**[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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**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/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 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 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">**

**<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**

**package com.example.madpractical10\_21012022022  
  
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**

**package com.example.madpractical10\_21012022022  
import androidx.appcompat.app.AppCompatActivity  
import android.os.Bundle  
import androidx.core.view.WindowCompat  
import com.example.madpractical10\_21012022022.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**

**package com.example.madpractical10\_21012022022  
  
import androidx.appcompat.app.AppCompatActivity  
import android.os.Bundle  
import android.util.Log  
import com.example.madpractical10\_21012022022.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**

**package com.example.madpractical10\_21012022022  
  
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"  
 }  
}**

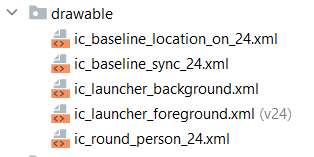
**PersonAdapter.kt**

**package com.example.madpractical10\_21012022022  
  
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\_21012022022.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  
 }  
}**

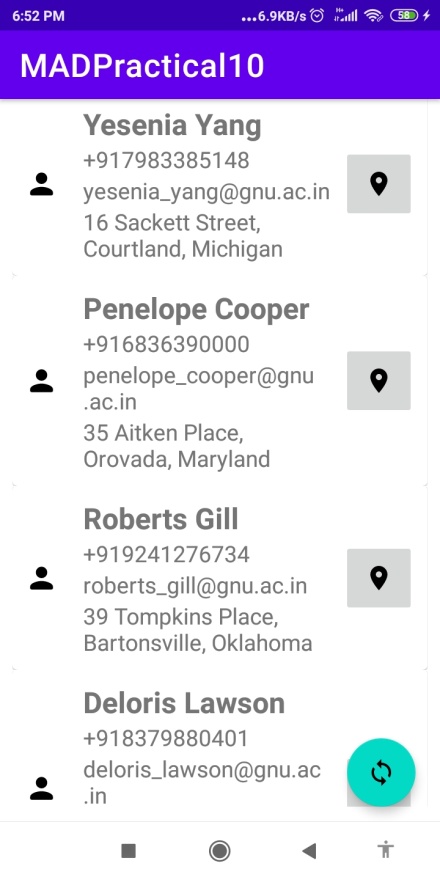
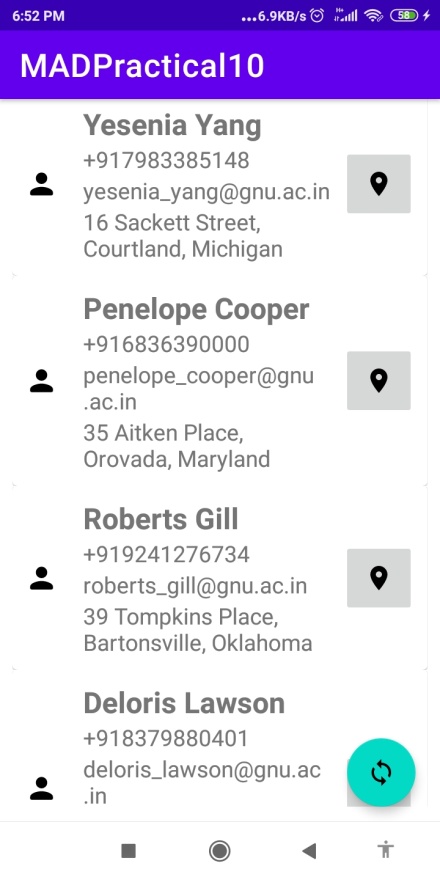
**AndroidManifest.xml**

**<?xml 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\_21012022022"  
 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:



**Output:**

**  **

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