[2CEIT5PE5: MOBILE APPLICATION DEVELOPMENT]

Practical: 10

AIM: Create an application to create JSON URL for Contact which have field(id, Name(First Name, Last Name), Phone No, Address) and should be minimum five contact details & display received contact data in RecyclerView. Add Google Map Activity which displays location which is received in JSON Data in google Maps activity and set the zoom level to 10.

Submitted By: Meda chandrika
Enrollment number: 21012022026

Ganpat University | U.V. Patel College of Engineering

|| विद्यया समाजोत्कर्षः ||

Department of Computer Engineering/Information Technology

activity_main.xml

```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"
    tools:context=".MainActivity">
    <androidx.recyclerview.widget.RecyclerView
        android:id="@+id/listView1"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        app:layoutManager="androidx.recyclerview.widget.LinearLayoutManager"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        android:layout_marginHorizontal="10dp"
        android:layout_marginBottom="60dp"
        android:layout_marginTop="75dp"
        app:layout_constraintBottom_toBottomOf="parent"
        >
    </androidx.recyclerview.widget.RecyclerView>
    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/fab"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="60dp"
        android:layout_marginEnd="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        android:src="@drawable/ic_baseline_sync_24"/>

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

activity_maps.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<fragment xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:map="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/map"
    android:name="com.google.android.gms.maps.SupportMapFragment"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MapsActivity" />
```

person_item_view.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    xmlns:app="http://schemas.android.com/apk/res-auto">
    <com.google.android.material.card.MaterialCardView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        style="?attr/materialCardViewElevatedStyle"
        >
    <androidx.constraintlayout.widget.ConstraintLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="match_parent">

        </LinearLayout>
        <ImageView
            android:id="@+id/imageView"
            android:layout_gravity="center"
            android:layout_width="48dp"
            android:layout_height="48dp"
            android:padding="10dp"
            android:src="@drawable/ic_round_person_24"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintEnd_toStartOf="@id/imageView"
            app:layout_constraintTop_toTopOf="parent"
            app:layout_constraintBottom_toBottomOf="parent"
            />
        <LinearLayout
            android:id="@+id/linear_content"
            android:layout_margin="10dp"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            app:layout_constraintStart_toEndOf="@id/imageView"
            app:layout_constraintTop_toTopOf="parent"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintEnd_toStartOf="@id/button_map"
            android:orientation="vertical">
```

```xml
        <TextView
            android:id="@+id/textView_name"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:textSize="18sp"
            android:textStyle="bold"
            android:text="Guerra Rodgers"/>
        <TextView
            android:id="@+id/textView_phone_no"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="+919289635723" />
        <TextView
            android:id="@+id/textView_email"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="guerra_rodgers@gnu.ac.in" />
        <TextView
            android:id="@+id/textView_address"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="88 College Place, Umapine, Oregon" />

    </LinearLayout>
    <ImageButton
        android:id="@+id/button_map"
        android:layout_gravity="center"
        android:layout_width="60dp"
        android:layout_height="60dp"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toEndOf="@id/linear_content"
        app:layout_constraintEnd_toEndOf="parent"
        style="?attr/materialIconButtonFilledStyle"
        android:src="@drawable/ic_baseline_location_on_24"
        android:layout_marginEnd="10dp"
        />
    </androidx.constraintlayout.widget.ConstraintLayout>
    </com.google.android.material.card.MaterialCardView>
</LinearLayout>
```

HttpRequest.kt

```kotlin
package com.example.madpractical10_21012022026

import android.util.Log
import java.io.*
import java.net.HttpURLConnection
import java.net.MalformedURLException
import java.net.ProtocolException
import java.net.URL

class HttpRequest {
    private val TAG = "HttpRequest"
    fun makeServiceCall(reqUrl: String?,token:String?=null): String? {
        var response: String? = null
        try {
            val url = URL(reqUrl)
            val conn = url.openConnection() as HttpURLConnection
            if(token != null){
                conn.setRequestProperty("Authorization","Bearer $token");
                conn.setRequestProperty("Content-Type","application/json");
            }
            conn.requestMethod = "GET"
            response = convertStreamToString(BufferedInputStream(conn.inputStream))
        } catch (e: MalformedURLException) {
            Log.e(TAG, "MalformedURLException: " + e.message)
        } catch (e: ProtocolException) {
            Log.e(TAG, "ProtocolException: " + e.message)
        } catch (e: IOException) {
            Log.e(TAG, "IOException: " + e.message)
        } catch (e: Exception) {
            Log.e(TAG, "Exception: " + e.message)
        }
        return response
    }
    private fun convertStreamToString(`is`: InputStream): String {
        val reader = BufferedReader(InputStreamReader(`is`))
        val sb = StringBuilder()
        var line: String?
        try {
            while (reader.readLine().also { line = it } != null) {
                sb.append(line).append('\n')
            }
        } catch (e: IOException) {
            e.printStackTrace()
        } finally {
            try {
                `is`.close()
            } catch (e: IOException) {
                e.printStackTrace()
            }
        }
        return sb.toString()
    }
}
```

MainActivity.kt

```kotlin
package com.example.madpractical10_21012022026
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import androidx.core.view.WindowCompat
import com.example.madpractical10_21012022026.databinding.ActivityMainBinding
import kotlinx.coroutines.CoroutineScope
import kotlinx.coroutines.Dispatchers
import kotlinx.coroutines.launch
import kotlinx.coroutines.withContext
import org.json.JSONArray
import org.json.JSONException
import org.json.JSONObject
import java.util.ArrayList
class MainActivity : AppCompatActivity() {
    private lateinit var binding: ActivityMainBinding
    override fun onCreate(savedInstanceState: Bundle?) {
        WindowCompat.setDecorFitsSystemWindows(window, false)
        super.onCreate(savedInstanceState)
        binding = ActivityMainBinding.inflate(layoutInflater)
        setContentView(binding.root)
        binding.fab.setOnClickListener {
            CoroutineScope(Dispatchers.IO).launch {
                try {
                    val data = HttpRequest().makeServiceCall(
                        "https://api.json-generator.com/templates/qjeKFdjkXCdK/data",
                        "dchj8v1b6qqdjzbqood1jgpachyfzlw58r540gru")
                    withContext(Dispatchers.Main) {
                        try {
                            if(data != null)
                                runOnUiThread{getPersonDetailsFromJson(data)}
                        } catch (e: Exception) {
                            e.printStackTrace()
                        }
                    }
                } catch (e: Exception) {
                    e.printStackTrace()
                }
            }
        }
    }

    private fun getPersonDetailsFromJson(sJson: String?) {
        val personList = ArrayList<Person>()
        try {
            val jsonArray = JSONArray(sJson)
            for (i in 0 until jsonArray.length()) {
                val jsonObject = jsonArray[i] as JSONObject
                val person = Person(jsonObject)
                personList.add(person)}
            binding.listView1.adapter = PersonAdapter(this, personList)
        } catch (ee: JSONException) {ee.printStackTrace()}
    }
}
```

MapsActivity.kt

```kotlin
package com.example.madpractical10_21012022026

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.util.Log
import com.example.madpractical10_21012022026.databinding.ActivityMapsBinding
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

class MapsActivity : AppCompatActivity(), OnMapReadyCallback {

    private val TAG = "MapActivity"
    private lateinit var mMap: GoogleMap
    private lateinit var binding: ActivityMapsBinding
    private var lat = -34.0
    private var log = 151.0
    private var title = "Marker in Sydney"

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        val obj = intent.getSerializableExtra("Object") as Person
        Log.i(TAG, "onCreate: Object:$obj")
        lat = obj.Latitude
        log = obj.Longitude
        title = obj.Name
        binding = ActivityMapsBinding.inflate(layoutInflater)
        setContentView(binding.root)
        val mapFragment = supportFragmentManager
            .findFragmentById(R.id.map) as SupportMapFragment
        mapFragment.getMapAsync(this)
    }
    override fun onMapReady(googleMap: GoogleMap) {
        mMap = googleMap
        val sydney = LatLng(lat, log)
        mMap.addMarker(MarkerOptions().position(sydney).title("Marker in Sydney"))
        mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney))
    }
}
```

Person.kt

```kotlin
package com.example.madpractical10_21012022026

import org.json.JSONObject
import java.io.Serializable
class Person (jsonObject: JSONObject) :Serializable {
    var id:String
    var Name: String
    var EmailId: String
    var PhoneNo: String
    var Address: String
    var Latitude: Double
    var Longitude:Double
    init {
        id = jsonObject.getString("id")
        EmailId = jsonObject.getString("email")
        PhoneNo = jsonObject.getString("phone")
        val profileJson = jsonObject.getJSONObject("profile")
        Name = profileJson.getString("name")
        Address = profileJson.getString("address")
        val locationJson = profileJson.getJSONObject("location")
        Latitude = locationJson.getDouble("lat")
        Longitude = locationJson.getDouble("long")
    }
    override fun toString(): String {
        return "$Name\n$PhoneNo\n$EmailId\n$Address\nlat:$Latitude\nlog:$Longitude"
    }
}
```

PersonAdapter.kt

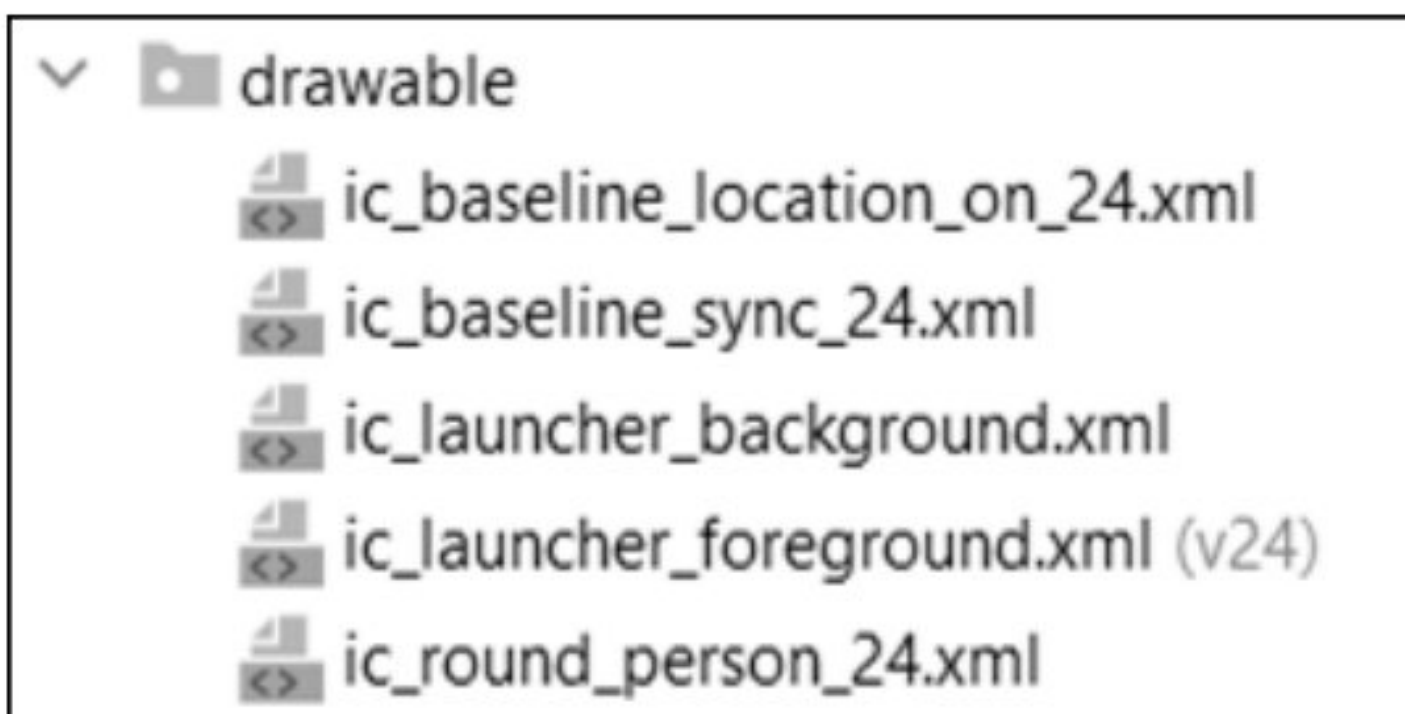```kotlin
package com.example.madpractical10_21012022026

import android.content.Context
import android.content.Intent
import android.view.LayoutInflater
import android.view.ViewGroup
import androidx.recyclerview.widget.RecyclerView
import com.example.madpractical10_21012022026.databinding.PersonItemViewBinding
import java.io.Serializable

class PersonAdapter (private val context: Context, private val array:ArrayList<Person>):
    RecyclerView.Adapter<PersonAdapter.PersonViewHolder>() {
    inner class PersonViewHolder(val binding: PersonItemViewBinding):
RecyclerView.ViewHolder(binding.root)
    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int): PersonViewHolder {
        val binding = PersonItemViewBinding.inflate(LayoutInflater.from(parent.context),
parent, false)
        return PersonViewHolder(binding)
    }
    override fun onBindViewHolder(holder: PersonViewHolder, position: Int) {
        with(holder){
            with(array[position]){
                binding.textViewPhoneNo.text = this.PhoneNo
                binding.textViewName.text = this.Name
                binding.textViewEmail.text = this.EmailId
                binding.textViewAddress.text = this.Address
                val obj = this as Serializable
                binding.buttonMap.setOnClickListener {
                    Intent(this@PersonAdapter.context, MapsActivity::class.java).apply {
                        putExtra("Object",obj)
                        this@PersonAdapter.context.startActivity(this)
                    }
                }
            }
        }
    }
    override fun getItemCount(): Int {
        return array.size
    }
}
```

**AndroidManifest.xml**

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <uses-permission android:name="android.permission.INTERNET"/>
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.MADPractical10_21012022026"
        tools:targetApi="31">
        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="AIzaSyC3T6FnhyHOhZ_vcrT2EtaqFwf0MSc7hh4" />
        <activity
            android:name=".MapsActivity"
            android:exported="false"
            android:label="@string/title_activity_maps" />
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>
</manifest>
```

Resources:

- drawable
  - ic_baseline_location_on_24.xml
  - ic_baseline_sync_24.xml
  - ic_launcher_background.xml
  - ic_launcher_foreground.xml (v24)
  - ic_round_person_24.xml

Practical: 10

Output: