



Final Semester Project

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Program:

BS

Department:

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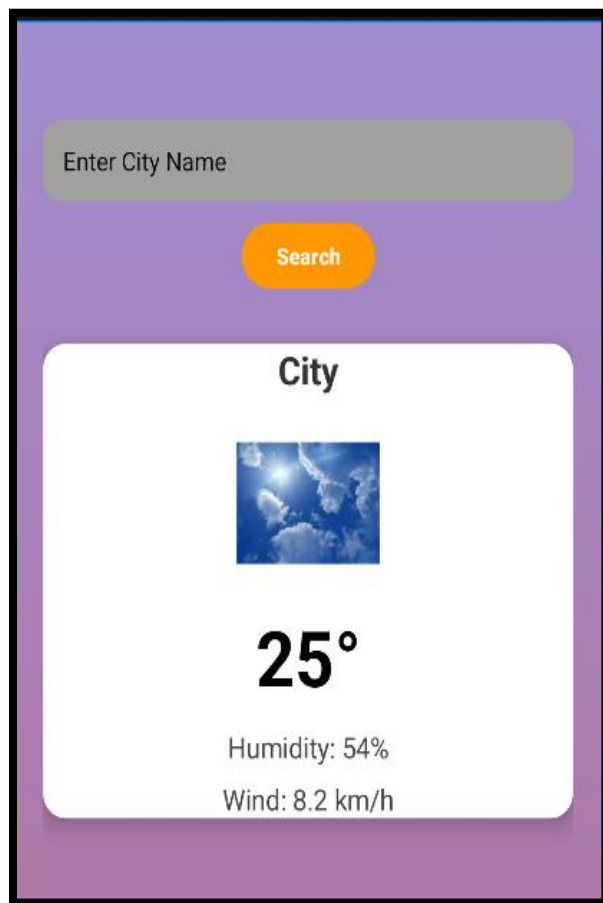
Project Report

Weather Application in Android

Introduction:

This Android application provides real-time weather information for any city entered by the user. It utilizes the OpenWeatherMap API to fetch data such as temperature, humidity, wind speed, and weather conditions, including an icon. The app is built using Java and Android SDK.

XML Code:




```

58
59      <!-- City Name -->
60      <TextView
61          android:id="@+id/cityText"
62          android:layout_width="wrap_content"
63          android:layout_height="wrap_content"
64          android:text="City"
65          android:textSize="24sp"
66          android:textStyle="bold"
67          android:textColor="#333333"
68          app:layout_constraintTop_toTopOf="parent"
69          app:layout_constraintStart_toStartOf="parent"
70          app:layout_constraintEnd_toEndOf="parent" />
71
72      <!-- Weather Icon -->
73      <ImageView
74          android:id="@+id/weatherIcon"
75          android:layout_width="100dp"
76          android:layout_height="100dp"
77          android:layout_marginTop="16dp"
78          android:src="@drawable/ic_sun"
79          app:layout_constraintTop_toBottomOf="@id/cityText"
80          app:layout_constraintStart_toStartOf="parent"
81          app:layout_constraintEnd_toEndOf="parent" />
82
83      <!-- Temperature -->
84      <TextView
85          android:id="@+id/tempText"
86          android:layout_width="wrap_content"

```

```

82
83      <!-- Temperature -->
84      <TextView
85          android:id="@+id/tempText"
86          android:layout_width="wrap_content"
87          android:layout_height="wrap_content"
88          android:text="25°"
89          android:textSize="48sp"
90          android:textStyle="bold"
91          android:textColor="#000000"
92          app:layout_constraintTop_toBottomOf="@id/weatherIcon"
93          app:layout_constraintStart_toStartOf="parent"
94          app:layout_constraintEnd_toEndOf="parent"
95          android:layout_marginTop="12dp" />
96
97      <!-- Humidity -->
98      <TextView
99          android:id="@+id/humidityText"
100          android:layout_width="wrap_content"
101          android:layout_height="wrap_content"
102          android:text="Humidity: 54%"
103          android:textSize="18sp"
104          android:textColor="#444444"
105          app:layout_constraintTop_toBottomOf="@id/tempText"
106          app:layout_constraintStart_toStartOf="parent"
107          app:layout_constraintEnd_toEndOf="parent"
108          android:layout_marginTop="12dp" />
109

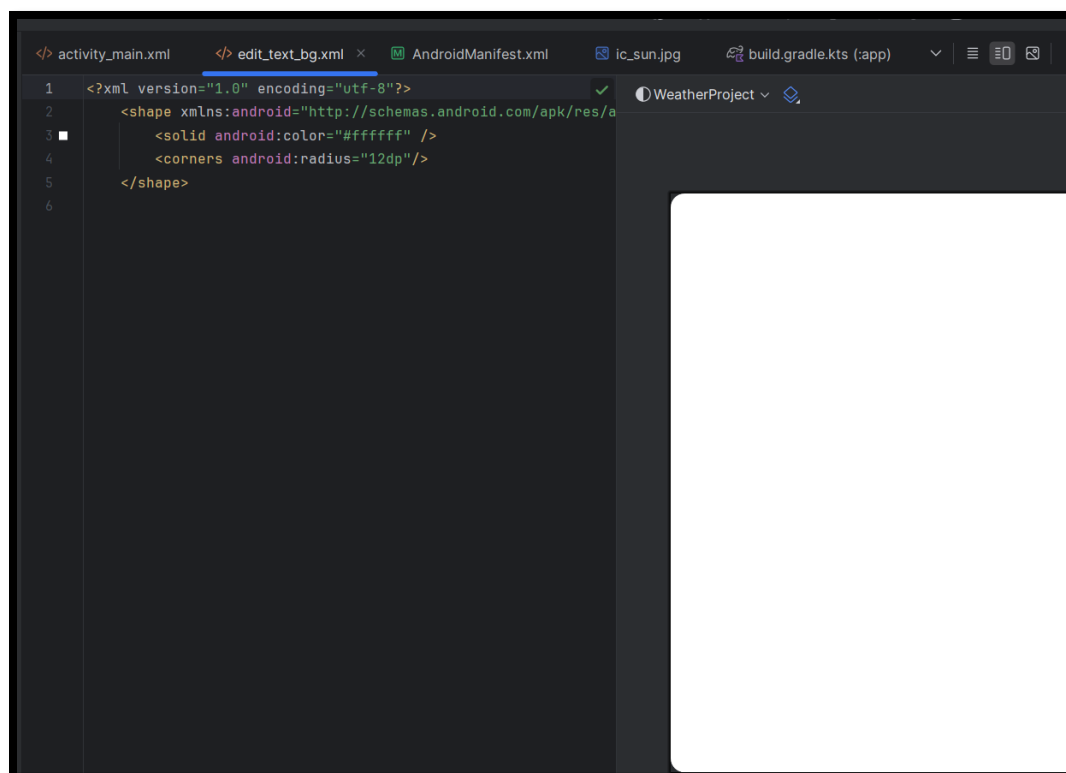
```

```

109
110      <!-- Wind Speed -->
111      <TextView
112          android:id="@+id/windText"
113          android:layout_width="wrap_content"
114          android:layout_height="wrap_content"
115          android:text="Wind: 8.2 km/h"
116          android:textSize="18sp"
117          android:textColor="#444444"
118          app:layout_constraintTop_toBottomOf="@id/humidityText"
119          app:layout_constraintStart_toStartOf="parent"
120          app:layout_constraintEnd_toEndOf="parent"
121          android:layout_marginTop="8dp"
122          android:layout_marginBottom="12dp" />
123
124      </androidx.constraintlayout.widget.ConstraintLayout>
125  </androidx.cardview.widget.CardView>
126
127  </androidx.constraintlayout.widget.ConstraintLayout>

```

Edit_text_bg.xml:



Android manifest.xml:

```
<?xml version="1.0" encoding="utf-8" android:windowBackground="@drawable/edit_text_bg"
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <uses-permission android:name="android.permission.INTERNET" />
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/Theme.WeatherProject"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

Build gradle.kts:

```
You can use the Project Structure dialog to view and edit your project configuration
Open (Ctrl+Alt+Shift+S)

5  android {
19      buildTypes {
20          release {
22              proguardFiles(
23                  getDefaultProguardFile("proguard-android-optimize.txt"),
24                  "proguard-rules.pro"
25              )
26          }
27      }
28      compileOptions {
29          sourceCompatibility = JavaVersion.VERSION_11
30          targetCompatibility = JavaVersion.VERSION_11
31      }
32  }
33
34  dependencies {
35      implementation("com.squareup.okhttp3:okhttp:4.12.0")
36      implementation("com.squareup.picasso:picasso:2.71828")
37
38      implementation(libs.appcompat)
39      implementation(libs.material)
40      implementation(libs.activity)
41      implementation(libs.constraintlayout)
42      testImplementation(libs.junit)
43      androidTestImplementation(libs.ext.junit)
44      androidTestImplementation(libs.espresso.core)
45  }
```

Java Code:

```
sin.xml    </> edit_text_bg.xml    AndroidManifest.xml    ic_sun.jpg    build.gradle.kts (:app)

23      public class MainActivity extends AppCompatActivity {
24          2 usages
25          EditText cityInput;
26          2 usages
27          Button searchButton;
28          2 usages
29          TextView cityText, tempText, humidityText, windText;
30          2 usages
31          ImageView weatherIcon;
32          1 usage
33          String API_KEY = "c6d44b10f0239412812db7663d2e3fcd";
34
35      @Override
36      protected void onCreate(Bundle savedInstanceState) {
37          super.onCreate(savedInstanceState);
38          setContentView(R.layout.activity_main);
39
40          cityInput = findViewById(R.id.cityInput);
41          searchButton = findViewById(R.id.searchButton);
42          cityText = findViewById(R.id.cityText);
43          tempText = findViewById(R.id.tempText);
44          humidityText = findViewById(R.id.humidityText);
45          windText = findViewById(R.id.windText);
46          weatherIcon = findViewById(R.id.weatherIcon);
47
48          searchButton.setOnClickListener( View v -> {
49              String cityName = cityInput.getText().toString().trim();
50              if (!cityName.isEmpty()) {
51                  getWeatherData(cityName);
52              }
53          });
54      }
```

```

23 public class MainActivity extends AppCompatActivity {
54     }
55
56     2 usages
57     private void getWeatherData(String cityName) {
58         OkHttpClient client = new OkHttpClient();
59         String url = "https://api.openweathermap.org/data/2.5/weather?q=" + cityName +
60             "&appid=" + API_KEY + "&units=metric";
61
62         Request request = new Request.Builder().url(url).build();
63
64         client.newCall(request).enqueue(new Callback() {
65             @Override
66             public void onFailure(Call call, IOException e) { e.printStackTrace(); // Handle error }
67
68             @Override
69             public void onResponse(Call call, Response response) throws IOException {
70                 if (response.isSuccessful()) {
71                     final String responseData = response.body().string();
72
73                     try {
74                         JSONObject json = new JSONObject(responseData);
75                         final String city = json.getString( name: "name");
76                         final double temp = json.getJSONObject( name: "main").getDouble( name: "temp");
77                         final int humidity = json.getJSONObject( name: "main").getInt( name: "humidity");
78                         final double wind = json.getJSONObject( name: "wind").getDouble( name: "speed");
79                         final String iconCode = json.getJSONArray( name: "weather")
80                             .getJSONObject( index: 0)
81                             .getString( name: "icon");
82                         final String iconUrl = "https://openweathermap.org/img/wn/" + iconCode + "@2x.png";
83
84                         runOnUiThread() -> {
85

```


8. Screenshots of the App:

