What Does This Code Do?

This code is a **Sign Up, Login, and Logout system** using Firebase Authentication. It allows users to:

✅ **Sign Up** with an email and password.

✅ **Log In** with an email and password.

✅ **Log In with Google** (no need to enter email and password).

✅ **Log Out** from their account.

✅ **Display the user's email** on a welcome page after they log in.

Real-Life Example

Think of this like a **gym membership system**:

🏋 **Sign Up** → You register at the gym and get a membership.

🔑 **Log In** → You show your membership card (email/password) to enter.

🆔 **Log In with Google** → Instead of a card, you use your Google account.

🚪 **Log Out** → You leave the gym and check out.

💼 **Welcome Page** → After entering, your name appears on the screen.

Code Breakdown

1️⃣ Firebase Setup

```
import { initializeApp } from "https://www.gstatic.com/firebasejs/11.4.0/firebase-app.js";
import { getAuth, createUserWithEmailAndPassword, signInWithEmailAndPassword, signOut, signInWithPopup, GoogleAuthProvider, onAuthStateChanged } from "https://www.gstatic.com/firebasejs/11.4.0/firebase-auth.js";
import { getAnalytics } from "https://www.gstatic.com/firebasejs/11.4.0/firebase-analytics.js";
```

♦ Imports Firebase tools for authentication (signup, login, logout) and analytics.

2️⃣ Firebase Configuration

```
const 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",
  measurementId: "YOUR_MEASUREMENT_ID",
};
```

⬦ This is like the **address and key** to your Firebase project.

3️⃣ Initialize Firebase

```
const app = initializeApp(firebaseConfig);
const analytics = getAnalytics(app);
const auth = getAuth(app);
const provider = new GoogleAuthProvider();
```

⬦ Connects your app to Firebase and sets up authentication.

4️⃣ Sign Up with Email and Password

```
document.getElementById("signup-btn")?.addEventListener("click", () => {
  const email = document.getElementById("signup-email").value;
  const password = document.getElementById("signup-password").value;

  createUserWithEmailAndPassword(auth, email, password)
    .then(() => {
      alert("✅ Sign Up Successful!");
      window.location.href = "welcome.html";
    })
    .catch((error) => {
      alert(error.message);
    });
});
```

🏰 What happens?
⬦ User clicks **Sign Up** → Firebase creates an account → Redirects to **Welcome Page**.

5️⃣ Log In with Email and Password

```
document.getElementById("login-btn")?.addEventListener("click", () => {
```

```
  const email = document.getElementById("login-email").value;
  const password = document.getElementById("login-password").value;

  signInWithEmailAndPassword(auth, email, password)
    .then(() => {
      alert("✅ Login Successful!");
      window.location.href = "welcome.html";
    })
    .catch((error) => {
      alert(error.message);
    });
});
```

📝 What happens?

♦ User enters email & password → Firebase checks credentials → Redirects to **Welcome Page**.

6️ Log In with Google

```
document.getElementById("google-btn")?.addEventListener("click", () => {
  signInWithPopup(auth, provider)
    .then(() => {
      alert("✅ Login Successful!");
      window.location.href = "welcome.html";
    })
    .catch((error) => {
      alert(error.message);
    });
});
```

📝 What happens?

♦ User clicks **Continue with Google** → Firebase logs them in using their Google account.

7️ Log Out

```
document.getElementById("logout-btn")?.addEventListener("click", () => {
  signOut(auth)
    .then(() => {
      alert("👋 Logged Out Successfully!");
      window.location.href = "index.html";
    })
```

```
    .catch((error) => {
      alert(error.message);
    });
});
```

🎬 What happens?

⬦ User clicks **Logout** → Firebase signs them out → Redirects to the **Login Page**.

8️⃣ Show User Email on Welcome Page

```
onAuthStateChanged(auth, (user) => {
  if (user && window.location.pathname.includes("welcome.html")) {
    document.getElementById("user-email").textContent = user.email;
  } else if (!user && window.location.pathname.includes("welcome.html")) {
    window.location.href = "index.html";
  }
});
```

🎬 What happens?

⬦ Checks if user is **logged in** → Shows their email on the **Welcome Page**.
⬦ If **not logged in**, redirects them to the **Login Page**.

Real-Life Flow

1️⃣ **Sign Up** → Register at the gym (create an account).
2️⃣ **Log In** → Show your membership card (email & password).
3️⃣ **Log In with Google** → Use Google instead of a membership card.
4️⃣ **Welcome Page** → Your name appears on the screen (logged in).
5️⃣ **Log Out** → Check out when leaving the gym.