CS 16 (101) – Homework #1 – Due at noon, Friday, March 6, 2009

This assignment consists of three spreadsheets. Begin by copying the entire folder called “CSC101-02\Out\hw1” or “CSC101-03\Out\hw1” to your USB memory stick. (Alternatively, the files can be found on the class Web site.) Change the name of this folder so that it includes your name. When you are done and ready to submit your homework, copy this folder into the class IN folder on the server by the deadline. If you submit your folder but realize later you’ve made a mistake, you may resubmit another folder, but please give it a new name and make it clear it’s a revision. If you do not have access to the class folder, then you may e-mail the homework files to me.

For your own safety, please keep your work private. Do not store your work in the Student Backup folder. If you use a public or lab computer, be sure not to keep your files on its hard drive (desktop, My Documents, etc.)

Spreadsheet #1 – Law school grades. Suppose that you work for the dean’s office in a law school. A semester has just ended, and professors have turned in their grades. Your job is to compute summary statistics about the college’s grade distribution. Open the file “law school grades.xlsx”.

1. Each row in the spreadsheet shows a particular course that was taught. Starting in column J are the individual student grades. The first thing to do is to generate a raw grade distribution for each course. In columns D-H, enter formulas that will compute the total number of As, Bs, Cs, Ds and Fs in each class. In column I, enter a formula that will give the total number of A-F letter grades. Note that other letters such as S are not going to be used in this exercise.
2. In column C, enter a formula that will determine the average grade (GPA) for each class, using A=4, B=3, C=2, D=1 and F = 0 quality points. Use conditional formatting to highlight the distribution of course GPA. Use a color spectrum that uses a blue background for the lowest GPA and a yellow background for the highest GPA.
3. In row 74, enter formulas that will show the totals for the entire law school. The cell C74 would then give the average grade given by all instructors.
4. The law school dean is especially interested to know which courses are the easiest and which are the most difficult. In column B, enter a formula that determines the quality point surplus (or excess) that each class has over the average GPA. According to your analysis, which are the easiest and hardest law school classes? Are they necessarily the ones with the highest or lowest GPA? Explain. (Write your answers at the bottom of the page.)

Spreadsheet #2 – Educational attainment in the United States. (education.csv)

1. First, you need to save this file in “xlsx” format so that we can make changes to it.
2. Create a new sheet called “Documentation”. In this sheet, we will give credit to the Census bureau for the data. On the data page of the spreadsheet, delete the first 5 rows and the last row, which do not contain any data, and move these to the documentation page.
3. Return to the page containing the data. To the left of column A, create a new column for state. Enter “state” as the header of this column. You will need to create a formula that extracts the state name from the county name in column B. Hint: use the mid and search functions to accomplish this.
4. Immediately after column B, insert 4 new columns. These columns should show the percentage of people (men and women combined) who have:
   1. Less than a high school diploma
   2. Exactly a high school diploma
   3. College experience, but less than a bachelor’s degree. Note that an associate degree is less than a bachelor’s.
   4. A bachelor’s degree or higher.
5. Sort the counties by state. The states should be in alphabetical order. Within each state sort the counties by educational attainment from high to low according to the percentage of people with college degrees.
6. Use conditional formatting to highlight the percentage of bachelor’s degrees in each county. Use a color spectrum using blue for the lowest value and yellow for the highest value.
7. Have Excel create subtotals for each state. Then, recalculate the four percentages for the states. Copy these subtotals (and only the subtotals) onto a new worksheet. On this new sheet, sort the states by their percentage of college degrees.
8. Choose two states that you are interested in. For each of these states, create a pie chart showing the distribution of educational attainment. Your pies should each show 4 slices (like the list given in part d above). Make sure that each pie chart is on its own sheet, and the name of the sheets makes it clear which states you have selected. Use appropriate titles at the top of each pie chart. Label each slice of the pie by the level of educational attainment. There should be no legend. Finally, use an eyecatcher (like you did in lab) to highlight some contrasting information, such as an exceptionally high percentage of high school dropouts or college graduates, or whatever conclusion you would like to draw.