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Completed the project named as Phase 2

NAME : Live Weather Dashboard

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Live Weather Dashboard – System Design

Tech Stack Selection

- Frontend: React.js, TailwindCSS/Bootstrap,
Axios/Fetch API, Recharts - Backend (Optional):
Node.js + Express (for proxy & caching) - API
Provider: OpenWeatherMap API /
WeatherAPI.com - Deployment: Vercel / Netlify
(Frontend), Render / Heroku (Backend)

UI Structure

```
----- | Weather Dashboard
| ----- | Search Bar (Enter
city name) | [Search Button] | -----
----- | Current Weather Card: | | - City Name, Country | | -
Temperature (°C/°F) | | - Weather Condition + Icon | | -
Humidity, Wind Speed, Pressure | -----
----- | Forecast Section (Next 5 Days) | | - Cards with
Date, Temp, Condition | -----
--- | Charts / Graphs | | - Temperature Trend (line chart) | | -
Humidity & Wind Speed (bar chart) | -----
-----
```

API Schema Design

Endpoint: GET

https://api.openweathermap.org/data/2.5/weather?q={city}&appid={API_KEY} GET

https://api.openweathermap.org/data/2.5/forecast?q={city}&appid={API_KEY} Example Response (simplified):
{
 "city": {
 "name": "Chennai",
 "country": "IN",
 "list": [
 {
 "dt_txt": "2025-09-15 12:00:00",
 "main": {
 "temp": 303.15,
 "humidity": 78,
 "pressure": 1005,
 "weather": [{
 "description": "light rain",
 "icon": "10d"}],
 "wind": {
 "speed": 4.5
 }
 }
]
 }
 }
}

Data Handling Approach

1. Frontend calls API with cityname input
2. API response parsed → Extract fields: City, Temp, Condition, Humidity, Wind, Pressure
3. State management with React useState/useEffect
4. Data mapped to UI Components (cards, charts)
5. Error handling with fallback UI
6. Optional caching in localStorage

Component / Module Diagram

[App] | I-- [SearchBar
Component] I--
[CurrentWeatherCard] I--
[ForecastList] | I--
[ForecastCard] | I-- [Charts] I--
[TemperatureChart] I--
[HumidityWindChart]

Basic Flow Diagram

UserInput (CityName)
↓
[SearchBar Component]
↓
API Call → Weather API
↓
JSON Response
↓
[Data Parser / State Update]
↓
UI Components Update
↓
User sees Weather Cards +
Forecast + Charts