LAB 10 – Google Maps API

At the end of this lab, students should be able to:

- Demonstrate some of basics of Google Maps Android integration.

The Elements of the Google Maps Android API

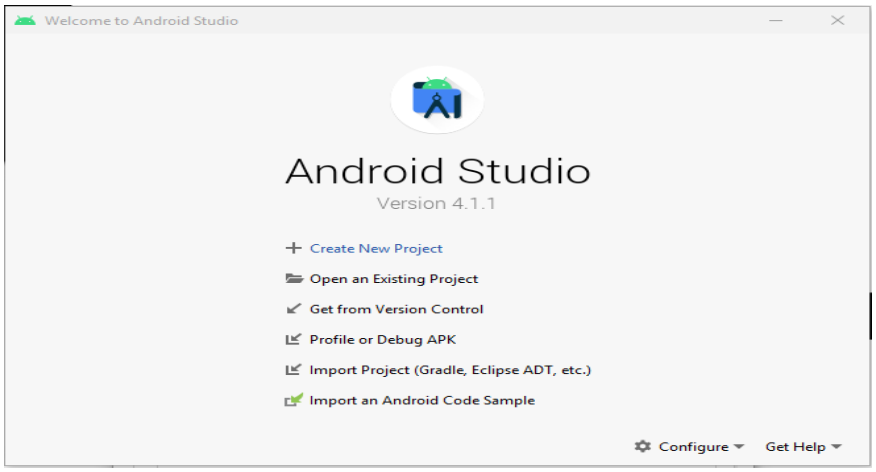
The Google Maps Android API consists of a core set of classes that combine to provide mapping capabilities in Android applications. The key elements of a map are as follows:

Key Elements	Description
Google Map	The main class of the Google Maps Android API. This class is responsible for downloading and displaying map tiles and for displaying and responding to map controls. The GoogleMap object is not created directly by the application but is instead created when MapView or MapFragment instances are created.
MapView	subclass of the View class, this class provides the view canvas onto which the map is drawn by the GoogleMap object, allowing a map to be placed in the user interface layout of an activity.
SupportMapFragment	A subclass of the Fragment class, this class allows a map to be placed within a Fragment in an Android layout.
Marker	The purpose of the Marker class is to allow locations to be marked on a map.
Shapes	The drawing of lines and shapes on a map is achieved through the use of the *Polyline*, *Polygon* and *Circle* classes.
UiSettings	The UiSettings class provides a level of control from within an application of which user interface controls appear on a map. Using this class, for example, the application can control whether or not the zoom, current location and compass controls appear on a map. This class can also be used to configure which touch screen gestures are recognized by the map.
My Location Layer	When enabled, the My Location Layer displays a button on the map which, when selected by the user, centers the map on the user's current geographical location.

Google Maps Project- An Example

a) Creating the Example Application

i. Go to File -> New Project



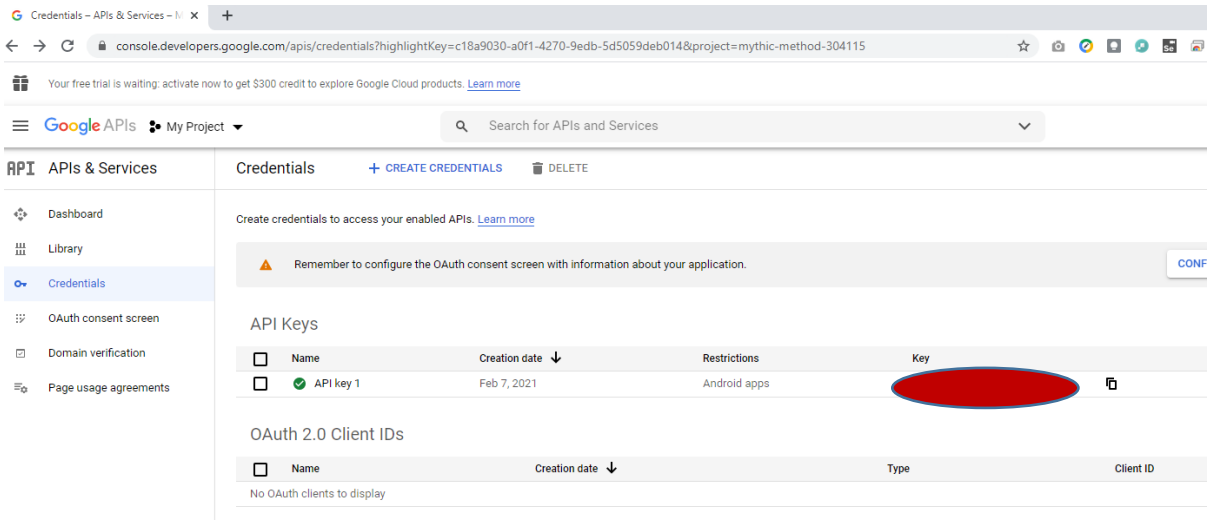
ii. Choose **Google Maps Activity** template, then click Next

iii. Enter *MapDemo* into the Name field and specify com.ebookfrenzy.mapdemo as the package name.
Change the Minimum API level setting to API26: Android 8.0(Oreo) and the Language menu to Java.
Click Finish.

b) Obtaining Your Developer Signature

Before an application can make use of the Google Maps Android API, it must first be registered within the Google APIs Console.

i. Go to google_maps_api.xml, copy the link and paste it in a browser. Follow the instructions to add the project in the browser until you receive your API key. Copy the API key and paste it in the google_maps_key string below the link.



c) Modify the MainActivity.java

i. Modify the lines in onMapReady()

```
LatLng mmu = new LatLng(2.926386, 101.641144);
mMap.addMarker(new MarkerOptions().position(mmu)
.title("DIT5851").snippet("Mobile Application Development"));
mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(mmu, 17));
```

ii. Add this line at the end of on MapReady. Press alt-enter and add permission.

```
mMap.setMyLocationEnabled(true);
```

iii. Add these lines in the *if block* before the return statement.

```
String[] permissions = {Manifest.permission.ACCESS_FINE_LOCATION};
ActivityCompat.requestPermissions(this, permissions, 0);
```

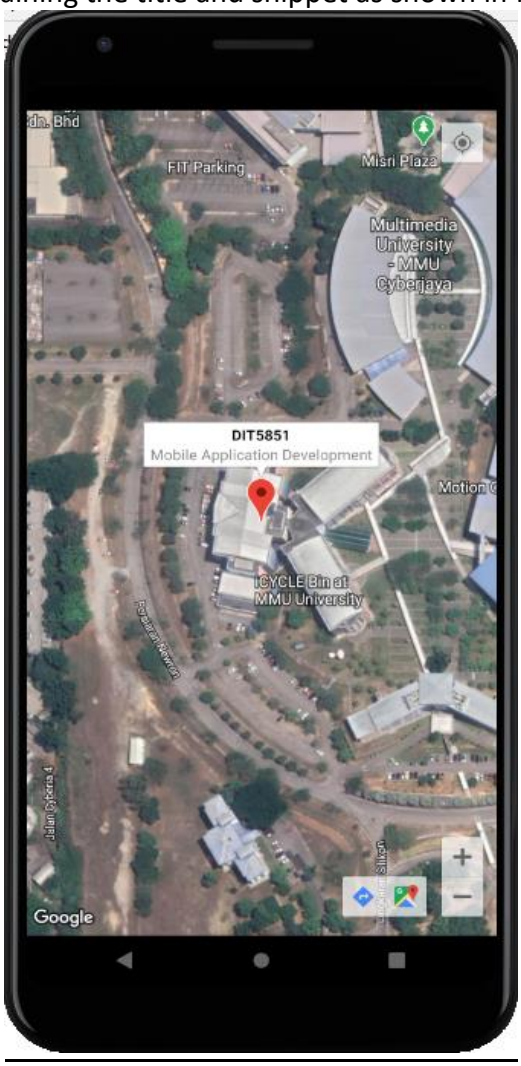
.

iv. Add these lines in *onRequestPermissionResult()*

```
if (requestCode == 0) {
if (grantResults[0] == PackageManager.PERMISSION_GRANTED) {
if (ActivityCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED && ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) != PackageManager.PERMISSION_GRANTED) {
String[] permissions2 = {Manifest.permission.ACCESS_FINE_LOCATION};
ActivityCompat.requestPermissions(this, permissions2, 0);
return;
}
mMap.setMyLocationEnabled(true);
} else {
String[] permissions2 = {Manifest.permission.ACCESS_FINE_LOCATION};
ActivityCompat.requestPermissions(this, permissions2, 0);
}
}
```

d) Testing the application

When executed, the above code will mark the location specified which, when tapped, will display an info window containing the title and snippet as shown in figure below:



Exercise:

1) Please modified the latitude and longitude value so that it can show your current location. Change the title and snippet accordingly.