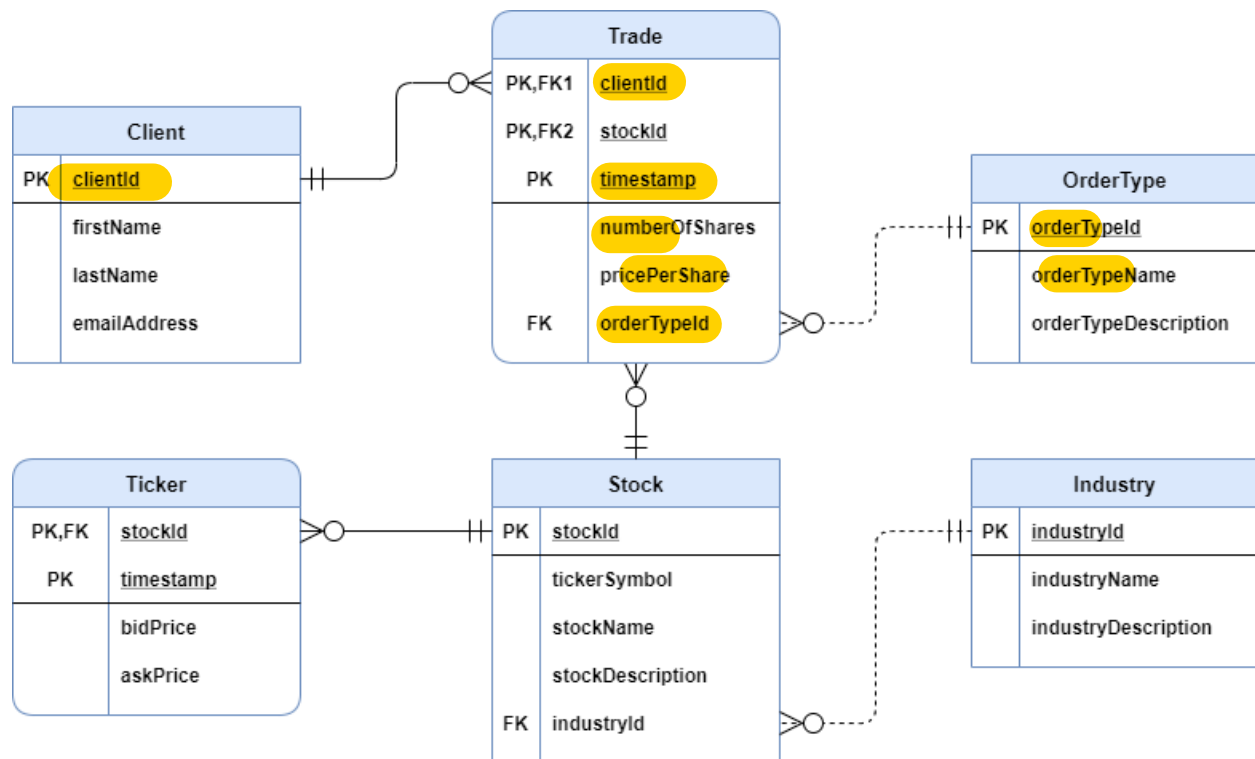


Overview

Indexes are perhaps the most powerful tool that database administrators can use to improve query performance. This assignment will allow you to gain some experience in making decisions about indexes and implementing those indexes in a relational database.

Details

Consider the simple database below, which tracks stock trades for the clients of a brokerage firm:



The **Client** table holds information about the firm's clients, while the **Stock** table holds information about the various stocks in the stock market that are available for clients to buy or sell. Records of stock trades (i.e., the buying or selling of stocks) are stored in the **Trade** table, with the names and descriptions of the various types of trade orders (such as orders to buy or sell at the market price, orders to buy or sell at a limit price, stop-loss orders, etc.) being stored in the **OrderType** table. The names and descriptions of the industries to which the various stocks belong are stored in the **Industry** table, while changes in each stock's bid and ask prices over time are stored in the **Ticker** table.

The managers of the brokerage firm would like to use their database to generate a few reports for their new dashboard system. Specifically, the managers are interested in knowing:

1. *All of the stocks within a specified industry.* The user will choose the name of an industry, and the report should contain the name and ticker symbol of each stock in that industry.
2. *Total number of shares for each order type for a particular stock during a specified timeframe.* The user will provide the **ticker symbol** for a stock and a **range of dates** (i.e., a start date and an end date), and the report should contain the **names of all possible order types** and the **number of shares that were traded for each of those order types during the specified timeframe.**
3. *Total amount of money for each order type for a particular client during a specified timeframe.* The user will provide the **client's email address** and a range of dates (i.e., a start date and an end date), and the report should contain the names of all possible order types and the total amount of money that was traded for each order type by the client during the specified timeframe.

Tasks

1. Implement the database depicted above in SQL Server. After implementing the basic database structure (tables, attributes, keys, and relationships), consider the managerial reporting requirements described above and the sort of SQL queries that would be necessary to meet those requirements. **Note:** you do not actually need to write the SQL queries.
2. Add appropriate indexes to the tables in the database so that each of the reports listed above can be generated as quickly as possible. Note that SQL Server automatically adds indexes to primary key columns, so some indexes may have already been created for you.
3. Keep record of your indexing activities in a Microsoft Word document by:
 - a) Describing each index in the database. Each index description should include:
 - i. The name of the table to which the index applies
 - ii. Whether the index is clustered or non-clustered
 - iii. Whether the index is unique or non-unique
 - iv. The name(s) of the index key column(s)
 - v. The names of any additional (non index key) columns that are included in the index
 - vi. Your rationale for why the index was included
 - b) Include the SQL CREATE or ALTER TABLE statement associated with each index. **Note:** After implementing each index, you can view its associated CREATE or ALTER TABLE statement by right-clicking on the index name in the Object Explorer, and then selecting *Script Index As >> CREATE To >> New Query Editor Window*.

Deliverables

To ensure that you receive credit for this assignment, please assemble your index descriptions and SQL CREATE or ALTER TABLE statements from Task 3 above into a single Word document. After creating your Word document, submit the file using the appropriate link on the course website.