4   Copying cells

As in other Windows programs, you can also use "cut", "copy" and "paste" in Excel. You can copy a cell and paste the contents into another cell. This includes formulas. But copying and pasting is an art in itself in Excel, which is why this issue has its very own section in the book. It might be a little confusing at first, but once you have learned it, it is a great help that Excel can "think" by itself when you copy, for example, a formula.

4.1   Simple Copying

With "Simple copying" I mean copying the contents from one cell to one or more other cells when the content is a simple number or a text. You can copy cells with formulas in exactly the same way, but in the following chapter you will see that the consequences are a little different.

The first exercise is a simple copying of a cell.

1. Start with a blank worksheet. We need something to work with so type "Something" in cell B2 and press ENTER on the keyboard.
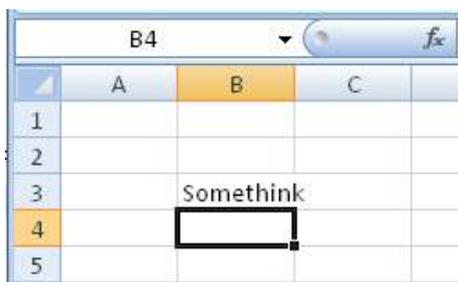
Figure 16: Type "Something" in cell B2.

2. Move the cursor back to cell B2, then copy the cell to the Windows Clipboard by either clicking the **Copy** button in the Ribbon or by holding down the CTRL key on your keyboard and pressing the C key.
3. Move the cursor back to cell B3. Notice that there is now an animated dotted line around cell B2. Excel always marks the cells that are copied to the clipboard in this way. The highlight will disappear as soon as you copy something else, write something in a cell or press the ESC key on your keyboard. Click the **Paste** button in the Ribbon or hold down the CTRL key on your keyboard and press the V key.
4. Now it should say "Something" in both cell B2 and B3.

This is the simplest form of copying. When you have inserted something, a small "copy button" appears next to the cell. Here you can control various settings for the copy function, but we will not review it here. You can try it yourself once you have mastered the basics.

We will try to copy cell B2 once more, but this time it will be copied to a lot of other cells.

1. If there is no longer an animated dotted line around cell B2, you must activate the cell and hold down the CTRL key on your keyboard while you press the C key.
2. Make cell D2 the active cell. Hold down the Shift key on your keyboard and use the arrow keys to select the region D2: G12. Alternatively you can mark it with the mouse, but I recommend once more that you get used to using the keyboard.
3. Hold down the CTRL key on your keyboard and press the V key.
4. Now it says "Somethink" in cell region D2: G12 (Figure 17).
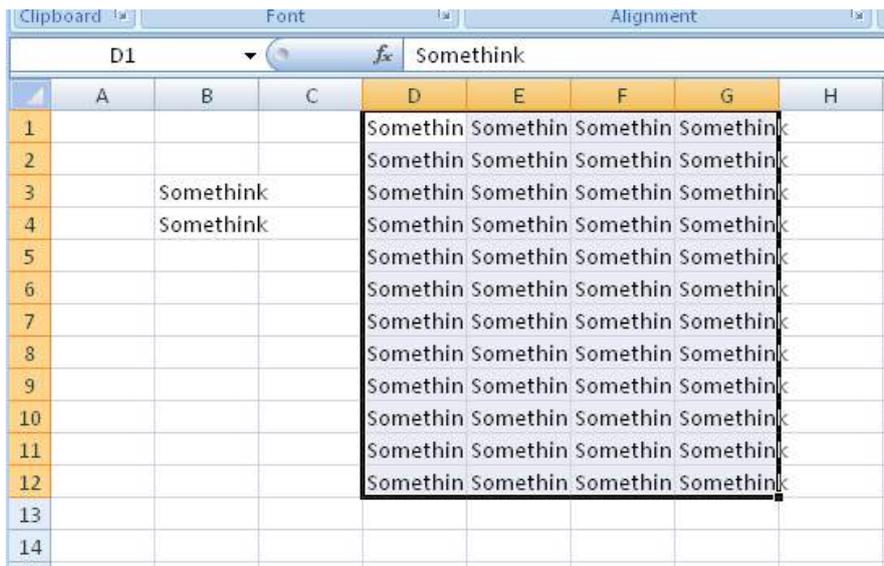
Figure 17: Now we have made more copies

Do you remember the section on the cell pointer and Auto fill? The Auto fill feature is located in the small black square in the lower right corner of the cell pointer. We will make a simple copy using it.

1. Activate cell B3.
2. Using your mouse, point to the little black square in the lower right corner of the cell pointer.
3. Press the left mouse button and hold it down while moving the mouse down until you have selected 5 cells.
4. Release the left mouse button.

Now you know the different ways you can perform a simple copying procedure. These methods are also used when copying cells with formulas.

4.2   Series

A series is a range of values that are linked. One example is the weekdays. After Monday comes Tuesday, and after Tuesday comes Wednesday. In my experience this never fails, and Excel knows this. Excel already knows the series for weekdays and months, but you can also define ranges yourself. Let us take a look at how it works.

1. Start with a blank spreadsheet and type "Monday" in cell B2.
2. Ensure that cell B2 is the active cell. Using your mouse, point to the Auto Fill square in the lower right corner of the cell pointer.
3. Hold the left mouse button down and drag the mouse to cell B12, then release the mouse button.

It should now look as shown in Figure 18.

Figure 18: We have inserted a series consisting of weekdays

When there are no more elements in the series, it simply starts over. You can see that in cell 19, where Excel writes "Monday" anew.

4.2.1   Series with Numbers

If you need to write a long row of numbers, Excel can also help. In this case there is no predefined series, but Excel tries to figure out what should be in subsequent cells from what you have already written.

Let us make a five-times table.

1. Start with a blank spreadsheet and type "5" in cell B2.
2. Type "10" in cell B3.
3. Select the cell region B2:B3, using either the keyboard or the mouse.
4. Point the mouse to the Auto Fill square. Keep the left mouse button down and drag the selection down to cell B11. Release the mouse button.

You have now made a five-times table in no time!

Figure 19: The five-times table.

Excel does not always understand what you have in mind, so sometimes you may not get the result you want. But if you have a regular series of numbers, you can at least try Auto Fill first before you start typing numbers into cells manually. If it works as intended, it is faster and you do not risk typing errors.

Try experimenting some more. You are not limited to starting with the values of only two cells. You can also try entering some initial values of three or more cells and see what happens.

4.2.2   Series that you define

You can define your own series. It could be the alphabet or the sequence of the Fibonacci numbers.

Let us try something simple. For example, if we write "First course", we would like Excel to continue with "Main Course", "Dessert" and "Coffee and brandy".

To define a series, we go into Excel's Option. You enter Options by clicking on the big round Office Button in the upper left corner. At the bottom of the box that opens there is a button that says **Excel Options**. Click on that.

In the settings you can change lots of things to make Excel work differently. I would not recommend that you start changing a lot until you are fairly familiar with the program because here it is possible to mess things up pretty badly.
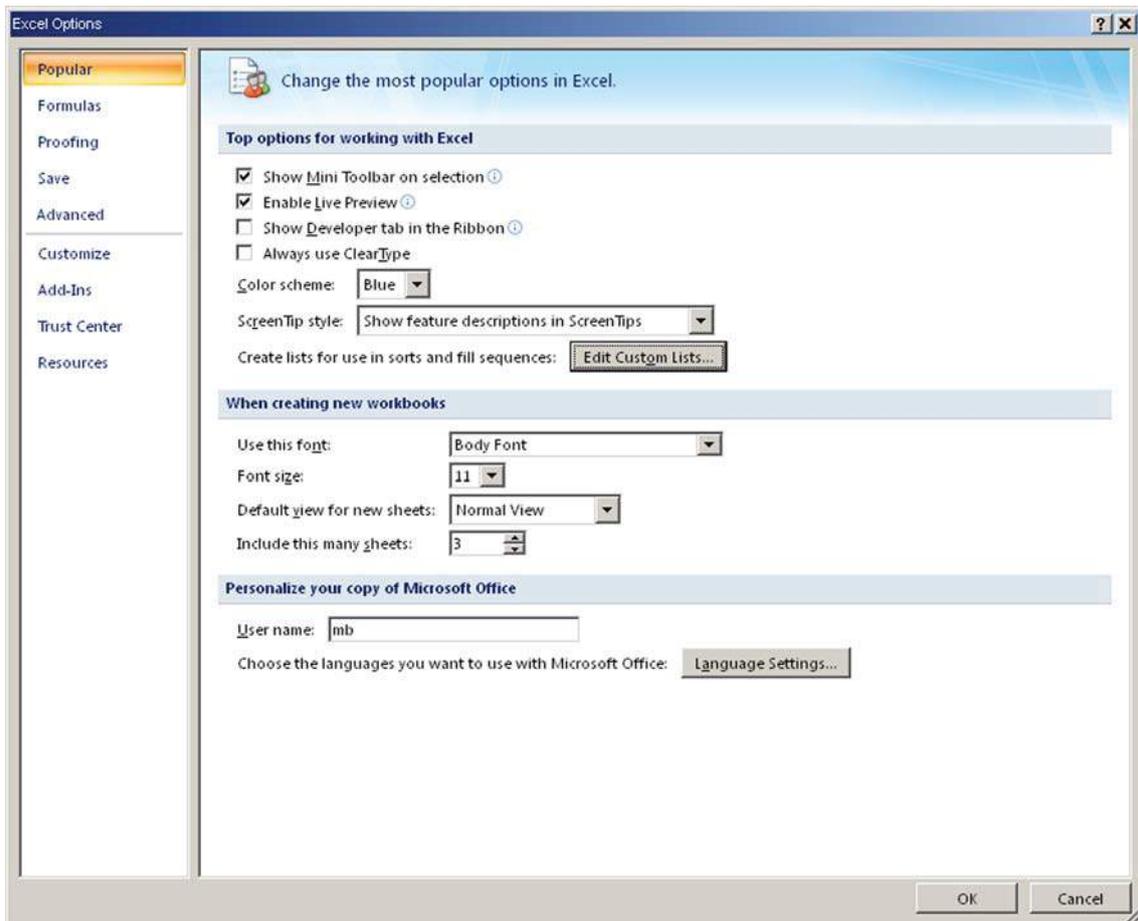
Figure 20: Inside Excel Options.

However, it is not "dangerous" to define your own series. Click **Edit Custom Lists** to get into the series. Excel uses the terms "series" and "lists" somewhat interchangeably, so do not let that confuse you.

Now you should be inside the same window as in Figure 21. There are two panes; one is an overview of the various lists you can choose, and the second shows the contents of the list you have selected.
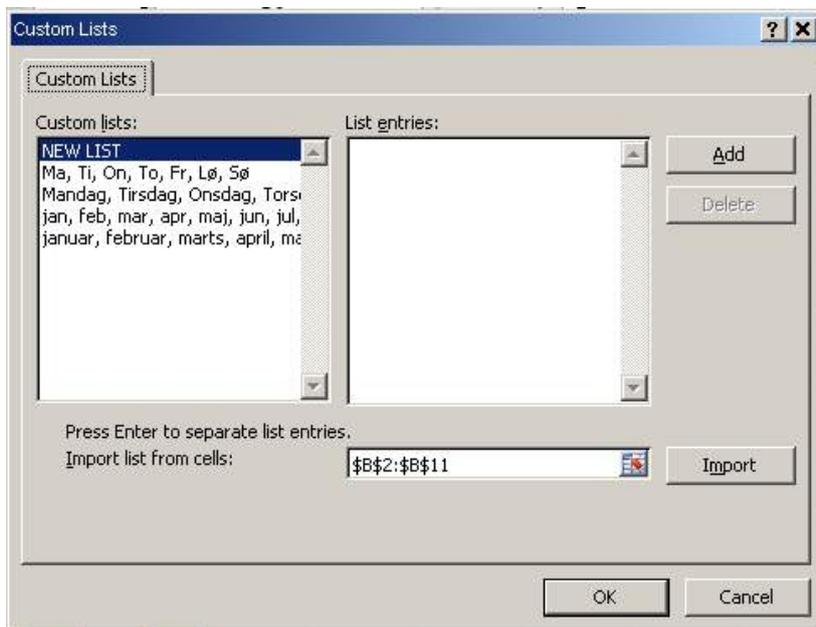
Figure 21: The "Lists" box

As mentioned above, Excel already has some pre-defined lists for weekdays and months. These lists cannot be erased or altered, but the lists you create you can do with what you want.

Let us make the list – or series if you prefer.

1. In the left pane, click on **NEW LIST**.
2. Click with left mouse button in the right pane.
3. Type First Course and press ENTER on the keyboard.
4. Type Main Course and press ENTER on the keyboard.
5. Type Dessert and press ENTER on the keyboard.
6. Type Coffee and Brandy, then press ENTER on the keyboard.
7. Click on the **Add** button, now you can see your list in the left pane.
8. Click **OK** to close the "Lists" window, then **OK** again to close "Excel Options".

Now your list is hidden discretely in the background until you decide to use it. We want to try it now, so let us start in a blank worksheet and type "First Course" in cell B2.

Figure 22: Our series put to practical use.

Now grip the mouse tightly, click on the AutoFill square and drag the mouse either down or to the right, then release the mouse button. If you dragged the mouse down, it will look like Figure 22.

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4.3   Copying Formulas

You have now learned the basics of how to copy a cell. Copying cells with formulas is done in exactly the same way, but there are some things in the formulas that you must learn to control. Excel will help you when you copy, so you do not need to edit the formulas that follow. Excel also does different things when you copy and when you cut cells with formulas, but we will return to that in due course.

Let us first get some material to work with. Let us imagine that we have a very small company who sell miracle cures against dry skin, and we want to calculate the monthly profits.

1. Make a spreadsheet exactly identical to what you see in Figure 26.

Figure 23: The starting point of the exercise.

The monthly surplus should appear in cell C5, D5 and E5, so we start by calculating the surplus for the month of January.

2. In cell C5, type "=C3-C4" and press ENTER.

Cell C5 should now show the result 250.

3. Now copy cell C5 to cell D5 and E5 as described in the section Simple Copying. The Result should be identical to the one in Figure 24.

Figure 24: If you have done everything correctly it will look like this.

Note that Excel has calculated the surplus for February and March correctly as well. This is because it has automatically moved the references.

If you select cell D5 and look at the formula bar, you can see that the formula is "= D3-D4" and not "= C3-C4", as you wrote in cell C5.

As a starting point, Excel works with something called "relative references", which means that the cell references are changed accordingly when you copy a cell with a formula to another location.

This applies only when you copy the cell. If you instead cut cells and paste them somewhere else, the original cell references will be retained.

4.3.1   Relative and Absolute References

When you copy formulas, the concepts "relative" and "absolute" references are important to know. Let us continue our little exercise in which we must now calculate with a fixed monthly expense.

1. In the spreadsheet, we are already working with, type "rent of storage" in cell G3.
2. Type "300" in cell H3.
3. Type "rent of storage" in cell B7, and type "Surplus" after " rent of storage in cell B8.
4. Change the text in cell B5 to "Surplus" before "rent of storage".

You will probably have to adjust column width in some places to display it all.

You have now prepared a spreadsheet as shown in Figure 28

5. In cell C7, type "=H3" and press ENTER. It now says you have $50 for rent in January.
6. Now copy cell C7 to cell D7 and E7, using one of the methods we have been practicing.

No, you are not doing anything wrong – the cells are supposed to display 0! If you click on cell 7, you can see that in the formula bar it says "J3". This is a case where relative references cannot be used. Instead we must use an absolute reference.

7. In cell C7, type "=H3" and press ENTER.
8. Copy cell C7 to cell D7 and E7.

Now it says 300 in all three cells. The dollar sign "locks" a row or column, so that the reference will always be for that row or column, no matter where we copy the cell to.

Try clicking on cell C7, then click the formula in the formula bar so you can edit it. Now try pressing F4 a few times. With F4 you can add and remove dollar signs in the cell reference. Of course you can also just type the dollar signs the usual way.

Let us try another exercise, this time with the Multiplication Table.

1. Create a new spreadsheet as shown in Figure 25.
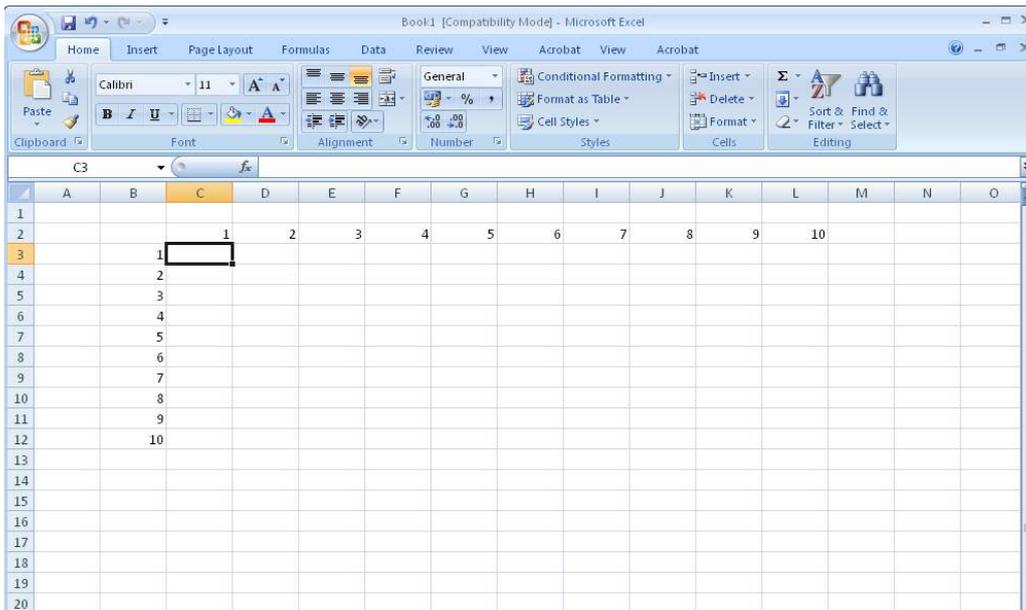
Figure 25: Making the Multiplication Table.

The idea of the Multiplication Table is that you can see the result if you multiply a number in the top row with a number in the left column. So let us make some formulas to calculate each cell.

2. In cell C3, type " =C2*B3" and press ENTER.

We know from first grade that 1 times1 equals 1, so everything seems fine so far.

3. Copy cell C3 to the region C3:L12 and let us see what happens. Be prepared for a less than pretty sight!

Once again it is the relative references that are tricking us. Some sums are calculated incorrectly. Some cells even show the value "# NUM!", Which means that the number is too large for Excel to calculate!

Other cells, like cell F6, display cryptic values, such as "1.1E+11". That is because the number in itself is too large to show in the normal way. In the case of "1.1E+11" it means that you must multiply 1.1 with 10^{11}.

Or to put it differently, you must multiply 1.1 with 100.000.000.000 (11 zeros)

Figure 26: This is what it looks like when you have copied cell C3 to the entire region.
There is definitely something wrong!

Take a look at the formulas in the individual cells. Because of the relative references, it is not the numbers in row 2 that are multiplied with the numbers in column B. We need change to change that!

4. In cell C3, type "=C$2*$B3" and press ENTER.
5. Copy cell C3 to the entire region C3:L12 once more.

Now the table should look like Figure 27

Figure 27: The Multiplication Table as it is supposed to look.

This time we have used the dollar signs to lock row 2 and column B respectively, so they now have become absolute references.

If this is clear you are now in a good position to move forward. The concepts of relative and absolute references are ones that many people find difficult, so if you have not understood it yet, I recommend you put the book aside for today and sleep on it. Tomorrow you can calmly read this section once more and do the exercises without haste. Trust me, you will get it eventually

You are now familiar with the basic concepts of Excel, and you can make spreadsheets. Later in the book we will proceed with more advanced functions and formulas, but it is probably time we learned to make it all look a little more inviting.