Aim: To Connect Flutter UI with fireBase database.

Theory:

Firebase is a cloud-based backend platform that provides a wide range of services, including authentication, real-time databases, cloud storage, and hosting. In Flutter, Firebase allows developers to integrate backend functionalities without setting up complex servers. The Firebase Authentication module enables user authentication using methods like email-password login, Google sign-in, and password reset.

Implementation in Our Code

1. User Authentication with Firebase
- Implemented sign-up (signUp) and login (signIn) functionalities using Firebase Authentication.
- Used FirebaseAuth API to create a user account with an email and password.
- Implemented a password reset feature to allow users to recover their accounts.

2. Secure User Authentication
- Used Firebase's secure token-based authentication to validate users.
- Stored user session details using Firebase's current user session tracking.

3. Sign-Out Functionality
- Implemented a sign-out method that logs users out of Firebase.

Code :

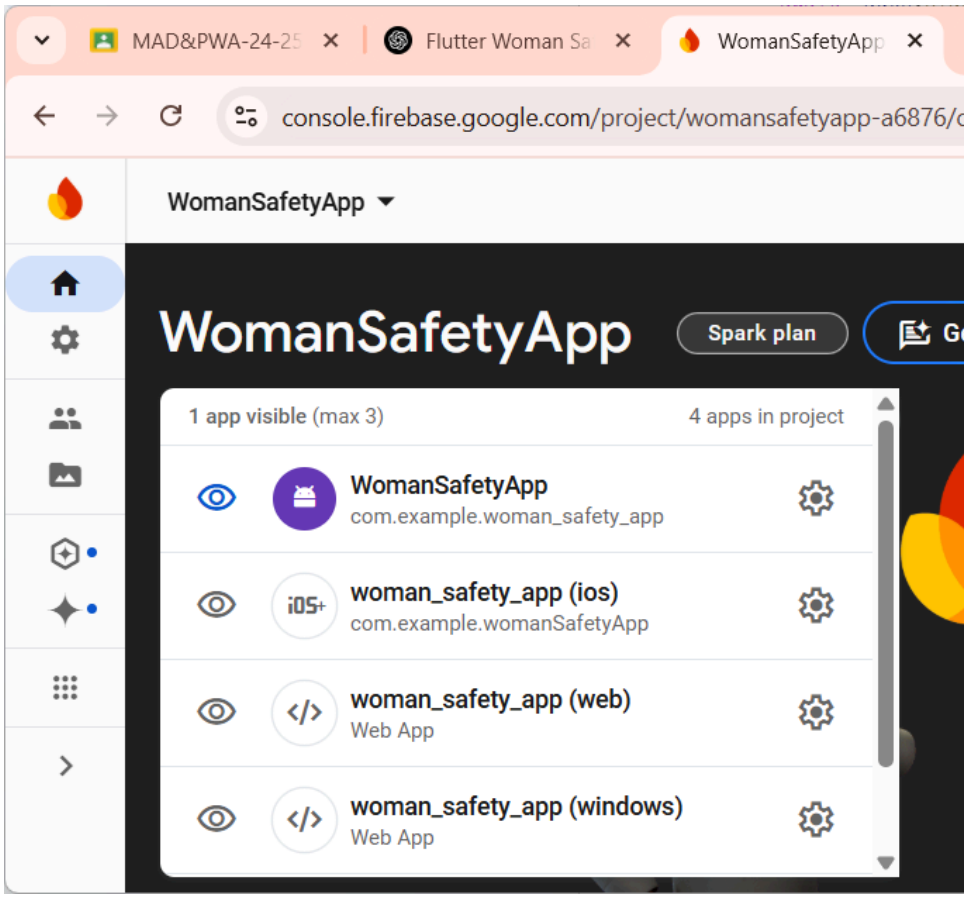
auth_service.dart

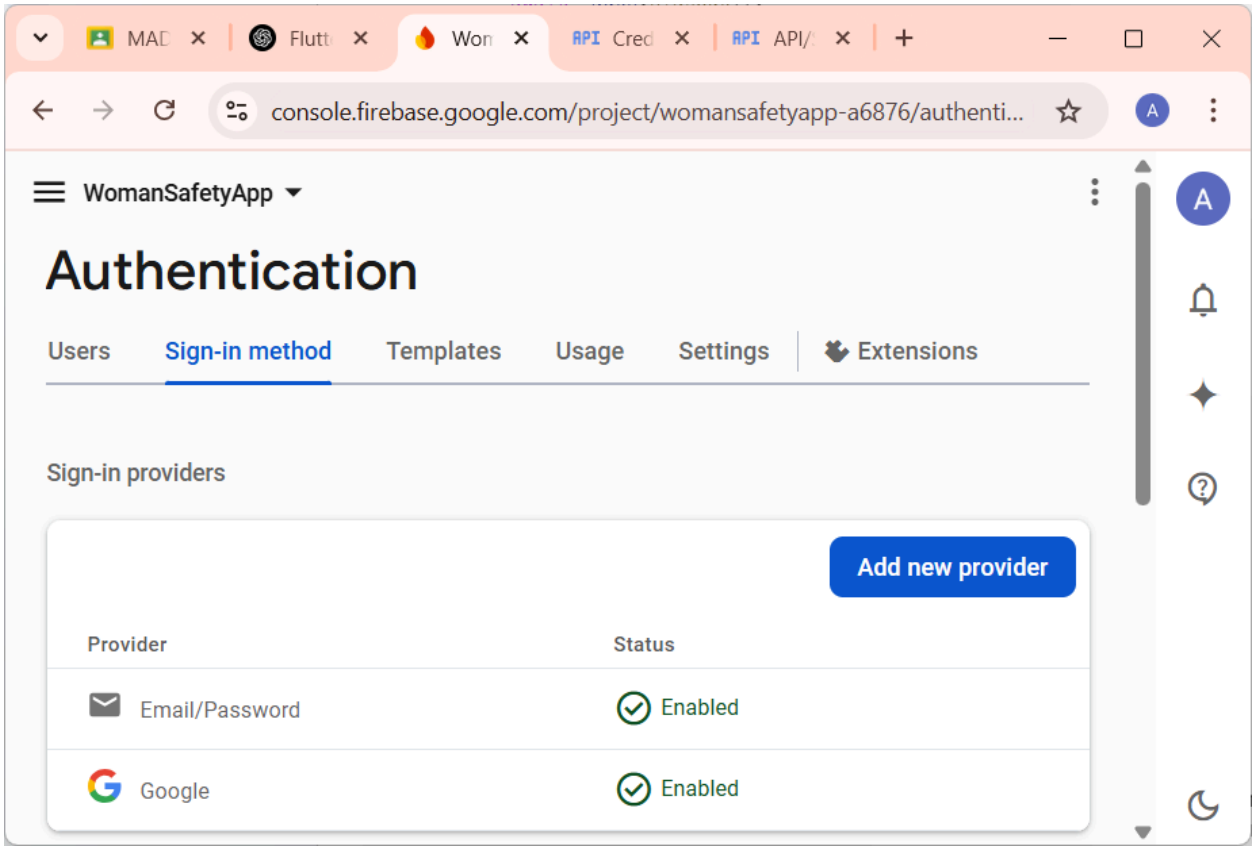
```
import 'package:firebase_auth/firebase_auth.dart';
import 'package:google_sign_in/google_sign_in.dart';

class AuthService {
  final FirebaseAuth _auth = FirebaseAuth.instance;
  final GoogleSignIn _googleSignIn = GoogleSignIn(
    clientId:
"369364366716-52nj14de3gasogbs56f7i9js8tpvor2g.apps.googleusercontent.com",
  );

  // Sign Up with Email & Password
  Future<User?> signUp(String email, String password) async {
    try {
      UserCredential userCredential = await
_auth.createUserWithEmailAndPassword(
        email: email,
        password: password,
      );
      return userCredential.user;
    } catch (e) {
      print("Sign Up Error: $e");
```

```
      return null;
    }
  }

  // Login with Email & Password
  Future<User?> signIn(String email, String password) async {
    try {
      UserCredential userCredential = await _auth.signInWithEmailAndPassword(
        email: email,
        password: password,
      );
      return userCredential.user;
    } catch (e) {
      print("Login Error: $e");
      return null;
    }
  }

  // Get current user
  User? getCurrentUser() {
    return _auth.currentUser;
  }

  // Reset Password
  Future<bool> resetPassword(String email) async {
    try {
      await _auth.sendPasswordResetEmail(email: email);
      return true; // Email sent successfully
    } catch (e) {
      print("Password Reset Error: $e");
      return false; // Failed to send email
    }
  }

    // Google Sign-In
  Future<User?> signInWithGoogle() async {
    try {
      final GoogleSignInAccount? googleUser = await _googleSignIn.signIn();
      if (googleUser == null) return null; // User canceled

      final GoogleSignInAuthentication googleAuth = await
googleUser.authentication;
      final AuthCredential credential = GoogleAuthProvider.credential(
        accessToken: googleAuth.accessToken,
        idToken: googleAuth.idToken,
      );

      UserCredential userCredential = await
_auth.signInWithCredential(credential);
```

```
      return userCredential.user;
    } catch (e) {
      print("Google Sign-In Error: $e");
      return null;
    }
  }

  // Sign Out (Google & Email)
  Future<void> signOut() async {
    await _auth.signOut();
    await _googleSignIn.signOut();
  }
}
```

Screenshot:

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WomanSafetyApp
Authentication
Users
Sign-in method
Templates
Usage
Settings
Extensions
Sign-in providers
Add new provider
Provider
Status
Email/Password
Enabled
Google
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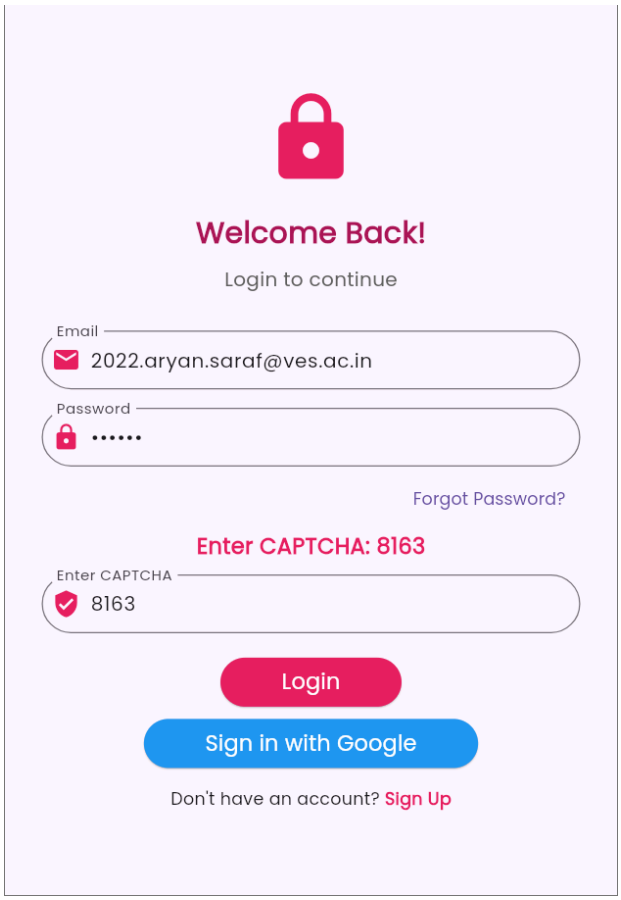
Welcome Back!
Login to continue
Email
2022.aryan.saraf@ves.ac.in
Password
Forgot Password?
Enter CAPTCHA: 8163
Enter CAPTCHA
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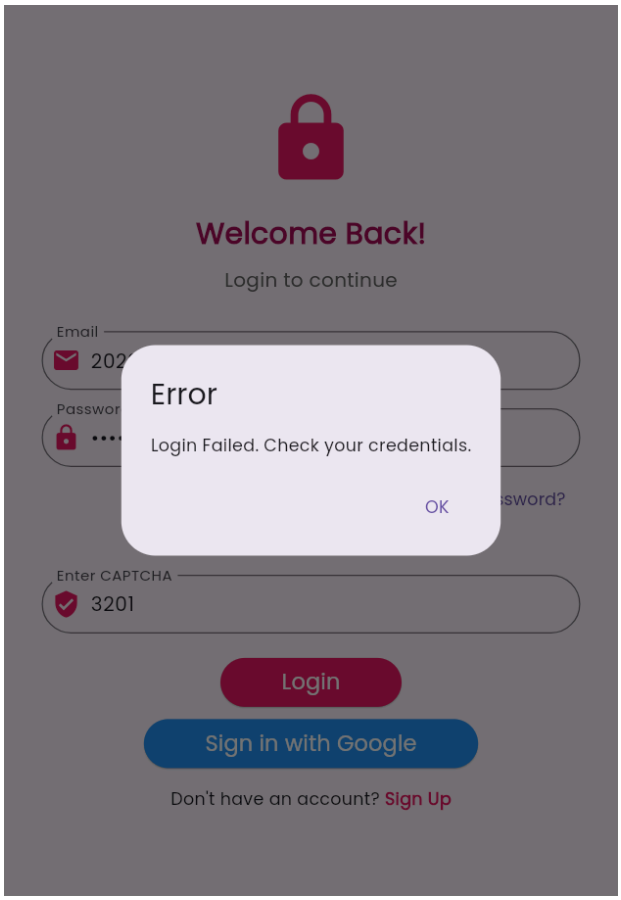
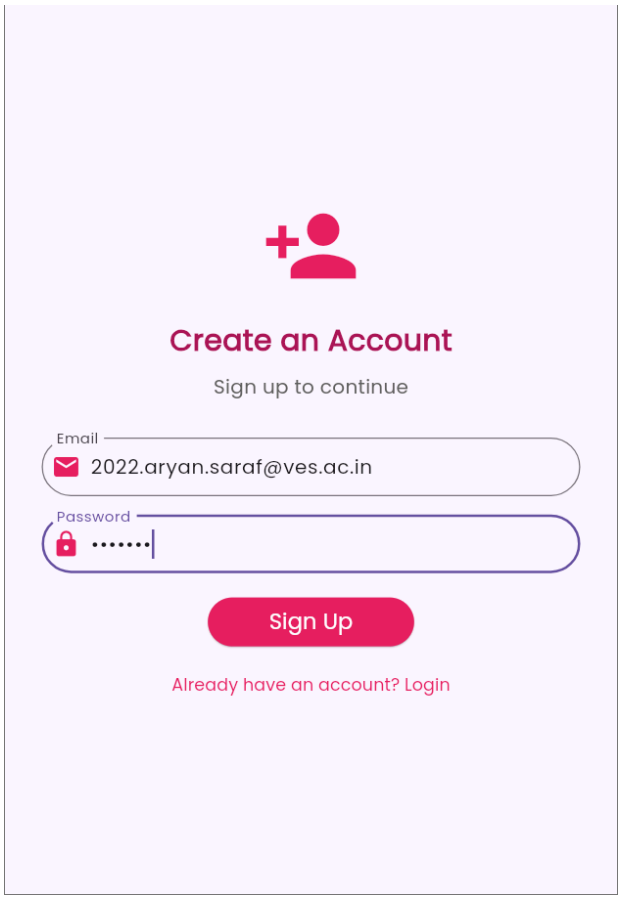
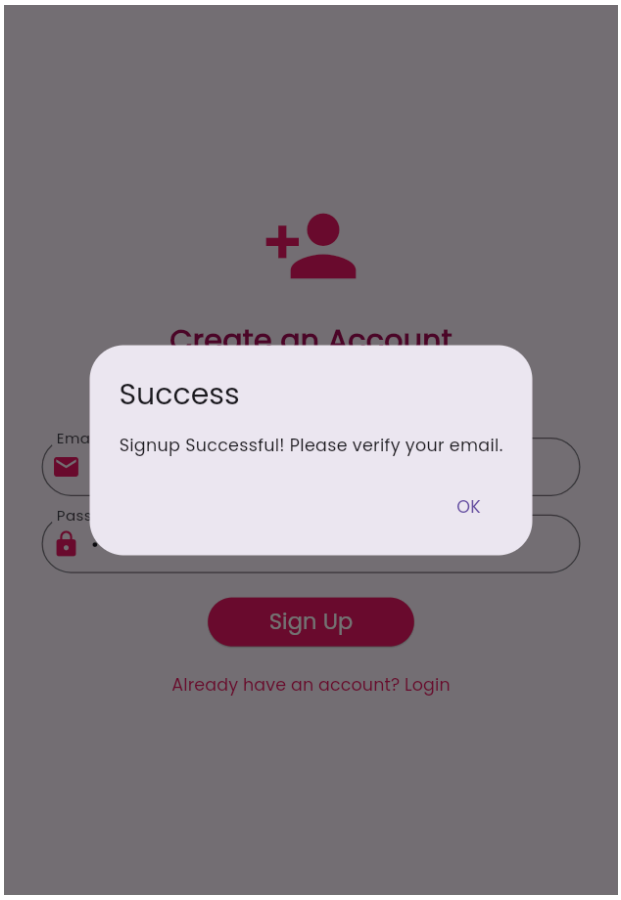
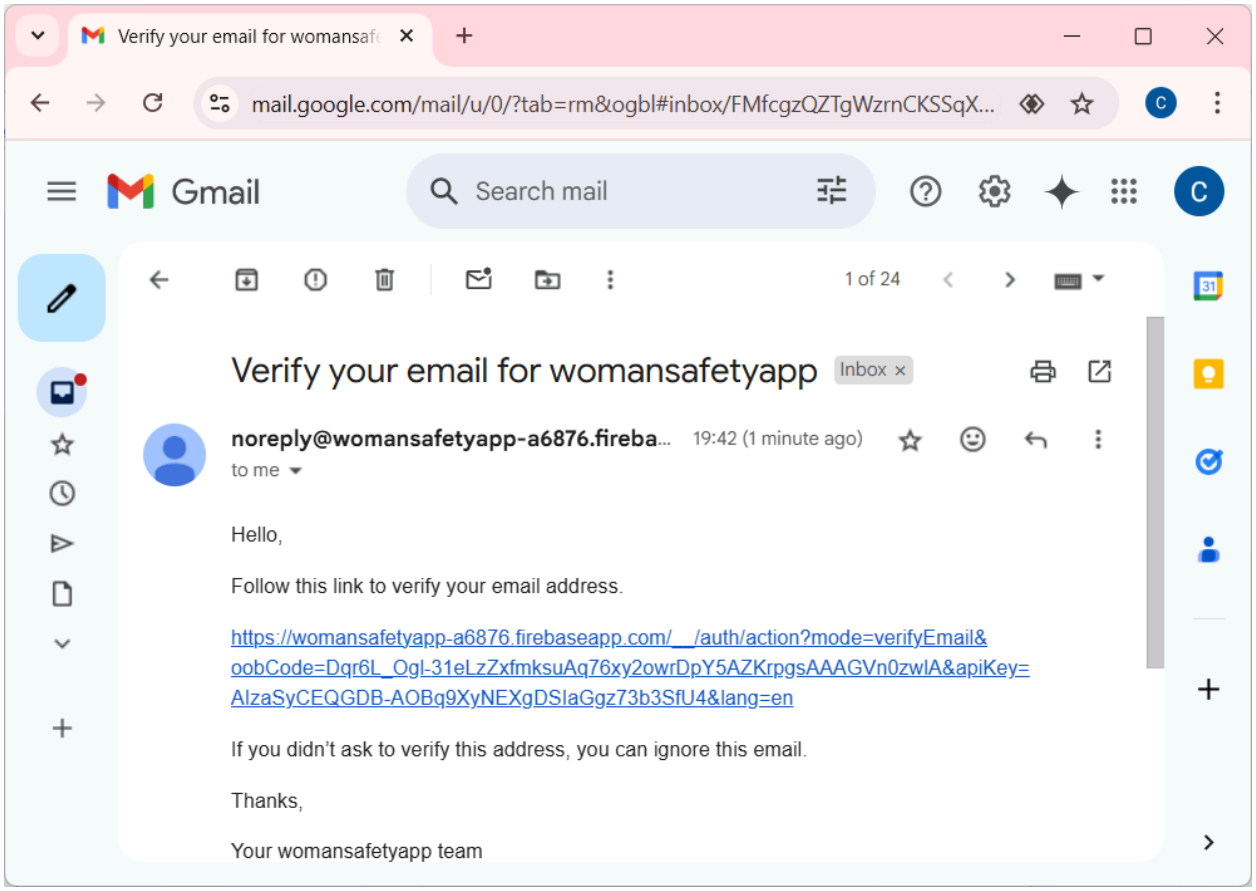
Login
Sign in with Google
Don't have an account? Sign Up


Welcome Back!
Login to continue
Email
Error
Login Failed. Check your credentials.
OK
Enter CAPTCHA
3201
Login
Sign in with Google
Don't have an account? Sign Up


Create an Account
Sign up to continue
Email
2022.aryan.saraf@ves.ac.in
Password
Sign Up
Already have an account? Login


Success
Signup Successful! Please verify your email.
OK
Sign Up
Already have an account? Login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mail.google.com/mail/u/0/?tab=rm&ogbl#inbox/FMfcgzQZTgWzrnCKSSqX...
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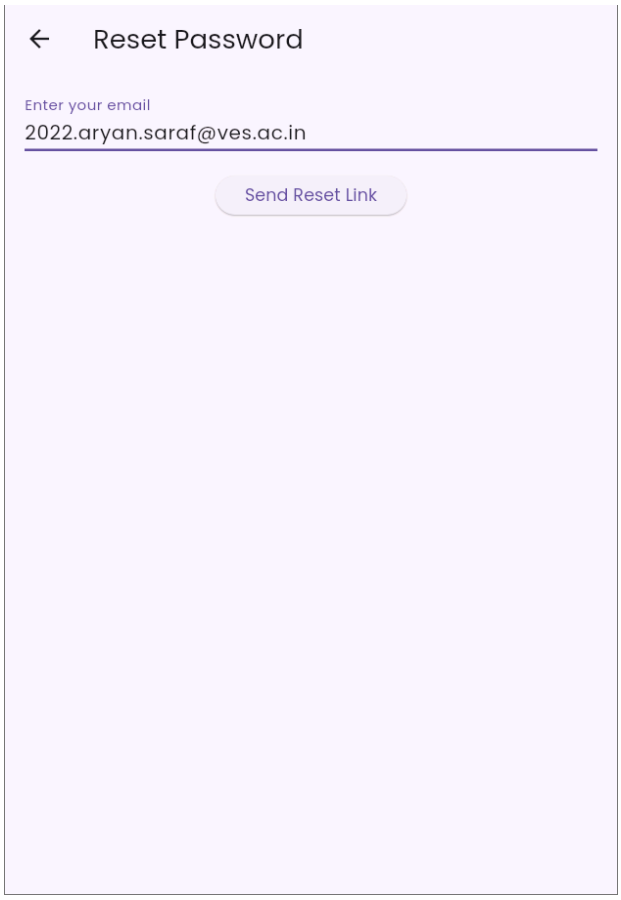
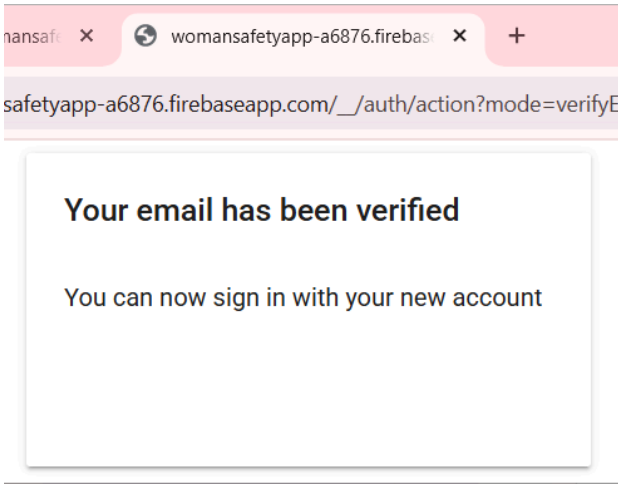
Search mail
1 of 24
Verify your email for womansafetyapp
Inbox
noreply@womansafetyapp-a6876.fireba...
19:42 (1 minute ago)
to me
Hello,
Follow this link to verify your email address.
https://womansafetyapp-a6876.firebaseapp.com/__/auth/action?mode=verifyEmail&oobCode=Dqr6L_Ogl-31eLzZxfmksuAq76xy2owrDpY5AZKrpgsAAAGVn0zwlA&apiKey=AIzaSyCEQGDB-AOBq9XyNEXgDSlaGgz73b3SfU4&lang=en
If you didn't ask to verify this address, you can ignore this email.
Thanks,
Your womansafetyapp team


Reset Password
Enter your email
2022.aryan.saraf@ves.ac.in
Send Reset Link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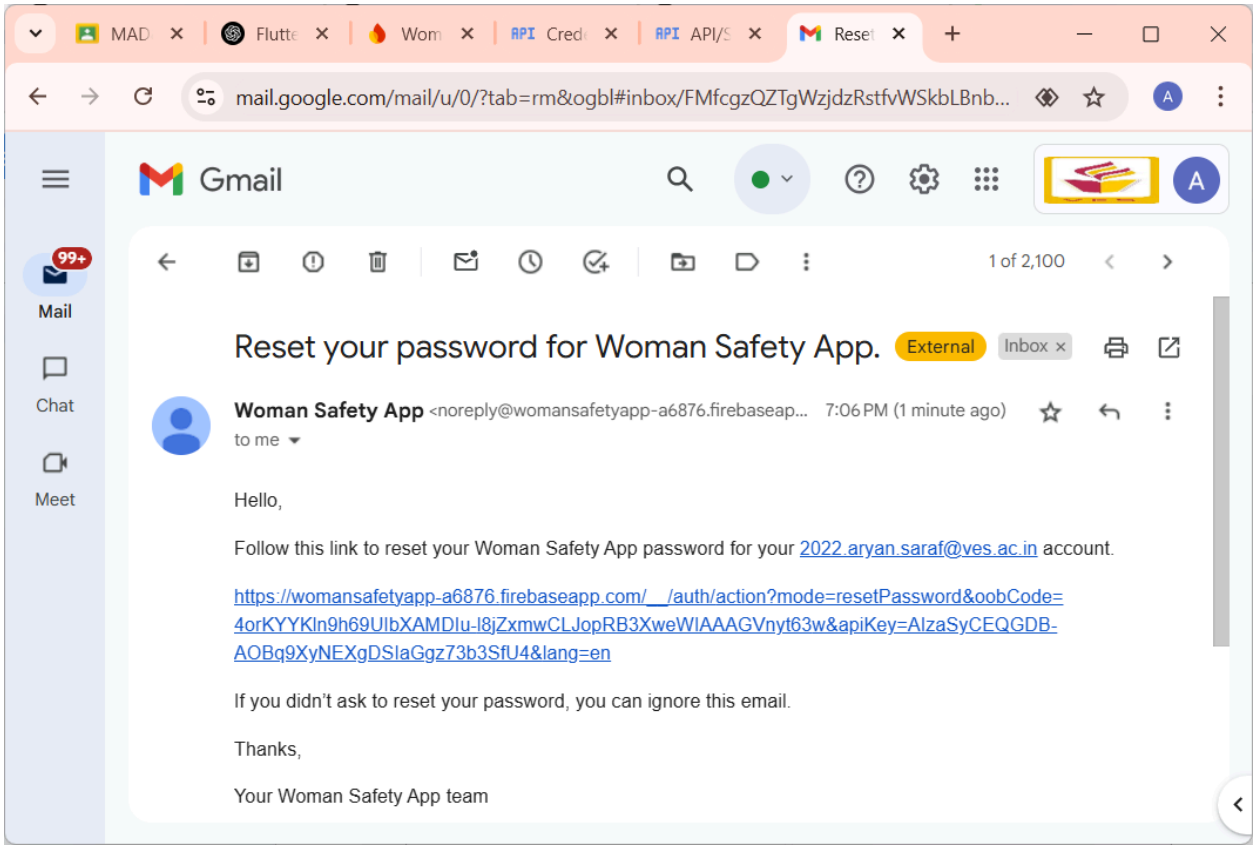
Your email has been verified
You can now sign in with your new account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Gmail
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1 of 2,100
Reset your password for Woman Safety App.
External
Inbox
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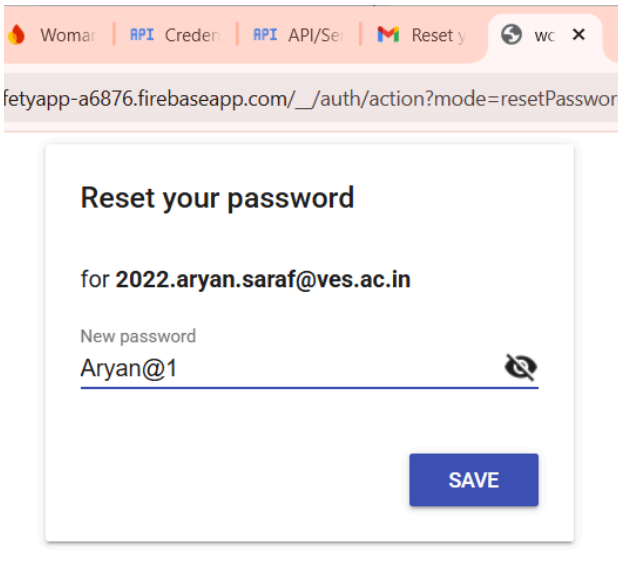
to me
Hello,
Follow this link to reset your Woman Safety App password for your 2022.aryan.saraf@ves.ac.in account.
https://womansafetyapp-a6876.firebaseapp.com/__/auth/action?mode=resetPassword&oobCode=4orKYYKln9h69UIbXAMDIu-l8jZxmwCLJopRB3XweWIAAAGVnyt63w&apiKey=AIzaSyCEQGDB-AOBq9XyNEXgDSIaGgz73b3SfU4&lang=en
If you didn't ask to reset your password, you can ignore this email.
Thanks,
Your Woman Safety App team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Reset your password
for 2022.aryan.saraf@ves.ac.in
New password
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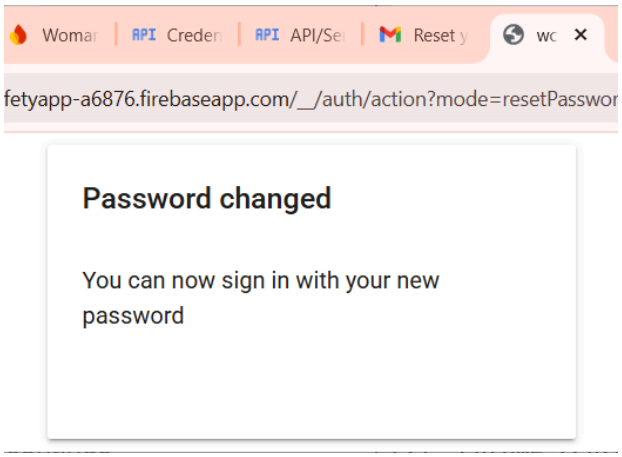
SAVE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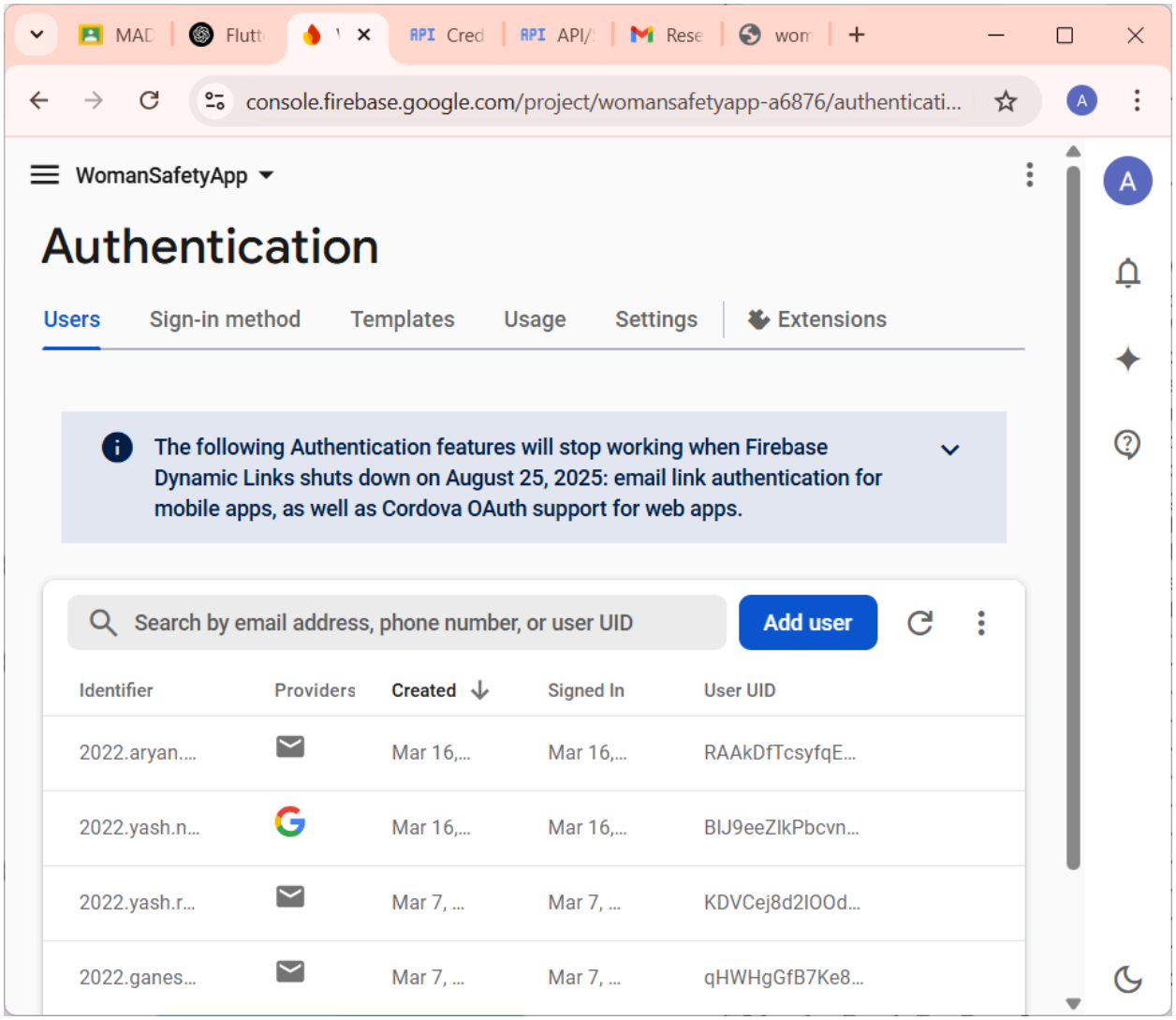
Password changed
You can now sign in with your new password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WomanSafetyApp
Authentication
Users
Sign-in method
Templates
Usage
Settings
Extensions
The following Authentication features will stop working when Firebase Dynamic Links shuts down on August 25, 2025: email link authentication for mobile apps, as well as Cordova OAuth support for web apps.
Search by email address, phone number, or user UID
Add user
Identifier
Providers
Created
Signed In
User UID
2022.aryan....
Mar 16,...
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RAAkDfTcsyfqE...
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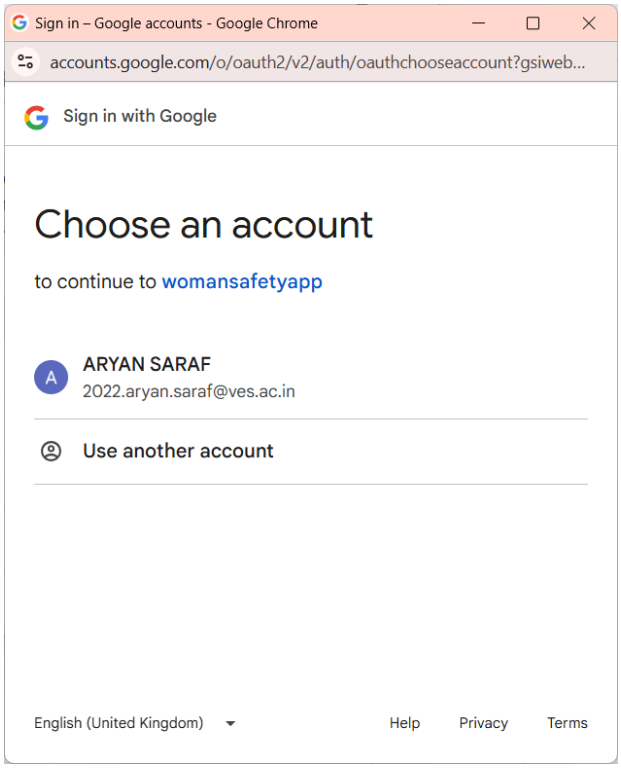

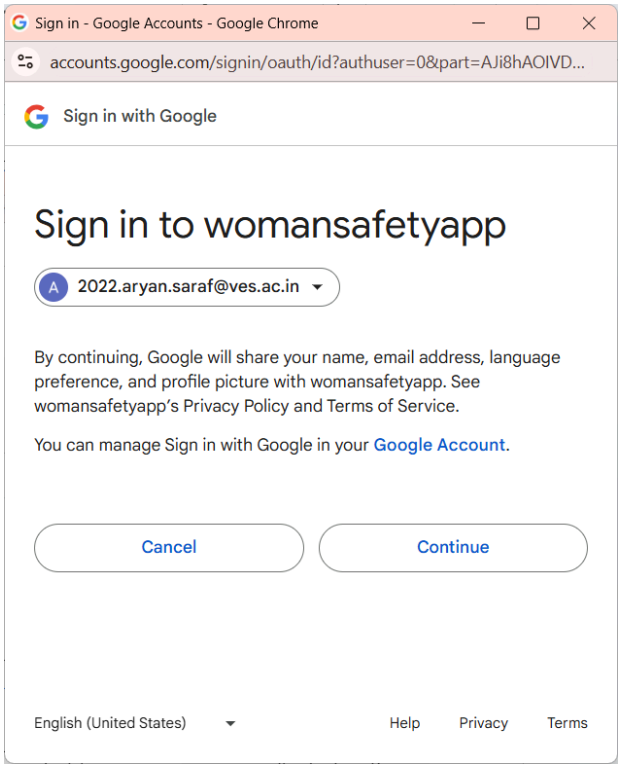

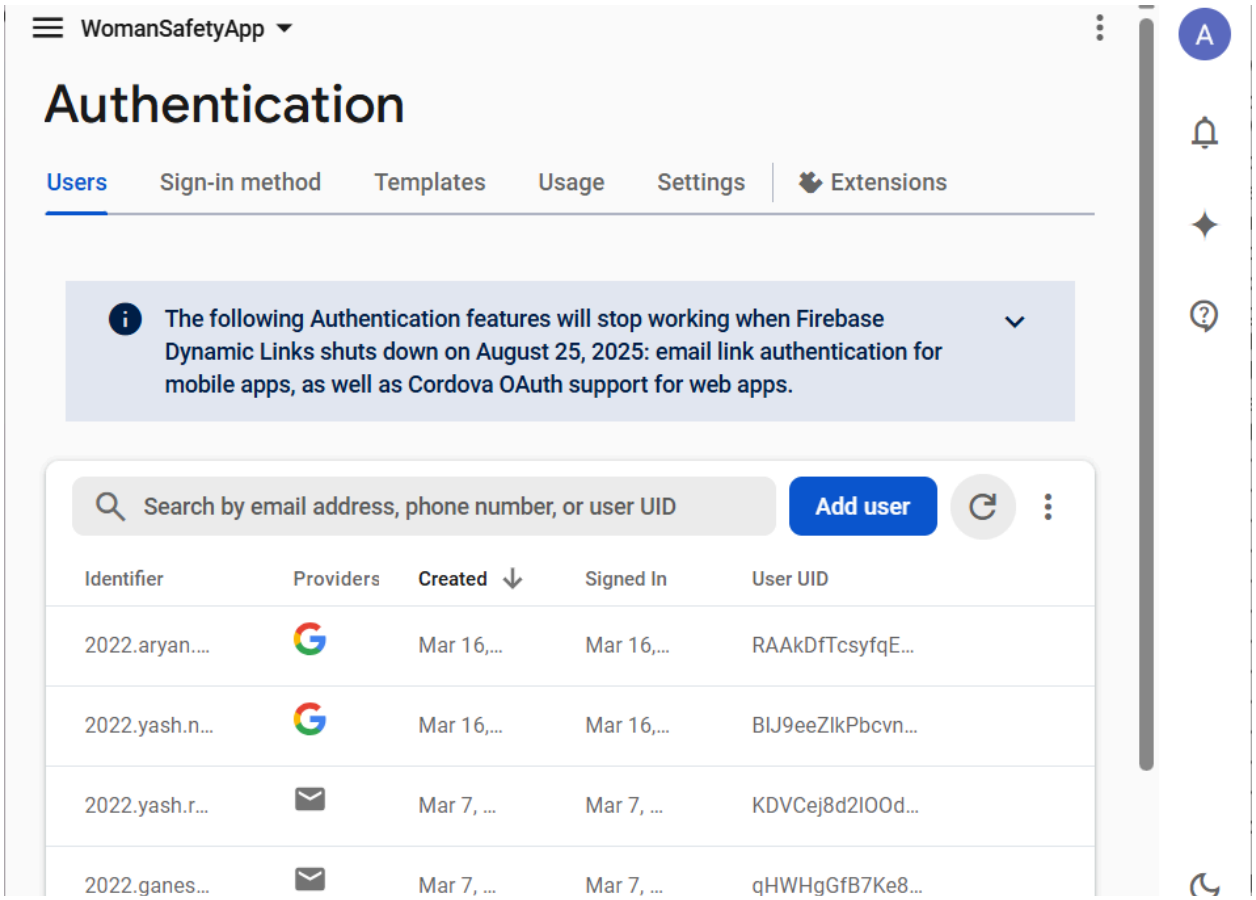

Conclusion:

In this experiment, we successfully integrated Firebase Authentication, implementing email-password login, and password reset while ensuring secure user authentication. During development, we faced issues like OAuth client errors, redirect URI mismatches, and Firebase configuration mismatches, which we resolved by correctly setting up the Google Cloud OAuth client, updating redirect URIs, and verifying Firebase authentication settings.