

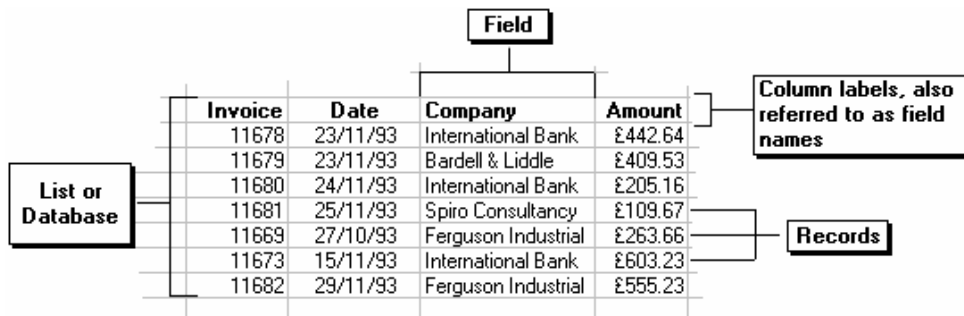
20. Working with Lists

You may often need to manage lists of data on a worksheet. A list is simply a series of rows that contain similar data, organised in a database-like structure with column labels at the top identifying rows that contain records. In this context, the terms list and database are interchangeable.

Terminology used in this section...

Term	Meaning
List or Database	<i>A series of rows that contain similar data. The first row of the list will contain names to identify the pieces of information in the list. In Excel, to select a list, you simply need to select any single cell within the list. The region surrounding the cell is defined as a list as long as it is contained in an area bounded by any combination of <u>blank</u> rows or blank columns.</i>
Record	<i>A single row within a list (except the first row). A record contains the same sort of information in each column, as every other record in the list.</i>
Field	<i>A cell within a record containing information. A column within a list contains the same field for all records in the list.</i>
Computed Field	<i>A field containing a formula. A value will be generated based on other information provided by the user.</i>
Column Label or Field Name	<i>A name given to information stored within a field. The top row of a list will contain a column label. A column label may also be referred to as a field name.</i>

The diagram below illustrates some of the above terms...



20.1 Sorting Data In A List

In order to produce summary statistics you will sometimes need to sort the data in your list into a particular order, alphabetically or numerically. Excel will allow you to rearrange the order of a list based on the contents of one or more columns. Excel can sort on up to three fields in the same list, (e.g. one sort within another such as firstname within the same surname).

All lists must have a header row, (usually the first row in the list) containing field names which enables Excel to sort by those categories. Excel automatically assumes the first row in the list is the header row, and will omit it from the sort.




WARNING!


It is quite easy in Excel to sort a single column on its own with disastrous consequences for your data. It is strongly recommended therefore that you save a backup of your data *before* sorting.

20.2 Basic Sorting

The first step in sorting is to select a cell anywhere in a column of data, (do not select the entire column as this will sort just that column on its own).

Once this is done Excel allows you to...

- sort in ascending order, from A to Z, using the **Sort Ascending** button 
- or...

- sort in Descending order, Z to A, using the **Sort Descending** button 

The field name which you chose to sort by is referred to as the 'sort key'.



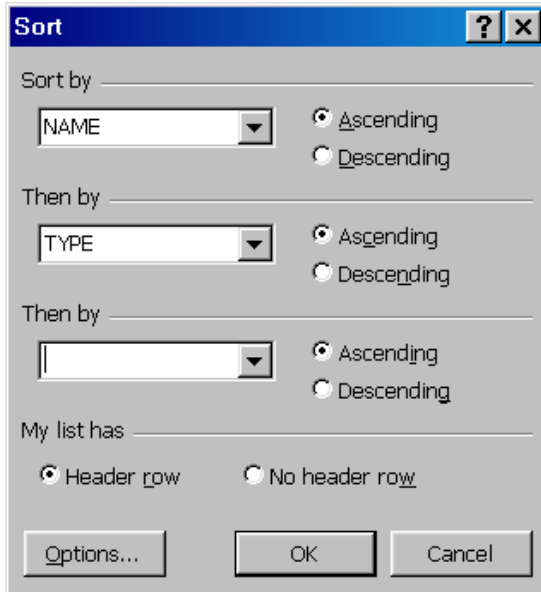
You may find it beneficial to create a named range for your data, (including the field heading row) and call it 'Database'. This is an Excel reserved name which is automatically chosen when sorting and also during other data handling activities.

20.3 Compound Sorts

The above method simply sorted on a single field. To sort on more than one field....

- select a single cell anywhere in the list
- choose the **Data** menu followed by the **Sort** command

The Sort dialog box, as shown, is displayed...



Excel automatically selects the field heading corresponding to the cell selected...

- select the drop-down arrow in the dialog box to display the **Sort by** list which contains the field names
- select the appropriate field name in the **Sort by list**
- select the **Ascending** or **Descending** order to specify the sort order

If the rows in your Sort By column contain duplicate items, you can sort these duplicate rows further by setting a second sort key.

The second sort key acts as a 'tie-breaker' for those records with the same value in the primary sort key.

- if required, click on the field name from the **Then by** list and choose **Ascending** or **Descending**.

You can set up to 3 sort keys by using then By options.

- select the **OK** button when done

20.4 Filtering Lists

You may need to reference certain information in a database quickly. For instance, in a database containing client invoices, you may need to find all invoices exceeding a certain amount and preceding a specified date.

Excel has a powerful automatic feature called 'AutoFilter' which allows you to show only the records you need and filter out the rest.

20.5 Using AutoFilter

- select a single cell anywhere in the list
- choose **Data** and **Filter**, then choose **AutoFilter**

Filter arrows will now appear next to the column labels at the top of the list, as shown in the example below....



- select the filter arrow next to the column label for which you wish to set criteria
- from the list of criteria that drops down select the criteria and only the records that contain the selected criteria will be displayed


You can further filter the list by selecting another item from another list of criteria.

To display the full list once again...

- choose **Data, Filter** and then choose **Show All**

The AutoFilter command will display a subset of your list which matches the criteria and hides all other records. You can easily identify a filtered list, the relevant filter arrows and the row headings will appear blue. Also in the status bar the number of rows that meet the criteria and the message "Filter Mode" will be displayed. On the row numbers for the records which pass through the filter will appear on the left hand side of the screen, (all the others are hidden).

You can customise the toolbar to add the AutoFilter tool.

By clicking on the AutoFilter tool,  the list will be filtered to display records which match the contents of the active cell.

Apart from listing unique items which appear in the current column, clicking on the filter arrow will also display the following options...

Criteria List Option	What It Does
<i>All</i>	<i>Removes filter criteria and therefore shows all the records.</i>
<i>Top 10</i>	<i>Displays all records within top/bottom 10 matching custom criteria.</i>
<i>Custom</i>	<i>Displays all records which match custom criteria.</i>
<i>Blanks</i>	<i>Displays all blank records.</i>
<i>NonBlanks</i>	<i>Displays all non-blank records.</i>

20.6 Using Custom Criteria

Sometimes you may need to find records that match special criteria which are not included in the AutoFilter drop-down menus. For example, in a client invoice database, you may want to find all records who's invoice date is due for a particular client. To do this you will need to use more advanced 'custom criteria'.

20.7 And/Or Conditions

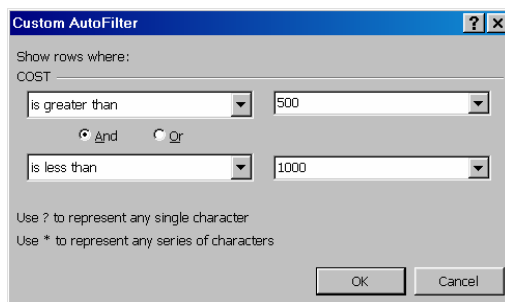
Two types of criteria that you can construct using custom filters involve using And and Or conditions.

1. **And** will display records matching **both** specified criteria, for instance, all records with values greater than 2000 and less than 4000.
2. **Or** will display records matching **one or the other** specified criteria, as an example, all records that contain the text "Andrews" or "Powell" in a Client column.

20.8 Custom Filters

- select a single cell anywhere in the list
- choose Data, Filter and AutoFilter
- filter arrows will appear next to the column labels at the top of the list
- select the filter arrow next to the column label for which you wish to set criteria
- from the list of criteria that drops down select the **Custom** option

The Custom AutoFilter dialog box, as shown below, is displayed...



- in the first **Type** list box **click** on the drop-down arrow and choose the appropriate operator
- in the second **Type** list box **click** on the drop-down arrow in the criteria box and select the appropriate item from the list
- specify whether this is to be an **And** or **Or** condition by clicking on one or the other of these options, if required
- repeat steps 5 and 6 in the lower operator and criteria list boxes, if required
- select the **OK**

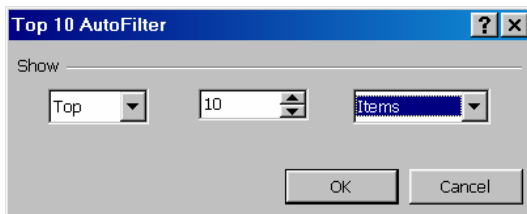
Only the records matching the criteria which you have specified will be displayed.

20.9 Custom Top 10 Lists

In addition to the default Top 10 option available in the AutoFilter menu you can create customised Top 10 lists from the data without having to sort any of it. There are options for choosing the top or bottom items on the list and even a different number of entries, (e.g. top 20!)

- select a single cell anywhere in the list
- choose Data, Filter and AutoFilter
- filter arrows will appear next to the column labels at the top of the list
- select the filter arrow next to the column label for which you wish to set criteria
- from the list of criteria that drops down select the **Top 10** option

The Top Ten AutoFilter dialog box, as shown below, is displayed...



- in the **Show** list box click on the drop-down arrow and choose the appropriate option (Top or Bottom)
- in the next box, use the spinners to select the number you wish to see
- in the next box choose **Items** or **Percent**
- select the **OK**

Only the records matching the criteria which you have specified will be displayed.



In Excel 2002, you can insert and delete columns whilst using AutoFilter.

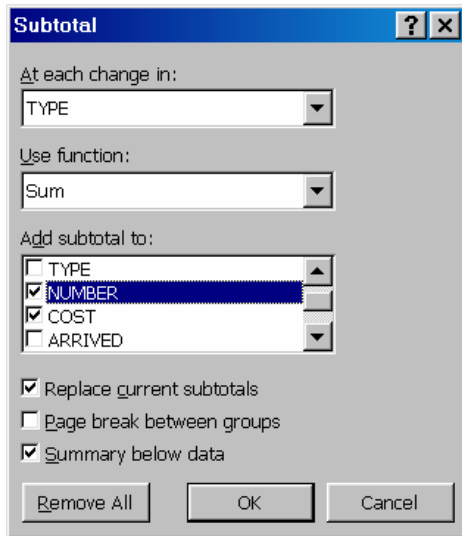
20.10 Applying Subtotals

Creating subtotals is very easy within lists. All you need to check is that there is a column which contains labels suitable for grouping and that this column is sorted.

To create subtotals...

- select Data and Subtotals

You will now see the Subtotal dialog box as shown below...



- in the **Subtotal** dialog box specify the column to group by in the **At each change in** box
- in the **Use function** box specify the type of function you wish to use on the numeric data, (defaults to SUM)
- in the **Add subtotal to** box specify the field or fields that you wish Excel to add subtotal to
- select the **Remove all** button to remove all previous subtotals
- select **OK** when done

The example below shows subtotals of numbers for each type of animal in a zoo...

	NAME	TYPE	NUMB	COST	ARRIVE	KEEPER	ENDANGERI
50		M Total	208	£ 28,105			
86		B Total	126	£ 13,948			
106		R Total	50	£ 6,659			
138		F Total	209	£ 14,600			
139	SALAMANDER, SHARP-RIBBED	A	2	£ 67	2901888	D. YOUNGBLOOD	FALSE
140	SALAMANDER, FIRE	A	10	£ 32	140386	D. YOUNGBLOOD	FALSE
141	DLM	A	5	£ 275	290289	D. YOUNGBLOOD	FALSE
142	GHOST FROG	A	2	£ 135	120689	H. MUNSTER	FALSE
143	LUTZ'S PHYLLOMEUSA	A	19	£ 10	041286	H. MUNSTER	FALSE
144	ORIENTAL FIRE-BELLIED TOAD	A	8	£ 11	050288	H. MUNSTER	FALSE
145	WALLACE'S FLYING FROG	A	2	£ 84	160788	D. YOUNGBLOOD	FALSE
146	FROG, APRIL LILY	A	5	£ 18	250888	D. YOUNGBLOOD	FALSE
147	HAIRY FROG	A	4	£ 85	140689	H. MUNSTER	FALSE
148	FROG, PARADOXICAL	A	4	£ 29	040489	D. YOUNGBLOOD	FALSE
149	FROG, MOUTH BREEDING	A	4	£ 96	170289	D. YOUNGBLOOD	FALSE
150	HELLBENDER	A	2	£ 350	120989	H. MUNSTER	FALSE
151	FROG, HOCHSTETTERS	A	4	£ 62	230789	H. MUNSTER	TRUE
152		A Total	71	£ 1,254			
153		Grand Total	664	£ 64,566			

Note that outline symbols have automatically been applied to assist managing the long list and that grand totals are given at the very bottom, (currently only the Amphibians details are shown).