CS130/230
Formatting, Logic, and the 'IF' Function

Formatting

During our first class meeting, we discussed how to format the output of a cell (currency, decimals, etc.). Not surprisingly, there is much more to formatting than just this. You can format the alignment, fonts, borders, and background colors of cells, which is what we'll do in the first problem below.

5.1 Exercise

Consider the following table of data representing sales (in dollars) for various bookstores in the Portland area:

Portland Area Bookstores
2006 Sales

	Borders	Powells	B&N	Pacific
Fiction	3230	4530	2150	230
Biography	5300	6390	6299	549
Reference	3599	7395	3053	912
First Edition	9232	11003	2351	1052
Children	5234	5372	2692	384

Our goal is to create an Excel document that will graphically display this information in a more creative way.
   a. Grab the above information and place it in an Excel document. Add an additional row that includes the total sales for each store.
   b. You need to format the data in the table properly. You can either format it yourself by changing the fonts and background color or you could use the Excel AutoFormat feature.

To use AutoFormat
- Select the range of cells to be AutoFormatted
- Go to Format on the menu bar and select AutoFormat
- Select the AutoFormat option of choice

To format the cells yourself
- To merge cells; select the cells, right click on the cells, select the alignment tab, and check the 'Merge Cells' check box.
- Use the toolbar to change the color of the text and the color of the cell background

Try both now, and create the following worksheet:

Portland Area Bookstores 2006 Sales				
	Borders	**Powells**	**B&N**	**Pacific**
Fiction	$3,230.00	$4,530.00	$2,150.00	$230.00
Biography	$5,300.00	$6,390.00	$6,299.00	$549.00
Reference	$3,599.00	$7,395.00	$3,053.00	$912.00
First Edition	$9,232.00	$11,003.00	$2,351.00	$1,052.00
Children	$5,234.00	$5,372.00	$2,692.00	$384.00
Total Sales	$26,595.00	$34,690.00	$16,545.00	$3,127.00

Printing

Let's have a look at what the spreadsheet would look like if we printed it out. Click on the (Print Preview) toolbar menu.

You will probably find that you will need to make some adjustments before you can print the page. You might need to change the page orientation from portrait to landscape. You also might need to adjust the margins. You can do this by going into the Page Setup menu item in the file menu.

One of the useful features under the margins tab is the centre horizontally and centre vertically option. This centers your spreadsheet in the middle of the page.

Comparison Operators

You can use comparison operators to compare two numbers, functions, formulas, or labels and return either true or false.

Examples include:

=2*3=4+2
=A1>0
=average(a1:a10)>50

Every conditional test must include at least one comparison operator. As an example, in the formula =A1>0, the comparison operator is >. The following six comparison operators exist in Excel:

Comparison Operator	Definition
=	Equal to
<>	Not equal to
<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to

IF Built-In Function

The IF function checks a condition that must be either true or false. If the condition is true, the function returns one value; if the condition is false, the function returns another value.

The syntax of the IF function is:

=IF(logical_test, value_if_true, value_if_false)

5.2 Exercise

You are the owner of a small business and every month you need to take a person's hours-worked and hourly wage and calculate gross and net pay. Gross pay is hours worked times hourly wage and net pay is gross pay minus: (1) Social Security (7.65%) (2) State Income Tax (8.5%) and (3) Federal Income Tax (15%).

Set up a worksheet that allows the user the ability to enter hours worked and hourly wage; your worksheet then displays: Gross Pay, Social Security, State Income Tax, Federal Income Tax, Net Pay.

Your worksheet must handle overtime such that any hours over 40 earn time and one half. If a person was making $5.00 per hour and worked 45 hours, for 5 hours they made $7.50 per hour.

Logical Operators

Sometimes our logical_test needs to use a logical function such as AND and OR:

The syntax for each of these statements is:

OR(logical test#1, logical test #2)

AND(logical test#1, logical test #2)

For the OR construct, a value of TRUE is returned if EITHER of the logical tests returns a value of TRUE; otherwise, a value of FALSE is returned to the cell.

For the AND construct, a value of TRUE is returned if BOTH of the logical tests return a value of TRUE; otherwise, a value of FALSE is returned to the cell.

Note that you can have more than TWO logical tests within an OR or AND statement by simply separating each subsequent logical test with a comma.

Often, the OR and AND constructs are used within an IF statement. For example, the statement

IF(AND(1<2,4=3),"HELLO","GOODBYE")

will return to the cell "GOODBYE" because both 1<2 and 4=3 are not true. However, the statement

IF(AND(1<2,4=4),"HELLO","GOODBYE")

will return "HELLO" to the cell.

5.3 Exercise

Consider the following data:

Name	ID#	Quiz1	Quiz2	Midterm	Final
Adams	0001	14	23	82	76
James	0002	12	21	76	68
Jones	0003	15	24	91	93
Mann	0004	14	19	88	73
Smith	0005	11	16	79	71
Tolls	0006	10	13	62	65
Wells	0007	5	10	43	55
Max Points		15	25	100	100

Part I: Add two additional columns as follows: (a) *Average* is a person's total points divided by the max points possible (b) *Grade* is 90-100 A, 80-90 B, 70-80 C, 60-70 D, 0-60 F.

Part II: Create a Pie Chart that shows the percentage of A's, B's, etc. Hint: you will need to use the COUNTIF function. You can look up how it works in Excel help.