**CRYPTOCURRENCY DASHBOARD**

1.Introduction

Project title: Cryptocurrency Dashboard

Team ID: SWTID1741177424154353

Team members:Nandhini.R

Nandhini.S

Rajagandham.B

Hemapriya

2.Project overview

Purpose: A crypto dashboard is a digital platform that lives on a website or an app (either desktop or mobile).Its primary function is to track your cryptocurrency accounts and coins and monitor their historical prices and current values so that you can manage both your crypto assets and related financial plans accordingly.

Features:Real time price tracking for multiple coins portfolio management with asset allocation visualization watchlists for monitoring specific assets price alerts for significant market movements news feeds customizable views integration with exchange APLs for data updates and a user-friendly interface for easy navigation and data interpretation.

3.Architecture

Components structure: Major components like a “Coin list", "Coin details”,”Chat”,”portfolio”,and “Search bar”.

State management: Crypto asset management is a term that refers to the process of managing digital assets such as cryptocurrencies, tokens, and non-fungible tokens (NFTs).

Routing: An algorithmic system that automatically finds the best price for an order by routing it across multiple exchanges.

4.Setup Instructions

Prerequisities: At a minimum, you'll need to be familiar with HTML, CSS, java script, APIs, and styling for the frontend dashboard itself.

Installation:

1. Set Crypto Goals. ...
2. Make a List of Your Crypto Assets and Accounts. ...
3. Build a Dashboard to Track Crypto Changes (Tutorial and HTML Required) ...
4. Build Another Dashboard to Track the Other, Non-Cryptocurrency Assets in Your Portfolio.

5.Folder structure

Client: Client-Side Rendering

Component-based Architecture

JavaScript library

Single-page Applications (SPAs)

Client-Side Routing

State Management

React Native

Server Components

Utilities: Fetching cryptocurrency data

Formatting numbers

Date formatter utility

Use crypto data (custom hooks)

Use price chart data (custom hooks)

6.Running the Application

Frontend: Install Dependencies

Start the Development Server

Access the Dashboard

7.Component Documentation

Key Components:

1.**App Component:**

Purpose: The main entry point of the React application that includes routing, global state management, and top-level layout. It typically holds the structure of the entire dashboard and renders the main UI components.

Props: **None**

2. **Header Component:**

Purpose: The header typically contains the navigation menu, logo, user authentication status, and possibly other elements like search or theme toggles.

Props:

**User Data**: Information about the logged-in user (name, profile picture)

Selected Page: The current page or tab selected by the user.

On Logout: A function to handle the user's logout action.

**3.Sidebar Component**

Purpose: Displays a navigation menu, typically located on the left side of the dashboard, providing links to various sections like Portfolio, Transactions, Market Data, etc.

Props:

Active Tab: The currently selected tab to highlight in the sidebar.

On TabChange: A function to handle the user's tab selection.

UserPermissions: Role-based permissions to show or hide certain sections.

**4.Market Overview Component**

Purpose: Shows real-time market data such as the prices, market cap, volume, and price changes for various cryptocurrencies.

Props:

Cryptos Data: A list or array of cryptocurrency data (e.g., Bitcoin, Ethereum) including name, symbol, price, volume, and market cap.

Loading: Boolean indicating whether data is being fetched.

On Refresh: Function to refresh or reload the market data.

**5. Portfolio Component**

Purpose: Displays the user's cryptocurrency holdings, their current value, profit/loss, and historical performance.

Props:

Portfolio Data: The user's portfolio data including a list of coins, quantity, cost price, and current price.

Currency: The selected currency (USD, EUR, etc.) for value conversion.

On CoinAdd: Function to add a new coin to the portfolio.

OnCoinRemove: Function to remove a coin from the portfolio.

Reusable Components:

**1. Header Component**

* **Description**: Displays the main navigation, including logo, menu, user profile, and notification icons.
* **Configurations**:
  + **Logo**: Dynamic logo based on the platform or theme (e.g., light/dark mode).
  + **Menu**: A collapsible navigation menu with links to different sections of the dashboard.
  + **Search Bar**: Search functionality for finding specific coins or news.
  + **Profile/Notifications**: Displays user profile picture and notifications. Configurable based on user status.

### **2. Coin Price Ticker Component**

* **Description**: Displays real-time cryptocurrency prices for a list of selected coins.
* **Configurations**:
  + **Currency**: Users can toggle between different fiat currencies (USD, EUR, GBP).
  + **Time Interval**: Configurable display of price changes over different intervals (1 minute, 1 hour, 24 hours).
  + **Price Change Indicator**: Visual representation of price changes (up/down arrows or color-coded changes).
  + **Trending Coins**: A list of the most popular or trending coins based on market volume or price movement.

### **3. Chart Component (Candlestick/Line Graph)**

* **Description**: Displays cryptocurrency price charts in various forms (candlestick, line, etc.) to visualize price trends over time.
* **Configurations**:
  + **Chart Type**: Users can toggle between different chart types (e.g., line, candlestick).
  + **Time Period**: Adjustable range of the chart, e.g., 1 day, 7 days, 30 days, 1 year.
  + **Indicators**: Ability to add technical indicators like moving averages (MA), Relative Strength Index (RSI), etc.
  + **Zoom**: Users can zoom into specific date ranges.
  + **Overlay Data**: Display additional data like volume or order book depth overlaid on the chart.

**4. Transaction History Component**

* **Description**: Displays the history of the user's transactions, such as buys, sells, or transfers of cryptocurrency.
* **Configurations**:
  + **Filters**: Allow users to filter by date range, transaction type (buy/sell), or coin.
  + **Pagination**: Display transactions in pages if there are many records.
  + **Sorting**: Enable sorting by transaction amount, date, etc.

### 5. Portfolio Overview Component

* **Description**: Displays a summary of the user's cryptocurrency holdings, including balance and portfolio performance.
* **Configurations**:
  + **Portfolio Value**: Total value of all holdings in fiat currency.
  + **Asset Distribution**: Graphical representation (pie chart or bar chart) of portfolio distribution by asset.
  + **Change Over Time**: Portfolio performance chart showing growth or loss over a specific time period.

### **6. Coin Detail Component**

* **Description**: Provides detailed information about a specific cryptocurrency, such as market cap, supply, historical data, and more.
* **Configurations**:
  + **Market Cap**: Displays the market cap of the selected coin.
  + **Supply Info**: Shows the total, circulating, and max supply of the coin.
  + **Historical Performance**: A graph or chart showing the performance of the coin over time.
  + **Technical Data**: Display other data like 24-hour volume, high/low prices, and trading pairs.

8.State management

Global State:1. State management overview

2.User authentication data

3.Cryptocurrency data

4.Wallet data

5.Real-time data

Local State:1. Search bar component

2.Modal or popup component

3.Portfolio component

4.Transaction history component

9.User Interface

10.Styling

CSS Frameworks/Libraries:1. Bootstrap

2.Tailwind CSS

3.Bulma

4.Animate CSS

5.Font awesome

6.CSS grid layout

Theming:1. Dark mode vs Light mode

2.Customizable branding colours

3.Theming with CSS variables

11.Testing

Testing strategy:1. Unit testing

2.Integration testing

3.End-to-End testing

Code Coverage: **1. Jest** (for JavaScript/React)

2. **Istanbul/NYC** (for JavaScript/Node.js)

3. Coveralls

Techniques for Code Coverage:1. **Track All Major Code Paths**

2. Branch Coverage

3. **Edge Cases**

1. Real-Time Price Discrepancies

2. Blockchain Network Congestion

3. Incorrect Transaction States (Pending vs. Completed)

4. Inconsistent Wallet Balances

5. Transaction Gas Fees and Limits

6. Security Vulnerabilities

7. Data Integrity and Synchronization Issues

14.Future Enhancements

a. Modernized, Modular Components

b. Interactive and Animated Charts

c. Enhanced Transaction Feedback

d. AI-Powered Trading Insights and Automation

e. Advanced Charting Tools

f. Multi-chain Support and Cross-chain Swaps

g. Advanced Security Features

h. Enhanced Private Key Management