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EXPERIMENT 15

WORKING WITH LOCATION

AIM: To create an application that displays current location

THEORY:

LocationManager

LocationManager is the main class through which your application can access location services on Android. Similar to other system services, a reference can be obtained from calling the getSystemService() method. If your application intends to receive location updates in the foreground (within an Activity), you should usually perform this step in the onCreate() method.

```
LocationManager locationManager =
      (LocationManager) this.getSystemService(Context.LOCATION_SERVICE);
```

LocationListener

The LocationListener interface, which is part of the Android Locations API is used for receiving notifications from the **LocationManager** when the location has changed. The **LocationManager** class provides access to the systems location services.

The LocationListener class needs to implement the following methods.

- **onLocationChanged(Location location)** : Called when the location has changed.
- **onProviderDisabled(String provider)** : Called when the provider is disabled by the user.
- **onProviderEnabled(String provider)** : Called when the provider is enabled by the user.
- **onStatusChanged(String provider, int status, Bundle extras)** : Called when the provider status changes.

Request Location Updates:

After creating the location service reference, location updates are requested using requestLocationUpdates() method of LocationManager. For this function, we need to send the type of location provider, number of seconds, distance and the LocationListener object over which the location to be updated.

```
locationManager.requestLocationUpdates("gps", 5000, 0, locationListener);
```

getLatitude( ) – Method used to get the current latitude of your device location.

getLongitude( ) – Method used to get the current longitude of your device location.

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ASSIGNMENT

1. Create an application to display the current location of your device. (Latitude and Longitude value).

CODE

activiy.main.xml

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

```
<RelativeLayout 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"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="GPS Location"
        android:textSize="30dp"
        android:textStyle="bold"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp"
        android:id="@+id/textV1" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text=""
        android:textSize="30dp"
        android:textStyle="bold"
        android:layout_below="@+id/textV1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="40dp"
        android:id="@+id/textLoc" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Get Location"
        android:textSize="30dp"
        android:textStyle="bold"
        android:layout_below="@+id/textLoc"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp"
        android:onClick="configureButton"
        android:id="@+id/btnGetLoc"
```

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Roll No : 804

```
        />
</RelativeLayout>
```

MainActivity.java

```
package com.example.mca1634.gps_location;

import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Build;
import android.provider.Settings;
import android.support.annotation.NonNull;
import android.support.v4.app.ActivityCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    TextView textLoc;
    Button btnGetLoc;
    private LocationManager locationManager;
    private LocationListener locationListener;
    @Override
    public void onRequestPermissionsResult(int requestCode, @NonNull String[]
permissions, @NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        switch (requestCode) {
            case 10:
                if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                    configureButton();
                    return;
                }
        }
    }
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        textLoc = (TextView) findViewById(R.id.textLoc);
        btnGetLoc = (Button) findViewById(R.id.btnGetLoc);
        locationManager = (LocationManager) getSystemService(LOCATION_SERVICE);
        locationListener = new LocationListener() {
            @Override
            public void onLocationChanged(Location location) {
                textLoc.append("\n " + location.getLatitude() + " " +
location.getLongitude());
            }
            @Override
```

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Roll No : 804

```
            public void onStatusChanged(String provider, int status, Bundle
extras) {
            }
            @Override
            public void onProviderEnabled(String provider) {
            }
            @Override
            public void onProviderDisabled(String provider) {
                Intent intent = new
Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
                startActivity(intent);
            }
        };
        if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_FINE_LOCATION) != PackageManager.PERMISSION_GRANTED&&
                ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) !=PackageManager.PERMISSION_GRANTED)
        {
            if(Build.VERSION.SDK_INT >= Build.VERSION_CODES.M)
            {
                requestPermissions(new String[]{
                                Manifest.permission.ACCESS_COARSE_LOCATION,
                                Manifest.permission.ACCESS_FINE_LOCATION,
                                Manifest.permission.INTERNET},10);
            }
            return;
        }
        else
        {
            configureButton();
        }
    }
    private void configureButton() {
        btnGetLoc.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                locationManager.requestLocationUpdates("gps", 5000, 0,
locationListener);
            }
        });
    }
}
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.INTERNET"/>

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

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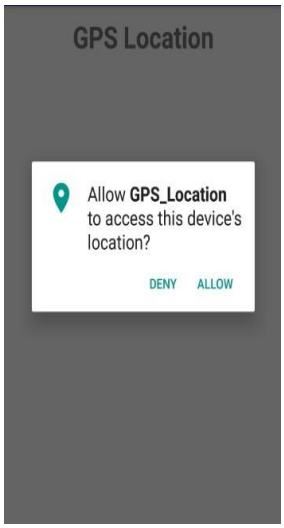
OUTPUT:



CONCLUSION: Successfully implemented GPS location.