Lab 6 – Google Map

KUAN-TING LAI

2020/10/24

Use Google Map in Your APP

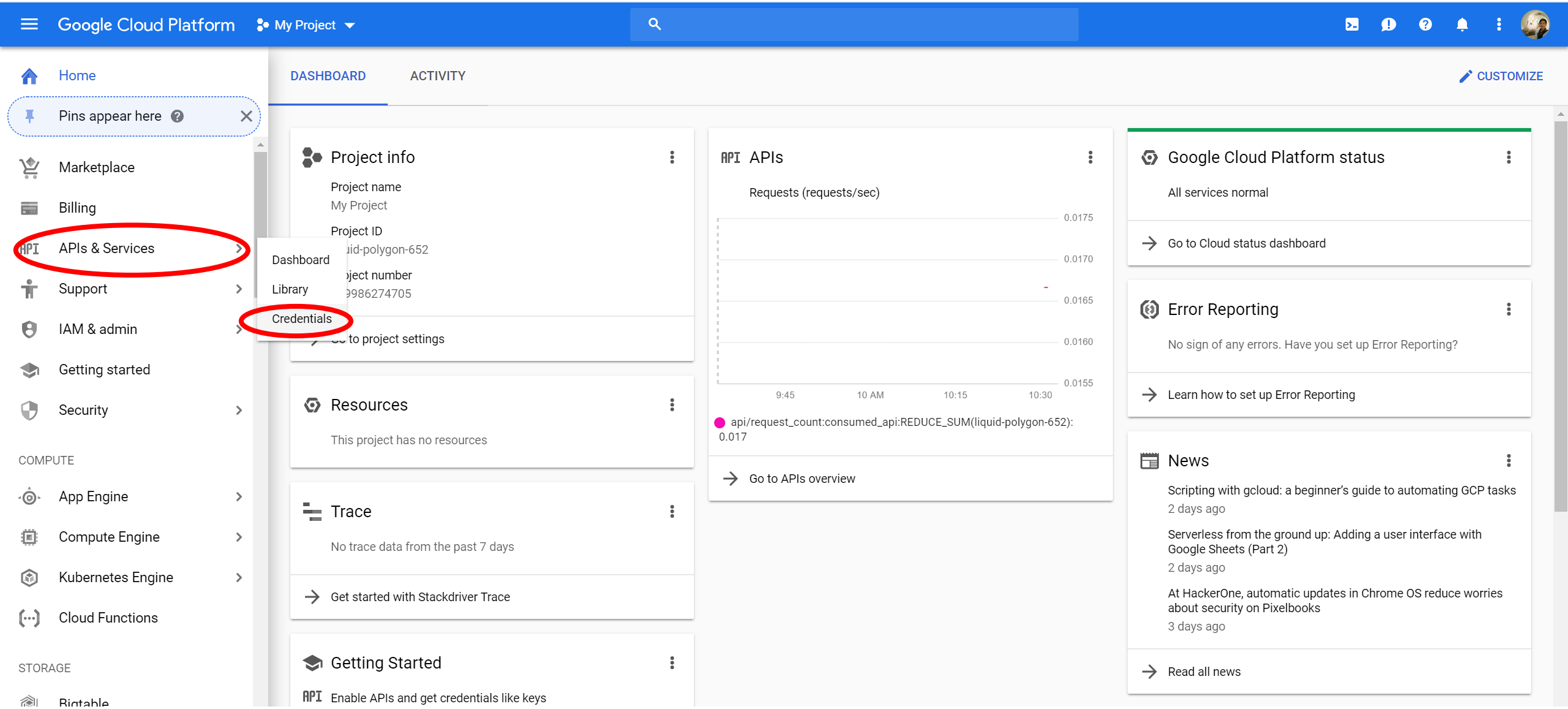
- Mark specific positions
- Sets of line segments (Polylines)
- Enclosed segments (Polygons)
- Bitmap graphics anchored to specific positions on the map (Ground Overlays).
- Sets of images which are displayed on top of the base map tiles (Tile Overlays).

https://developer.android.com/guide/components/activities/intro-activities#java

Get API Key

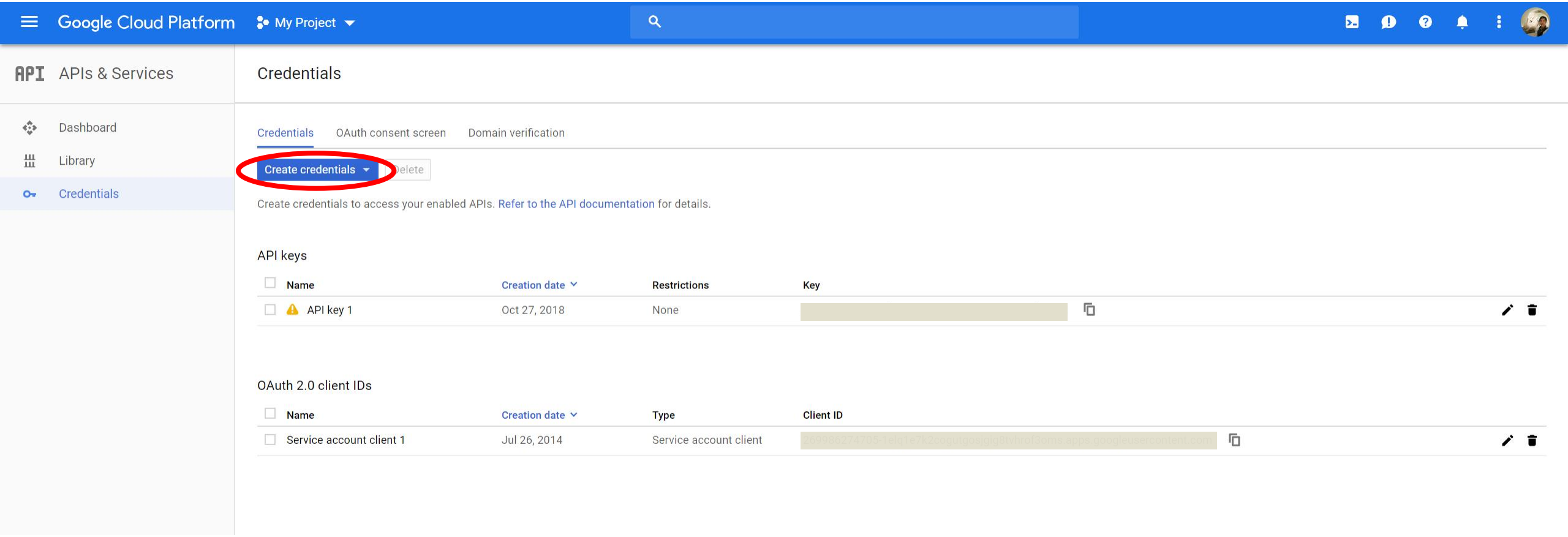
- Register an account at “cloud.google.com”
- APIs & Services -> Credentials

Select APIs & Services -> Credentials



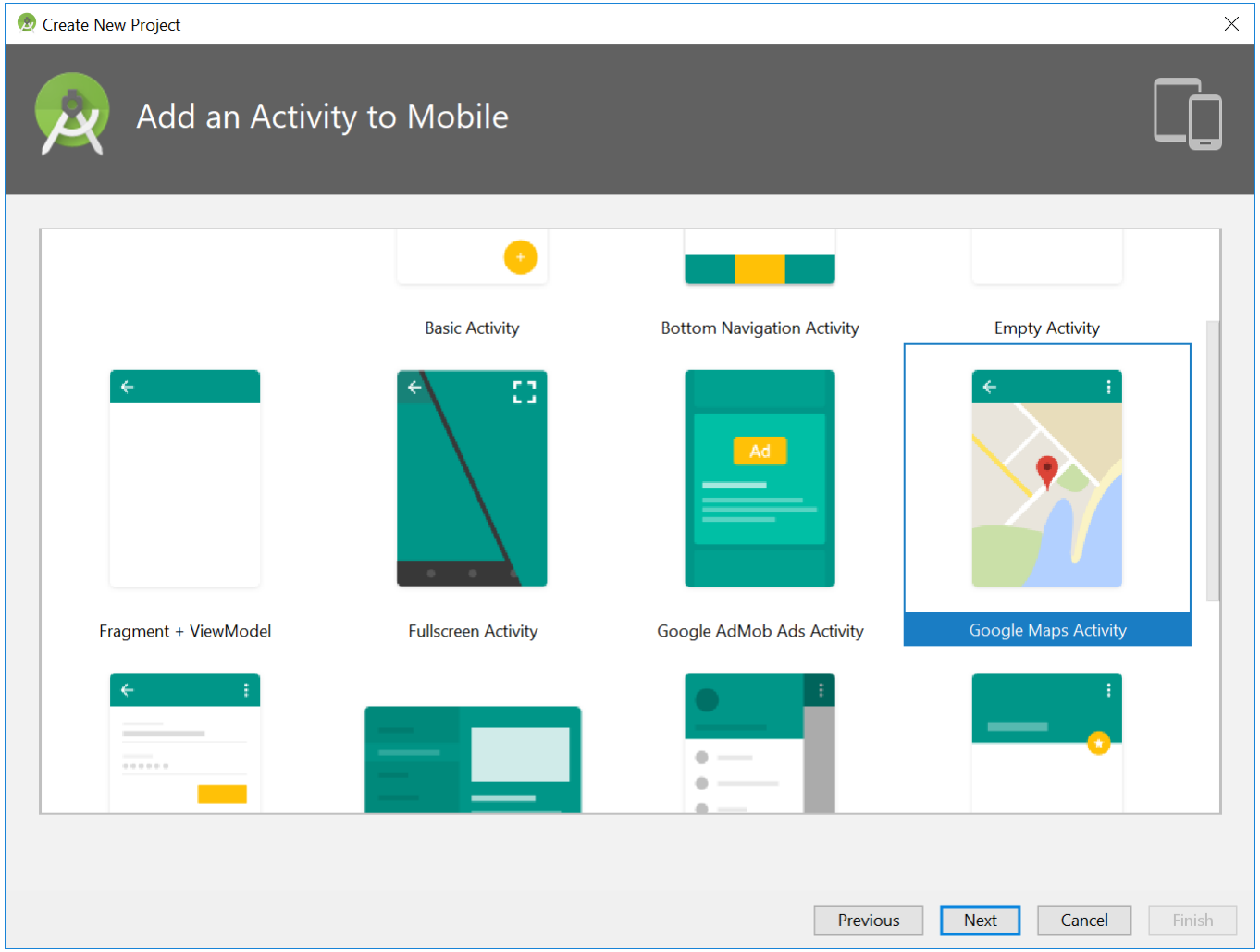
Credentials

- AIzaSyABNsVHTjg8JRmMWTA3oQRxmP-MDEhBG0s



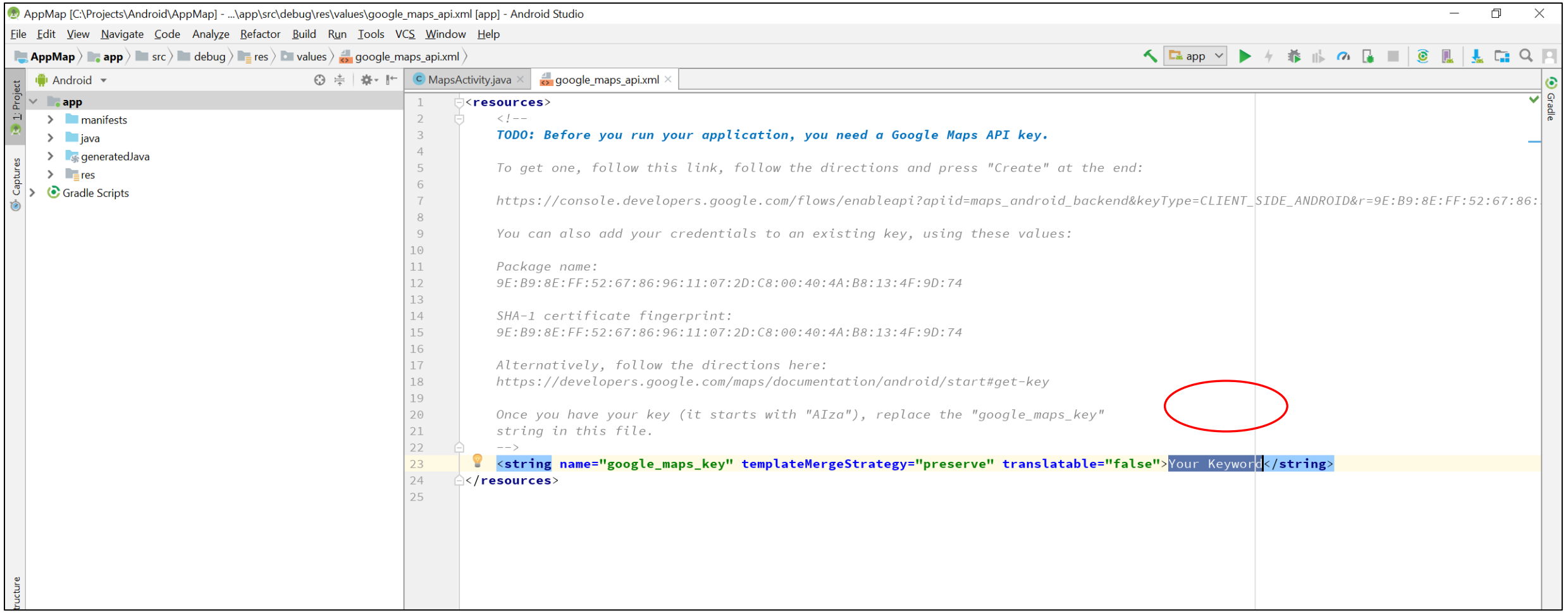
Create Google Maps Project

- Create new project called “AppMap”
- Use default settings
- Select “Google Maps Activity”



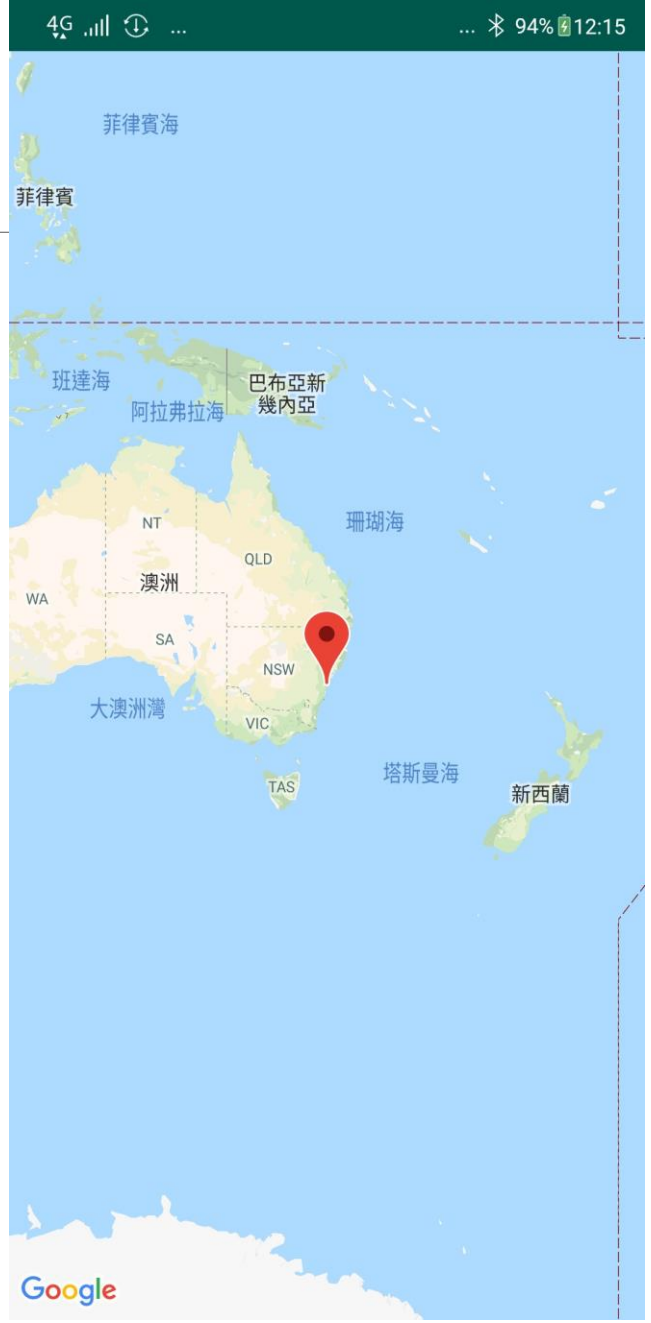
Paste Your Key in google_maps_api.xml

- app/res/google_maps_api.xml



Compile

- The default location is set at Sydney, let’s change to NTUT



Set the Position to NTUT

- (Latitude, Longitude) = (25.067060, 121.380580)

```
@Override
public void onMapReady(GoogleMap googleMap) {
    mMap = googleMap;

    // Add a marker in NTUT and move the camera
    LatLng ntut = new LatLng(25.0422329, 121.5354974);
    mMap.addMarker(new MarkerOptions().position(ntut).title("Marker in National Taipei
University of Technology"));
    mMap.moveCamera(CameraUpdateFactory.newLatLng(ntut));
}
```

Compile

- The location is set to NTUT

Add Polygon and Set Zoom Level

```
@Override
public void onMapReady(GoogleMap googleMap) {
    mMap = googleMap;

    LatLng ntut = new LatLng(25.0422329, 121.5354974);
    mMap.addMarker(new MarkerOptions().position(ntut).title("Marker in
National Taipei University of Technology"));
    mMap.moveCamera(CameraUpdateFactory.newLatLng(ntut));
    mMap.animateCamera( CameraUpdateFactory.zoomTo( 17.0f ) );

    Polygon polygon = mMap.addPolygon(new PolygonOptions()
            .add(new LatLng(25.042, 121.538),
                    new LatLng(25.040, 121.538),
                    new LatLng(25.040, 121.532),
                    new LatLng(25.042, 121.532))
            .strokeColor(Color.RED)
            .fillColor(0x88FF0000));
}
```

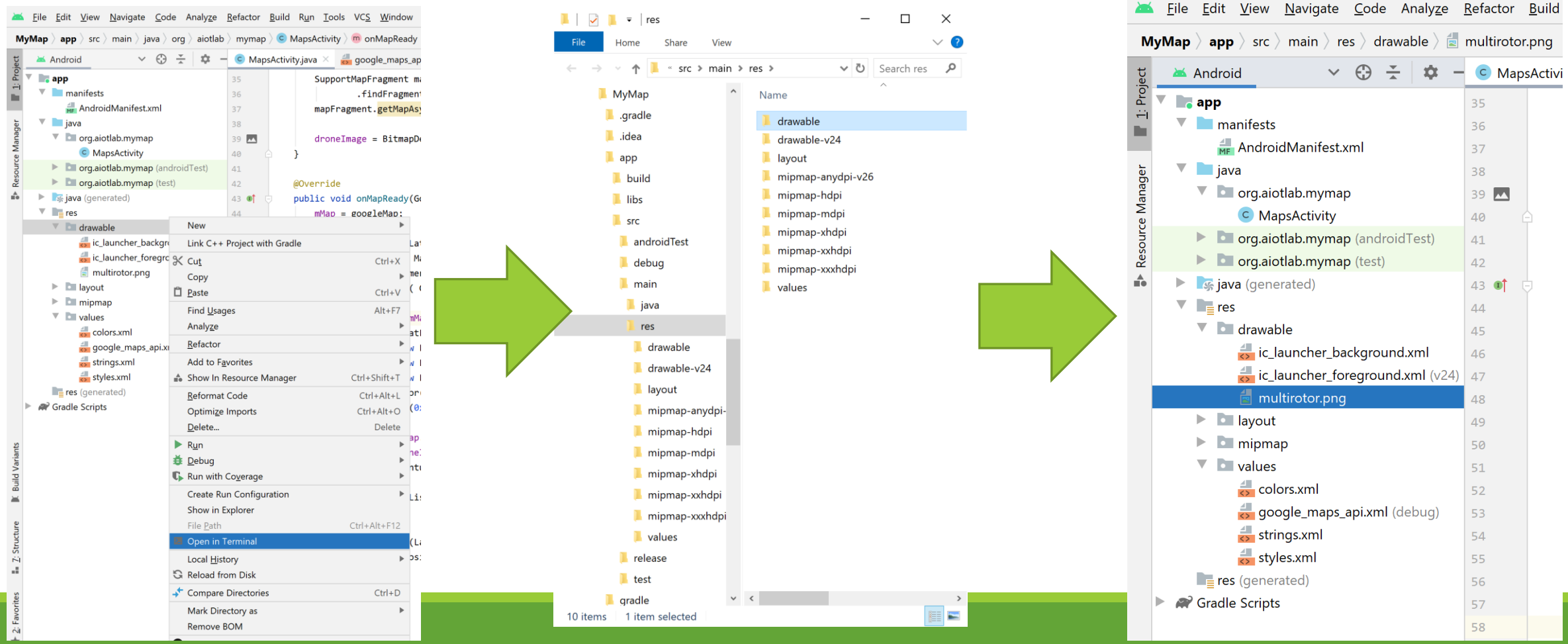
Results


22:32
阿華海鮮熱炒
海鮮料理 · $$
渭水路
勝田安全帽店
機車行
美麗信花園酒店
八德路二段
市民大道高架道路
市民大道
台北市東西向快速道路
陽光加油站
忠泰美術館
建國南路一段44巷
八德路二段10巷
第六教學大樓
第二教學大樓
化學館
第四教學大樓
國立臺北科技大
綜合科館
設計館
共同科館
建國高架道路
建國南路一段
忠孝東路
伯朗咖啡館 科大店
忠孝東路三段
伯朗咖啡館 建國店
新生南路一段97巷
濟南鮮湯包總店じー
なんしぇんたんパオ
上海料理 · $$
新生南路一段103巷
CHANTEZ
Pâtisserie 穿石
常夜燈
仁愛路三段5巷5弄
仁愛路三段5巷3弄
仁愛路三段5巷
艾樂比手作烘焙坊
建國南路一段212巷
D棟
仁愛地下停車
E棟
F棟
仁愛尊爵大廈
仁愛一品大廈
仁愛路三段
Google

Adding an Image on the Map (groundOverlay)

Copy an Image to “res/drawable/”

- Open folder of “res/drawable” => Paste an image to the folder
  - Drone image: https://www.pngwing.com/en/free-png-muxkx



groundOverlay

- Load Bitmap from R.drawable via BitmapDescriptor in onCreate()

```
public class MapsActivity extends FragmentActivity implements OnMapClickListener,
OnMapReadyCallback {
    private GoogleMap mMap;
    BitmapDescriptor droneImage = null;
    private GroundOverlay groundOverlay;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        ……
        droneImage = BitmapDescriptorFactory.fromResource(R.drawable.multirotor);
    }

    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;
        ……
        groundOverlay = mMap.addGroundOverlay(new GroundOverlayOptions()
                .image(droneImage).anchor(0.5f, 0.5f)
                .position(ntut, 120));
    }
}
```

Moving the Drone to the Clicked Location

```
public class MapsActivity extends FragmentActivity implements OnMapClickListener, OnMapReadyCallback {
    private GoogleMap mMap;
    BitmapDescriptor droneImage = null;
    private GroundOverlay groundOverlay;

    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;
        ……
        ……
        mMap.setOnMapClickListener(this);
    }

    public void onMapClick(LatLng point) {
        groundOverlay.setPosition(point);
    }
}
```

Final Result

More Google Map Examples

- https://github.com/googlemaps/android-samples
  1. Get a Maps API key
  2. Create a file in the root directory called secure.properties (this file should NOT be under version control to protect your API key)
  3. Add a single line to secure.properties that looks like MAPS_API_KEY=YOUR_API_KEY, where YOUR_API_KEY is the API key you obtained in the first step
  4. Build and run