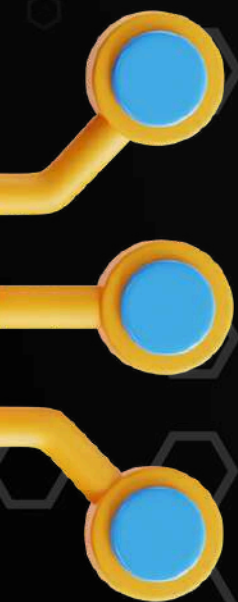# TOPIK PEMBAHASAN

- Maps

01

Apa itu Maps?

Maps di Android merupakan fitur yang memungkinkan aplikasi menampilkan peta interaktif kepada pengguna. Ini sangat bermanfaat untuk aplikasi yang melibatkan lokasi, navigasi, penandaan tempat, atau layanan berbasis lokasi (Location-Based-Service/LBS). Untuk menampilkan peta pada Android biasanya menggunakan Google Maps API melalui Google Maps SDK for Android

Persyaratan Penggunaan

1. Install Android Studio

2. Aktifkan Google Maps SDK di Google Cloud Console

3. Dapatkan API Key Google Maps

Contoh

```
1   implementation 'com.google.android.gms:play-services-maps:18.2.0'
2
```

```
1   <uses-permission android:name="android.permission.INTERNET" />
2   <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
3
4   <application>
5       <meta-data
6           android:name="com.google.android.geo.API_KEY"
7           android:value="YOUR_API_KEY_HERE" />
8   </application>
9
```

```
1   <fragment
2       android:id="@+id/map"
3       android:name="com.google.android.gms.maps.SupportMapFragment"
4       android:layout_width="match_parent"
5       android:layout_height="match_parent"/>
6
```

```
1   public class MapsActivity extends FragmentActivity implements OnMapReadyCallback {
2
3       private GoogleMap mMap;
4
5       @Override
6       protected void onCreate(Bundle savedInstanceState) {
7           super.onCreate(savedInstanceState);
8           setContentView(R.layout.activity_maps);
9
10          SupportMapFragment mapFragment =
11              (SupportMapFragment) getSupportFragmentManager()
12              .findFragmentById(R.id.map);
13          mapFragment.getMapAsync(this);
14      }
15
16      @Override
17      public void onMapReady(GoogleMap googleMap) {
18          mMap = googleMap;
19          // Contoh: menambahkan marker di Jakarta
20          LatLng jakarta = new LatLng(-6.2088, 106.8456);
21          mMap.addMarker(new MarkerOptions().position(jakarta).title("Jakarta"));
22          mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(jakarta, 12));
23      }
24  }
25
```

Flutter

Dalam Flutter, Map merupakan struktur data di Dart (digunakan juga dalam Flutter) yang menyimpan pasangan key-value. Setiap key (kunci) unik dan digunakan untuk mengakses value (nilai) yang sesuai.

Karakteristik

- **Key** harus unik
- **Value** dapat bertipe data apa saja
- Urutan penyimpanan tidak dijamin (meskipun **Map** modern menjaga urutan)

Contoh

```dart
import 'package:flutter/material.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  final List<Map<String, String>> data = [
    {'nama': 'Alice', 'kota': 'Bandung'},
    {'nama': 'Bob', 'kota': 'Jakarta'},
    {'nama': 'Charlie', 'kota': 'Surabaya'}
  ];

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(title: Text('Contoh Map di Flutter')),
        body: ListView.builder(
          itemCount: data.length,
          itemBuilder: (context, index) {
            return ListTile(
              title: Text(data[index]['nama']!),
              subtitle: Text('Kota: ${data[index]['kota']}'),
            );
          },
        ),
      ),
    );
  }
}
```

Android VS Flutter

Aspek	Android	Flutter
Struktur Data	Map, HashMap, TreeMap dll	Map (K, V)
Tipe Data	Umumnya HashMap <String, String>	Umumnya Map<String, dynamic>
Penggunaan Umum	Menyimpan data konfigurasi, objek	Menyimpan data JSON, state, API, response
Sintaksis	Verbose (khususnya di Java)	Ringkas dan fleksibel
Null Safety	Kotlin : Aman (dengan nullable types)	Dart : null safety bawaan (sejak versi 2.12)

Android vs Flutter


```java
1  import java.util.HashMap;
2
3  public class ContohMapJava {
4      public static void main(String[] args) {
5          HashMap<String, String> user = new HashMap<>();
6          user.put("nama", "Khun Edahn");
7          user.put("kota", "Jakarta");
8
9          System.out.println(user.get("nama"));   // Output: Khun Edahn
10     }
11 }
12
```

```dart
1  void main() {
2      Map<String, dynamic> user = {
3          'nama': 'Khun Edahn',
4          'kota': 'Yogyakarta'
5      };
6
7      print(user['nama']);   // Output: Khun Edahn
8
9      user['kota'] = 'Semarang';   // Mengubah value
10     print(user);
11 }
12
```

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Installation

Ketikan pada Terminal :

```
flutter pub add salomon_bottom_bar
flutter pub add icons_plus
flutter pub add audioplayers
flutter pub add file_picker
flutter pub add video_player
flutter pub add flick_video_player
flutter pub add location
flutter pub add latlong2
flutter pub add flutter_polyline_points
flutter pub add visibility_detector
flutter pub add mock_data
flutter pub add http
flutter pub add flutter_map
flutter pub add flutter_map_location_marker

flutter pub outdated
```
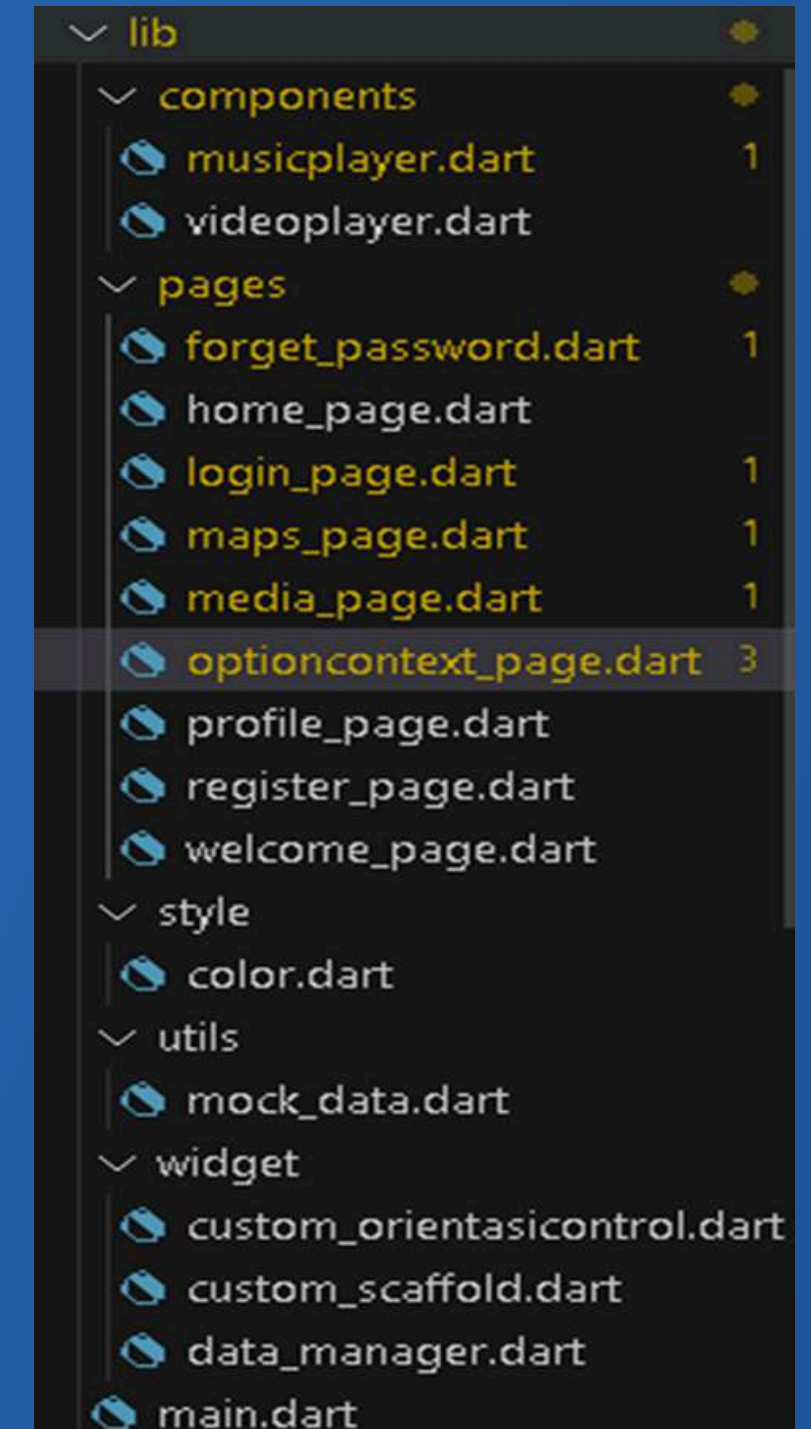
Pubspec.yaml

```
cupertino_icons: ^1.0.8
audioplayers: ^6.4.0
carousel_slider: ^5.1.1
file_picker: ^10.2.0
video_player: ^2.10.0
flutter_map: ^8.1.1
location: ^8.0.1
latlong2: ^0.9.1
http: ^1.4.0
flutter_map_location_marker: ^10.1.0
flutter_polyline_points: ^2.1.0
flick_video_player: ^0.9.0
visibility_detector: ^0.4.0+2
mock_data: ^2.0.1
```

Installation

Buat susunan folder dan dua file seperti gambar disamping. Dengan cara :

- Klik kanan folder lib > New Folder > beri nama foldernya dengan 'pages', 'style', 'component' dan 'widget'

- Klik kanan folder pages > New File > beri nama filenya dengan 'profile_page.dart' , 'welcome_page.dart', 'login_page.dart', 'register_page.dart', 'forgot_password.dart', 'media_page.dart', 'maps_page.dart', 'home_page.dart', 'optioncontext.dart', 'musicplayer.dart', dan 'videoplayer.dart'

-

```
v lib                                    ⚙
  v components                           ⚙
    🔵 musicplayer.dart                  1
    🔵 videoplayer.dart
  v pages                                ⚙
    🔵 forget_password.dart              1
    🔵 home_page.dart
    🔵 login_page.dart                   1
    🔵 maps_page.dart                    1
    🔵 media_page.dart                   1
    🔵 optioncontext_page.dart           3
    🔵 profile_page.dart
    🔵 register_page.dart
    🔵 welcome_page.dart
  v style
    🔵 color.dart
  v utils
    🔵 mock_data.dart
  v widget
    🔵 custom_orientasicontrol.dart
    🔵 custom_scaffold.dart
    🔵 data_manager.dart
  🔵 main.dart
```

SOURCE CODE

main.dart

```dart
import 'package:flutter/material.dart';
import 'package:flutter_pert14/pages/welcome_page.dart';

void main(){
  runApp(MyApp());
}

class MyApp extends StatelessWidget{
  @override

  Widget build(BuildContext context){
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      home: WelcomePage(),
    );
  }
}
```
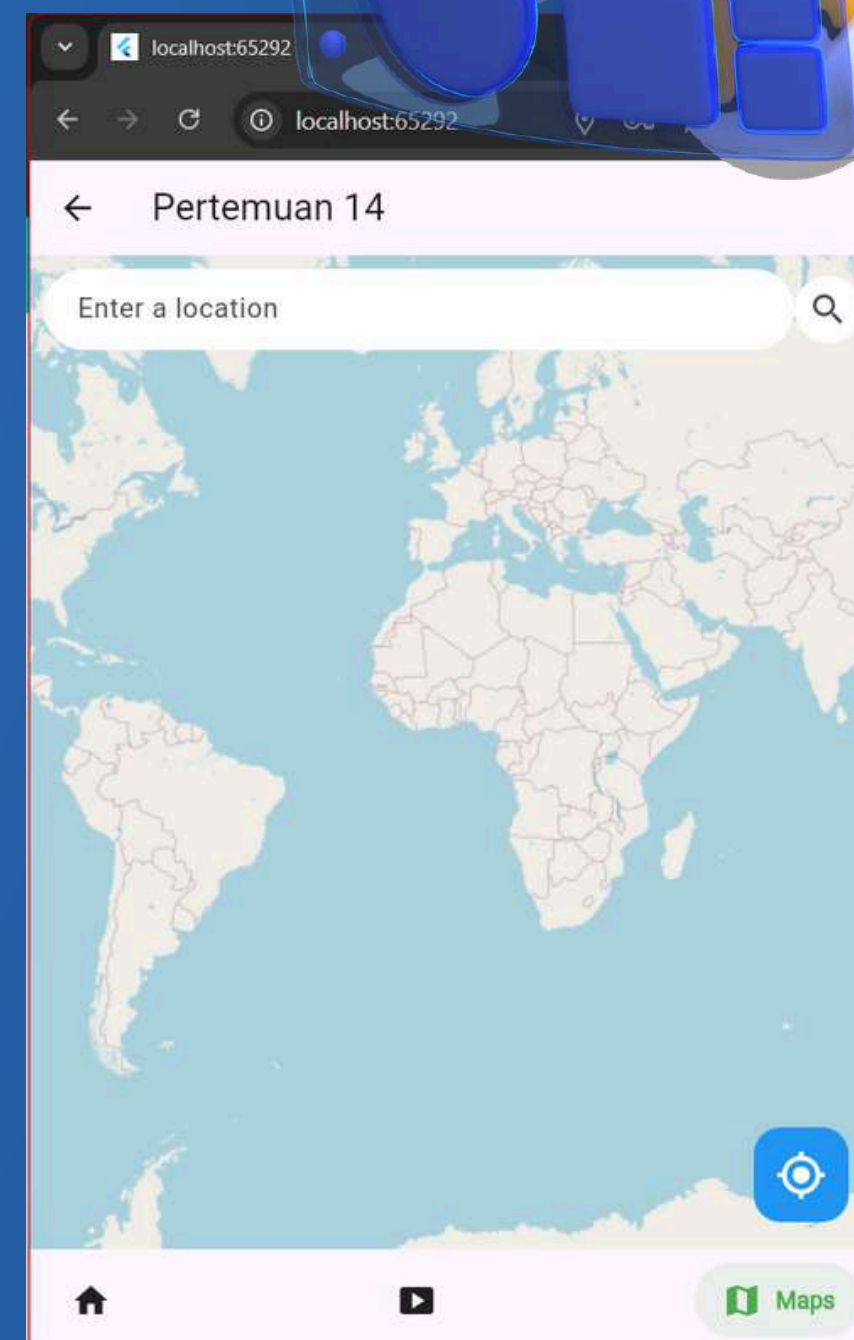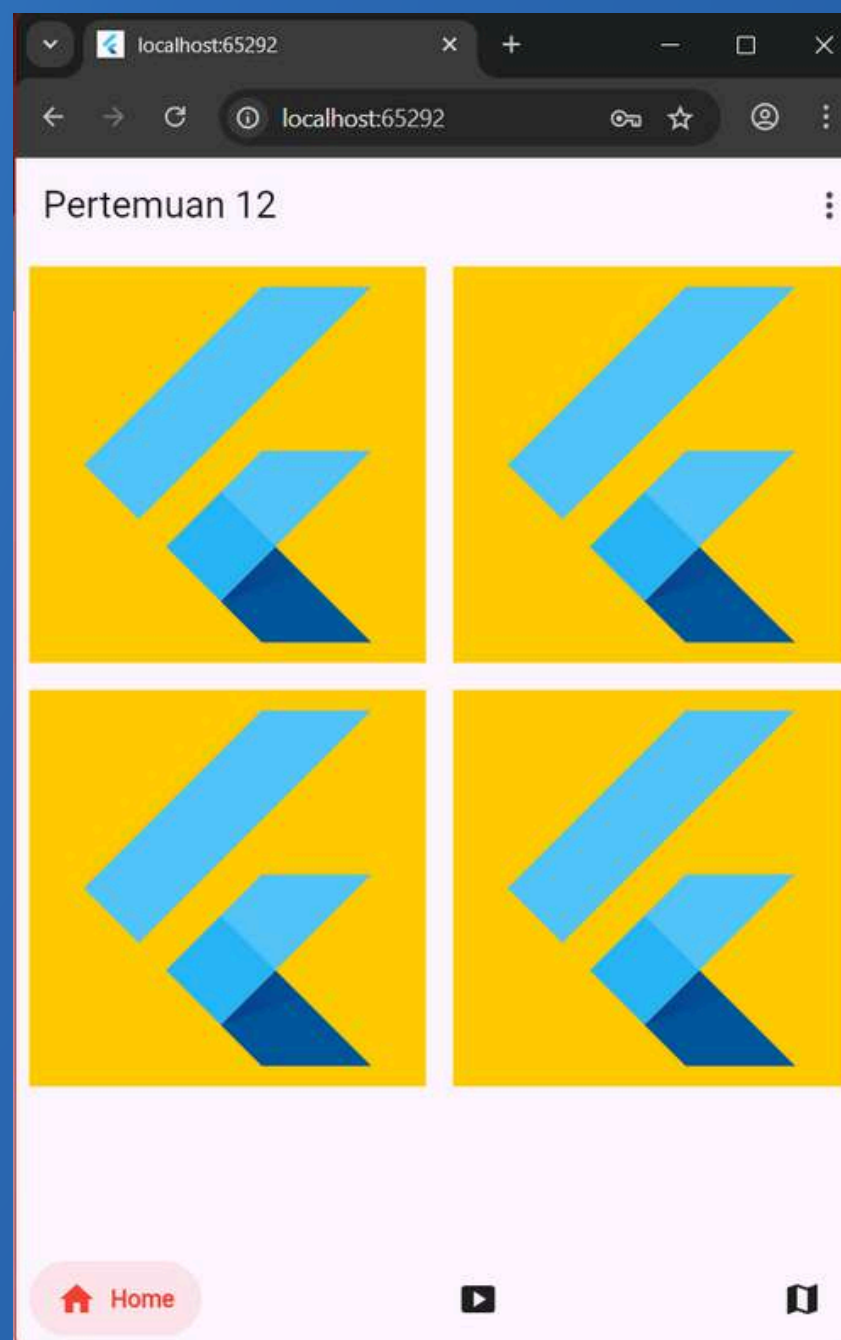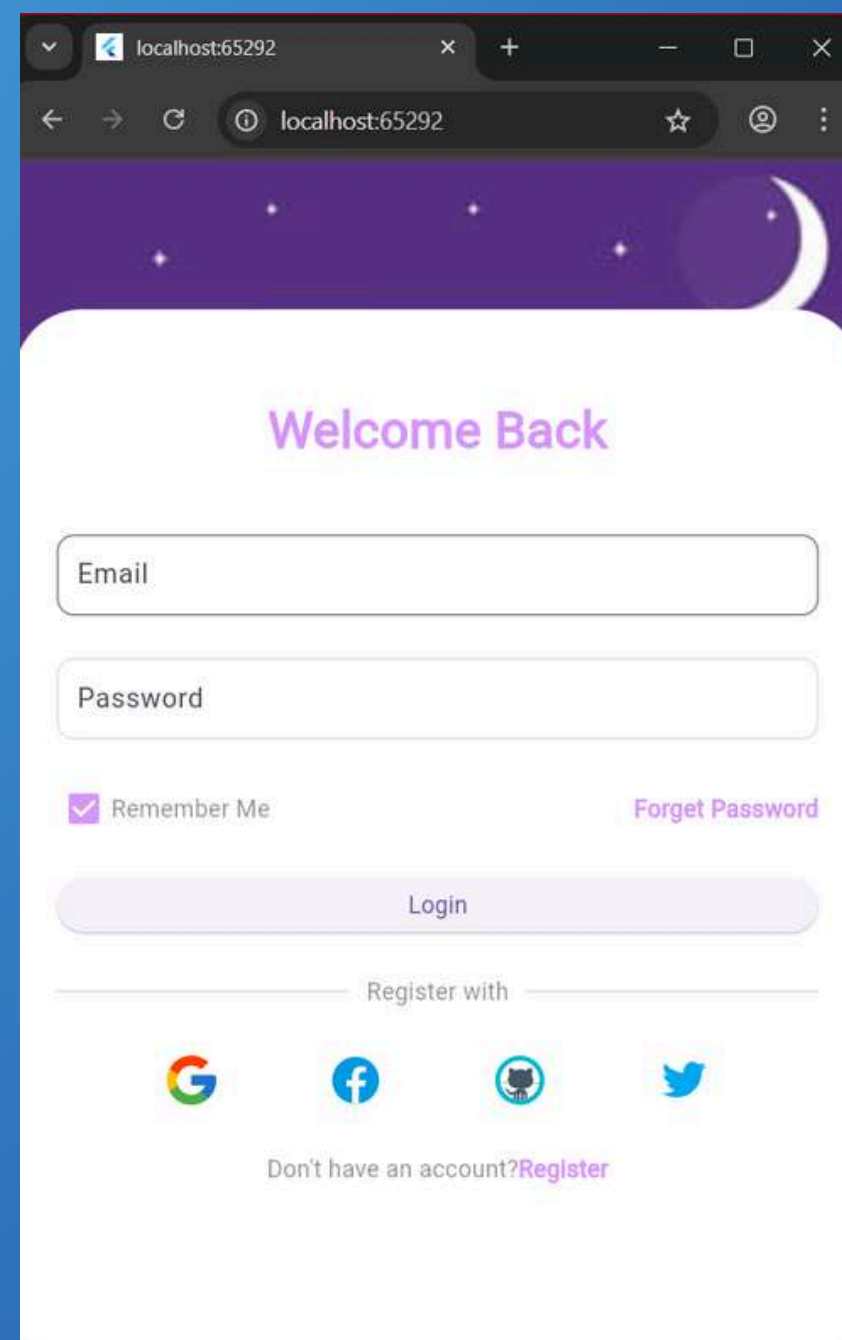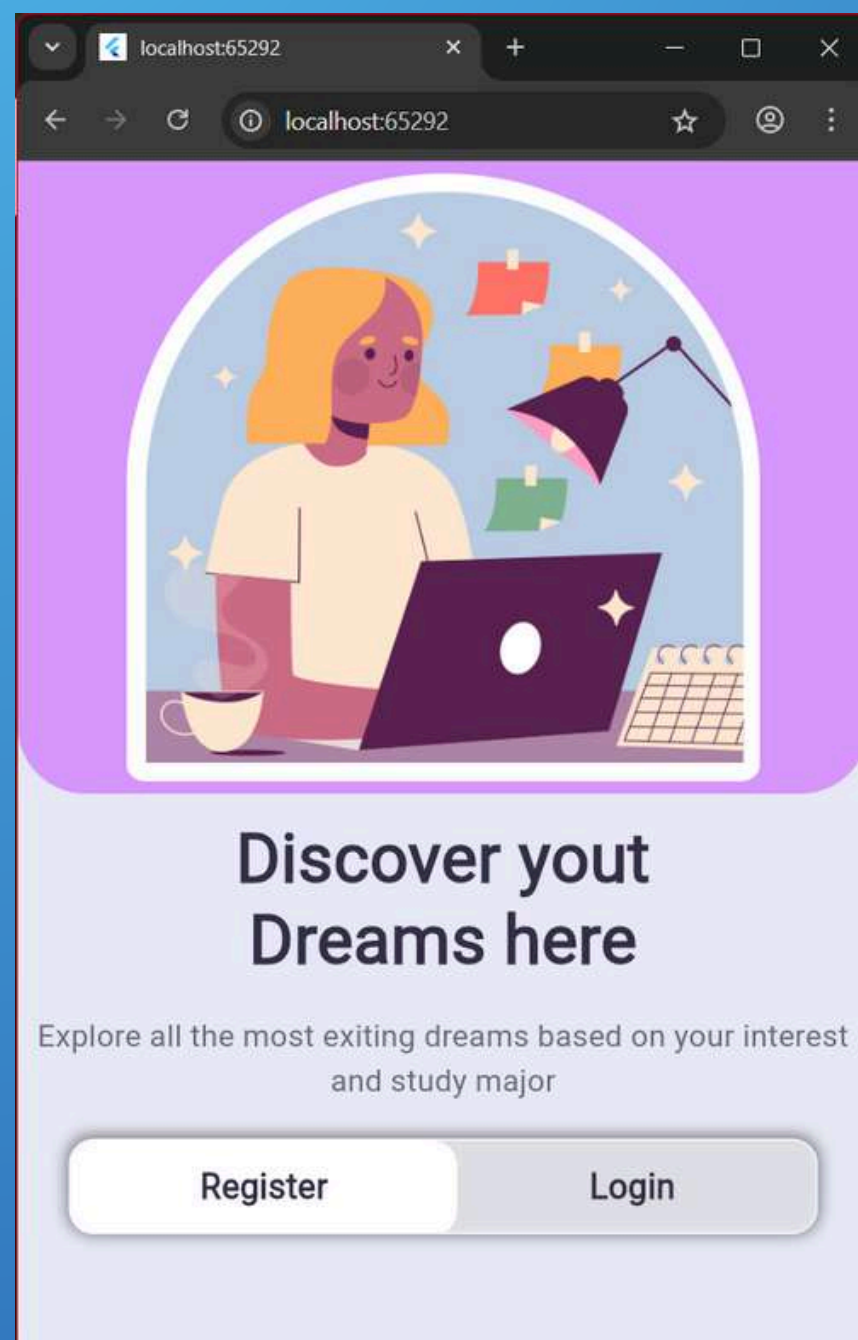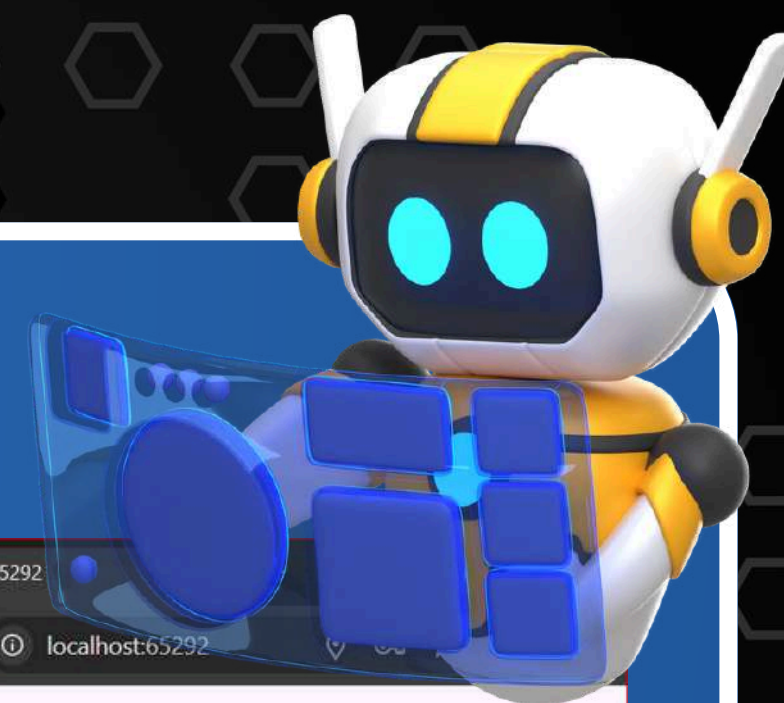
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SOURCE CODE

Note:
Jika terdapat error location saat run & debugging, silahkan ubah versi location di pubspec.yaml menjadi

```
dependencies:
 flutter:
  sdk: flutter
location: ^5.0.0
```

Thank You!