Milestone 1

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System Design:

- The project simulates the management system of an investment company.
- Data about industries, stocks, financial advisers, clients, investment profiles, and accounts are required to be handled.
- Backend logic is the main focus; no hardware integration or user interface is needed.

Essential Features:

- Describe several market segments and link stocks to them.
- Keep an eye on stock and portfolio valuations while managing trades and stock prices.
- With preferred investment sector distributions, create and maintain investor profiles.
- Assign clients to financial advisors and manage account activities.
- Establish procedures for handling dividends, such as possibilities for reinvestment.

Data management: To save information between sessions, the system should make use of files, databases, or data structures. This instance of a project includes the SQL database.

Reports and Enquiries:

- Determine the distribution of investments across different sectors for each investor.
- Find financial advisors who use comparable investment approaches.
- Identify investors whose holdings considerably depart from their risk profiles.
- Make stock trade recommendations based on contrasts with comparable investors.

Features and Functionalities:

Data Handling: Capability for determining investment sectors, certain equities, fix certain stock prices.

Investment Profiles: For example, in the process of building a given profile identified at the stage one, which specifies investment distribution among different sectors.

Investor and Advisor Management: Underlining the roles of the client management officials and financial advisors, which is their capacity to deal customer query, to create investment accounts and to change advisers as may be wished by the customers.

Transaction Handling: Negotiation of portfolio liquidation and management of cash accounts within investment accounts.

Dividend Management: Automated PROCESSING of dividends, fractional SBA and other functionalities.

Reporting: The conduction of various financial operations, including, for example, account value reporting, adviser’s investment value, investor profit, and investment sector distribution.

Analysis and Recommendations: The use of analytical techniques to distinguish divergent profiles from their investment decisions, stock recommendations, and financial advisor structures founded on investment styles as the case.

Clustering and Similarity Analysis: Aggravate cosine similarity metrics and k-means cluster analysis for investment strategies dissimilarity and groupings different advisors.

Comparing investor profiles and portfolios using cosine similarity metrics is one analytical tool. Group financial advisers according to investment plans by maybe using k-means clustering.

The core of the system is the class InvestmentFirm, which manages interactions between clients, financial advisors, stocks, and sectors by interacting with all other functionalities. Strong data processing, flexibility to accommodate different investment domain scenarios, and elegant handling of exceptions are all necessary components of a strong solution. Additionally, the system needs to be effective in carrying out tasks without adding extra overhead.