**Assignment:** SFM-1-Assignment

**Note:** If there are multiple files for the assignment, please zip all the files in .zip format.

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**INSTRUCTIONS**:

1. Use the MS Excel File “XL\_FILE\_ SFM-01\_AssignmentData” to complete this assignment. Refer to relevant sheets within this Excel file to answer the respective questions given here.

2. Upload the updated MS Excel File and this word file to submit your work.

3. **Note: If there is more than one file kindly zip it in .zip format.**

**HINT:** Please refer to “In\_Class\_file”,“XLP”and lecture recording to do this assignment.

**(Each Question carries 5 marks)**

**Question 1:**

A) Open the Question1 worksheet in the “XL\_FILE\_SFM-01\_AssignmentData" and fill different colors to open high and closing price.

Please remember the data should be visible after the color filling.

B) In the class we created a separate column that mentions whether the price increased or decreased from the previous day. Repeat that exercise and create a separate column. We all know that an up movement in the market is denoted by green signal and the down movement by red signal. Assign green color to “Increase” and red to “Decrease”. Choose closing price for this calculation. Please document your steps.

C) Plot the open price, high price and the closing price on the same graph.

**Answer 1:**

1. Columns B (Open), C (High) and E (Close) have been highlighted in different colors.
2. Detailed steps:
   1. Created new Increase/Decrease column (Column F). Highlighted the header in light orange.
   2. Used formula ‘*=IF(E3>E2,"INCREASE","DECREASE")’* to identify increase or decrease based on Close price (Column E).
   3. Highlighted increase (green) and decrease (red) using conditional formatting.
3. Chart with Open, High & Close prices have been plotted against the Date column in Q1-Chart tab.

**Question 2:**

Taking reference from “XLP.xlsm” file (where signals are toggled between “BUY” and “SELL”), please try to create another model (using the data available in “Question 2” worksheet in “XL\_FILE\_SFM-01\_AssignmentData") with the following conditions:

A) If today's close price is greater than maximum of previous 5 day closing price then buy  
  
B) If today's close price is less than minimum of previous 5 day closing price then sell  
  
C) There may be consecutive buy and sell signal. Create a column called rule that has alternate buy and sell signals only (Since, we are working on toggle system, once the BUY /SELL is encountered, the system should wait till next SELL/BUY comes as per the condition defined in A. You’d be exiting the trade when the opposite signal comes. This also means that you’ll have one open position at all times after the first trade.)

**Answer 2:**

1. Refer column F (Signal) for the BUY/SELL signal as required by parts A & B.
2. Refer column F (Signal) for the BUY/SELL signal as required by parts A & B.
3. Refer Column H (Rules) for alternate BUY/SELL only. Column G (Signal\_2) has been used as intermediate step.
   1. Strategy rules, signals, trades and returns summary are shown in the spreadsheet. Rules column is a proxy for trades.
   2. The final BUY signal which remained open has been closed on the last day.

**Question 3:**

Data for a stock price dated from 1-Jan-2010 to 18-Jan- 2017 is given to you (using the data available in “Question 3” worksheet in “XL\_FILE\_SFM-01\_AssignmentData"). Now, calculate VWAP for the same. An example of the VWAP calculations has been done in the sheet XL\_FILE\_ SFM-01\_ In\_Class\_file.xlsm

**Answer 3:**

* Refer Column L for VWAP. Intermediate calculations are present in columns H through K.
* I have also calculated 5-day VWAP based on 5-day cumulative price \* volume and 5-day cumulative volume. Refer column O.
* Q3-Chart tab shows Close price vs VWAP vs 5-day VWAP.
* Created a simple strategy using 5-day VWAP.
* Strategy rules, signals, trades and returns summary are shown in the spreadsheet.
* The strategy triggered a signal on the last day, so no manual square-off was required.

**Question 4:**

For the Infosys data from the previous question, calculate RSI (Relative Strength Indicator). The steps are explained in the slides and an example has been done in the spreadsheet used in the class: XL\_FILE\_ SFM-01\_AssignmentData (“Question 4” worksheet). What do you infer? Does the RSI indicate overbought and oversold shares? Please document and submit your assumptions (if any) with the assignment.

**Answer 4:**

* Refer Column M for RSI. Intermediate calculations are present in columns H through L.
* A standard 14 day period has been used for the averages.
* RSI > 70 is highlighted in red indicating overbought and potential SELL and RSI<30 is highlighted in green indicating oversold and potential BUY.
* The share price indicates 163 oversold and 314 overbought days out of a total of 1987 trading days. This means the stock was in overbought range for ~16% and in oversold range ~8% of the time.
* Q4-Chart tab shows Close price vs RSI.
* Created a simple strategy using RSI.
* Strategy rules, signals, trades and returns summary are shown in the spreadsheet.
* The final BUY signal which remained open has been closed on the last day.

**Important points to keep in mind while attempting the assignment questions:**

Try figuring out the summary of your strategy wherever possible and you can include below points to summarize your strategy:

* Positive Returns, Negative Returns, Total Returns
* Positive Trades, Negative Trades
* Hit Ratio, Average Returns