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Experiment 06 :
To Connect Flutter UI to Firebase Database

Theory:

- **Flutter & Firebase Integration:** Flutter, a cross-platform UI framework, can connect to Firebase, a cloud-based backend service, for real-time data storage and management.

- **Setting Up Firebase:** Create a Firebase project, enable Firestore or Realtime Database, and configure authentication if needed. Add the Firebase SDK to your Flutter app via firebase_core and cloud_firestore packages.

- **Connecting Flutter to Firebase:** Initialize Firebase in main.dart using Firebase.initializeApp(), then use Firestore functions like FirebaseFirestore.instance.collection('users').add({...}) to read and write data.

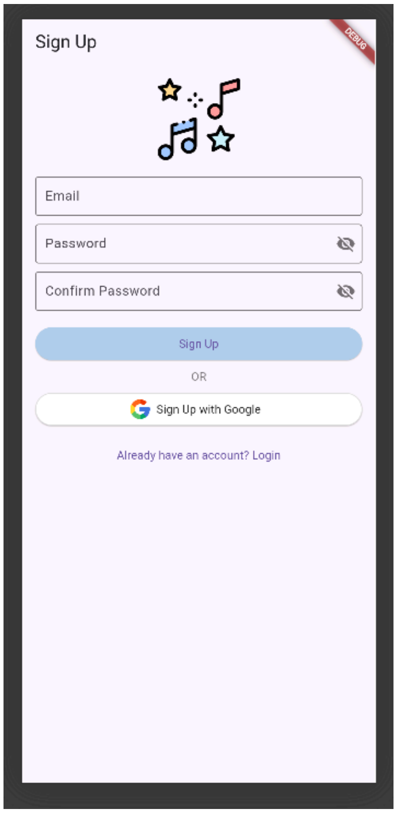
- **CRUD Operations:** Implement Create, Read, Update, and Delete operations in Flutter using Firebase methods like set(), get(), update(), and delete(). Use StreamBuilder for real-time updates.

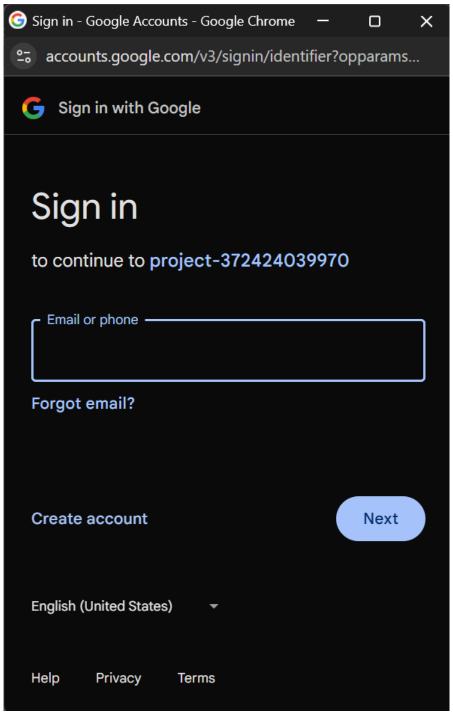
- **Authentication & Security:** Secure database access with Firebase Authentication and Firestore rules to restrict unauthorized access and ensure safe data handling.

Code:

www.github.com/anshi1108/MPL-project

Output:




Sign in - Google Accounts - Google Chrome
accounts.google.com/v3/signin/identifier?opparams...
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Create account
Next
English (United States)
Help
Privacy
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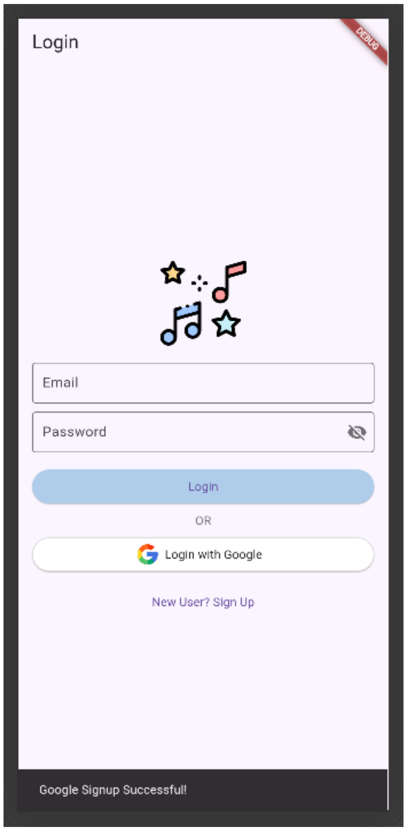
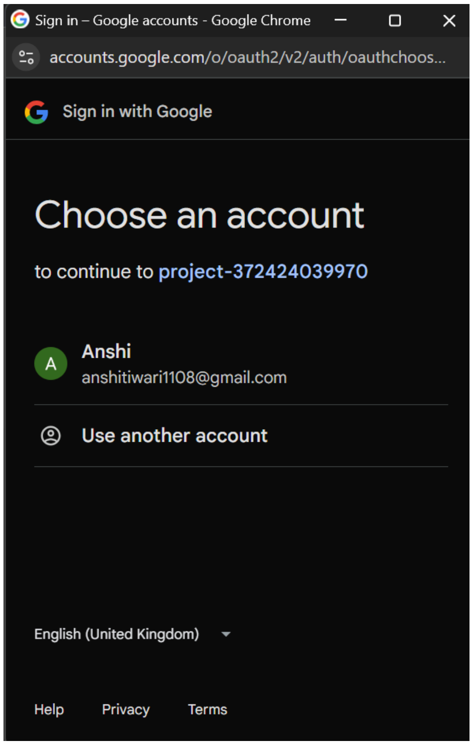
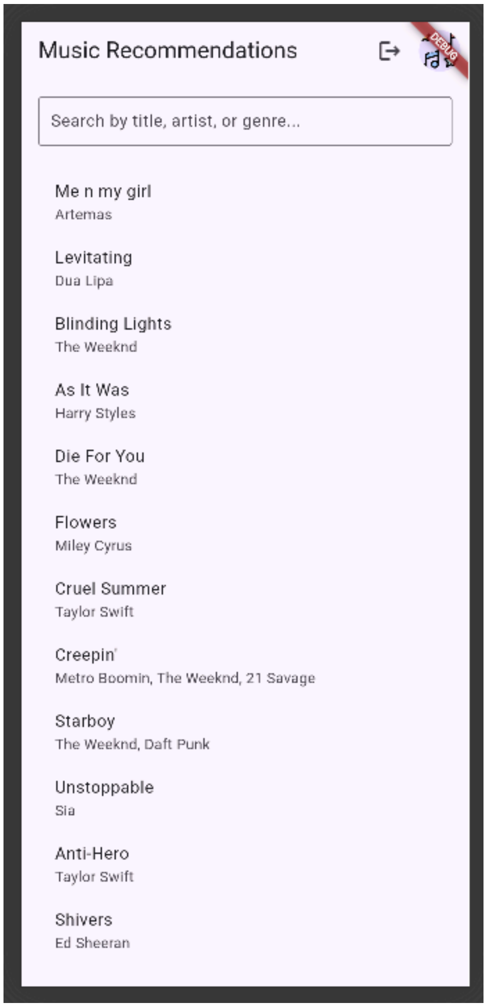


Google Signup Successful!


Sign in – Google accounts - Google Chrome
accounts.google.com/o/oauth2/v2/auth/oauthchoos...
Sign in with Google
Choose an account
to continue to project-372424039970
A
Anshi
anshitiwari1108@gmail.com
Use another account
English (United Kingdom)
Help
Privacy
Terms



Music Recommendations

Search by title, artist, or genre...

Me n my girl
Artemas

Levitating
Dua Lipa

Blinding Lights
The Weeknd

As It Was
Harry Styles

Die For You
The Weeknd

Flowers
Miley Cyrus

Cruel Summer
Taylor Swift

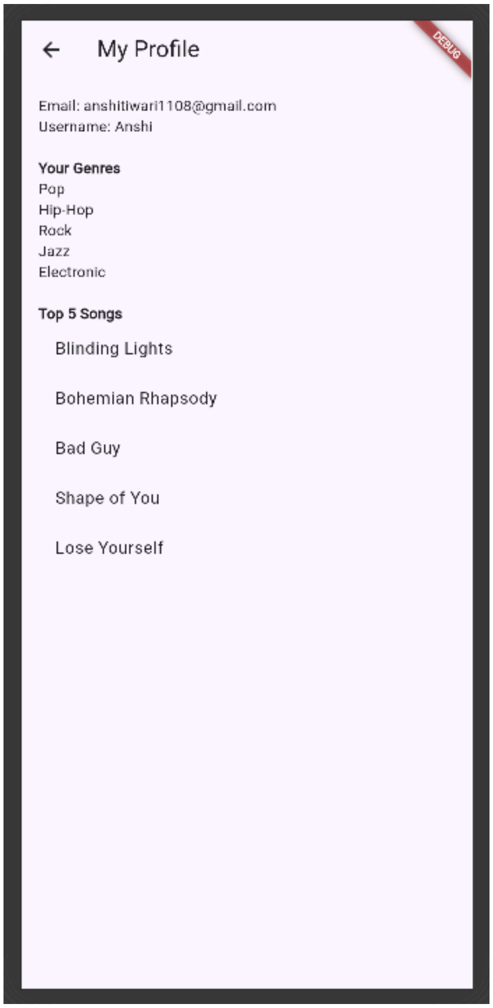
Creepin'
Metro Boomin, The Weeknd, 21 Savage

Starboy
The Weeknd, Daft Punk

Unstoppable
Sia

Anti-Hero
Taylor Swift

Shivers
Ed Sheeran



My Profile

Email: anshitiwari1108@gmail.com
Username: Anshi

Your Genres
Pop
Hip-Hop
Rock
Jazz
Electronic

Top 5 Songs

Blinding Lights

Bohemian Rhapsody

Bad Guy

Shape of You

Lose Yourself

Explanation:

In this app, user authentication is handled using **Firebase Authentication** and user data is stored in **MongoDB**.

Login Functionality:

- Users enter their email and password to log in.
- Firebase Authentication verifies credentials.
- If successful, the app retrieves the user's data from MongoDB and redirects them to the main music recommendation page.

Signup Functionality:

- Users register with an email, password, and optionally other details.
- Firebase Authentication creates the new user.

- The user's details are then stored in MongoDB for future reference.
- Once signed up, the user is redirected to the main page.

Conclusion:

This experiment successfully demonstrated how to connect a Flutter UI to a Firebase database for real-time data management.

By integrating Firebase Authentication and Firestore, user authentication and data storage were implemented efficiently.

The experiment also covered CRUD operations, ensuring smooth interaction with the database. Proper authentication and security measures were applied to protect user data.

Overall, this experiment highlights the seamless integration of Flutter with Firebase, enabling the development of dynamic and secure applications.