**User Interface: Design and implement a visually appealing user interface for the Weather Forecast app using React components. Utilize CSS or a UI framework (e.g., Bootstrap, Material-UI) to enhance the styling and responsiveness of the application**.

Approach:

1.Choosing CSS approach :For CSS as it is given in problem statement to use the CSS framework like bootstrap or material-UI, we will be using the this pre-designed component to style quickly. So firstly we need to install these components.

2.Creating the new React app using the command npx create-react-app weather-app.

3.Install the required dependencies like CSS framework Bootstrap or Material-UI, axios, cors etc, using the npm (Node Package Manager).

4 Create React components: We will be defining the components based on the projects requirements, such as WeatherApp, SearchBar, CurrentWeather, Forecast , etc.

5.For above created components, applying the necessary styles and classes, and organize them.

**Weather API Integration: Integrate a weather data API (e.g., OpenWeatherMap, Weatherbit) to fetch the weather information for the searched cities. Retrieve the current weather conditions (e.g., temperature, humidity, wind speed) and the 5-day forecast (including date, weather description, and temperature).**

Approach :

1 Sign up and obtain an API key :Register the account with the chosen weather data API provider

(OpenWeatherMap, Weatherbit) and obtain an api key.

2.Set up the API requsest :

i. Construct the URL for the API request using the Api key.

ii. Decide which endpoints you need to fetch the current weather condition the 5-day forecast.

3 Make the API requsts:

i. In react component SearchBar , we will be defing a function that handles the API requests by

using the fetch or an HTTP client( using Axios) to send the requsest to the endpoint.

4.Handle the API response:

i. In the function that handles the API request, we will use the async/await or promises to handle

the asynchronous nature of the API call.

ii. Once you receive the response from the API, parse the JSON data.

Iii Extract the relevant information from the response.

**City Search: Implement a search functionality where users can enter the name of a city to fetch its weather details. Utilize an input field and a search button to trigger the API call and display the results on the UI.**

Approach:

1. As we already created the SearchBar component that will handle the search functionality.

2. Here first we need to create the input field for storing the user data i.e. city name and bind this value.

to the state which we will be using for storing the data.

3. Create the search button and add the onclick event handler to the button.

4 Create the search function which will call by button click event, Inside the function , make the API call to

fetch the weather data for the entered city name.Use the API key to make requests .

**Weather Display: Display the current weather information for the selected city, including the temperature, humidity, wind speed, and weather description. Present the information in a visually appealing format, such as using icons or appropriate weather graphics.**

1.We created the React component called CurrentWeather to modify the existing components to handle

the display of current weather information.

2. Receive the weather data as props inside the CurrentWeather like temperature, humidity, wind speed

weather description .

3. Format those receive data by using the icons( react-icons) or any graphics. Use Bootstrap or material

-UI to design the receive information.

**Forecast Display: Create a section to display the 5-day weather forecast for the selected city. Show the date, weather description, and temperature for each day. Use appropriate styling to differentiate between the current day and the upcoming days.**

**Approach:**

1.As we created the react component Forecast which will display the weather information for next 5 -day.

2. Receive the forecast data as props from **WeatherApp** and then extract the relevant forecast information

Such as date, weather description and temperature for each day.

3. Determine the current date using the timestamp and differentiate it from the upcoming days.

4.Render the forecast information using the loop for each day and display it in the Forecast components.

5 Style them using the custom CSS or the pre-designed CSS like bootstrap or Material-UI for each 5-days.

**Error Handling: Implement error handling for scenarios where the API request fails or the user enters an invalid city name. Display appropriate error messages to guide the user and handle such cases gracefully.**

1. Set up an error state. In the component responsible for making the API requests, set up a state using

Hooks to hold the error message , if any.

2. Handle API requests errors. In a function that handles the API requsts, use try./catch or promises to

Handle any errors.

3.Validate the user input before the API requests

4. Handle invalid city name.

**Unit Conversion: Provide an option for users to switch between different units of measurement, such as Celsius and Fahrenheit for temperature, and metric or imperial units for other weather metrics.**

Approach :

1 .We will define state variable in our main app component(lets say WeatherApp) to know the selected units for temperature and other weather metrics.

2. We need to create the UI element for unit options for selection of units. We can use dropdown , toggle switch etc.

3.We will be passing the selected components to the CurrentWeather and to the Forecast components for updating the temperature based on selected units.

GeeksforGeeks:

<https://auth.geeksforgeeks.org/user/samiryadav8750>

Leetcode:

https://leetcode.com/samir\_yadav123