

Databases

...also called lists or
tables



Fields and Records

field

record

first	last	dept	phone
Alan	Ransom	Accounting	Ext. 22
Bob	Anderson	Purchasing	Ext. 45
Sheri	Wilson	Personnel	Ext. 33
Helen	Emery	Safety	Ext. 11

Databases in Excel

- ◆ Add and Delete Records
- ◆ Change values in fields
- ◆ Sort Records
- ◆ Create subtotals for numeric fields
- ◆ Display Records meeting criteria
- ◆ Analyze data using functions



Steps for Creating a Table

1. Enter column headings (field names)
2. Format range as a Table
3. Setup Data Validation as needed
4. Enter Records



Modifying Table Quick Style

- ◆ Built-in Table Style cannot be changed
- ◆ Duplicate and modify built-in style
- ◆ Alter parts of duplicated style
- ◆ Saving duplicated style with new name
- ◆ Only specific features can be modified



Data Validation

- ◆ Checks data being entered into cells
- ◆ Will not allow invalid data to be entered into a cell
- ◆ Displays message indicating error
- ◆ Can be either Mandatory or Cautionary Rule



Mandatory Validation Rule

- ◆ Rejects entry of invalid data
- ◆ Displays error dialog box
- ◆ Gives user chance to correct entry



Cautionary Validation Rule

- ◆ Delays entry of invalid data
- ◆ Displays warning dialog box
- ◆ Allows fixing data or accepts data as-is





Kinds of Validation

- ◆ Number range validation
- ◆ List validation
- ◆ Date and Time validation
- ◆ Text length validation
- ◆ Custom Validation

Number Range Validation

- ◆ Can allow only Integers or only Decimal values
- ◆ Check for entries between or **not** between min and max values
- ◆ Check for an entry equal to or not equal to a specific value



List Validation



- ◆ Create list of acceptable values in worksheet and not allow cell entries that are not on the list
- ◆ Display optional drop-down list containing those values so that the user can see them when preparing to enter a value in a cell that has validation on it

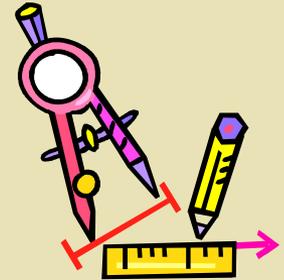
Date and Time Validation



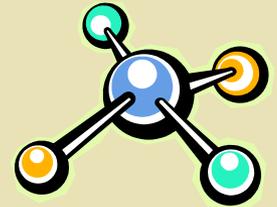
- ◆ Create a range of acceptable start/end Dates and start/end Times.
 - A Date or Time can be entered in a cell as long as it is between the start and end of the range.
 - Check Date/Time entered greater than/equal to dates/times
 - Check Date/Time entered less than/equal to dates/times

Text Length Validation

- ◆ Checks number of letters in entry
- ◆ Checks for greater than min
- ◆ Checks for less than max
- ◆ Check for equal to length



Custom Validation



- ◆ More flexible than other validations
- ◆ Use worksheet formula to check entry
- ◆ Custom formula must return True/False
- ◆ Example:

=IF(B4 > F2+12, TRUE, FALSE)

Table Elements to be Modified

- ◆ Whole Table
- ◆ Table Title Row
- ◆ Table Columns
- ◆ Table Rows



Adding New Fields to a Table

- ◆ New fields created by typing column titles
- ◆ New Fields are attached to entire table
- ◆ Records now include new fields
- ◆ Table formatting automatically extended to new fields

Conditional Formatting

- ◆ Format cells based on cell content
- ◆ Formatting can change as cell values change
- ◆ Create formatting conditions
- ◆ Effective for quickly highlighting cells in large and complex worksheets



Icon Sets

- ◆ Work like Data Bars and show relative values
- ◆ Rules can be manually set
- ◆ Choice of several sets of icons

	E	F
	↓	4
	↑	543
	→	344
	↑	445
	↓	5
	↓	144
	↓	4
	↓	3
	↓	4
	↑	455
	↓	55
	↓	165
	↓	23
	↓	33
	↓	12

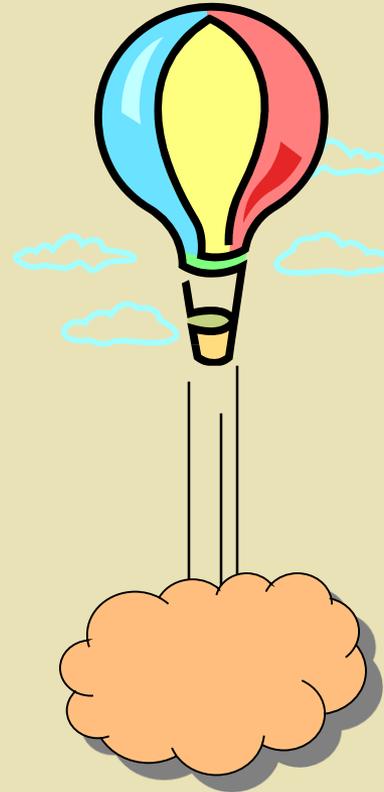
Sorting in A-Z Order

A-Z

1-100

Low to high

Also referred to as
ascending



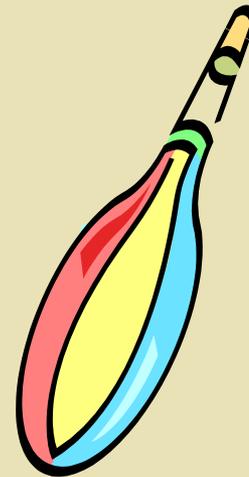
Sorting in Z-A Order

Z to A

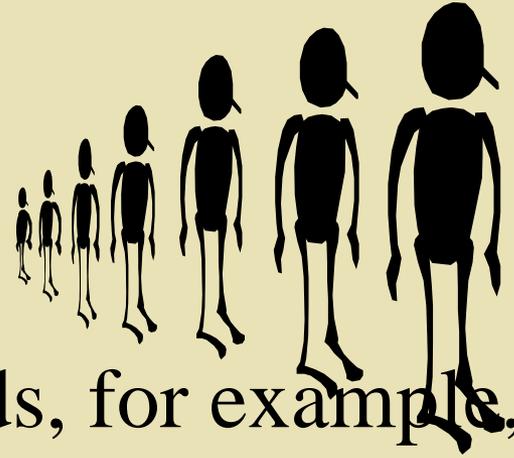
100-1

High to low

Also referred to as
Descending



Subtotals

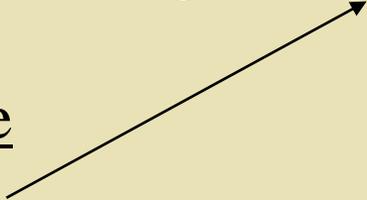


- ◆ Totals for a group of records, for example, sales totals by state
- ◆ Records in the groups must be all together in order for their values to be totaled
- ◆ To group records you must sort records on a field (for example, the state field)

Subtotal by State (Must Sorting by State First)

Sort by the field that you want to subtotal before subtotaling.

Sorted by state before subtotaling



California	433	
California	23	
California	633	
Subtotal for California		1089
Arizona	244	
Arizona	55	
Subtotal for Arizona		299
Grand Total		1388

Not sorted by state before subtotaling. Now there are two subtotals for California.



California	433	
California	23	
Subtotal for California		456
Arizona	244	
Arizona	55	
Subtotal for Arizona		299
California	633	
Subtotal for California		633
Grand Total		1388



Finding Things

- ◆ You can search through a list of records for a specific name.
- ◆ *You can even search for a name when you are not sure exactly how to spell it.*
- ◆ Example: You know a person's last name, but you can't remember if it is spelled Ri**v**era or Ri**b**era. *You use a wild card for the third letter.*



First Wild Card

- ◆ ? Stands in for any one character
- ◆ Ri?era finds Ribera and Rivera
- ◆ Ri?er? Finds names such as Riveraa, Riberaa, Rivero, Rivers



Second Wild Cards

* = any number of characters

O* finds any word in the designated field that starts with a capital O followed by any number of characters

Ota, Olsen, Ozawa, Ozbourne



Sorting Fields Within Other Fields

Original Sort Request: Sort by name within city within state.

Reverse the order of the fields and *then* sort them.

state city name

1 2 3

First sort the records by the state field (most general-state)

Then sort the records by the city field

End by sorting the records by the name field (least general-name)



And and Or Criteria



- ◆ Using Multiple Conditions for Search
- ◆ AND must match all criteria
- ◆ OR must only match a single criteria
- ◆ AND search will fail if EITHER criteria are not found
- ◆ OR search will fail if BOTH criteria are not found



Using AND Criteria

Gender is **F** AND Age > **25**

Will match:

Brunell, Candice, F, 36

Lyon, Jody, F, 27

Will **NOT** match

Cataldo, Lydia, F, 25

Using OR Criteria



Gender is **F** OR Age > **25**

Will match:

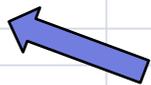
Battistini, Jorge, M, 26

Brunell, Candace, F, 36

Will **NOT** match:

Moeller, Pierre, M, 24

	A	B	C	D	E	F	G	H	I	J	
1	Criteria Area										
2	Name	Gender	Age	Hire Date	State	Sales Area	Quota	YTD Sales	% of Quota	Grade	
3		F									
4											
5											
6											



Single Criteria

Silver Photography Accessories Sales Rep Table

	Name	Gender	Age	Hire Date	State	Sales Area	Quota	YTD Sales	% of Quota	Grade
9	Moeller, Pierre	M	24	03/12/01	WA	Outside	3,656,640	3,336,300	91.24%	B
10	Battistini, Jorge	M	26	07/02/01	WA	Inside	3,371,092	1,960,932	58.17%	F
11	Lambert, Paul	M	35	03/16/02	CA	Outside	1,768,442	1,525,237	86.25%	B
12	Brunell, Candace	F	36	06/01/02	CA	Inside	3,000,264	2,078,386	69.27%	D
13	Dunn, Alan	M	39	06/06/02	CA	Outside	1,652,836	1,432,701	86.68%	B
14	Lyon, Jody	F	27	08/03/02	NV	Outside	2,280,900	1,548,311	67.88%	D
15	Bulger, Gloria	F	25	12/23/02	AZ	Outside	2,651,270	2,451,454	92.46%	A
16	Lopez, Maria	F	25	06/03/04	UT	Outside	1,837,213	1,563,140	85.08%	B
17	Dillig, Henry	M	42	11/21/06	NM	Outside	3,899,402	1,916,753	49.16%	F
18	Kahn, Ramesh	M	44	04/06/07	MT	Outside	3,426,535	3,292,270	96.08%	A
19	Chiu, Leslie	F	36	07/15/07	OR	Inside	3,218,514	2,514,181	78.12%	C
20	Wochos, Lisa	F	30	10/21/07	NV	Inside	2,648,883	2,188,106	82.60%	B
21	Cataldo, Lydia	F	25	11/15/07	AZ	Inside	3,668,028	2,846,910	77.61%	C



Results

Extract Area

	Name	Gender	Age	Hire Date	State	Sales Area	Quota	YTD Sales	% of Quota	Grade
27	Brunell, Candace	F	36	06/01/02	CA	Inside	3,000,264	2,078,386	69.27%	D
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	A	B	C	D	E	F	G	H	I	J
1	Criteria Area									
2	Name	Gender	Age	Hire Date	State	Sales Area	Quota	YTD Sales	% of Quota	Grade
3		F	>25							
4										
5	AND Criteria									
6										

	Silver Photography Accessories Sales Rep Table									
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1	Criteria Area									
2	Name	Gender	Age	Hire Date	State	Sales Area	Quota	YTD Sales	% of Quota	Grade
3		F								
4			>25							
5										
6										



OR Criteria

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Database Function Arguments

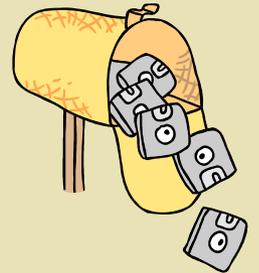
- ◆ First Argument– Range of List
- ◆ Second Argument – Name of field to calculate on
- ◆ Third Argument– Range of Criteria name and data



Example DAVVERAGE

=DAVERAGE(A8:J21, “Age”, O2:O3)

- ◆ A8:J21 is List Range
- ◆ “Age” is name of field to average
- ◆ O2:O3 is criteria range which includes criteria name and value



=DAVERAGE(A8:J21, "Age", O2:O3)

N	O	P	Q	R
Criteria				
	Gender	Gender	Grade	
	F	M	A	
	Average Female Age = = = = >			29.14
	Average Male Age = = = = =			35.00
	Grade A Count = = = = =			2
	Grade A YTD Sales Sum = = = =			5,743,724
	Male Sales Rep Count = = = =			6

Silver Photography Accessories Sales Rep Table

7	Name	Gender	Age	Hire Date	State	Sales Area	Quota	YTD Sales	% of Quota	Grade
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SUMIF Function



- ◆ Uses three arguments
- ◆ First argument is range to check for value match
- ◆ Second argument is value to look for in range
- ◆ Third argument is range to sum

Example of SUMIF



=SUMIF(J9:J21, “A”, H9:H21)

- ◆ J9:J21 is range containing values to be checked against “A”
- ◆ “A” the value that must be present in order to sum
- ◆ Range of numbers to be summed given the value

=SUMIF(J9:J21, "A", H9:H21)

Criteria		
Gender	Gender	Grade
F	M	A
Average Female Age = = = = = >		29.14
Average Male Age = = = = =		35.00
Grade A Count = = = = =		2
Grade A YTD Sales Sum = = = = =		5,743,724
Male Sales Rep Count = = = = =		6

Rep Table			
	YTD Sales	% of Quota	Grade
40	3,336,300	91.24%	B
92	1,960,932	58.17%	F
42	1,525,237	86.25%	B
64	2,078,386	69.27%	D
36	1,432,701	86.68%	B
00	1,548,311	67.88%	D
70	2,451,454	92.46%	A
13	1,563,140	85.08%	B
02	1,916,753	49.16%	F
35	3,292,270	96.08%	A
14	2,514,181	78.12%	C
83	2,188,106	82.60%	B
28	2,846,910	77.61%	C