PROJECT WORK

- Project Title **: Weather app**
- Faculty Mentor: SASHIKANTH BETHA
- Team Id: **: LTVIP2023TMID08015**
- Team size: 4
- Team leader: DHARMIREDDY LAHARI
- Team members: CHUKKA YAMUNA
  GEDELA HEMADATTA
  DASARI POORNA CHANDRIKA

1. INTRODUCTION:

OVERVIEW:

The WeatherApp is a web application that provides real-time weather information for a specified location. It utilizes HTML, CSS, Java script and the OpenWeatherMap API to fetch weather data and displays it in a user-friendly interface. Users can search for a location by city name and receive detailed weather information, including temperature, humidity, wind. Weather prediction is the application of science and technology to predict the state of the atmosphere for a given location. Here this system will predict weather based on parameters such as temperature, humidity and wind. This system is a web application with effective graphical user interface. To predict the future's weather condition, the variation in the conditions in past years must be utilized. The probability that it will match within the span of adjacent fortnight of previous year is very high.

PURPOSE:

We have proposed this weather prediction system with parameters such as temperature, humidity and wind. It will predict weather based on API Key therefore this prediction will prove reliable. This system can be used for general purposes to find the weather conditions. This is created by using HTML, CSS, and Java script that provides real-time weather information for a specified location using the open weather app API key. Users can search for a location by city name and receive detailed weather information, including temperature, humidity, wind speed, and weather conditions. Dynamically update the UI with the fetched weather data. Allow users to search for weather information by city name.

2. LITERACY SURVEY

EXISTANCE PROBLEM:

Weather prediction is a useful tool for informing populations of expected weather conditions. Weather prediction is a complex topic and poses significant variation in practice. We will attempt to understand and implement a weather prediction application using the front-end development. By creating a user interface using HTML and CSS to display weather information. It utilizes JavaScript to interact with the Open Weather-Map

API key and fetch weather data and to update the UI with the fetched weather data dynamically.

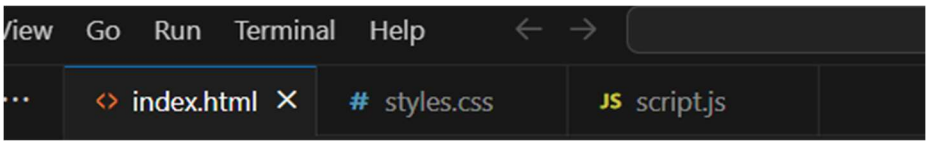
PROPOSED SOLUTION:

- Firstly create a new project folder for the Weather App with required files.

  index.html

  style.css

  script.js



- After that set up the basic HTML structure.
- Applying styles to the UI elements using CSS in style.css.
- Design the layout and structure of the user interface using HTML elements and CSS classes.
- In script.js, define a constant variable to store your Open Weather Map API key. Using the Open WeatherMap API, we can get the necessary parameters of temperature, windspeed, humidity, etc.
- Calling the API key in java script. We added an input field and a button to the UI to allow users to enter a city name or zip code.
- A event listener is added to the button to trigger the weather data fetch function when clicked.
- After that we retrieved the user input from the input field by giving the required city as input. we can get the detailed weather information.

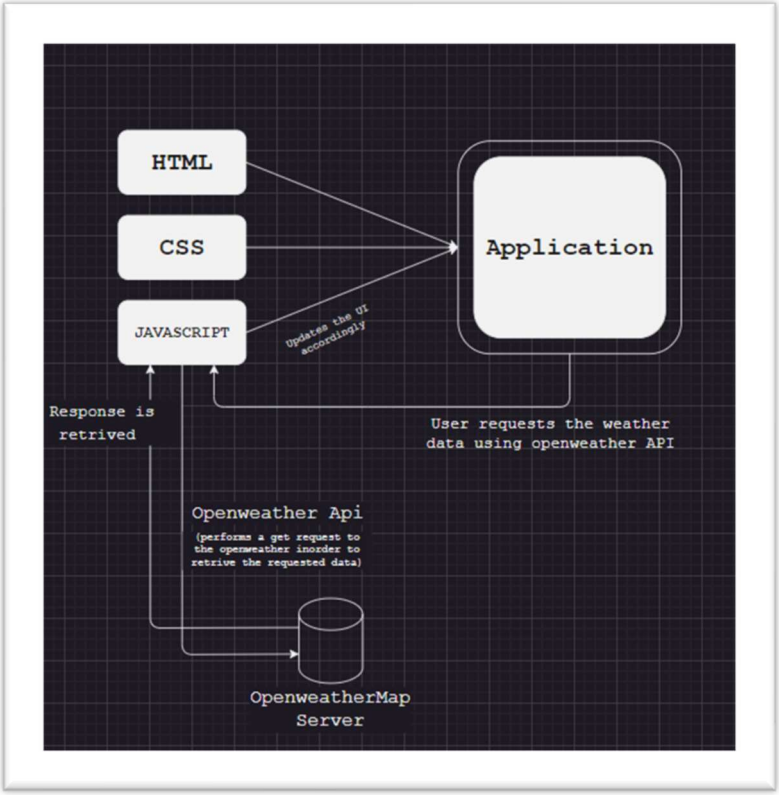
3.THEORETICAL ANALYSIS

- In this we create a Weather app using HTML, CSS, and Java script that provides real-time weather information for a specified location using the open weather app API key.
- Users can search for a location by city name and receive detailed weather information, including temperature, humidity, wind speed, and weather conditions.
- The Flow of the Project:

  - Set up the project structure
  - Design and implement the user interface Connect to the API key.
  - Fetch weather data based on user input Update the UI with the fetched weather data.

BLOCK DIAGRAM:

A Block diagram is a graphical representation of a system. It provides a functional view of a system. It helps to create interconnections within it. Creating a detailed block diagram for Unleashing The Potential Of Our Youth involves breaking down the process into key steps and components. It illustrates the end-to-end process of Unleashing The Potential Of Our Youth. Starting from data collection and preprocess into deploying the final models. For Better Understanding let us have a look into Block diagram.



SOFTWARE DESIGNING

To complete this project, you will need:

- A code editor (such as Visual Studio Code, Sublime Text, or Atom)
- A web browser
- An internet connection
- HTML, CSS or Bootstrap, and JavaScript knowledge
- Open WeatherMap API key (sign up at https://openweathermap.org/ to create one)
- The output is displayed by using go-live in the editor in a webpage which we created.

Weather API:

Weather APIs are Application Programming Interfaces that allow you to connect to large databases of weather forecast and historical information. The weather API provides enough weather data for basic weather information (current weather, forecast, UV index data, and historical weather information). You can use geolocation and names to get a city location.

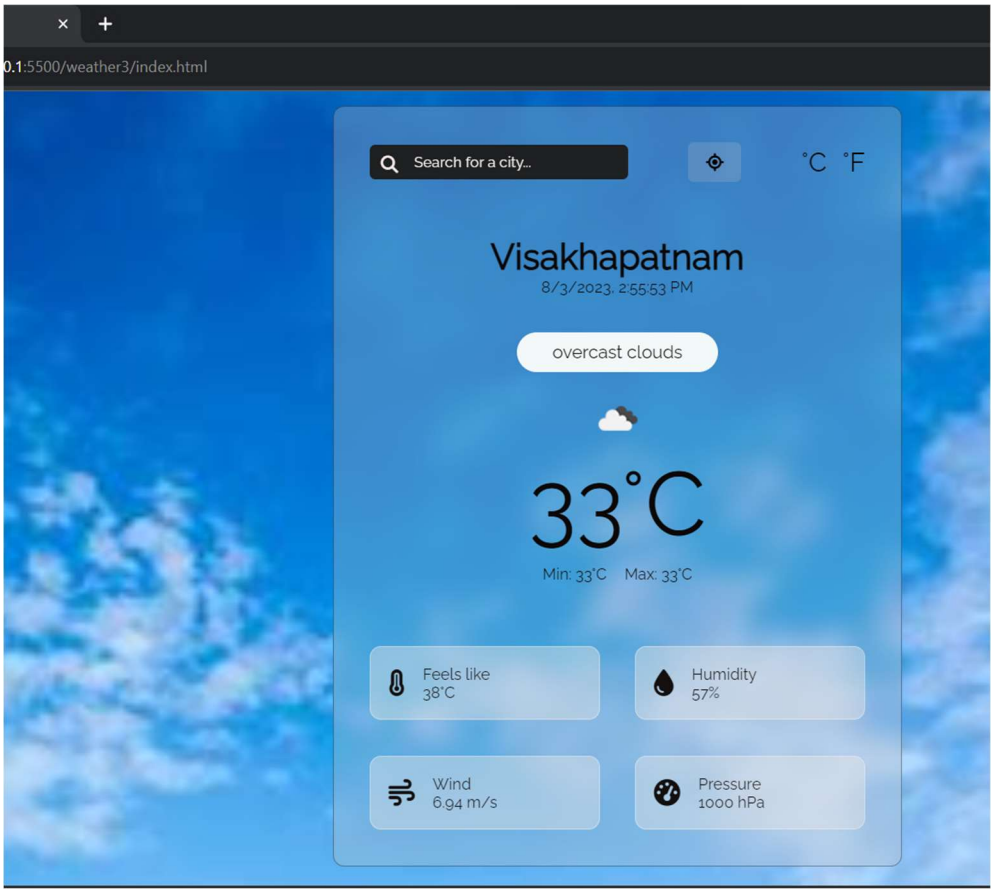
```
const apiKey = "385566fe8e91e8e5572e5c79ac345276";
const baseUrl = "https://api.openweathermap.org/data/2.5/weather";
let units = "metric";

searchForm.addEventListener("submit", (e) => {
  e.preventDefault();
  const city = searchInput.value.trim();
  if (city !== "") {
    fetchWeatherData(city);
  }
  searchInput.value = "";
});
```

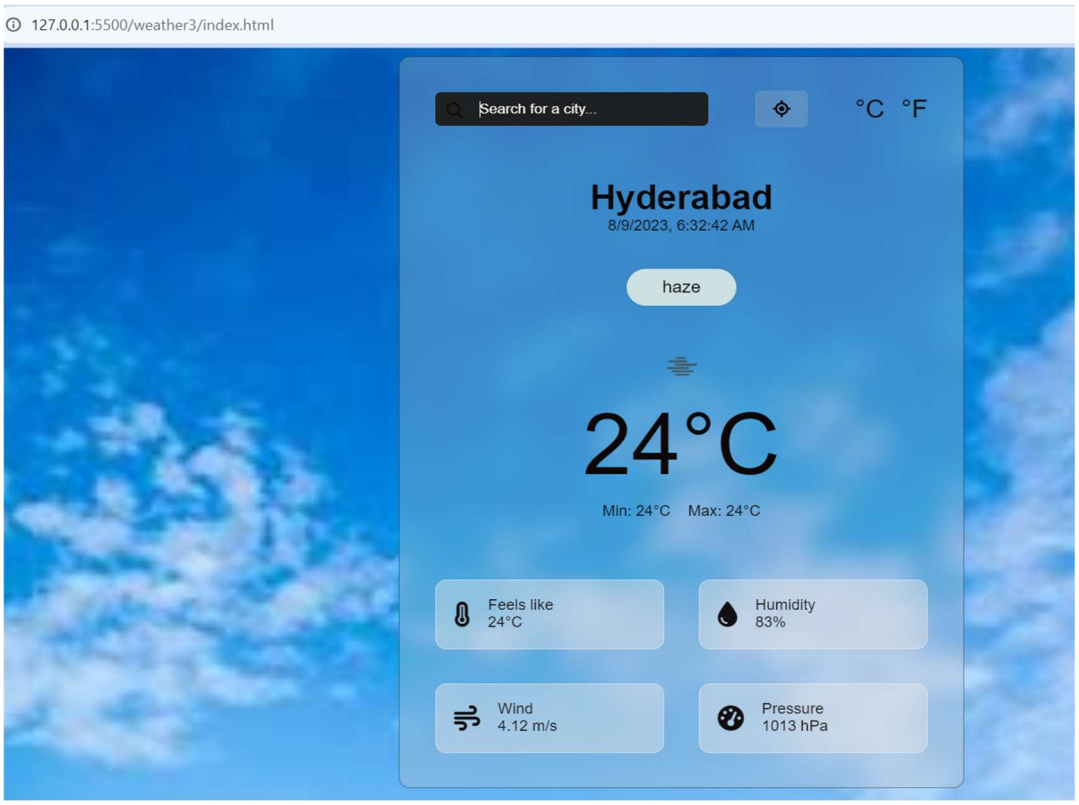
4. RESULT

We can get the required output in a new webpage. By giving the user input we can get the required weather information.

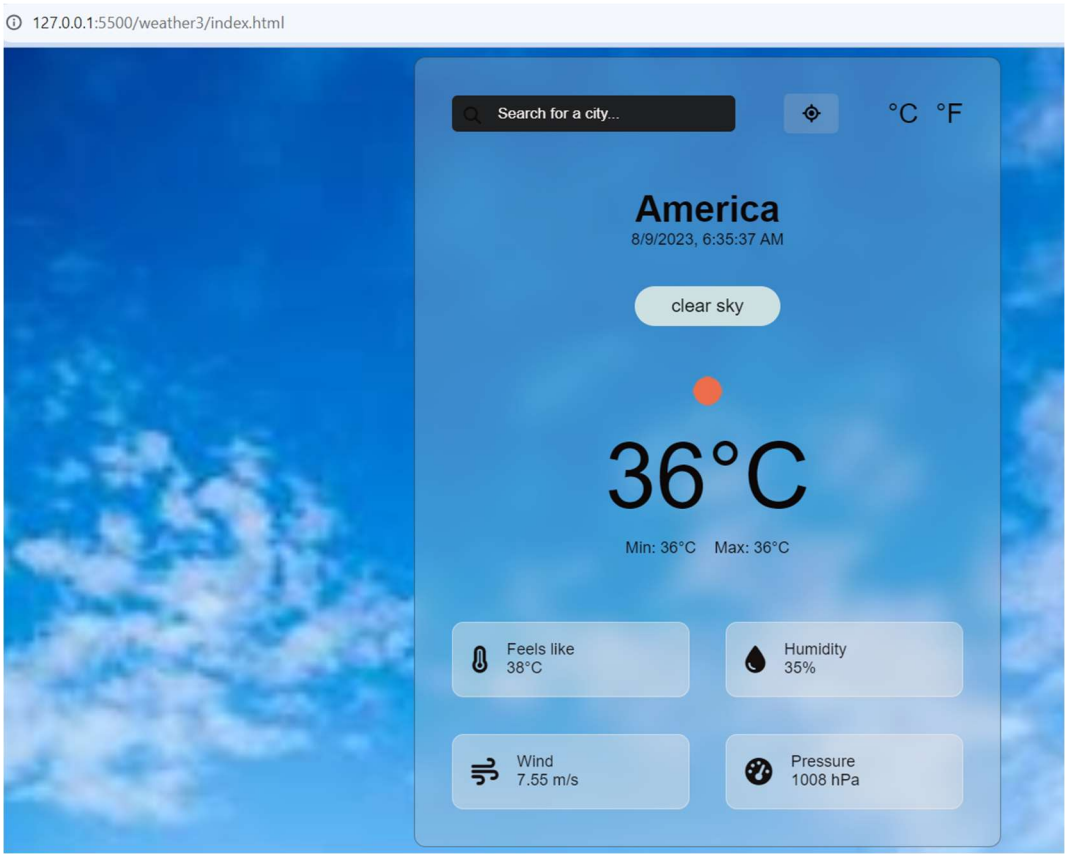
It gives the current location by using the button.



When we give input as Hyderabad



When we give input as America



5. ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- When we input a name of a city, we can easily see the current temperature, humidity, pressure and windspeed.
- The weather app enables you make better preparation for the day in relation to giving accurate daily weather forecast.
- The app provides you the details of the weather elements like pressure, temperature, windspeed.
- This helps to track the details of your favorite cities and regions.

DISADVANTAGES:

- Weather is extremely difficult to forecast correctly.
- The computers needed to perform the millions of calculations necessary are expensive
- The weather forecasters get blamed if the weather is different from the forecast.
- Reliance on Technology: Weather forecasting relies heavily on technology, and if the technology fails or is unavailable, accurate predictions cannot be made.
- Limited Reach: Weather forecasts are not available for many remote or sparsely populated areas, making it difficult for people in these areas to prepare for severe weather.

6. APPLICATIONS

- Forecasting could be applied in air traffic, severe weather alerts, marine, agriculture, utility companies, private sector and military application.
- These apps are the most effective way of learning about forthcoming weather patterns in the environment.
- If someone is planning a journey to a specific location, they can learn about the weather conditions ahead of time through these apps.
- Weather forecasting majorly helps in agriculture, military, private sector in finding the weather in before for predicting.
- This helps to track the details of your favorite cities and regions.

7. CONCLUSION

This research suggests and proposes an efficient and accurate weather prediction and forecasting model using frontend development. It is a very efficient weather prediction model and using the entities temperature, humidity and pressure, it can be used to make reliable weather predictions. This model also facilitates decision making in day to day life. It can yield even better results by using different styles. Pre-processing of the datasets is effective in the prediction as unprocessed data can also affect the efficiency of the model.

The Weather App is a web application that provides real-time weather information to users. By integrating the OpenWeatherMap API and implementing an intuitive user interface, users can easily retrieve weather data for a specific location. The project's modular structure allows for easy maintenance and further enhancements, such as adding additional features or optimizing the UI.

8. FUTURE SCOPE

Scope of Weather Prediction

- Our system will only provide weather prediction of cities only.
- Prediction will be done based on historical weather activities like based on API key to find temperature, wind, etc. pattern what will be the future weather.
- By using different methods or applications we can get the better implementation of the weather forecast.
- By providing broadcast using different features and images can get in the future by vast development.

Future Enhancement

- Mobile and IOS application Integration.
- Addition of new cities weather dataset to predict there future weather also.
- Addition of new Indices.
- Animation like snow and functions like notifications can also be added