Weather Forecast App Using API

PROJECT REPORT for
Open Source Development for Google Applications(EXC1081)

VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Submitted To:-
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Abstract
The purpose of the project entitled as “Weather Forecast App Using API” is to display the weather of a place using the API. This project will display the current weather and tthe forecast in different activity. It consists of temperature, humidity, wind speed information. This will help the user to easily know about the weather of any place just by entering the city name.

Introduction

The project “Weather Forecast App Using API” is an Android app which displays the weather information for any place in India. It has been made using java on android studio. Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. Java is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. Using API from the weather forecast sites we can get the data related to weather such as Temperature, Humidity, Pressure and wind speed for a place that the user has input. This application has different activities to show the various result according to user choice. The User can view the current temperature in one activity and the forecast in other activity.

Methodology

This app has been made using android studio which allows us to build cross-platform applications and simpler in developing. It is generally used when we want widgets in our application such as text, images, menu or any function to display any output.

The other dependencies used here are:

implementation 'com.android.volley:volley:1.1.0'
implementation 'com.google.code.gson:gson:2.8.2'

in build.gradle under the dependencies.

This app uses the internet so an extra permission is needed so <uses-permission android:name="android.permission.INTERNET"/> is placed in the AndroidManifest.xml

OpenWeatherMap API is used in this application to display the current weather and the forecast. API (Application program interface) is used to access the particular data or information from another site. It makes things easier because we don’t have to write a separate program to just access the data, we can just use the API and perform further operations with the data.

Openweatherapi
APIURL1
=
"https://api.openweathermap.org/data/2.5/weather
q=**city,country**&appid=**{apikey}**&units=metric";

APIURL2
=
"https://api.openweathermap.org/data/2.5/forecast?
q=**city,country**&appid=**{apikey}**&units=metric";

The APIURL1 when given city,country and apikey will give current weather update of given location.

The APIURL2 when given city,country and apikey will give forecast about weather of given location.

API URL SAMPLE REPLY:-

{"coord":{"lon":79.13,"lat":12.91},"weather":
[{"id":801,"main":"Clouds","description":"fe
w
clouds","icon":"02d"}],"base":"stations","main":
{"temp":25.58,"pressure":1014.11,"humidit
y":73,"temp_min":25.58,"temp_max":25.58,"sea_level":1014.11,"
grnd_level":978.71},"win
d":{"speed":2.41,"deg":191.504},"clouds":
{"all":12},"dt":1553224236,"sys":{"message":0.2
518,"country":"IN","sunrise":1553215602,"sunset":1553259259},
"id":1253286,"name":"Vel
lore","cod":200}

The above is raw data which is accessed through url, and after converting it to JSON it looks like below:

{
"coord":{
"lon":79.13,
"lat":12.91
},
"weather":[
{
"id":801,
"main":"Clouds",
"description":"few clouds",
"icon":"02d"
}
],
"base":"stations",
"main":{
"temp":25.58,
"pressure":1014.11,
"humidity":73,
"temp_min":25.58,

"temp_max":25.58,
"sea_level":1014.11,
"grnd_level":978.71
},
"wind":{
"speed":2.41,
"deg":191.504
},
"clouds":{
"all":12
},
"dt":1553224236,
"sys":{
"message":0.2518,
"country":"IN",
"sunrise":1553215602,
"sunset":1553259259
},
"id":1253286,
"name":"Vellore",
"cod":200
}

From the main activity the location is passed to other activity where

```
String URL = "http://api.openweathermap.org/data/2.5/weather?
q="+loc+",in&APPID=d0ab0b374135800cf14795258913d357&units=metric";
```

string is formed which is the API URL

```
RequestQueue requestQueue = Volley.newRequestQueue(this);
JsonObjectRequest objectRequest=new JsonObjectRequest(
        Request.Method.GET,
        URL,
        null,
        new Response.Listener<JSONObject>() {
            @Override
            public void onResponse(JSONObject response) {
                Log.e("Rest Response",response.toString());
```

this accesses the data into stores it into a JSON object which is reponse here with tag Rest Response.

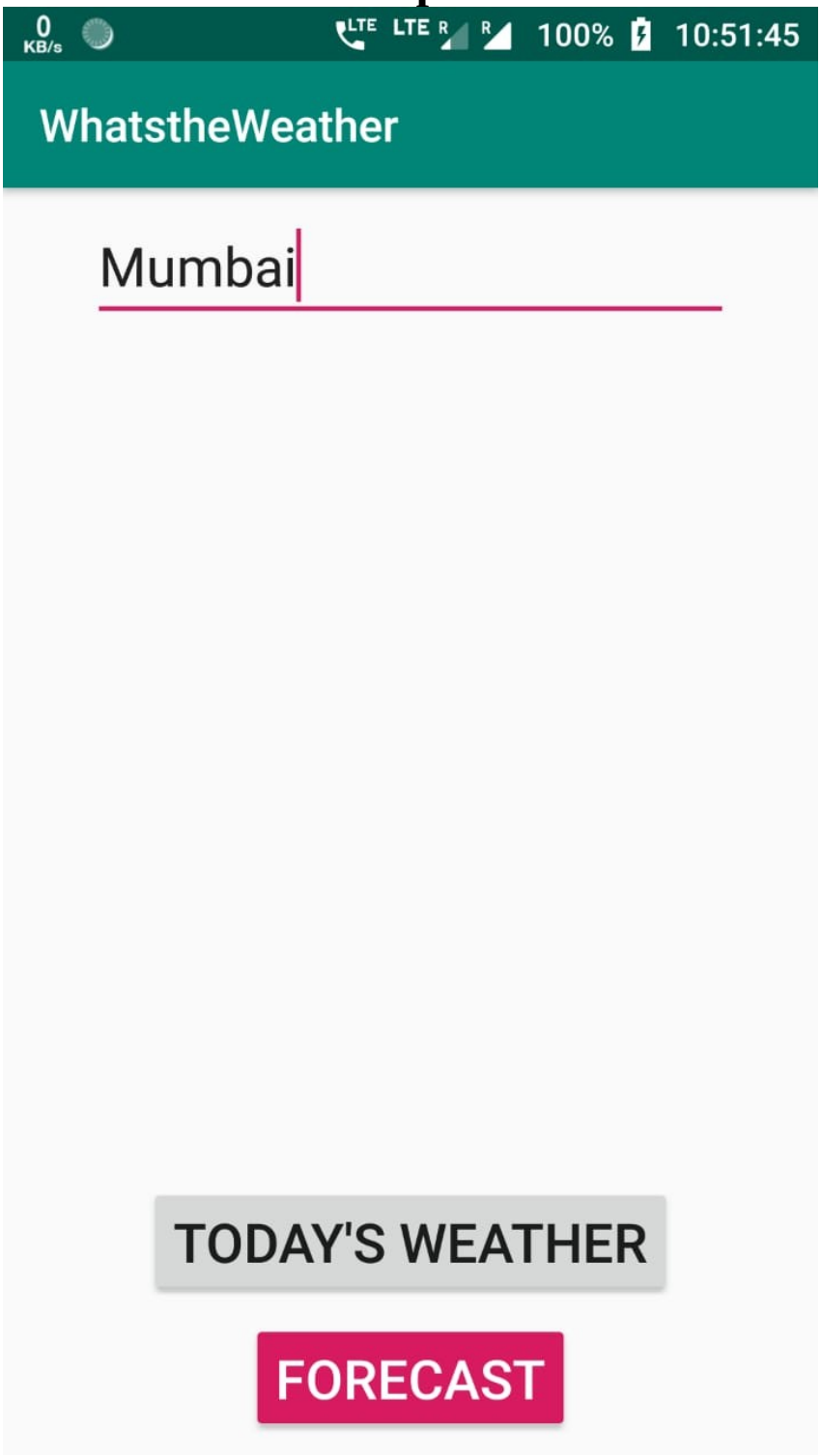
```
str1 =response.getJSONObject("main").getString("temp");
```

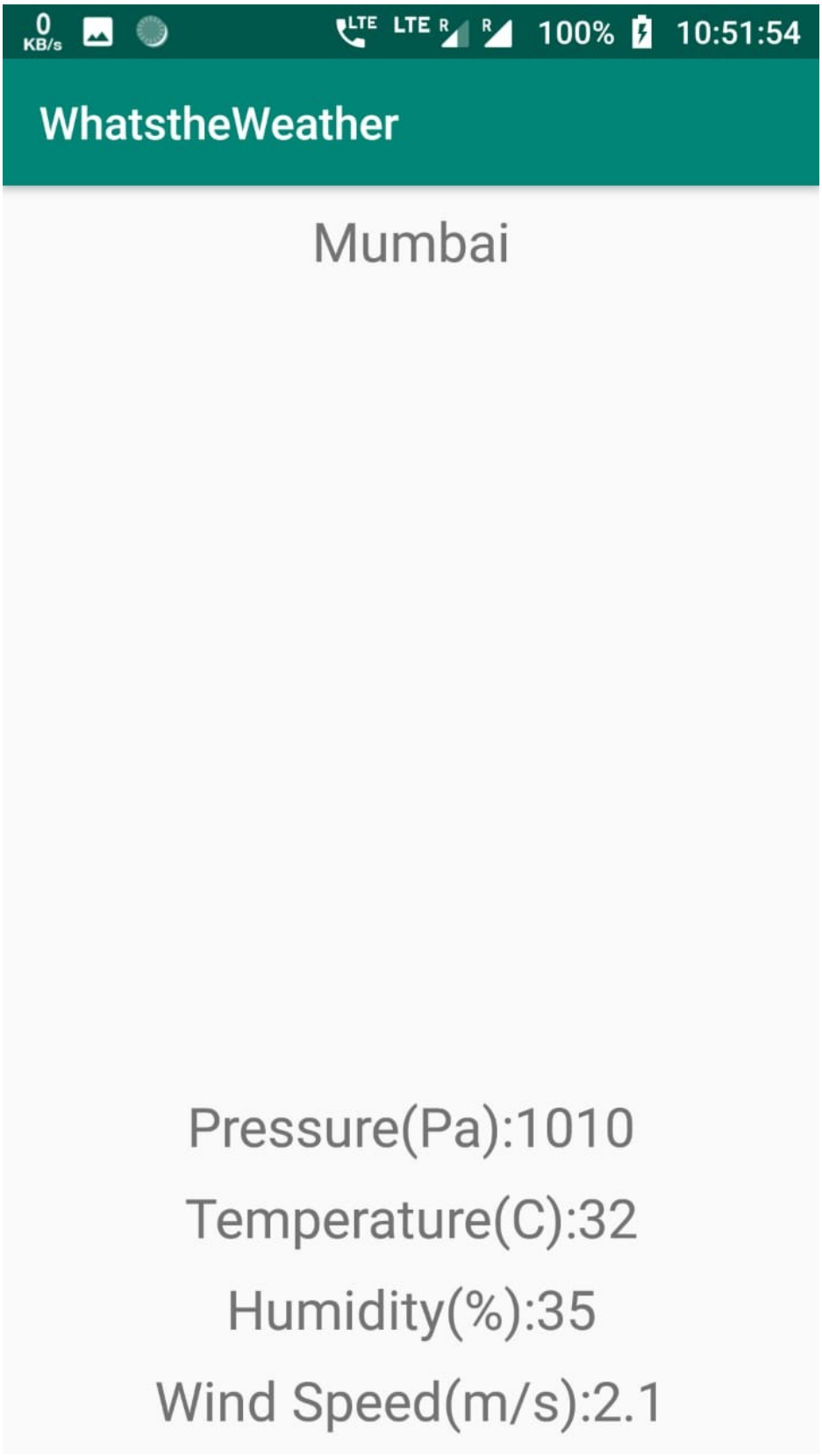
The JSON object is the extracted and thus we get the data.
This data is set in text view.

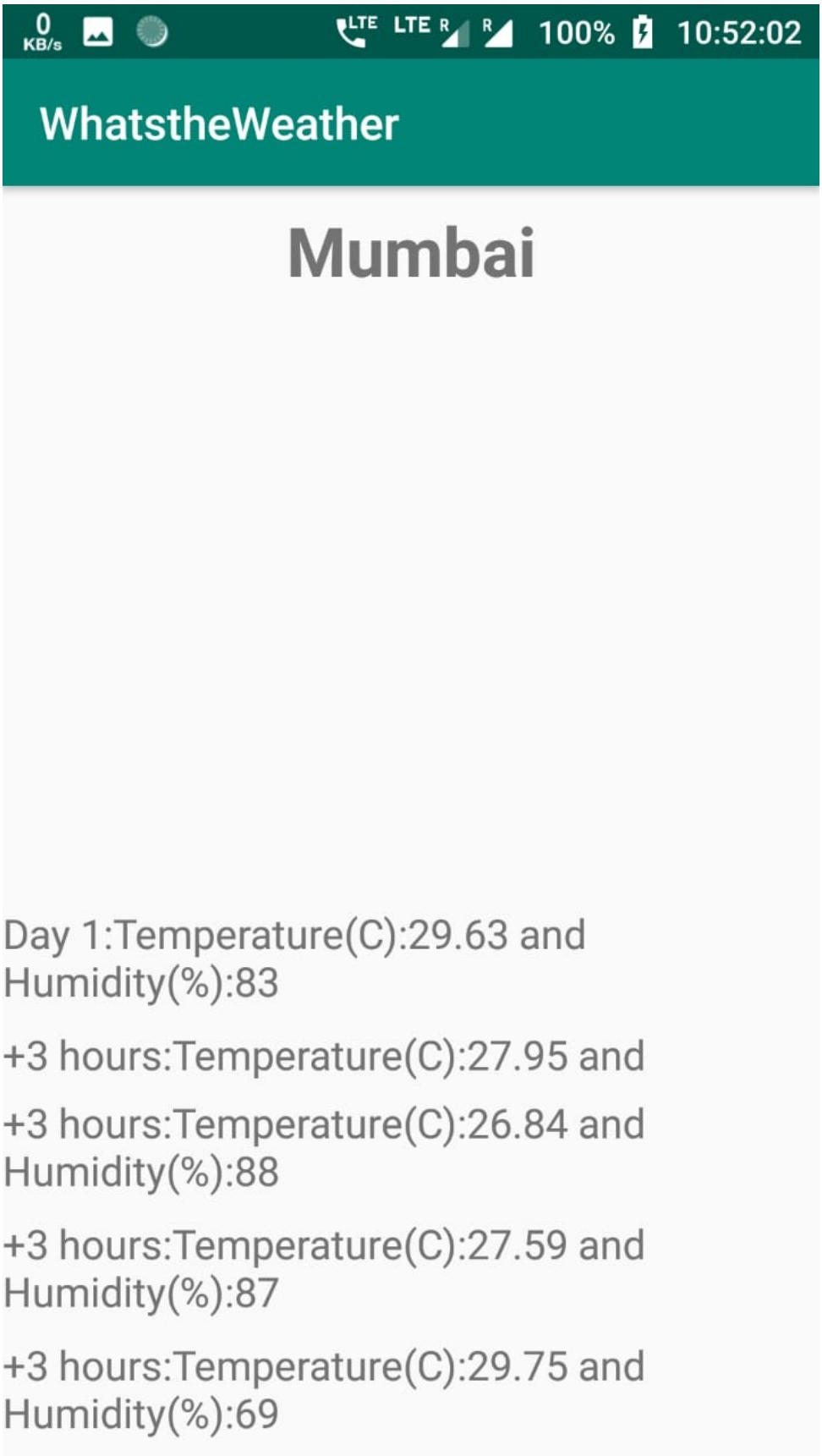
String URL = "https://api.openweathermap.org/data/2.5/forecast?q="+loc+",in&APPID=d0ab0b374135800cf14795258913d357&units=metric";

is the url for forcast and this accessed and stored in the same way as above.

Output


0
KB/s
LTE
LTE
100%
10:51:45
WhatstheWeather
Mumbai
TODAY'S WEATHER
FORECAST


0
KB/s
LTE
LTE
100%
10:51:54
WhatstheWeather
Mumbai
Pressure(Pa):1010
Temperature(C):32
Humidity(%):35
Wind Speed(m/s):2.1



The problems faced in this application was getting correct information from the JSON object.

Conclusion

This android application is the implementation of how to use API to get the data and to display it to user. This weather application will access the data of the city that has been input and will display the current weather and the forecast in different activities.

References

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