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Crypto-Currency App Using React

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ABSTRACT:

Coin Track is an innovative real-time crypto-currency tracking application developed using React.js, Redux, and the Coin Gecko API. This app provides users with up-to-date information about various crypto-currencies, allowing them to monitor prices, track portfolios, and make informed investment decisions. By leveraging the power of React.js and Redux, Coin Track offers a seamless user experience, efficient data management, and dynamic updates. Additionally, the integration of the Coin Gecko API ensures accurate and reliable crypto-currency data, making Coin Track a valuable tool for crypto-currency enthusiasts and investors.

Key Terms: React.js, Redux, CoinGecko API, real-time, crypto-currency tracking, prices, portfolios, investment decisions, user experience.

I. Introduction

A crypto-currency app is a software application designed to provide users with a platform to manage their digital assets, primarily crypto-currencies. These apps offer various features and functionalities to help users track crypto-currency prices, manage portfolios, execute trades, and stay informed about market trends and news. The crypto-currency market has witnessed exponential growth and has become a prominent asset class for investors worldwide. To cater to the increasing demand for efficient crypto-currency management tools, this project introduces a cutting-edge crypto-currency application developed using React.js, Redux, and the Coin Gecko API.

The goal of this application is to provide users with a user-friendly and feature-rich platform to track, manage, and analyze crypto-currencies in real- time. By leveraging the power of React.js, Redux, and the Coin Gecko API, this application offers an intuitive user interface, seamless data management, and access to accurate and up-to-date crypto-currency information.

React.js, a popular JavaScript library for building user interfaces, provides the foundation for the application's front-end development. React.js is component-based architecture enables the creation of reusable UI elements, resulting in a modular and scalable application structure. React.js also ensures a responsive and interactive user experience, allowing users to navigate through the app seamlessly.

To efficiently manage the application state and ensure smooth data flow, Redux, a predictable state container, is integrated into the application. Redux centralizes the state management, making it easier to track changes and update components accordingly. This simplifies data synchronization and enhances the overall performance of the application.

The Coin-Gecko API serves as the primary data source for the application, providing real-time and comprehensive crypto-currency data. By integrating the Coin Gecko API, users gain access to a wide range of information, including crypto-currency prices, market trends, trading volumes, historical data, and more. This integration ensures the accuracy and reliability of the data, enabling users to make informed decisions regarding their investments.

II. Literature Review

1. Crypto-currencies overview

A crypto-currency can be defined as "cash for the internet." It is a piece of digital information that one can hold onto, and it has value as long as no one else has access to the information and keys that provide the value. The entity who holds the information at that point of time is also the holder of the value of that crypto-currency.

The creation of crypto-currencies is based on the need for internet cash combined with the desire for anonymity in internet transactions. As explained in **Geiregat** (2018), scientists and activists concerned with privacy and personal liberty started the experimentation and

Crypto-currencies have been among the largest unregulated markets in the world. Foley et al. (2019) document that roughly one fourth of Bitcoin users may have been involved in illegal activity. Their study estimates that about $76bn of illegal activity each year may involve Bitcoin. They also document that the illegal share of Bitcoin activity has declined with mainstream interest in Bitcoin and with the emergence of more opaque crypto-currencies. Practical problems related to investing in crypto-currencies include illiquidity, theft, fraud, ransom attacks/hacking and potential constrictive government regulation. Since crypto-currencies are unregulated, decentralized, untraceable and anonymous, there are no protections, liability clauses or insurers.

Although the lack of regulation is an important problem for the lack of protection from theft and ransom attacks, increased levels of regulation could pose an even bigger problem for these digital coins. Government regulation could disrupt the true nature of crypto-currencies that makes them attractive to users, could lead to drastic declines in their value, and could cause significant illiquidity, making them unattractive to investors. Overall, the potential for regulation is a major threat to crypto-currencies for the near future.

2. Popular crypto-currencies

The top four crypto-currencies in terms of market capitalization are Bitcoin, Ethereum, Ripple and Litecoin. Bitcoin holds the largest market capitalization allocating half of the crypto-currency market. Ethereum and Ripple also hold significant spots covering 10 percent of the market capitalization each. Litecoin is on the rise with a smaller holding of the market capitalization of roughly 3 percent. These four crypto-currencies constitute three fourths of the entire market. As reported in Radovanoet al. (2018), although correlations vary between these crypto-currencies, they are fundamentally different from each other because of their unit values, market capitalizations and user applications.

Bitcoin has been the most talked about, popular and sophisticated cryptocurrency (Velde, 2013). Launched in 2009, the value has grown tenfold from 2013 to 2018. Figure 1 depicts the Bitcoin price vs the Dow Jones Industrial Average in 2010s. We can see the exponential increase in the Bitcoin value and the dramatic decline during the crypto-currency crash of January 2018. In the Nakamoto (2008) manifesto outlining the idea of Bitcoin and blockchain, a low-cost secure payment system has been proposed that does not involve a central authority or trusted third party. As explained further in Velde (2013), Bitcoin is not a claim to a physical object or to a currency; rather, it aims to be a currency itself to replace the usual physical object of a currency with a computer file. Bitcoin and other crypto-currencies use the blockchain network but they differ in from each other terms in terms of the difficulty in mining the specific currency. Bitcoin has a specific hash rate of verifying transactions, a certain number of miners and a goal of six blocks to be created per hour (for an average transaction speed of ten minutes), making it organically fit the blockchain network. Overall, Bitcoin has been primarily utilized as a means to transfer funds within the blockchain environment, but also as a speculative investment opportunity given that the crypto-currency derives its value from exchange.

Second in the market capitalization in the crypto-currency market is Ethereum, created in 2014. Ether, the digital coin of Ethereum, is rival to Bitcoin due to the promise of the technology it is built in. Instead of being used as a digital currency, or an alternative to fiat money, Ethereum has been built for smart contracts and for decentralized applications. Smart contracts are agreements in the blockchain network that function like software programs that can bind obligations based on predetermined conditions. Ethereum's built-in programming language allows anyone to build augmented applications. The Ethereum network has the potential to host numerous functions such as social networks, public utility applications, crowd-sourced prediction markets and investment companies. Ethereum's ability to create new social structures within a completely virtual network sets it apart from Bitcoin and other crypto-currencies.

3. Cryptocurrencies in investment portfolios

There are studies that look into the effects of using Bitcoin to diversify an investment portfolio, such as Wu and Pandey (2014), Klabbers (2017) and Andrianto and Diputra (2017). These studies primarily focus only on Bitcoin. Using dated and limited sample periods from 2010 to 2013 in Wu and Pandey (2014), from 2013 to 2016 in Andrianto and Diputra (2017) and from 2010 to 2016 in Klabbers (2017), the usefulness of Bitcoin as an investment asset in enhancing the efficiency of an investment portfolio were documented.

Lack of sufficient information and the novelty of crypto-currencies lead to discomfort in the opinions of different investors and financial experts in using Bitcoin and other crypto-currencies in an investment portfolio (Burgess, 2018). Burgess (2018) documents one expert recommending allocations of no more than 2 percent of a portfolio to Bitcoin due to high-volatility, and not recommending for anyone nearing retirement. Investors generally consider crypto-currencies as high risk investments and tend to keep some in the portfolio only as an insurance policy: in order to settle ransomware attacks with these crypto-currencies.

III. Proposed Methodology

Designing a crypto-currency app requires careful consideration of the needs of your users, as well as the requirements for security and functionality of a crypto-currency exchange.

1) **Real-Time Market Data:** The app should provide users with real-time market data for all supported crypto-currencies. This should include charts, price alerts, and other useful information that will help users make informed trading decisions.

2) **Price Alerts and Market Analysis:** Provide users with real-time market data, price charts, and analysis tools to help them make informed investment decisions. Users can set price alerts for their preferred crypto-currencies to receive notifications when specific price thresholds are reached.

3) **Global Accessibility:** Crypto-currencies are borderless, and crypto-currency apps enable users to participate in the global crypto-currency market irrespective of their location. This opens up investment opportunities and financial inclusion for individuals who may not have access to traditional banking systems.

Advantages

1) Accurate Pricing,

2) Faster Trading,

3) Increased Transparency,

4) Better Investment Decisions,

5) Improved User Experience.

A crypto-currency app is a mobile application or software platform that allows users to manage, trade, and interact with crypto-currencies.

Users can create and manage their crypto-currency wallets to securely store their digital assets. The app may generate unique addresses for receiving funds and enable users to initiate transactions.

Crypto-currency apps provide access to real-time market data, including prices, trading volumes, market capitalization, and other relevant metrics. Users can view charts and analyze trends to make informed investment decisions.
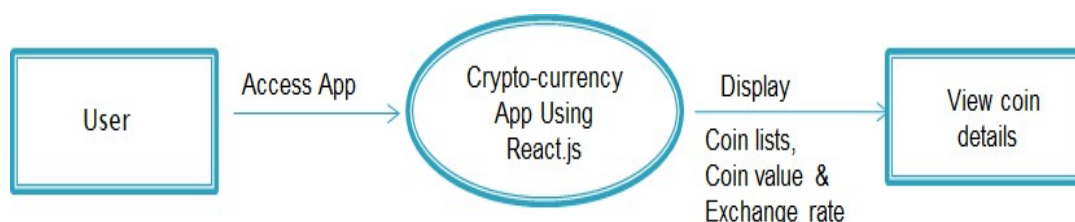
IV. Functions

1. **Home:** The "Home page" refers to the main or default page of a website that serves as the starting point for visitors. It is typically the first page users encounter when they access a website's domain or root URL. The primary purpose of a home page is to welcome visitors, introduce the website's purpose or mission, and provide an overview of its content or services. Homepage serves as a gateway to the rest of the website, offering navigation options or links to different sections or pages. The home page can also showcase important or featured content, such as news updates, promotions, or recent articles, to engage users and encourage further exploration. Home pages often feature a visually appealing design that reflects the website's branding and style. The layout typically includes a combination of text, images, graphics, and interactive elements. The design should be user-friendly, with clear navigation menus or buttons that help visitors easily find the information they are looking for. The layout should also be responsive, adapting to different screen sizes and devices to ensure a consistent user experience. In this app the user can view the home page. The home page will display features of the crypto-currency app.

The features are,

1) Statistics,

2) Community,

3) Exchange Rates,

4) Mobile Friendly,

5) Updates,

6) Global.

2. **DashBoard:**

"Dashboard" refers to a visual representation or interface that provides a consolidated view of important information, metrics, and data related to a project. Dashboard serves as a central hub for monitoring and managing project progress, performance, and key indicators. Dashboard design focuses on presenting information in a visually appealing and easily understandable manner. The layout often consists of multiple widgets or modules that display different aspects of the project's data. Widgets can include charts, graphs, progress bars, tables, lists, and other visual elements that convey information effectively.

The design should be intuitive, with clear navigation and visual cues to guide users through the dashboard's various sections. Dashboards integrate with various data sources and systems to gather the necessary information for display. This may include project management tools, time tracking systems, issue tracking systems, financial systems, or customer relationship management (CRM) platforms. By pulling data from these sources, the dashboard ensures that the presented information is accurate, up-to-date, and relevant. Dashboards are often designed to provide real-time or near-real-time updates, allowing stakeholders to have an accurate and current view of the project's status. This can be achieved through automatic data synchronization or by periodically refreshing the data displayed on the dashboard. In this module will display information of the crypto-currencies. This module has Five sub Module such as,

a)General

b)Coin

c)Exchanges

d)Exchange

Rates e)Global.

a) General:

In this sub Module display two sections,

i) Coin Listing

In this section contains the coin available listing and has View button, the user click the button goes to another section.

ii) Coins Details

Coin details displays an information about the coin and provides real time tracking value.

b) Coins:

The coin sub module is responsible for retrieving real-time data about various crypto-currencies from external APIs or data sources. It fetches information such as current prices, market capitalization, trading volume, price charts, and historical data. The module may implement mechanisms for periodic data updates to ensure users have the latest information. The coin sub module is responsible for retrieving real-time data about various crypto-currencies from external APIs or data sources. It fetches information such as current prices, market capitalization, trading volume, price charts, and historical data. The module may implement mechanisms for periodic data updates to ensure users have the latest information. When a user selects a specific coin, the coin module provides detailed information about that coin, including its historical price charts, trading pairs, market data, and additional details like project descriptions and social media links. These details help users make informed decisions about their investments and stay up-to-date with the latest developments in the crypto-currency market.

c) Exchanges:

The "Exchanges" refers to a specific module that handles the functionality related to crypto-currency exchanges. The Exchanges facilitates the integration and interaction with various crypto-currency exchange platforms to provide users with access to trading, market data, order management, and other exchange-related features. The exchanges module integrates with different crypto-currency exchange platforms, connecting the app to their APIs or trading interfaces. It establishes secure and authenticated connections with exchanges to access market data, account information, and execute trading orders. The exchanges module retrieves real-time market data, including current prices, order book depth, trading volumes, and price charts. It presents this information to users, allowing them to analyze market trends, make informed trading decisions, and view historical price movements. The module may also provide indicators, technical analysis tools, and customizable charting options to enhance the trading experience. The exchanges module enables users to manage their exchange accounts within the app. Users can view their account balances, transaction history, open orders, and other account-related details. The module allows users to initiate deposits or withdrawals, update account settings, and perform other account-related operations specific to each supported exchange.

d) Exchange Rates:

The "Exchange rates" functionality refers to the feature that provides real-time or historical exchange rates for crypto-currencies and traditional fiat currencies. Exchange Rates module enables users to convert between different currencies, calculate the value of their holdings, and stay informed about the current market rates. The Exchange rates feature retrieves and displays the current exchange rates for crypto-currencies against various fiat currencies, such as the US dollar, Euro, or other commonly used currencies. These rates are sourced from reputable crypto-currency data providers or exchanges and are updated in real-time or with a slight delay. Users can access the latest rates to understand the value of their holdings and make informed trading or conversion decisions. The exchange rates feature may also provide access to historical exchange rate data. Users can view historical rates for specific time periods, such as hourly, daily, weekly, or custom date ranges. This historical data helps users analyze past market trends, perform back-testing, or track the performance of their investments over time. The exchange rates functionality allows users to convert between different crypto-currencies or between crypto-currencies and fiat currencies. Users can enter the desired amount and select the source and target currencies to perform the conversion. The module retrieves the current exchange rate and calculates the converted value, providing users with an accurate and up-to-date conversion result.

e) Global:

The "Global" refers to a module that provides global market data, statistics, and insights related to the overall crypto-currency market. Global offers users a comprehensive view of the crypto-currency ecosystem, including market capitalization, trading volume, market trends, and other relevant data.

The global module provides a high-level overview of the crypto-currency market, displaying key metrics such as the total market capitalization, trading volume, and dominant crypto-currencies. Users can quickly assess the overall market health and track its performance over time. This information helps users understand the size and significance of the crypto-currency market. The global module may offer in-depth market research and reports, including historical data analysis, market predictions, and forecasts. These resources can help users gain a deeper understanding of the crypto-currency market and assist in formulating investment strategies. The module may collaborate with industry research firms or provide proprietary research from its own analysts.

3. About:

The "About" refers to a module that provides information and resources about the app itself, its development team, and other relevant details. About Module serves as a section where users can learn more about the app, its purpose, features, and the people behind its creation. The About module provides a general overview of the crypto-currency app, describing its purpose, key features, and benefits to users. It highlights the app's value proposition and explains how it can assist users in managing their crypto-currency investments, tracking market data, or engaging in trading activities.

V. Conclusion

Coin Track is a powerful crypto-currency tracking app that utilizes React.js, Redux, and the Coin Gecko API to provide users with real-time and accurate crypto-currency data.

By leveraging these technologies, Coin Track offers a seamless user experience, efficient data management, and access to reliable information. Whether users are tracking prices, managing portfolios, or making investment decisions, Coin-Track equips them with the necessary tools to navigate the dynamic world of crypto-currencies effectively.

VI. Future work

Enhanced Security Measures: As crypto-currencies gain wider adoption, security becomes increasingly important. Future crypto-currency apps could incorporate advanced security measures such as multi-factor authentication, biometric authentication (fingerprint or facial recognition), and hardware wallet integration to ensure the safety of users' funds.

Improved User Interface: User-friendly interfaces are crucial for wider adoption of crypto-currency apps. Future enhancements might focus on streamlining the user experience, simplifying the onboarding process for new users, and providing intuitive interfaces for managing wallets, conducting transactions, and monitoring market data.
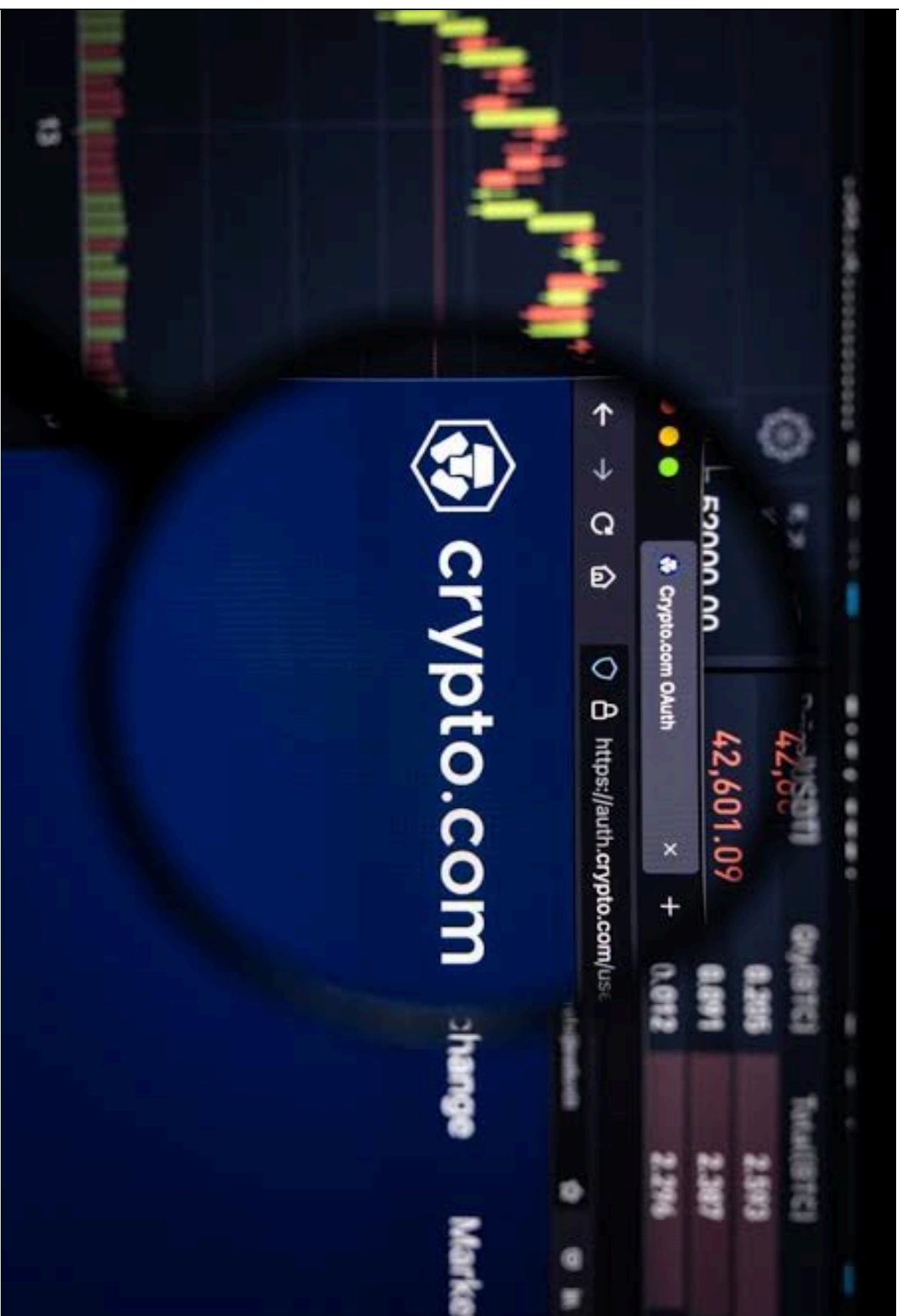
Symbol	Name	Price Usd	Price Btc
BTC	Bitcoin	37173.17	1.00
ETH	Ethereum	2043.58	0.054931
USDT	Tether	1.00	0.000027
BNB	Binance Coin	252.77	0.006794
XRP	XRP	0.687987	0.000018
USDC	USD Coin	0.999593	0.000027
SOL	Solana	46.53	0.001251
STETH	Staked Ether	2038.38	0.054791