

## DESCRIPTION

The program creates an android app LocationFromGPS.apk that performs the following actions:

1. Places the GPS location coordinates onto a Google map using a LocationListener.
2. Receives constant location updates and reflects them onto the map using a marker.

## TOOLS

Eclipse with android bundle packages installed for android 4.3 and higher versions. The application supports API 19.

## IMPLEMENTATION

1. We use Google Play Services SDK to enable google maps. This can be downloaded and installed using Android SDK Manager from 'Extras/Google Play Services'
2. After creating a simple Android project in Eclipse.
3. Link the google-play-services-lib library and appcompat\_v7 to this project
4. We now need to generate SHA-1 fingerprint using java **keytool** command:  
> keytool -list -v -keystore path\_of\_debug.keystore -storepass android -keypass android

The SHA-1 will be generated.

5. Now, go to Google API Console (<https://code.google.com/apis/console/>).
  - 5.1 Go to Projects in the left menu, create a new project
  - 5.2 Go to APIs & auth/APIs, enable Google Maps Android API v2.
  - 5.3 Go to Credentials, Create new Key. Then select 'Android key'.
  - 5.4 On selection, enter the SHA-1, followed by the package name.
  - 5.5 The API key will be generated.
6. Add this key into the manifest file under <application> tag:

```
<meta-data
    android:name="com.google.android.maps.v2.API_KEY"
    android:value="AIzaSyDBAy_Pyi92qFgbHkm4jG1U8_NZ11nr-SE" />
```

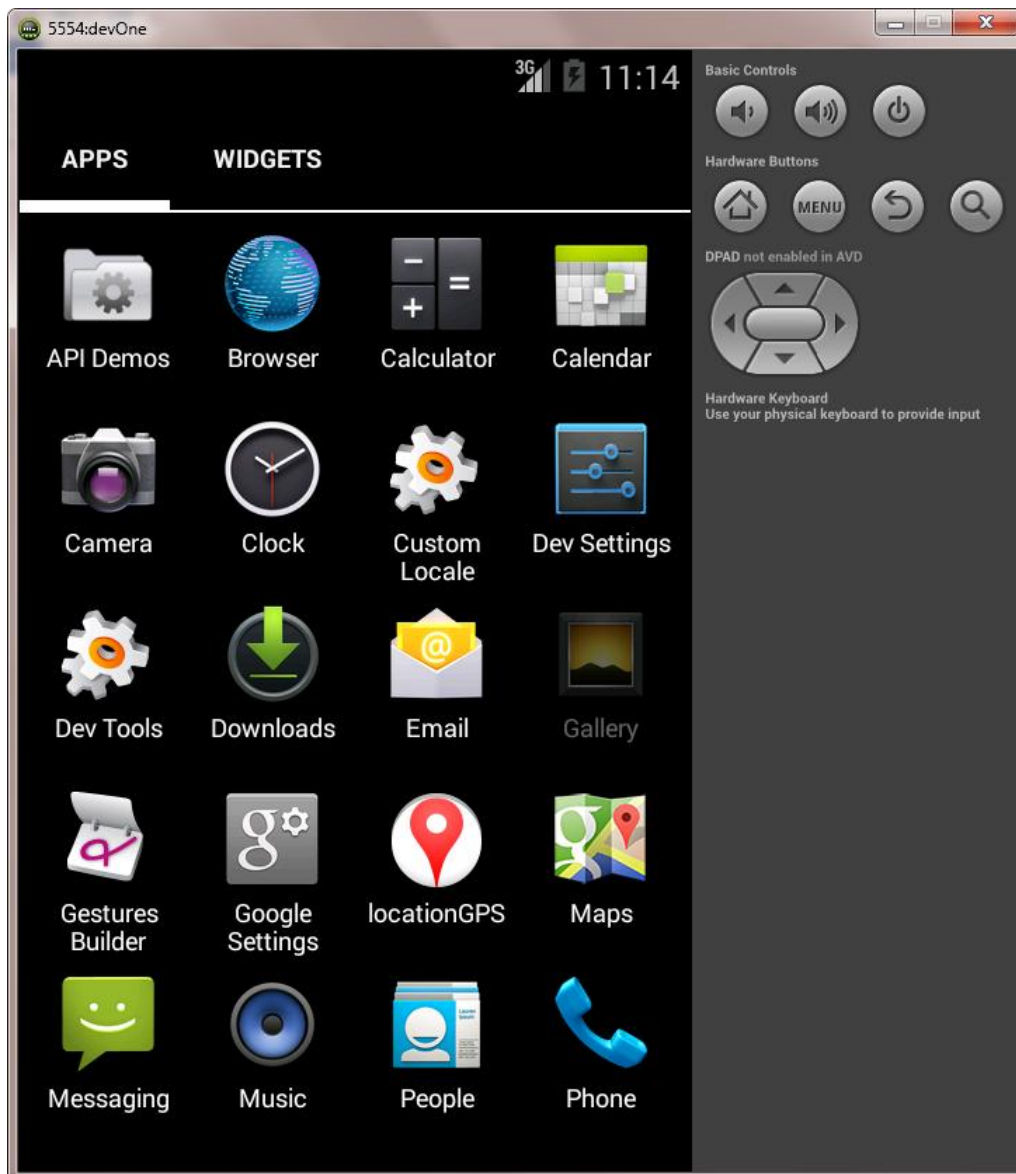
I have also added the key in the values/strings.xml file.

7. Next, set permission in the manifest file:
  - 7.1 ACCESS\_NETWORK\_STATE: Check network state. Checks whether data can be downloaded.
  - 7.2 WRITE\_EXTERNAL\_STORAGE: Enables google map to store map data on external storage.
  - 7.3 INTERNET: Internet connection check.
  - 7.4 ACCESS\_FINE\_LOCATION: To find out user's location using GPS.
  - 7.5 ACCESS\_COARSE\_LOCATION: To find out user's location using mobile cell or WiFi data.
8. Set OpenGL ES 2.0. for Maps V2 feature:

```
<uses-feature
    android:glEsVersion="0x00020000"
```

```
android:required="true" />
```

9. Mention the minimum and target SDK version number. Here, the maximum target version is 19.
10. Open the activity\_main.xml file and add the fragment. Google maps are implemented using MapFragments hence, add the fragment within the RelativeLayout in the file.
11. Go to MainActivity.java file:
  - 11.1 Import the necessary packages that support MapFragments, Marker, LocationListener, LocationManager and so forth.
  - 11.2 Create a location Manager that captures periodic updates of the device's geographical updates.
  - 11.3 The onLocationChanged() method creates a marker that points to a location on the map. The marker takes latitude and longitude values from the DDMS and points to that location on the map.
  - 11.4 The initMap() method places a map on the android device using a map fragment.
12. The program when run, creates an app named *locationGPS* on an android device.



13. The co-ordinates given via the DDMS are shown on the map. Any new added co-ordinates are shown on the map, retaining the old co-ordinates markers.
14. This assignment is different from the programming assignment 1 since it plots the location details like latitude and longitude provided from the DDMS on the Google maps. The app requires Google Maps API v2 to be enabled as well as, requires its API Key in order to enable map plotting. The markers can plot current co-ordinates as well as retain previous co-ordinates on the map at once.

## REFERENCE

P535 Pervasive Computing: Lab 3

<http://developer.android.com/guide/topics/location/strategies.html>

<http://developer.android.com>

[http://developer.xamarin.com/guides/android/platform\\_features/maps\\_and\\_location/maps/obtaining\\_a\\_google\\_maps\\_api\\_key/](http://developer.xamarin.com/guides/android/platform_features/maps_and_location/maps/obtaining_a_google_maps_api_key/)

<http://www.androidhive.info/2013/08/android-working-with-google-maps-v2/>

<http://developer.android.com>

<http://developer.google.com>