### WEATHER FORECASTING SITE

#### A PROJECT REPORT

##### *Submitted by*

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***in partial fulfillment for the award of the degree of***

#### BACHELOR OF ENGINEERING

**IN**

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# Acknowledgement

It gives us a great sense of pleasure to present the synopsis of the B.Tech mini project undertaken during B.Tech III Year. This project is going to be an acknowledgement to the inspiration, drive and technical assistance will be contributed to it by many individuals. We owe special debt of gratitude to Mr. Bhanu Kapoor, Technical Trainer , for providing us with an encouraging platform to develop this project, which thus helped us in shaping our abilities towards a constructive goal and for his constant support and guidance to our work.

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#### DECLARATION

I would like to express my special thanks of gratitude to my project guide **Mr. Bhanu Kapoor sir** who gave us the golden opportunity to do this wonderful project on the topic  **Weather Forecasting Site** , which also helped us in doing a lot of research and we came to know about so many new things we are really thankful to them.

Secondly, we would also like to thank my parents and friends who helped us a lot in finalizing this project within the limited time frame.

Candidate’s Names:

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#### BONAFIDE CERTIFICATE

Certified that this project report **“Weather Forecasting Site”** is the bonafide work of “**Vishal Srivastava, Shresth Agarwal & Piyush Kumar ”** who carried out the project work under my/our supervision.

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| **SIGNATURE**  **HEAD OF THE DEPARTMENT** | **SIGNATURE**  **SUPERVISOR** |

Submitted for the project viva-voce examination held on

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**INTRODUCTION**

Weather simply refers to the condition of air on the earth at a given place and time. It is a continuous, data-intensive, multidimensional, dynamic and chaotic process. These properties make weather forecasting is a formidable challenge. Forecasting is the process of estimation in unknown situations from the historical data. Weather forecasting is one of the most scientifically and technologically challenging problems around the world in the last century. To make an accurate prediction is indeed, one of the major challenges that meteorologists are facing all over the world. Since ancient times, weather prediction has been one of the most interesting and fascinating domains. Scientists have tried to forecast meteorological characteristics using a number of methods, some of these methods being more accurate than others.

**OVERVIEW**

Having an up to date information about the weather helps us to take well-read decisions. These weather apps constantly update the forecasts for a day or hour or sometimes for even a minute. These can be simply termed as the compact weather devices, as they do not only tell about the temperature of that specific region instead they can describe the accurate time of the sunrise and sunset, the time of the rainfall, humidity levels, etc. In general, the Indian Meteorological Department (IMD) use a conventional approach to weather forecasting that includes observing the previous data on weather conditions and their pattern of behaviour and acquiring the data from weather satellites. We use weather forecast API to fetch the weather data and develop the **weather app Using HTML, CSS & Javascript.**

**OBJECTIVE**

Weather Report project application is a web based application through which you will able to get all the reports related to weather forecasting of any locations. Its geographical locator which will be received through your browser setting and server configuration will automatically identify the location and able to present its weather details such as temperature, direction of wind, rains, humidity etc. To change the location you will just have to select the options provided below to get its details. Its new avatars and feed burner will also allow its users to get the weather reports directly to their mail, when they were not able to access this particular domain or even when the server is down.

Its weather watch gadgets in animated form will able to notify about weather for particular date and time also. It will also able to focus on critical weather condition for a particular gadgets through this gadgets.

**TECHNOLOGY USED**

**HTML:**

HTML is an acronym which stands for **HyperText Markup Language** which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.

**Hyper Text:** HyperText simply means "Text within Text." A text has a link within it, is a hypertext. Whenever you click on a link which brings you to a new webpage, you have clicked on a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.

**Markup language:** A markup language is a computer language that is used to apply layout and formatting conventions to a text document. Markup language makes text more interactive and dynamic. It can turn text into images, tables, links, etc.

**Web Page:** A web page is a document which is commonly written in HTML and translated by a web browser. A web page can be identified by entering an URL. A Web page can be of the static or dynamic type. **With the help of HTML only, we can create static web pages**.

**CSS:**

CSS stands for Cascading Style Sheets. It is a style sheet language which is used to describe the look and formatting of a document written in markup language. It provides an additional feature to HTML. It is generally used with HTML to change the style of web pages and user interfaces. It can also be used with any kind of XML documents including plain XML, SVG and XUL.

CSS is used along with HTML and JavaScript in most websites to create user interfaces for web applications and user interfaces for many mobile applications.

**Javascript:**

JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages. It is an interpreted programming language with object-oriented capabilities.

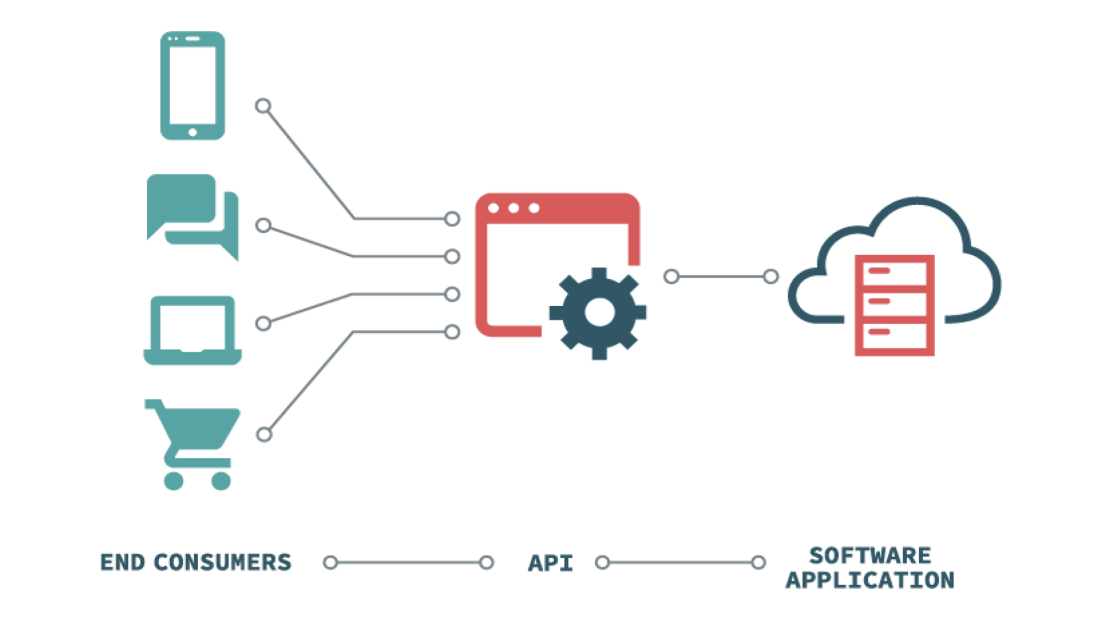
JavaScript was first known as LiveScript, but Netscape changed its name to JavaScript, possibly because of the excitement being generated by Java. JavaScript made its first appearance in Netscape 2.0 in 1995 with the name LiveScript. The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers.

**Advantages of Javascript:**

* Less server interaction
* Immediate feedback to the visitors
* Increased interactivity
* Richer interfaces

**API:**

* APIs, application programming interfaces, are used to allow software applications to communicate. This unique interface dictates requests and responses to and from different systems to allow for the exchange of data. Each letter in the acronym API has an important meaning.
* **Interface:** Let’s start with the “I” because that will help to better contextualize the term in question. An interface, in short, is how individuals interact with a computer. As an interface, an API is a way to interact with the underlying program or software for which the API was created. We work in interfaces everyday. In fact, you are currently viewing this article through an interface – a graphical user interface (GUI or UI). Developers spend much of their time coding in a different interface – a command line interface (CLI). When you talk to Siri you are leveraging yet another interface – a natural language interface (NLI). We could go on here, but I think you get the point.
* An API is a unique interface in which to interact with software.
* **Application:** APIs are specific to an application, service, or function. The application is what an end user (whether that be a person or another application) is trying to communicate with by way of an interface. The same way you are interacting with this UI to reach Aloi or how you would be interacting with the bank when using an ATM.



**JSON:**

* JSON stands for JavaScript Object Notation.
* JSON is an open standard data-interchange format.
* JSON is lightweight and self-describing.
* JSON originated from JavaScript.
* JSON is easy to read and write.
* JSON is language independent.
* JSON supports data structures such as arrays and objects.

**Features of JSON:**

* Simplicity
* Openness
* Self-Describing
* Internationalization
* Extensibility
* Interoperability

**Why do we use JSON?**

* Less Verbose
* Faster
* Readable
* Structured Data

**SYSTEM REQUIREMENTS**

**Software Requirement-**

**To build application –**

* 64-bit Windows 8/10/11
* Libraries
* Visual Studio code (latest version).

**To Run Website–**

* Web Browsers (chrome,Mozilla)

**Hardware Requirement –**

* x86\_64 CPU architecture; 2nd generation Intel Core or newer
* 8 GB RAM or more
* 8 GB of available disk space minimum

**IMPLEMENTATION**

**HTML Code:**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta http-equiv="X-UA-Compatible" content="IE=edge" />

<meta name="viewport" content="width=device-width, initial-scale=1.0" />

<title>Weather App</title>

<link rel="stylesheet" href="./style.css" />

<!-- <script type="text/javascript" src="./cities.js"></script> -->

<script src="./script.js" defer></script>

</head>

<body>

<div class="card">

<div class="search">

<input type="text" class="search-bar" placeholder="search" />

<button>

<?xml version="1.0" ?><svg

height="1.2em"

version="1.1"

viewBox="0 0 32 32"

width="1.2em"

xmlns="http://www.w3.org/2000/svg"

xmlns:sketch="http://www.bohemiancoding.com/sketch/ns"

xmlns:xlink="http://www.w3.org/1999/xlink"

>

<title />

<desc />

<defs />

<g

fill="none"

fill-rule="evenodd"

id="Page-1"

stroke="none"

stroke-width="1"

>

<g fill="#929292" id="icon-111-search">

<path

d="M19.4271164,20.4271164 C18.0372495,21.4174803 16.3366522,22 14.5,22 C9.80557939,22 6,18.1944206 6,13.5 C6,8.80557939 9.80557939,5 14.5,5 C19.1944206,5 23,8.80557939 23,13.5 C23,15.8472103 22.0486052,17.9722103 20.5104077,19.5104077 L26.5077736,25.5077736 C26.782828,25.782828 26.7761424,26.2238576 26.5,26.5 C26.2219324,26.7780676 25.7796227,26.7796227 25.5077736,26.5077736 L19.4271164,20.4271164 L19.4271164,20.4271164 Z M14.5,21 C18.6421358,21 22,17.6421358 22,13.5 C22,9.35786417 18.6421358,6 14.5,6 C10.3578642,6 7,9.35786417 7,13.5 C7,17.6421358 10.3578642,21 14.5,21 L14.5,21 Z"

id="search"

/>

</g>

</g>

</svg>

</button>

</div>

<p id="suggest1" class="suggestions"></p>

<p id="suggest2" class="suggestions"></p>

<p id="suggest3" class="suggestions"></p>

<div class="weather">

<h2 class="city">Weather in your city ?</h2>

<h1 class="temp"></h1>

<div class="flex">

<img

src="https://openweathermap.org/img/wn/04n.png"

alt=""

class="icon"

/>

<div class="description">Feels ?</div>

</div>

<div class="humidity">humidity: \_\_\_</div>

<div class="wind">Wind Speed: \_\_\_</div>

</div>

</div>

<div class="places card">

<h3>Suggestion of Places you can go on vacation:</h3>

<p id="place"></p>

<a id="link" href=""></a>

</div>

</body>

</html>

**CSS Code:**

body {

display: flex;

justify-content: center;

align-items: center;

height: 100vh;

margin: 0;

font-family: "Open snas", sans-serif;

background: #222;

background-image: url("https://images.unsplash.com/photo-1512511708753-3150cd2ec8ee?ixlib=rb-4.0.3&ixid=MnwxMjA3fDB8MHxzZWFyY2h8MTR8fHJhaW58ZW58MHx8MHx8&auto=format&fit=crop&w=600&q=60");

}

#link {

color: rgb(65, 65, 160);

}

.card {

background: #000000d0;

color: white;

padding: 2em;

border-radius: 30px;

width: 100%;

max-width: 420px;

margin: 1em;

}

.search {

display: flex;

align-items: center;

justify-content: center;

}

button {

margin: 0.5px;

margin-left: 5px;

border-radius: 50%;

border: none;

height: 46px;

width: 46px;

outline: none;

background: #7c7c7c2b;

color: white;

cursor: pointer;

transition: 0.2s ease-in-out;

}

input.search-bar {

border: none;

outline: none;

padding: 0.4em 1em;

border-radius: 24px;

background: #7c7c7c2b;

color: white;

font-family: inherit;

font-size: 105%;

width: calc(100%-100px);

}

button:hover {

background: #7c7c7c6b;

}

h1.temp {

margin: 0;

margin-bottom: 0.4em;

}

.flex {

display: flex;

align-items: center;

}

.description {

text-transform: capitalize;

margin-left: 8px;

}

.suggestions {

background-color: rgb(66, 64, 64);

display: flex;

align-items: center;

justify-content: left;

margin-left: 80px;

margin-right: 120px;

}

**Javascript Code:**

let weather = {

apiKey: "ea8777f7cd299604a7082b4974bd8d7d",

fetchWeather: function (city) {

fetch(

"https://api.openweathermap.org/data/2.5/weather?q=" +

city +

// +"&units=metric&appid="

"&appid=" +

this.apiKey

)

.then((response) => response.json())

.then((data) => this.displayWeather(data));

},

displayWeather: function (data) {

const { name } = data; //const name=data.name;

const { icon, description } = data.weather[0];

const { temp, humidity } = data.main;

const { speed } = data.wind;

// console.log(name, icon, description, temp, humidity, speed);

document.querySelector(".city").innerText = "Weather in " + name;

document.querySelector(".icon").src =

"https://openweathermap.org/img/wn/" + icon + "@2x.png";

document.querySelector(".description").innerText = description;

document.querySelector(".temp").innerText = temp - 273 + "°C";

document.querySelector(".humidity").innerText =

"Humidity:" + humidity + "%";

document.querySelector(".wind").innerText = "wind speed:" + speed + "km/h";

},

search: function () {

this.fetchWeather(document.querySelector(".search-bar").value);

},

};

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

weather.search();

});

document

.querySelector(".search-bar")

.addEventListener("keyup", function (event) {

if (event.key == "Enter") {

weather.search();

}

});

//https://api.openweathermap.org/data/2.5/weather?q=denver&appid=ea8777f7cd299604a7082b4974bd8d7d

**JSON Document:**

{

"coord": { "lon": -104.9847, "lat": 39.7392 },

"weather": [

{ "id": 500, "main": "Rain", "description": "light rain", "icon": "10d" }

],

"base": "stations",

"main": {

"temp": 275.05,

"feels\_like": 272.21,

"temp\_min": 273.89,

"temp\_max": 276.54,

"pressure": 1013,

"humidity": 89

},

"visibility": 64,

"wind": { "speed": 2.68, "deg": 333, "gust": 6.26 },

"rain": { "1h": 0.87 },

"clouds": { "all": 100 },

"dt": 1666880992,

"sys": {

"type": 2,

"id": 2004334,

"country": "US",

"sunrise": 1666876976,

"sunset": 1666915465

},

"timezone": -21600,

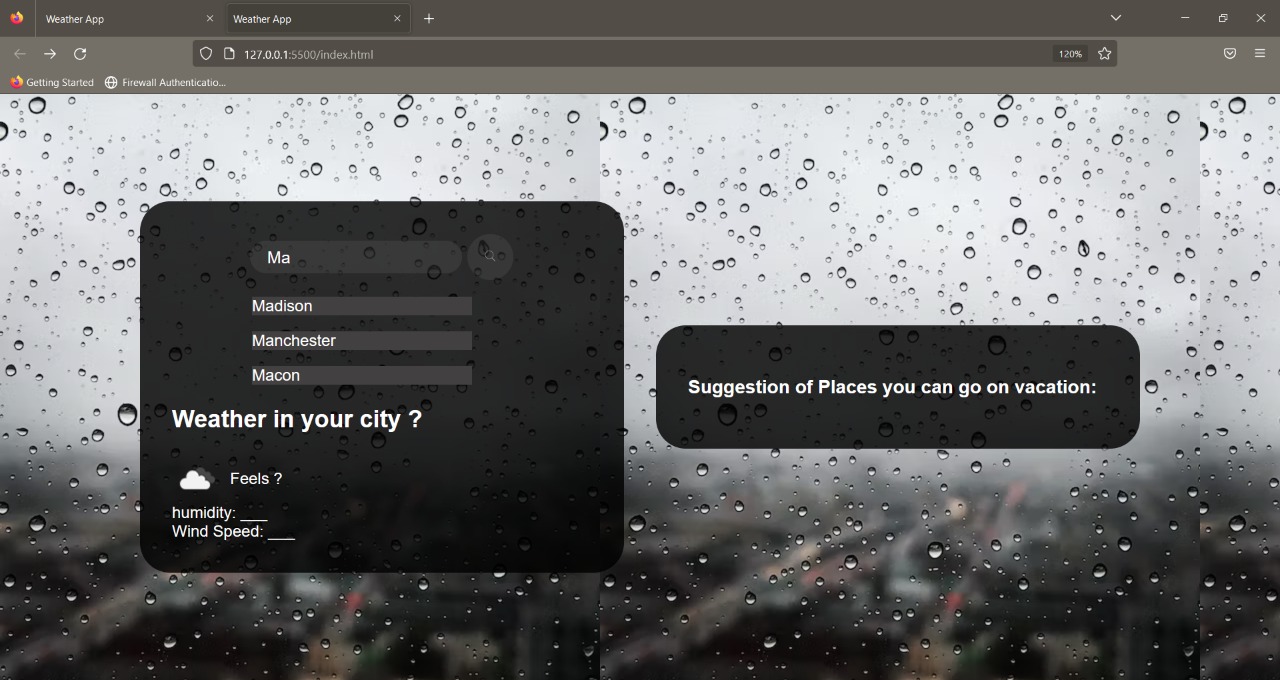
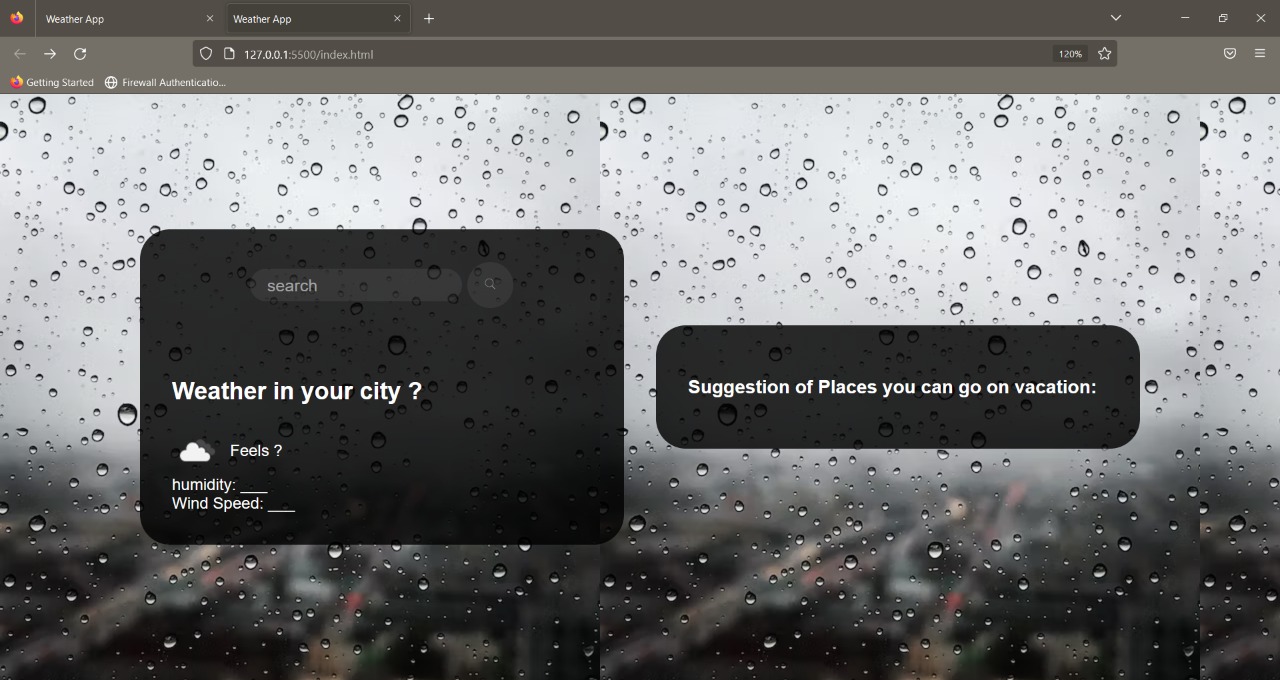
"id": 5419384,

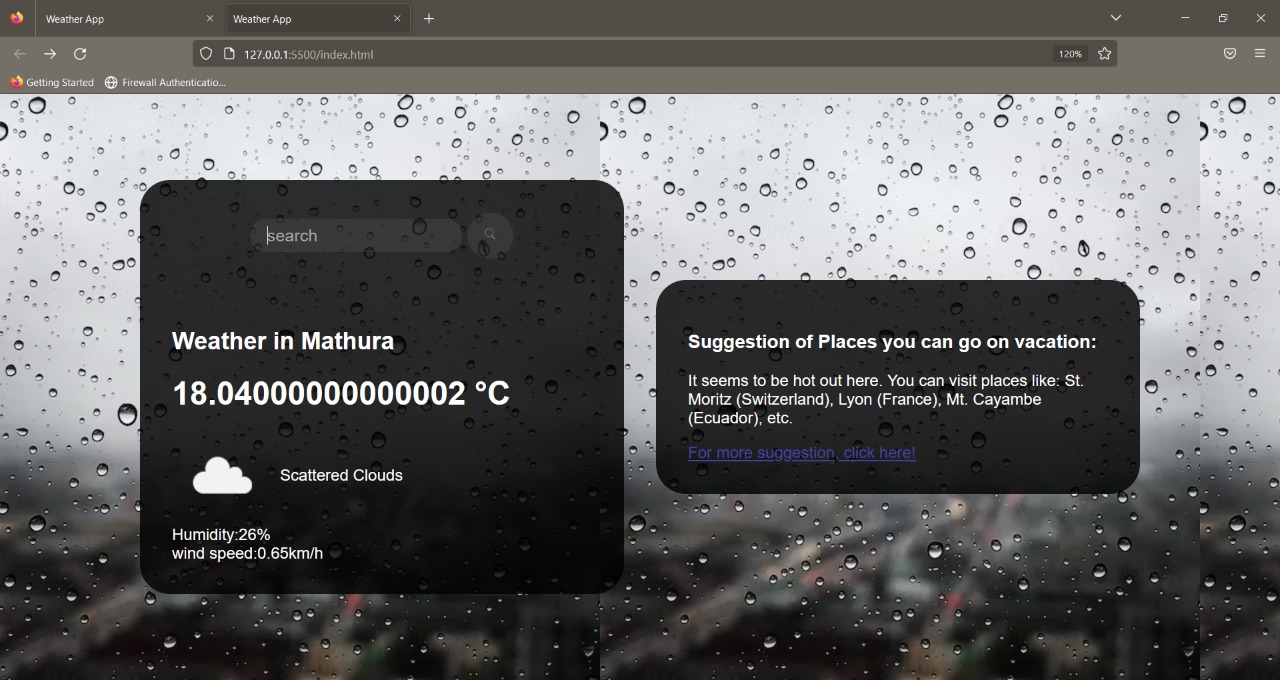
"name": "Denver",

"cod": 200

}

**ScreenShots**



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**Conclusions**

As per the goal of this project an attempt is made to show the temperature of a particular region. User must give the city name to know the temperature of a city.

Along with the temperature it also tells us about the humidity & wind speed in that region.

An additional feature is also available in the site especially for the tourist kind person. As per the Temperature it suggest for some tourism places to visit which is suitable according to the temperature.

**Working**

* User should first visit the site
* Then enter the name of the city whose temperature you want to see.
* As per the city, API fetch the temperature, Humidity as well as wind speed.
* If you want to see some suitable places to visit according to the temperature then click on the link mentioned in the right box.

**References**

* Jonah Lawrence. Dev Pro Tips (Youtube Channel)
* Under Inspect section of Google Weather Section
* W3school
* CSS-Tricks

Github Link: https://github.com/shresthagarwal15/WeatherForecast.git