Academia International College

Tribhuvan University

Institute of Science and Technology

HTML, CSS and JS Project Work

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Introduction

Purpose

The website is basically a web application that gives weather information of a city. It allows user to get information about the weather of their current location or manually enter the name of the city they want information about. The application gives information about the current temperature, description (winds, barometer, feels like, humidity), a summary of the day's weather and report of hourly weather of the day and daily weather of the week. Also, every time the user hovers over a tile of a day of the daily weather section, they get to see the information about the respective day's temperature. Users can bookmark their favorite locations and later review the saved location in bookmarks section. The information is available in degree Celsius and degree Fahrenheit. By default, it is seen in degree Celsius which can be changed into degree Fahrenheit. The app is made user friendly and easy to use. The web application is built for an easy access of information of weather forecast. The app can be pretty useful for making a weather suitable planning of a day or week.

Implementation

System Implementation

The concepts developed are implemented, and web application is actually built in the implementation phase. A fully functional weather web application is implemented. The algorithm and pseudocode devised per planning will be built in actual code.

Tools

Visual Studio Code

Visual studio code is a code editor which can be used to edit source code for a number of programming languages. It is made by Microsoft and is available for Windows, Linux and macOS. It has in-built support for IntelliSense code completion, debugger and integration with git.

Visual studio code with its extensions provides top-notch support for web development using HTML, CSS and JavaScript.

GitHub

GitHub, Inc. is a provider of Internet hosting for software development and version control using Git. It offers the distributed version control and source code management (SCM) functionality of Git, plus its own features. It provides access control and several collaboration features such as bug tracking, feature requests, task management, continuous integration and wikis for every project. Headquartered in California, it has been a subsidiary of Microsoft since 2018. *(Wikipedia, 2021)*

Technologies and frameworks used

HTML5

Hyper Text Markup Language is the standard markup language for creating web pages. HTML5 is the fifth and last major HTML version and is currently being used in web. It describes the structure of web page and order of appearance of the document. This iteration of HTML introduced newer and important features for developers like audio and video tag for embedding video or audio directly. Previously third-party plugins like Adobe Flash had to be used for this. It also introduced more semantic style of code.

CSS

Cascading Style Sheets (CSS) is a language used to describe the style of HTML document. CSS3 is the latest version of CSS. CSS is used for styling appearance and presentation of website. It helps to improve accessibility and consumption of content in a website. The specifications of CSS are controlled and supervised by World Wide Web Consortium. It uses simple syntax and number of English keywords to specify styling properties.

Bootstrap

Bootstrap is a free and open-source CSS framework focusing in responsive, front-end web development. It contains CSS and JavaScript based design templates for typography, forms, buttons, navigation, and other interface components.

JavaScript

JavaScript (JS) is a lightweight, interpreted, or just-in-time compiled programming language with first-class functions. While it is most well-known as the scripting language for Web pages, many non-browser environments also use it, such as Node.js, Apache CouchDB and Adobe Acrobat. JavaScript is a prototype-based, multi-paradigm, single-threaded, dynamic language, supporting object-oriented, imperative, and declarative (e.g. functional programming) styles. *(MDN Web Docs)*

The standards for JavaScript are the ECMAScript Language Specification.

- **Weakly typed** – JavaScript is weakly typed so types are implicitly cast depending upon use case. So, it has more run time errors and is very difficult to debug in runtime.
- **Functional** – A function is first-class; a function is considered to be an object. As such, a function may have properties and methods, such as. call () and. bind (). A nested function is a function defined within another function. It is created each time the outer function is invoked. JavaScript also supports anonymous functions. *(Wikipedia 2021)*
- **Object-Oriented** – JavaScript also has support for Object-Oriented style of programming.
- **Beginner friendly** - JavaScript is a great language for the beginner-level programmers and has very easy to write syntax with easy readability.

API Description

Open Weather API is a weather data API that provides historical, current and forecasted weather data. It is based in London. This API is used to get weather data in this web application. The One Call API provides following weather data for any geographical coordinated:

- Current weather
- Minute forecast for 1 hour
- Hourly forecast for 48 hours
- Daily forecast for 7 days
- National weather alerts
- Historical weather data for the previous 5 days

The API call looks like:

https://api.openweathermap.org/data/2.5/onecall?lat={lat}&lon={lon}&exclude={part}&appid={API key}

The parameters required for making the call are:

Table 1: API Call Parameters

lat, lon	Geographical coordinates (latitude, longitude)
Appid	Unique API key
Exclude	By using this parameter, some parts of weather data can be excluded from API response
Units	Units of measurement for data
Lang	Lang parameter can be used to get output in required available language

Limitation

The weather app gets its data via a One Call API call. The constraint in the API is likewise considered a limitation. The limitations are given below:

- The weather app can display minute forecasts for the next 48 hours.
- The weather app can display a 7-day forecast.
- The weather app can only show an hourly forecast for 1 hour.
- The weather app can store data for five previous days.
- The weather in different locations depends on national weather alerts which
- might not be 100% accurate.
- Fixed locations can’t be found in this api, rather it shows areas which are
- provided by the National Weather Alert. (National weather alerts are also
- different in many countries, which you can see from openweathermap.org.)

Conclusion and Future Enhancements

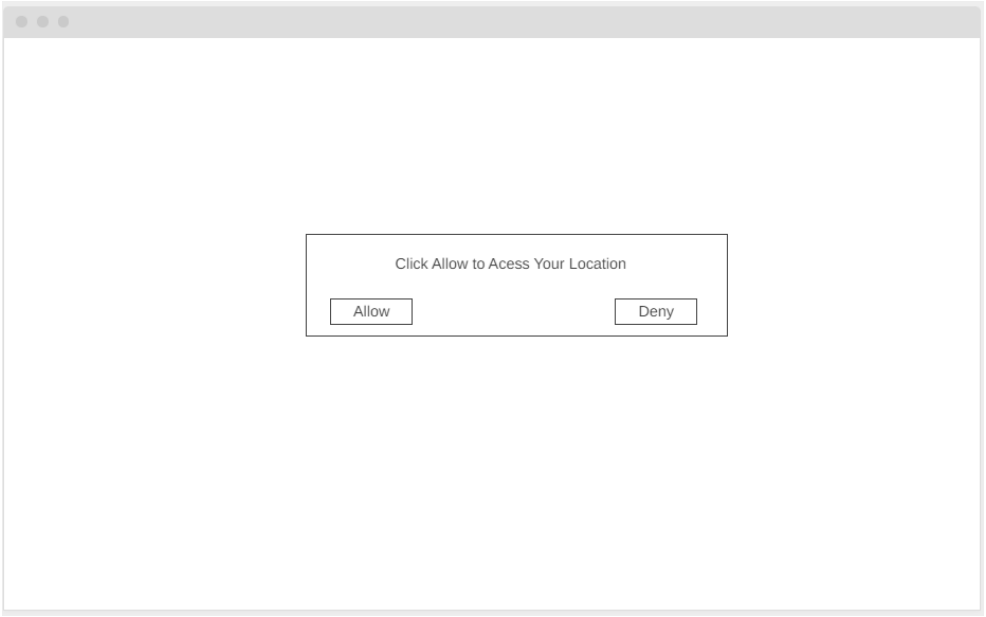
We were able to create a user-friendly, easy-to-use weather app using these numerous resources and tools. It provides detailed information about a location's current weather, hourly and daily forecast. It is simple enough to not overwhelm the user because not much additional steps are necessary to obtain the required information. Once the user searches for the desired place, all of the weather information are given, with the option to bookmark the location to avoid having to look for it every time you use the application.

Better icons could be used instead of just text. We could include a feature that allows users to modify the application's theme.

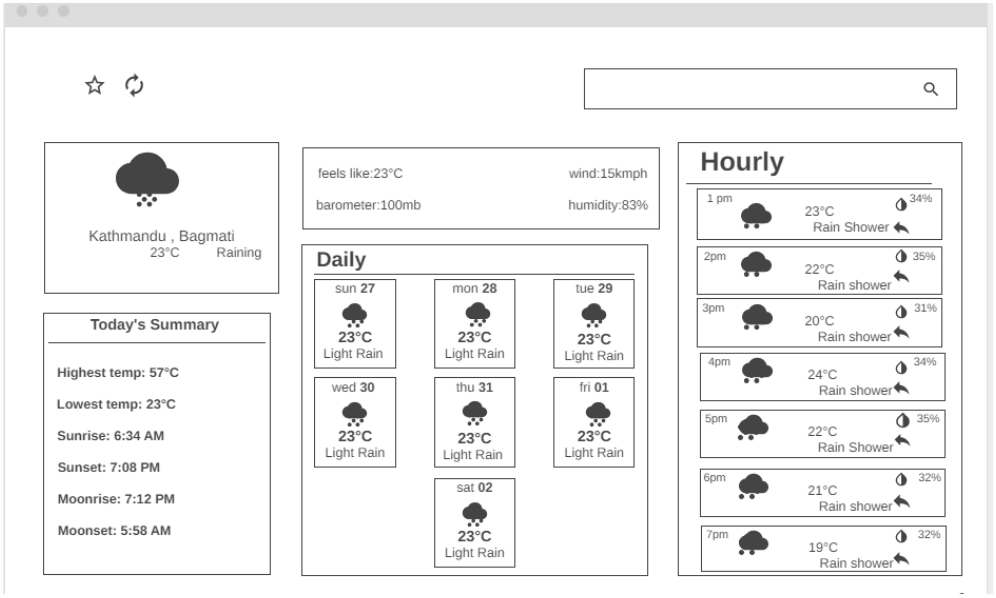
Appendix

Wireframes

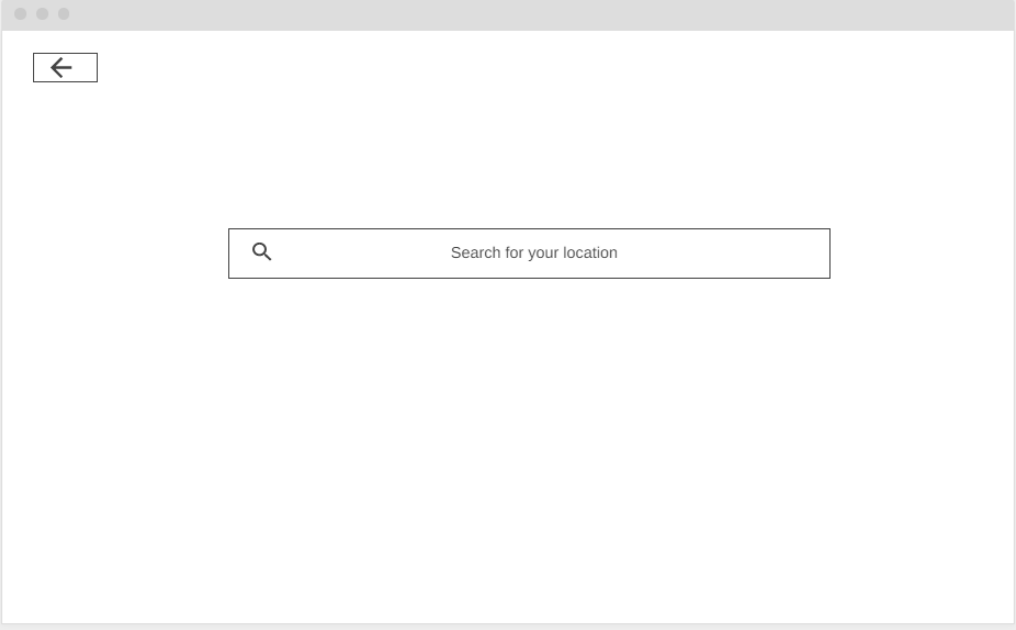
Loading Page:



When ‘Allow’ is clicked in the loading page:



When ‘Deny’ is clicked in the loading page:



Wireframe made from *www.wireframe.cc*

Link: https://wireframe.cc/pro/pp/4d7a30969457938