

**LAPORAN PRAKTIKUM
PEMROGRAMAN PERANGKAT BERGERAK**

**MODUL XII
MAPS & PLACES**



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PROGRAM STUDI S1 SOFTWARE ENGINEERING

FAKULTAS INFORMATIKA

TELKOM UNIVERSITY PURWOKERTO

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A. GUIDED

Menambahkan API Key di android/app/src/main/AndroidManifest.xml

```
9      <meta-data android:name="com.google.android.geo.API_KEY"
10      android:value="AIzaSyA9VfdPS0QyvZuhSJCPH20NpKMAPKPWscw"/>
```

Lalu import package google_maps_flutter dan place_picker_google yang nantinya muncul di pubspec.yaml

```
38   google_maps_flutter: ^2.10.0
39   place_picker_google: ^0.0.13
```

1. Main.dart

Source code :

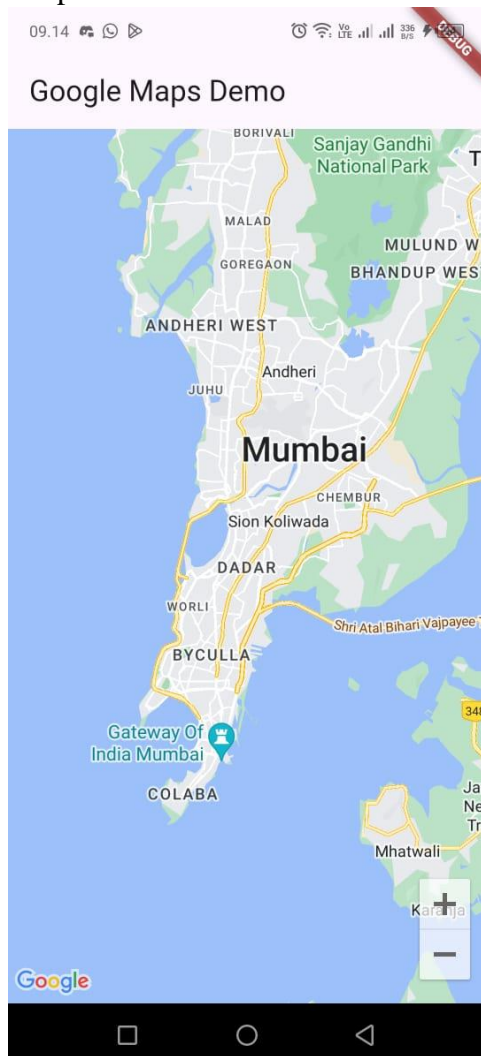
```
lib > main.dart > ...
1  import 'package:flutter/material.dart';
2  import 'package:maps_places/homepage.dart';
3
4  Run | Debug | Profile
5  void main() {
6    runApp(const MyApp());
7  }
8
9  class MyApp extends StatelessWidget {
10    const MyApp({super.key});
11
12    @override
13    Widget build(BuildContext context) {
14      return MaterialApp(
15        title: 'Flutter Demo',
16        theme: ThemeData(
17          colorScheme: ColorScheme.fromSeed(seedColor: Colors.deepPurple),
18          useMaterial3: true,
19        ), // ThemeData
20        home: MapsScreen(); // MaterialApp
21    }
22  }
```

2. homepage.dart

Source code :

```
1 import 'package:flutter/material.dart';
2 import 'package:google_maps_flutter/google_maps_flutter.dart';
3
4 class MapsScreen extends StatefulWidget {
5   @override
6   MapsScreenState createState() => _MapsScreenState();
7 }
8
9 class _MapsScreenState extends State<MapsScreen> {
10   static final LatLng _kMapCenter =
11     LatLng(19.018255973653343, 72.84793849278007);
12   static final CameraPosition _kInitialPosition = CameraPosition(
13     target: _kMapCenter,
14     zoom: 11.0,
15   );
16   @override
17   Widget build(BuildContext context) {
18     return Scaffold(
19       appBar: AppBar(
20         title: Text('Google Maps Demo'),
21       ), // AppBar
22       body: GoogleMap(
23         initialCameraPosition: _kInitialPosition,
24         myLocationEnabled: true,
25       ), // GoogleMap
26     ); // Scaffold
27   }
28 }
```

Output :



Penjelasan Program

MapsScreen yang didefinisikan dalam homepage.dart akan dirender.

Dalam implementasi GoogleMap, posisi awal peta diatur menggunakan `_kInitialPosition` yang merupakan instance `CameraPosition`. Koordinat pusat peta (`_kMapCenter`) diset ke latitude 19.018255973653343 dan longitude 72.84793849278007, yang merupakan lokasi di Mumbai, India. Level zoom diatur ke 11.0 untuk memberikan tampilan yang cukup luas dari area tersebut.

Fitur `myLocationEnabled` diaktifkan untuk menampilkan lokasi pengguna saat ini pada peta.

Output yang terlihat pada screenshot menunjukkan peta Google Maps yang berpusat di Mumbai, dengan berbagai area seperti Sanjay Gandhi National Park di utara, Andheri West di bagian barat, dan Gateway of India Mumbai di selatan. Interface menggunakan layout standar Android dengan tombol navigasi di bagian bawah dan status bar di bagian atas yang menampilkan waktu dan status koneksi.

Program ini memanfaatkan package `google_maps_flutter` untuk mengintegrasikan Google Maps ke dalam aplikasi Flutter, memungkinkan pengguna melihat dan berinteraksi dengan peta secara interaktif.

B. UNGUIDED

Dari tugas guided yang telah dikerjakan, lanjutkan hingga ke bagian place picker untuk memberikan informasi mengenai lokasi yang ditunjuk di peta.

Source code :

lib/main.dart

```
lib > main.dart > ...
1  import 'package:flutter/material.dart';
2  import 'package:maps_places/homepage.dart';
3
4  Run | Debug | Profile
5  void main() {
6    runApp(const MyApp());
7  }
8
9  class MyApp extends StatelessWidget {
10    const MyApp({super.key});
11
12    @override
13    Widget build(BuildContext context) {
14      return MaterialApp(
15        title: 'Flutter Demo',
16        theme: ThemeData(
17          colorScheme: ColorScheme.fromSeed(seedColor: Colors.deepPurple),
18          useMaterial3: true,
19        ), // ThemeData
20        home: MapsScreen(); // MaterialApp
21    }
22  }
```

lib/homepage.dart

```

1 import 'package:flutter/material.dart';
2 import 'package:google_maps_flutter/google_maps_flutter.dart';
3 import 'package:place_picker_google/place_picker_google.dart';
4
5 class AppColors {
6   static const Color primary = Color(0xFF2D5AF0);
7   static const Color secondary = Color(0xFF8C9EFF);
8   static const Color background = Color(0xFFF8F9FD);
9   static const Color surface = Colors.white;
10  static const Color text = Color(0xFF1B1B1B);
11  static const Color textSecondary = Color(0xFF6B7280);
12  static const Color divider = Color(0xFFEEF2F6);
13 }
14
15 class MapsScreen extends StatefulWidget {
16   @override
17   _MapsScreenState createState() => _MapsScreenState();
18 }
19
20 class _MapsScreenState extends State<MapsScreen> with TickerProviderStateMixin {
21   static final LatLng _kMapCenter =
22     const LatLng(-7.435224768988344, 109.24909224765842);
23
24   static final CameraPosition _kInitialPosition = CameraPosition(
25     target: _kMapCenter,
26     zoom: 16.0,
27   );
28
29   GoogleMapController? _mapController;
30   Set<Marker> _markers = {};
31   late AnimationController _animationController;
32
33   final Map<LatLng, Map<String, dynamic>> _placesInfo = {
34     const LatLng(-7.435224768988344, 109.24909224765842): {
35       'name': 'Telkom University Purwokerto',
36       'address': 'Jl. DI Panjaitan No.128, Purwokerto',
37       'type': 'University',
38       'phone': '+62 281 641629',
39       'website': 'www.telkomuniversity.ac.id',
40       'operatingHours': 'Monday - Friday: 8:00 AM - 4:00 PM',
41       'facilities': [
42         'Library',
43         'Laboratory',
44         'Cafeteria',
45         'Parking',
46         'Sport Center'
47       ],
48       'rating': 4.6
49     },
50   };
51
52   @override
53   void initState() {
54     super.initState();
55     _initializeMarkers();
56     _animationController = AnimationController(
57       duration: const Duration(milliseconds: 300),
58       vsync: this,
59     ); // AnimationController
60   }
61
62   @override
63   void dispose() {
64     _animationController.dispose();
65     super.dispose();
66   }
67
68   void _initializeMarkers() {
69     _markers = _placesInfo.entries.map((entry) {
70       return Marker(
71         markerId: MarkerId(entry.value['name']),
72         position: entry.key,
73         onTap: () => _showPlaceInfo(entry.key),
74         icon: BitmapDescriptor.defaultMarkerWithHue(BitmapDescriptor.hueAzure),

```

```

75     ); // Marker
76   }).toSet();
77 }
78
79 void _showPlaceInfo(LatLng position) {
80   _animationController.forward(from: 0.0);
81   showModalBottomSheet(
82     context: context,
83     isScrollControlled: true,
84     backgroundColor: Colors.transparent,
85     builder: (context) => _buildBottomSheet(position),
86   );
87 }
88
89 Widget _buildInfoCard(IconData icon, String title, String content) {
90   return Container(
91     margin: const EdgeInsets.only(bottom: 16),
92     decoration: BoxDecoration(
93       color: Colors.surface,
94       borderRadius: BorderRadius.circular(12),
95       boxShadow: [
96         BoxShadow(
97           color: Colors.black.withOpacity(0.05),
98           blurRadius: 10,
99           offset: const Offset(0, 2),
100         ), // BoxShadow
101       ],
102     ), // BoxDecoration
103     child: ClipRRect(
104       borderRadius: BorderRadius.circular(12),
105       child: Material(
106         color: Colors.transparent,
107         child: Inkwell(
108           onTap: () {},
109           child: Padding(
110             padding: const EdgeInsets.all(16),
111             child: Row(
112               children: [
113                 Container(
114                   padding: const EdgeInsets.all(12),
115                   decoration: BoxDecoration(
116                     color: Colors.primary.withOpacity(0.1),
117                     borderRadius: BorderRadius.circular(10),
118                   ), // BoxDecoration
119                   child: Icon(icon, color: Colors.primary, size: 24),
120                 ), // Container
121                 const SizedBox(width: 16),
122                 Expanded(
123                   child: Column(
124                     crossAxisAlignment: CrossAxisAlignment.start,
125                     children: [
126                       Text(
127                         title,
128                         style: const TextStyle(
129                           color: Colors.textSecondary,
130                           fontSize: 14,
131                           fontWeight: FontWeight.w500,
132                         ), // TextStyle
133                       ), // Text
134                       const SizedBox(height: 4),
135                       Text(
136                         content,
137                         style: const TextStyle(
138                           color: Colors.text,
139                           fontSize: 16,
140                           fontWeight: FontWeight.w600,
141                         ), // TextStyle
142                       ), // Text
143                     ],
144                   ), // Column
145                 ), // Expanded
146               ],
147             ), // Row
148           ), // Padding

```



```

223         '${placeInfo?['rating']}',
224         style: const TextStyle(
225           color: Colors.white,
226           fontWeight: FontWeight.bold,
227         ), // TextStyle
228       ), // Text
229     ],
230   ), // Row
231 ), // Container
232 ],
233 ), // Row
234 const SizedBox(height: 8),
235 Text(
236   placeInfo?['type'] ?? '',
237   style: const TextStyle(
238     fontSize: 16,
239     color: AppColors.primary,
240     fontWeight: FontWeight.w500,
241   ), // TextStyle
242 ), // Text
243 ],
244 ), // Column
245 ), // Container
246 Expanded(
247   child: SingleChildScrollView(
248     physics: const BouncingScrollPhysics(),
249     padding: const EdgeInsets.all(24),
250     child: Column(
251       crossAxisAlignment: CrossAxisAlignment.start,
252       children: [
253         _buildInfoCard(
254           Icons.location_on_rounded,
255           'Address',
256           placeInfo?['address'] ?? '',
257         ),
258         _buildInfoCard(
259           Icons.access_time_rounded,
260           'Operating Hours',
261           placeInfo?['operatingHours'] ?? '',
262         ),
263         _buildInfoCard(
264           Icons.phone_rounded,
265           'Contact',
266           placeInfo?['phone'] ?? '',
267         ),
268         _buildInfoCard(
269           Icons.info_outline_rounded,
270           'About',
271           placeInfo?['description'] ?? '',
272         ),
273         const Text(
274           'Facilities',
275           style: TextStyle(
276             fontSize: 18,
277             fontWeight: FontWeight.bold,
278             color: AppColors.text,
279           ), // TextStyle
280         ), // Text
281         const SizedBox(height: 16),
282         Wrap(
283           spacing: 8,
284           runSpacing: 8,
285           children:
286             (placeInfo?['facilities'] as List<String>? ?? []).
287               .map((facility) {
288                 return Chip(
289                   label: Text(
290                     facility,
291                     style: const TextStyle(color: AppColors.primary),
292                   ), // Text
293                   backgroundColor: AppColors.primary.withOpacity(0.1),
294                   padding: const EdgeInsets.symmetric(horizontal: 8),
295                 ); // Chip
296               }).toList(),

```



```

297         ), // Wrap
298         const SizedBox(height: 24),
299         ElevatedButton(
300           onPressed: () {
301             _mapController?.animateCamera(
302               CameraUpdate.newLatLngZoom(place, 17),
303             );
304             Navigator.pop(context);
305           },
306           child: const Row(
307             mainAxisAlignment: MainAxisAlignment.center,
308             children: [
309               Icon(Icons.navigation_rounded),
310               SizedBox(width: 8),
311               Text(
312                 'Navigate',
313                 style: TextStyle(
314                   fontSize: 16,
315                   fontWeight: FontWeight.w600,
316                 ), // TextStyle
317               ), // Text
318             ],
319           ), // Row
320           style: ElevatedButton.styleFrom(
321             backgroundColor: AppColors.primary,
322             padding: const EdgeInsets.symmetric(vertical: 16),
323             shape: RoundedRectangleBorder(
324               borderRadius: BorderRadius.circular(12),
325             ), // RoundedRectangleBorder
326             elevation: 0,
327           ),
328         ), // ElevatedButton
329       ],
330     ), // Column
331   ), // SingleChildScrollView
332 ), // Expanded
333 ],
334 ],
335 ), // Column
336 ); // Container
337 },
338 ); // AnimatedBuilder
339 }

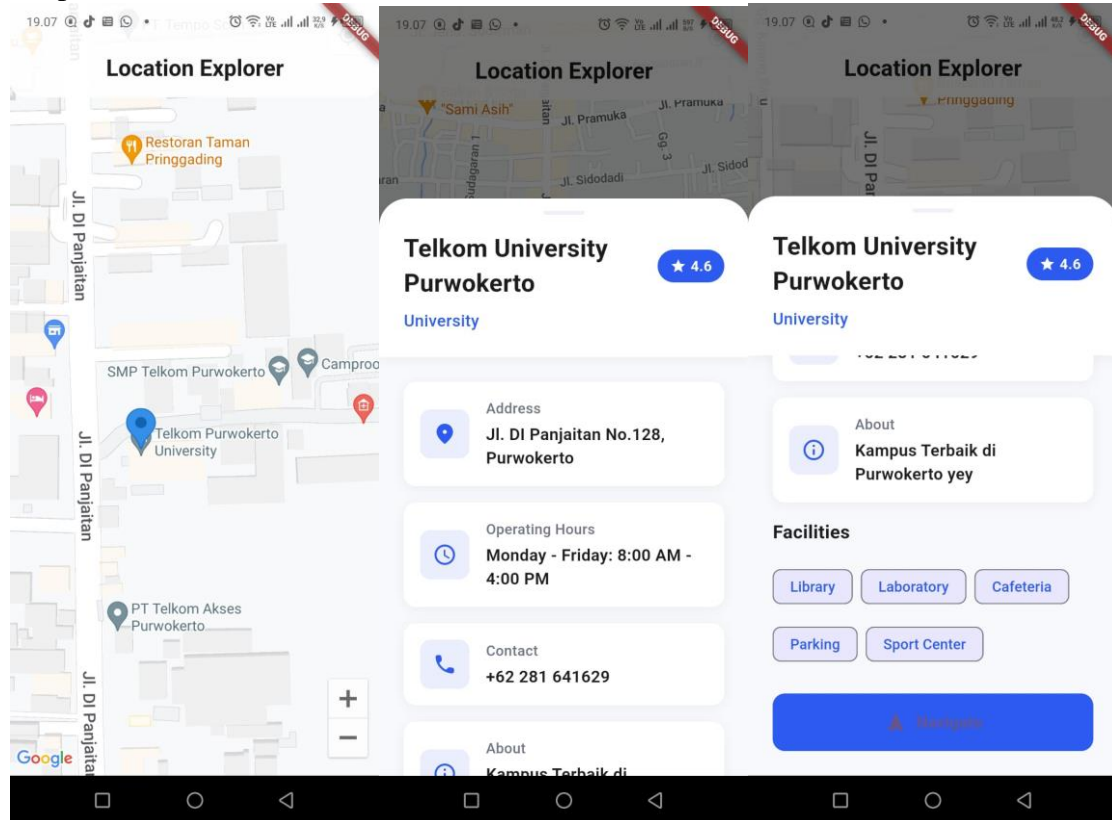
```

```

341 @override
342 Widget build(BuildContext context) {
343   return Scaffold(
344     extendBodyBehindAppBar: true,
345     appBar: AppBar(
346       title: const Text(
347         'Location Explore',
348         style: TextStyle(
349           color: AppColors.text,
350           fontWeight: FontWeight.bold,
351         ), // TextStyle
352       ), // Text
353       backgroundColor: AppColors.surface.withOpacity(0.9),
354       elevation: 0,
355       centerTitle: true,
356       shape: const RoundedRectangleBorder(
357         borderRadius: BorderRadius.vertical(bottom: Radius.circular(16)),
358       ), // RoundedRectangleBorder
359     ), // AppBar
360     body: GoogleMap(
361       initialCameraPosition: _kInitialPosition,
362       myLocationEnabled: true,
363       myLocationButtonEnabled: true,
364       onMapCreated: (GoogleMapController controller) {
365         _mapController = controller;
366       },
367       markers: _markers,
368       mapType: MapType.normal,
369     ), // GoogleMap
370   ); // Scaffold
371 }
372 }

```

Output :



Penjelasan Program

Saat aplikasi pertama kali dijalankan, layar menampilkan peta dengan posisi kamera awal yang ditetapkan pada koordinat Telkom University Purwokerto (-7.435224768988344, 109.24909224765842) dengan level zoom 16.0. Ketika marker diklik, aplikasi akan menampilkan bottom sheet dengan animasi yang berisi informasi detail tentang lokasi tersebut.

Bagian atas bottom sheet menampilkan nama lokasi "Telkom University Purwokerto" dengan rating 4.6 yang ditampilkan dalam badge biru.

Informasi detail lokasi ditampilkan dalam card-card yang memiliki ikon dan latar belakang putih dengan bayangan halus. Setiap card menampilkan informasi spesifik:

- Alamat: Jl. DI Panjaitan No.128, Purwokerto
- Jam Operasional: Senin - Jumat: 8:00 AM - 4:00 PM
- Kontak: +62 281 641629
- Deskripsi: "Kampus Terbaik di Purwokerto yey"

Di bagian bawah informasi, terdapat daftar fasilitas yang ditampilkan menggunakan chip dengan latar belakang biru transparan, meliputi Library, Laboratory, Cafeteria, Parking, dan Sport Center.

Tombol "Navigate" berada di bagian paling bawah bottom sheet dengan ikon navigasi. Ketika ditekan, tombol ini akan menganimasikan kamera peta untuk zoom in ke lokasi yang dipilih dan menutup bottom sheet. Aplikasi juga mendukung fitur lokasi pengguna dengan tombol "My Location" bawaan Google Maps yang memungkinkan pengguna melihat posisinya sendiri di peta.