How to… Use database functionality in Excel 2010

Overview

Microsoft Access is the database application of the Microsoft Office suite – it's the tool to use if you want to store multiple related lists of information, or lists containing hundreds of thousands of items.

But if you just need to manage more simple lists, Excel can do a great job. It has a number of tools for working with data, and this guide shows you some of the most useful ones.

Guidelines on creating data lists in Excel

There are a number of things to consider when creating a list within Excel

1. Ensure that each list you create is made of a block of contiguous cells. Do not have a completely empty row or column within the list, as Excel will not realise that the list continues after the gap.

2. If the lists contain more than a few items, keep each list on a separate worksheet. If there are multiple lists on a single worksheet, then anything you do to one list – such as filtering it – may affect other lists.

3. Ensure that the list headings are formatted distinctly. It needn't be complex – just making the headings bold will do – but this will help Excel to keep your headings separate from the data they represent.

4. If you need to be able to return the data in the list to its original order, have a field which has incremental numbers. Many databases have an "Autonumber" field which counts up each row of data, but Excel doesn't so you'll need to add this yourself.
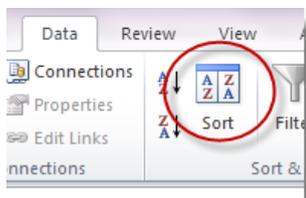
## Sorting data

Excel has two tools for sorting data.

For simple sorts, where you just want to sort one column by the values it contains, simply click anywhere in that column, then click the sort ascending or sort descending buttons on the Data tab of the ribbon:
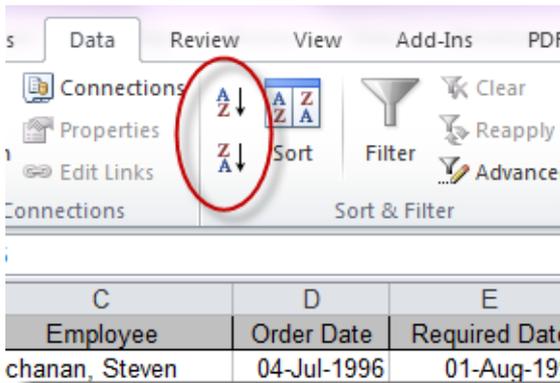
More complex sorts are available by clicking the Sort button on the data tab of the ribbon:

This tool allows you to sort by multiple columns, or by non-data factors, such as a cell's font colour. For each sort level you want, click on the Add Level button, or if the sort level is very similar to another one (perhaps sorting a column twice based on different coloured fonts) then click the Copy Level button.
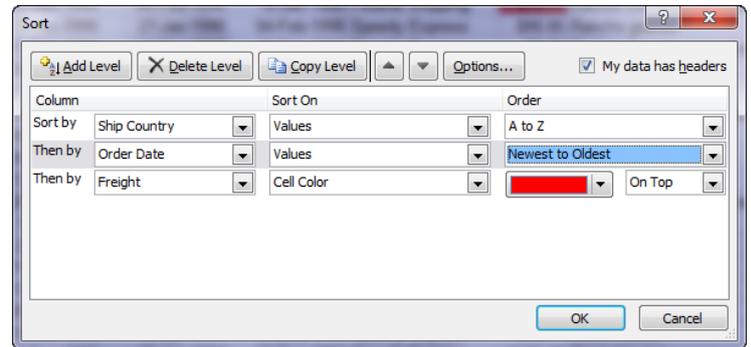

Note: If you want to sort by something which is not alphabetical, such as the names of months, click the drop-down arrow in the "Order" column, and select "Custom List". If you want to sort the data from left to right instead of top to bottom, clicking the Options button allows this.

Filtering data

There are two tools within Excel for filtering lists of data – AutoFilter and Advanced Filter. The AutoFilter tool is simple and powerful, and we'll look at that first.

Using the AutoFilter

In order to turn on the AutoFilter, click within your data, then click the Filter button on the data tab of the ribbon:
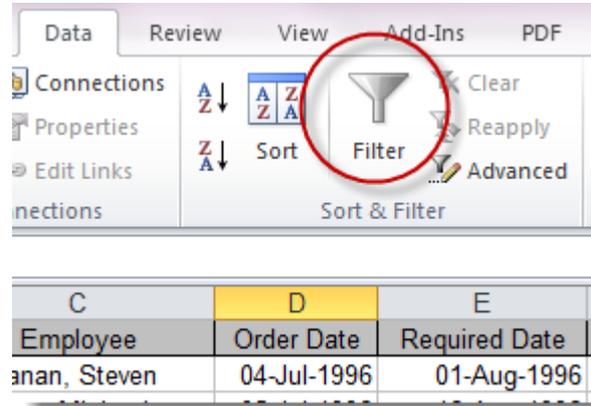

This will add AutoFilter arrow buttons next to each column heading within the list of data:

Clicking any of these arrows will present a list of sorting and filtering options for that column, allowing the data to be filtered by one or more values within that column, to be filtered to show blanks or non-blanks, to be sorted in various ways, or to have a custom filter applied.

Custom filters are useful if you want to look for ranges of values or partial matches, such as any name containing "Andrew" or any date within a particular range:
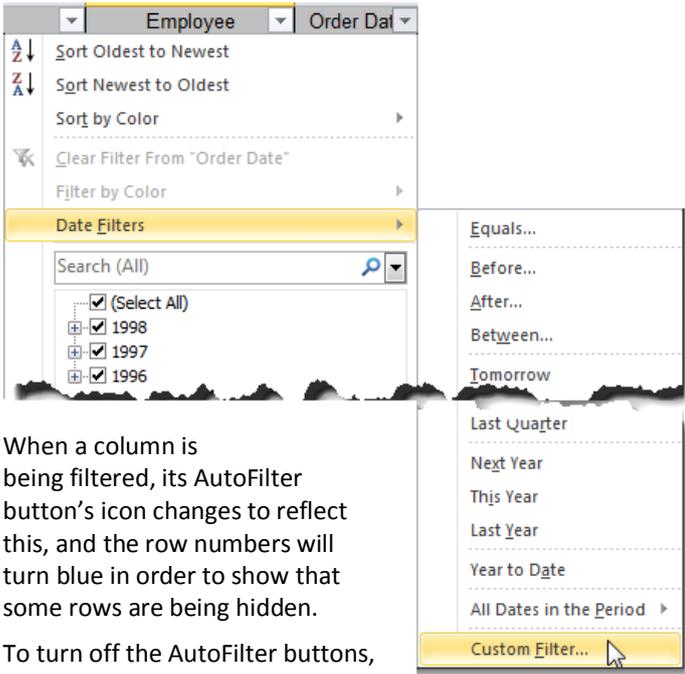
When a column is being filtered, its AutoFilter button's icon changes to reflect this, and the row numbers will turn blue in order to show that some rows are being hidden.

To turn off the AutoFilter buttons, click the Filter button again.

Using the Advanced Filter

Powerful though the AutoFilter is, the advanced filter allows for additional options unavailable with the AutoFilter:

1) The ability to create a separate list of the filtered data while leaving the original list intact and unfiltered

2) The ability to filter out rows which are exact duplicates

3) The ability to create multiple filters simultaneously, such as "full-time staff in Production and part-time staff in Marketing".

There are three areas of a spreadsheet to set up when working with the Advanced Filter:

1) The list range. This is where your data resides, including its headings. You will already have this.

2) The criteria range. This range has one or more headings which must **exactly** match the headings of the list range. Below these headings are the criteria for filtering the data. For example, if you have a "Country" column in your data, your criteria should also include a "Country" heading, and if you want to show data where the country is either USA or Mexico, type these values on rows below Country in the critera range.

3) Optionally, you may want to create a separate list of data which matches your filter. If so, you will need to specify the top-left corner cell of the range to contain this list (the "copy-to range"). If not, the list will be filtered by hiding non-matching rows, as per the AutoFilter tool

Once you have determined where each of these areas is, click the Advanced button in the Sort & Filter area of the Data tab on the Ribbon.
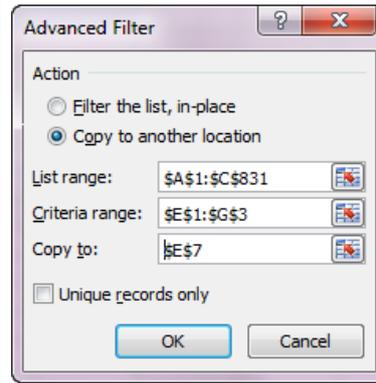
The Advanced Filter dialog box prompts for each of these ranges. Remember that the criteria range must include both the headings (which must match those of the list range) and the criteria below, and that only the first cell of the copy-to range need be specified.

Database functions

Database functions mirror the common functions such as SUM, MAX, MIN, COUNT and AVERAGE that you may be familiar with in Excel.

However, unlike the standard functions, the Database functions, each prefixed with a D (DSUM, DMAX, DMIN and so on) are designed only to perform the required calculation on those rows of data which meet your criteria, rather than on all rows.

As with the Advanced Filter, described above, the Database functions rely on you having both a List range, containing your data, and a criteria range. Once again, the criteria range must include headings to match the list range, plus the criteria values below. Here's how the start of the data might look:

And the criteria range:

With a standard function, such as SUM, we could get a total for the OrderValue column. But with DSUM, we can get a total for the OrderValue column *where the country is France or Germany* in this case.

All the database functions are similar. They each have three arguments – (1) the complete list range, (2) the cell containing the heading of the column to be calculated, and (3) the criteria range. So, in order to add up all OrderValues where the country is either France or Germany, you would write this:

=DSUM(A1:E500,E1,G1:K3)

The list range **The criteria**

Heading for OrderValue

Database functions include **DSUM**, **DMIN**, **DCOUNT**, **DAVERAGE**, **DMAX**, **DMIN**, **DPRODUCT** and **DGET**.

For help on these and other database functions, click the Insert Function button [fx] within Excel, and click on "Help on this function".