

Stock Portfolio Management System

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DBMS Mini Project 2023

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Introduction:

- **Purpose:**

A portfolio is a collection of financial investments like stocks, bonds, commodities, cash, and cash equivalents, as well as their fund counterparts. In our project, we will often use a portfolio to define only investments in stocks. Portfolio management is the art and science of selecting and overseeing a group of stocks that meet the long-term financial objectives and risk tolerance of a client, a company, or an institution. The primary purpose of a Portfolio Management System is to provide a comprehensive platform for investors and portfolio managers to make informed decisions about their investments.

- **Scope:**

Share Market is the aggregation of buyers and sellers of stocks (also called shares), which represent ownership claims on businesses; these may include securities listed on a public stock exchange, as well as stock that is only traded privately, such as shares of private companies which are sold to investors through equity crowdfunding platforms. Investment in the stock market is most often done via stock brokerages and electronic trading platforms which is TMS (Trade Management System) in India. Investment is usually made with an investment strategy in mind.

Overall, a well-designed Portfolio Management System contributes to the efficiency, transparency, and effectiveness of the investment management process, enabling investors and portfolio managers to navigate dynamic markets and achieve their financial goals.

Project Description:

- **Overview:**

The Portfolio Management System project goes beyond monitoring overall portfolio performance by incorporating fundamental analysis features. The system enables users to monitor the performance of individual securities and the overall portfolio, allowing for timely adjustments based on market trends and economic indicators. Fundamental analysis determines a stock's fair value by examining the related company earnings with respect to investment.

Fundamental analysis depends upon fundamental reports. Fundamental analysts search for stocks that are currently trading at prices that are higher or lower than their real value. The Portfolio Management System project aims to create a user-friendly platform with seamless integration into financial databases, providing strong reporting features. This system empowers users, helping them navigate changing markets and reach their financial goals more effectively.

- **Major Product Functionalities:**

1. **Data Storage and Retrieval:**

Description: Establish and maintain a robust MySQL database structure to store user accounts, watchlists, transactions, stock prices, news, and other relevant data. Implement efficient data retrieval mechanisms to ensure timely access to information.

Key Components: Database schema design, data indexing, and optimized queries.

2. **Data Relationships and Integrity:**

Description: Define and enforce relationships between different entities within the database to maintain data integrity. Ensure that data is accurately represented and updated across related tables.

Key Concepts: Foreign keys, primary keys, database normalization.

3. **Dynamic Visualization of Financial Data:**

Description: Implement dynamic visualizations for financial data, including real-time stock prices, technical signals, and risk metrics. Utilize charts, graphs, and other graphical elements to enhance data interpretation.

Key Tools: Charting libraries, graphical data representation.

4. Search and Filtering Functionality:

Description: Implement a powerful search and filtering system to enable users to quickly locate specific securities, transactions, or news articles. Enhance user efficiency in navigating through vast amounts of data.

Key Features: Search bar, advanced filters.

5. Streamlit-Powered User Interface:

Description: Develop the frontend using Streamlit to create an interactive and dynamic user interface. Leverage Streamlit's ease of use and rapid development capabilities to enhance user experience.

Key Aspects: Streamlit components, layout management.

6. Investment Advice:

Description: Integrate an investment advice feature that analyzes user portfolios and provides tailored recommendations. Utilize machine learning models or predefined algorithms to offer insights into potential investment opportunities.

Key Aspects: Algorithm integration, Streamlit display of investment advice.

7. Secure User Authentication:

Description: Utilize secure authentication mechanisms to verify user identities. Implement strong password algorithms and consider additional security measures like multi-factor authentication to enhance user account protection.

Key Components: Hashed passwords, multi-factor authentication.

8. Multi-Currency Portfolio Values:

Description: Allow users to view the value of their portfolio in multiple currencies. Implement a dynamic system that calculates and displays the portfolio value in the user's selected currency based on real-time exchange rates.

Implementation: Currency conversion algorithms, real-time portfolio value updates.

System Features and Function Requirements:

- **User Account Creation:**

Description: Users can create personal accounts within the system by providing essential details such as username, email, and password. Account creation facilitates personalized portfolio management.

- **Watchlist Management:**

Description: This feature enables users to create and manage watchlists, allowing them to track specific securities without immediate buy or sell commitments. Users can add or remove securities from their watchlists for efficient monitoring.

- **Real-Time Company Price Tracking:**

Description: Users can monitor real-time and historical prices of specific companies or securities. This feature provides crucial information for tracking market trends and making timely investment decisions based on the latest price movements.

- **Company Profile Access:**

Description: Users can access detailed profiles of companies, including key financial metrics, business descriptions, and historical performance. This feature enhances users' understanding of the companies in their portfolio.

- **News Feed Integration:**

Description: The system integrates a news feed relevant to the user's portfolio, providing real-time information on market trends and company-specific news. Users stay informed about events that may impact their investments.

- **User Transaction History:**

Description: This feature maintains a comprehensive record of users' transaction history, detailing buy and sell orders, dates, and transaction amounts. Users can review their past activities for a complete overview of their investment decisions.

- **Dividend History Tracking:**

Description: Users can review the dividend history of specific securities or companies to assess their income-generating potential. This feature assists in understanding the historical performance of dividend-paying stocks.

- **Technical Signal Analysis:**

Description: The system incorporates technical analysis tools to generate signals based on price charts, aiding users in making informed decisions. This feature provides insights into potential trends or reversals in stock prices.

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- **Fundamental Report Generation:**

Description: Users can generate comprehensive reports based on fundamental analysis, offering insights into a company's financial health and valuation. This feature supports users in making investment decisions grounded in fundamental factors.

- **Risk Management Dashboard:**

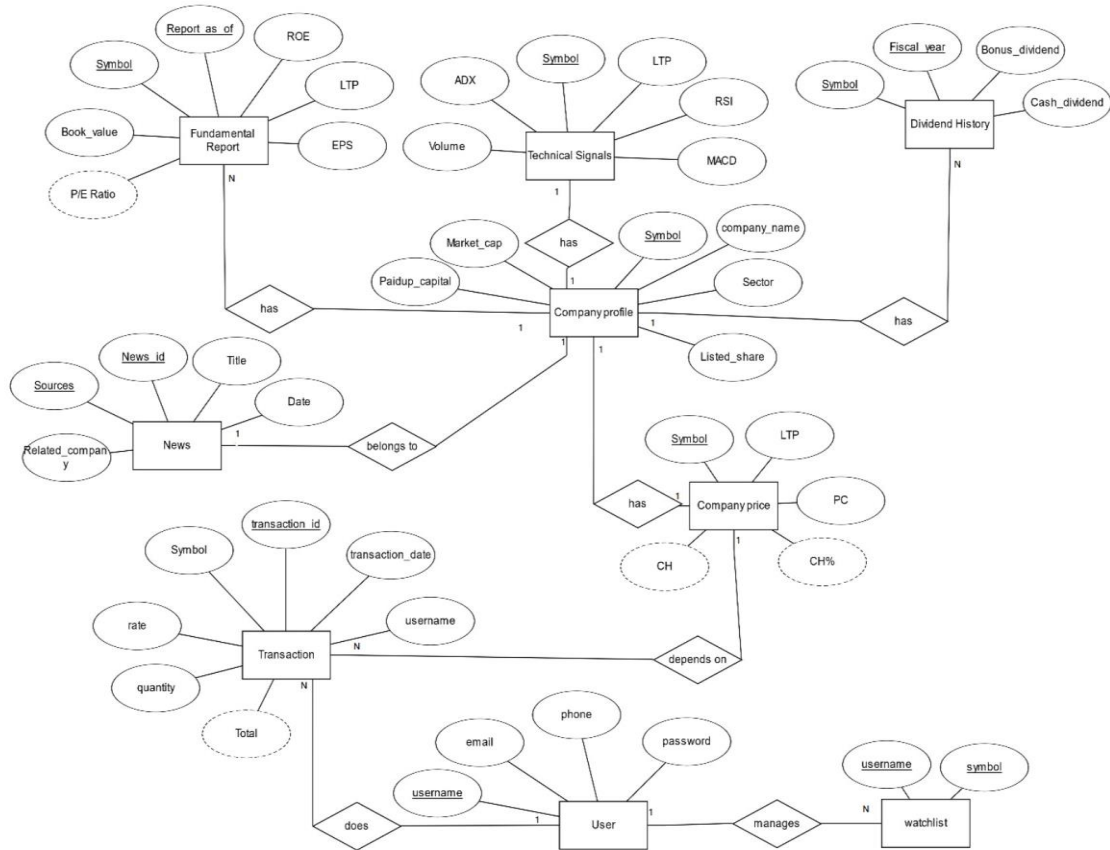
Description: The Risk Management Dashboard provides users with a comprehensive overview of the risks associated with their investment portfolio. It integrates various risk metrics and analytics, empowering users to proactively manage potential risks.

- **Stock Portfolio Overview:**

Description: The Stock Portfolio Overview consolidates all relevant information, including real-time prices, transaction history, dividend records, and risk metrics. This feature offers a holistic view of the user's stock portfolio for strategic decision-making.

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ER Diagram:



Relational Schema:

Relational Schema:

DIVIDEND-HISTORY

<u>Symbol</u>	<u>Fiscal-year</u>	Bonus-dividend	Cash-dividend
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NEWS

<u>News-id</u>	<u>Source</u>	Title	Date	Related-company
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WATCHLIST

<u>Username</u>	<u>Symbol</u>
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TRANSACTION-HISTORY

<u>Transaction-id</u>	<u>Username</u>	<u>Symbol</u>	Transaction-data	Quantity	Rate
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USER-PROFILE

<u>Username</u>	Email	Phone	User-password
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FUNDAMENTAL-REPORT

<u>Symbol</u>	<u>Report-as-of</u>	Eps	Roe	Book-value	Ltp
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COMPANY-PROFILE

<u>Symbol</u>	<u>Company-name</u>	Sector	Market-cap	Paidup-capital
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TECHNICAL-SIGNALS

<u>Symbol</u>	Ltp	Rsi	Volume	Adx	Macd
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COMPANY-PRICE

<u>Symbol</u>	<u>Ltp</u>	Pc	Ch
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