

Animations with Excel The Essential Tools

All of the essential tools for making Excel spreadsheets “come alive” are in the Control Toolbox. You can right click on your button bar to select Control Toolbox, or you can go to View... Toolbars... Control Toolbox. The “Triangle and Pencil” button turns the controls on and off. This is called going from “user” mode to “design” mode.

There are many controls that may be useful to you. Here we focus on three: The scroll bar, the combo box (drop-down menu), and the button (with Visual Basic).

THE SCROLL BAR:

To create a scroll bar in a spreadsheet, click on the scroll bar button in the Control Toolbox (it will identify itself when you mouse over) and “click and drag” one onto your screen. You can put it anywhere, horizontally or vertically.

Right click on the scroll bar. Choose “properties.” The important properties are “Linked Cell” and “min” and “max”. In the space for Linked Cell, type B2. In the space for min, type “0”. In the space for max, type “40.” Close the properties box.

Click on the triangle button to get out of “design” mode. Try moving the scroll bar and see what happens in cell B2. You can now graph anything that depends on cell B2 and it will move as you move the scroll bar.

Hint: In cell B3 type “0”. In cell B4 type “40”. In cells C2, C3, and C4 type “2”. Highlight all three cells and click on the graph button. Choose XY-scatter and choose dots without connecting lines. Finish the graph and try moving the scroll bar.

Notes on scroll bars:

1. Scroll bars only produce integers. If you want a decimal, have the scroll bar produce an integer in a cell you don't want and then divide that by some large number (say 100) in another cell. Use the second cell as your decimal.
2. Scroll bars only produce positive integers. If you want negative numbers, let the scroll bar produce positive numbers in one cell and then subtract off the amount you want in another cell. Use the second cell for your negative numbers.
3. The largest integer your scroll bar can produce is 65535.

THE COMBO BOX (drop-down menus):

A drop-down menu is useful when you want to offer a few choices but only a few. Each choice appears as an option on the menu. The user clicks one option and that choice is reflected somewhere else on the spreadsheet.

Click on the combo box button on the control toolbox. Click and drag to create a combo box on your screen. It can only be horizontal (the options will drop down).

Right click on the combo box and choose “properties.” The crucial properties are Linked Cell and List Fill Range. Write “C1:C3” under List Fill Range and write “E1” under linked cell. Close the properties box and get out of design mode. Nothing will happen yet.

Now write “small” in cell C1, “medium” in cell C2, and “large” in cell C3. Go back to the drop down box. Click on the arrow and you should see “small”, “medium”, and “large” as your three choices. Click on one of them. It should appear in cell E1.

Now to use that you need to convert your options (presumably written in English) into something that the spreadsheet can read. Enter the following text in cell E2:

```
=IF(E1="small",1,IF(E1="medium",5,10))
```

That says if E1 is small, make E2 “1”, or else if E1 is medium, make E2 5, or else make E2 10 (since “large” is all that’s left).

Now type three names (like Huey, Dewey, and Louie) in cells C7, D7, and E7. In cell C8 type “1”, in cell D8 type “=E2”, and in cell E8 type 10. Now highlight all six cells and click on the graph button. Choose bar graph, first option, and make your graph. Get out of design mode and try options on your combo box. The graph should move accordingly.

BUTTONS WITH VISUAL BASIC:

First a disclaimer. Don’t worry that you don’t know Visual Basic. Neither do I. You can do a lot with very little and there is online help available.

Second, let me suggest a good idea that is not completely necessary. It has to do with naming variables. Name your variables. It will make life easier later.

Naming Variables:

Excel refers to variables as things like C7, D8, and E2. Those names are hard for humans to remember. If you still have your Huey, Dewey, and Louie spreadsheet open, click on the cell under the word Louie. It should say “E8” in the upper left hand corner of your screen (it says this in the place called the “name box”).

While you still have cell E8 selected, go to the menu and choose Insert... Name... Define. Excel now gives you the ability to name that cell with a name you can remember. You can choose anything but Excel is probably suggesting that you use the name Louie. You can write anything (such as “Donald”) and use that as the name of that cell, but Louie makes a lot of sense, so go ahead and use Louie. Click OK.

Click on cell E8. The name box should say “Louie”. You can still refer to that cell as E8 (try writing =E8 in any empty cell) but you can also refer to it as Louie (try writing =Louie). For many applications it makes more sense to use a meaningful name than it does to use the cell address. For others you may want to use the address. When you are using Visual Basic, you often cannot see the spreadsheet in front of you and this makes addresses hard to remember. In the following example we will use a name.

Command Buttons.

Let’s insert a button to make Louie grow. Go to the Control Toolbox. Click and drag a command button onto your screen. It will probably say “command button 1” on it.

Right click on the button and choose properties. The only one you want to worry about right now is the “caption”. It should say CommandButton1. Change that to “Make Louie Grow.” Close the properties box. The button should be labeled with the new caption.

While still in design mode, double click on the button. Excel immediately calls up the Visual Basic (VB) screen. You are all set to enter the instructions for CommandButton1 (we just changed the caption but it is still CommandButton1).

The instructions can be simple or complicated. You need to tell the computer what variables you will be using and what type of variables they are (usually “Integer” or “Single” precision floating point number). You need to tell the computer where to find appropriate information within the spreadsheet. You need to tell the computer what to do with that information. Then you need to tell it where to write the result.

Copy this text into the VB screen:

```
Private Sub CommandButton1_Click()  
Dim lou As Single  
Dim deltalou As Single  
Dim imax As Integer
```

The variables lou and deltalou are Single precision decimals. Imax is an integer.

```
Range("Louie").Select  
lou = ActiveCell.Value  
If (lou > 0) Then ActiveCell.Value = 0
```

Read what is in the cell “Louie” and assign that value to “lou”. If Louie isn’t zero, then make it zero and write “0” back into that cell.

```
Range("delta").Select  
deltalou = ActiveCell.Value  
Range("steps").Select  
imax = ActiveCell.Value
```

Read what is in the cells delta and steps and assign variables deltalou and imax to those values.

```
For i = 1 To imax  
    Range("Louie").Select  
    lou = ActiveCell.Value  
    lou = lou + deltalou  
    ActiveCell.Value = lou  
Next i
```

Step through this loop “imax” times and add deltalou to lou each time.

As written, this won't work. It won't work because we have asked the computer to read what is in cells delta and steps but there are no such cells. You need to create them. Somewhere on your spreadsheet create a cell called delta and give it a value of 0.01. Now create a cell called steps and give it a value of 4000.

Your Make Louie Grow button should now work.