

Lab2: Design Your Own Spreadsheet

Due Dates

Monday Labs: February 6, 2006, by 9:00 AM

Tuesday Lab: February 7, 2006, by 9:00 AM

Wednesday Lab: February 8, 2006, by 9:00 AM

Thursday Lab: February 9, 2006, by 9:00 AM

Overview: In this lab you will create 2 spreadsheets using what you learned about Excel in the first lab. The goal of these 2 Excel labs is to give you a very basic introduction to Excel and also to introduce you to the concept of *functions* and especially the *if function*. These two concepts (functions and “if”s) will be important later on when you learn how to program in Java.

This handout will explain the requirements for the 2 lab exercises; an attached handout will list the Excel information that you have learned in the previous lab and/or need to do this lab. It is designed so that you could save it for future reference as a quick guide to how to do the most simple tasks in Excel.

NOTES: Please save your work in your lab2 file folder (homework and lab). Please remember to save often so you don't lose your work. Also put your name, lab section, lab number, and date somewhere in your spreadsheet and at the top of your homework.

Assignment 1: Make a spreadsheet to create a simple custom calculator that looks like the one below:

	A	B	C	D	E	F
1						
2		My Custom Calculator				
3						
4		Function Name	Input 1	Input 2	Output	
5						
6		Add	2.00	1.50	3.50	
7		Subtract	4.00	3.00	1.00	
8		Multiply	2.00	2.50	5.00	
9		Divide	6.00	3.00	2.00	
10		Average	2.00	4.00	3.00	
11		Square Root	16.00		4.00	
12		Square	3.00		9.00	
13						
14						

Requirements:

(Note: All the Excel information you need is on the Excel Handout.)

- 1) Use functions to compute the values in the Output column.
- 2) Your calculator must have all the rows shown above (“Add”, “Subtract”, etc.).
- 3) Format the cells that contain numbers so that the numbers are shown with 2 decimal points.
- 4) Shade the cells shown to indicate that the user should not enter data there.
- 5) Format the calculator so that it looks nice: Center the title in merged cells, Make the titles Bold, and add borders around selected cells. You can do more if you like.
- 6) For the square root function, embed it in an “if” function so that it will give an error message if the user tries to take the square root of a negative number. See the Excel handout for a discussion of how to use the “if” function. Your function should compute the square root if the input value is not negative. If the input value is negative, your function should put the word “ERROR” in the cell instead.

For reference, an IF function has the following form:

= IF (condition; value if true; value if false)

Where the “condition” is a logical condition involving cells, like: “A1 >0” which will be true if the value of cell A1 is greater than 0. The “value if true” and “value if false” can be a number, a cell name, a function involving numbers and cell names, or some text (text has to be placed in quotation marks). More discussion and examples are on the Excel Handout.

Assignment 2

For the second part of this lab, you will develop a grade spreadsheet for an imaginary class. In this spreadsheet, an instructor would be able to enter students' names and grades and the spreadsheet will calculate their final average. You will design the spreadsheet - putting headers on the columns and functions where needed.

This assignment is partly about Excel, but more about putting what you know to good use to produce something that does what is asked in a clear and user-friendly way. This is an important skill! If you feel you need more guidance, please feel free to ask the lab TA's for help.

Grade Spreadsheet Guidelines

In order to create a grade-calculating spreadsheet, you will need to know how the grade is calculated. For our imaginary class, the grade percentages are as follows:

Points Breakdown:

Labs (4):	30%
Homework (4) :	15%
Exam 1:	15%
Exam 2:	15%
Final Exam:	20%
Attendance and participation:	5%

For this imaginary class there will be 4 labs and 4 homeworks. All lab and homework grades will be out of 100 points. Test grades will be out of 100 points.

Your job is to set up a spreadsheet with the correct columns (and column labels) for all the

grades that the instructor will have to keep track of and columns for any values you need to calculate (such as lab average). You will need to use functions for the values that need to be calculated. The user should be able to see all the grades and the final average and it should be clearly labeled and easy to use. Enter at least four imaginary students and imaginary grades to show that your spreadsheet works.

How to compute the final average:

It is easier if you add a column for “Homework Average” and “Lab Average”. To compute the average you can use the “AVERAGE” function. Then after you have the homework and lab averages in their own cells, you can write a function to compute the final average. This is a weighted average which means you need to multiply each value (like homework average) times the decimal representing the weight. For example, if all you had were homeworks and labs and the homeworks were worth 40% and the labs were worth 60%, and the homework average was in cell C2 and the lab average was in cell H2, then the function to compute the final average would be: $=C2*0.4 + H2*0.6$. This is *just an example*; in your function you will need to add 6 things. Recall that to compute using a percent you have to write the percent as a decimal by dividing by 100 (e.g. 15% will become 0.15).

In addition, use an IF function to determine whether the student will pass or fail. Assume that anyone with an average over 60 will pass; otherwise they will fail. Your function should write "PASS" or "FAIL" in each student's row.

Extra Credit: Instead of determining pass or fail, use nested IF functions to determine the letter grade for each student. Use the grading guidelines on the syllabus to determine which grades should be an A, B, C, D, F. This is a little advanced, but students in previous semesters have gotten this to work!

Test data: test to see that your functions are working using this data:

Lab grades: 100 90 80 89

HW grades: 92 99 100 89

Exam Grades: 97 80 88

Attendance Grade 100

Final Average 90.325

You can also enter all 100's and the final average should be 100.

Grading Guidelines

The overall design of the spreadsheet is up to you, however there are certain aspects for a well-designed spreadsheet that your TA will be looking for. Be sure to include all the information that is specified in the above guidelines. When you are finished it should be readily apparent what information each column and data cells contains. The majority of the points for the lab will be based on these criteria. Your formulas should work, and they should reference the proper cell, but clarity and user-friendliness will count for more.