# Exercise 6 – Finding Geo-coordinates of a Location and Reverse Geocoding

## Aim:

a) Develop an android application to find the latitude and longitude of current location and the selected location in a google map using anyone of the below options: 1) Location Manager

2) Network Provider

3) GPS Provider

b) Also perform Reverse Geocoding i.e. given a latitude and longitude of a location, app should display the location name or given a location name it should display the latitude and longitude of that place.

## Code:

//activity\_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"

android:padding="16dp"

tools:context=".MainActivity">

<!-- Previous UI elements -->

<Button

android:id="@+id/getLocationButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerHorizontal="true"

android:text="Get Location" />

<TextView

android:id="@+id/latitudeTextView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/getLocationButton"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="16dp"

android:text="Latitude: "

android:textSize="18sp" />

<TextView

android:id="@+id/longitudeTextView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/latitudeTextView" android:layout\_centerHorizontal="true"

android:layout\_marginTop="8dp"

android:text="Longitude: "

android:textSize="18sp" />

<!-- New UI elements for search -->

<EditText

android:id="@+id/locationNameEditText"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@id/longitudeTextView" android:layout\_marginTop="16dp"

android:hint="Enter Location Name" />

<Button

android:id="@+id/searchLocationButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/locationNameEditText" android:layout\_centerHorizontal="true"

android:layout\_marginTop="16dp"

android:text="Search Location" />

<TextView

android:id="@+id/searchLatitudeTextView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/searchLocationButton" android:layout\_centerHorizontal="true"

android:layout\_marginTop="16dp"

android:text="Searched Latitude: "

android:textSize="18sp" />

<TextView

android:id="@+id/searchLongitudeTextView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/searchLatitudeTextView"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="8dp"

android:text="Searched Longitude: "

android:textSize="18sp" />

</RelativeLayout>

//MainActivity.java

package com.example.app6;

import android.content.pm.PackageManager;

import android.location.Address;

import android.location.Geocoder;

import android.location.Location;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.ActivityCompat;

import androidx.core.content.ContextCompat;

import com.example.app6.R;

import com.google.android.gms.location.FusedLocationProviderClient; import com.google.android.gms.location.LocationServices;

import com.google.android.gms.tasks.OnSuccessListener;

import java.io.IOException;

import java.util.List;

import java.util.Locale;

public class MainActivity extends AppCompatActivity {

private static final int LOCATION\_PERMISSION\_REQUEST = 1;

private FusedLocationProviderClient fusedLocationProviderClient; private EditText locationNameEditText;

private Button searchLocationButton;

private TextView latitudeTextView, longitudeTextView, searchLatitudeTextView, searchLongitudeTextView;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

fusedLocationProviderClient =

LocationServices.getFusedLocationProviderClient(this);

locationNameEditText = findViewById(R.id.locationNameEditText); searchLocationButton = findViewById(R.id.searchLocationButton); latitudeTextView = findViewById(R.id.latitudeTextView);

longitudeTextView = findViewById(R.id.longitudeTextView);

searchLatitudeTextView = findViewById(R.id.searchLatitudeTextView); searchLongitudeTextView = findViewById(R.id.searchLongitudeTextView);

findViewById(R.id.getLocationButton).setOnClickListener(new

View.OnClickListener() {

@Override

public void onClick(View view) {

getLocation();

}

});

searchLocationButton.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

searchLocation();

}

});

}

private void getLocation() {

if (ContextCompat.checkSelfPermission(this,

android.Manifest.permission.ACCESS\_FINE\_LOCATION) ==

PackageManager.PERMISSION\_GRANTED) {

fusedLocationProviderClient.getLastLocation().addOnSuccessListener(new OnSuccessListener<Location>() {

@Override

public void onSuccess(Location location) {

if (location != null) {

double latitude = location.getLatitude();

double longitude = location.getLongitude();

latitudeTextView.setText("Latitude: " + latitude);

longitudeTextView.setText("Longitude: " + longitude);

} else {

showToast("Location not available");

}

}

});

} else {

ActivityCompat.requestPermissions(this, new

String[]{android.Manifest.permission.ACCESS\_FINE\_LOCATION},

LOCATION\_PERMISSION\_REQUEST);

}

}

private void searchLocation() {

String locationName = locationNameEditText.getText().toString().trim();

if (!locationName.isEmpty()) {

Geocoder geocoder = new Geocoder(this, Locale.getDefault());

try {

List<Address> addresses =

geocoder.getFromLocationName(locationName, 1);

if (addresses != null && !addresses.isEmpty()) {

Address address = addresses.get(0);

double latitude = address.getLatitude();

double longitude = address.getLongitude();

searchLatitudeTextView.setText("Searched Latitude: " +

latitude);

searchLongitudeTextView.setText("Searched Longitude: " +

longitude);

} else {

showToast("Location not found");

}

} catch (IOException e) {

e.printStackTrace();

showToast("Geocoding error");

}

} else {

showToast("Please enter a location name");

}

}

@Override

public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions, @NonNull int[] grantResults) {

super.onRequestPermissionsResult(requestCode, permissions, grantResults); if (requestCode == LOCATION\_PERMISSION\_REQUEST) {

if (grantResults.length > 0 && grantResults[0] ==

PackageManager.PERMISSION\_GRANTED) {

getLocation();

} else {

showToast("Location permission denied");

}

}

}

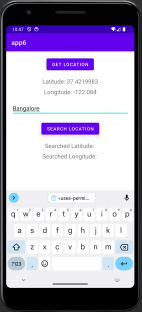
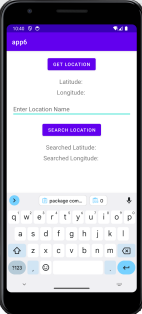
private void showToast(String message) {

Toast.makeText(this, message, Toast.LENGTH\_SHORT).show();

}

}

## Output:

****

## Learning outcomes:

● An android application to find the latitude and longitude of a selected location was implemented.

● Geocoding and Reverse geocoding was implemented.