INVESTORY – STOCK TRADING SYSTEM

1. Summary of Problem Description: (Nouns and Verbs)

In recent years, the number of **self-directed traders/investors**, particularly **day traders**, has **seen a dramatic increase**, with a year-over-year (YoY) **growth** of around 4 percent. This **growth**, **driven** by **easier access** to **trading platforms**, lower **transaction costs**, and the increasing **popularity** of **retail trading**, has **created a pressing need** for an efficient **database management system** supplemented with **real-time data access capabilities**. Such a **system** needs to **handle trader profiles**, their **transactional data**, and **portfolio performance** while **providing low-latency responses** for **time-sensitive operations**.

To **tackle** these **issues**, a comprehensive **database system** is **created** that **combines persistent storage** and **in-memory storage**. **MongoDB** is **used** for long-term **storage** of **trading data**, such as **details** on **stocks**, including **Stock Name**, **Market Share Percentage**, and **Sector**, while **Redis** **serves** as a high-performance **layer** for **frequently accessed** or **dynamically updated data**. **Redis functionalities** include **managing trader watchlists**, **leaderboards**, and **session states**, which **require rapid read and write capabilities**.

The **Redis layer** **enables** the **system** to **perform tasks** like **tracking most actively traded stocks**, **maintaining real-time portfolio rankings** based on **PnL values**, and **managing traders’ current sessions**. With this **hybrid architecture**, **traders** **gain** deeper **insights** into their **trading patterns**, **profitability trends**, and **risk exposures**, **enabling** them to **optimize their risk management strategies**, **make more data-driven investment decisions**, and **improve** their overall **financial performance**.

1. Summary of Highlighted Nouns and Verbs:
   1. Nouns:

* Traders
* Investors
* Day Traders
* Growth
* Access
* Trading Platforms
* Transaction Costs
* Popularity
* Retail Trading
* Database Management System
* Real-Time Data Access
* Profiles
* Transactional Data
* Portfolio Performance
* Operations
* MongoDB
* Storage
* Trading Data
* Stocks
* Stock Name
* Market Share Percentage
* Sector
* Redis
* Layer
* Watchlists
* Leaderboards
* Session States
* Tasks
* Insights
* Trading Patterns
* Profitability Trends
* Risk Exposures
* Risk Management Strategies
* Decisions
* Financial Performance
  1. Verbs:
* Seen
  + Driven
  + Created
  + Handle
  + Providing
  + Tackle
  + Created
  + Combines
  + Used
  + Serves
  + Requires
  + Enables
  + Perform
  + Tracking
  + Maintaining
  + Managing
  + Gain
  + Optimize
  + Make
  + Improve

1. Rules and Narratives:
   * 1. **Trader Accounts:**

•Each trader has a unique account managed within the system.

•Active trader sessions are dynamically tracked using Redis.

* + 1. **Transactions**:

•All transactions (buy/sell) are stored persistently in MongoDB but updated in real-time for display purposes using Redis.

•Traders cannot buy stocks exceeding their account balance.

* + 1. **Portfolio** **Management**:

•Redis ensures fast updates of the leaderboard, reflecting real-time PnL values.

* + 1. **Watchlists**:

•Watchlists are stored in Redis for instantaneous access and dynamic updates.

* + 1. **Session** **State**:

•Redis hashes track each trader’s login status, session duration, and last activity.