

Frontend Developer Longterm Internship

Project Report

Introduction to Weather app :-

Our weather app, your go-to companion for all things weather-related, whether you're planning a weekend getaway, preparing for your daily commute or simply curious about the current conditions, our app has got you covered.

Key features :-

- [1] Real-Time weather updates :- Stay up-to-date with the latest weather conditions for your location. Our app provides real-time data, so you can trust that the information you receive is accurate and reliable.
- [2] Hourly and Daily forecasts :- Plan your day effectively with our detailed hourly and daily forecasts. Know when to expect rain, sunshine, or any other weather changes and be prepared for any outdoor activities.
- [3] Weather Alerts :- Receive timely weather alerts and warnings, ensuring you're aware of any potential hazards or adverse conditions. Safety is our priority, and our app will notify you of significant weather changes in your area.
- [4] Customized Locations :- Add multiple locations and access weather information for different cities or places that matter to you. Whether it's your hometown, vacation destination, or a loved one's location, you can easily switch between locations.

PURPOSE :

The purpose of a weather app is to provide users with accurate and real-time weather information for any location they are interested in. Weather apps serve several essential functions, including:

- [1] Weather forecasting: The primary purpose of a weather app is to deliver weather forecasts, which help users plan their activities and make informed decisions based on expected weather conditions for the day or week ahead.
- [2] Real-Time updates: Weather apps offer real-time updates on the current weather conditions, such as temperature, humidity, wind speed, and precipitation, allowing users to stay informed about the weather at their current location or any other location they are interested in.
- [3] Severe Weather Alerts: Weather apps can send alerts and warnings about severe weather events, such as storms, hurricanes, tornadoes, or extreme
- [4] Travel Planning: For travelers, a weather app is a valuable tool for checking weather conditions at their destination or along their travel route, enabling them to pack appropriately and anticipate any potential weather-related disruptions.

Literature Survey of weather app:

(1) Usability and User Experience of Weather App:

Many studies focussed on evaluating the usability and user experience of weather apps on different platforms. These assessments considered factors like app design, information presentation, and user interactions.

(2) Accuracy and Reliability of Weather App:

Several research papers examined the accuracy and reliability of weather app data provided by various weather apps. These studies compared forecast accuracy between different apps and analyzed the sources of forecast data.

(3) Data Visualization Techniques:

Researchers explored different data visualization methods and techniques to present weather information effectively. These studies aimed to improve users' comprehension of complex weather data through innovative visualizations.

Proposal solution :-

- * Design a clean and intuitive user interface that allows users to easily input their location or enable GPS for automatic location detection.
- * Integrate with a reliable weather data API to fetch real-time weather information. Consider APIs that provide data on temperature, humidity, wind speed, and weather conditions.
- * Provide current weather information for the user's selected location and a 7-day forecast to help users plan ahead.
- * Include appropriate weather icons to visually represent the current weather condition.
- * Allow users to switch between Celsius and Fahrenheit for temperature display.
- * Implement push notifications for severe weather alerts to keep users informed about any critical weather change.
- * Optionally, include historical weather data to allow users to review past weather conditions.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <link rel="stylesheet" href="weatherstyle.css">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Weather App</title>
</head>
<body>
    <div class="container">
        <div class="search">
            <input type="text" placeholder="Enter City Name">
            <button></button>
        </div>
        <div class="error">
            <p>Invalid City Name</p>
        </div>
        <div class="weather">
            
            <h1 class="celcius">32°c</h1>
            <h2 class="city">Visakhapatnam</h2>
            <div class="detail">
                <div class="col">
                    
                    <div class="humidity">
                        <p class="humidityP">20%</p>
                        <p>Humidity</p>
                    </div>
                </div>
                <div class="col">
                    
                    <div class="wind">
                        <p class="windS">20k/h</p>
                        <p>wind</p>
                    </div>
                </div>
            </div>
        </div>
    </div>
    <script src="script.js"></script>
</body>
</html>
```

```
* {
    padding: 0px;
    margin: 0px;
    box-sizing: border-box;
}

body {
    background-color: rgb(41, 41, 41);
}

.container {
    width: 450px;
    background: linear-gradient(135deg,#00feba,#5b548a);
    color: white;
    padding: 30px;
    margin: 50px auto 0;
    border-radius: 10px;
    text-align: center;
}

.search {
    width: 100%;
    display: flex;
    align-items: center;
    justify-content: space-between;
}

.search input{
    border: 0;
    outline: 0;
    padding: 12px 22px;
    flex: 1;
    margin-right: 20px;
    border-radius: 30px;
    font-size: 18px;
    background-color: rgb(233, 240,240);
    color: black;
}

.search button {
    border: 0;
    outline: 0;
    background-color: rgb(233, 240,240);
    width: 50px;
    height: 50px;
    border-radius: 50%;
    cursor: pointer;
}
```

```
.search button img {  
    width: 16px;  
}  
  
.weather .icon {  
    margin-top: 20px;  
    width: 170px;  
}  
  
.weather h1 {  
    font-size: 60px;  
    font-weight: 500;  
}  
  
.weather h2 {  
    font-size: 40px;  
    font-weight: 400;  
    margin-top: -10px;  
}  
  
.detail {  
    display: flex;  
    align-items: center;  
    justify-content: space-between;  
    padding: 0px 20px;  
    margin-top: 50px;  
}  
  
.col {  
    display: flex;  
    align-items: center;  
    text-align: left;  
}  
  
.col img {  
    width: 45px;  
    margin-right: 10px;  
}  
  
.humidity, .wind {  
    font-size: 27px;  
}  
  
.error {  
    text-align: left;  
    color: red;  
    margin-top: 5px;
```

```
margin-left: 5px;  
display: none;  
}
```

```
Const searchInput = document.querySelector('.search input');

Const searchBtn = document.querySelector('.search button');

Const image = document.querySelector ('.icon');

Async function getWeather(city) {

    Var res = await
fetch(`https://api.openweathermap.org/data/2.5/weather?q=${city}&appid=b58dcb88d853197b45b3a5
6038ae5821&units=metric`);

    If(res.status == 404) {

        Document.querySelector('.error').style.display = "block";

    } else {

        Document.querySelector('.error').style.display = "none";

    }

    Var data = await res.json();

    Console.log(data);

    Document.querySelector('.celcius').innerHTML = Math.round(data.main.temp) + "°c";
```

```
Document.querySelector('.city').innerHTML = data.name;

Document.querySelector('.humidityP').innerHTML = Math.round(data.main.humidity) + "%";

Document.querySelector('windS').innerHTML = Math.round(data.wind.speed) + "km/h";

If(data.weather[0].main == "Clouds") {

    Image.src = "./img/clouds.png"

} else if(data.weather[0].main == "Clear") {

    Image.src = "./img/clear.png"

} else if(data.weather[0].main == "Rain") {

    Image.src = "./img/rain.png"

} else if(data.weather[0].main == "Drizzle") {

    Image.src = "./img/drizzle.png"

} else if(data.weather[0].main == "Mist") {

    Image.src = "./img/mist.png"
}
```

}

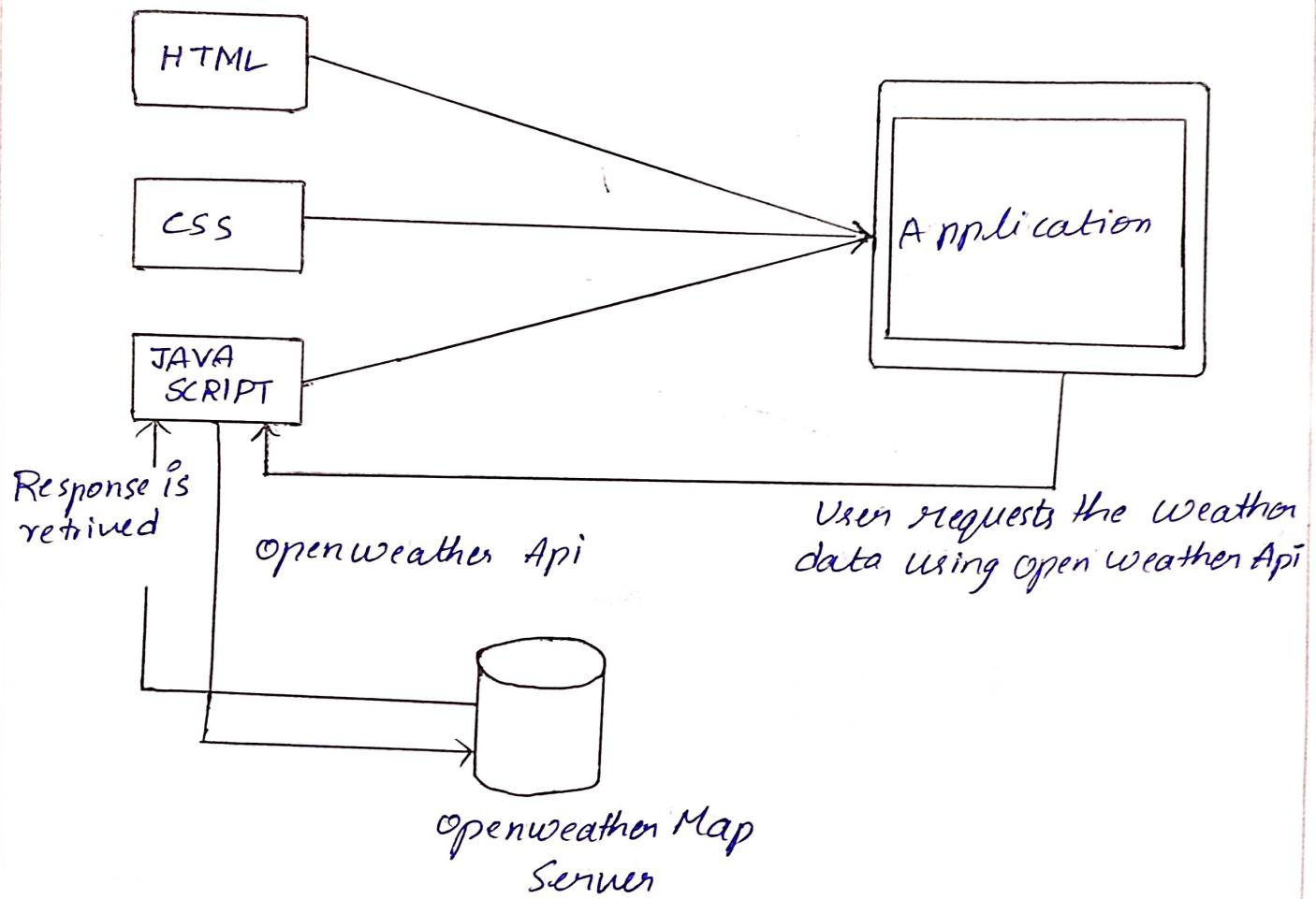
}

```
searchBtn.addEventListener('click', () => {
```

```
  getWeather(searchInput.value);
```

```
})
```

Block Diagram



Hardware Components:

[1] Smartphones, Tablets & Computers:

Weather apps primarily run on user devices, such as smartphones, tablets and computers. These devices provide the platform on which the weather app software is installed and executed.

[2] Sensors:

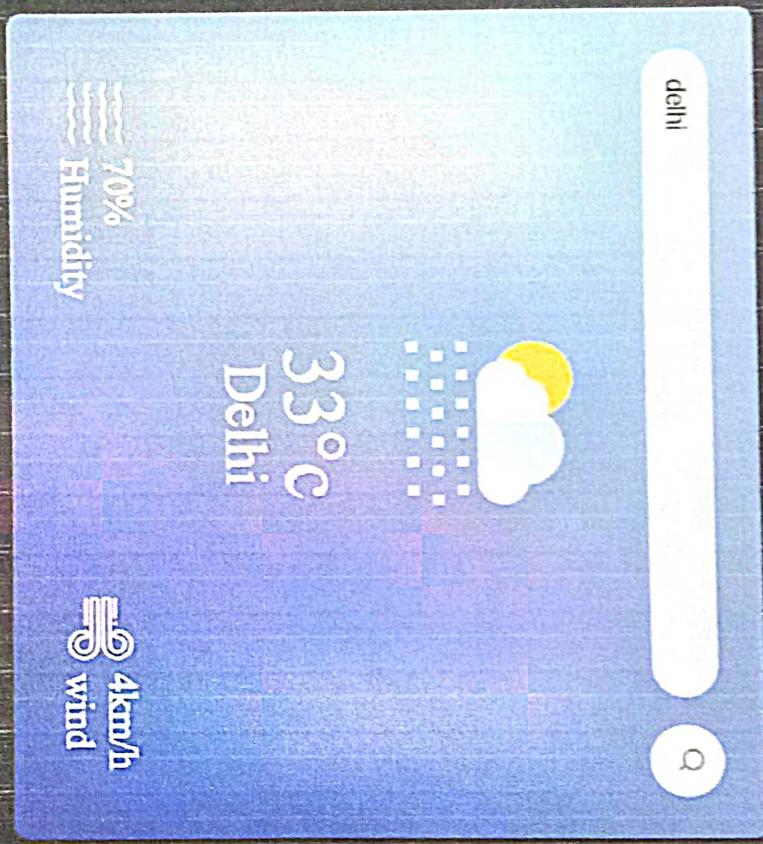
Some modern smartphones and tablets come equipped with built-in sensors that collects weather-related data. These may include GPS, barometers, thermometers, hygrometers and ambient light sensors, among others. They help gather location-specific and environmental data to provide accurate weather information.

[3] IoT Devices:

Internet of Things devices, such as smart weather stations and weather sensors, can be integrated with weather apps to provide hyper-local weather data. These devices are often installed in homes or outdoor locations, collecting data that enhances the app's accuracy for specific regions.

Software Components:

- (1) Application Code: The core of a weather app, is its application code. This code is written in programming languages like html, css, Java script depending on the platform and the framework used for app development.
- (2) APIs: Weather apps rely on APIs provided by weather data providers and weather services. These API's allow the app to access up-to-date weather information including current conditions and weather forecasts for specific locations.
- (3) Geolocation Services: Weather apps often use geolocation services to determine the user's current location. This information is then used to provide location-based weather forecasts and current weather conditions.
- (4) Push Notifications: Weather app can send push notifications to users, alerting them about severe weather conditions or important updates.



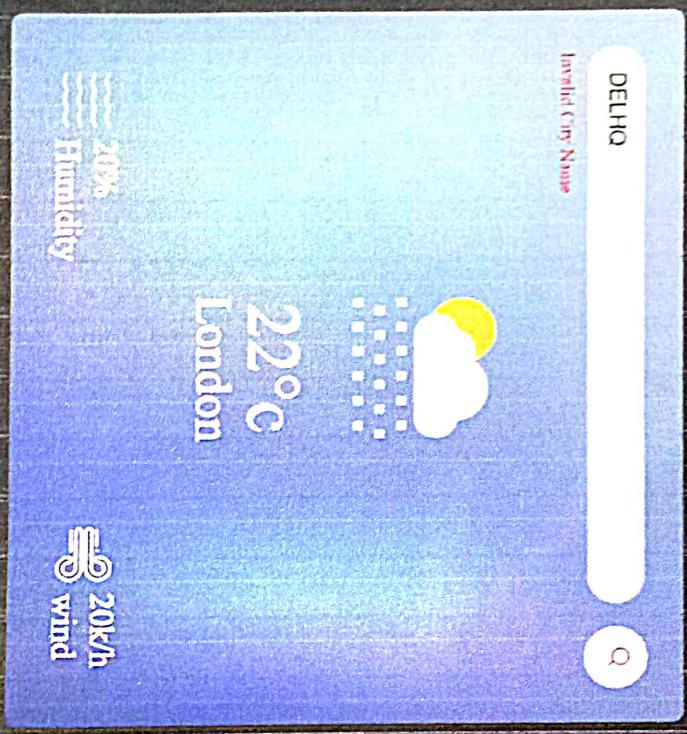
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Advantages:

The advantage app of a weather app refers to the unique features and benefits that set it apart from other weather applications. Here are some potential advantages that a weather app could offer:

- [1] Accurate forecasting: The app could utilize advanced weather predictions models, real-time data from reliable sources, and cutting-edge technology to provide highly accurate weather forecasts. This would be particularly valuable for users who need to plan outdoor activities or make travel arrangements with confidence.
- [2] Localized weather updates: The app may offer hyper-local weather updates, allowing users to get weather information specific to their exact location. This level of details can be crucial for people living in large cities with varying microclimates or those in remote areas.
- [3] User-friendly interface: A well-designed and intuitive interface can enhance the user experience. The app might present weather information in a clear and easily understandable format.

Disadvantages:

Weather app also come with some disadvantages. Here are some potential drawbacks of using weather app:

- [1] Inaccuracy: While many weather apps strive to be accurate, weather prediction is inherently challenging and there can still be errors in forecasts. Users may rely heavily on the app's information and make plans based on it, only to encounter unexpected weather conditions.
- [2] Data Source Reliability: Weather apps depend on data from various sources, including meteorological agencies and weather stations. The reliability and accuracy of the app can be affected if the data source experiences technical issues or inconsistencies.
- [3] Battery drain: Weather apps often require location services and frequent data updates, which can consume significant battery power.

Applications:

A weather app is a versatile tool that can be applied in various situations and settings. Its primary purpose is to provide users with up-to-date weather information for a specific location or multiple locations. Here are some common applications of weather apps:

- (1) Daily forecast: The most common use of weather apps is to check the daily weather forecast for your current locations or any other place you plan to visit. This helps you prepare for the day ahead, whether you need to dress appropriately, carry an umbrella, or plan outdoor activities.
- (2) Travel planning: Weather apps are handy when planning a trip or vacation. They allow you to check the weather conditions of your destinations in advance, helping you pack the right clothing and make any necessary adjustments to your itinerary.
- (3) Outdoor Activities: Whether you're going for a hike, a picnic, or a day at the beach, a weather app can help you decide on the best time to go based on the weather condition. It can also provide information about sunrise and sunset times, which is crucial for outdoor photography enthusiasts.

Conclusion :

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.

(1) Safety and preparedness: Weather apps offer severe weather alerts, notifying users of potential hazards like storms, hurricanes, extreme temperatures. These alerts help users take necessary precautions and stay safe during adverse weather conditions.

(2) Environmental Awareness: Some weather apps incorporate environmental data, such as air quality and UV index, promoting awareness of environmental factors that can affect health and well-being.

Future scope of weather app:

The weather app landscape was already well-established, with numerous weather apps available on various platforms, such as smart phones, tablets, and computers. However, technology and user needs evolve rapidly. Some potential future scope and enhancements for weather apps:

(1) Hyperlocal and Real-Time Data: Future weather apps could provide even more granular, hyperlocal weather information with real-time updates. This could be achieved through the use of more advanced weather sensors, IoT devices and crowd-sourced data from user's smartphones.

(2) Personalization and AI-Driven Insights: Weather apps could become more personalized by learning from users' preferences and behaviour patterns. Advanced AI algorithms could analyze user's historical data to provide personalized weather forecasts and relevant insights - such as weather-related health advisors.