

# IS534 PEMROGRAMAN MOBILE

## *Praktikum 13*

### GOOGLE MAPS

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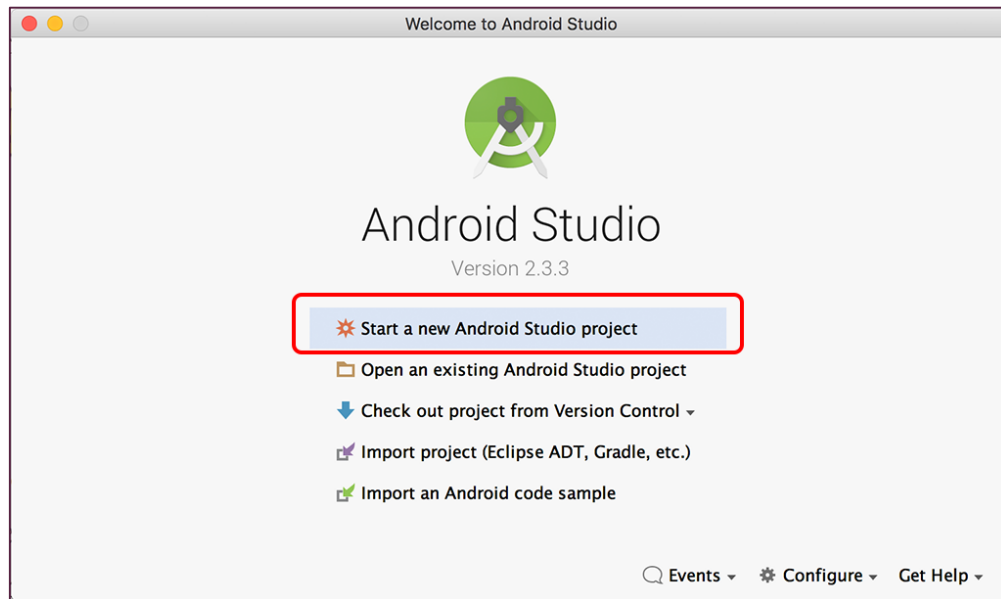


#### **A. Tujuan Praktikum**

1. Mampu menggunakan API Google Maps dan Google Place untuk penggunaan sederhana pada aplikasi Android

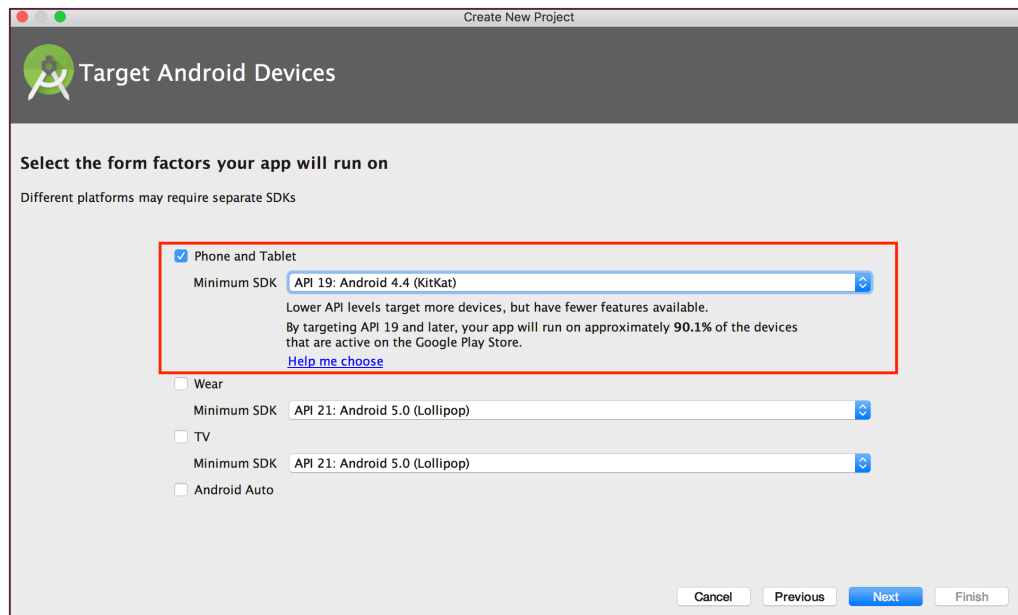
## B. Kegiatan Praktikum

1. Bukalah aplikasi Android Studio
2. Pilih Start a new Android Studio Project

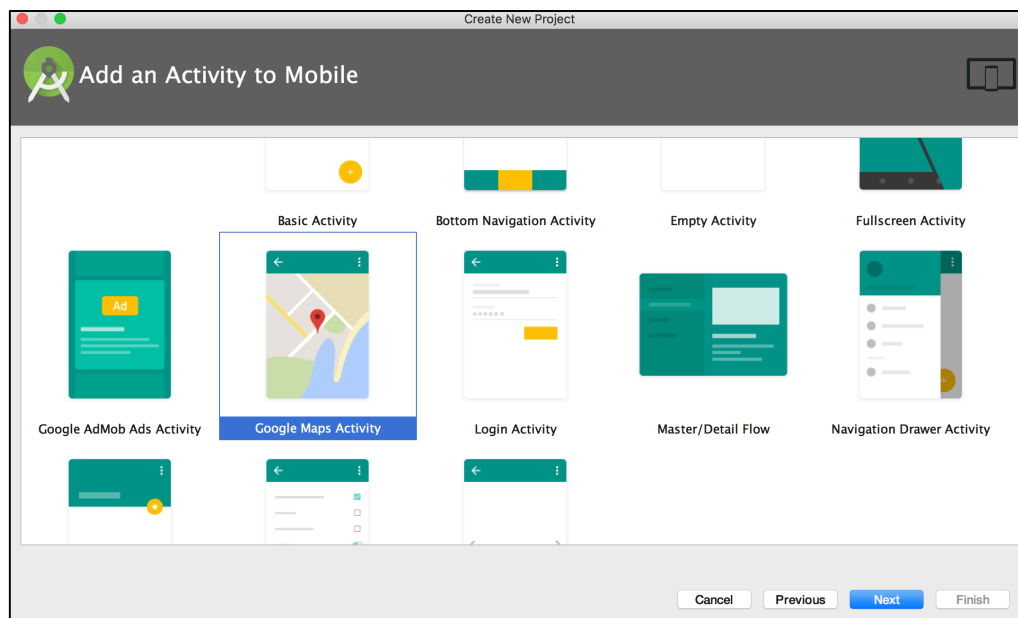


3. Buatlah project baru dengan nama **MyMaps**
  - b. Company Domain : **Prak13\_<NIM>.com**
  - c. Project Location : **D:\Android\_SI\<kode\_kelas>\Prak13\<Application\_Name>**
4. Klik Next

5. Pilih Phone and Tablet dan minimum SDK **API 19: Android 4.4 (KitKat)**

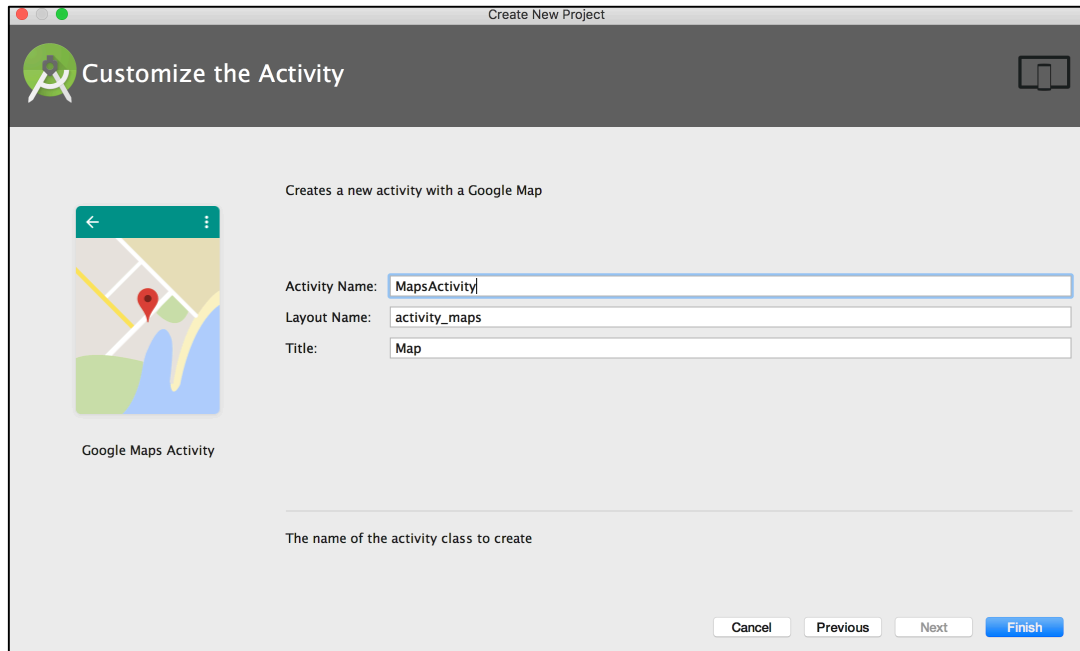


6. Klik Next
7. Akan muncul dialog box untuk memilih jenis activity yang akan dibuat. pilih **Google Maps Activity** dan klik Next



8. Kemudian pada dialog Customize Activity, beri nama Activity Name dengan nama **MapsActivity** dan Layout Name dengan nama

## activity\_maps



9. Klik Finish

10. Setelah itu, buka google\_maps\_api.xml yang ada di folder values

11. Copy link yang ada pada xml tersebut

```
<resources>
<!--
  TODO: Before you run your application, you need a Google Maps API key.
  To get one, follow this link, follow the directions and press "Create" at the end:
  https://console.developers.google.com/flows/enableapi?apiid=maps_android_backend&keyType=CLIENT_SIDE_ANDROID&r=9E:69:D6:80:
  You can also add your credentials to an existing key, using these values:

  Package name:
  9E:69:D6:80:A2:DD:84:90:0B:4C:7F:8F:75:D5:04:CD:7E:76:63:A2

  SHA-1 certificate fingerprint:
  9E:69:D6:80:A2:DD:84:90:0B:4C:7F:8F:75:D5:04:CD:7E:76:63:A2

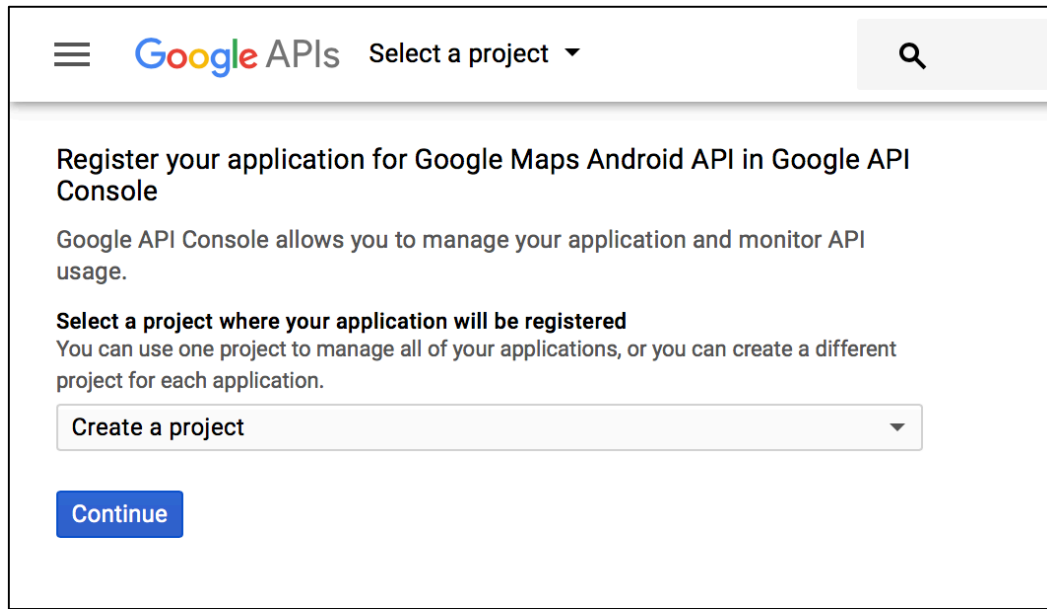
  Alternatively, follow the directions here:
  https://developers.google.com/maps/documentation/android/start#get-key

  Once you have your key (it starts with "AIza"), replace the "google_maps_key"
  string in this file.
-->
<string name="google_maps_key" templateMergeStrategy="preserve" translatable="false">YOUR_KEY_HERE</string>
</resources>
```

12. Kemudian paste ke dalam Web Browser

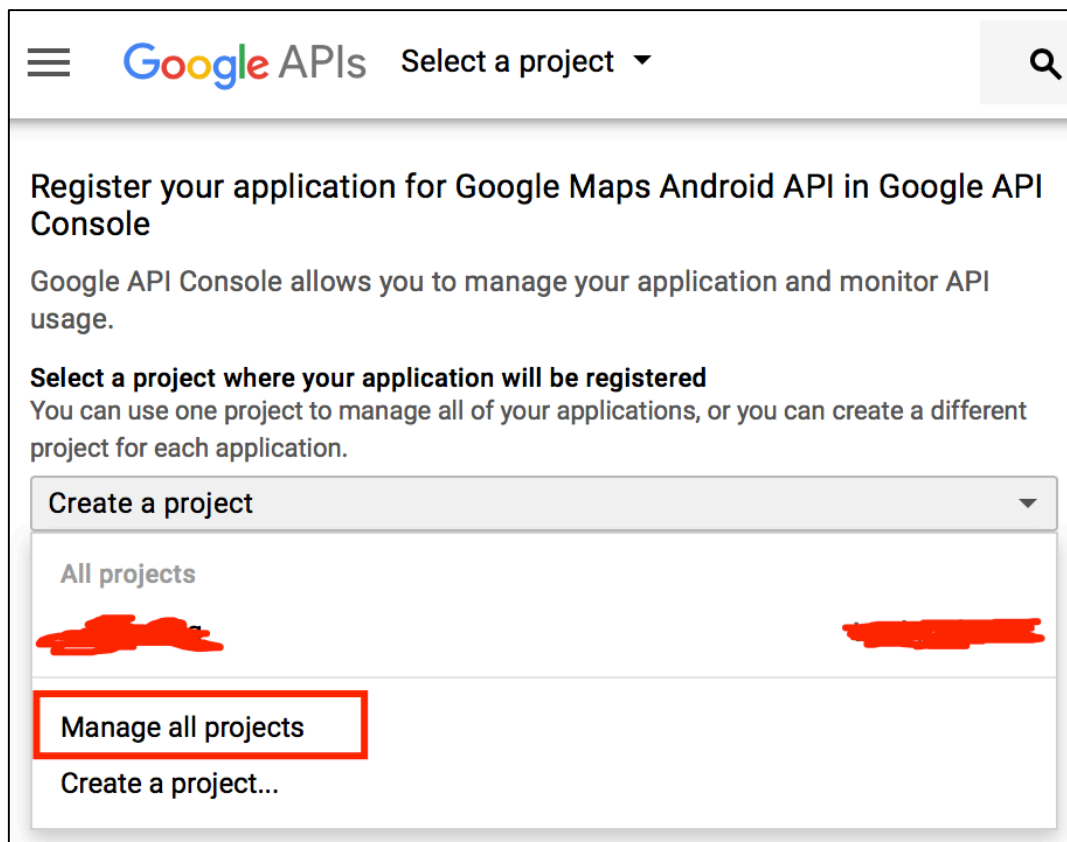
13. Kalian akan diarahkan ke halaman Google APIs, silahkan sign in dengan account Google masing-masing jika belum

14. Akan muncul tampilan seperti di bawah ini



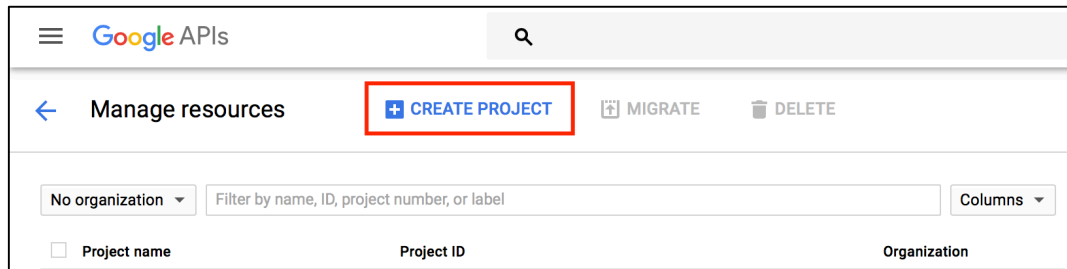
The screenshot shows the Google APIs console registration page. At the top, there is a header with the Google APIs logo, a 'Select a project' dropdown menu, and a search icon. Below the header, the main content area contains the following text: 'Register your application for Google Maps Android API in Google API Console', 'Google API Console allows you to manage your application and monitor API usage.', and 'Select a project where your application will be registered'. Below this text, there is a dropdown menu with the text 'Create a project' and a blue 'Continue' button.

15. Pilih Manage all projects pada menu drop down list Create a project



The screenshot shows the Google APIs console registration page with the 'Create a project' dropdown menu open. The dropdown menu contains the following options: 'All projects', 'Manage all projects' (highlighted with a red box), and 'Create a project...'. The 'Manage all projects' option is the one selected according to the instructions.

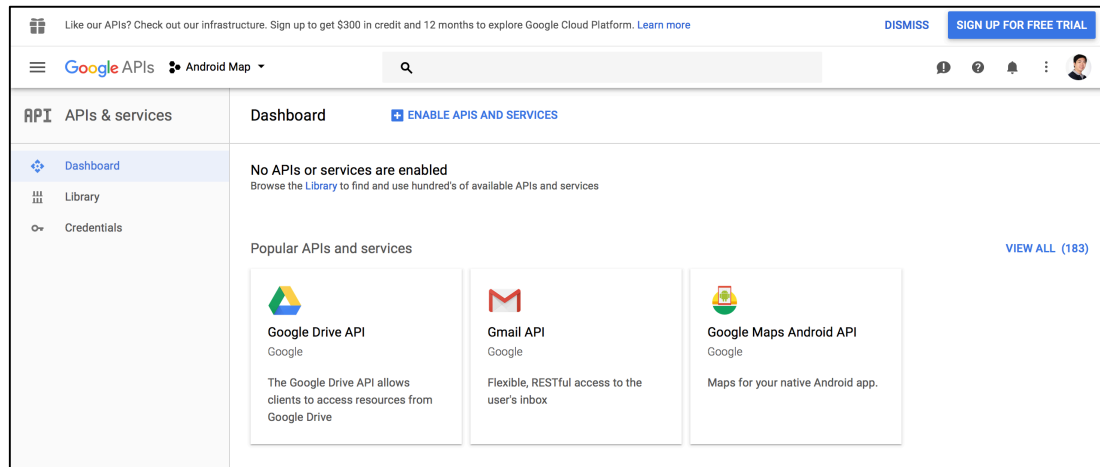
## 16. Klik button Create Project



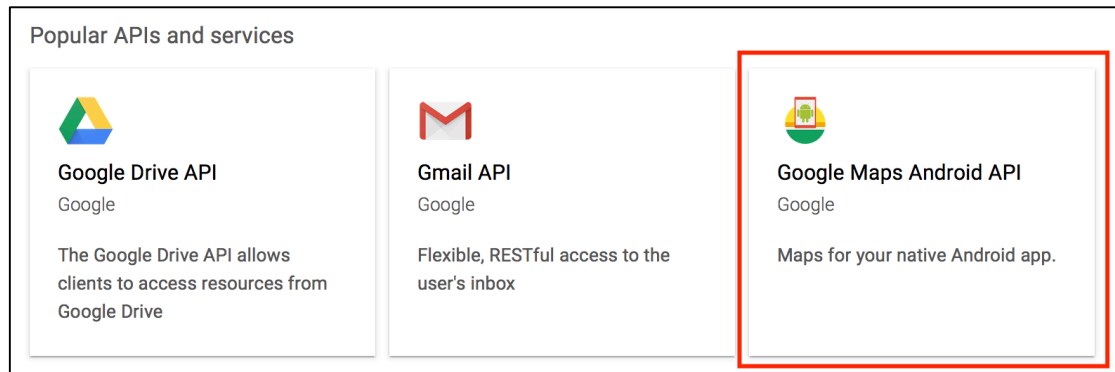
## 17. Beri nama project dengan Android Map, kemudian klik tombol Create

A screenshot of the 'New Project' form in Google APIs. The form has a title 'New Project'. Below the title, there's a message: 'You have 6 projects remaining in your quota. Learn more.' The 'Project name' field is labeled with a question mark and contains the text 'Android Map'. Below this, it says 'Your project ID will be android-map-187713' with an 'Edit' link. The 'Organization' field is labeled with a question mark and contains the text 'siswanto.me'. At the bottom, there's a message: 'You have logged in under a managed account. Your domain administrator may be able to access, change or suspend any projects created using this account. If you do not want your domain administrator to access your projects, please log out and create a project under an unmanaged Google Account. For more information, please review Google's Privacy Policy.' At the very bottom, there are two buttons: 'Create' and 'Cancel'.

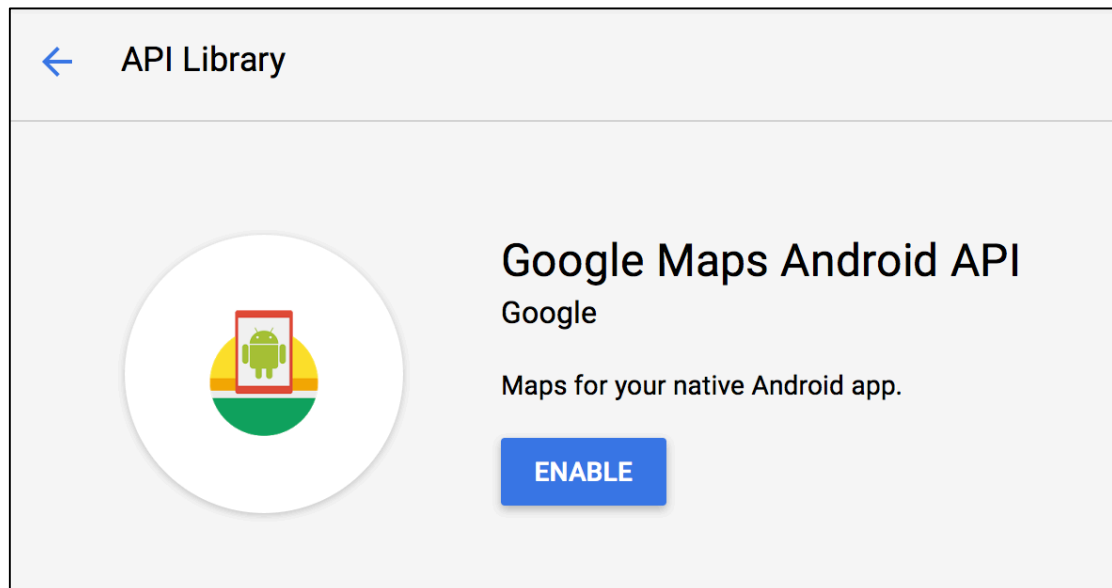
## 18. Setelah selesai, kembali ke Dashboard APIs & Services



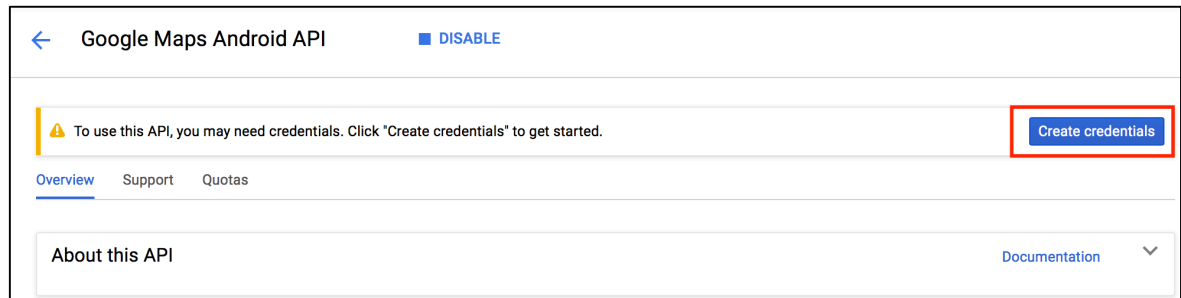
## 19. Pilih Google Maps Android API



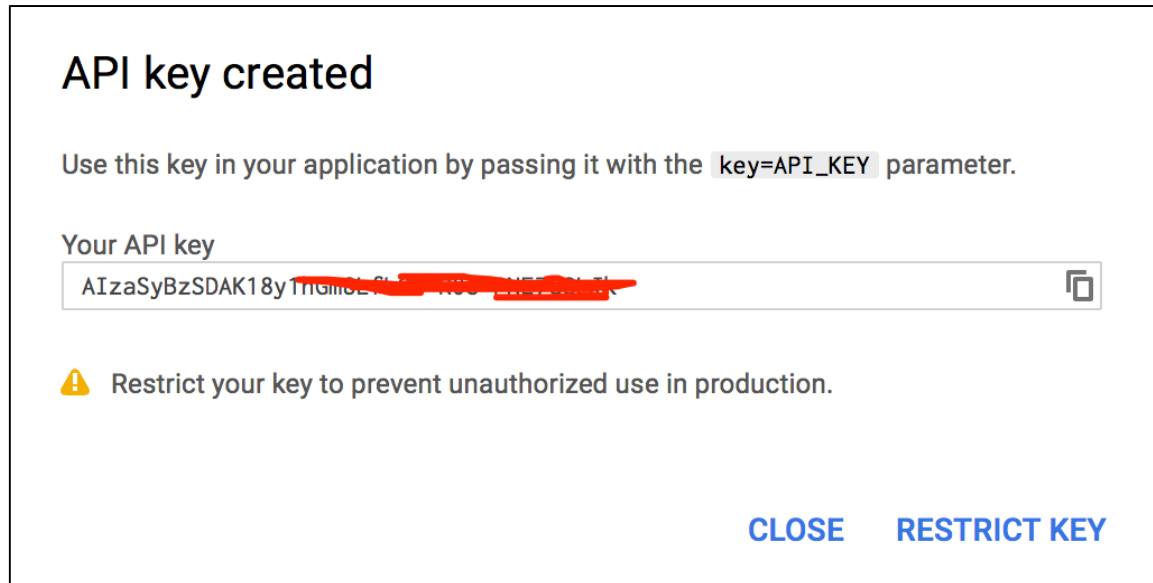
## 20. Klik Enable



## 21. Klik Create Credentials



## 22. Ikuti stepnya sampai mendapatkan API key yang dibutuhkan



## 23. Copy dan paste API key tersebut pada google\_maps\_api.xml

```
<string name="google_maps_key" templateMergeStrategy="preserve" translatable="false">AIzaSyBzSDAK18yTnGmOL8y...</string>  
sources>
```

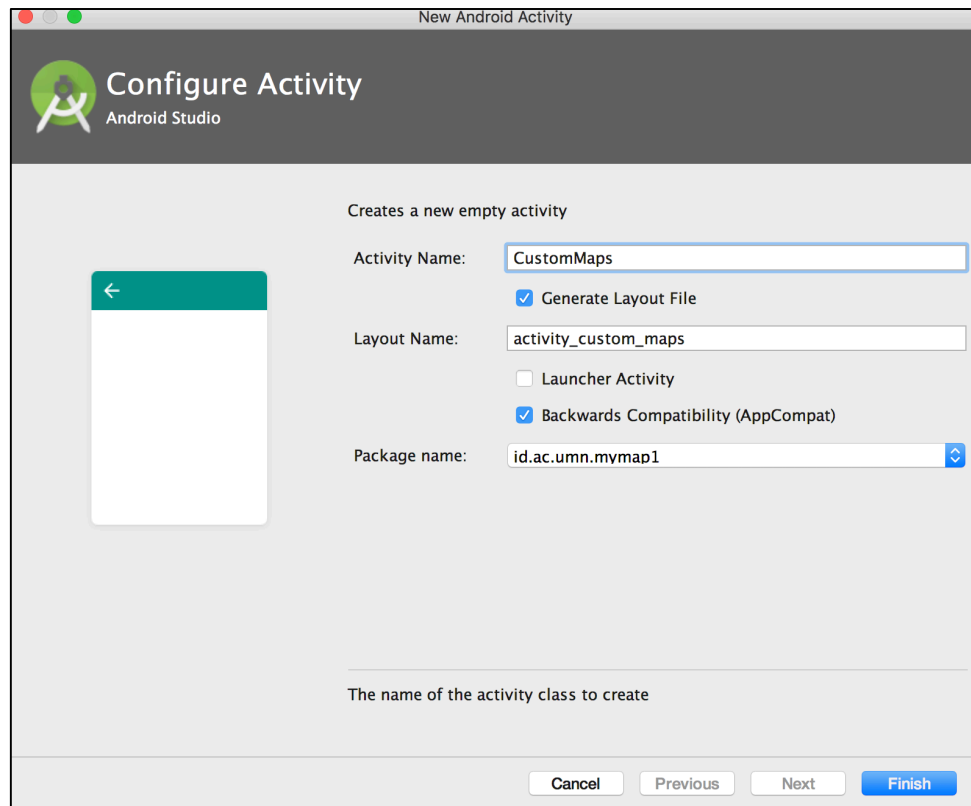
## 24. Jalankan aplikasi yang dibuat maka akan muncul peta di Australia dengan title Marker in Sydney



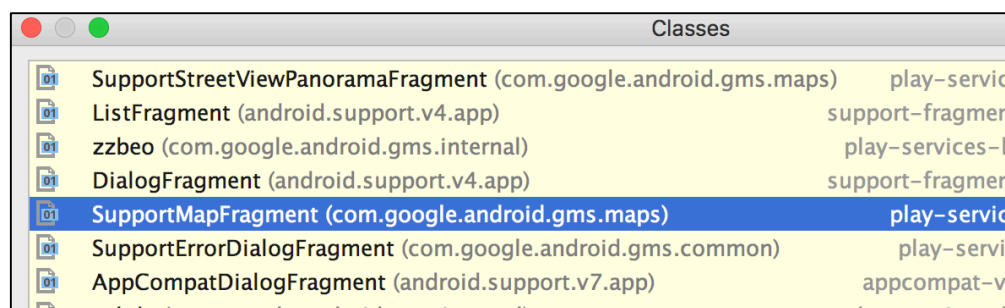


## Challenge

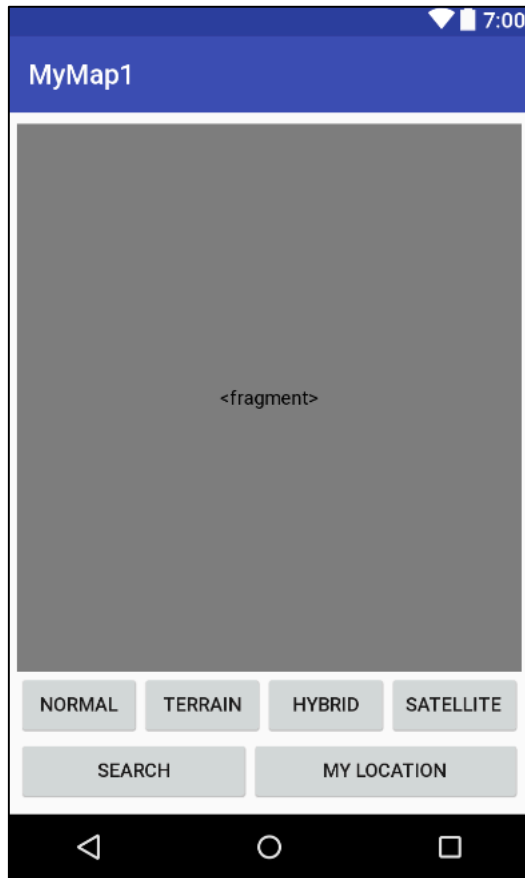
1. Buatlah sebuah Empty Activity baru dengan nama CustomMaps



2. Tambahkan sebuah LinearLayout (vertical) ke dalam layout Custom Maps
3. Kemudian tambahkan fragment ke dalam layout
4. Pilih SupportMapFragment



5. Atur layout design seperti di bawah ini



6. Ada 6 Button yang digunakan yaitu Normal (ID btnNormalMode), Terrain (ID btnTerrainMode), Hybrid (ID btnHybrid), Satellite (ID btnSatelliteMode), Search (ID btnSearch), My Location (ID btnMyLocation)
7. Pada build.gradle (Module: app), tambahkan library play services untuk places setelah itu Sync kembali gradle yang sudah diubah

```
dependencies {
    compile fileTree(dir: 'libs', include: ['*.jar'])
    androidTestCompile('com.android.support.test.espresso:espresso-core:2.2.2', {
        exclude group: 'com.android.support', module: 'support-annotations'
    })
    compile 'com.android.support:appcompat-v7:26.+'
    compile 'com.google.android.gms:play-services-maps:11.0.4'
    compile 'com.google.android.gms:play-services-places:11.0.4'
    compile 'com.android.support.constraint:constraint-layout:1.0.2'
    testCompile 'junit:junit:4.12'
}
```

8. Tambahkan implements fungsi dari OnMapReadyCallback pada class CustomMaps dan tambahkan beberapa objek, instance, dan

variabel yang dibutuhkan seperti di bawah ini

```
public class CustomMaps extends AppCompatActivity implements OnMapReadyCallback {  
    Button terrain, satellite, normal, hybrid, mylocation, search;  
    GoogleMap map;  
    LatLng home, position;  
    Double latitude, longitude, x, y;  
    int PLACE_AUTO = 1;  
}
```

9. Kemudian implements method overried untuk onMapReady dan ketikkan source code berikut di dalam method tersebut

```
@Override  
public void onMapReady(GoogleMap googleMap) {  
    map = googleMap;  
  
    home = new LatLng(-6.257385, 106.618320);  
    map.addMarker(new MarkerOptions().position(home).title("Welcome to UMN!")).showInfoWindow();  
    map.moveCamera(CameraUpdateFactory.newLatLng(home));  
    map.moveCamera(CameraUpdateFactory.newLatLngZoom(home, 16));  
    map.setTrafficEnabled(true);  
}
```

10. Pada method onCreate, tambahkan source code berikut

```
try {  
    SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()  
        .findFragmentById(R.id.map);  
    mapFragment.getMapAsync(this);  
}  
catch (Exception e){  
    Toast.makeText(getApplicationContext(),e.toString(),Toast.LENGTH_LONG).show();  
}
```

```
terrain = (Button) findViewById(R.id.btnTerrainMode);  
hybrid = (Button) findViewById(R.id.btnHybridMode);  
satellite = (Button) findViewById(R.id.btnSatelliteMode);  
normal = (Button) findViewById(R.id.btnNormalMode);  
search = (Button) findViewById(R.id.btnSearch);  
mylocation = (Button) findViewById(R.id.btnMyLocation);
```

```

terrain.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        map.setMapType(GoogleMap.MAP_TYPE_TERRAIN);
    }
});
hybrid.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        map.setMapType(GoogleMap.MAP_TYPE_HYBRID);
    }
});
satellite.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        map.setMapType(GoogleMap.MAP_TYPE_SATELLITE);
    }
});
normal.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        map.setMapType(GoogleMap.MAP_TYPE_NORMAL);
    }
});

```

```

mylocation.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        try {
            if (ActivityCompat.checkSelfPermission(getApplicationContext(),
                android.Manifest.permission.ACCESS_FINE_LOCATION) != PackageManager.PERMISSION_GRANTED) {
                Toast.makeText(getApplicationContext(), "Error: Tidak ada akses ke GPS!", Toast.LENGTH_SHORT).show();
                return;
            }
            map.setMyLocationEnabled(true);
            LocationManager locationManager = (LocationManager) getSystemService(LOCATION_SERVICE);
            Criteria criteria = new Criteria();
            //Location location = locationManager.getLastKnownLocation(LocationManager.GPS_PROVIDER);
            Location location = locationManager.getLastKnownLocation(LocationManager.NETWORK_PROVIDER);
            latitude = location.getLatitude();
            longitude = location.getLongitude();

            position = new LatLng(latitude, longitude);
            map.addMarker(new MarkerOptions().position(position).title("My Location Now")).showInfoWindow();
            map.animateCamera(CameraUpdateFactory.newLatLng(position));
            map.animateCamera(CameraUpdateFactory.newLatLngZoom(position, 18));
        } catch (Exception e){
            Toast.makeText(getApplicationContext(), e.toString(), Toast.LENGTH_LONG).show();
        }
    }
});

```

```

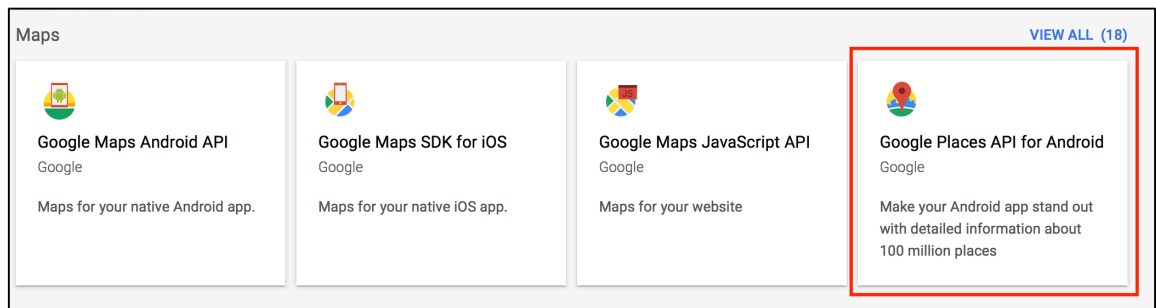
search.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent intent = null;
        try {
            intent = new PlaceAutocomplete.IntentBuilder(PlaceAutocomplete.MODE_FULLSCREEN).build(CustomMaps.this);
            startActivityForResult(intent, PLACE_AUTO);
        } catch (GooglePlayServicesRepairableException e) {
            Toast.makeText(getApplicationContext(), e.toString(), Toast.LENGTH_LONG).show();
        } catch (GooglePlayServicesNotAvailableException e) {
            Toast.makeText(getApplicationContext(), e.toString(), Toast.LENGTH_LONG).show();
        }
    }
});

```

## 11. Tambahkan override method onActivityResult

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if(requestCode == PLACE_AUTO){
        if(resultCode == RESULT_OK){
            Place place = PlaceAutocomplete.getPlace(this, data);
            LatLng search = place.getLatLng();
            x = place.getLatLng().latitude;
            y = place.getLatLng().longitude;
            String alamat = place.getAddress().toString();
            String telp = place.getPhoneNumber().toString();
            String nama = place.getName().toString();
            String snip = alamat+System.getProperty("line.separator")+telp;
            map.addMarker(new MarkerOptions().position(search).title(nama).snippet(snip)).showInfoWindow();
            map.animateCamera(CameraUpdateFactory.newLatLng(search));
            map.animateCamera(CameraUpdateFactory.newLatLngZoom(search, 18));
        }
    }
}
```

## 12. Kembali ke halaman web Google APIs dan pilih Google Places API for Android



## 13. Enabled API dan add credentials untuk penggunaan Google Places

## 14. Silahkan explore fungsi-fungsi dari library Google Maps, CameraUpdateFactory, LocationManager, dan Place

## Questions - Dilarang Mencontek Yah..

(Dijawab dengan memberikan komentar pada CustomMaps.java)

1. Apa perbedaan dari LocationManager.GPS\_PROVIDER dan LocationManager.NETWORK\_PROVIDER?
2. Apa fungsi dari newLatLngZoom dan berapa minimal dan maksimal nilai zoom yang dapat diberikan sebagai parameter?
3. Apa fungsi dari showInfoWindow()? Apa bedanya jika diberikan perintah tersebut dengan dihilangkan?
4. Apa perbedaan map type Normal, Terrain, Hybrid, dan Satellite?
5. Apa fungsi dari PlaceAutoComplete dan jelaskan cara kerjanya?