International Journal of Research and Technology (IJRT)
International Open-Access, Peer-Reviewed, Refereed, Online Journal
ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529
| An ISO 9001:2015 Certified Journal |

CRYPTOCURRENCY PORTFOLIO TRACKER

Sahana B, Sangeetha M, Varsha M
Mrs. Saranya M
Assistant Professor, Department of Information Technology,
Sri Shakthi Institute of Engineering and Technology, Coimbatore-641062, Tamil Nadu, India.
Email ID:sangethamanivannan2008@gmail.com

ABSTRACT
Cryptocurrency markets contain many digital assets whose prices and values may change frequently. Users who hold more than one cryptocurrency may find it difficult to maintain a clear record of the quantity owned, purchase price, current indicative price and overall portfolio value. The Cryptocurrency Portfolio Tracker is a browser-based application designed to organise this information in one simple dashboard.
The prototype is developed using HTML for page structure, CSS for layout and responsive styling, and JavaScript for validation, calculations, interaction and data persistence. A user can add cryptocurrency holdings, enter quantity and purchase price, view estimated holding value and profit or loss, search the holdings list, and review a summary of the portfolio. Browser localStorage can be used to retain portfolio entries on the same browser and device.
The project focuses on usability, basic portfolio calculations and clear presentation of information. Unless a live market-price API is integrated, the displayed prices are sample or user-entered values and should not be treated as real-time market data. The application is an educational tracking tool and does not execute trades, connect to wallets or provide investment advice.
Keywords: Cryptocurrency, Portfolio Tracker, HTML, CSS, JavaScript, localStorage, Dashboard, Digital Assets.

1. INTRODUCTION
Cryptocurrency is a form of digital asset that uses cryptographic techniques and distributed-ledger technologies. People may hold different cryptocurrencies, purchase them at different prices and track changes in their estimated value. When the information is maintained manually, it can become difficult to calculate the total value of holdings and compare purchase cost with the latest available price.
The Cryptocurrency Portfolio Tracker provides a single web interface to record and review cryptocurrency holdings. It is intended as a lightweight educational application that demonstrates frontend development, event handling, form validation, data processing and browser-based storage.

1.1 Existing challenges in complexity analysis

The existing cryptocurrency portfolio management systems face several challenges in analyzing the complexity of managing multiple digital assets. Users often invest in different cryptocurrencies, and tracking their prices, total investments, and profit or loss manually can be time-consuming. Market prices fluctuate frequently, making it difficult to maintain accurate portfolio information.

Traditional tracking methods may require users to calculate the total value of their holdings and compare price changes individually. These processes can become complicated as the number of cryptocurrencies increases. In addition, some basic tracking methods lack a simple user interface, real-time price updates, and clear graphical representations of portfolio performance.

Therefore, an efficient Cryptocurrency Portfolio Tracker is needed to simplify portfolio management, reduce manual calculations, and provide a clear overview of cryptocurrency investments using web technologies such as HTML, CSS, and JavaScript.

1.2 Role of static analysis and machine learning

Static analysis and machine learning can play important roles in improving the efficiency of a Cryptocurrency Portfolio Tracker. Static analysis involves examining the structure and code of a software application without executing it. In this project, it helps identify coding errors, maintain code quality, and improve the reliability of HTML, CSS, and JavaScript components.

Machine learning is a technology that uses historical data to identify patterns and generate predictions. In cryptocurrency applications, it can be used to analyze historical price movements, recognize market trends, and estimate possible price changes. These predictions may help users understand cryptocurrency market behavior, but they cannot guarantee future prices.

By combining static analysis principles with machine learning techniques, cryptocurrency tracking applications can be made more reliable and informative. Although the proposed Cryptocurrency Portfolio Tracker primarily uses HTML, CSS, and JavaScript to manage and display portfolio information, machine learning can be considered a future enhancement for advanced market analysis and predictive features.

1.3 Problem statement and objectives

Problem Statement:

Managing cryptocurrency investments can be challenging due to frequent market price fluctuations and the difficulty of tracking multiple digital assets. Manual tracking methods require users to calculate investment values, monitor individual cryptocurrency prices, and evaluate profits or losses separately. These activities can be time-consuming and may lead to calculation errors. Therefore, an efficient and user-friendly Cryptocurrency Portfolio Tracker is required to simplify investment monitoring and provide clear portfolio information in a single interface.

The specific objectives are:

The main objectives of the Cryptocurrency Portfolio Tracker are:

- To develop a simple and user-friendly web application for tracking cryptocurrency investments.
- To allow users to add, view, and manage their cryptocurrency holdings.
- To calculate the total investment value and display profit or loss based on the available price data.
- To provide a clear overview of portfolio distribution and individual asset values.
- To design a responsive and attractive interface using HTML and CSS.
- To implement portfolio calculations and interactive features using JavaScript.
- To reduce manual calculations and improve the efficiency of cryptocurrency portfolio management.

2. MATERIALS AND METHODS

2.1 Development approach

The Cryptocurrency Portfolio Tracker is developed using a structured and systematic approach to ensure simplicity, accuracy, and usability. The development process includes requirement analysis, interface design, implementation, testing, and maintenance. Each stage contributes to building an efficient web application for managing cryptocurrency investments.

Initially, the project requirements are identified, including adding cryptocurrency details, viewing portfolio information, calculating total investment value, and displaying profit or loss. HTML is used to create the structure of the web application, while CSS is used to design an attractive and responsive user interface. JavaScript is used to implement interactive features, perform calculations, and update portfolio information dynamically.

The application is then tested to verify that all features work correctly and that calculations produce the expected results. Errors are identified and corrected to improve reliability and usability. Finally, the application is refined based on testing results to provide a smooth user experience.

This development approach helps create a lightweight, accessible, and user-friendly Cryptocurrency Portfolio Tracker that simplifies the process of monitoring and managing digital asset investments.

2.2 System architecture

The Cryptocurrency Portfolio Tracker follows a simple three-layer system architecture consisting of the Presentation Layer, Application Layer, and Data Layer. This architecture ensures that the user interface, application logic, and data management work together efficiently.

The Presentation Layer is developed using HTML and CSS. It provides a user-friendly interface where users can enter cryptocurrency details, view portfolio information, and check profit or loss. The responsive design allows the application to work smoothly on different screen sizes.

The Application Layer is implemented using JavaScript. It processes user inputs, performs calculations for investment value and profit or loss, updates portfolio information dynamically, and manages interactions within the application.

International Journal of Research and Technology (IJRT)
International Open-Access, Peer-Reviewed, Refereed, Online Journal
ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529
| An ISO 9001:2015 Certified Journal |

The Data Layer stores cryptocurrency portfolio details such as coin name, quantity, purchase price, and current price. In this project, the data can be managed using browser local storage, allowing portfolio information to remain available even after the page is refreshed.



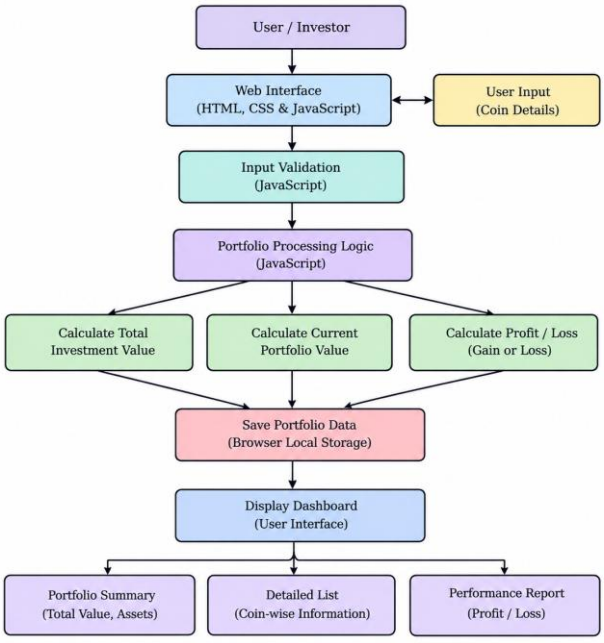


Figure 2.5: System Flow of the Cryptocurrency Portfolio Tracker

Fig. 1. System Architecture of the Proposed Code Analyzer and Complexity Predictor.

International Journal of Research and Technology (IJRT)
International Open-Access, Peer-Reviewed, Refereed, Online Journal
ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529
| An ISO 9001:2015 Certified Journal |

2.3 Technology stack and development environment

The Cryptocurrency Portfolio Tracker is developed using HTML, CSS, and JavaScript to provide an efficient and user-friendly web application. HTML is used to create the structure of the application, including forms, tables, and dashboard elements. CSS is used to improve the visual appearance through styling, layouts, colours, and responsive design. JavaScript handles user interactions, performs investment calculations, and dynamically updates portfolio information.

The development environment consists of Visual Studio Code for writing and editing code and Google Chrome for running and testing the application. Browser Local Storage is used to store cryptocurrency details, including coin names, quantities, and purchase prices, so that the information remains available after refreshing the page.

The combination of these technologies provides a lightweight and accessible solution for tracking cryptocurrency investments, viewing portfolio performance, and managing digital asset information efficiently.

2.4 Data collection and processing

The Cryptocurrency Portfolio Tracker collects cryptocurrency information entered by the user, including coin name, quantity, purchase price, and current price. This information is used to maintain portfolio records and calculate the total investment value and profit or loss for each cryptocurrency.

The collected data is processed using JavaScript to perform calculations and update portfolio details dynamically. The total value of each cryptocurrency holding is calculated by multiplying the quantity by its current price. Profit or loss is determined by comparing the current value with the original investment value.

The processed information is displayed through tables, summary cards, and graphical representations to help users understand their portfolio performance. Browser Local Storage can be used to save portfolio details and retrieve them when the application is reopened. If live market prices are required, the application can be integrated with a cryptocurrency market data API.

This data collection and processing approach reduces manual calculations, improves the organization of investment information, and provides users with a clear overview of their cryptocurrency portfolio.

2.5 Database design

The database design of the Cryptocurrency Portfolio Tracker focuses on storing and managing cryptocurrency portfolio information efficiently. The system maintains details such as cryptocurrency name, quantity held, purchase price, current price, and investment value. These details help users monitor their digital assets and understand their portfolio performance.

In this project, browser Local Storage is used as a simple data storage mechanism instead of a traditional database management system. The portfolio information is stored in key-value format and retrieved whenever the application is accessed. JavaScript is used to add, update, retrieve, and delete cryptocurrency records.

International Journal of Research and Technology (IJRT)
International Open-Access, Peer-Reviewed, Refereed, Online Journal
ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529
| An ISO 9001:2015 Certified Journal |

The system organizes the collected information to support calculations such as total portfolio value and profit or loss. Proper data handling helps maintain consistency and improves the usability of the application. This database design provides a lightweight and cost-effective solution for managing cryptocurrency portfolio data without requiring a separate database server.

2.6 Code analysis and complexity prediction

Code analysis and complexity prediction are important techniques used to evaluate the efficiency and performance of a program. Code analysis involves examining the structure and logic of the source code to understand how different operations are performed. It helps identify loops, conditional statements, functions, and other programming structures that influence execution time and memory usage.

Complexity prediction estimates the time and space required by an algorithm as the input size increases. Time complexity describes how the number of operations grows with input size, while space complexity represents the additional memory required during execution. Big-O notation, such as O(1), O(n), and $O(n^2)$, is commonly used to express algorithmic complexity.

In the proposed system, static analysis techniques can be used to examine source code without executing it. Relevant features are identified and analyzed to estimate the program's complexity. Rule-based methods or machine learning techniques can further support complexity prediction. The results help users understand program efficiency and identify possible areas for optimization.

Code pattern	Typical time complexity	Example
Accessing a stored cryptocurrency record by index	O(1)	Accessing a specific portfolio item in an array
Searching for a cryptocurrency by name	O(n)	Finding Bitcoin or Ethereum in the portfolio
Iterating through all portfolio records	O(n)	Calculating the total portfolio value
Adding a new cryptocurrency record	O(1) average	Adding a new coin to the portfolio array
Sorting cryptocurrencies by price or value	O(n log n) average	Arranging cryptocurrencies by current value
Calculating total investment and profit or loss	O(n)	Processing all holdings to calculate portfolio performance

Table 1. Common code patterns and their expected time complexity classes.

2.7 Analysis workflow

The analysis workflow of the Cryptocurrency Portfolio Tracker describes the sequence of steps involved in collecting, processing, and displaying cryptocurrency portfolio information. The workflow begins when the user enters cryptocurrency details, such as coin name, quantity, purchase price, and current price.

International Journal of Research and Technology (IJRT)
International Open-Access, Peer-Reviewed, Refereed, Online Journal
ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529
| An ISO 9001:2015 Certified Journal |

The entered data is validated and processed using JavaScript. The system calculates the total investment value, current portfolio value, and profit or loss for each cryptocurrency. The portfolio information is then stored in browser Local Storage and retrieved whenever required. Finally, the processed results are displayed through a dashboard containing portfolio summaries, tables, and graphical representations.

This workflow helps organize cryptocurrency data efficiently, reduces manual calculations, and provides users with a clear overview of their investments.

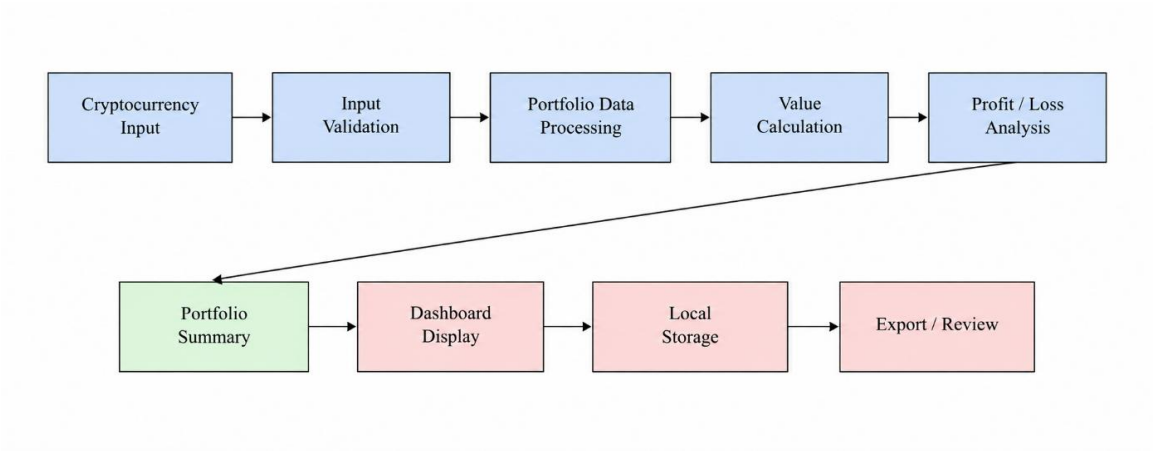


Fig. 2. Workflow of the Proposed Code Analyzer and Complexity Predictor.

2.8 Testing and evaluation

Testing and evaluation are essential stages in the development of the Cryptocurrency Portfolio Tracker. Testing is performed to ensure that all application features function correctly and provide accurate results. The system is tested using different cryptocurrency details, quantities, purchase prices, and current prices to verify the correctness of portfolio calculations.

Functional testing is carried out to check whether users can add, view, update, and delete cryptocurrency records successfully. Calculation testing verifies the total investment value, current portfolio value, and profit or loss. Data storage testing ensures that portfolio information saved in browser Local Storage remains available after refreshing or reopening the application.

User interface testing is performed to verify that the application displays information clearly and works properly across different screen sizes. Error handling is also evaluated to identify invalid inputs, missing values, and incorrect data entries.

The evaluation process helps identify and correct errors, improve application reliability, and ensure a smooth user experience. Overall, testing and evaluation confirm that the Cryptocurrency Portfolio Tracker meets its functional requirements and provides an efficient solution for monitoring cryptocurrency investments.

3. RESULTS AND DISCUSSION

3.1 Proposed system functionality

International Journal of Research and Technology (IJRT)
International Open-Access, Peer-Reviewed, Refereed, Online Journal
ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529
| An ISO 9001:2015 Certified Journal |

The proposed Cryptocurrency Portfolio Tracker is a web-based application designed to simplify the process of managing and monitoring cryptocurrency investments. It provides a user-friendly interface that allows users to maintain their cryptocurrency holdings and view portfolio information in an organized manner.

The system allows users to add cryptocurrency details, including coin name, quantity, purchase price, and current price. Using JavaScript, the application processes the entered information and calculates the total investment value, current portfolio value, and profit or loss. These results help users understand the performance of individual cryptocurrencies and their overall portfolio.

The application provides a dashboard to display portfolio summaries, cryptocurrency details, and investment performance. Browser Local Storage is used to save portfolio data so that users can access their information even after refreshing the webpage. The interface is designed using HTML and CSS to provide a clear layout and responsive user experience.

The proposed system reduces manual calculations, improves data organization, and makes cryptocurrency portfolio monitoring easier. It can also be enhanced with live cryptocurrency price updates, graphical analysis, and additional reporting features to support more advanced portfolio management.

3.2 Functional evaluation

Functional evaluation examines whether the implemented modules of the Cryptocurrency Portfolio Tracker work according to their requirements. Representative test scenarios for each module are summarised in Table 2. The results should be documented based on the observed behaviour of the application, and features that have not been tested should be identified as pending evaluation.

Test ID	Module	Test scenario	Expected behaviour
T1	Data Input	Enter valid and invalid cryptocurrency details	Valid data accepted; invalid data displays a validation message
T2	Input Validation	Submit empty fields	Clear validation message displayed
T3	Portfolio Management	Add a new cryptocurrency	Cryptocurrency details added to the portfolio
T4	Value Calculation	Enter coin quantity and current price	Current portfolio value calculated correctly
T5	Profit/Loss Calculation	Enter purchase price and current price	Profit or loss calculated correctly
T6	Local Storage	Refresh the webpage after adding data	Previously saved portfolio details remain available
T7	Dashboard	View the portfolio summary	Total investment, current value, and profit or loss displayed clearly

Table 2. Representative functional test scenarios for the proposed system.

Any failed tests should be investigated and repeated after corrections are made. The calculation module should be tested using different cryptocurrency quantities and prices to verify the accuracy of the results. Data storage and input validation should also be checked to ensure reliable operation. Features that depend on live cryptocurrency market prices should be marked as pending evaluation if they have not yet been implemented or tested.

3.3 Comparison with conventional approaches

Conventional cryptocurrency portfolio management methods often involve spreadsheets, manual calculations, and the use of multiple websites or applications to monitor digital assets. Users must manually enter cryptocurrency details, track price changes, calculate investment values, and determine profit or loss. These activities may require additional time and effort, especially when managing multiple cryptocurrencies.

The Cryptocurrency Portfolio Tracker provides a simple and organized solution for managing cryptocurrency investments through a web-based application. It is developed using HTML, CSS, and JavaScript. HTML provides the structure of the application, CSS improves its appearance, and JavaScript performs calculations and handles user interactions.

Unlike conventional methods, the proposed system allows users to enter cryptocurrency details, such as coin name, quantity, purchase price, and current price, in a single interface. The application processes the entered information and calculates the total investment value, current portfolio value, and profit or loss. The results are displayed in an organized dashboard, making it easier for users to understand their portfolio performance.

The system also uses browser Local Storage to retain portfolio information. This helps users access their saved details even after refreshing or reopening the webpage in the same browser. The application reduces repetitive manual calculations and provides a more convenient way to organize cryptocurrency records.

Another advantage of the proposed system is its simple and user-friendly interface. Users with basic computer knowledge can enter and manage their portfolio details without requiring advanced technical skills. Since the application uses standard web technologies, it can run in a compatible web browser without requiring a separate desktop application.

3.4 Discussion

The Cryptocurrency Portfolio Tracker simplifies cryptocurrency investment management using HTML, CSS, and JavaScript. It allows users to enter cryptocurrency details and automatically calculate total investment value, current portfolio value, and profit or loss.

The application uses Local Storage to retain portfolio details and displays the results through a simple, user-friendly dashboard. Compared with conventional methods, it reduces manual calculations and improves data organization.

However, the accuracy of the results depends on the entered data. Future enhancements may include live cryptocurrency price updates, graphical reports, and improved data security. Overall, the system provides a convenient way to monitor cryptocurrency investments.

4. CONCLUSION

The Cryptocurrency Portfolio Tracker provides a simple and efficient solution for managing cryptocurrency investments using HTML, CSS, and JavaScript. The application enables users to enter cryptocurrency details and calculate total investment value, current portfolio value, and profit or loss. It presents the results through a user-friendly dashboard.

The system reduces manual calculations, improves data organization, and helps users monitor their cryptocurrency holdings conveniently. Browser Local Storage is used to retain portfolio details, allowing users to access previously saved information even after refreshing the webpage.

The project demonstrates how web technologies can be used to develop a practical portfolio management application. Although the system depends on the accuracy of the entered data, its functionality can be improved by integrating live cryptocurrency prices, graphical reports, advanced analytics, and secure cloud-based storage.

Overall, the Cryptocurrency Portfolio Tracker provides a useful foundation for monitoring digital assets and understanding investment performance. Future enhancements can make the application more reliable, informative, and suitable for managing larger cryptocurrency portfolios.

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my college management and Head of the Department for providing me with the opportunity and facilities to complete this project, “Cryptocurrency Portfolio Tracker.”

I am thankful to my project guide and faculty members for their valuable guidance, encouragement, and support throughout the development of this project. Their suggestions helped me improve my understanding of HTML, CSS, and JavaScript.

I also thank my friends and classmates for their support and encouragement during the project work. Finally, I express my heartfelt gratitude to my parents for their continuous motivation and support, which helped me complete this project successfully.

REFERENCES

1. Mozilla Developer Network (MDN), “HTML: HyperText Markup Language.” https://developer.mozilla.org/en-US/docs/Web/HTML
2. Mozilla Developer Network (MDN), “CSS: Cascading Style Sheets.” https://developer.mozilla.org/en-US/docs/Web/CSS
3. Mozilla Developer Network (MDN), “JavaScript Guide.” https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide
4. Mozilla Developer Network (MDN), “Window: localStorage Property.” https://developer.mozilla.org/en-US/docs/Web/API/Window/localStorage
5. W3Schools, “HTML Tutorial.” https://www.w3schools.com/html/
6. W3Schools, “CSS Tutorial.” https://www.w3schools.com/css/
7. W3Schools, “JavaScript Tutorial.” https://www.w3schools.com/js/

8. CoinMarketCap, “Cryptocurrency Prices, Charts and Market Capitalizations.” https://coinmarketcap.com/
9. Visual Studio Code, “Documentation.” https://code.visualstudio.com/docs
10. Google Chrome, “Chrome DevTools Documentation.” https://developer.chrome.com/docs/devtools/