Practical No: - 01
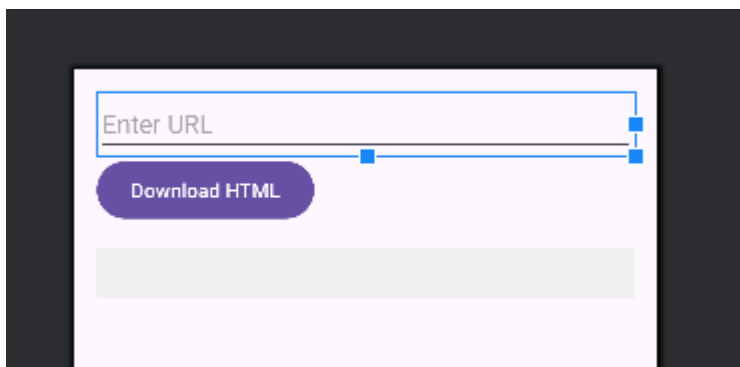
Create an android application to download an HTML page of any website using HttpURLConnection.

Activity_main.xml: -

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">
    <EditText
        android:id="@+id/urlEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter URL" />
    <Button
        android:id="@+id/downloadButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Download HTML" />
    <TextView
        android:id="@+id/htmlTextView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:background="#f0f0f0"
        android:padding="8dp"
        android:textSize="14sp" />
</LinearLayout>
```

MainActivity.java: -

```java
package com.example.restapi;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;
public class MainActivity extends AppCompatActivity {
    private EditText urlEditText;
    private Button downloadButton;
    private TextView htmlTextView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        urlEditText = findViewById(R.id.urlEditText);
        downloadButton = findViewById(R.id.downloadButton);
        htmlTextView = findViewById(R.id.htmlTextView);
        downloadButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String url = urlEditText.getText().toString().trim();
                if (!url.isEmpty()) {
                    new DownloadHtmlTask().execute(url);
                } else {
                    Toast.makeText(MainActivity.this, "Please enter a URL",
Toast.LENGTH_SHORT).show();
                }
            }
        });
```

```java
    }
    private class DownloadHtmlTask extends AsyncTask<String, Void, String> {
        @Override
        protected String doInBackground(String... urls) {
            StringBuilder htmlContent = new StringBuilder();
            try {
                URL url = new URL(urls[0]);
                HttpURLConnection connection = (HttpURLConnection)
url.openConnection();
                connection.setRequestMethod("GET");
                BufferedReader reader = new BufferedReader(new
InputStreamReader(connection.getInputStream()));
                String line;
                while ((line = reader.readLine()) != null) {
                    htmlContent.append(line).append("\n");
                }
                reader.close();
            } catch (Exception e) {
                e.printStackTrace();
                return "Error: " + e.getMessage();
            }
            return htmlContent.toString();
        }
        @Override
        protected void onPostExecute(String result) {
            htmlTextView.setText(result);
        }
    }
}
```
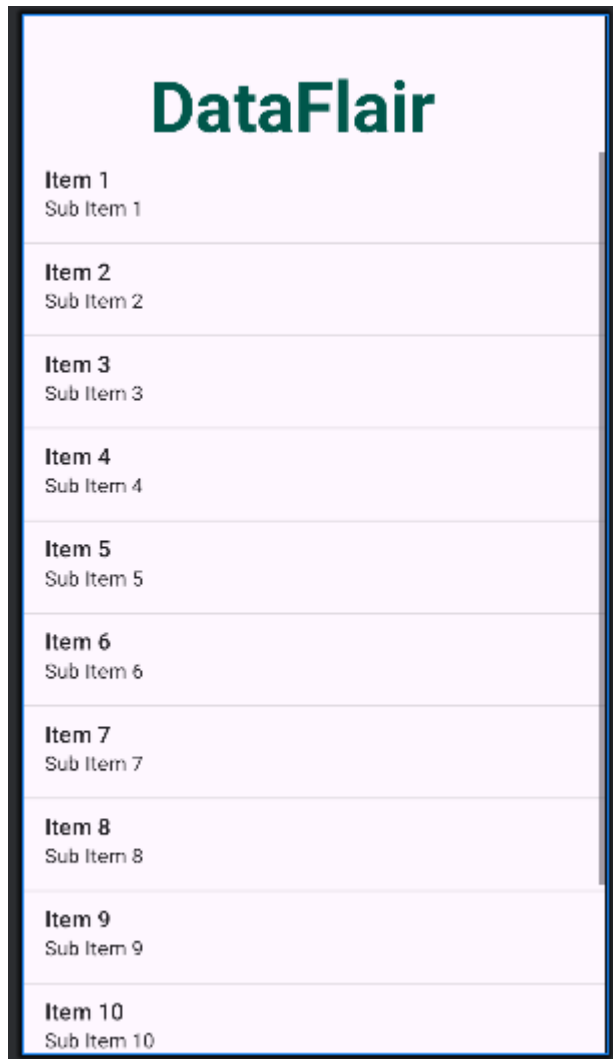
Output : -

Practical No: 02

Create an application to parse a JSON Object(Student Info)

Activity_main.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginLeft="90dp"
        android:layout_marginTop="30dp"
        android:text="DataFlair "
        android:textColor="#00574B"
        android:textSize="50dp"
        android:textStyle="bold" />
    <ListView
        android:id="@+id/students"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:dividerHeight="1dp" />
</LinearLayout>
```

List.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:padding="5dip">
    <TextView
        android:id="@+id/StudentName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="#024E46"
        android:textSize="25dp"
        android:textStyle="bold" />
    <TextView
```

```xml
            android:id="@+id/Branch"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@id/StudentName"
            android:layout_marginTop="10dp"
            android:textColor="#A5BAB8"
            android:textSize="20dp" />
        <TextView
            android:id="@+id/institute"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_alignParentRight="true"
            android:textColor="#A5BAB8"
            android:textSize="20dp" />
</RelativeLayout>
```

MainActivity.java:
```java
package com.example.studemtinfo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.widget.ListAdapter;
import android.widget.ListView;
import android.widget.SimpleAdapter;
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;
import java.util.ArrayList;
import java.util.HashMap;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        String json_stu = getListData();
        try {
            // Create a userList string hashmap arraylist
```

```java
        ArrayList<HashMap<String, String>> userList = new ArrayList<>();
        //list view mapped
        ListView listview = findViewById(R.id.students);
        //// get JSONObject from JSON file
        JSONObject jsObj = new JSONObject(json_stu);
        JSONArray jsArray = jsObj.getJSONArray("Students");
        // implement for loop for getting Student list data
        for (int i = 0; i < jsArray.length(); i++) {
            // Create an empty hash map by declaring object
            // of string,String type
            HashMap<String, String> stu = new HashMap<>();
            // create a JSONObject for fetching single user data
            JSONObject obj = jsArray.getJSONObject(i);
            // and extracting the Stud information
            stu.put("name", obj.getString("name"));
            stu.put("Branch", obj.getString("Branch"));
            stu.put("institute", obj.getString("institute"));
            userList.add(stu);
        }
        // ListAdapter to broadcast the information to the list elements
        ListAdapter simpleAdapter = new SimpleAdapter(MainActivity.this,
userList, R.layout.list, new String[]{"name", "Branch", "institute"}, new
int[]{R.id.StudentName, R.id.Branch, R.id.institute});
        listview.setAdapter(simpleAdapter);
    } catch (JSONException ex) {
        Log.e("JsonParser ", "Exception", ex);
    }
}
// JSON object in the form of input stream
private String getListData() {
    String json_stu1 = "{ \"Students\" :[" +
        "{\"name\":\"Vinayak Gupta
\",\"Branch\":\"MCA\",\"institute\":\"BVIMIT\"}" +
        ",{\"name\":\"Samiksha
Gulhane\",\"Branch\":\"MBA\",\"institute\":\"BVIMSR\"}" +
        ",{\"name\":\"Sairaj
Bhosale\",\"Branch\":\"MCA\",\"institute\":\"BVIMIT\"}" +
```
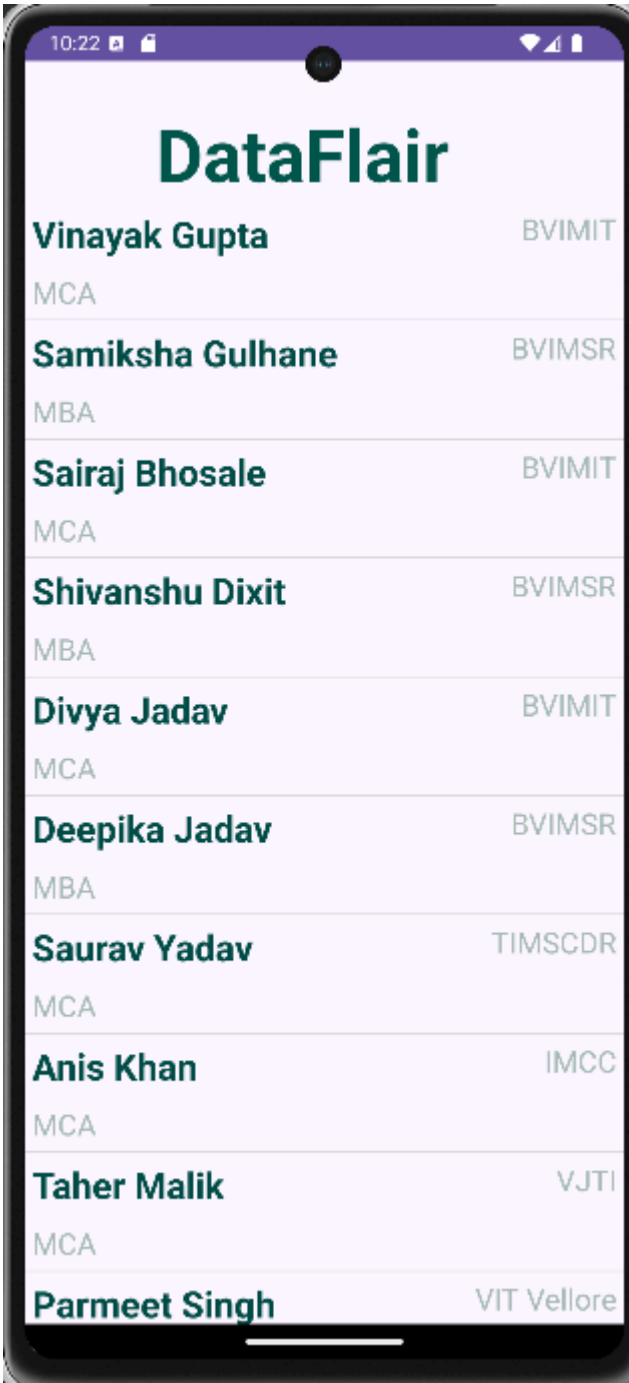
```java
        ",{\"name\":\"Shivanshu
Dixit\",\"Branch\":\"MBA\",\"institute\":\"BVIMSR\"}" +
        ",{\"name\":\"Divya
Jadav\",\"Branch\":\"MCA\",\"institute\":\"BVIMIT\"}" +
        ",{\"name\":\"Deepika
Jadav\",\"Branch\":\"MBA\",\"institute\":\"BVIMSR\"}" +
        ",{\"name\":\"Saurav
Yadav\",\"Branch\":\"MCA\",\"institute\":\"TIMSCDR\"}" +
        ",{\"name\":\"Anis
Khan\",\"Branch\":\"MCA\",\"institute\":\"IMCC\"}" +
        ",{\"name\":\"Taher
Malik\",\"Branch\":\"MCA\",\"institute\":\"VJTI\"}" +
        ",{\"name\":\"Parmeet Singh\",\"Branch\":\"CSE\",\"institute\":\"VIT
Vellore\"}]}";
    return json_stu1;
  }
}
```
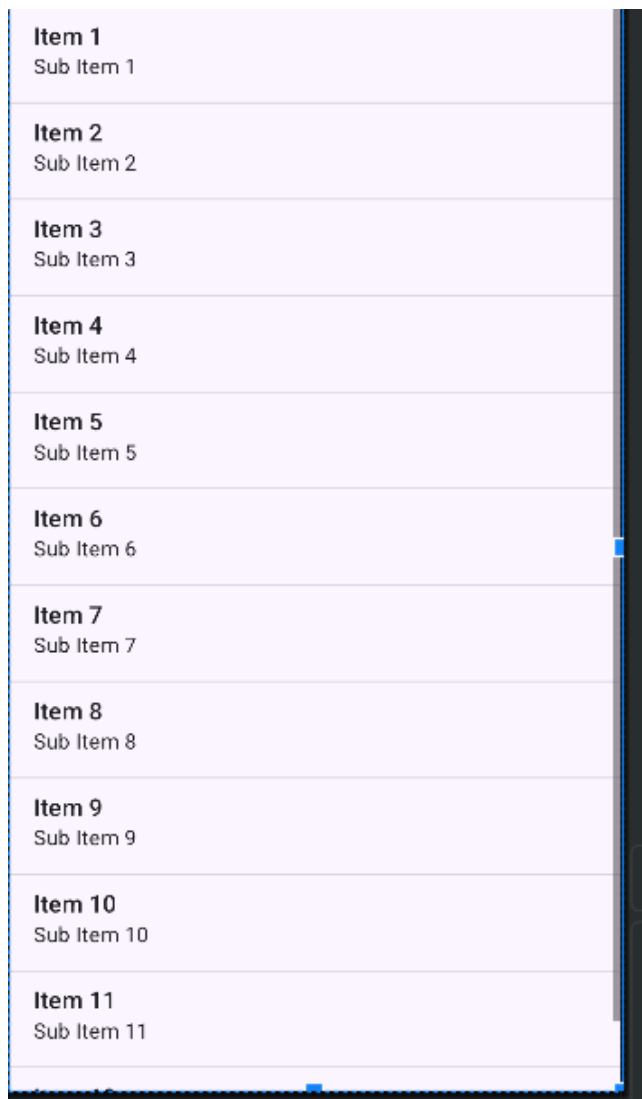
Output: -

Practical No: - 3

Create App for Simple GET request using Retrofit

Activity_main.xml: -

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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">
    <ListView
        android:id="@+id/superListView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
</LinearLayout>
```

Result.java: -

```java
public class Results {
//An annotation that indicates this member should be serialized to JSON with
the provided name value as its field name.
    @SerializedName("name")
    private String superName;
    public Results(String name) {
        this.superName = name;
    }
    public String getName() {
        return superName;
    }
}
```

Retrofit.java: -

```java
import Api.Api;
import retrofit2.Retrofit;
import retrofit2.converter.gson.GsonConverterFactory;
public class RetrofitClient {
    private static RetrofitClient instance = null;
    private Api myApi;
    private  RetrofitClient()
    {
        Retrofit retrofit= new Retrofit.Builder().baseUrl(Api.BASE_URL)
            .addConverterFactory(GsonConverterFactory.create())
            .build();
        myApi=retrofit.create(Api.class);
    }
    public static synchronized RetrofitClient getInstance()
    {
        if(instance==null)
        {
            instance= new RetrofitClient();
        }
        return instance;
    }
    public Api getMyApi()
```

```java
    {
        return myApi;
    }
}
```

Api.java: -

```java
package Api;
import java.util.List;
import retrofit2.Call;
import retrofit2.http.GET;
public interface Api {
    String BASE_URL = "https://simplifiedcoding.net/demos/";
    @GET("marvel")
//Retrofit method that sends a request to a webserver and returns a response.
Each call yields its own HTTP request and response pair
    Call<List<results>> getsuperHeroes();
}
```

MainActivity.java: -

```java
package com.example.marvelretrofit;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;
import java.util.List;
import Api.results;
import retrofit2.Call;
import retrofit2.Callback;
import retrofit2.Response;
public class MainActivity extends AppCompatActivity {
    ListView superListView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        superListView = findViewById(R.id.superListView);
```
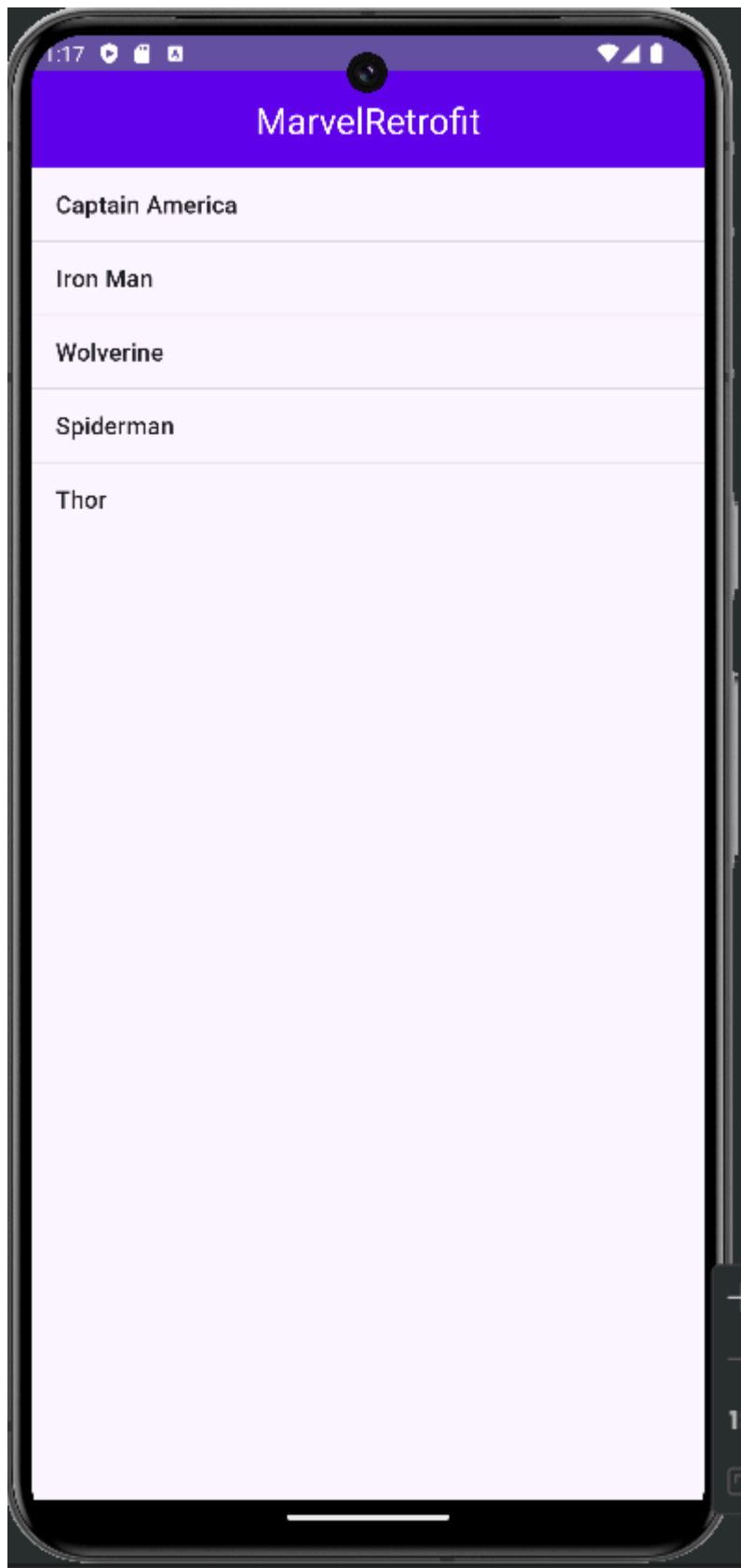
```java
        getSuperHeroes();
    }
    private void getSuperHeroes() {
        Call< List< Results >> call =
RetrofitClient.getInstance().getMyApi().getsuperHeroes();
        call.enqueue(new Callback<List<Results>>() {
            @Override
            public void onResponse(Call<List<Results>> call,
Response<List<Results>> response) {
                List<Results> myheroList = response.body();
                String[] oneHeroes = new String[myheroList.size()];
                for (int i = 0; i < myheroList.size(); i++) {
                    oneHeroes[i] = myheroList.get(i).getName();
                }
                superListView.setAdapter(new
ArrayAdapter<String>(getApplicationContext(),
android.R.layout.simple_list_item_1, oneHeroes));
            }
            @Override
            public void onFailure(Call<List<Results>> call, Throwable t) {
                Toast.makeText(getApplicationContext(), "An error has occured",
Toast.LENGTH_LONG).show();
            }
        });
    }
}
```

Output: -

Create App for Making API Requests using Volley
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"
    android:background="@color/white">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Total_cases_in_the_world"
        android:textSize="22sp"
        android:textStyle="bold"
        android:textColor="@color/black"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.494"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.225" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Total_recovered_in_the_world"
        android:textSize="22sp"
        android:textStyle="bold"
        android:textColor="@color/black"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.494"
```

```xml
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.39" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Total_deaths_in_the_world"
        android:textSize="22sp"
        android:textStyle="bold"
        android:textColor="@color/black"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.518"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.559" />
    <TextView
        android:id="@+id/newCasesWorld"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/black"
        android:textSize="22sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.296" />
    <TextView
        android:id="@+id/newDeathsWorld"
```
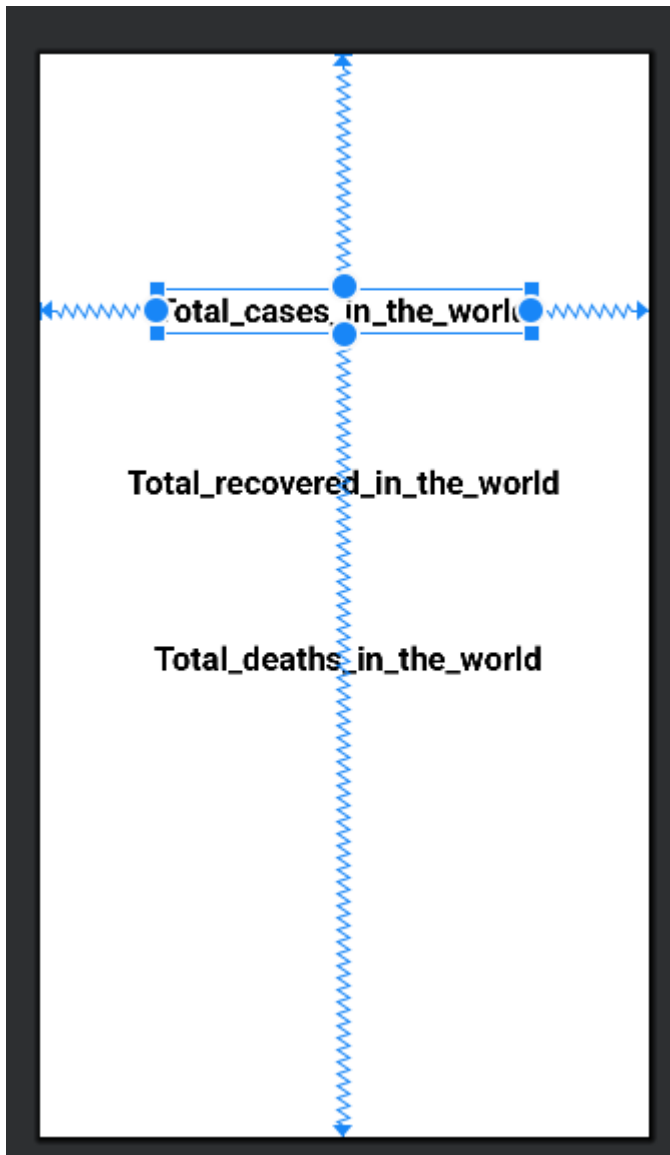
```xml
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/black"
        android:textSize="22sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.654" />
    <TextView
        android:id="@+id/newRecoveredWorld"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/black"
        android:textSize="22sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.473" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```java
package com.example.covidtrackervolley;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;
import android.widget.Toast;
import com.android.volley.Request;
import com.android.volley.Request.Method;
import com.android.volley.RequestQueue;
import com.android.volley.Response;
import com.android.volley.toolbox.StringRequest;
import com.android.volley.toolbox.Volley;
import org.json.JSONException;
```

```java
import org.json.JSONObject;
public class MainActivity extends AppCompatActivity {
    StringRequest myRequest;
    private TextView totalCasesWorld, totalDeathsWorld, totalRecoveredWorld;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        //Initialize the objects
        totalCasesWorld = findViewById(R.id.newCasesWorld);
        totalDeathsWorld = findViewById(R.id.newDeathsWorld);
        totalRecoveredWorld = findViewById(R.id.newRecoveredWorld);
        getData();
        RequestQueue requestQueue = Volley.newRequestQueue(this);
        requestQueue.add(myRequest);
    }
    private void getData () {
        String myUrl = "https://disease.sh/v3/covid-19/all";
        myRequest = new StringRequest(Method.GET, myUrl, response -> {
            try {
                ////Create a JSON object containing information from the API.
                JSONObject jb = new JSONObject(response);
                totalCasesWorld.setText(jb.getString("cases"));
                totalRecoveredWorld.setText(jb.getString("recovered"));
                totalDeathsWorld.setText(jb.getString("deaths"));
            } catch (JSONException e) {
                e.printStackTrace();
            }
        },
            volleyError -> Toast.makeText(MainActivity.this,
volleyError.getMessage(), Toast.LENGTH_SHORT).show()
        );
    }
}
```

Output: -