

# Homework 3

*Due: Sept. 14, 2010, 2:25 pm*

## Reminders

For the following problems you may discuss the concepts that will help solve these problems with classmates and course staff. You may *not* simply copy down the answers of your classmates as that is a violation of the collaboration policy. The one exception to this rule are those problems marked as Independent. You may discuss independent problems *with course staff only*.

## Task 1:

- a. Create a new spreadsheet called `StockReport`. Use `Data...Get External Data ...From Web` to import a part of <http://finance.yahoo.com/q?s=GOOG> into your spreadsheet. The `s=GOOG` part of that URL tells Yahoo that you want to see the price for Google; you can change this to any other ticker-symbol you like.

What should you import? Find a small piece of the page to import — perhaps the stock name, price, and most recent change — but feel free to be creative; import a couple of stocks if you like. When you look at the web page you'll see the stock name, price, most recent change in price, and a few other pieces of data. Be sure to import the *most-recent-change*, because you'll need it in the next part of the exercise.

- b. Now using `Data ...Connections`, change the Properties of your connection to “refresh every 2 minutes”. This will make Excel check the source webpage every two minutes to see if anything in the table has changed
- c. Finally, Use `Home...Conditional Formatting` to make the background of the “Change:” cell be pale green if the price is rising and pale red if it's falling.
- d. Save your spreadsheet as `YourNameHW3_1.xlsx`.

## The Row() function

## Task 2:

- a. Open `Sheet2` of `YourNameHW3.1.xlsx` and name it `FillStuff`. Put the number 7 in cell `A1`. Use `Fill...Series` to fill in the numbers 8, 9, 10, ...16 in rows 2 through 10.
- b. Enter the formula `=Row() + 6` in cell `B1`. Fill down for ten rows. Your results should be the same as those in column `A`.  
Explanation: The value of the `Row()` function in a cell is the number of the row that the cell is in. So cell `B1` is in row 1, hence `row() + 6` has the value 7.
- c. Experiment with `Column()`; describe its behavior.
- d. In cell `C1`, enter the formula `=A1 + row()`. *Before you do so*, predict what will happen when you fill down from cell `C1` to `C10`, and write your prediction in a comment for cell `C1`. Now execute the fill, and in a comment for cell `C10`, explain what happened (even if it agrees with your prediction).
- e. In cell `D1`, enter the formula `=A$1 + row()`. Again, predict the results of filling down, and explain the results you actually get, using comments on row `D` instead.

### The Match() function

The `Match()` function finds the location of a particular item in a row or column of items. If the item appears more than once, then `Match()` reports the first occurrence, at least if you set the third parameter to "0," which is what you should do in all these examples.

For example, if you want to find the first cell that contains the exact text "Test tube" in cells `A1:A9`, you would type: `=Match("Test tube",A1:A9,0)`

### Task 3:

- a. In cells A15:F15 of FillStuff, enter P, Q, P, Q, Q, R. In cells A16:F16, enter 15, 13, 12, 6, 3, 9. In cell A17, enter a formula that produces a "1" if A15 has an Q in it, and a zero otherwise. Fill this to the right for six cells. In cell H15, enter a formula involving Match() that will tell which column in row 15 is the first to contain the letter Q. In cell H17, enter a formula involving Match() that will tell which column in row 17 is the first to contain the number 1.
- b. In cell A18, enter the formula =A17, which will copy the zero from the row above. In cell B18, enter the formula =A18+B17; this takes the previous result, and adds to it the next entry from row 17. Fill this formula to the right from B18 to E18. The resulting values are called the *partial sums* of the numbers in A17:E17. You'll notice that the partial sums increase by one exactly in the columns where the letter Q appears in row 15. Observe what happens if you use Match() to locate the numbers 1, 2 and 3 in row 18.
- c. In cell G17, put a formula to count the number of ones in A17:F17.

### The Offset() function

The `Offset()` function can be used to grab a particular cell by saying "it's the one two steps down and 3 steps over from some *other* cell." For instance, the formula `=Offset(A1, 2, 3)` will give the value in cell D3: we add two rows to A1 to get the location A3, and then add three columns to get to D3.

We're going to use `Offset` to copy exactly those columns of our original data where there's a Q in row 1. This would be easy to do by hand, of course — there are just three columns, and we could just copy them one at a time. But when you get to 200 columns, that becomes impractical. Here's the idea:

In row 18, we've got a sequence in which each new number *first* appears in a row containing the letter Q. The first 1 is in column B; the first 2 is in column D; the first 3 is in column E. If we use `Match` to find these columns, we can copy them to a new location.

### Task 4:

- a. Since there are three Qs in the table, enter the numbers 1, 2, and 3 in cells A20:C20.
- b. In cell A21, enter a formula using `Match()` that identifies the column in which the first 1 appears in row 18. Don't use the number 1 directly; instead, get it from cell A20. Fill your formula two more cells to the right, so that cells B21 and B22 contain the columns of the first appearance of the numbers 2 and 3, respectively. Hint: when entering the range to search, you should use `$A18:$F18`, so that the same range will be used when you fill right, rather than the range being adjusted to the right as well.
- c. In cells A22:C22, enter a formula that subtracts one from the corresponding entries in cells A21:C21.
- d. In cell A24, enter the formula `=Offset($A15,0, A$22)`. Because A22 contains the number 1, this goes to cell A15, moves down zero rows, and across by *one* column; it copies the value in cell B15, which is Q. Now enter a formula in cell A25 that copies the data in B16 by offsetting from cell A15.
- e. Would `fill` have worked to make the second formula in the previous task? Use `fill` to fill in formulas for cells B24:C24. You've succeeded in copying all columns from the original table that had a Q in the first row.
- f. Explain the use of dollar signs in the formula `=Offset($A15,0,A$22)` as a comment in cell A24.

**Task 5:**

- a. Download `GradeSheet.xlsx` from the website.
- b. Make a second sheet, containing a table of the same size and shape. For this table, make every cell show either a 0 or a 1. A cell should show a 1 if the score is higher than Anne's score and a 0 if it's equal to or less than Anne's score. This is tricky because of the need for absolute addressing in one index!
- c. Using conditional formatting to color in the cells on the original sheet that contain grades higher than Anne's score on that same assignment.
- d. Save this spreadsheet as `YourNameHW3_2.xlsx`.

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**Handin**

**Task 6:**

Send both `YourNameHW3_1.xlsx` and `YourNameHW3_2.xlsx` to `cs0931tas@cs.brown.edu`.