

# **Front End Engineering-II**

**Project Report**

**Semester-IV (Batch-2022)**

**CRYPTO PORTFOLIO TRACKER**



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## ABSTRACT

In the digital age, managing cryptocurrency investments efficiently and effectively has become increasingly crucial. Traditional platforms often fall short of providing a seamless, engaging, and personalized user experience for tracking digital assets. To address these gaps, we have developed "Crypto Portfolio Tracker," a cutting-edge web application leveraging modern web technologies to create a comprehensive and user-centric cryptocurrency management platform. This project integrates React, Firebase, and real-time cryptocurrency APIs to deliver a robust, responsive, and intuitive interface, thereby enhancing user engagement and satisfaction.

"Crypto Portfolio Tracker" serves as a dynamic platform where users can monitor, manage, and analyze their cryptocurrency investments. The application employs React to build a dynamic user interface, ensuring that navigation and interaction remain smooth and responsive. React's component-based architecture allows for efficient management of the application's state and UI, facilitating rapid updates and seamless transitions. This results in a highly responsive user experience that adapts to various devices and screen sizes, providing a consistent experience across desktops, tablets, and smartphones.

Firebase plays a crucial role in the backend infrastructure of "Crypto Portfolio Tracker." It provides robust user authentication and secure data management, ensuring that users' personal information and portfolio data are protected. Firebase's real-time database capabilities allow for instantaneous updates to portfolio values and transactions, fostering a reliable and interactive user environment. Additionally, Firebase's cloud storage solutions enable efficient handling and retrieval of user-generated content, such as transaction records and personal notes.

The integration of real-time cryptocurrency APIs is pivotal to the functionality of "Crypto Portfolio Tracker." By leveraging these APIs, the application gains access to a vast array of market data, including real-time prices, historical trends, and market capitalization. This extensive data repository ensures that users have access to the most current and comprehensive information available. The API integration also supports advanced portfolio analysis and visualization, allowing users to easily track performance and make informed investment decisions.

The development of "Crypto Portfolio Tracker" involved several phases, including initial conceptualization, design, implementation, and testing. During the design phase, wireframes and prototypes were created to outline the application's layout and user flow. The implementation phase focused on building the application's frontend and backend, integrating React components with Firebase services and cryptocurrency APIs. Rigorous testing was conducted to ensure the application met performance, security, and usability standards.

Results from the project indicate significant improvements in user engagement and satisfaction. User feedback highlighted the application's intuitive design, responsive performance, and comprehensive features as major strengths. Metrics such as page load times, user retention rates, and interaction frequency demonstrated the effectiveness of the chosen technologies and design approach.

# Key Features of Crypto Portfolio Tracker

## 1. Real-Time Portfolio Tracking

**Live Updates:** Track the value of cryptocurrency holdings in real-time with instantaneous updates.

**Market Data:** Access live market data including current prices, trends, and market capitalization for a comprehensive overview.

## 3. Dynamic Dashboard

**Portfolio Overview:** Provides a detailed overview of the user's portfolio, showing total value, individual asset performance, and recent activity.

**Customizable Widgets:** Users can personalize their dashboard with widgets that display relevant information like favorite assets, watchlists, and news feeds.

## 5. Comprehensive Analytics

**Performance Metrics:** Detailed analytics on portfolio performance including ROI, daily changes, and historical trends.

**Visualization Tools:** Interactive charts and graphs to help users visualize the performance and distribution of their investments.

## 6. Alerts and Notifications

**Price Alerts:** Users can set alerts for specific price thresholds to receive notifications when those thresholds are met.

**News Alerts:** Stay updated with the latest news and developments in the cryptocurrency market.

## 7. Advanced Search and Filter Options

**Search Functionality:** Easily find specific cryptocurrencies or transactions using advanced search filters.

**Filter by Criteria:** Filter assets by various criteria such as market cap, performance, and transaction date.

## 8. Responsive Design

**Cross-Device Compatibility:** The platform is optimized for desktops, tablets, and smartphones, providing a consistent experience across all devices.

**Adaptive Layouts:** Dynamic layouts that adjust to different screen sizes for optimal usability.

## 9. User-Friendly Interface

**Intuitive Navigation:** Easy-to-use navigation ensuring users can access different features and information without hassle.

**Clean Design:** Aesthetically pleasing and organized design to enhance user experience.

## 10. Integration with External APIs

**Cryptocurrency APIs:** Real-time integration with multiple cryptocurrency APIs to ensure up-to-date data.

**Exchange Integration:** Potential integration with cryptocurrency exchanges for direct trading and portfolio synchronization.

## 11. Latest News

**Up-to-Date News:** Fetch the latest cryptocurrency news using a reliable news API to keep users informed about market trends and important updates.

**Real-Time Updates:** Ensure that news is updated in real-time, providing the most current information available.

## 12. Dark Mode Toggle

**User Preference:** Implement a dark mode toggle to allow users to switch between light and dark themes based on their preference.

**Chakra UI Integration:** Utilize Chakra UI's theme customization capabilities to provide a seamless dark mode experience.

### 13. Most Traded, Highest Volume, and Biggest Drop

**Market Insights:** Display lists of the most traded cryptocurrencies, those with the highest trading volumes, and those with the biggest price drops.

**Real-Time Data:** Ensure these lists are updated in real-time to reflect the latest market conditions.

### 14. Graphs and Analytics

**Visual Data Representation:** Provide interactive graphs to visualize cryptocurrency price trends, trading volumes, and other relevant metrics.

**Historical Data:** Allow users to view historical price data and analyze trends over different time periods.

### 15. Transaction Fees

**Cost Transparency:** Display the transaction fees associated with buying, selling, or transferring cryptocurrencies.

**Comparison:** Enable users to compare transaction fees across different exchanges or networks

### 16. Latest and Real-Time Changes

**Live Data Updates:** Show real-time changes in cryptocurrency prices, market caps, and other key metrics.

**Notifications:** Implement notification features to alert users about significant changes in their portfolio or the market.

## 17. Favorite Cryptocurrencies

**Favorites Management:** Allow users to save and manage a list of their favorite cryptocurrencies for quick access.

**Personalization:** Provide personalized recommendations based on the user's favorite cryptocurrencies and viewing history.

## 18. Portfolio Summary

**Comprehensive Overview:** Display a summary of the user's cryptocurrency portfolio, including total value, individual coin holdings, and performance over time.

**Real-Time Valuation:** Ensure that the portfolio valuation is updated in real-time with the latest market prices.

## 19. News Page

**Curated Content:** Show a dedicated news page with curated articles and updates relevant to the user's portfolio and interests.

**Source Variety:** Integrate multiple news sources to provide diverse perspectives and comprehensive coverage of the cryptocurrency market.

These key features collectively create a comprehensive and user-friendly platform for tracking and managing cryptocurrency portfolios, enhancing user engagement and satisfaction while providing a secure and efficient environment for real-time data interaction



# PROBLEM DEFINITION AND REQUIREMENTS

## Problem Statement

In today's digital landscape, cryptocurrency investors face several challenges when it comes to managing their portfolios efficiently. Traditional portfolio management platforms often suffer from outdated interfaces, lack of real-time updates, limited analytical tools, and insufficient security measures. As a result, users experience frustration when trying to track their investments, analyze portfolio performance, and stay updated with market trends.

"Crypto Portfolio Tracker" aims to address these issues by providing a modern, responsive, and user-centric platform that leverages the power of React, Firebase, and real-time cryptocurrency APIs. This project seeks to offer an enhanced user experience with real-time updates, comprehensive analytics, and seamless navigation, ultimately bridging the gap between users and the rich, detailed cryptocurrency data they need.

## Software Requirements

To develop and maintain "Crypto Portfolio Tracker," a set of specific software tools and technologies are required:

**React:** A JavaScript library for building user interfaces, React is essential for developing the dynamic, responsive, and component-based architecture of "Crypto Portfolio Tracker."

**Cryptocurrency APIs:** APIs such as CoinGecko or CoinMarketCap are used to fetch extensive and up-to-date cryptocurrency data, including prices, market caps, and historical data.

**Crypto Portfolio Tracker relies on data sourced primarily from cryptocurrency APIs. These APIs provide a comprehensive database that includes:**

**Cryptocurrency Details:** Prices, market capitalizations, historical data, and real-time trends.

**Portfolio Performance Metrics:** Real-time updates on portfolio value, individual asset performance, and overall ROI.

**Market News and Alerts:** Up-to-date news and alerts on market changes, significant price movements, and other relevant events.

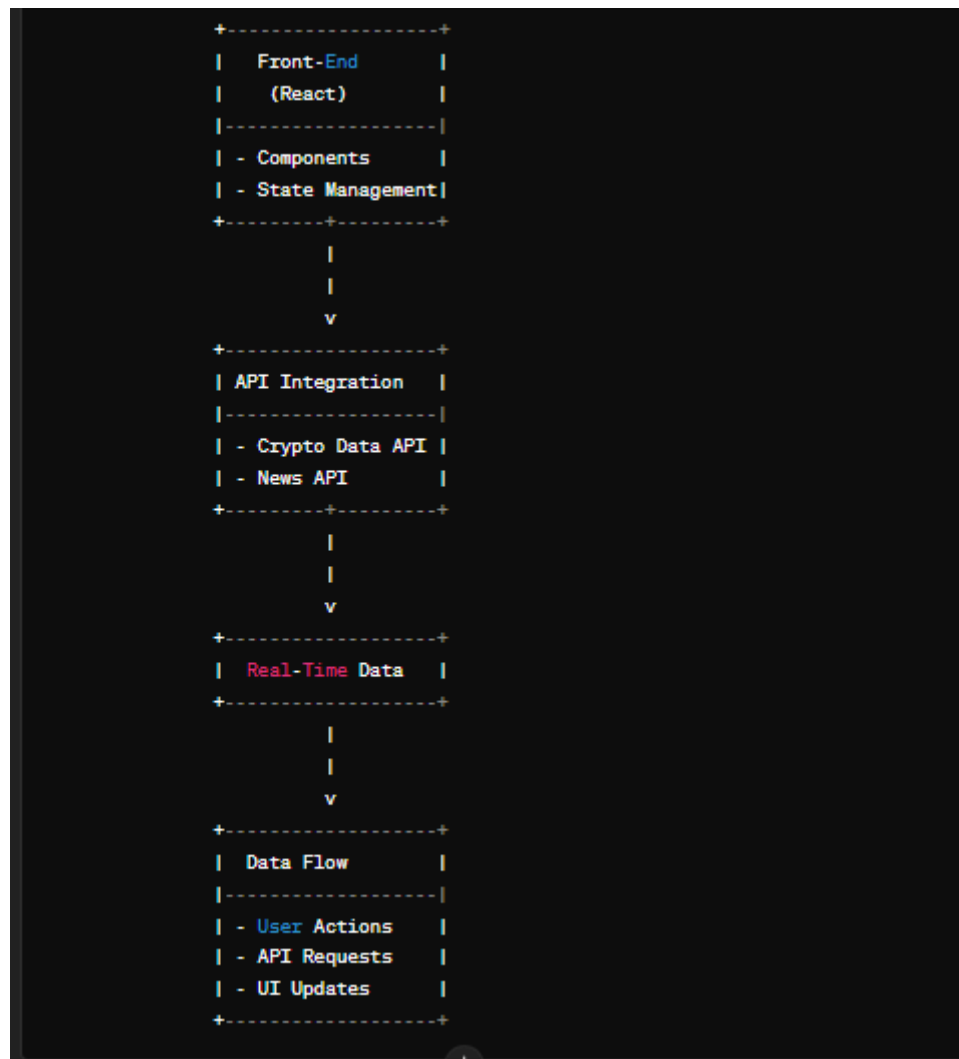
By utilizing these data sets, "Crypto Portfolio Tracker" ensures that users have access to the most accurate and up-to-date information, facilitating an engaging and informative user experience. This integration of robust software tools, reliable hardware, and comprehensive datasets forms the foundation of "Crypto Portfolio Tracker," enabling it to address the challenges faced by cryptocurrency investors effectively.

## **Proposed Design / Methodology**

The proposed design and methodology for "Rotten Potatoes" involve the integration of various modern web development technologies to create a responsive, user-friendly, and robust movie review platform. The design focuses on a modular architecture, enabling scalability and maintainability. Below is a detailed explanation of the design approach, including schematic diagrams, file structure, and algorithms used.

### **Schematic Diagram**

The schematic diagram below illustrates the high-level architecture of "Rotten Potatoes":



## APIs and Main Code

```
fetchAssets: async () => {
  try {
    const response = await fetch("https://api.coincap.io/v2/assets");
    if (!response.ok) {
      throw new Error(`HTTP error! status: ${response.status}`);
    }
    const data = await response.json();
    const assetsWithRank = data.data.map((asset, index) => ({
      ...asset,
      rank: index + 1,
    }));

    set(() => ({
      ...calculateMarketData(assetsWithRank),
      assets: assetsWithRank,
    }));
  } catch (error) {
    console.error("Error fetching assets:", error);
  }
},
});
```

```
fetchGasPrices: async () => {
  try {
    const response = await fetch("https://api.etherscan.io/api?module=gastracker&action=gasoracle");
    if (!response.ok) throw new Error("Failed to fetch gas prices");
    const data = await response.json();
    const gasPrices = data.result;

    if (gasPrices) {
      const { ProposeGasPrice, FastGasPrice } = gasPrices;
      set(() => ({
        standardGasPrice: ProposeGasPrice,
        fastGasPrice: FastGasPrice,
        lastFetched: Date.now(),
      }));
    }
  } catch (error) {
    console.error("Error fetching gas prices:", error.message);
  }
},
});
```

```

return (
  <Box display="flex" flexDirection="column" minHeight="100vh">
    <Router>
      <Header />
      <Routes>
        <Route path="/" element={<Index />} />
        <Route path="/about" element={<About />} />
        <Route path="/favorites" element={<Favorites />} />
        <Route path="/news" element={<NewsPage />} />
        <Route path="/crypto/:id" element={<CryptoDetails />} />
      </Routes>
      <Footer />
    </Router>
  </Box>
);
}

export default App;

```

```

<html lang="en">
  <head>
    <meta charset="utf-8" />
    <meta content="width=device-width, initial-scale=1.0" name="viewport" />
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link href="https://fonts.googleapis.com/css2?family=Nunito:ital,wght@0,200..1000;1,200..1000&display=swap" rel="stylesheet">
    <script src="https://cdn.jsdelivr.net/npm/chartjs-chart-financial"></script>
    <title>CRYPTOTRACKER</title>
  </head>
  <body>
    <div id="root"></div>
    <script src="/src/main.jsx" type="module"></script>
  </body>
</html>

```

```

import React, { useState, useEffect } from "react";
import { Box, Heading, Text } from "@chakra-ui/react";
import CryptoTable from "../components/market/table/CryptoTable";
import NewsSection from "../components/news/NewsSection";
import useAssetStore from "../stores/useAssetStore";
import useNewsStore from "../stores/useNewsStore";

const Favorites = () => {
  const assets = useAssetStore((state) => state.assets);
  const [favorites, setFavorites] = useState(() => {
    try {
      const localData = localStorage.getItem("favorites");
      return localData ? JSON.parse(localData) : {};
    } catch (error) {
      console.error("Error reading favorites from localStorage:", error);
      return {};
    }
  });

  useEffect(() => {
    try {
      localStorage.setItem("favorites", JSON.stringify(favorites));
    } catch (error) {
      console.error("Error saving favorites to localStorage:", error);
    }
  }, [favorites]);

```

## Methodology

## Planning

## Requirement Analysis

Identify key features such as displaying all cryptocurrencies, integrating a news page, and saving favorite cryptocurrencies.

Define user stories and use cases to understand the user interactions and functionalities required.

## Technology Stack Selection

- Front-End: React for building the user interface.
- UI Framework: Chakra UI for a modern, responsive design.
- APIs: Coincap API and Etherscan API for cryptocurrency data, a reputable news API for the latest updates.
- State Management: React's Context API or Redux.

## Project Timeline

- Create a detailed project plan with timelines and milestones for each phase: design, implementation, testing, and deployment.

## Design

### Component Design

- **UI Components:** Design reusable UI components like `Dashboard`, `CryptoList`, `NewsPage`, `Favorites`, and `TransactionList`.
- **Responsive Layout:** Use Chakra UI to design a responsive layout that works across all devices.

### Data Flow Diagrams

- Create data flow diagrams to illustrate how data will move between the front-end, APIs, and user actions.
- Ensure real-time data updates are reflected in the UI.

## User Interface Mockups

- Develop wireframes and mockups for key screens: home page, portfolio page, news page, and favorites.
- Gather feedback from stakeholders to refine the UI/UX design.

## Implementation

- Front-End Development (React and Chakra UI)
- **Set Up Project:** Initialize the React project and integrate Chakra UI.
- **Build Components:** Develop modular components, ensuring each component is reusable and maintainable.
- **State Management:** Implement global state management using Context API or Redux to manage application state.

## API Integration

- **Crypto Data API:** Integrate a cryptocurrency data API to fetch real-time prices and market trends.
- **News API:** Integrate a news API to fetch the latest cryptocurrency news.
- **Data Fetching:** Use `fetch` or `axios` to retrieve data from the APIs and manage it within the application state.



## **Favorites Feature**

- **Local Storage:** Implement functionality to save and retrieve favorite cryptocurrencies.
- **Favorites List:** Develop a component to display the list of favorite cryptocurrencies.

## **Testing**

### **Unit Testing**

- Write unit tests for individual components using testing libraries such as Jest and React Testing Library.
- Ensure that each component functions correctly in isolation.

### **Integration Testing**

- Perform integration tests to verify that different components work together as expected.
- Test the interaction between the front-end, APIs, and Firebase to ensure seamless data flow.

### **User Testing**

- Conduct user testing sessions to gather feedback on usability and performance.
- Make necessary adjustments based on user feedback to enhance the user experience.

## Performance Testing

- Test the application's performance, including load times and responsiveness, across different devices and network conditions.

## Hosting

- Deploy the application to a reliable hosting service such as Netlify, Vercel Hosting.
- Configure the hosting environment to support secure and efficient access to the application.

## Monitoring and Maintenance

- **Monitoring Tools:** Integrate tools like Google Analytics to monitor user interactions and application performance.
- **Error Tracking:** Use services like Sentry to track and manage errors in the application.
- **Regular Updates:** Keep the application updated with the latest dependencies and security patches.
- **User Feedback:** Continuously collect and implement user feedback to improve the application.

This methodology provides a comprehensive approach to planning, designing, implementing, testing, and deploying the Crypto Portfolio Tracker, ensuring a robust and user-friendly application.

RESULTS

Market

Favorites

News

ETH Gas: 15 Gwei

About Us

Explore the Top 100 Cryptocurrencies

Our top 100 crypto have a total market value of \$2.30 Trillion, a +0.66% change in the last 24 hours.

| RANK |   | NAME            | PRICE    | 24H%   | MARKET CAP ▼         | VOLUME (24H)      | CIRCULATING SUPPLY |
|------|---|-----------------|----------|--------|----------------------|-------------------|--------------------|
| 1    | ♥ | Bitcoin<br>BTC  | \$67,269 | 0.42%  | \$13,25,19,76,75,640 | \$6,09,09,54,394  | 1,96,99,693        |
| 2    | ♥ | Ethereum<br>ETH | \$3,110  | 1.04%  | \$3,73,68,93,74,315  | \$3,81,22,07,974  | 12,01,20,311       |
| 3    | ♥ | Tether<br>USDT  | \$1      | -0.08% | \$1,11,22,25,99,594  | \$12,24,99,01,682 | 1,11,20,54,83,123  |
| 4    | ♥ | BNB<br>BNB      | \$574    | -0.43% | \$95,89,83,77,689    | \$22,78,00,980    | 16,68,01,148       |
| 5    | ♥ | Solana<br>SOL   | \$177    | 5.76%  | \$79,85,72,77,214    | \$92,79,08,223    | 44,88,00,482       |

|   |   |                 |          |       |                      |                  |              |
|---|---|-----------------|----------|-------|----------------------|------------------|--------------|
| 1 | ♥ | Bitcoin<br>BTC  | \$67,267 | 0.42% | \$13,25,14,14,12,424 | \$6,09,24,58,268 | 1,96,99,693  |
| 2 | ♥ | Ethereum<br>ETH | \$3,110  | 1.04% | \$3,73,59,99,15,144  | \$3,81,06,94,271 | 12,01,20,311 |

Your Favorite Cryptocurrencies

Keep your most loved cryptocurrencies close and never miss a beat in the market!

| RANK |   | NAME            | PRICE    | 24H%  | MARKET CAP ▼         | VOLUME (24H)     | CIRCULATING SUPPLY |
|------|---|-----------------|----------|-------|----------------------|------------------|--------------------|
| 1    | ♥ | Bitcoin<br>BTC  | \$67,267 | 0.42% | \$13,25,14,14,12,424 | \$6,09,24,58,268 | 1,96,99,693        |
| 2    | ♥ | Ethereum<br>ETH | \$3,110  | 1.04% | \$3,73,59,99,15,144  | \$3,81,06,94,271 | 12,01,20,311       |

## Latest Crypto News

Stay up-to-date with the latest happenings in the world of cryptocurrencies.



DOJ charges two Chinese nationals in \$73m crypto scam  
nft.news



DOJ charges two Chinese nationals in \$73m crypto scam  
crypto.news



CleanSpark: Recent Acquisitions And Increase In Capacity Are Offset By Halving Decline  
Seeking Alpha




HBAR Price Under Pressure Warns \$0.10 Crackdown  
coinpedia





Analyst Compares Bitcoin's Current State to 2017  
CoinTurk News



Veteran Trader Peter Brandt Says Peter Schiff Criticizes Bitcoin to Attract Attention, Increase Foll...  
Bitcoin.com

 ETH Gas: 15 Gwei





About Us

 **Most Wanted**

1. Pendle

PENDLE

15.66%

2. Fantom

FTM

10.48%

3. XinFin Network

XDC

10.17%

## About Us

Track, trade, triumph.



At CryptoTracker, we believe in empowering every individual to navigate the exciting and ever-changing world of cryptocurrencies.

Trade carefully. 🧐

## REFERENCES :-

- <https://fonts.google.com/>
- <https://v2.chakra-ui.com/>
- <https://coinmarketcap.com/>
- <https://etherscan.io/>
- <https://www.chartjs.org/>