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EXPERIMENT 5

Aim :

Develop a Currency Converter Application for Mobile Phone using Android Studio.

Theory :

While doing business with foreign countries, we may need to deal with foreign currencies, convert them, price them, or quote them. Operating business within two countries means the exchange of currencies, and this in turn increases the foreign currency reserve in the country. The more foreign currency reserves, the more powerful the country is. But the currency rates keep on fluctuating now and then, which becomes an arduous task for the businessman to keep an eye on it. To overcome this challenge, we can develop a currency converter app.

Requirements :

- Android Studio
- Knowledge of XML and JAVA
- Android emulator (or) Android Mobile

Steps for Creating Currency Converter Application :

Step 1: Create a new project in Android Studio and select Java as the programming language.

Step 2: Select Form Factors and minimum SDK, Tick Phone and Tablet.

Step 3: Click Next and Add an empty Activity to Project. Continue with defaults and click Finish.

Step 4: Android Studio has created two files: **MainActivity.java** and **activity_main.xml.**

Step 5: Source code of our project will be present in these two files.

Code :

activity_main.xml file

```
<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout

        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">
```

```
<ImageView
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:layout_alignEnd="@+id/button"
        android:layout_alignParentTop="true"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="-14dp"
        android:src="@drawable/icon"
        android:layout_alignRight="@+id/button"
        android:layout_marginRight="-14dp" />


<TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_marginStart="41dp"
        android:layout_marginLeft="41dp"
        android:layout_marginTop="164dp"
        android:text="Euro" />


<EditText
        android:id="@+id/editText4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/textView4"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="-16dp"
        android:ems="10"
        android:inputType="number" />


<TextView
        android:id="@+id/textView5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignStart="@+id/textView4"
        android:layout_alignParentTop="true"
        android:layout_marginStart="0dp"
        android:layout_marginTop="231dp"
        android:text="Currency" />
```

```
        <Spinner
                android:id="@+id/planets_spinner"
                android:layout_width="220dp"
                android:layout_height="wrap_content"
                android:layout_alignTop="@+id/textView5"
                android:layout_marginLeft="70dp"
                android:layout_marginTop="1dp" />


        <Button
                android:id="@+id/button"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_alignParentStart="true"
                android:layout_alignParentLeft="true"
                android:layout_alignParentTop="true"
                android:layout_marginStart="125dp"
                android:layout_marginLeft="125dp"
                android:layout_marginTop="297dp"
                android:text="Convert" />


        <TextView
                android:id="@+id/textView6"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_alignParentStart="true"
                android:layout_alignParentLeft="true"
                android:layout_alignParentBottom="true"
                android:layout_marginStart="51dp"
                android:layout_marginLeft="51dp"
                android:layout_marginBottom="113dp"
                android:text="Value" />


        <TextView
                android:id="@+id/textView7"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_alignTop="@+id/textView6"
                android:layout_marginStart="44dp"
                android:layout_marginTop="0dp"
                android:layout_toEndOf="@+id/textView5"
                android:text="TextView" />


</RelativeLayout>
```

Code :

MainActivity.java file

```
package com.example.currency_converter;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;
import com.example.currency_converter.R;
import com.squareup.okhttp.Callback;
import com.squareup.okhttp.OkHttpClient;
import com.squareup.okhttp.Request;
import com.squareup.okhttp.Response;
import org.json.JSONException;
import org.json.JSONObject;
import java.io.IOException;
import java.text.BreakIterator;
import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;

public class MainActivity extends AppCompatActivity {
    public static BreakIterator data;
    List<String>keysList;
    Spinner toCurrency;
    TextViewtextView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        toCurrency = (Spinner)findViewById(R.id.planets_spinner);
      final EditTextedtEuroValue = (EditText)findViewById(R.id.editText4);
        final Button btnConvert = (Button)findViewById(R.id.button);
        textView =(TextView) findViewById(R.id.textView7);
        try {
            loadConvTypes();
        } catch (IOException e) {
            e.printStackTrace();
        }
```

```
        btnConvert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if(!edtEuroValue.getText().toString().isEmpty())
                {
                  String toCurr = toCurrency.getSelectedItem().toString();
     double euroVlaue = Double.valueOf(edtEuroValue.getText().toString());
Toast.makeText(MainActivity.this,"Please Wait",Toast.LENGTH_SHORT).show();
                    try {
                        convertCurrency(toCurr, euroVlaue);
                    } catch (IOException e) {
                        e.printStackTrace();
Toast.makeText(MainActivity.this,e.getMessage(),Toast.LENGTH_SHORT).show()
; }
                }
                else {
Toast.makeText(MainActivity.this,"Please Enter a Value to Convert",Toast.L
ENGTH_SHORT).show(); }
            }
        });
    }
    public void loadConvTypes() throws IOException {
        String url = "https://api.exchangeratesapi.io/latest";
        OkHttpClient client = new OkHttpClient();
Request request = new Request.Builder().url(url).header("ContentType","app
lication/json").build();
        client.newCall(request).enqueue(new Callback() {
            @Override
            public void onFailure(Request request, IOException e) {
                String mMessage = e.getMessage().toString();
                Log.w("failure Response", mMessage);
   Toast.makeText(MainActivity.this, mMessage, Toast.LENGTH_SHORT).show();
            }
            @Override
            public void onResponse(Response response) throws IOException {
                final String mMessage = response.body().string();
                MainActivity.this.runOnUiThread(new Runnable() {
                    @Override
                    public void run() {
                        try {
                            JSONObject obj = new JSONObject(mMessage);
                            JSONObject  b = obj.getJSONObject("rates");
                            Iterator keysToCopyIterator = b.keys();
                            keysList = new ArrayList<String>();
                            while(keysToCopyIterator.hasNext()) {
                          String key = (String) keysToCopyIterator.next();
                                keysList.add(key);}
```

```
ArrayAdapter<String>spinnerArrayAdapter = new ArrayAdapter<String>(getAppl
icationContext(), android.R.layout.simple_spinner_item, keysList );
                            toCurrency.setAdapter(spinnerArrayAdapter);
                        } catch (JSONException e) {
                            e.printStackTrace();
                        }
                    }
                });
            }
        });
    }

public void convertCurrency(final String toCurr, final double euroVlaue) t
hrows IOException {
        String url = "https://api.exchangeratesapi.io/latest";
        OkHttpClient client = new OkHttpClient();
        Request request = new Request.Builder().url(url).header("Content-
Type", "application/json").build();
        client.newCall(request).enqueue(new Callback() {
            @Override
            public void onFailure(Request request, IOException e) {
                String mMessage = e.getMessage().toString();
                Log.w("failure Response", mMessage);
   Toast.makeText(MainActivity.this, mMessage, Toast.LENGTH_SHORT).show();
            }
            @Override
            public void onResponse(Response response) throws IOException {
                final String mMessage = response.body().string();
                MainActivity.this.runOnUiThread(new Runnable() {
                    @Override
                    public void run() {
                        try {
                            JSONObject obj = new JSONObject(mMessage);
                            JSONObject  b = obj.getJSONObject("rates");
                            String val = b.getString(toCurr);
                            double output = euroVlaue*Double.valueOf(val);
                            textView.setText(String.valueOf(output));
                        } catch (JSONException e) {
                            e.printStackTrace();
                        }
                    }
                });
            }
        });
    }
}
```

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App Screenshots :