



CPSC203 – Introduction to Problem Solving and Using Application Software

Winter 2010

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Introduction

- Analysis and forecasting
- Sorting data in Excel
- Filtering data in Excel

Analysis and Forecasting

analysis example copy - Microsoft Excel

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Clipboard Font Alignment Number Styles Cells Editing

C20 $=\$B\$13*(1+(\$B\$14/A20))^{(A20*\$B\$12)}$

Legend	
P	= Future value
C	= initial deposit
r	= interest rate (expressed as a fraction: eg. 0.06)
n	= # of times per year interest is compounded
t	= number of years invested

Years Invested (t): 1
 Initial Deposit (C): \$ 10,000.00
 Interest Rate (r): 6%

Demonstrations of Various Compounding

Compounded (n)	Final Principal (P)
1 (Yearly)	\$ 10,600.00
2 (Semi-Annually)	\$ 10,609.00
4 (Quarterly)	\$ 10,613.64
12 (Monthly)	\$ 10,616.78
52 (Weekly)	\$ 10,618.00
365 (Daily)	\$ 10,618.31

Demonstration of Continuous Compounding

Compounded (n)	Final Principal (P)
Continuous	\$ 10,618.37

Sheet1 Ready Page: 1 of 1 100%

Compound Interest

- The compound interest is the amount of money earned on a deposit during a period of time. It can be calculated using the following formula:

$$P = C (1 + r/n)^{nt}$$

P = future value

C = initial deposit

r = interest rate (expressed as a fraction e.g. 0.06 = 6%)

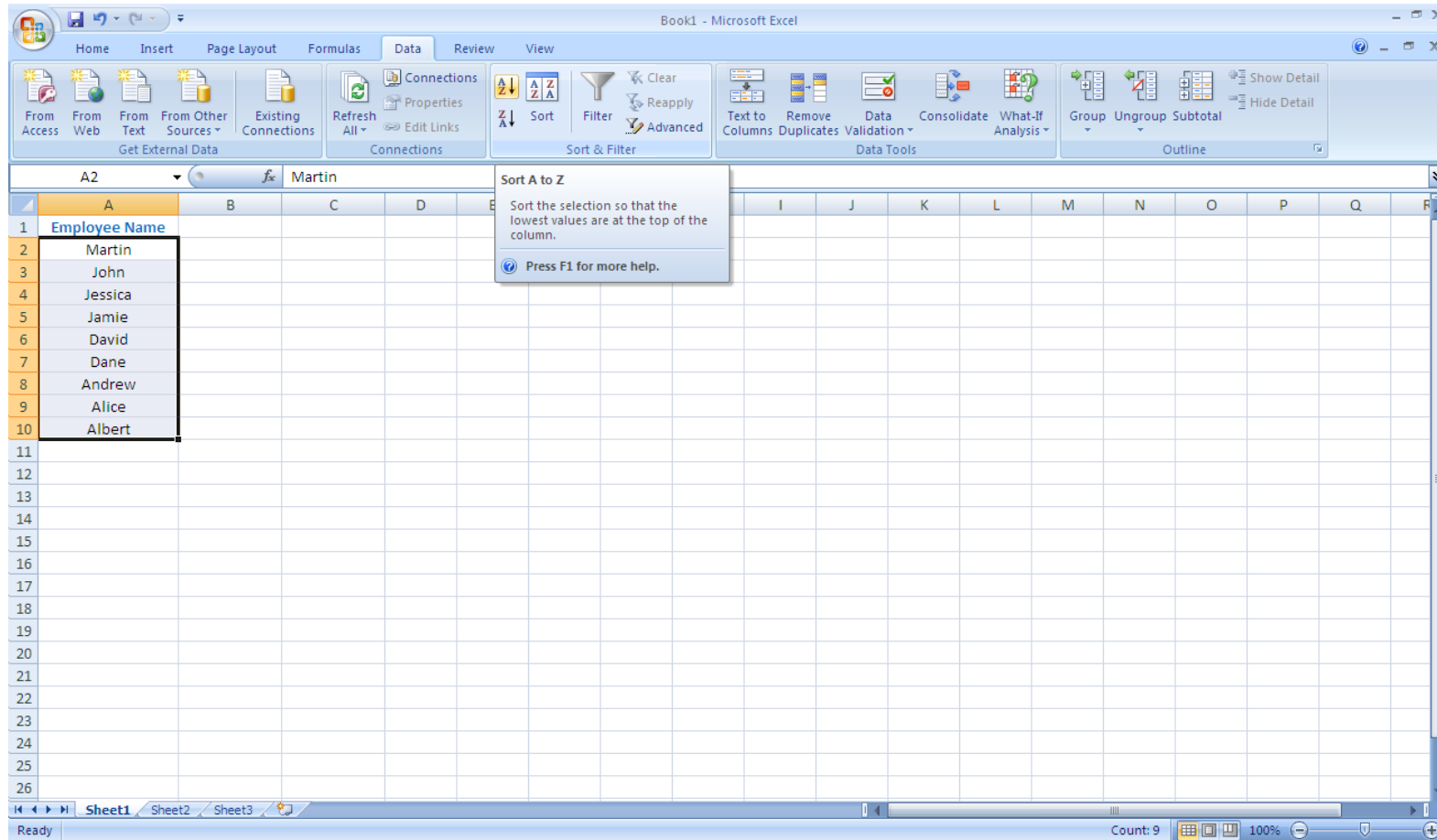
n = # of times per year interest is compounded

t = number of years invested.

Continuous Compound Interest

- $P = C e^{rt}$
- e is a mathematical constant that is used for this formula, to which you can refer in calculation using `EXP(1)`.

Sorting Textual Data



Sorting Numerical Data: Single Column

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Sort & Filter' group is active, and the 'Sort' button is highlighted with a red box. A 'Sort' dialog box is open, showing the following configuration:

Column	Sort On	Order
Sort by Salaries	Values	Smallest to Largest

The spreadsheet data is as follows:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Salaries															
2	300															
3	200															
4	400															
5	120															
6	600															
7	430															
8	80															
9	60															
10	90															

Sorting Numerical Data: Multiple Columns

The screenshot shows the Microsoft Excel interface with the Data tab selected. The ribbon includes options for Connections, Sort & Filter, Data Tools, and Outline. The 'Sort' button in the Sort & Filter group is highlighted with a red box. Below the ribbon, a data table is displayed in the 'Finance' worksheet, with columns A and B highlighted. The table contains the following data:

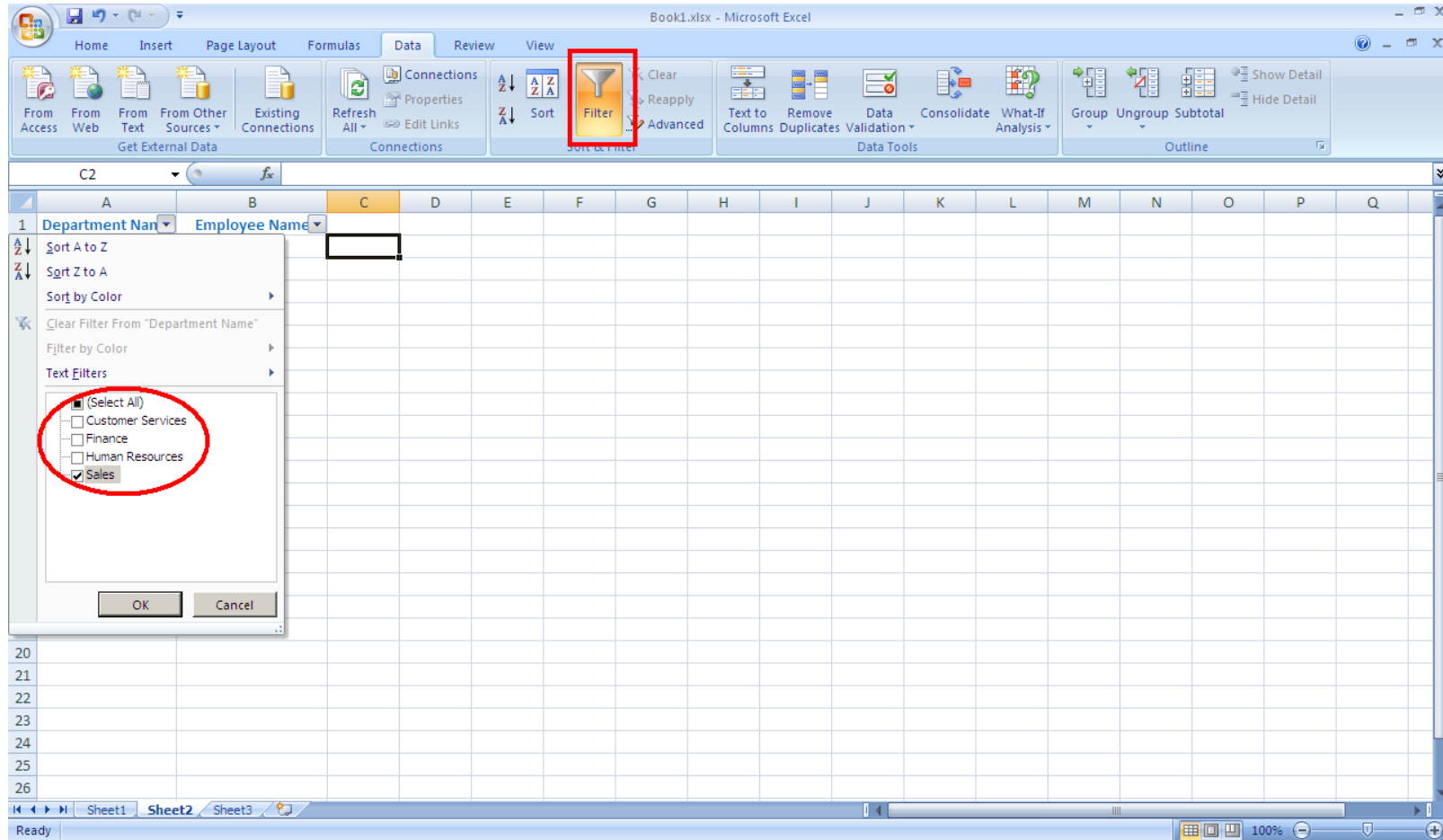
1	Department Name	Employee Name
2	Finance	Mark
3	Sales	Jessica
4	Human Resources	Martin
5	Finance	Albert
6	Customer Services	Dane
7	Finance	David
8	Customer Services	Andrew
9	Sales	Jamie
10	Finance	John
11	Customer Services	Jonathan

The 'Sort' dialog box is open, showing the following configuration:

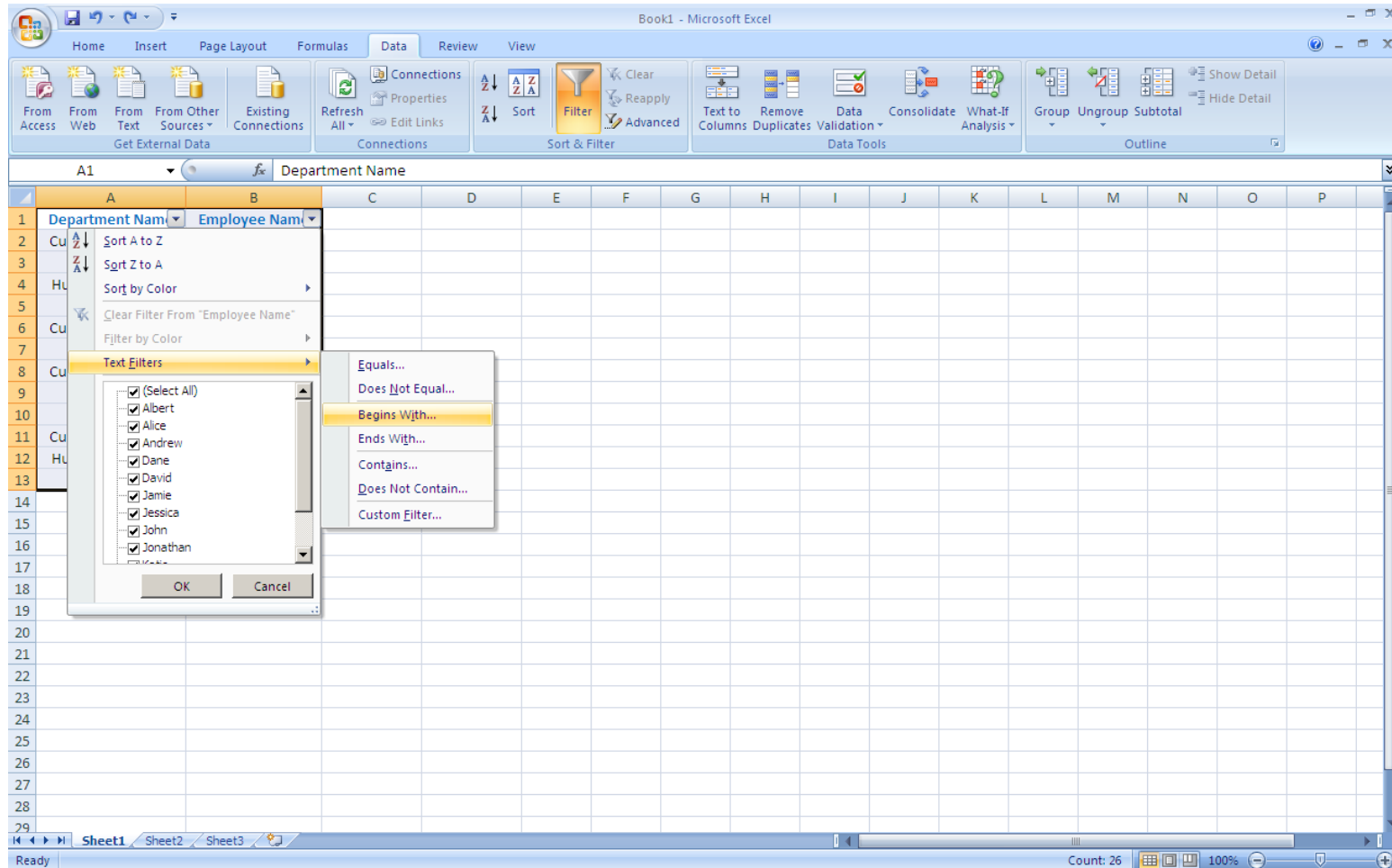
- My data has headers:
- Sort by: Department Name (Values, A to Z)
- Then by: Employee Name (Values, A to Z)

The 'Add Level' button in the dialog box is also highlighted with a red box. The status bar at the bottom indicates 'Count: 20' and '100%' zoom.

Filtering



Customized Filters



Filtering for Unique Values

The screenshot shows the Microsoft Excel interface with the 'Advanced Filter' dialog box open. The dialog box has the following settings:

- Action: Copy to another location
- List range: \$A\$2:\$A\$8
- Criteria range: (empty)
- Copy to: \$E\$2
- Unique records only

The spreadsheet data is as follows:

1	Department Name	Employee Name	
2	Finance	Mark	
3	Sales	Jessica	
4	Human Resources	Martin	
5	Customer Services	Dane	
6	Customer Services	Andrew	
7	Sales	Jamie	
8	Customer Services	Jonathan	

The text 'Unique Departments Names' is located in cell E2, with a red arrow pointing to it from the 'Unique records only' checkbox in the dialog box.

Spreadsheets Review (1)

- Given the spreadsheet file below:

	A	B	C	D	E	F	G	H	I	J	K
1	Faculty	2007 Budget	2008 Budget	Growth	Growth %	Total %	2009 Forcast	Trend1	Trend2		Total 2008 Budget
2	Science	128	132								Average 2008 Budget
3	Engineering	197	205								Minimum Budget
4	Arts	73	99								Maximum Budget
5	Medicine	143	155								Standard Deviation of 2008 Budget
6	Law	65	65								
7	Humanities	74	84								
8	Business	136	165								

- Compute the following:
 - “Total 2008 Budget”, “Average 2008 Budget”, “Minimum 2008 Budget”, “Maximum 2008 Budget”, and “Standard Deviation of 2008 Budget”. Format cells as Number.
 - Net “Growth” = “2008 Budget” – “2007 Budget”. Format cells in this column as Number.

Spreadsheets Review (2)

3. “Growth %” = “Growth” / “2007 Budget”. Format cells in this column as Percentage.
4. “Total %” = “2008 Budget” / “Total 2008 Budget”. Format cells in this column as Percentage.
5. “2009 Forecast” = “2008 Budget” * (1 + “Growth %”). Format cells in this column as Number.
6. “Trend1” of growth using nested IF function:
If “Growth %” is less than or equal to 5% then trend is “Slow”,
Otherwise if “Growth %” is less than or equal to 10% then trend is “Normal”,
Otherwise trend is “Fast”. Format cells in this column as Text.

Spreadsheets Review (3)

7. “Trend2” using the same logic in step 6 using lookup table this time. Format cells in this column as Text.
8. Create a pivot table where rows are from “Faculty” and columns are from “Trend1” and the data is the Maximum of “Growth %”.
9. Create a column chart where the X-axis is “Faculty” and Y-axis is “Growth %”. Give your chart a title, and axis titles. Change the range of values for Y-axis to 0.0 to 1.0.