The database is going to model a stockbroker firm. It will keep track of clients and their transactions, which take place through their brokers. It will also keep track of the current stock market in order to provide brokers with the analytics they need to inform clients about potentially profitable positions. Each symbol will include the sectors, industries, exchanges and countries they are associated with and a history of the volume, opening and closing price of each day. Both clients and brokers will have personal information that includes a username, password, email address, first name, last name and a physical street address. This personal information will be stored on a separate table where there’s a one-to-one relationship between the Clients and PersonalInfo tables as well as the Brokers and the PersonalInfo tables. This is done to conform to the Third normal form, which states there will not be any duplicate data.

In this database, if a broker want’s to purchase stocks, they must register as a client, they cannot purchase stocks themselves. For the transactions clients make through their brokers, a Transactions table will used to store the date they were purchased, the quantity of a specific stock, and the price of the stock at the time of purchase. If clients wish to purchase or sell different stocks, they must have one transaction for each given stock. This restriction is applied to simulate how the real stock market works. The only data that will be stored in the symbols table will be the name of the given symbol. Considering that a symbol can have many sectors, industries, exchanges and countries associated with it, there will be a many-to-one relationship of said attributes to each symbol. Since we want a history of the symbol’s opening and closing prices, there is a many-to-one relationship between the MarketDays table to the Symbols table.