Final Project Requirements

1. At least Store 10 stocks:

Store Information in your database for 10 stocks. For each stock, you are expected to have real-time data and historical data. The real-time data should contain the price, time and volume. The time slice between two real-time points should be no more than one minute. The historical data should at least contain time, open, high, low, close, and volume.

2. Prediction Strategies:

(Long term and short term) that can help while making stock investment decisions. You are required to use **Bayesian Curve Fitting, ANN, SVM, and at least three indicators** to do predictions. For the indicators, you need to calculate the value and show them in the chart like the existing website does.

3. Figure (Basic requirement):

You can plot a figure of any stock for a certain time period. The time interval of the figure (x axis) is preset (start from some point to the current time) and can be changed by users. The value interval (y axis) should be automatically adjusted by the input data.

4. Query:

1. Show the list of **all companies** in the database along with their latest stock price (real time latest stock price)

2. Get the highest stock price of **any company** in the last ten days.

3. Average stock price of **any company** in the latest one year.

4. Lowest stock price for **any company** in the latest one year.

5. List the ids of companies along with their name who have the average stock price lesser than the lowest of **any of the Selected Company** in the latest one year.

You are required to integrate these queries into your web interface, not just do them at background. For e.g you can create a separate web page for these queries and use some edit texts, dropdown boxes and submit button to run the query in the background and display result on web page.

Since this task execution depends on your design, the grading will be comparative.

5. Web Service:

Expose the functionality (at least the prediction part) of your application as a web service (API) so that any front end application can use it as a back end.

You can choose either SOAP or RESTful Web Service and use any framework for this purpose. You do not necessarily have to host it on the internet, even running it on your localhost will suffice.

Following resources can be used as a starting point to learn more about web services.

SOAP → https://www.tutorialspoint.com/webservices/index.htm
REST → https://www.tutorialspoint.com/restful/index.htm

REST v/s SOAP: https://stackoverflow.com/questions/19884295/soap-vs-rest-differences

Example of web service: http://www.webservicex.com/stockquote.asmx?op=GetQuote

Some previous projects that used SOAP web services:
http://www.ece.rutgers.edu/~marsic/books/SE/projects/StockForecasters/
http://www.ece.rutgers.edu/~marsic/books/SE/projects/StockForecasters/2008report2-g5.pdf
http://www.ece.rutgers.edu/~marsic/books/SE/projects/StockForecasters/2008report2-g1.pdf
http://www.ece.rutgers.edu/~marsic/books/SE/projects/StockForecasters/2008report2-g3.pdf

6. Special Features:

Create something fun and useful for users. Please do not ignore this part because this carries considerable weightage too!

7. User Interface design:

You are expected to design a good user interface for your system. While showing demo of your system, please make note that we will consider this factor and grade accordingly. Doing only backend programming is not the aim of this class.

8. Extra Credits:

You will get extra credits, if you come up with strategies for pattern recognition. You are also supposed to explain this clearly in your demo.

Presentation content requirements:

Besides the requirements which has been mentioned in the preliminary presentation, your presentation slides have to cover additional content below:

1. **Architecture Diagram** : Describe your web application with block diagram in detail.
2. **Use cases** : Cover all the use cases in your actually built application.
3. **Programming Technologies** : Including languages, web service framework and other tools.
4. **Special Features**
5. **Web sources for stock price**
6. **Prediction Strategies** : Including shot term and long term strategies in DETAILS. (You don't have to describe too much details of your algorithms, but explain how they work.)

Note : There should not more than 10 slides in your presentation.

Heads-up : Besides presentation, there also will be a demo of your final designed system. Please prepare accordingly.