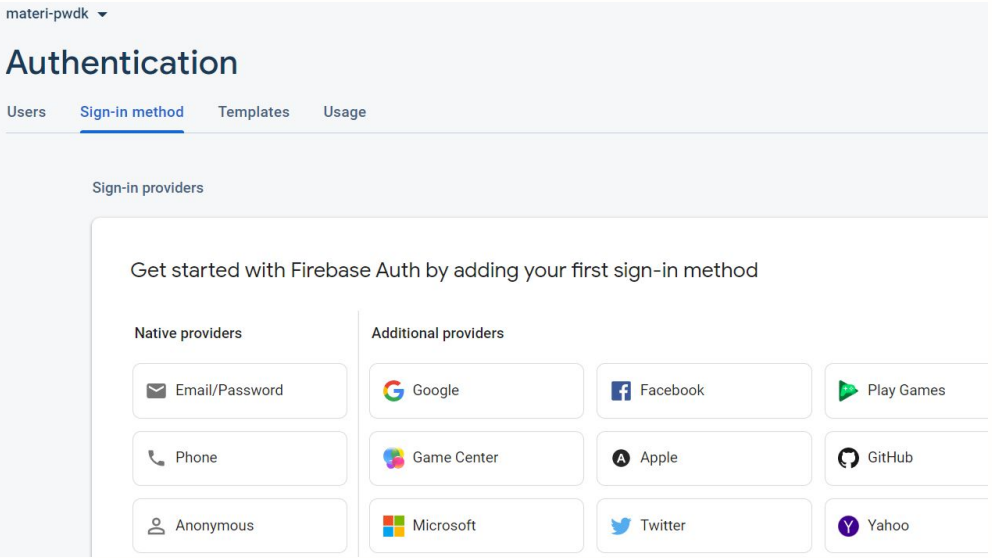
Click on Authentication on the sidebar and click on Get Started to enable the module. Now you will be presented with various authentication options:





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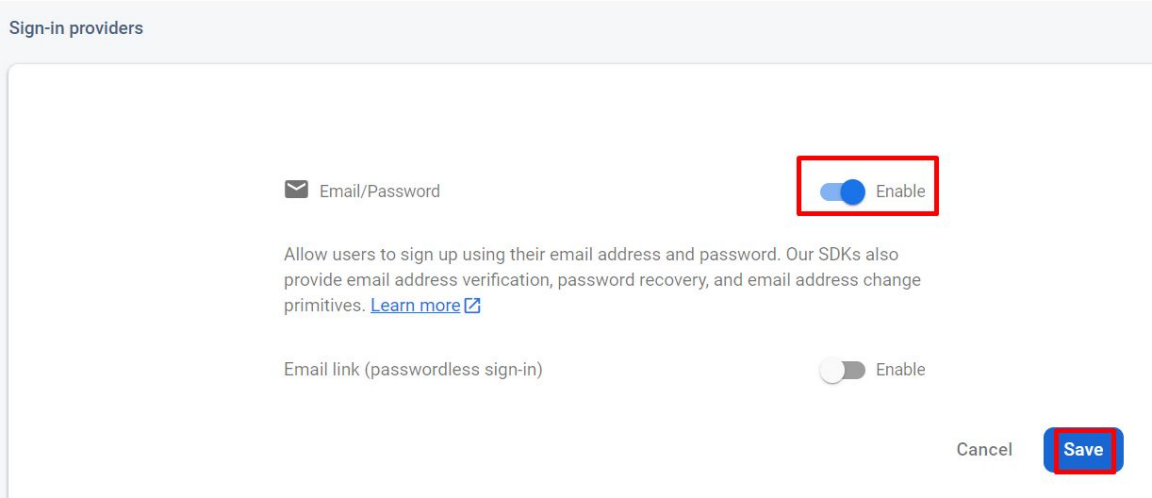
Login through Email & Password, click on enable email/password and hit save button to applies the changes



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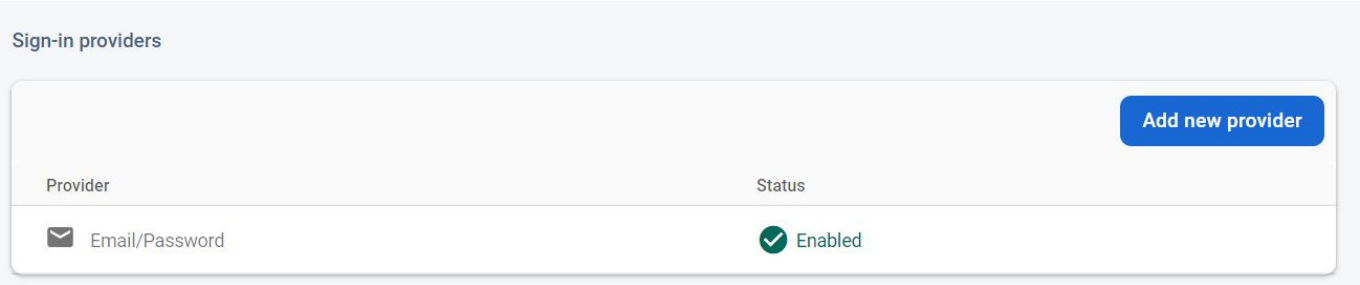
As you can see, we already enable sign-in methods using email and password. Now lets click on **add new provider** button to add another method. In this case lets click on google



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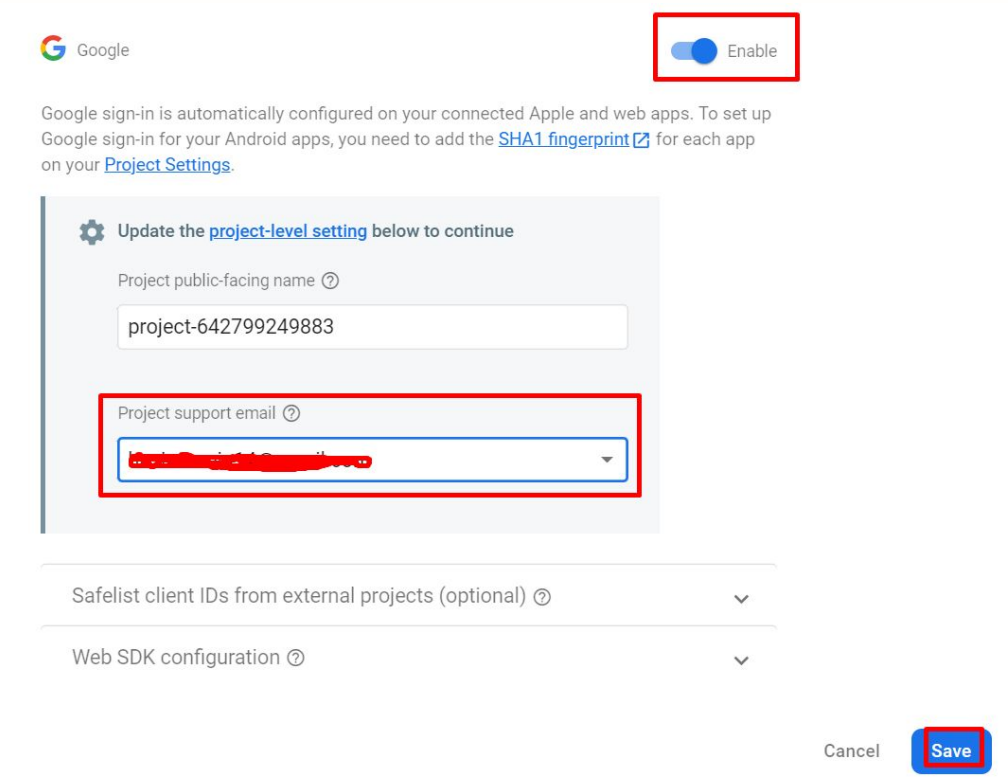

Enable the switch button and set email address as project support email. Click on save button to keep the changes.

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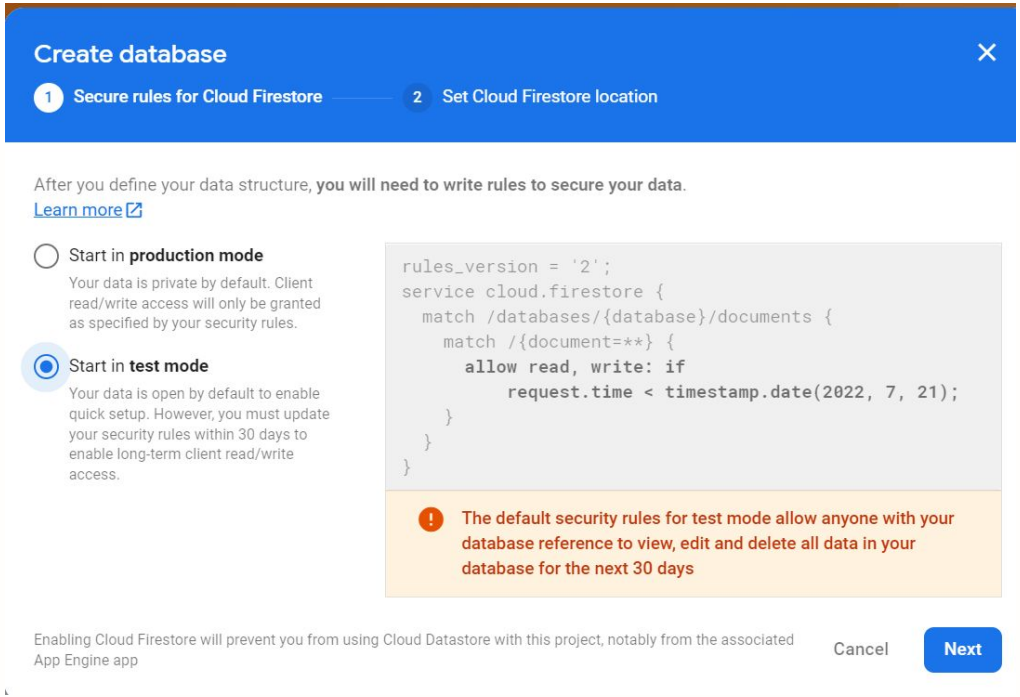

Now, let's set up the database we are going to use Cloud Firestore. Click on Firestore Database on the sidebar and click on Create Database.

Remember to select Start in test mode. Production mode databases require a configuration of security rules, which is out of the scope of this tutorial.

Click Next. Select the region. This should completely set up your Cloud Firestore database.

Integrating Firebase into React app

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Open your react app projects, and install this several packages.

install:

npm install firebase react-router-dom react-firebase-hooks

we are installing firebase to communicate with Firebase services, and we are also installing react-router-dom to handle the routing of the application. We use react-firebase-hooks to manage the authentication state of the user.

Integrating Firebase into React app

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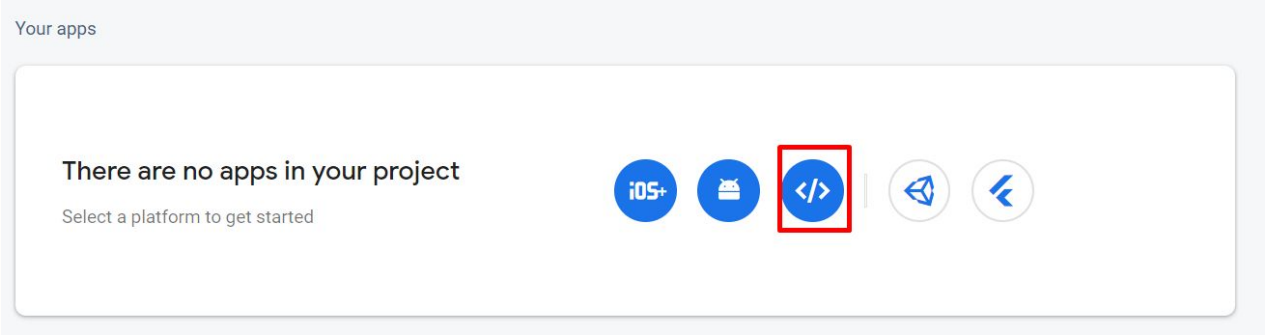
Go to your Firebase Console dashboard, click on Project Settings, scroll down, and you should see something like this and click on the third icon from the left:



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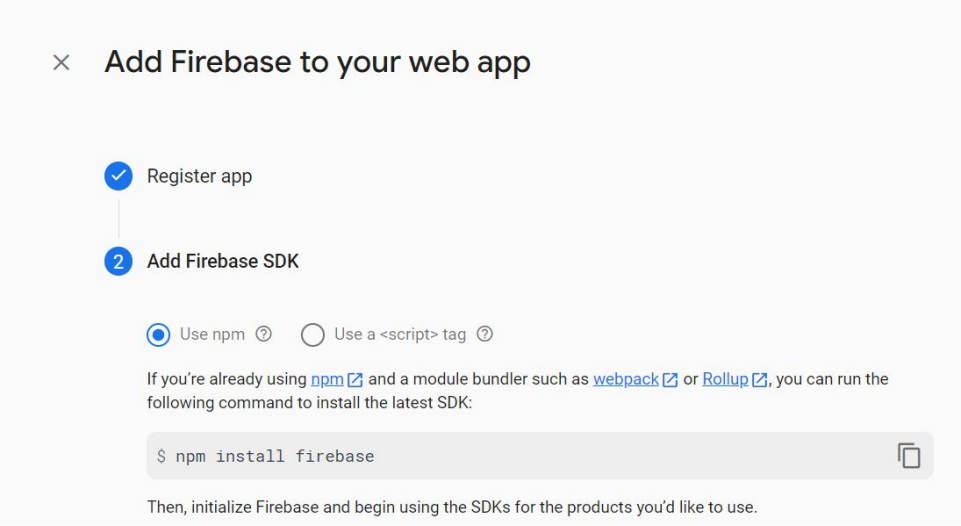
Enter the app name and click on Continue.



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SDK setup and configuration

npm CDN Config

If you're already using npm and a module bundler such as webpack or Rollup, you can run the following command to install the latest SDK:

```
$ npm install firebase
```

Then, initialize Firebase and begin using the SDKs for the products you'd like to use.

```
// Import the functions you need from the SDKs you need
import { initializeApp } from "firebase/app";
// TODO: Add SDKs for Firebase products that you want to use
// https://firebase.google.com/docs/web/setup#available-libraries

// Your web app's Firebase configuration
const firebaseConfig = {
```

Go back to the project settings and you should now see a config like this.

Copy the config. Create a new file in the src folder named firebase.js

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Clone this repo that contain Login.js, Register.js, Dashboard.js component:

https://github.com/hasianamin/firebase-auth.git

Install all dependencies and start the projects.

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src > JS firebase.js > ...

```
1  import { initializeApp } from "firebase/app";
2  import {
3      GoogleAuthProvider,
4      getAuth,
5      signInWithPopup,
6      signInWithEmailAndPassword,
7      createUserWithEmailAndPassword,
8      sendPasswordResetEmail,
9      signOut,
10 } from "firebase/auth";
11 import {
12     getFirestore,
13     query,
14     getDocs,
15     collection,
16     where,
17     addDoc,
18 } from "firebase/firestore";
```

Let's first checkout firebase.js.

Import firebase modules, since Firebase uses modular usage in v9

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Now paste in the config we just copied. Let's initialize our app and services so that we can use Firebase throughout our app:

```
21  const firebaseConfig = {
22    apiKey: 'YOUR_API_KEY',
23    authDomain: 'YOUR_AUTH_DOMAIN',
24    projectId: 'YOUR_PROJECT_ID',
25    storageBucket: 'YOUR_STORAGE_BUCKET',
26    messagingSenderId: 'YOUR_MESSAGING_SENDER_ID',
27    appId: 'YOUR_APP_ID',
28  };      You, 7 days ago • first …
29
30  const app = initializeApp(firebaseConfig);
31  const auth = getAuth(app);
32  const db = getFirestore(app);
```

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```
32  const googleProvider = new GoogleAuthProvider();
33  const signInWithGoogle = async () => {
34    try {
35      const res = await signInWithPopup(auth, googleProvider);
36      const user = res.user;
37      const q = query(collection(db, "users"), where("uid", "==", user.uid));
38      const docs = await getDocs(q);
39      if (docs.docs.length === 0) {
40        await addDoc(collection(db, "users"), {
41          uid: user.uid,
42          name: user.displayName,
43          authProvider: "google",
44          email: user.email,
45        });
46      }
47    } catch (err) {
48      console.error(err);
49      alert(err.message);
50    }
51  };
```

We will be creating all important authentication-related functions in firebase.js itself. So first look at the Google Authentication function:

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Now let's make a function for signing in using an email and password:

```
53  const logInWithEmailAndPassword = async (email, password) => {
54    try {
55      await signInWithEmailAndPassword(auth, email, password);
56    } catch (err) {
57      console.error(err);
58      alert(err.message);
59    }
60  };
```

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Now, let's create a function for registering a user with an email and password:

```
62  const registerWithEmailAndPassword = async (name, email, password) => {
63    try {
64      const res = await createUserWithEmailAndPassword(auth, email, password);
65      const user = res.user;
66      await addDoc(collection(db, "users"), {
67        uid: user.uid,
68        name,
69        authProvider: "local",
70        email,
71      });
72    } catch (err) {
73      console.error(err);
74      alert(err.message);
75    }
76  };
```

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Create a function that will send a password reset link to an email address:

```
78  const sendPasswordReset = async (email) => {
79    try {
80      await sendPasswordResetEmail(auth, email);
81      alert("Password reset link sent!");
82    } catch (err) {
83      console.error(err);
84      alert(err.message);
85    }
86  };
```

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Create the logout function:

```
89  const logout = () => {
90    signOut(auth);
91  };
```

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Finally we export all the functions at the end of the code:

```
93   export {
94     auth,
95     db,
96     signInWithGoogle,
97     logInWithEmailAndPassword,
98     registerWithEmailAndPassword,
99     sendPasswordReset,
100    logout,
101  };
```

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Checkout Register.js component for implementing registration using email and password

```
<div>
  <button
    onClick={() => registerWithEmailAndPassword(name, email, password)}
  >
    Submit
  </button>
```

Integrating Firebase into React app

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```
const onLogin = async () => {
  try {
    const result = await logInWithEmailAndPassword(email, password);
    if (result === 'sign in success') {
      setOpenTab(3);
    }
  } catch (error) {
    console.log(error);
  }
};

const onLoginWithGoogle = async () => {
  try {
    const result = await signInWithGoogle();
    if (result === 'signin with google success') {
      setOpenTab(3);
    }      You, 7 minutes ago • first …
  } catch (error) {
    console.log(error);
  }
};
```

Checkout Login.js component for implementing login using email and password, and also signin and register using google account

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Put those function into the button and put trigger onClick actions

```
  <div>
    <button onClick={onLogin}>Submit</button>
  </div>
  <div>
    <button onClick={onLoginWithGoogle}>Signin with Google</button>
  </div>
```

Integrating Firebase into React app

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```
import { logout } from './firebase';
import React from 'react';
import './App.css';

function Dashboard({ setOpenTab }) {
  const onLogout = () => {
    const result = logout();
    if (result === 'logout success') {
      setOpenTab(2);
    }
  };

  return (
    <>
      <h3>Dashboard</h3>
      <h4>You are login</h4>
      <button onClick={onLogout}>Log out</button>
    </>
  );
}
```

Finally look after Dasboard.js, here is how to logout from the sessions.

Push Notification With Firebase

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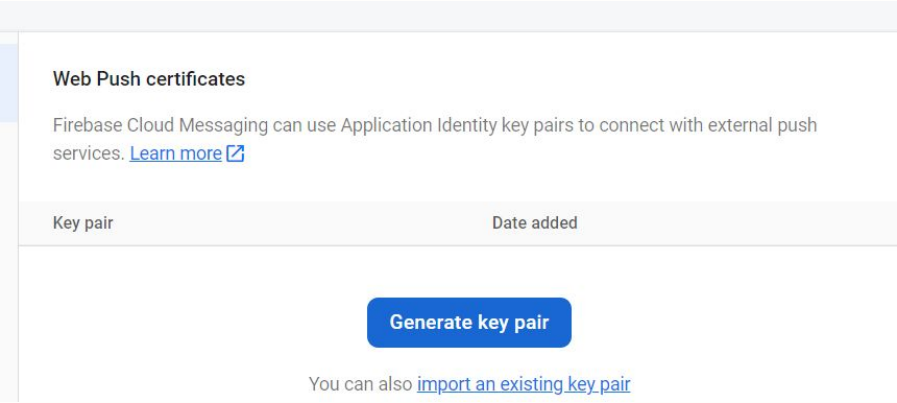
Since we already integrating our projects with firebase, lets integrate our projects to cloud messaging provide by firebase.

Generate a web push certificate key. Navigate to the cloud messaging tab for your project and scroll to the Web configuration section.

Under Web Push certificates, click on Generate key pair. Note the key that gets generated.

Go to:
https://console.firebase.google.com/u/0/project/_/settings/cloudmessaging



Push Notification With Firebase

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Open up firebase.js and write down this code to import some methods provided by firebase to handling push notification.

```
19 import { getMessaging, getToken, onMessage } from 'firebase/messaging';
20
```

Push Notification With Firebase

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Open up firebase.js and write down this code to import some methods provided by firebase to handling push notification.

```
19 import { getMessaging, getToken, onMessage } from 'firebase/messaging';
20
```

Use getMessaging method to access the messaging object from the firebase

```
30 const app = initializeApp(firebaseConfig);
31 const auth = getAuth(app);
32 const db = getFirestore(app);
33 const messaging = getMessaging(app);        You, 1
34
```

Push Notification With Firebase

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In order to send push notifications to the browser, we need to get permission from the user. It opens the “Enable notifications?” popup that you may have seen on other websites.

The way to initiate that request is by calling the **getToken** method Firebase provides. Before that, let’s create function named as handleGetToken on firebase.js, which will keep track of whether we have access to the notifications

```
99  const handleGetToken = (setTokenFound) => {
100   return getToken(messaging, {
101     vapidKey: 'YOUR_VAPID_KEY',        You, 1 second ago • Uncommitted changes
102   })
103     .then((currentToken) => {
104       if (currentToken) {
105         console.log('current token for client: ', currentToken);
106         setTokenFound(true);
107         // Track the token -> client mapping, by sending to backend server
108         // show on the UI that permission is secured
109       } else {
110         console.log(
111           'No registration token available. Request permission to generate one.',
112         );
113         setTokenFound(false);
114         // shows on the UI that permission is required
115       }
116     })
117     .catch((err) => {
118       console.log('An error occurred while retrieving token. ', err);
119       // catch error while creating client token
120     });
121 };
```

Push Notification With Firebase

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After create function to track notification permission, let's use that code in our App.js file by following this code:

```
const [isTokenFound, setTokenFound] = React.useState(false);
handleGetToken(setTokenFound);

console.log(isTokenFound);
```

Import handleGetToken from firebase.js to use the function

```
import { handleGetToken } from './firebase';
```

Push Notification With Firebase

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When you allow the pop up notification, this will be shown in your screen:

Check out the terminal to see the logs:

```
4 current token for    firebase.js:106
  client:
  dCJs0utBtqT5gpuAxDmeRe:APA91bEugVroAw
  By2AegpfvGA81OL2aMQvty3C8WFjhVSXMQVIu
  NFGhhV2dvPzzKjaCr5_IOIpYYmvVmNUvcTNYl
  OL3Ztrs-
  ohlz3H8M89BFdC2uNdu27gjH1ncmm_RzWlZIR
  9YiLYZc
```

Configuring Message Listeners

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After that we should add a listener to the incoming push notification that is directed towards the client.

We do that by adding a **firebase-messaging-sw.js** service worker file in the public folder, write down this line of code:

JS App.js M | JS firebase.js 1, M | JS *firebase-messaging-sw.js 5, U* ×

public > JS firebase-messaging-sw.js > firebaseConfig > messagingSenderId

```
// Scripts for firebase and firebase messaging
importScripts(
  'https://www.gstatic.com/firebasejs/9.0.0/firebase-app-compat.js',
);
importScripts(
  'https://www.gstatic.com/firebasejs/9.0.0/firebase-messaging-compat.js',
);
```

Configuring Message Listeners

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```
// Initialize the Firebase app in the service worker by passing the generated config
var firebaseConfig = {
  apiKey: 'YOUR_API_KEY',
  authDomain: 'YOUR_AUTH_DOMAIN',
  projectId: 'YOUR_PROJECT_ID',
  storageBucket: 'YOUR_STORAGE_BUCKET',
  messagingSenderId: 'YOUR_MESSAGING_SENDER_ID',
  appId: 'YOUR_APP_ID',
};

firebase.initializeApp(firebaseConfig);
```

Configuring Message Listeners

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```
21  // Retrieve firebase messaging
22  const messaging = firebase.messaging();
23
24  messaging.onBackgroundMessage(function (payload) {
25    console.log('Received background message ', payload);
26
27    const notificationTitle = payload.notification.title;
28    const notificationOptions = {
29      body: payload.notification.body,
30    };
31
32    self.registration.showNotification(notificationTitle, notificationOptions);
33  });
```

Foreground Listener

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To take care of cases in which the app is active in foreground, we need to add this code to the firebase.js file:

```
124  const onMessageListener = () =>
125    new Promise((resolve) => {
126      onMessage(messaging, (payload) => {
127        resolve(payload);
128      });
129    });        You, 35 seconds ago • Uncommit
```

Export onMessageListener function.

Foreground Listener

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```
14  const onMessageListenerHandler = () => {
15    try {
16      const result = onMessageListener();
17      console.log(result);
18    } catch (error) {
19      console.log(error);
20    }
21  };
22  useEffect(() => {
23    onMessageListenerHandler();        You, 1
24  }, []);
```

We also need to import this in App.js and add logic to create the notification out of the parsed payload, which looks something like this:

Testing Push Notifications

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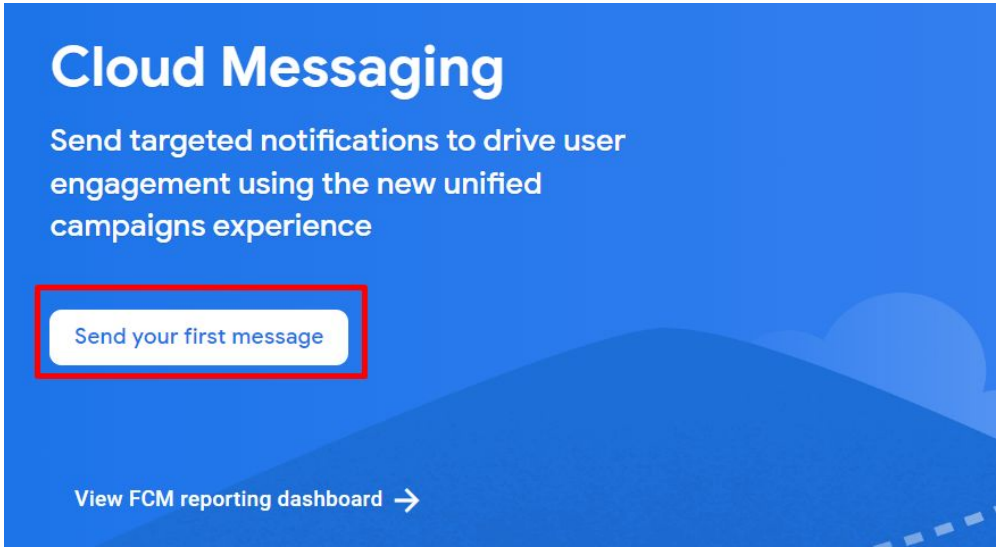
Open up your google firebase projects and go to cloud messaging sections.

On the home page, click on Send your first message. Enter the Notification title and Notification text. Then, under the Device preview section, click on Send test message.



Testing Push Notifications

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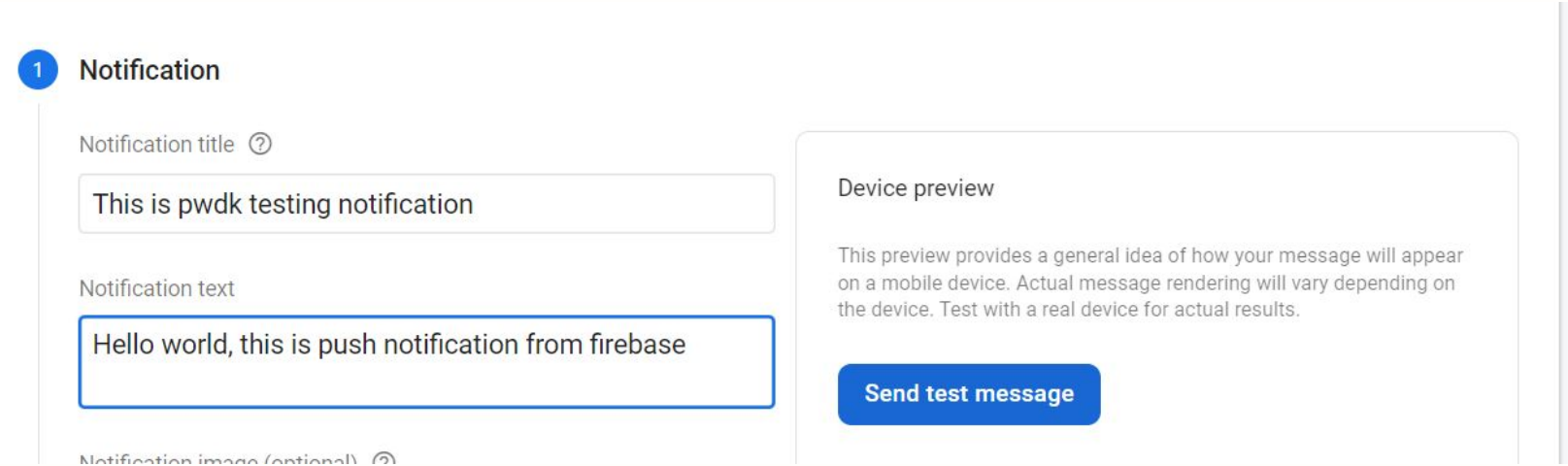
Fill out the form and click on send test message under Device preview section



Testing Push Notifications

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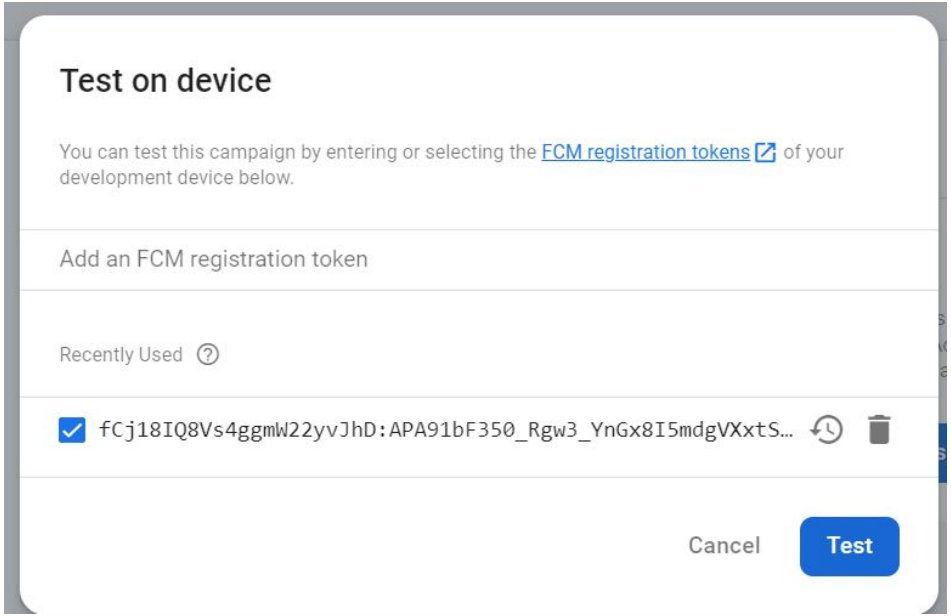
Copy and paste your token from web console, and put it on Add an FCM registration token and click on + button. Make sure the FCM token is checked, then click on Test.



Testing Push Notifications

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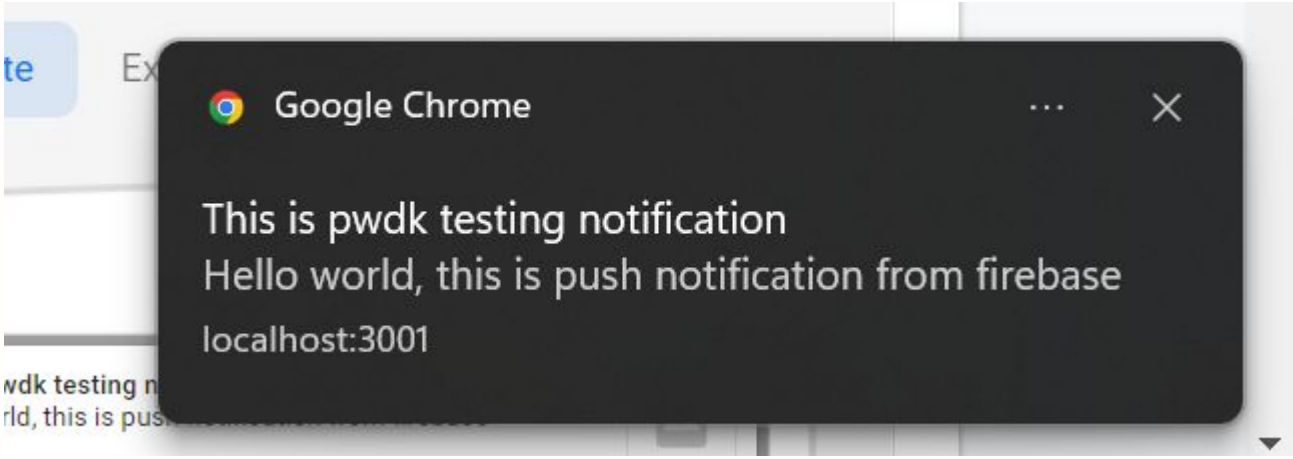
Notification successfully sent to your application.



Thank You!

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