[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.

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AndroidManifest.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"
    package="com.example.madpractical10_20012021015">

    <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_20012021015"
        tools:targetApi="31">

        <!--
             TODO: Before you run your application, you need a Google
Maps API key.

             To get one, follow the directions here:


https://developers.google.com/maps/documentation/android-sdk/get-api-
key

             Once you have your API key (it starts with "AIza"),
define a new property in your
             project's local.properties file (e.g.
MAPS_API_KEY=Aiza...), and replace the
             "YOUR_API_KEY" string in this file with
"${MAPS_API_KEY}".
        -->
        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="AIzaSyBS8MoTbcBZZo8_MrNVubYyT8ZophOijFA" />
```

```
        <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>
```

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"
    tools:context=".MainActivity">

    <androidx.recyclerview.widget.RecyclerView
        android:id="@+id/recyclerView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"

app:layoutManager="androidx.recyclerview.widget.LinearLayoutManager"
        android:layout_marginTop="50dp"
        tools:listitem="@layout/user_view_design"
        tools:itemCount="5"
        app:layout_constraintTop_toTopOf="parent"/>


<com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/refresh"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_gravity="bottom|end"
        android:layout_marginEnd="30dp"
        android:layout_marginBottom="56dp"
        app:srcCompat="@drawable/ic_baseline_autorenew_24"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent" />

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

MainActivity.kt :

```
package com.example.madpractical10_20012021015

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import androidx.core.view.WindowCompat
import
com.example.madpractical10_20012021015.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.refresh.setOnClickListener {
            CoroutineScope(Dispatchers.IO).launch {
                try {
                    val data = HttpRequest().makeServiceCall(
                        "https://api.json-
generator.com/templates/wuIoxGWw4EPH/data",
                        "uk0y9lm454oepdbo64fkqwvlzcpay9axp4jporyg")
                    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.recyclerView.adapter    =    PersonViewAdapter(this,
personList)
        } catch (ee: JSONException) {
            ee.printStackTrace()
        }
    }
}
```

activity_maps.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" />
```

MapsActivity.kt :

```
package com.example.madpractical10_20012021015

import android.os.Bundle
import android.util.Log
import androidx.appcompat.app.AppCompatActivity
import
com.example.madpractical10_20012021015.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)

        // Obtain the SupportMapFragment and get notified when the map
is ready to be used.
        val mapFragment = supportFragmentManager
            .findFragmentById(R.id.map) as SupportMapFragment
        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 fun onMapReady(googleMap: GoogleMap) {
        mMap = googleMap
        // Add a marker in Sydney and move the camera
        val sydney = LatLng(lat, log)
        //googleMap.uiSettings.isZoomGesturesEnabled = true;

        mMap.addMarker(MarkerOptions().position(sydney).title(title))

mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(sydney,8.0f))
    }
}
```

user_view_design.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"
    android:orientation="horizontal"
    android:layout_marginHorizontal="10dp">

    <com.google.android.material.card.MaterialCardView
        android:id="@+id/cardView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        style="?attr/materialCardViewElevatedStyle"
        android:layout_marginVertical="10dp"
        android:layout_marginHorizontal="5dp"

        app:cardElevation="5dp"
        app:cardCornerRadius="10dp">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="horizontal">
            <ImageView
                android:id="@+id/icon"
                android:layout_width="45dp"
                android:layout_height="45dp"
                android:padding="7dp"
                android:layout_gravity="center"
                android:layout_marginStart="10dp"
```

```
                android:src="@drawable/ic_baseline_person_24"
                android:background="@drawable/shape" />
            <LinearLayout
                android:layout_width="0dp"
                android:layout_height="wrap_content"
                android:orientation="vertical"
                android:layout_margin="5dp"
                android:layout_weight="15">
                <TextView
                    android:id="@+id/textViewName"
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content"
                    android:text="Medium Text"
                    android:textStyle="bold"
                    android:textSize="18sp"
                    android:padding="2dp" />
                <TextView
                    android:id="@+id/textViewPhoneNo"
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content"
                    android:text="TextView"
                    android:padding="2dp" />
                <TextView
                    android:id="@+id/textViewEmail"
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content"
                    android:text="TextView"
                    android:padding="2dp" />
                <TextView
                    android:id="@+id/textViewAddress"
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content"
                    android:text="TextView"
                    android:padding="2dp" />
            </LinearLayout>
<com.google.android.material.floatingactionbutton.FloatingActionButton
                android:id="@+id/locationBtn"
                android:layout_width="45dp"
                android:layout_height="45dp"
                android:layout_gravity="center_vertical"
                app:srcCompat="@drawable/ic_baseline_location_on_24"
                android:layout_marginEnd="15dp"
                app:fabCustomSize="45dp"
                app:layout_anchorGravity="center" />
        </LinearLayout>
    </com.google.android.material.card.MaterialCardView>
</LinearLayout>
```

HttpRequest.kt :

```
package com.example.madpractical10_20012021015
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()
    }
}
```

Person.kt :

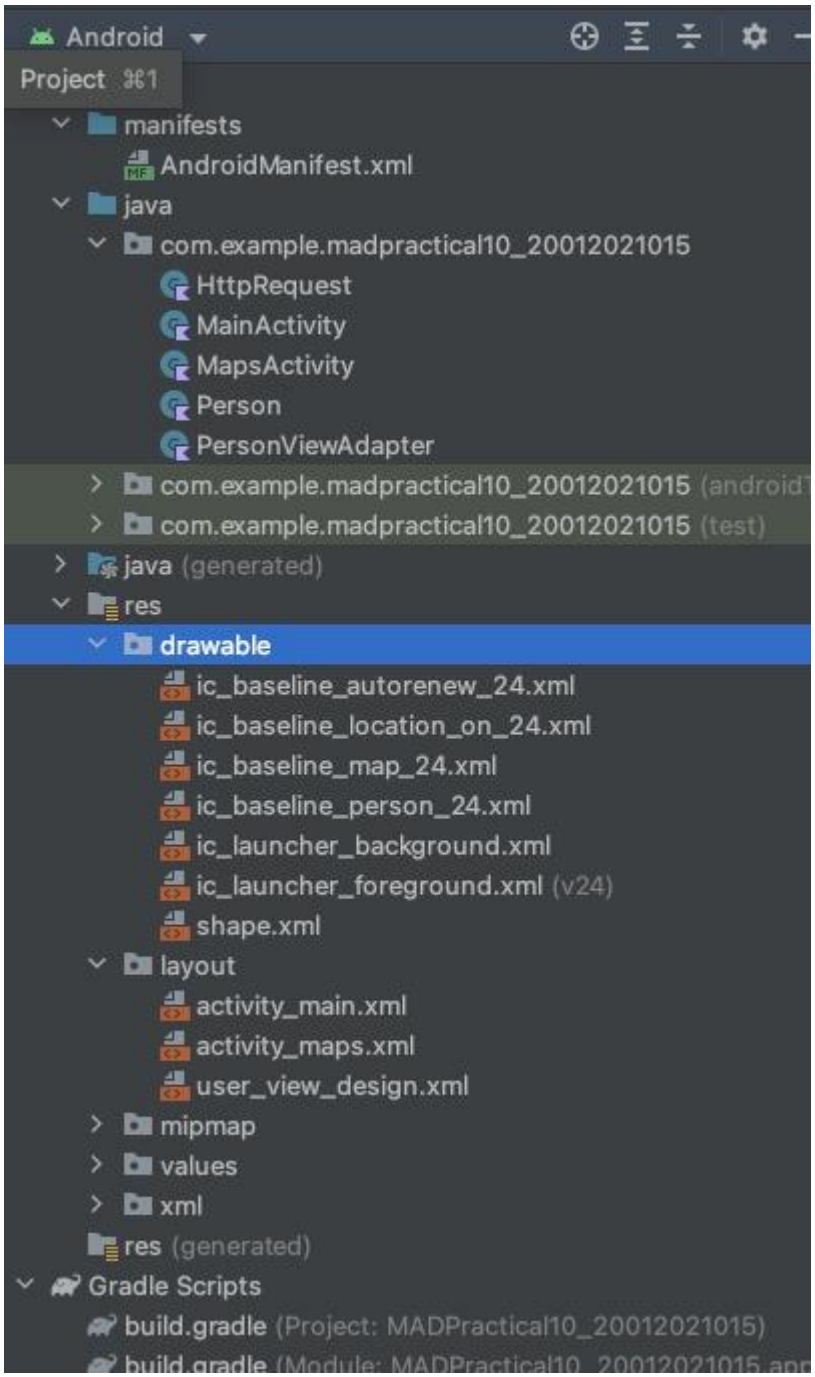
```
package com.example.madpractical10_20012021015

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"
    }
}
```

PersonViewAdapter.kt :

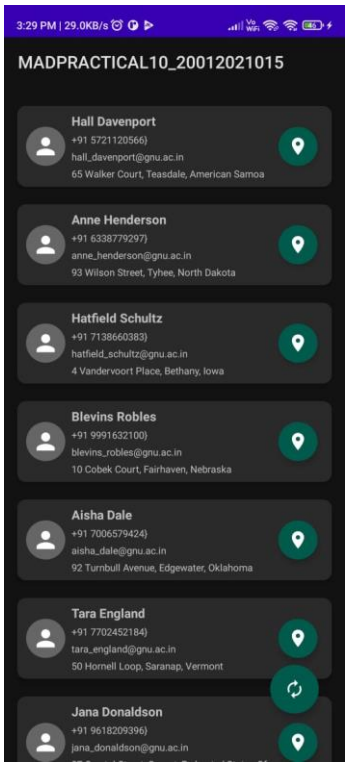
```
package com.example.madpractical10_20012021015
import org.json.JSONObject
import java.io.Serializable

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:Doublepackage com.example.madpractical10_20012011059

import android.content.Context
import android.content.Intent
import android.view.LayoutInflater
import android.view.ViewGroup

import android.widget.Toast
import androidx.recyclerview.widget.RecyclerView
import
com.example.madpractical10_20012021015.databinding.UserViewDesignBindi
ng
import java.io.Serializable

class PersonViewAdapter (private val context: Context, private val
array:ArrayList<Person>):
    RecyclerView.Adapter<PersonViewAdapter.PersonViewHolder>() {
    inner class PersonViewHolder(val binding: UserViewDesignBinding):
RecyclerView.ViewHolder(binding.root)

    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int):
PersonViewHolder {
        val                          binding                          =
UserViewDesignBinding.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.locationBtn.setOnClickListener {
                    Intent(this@PersonViewAdapter.context,
MapsActivity::class.java).apply {
                        putExtra("Object",obj)

this@PersonViewAdapter.context.startActivity(this)
                    }
                    //Toast.makeText(this@PersonAdapter.context,
"Clicked         on         "+binding.textViewName+",         Location:
Lat:"+this.Latitude+"Long:"+this.Longitude, Toast.LENGTH_SHORT).show()
                }
            }
        }
    }

    override fun getItemCount(): Int {
        return array.size
    }
}
    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"
    }
}
```

Structure Tree :



Output :


3:29 PM | 29.0KB/s
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