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.

To Generate JSON Data, Refer: **https://app.json-generator.com/**

1. Create MainActivity according to below UI design.

2. Use link generated from website for JSON Data

3. Create MapActivity by using this **instructions**.

4. Create Class Person with member Variables like id, Name, Phone No, Email Id, Address, Latitude, Longitude. This class should be inherited from Serializable class.

5. Generate JSON data format according to below image.

6. Use RecyclerView or ListView Adapter

7. Add Internet Permission in Manifest file

8. Create Class HttpRequest for communicating with Web URL

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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">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="@string/app_name"
        android:textSize="20sp"
        android:textAppearance="?attr/textAppearanceHeadline6"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <ListView
        android:id="@+id/listview_main"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintTop_toBottomOf="@+id/textView1"
        app:layout_constraintEnd_toEndOf="parent">

    </ListView>

    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/autorenew_btn"
        android:src="@drawable/baseline_autorenew_24"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        android:layout_marginBottom="20dp"
        android:layout_marginEnd="20dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.kt :-

```kotlin
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.ListView
import com.google.android.material.floatingactionbutton.FloatingActionButton
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

class MainActivity : AppCompatActivity() {
    private lateinit var personListView : ListView
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        val btn= findViewById<FloatingActionButton>(R.id.autorenew_btn)
        btn.setOnClickListener(){
            CoroutineScope(Dispatchers.IO).launch {
                try {
                    val data = HttpRequest().makeServiceCall(
                        "https://api.json-generator.com/templates/qjeKFdjkXCdK/data",
                        "rbn0rerl1k0d3mcwgw7dva2xuwk780z1hxvyvrb1")
                    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)
          }
          val personListView=findViewById<ListView>(R.id.listview_main)
          personListView.adapter = PersonAdapter(this, personList)
      } catch (ee: JSONException) {
        ee.printStackTrace()
      }
    }
}
```

activity_maps.xml :-

```xml
<?xml version="1.0" encoding="utf-8"?>
<fragment xmlns:android="http://schemas.android.com/apk/res/android"
   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"
   tools:ignore="MissingClass" />
```

MapsActivity.kt :-

```kotlin
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.util.Log
import com.example.mad_practical_10_21012021070.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.BitmapDescriptorFactory
import com.google.android.gms.maps.model.LatLng
import com.google.android.gms.maps.model.MarkerOptions

class MapsActivity : AppCompatActivity(), OnMapReadyCallback {

  private lateinit var mMap: GoogleMap
  private lateinit var binding: ActivityMapsBinding
```

```kotlin
 private var lat:Double = 0.0
 private var log:Double = 0.0
 private var title = ""
 private val TAG = "MapsActivity"

 override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)

    binding = ActivityMapsBinding.inflate(layoutInflater)
    setContentView(binding.root)
    val obj = intent.getSerializableExtra("Object") as Person
    Log.i(TAG, "onCreate: Object: $obj")
    lat = obj.latitude
    log = obj.longitude
    title = obj.name
    val mapFragment = supportFragmentManager
       .findFragmentById(R.id.map) as SupportMapFragment
    mapFragment.getMapAsync(this)
 }

 override fun onMapReady(googleMap: GoogleMap) {
    mMap = googleMap
    mMap.mapType = GoogleMap.MAP_TYPE_SATELLITE
    val sydney = LatLng(lat,  log )
    mMap.addMarker(
       MarkerOptions().position(sydney)
       .title(title)
       .snippet(title)
       .icon(BitmapDescriptorFactory.fromResource(R.drawable.img))
    )
    mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(sydney,16.0f))
 }
}
```

contact_item.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">
  <com.google.android.material.card.MaterialCardView
    android:id="@+id/materialCardView"
```

```xml
android:layout_width="match_parent"
android:layout_height="wrap_content"
app:cardCornerRadius="20dp"
app:cardElevation="20dp"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent">
<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="20dp">

    <com.google.android.material.button.MaterialButton
        android:id="@+id/person_btn"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:layout_marginStart="15dp"
        android:backgroundTint="@color/cardview_dark_background"
        android:drawableTint="@color/white"
        app:icon="@drawable/baseline_person_24"
        app:iconGravity="textStart"
        app:iconSize="30dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/location_btn"
        app:layout_constraintStart_toEndOf="@id/person_btn"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:id="@+id/name_textView"
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="10dp"
            android:text="John  Gill"
            android:textSize="20dp"
            android:textStyle="bold"
            app:layout_constraintBottom_toTopOf="@+id/number_textView"
            app:layout_constraintStart_toEndOf="@+id/person_btn"
            app:layout_constraintTop_toTopOf="parent" />
```

```xml
        <TextView
            android:id="@+id/number_textView"
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="10dp"
            android:text="+91 7983356739"
            app:layout_constraintBottom_toTopOf="@+id/email_textView"
            app:layout_constraintStart_toStartOf="@+id/name_textView"
            app:layout_constraintTop_toBottomOf="@+id/name_textView" />

        <TextView
            android:id="@+id/email_textView"
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="10dp"
            android:text="john123@gmail.com"
            app:layout_constraintBottom_toTopOf="@+id/address_textView"
            app:layout_constraintStart_toStartOf="@+id/name_textView"
            app:layout_constraintTop_toBottomOf="@+id/number_textView" />
        <TextView
            android:id="@+id/address_textView"
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="10dp"
            android:text="S-2, Someshwar Banglows, \nAhemdabad"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintStart_toStartOf="@+id/number_textView"
            app:layout_constraintTop_toBottomOf="@+id/email_textView" />

    </LinearLayout>

    <com.google.android.material.button.MaterialButton
        android:id="@+id/location_btn"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:layout_marginEnd="4dp"
        android:backgroundTint="#0000ff"
        android:drawableTint="@color/white"
        app:icon="@drawable/baseline_location_on_24"
        app:iconGravity="textStart"
        app:iconSize="30dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

  </androidx.constraintlayout.widget.ConstraintLayout>
</com.google.android.material.card.MaterialCardView>
```

```
    <com.google.android.material.divider.MaterialDivider
      android:layout_width="wrap_content"
      android:layout_height="10dp"
      app:layout_constraintTop_toBottomOf="@+id/materialCardView"
      app:layout_constraintStart_toStartOf="parent"
      app:dividerColor="@color/white">
    </com.google.android.material.divider.MaterialDivider>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Person.kt :-

```
import org.json.JSONObject
import java.io.Serializable

class Person (var id: String,
        var name: String,
        var emailId: String,
        var phoneNo: String,
        var address: String,
        var latitude: Double,
        var longitude: Double):Serializable{
    constructor(jsonObject: JSONObject):this("","","","","",0.0,0.0) {
      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")
    }
}
```

PersonAdapter.kt :-

```
import android.annotation.SuppressLint
import android.content.Context
import android.content.Intent
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
import android.widget.ArrayAdapter
import android.widget.TextView
```

```
import com.google.android.material.button.MaterialButton
import java.util.ArrayList

class PersonAdapter(context:Context,  val Personarray : ArrayList<Person>):
ArrayAdapter<Person>(context,0,Personarray) {
   override fun getView(position: Int, convertView: View?, parent: ViewGroup): View {
      val view=LayoutInflater.from(context).inflate(R.layout.contact_item, parent, false)
      view.findViewById<TextView>(R.id.name_textView).text = Personarray[position].name
      view.findViewById<TextView>(R.id.number_textView).text= Personarray[position].phoneNo
      view.findViewById<TextView>(R.id.email_textView).text= Personarray[position].emailId
      view.findViewById<TextView>(R.id.address_textView).text= Personarray[position].address
      view.findViewById<MaterialButton>(R.id.location_btn).setOnClickListener {
         Intent(context, MapsActivity::class.java).putExtra("Object",Personarray[position]).apply {
context.startActivity(this) }
      }
      return view
   }
}
```

HttpRequest.kt :-

```
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)
```
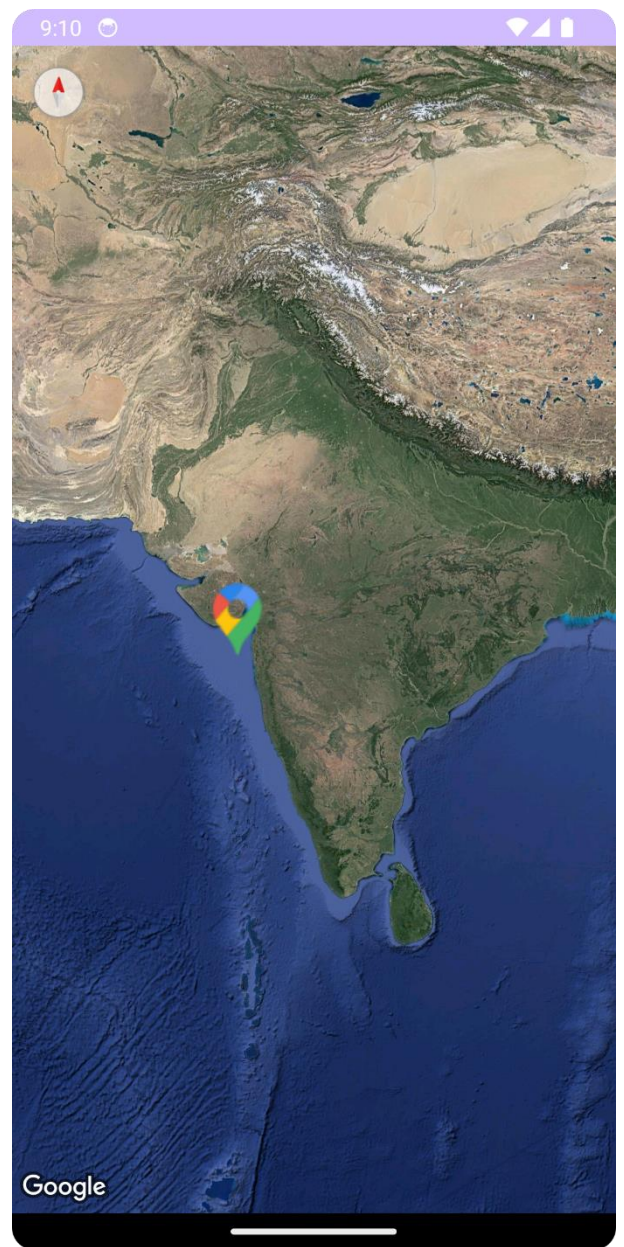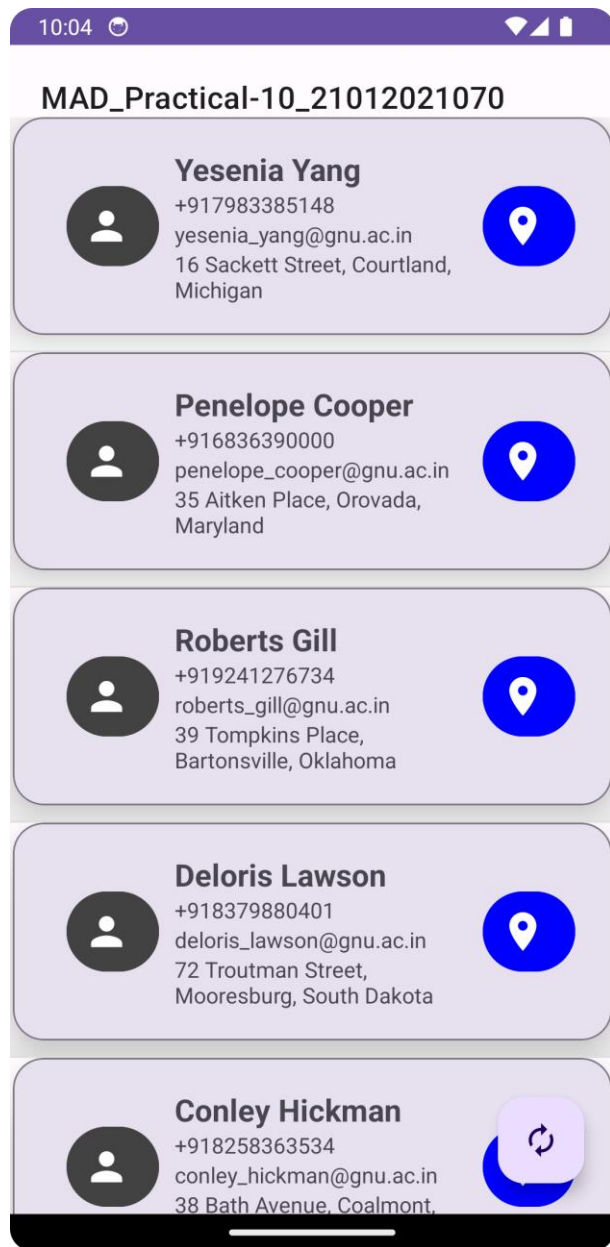
```kotlin
        } catch (e: IOException) {
            Log.e(TAG, "IOException: " + e.message)
        } catch (e: Exception) {
            Log.e(TAG, "Exception:" + .message)
        }
        return response
    }
    private fun convertStreamToString(`is`: InputStream): String {
        val reader = 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()
    }

}
```
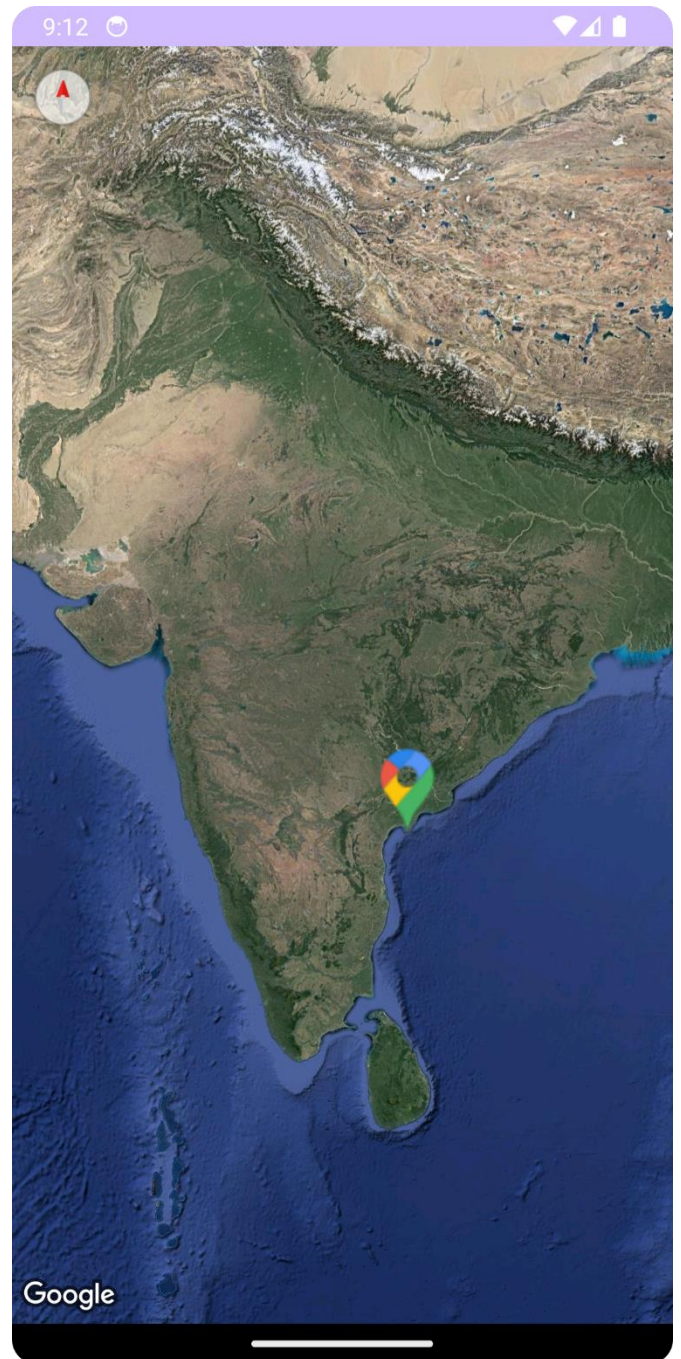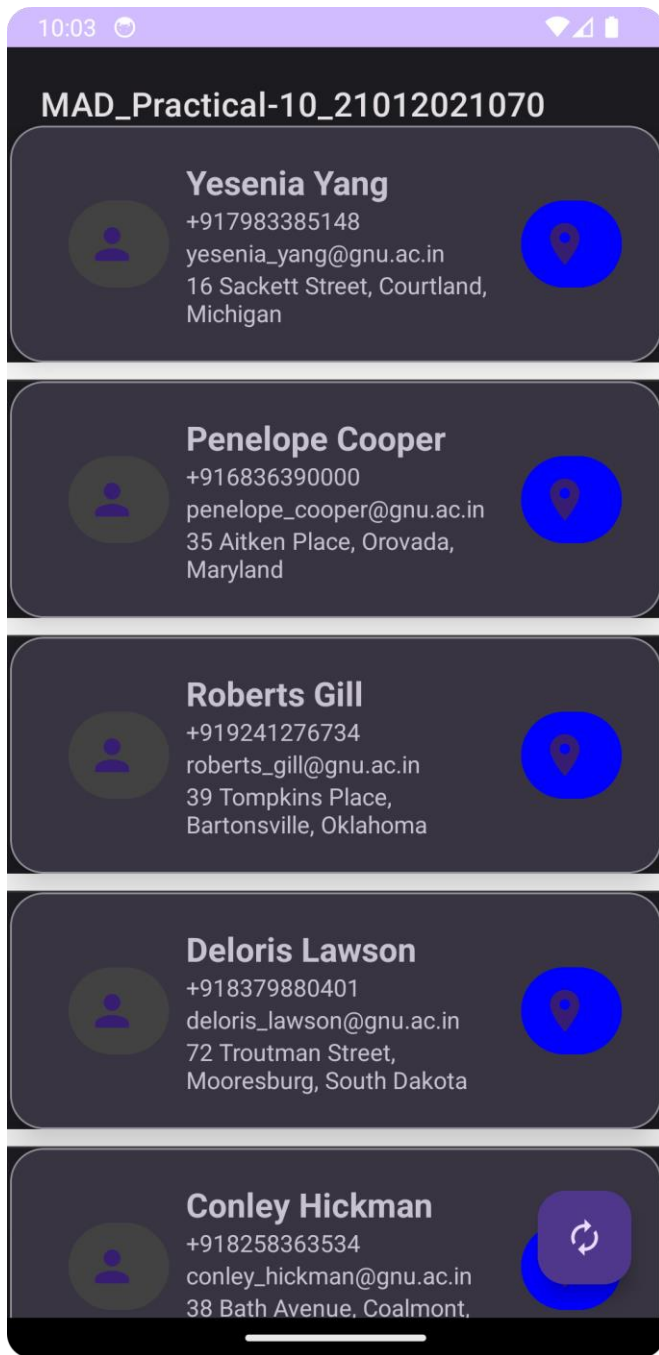
AndroidManifest.xml :-

```xml
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value="AIzaSyBVgO1713xHQ9FVaLQiV1Pp0AiA3ndOckw" />
```

Output :-

LIGHT THEME

DARK THEME