# Lab 2: Complex Calculations, If-Then Statements, and Pivot Tables

Outline

- Do a custom calculation using a formula
- Using a nested *If... Then* statement to define classes
- Summarizing data in a Pivot table
- Use a Lookup table to define classes

Cell Referencing

- A cell, in the same worksheet, is referenced by column and row, e.g. F11

- A cell in a different worksheet is referenced by sheet name, exclamation point, and cell reference, e.g. Sheet2!A1
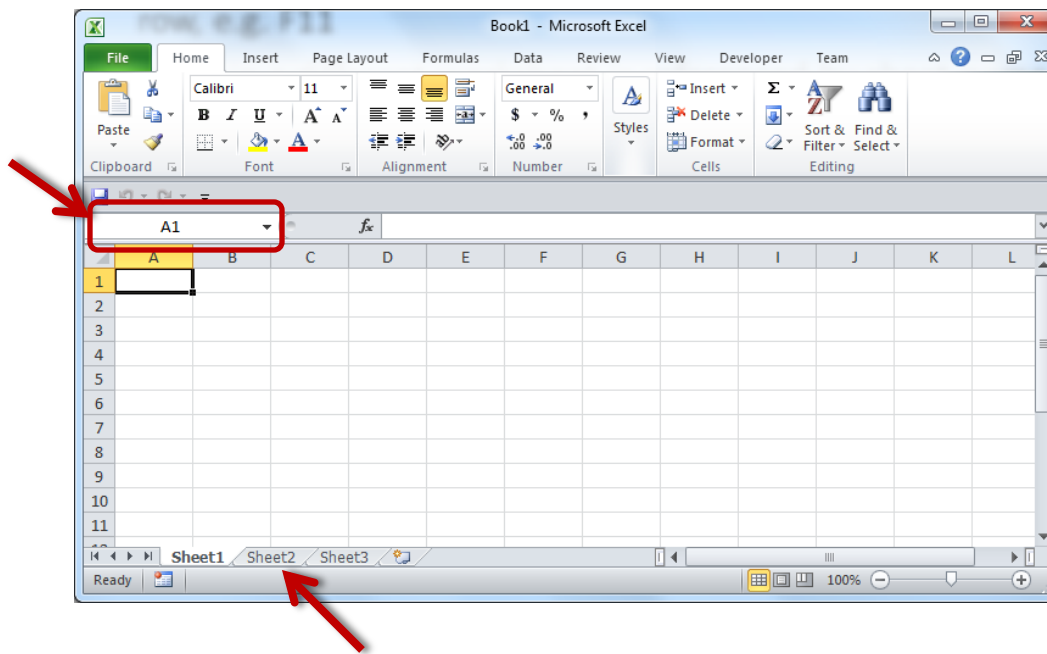
Custom Calculation

- Select the cell in which you would like the evaluation of the custom calculation to be displayed

- In the Function toolbar, enter the custom calculation by starting with the equals symbol '='

- After entering the custom calculation, press the 'enter' key to evaluate the function. The result will appear in the cell that was originally selected

If-Then Statement

- An If-Then statement consists of three parts: logical test, true statement, and false statement

- Syntax :
  =IF(<logical statement>, <true statement>, <false statement>)

- Example:
  =IF(A2 > 60, "Pass", "Fail")

Nested If-Then Statement

- An If-Then statement can contain n number of nested If-Then statement
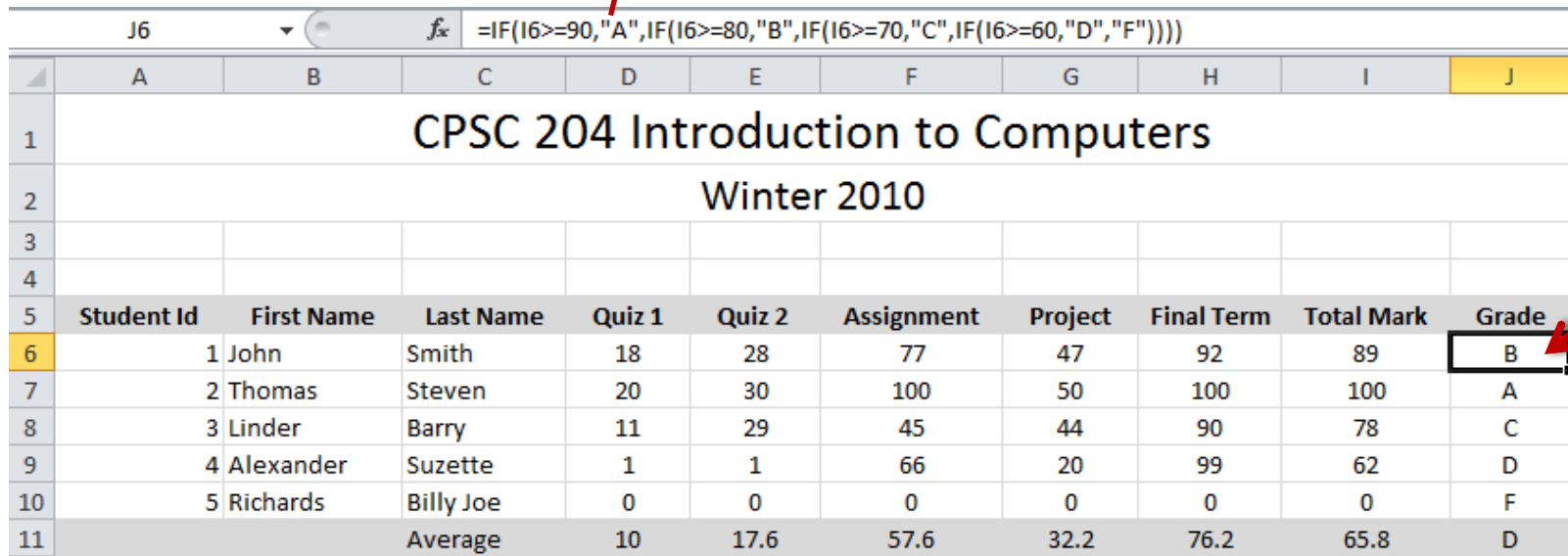
- Syntax :
  =IF(<logical statement>, <true statement>, IF(<logical statement>, <true statement>, IF(<logical statement>, <true statement>, ⋯ <false statement>)))

- Example:
  =IF(I6>=90,"A",IF(I6>=80,"B",IF(I6>=70,"C",IF(I6>=60,"D","F"))))

Example: If-Then Statement

`=IF(I6>=90,"A",IF(I6>=80,"B",IF(I6>=70,"C",IF(I6>=60,"D","F"))))`

	J6	▼	f_x	=IF(I6>=90,"A",IF(I6>=80,"B",IF(I6>=70,"C",IF(I6>=60,"D","F"))))				

	A	B	C	D	E	F	G	H	I	J
1			CPSC 204 Introduction to Computers							
2			Winter 2010							
3										
4										
5	Student Id	First Name	Last Name	Quiz 1	Quiz 2	Assignment	Project	Final Term	Total Mark	Grade
6	1	John	Smith	18	28	77	47	92	89	B
7	2	Thomas	Steven	20	30	100	50	100	100	A
8	3	Linder	Barry	11	29	45	44	90	78	C
9	4	Alexander	Suzette	1	1	66	20	99	62	D
10	5	Richards	Billy Joe	0	0	0	0	0	0	F
11			Average	10	17.6	57.6	32.2	76.2	65.8	D

Pivot Table

Summarize data in a Pivot table

Pivot Table

- Pivot tables provide a mechanism to summarize data, and as a result, makes it easier to analyze and present data

- Creating a pivot table:
  - Step 1: select a range of cells
  - Step 2: select the 'PivotTable' icon
  - Step 3: specify the destination of the Pivot table
  - Step 4: format the Pivot table

Pivot Table
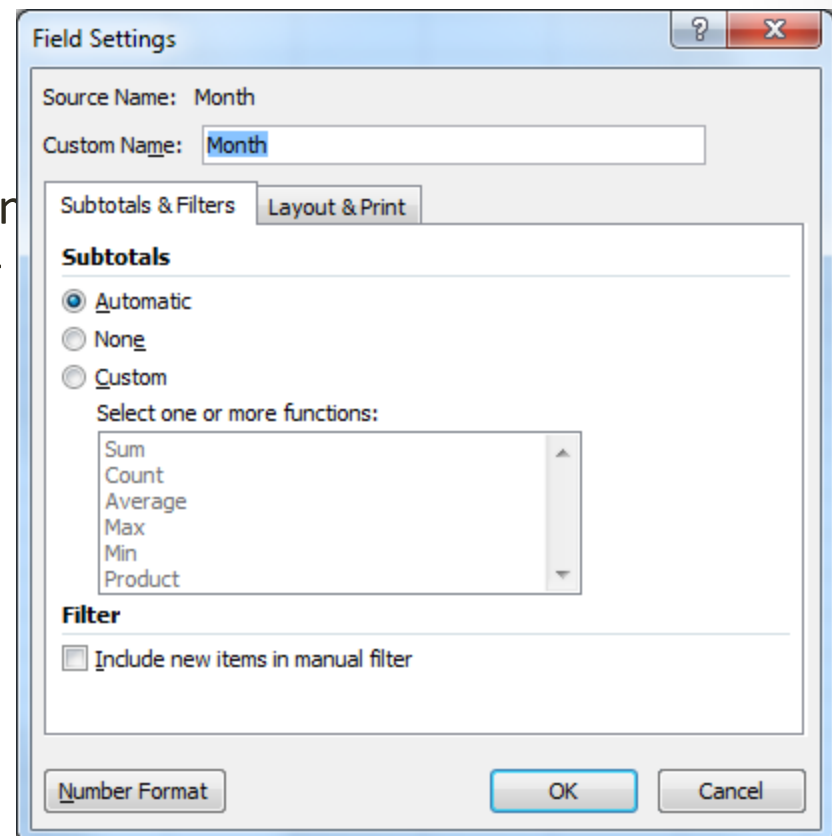
Lookup Function

Use a Lookup table to define classes

Lookup Function

- Lookup functions can be used to find values (data) in a data table
- Syntax:
  `=Lookup(lookup_value, lookup_vector, result_vector)`

- Example:
  `=LOOKUP(I6,A19:A23,B19:B23)`

- *Note: The lookup value needs to be in ascending order*

Example: Lookup Function

=LOOKUP(I6,A$19:A$23,B$19:B$23)

J6   fx   =LOOKUP(I6,A$19:A$23,B$19:B$23)

	A	B	C	D	E	F	G	H	I	J
	Student Id	First Name	Last Name	Quiz 1	Quiz 2	Assignment	Project	Final Term	Total Mark	Grade
	1 John	Smith		18	28	77	47	92	89	B
	2 Thomas	Steven		20	30	100	50	100	100	A
	3 Linder	Barry		11	29	45	44	90	78	C
	4 Alexander	Suzette		1	1	66	20	99	62	D
	5 Richards	Billy Joe		0	0	0	0	0	0	F
		Average		10	17.6	57.6	32.2	76.2	65.8	D
	Mark	Grade								
	0	F								
	60	D								
	70	C								
	80	B								
	90	A								

Lookup Function (2)

- Syntax:
  =Lookup(lookup_value, array)

- Example:
  =LOOKUP(I11,{0,60,70,80,90},{"F","D","C","B","A"})

- *Note: The lookup value needs to be in ascending order*

VLookup Function

- VLookup functions can also be used to find values (data) in a data table

- Syntax:
  ```
  =VLookup(lookup_value, table_array,
   col_index_num, [range_lookup])
  ```

- Example:
  ```
  =VLOOKUP(I6,A19:B23,2,TRUE)
  ```

- *Note: The lookup value needs to be in ascending order*

Example: VLookup Function

=VLOOKUP(I6,A$19:B$23,2,TRUE)

J6		fx	=LOOKUP(I6,A$19:A$23,B$19:B$23)						

	A	B	C	D	E	F	G	H	I	J
	Student Id	**First Name**	**Last Name**	**Quiz 1**	**Quiz 2**	**Assignment**	**Project**	**Final Term**	**Total Mark**	**Grade**
	1 John	Smith	18	28	77	47	92	89	B
	2 Thomas	Steven	20	30	100	50	100	100	A
	3 Linder	Barry	11	29	45	44	90	78	C
	4 Alexander	Suzette	1	1	66	20	99	62	D
	5 Richards	Billy Joe	0	0	0	0	0	0	F
		Average	10	17.6	57.6	32.2	76.2	65.8	D
	Mark	**Grade**							
	0	F							
	60	D							
	70	C							
	80	B							
	90	A							

Note: The lookup value needs to be in ascending order

Questions?