

PROJECT ON WEATHER APPLICATION

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WEATHER APP

- Knowing what the day will bring is one good way to making a perfect plan for each day. sometimes this is usually a difficult one for all us because no body really knows for certain what is likely to happen in the nearest minutes. Even in the area of weather , this is paramount.
- In order to minimize the rise of distorted daily plans and arrangement , owing to change in weather ,
There is need to take close looks daily weather condition . Which means determining what the weather
○ Is likely to bring for the day.
- This goes to help us realise bthe need and importance of weather forecast and its instruments , including a weather app.

➤ Why we need weather app

- To plan journeys ahead.
- To plan meeting / commute timings.
- To decide what to wear.
- To know when rain comes or stops
- To receive alerts / warnings during cyclones, sandstorms, typhoons etc.
- A person travelling in a bus/ train/ flight may need to check the weather in their destination city.
- Some travellers may need to know more details about the weather such as visibility, chances of rainfall, humidity etc.

➤ When we input a name of a city , we can easily see

- Current temperature
- Humidity
- Pressure
- Description

➤ Benefits of weather app

- The weather app enables to your make better preparation for the day in relation to giving accurate daily weather forecasts.
- The app provides you with details of the weather elements - pressure , winds , precipitation , browse interactive maps , satellite , radar , heat , snow , all , when you download and install the weather app in your smartphone.

- Simply know what the weather brings just from the comfort of you handy smart mobile device , pcs and tablets.
- The application also comes with animated sunrise , sunset , wind and pressure modules .
- Track details of you favorite cities ana regions , and even more all with the weather application!

➤ WEATHER FORECASTING

- **Weather forecasting** is the application of science and technology to predict the conditions of the atmosphere for a given location and time.
- People 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, land, and ocean and using meteorology to project how the atmosphere will change at a given place.

➤ HISTORY

- Ancient forecasting
- Modern Methods
- Numerical Prediction
- Broadcasts
- Numerical Weather Prediction

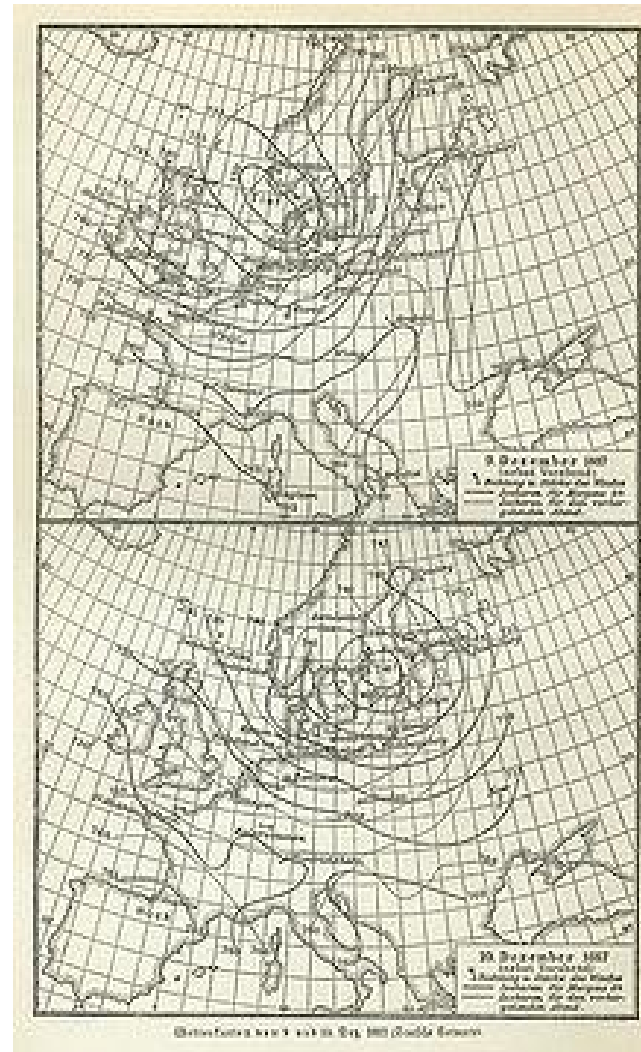
➤ Ancient Forecasting

- Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition.
- For example, it was observed that if the sunset was particularly red, the following day often brought fair weather.
- This experience accumulated over the generations to produce weather lore. However, not all of these predictions prove reliable, and many of them have since been found not to stand up to rigorous statistical testing.
- In 904 AD, translated into Arabic from an earlier Aramaic work, discussed the weather forecasting of atmospheric changes and signs from the planetary astral alterations; signs of rain based on observation of the lunar phases; and weather forecasts based on the movement of winds

➤ Modern Method

- It was not until the invention of the electric telegraph in 1835 that the modern age of weather forecasting began. Before that, the fastest that distant weather reports could travel was around 160 kilometres per day (100 mi/d), but was more typically 60–120 kilometres per day (40–75 mi/day) (whether by land or by sea).
- By the late 1840s, the telegraph allowed reports of weather conditions from a wide area to be received almost instantaneously, allowing forecasts to be made from knowledge of weather conditions further upwind.
- The two men credited with the birth of forecasting as a science were an officer of the Royal Navy Francis Beaufort and his protégé Robert FitzRoy.
- Both were influential men in British naval and governmental circles, and though ridiculed in the press at the time, their work gained scientific credence, was accepted by the Royal Navy, and formed the basis for all of today's weather forecasting knowledge.
- Beaufort developed the Wind Force Scale and Weather Notation coding, which he was to use in his journals for the remainder of his life. He also promoted the development of reliable tide tables around British shores, and with his friend William Whewell, expanded weather record-keeping at 200 British coast guard stations.

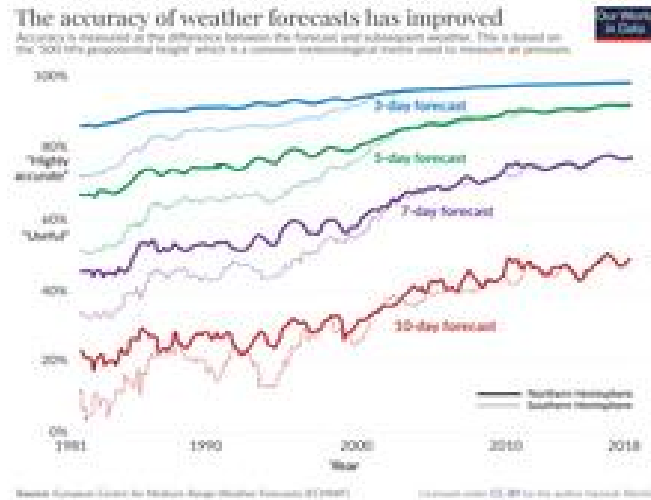
➤ Weather Mapping



➤ Numerical Prediction

- It was not until the 20th century that advances in the understanding of atmospheric physics led to the foundation of modern numerical weather prediction.
- In 1922, English scientist Lewis Fry Richardson published "Weather Prediction By Numerical Process", after finding notes and derivations he worked on as an ambulance driver in World War.
- He described therein how small terms in the prognostic fluid dynamics equations governing atmospheric flow could be neglected, and a finite differencing scheme in time and space could be devised, to allow numerical prediction solutions to be found.

➤ Difference between the Forecast and the Actual Weather

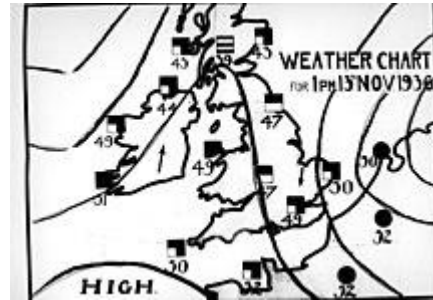


_The difference between the forecast and the actual weather outcome for forecasts.

➤ Broadcasts

- The first ever daily weather forecasts were published in the first weather maps were produced later in the same year, the Met Office began issuing the first marine weather forecasts via radio transmission.
- These included gale and storm warnings for areas around Great Britain. In the United States, the first public radio forecasts were made in 1925 by Edward B. "E.B." Rideout, on the Edison Electric Illuminating station in Boston. Rideout came from the weather forecaster G. Harold Noyes in 1931.
- The world's first televised weather forecasts, including the use of weather maps, were experimentally broadcast by the BBC .
- This was brought into practice in 1949, after World War gave the first weather forecast while being televised in front of the map in 1954. In America, experimental television forecasts .
- The first weatherman for the American pioneered the use of on-screen weather satellite data and computer graphics for television forecasts. In 1982, Coleman partnered with Landmark Communications CEO Frank Batten to launch The Weather Channel cable network devoted to national and local weather

➤ Weather Chart



BCC television weather chart

➤ Numerical Weather

- The basic idea of numerical weather prediction is to sample the state of the fluid at a given time and use the equations of fluid dynamics and thermodynamics to estimate the state of the fluid at some time in the future.
- The main inputs from country-based weather services are surface observations from automated weather stations at ground level over land and from weather buoys at sea.
- The World Meteorological Organization acts to standardize the instrumentation, observing practices and timing of these observations worldwide. Stations either report hourly in METAR reports, or every six hours in SYNOP reports. Sites launch radiosondes, which rise through the depth of the troposphere and well into the stratosphere.
- Data from weather satellites are used in areas where traditional data sources are not available. Compared with similar data from radiosondes, the satellite data has the advantage of global coverage, but at a lower accuracy and resolution.
- Meteorological radar provide information on precipitation location and intensity, which can be used to estimate precipitation accumulations over time. Additionally, if a pulse Doppler weather radar is used then wind speed and direction can be determined.
- These methods, however, leave an in-situ observational gap in the lower atmosphere . Research has been growing significantly , and weather-drone data may in future be added to numerical weather models.

➤ Here are the codes for weather application

1. HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <link rel="preconnect" href="https://fonts.googleapis.com">
  <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
  <link href="https://fonts.googleapis.com/css2?family=Open+Sans&display=swap" rel="stylesheet">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <link rel="stylesheet" href="style.css">
  <script src="script.js" defer></script>
  <title>Weather</title>
</head>
<body>
  <div class="card">
    <div class="search">
      <input type="text" class="searchbar" placeholder="Search">
      <button><svg stroke="currentColor" fill="currentColor" stroke-width="0" viewBox="0 0 1024 1024"
height="1.5em" width="1.5em" xmlns="http://www.w3.org/2000/svg"><path d="M909.6 854.5L649.9
```



```
<button><svg stroke="currentColor" fill="currentColor" stroke-width="0" viewBox="0 0 1024 1024"
height="1.5em" width="1.5em" xmlns="http://www.w3.org/2000/svg"><path d="M909.6 854.5L649.9
594.8C690.2 542.7 712 479 712 412c0-80.2-31.3-155.4-87.9-212.1-56.6-56.7-132-87.9-212.1-87.9s-155.5
31.3-212.1 87.9C143.2 256.5 112 331.8 112 412c0 80.1 31.3 155.5 87.9 212.1C256.5 680.8 331.8 712 412
712c67 0 130.6-21.8 182.7-62l259.7 259.6a8.2 8.2 0 0 0 11.6 0l43.6-43.5a8.2 8.2 0 0 0 0-11.6zM570.4
570.4C528 612.7 471.8 636 412 636s-116-23.3-158.4-65.6C211.3 528 188 471.8 188 412s23.3-116.1 65.6-
158.4C296 211.3 352.2 188 412 188s116.1 23.2 158.4 65.6S636 352.2 636 412s-23.3 116.1-65.6
158.4z"></path></svg></button>
</div>
<div class="weather loading">
  <h2 class="city">Weather in Durgapur</h2>
  <h1 class="temp">45°C</h1>
  <div class="flex">
    </img>
    <div class="description">Cloudy</div>
  </div>
  <div class="humidity">Humidity: 60%</div>
  <div class="wind">Wind speed: 6.2 km/h</div>
</div>
</div>
</body>
</html>
```

2. CSS

```
body {  
  display: flex;  
  justify-content: center;  
  align-items: center;  
  height: 100vh;  
  margin: 0;  
  background: #222;  
  font-family: 'Open Sans', sans-serif;  
  background-image:  
url('https://source.unsplash.com/1600x900/?landscape');  
  background-size: cover;  
  background-position: center center;  
  background-repeat: no-repeat;  
  font-size: 120%;  
}
```

```
.card {
  background: #000000d0;
  color: whitesmoke;
  padding: 2em;
  border-radius: 30px;
  width: 100%;
  max-width: 420px;
  margin: 1em;
}

.search {
  display: flex;
  align-items: center;
  justify-content: center;
}

button {
  margin: 1.7em;
  border-radius: 50%;
  border: none;
  height: 45px;
  width: 45px;
  outline: none;
```

```
outline: none;
padding: 0.4em 1em;
border-radius: 24px;
background: #7c7c7c2b;
color: whitesmoke;
font-family: inherit;
font-size: 105%;
width: calc(100% - 100px);
}
```

```
button:hover {
background: white;
color: black;
}
```

```
h1.temp {
margin: 0;
margin-bottom: 0.4em;
}
```

```
.flex {
display: flex;
align-items: center;
```

```
}

.description {
  text-transform: capitalize;
  margin-left: 8px;
}

.weather.loading {
  visibility: hidden;
  max-height: 20px;
  position: relative;
}

.weather.loading:after{
  visibility: visible;
  content: "Loading....";
  color: white;
  position: absolute;
  top: 0;
  left: 20px;
}

.card:hover {
  border: 1px solid #ccc;
  padding: 5px;
  margin: 5px;
  background-color: #f9f9f9;
}
```

```
    box-shadow: 5px 5px 5px #00000056;  
}  
  
.searchbar:hover {  
    transform: scale(1.07);  
}
```

3. JAVA SCRIPT

```
let weather = {  
  "apikey": 'd346efdd1071132b93844cc2dd94625f',  
  fetchWeather: function(city) {  
    fetch("https://api.openweathermap.org/data/2.5/weather?q=" +  
      city +  
      "&units=metric&appid=" +  
      this.apikey)  
      .then((Response) => Response.json())  
      .then((data) => this.displayWeather(data));  
  },
```

```
  displayWeather: function(data) {  
    const { name } = data;  
    const { icon, description } = data.weather[0];  
    const { temp, humidity } = data.main;  
    const { speed } = data.wind;  
    document.querySelector(".city").innerText = "Weather in " + name;  
    document.querySelector(".icon").src = "https://openweathermap.org/img/wn/" + icon + ".png";  
    document.querySelector(".description").innerText = description;  
    document.querySelector(".temp").innerText = temp + "°C";  
    document.querySelector(".humidity").innerText = "Humidity: " + humidity + "%";  
  }  
}
```

```
document.querySelector(".wind").innerText = "Wind speed: " + speed + " km/h";
    document.querySelector(".weather").classList.remove("loading");
    document.body.style.backgroundImage = "url('https://source.unsplash.com/1600x900/?" + name + "')";
},

search: function() {
    this.fetchWeather(document.querySelector(".searchbar").value);
}
};

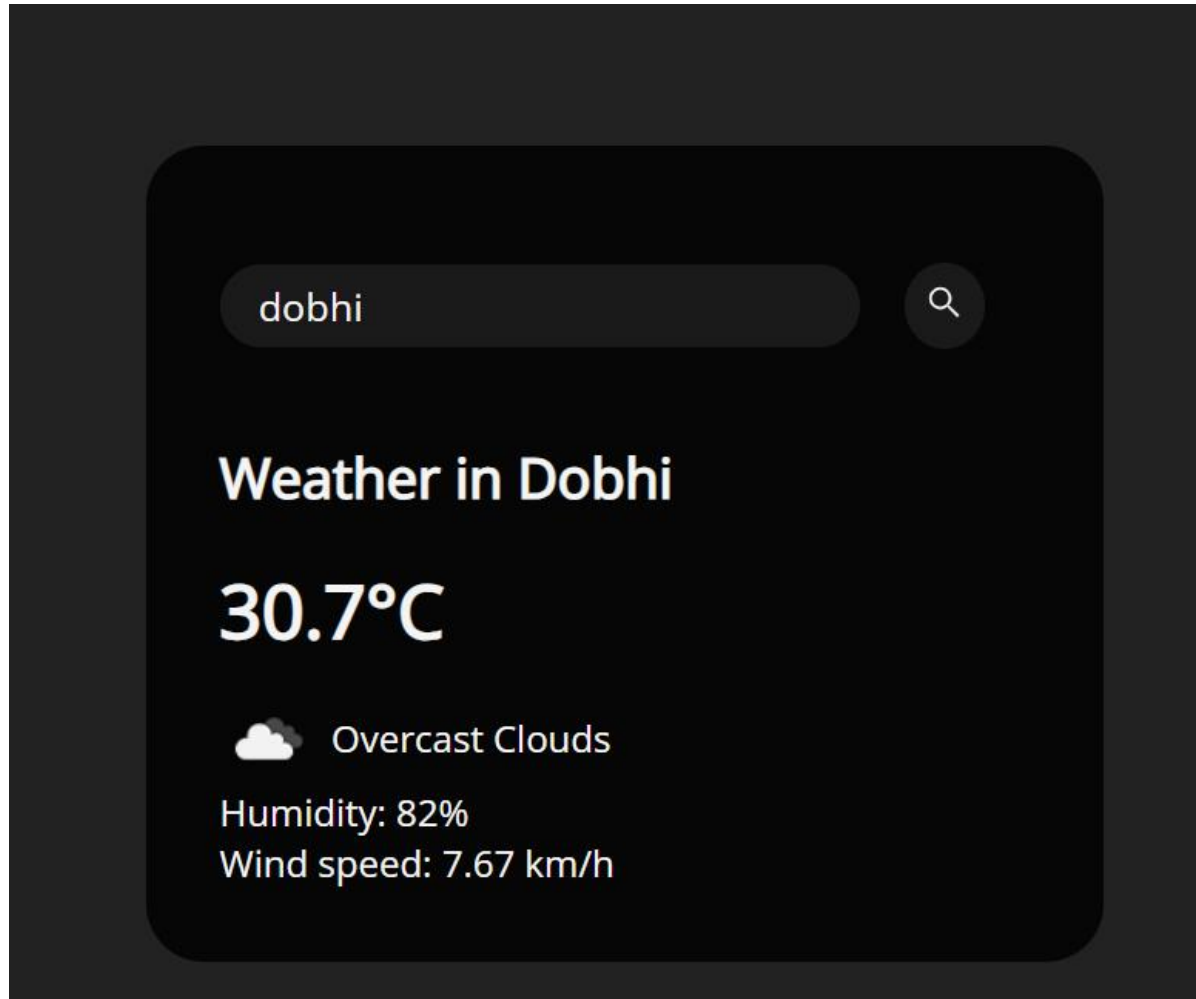
document.querySelector(".search button").addEventListener("click", function() {
    weather.search();
});

document.querySelector(".searchbar").addEventListener("keyup", function(event) {
    if (event.key == "Enter") {
        weather.search();
    }
});

weather.fetchWeather("gaya");
```


❖ SOME EXAMPLE OF WEATHER

❑ Weather in dobhi



❖ WEATHER IN BODHGAYA

bodhgaya



Weather in Bodh Gaya

30.94°C



Broken Clouds

Humidity: 70%

Wind speed: 6.17 km/h

❖ WEATHER IN GAYA



Weather in Gaya

29.95°C

 Scattered Clouds

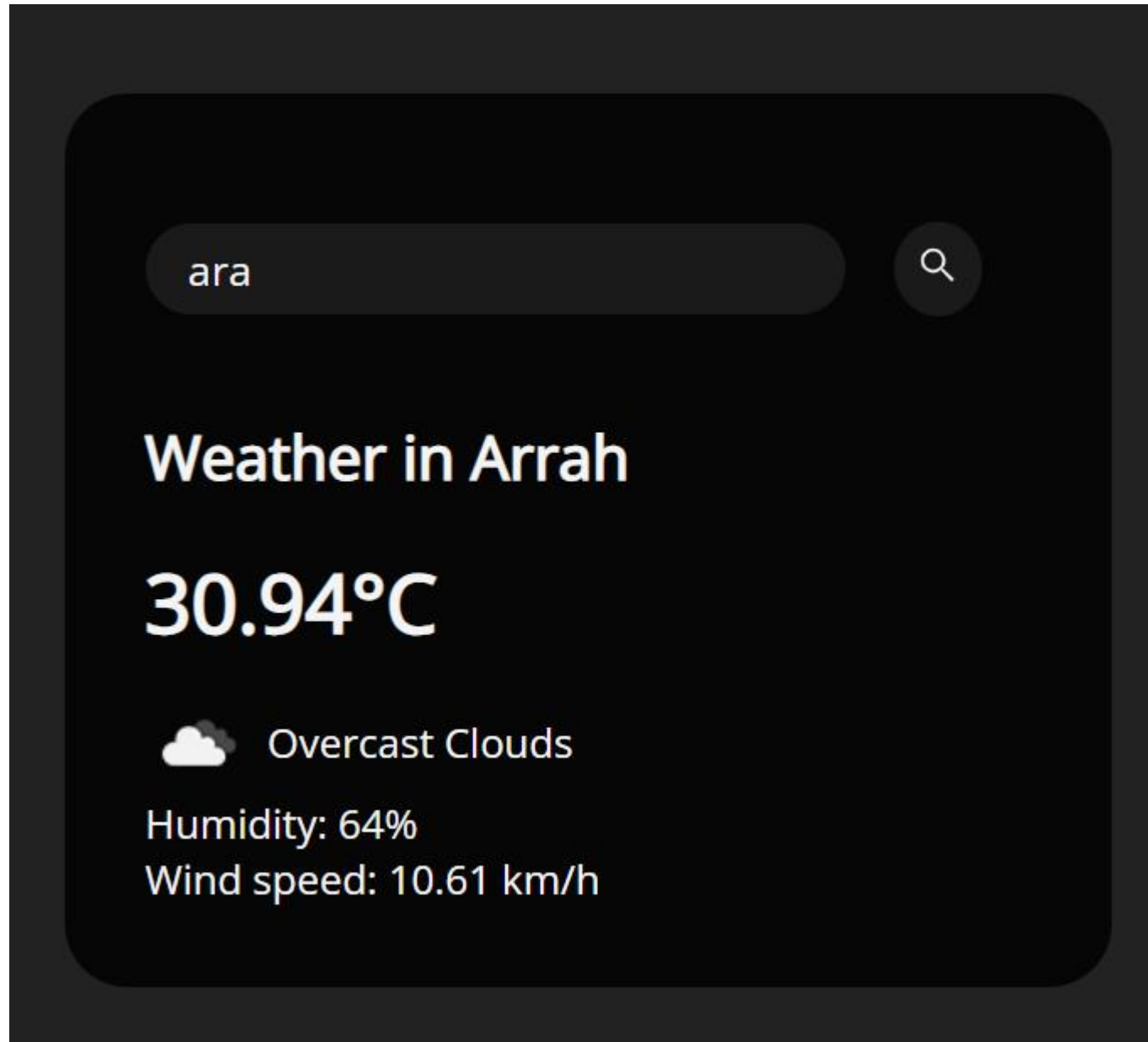
Humidity: 79%

Wind speed: 2.57 km/h

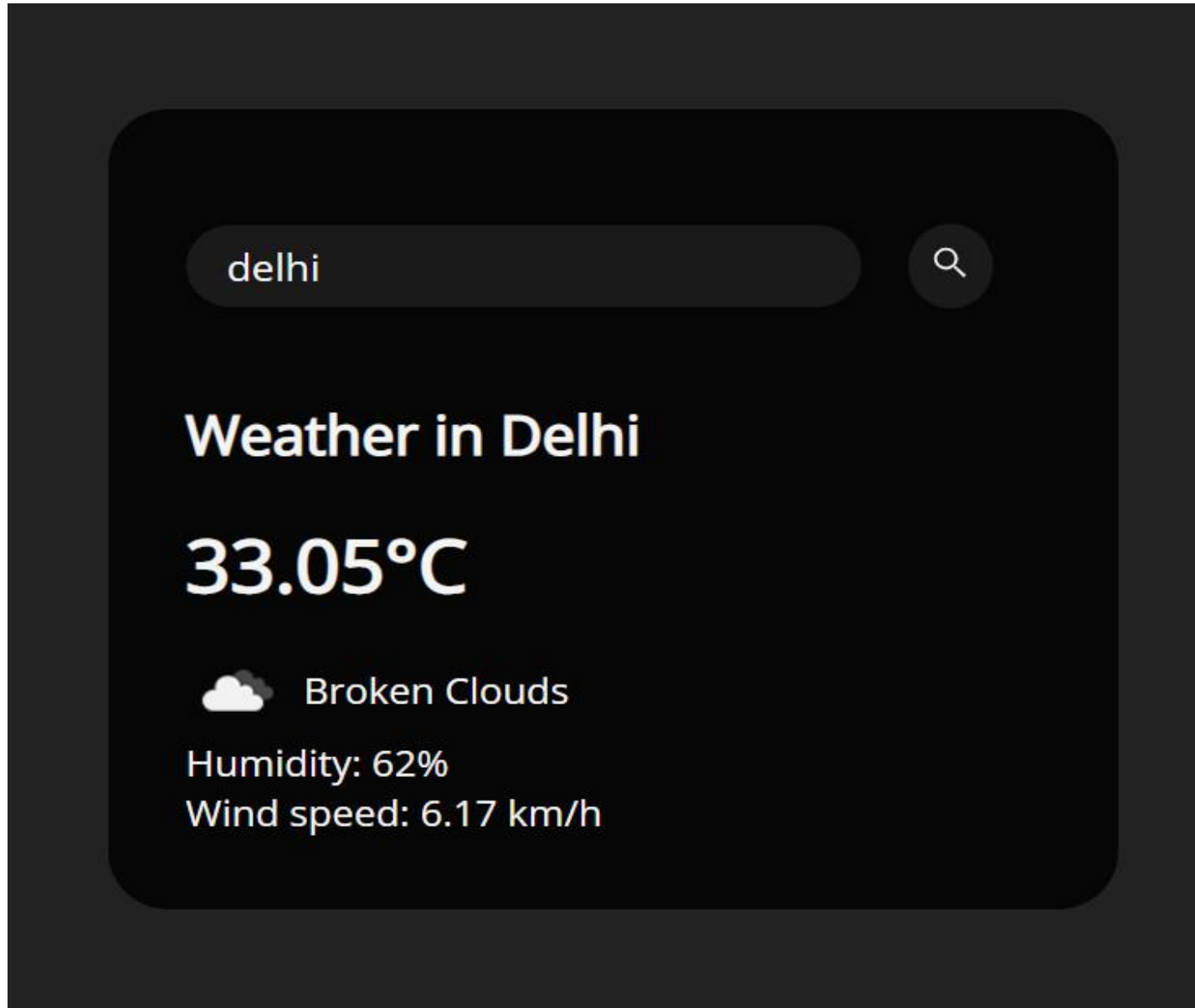
❖ WEATHER IN PATNA



❖ WEATHER IN ARA




❖ WEATHER IN DELHI

A dark-themed weather application interface. At the top, a search bar contains the text 'delhi' and a magnifying glass icon. Below the search bar, the title 'Weather in Delhi' is displayed. The temperature '33.05°C' is shown in a large font. Underneath, a cloud icon is followed by the text 'Broken Clouds'. At the bottom, two lines of text provide additional data: 'Humidity: 62%' and 'Wind speed: 6.17 km/h'.

delhi

Weather in Delhi


33.05°C

 Broken Clouds

Humidity: 62%


Wind speed: 6.17 km/h

❖ WEATHER IN DARBHANGA



Weather in Darbhanga

27.47°C

 Light Rain

Humidity: 85%

Wind speed: 9.16 km/h

sasaram



Weather in Sasaram

26.62°C



Overcast Clouds

Humidity: 88%

Wind speed: 9.81 km/h

