A Mini Project Synopsis on

Weather App

T.E. - I.T Engineering

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CERTIFICATE

This to certify that the Mini Project report on "**WEATHER APP"**

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This project would not have come to fruition without the invaluable help of our guide **Prof. Charul Singh**. We express our gratitude towards our HOD, **Dr. Kiran Deshpande**, and the Department of Information Technology for providing us with the opportunity as well as the support required to pursue this project. We would also like to thank our peers for their helpful suggestions.

ABSTRACT

Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly, the following day often brought fair weather. However, not all of these predictions prove reliable. Here this system will predict weather based on parameters such as temperature, humidity and wind. User will enter current temperature; humidity and wind, System will take this parameter and will predict weather(rainfall in inches)from previous data in database(data set). The role of the admin is to add previous weather data in database, so that system will calculate weather(estimated rainfall in inches) based on these data. Weather forecasting system takes parameters such as temperature, humidity, and wind and will forecast weather based on previous record therefore this prediction will prove reliable. This system can be used in Air Traffic, Marine, Agriculture, Forestry, Military, and Navy etc.

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Chapter 1

1. Introduction

Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Weather apps are your ideal companion when it comes to having an estimate of the weather and thereby lets you make informed decisions. Human beings have attempted to predict the weather informally for millennia and formally since the 19th century. Weather forecasts are made by collecting quantitative data about the current state of the atmosphere at a given place and using meteorology to project how the atmosphere will change.

This Weather Monitor App provides the user with real time weather information. This system is dynamic and updated on an hourly basis thus allowing to keep up with the ever-changing weather. Weather data is not only necessary for researchers or scientists, ordinary people can be benefited from it as well. People nowadays are feeling the necessity of weather data as well. There are a variety of weather mobile apps in Google Play and the App store, those apps have great features and functionalities to satisfy users. However, only a few of them have friendly user interface and human centered interactions, which means that a lot of them might be difficult to be navigated even though they provide enough functionalities. It is not convenient for new users.

Therefore, we would like to do improvements on weather apps. As well as temperature forecasts are used by utility companies to estimate demand over coming days. On an everyday basis, people use weather forecasts to determine what to wear on a given day. Since outdoor activities are severely curtailed by heavy rain, snow and wind chill, forecasts can be used to plan activities around these events, and to plan ahead and survive them.

1.1 Purpose:

The purpose of developing weather app is to fetch the data in the need of taking information about weather worldwide. Another purpose for developing this software is to generate the report automatically at the end of the session or in the between of the session.

1.2 Problem Statement:

This project is to create a weather application with third party server and users to enable the users to forecast weather. The project should be very easy to use enabling even a novice person to use it. This application is also developed to make people's life hustle free by introducing some of the extraordinary features like weather updates which are going on all around the world and also getting the weather forecast before going out of the home. This project is to design an application which consists of all the basic features which the users can access all of them with a single click.

1.3 Objectives:

The objectives of our project are as follows:

- To display the weather minute basis accurately, hourly & daily.
- To Study about weather forecasting applications and systems.
- To reduce manual workloads and paper works of the vehicle parkingmanagement staff.
- To Design and develop a system which can properly get updates of the current weather status.
- To helps people prepare for how to dress (i.e. warm weather, cold weather, windy weather, rainy weather).
- The user will be checking all the weather information inside on app itself.
- To help people prepare if they need to take extra gear to prepare for the weather(i.e.umbrella, raincoat, sun-screen, cap, sweater, etc).

1.4 Scope:

The scope of the project is the system on which the software is installed, i.e. the project is developed as a desktop application, and it will work for a particular institute or organization. But later on the project can be modified to operate it online. The intention of developing weather app is to fetch the data in the need of taking information about weather worldwide.This project is basically a desktop application which means 3 self-contained software runs on which it has been installed under the user control. Predicting the Weather of day today changes without any visualizing tools. Using the previous data of weather changes per hour is given to the model so that it will predict the weather according to the previous past data. Weather varies for every hour our data-set has every hour data so that machine will be trained more accurately. It will reduce the cost for equipment. Daily update of weather should be updated in the data-set so that the accurate weather details are easy to attain.

Chapter 2

2. Literature Review

Weather forecasts are made by collecting quantitative data about the current state of the atmosphere at a given place and using meteorology to project how the atmosphere will change. This specific project is not only the most easy topic but also rarely used. For instance there exist more than 15 Weather Applications and only 3 have managed to climb the cliff of 100k Downloads. With the market so low ,entering into this was indeed difficult and the greatest risk. As Steve Jobs once said “There is no such thing as a simple project, make it complex “, just what our team did here. With every step the project describes weather timely and hourly basis and provide to user. The project, the Application in itself is enough explain and need no marketing at any point of time. Application stands for itself. It is indeed very important to take care of oneself, no one ever can ever predict rain , nor a storm. Climatic change is subject to risk. In interest of social service and user convenience that this web-app is perfect of a person who is climate conscious and doesn’t use his /her phone well. This app will stand out from others for sure.

Agrawal et al. (1980) explained the phenomena for time series regression models for forecasting the yield of rice in Raipur district on weekly data using weather parameters [1]. In [2] the author Kuo and Sun, (1993) was used to Associate in having intervention model for average10 days stream flow forecast and synthesis that was investigated by to effect the extraordinary phenomena caused by typhoons and different serious irregularities of the weather of the Tanshui geographical area in Taiwan. In [3] Chaotic features are associated with the atmospheric phenomena also have fascinated the attention of the modern scientists (Sivakumar 2001; Sivakumar et al. 1999; Men et al. 2004). At present, the valuation of the nature and causes of seasonal climate variability is still formation. Since, it is a complicated phenomenon that includes many specialized fields of know-how to work for weather prediction (Guhathakurata, 2006); therefore, in the field of meteorology all assumptions are to be taken in the visage of uncertainty connected with local of and global climatic variables. Different scientists over the world have developed stochastic weather models. It is mainly used to predict and warn about how natural disasters that are caused by abrupt modification in climate conditions and has been approached using Climatic means [4].In [9] Seyed, A., Shamsnia, M.,Naeem,S. and Ali, L.,(2011) was explained that the modelled weather parameter using some of the random methods(ARIMA Model) It include the Case

Study:Abadeh station,Iran. Mahsin et al. (2012) used Box-Jenkins methodology to form seasonal ARIMA model for monthly weather information taken for Dhaka station, Bangladesh, for the significant amount from 1981-2010. Another researcher F. Mekanik and M. A. Imteaz [4] found that Australian rainfall is also affected by these key modes of complex climate variables. On the other hand, few attempts have been made to establish the combined effect of these indices on rainfall in order to develop a better understanding and forecasting system.

2.1. There are some apps similar to our application

1. Dark Sky Weather App: Dark Sky was a popular iOS-only app for a long time, but it's available on Android now too.This app's claim to fame is the "hyper-local" forecasts. You'll know when the rain will start and stop, down to the minute. The one big catch with Dark Sky is the $2.99 per year subscription for premium features. Not a lot of people want to pay yearly for a weather app.

2. AccuWeather Weather App: AccuWeather is one of the most well-known names in the weather game. The app has more features than you can shake a stick at. Everything from extended forecasts to live radar. The most unique feature is called "Minute Cast," which shows precipitation on a minute-by-minute basis. You'll know exactly how long until the rain starts.

3. Google Weather App: Google has provided this free application to predict weather which automatically locates our location and displays your current weather forecast, hourly and 7 day forecast.

4. Oneplus Weather App: OnePlus Weather is the official weather forecasting app from OnePlus. It comes installed by default on all OnePlus brand devices, but can be used on any device with Android 7.1 or higher.

Chapter 3

3. Proposed System:

Using ReactJS we have build the application from front-end up-to back-end. To display weather prediction OpenWeather API is used which displays hour and day wise data of weather to user. Openweather is much preferable than other API like AccuWeather because it gives more features in one single key. This Weather Monitor App provides the user with real time weather information. This system is dynamic and updated on an hourly basis thus allowing to keep up with the ever-changing weather.

3.1 Features and Functionality:

1. **User-friendly interface:**

- Interface is bound to simple and very friendly as per the user is concerned. That is, we can say that the project is user friendly which is one of the primary concernsof any good project.

2. **Easy to Search Location:**

- The user can easily find their city weather just by entering their city name. Accordingly the weather details will appear on screen.

3. **Real-Time Weather Details:**

- The user can view current weather for current location with appropriate information & graphic.

4. **Hourly Weather Information:**

- Hourly weather information for today & daily for a week.

Chapter 4

Requirement Analysis:

Feasibility Study -

Whenever a new system (hardware or software) is to be introduced, there is a need to study every aspect or manner before working on it. The four main consideration of the study are:

1. Time Feasibility: Time feasibility refers to the time management of the project. It refers to the time and process incurred during the development of the project.

2. Technical Feasibility: Technical feasibility refers to technical knowledge and auxiliary devices required. Since our project is in Visual Basic 6 so we need to have a strong base of this programming language. And programming language we have used is React JS.

3. Costing Feasibility: Costing Feasibility refers to the cost the project members have done toward the project since our project is tried to be made as economical as possible.

4. Economical Feasibility: he hardware/software setup required is that the proposed system can be easily run on any dual core smartphone and as the software used to build system is Visual Studio code in windows 10 or we can build this in Linux also. So it does not cost high.

5. Operational Feasibility: Operational feasibility means it is possible to practically implement the project. While installing this software, the hardware, and software. One of the objectives of developing and user friendly application apart from speeding of the operation is that users do not face any problem while making any plans depending on the weather.

Chapter 5

Hardware and Software Requirements:

Hardware Required :

1. Standard computer with at least i3 processor Standard computer with 4GB of RAM

2. Standard computer with 100GB of free space

3. Active Internet Connectivity with good bandwidth

Software Required :

1. React JS

2. HTML , CSS , JavaScript

3. Visual Studio / Sublime Text

4. Node JS

5. API

Operating System :

1. Windows 10

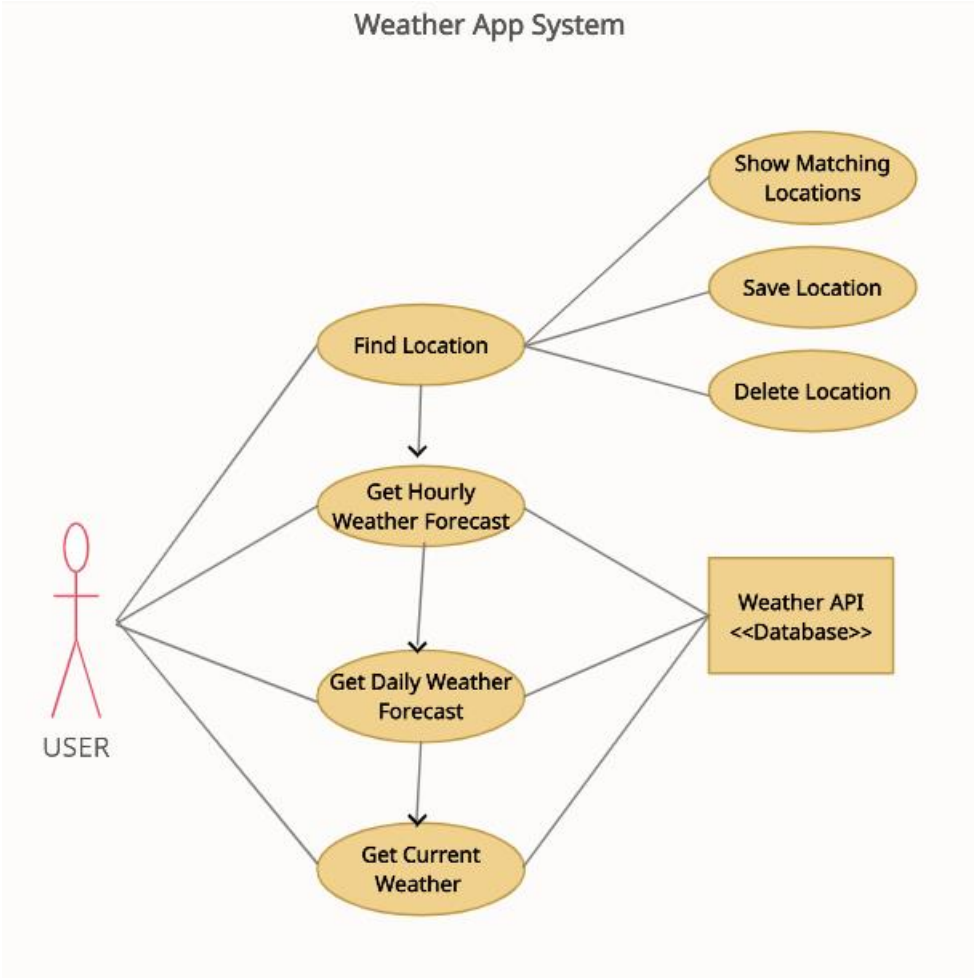
Chapter 6

Project Design:

In this phase, a logical system is built which fulfils the given requirements. Design phase of software development deals with transforming the client's requirements into a logically working system.

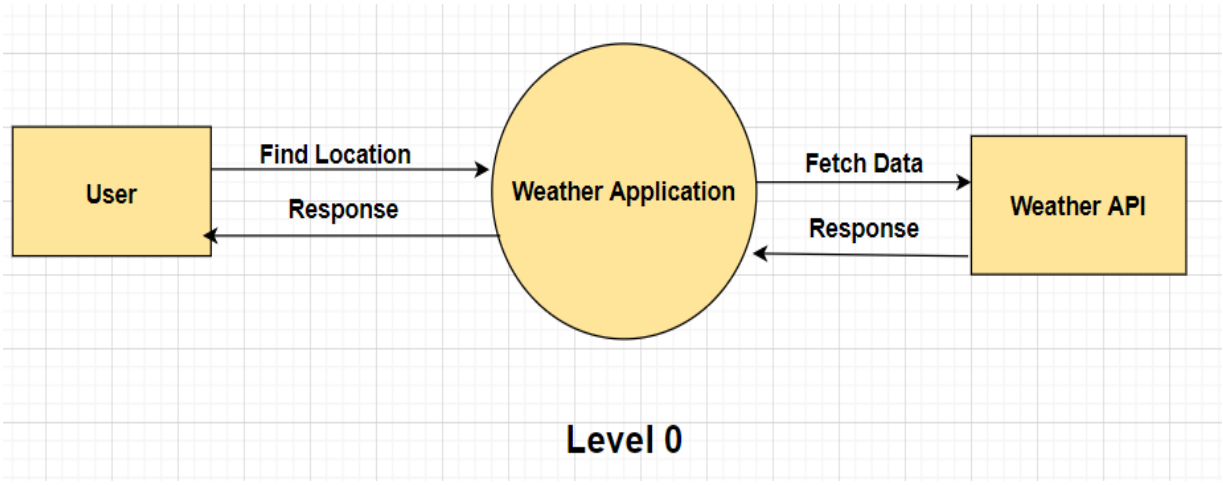
1. User Case Diagram:

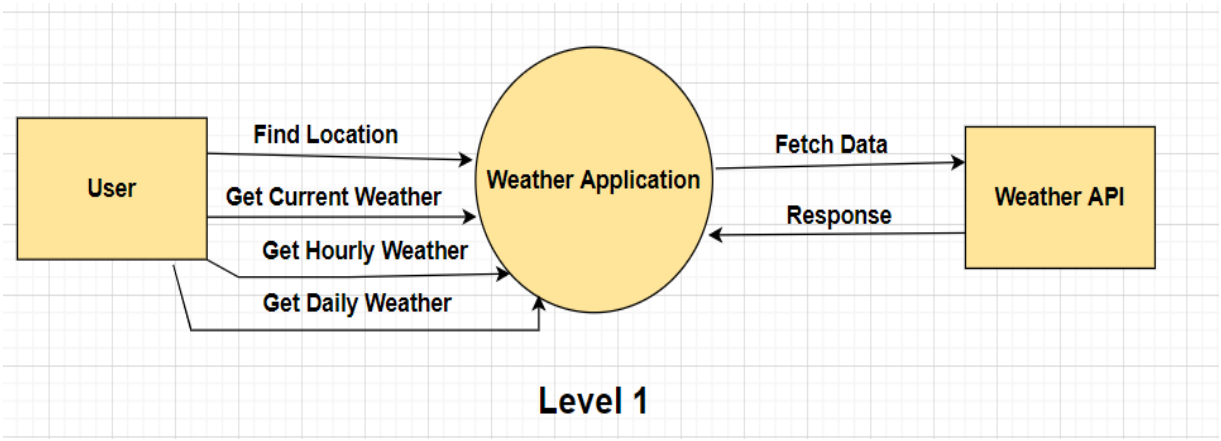
In the Unified Modeling Language (UML), a use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system.To build one, you'll use a set of specialized symbols and connectors.



2. Data Flow Diagram:

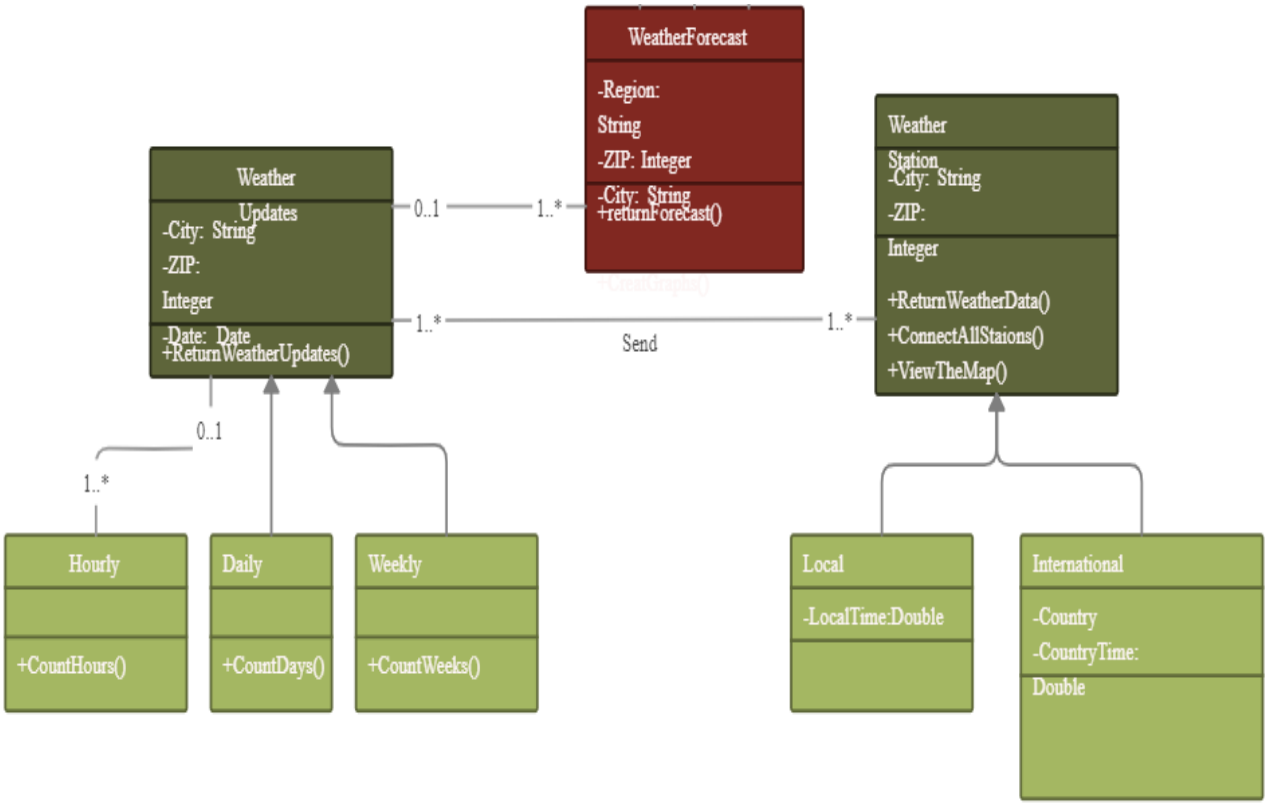
A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressively deeper into how the data is handled. They can be used to analyze an existing system or model a new one.

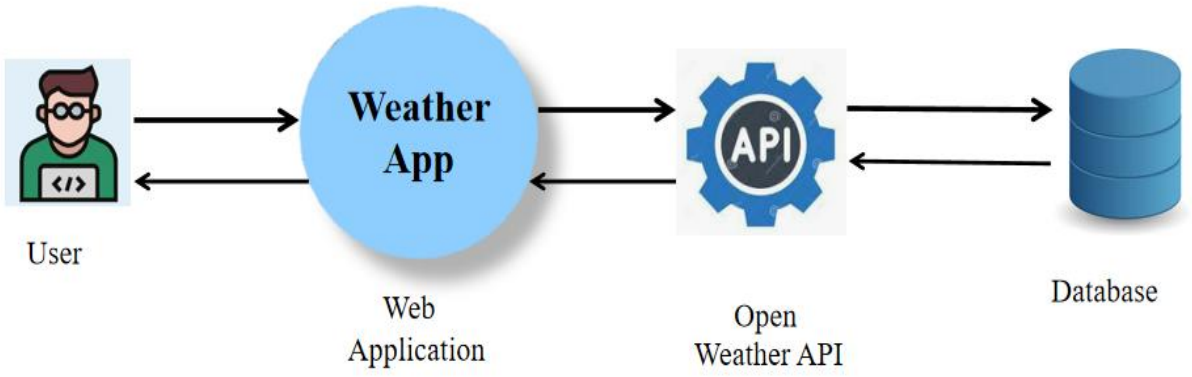




3. System Architecture:

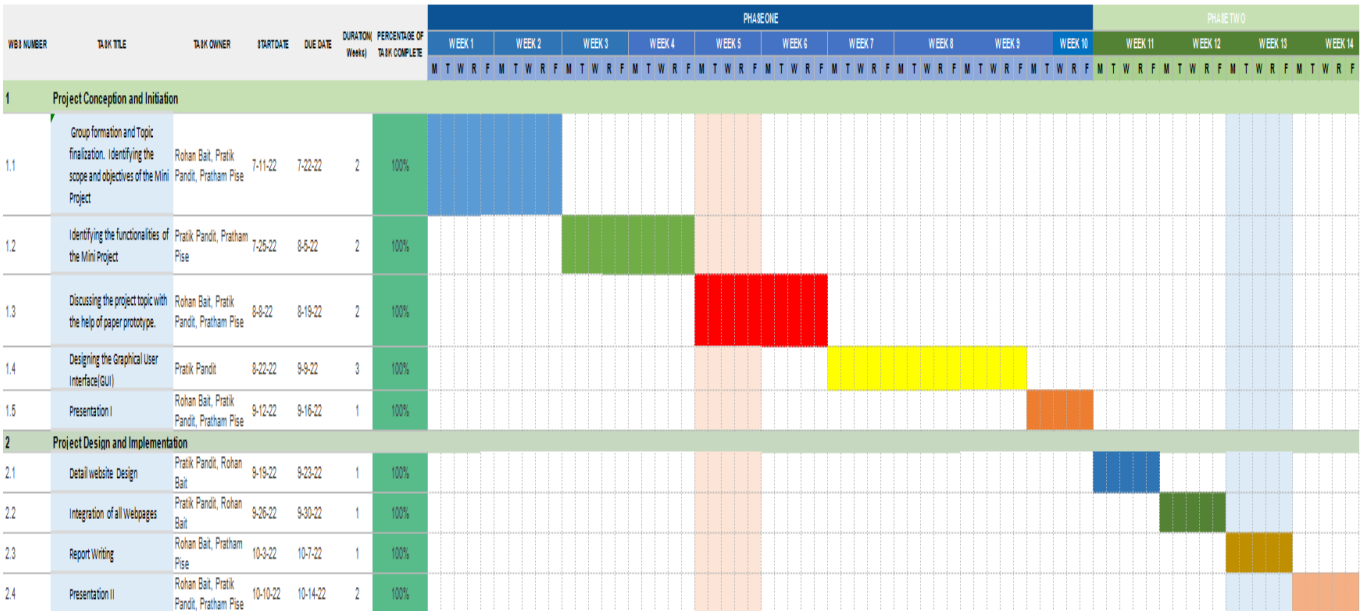
When user logins to the application the user just has to enter any location to know the weather then click on search button through it weather of that particular location will be displayed. Based on date and time user will be able to weather hourly,daily and weekly basis. User can see weather all over the globe. Application uses API (Open Weather API) and fetches data from open weather database and display it to user.Also user can check air quality index of particular city by entering city name which will display air quality like amount of gases in atmosphere in nearby location.





Chapter 7

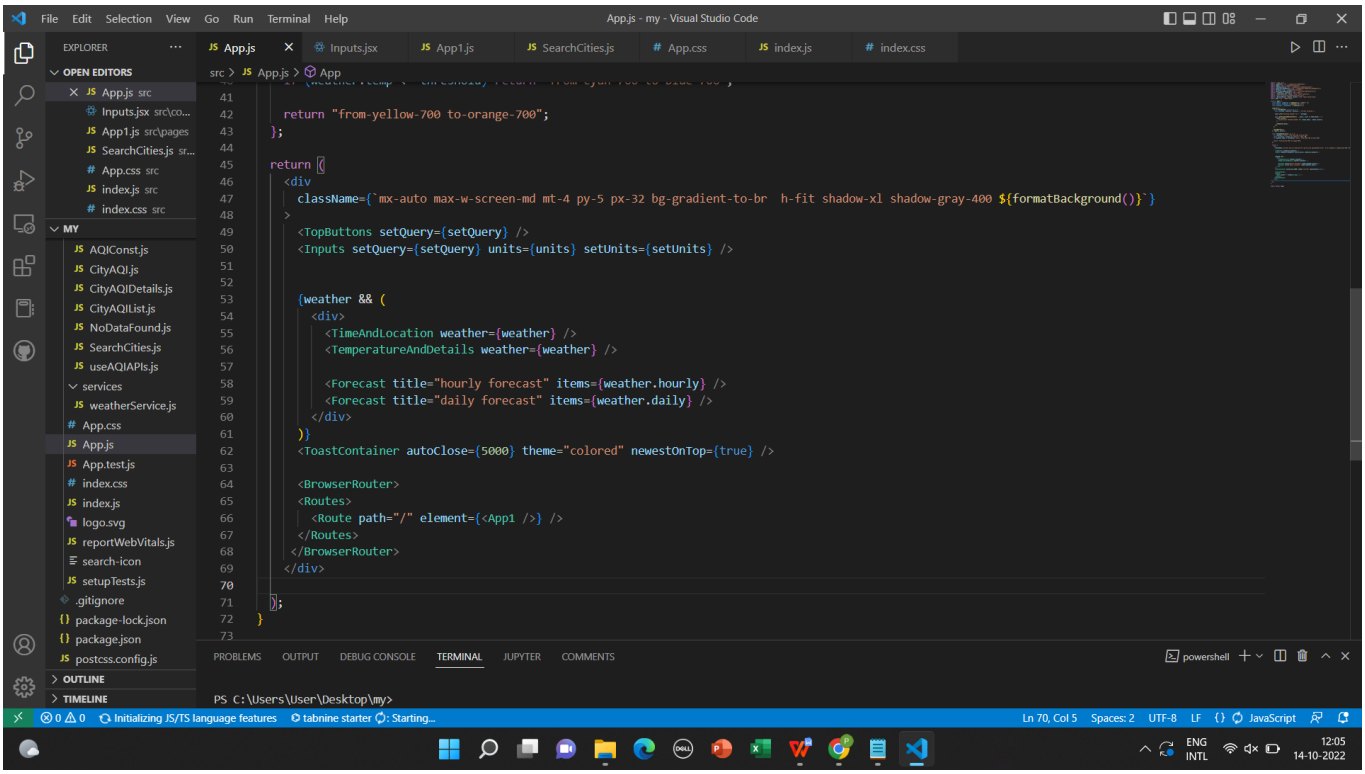
Project Scheduling:



WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION (Weeks)	PERCENTAGE OF TASK COMPLETE
1	Project Conception and Initiation					
1.1	Group formation and Topic finalization. Identifying the scope and objectives of the Mini Project	Rohan Bait, Pratik Pandit, Pratham Pise	7-11-22	7-22-22	2	100%
1.2	Identifying the functionalities of the Mini Project	Pratik Pandit, Pratham Pise	7-25-22	8-5-22	2	100%
1.3	Discussing the project topic with the help of paper prototype.	Rohan Bait, Pratik Pandit, Pratham Pise	8-8-22	8-19-22	2	100%
1.4	Designing the Graphical User Interface(GUI)	Pratik Pandit	8-22-22	9-9-22	3	100%
1.5	Presentation I	Rohan Bait, Pratik Pandit, Pratham Pise	9-12-22	9-16-22	1	100%
2	Project Design and Implementation					
2.1	Detail website Design	Pratik Pandit, Rohan Bait	9-19-22	9-23-22	1	100%
2.2	Integration of all Webpages	Pratik Pandit, Rohan Bait	9-26-22	9-30-22	1	100%
2.3	Report Writing	Rohan Bait, Pratham Pise	10-3-22	10-7-22	1	100%
2.4	Presentation II	Rohan Bait, Pratik Pandit, Pratham Pise	10-10-22	10-14-22	2	100%

Chapter 8

Implementation:

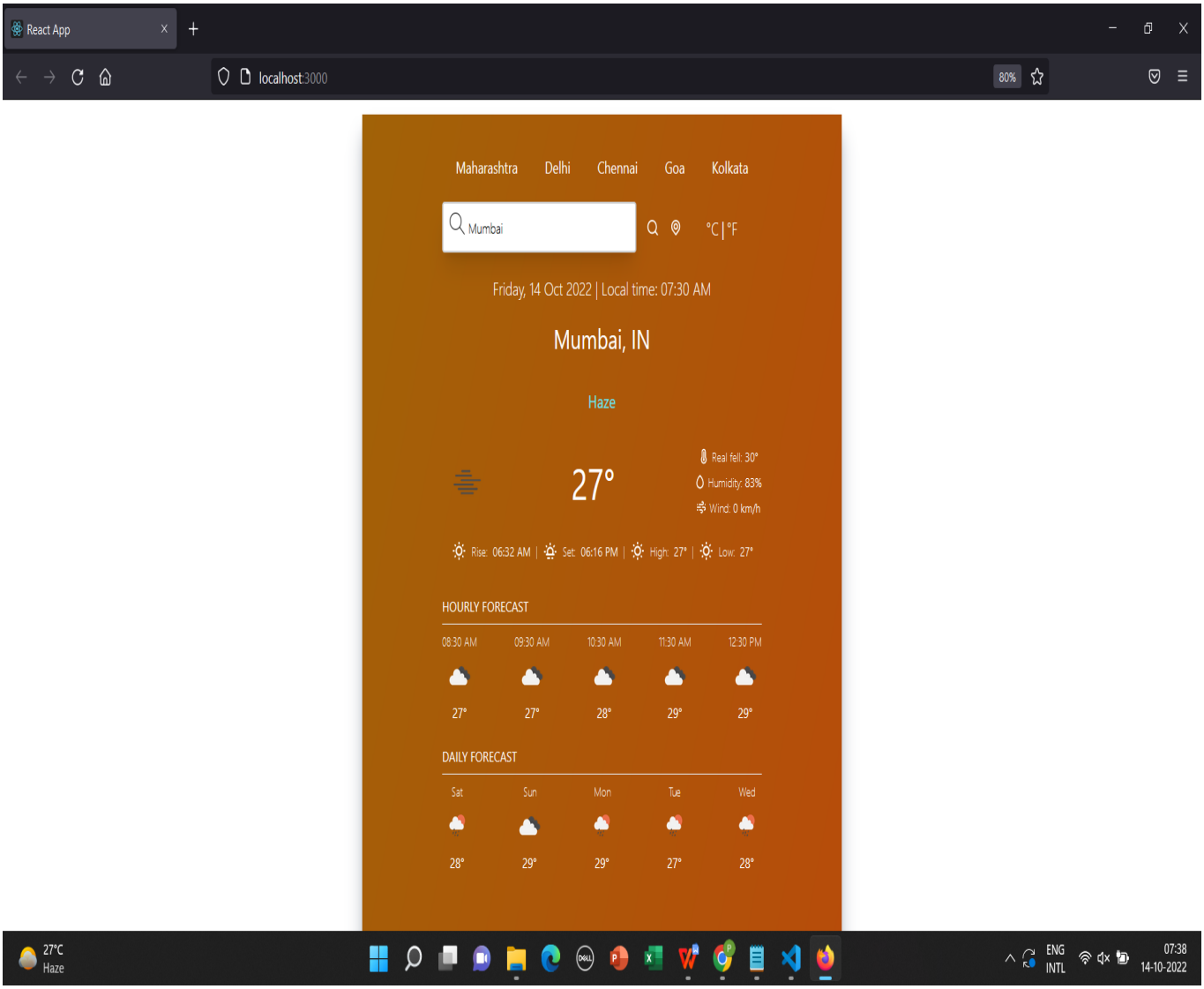


Chapter 9

Result and Discussion:

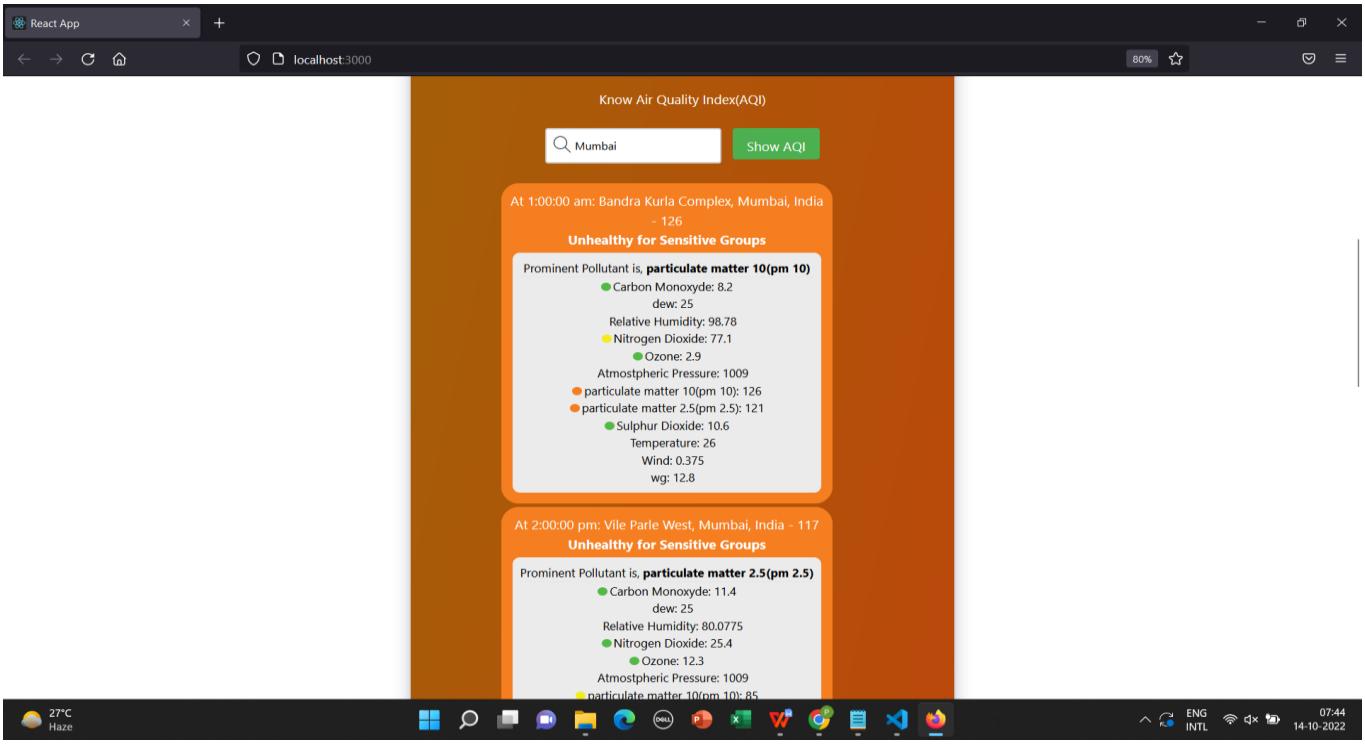
Home Screen:

Home screen where user has to enter any location and weather is displayed accordingly in hourly format as well next five days forecast.



Air Quality Index :

Base on location entered user can check quality of air in their surrounding localities.



Chapter 10

Conclusion and Future Scope:

The development of the weather report application is not an easy task. In this project we present the main steps in development of application of weather forecast using the react. The system developed includes the testing module. The testing result showed that the system worked correctly. Next step, we are going to conduct an evaluation on the effectiveness of the system. This system will persist to grow and the future work will include improving the content of the system by adding more modules and having graphical representation as an additional feature in turn creating more assortments and enhancing the system to continuously suit the users needs. There is always a room for improvements in any software package, however good and efficient it may be done. But the most important thing is it should be flexible to accept further modifications. Right now we are just dealing with the Graphical representation. Further we would be including the charts and many other features to make it go with the new and trending technology and adding services like weather prediction through real-time maps to showcase wind flow as well develop a database to maintain users. Thus implementing the further enhancements will make the project more flexible and also ease for the users.

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