Homework 1

Due: Sept. 7, 2010, 2:25 pm

Basics

These problems should take you just a few minutes each; each one aims to teach you a particular skill that you'll need to have in Excel. Most involve a task and some hint of how to approach it; you'll want to do a web search, or ask a friend, or use the Help function (press the F1 key!) in Excel to learn how to do things.

One good reference is the Excel tutorial at http://www.baycongroup.com/el0.htm. In fact it's so good several of the following problems involve parts of it; if you have some time, it's worth working through the whole thing over the next week or two.

This homework may seem long, as there are quite a few pages to work through, but don't get intimidated! Most of the assignment is a tutorial, and the problems themselves are very easy. If you are already comfortable with Excel, feel free to skim over most of the homework, focusing mainly on anything that you are not familiar with. (We strongly recommend that you also try out a few of the exercises with Excel 2007 if you have never used that particular version before, as it does things very differently than do previous versions. There is also a required handin at the end of the lab that will test most of the subjects covered in this tutorial.

Task 1:

Go to http://www.baycongroup.com/excel2007/01_excel.htm#window and do everything described there on the first page. When you're done, you should know how to move around in an Excel spreadsheet, enter data into cells, delete data from cells, select a region of cells, and how to save and close a spreadsheet.

Task 2:

Now we're going to enter a "formula" in a cell. Formulas are the heart of Excel, but for now we're doing something very simple.

a. First enter your name in cell A1. Then click on cell B1, and in the formula bar, type

```
=A1
```

and hit "Enter." The equals sign is essential; it tells Excel that you're entering a formula rather than just a piece of text like your name. When you hit "Enter", cell B1 should show your name, just as cell A1 does. Now click on cell C1 and in the formula bar, type

```
A1
```

(notice that there's no equals-sign). Press Enter. Cell C1 should display the text "A1".

b. Now go to cell A1 and enter a different name. Notice that cell B1 also changes. That's because the rule defining B1 is that it "equals whatever's in A1." The rule defining A1 is that it's "Robin Smith" (or whatever you typed in there). Change cell A1 back to your own name.

Task 3:

At the lower-left of the spreadsheet, you'll notice some tabs labelled "Sheet1," "Sheet2," "Sheet3," and so on. When Excel starts up, you're looking at Sheet1, and the others are hidden. Enter your name in cell A1 (it may still be there from exercise 2) Now click the Sheet2 tab; you'll see a fresh spreadsheet in which cell A1 is empty. Enter a friend's name in cell A1. Click on the Sheet1 tab, and then on the Sheet2 tab. Describe what you see in cell A1 after each click. **Important note:** The name "Sheet1" has no blank between the "Sheet" and the "1"; the same goes for all the other sheets.

Task 4:

If you go to Sheet2, and in cell B1 you enter "=A1," the value that will appear in cell B1 will be your friend's name. In general, cell-addresses refer to the current sheet. But you CAN enter a formula that lets you get at cells from another sheet. On Sheet2, click on cell B1. Enter the formula

```
=Sheet1!A1
```

and press Enter. Your name should show up in cell B1, having been copied from cell A1 on Sheet1. Go to sheet 1, cell A2, and enter your age. Notice that it appears all the way to the right in cell A2 because Excel has interpreted it as a number.

Naming

Naming things is one of the ways that we impose structure on the world[1]. While Excel has default names (like "A1", "N13") sometimes it makes sense to give things names that are more readable by humans. For instance, the contents of cell A2 (your age), might be better called "age" than "A2." Here's how to add a name to a cell:

Task 5:

1. Click on cell A2. Just to the left of the formula bar, you'll see a white space with "A2" in it. Click on this and type "age," and then press Enter. The cell is now named "age" in addition to "A2."
2. Click on B2, and enter the formula "=age"; the result should be that your age appears in cell B2.
3. Click on cell B2 and enter the formula "=A2"; again, your age should appear. The cell A2 can be referred to either by its standard spreadsheet address (A2), or by its name ("age").
4. Go to Sheet2, and in cell B2, type a formula that will copy your age from Sheet1, cell A2. Use the name "age" rather than "A2."

Point of information: you can also rename sheets. Click on the Sheet3 tab. Then right-click on it. A menu pops up; click "rename" and rename

[1] The forms of things unknown, the poet's pen / Turns them to shapes, and gives to airy nothing / A local habitation and a name. (Shakespeare, Midsummer Night's Dream V.i.15-17). See also Naming of Parts, by Henry Reed.

it "Junk." You'll see the name change on the tab. Now change it back to Sheet3.

Descriptions

When you build a spreadsheet, you're doing so with some *intent*. You should record your intentions by adding comments to your spreadsheet(s).

Task 6:

Right click on cell A2 of Sheet1. Select "Insert comment." Type "This is where you have to enter your age" as a comment. Notice:

a. A small red triangle appears in the upper right of the cell to indicate there's a comment for the cell.

b. When you select the cell, the comment appears.

Filling

Let's talk about "Filling" – taking some data from a cell or two, and using it to generate data for a whole bunch of cells. We'll do this by example. By the way, cutting, pasting, and copying work in spreadsheets much as they do in many other programs, with a few subtle differences that you'll learn about. Filling is kind of like a fancy copy/paste operation.

Task 7:

Visit http://www.baycongroup.com/excel2007/03_excel.htm, and search for "Fill Cells Automatically." Carry out the exercises there, stopping when you get to "Create Headers and Footers"

There are other ways to perform filling on the cells besides those described in the tutorial. First, select the cells you would like to fill, including the original "base" cell(s). In the ribbon under the tab "Home" and the section "Editing," there is the "Fill" button. When you click on it, it should give you a menu for different options. Pick "Series." This should give you a dialog providing different options to use to fill the selected cells. Play around with these options to get a feel for what they do.

Task 8:

Do exercises 1 through 5 at http://www.baycongroup.com/excel2007/02_excel.htm.

Task 9:

Do Exercise 1 at http://www.baycongroup.com/excel2007/03_excel.htm.

There's great power in establishing a bunch of relationships, and then seeing what happens when you change one cell. ("What would the company profits be if we could reduce the cost of manufacturing widgets by three percent?") The formulas you've already encountered let you do things like that. But one kind of formula adds a special power to a spreadsheet: the conditional formula, which usually involves an "If." Here's how it works: when you tell a friend how to get to your home, you might say something like "Take route 42 for the first 8 miles. If it's rush hour, take 302 to go around the city; if not, just take route 42 straight through the city. On the other side, whichever route you took, watch for signs for Millville, and take the first Millville exit..." This is a conditional description: what your friend should do depends on whether or not it is rush-hour. So rush-hour-ness is the condition, and there are two choices for what to do: one if it is rush hour, and one if it isn't.

In writing expressions in Excel, we don't *do* things so much as we *express computations*: Cell A3 should be the sum of cells A1 and A2. How can a notion of conditionality fit into this? This isn't something you see in algebra class, so we have to write it a little differently. Let's see an example:

Task 10:

In cell D1, enter 12. In cell D2, enter the formula

```
=If(D1 > 10, 3, 0)
```

Observe the result. Change the value of D1 to 4, and observe the result.

The "If expression" checks to see whether D1 is more than 10; if so, the value of the "If expression" is 3; if not, its value is zero. The "condition" can use equality-testing ("If(D1 = 3, ..."), various inequalities ("If(D1 >= 2, ...," "If(D1 < 5, ..."), or even other functions ("If(IsBlank(D1), ..."); this last test determines whether cell D1 has anything in it or not.

The result-if-true can also be more complicated than a single number. For instance, the expression

```
If(D1 < 5, D1+3, D1-2)
```

gives D1+3 if D1 is less than five, but if it's five or more, the expression gives D1-2.

Final Handin

Task 11:

1. Once you have completed the tutorials and above exercises, download `ExcelBasics.xlsx` from the website.
2. Rename your Excel file to something like JohnHughesHW1 (i.e., your name, followed by "HW1").
3. This Excel file will contain several exercises. Complete these exercises.
4. E-mail your completed file to the TAs at `cs0931tas@cs.brown.edu` with the "Subject:" line "HW1".