



# Documentation



## Real-Time Dashboard: Weather, Crypto & News

This project is a responsive, real-time dashboard built using Next.js, Redux, Tailwind CSS, and WebSocket integration. It displays dynamic data for weather, cryptocurrency prices and news headlines with a clean UI and fluid user experience.



## Challenges Faced & Resolutions

### 1. Integrating Real-Time WebSocket Data

- **Challenge:** Rendering WebSocket data (like crypto price updates) without causing re-renders or performance issues.
- **Solution:** Used Redux and Redux Saga to manage real-time state updates cleanly, and memoized selectors/components where needed to avoid unnecessary renders.

### 2. Managing Multiple APIs

- **Challenge:** Coordinating responses from multiple third-party APIs (weather, crypto, news) and updating state without conflicts.
- **Solution:** Created separate async functions and action types in Redux slices to isolate data flow and avoid race conditions or overlaps.

### 3. Loading States and Skeleton UIs

- **Challenge:** Ensuring smooth user experience when data is being fetched.
- **Solution:** Used Skeleton components to represent loading states clearly before actual data loads.

### 4. Dynamic UI Enhancements

- **Challenge:** Adding interactive UI features like favoriting rows (star icons) without storing that state globally or affecting backend logic.
- **Solution:** Maintained local component state (useState) to toggle favorite stars on the UI only.

### 5. Responsive Layout and Overflow Handling

- **Challenge:** Making tables scrollable on smaller screens while maintaining a clean layout.
- **Solution:** Used Tailwind classes like overflow-x-auto and responsive paddings/margins to improve UI responsiveness.