**Project Documentation**

**Introduction**

**Project Title: CryptoVerse**

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**Project Overview**

**Purpose**

CryptoVerse is a web application designed to provide users with real-time information on various cryptocurrencies, including their current prices, market trends, and detailed statistics. The platform aims to offer both novice and experienced investors a comprehensive tool to track and analyze digital currencies.

**Features**

* Real-time cryptocurrency price tracking
* Detailed statistics and market trends
* Search functionality for specific cryptocurrencies
* Responsive design for optimal viewing on various devices
* Interactive charts for price visualization

**Architecture**

**Component Structure**

CryptoVerse\_NaanMudhalvan/

│── public/ # Public assets

│ ├── \_redirects # Redirect settings

│ ├── cryptocurrency.png # Cryptocurrency image

│ ├── index.html # Main HTML file

│

│── src/ # Main source code

│ ├── app/ # Global state management

│ │ ├── store.js # Redux or Context API store

│ │

│ ├── components/ # React components

│ │ ├── CryptoDetails.jsx

│ │ ├── Cryptocurrencies.jsx

│ │ ├── Exchanges.jsx

│ │ ├── Homepage.jsx

│ │ ├── LineChart.jsx

│ │ ├── Loader.jsx

│ │ ├── Navbar.jsx

│ │ ├── News.jsx

│ │ ├── index.js

│ │

│ ├── images/ # Image assets

│ │ ├── cryptocurrency.png

│ │

│ ├── services/ # API services

│ │ ├── cryptoApi.js # API calls for cryptocurrency data

│ │ ├── cryptoNewsApi.js # API calls for cryptocurrency news

│ │

│ ├── App.css # Global styles

│ ├── App.js # Main App component

│ ├── index.js # Entry point

│

│── .env.example # Example environment variables

│── .eslintrc.js # ESLint configuration

│── .gitignore # Git ignored files

│── README.md # Documentation

│── package-lock.json # Dependency lock file

│── package.json # Project dependencies.

**State Management**

The application utilizes **Redux Toolkit** for efficient state management, allowing centralized and predictable state updates. It includes slices for:

* Cryptocurrencies
* News
* Price history

**Routing**

**React Router** is employed to handle navigation between different pages, ensuring a seamless user experience.

**Setup Instructions**

**Prerequisites**

* Node.js (version 14.x or higher)
* npm package manager

**Installation**

1. Clone the repository:
2. git clone https://github.com/Srivalasalan/CryptoVerse\_NaanMudhalvan.git
3. Navigate to the project directory:
4. cd CryptoVerse\_NaanMudhalvan
5. Install dependencies:
6. npm install

**Folder Structure**

**Client**

* **src/**: Contains the source code of the React application.
  + **components/**: Reusable UI components (e.g., Navbar, CryptoCard).
  + **pages/**: Page components corresponding to different routes (e.g., Homepage, Cryptocurrencies, CryptoDetails, News).
  + **app/**: Contains the main App component and routing logic.
  + **services/**: API service functions for fetching data from external sources.
  + **app/store.js**: Redux store configuration.

**Running the Application**

To start the application locally:

npm start

This will launch the application at http://localhost:3000.

**Component Documentation**

**Key Components**

* **Navbar**: Renders navigation links to different sections of the application.
* **Homepage**: Displays top cryptocurrencies and latest market news.
* **Cryptocurrencies**: Lists all cryptocurrencies with pagination support.
* **CryptoDetails**: Provides detailed information about a selected cryptocurrency, including charts and statistics.
* **News**: Shows the latest news articles related to cryptocurrencies.
* **LineChart**: Visualizes cryptocurrency price trends.
* **Loader**: Displays a loading indicator when fetching data.

**Reusable Components**

* **CryptoCard**: Displays brief information about a cryptocurrency, used in lists and search results.
* **Button**: Custom-styled button used across the application.
* **SearchBar**: Enables searching for cryptocurrencies.

**State Management**

**Global State**

Managed using **Redux Toolkit**, encompassing:

* **Cryptocurrencies**: State slice for storing cryptocurrency data.
* **News**: State slice for storing news articles.

**Local State**

Handled within components using the useState hook for UI-specific states, such as form inputs and modal visibility.

**User Interface**

Screenshots or GIFs showcasing different UI features, such as pages, forms, or interactions.

**Styling**

**CSS Frameworks/Libraries**

* The application uses **Ant Design** for consistent and responsive UI components.

**Theming**

* Custom theming is applied using Ant Design's theming capabilities to align with the application's branding.

**Testing**

**Testing Strategy**

* The project employs **Jest** and **React Testing Library** for unit and integration testing of components and Redux slices.

**Code Coverage**

* Code coverage is monitored using Jest's built-in coverage tools, aiming for comprehensive test coverage across all modules.

**Screenshots or Demo**

**Live Demo**

<https://drive.google.com/drive/folders/10whrma5VDJhR625YxMH3XTQFIuj7oYIN?usp=sharing>

**Screenshots**

<https://drive.google.com/drive/folders/1Myg0eV7-RCUkCQWRvFNJLOZoVmJsRTVF?usp=sharing>

**Known Issues**

* The Exchange and News options are not working properly.
* API Rate Limits: Some cryptocurrency APIs impose rate limits, which might cause occasional delays or failures in fetching data.
* Incomplete Data Display: Certain cryptocurrencies may not have all the required details, leading to missing information in the CryptoDetails page.
* Pagination Bug: In the Cryptocurrencies list, sometimes pagination does not update properly when switching between filters.
* Mobile Responsiveness: Some UI elements may not be fully optimized for smaller screens, causing layout inconsistencies.
* Loading Performance: The app might take longer to fetch and display data when dealing with large datasets or slower networks.

**Future Enhancements**

* Dark mode toggle feature
* Real-time WebSocket price updates
* Improved UI animations
* Additional charting options
* User authentication for personalized watchlists