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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>
```

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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">
```

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```
<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_rodders@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>
```

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HttpRequest.kt

```
package com.example.madpractical10_20012021055

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()
    }
}
```

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MainActivity.kt

```
package com.example.madpractical10_20012021055
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import androidx.core.view.WindowCompat
import com.example.madpractical10_20012021055.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()}
    }
}
```

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MapsActivity.kt

```
package com.example.madpractical10_20012021055

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.util.Log
import com.example.madpractical10_20012021055.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))
    }
}
```

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Person.kt

```
package com.example.madpractical10_20012021055

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"
    }
}
```


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PersonAdapter.kt

```
package com.example.madpractical10_20012021055

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_20012021055.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)
                            }
                        }
                    }
                }
            }
        }
    }

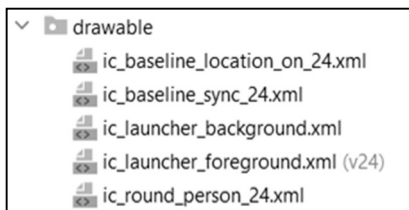
    override fun getItemCount(): Int {
        return array.size
    }
}
```

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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">
    <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:supportRtl="true"
        android:theme="@style/Theme.MADPractical10_20012021055"
        tools:targetApi="31">
        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="AIzaSyC3T6FnhyH0hZ_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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