

# Extending a Series and Creating a Custom List in Microsoft Excel 2003

## Introduction

Microsoft Excel allows you to fill a range of cells by dragging on the *fill handle* (the small black square in the bottom right corner of a selected cell or cells). Where a cell contains a formula, the formula is copied to the cells as the handle is dragged across them. For each new cell the formula is automatically amended to reflect its different row or column. Where the cell contains a value, the value is copied across the range unless it is one in a pre-defined series.

This document introduces you to these pre-defined series and also shows you how to create your own.

## Extending a Single Cell

Starting on a new worksheet:

1. Type *any number* (eg 33) into cell *A1* and press **<Enter>**
2. Move back to cell *A1* and, using the mouse, point to the *fill handle* (the pointer should change shape to a plain black cross)
3. Drag the fill handle down to include cell *A15*

You should find that the number has been copied down the column - the range *A1* to *A15* contains identical values. Whenever you use the fill handle, the *Auto Fill Options* button appears - ignore this for the time being.

You can also fill in a range using commands from a menu (or a control key combination):

4. Move to cell *B1* and type in *your name* - press **<Enter>**
5. Select cells *B1* to *B15* by dragging through them, using the mouse
6. Open the **Edit** menu and choose **Fill** then **Down**

Note that this command can also be issued from the keyboard using **<Ctrl d>**. To try this out:

7. Click on the **[Undo]** button - or use **Undo** from the **Edit** menu or press **<Ctrl z>**

8. Press **<Ctrl d>** to fill the selected range

**Tip:** If you *double click* on a fill handle, the value/formula is copied down the column until Excel finds an empty cell in the column to the left.

### Built-in Data Series

Microsoft has pre-defined some commonly-used data series for you. For some of these, you just need to type in a single value:

1. Move to cell *C1*, type in *Jan* - don't press **<Enter>**
2. *Double click* on the fill handle (or drag it down) to fill cells *C1* to *C15*

You should find that you have the sequence Jan, Feb, Mar, etc. If you wanted Jan in all the cells you could do so by first selecting cells *C1* to *C15* and then using Fill Down (**<Ctrl d>**).

Repeat steps **1** and **2** using the following values in the named columns:

3. In cell *D1*, start with any month of the year spelt out in full - eg *July*
4. In cell *E1*, start with any day of the week abbreviated - eg *Tue*
5. In cell *F1*, start with any day of the week in full - eg *sunday*
6. In cell *G1*, start with *1st* (first)
7. In cell *H1*, start with *x1* (numbers at the *end* of any text are incremented)
8. In cell *I1*, start with *q1* (Q is taken as an abbreviation for Qtr or Quarter, both of which also work)
9. In cell *J1*, start with *9:00* (the colon signifies a time)

### Extending Two Cells

If you want a data series to expand in a different sequence, you have to type in more than one value (to define the sequence required). For example, you might require quarter-hour intervals rather than the hourly ones just created:

1. In cell *K1*, type *9:00* - press **<Enter>**
2. In cell *K2*, type *9:15* - press **<Enter>**
3. Select both cells by dragging through them
4. *Double click* on the fill handle (or drag it down) to fill down to *K15*

Repeat steps **1** to **4** using the following values in the named columns:

5. In cells *L1* and *L2*, start with *Jan* , *Apr*
6. In cells *M1* and *M2*, start with *1-Jan-00* , *1-Feb-00* (widen the column if you get #####)
7. In cells *N1* and *N2*, start with *1/1/00* , *8/1/00* (a slash or hyphen signifies a date)
8. In cells *O1* and *O2*, start with *1* , *2*
9. In cells *P1* and *P2*, start with *1* , *3*
10. In cells *Q1* and *Q2*, start with *10* , *20*
11. In cells *R1* and *R2*, start with *a* , *b* (Excel doesn't know the alphabet so copies the sequence)
12. In cells *S1* and *S2*, start with *a* , *1* (Excel extends part and copies part of the sequence)
13. In cells *T1* and *T2*, start with *Mon* , *9:00* (an example of two sequences intermixed)

## Extending Multiple Cells

Sometimes you may want to use only part of a built-in series. A good example would be working days of the week - ie missing out Saturday and Sunday. For this you have to base your sequence on more than two cells:

1. In cell *U1*, type *Mon*
2. Using the *fill handle* attached to cell *U1*, drag down the sequence to **U5** (ie **Fri**)
3. In cell *U6*, type *Mon* - press **<Enter>**
4. Select cells *U2* to *U6* (note: start at *U2*)
5. *Double click* on the fill handle (or drag it down) to fill cells *U7* to *U15*

Because this is a common requirement in the business world, Excel provides another much quicker way of achieving this particular sequence:

6. In cell *V1*, type *Mon* - don't press **<Enter>** yet
7. Using the *right mouse button*, drag the *fill handle* down to *V15*
8. From the pop-up menu which appears select **Fill Weekdays**

The same procedure allows you to select weekday dates:

9. In cell *W1*, type *today's date* (eg *21-July-2005*) - don't press **<Enter>**
10. Using the *right mouse button*, drag the *fill handle* down to *W15*
11. From the pop-up menu which appears select **Fill Weekdays**

Other options are **Fill Days** (gives all dates, including weekends), **Fill Months** (the same date for each following month) and **Fill Years** (the same date for each following year).

**Note:** You can also get to these options via the *Auto Fill Options* button.

## Linear and Growth Series

With numeric series, Excel has the ability to increment (add) or grow (multiply) by a fixed value. These produce extended linear and growth series. Examples of linear series have already been seen (in columns O, P and Q). Here's an example of a growth series:

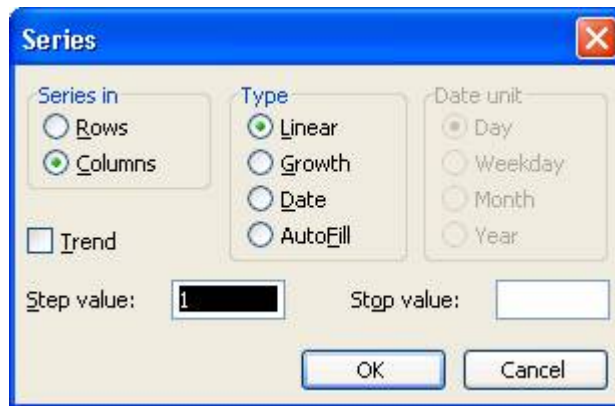
1. In cell X1, type 1 - press **<Enter>**
2. In cell X2, type 2 - press **<Enter>**
3. Select cells X1 and X2
4. Using the *right mouse button*, drag the *fill handle* down to X15
5. From the pop-up menu which appears select **Growth Trend**

This produces the series 1, 2, 4, 8, 16 - ie multiplication by 2.

**Note:** Other options allow you to **Copy Cells** (gives sequence 1, 2, 1, 2, ...) and **Fill Series** (gives 1, 2, 3, 4 ... - using this you need only type in a single value to extend a sequence). You can also **Fill Formatting Only** (which copies just the formats of the source cells, leaving the destination cells empty) and **Fill Without Formatting** (which extends a sequence omitting any cell formatting). These options are also available via the *Auto Fill Options* button (see later).

You can also set your own *step value* via this pull-down menu:

6. In cell Y1, type 10 - don't press **<Enter>**
7. Using the *right mouse button*, drag the *fill handle* down to Y15
8. From the pop-up menu which appears select **Series...** - the following window appears:



9. In the new *Series* window set the required **Step value** (here type 0.5)
10. Keep the *Type* as **Linear** (ie 10, 10.5, 11, ...) - press **<Enter>** or click on **[OK]** to fill the cells
11. **[Undo]** the results and repeat steps 7 to 10 but this time choose **Growth** (ie 10, 5, 2.5, ...) and set a **Stop value** of 0.01 - only the first 10 values appear

## Trends

A final option available from the pull-down menu fits a trend line through your data (a best fit straight line through the values), amending them to fit the closest linear or growth series. This is rather mathematical for most users but it's interesting to see how it works:

1. Starting in cell Z1, type 0.7 - press **<Enter>**
2. In cells Z2 to Z4 type 1.5, 3.1 and 5.9
3. Click on Z1 then, using the *right mouse button*, drag the *fill handle* down to Z4
4. From the pop-up menu which appears select **Series...**
5. In the *Series Window* click on the **Trend** option
6. Set the *Type* to **Linear** and click on **[OK]**

The resultant values (0.22, 1.94, 3.66 and 5.38) may look confusing but they are the values obtained by fitting a straight line (a linear trend) through the data. Each value is 1.72 bigger than the previous one in the series.

7. Press **<Ctrl z>** or click on **[Undo]** to reset the values
8. Repeat instructions 3 to 6 above, but this time set the *Type* to **Growth**

The new values might seem even more confusing, though they match the original ones better. Each is roughly twice the previous one - the growth factor is approximately to double each time.

## Customising a Series

The series built into Excel are very useful but each user will also have need for their own data values. You can create your own lists, which can then be used in exactly the same way as the pre-defined ones. Starting on a new worksheet, create a list of names (eg students on a course or members of staff in a department):

1. Move to *Sheet2* then type the first name into cell *A1* and press **<Enter>**
2. Type further names into cells *A2* to *A6* - if you want the names in alphabetical order, click on the **[Sort Ascending]** button
3. Open the **Tools** menu and choose **Options...** then click on the *Custom Lists* tab
4. Click in the *Import lists from cells:* box and type **A1:A6** (or drag through the cells to fill in the box) then click on **[Import]**
5. Click on **[OK]** to close the *Options* window
6. Move to cell *B1* and type in any name from the new list then *double click* on the *fill handle* to fill cells *B2* to *B6*

You can also set up a list by typing it directly into the *List entries:* box on the Custom Lists tab:

1. Open the **Tools** menu and choose **Options...** then click on the *Custom Lists* tab
2. Click in the *List entries:* box to set the typing position here
3. Type in another list (eg the alphabet), pressing **<, >** or **<Enter>** between each list item
4. Click on the **[Add]** button to add the list to those already defined
5. Click on **[OK]** to close the *Options* window
6. Move to cell *C1* and type in any name from the new list then *double click* on the *fill handle* to fill cells *C2* to *C6*

To edit a custom list:

1. Open the **Tools** menu and choose **Options...** then click on the *Custom Lists* tab
2. Select the list to be edited from the *Custom lists:* box - eg the list of names
3. Make the required changes (corrections, additions or deletions) in the *List entries:* box
4. Click on the **[Add]** button to amend the original list
5. Click on **[OK]** to close the *Options* window

6. Move to cell **D1** and type in any name from the new list then *double click* on the *fill handle* to fill cells *D2* to *D6*

To delete a custom list:

1. Open the **Tools** menu and choose **Options...** then click on the *Custom Lists* tab
2. Select the list to be deleted from the *Custom lists:* box
3. Click on the **[Delete]** button to remove the original list
4. Press **<Enter>** or click on **[OK]** to confirm the deletion
5. Click on **[OK]** to close the *Options* window

Note that customised series like the above can be used for sorting data (as can the built-in series - eg to sort by the days of the week or months of the year). See the [Advanced Sort Options](#) notes in *Sorting, Subtotals and Outlines in Microsoft Excel 2003*.

## The Auto Fill Options Button

Whenever you use the cell handle to extend a series or copy a formula, the *Auto Fill Options* button appears.

1. Move to cell *E1* and type in a date
2. Drag the *fill handle* down to *E15* - the *Auto Fill Options* button appears
3. Click on the *Auto Fill Options* button and select the series required - eg **Fill Months**
4. Now move to cell *F1*, type in the number 1 then move to *F2* and type in 2
5. Select both cells, apply a **[Currency]** style then *double click* on the *handle* to fill down to *F15*
6. Click on the **[Auto Fill Options]** button again and note the options have been suitable modified
7. Select the series required - eg **Fill Without Formatting**

You can investigate other series, if you like, to see what options are provided. If you like this new feature then make use of it. Note that a related *Paste Options* button appears whenever you use *Cut* and *Paste*. Both buttons can be turned off, as follows:

1. Open the **Tools** menu and select **Options...**

2. Click on the *Edit* tab and, under *Settings*, click on **Show Paste Options buttons** to turn it off - press **<Enter>** for **[OK]** to close the *Options* window
3. Try filling a series - you'll find the button no longer appears