SSN College of Engineering, Kalavakkam

Department of Computer Science and Engineering

UCS1711-Mobile Application Development Lab

Exercise 7:Andriod Location Tracker Application

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AIM:

To develop an android Location Tracker Application.

CODE:

MainActivity.java:

```
package com.example.gpslocation;


import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.ActivityCompat;

import androidx.core.content.ContextCompat;


import android.Manifest;

import android.content.Context;

import android.content.pm.PackageManager;

import android.location.LocationListener;

import android.location.LocationManager;
```

```
import android.os.Bundle;

import android.util.Log;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;


import java.util.List;


public class MainActivity extends AppCompatActivity {

    EditText lat, lon;

    private GPSTracker gpsTracker;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        Button track = (Button) findViewById(R.id.track_btn);

        lat = (EditText) findViewById(R.id.lat);

        lon = (EditText) findViewById(R.id.lon);


        try {

            if (ContextCompat.checkSelfPermission(getApplicationContext(),
android.Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED ) {

                ActivityCompat.requestPermissions(this, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION}, 101);
```

```
        }
    } catch (Exception e){
        e.printStackTrace();
    }

    track.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            gpsTracker = new GPSTracker(MainActivity.this);
            if(gpsTracker.canGetLocation()){
                Log.i("MainActivity","Success");
                double latitude = gpsTracker.getLatitude();
                double longitude = gpsTracker.getLongitude();
                lat.setText(String.valueOf(latitude));
                lon.setText(String.valueOf(longitude));
            }else{
                Log.i("MainActivity","Failure");
                gpsTracker.showSettingsAlert();
            }
        }
    });
  }
}
```

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"

    xmlns:tools="http://schemas.android.com/tools"

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:orientation="vertical"

    tools:context=".MainActivity">



    <EditText

        android:id="@+id/lat"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_marginTop="184dp"

        android:ems="10"

        android:inputType="textPersonName"

        android:text="Latitude"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.875"
```

```
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<EditText
    android:id="@+id/lon"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="80dp"
    android:layout_marginEnd="4dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:text="Longitude"
    app:layout_constraintEnd_toEndOf="@+id/lat"
    app:layout_constraintTop_toBottomOf="@+id/lat" />

<Button
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#2E3B81"
    android:text="Longitude"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
```

```
    app:layout_constraintHorizontal_bias="0.054"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.448" />

<Button
    android:id="@+id/track_btn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="207dp"
    android:backgroundTint="#2338AC"
    android:text="Get Location"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#2E3B81"
    android:text="Lattitude"
    app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.04"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.267" />

    <Button
        android:id="@+id/button"
        android:layout_width="387dp"
        android:layout_height="73dp"
        android:backgroundTint="#276987"
        android:text="Android Location Tracker Application"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

Colors.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
```

```
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
</resources>
```

GPSTracker.java:

```
package com.example.gpslocation;


import android.Manifest;
import android.app.Activity;
import android.app.AlertDialog;
import android.app.Service;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.os.IBinder;
import android.provider.Settings;
```

```
import android.util.Log;

import androidx.core.app.ActivityCompat;

public class GPSTracker extends Service implements LocationListener {
    private final Context mContext;

    // flag for GPS status
    boolean isGPSEnabled = false;

    // flag for network status
    boolean isNetworkEnabled = false;

    // flag for GPS status
    boolean canGetLocation = false;

    Location location; // location
    double latitude; // latitude
    double longitude; // longitude

    // The minimum distance to change Updates in meters
    private static final long MIN_DISTANCE_CHANGE_FOR_UPDATES = 10; // 10 meters
```

```
    // The minimum time between updates in milliseconds
    private static final long MIN_TIME_BW_UPDATES = 1000 * 60 * 1; // 1 minute

    // Declaring a Location Manager
    protected LocationManager locationManager;

    public GPSTracker(Context context) {
        this.mContext = context;
        getLocation();
    }

    public Location getLocation() {
        try {
            locationManager = (LocationManager)
mContext.getSystemService(LOCATION_SERVICE);

            // getting GPS status
            isGPSEnabled =
locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);

            // getting network status
            isNetworkEnabled = locationManager
                    .isProviderEnabled(LocationManager.NETWORK_PROVIDER);
```

```
        if (!isGPSEnabled && !isNetworkEnabled) {
            // no network provider is enabled
        } else {
            this.canGetLocation = true;
            // First get location from Network Provider
            if (isNetworkEnabled) {
                //check the network permission
                if (ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
                    ActivityCompat.requestPermissions((Activity) mContext, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 101);
                }
                locationManager.requestLocationUpdates(
                        LocationManager.NETWORK_PROVIDER,
                        MIN_TIME_BW_UPDATES,
                        MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

                Log.d("Network", "Network");
                if (locationManager != null) {
                    location = locationManager
                            .getLastKnownLocation(LocationManager.NETWORK_PROVIDER);
```

```
                if (location != null) {
                    latitude = location.getLatitude();
                    longitude = location.getLongitude();
                }
            }
        }

        if (isGPSEnabled) {
            if (location == null) {
                if (ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
                    ActivityCompat.requestPermissions((Activity) mContext, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 101);
                }
                locationManager.requestLocationUpdates(
                        LocationManager.GPS_PROVIDER,
                        MIN_TIME_BW_UPDATES,
                        MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

                Log.d("GPS Enabled", "GPS Enabled");
```

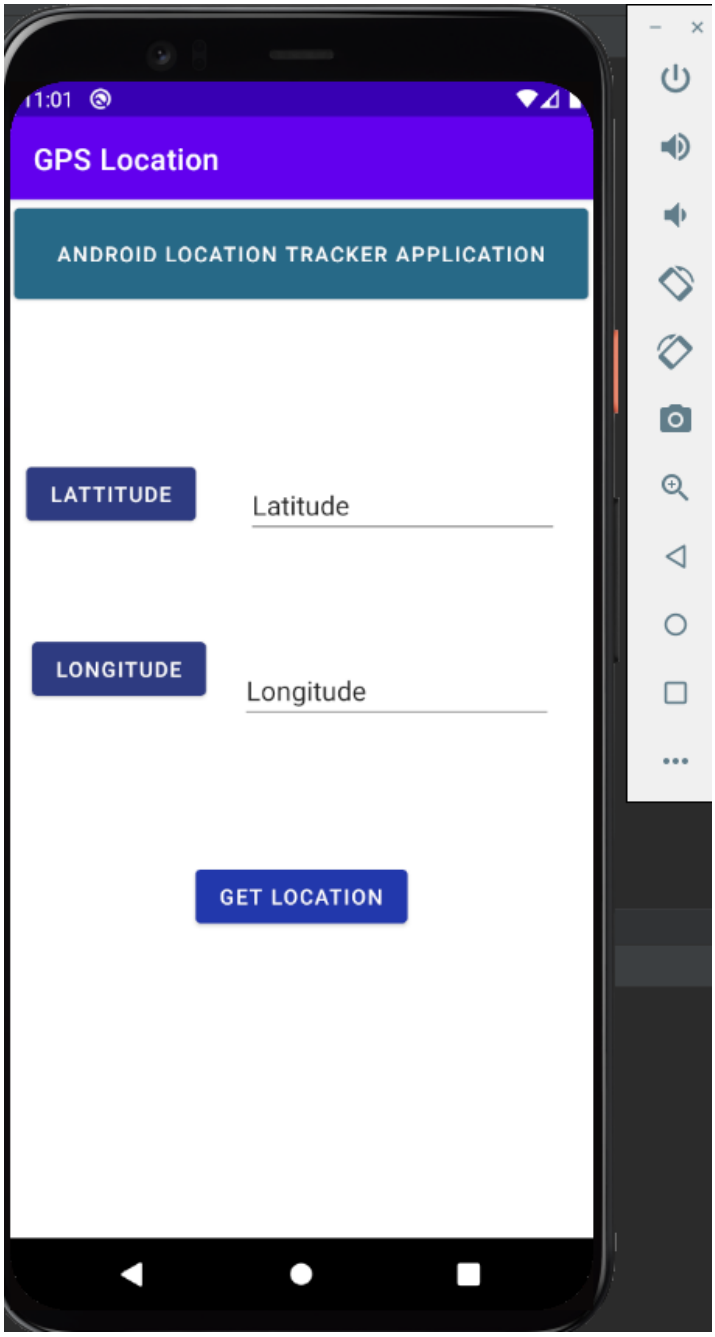
```
                if (locationManager != null) {
                    location = locationManager
                            .getLastKnownLocation(LocationManager.GPS_PROVIDER);

                    if (location != null) {
                        latitude = location.getLatitude();
                        longitude = location.getLongitude();
                    }
                }
            }
        }

    } catch (Exception e) {
        e.printStackTrace();
    }

    return location;
}

public void stopUsingGPS(){
    if(locationManager != null){
        locationManager.removeUpdates(GPSTracker.this);
```

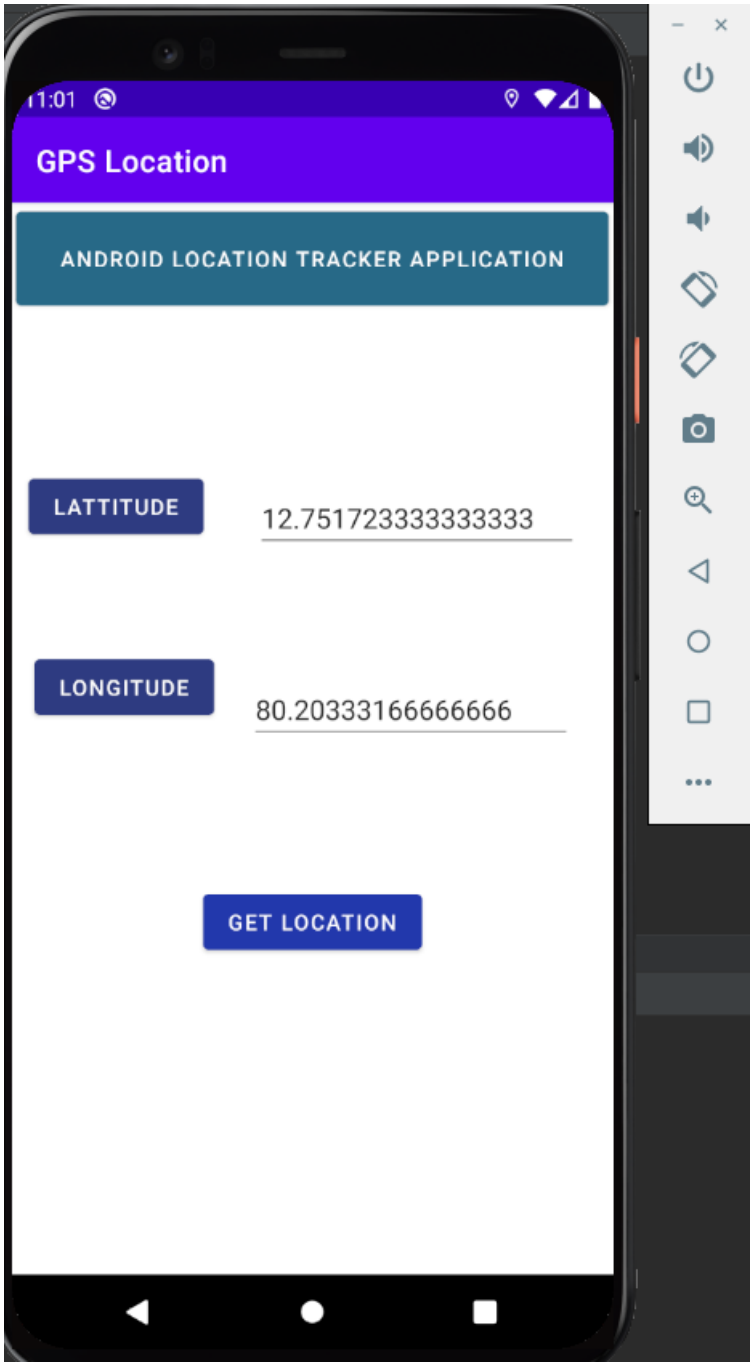
```
    }
}

public double getLatitude(){
    if(location != null){
        latitude = location.getLatitude();
    }
    // return latitude
    return latitude;
}

public double getLongitude(){
    if(location != null){
        longitude = location.getLongitude();
    }
    // return longitude
    return longitude;
}


public boolean canGetLocation() {
    return this.canGetLocation;
}
```

```
public void showSettingsAlert(){
    AlertDialog.Builder alertDialog = new AlertDialog.Builder(mContext);

    // Setting Dialog Title
    alertDialog.setTitle("GPS is settings");

    // Setting Dialog Message
    alertDialog.setMessage("GPS is not enabled. Do you want to go to settings menu?");

    // On pressing Settings button
    alertDialog.setPositiveButton("Settings", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog,int which) {
            Intent intent = new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
            mContext.startActivity(intent);
        }
    });

    // on pressing cancel button
    alertDialog.setNegativeButton("Cancel", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog, int which) {
            dialog.cancel();
        }
    });
```

```
        alertDialog.show();
    }
    @Override
    public void onLocationChanged(Location location) {
    }
    @Override
    public void onProviderDisabled(String provider) {
    }
    @Override
    public void onProviderEnabled(String provider) {
    }
    @Override
    public void onStatusChanged(String provider, int status, Bundle extras) {
    }
    @Override
    public IBinder onBind(Intent arg0) {
        return null;
    }
}
```

OUTPUT:


11:01
GPS Location
ANDROID LOCATION TRACKER APPLICATION
LATTITUDE
Latitude
LONGITUDE
Longitude
GET LOCATION



RESULT:

An android Location Tracker Application has been successfully developed.