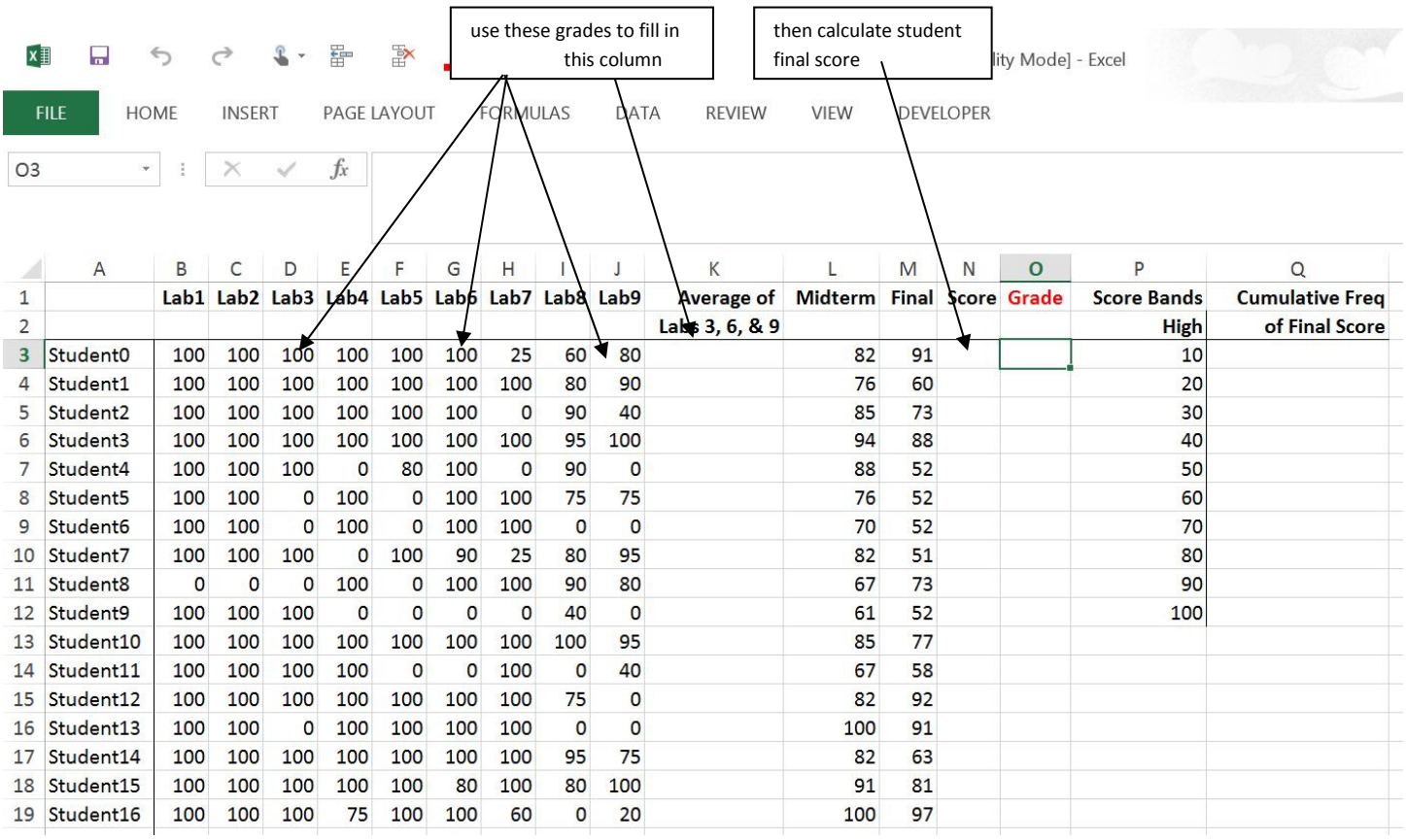
Lab 7 - working with Excel to analyze and chart data

If you haven't installed Microsoft Office on your computer, see Lecture 11, or work on any PC on campus. Start with the Excel file ***GradesStart.xls***, supplied with the lab. It is a sample grading sheet for EAS230 (you can figure out your grade!).

1. Starting with the file GradesStart.xls, complete all columns:



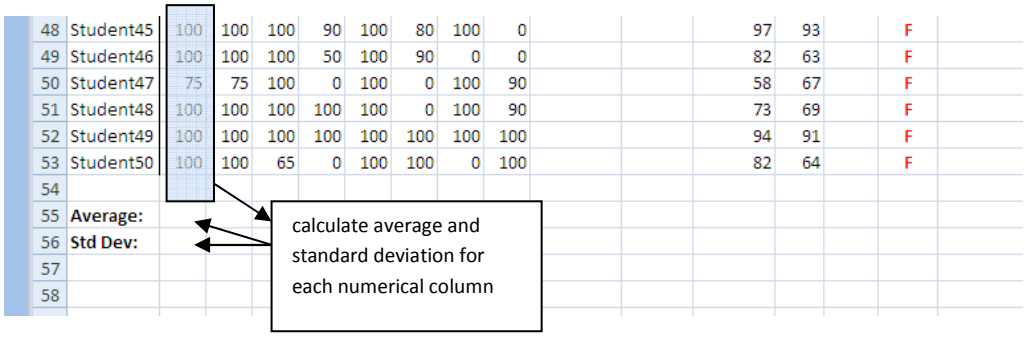
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1		Lab1	Lab2	Lab3	Lab4	Lab5	Lab6	Lab7	Lab8	Lab9	Average of	Midterm	Final	Score	Grade	Score Bands	Cumulative Freq
2											Labs 3, 6, & 9					High	of Final Score
3	Student0	100	100	100	100	100	100	25	60	80		82	91			10	
4	Student1	100	100	100	100	100	100	100	80	90		76	60			20	
5	Student2	100	100	100	100	100	100	0	90	40		85	73			30	
6	Student3	100	100	100	100	100	100	100	95	100		94	88			40	
7	Student4	100	100	100	0	80	100	0	90	0		88	52			50	
8	Student5	100	100	0	100	0	100	100	75	75		76	52			60	
9	Student6	100	100	0	100	0	100	100	0	0		70	52			70	
10	Student7	100	100	100	0	100	90	25	80	95		82	51			80	
11	Student8	0	0	0	100	0	100	100	90	80		67	73			90	
12	Student9	100	100	100	0	0	0	0	40	0		61	52			100	
13	Student10	100	100	100	100	100	100	100	100	95		85	77				
14	Student11	100	100	100	100	0	0	100	0	40		67	58				
15	Student12	100	100	100	100	100	100	100	75	0		82	92				
16	Student13	100	100	0	100	100	100	100	0	0		100	91				
17	Student14	100	100	100	100	100	100	100	95	75		82	63				
18	Student15	100	100	100	100	100	80	100	80	100		91	81				
19	Student16	100	100	100	75	100	100	60	0	20		100	97				

A. **Column K** should be the lab average for graded labs 3, 6, & 9.

B. **Column N** should be the student's final score: the midterm counts 25%, the final counts 40%, and the lab average counts 35%. The final score must be between 0 and 100 (inclusive).

C. **Column O** will be the student's final letter grade (this is a little tough). We have to use the VLOOKUP function (it stands for Value Lookup). Essentially, we're taking each student's final score in column N, and looking up their letter grade in the second sheet marked "Table". To find the Table sheet, check the tabs at the bottom.
The formula for each cell in column O is as follows: = VLOOKUP(Score, Sheet!***$StartCol$StartRow:$EndCol$EndRow***, 2)
- The "Score" is the cell where the student's final score is.
- The "Sheet!" Is the second sheet of the spreadsheet, named Table (so... Table!).
- ***$StartCol$StartRow:$EndCol$EndRow*** are the start and end cells of the Table sheet where the entire lookup table can be found on the sheet "Table" (e.g. $A$1:$B$12)
- The last "2" in VLOOKUP refers to which of the columns in the $A$1:$B$12 contains the final letter grade. Clearly, that's the second column.

2. Find the average of each numerical column using the "***=AVERAGE(range)"*** function, and place it at the bottom of each column. You specify a column range as B3: B52.

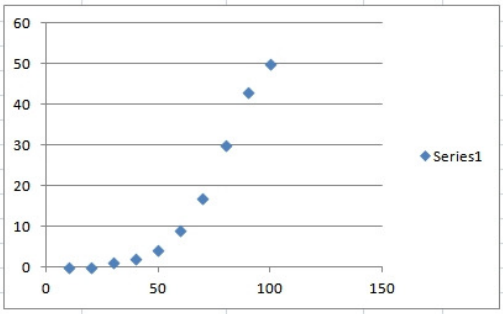


3. Find the standard deviation for each numerical column, using the "***=STDEVP(range)"*** function, and place it at the bottom of each column.

4. Calculate the Cumulative Frequency distribution of the final score in Column Q, using the ***"=FREQUENCY(range, upper limit)"*** function**.** Cumulative Frequency simply tabulates the total number of final scores up to and including the limit specified in Column P. The range should refer to Column N (specifically, N3:N52). The upper limits are to the left of each Q cell in Column P. There is a problem however… you cannot copy and paste the items in Column Q, since each item must refer to the same N range. So either type in each Cumulative Frequency cell of column Q, or specify the range as **$N$3:$N$52**. The $ sign means "exact" rather than relative for the copy and paste operation.

5. Chart the Cumulative Frequency distribution, using any chart that you deem suitable. Chart types can be found under the INSERT tab at the top. Typically, you mouse-select a range and then insert a chart, which grabs that range and formats as best as it can. If you mouse select the Score Bands and Cumulative Frequency, and then Insert / ScatterPlot, you get this:

Score Bands High	Cumulative Freq of Final Score
10	0
20	0
30	1
40	2
50	4
60	9
70	17
80	30
90	43
100	50



Select this range with the mouse, then from the top menus select Insert, Scatter Plot.

Note that the left-hand column becomes the X axis and the right hand column becomes the Y axis.

Here's a little Excel trick. After you've charted the two columns using a Scatter Plot, you can right-click on the chart and select Change Chart Type, and select a different representation.

6. Your final spreadsheet should look like the spreadsheet GradesFinish.xls, which contains this lab solution.