

Modul I

Google Maps pada Android

A. Tujuan

1. Mampu memahami cara membangun GoogleMaps pada Android
2. Mampu membuat menampilkan custom marker
3. Mampu menggambar polyline route dari dua marker

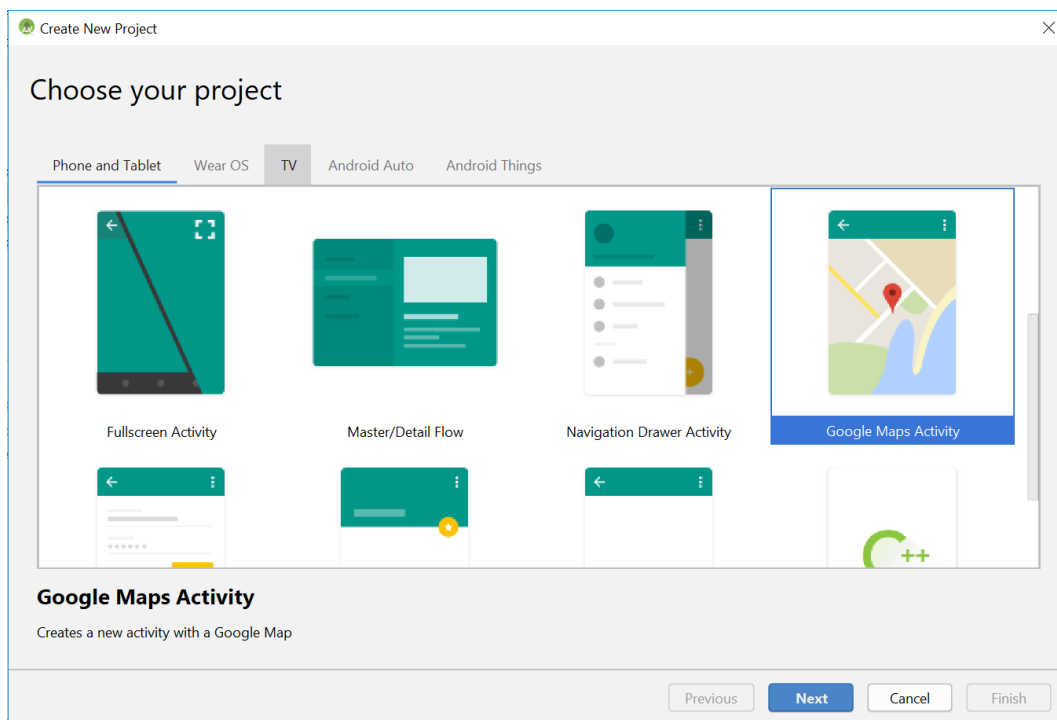
B. Teori Dasar

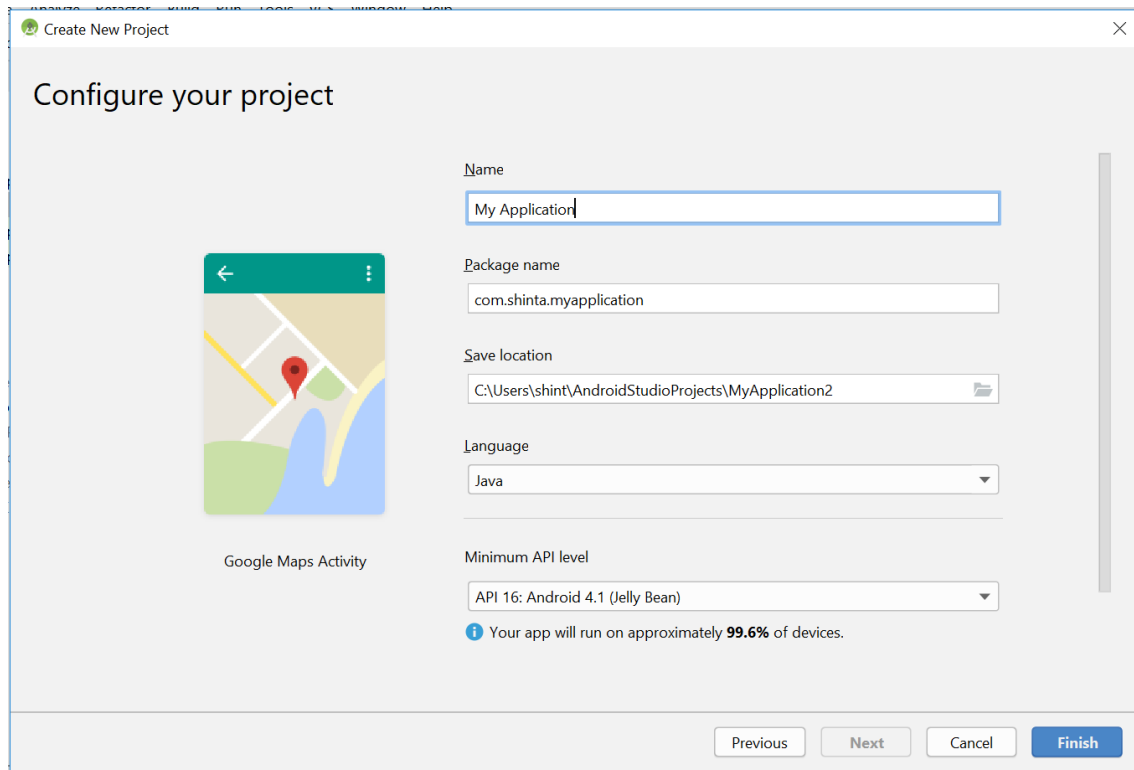
Android memungkinkan kita untuk mengintegrasikan peta google dalam aplikasi kita. Dengan aplikasi ini pengembang dapat menunjukkan lokasi mana pun di peta, atau dapat menunjukkan rute yang berbeda di peta. Selain itu pengembang dapat menyesuaikan peta sesuai pilihan yang diinginkan. Pengembang dapat dengan mudah menyesuaikan google map dari tampilan default, dan mengubahnya sesuai permintaan, seperti menambahkan marker. Tambahkan marker ke peta untuk menunjukkan tempat menarik khusus bagi pengguna. Pengembang dapat menentukan warna atau ikon khusus untuk marker peta Anda agar sesuai dengan tampilan dan nuansa aplikasi Anda. Untuk lebih meningkatkan aplikasi, gambar polyline dan poligon untuk menunjukkan jalur atau wilayah, atau memberikan overlay gambar lengkap.

C. Praktikum

1. Menampilkan GoogleMap

File – New – New Project – Pilih Google Maps Activity





Ketik code di java class MapsActivity.java

```
MapsActivity.java x main\AndroidManifest.xml x ExampleInstrumentedTest.java x
1 package com.example.mapstarter;
2
3 import android.support.v4.app.FragmentActivity;
4 import android.os.Bundle;
5
6 import com.google.android.gms.maps.CameraUpdateFactory;
7 import com.google.android.gms.maps.GoogleMap;
8 import com.google.android.gms.maps.OnMapReadyCallback;
9 import com.google.android.gms.maps.SupportMapFragment;
10 import com.google.android.gms.maps.model.LatLng;
11 import com.google.android.gms.maps.model.MarkerOptions;
12
13 public class MapsActivity extends FragmentActivity implements OnMapReadyCallback {
14
15     private GoogleMap mMap;
16
17     //sets the map type to be "hybrid"
18     //map.setMapType(GoogleMap.M)
19
20     @Override
21     protected void onCreate(Bundle savedInstanceState) {
22         super.onCreate(savedInstanceState);
23         setContentView(R.layout.activity_maps);
24         // Obtain the SupportMapFragment and get notified when the map is ready to be used.
25         SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
26             .findFragmentById(R.id.map);
27         mapFragment.getMapAsync(new OnMapReadyCallback() {
28             @Override
29             public void onMapReady(GoogleMap googleMap) {
30                 // Add a map marker
31                 LatLng defaultLocation = new LatLng(37.4224754, -122.0842499);
32                 MarkerOptions markerOptions = new MarkerOptions().position(defaultLocation);
33                 googleMap.addMarker(markerOptions);
34             }
35         });
36     }
37 }
```

```

20  @Override
21  protected void onCreate(Bundle savedInstanceState) {
22      super.onCreate(savedInstanceState);
23      setContentView(R.layout.activity_maps);
24      // Obtain the SupportMapFragment and get notified when the map is ready to be used.
25      SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
26          .findFragmentById(R.id.map);
27      mapFragment.getMapAsync(onMapReadyCallback: this);
28  }
29
30
31  /**
32   * Manipulates the map once available.
33   * This callback is triggered when the map is ready to be used.
34   * This is where we can add markers or lines, add listeners or move the camera. In this case,
35   * we just add a marker near Sydney, Australia.
36   * If Google Play services is not installed on the device, the user will be prompted to install
37   * it inside the SupportMapFragment. This method will only be triggered once the user has
38   * installed Google Play services and returned to the app.
39   */
40  @Override
41  public void onMapReady(GoogleMap googleMap) {
42      mMap = googleMap;
43
44      // Add a marker in Sydney and move the camera
45      LatLng sydney = new LatLng(-0.83643, 119.89369);
46      mMap.addMarker(new MarkerOptions().position(sydney).title("Marker in Untad"));
47      mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney));
48  }
49  }

```

Coding dalam Manifest, yang perlu diperhatikan pada bagian ini adalah

- Uses Permission
- API Key

```

1  <?xml version="1.0" encoding="utf-8"?>
2  <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3      package="com.example.mapstarter">
4
5      <!-- ... -->
10     <uses-permission android:name="android.permission.INTERNET"/>
11     <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
12     <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
13
14     <application
15         android:allowBackup="true"
16         android:icon="@mipmap/ic_launcher"
17         android:label="MapStarter"
18         android:roundIcon="@mipmap/ic_launcher_round"
19         android:supportRtl="true"
20         android:theme="@style/AppTheme">
21
22         <!-- ... -->
30         <meta-data
31             android:name="com.google.android.geo.API_KEY"
32             android:value="API Key" />
33
34         <activity
35             android:name=".MapsActivity"
36             android:label="Map">
37             <intent-filter>
38                 <action android:name="android.intent.action.MAIN" />
39             </intent-filter>

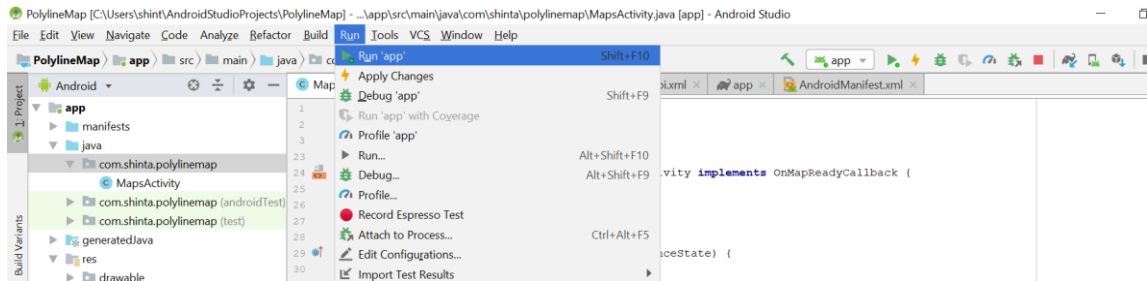
```

```
37         <intent-filter>
38             <action android:name="android.intent.action.MAIN" />
39             <category android:name="android.intent.category.LAUNCHER" />
40         </intent-filter>
41     </activity>
42 </application>
43 </manifest>
```

manifest > application > activity > intent-filter

Text Merged Manifest

Run aplikasi, Klik Run – Run ‘app’



Tampilan yang akan muncul setelah running aplikasi sebagai berikut



2. Menambahkan Custom Marker Lebih Dari Satu

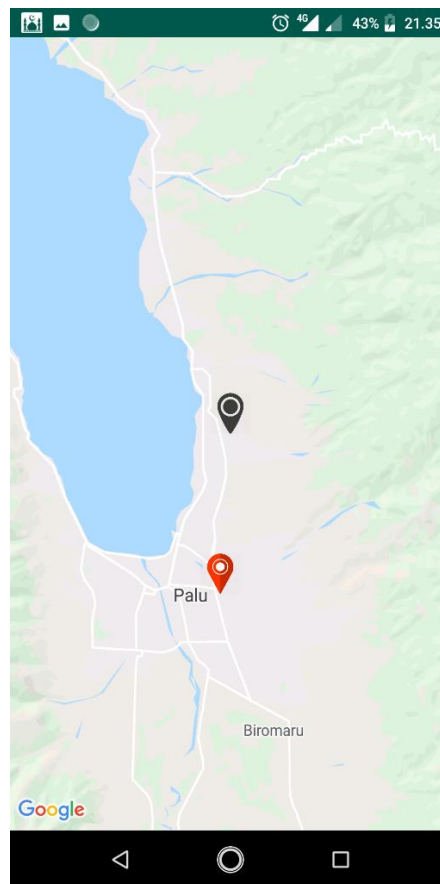
```
MapsActivity.java x AndroidManifest.xml x ExampleInstrumentedTest.java x AndroidManifest.xml x AndroidManifest.xml x
44 @Override
45 public void onMapReady(GoogleMap googleMap) {
46     mMap = googleMap;
47
48     // Add a marker in Untad and move the camera
49     LatLng untad = new LatLng( v: -0.83643, v1: 119.89369);
50     LatLng vatulemo = new LatLng( v: -0.90019, v1: 119.88957);
51     // Custom size marker
52     int tinggi = 100;
53     int lebar = 100;
54     BitmapDrawable bitmapStart = (BitmapDrawable) getResources().getDrawable(R.drawable.pin_map_hitam);
55     BitmapDrawable bitmapDes = (BitmapDrawable) getResources().getDrawable(R.drawable.pin_map_merah);
56     Bitmap s = bitmapStart.getBitmap();
57     Bitmap d = bitmapDes.getBitmap();
58     Bitmap markerStart = Bitmap.createScaledBitmap(s, lebar, tinggi, filter: false);
59     Bitmap markerDes = Bitmap.createScaledBitmap(d, lebar, tinggi, filter: false);
60
61     // Add marker to map
62     mMap.addMarker(new MarkerOptions().position(untad).title("Marker in Untad")
63         .snippet("Ini adalah kampus kami")
64         .icon(BitmapDescriptorFactory.fromBitmap(markerStart)));
65
66     mMap.addMarker(new MarkerOptions().position(vatulemo).title("Marker in Vatulemo")
67         .snippet("Ini adalah Taman Vatulemo")
68         .icon(BitmapDescriptorFactory.fromBitmap(markerDes)));
69
70     mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(untad, v: 11.5f));
71
72 }
73 }
```

Ganti marker map dengan marker custom

Ubah kode pada pada public void onMapReady menjadi seperti berikut:

```
MapsActivity.java x AndroidManifest.xml x ExampleInstrumentedTest.java x AndroidManifest.xml x AndroidManifest.xml x
41 * it inside the SupportMapFragment. This method will only be triggered once the user has
42 * installed Google Play services and returned to the app.
43 */
44 @Override
45 public void onMapReady(GoogleMap googleMap) {
46     mMap = googleMap;
47
48     // Add a marker in Untad and move the camera
49     LatLng untad= new LatLng( v: -0.83643, v1: 119.89369);
50     // Custom size marker
51     int tinggi = 100;
52     int lebar = 100;
53     BitmapDrawable bitmapDraw = (BitmapDrawable) getResources().getDrawable(R.drawable.pin_map_hitam);
54     Bitmap b = bitmapDraw.getBitmap();
55     Bitmap markerKecil = Bitmap.createScaledBitmap(b, lebar, tinggi, filter: false);
56     // Add marker to map
57     mMap.addMarker(new MarkerOptions().position(untad).title("Marker in Untad")
58         .snippet("Ini adalah kampus kami")
59         .icon(BitmapDescriptorFactory.fromBitmap(markerKecil)));
60     mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(untad, v: 13.5f));
61
62 }
63 }
```

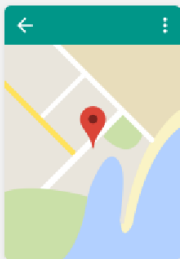
Tampilan hasil Running aplikasi



3. Membuat Polyline pada Google Map

Create New Project

Configure your project



Google Maps Activity

Name
PolylineMap

Package name
com.shinta.polylinemap

Save location
C:\Users\shint\AndroidStudioProjects\PolylineMap

Language
Java

Minimum API level
API 16: Android 4.1 (Jelly Bean)

i Your app will run on approximately **99.6%** of devices.

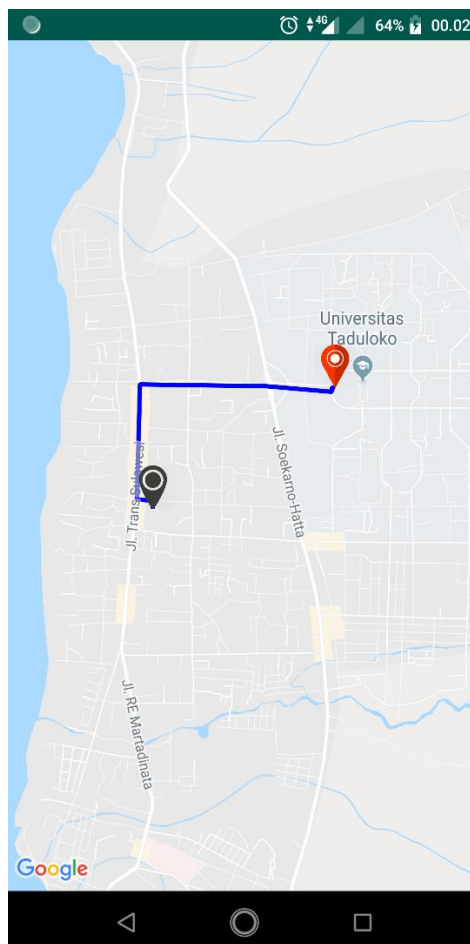
Previous Next Cancel Finish

Tambahkan kode add Polilyne kedalam public void onMapRead

```
MapsActivity.java × activity_maps.xml × google_maps_api.xml × app × AndroidManifest.xml ×
68 .snippet("Ini adalah Kampus Untad")
69 .icon(BitmapDescriptorFactory.fromBitmap(pinStart));
70 mMap.addMarker(new MarkerOptions().position(sma5).title("Marker di SMAN 5 Palu")
71 .snippet("Ini adalah SMAN 5 Palu")
72 .icon(BitmapDescriptorFactory.fromBitmap(pinDes)));
73
74 mMap.addPolyline(new PolylineOptions().add(
75     untad,
76     new LatLng(v: -0.836341, v1: 119.892311),
77     new LatLng(v: -0.836545, v1: 119.892279),
78     new LatLng(v: -0.836384, v1: 119.889565),
79     new LatLng(v: -0.836363, v1: 119.889340),
80     new LatLng(v: -0.836282, v1: 119.889233),
81     new LatLng(v: -0.836282, v1: 119.889233),
82     new LatLng(v: -0.836204, v1: 119.883431),
83     new LatLng(v: -0.836743, v1: 119.883487),
84     new LatLng(v: -0.839093, v1: 119.883360),
85     new LatLng(v: -0.841530, v1: 119.883290),
86     new LatLng(v: -0.841571, v1: 119.884040),
87     sma5
88 ).width(10)
89 .color(Color.BLUE)
90 );
91
92 mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(sma5, v: 14.5f));
93
94 }
```

MapsActivity > onMapReady()

Tampilan hasil Running aplikasi



D. Tugas

1. Buatlah aplikasi android yang dapat:
 - Menampilkan GoogleMaps
 - Menampilkan User Location
 - Menampilkan Custom Marker
 - Menampilkan Polyline dari dua Custom Marker