CS130 Assignment #1

Date Assigned: Wednesday, September 4, 2013
Date Due: Wednesday, September 11, 2013 2:15 pm
Points: 50

Goals: Build a worksheet, format data correctly, use named cells, build simple formulas, use built in Functions, build a table, and build a simple chart.

In a Workbook called **01ExcelPUNetID**, create each of the following worksheets:

Worksheet #1 (Name it Biomes) Biology

You have sampled 10 different 10 meter square areas around the Forest Grove area and counted how many organisms of certain types we found in each area.

The attached spreadsheet shows the data collected. You need to build the spreadsheet as shown. The Ants, Ticks, Mice, and Fleas columns are provided for you, but you need to write formulas for each of the other cells (Total Organisms, Average, Standard Deviation, and Median). Make sure that if you change any values in the Ants, Ticks, Mice, or Fleas columns all the formulas update correctly.

Make sure all of your data is formatted correctly. Use color and thick border lines to make your data easy to read. Numeric data and column headers for numeric data must be right justified. Text data and column headers for text data must be left justified. Average and Median must have one digit after the decimal point, and Standard Deviation must have two digits after the decimal point. Pay close attention to the sample spreadsheet including colors and formatting. A full color sample is available on the class schedule web site.

Finally, below the table, build a line chart showing the number of each organism per sample. Be sure to title the axes and chart correctly.

You can see a full color picture of the spreadsheet here:

http://zeus.cs.pacificu.edu/chadd/cs130f13/Biomes.pdf

Note that Excel provides a number of Standard Deviation functions. You'll have to experiment with each function to see which one gives the same answers as on the handout.

Worksheet #2 (Name it Population) Biology

A population of organisms grows based on the growth rate of the population. The population growth is limited by the carrying capacity of the environment. The carrying capacity is the maximum population size a particular area will sustain.   You will need to build a worksheet that calculates the total population of a group of organisms over time based on the following formula[1]:

Growth = Growth Rate * Current Population * (Carrying Capacity - Current Population) / Carrying Capacity

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[1] http://www.brown.edu/Courses/BI0020_Miller/week/2/eco-1-handout.pdf

Allow the user to input the initial population, growth rate, and carrying capacity. Be sure to use **Named Cells** where appropriate.

Build a table to show the population for the first 20 years (year 0 to year 19) if the initial population is 40, the carrying capacity is 9,000, and the growth rate is 4%. Since we cannot have a partial organism, produce only integers (rounded down!) in the Growth column.

The top of the spreadsheet must look as follows but you need to format the spreadsheet to make it look better:

Initial Population	40		
Carrying Capacity	9,000		
Growth Rate	4%		
Year	**Population**	**Growth**	**New Total Population**
0	40	1	41
1	41	1	42

Formatting:

Headings need to be aligned correctly. Numeric data needs to be right aligned. All numeric data are integers.

Chart:

Below the table build a chart that graphs **New Total Population** and **Growth** for each year. Properly label the chart axes and legend. Be sure to give the chart an appropriate title. **BONUS**: Use a secondary vertical axis to graph the Growth. Appropriately label the primary and secondary axes.

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 Box by **2:15pm** 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.