EDIT202 – Spreadsheet Lab
Assignment Guidelines

Getting Started

1. For this lab you will modify a sample spreadsheet file named "**Starter-Spreadsheet.xls"** which is available for download from the **Spreadsheet** lab page on the course WebCT site. The link to this file is listed under the **Needed Files** section of the basic lab.

- Download this file to the computer (if you are working from lab on campus be sure to select **Save As …** from the **File** menu and save it to a safe location that will not be deleted upon re-start).

2. Using **Microsoft Excel** create a marking spreadsheet of a fictional class that meets the following guidelines. Name this file "**LABSEC-CCID-SpreadSheet.xls**".

- To launch the Microsoft Excel program, locate the **Microsoft Excel** icon, and double click.

- To launch the program from the **Start** menu in the ED South 155 lab you can select **Start** > **Programs** > **Microsoft Office** > **Microsoft Excel 2003.**

- Once you have launched **Microsoft Excel** you should see the program interface with a blank worksheet labeled "**Workbook1**".

- Choose **File > Open**, then browse for the saved sample spreadsheet that was downloaded from the course WebCT site.

3. You will need to make sure that the following toolbars are available in order to be able to complete all of the steps in the tutorial:
Standard, **Formatting**, and **Drawing**

- Using the **View** menu choose **Toolbars** check of the name of a toolbar to add it to view.

Worksheet 1

4. Create columns to calculate the percent for each raw mark

4a. Insert a new column to the right of each "**Raw Marks"** column

- To insert a new column, left click inside any cell on the right side of where you wish the new column to appear (new columns are inserted to the left of the selected cell or column).
- Choose **Insert > Columns**

4b. Enter "**Percent"** in the column header of each new column

- To enter information into a spreadsheet, click the mouse on the cell where you want data to appear, then type.

2					
3	Student Name	Student ID No.	Assignment 1		Assignment 2
4			Raw Mark		Raw Mark
5	Esks, Basil	7048	10		23
6	Myers, Fred	7650	20		30
7	Batroc, Georges	2586	16		25
8	Richards, Franklin	9605	15		29
9	Hardy, Felicia	9474	17		15
10	Foswell, Frederic	2180			30
11	Marko, Flint	8834	18		21
12	Macendale, Jason Phillips	8423	19		21
13	Blonsky, Emil	4692	20		28
14	Kingsley, Roderick	1682	17		17
15	Pym, Henry	2323	15		30
16	Kasady, Cletus	8998	20		27

4c. In the "**Percent**" columns, create a formula that will calculate the first student's percentage for that assignment or exam (**Raw Mark / Marked Out Of**). Use **relative** and **absolute** cell **referencing.**

- In order to properly use formulas all formulas must start with an equal sign, e.g. **=B5-B20**.

- When typing in formulas, the formula should be typed where you want the result to be displayed. For example in the sample sheet below to calculate the first percentage the correct formula would be, =A2/B6 and the formula would be typed in cell B2.

	A	B
1	Raw Mark	Percent
2	10	
3	55	
4	90	
5		
6	Marked out of:	100
7		

- As an alternate to typing out each cell reference you can use your mouse. Once you begin a formula by entering an equal sign, then click your mouse on a cell you wish to use as a cell reference. You should notice that the cell

reference is automatically entered into the formula. (This means when you are done your formula hit enter on the keyboard instead of clicking on another cell.)

- A **relative cell reference** is automatically adjusted when copying a formula to other cells. For example, if the following formula, **= A1+B1** was copied, from cell **C1** down to **C2,** the formula when copied would change to **= A2+B2**

- An **absolute cell reference** refers to a value that does not change when being copied to other cells. For this example the same formula as above will be used but with one small change: absolutes will be added to the row values in the formula. In Microsoft Excel absolutes are represented as **dollar signs, $**).

- The absolute value in the percentage equation is the **Marked Out Of** value in cell B32. This is the value that each of the students' Raw Scores will be divided by.

- Using this information it will be up to you to think of where to place the absolute ($).

4d. Copy the formula down the column so that it determines the percentage for each student.

- To copy a formula, click on the bottom right-hand corner of the cell that needs to be copied and a little black crosshairs will appear.

- Drag down to include all the cells in the range.

- Release the mouse and we see our formula successfully copies with the correct results in our chosen cells.

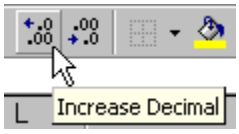
4e. Format each students' percentage to be displayed in percent format and to include one decimal place (e.g. **65.4%** not **0.654**).

- To get all of the numbers on your spreadsheet displayed in a consistent manner, such as an equal number of decimal places, you need to set a number formatting option.

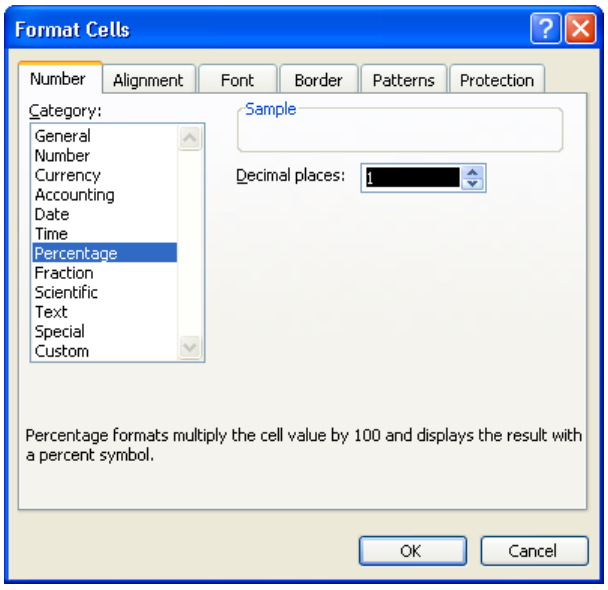
- To do this, first highlight the whole block of cells you want to format. The cells do not need data in them to complete this step; any data entered later will be formatted in this manner.

- You can then set the number of decimals in two ways:

  - Click once on the **Increase Decimal** button on the formatting toolbar.



  - The other way of adding decimals is to click on the **Format** menu, then click on **Cells**. Click on the **Number** tab, set the options as shown below, then click the **OK** button.



- In this window, the data can be formatted to look like currency with a **$**, or like percentages with a **%**. The results of our formulas or any other data can be formatted on our sheet to look like any type of data by selecting a different **Category** and setting different options.

5. Create a column to calculate the overall final mark for each student.

5a. In the column to the right of the Final Exam Percent column enter the column header "Final Mark"

5b. Create a formula to calculate students' final weighted mark ((Assignment 1 Percent X Assignment 1 weight) + (Assignment 2 Percent X Assignment 2 weight) + ….. + (Final Exam Percent X Final Exam weight))

5c. Format the results for each student's final mark to be displayed in percent and to include one decimal place e.g. (**65.4%** not **0.654**).

6. Create a new column to display if students received honors or not.

6a. In the column to the right of the Final Mark column enter the column header "Honors"

6b. Insert a formula that will display an "**H**" in the "**Honors**" column if the student got a final mark that is equal to **80%** or higher and will display an "**R**" if they did not get a mark over **80%**
(**Hint**: you will want to use the "**IF**" function" to do this)
Note: Ensure that a mark of *exactly* 80% receives honors

Some helpful symbols for you:

>	greater than
<	less than
>=	greater than or equal to
<=	less than or equal to

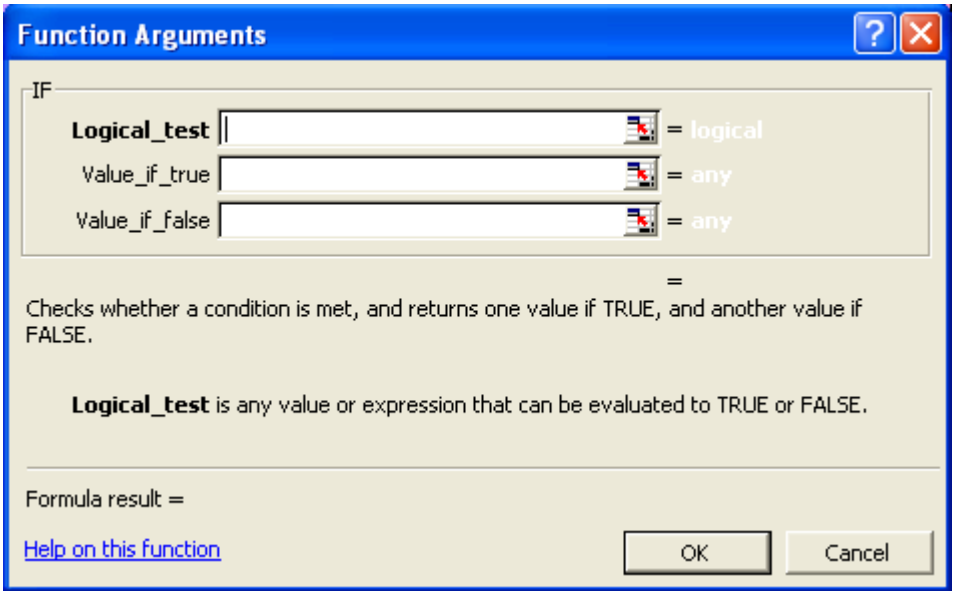
- If you have never used functions within Excel, it is recommended at this point that you go to the **Functions** section of your **Prep Sheet** read up on them.

- To insert a function into a cell, click on the cell, then select **Function** from the **Insert menu**. This opens the **Insert Function** window.

- Choose the desired function, and click **OK**. If you can't find the function you are looking for select the **All** category and you will see all functions listed in alphabetical order.

- Your current assignment also makes use of the "**IF**" function, specifically to determine whether or not students will receive honors.

- The "**IF**" function is referred to as a **conditional function**. A conditional function can return different results based on a certain condition being evaluated to **True** or **False**.

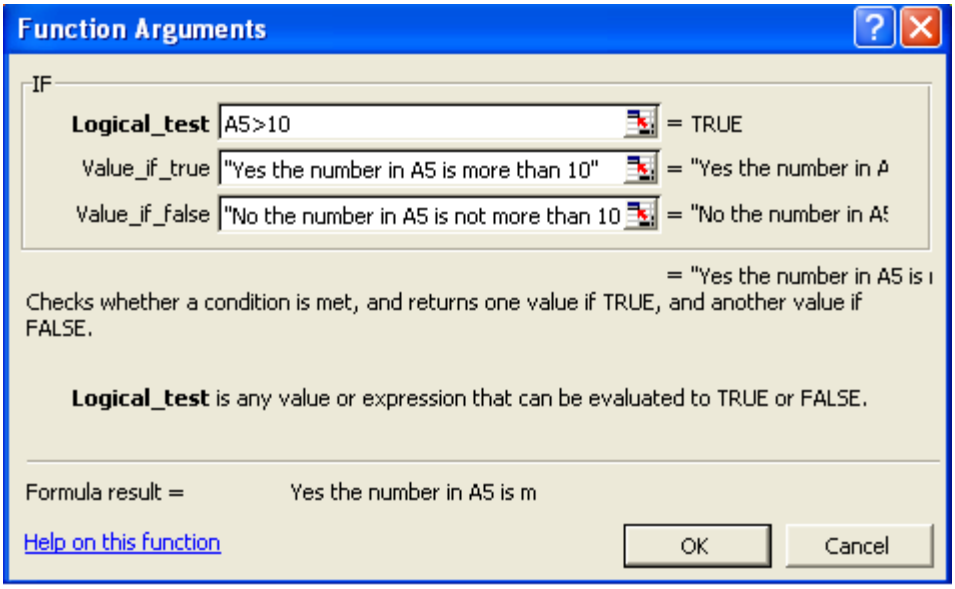


- The "**Logical_test**" text box shown in the above screenshot is where you type the condition that will be evaluated.

- So if that condition proves to be **True** we can get it to return a certain result, and if that condition proves to be **False** then we can get it to return a different result.

- **NOTE:** The following is an *example* of using the IF function. Refer to step 6b in the grey box above for the criteria you should use in this assignment.

- What is being tested in the example (please note this is only an example and will differ that what is needed for your assignment) shown below is whether or not the **value in cell A5 is greater than 10** by typing "**A5>10**" in the "**Logical_test**" text box.



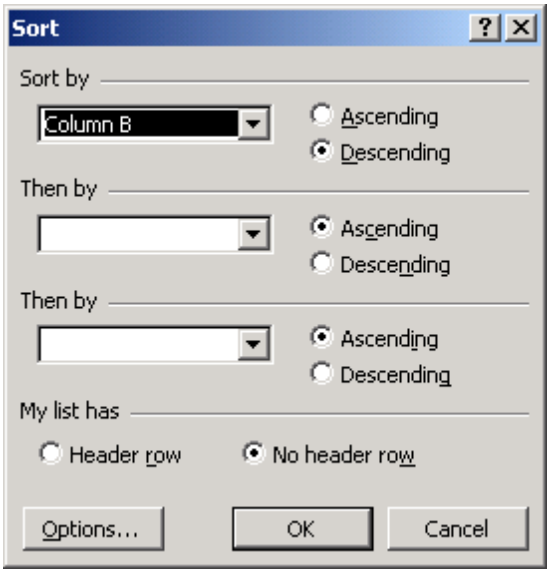
- So on the spreadsheet the phrase, "**Yes the number in A5 is more than 10**", would appear in the cell we selected before opening the function wizard.

- If the **value in cell A5 was less than 10** then the condition would be evaluated as "**False**", and the statement, "**No the number in A5 is not more than 10**" would appear in the cell we selected before opening the function wizard.

7. Sort the students on your spreadsheet in ascending according to their ID number. (**Note:** be sure that the students' data gets sorted along with the ID numbers, otherwise you will mix up which marks go with which student)

- First, indicate which data in the spreadsheet is to be sorted. Select the range of data you want to sort, making sure that all the data you want to move as a result of the sort has been selected.

- Select **Sort** from the **Data** menu.



- The **Sort** options window appears. Choose either **Header row** or **No header row**, based on whether or not you included the column headings when you selected your sort data. Selecting the **Header row** option will in fact eliminate the top row of your sort data in an attempt to remove the column headings from your sort.

- From the **Sort by** drop down menu, choose which column you want to sort, then choose to sort it in **Ascending** or **Descending** order. Once finished, click on **OK** and view your sheet to make sure the data has been sorted correctly.

8. Bold the main title and change the font and size to **Arial 24**. **Merge and Center** the title across all of the columns containing data in the spreadsheet.

9. Bold the individual column headings as well, and merge and center them across the two columns for each assignment and exam (raw mark and percent).

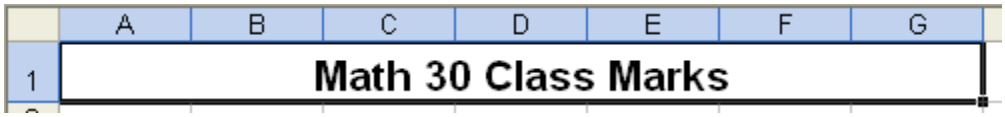
Assignment 1	
Raw Mark	Percent

- To format the data on your sheet there are a few different options. First, select the cell or range of cells you want to format.

- You can use the available buttons on the **formatting toolbar.**

- You can also select **Cells** from the **Format** menu then select the **Font** tab to change the font size, style, or color. There are many more options when you use **Format Cells**, however using the **formatting toolbar** is quicker and more convenient.

- Merging cells is where you take a range of cells and merge them together as if they are one cell. An example of merged cells is shown below. Cells A1 through G1 of a sheet are merged (**treated as if they were one cell**), and the text is also centered within this larger cell area.



- To merge data we first need to select the cells we want to merge. Start by clicking on the cell which contains the content you wish to keep. Then continue selected the range of cells you wish to merge into one.

- Then with the cells highlighted, use the **Merge and Center** button found on the formatting toolbar.

10. Format the borders around all cells of your sheet in the following way:

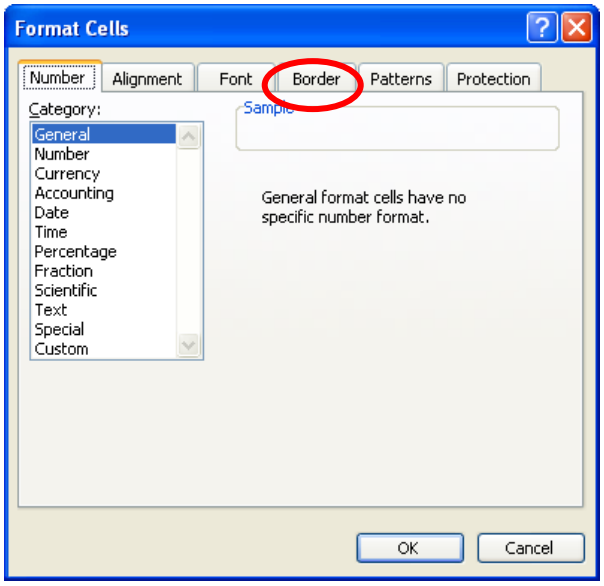
    - Thin borders between the cells

udent ID No.	Assignment 1		Assignment 2		Assignment 3		Midterm
	Raw Mark	Percent	Raw Mark	Percent	Raw Mark	Percent	Raw Mark
7048	10	50.0%	23	76.7%	31	77.5%	40
7650	20	100.0%	30	100.0%	29	72.5%	100
2586	16	80.0%	25	83.3%	34	85.0%	45
9605	15	75.0%	29	96.7%	37	92.5%	62
9474	17	85.0%	15	50.0%	36	90.0%	70
2180		0.0%	30	100.0%	24	60.0%	83
8834	18	90.0%	21	70.0%		0.0%	74
8423	19	95.0%	21	70.0%	40	100.0%	65
4692	20	100.0%	28	93.3%	29	72.5%	70
1682	17	85.0%	17	56.7%	22	55.0%	56
2323	15	75.0%	30	100.0%	40	100.0%	55
8998	20	100.0%	27	90.0%	32	80.0%	53

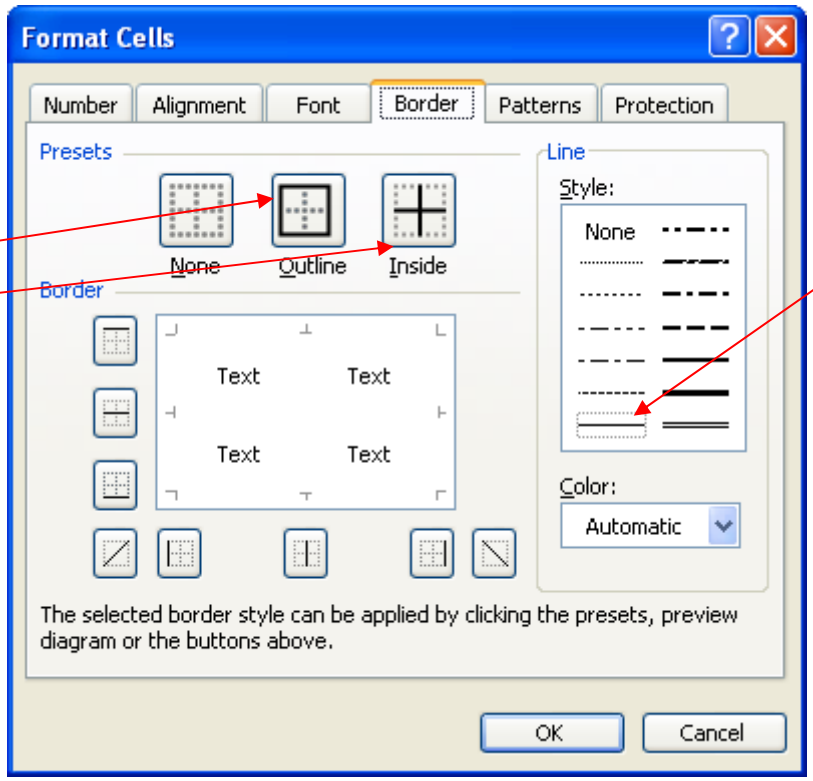
See sample assignment for full example

- To set borders, first select the range of cells around which you want to put borders.

- Now select **Cells** from the **Format** menu and choose the **Border** tab**.**



- To select your borders you first select the line style. With the current line style selected, click on the border you wish to apply it to within the border display box. Continue this process until all your borders are created.



Second: Choose a border

First: Select a line style

- Select the range of cells you wish to format and then select **Cells** from the **Format** menu then select the **Patterns tab** to change the background color of a cell.

11. Insert **Cell Comments (**as listed below in " ") into the following cells
    - Cell C3 (Assignment 1): "Statistics Project"
    - Cell E3 (Assignment 2): "Finance Project"
    - Cell G3 (Assignment 3): "Design Project"
    - Cell N3 (Honors): "H = honors R = regular Honors is awarded to a final mark of 80% or higher"

- To add a comment to a cell, click in the cell to which you want to add the comment and select **Comment** from the **Insert** menu.

- In the comment box, type your comment text. When you finish typing the text you can single click on the edge of the box to place it in a different location. When you are happy with the placement, single click outside the comment box.

- Wherever the comment box is placed will be where it will appear when you drag your mouse over the cell that has the comment.

- To edit an existing cell comment, click the cell with the comment you want to edit, and select **Edit Comment** from the **Insert** menu.

12. Rename this worksheet “Student Marks”

Note:

- An Excel document is called a “workbook”. A workbook can contain many “worksheets”. What you have been currently working on is one worksheet (currently named Sheet 1) within your LABSEC-CCID-spreadsheet.xls file.

- If you look at the bottom-left portion of the Excel program window you will see the following navigation arrows and tabs:

- The tabs represent worksheets; the bolded tab is the worksheet you are currently looking at. You can navigate between worksheets by clicking on the tabs.

- To rename an Excel worksheet right-click on the worksheet tab at the bottom of the screen and choose “Rename” from the context menu, then type in the new name.

- At this point it would be useful to compare your “Student Marks” worksheet with the same worksheet in the sample file (linked on the WebCT assignment page).

- You’ll want to particularly scrutinize the results of your formulas and verify all the numbers match up. (In a real-world scenario, you would have to do this verification against some numbers you calculate yourself by hand or calculator)

Worksheet 2

13. Start work in a new worksheet and name it “Assessment Statistics”

14. Inside the “Assessment Statistics” worksheet, type in the following row and column headers:

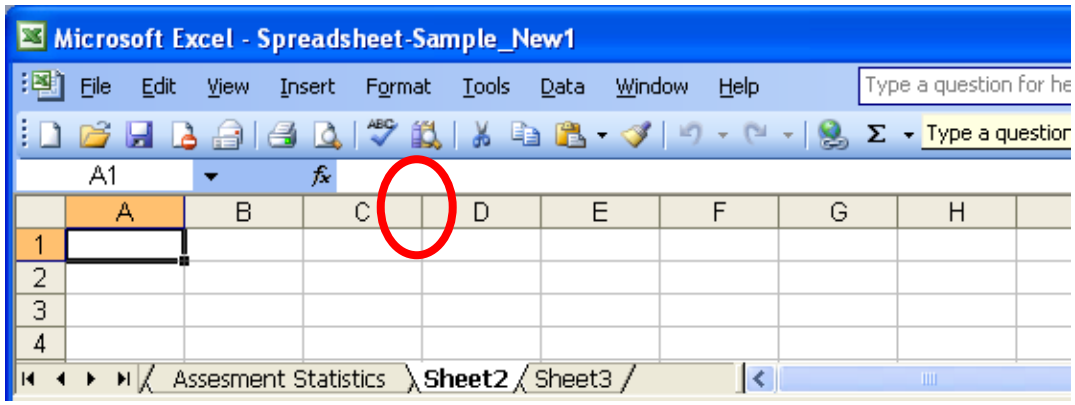
	A	B	C	D	E	F
1		Assignment 1	Assignment 2	Assignment 3	Midterm Exam	Final Exam
2	Class Average					
3	Below 50%					
4	90% and above					
5	Between 50% and 90%					
6						

15. Format column and row headers to be bold

16. Format borders: thin borders inside.

17. Format the column widths so that all the text is visible in every cell

- There are several ways to format column width and row height.
    - You can click on a cell in the desired column, the choose **Format > Column > Width** and manually enter a width.
    - You can place the cursor directly over the line that divides two column titles so that the cursor become a double-headed arrow, then click and hold down the left button to resize the column



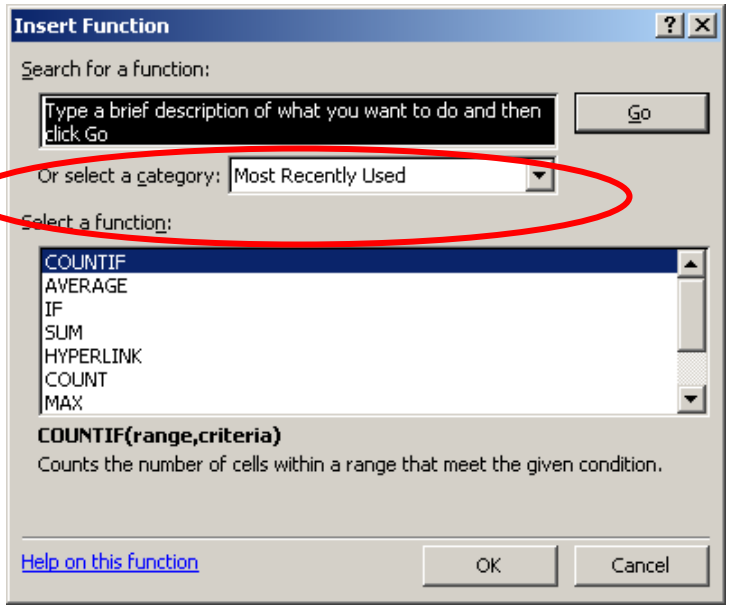
18. In the row titled "Class Average" insert functions that calculate the average mark for each assignment and exam. Format the results to display in percent with one decimal place.
(**Hint:** use the AVERAGE function)

- Inserting these functions is the same process as you have done in step 6. The only difference is that you will have to reference cells on a different worksheet

- When you wish to reference a cell or cells from another worksheet select the desired worksheet and then click on the cell you wish to reference. You will notice that the cell information will automatically be inserted into your formula or function.

19. In the row titled "Below 50%" insert functions that calculate the number of marks below 50% for each assignment and exam.
(**Hint:** use the COUNTIF function)

- If you can't find the COUNTIF function, change the category to "All" and search for it alphabetically



20. In the row titled "90% and above" insert functions that calculate the number of marks above 90% for each assignment and exam
(**Hint:** use the COUNTIF function)

21. In the row titled "Between 50% and 90%" create a formula that calculates the number of marks equal to 50% and up to 90%.
(**Hint:** COUNTIF will not evaluate two criteria at once. So you will need to insert a function, then subtract another function from it)

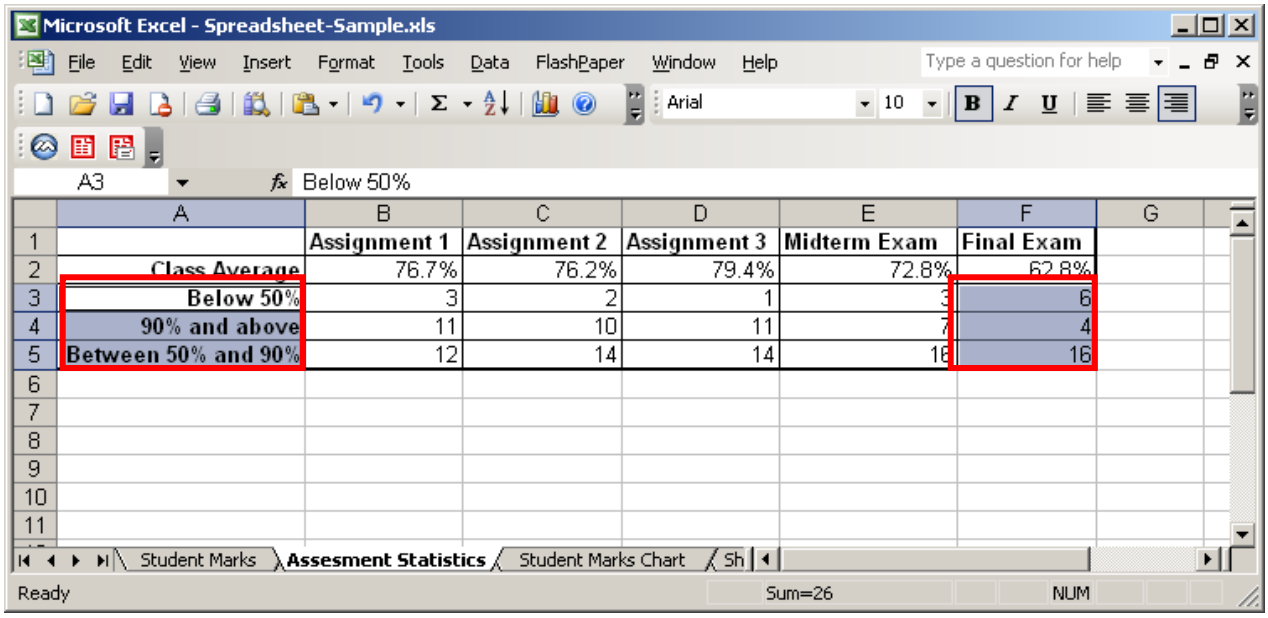
22. Insert a pie chart in the "Assessment Statistics" worksheet that compares the number of students within the 3 different ranges of marks for the Final Exam (Below 50%, Above 90%, Between 50% and 90%).

- chart title: Final Exam Analysis
- insert as object within the worksheet

- To create a chart in Excel first select the cells that contain the data that you want to appear in the chart. If you want column and row labels to appear in the chart, include the cells that contain them in the selection.

- To select more than one range of data, click and drag to select one range, and make sure it is highlighted. Then hold down the **CTRL key** on your keyboard and click and drag to select the next range of data.

- For our assignment the cells to select would look like this:



	A	B	C	D	E	F	G
1		Assignment 1	Assignment 2	Assignment 3	Midterm Exam	Final Exam	
2	Class Average	76.7%	76.2%	79.4%	72.8%	62.8%	
3	Below 50%	3	2	1	3	6	
4	90% and above	11	10	11	7	4	
5	Between 50% and 90%	12	14	14	16	16	
6							
7							
8							
9							
10							
11							

- Once you have your data ranges selected, click the **Chart Wizard** button on the standard toolbar, or select **Chart** from the **Insert** menu.

- Fill in the necessary information and click **NEXT** to move to the next options window

Note: If you created the pie chart but did not include the category labels ("Below 50%", "90% and Above", "Between 50% and 90%) then you will need to add them. To do this:

  - right-click on the chart and choose **Source Data**

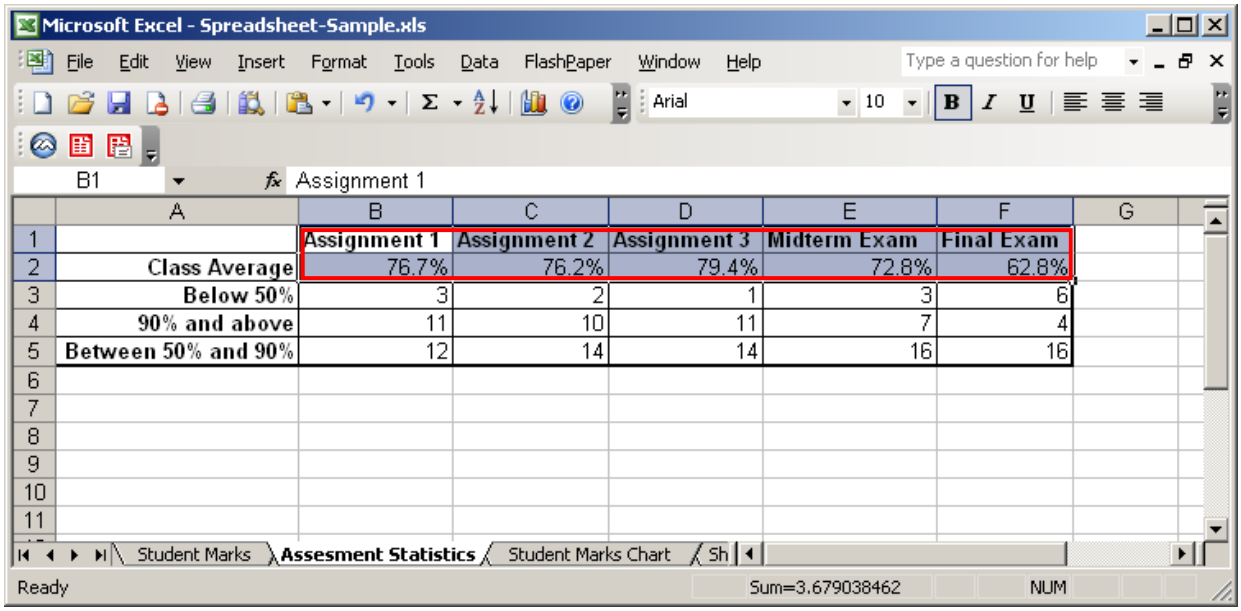
  - choose the **Series** tab

- click inside the box for **Category Labels**
- Now highlight the three categories on your spreadsheet. This should automatically enter them into the chart.
- Click **OK**

Worksheet 3

23. Create a line chart that tracks the class averages for all assignments and exams and meets the following criteria:
    - **marks data** is along the **Y-axis** and that the range is **0% - 100%**
    - **X-axis labels:** the assignment descriptions
    - **Chart Title:** Class Average
    - Chart created **on a separate sheet** labeled "**Student Marks Chart**" (you can specify this at **Step 4** of the **Chart Wizard**).
    - All other chart options can be added but are considered optional.

- The initial selection for this chart would look like this:

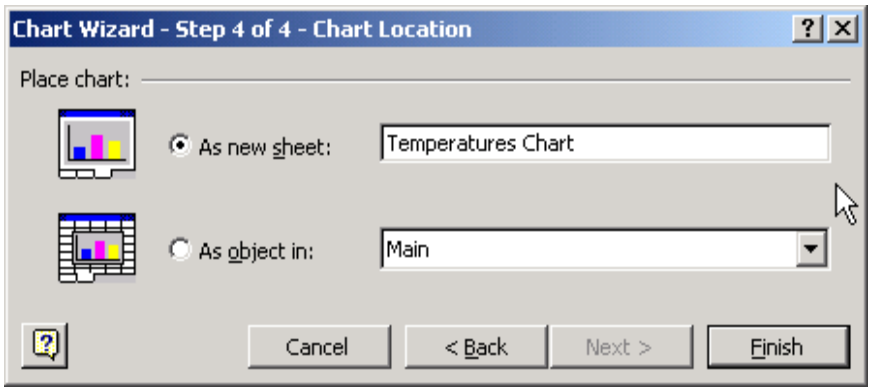


	A	B	C	D	E	F	G
1		Assignment 1	Assignment 2	Assignment 3	Midterm Exam	Final Exam	
2	Class Average	76.7%	76.2%	79.4%	72.8%	62.8%	
3	Below 50%	3	2	1	3	6	
4	90% and above	11	10	11	7	4	
5	Between 50% and 90%	12	14	14	16	16	
6							
7							
8							
9							
10							
11							

- Again, once you have your data ranges selected, click the **Chart Wizard** button on the standard toolbar, or select **Chart** from the **Insert** menu.

- Follow the same steps as with the pie chart.

- When **Step 4** of the chart wizard appears. You can insert your chart as a **new sheet** in your workbook or as a **separate object,** like a piece of **Clip Art** that is placed into an existing sheet. Click on the **As new sheet** radio button the click on the **Finish** button.



- If you wish to further customize any part of the chart right-click on it and use the menu options available.

- For example you will want to change the range of the Y-axis to be 0%-100%. To do this:

    - Right-click anywhere among the percents displayed in the X-axis.

    - The **Format Axis** window appears. Choose the **Scale** tab and make your changes.

Cell Protection

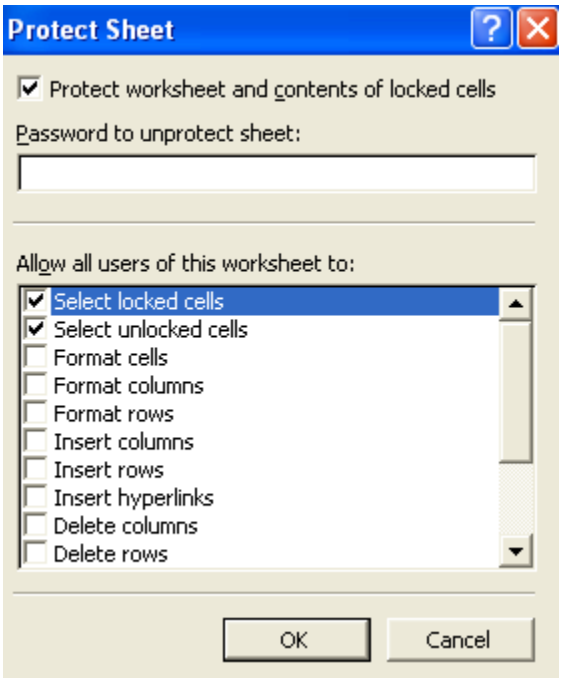
24. Modify your **Student Marks** worksheet so that only the cells with **Raw Data** (ie. Student Name, Student ID, Raw Marks for all assignments and exams) can be modified or have data entered into them when the **sheet is protected**.

- First select the ranges of data on the sheet you want to be able to edit after the entire worksheet has been protected. Select **Cells** from the **Format** menu.

- The **Format Cells** window should appear. Click on the **Protection** tab. Click in the box next to **Locked** to remove the check mark. Click **OK**. You have now set the **Locked property** for these cells to false. In other words you have **unlocked these cells**.

- Our next step is to protect our entire worksheet. From the **Tools** menu select **Protection** > **Protect Sheet**.

- The **Protect Sheet** window appears. Leave the options as they are and click **OK**. This ensures that every object on your sheet, aside from the ranges of cells you unlocked, will be unchangeable after the sheet has been protected.



- To protect other objects or set options on your sheet, single click to add a checkmark in the above check boxes.

- You also have the option to assign a password. This way only the people that know the password will be able to **unprotect the worksheet** and make changes. However, if you are ever submitting a spreadsheet for marking **you do not want to set a password**. The person marking your sheet will need to unprotect it in order mark it.

- Now if you try to alter the contents of any of the **locked** cells, you will not be able to. You should, however, be able to modify the data in the **unlocked** cells.

- If you want to change the locked property of cells, the worksheet must be unprotected. Thus, once you have protected a sheet, you must unprotect it before you can modify the locked settings or any other settings.

- To **remove protection** from a worksheet, select **Protection > Unprotect Sheet** from the **Tools** menu. If you entered a password, you will be prompted to enter the protection password for the worksheet.

- To move between unlocked cells on a protected worksheet, click an unlocked cell, and then press the **Tab** key. The **Tab** key is a handy way to let you cycle through the unlocked cells of a sheet.

25. Submit your "**LABSEC-CCID-SpreadSheet.xls**" file in WebCT.

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