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Investify: A Full-Stack Trading Platform

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Abstract: *Investify is a powerful full-stack trading platform designed to provide seamless and real-time stock trading experiences using the MERN (MongoDB, Express.js, React.js, Node.js) stack. It enables users to buy, sell, and monitor stocks efficiently while offering real-time market updates, order execution, and portfolio management.*
The platform integrates live financial data APIs, an intelligent order-matching engine, and interactive dashboards, making stock trading more accessible and engaging for both beginner and experienced traders. Security, scalability, and high performance are key priorities in the design of Investify.

Keywords: Stock Trading, Full-Stack Development, MERN, Real-Time Data, Portfolio Management, Market Analytics, Order Matching, Secure Transactions

I. INTRODUCTION

The stock market is rapidly evolving, and traders increasingly demand platforms that are fast, secure, and intuitive for executing trades efficiently. Investify addresses these needs as a next-generation trading platform that enables users to buy, sell, and track stocks in real time while gaining valuable market insights. It offers robust features including secure user authentication with encrypted transactions and two-factor authentication, live market data through streaming stock prices and real-time order execution, and comprehensive portfolio and risk management supported by AI-driven analytics, profit/loss tracking, and financial forecasting. Additionally, its interactive trading interface provides a user-friendly experience with powerful trading tools and advanced charting capabilities. By leveraging modern web technologies, Investify ensures high speed, scalability, and reliability, empowering traders to make informed and timely investment decisions..

II. CONTENT DETAILS

A. Aims and Objectives.

1. Real-Time Market Integration: Incorporate external financial APIs to fetch live stock prices and market trends.
2. User-Friendly Dashboard: Design an intuitive interface for efficient stock buying, selling, and management.
3. Robust Security: Implement JWT-based authentication and two-factor authentication (2FA) for secure user access and transactions.
4. Efficient Order Matching: Develop an intelligent engine for prompt and accurate execution of buy/sell orders.
5. Advanced Portfolio Management: Offer interactive reports, graphs, and AI-powered analytics to support smarter investment decisions.

B. Methodology

The system follows these core steps:

- Front-End Technologies: Built using React.js, along with HTML, CSS, Bootstrap, and Chart.js for a responsive and interactive user interface.
- Back-End Framework: Developed with Node.js and Express.js to manage server-side logic and API communication.
- Database Management: Utilizes MongoDB to store user information, transactions, and stock details efficiently.

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- Real-Time Data Integration: Implements WebSockets and financial market APIs (such as Alpha Vantage and Yahoo Finance) for live updates on stock prices.
- Device Requirements: Can run on any modern computer or mobile device with basic processing capabilities.
- Scalability and Performance: Designed to handle increasing loads while maintaining speed and reliability.

C. Module Description.

This module focuses on the development and implementation of *Investify*, a next-generation full-stack trading platform. It is designed to provide users with a seamless, secure, and real-time stock trading experience using modern web technologies. The platform integrates live market data, user-friendly interfaces, and intelligent analytics to support informed investment decisions. Built using the MERN stack (MongoDB, Express.js, React.js, Node.js), Investify ensures high performance, scalability, and robust security. It enables users to place various types of stock orders, manage portfolios, analyze market trends, and conduct secure transactions — all from a single, interactive dashboard.

Key topics include:

- User Authentication & Security (JWT, bcrypt encryption, and Two-Factor Authentication)
- Real-Time Market Data Integration using WebSockets and financial APIs
- Interactive Trading Dashboard with charts and technical indicators
- Smart Order Processing and Matching System
- Portfolio Tracking with automated alerts and market analysis
- Stock Search and Filtering features for targeted insights
- AI-powered Market Analytics and Sentiment Analysis
- Secure Transaction Logging using blockchain-inspired methods

Algorithm Description

- FIFO-Based Order Matching: Implements a First-In-First-Out approach to process buy and sell orders in the sequence they are received.
- Price-Time Priority Execution: Trades are executed based on a dynamic priority system that considers both price and time factors.
- Machine Learning for Price Prediction: Utilizes models like LSTM and Random Forest to analyze historical stock data and predict future trends.
- Historical Trend Analysis: Forecasts stock performance using past market behavior and machine learning algorithms.
- JWT for Session Management: Secures user sessions with JSON Web Tokens, ensuring safe and authenticated access.
- MongoDB Aggregation Pipelines: Facilitates efficient querying and processing of large-scale financial data in real time.

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E . UML & ER Diagram

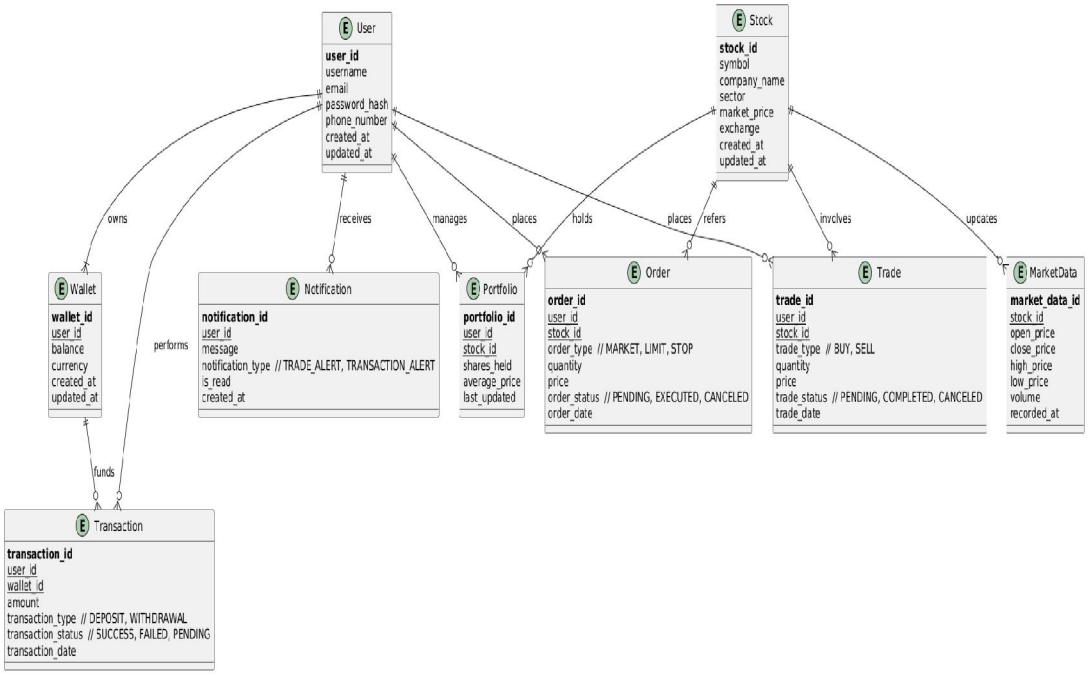

Figure.1. ER-DIAGRAM

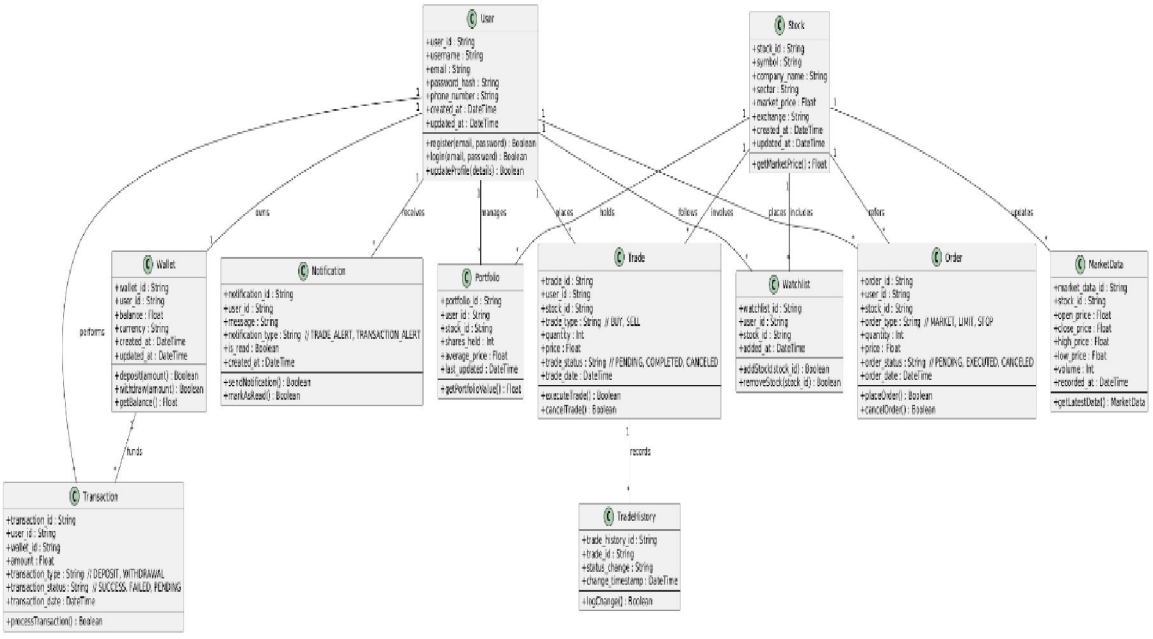

Figure . 2 .UML-Diagram

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F. Output.

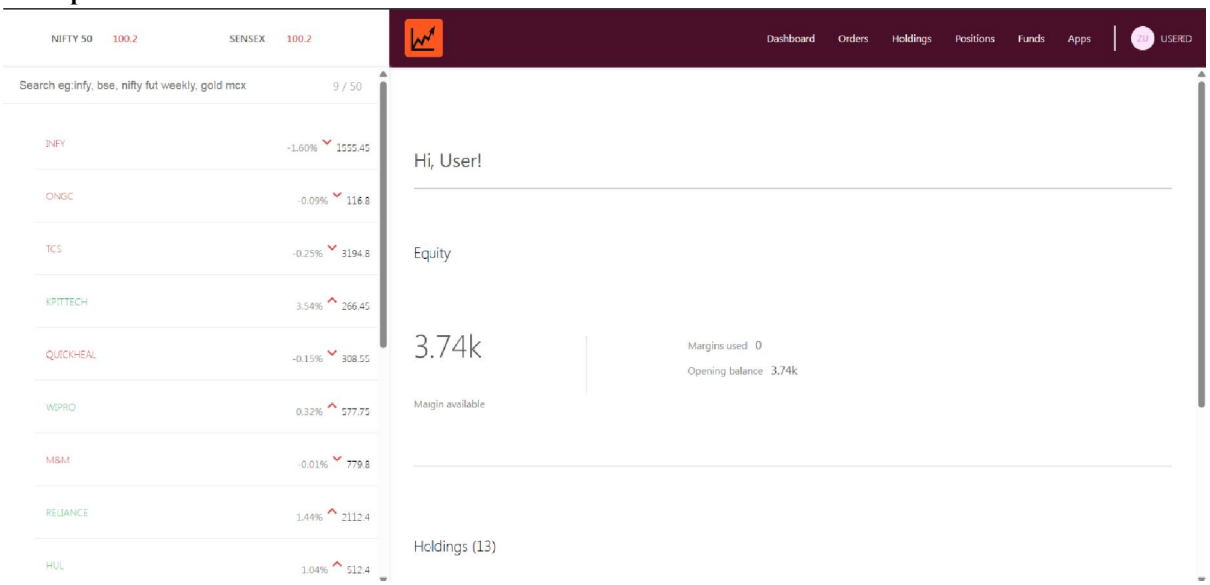

Figure.3.Expected Outcome.

III. CONCLUSION

In conclusion, Investify stands as a powerful and scalable full-stack trading platform designed to meet the dynamic needs of modern traders. By integrating real-time data processing, intelligent order matching, secure authentication mechanisms, and an interactive user interface, the platform ensures a seamless and efficient trading experience. Its use of advanced technologies such as WebSockets, MongoDB, and machine learning models enhances both performance and decision-making capabilities. With a focus on user security, data integrity, and market insight, Investify not only facilitates smooth trading operations but also empowers users to make informed investment decisions. The platform's modular and extensible architecture makes it well-suited for future enhancements, including mobile integration, personalized recommendations, and support for additional financial instruments.

IV. ACKNOWLEDGMENT

We would like to express our sincere gratitude to our project guide, **Dr. Manisha More**, for her continuous support, expert guidance, and valuable feedback throughout the development of *Investify: A Full-Stack Trading Platform*. Her mentorship has been instrumental in helping us overcome challenges and refine our approach. We are also thankful to the **Department of Computer Science & Engineering, DBATU University, Lonere**, for providing the technical resources and academic environment necessary for carrying out this project. Finally, we extend our heartfelt appreciation to our team members—**Vaidik Gampawar, Faizurrehman Mirza, Lobhas Thekale, Sumit Bhoyar, and Karan Nagrale**—for their dedication, collaboration, and commitment to successfully bringing this project to completion.

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