**EXPERIMENT 8**

**Aim :**

Develop a Weather Application for Mobile Phone using Android Studio.

**Theory :**

API stands for Application Programming Interface. A tool that allows for the automatic transfer of data from one program to one or more applications or programs.

We will use OpenWeather API to get the latest weather updates for this application. This API will automatically fetch all the latest weather updates for our application. First thing we have to do is get this key from the website that is mentioned below:

<https://openweathermap.org/api>

Create your account on this website using your email address and create your API.

**Requirements :**

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

**Steps for Online News Application :**

***Step 1:*** Create a **New Project**

Create a new project in Android Studio and select **Java** as the programming language.

***Step 2:*** Get **API Key**

Copy the API key you created and store it in a string in **MainActivity.java** file in your project.

***Step 3:*** Working with **activity\_main.xml** file

Here in the XML file, we define our layout for the weather app. Here we display ***Temperature, Last updated time, Forecast, City name, Country name, Humidity, Minimum Temperature, Maximum Temperature, Time of Sunrise,*** and ***Time of Sunset.*** Here we add search functionality, which means we can search the temperature by city names.

**Code :**

**activity\_main.xml** file

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

<androidx.core.widget.NestedScrollView

xmlns:android=”http://schemas.android.com/apk/res/android"

xmlns:tools=”http://schemas.android.com/tools"

android:layout\_width=”match\_parent”

android:layout\_height=”match\_parent”

android:background=”@drawable/weather\_app\_background”

tools:context=”.MainActivity”

android:padding=”10dp”>

<LinearLayout

android:orientation=”vertical”

android:layout\_width=”match\_parent”

android:layout\_height=”match\_parent”>

<RelativeLayout

android:id=”@+id/first”

android:layout\_width=”match\_parent”

android:layout\_height=”40dp”

android:layout\_marginStart=”20dp”

android:layout\_marginTop=”30dp”

android:layout\_marginEnd=”20dp”

android:padding=”2dp”

android:background=”@drawable/rounded\_border”

android:gravity=”center\_horizontal”>

<EditText

android:id=”@+id/Your\_city”

android:layout\_width=”wrap\_content”

android:layout\_height=”match\_parent”

android:layout\_alignParentStart=”true”

android:layout\_marginStart=”10dp”

android:background=”@drawable/rounded\_border”

android:ems=”10"

android:hint=”@string/enter\_your\_city\_name”

android:inputType=”text”

android:textColor=”#ffffff”

android:textColorHint=”#939393"

android:textSize=”15sp”

android:layout\_centerVertical=”true”/>

<ImageView

android:id=”@+id/search”

android:layout\_width=”35dp”

android:layout\_height=”35dp”

android:background=”?android:attr/selectableItemBackground”

android:layout\_alignParentEnd=”true”

android:layout\_centerVertical=”true”

android:src=”@drawable/search\_icon”/>

</RelativeLayout>

<LinearLayout

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”

android:layout\_marginTop=”20dp”

android:orientation=”vertical”>

<TextView

android:id=”@+id/forecast”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:textAllCaps=”true”

android:layout\_gravity=”center\_horizontal”

android:textColor=”@color/text2"

android:textSize=”16sp”

android:includeFontPadding=”false” />

<TextView

android:id=”@+id/temp”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:layout\_marginTop=”10dp”

android:textColor=”@color/text2"

android:textSize=”40sp”

android:includeFontPadding=”false”

android:layout\_gravity=”center\_horizontal”

android:textStyle=”bold” />

<TextView

android:id=”@+id/time”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:textColor=”@color/text2"

android:layout\_marginTop=”40dp”

android:textSize=”13sp”

android:layout\_gravity=”center\_horizontal”

android:includeFontPadding=”false”/>

</LinearLayout>

<LinearLayout

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”

android:layout\_marginTop=”210dp”

android:orientation=”vertical”

android:gravity=”center\_horizontal”>

<TextView

android:id=”@+id/city”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:textColor=”@color/text3"

android:textSize=”18sp”

android:includeFontPadding=”false”

android:textStyle=”bold” />

<TextView

android:id=”@+id/country”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:textColor=”@color/text1"

android:textSize=”16sp”

android:layout\_marginTop=”8dp”

android:includeFontPadding=”false” />

</LinearLayout>

<View

android:layout\_width=”150dp”

android:layout\_height=”1dp”

android:background=”@color/colorPrimaryDark”

android:layout\_marginTop=”15dp”

android:layout\_gravity=”center\_horizontal”/>

<LinearLayout

android:orientation=”vertical”

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”

android:layout\_marginTop=”5dp”>

<LinearLayout

android:orientation=”horizontal”

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”>

<TextView

android:layout\_width=”120dp”

android:layout\_height=”wrap\_content”

android:gravity=”start”

android:text=”Humidity”

android:textAllCaps=”false”

android:layout\_gravity=”center\_vertical”

android:textColor=”@color/text1"

android:textSize=”16sp”

android:layout\_marginStart=”5dp”

android:textStyle=”bold” />

<ImageView

android:layout\_width=”20dp”

android:layout\_height=”20dp”

android:src=”@drawable/hum”

android:layout\_gravity=”center\_vertical”

android:layout\_marginStart=”38dp” />

<TextView

android:id=”@+id/humidity”

android:layout\_width=”80dp”

android:layout\_height=”wrap\_content”

android:layout\_gravity=”end”

android:gravity=”center”

android:padding=”5dp”

android:text=” — “

android:layout\_marginStart=”80dp”

android:textColor=”@color/text1"

android:textSize=”16sp” />

</LinearLayout>

<LinearLayout

android:orientation=”horizontal”

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”>

<TextView

android:layout\_width=”120dp”

android:layout\_height=”wrap\_content”

android:gravity=”start”

android:text=”Min Temperature”

android:textColor=”@color/text1"

android:textSize=”15sp”

android:layout\_marginStart=”5dp”

android:layout\_gravity=”center\_vertical”

android:textStyle=”bold” />

<ImageView

android:layout\_width=”20dp”

android:layout\_height=”20dp”

android:src=”@drawable/tem\_down”

android:layout\_gravity=”center\_vertical”

android:layout\_marginStart=”38dp” />

<TextView

android:id=”@+id/min\_temp”

android:layout\_width=”80dp”

android:layout\_height=”wrap\_content”

android:layout\_gravity=”center\_vertical”

android:gravity=”center”

android:padding=”5dp”

android:text=” — “

android:layout\_marginStart=”80dp”

android:textColor=”@color/text1"

android:textSize=”16sp” />

</LinearLayout>

<LinearLayout

android:orientation=”horizontal”

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”>

<TextView

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:gravity=”start”

android:text=”Max Temperature”

android:textColor=”@color/text1"

android:textSize=”15sp”

android:layout\_gravity=”center\_vertical”

android:layout\_marginStart=”5dp”

android:textStyle=”bold” />

<ImageView

android:layout\_width=”20dp”

android:layout\_height=”20dp”

android:src=”@drawable/tem\_up”

android:layout\_gravity=”center\_vertical”

android:layout\_marginStart=”38dp” />

<TextView

android:id=”@+id/max\_temp”

android:layout\_width=”80dp”

android:layout\_height=”wrap\_content”

android:layout\_gravity=”center\_vertical”

android:gravity=”center”

android:padding=”5dp”

android:text=” — “

android:layout\_marginStart=”80dp”

android:textColor=”@color/text1"

android:textSize=”16sp”/>

</LinearLayout>

</LinearLayout>

<LinearLayout

android:layout\_width=”match\_parent”

android:layout\_height=”wrap\_content”

android:layout\_marginLeft=”20dp”

android:layout\_marginTop=”15dp”

android:layout\_marginRight=”20dp”

android:orientation=”horizontal”

android:layout\_gravity=”center\_vertical”

android:weightSum=”2">

<LinearLayout

android:layout\_width=”0dp”

android:layout\_height=”wrap\_content”

android:layout\_margin=”5dp”

android:layout\_weight=”1"

android:gravity=”center”

android:orientation=”vertical”>

<ImageView

android:layout\_width=”40dp”

android:layout\_height=”wrap\_content”

android:src=”@drawable/sunrise”/>

<TextView

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:text=”Sunrise”

android:includeFontPadding=”false”

android:textColor=”@color/text3"/>

<TextView

android:id=”@+id/sunrises”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:layout\_marginTop=”5dp”

android:text=” — “

android:includeFontPadding=”false”

android:gravity=”center”

android:padding=”5dp”

android:textColor=”@color/text1"

android:textSize=”14sp” />

</LinearLayout>

<LinearLayout

android:layout\_width=”0dp”

android:layout\_height=”wrap\_content”

android:layout\_margin=”5dp”

android:layout\_weight=”1"

android:gravity=”center”

android:orientation=”vertical”>

<ImageView

android:layout\_width=”40dp”

android:layout\_height=”wrap\_content”

android:src=”@drawable/sunset”/>

<TextView

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:text=”Sunset”

android:includeFontPadding=”false”

android:textColor=”@color/text3"/>

<TextView

android:id=”@+id/sunsets”

android:layout\_width=”wrap\_content”

android:layout\_height=”wrap\_content”

android:layout\_marginTop=”5dp”

android:text=” — “

android:gravity=”center”

android:padding=”5dp”

android:textColor=”@color/text1"

android:textSize=”14sp” />

</LinearLayout>

</LinearLayout>

</LinearLayout>

</androidx.core.widget.NestedScrollView>

***Step 4:*** Working with **MainActivity.java** file

**Code :**

**MainActivity.java** file

package com.example.weatherinfo;

import androidx.appcompat.app.AppCompatActivity;

import android.os.AsyncTask;

import android.os.Bundle;

import android.view.View;

import android.widget.EditText;

import android.widget.ImageView;

import android.widget.TextView;

import android.widget.Toast;

import com.androdocs.httprequest.HttpRequest;

import org.json.JSONObject;

import java.text.SimpleDateFormat;

import java.util.Date;

import java.util.Locale;

public class MainActivity extends AppCompatActivity {

String CITY;

String API = “Your Api Key here”;

ImageView search;

EditText etCity;

TextView city,country,time,temp,forecast,humidity,min\_temp,max\_temp,sunrises,sunsets;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main); }

etCity = (EditText) findViewById(R.id.Your\_city);

search = (ImageView) findViewById(R.id.search);

city = (TextView) findViewById(R.id.city);

country = (TextView) findViewById(R.id.country);

time = (TextView) findViewById(R.id.time);

temp = (TextView) findViewById(R.id.temp);

forecast = (TextView) findViewById(R.id.forecast);

humidity = (TextView) findViewById(R.id.humidity);

min\_temp = (TextView) findViewById(R.id.min\_temp);

max\_temp = (TextView) findViewById(R.id.max\_temp);

sunrises = (TextView) findViewById(R.id.sunrises);

sunsets = (TextView) findViewById(R.id.sunsets);

search.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

CITY = etCity.getText().toString();

new weatherTask().execute(); }

});

}

}

class weatherTask extends AsyncTask<String, Void, String>{

@Override

protected void onPreExecute() {

super.onPreExecute(); }

@Override

protected String doInBackground(String… args) {

String response = HttpRequest.excuteGet(“https://api.openweathermap.org/data/2.5/weather?q=" + CITY + “&units=metric&appid=” + API);

return response; }

@Override

protected void onPostExecute(String result) {

try {

JSONObject jsonObj = new JSONObject(result);

JSONObject main = jsonObj.getJSONObject(“main”);

JSONObject weather = jsonObj.getJSONArray(“weather”).getJSONObject(0);

JSONObject sys = jsonObj.getJSONObject(“sys”);

String city\_name = jsonObj.getString(“name”);

String countryname = sys.getString(“country”);

Long updatedAt = jsonObj.getLong(“dt”);

String updatedAtText = “Last Updated at: “ + new SimpleDateFormat(“dd/MM/yyyy hh:mm a”, Locale.ENGLISH).format(new Date(updatedAt \* 1000));

String temperature = main.getString(“temp”);

String cast = weather.getString(“description”);

String humi\_dity = main.getString(“humidity”);

String temp\_min = main.getString(“temp\_min”);

String temp\_max = main.getString(“temp\_max”);

Long rise = sys.getLong(“sunrise”);

String sunrise = new SimpleDateFormat(“hh:mm a”, Locale.ENGLISH).format(new Date(rise \* 1000));

Long set = sys.getLong(“sunset”);

String sunset = new SimpleDateFormat(“hh:mm a”, Locale.ENGLISH).format(new Date(set \* 1000));

city.setText(city\_name);

country.setText(countryname);

time.setText(updatedAtText);

temp.setText(temperature + “°C”);

forecast.setText(cast);

humidity.setText(humi\_dity);

min\_temp.setText(temp\_min);

max\_temp.setText(temp\_max);

sunrises.setText(sunrise);

sunsets.setText(sunset);

} catch (Exception e) {

Toast.makeText(MainActivity.this, “Error:” + e.toString(), Toast.LENGTH\_SHORT).show(); }

}

}

}

**App Screenshots :**

 

 