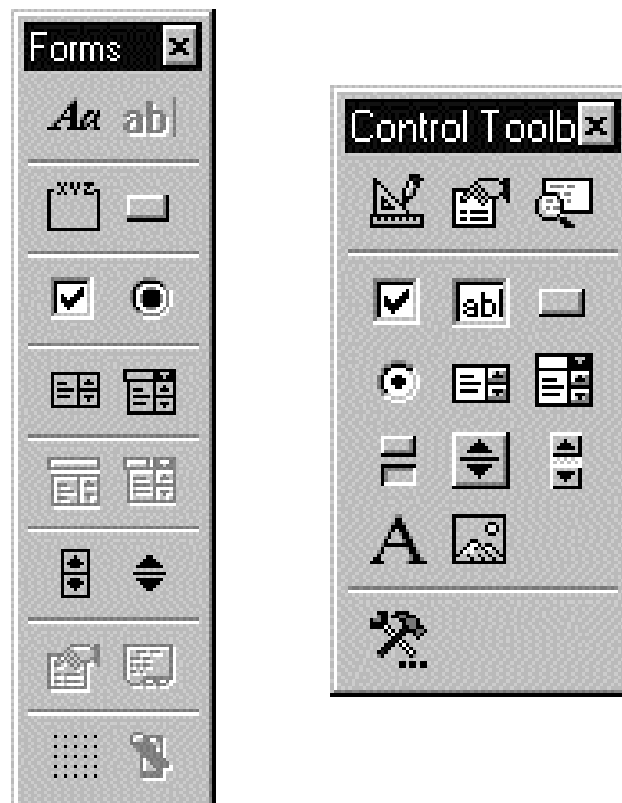

Notes on Excel Worksheet Controls



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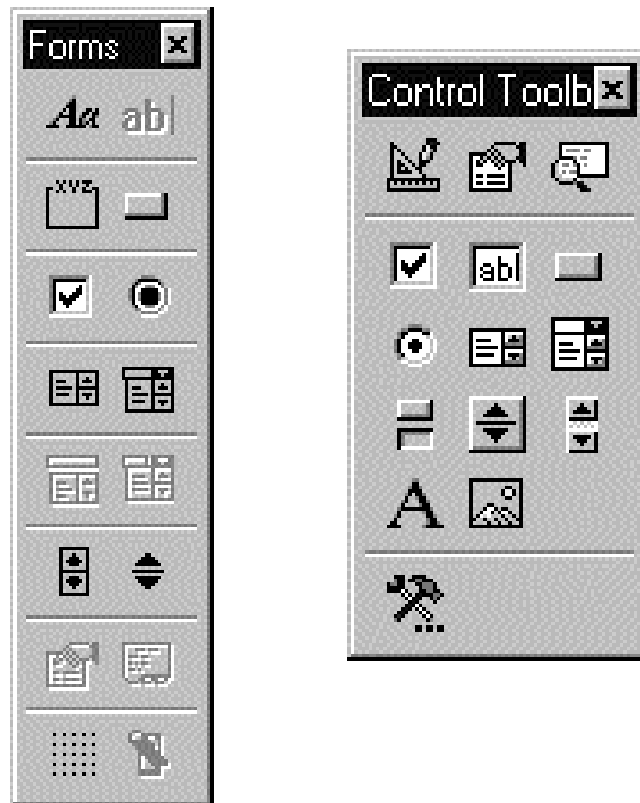
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Notes on Excel Worksheet Controls

Introduction

You can build a custom form for a worksheet by using Excel controls. Buttons, check boxes, drop-down lists, spinners, and other kinds of controls can make a worksheet easier for you and others to use.

There are two categories of Excel controls you can choose from, and there's a close correspondance between the two. Controls on the **Forms** toolbar are something of a holdover from earlier versions of Excel. These controls don't require any special programming or definition other than what can be provided from within Excel itself. Use a control from the Forms toolbar when you need a control to run a single macro or for a simple interactive worksheet. In contrast, controls from the **Control Toolbox** are more sophisticated. They're closely linked to Excel's Visual Basic for Applications (VBA) environment and require that you write code to manage how the control works. For forms and dialog boxes intended for custom VBA programs or for use on the Web, these controls are more suitable. If you write a macro for a control from the Control Toolbox the macro code is stored with the control itself.



The Control Toolbox contains a number of options that aren't available on the Forms toolbar, such as toggle buttons and image controls.

When you add a control to a worksheet, you can change the properties of the control. The properties of a control define things such as its appearance, the cell or range of cells the control refers to, and the state of the control (for example, if a check box is selected or clear by default).

If you choose to do so you'll have an opportunity to employ some controls from the Control Toolbox in Assignment 3, Level 2 and I'll provide notes about how to manage those controls for that assignment. An in-depth discussion of Control Toolbox controls is beyond the scope of this handout but you can find more information about them in the Visual Basic for Applications help system that's part of MS Office. The rest of this discussion focuses on the simpler controls that are located on Excel's **Forms** toolbar.

Using Forms Toolbar Controls

All the control buttons on the Forms toolbar work using the same two-part process:

- 1) Draw the control on the worksheet, and
- 2) Format the control.

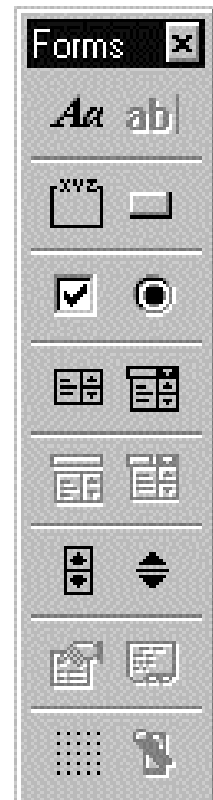
Formatting a control determines what data is associated with the control. In addition, formatting can change a control's protection status, how it moves when underlying cells are moved, and what its data entry limits might be.

Drawing a Control

To draw a control, first display Excel's Forms toolbar (*View, Toolbars, Forms*).

Then to draw a control on a worksheet:

1. Click the button on the Forms toolbar that represents the control you want to draw. As soon as you make your selection, your mouse pointer takes on a crosshair shape.
2. Move the crosshair to the top left corner of the spreadsheet where you want the control to appear. Drag down and right to make a space for the control.
3. Release the mouse button. The control appears. Black handles at the corners and edges show that the control is selected. In its selected state, the control you just added to the worksheet can be moved, resized, or have properties changed.



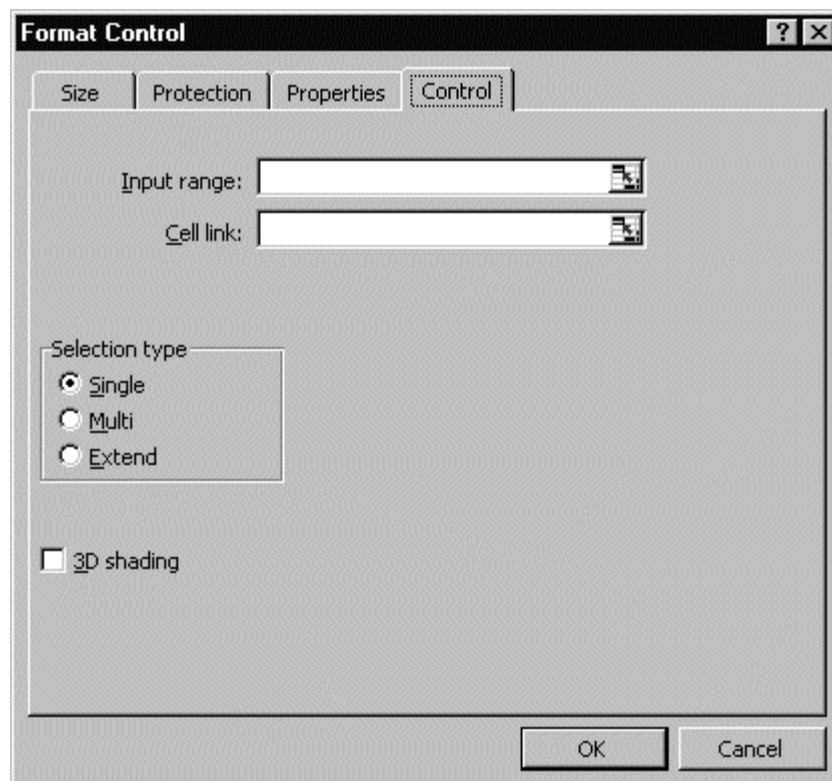
Controlling a Control

As long as a control is selected, you can move it by dragging an edge.

- Resize a selected control by dragging one of the black handles on a corner or an edge.
- Delete a selected control by pressing the Delete key.
- De-select a selected control by pressing the Escape key.
- Re-select an unselected control by right-clicking or CTRL+clicking it.
- To select multiple controls, depress the SHIFT and CTRL keys and click each control to add it to the selection.

Changing a Control's Format

1. Right-click the control to display the control's shortcut menu.
2. Choose the *Format Control* command from the shortcut menu. The "Format Control" tabbed dialog opens. This dialog is *context-sensitive*; it may display different tabs and different prompts depending on the control you're formatting.



Example of a Format Control dialog box.

3. Select the tab that addresses the aspect of the control you want to format, and select options available on that tab.

One of the most important tabs in the “Format Control” dialog is the “Control” tab. Its settings determine the default value for the control, its data limits, and where Excel will store any data the user enters.

Summary of the Varieties of Controls and How They Work



The Check Box

Used to collect True/False responses.

The check box control is linked to a cell. The result of the check box status appears as TRUE or FALSE in the linked cell. The user’s selection of the check box results in TRUE; de-selection results in FALSE.

This control is often used with an IF function that examines the TRUE or FALSE status of the linked cell.

For example,

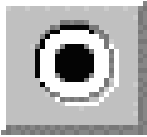
=if(LinkCell,TrueResult,FalseResult)

Or:

=if(\$B\$35,"Local","International")

To set defaults and the cell link on a check box:

1. Right-click the check box and choose *Format Control*.
2. Select the “Control” tab in the “Format Control” tabbed dialog.
3. Select the default value of the check box (unchecked for FALSE, checked for TRUE, Mixed for Not Applicable).
4. Select the “Cell Link” edit box and click the cell in which you want to hold the results (TRUE, FALSE) of the check box.
5. Choose OK.

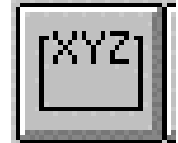


Option Button

Used most often to make a single choice from a group of options.

If you draw several option buttons on a worksheet, all these buttons will belong to the same group, so the user will be able to select only one button at a time. However, you can enclose a group of buttons in a group box (drawn with the group tool) and these buttons will function separately from any outside the group box or any other group box.

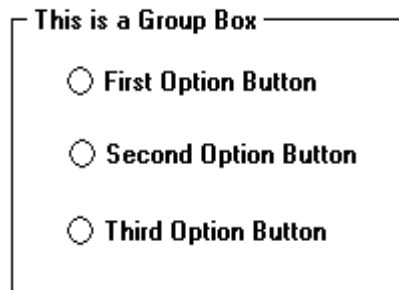
The result from a group of option buttons appears in one, linked cell.



The Group Box tool.

To create a group of option buttons:

1. Draw a group box with the group box tool. While the box is selected, type a title to replace the default box title.
2. Click the option button tool and draw an option button within the group box. Type a title while the option button is selected.



3. Right click the option button and choose *Format Control* to display the "Format Control" tabbed dialog. Select the Control tab and select a value for the option button (unchecked, checked, mixed).
4. Select the Cell Link edit box and click the worksheet cell that you want to contain the results from the group of option buttons.
5. Return to step 2 to create another option button. Remember that all option buttons in a group box share the same cell reference. Repeat for the number of option buttons you want in your box.
6. When you're through, click outside the group.

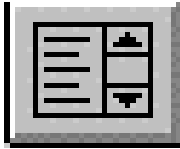
Because only one linked cell exists for all option buttons in a group, if the first button is selected, the linked cell holds **1**. If the second button is selected, the linked cell holds **2**, and so on.

The CHOOSE function can be used to turn the numeric choice into different results. For example:

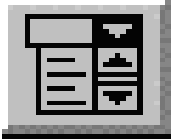
=choose(LinkCell,Result1,Result2,Result3...)

Continuing with this example: Assume that a group box contains 3 option buttons linked to cell B35. Selecting option buttons would produce the numbers 1, 2, or 3 in cell B35. To convert 1, 2, or 3 into three text results, use this formula:

=choose(\$B\$35,"Saturday","Sunday","Monday")



List Box or Combo Box



A list box and a combo (drop-down) box produce the same result, but they look different to the user. A list box shows multiple items in a list while the list itself stays the same height. A combo box (drop-down or pull-down list) is only one item high and has a down-arrow at the right. Clicking the arrow displays the list. A combo box is especially convenient when there's not enough room on the interface to accommodate a list box.

The List Box control.



The Combo Box control.



To create a list box or a combo box:

1. On the worksheet, enter a column with the items you want to appear in the list. Enter one item per cell.
2. Click the list box or combo box tool button and draw a list box on the worksheet. If the list box can't be wide enough to show all the text of each item, make it at least wide enough so the user can distinguish between items. Make a list box tall enough so you can see multiple items. Make a combo box tall enough for one item.
3. Right click the list and choose *Format Control* to display the "Format Control" tabbed dialog. Select the Control tab. Note that if you're working on a list box, the Control tab includes a "Drop Down Lines" entry. A combo box's tab won't have this option.
4. Select the Input Range box and drag across the range in the worksheet that contains the list. This is the list that will appear in the list box or combo box.
5. Select the Cell Link box and click the cell that will receive the results of the list.

6. If you're formatting a combo box, enter in the Drop Down Lines box the number of lines that should display when the list appears.

The result of a selection from a list is the number that's the position of the selected item in the list. If a user selected the second item in the list, for example, the linked cell holds **2**. If you want to convert this number into an actual item in the list, use the CHOOSE function described earlier, or use the INDEX function. The syntax of the index function is:

=index(ItemList,LinkCell,1)

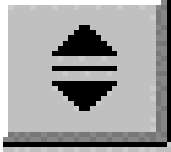
For example, assume that a list of items in the range B10:B20 is used for the range in the Input Range box. The link cell for the list is C15. This cell is where the numeric position of the item the user selects will appear. In another cell you can show the item selected with the formula:

=index(\$B\$10:\$B\$20,\$C\$15,1)

This function looks down the list B10:B20 to the row specified in C15. The item in that row of the list (1) is then returned to the cell that contains the index function.

Another useful technique with lists is to choose from one list but use a corresponding value from another list. This can be useful for selecting easily-recognizable items from a list but then letting Excel find corresponding but harder-to-remember information from another list. You could use this technique to look up items by name or description but then return more arcane information such as part number, price, weight, or SKU.

To use a two-list lookup, you need two lists. One is used as the Input Range for the control, and it's the list the user sees. The other is used to find the result you want to retrieve and have appear in the worksheet. You use the number that's the result of the user selection in the first list to access corresponding arcane information from the second list.



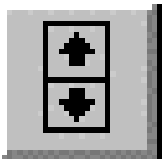
Spinner

A spinner increases or decreases the amount in the cell linked to it. Holding down the mouse button on a spinner makes it change continuously.

Note that using a spinner can cause a great deal of recalculation in a worksheet unless you control worksheet recalculation deliberately. See the end note on recalculation.

To set the defaults and limits on a spinner control:

1. Right-click the spinner control and choose the *Format Control* command.
2. On the “Format Control” tabbed dialog, select the “Control” tab.
3. In the Current Value box, enter the amount you want the linked cell to have by default when the worksheet opens.
4. In the Minimum Value box, enter the lowest value you want the spinner to produce. In the Maximum Value box, enter the highest. Set the amount of change for each click to the spinner in the Incremental Change box. (The Page Change box isn’t used for spinner control.)
5. Select the Cell Link box and click the cell in the worksheet that you want to receive the spinner result.



Scroll Bar

A scroll bar, or slider, lets a user select from a wide range of numbers while getting a visual impression of where their entry lies within the possibilities. The scroll bar can be drawn to operate vertically or horizontally. To enter a number, the user clicks the top or bottom arrow for incremental change or the gray part of the bar for a “page” amount of change. Or, the user can drag the square button in the scroll bar.

Like a spinner, a scroll bar can cause a great deal of recalculation in a worksheet unless you control worksheet recalculation deliberately. See the end note on recalculation.

To set scroll bar defaults:

1. Right-click the scroll bar control and choose the *Format Control* command.
2. On the “Format Control” tabbed dialog, select the “Control” tab.
3. In the Current Value box, enter the amount you want the linked cell to have when the worksheet opens.

4. In the Minimum Value and Maximum Value boxes enter the lowest and highest values you want to allow. In the Incremental Change box, enter the amount of change for each mouse click on the control. In the Page Change box, enter the amount of change you want when the user clicks the gray part of the scroll bar.
5. Select the Cell Link edit box and click the cell in the worksheet you want to receive the scroll bar result.

Recalculation

When a control's result changes, the worksheet immediately recalculates. For selections from a list in a dialog box, for example, this recalculation is minor and won't cause much delay. However, using a spinner to spin through a series of numbers or using a scroll bar to select a value can cause significant recalculation and significant delays.

A straightforward solution to this problem is to turn off automatic recalculation (*Tools, Options, Calculation, Manual*). Then to recalculate, the user presses the F9 key.

An alternative is for the system designer to *hide* changes until it's appropriate to recalculate. With this method, you leave the worksheet in automatic calculation mode, but hide the changed number from the spinner or scroll bar by putting the control's result inside an IF function. The IF function is then controlled by a check box control, which the user can operate. When the check box control is selected (e.g., it's appropriate to recalculate), the IF function reveals the changed result and the worksheet recalculates. When the check box control is de-selected, the IF produces the #NA error by using an NA() function.