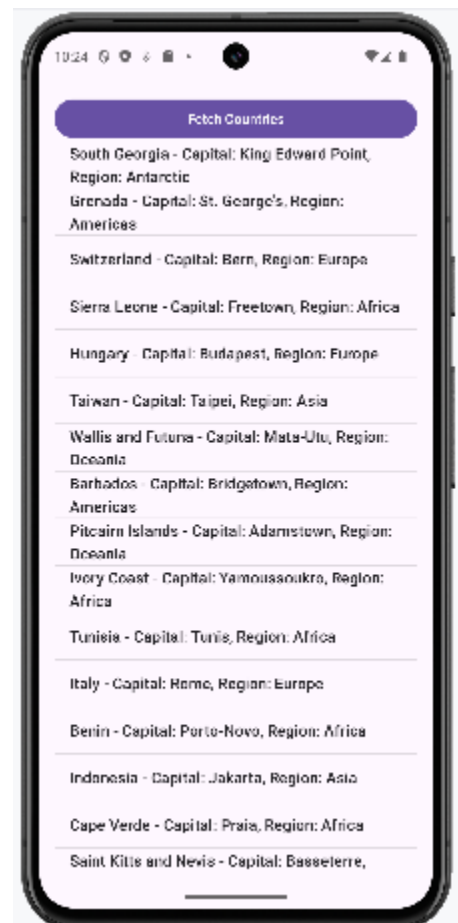


# RESTFUL API

## BÀI TẬP 1:

- Tìm hiểu về RESTful API <https://restcountries.com/>
- Tìm hiểu về POSTMAN test API
- Viết ứng dụng lấy và hiển thị danh sách các quốc gia



Hướng dẫn:

Thêm vào AndroidManifest.xml

```
<uses-permission android:name="android.permission.INTERNET"/>
```

Tạo giao diện activity\_main.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="match_parent"
    android:orientation="vertical"
    android:padding="16dp">

    <Button
        android:id="@+id/btnFetch"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Fetch Countries" />

    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

Tạo lớp Country trong Country.java

```

public class Country {
    3 usages
    private String name;
    3 usages
    private String capital;
    3 usages
    private String region;

    1 usage
    public Country(String name, String capital, String region) {
        this.name = name;
        this.capital = capital;
        this.region = region;
    }
    public String getName() { return name; }
    no usages
    public String getCapital() { return capital; }
    no usages
    public String getRegion() { return region; }
    @Override
    public String toString() {
        return name + " - Capital: " + capital +
            ", Region: " + region;
    }
}

```

Tạo NetworkUtils.java để kết nối

```
import android.util.Log;
import org.json.JSONArray;
import org.json.JSONObject;
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;
import java.util.ArrayList;
```

1 usage

```
public class NetworkUtils {
```

1 usage

```
    private static final String API_URL = "https://restcountries.com/v3.1/all";
```

```
    public static ArrayList<Country> fetchCountries() {
        ArrayList<Country> countries = new ArrayList<>();
        try {
            URL url = new URL(API_URL);
            HttpURLConnection conn = (HttpURLConnection) url.openConnection();
            conn.setRequestMethod("GET");
            conn.setConnectTimeout(5000);
            conn.setReadTimeout(5000);

            int responseCode = conn.getResponseCode();
            if (responseCode == HttpURLConnection.HTTP_OK) {
                BufferedReader reader = new BufferedReader(new
                    InputStreamReader(conn.getInputStream()));
                StringBuilder response = new StringBuilder();
                String line;
                while ((line = reader.readLine()) != null) {
                    response.append(line);
                }
                reader.close();
            }
        }
    }
}
```

```

JSONArray jsonArray = new JSONArray(response.toString());
for (int i = 0; i < jsonArray.length(); i++) {
    JSONObject countryJson = jsonArray.getJSONObject(i);
    String name = countryJson.getJSONObject( name: "name")
        .getString( name: "common");
    String capital = countryJson.has( name: "capital") ?
        countryJson.getJSONArray( name: "capital")
            .getString( index: 0) : "N/A";
    String region = countryJson.getString( name: "region");

    countries.add(new Country(name, capital, region));
}
}
} catch (Exception e) {
    Log.e( tag: "NetworkUtils", msg: "Error fetching API", e);
}
return countries;
}
}

```

Trong MainActivity.java

```
import android.os.Bundle;
import android.os.Handler;
import android.os.Looper;
import android.view.View;
import android.widget.AdapterView;
import android.widget.Button;
import android.widget.ListView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.util.ArrayList;
import java.util.concurrent.ExecutorService;
import java.util.concurrent.Executors;

public class MainActivity extends AppCompatActivity {
    2 usages
    private ListView listView;
    2 usages
    private Button btnFetch;
    3 usages
    private ArrayAdapter<String> adapter;
    4 usages
    private ArrayList<String> countryNames;
```

```
private ExecutorService executorService;
```

2 usages

```
private Handler handler;
```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);
```

```
    listView = findViewById(R.id.listView);
```

```
    btnFetch = findViewById(R.id.btnFetch);
```

```
    countryNames = new ArrayList<>();
```

```
    adapter = new ArrayAdapter<>(context: this,  
                                android.R.layout.simple_list_item_1, countryNames);
```

```
    listView.setAdapter(adapter);
```

```
// Tạo ExecutorService và Handler
```

```
executorService = Executors.newSingleThreadExecutor();
```

```
handler = new Handler(Looper.getMainLooper());
```

```
    btnFetch.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
```

```
        public void onClick(View v) {
```

```
            fetchCountries();
```

```
        }
```

```
    });
```

```
}
```

1 usage

```
private void fetchCountries() {
```

```
    executorService.execute(new Runnable() {
```

```
        @Override
```

```
        public void run() {
```

```
            ArrayList<Country> countries = NetworkUtils.fetchCountries();
```

```

        handler.post(new Runnable() {
            @Override
            public void run() {
                if (countries.isEmpty()) {
                    Toast.makeText(context: MainActivity.this,
                        text: "Lỗi lấy dữ liệu!",
                        Toast.LENGTH_SHORT).show();
                } else {
                    updateUI(countries);
                }
            }
        });
    }
});
}

```

1 usage

```

private void updateUI(ArrayList<Country> countries) {
    countryNames.clear();
    for (Country country : countries) {
        countryNames.add(country.toString());
    }
    adapter.notifyDataSetChanged();
}
}

```