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EXPERIMENT 16

WORKING WITH JSON PARSER

AIM: To create an application which parses JSON data and displays required information.

THEORY:

JSON stands for JavaScript Object Notation. It is an independent data exchange format and is the best alternative for XML.

Android provides four different classes to manipulate JSON data. These classes are **JSONArray, JSONObject, JSONStringer and JSONTokenizer.**

The first step is to identify the fields in the JSON data in which you are interested in. For example. In the JSON given below we interested in getting temperature only.

```
[{
"name" : "John",
"salary" : "40000"
},
{
"name" : "Mark",
"salary" : "50000"
},
{
"name" : "Alice",
"salary" : "60000"
}]
```

JSON - Elements

An JSON file consist of many components. Here is the table defining the components of an JSON file and their description –

Array ([) - In a JSON file , square bracket ([) represents a JSON array
Objects ({) - In a JSON file, curly bracket ({) represents a JSON object.
Key - A JSON object contains a key that is just a string. Pairs of key/value make up a JSON object
Value - Each key has a value that could be string , integer or double e.t.c

JSON – Parsing

For parsing a JSON object, we will create an object of class JSONObject and specify a string containing JSON data to it. Its syntax is –

```
String in;
JSONObject reader = new JSONObject(in);
```

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ASSIGNMENT

1. Create an application to parse the data using JSONObject methods and set it in the Text View. (Employee name and salary stored in JSON format).

CODE:

Java Code

MainActivity

```
package com.example.json_app_191019;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
   public static TextView textView;
   Button button;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      textView = findViewById(R.id.tv);
      button = findViewById(R.id.btn);
      button.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            Download download = new Download();
            download.execute();
         }
      });
   }
}
```

Download

```
package com.example.json_app_191019;

import android.os.AsyncTask;

import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStream;
```

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```
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.MalformedURLException;
import java.net.URL;

public class Download extends AsyncTask<Void, Void, Void> {
   String stringData = "";
   String singleParsed = "", dataParsed = "";

   @Override
   protected Void doInBackground(Void... voids) {
      try {
         URL url = new URL("https://api.myjson.com/bins/cc4is");
         HttpURLConnection httpURLConnection = (HttpURLConnection) url.openConnection();
         InputStream inputStream = httpURLConnection.getInputStream();
         BufferedReader bufferedReader = new BufferedReader(new
InputStreamReader(inputStream));
         String sLine = "";
         while (sLine != null) {
            sLine = bufferedReader.readLine();
            stringData = stringData + sLine;
         }
         JSONArray jsonArray = new JSONArray(stringData);
         for (int i = 0; i < jsonArray.length(); i++) {
            JSONObject jsonObject = (JSONObject) jsonArray.get(i);
            singleParsed = "Employee Name : " + jsonObject.get("name") + "\n Salary : " +
jsonObject.get("salary") + "\n Age : " + jsonObject.get("age") + "\n\n";
            dataParsed = dataParsed + singleParsed;
         }
      } catch (JSONException e) {
         e.printStackTrace();
      } catch (MalformedURLException e) {
         e.printStackTrace();
      } catch (IOException e) {
         e.printStackTrace();
      }
      return null;
   }

   @Override
   protected void onPostExecute(Void aVoid) {
      super.onPostExecute(aVoid);
      MainActivity.textView.setText(stringData);
   }
}
```

XML File

activity_main

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

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```
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">

   <Button
      android:id="@+id/btn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_above="@+id/sv"
      android:layout_centerHorizontal="true"
      android:text="fetch" />

   <ScrollView
      android:id="@+id/sv"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_centerInParent="true">

      <TextView
         android:id="@+id/tv"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:width="300sp"
         android:height="500sp" />
   </ScrollView>
</RelativeLayout>
```

Android Manifest

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   package="com.example.json_app_191019">

   <application
      android:allowBackup="true"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/AppTheme">
      <activity android:name=".MainActivity">
         <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
         </intent-filter>
      </activity>
   </application>
   <uses-permission android:name="android.permission.INTERNET" />

</manifest>
```

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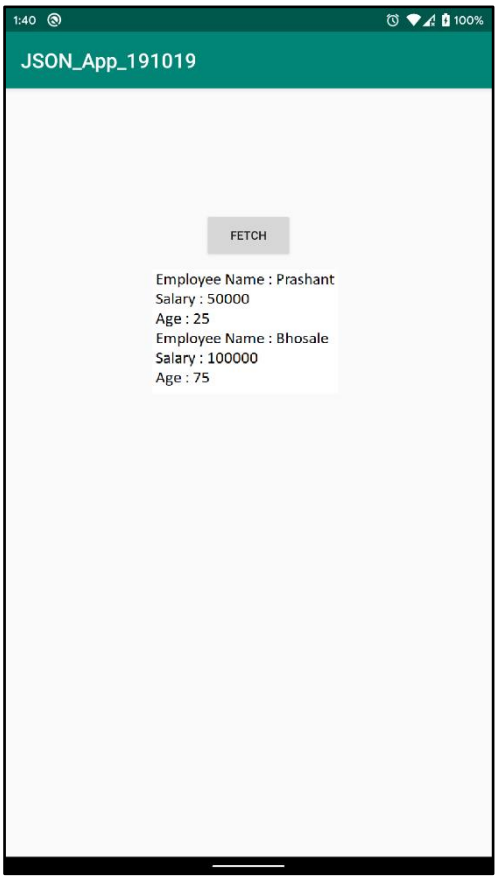
JSON FILE

```
[
 {
        "name":"Prashant",
        "salary":"50000",
        "age":"25"
 },
 {
        "name":"Bhosale",
        "salary":"100000",
        "age":"75"
 }
]
```

OUTPUT:



CONCLUSION:

To create an application which parses JSON data and displays required information.