Prediction Exercise

Save all your source files and output files in new folder (your name will be used as folder name)

Step 1: If you have no prior knowledge in trading, watch the short videos in the links at the bottom.
Step 2: Read the following instructions, write a design describing how you would approach this problem (address point no. 3 in detail). Present this design.
Step 3: execute your design in python (or similar), up until point no. 4 inclusive.
Step 4: Continue point 5 in C++.

1) Trades data file named "*INST*_DATE.csv" provided covering the following:
(full file path : '/home/guest/CandlesData')

Seconds	High	Low	Open	Close	Qty
0	2556	2556	2556	2556	1

I. Seconds from start of day
II. Highest price in 1 sec time bar
III. Lowest price in 1 sec time bar
IV. Start price of 1 sec time bar
V. End price of 1 sec time bar
VI. Quantity of traded lots (stocks) in 1 sec time bar

If there were no transactions during a second, the close price remains the same and all other data columns are NA.

INST1 – INST5 will be your predictors. INST6 will be the predicted instrument.

2) Transform the INST6 files into a file containing the prices of this instrument in samples of 10 seconds, looking at close price (last price in the 10 seconds window).

3) Your goal is to predict the changes in the price of INST6 based on all other 5 instruments. You should choose whatever features you want and/or create your own for the prediction. For each point in time predict the next 10 seconds and decide whether the price of INST6 is about to go up, down, or stay the same. Transform the INST6 files so they show the close price (last value) for each 10 seconds.

4) Based on your prediction – write the following strategy: for every 10 seconds you can be in long position (if you predict the price is going up) or short position. Write your decisions to a csv file in the following path ('/home/guest/CorrTest/decision.csv') with the following format, for the validation date (2018-12-07):

Time	Direction
1543820460	-1
1543820470	1

5) In C++, write a function that calculates the profit and loss (PnL) for each 10 seconds bar, based on the differences between your prediction and the actual price movement. If the price went up and you decided long, the price change is your profit. Else, it is your loss. (The code is ready to accept a csv file with your decisions based on point no. 4 and the validation file for INST6 on 2018-12-07). The function should return a csv with the PnL calculation changing during the day.

The following software installed on the system:

eclipse (python\cpp)	Open terminal and run : **eclipse**
pycharm(python)	Open terminal and run : **pycharm-community**
rstudio(R)	Open browser and go to `http://localhost:8787` user guest password 5tg6yh7uj
`jupyter notebook(python)`	Open terminal and run : **jupyter-notebook**
matlab	Open terminal and run : **matlab**

Basic Trading Concepts Explanations:

What is an order? - https://youtu.be/5Od7o05Lpsc
The Order Book - https://youtu.be/_0KVAfy49h0
How orders affect the order book - https://youtu.be/Kl4-VJ2K8Ik
Short position - https://youtu.be/UFj1DyBe5_A