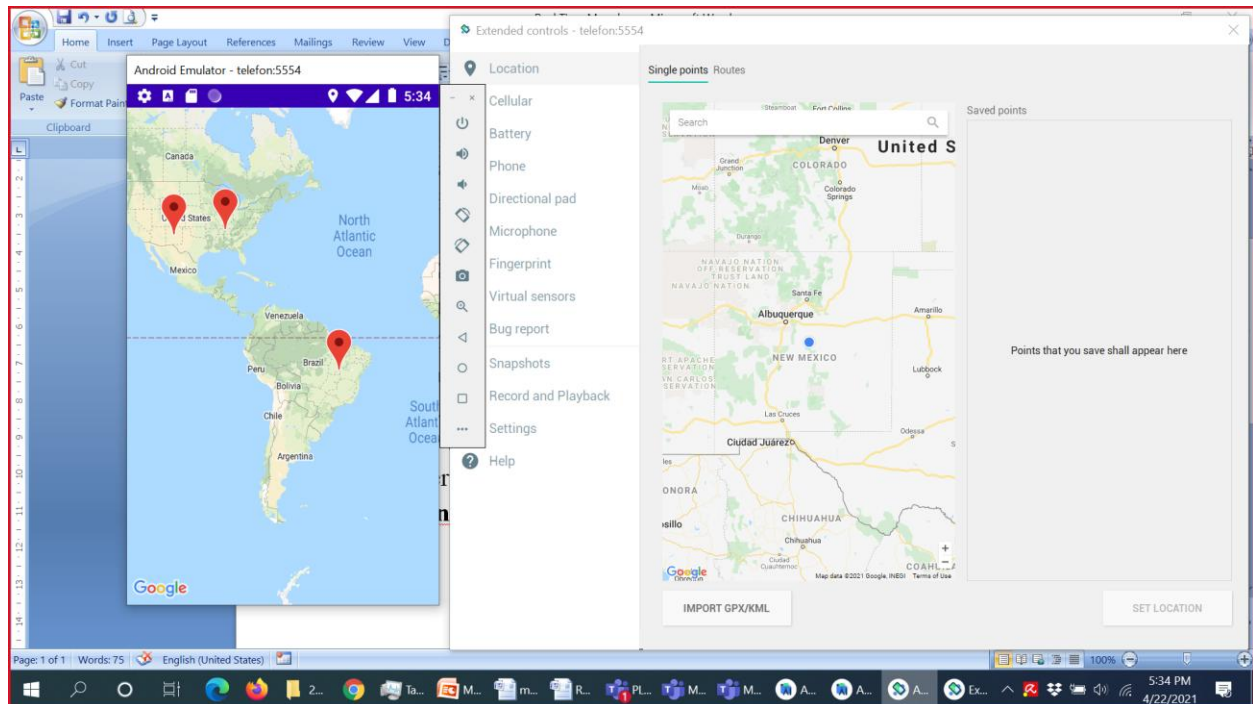# Real Time Map

- We want to update the current position on the map, according to the new location of the user (device)
- Steps:
    - **Get the current location (from the GPS antenna);**
    - **Move the camera on the map on the new location;**
    - **Add a marker on the map on the new location**
- Allow the user to click on the map and to add a new marker "by hand".
    - **onMapClick**

AndroidManifest.xml

```xml
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission
android:name="android.permission.ACCESS_COARSE_LOCATION"></uses-permission>
```

MapsActivity.java

```java
package com.tavy.aplicatii.apprealmapssdbis;

import androidx.core.app.ActivityCompat;
import androidx.fragment.app.FragmentActivity;

import android.Manifest;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.util.Log;

import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;

public class MapsActivity extends FragmentActivity implements
OnMapReadyCallback, LocationListener, GoogleMap.OnMapClickListener {

    private GoogleMap harta;
    LocationManager locManager;
    Location location;
    static int counter=0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

requestPermissions(new String[]{Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 1);
        //generate a location manager
        locManager = (LocationManager) getSystemService(LOCATION_SERVICE);

        setContentView(R.layout.activity_maps);
```

```java
        // Obtain the SupportMapFragment and get notified when the map is
ready to be used.
        SupportMapFragment mapFragment = (SupportMapFragment)
getSupportFragmentManager()
                .findFragmentById(R.id.map);
        mapFragment.getMapAsync(this);
    }

    /**
     * Manipulates the map once available.
     * This callback is triggered when the map is ready to be used.
     * This is where we can add markers or lines, add listeners or move the
camera. In this case,
     * we just add a marker near Sydney, Australia.
     * If Google Play services is not installed on the device, the user will
be prompted to install
     * it inside the SupportMapFragment. This method will only be triggered
once the user has
     * installed Google Play services and returned to the app.
     */
    @Override
    public void onMapReady(GoogleMap googleMap) {
        harta = googleMap;
        harta.setOnMapClickListener(this);

        // Add a marker in Sydney and move the camera
        LatLng iasi = new LatLng(47, 27);
        harta.addMarker(new MarkerOptions().position(iasi).title("Marker in
Iasi"));
        harta.moveCamera(CameraUpdateFactory.newLatLng(iasi));

        //request periodic location updates
        if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED && ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
            return;
        }
locManager.requestLocationUpdates(LocationManager.GPS_PROVIDER, 1000, 10,
this);
location = locManager.getLastKnownLocation(LocationManager.GPS_PROVIDER);
        if(location != null)
            onLocationChanged(location);
    }

    @Override
    public void onLocationChanged(Location newLocation) {
        //whenever the location is changed,
        //the map (camera on map) should be updated (moved to the new
```

```java
location)
        LatLng newPosition;
        newPosition = new LatLng(newLocation.getLatitude(),
newLocation.getLongitude());
        //move the camera (view) to the newPosition
        harta.animateCamera(CameraUpdateFactory.newLatLng(newPosition));
        //let's put a marker on the new location
        counter++;
        harta.addMarker(new
MarkerOptions().position(newPosition).title("Marker no. " + counter));
    }

    @Override
    public void onStatusChanged(String s, int i, Bundle bundle) {

    }

    @Override
    public void onProviderEnabled(String s) {

    }

    @Override
    public void onProviderDisabled(String s) {

    }

    @Override
    public void onMapClick(LatLng newPosition) {
        //every time the user clicks on the map,
        //this method is called
        Log.i("SDBIS22","The map was clicked at position: " +
newPosition.latitude + " ; " + newPosition.longitude);
        //add a new marker on the new position (where the user clicked)
        counter++;
        harta.addMarker(new MarkerOptions().position(newPosition).title("By
hand with no. " + counter));
        harta.animateCamera(CameraUpdateFactory.newLatLng(newPosition));
    }
}
```