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**Completed the project named as  
Phase 3  
FRONT END TECHNOLOGY  
LIVE WEATHER DASHBOARD**

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# Phase 3: MVP Implementation

## Overview

This Phase 3 document focuses solely on the Minimum Viable Product (MVP) implementation activities. It intentionally excludes project-identifying details already present in earlier phases. The included cover/header page from the provided reference PDF will be used as the document's front page.

## Scope & Objectives

- Implement core MVP features based on requirements and design from previous phases.
- Provide a clear implementation plan, folder structure, key components, sample code snippets, testing and deployment guidance.

## Implementation Plan

- Bootstrap project and install required tooling.
- Create core components and modules required for the MVP.
- Implement service modules to interact with external APIs and normalize responses.
- Implement state management and persistence for user-facing features.
- Add loading/error states and basic responsive styles.
- Optional: create a lightweight backend proxy to protect API credentials and enable caching.
- Test thoroughly (manual + automated) and prepare for deployment.

## Suggested Tech Stack

Frontend: Modern JS framework (React/Vue) with component-based structure. Styling: Utility CSS (e.g., Tailwind) or scoped CSS modules. APIs: External third-party APIs for data; a small server (Node/Express) is optional for key protection and caching. Testing: Unit tests (Jest), integration tests (React Testing Library), and manual acceptance tests.

## Recommended Folder Structure

src/ └─ components/ └─ context/ or store/ └─ services/ └─ styles/ └─ App.jsx / main.js

## Key Components & Responsibilities

Search/Input component: triggers data retrieval. Display component(s): render main data and short-term forecasts. History component: persist and present recent searches. Service module: single place to call external APIs and return normalized data. Context/store: central state management and persistence.

## Sample Service (concept)

```
/* Example service (pseudo-code) */ async function getData(query, apiKey) { const res =  
await  
fetch(`https://api.example.com/data?q=${encodeURIComponent(query)}&appid;=${apiKey}`); if  
(!res.ok) throw new Error('Fetch failed'); return res.json(); }
```

## State Management (concept)

```
/* Concept: central provider that exposes currentData, history and actions */ const  
[current, setCurrent] = useState(null); const [history, setHistory] = useState(() =>  
JSON.parse(localStorage.getItem('history') || '[]'));
```

## **Testing Approach**

Manual tests: functional flows (valid/invalid inputs), network failures, mobile responsiveness. Automated: unit tests for service functions and components. Acceptance criteria: core search returns data, display contains expected fields, history persists and is clickable.

## **Deployment**

Build and deploy as a client application (Vercel / Netlify / GitHub Pages) or as a client + small server (Render / Railway). If a server is used, ensure environment variables are used for API keys and that endpoints are rate-limited/cached.

## **Timeline & Deliverables**

Week 1: Setup and core components. Week 2: Service integration and state management. Week 3: Styling, responsiveness, testing. Week 4: Final testing and deployment.

## **Acceptance Criteria**

1. Searching returns current data and short-term forecast.
2. Display shows name/date/condition/temp/humidity/wind (as applicable).
3. History is persisted and clickable.
4. UI is responsive.

## **References**

This document uses the first page of the provided reference PDF as the front cover/header. For detailed requirements and design, refer to Phase 1 and Phase 2 documents.