

Project Report On



CoinStack

Submitted in partial fulfillment for the award of
Post Graduate Diploma in Advanced Computing
from
C-DAC ACTS (Pune)

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Centre of Development of Advanced Computing (C-DAC), Pune



CERTIFICATE

TO WHOMSOEVER IT MAY CONCERN

This is to certify that

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have successfully completed their project titled

“CoinStack”

Under the Guidance of [Mr. Prateek Dhole](#)

Project Guide

HOD ACTS



ACKNOWLEDGEMENT

We are pleased to present our project, "**CoinStack**" as part of our submission to the **Advanced Computing Training School (CDAC ACTS)**. This project has been an enriching learning experience, allowing us to develop our technical skills and problem-solving abilities.

We would like to express our sincere gratitude to our project guide, **Mr. Prateek Dhole**, for his invaluable guidance and continuous support throughout this project. His mentorship helped us navigate challenges and complexities, enabling us to complete our work successfully.

We are also deeply grateful to **Mrs. Swati Mam** (Course Coordinator, PG-DAC) for her unwavering support and coordination. Her efforts in providing essential resources, including internet facilities and additional lab hours, were instrumental in the successful completion of our project.

Lastly, we extend our heartfelt thanks to **C-DAC ACTS, Pune**, for offering us this platform to learn, explore, and enhance our skills.

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1. Introduction

CoinStack is a secure, user-friendly cryptocurrency platform designed to provide seamless digital asset management. It enables users to buy, sell, and track their cryptocurrency investments with ease. The platform offers features such as portfolio management, **wallet-to-wallet transfers, bank withdrawals, and balance top-ups**, ensuring a comprehensive crypto trading experience. Additionally, users can monitor their transaction history and search for various cryptocurrencies, thanks to real-time market data integrated via the **CoinGecko API**.

CoinStack is powered by a robust and scalable technology stack, ensuring high performance, security, and reliability. The backend is built using **Spring Boot, MySQL, and Spring Security**, which provide a secure and efficient infrastructure for handling transactions and user authentication. **Java Mail Sender** is integrated for account verification and password recovery, reinforcing account security. On the frontend, **React, Tailwind CSS, Redux, and Shaden UI** work together to deliver a dynamic, responsive, and visually appealing user experience. **React-Router-Dom** ensures smooth navigation, while **Axios** facilitates efficient communication between the client and server. To support secure financial transactions, CoinStack integrates payment gateways like **Razorpay**, offering users multiple payment options for deposits and withdrawals. The CoinGecko API provides real-time cryptocurrency price tracking, allowing users to stay updated on market trends.

Security is a top priority for CoinStack. The platform implements secure login mechanisms, **two-factor authentication (2FA)**, and password recovery features to protect user accounts from unauthorized access. **End-to-end encryption** ensures that sensitive information remains safeguarded at all times. CoinStack is designed with a focus on ease of use and accessibility. The platform provides a clean and intuitive interface that allows users to navigate effortlessly through various features.

Key functionalities include **real-time portfolio management, transaction history, fast and secure transfers, flexible payment options, and search & market insights**.

Users can view and track their crypto assets in an organized manner, access complete records of previous transactions, and make wallet-to-wallet transfers with minimal processing time. Additionally, integration with **Razorpay and Stripe** ensures hassle-free deposits and withdrawals, while real-time market data keeps users informed about cryptocurrency trends.

CoinStack is designed to handle high transaction volumes efficiently, ensuring fast loading times and seamless user interactions. The system architecture supports scalability, allowing it to accommodate an increasing number of users without compromising performance. With its cutting-edge technology stack, strong security measures, and user-centric design,

CoinStack redefines cryptocurrency management by offering a modern, reliable, and efficient platform. Whether users are trading, transferring, or monitoring digital assets, CoinStack ensures a seamless and secure experience, making crypto investment accessible to all.

2. Software Requirement

Processor: Dual-core processor or higher.

RAM: Minimum 4GB RAM.

Storage: Sufficient storage for caching and local data.

Network: Ethernet or Wi-Fi connectivity.

Browser: Compatible with latest versions of popular browsers like Google Chrome, Mozilla Firefox, and Safari.

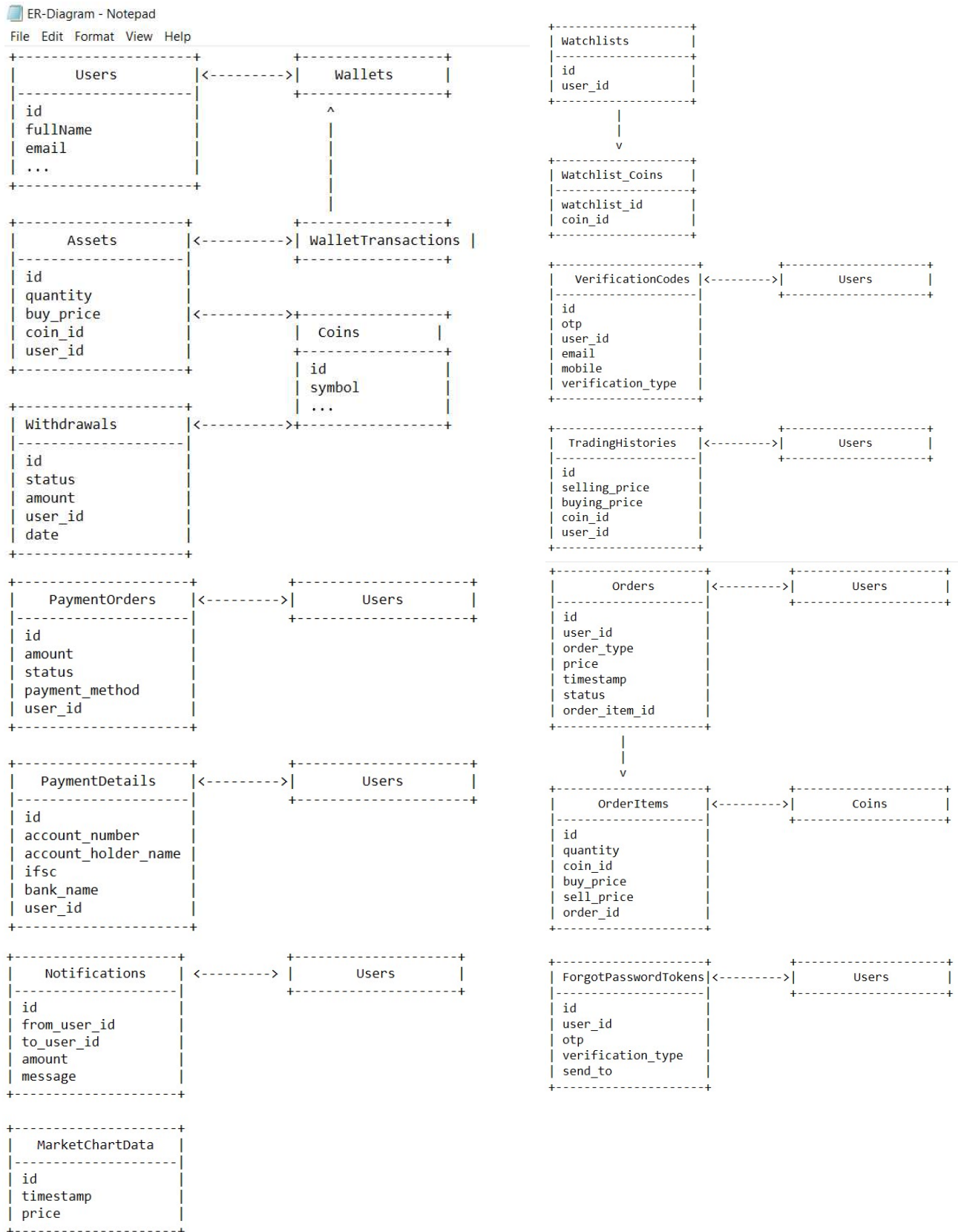
3. Tools and technologies used

1. **Spring Boot:** Utilized for developing the backend of the application, providing a robust framework for building scalable and high-performance Java-based web applications.
2. **Spring Security:** Implemented to secure user authentication, enabling features like role-based access control, encrypted passwords, and protection against common security vulnerabilities.
3. **Spring Data JPA:** Used for database interaction, allowing seamless integration with MySQL to store and manage user accounts, transactions, and cryptocurrency data efficiently.
4. **RESTful Web Services:** Facilitates communication between the frontend and backend components of the application by following REST principles for handling API requests efficiently.
5. **MySQL:** Chosen as the relational database management system to store user data, transaction records, and cryptocurrency portfolio details securely.
6. **Java Mail Sender:** Integrated for sending automated emails related to user authentication, password recovery, and account verification, ensuring secure access.
7. **JWT (JSON Web Token):** Implemented for secure authentication and authorization, ensuring only authorized users can access critical functionalities like trading and fund transfers.
8. **React.js:** Employed to build the frontend of the application, offering a component-based architecture to create an interactive and user-friendly experience.
9. **Tailwind CSS:** Used for designing a visually appealing and responsive user interface with utility-first CSS classes, ensuring consistency and ease of customization.
10. **Redux:** Integrated for efficient state management, enabling smooth handling of user data, portfolio updates, and transaction history.
11. **Axios:** Used as an HTTP client to facilitate API communication between the frontend and backend, ensuring efficient data retrieval and seamless interactions.
12. **React-Router-Dom:** Enables client-side routing, allowing users to navigate between different pages of the application without reloading.
13. **Shadcn UI:** Utilized for designing modern UI components, enhancing the overall look and feel of the platform.
14. **CoinGecko API:** Integrated to fetch real-time cryptocurrency data, including price updates, market trends, and historical performance, enabling users to make informed investment decisions.
15. **Razorpay & Stripe Payment Integration:** Secure payment gateways are implemented to facilitate seamless transactions, deposits, and withdrawals, ensuring a smooth user experience.

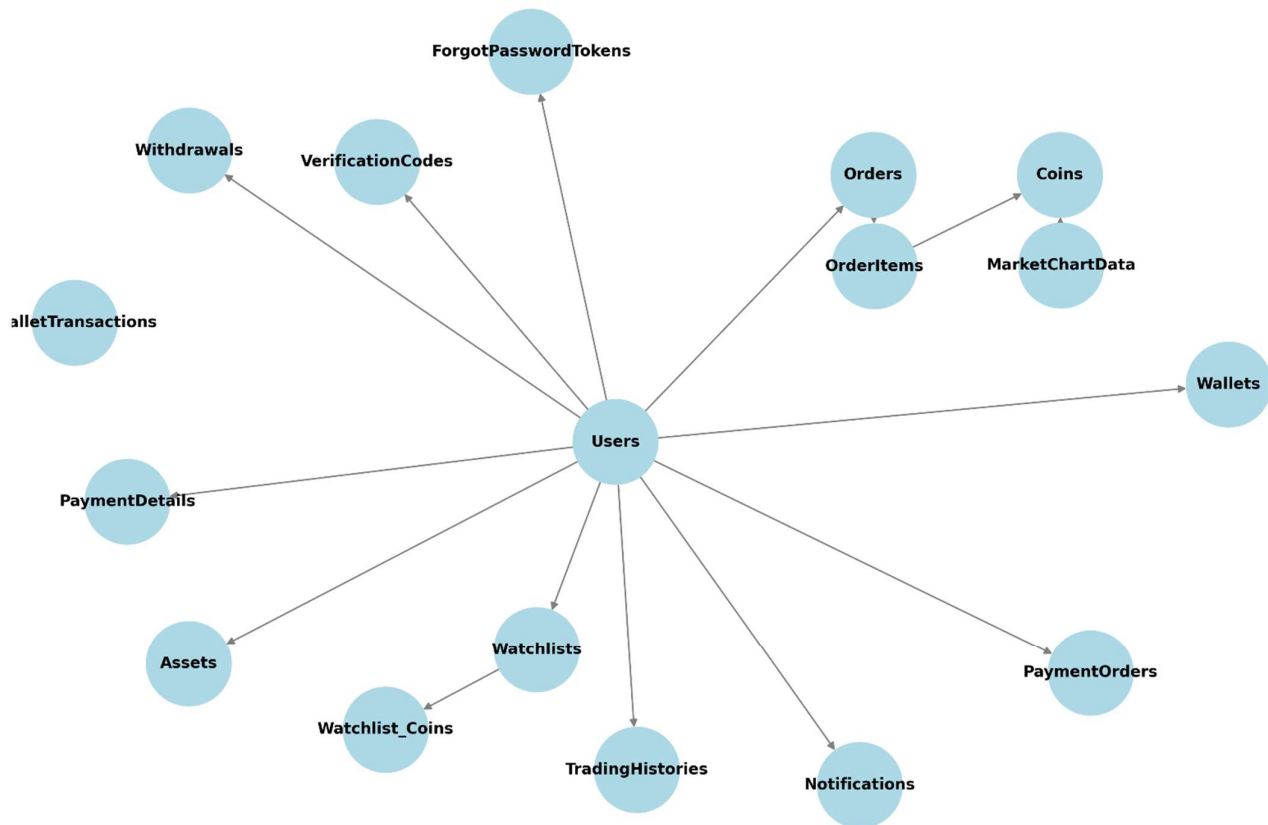
16. **Git:** Implemented as a version control system, allowing efficient collaboration among developers, tracking changes, and managing deployments.
17. **Two-Factor Authentication (2FA):** Adds an extra layer of security to user accounts, requiring an additional verification step during login to prevent unauthorized access.
18. **Bank Withdrawals & Wallet-to-Wallet Transfers:** Enables users to move funds securely between their crypto wallet and bank accounts or transfer assets to other users.
19. **Real-Time Portfolio Management:** Allows users to track their holdings, view real-time price changes, and analyze portfolio performance directly within the platform.
20. **Scalability & High Performance:** Designed to handle large transaction volumes efficiently, ensuring smooth performance even with an increasing user base.

CoinStack is a cutting-edge cryptocurrency trading platform that prioritizes security, user experience and efficiency. With its advanced technology stack and user-centric features, it provides an optimized and seamless digital asset management experience.

4. Project Database Diagram



5. Project E-R(Entity relationship) Diagram



Coin-Stack

6. Advantages

CoinStack is a **secure, scalable, and user-friendly cryptocurrency platform** that simplifies crypto trading and investment management. Below are its key advantages:

1. Secure and Robust Infrastructure

- **Spring Boot with Spring Security** ensures **strong authentication and authorization** mechanisms, including role-based access control.
- **Two-Factor Authentication (2FA) and Secure Login** enhance account protection against unauthorized access.
- **Java Mail Sender for Password Recovery** helps users regain account access securely.

2. Efficient Transaction Handling

- **Supports buying, selling, and managing crypto assets seamlessly** through an optimized transaction processing system.
- **Secure Bank Withdrawals & Balance Top-Ups** ensure smooth conversion between fiat and cryptocurrencies.
- **Razorpay & Stripe Payment Gateway Integration** for fast and secure transactions.

3. Real-Time Market Data & Portfolio Management

- **CoinGecko API Integration** allows users to track **real-time prices, historical trends, and market data**.
- **Comprehensive Portfolio Management** lets users monitor holdings, trade history, and performance in one place.

4. Scalable and High-Performance Backend

- **Spring Boot & MySQL** provide a **scalable, high-performance backend**, ensuring efficient data processing and transaction handling.
- **Optimized Query Handling & Caching** improve responsiveness and data retrieval speeds.

5. Seamless & Responsive User Experience

- **React, Tailwind CSS, and Shadcn UI** create a **sleek, responsive, and intuitive interface** for users.
- **Redux for State Management** ensures smooth application performance and real-time updates.
- **Axios for API Requests** allows fast communication between the frontend and backend.

6. Cross-Platform Compatibility & API Flexibility

- **React ensures web and mobile compatibility**, providing a **smooth trading experience on multiple devices**.
- **RESTful API Architecture** enables easy integration with **third-party applications, wallets, and market data providers**.

7. Secure and Transparent Payment Processing

- **Razorpay & Stripe ensure secure, encrypted transactions** for buying and selling crypto.
- **Transparent Payment Tracking** enables users to monitor deposits, withdrawals, and order history.

8. Automated Backup & Data Integrity

- **MySQL ensures high data durability**, preventing loss of critical user and transaction data.
- **Automated database backups** protect against failures and security threats.

9. Cost-Effective & Scalable

- **Optimized cloud infrastructure** ensures **cost-effective scaling** based on user demand.
- **Modular and extensible architecture** makes it easy to integrate **new features and services**.

10. Regulatory Compliance & Security Measures

- **Secure login, KYC verification, and anti-fraud measures** enhance compliance with financial regulations.
- **Audit Logs & Transaction Monitoring** help in fraud detection and regulatory reporting.

7. Screenshots

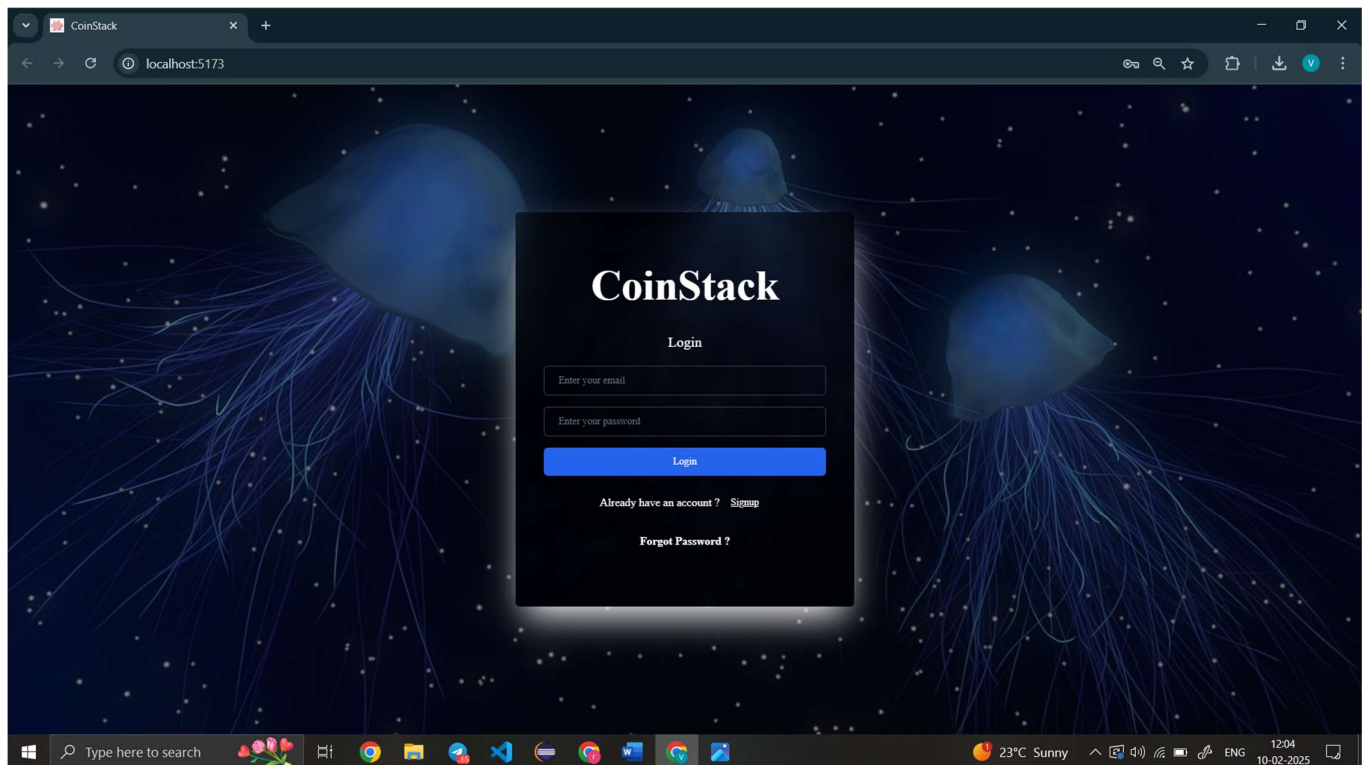


Fig 1 – Login Page

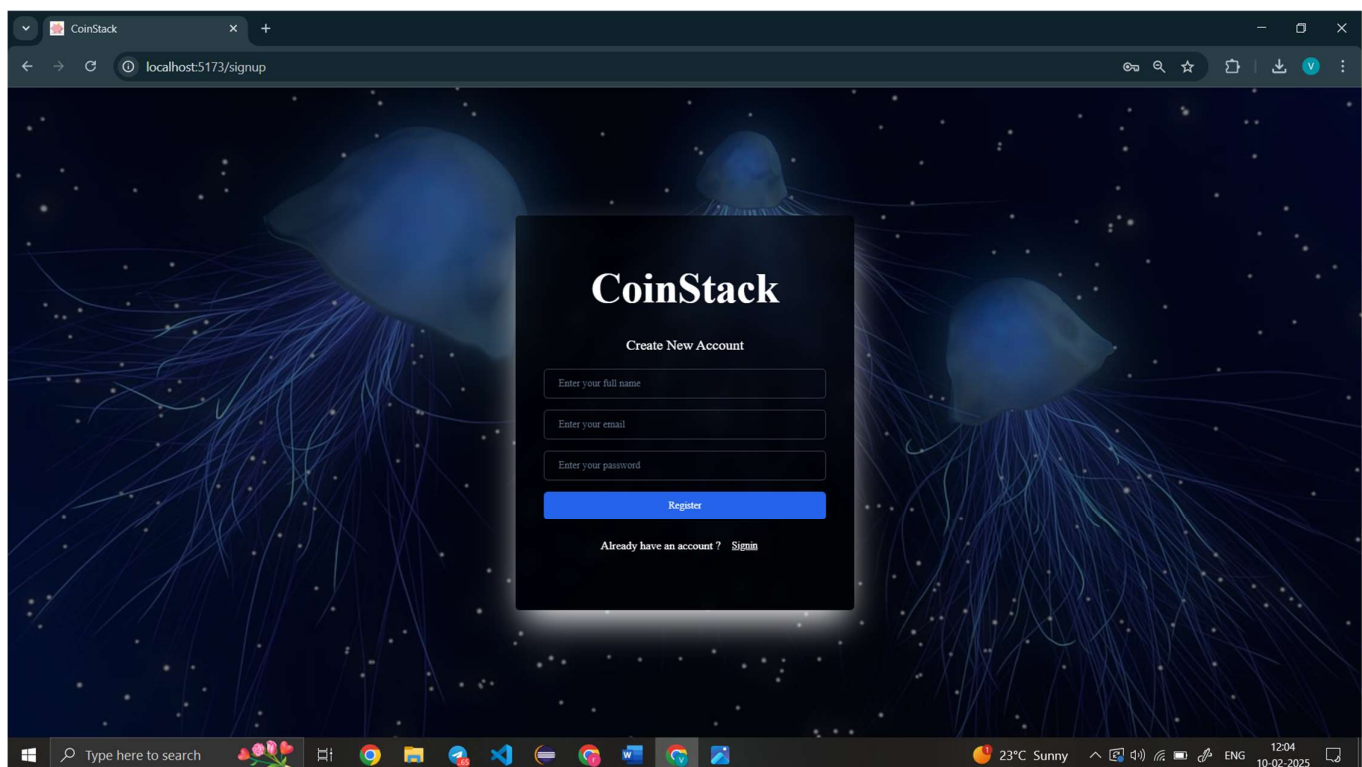


Fig 2 – SignUp Page

CoinStack

Search...

Home Portfolio Watchlist Activity Wallet Payment Details Withdrawal Profile Logout

All Top 50

Coin	SYMBOL	VOLUME	MARKET CAP	24H	PRICE
Bitcoin	BTC	23707189584	1923801272346	0.19636%	97163
Ethereum	ETH	20273288377	317389883982	-0.82063%	2635.3
Tether	USDT	35196101349	141632456233	-0.09635%	1
XRP	XRP	4653032898	138142915904	-2.64389%	2.39
Solana	SOL	4477202243	98529127140	-1.28433%	202.56
BNB	BNB	2231607866	88498400749	-1.27649%	607.15
USDC	USDC	8196611765	56237154898	0.29759%	0.999926
Dogecoin	DOGE	1405554587	36905717935	-2.47778%	0.249705
Cardano	ADA	754873499	24770403609	-1.57448%	0.689692
Lido Staked Ether	STETH	102132150	24765625750	-0.82525%	2632.27

< Previous 1 2 3 ... Next >

Type here to search

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Page 3 – Home Page

CoinStack

Search...

Home Portfolio Watchlist Activity Wallet Payment Details Withdrawal Profile Logout

All Top 50

Coin	SYMBOL	VOLUME	MARKET CAP	24H	PRICE
Bitcoin	BTC	23763329587	1923801272346	0.19636%	97163
Ethereum	ETH	20274261392	317389883982	-0.82063%	2635.3
Tether	USDT	35196101349	141632456233	-0.09635%	1
XRP	XRP	4653901731	138142915904	-2.64389%	2.39
Solana	SOL	4477202242	98529127140	-1.28433%	202.56
BNB	BNB	2231607866	88498400749	-1.27649%	607.15
USDC	USDC	8181428365	56237154898	0.29759%	0.999926
Dogecoin	DOGE	1405557610	36905717935	-2.47778%	0.249706
Cardano	ADA	754873495	24770403609	-1.57448%	0.689692
Lido Staked Ether	STETH	102132057	24765625750	-0.82525%	2632.28
TRON	TRX	675292597	19987370433	-0.91394%	0.232417
Wrapped Bitcoin	WBTC	520864820	12481425768	-0.07691%	96696

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Fig 4 –Top 50 Entries page

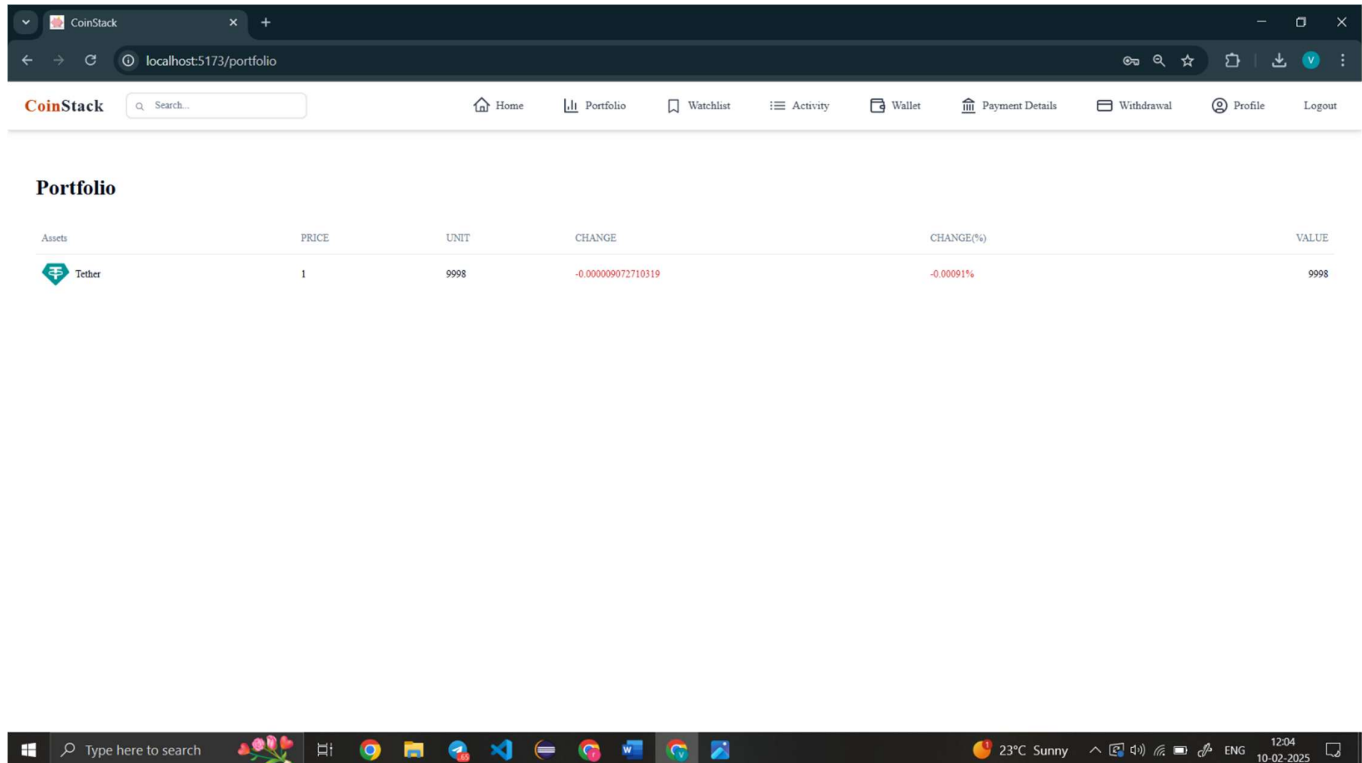
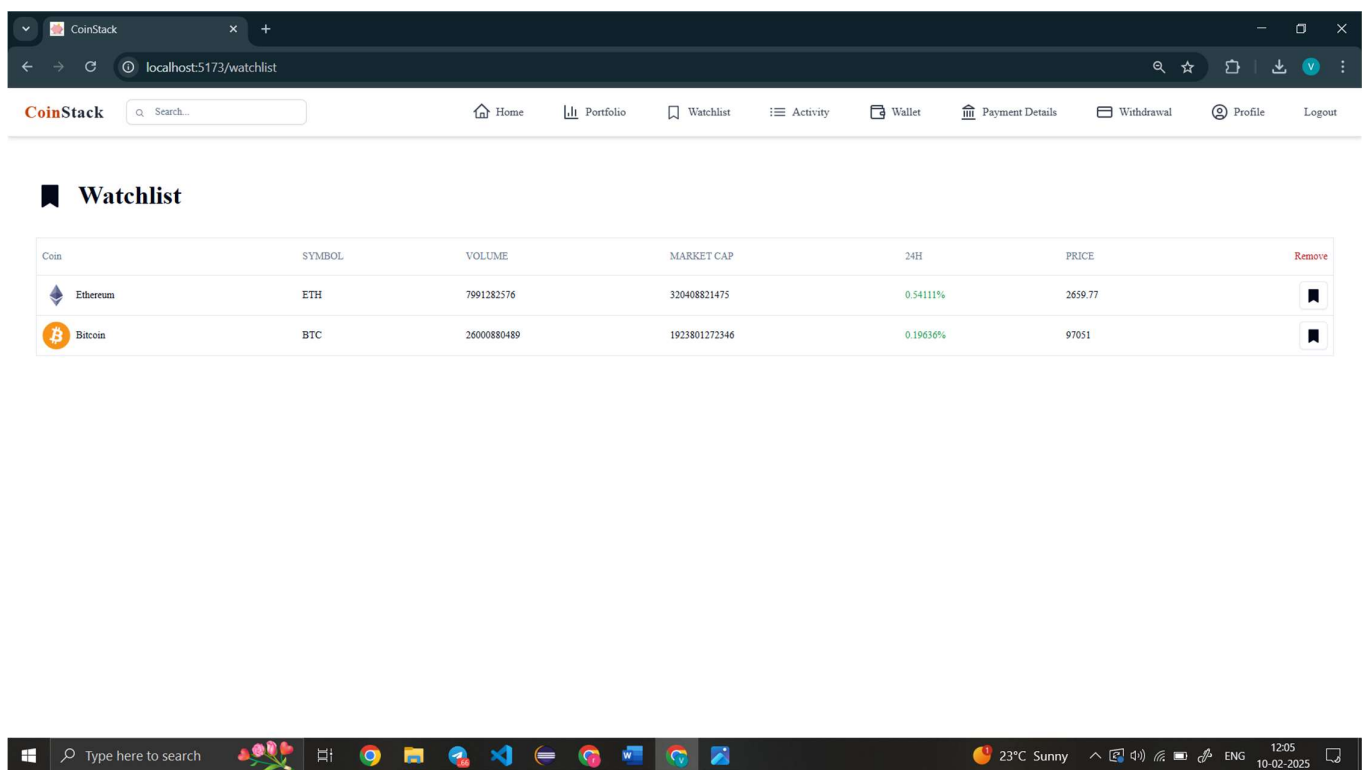


Fig 5 – Portfolio page



Page 6 - WatchList Page

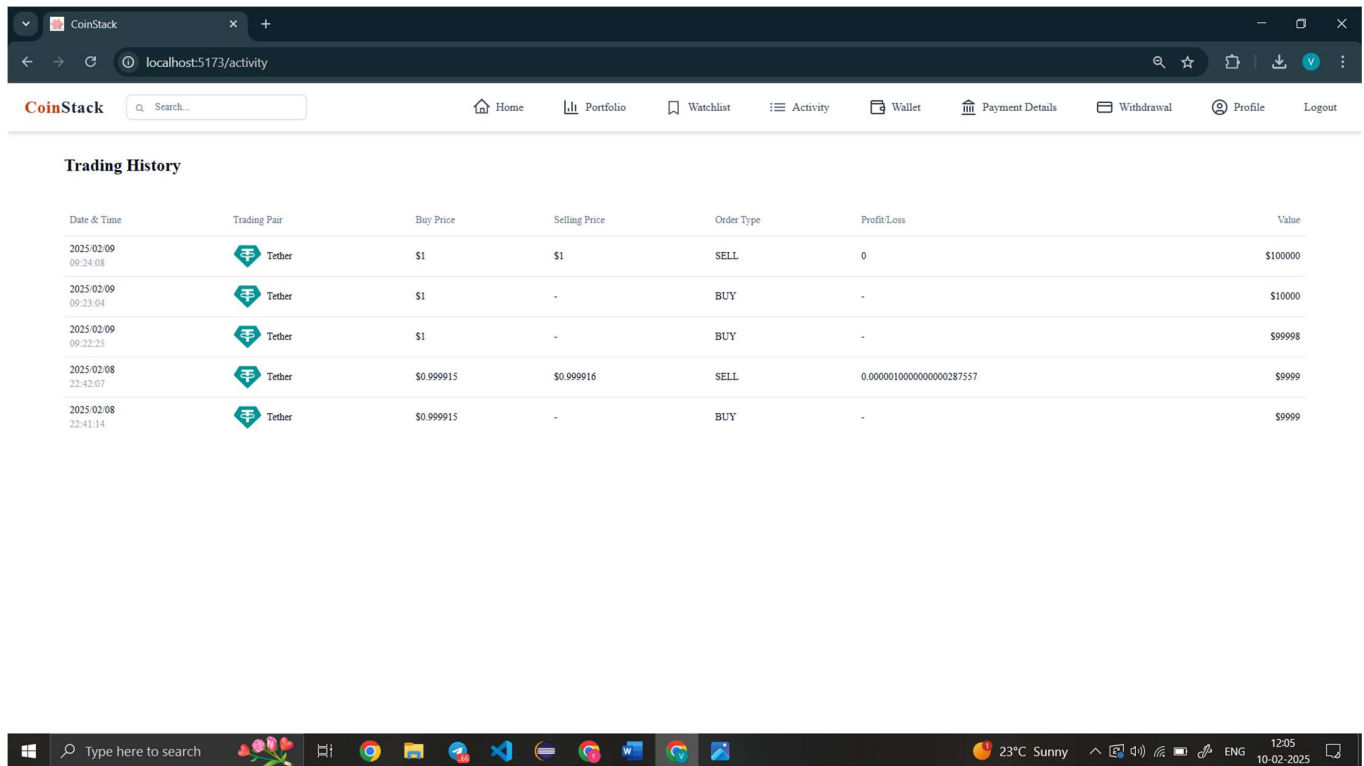


Fig 7 – Trading History page

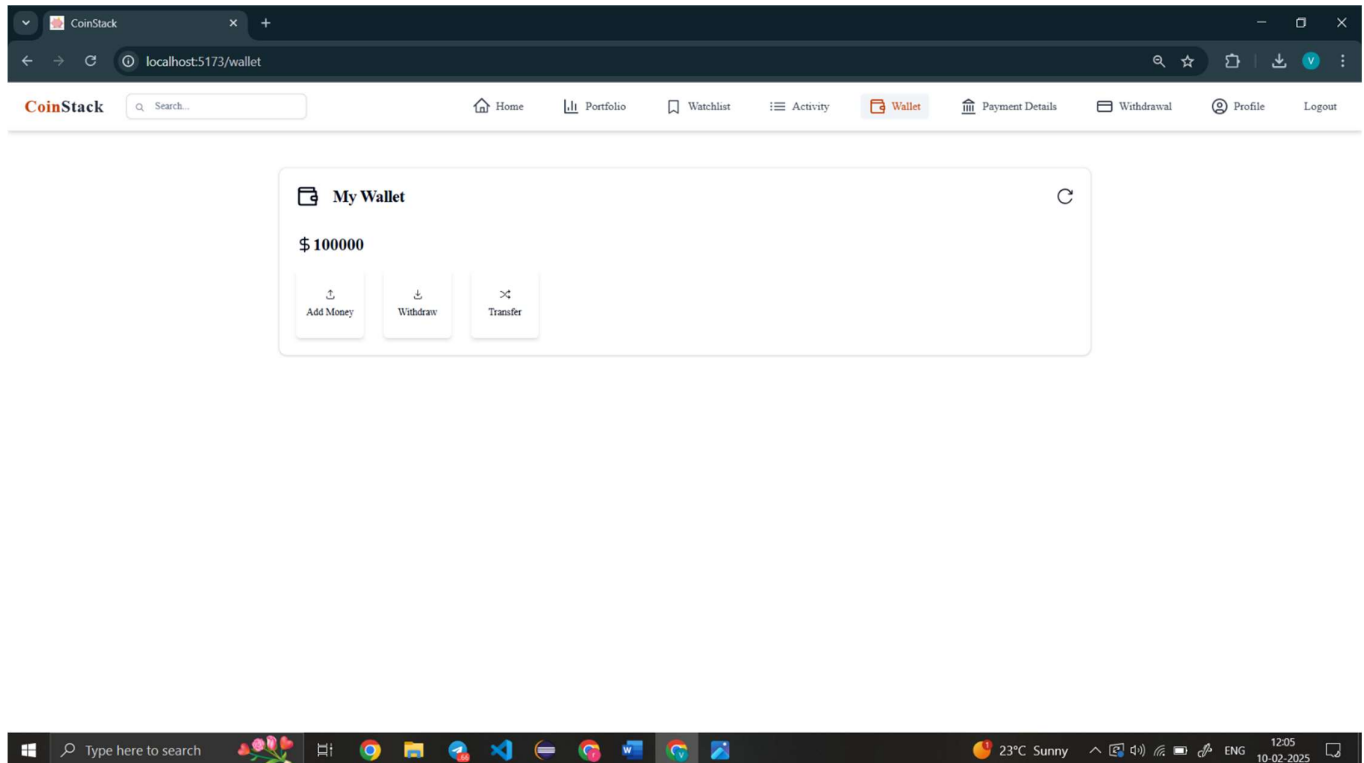


Fig 8 – MyWallet Page

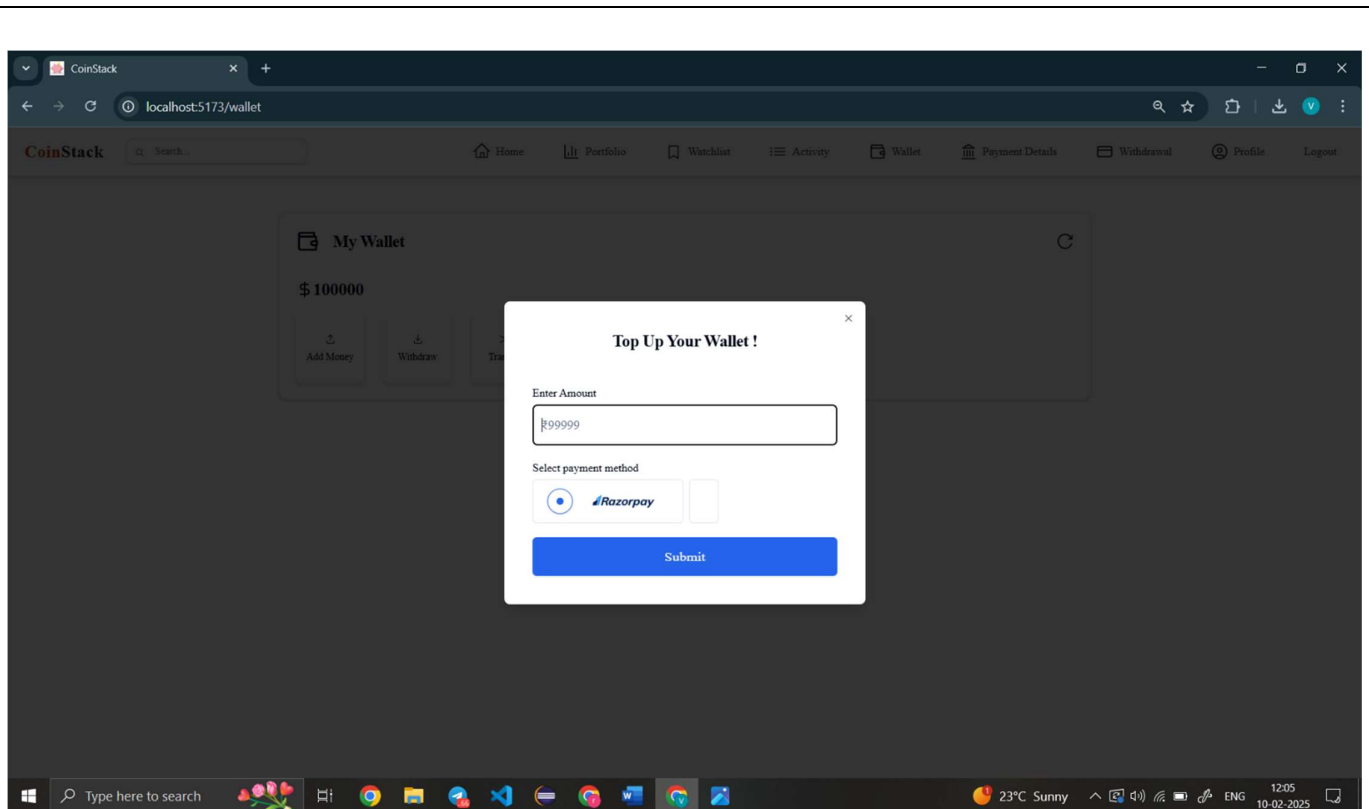


Fig 9 – Top Up Your Wallet Page

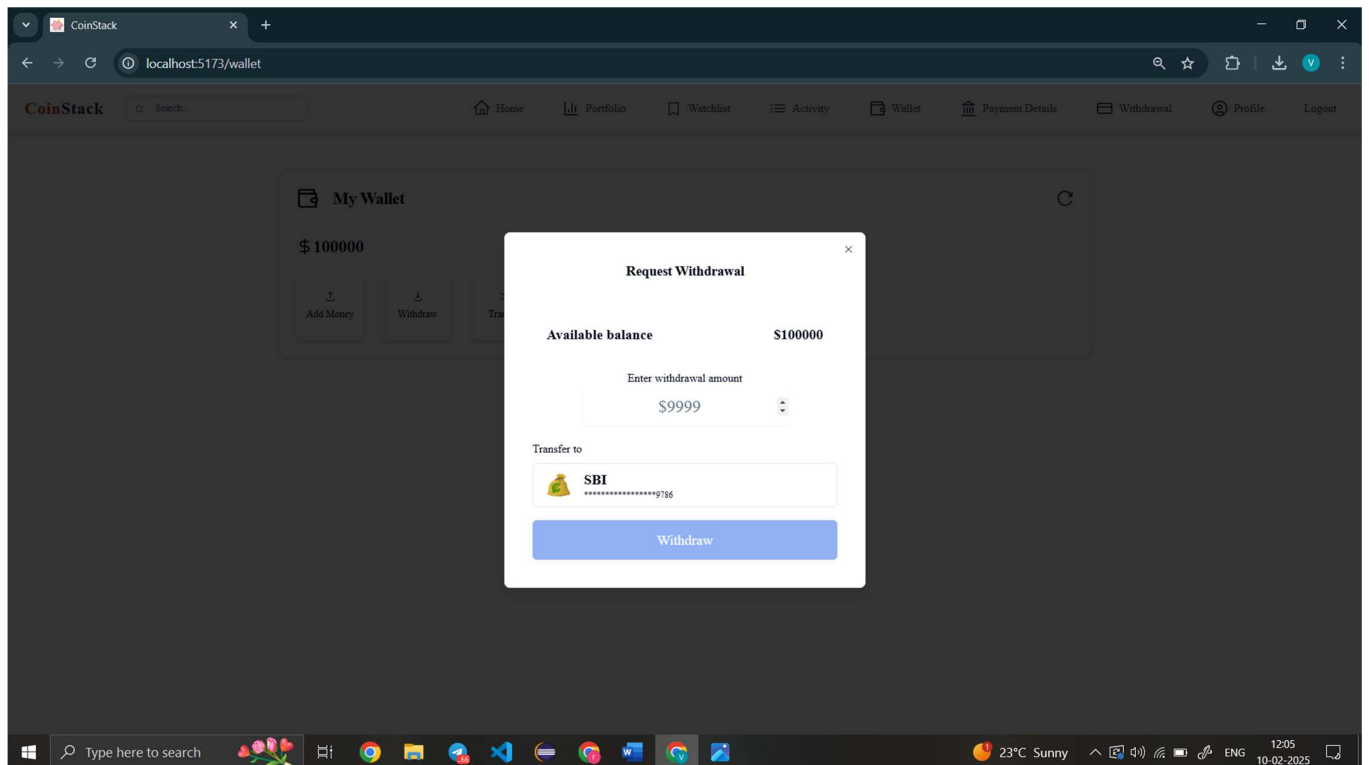


Fig 9 –Request Withdrawal Page

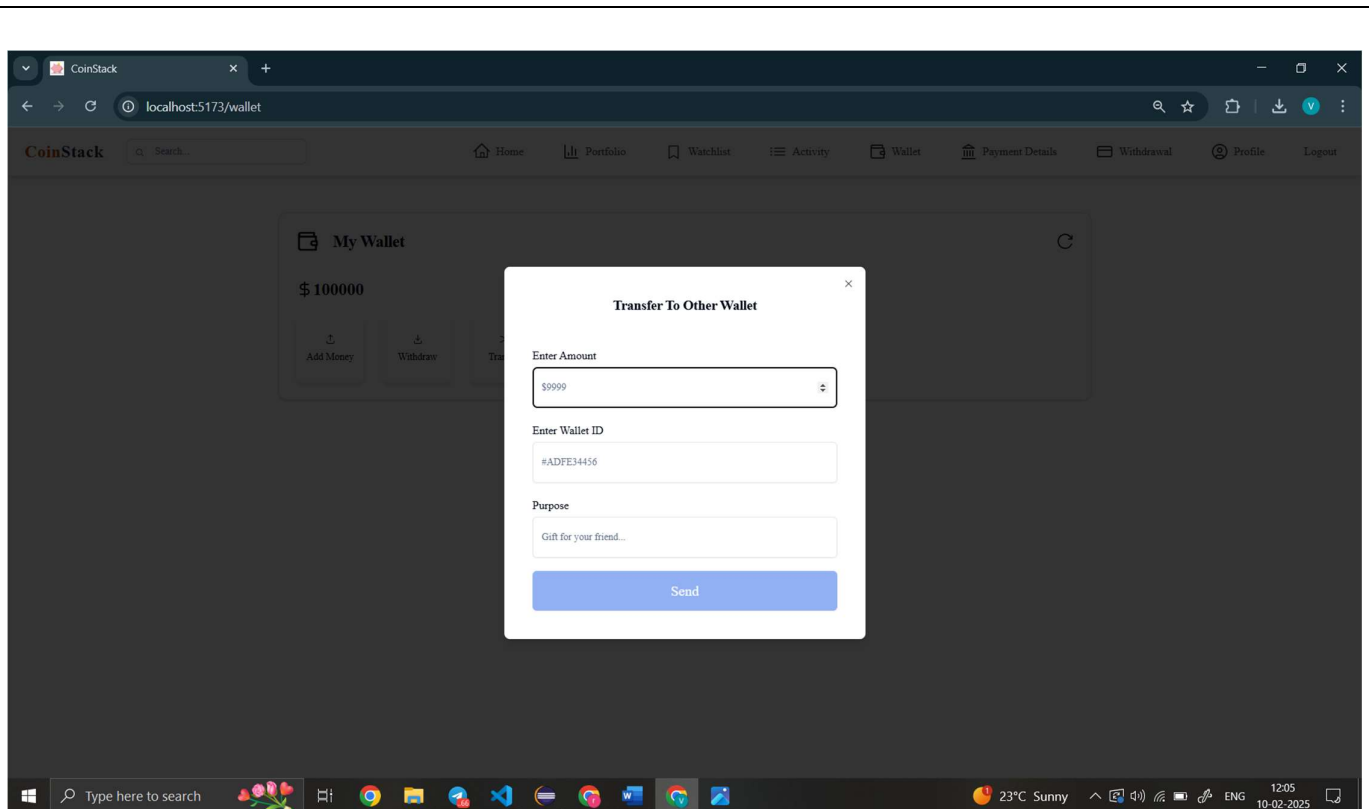


Fig 10 –Transfer to other Page

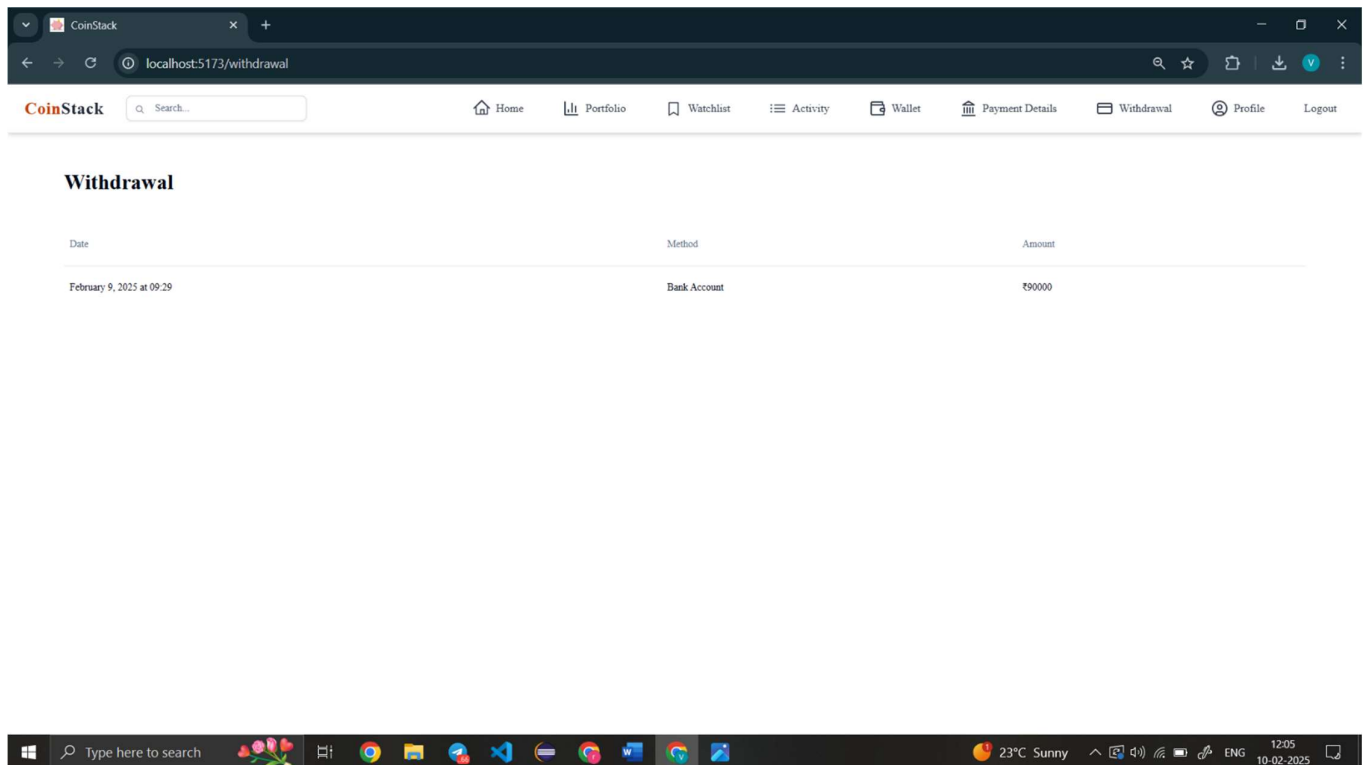


Fig 11 –Withdrawal Page

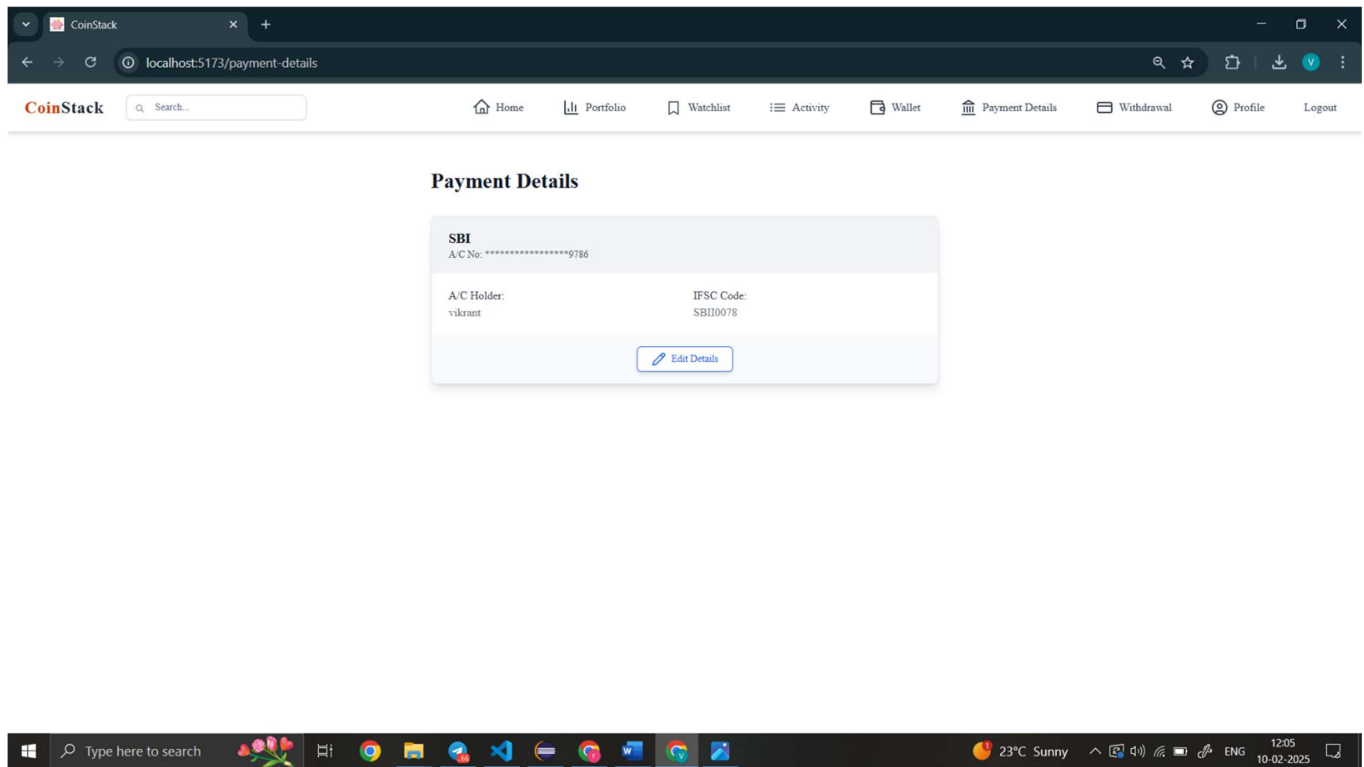


Fig 12 –Payment Details Page

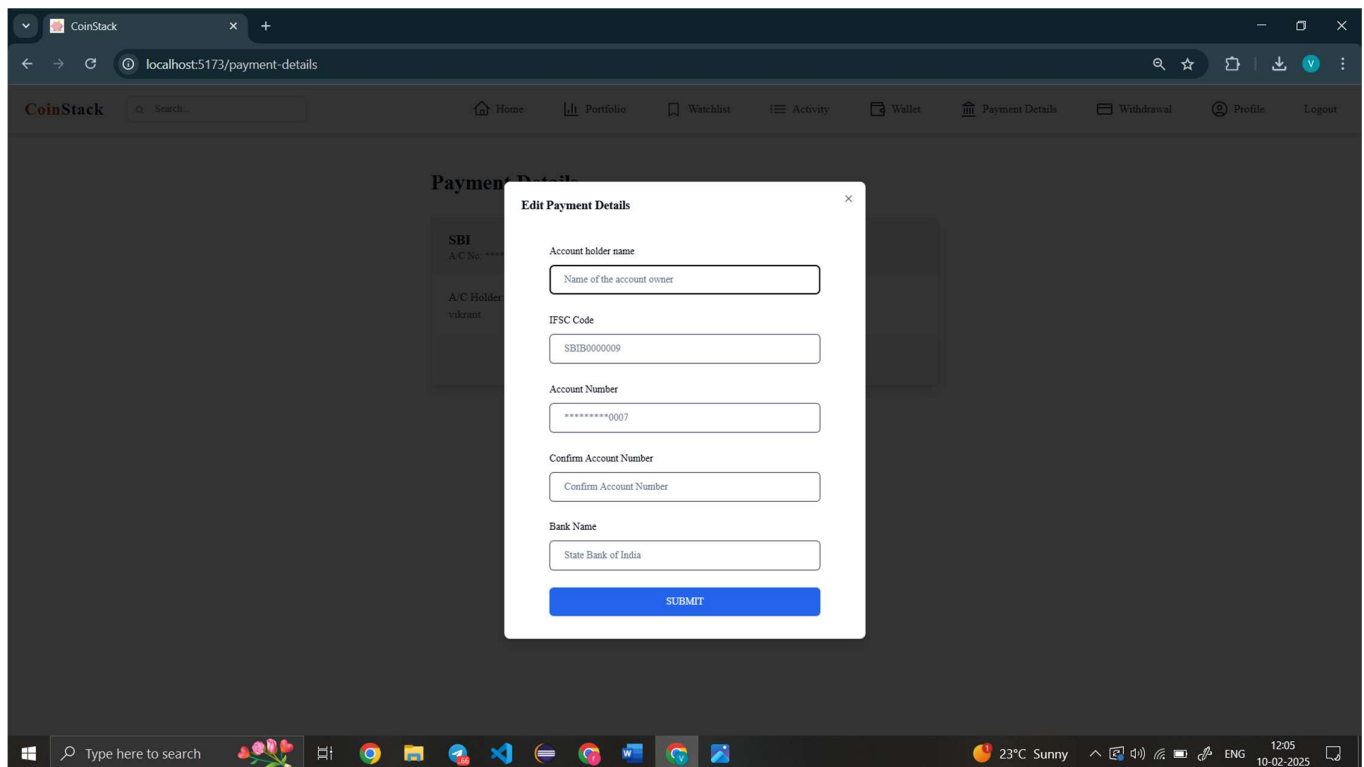


Fig 13 –Edit Payment Details Page

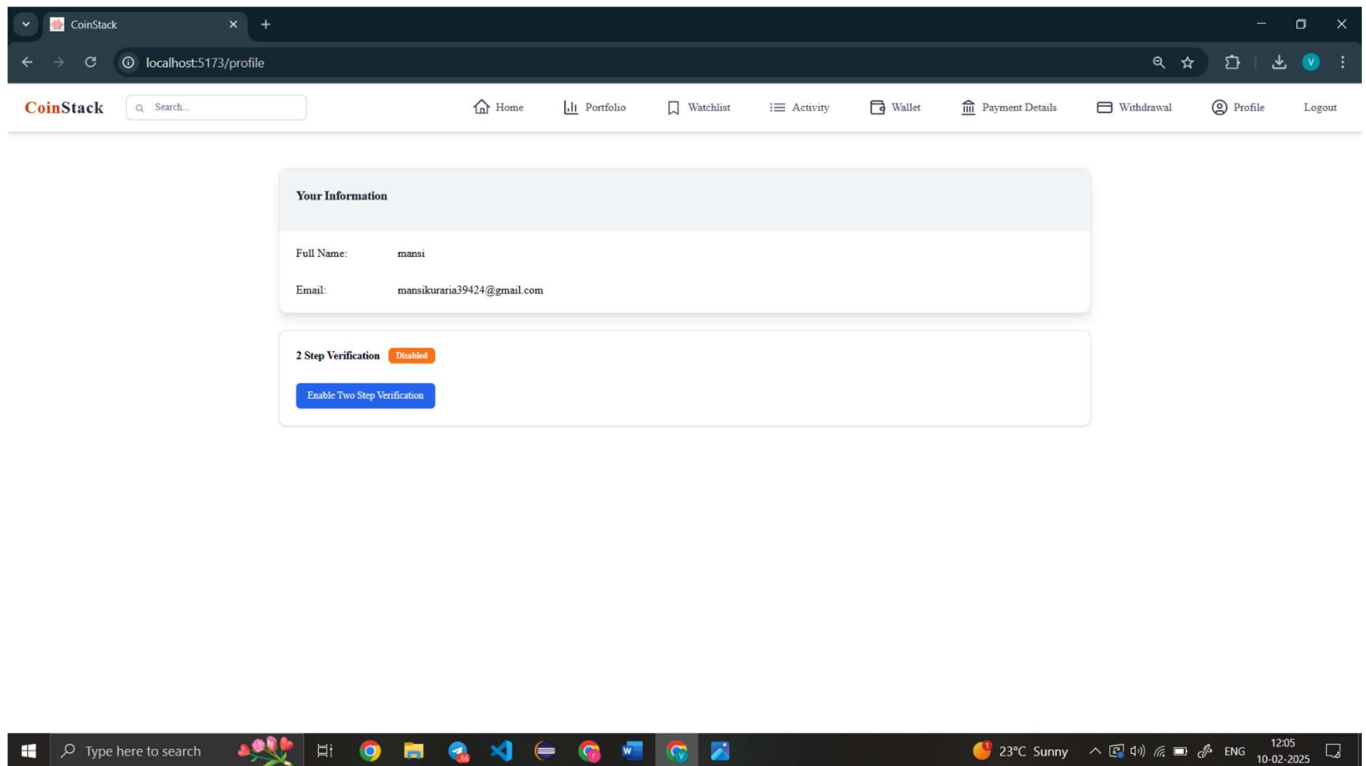


Fig 14 –Profile Page

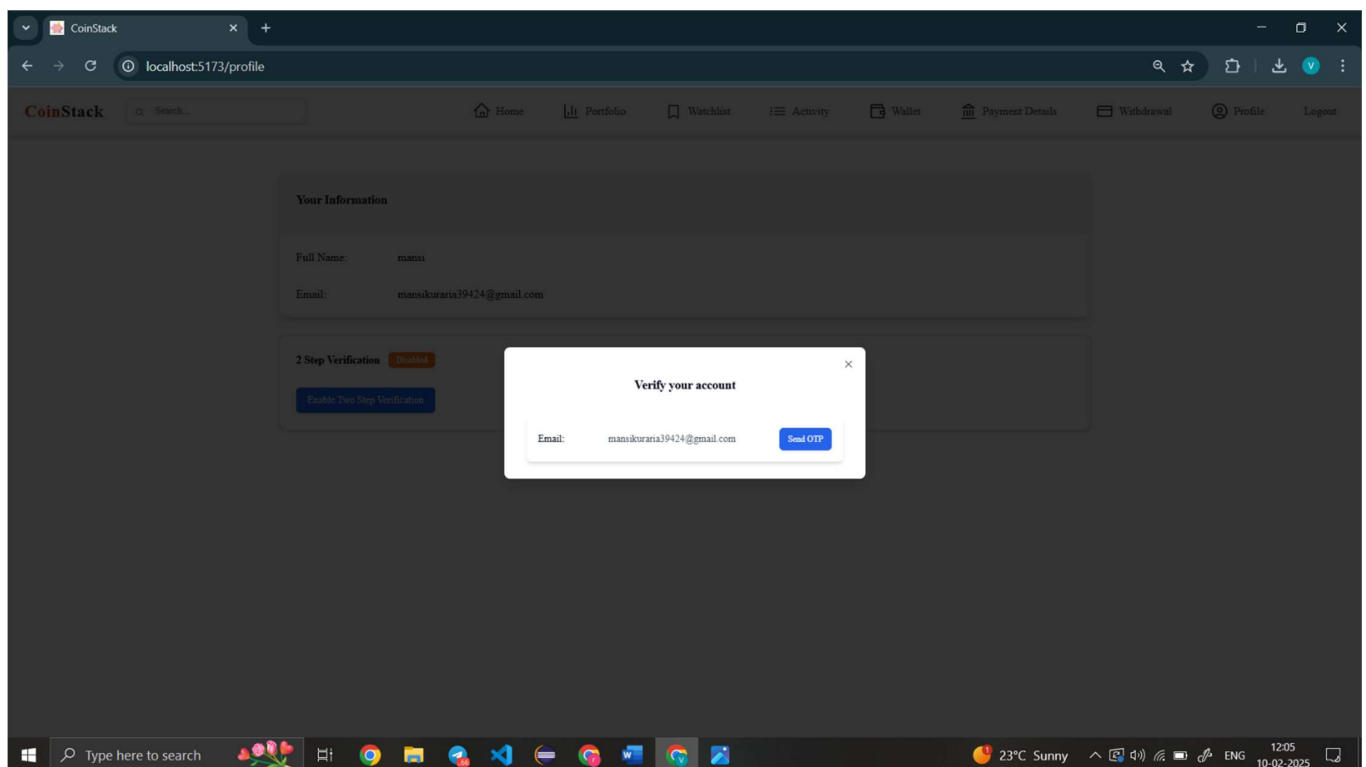


Fig 15 –Verify your account window

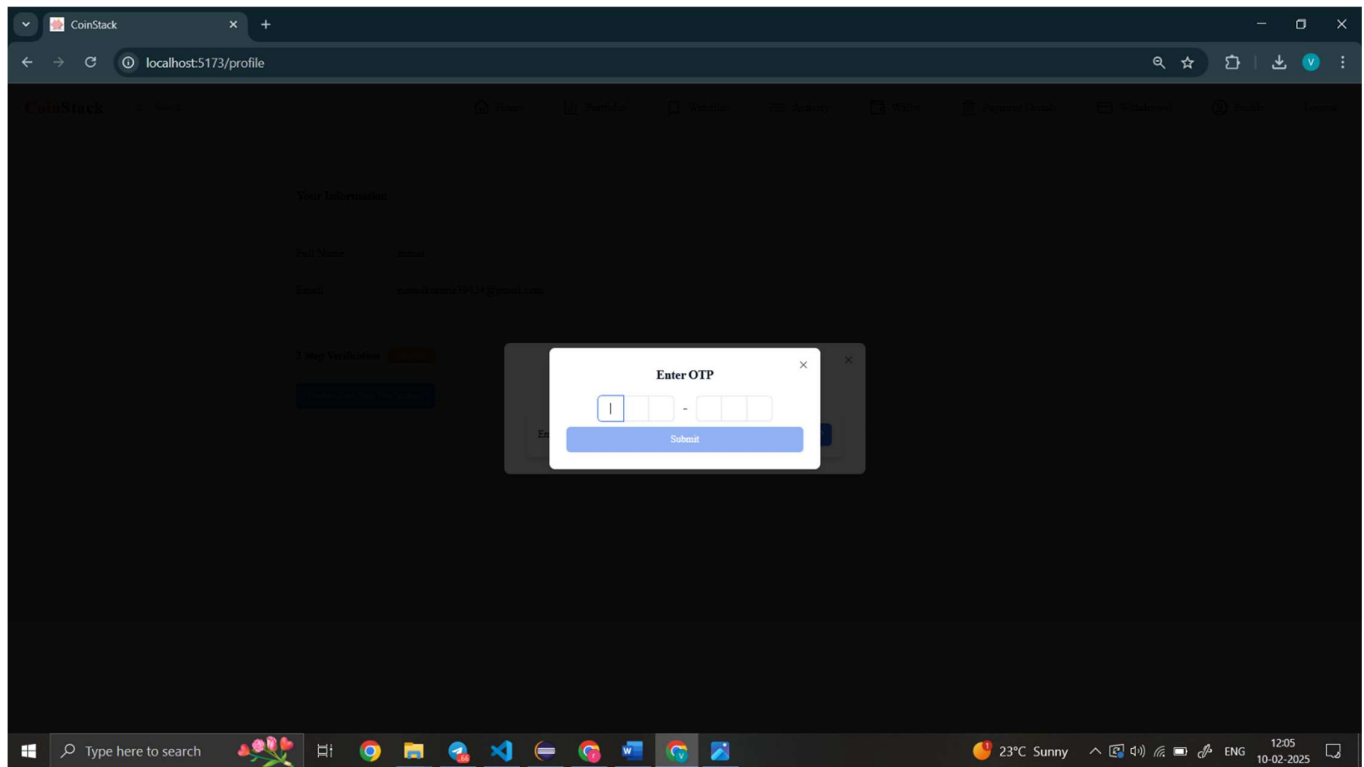


Fig 16 –EnterOTP Page

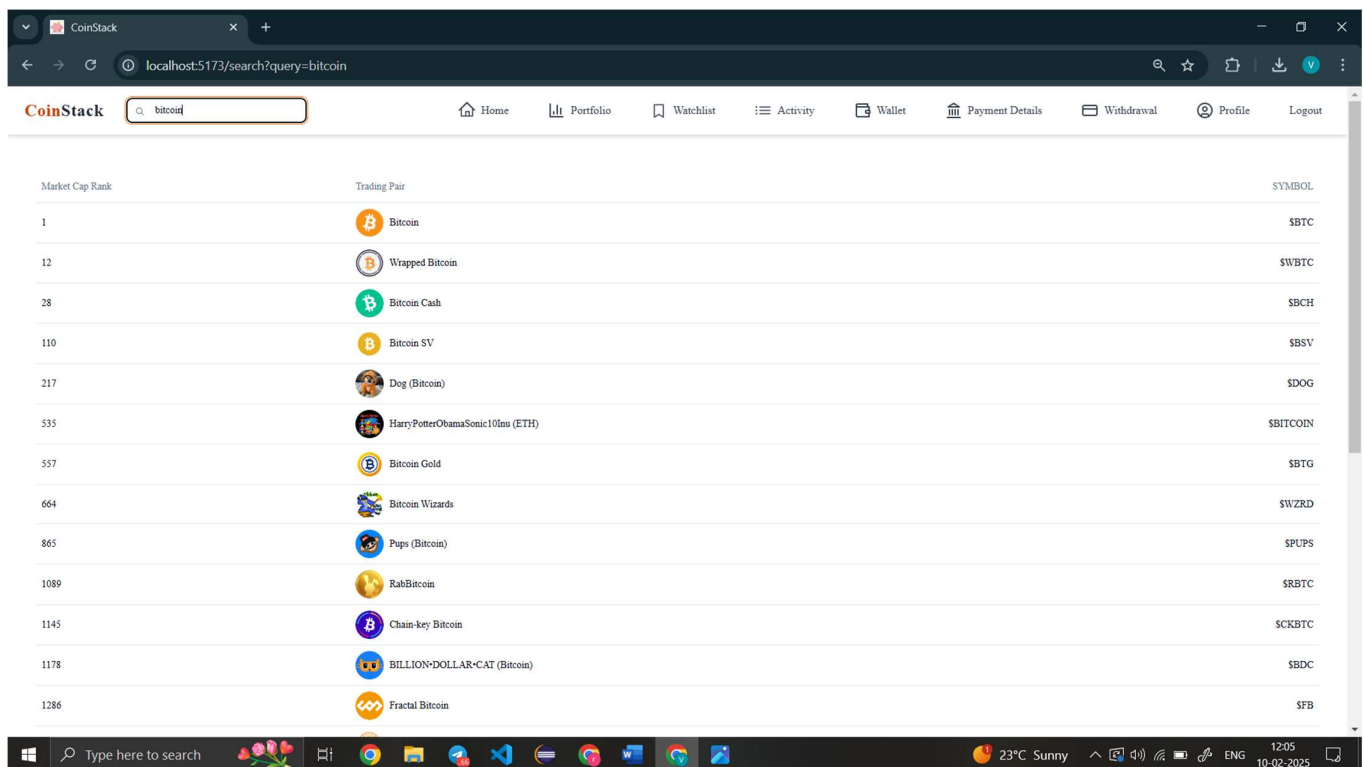


Fig 17 –Search Page

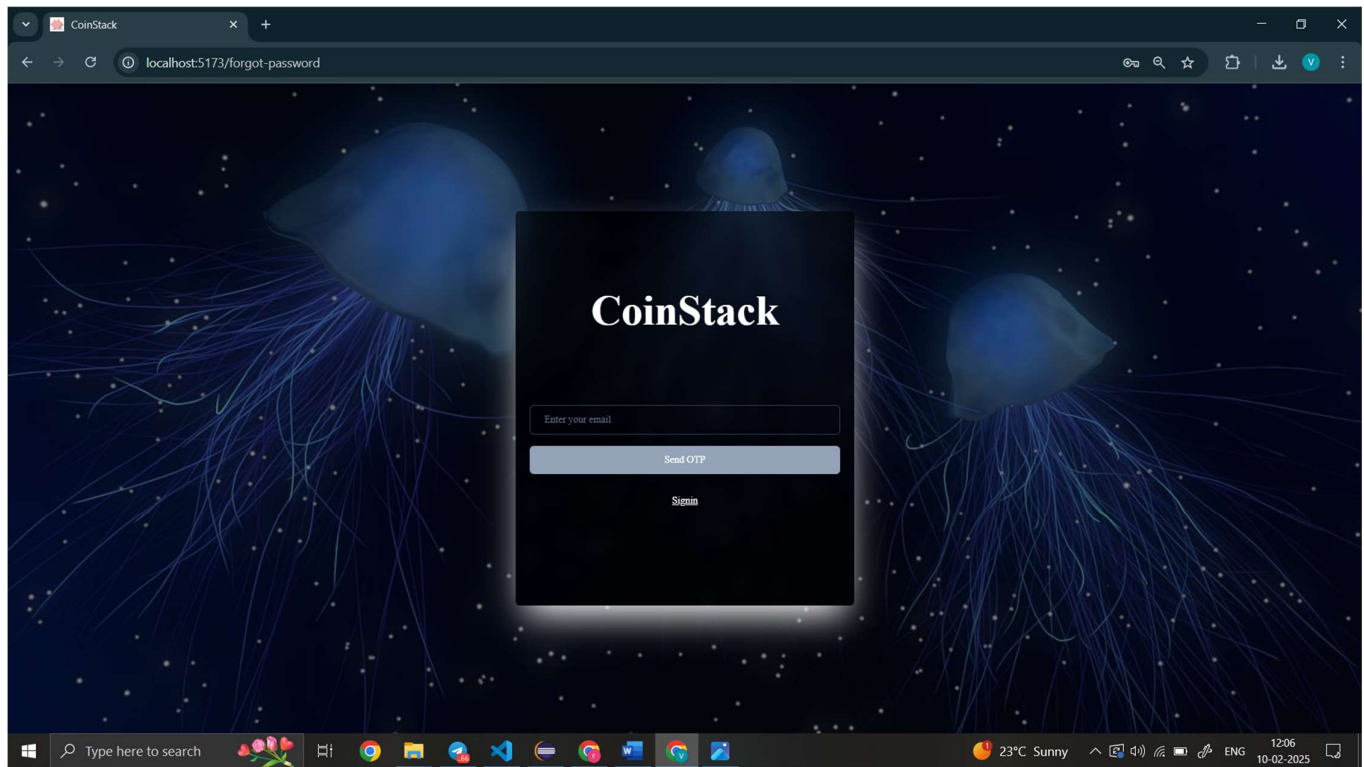


Fig 18 –ForgotPassword Page

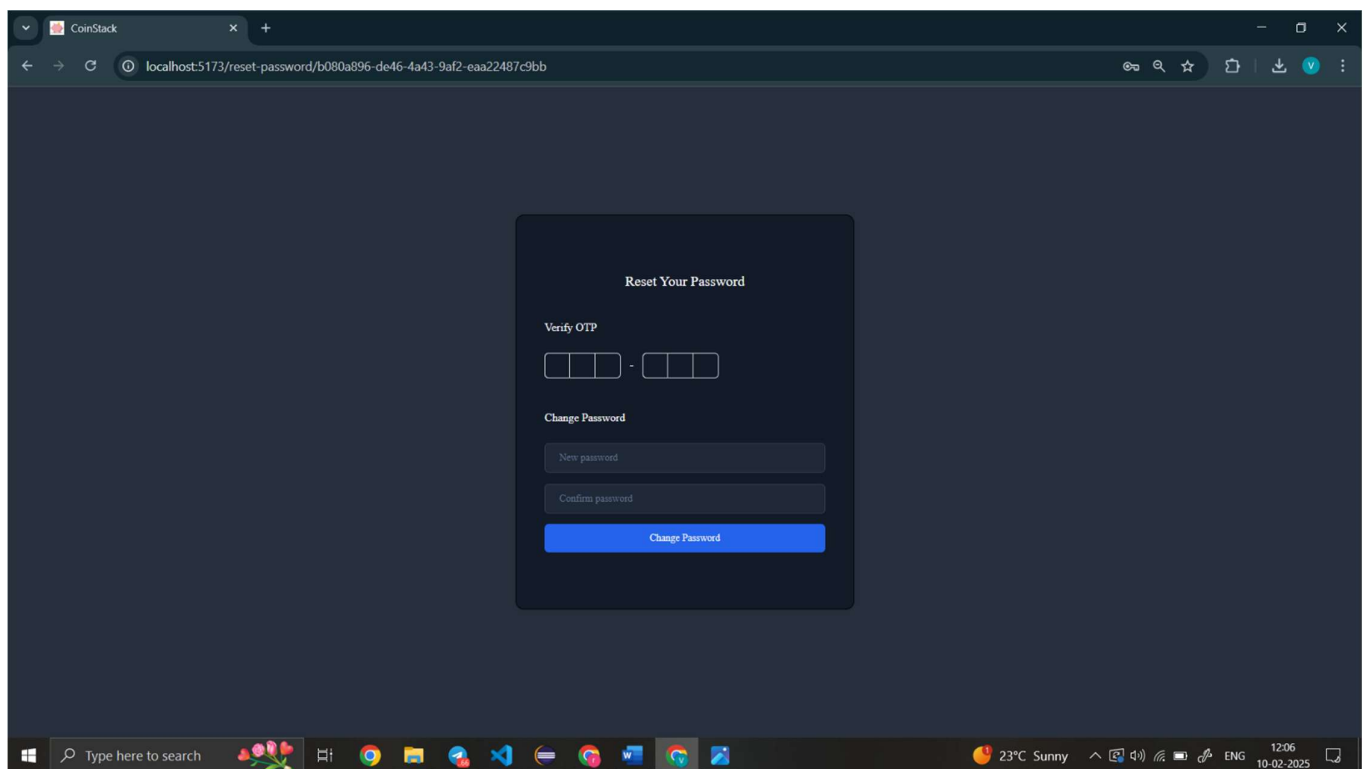


Fig 19 –Change Password Page

8. FUTURE SCOPE:

- **Multi-Asset Support:** Expand the platform to support additional asset classes like NFTs and tokenized securities for diversified investments.
- **AI-Driven Trading Insights:** Implement AI and machine learning algorithms to provide predictive analytics, risk assessments, and automated trading recommendations.
- **Mobile Application Development:** Introduce a dedicated mobile app for Android and iOS to enhance accessibility and user experience on the go.
- **DeFi Integration:** Enable integration with decentralized finance (DeFi) protocols, allowing users to participate in staking, yield farming, and decentralized lending.
- **Advanced Security Measures:** Implement biometric authentication, multi-layered encryption, and AI-powered fraud detection to further strengthen security.
- **Cross-Border Transactions:** Enhance global usability by supporting international payment methods and instant crypto-to-fiat conversions.
- **Regulatory Compliance Enhancements:** Adapt to evolving cryptocurrency regulations by integrating automated KYC/AML compliance checks and regulatory reporting features.
- **Enhanced Portfolio Management:** Introduce automated portfolio rebalancing, tax calculations, and profit/loss tracking for improved investment management.
- **Smart Contract Functionality:** Implement smart contract-based escrow services for secure peer-to-peer trading and automated transactions.
- **Community & Social Trading:** Develop social trading features, allowing users to follow expert traders, copy trades, and participate in investment communities.

9. Conclusion

CoinStack is a **comprehensive, secure, and user-friendly cryptocurrency platform** that empowers users to efficiently **buy, sell, and manage their digital assets**. With **robust security measures, real-time market data, seamless payment integrations, and an intuitive user experience**, CoinStack provides a **reliable and scalable** solution for crypto investors.

Looking ahead, the platform aims to **expand its capabilities** by integrating **AI-powered insights, DeFi functionalities, mobile applications, and advanced security features**. By continuously evolving with **market trends and regulatory requirements**, CoinStack aspires to be a **leading cryptocurrency investment platform**, making digital asset management more **accessible, efficient, and secure for users worldwide**.

10. References

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7. <https://razorpay.com/docs/api/>
8. <https://start.spring.io/>
9. <https://redux.js.org/>
10. <https://apexcharts.com/>
11. <https://ui.shadcn.com/>