CS130 Assignment #1

Date Assigned: 1/10/12
Date Due: 1/11/12 by 1pm
Points: 50

In a Workbook called **PUNetID-Assignments**, create each of the following worksheets:

Worksheet #1 – named "Forest Defoliation"

A forester counts the number of gypsy moth egg masses on 1/40 of an acre the preceding fall to determine the amount of defoliation that will be caused by the gypsy moth during the current year. The percent of defoliation y is approximated by $y = \frac{300}{3+17e^{-1.57x}}$ where x is the number of egg masses **in thousands**. (Source: Department of Environmental Resources)

You are to design a worksheet with the title **Forest Defoliation** in cell B1 and two columns of information under the headings **Egg Masses** in cell A3 and **Percent of Defoliation** in cell B3. Underneath the Egg Masses heading, display values that go from 0 to 2000 in increments of 100. For each egg mass value, calculate and display the percentage (e.g. 12.45%) of defoliation in the corresponding row and column for the given egg mass. Display percentages to two decimal places. This worksheet is to look very professional. Column headings and values are to be right aligned and the worksheet heading is to be centered. Make sure the columns are wide enough to display all information as well as a little spacing between each column.

NOTE: If I drag down on the last row of your table, your worksheet is to continue doing correct calculations without me having to do any table modifications.

Worksheet #2 – named "Compound Interest"

All of you will, at some point in time, start saving for retirement. We've all heard of the value of compounding interest. You are to design a worksheet that allows the user the ability to enter a Principal (P), Annual Percentage Rate (r), a number of compoundings per year (n), and a time in Years (t). For n compoundings per year, the balance (A) in the account is given by the formula: $A = P\left(1 + \frac{r}{n}\right)^{nt}$. Your worksheet is to look exactly like the following:

	A	B
1	Compound Interest Calculator	
2		
3	Enter Principal	$9,000.00
4	Enter APR	8.50%
5	Enter Years	3
6	Enter Compoundings Per Year	1
7		
8	Balance Is	$11,495.60
9		

You are to use the Name Manager to name cell B3 **principal**, cell B4 **apr**, cell B5 **years**, cell B6 **compoundingsperyear**, and cell B8 **balance**. Make sure you use named cells and not cell references in your worksheet formulas. For example, use the named cell **principal** instead of B3 in any formulas using principal.

Assume at graduation that you receive a total of $5,000 in cash. Using the comment feature in Excel, answer each of the following questions in a single comment that is placed in cell D1:

a) If you invest the money in a mutual fund that earns 5% compounded monthly over a 45 year period of time, how much money will you have in the mutual fund at the end of the 45 year period?

b) Answer question a) again but assume an earnings of 10%.

c) If you received $5,000 at graduation, how would you actually spend the money?

Note: Make sure your comment is showing when I open the worksheet. Further, make sure the comment is large enough to show all answers to questions a) through c).

Finally, in this worksheet you are to create a table starting in row 11 that shows the initial principal compounded each year for 45 years. For this table, simply use the APR and assume a compounding of once per year. Make sure you use the values from cells B3 and B4 in your table calculations. This way if those values ever change, the table will be automatically updated.

The beginning of your table is to look like:

Beginning Balance	Interest Earned	Ending Balance	Year

You fill in the correct formulas (using the named variables when possible) to produce the described table above.

Note1: Split the screen so that the first 12 rows and the last 4 rows of the worksheet are showing on the display screen.

Note 2: If I drag down on the last row of your table, your worksheet is to continue doing correct calculations without me having to do any table modifications.

How to Submit and Grading Policies

A copy of your single Excel file (properly named) with the two worksheets (properly named) is to be placed in the CS130 Drop folder by **1:00pm** on the due date to be considered on time.

Grading will be based on:

•   Correctness of your results

•   Completeness of your results

•   Professional look of the worksheets as described above and discussed in class

•   Ability to perform a what-if analysis by changing any of the user input data with accurate results computed and displayed in the worksheet.