

# Mastering Excel's Form Controls

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## Using Form Controls on sheets

Form controls include check boxes and option buttons that you typically see in Windows-based dialog screens.

You can use Form controls to improve and simplify your spreadsheet interface. They also add structure and reduce errors by automatically validating entries.

We will examine four types of controls that can simplify choosing options in a spreadsheet.

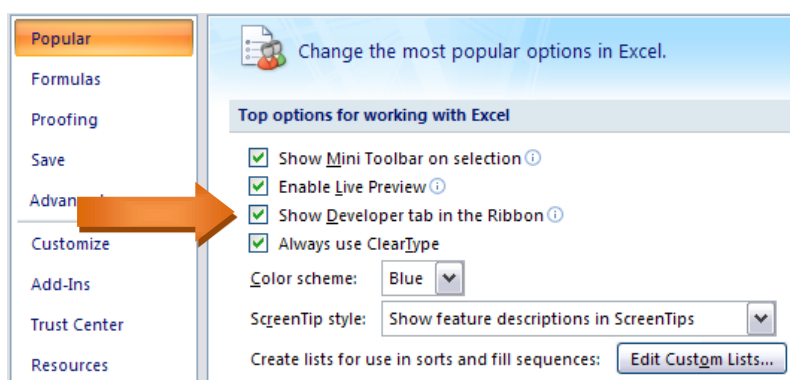
- Check boxes
- Options buttons
- Scroll bars
- Combo boxes

The Form Control tools are on a Ribbon that is hidden with the standard installation of Excel and you need to change a setting to make it visible.

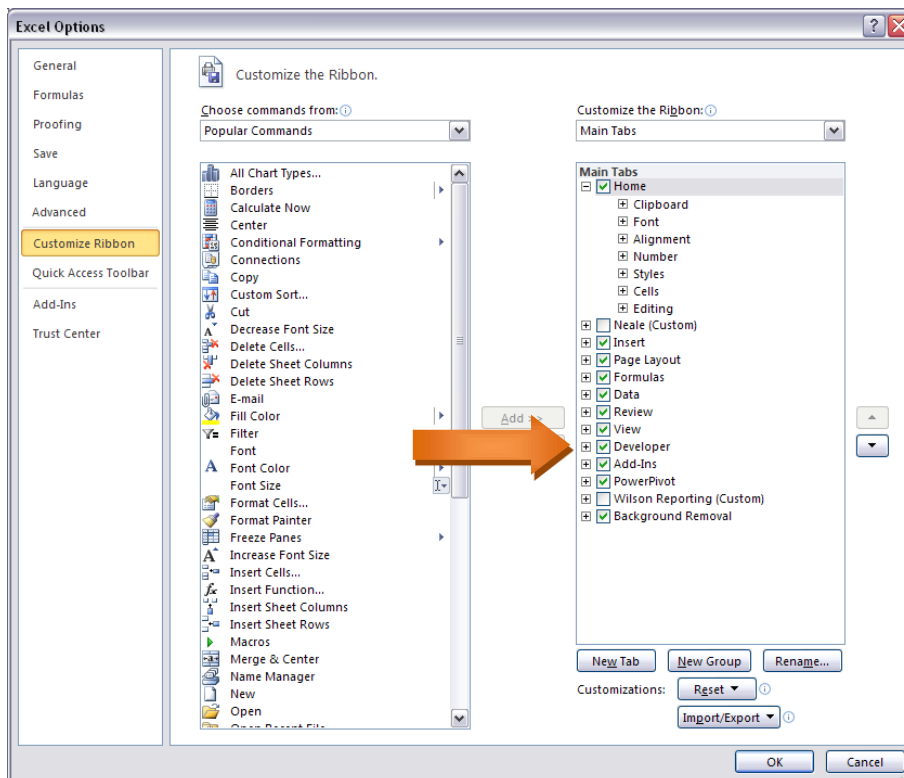
## Adding the Developer Ribbon

The Developer Ribbon tab contains the Insert icon used for Forms. You need to make it visible. Note, you only need to do this once. How you make it visible depends on your Excel version.

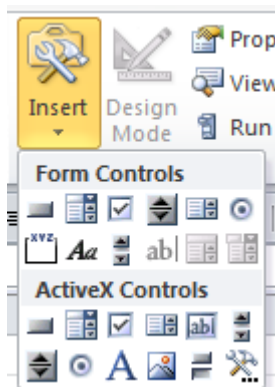
**Office 2007** - Click the round Office button, click Excel Options and tick the Show Developer tab in the Ribbon option, click OK.



**Office 2010** – right click the ribbon headings and click Customize Ribbon and tick the Developer option (see image below) and click OK.



## Form Controls vs ActiveX Controls



The Insert icon on the Develop Ribbon tab has two sections.

Form Controls are at the top and they are the controls we'll be examining in this session.

The ActiveX controls are very similar, but are more complex to use and can have some issues running on different systems. I advise avoiding the ActiveX controls in most situations.

## Check Boxes

A check box is used to allow a user to select or de-select an option. Check boxes are ideal to allow users to quickly "turn off" or "turn on" certain features or calculations in a spreadsheet.

The check box is linked to a cell. That cell will contain TRUE if the check box is ticked and FALSE if it isn't. You can then use the TRUE or FALSE in calculations to zero calculations by multiplying by the linked cell. Remember that TRUE = 1 and FALSE = 0.

**PRACTICE**

1. In the Checkbox sheet notice there are 5 check boxes already on the sheet. Clicking these check boxes will zero that line's costs.
2. We will create a similar control for the inflation factor.

Select the cell D6. Click on Insert in the Developer Ribbon tab.

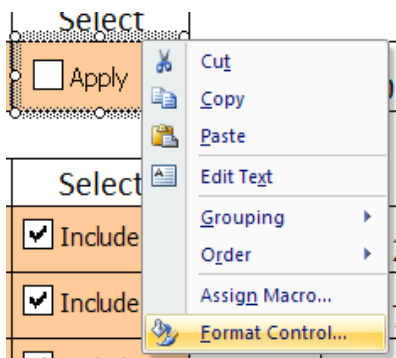
3. Click the check box icon in the Form Controls section.



4. The mouse will now have a cross hair - draw a rectangle over cell D6

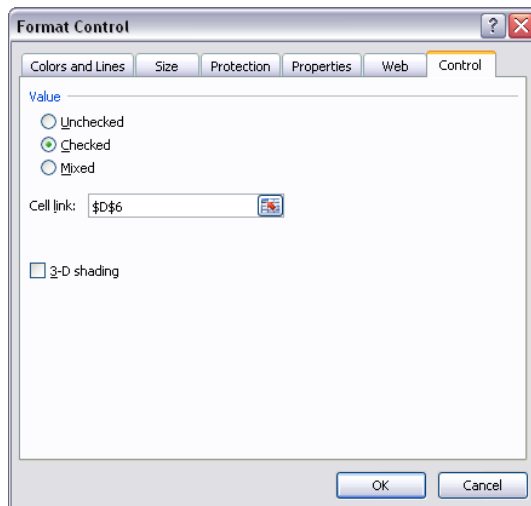
	Input	Select	
Inflation	4%	<input type="checkbox"/> Apply	100.3

5. Click on the check box and change the text to Apply – see image above.
6. Right Click the check box and select Format Control

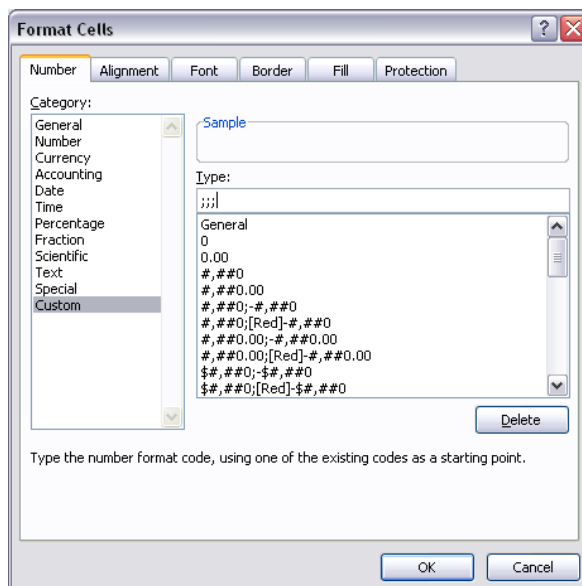
**TIP:**

Right clicking controls allows you to edit them and to move them. Press Esc and then click and hold on the border of the control to move it. Left click outside the control so that it is ready to use.

7. Click in the Cell Link box and type \$D\$6 and Click OK



8. Note the word TRUE in the Cell, it will display FALSE if the box is unticked. We can hide the word by applying a custom format.



Use the arrow keys to select cell D6 and press Ctrl + 1 (Format Cells shortcut).

Enter ;;; in the Type box

That's three semi-colons in a row.

This format will not display or print any entries in the cell.

	D6		fx	TRUE
	A	B	C	D
3				
4				
5			Input	Select
6		Inflation	4%	<input checked="" type="checkbox"/> Apply

### Naming Linked Cells

It is a best practice to name the linked cell with a prefix that describes the type of control it is linked to. This assists when reading any formula that refers to cells linked to controls.

9. We will name cell D6 and then amend the inflation formula in row 6.

Select D6 and name it chkbxInflation

Amend the formula in cell E6 to

=1+(Inflation/12\*E3\*chkbxInflation)

10. Copy E6 across for the other months
11. Test the check box

## Options Buttons

Also known as radio buttons, option buttons allow a user to select only one option from a number of options. These types of options are mutually exclusive. As a guideline, option buttons should be used for between 3 and 5 options. Less than three you would use a check box and more than 5 you would use a combo box or data validation.

### PRACTICE

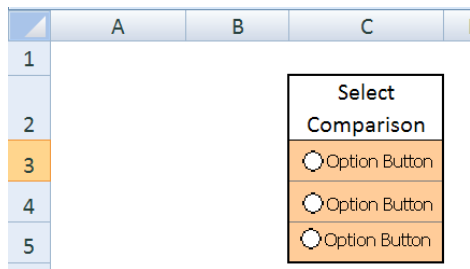
1. Open the Option Button sheet.

We will use three option buttons to allow the user to select the comparison figures (Budget, Forecast or Last Year) in Column C, for the chart.

2. Click the Insert icon click Option Button control and draw the option button over cell C3.



3. Right click the option button and choose Format Control
4. Enter \$C\$3 in the Cell Link box and click OK.
5. Right click the option button and press Esc. Point to the option button and click and hold the Ctrl key and drag the mouse to copy the Option button on top of cell C4 and then cell C5.



6. Right click the first button and change the text to Budget.

Change the text on the middle button to Forecast

Change the bottom button to Last Year

This order is important as it matches the order of the entries we want to choose from.

7. Click any one of the buttons it will enter a 1, 2 or 3 in cell C3.

8. Apply the ;;; format to the cell C3

Name cell C3 optComparison

You could use Paste Format from the Checkbox sheet

Click one of the buttons.

9. We will use the linked cell with an INDEX function to populate the range C7:C10

In cell C7 enter the following formula

`=INDEX(E7:G7,1,optComparison)`

Copy the formula down.

10. Test the options buttons.

### Multiple sets of options buttons

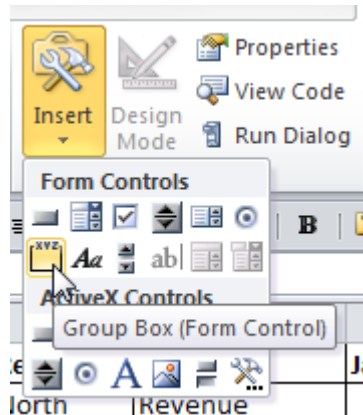
If you need to add more than one set of option buttons to a sheet you will need to use another control. If you don't all the option buttons will be linked to the one cell - not what you will want.

The Group Box control is used to group controls together. It is a graphic object. All the controls that you put on that object are grouped together. In the case of option buttons it means that they share

the same linked cell. This means different groups of option buttons on the same sheet, can have different linked cells.

### PRACTICE

1. Open the Multiple Options sheet. This sheet has a table, formula and a chart ready to accept input from two sets of option buttons.
2. Click the Insert icon on the Developer Ribbon tab. Choose the Group Box (first icon - second row) see image below.



3. Draw a Group Box on the sheet above the range A4:A11.
4. Right click the Group Box (right click the line around the box) and choose Edit Text. Change the name to Region.
5. Create another Group Box above C4:C9 and rename it Measure.
6. Add four option buttons to the Region box. Name them in order from top to bottom North, South, East and West. The order is extremely important - it matches the order used in the table on the sheet.
7. Right click any one of the option buttons and select Format Control and set the linked cell to A2. I have already named that cell optRegion.
8. Add three option buttons to the Measure box. Name them in order from top to bottom Revenue, Costs and Profit. The order is extremely important - it matches the order used in the table on the sheet.
9. Right click any one of the Measure option buttons and select Format Control and set the linked cell to C2. That cell is already named optMeasure.

10. The final set sheet should look like the image below.

	A	B	C
1			
2	1		1
3			
4	Region		Measure
5	<input checked="" type="radio"/> North		<input checked="" type="radio"/> Revenue
6	<input type="radio"/> South		<input type="radio"/> Costs
7	<input type="radio"/> East		<input type="radio"/> Profit
8	<input type="radio"/> West		
9			
10			
11			
12			
13			

Changing the two options will update the chart via the range F16:L16 which includes an INDEX formula.

## Scroll Bar

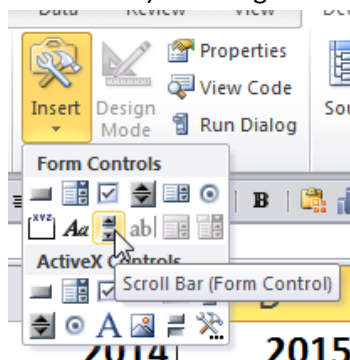
This control is used to vary a cell's value by a set amount in between certain limits. It is typically used for "what-if" type analysis. In the example below we will amend the Discount rate for a simple NPV calculation.

### PRACTICE

1. Open the Scroll Bar sheet.

This report is a simple NPV calculation. With NPV calculations the discount % is important. We will add a scroll bar to vary the discount %.

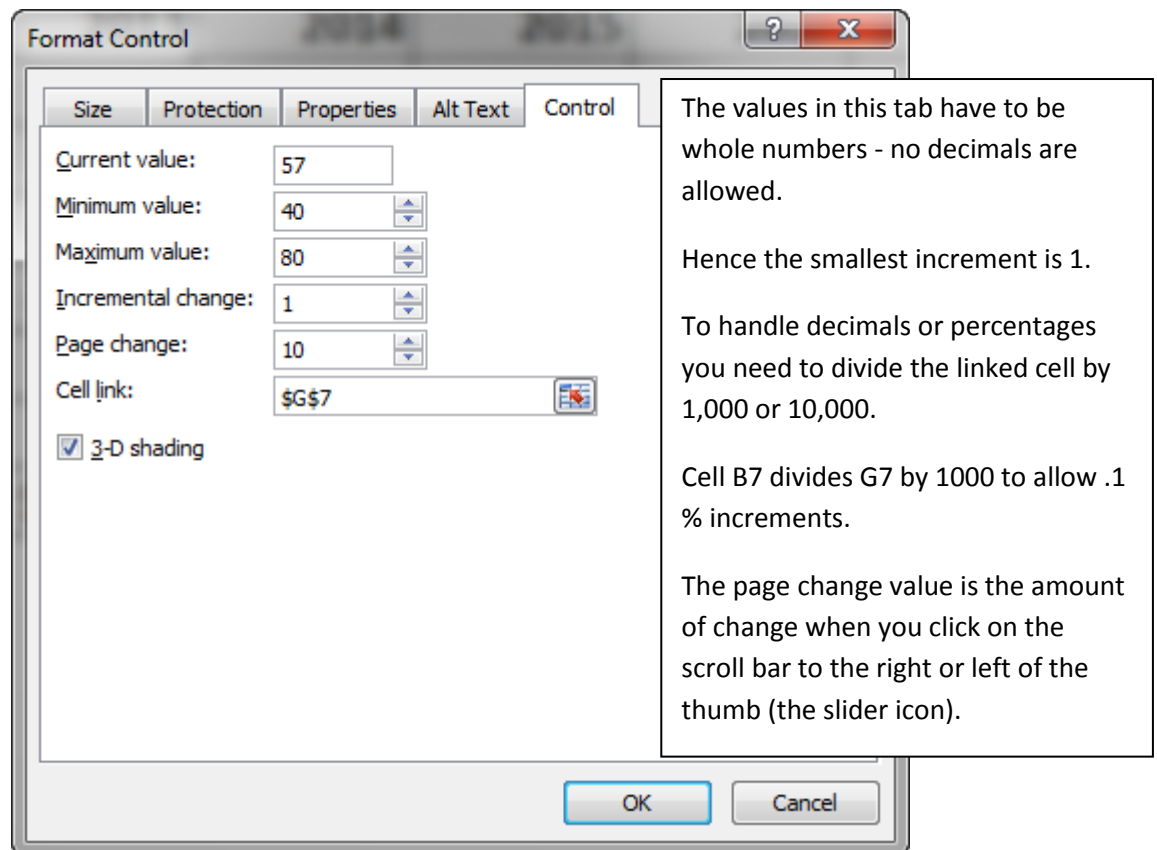
2. Click the Insert icon on the Developer Ribbon tab. Choose the scroll bar (third icon - second row) see image below.



3. Draw the scroll bar on the sheet above cells D7 and E7.

4. Right click the scroll bar and select Format Control and amend the settings as per the image below and click OK.

I have already named cell G7 as scrNPV.



This will mean a maximum percentage of 8% and a minimum of 4%. That is driven by the formula in cell B7 which is

=IFERROR(scrNPV/1000,0)

5. The final sheet should look like the image below. Test the scroll bar.

	A	B	C	D	E	F	G
1	000s	2013	2014	2015	2016	2017	2018
2	Cash Flow						
3	Inflows		\$1,750	\$1,800	\$1,850	\$1,900	\$1,950
4	Outflows	-\$2,000	-\$1,000	-\$1,200	-\$1,500	-\$1,600	-\$1,500
5	Net Cash	-\$2,000	\$750	\$600	\$350	\$300	\$450
6							
7	NPV Rate	5.00%					50
8	NPV '000s	\$152.61					

## Combo Box

This type of control is a drop down box. It is a more robust drop down list than the Data Validation List option. With a Data Validation List option you can Paste Special Values entries into the cell. Also if the list changes the selected value doesn't change.

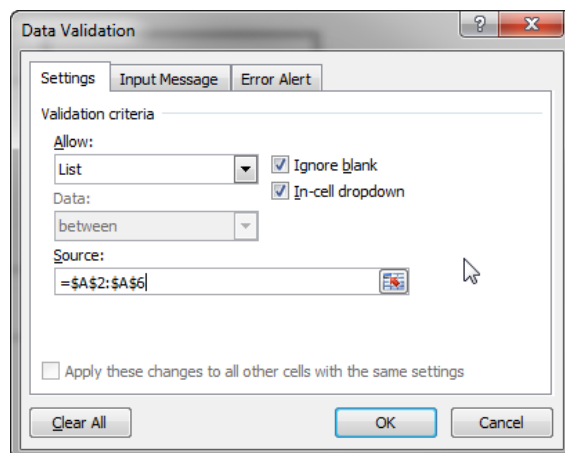
A combo box does need an extra step in the process to extract the chosen item into a cell. Typically this is done using the INDEX function.

Let's take the example of a list of fruit. We'll first see the how you do it with a Data Validation and then see the problems associated with Data Validations. Then we'll use a combo box.

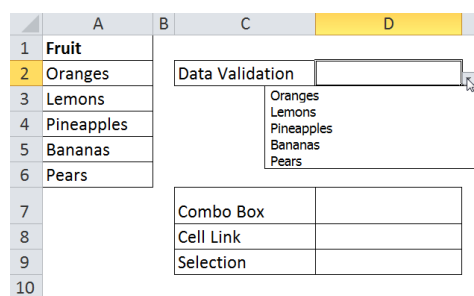
It is best practice to name the list range for use in both Data Validations and combo boxes.

### PRACTICE

1. Open the Combo sheet.
2. Select cell D2 and use the shortcut Alt + V + V. Press in sequence do not hold the keys down. This opens the Data Validation dialog.
3. Select List from the first drop down, then click in the Source box and select the range A2:A6 and click OK.



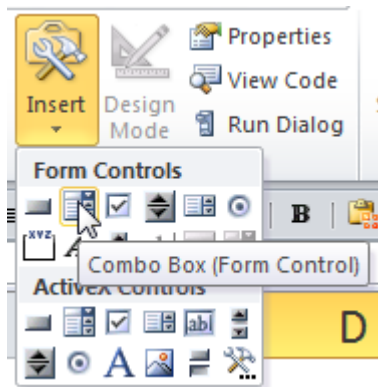
4. There is now a drop down list in cell D2.



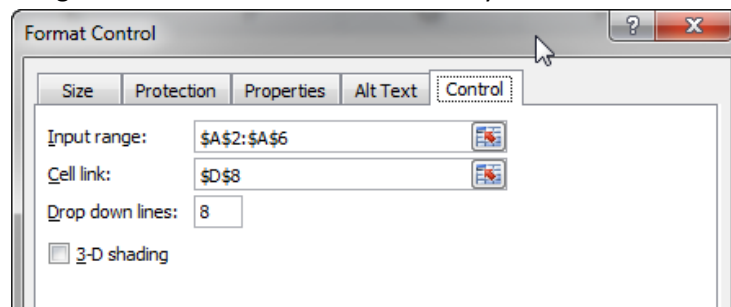
5. Cell F2 has an entry for Carrots. You can copy cell F2 and Paste > Special > Values into cell D2 to enter Carrots in the Data Validation cell.
6. The other problem is if the list changes the selection may be invalid. If you select Apples from the drop down and the list changes from Apples to Pineapples the cell won't update and will have an entry in the cell that is not in the list.

A combo box handles those issues.

7. Click the Insert icon on the Developer Ribbon tab. Choose the combo box (second icon - first row) see image below.



8. Draw the combo box on the sheet above cell D7.
9. Right click the combo box and choose Format Control. Change the settings as per Image below and click OK. I have already named cell D8 comboFruit.



10. The last step is the formula in the cell D9. This converts the cell link number into the selected entry.

=IFERROR(INDEX(A2:A6,comboFruit), "")

11. The combo box is ready to use. If you use Paste > Special > Values you will break the control as you will be overwriting a formula. You can use Protect sheet to protect the formula. Make sure you unprotect the linked cell.
12. If you select Apples in the combo box and then change Apples to Pineapples in the list then both the combo box and the selection cell D9 will update.

## Worked Example

Let's bring it all together and create a loan calculator using the four controls we have seen.

### PRACTICE

1. Open the Loan Sheet.

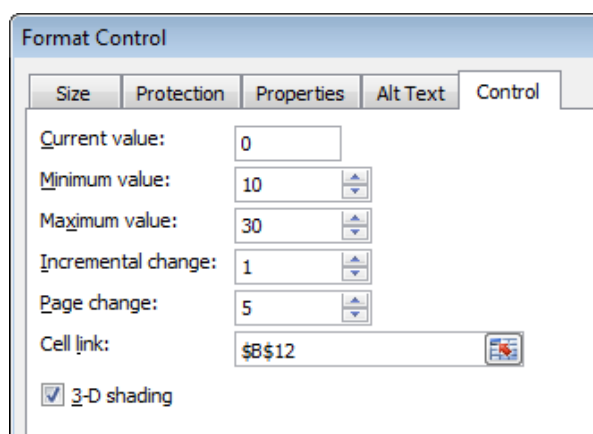
The structure of the loan calculator is established we just need to add the controls and four formulas. Yellow cells are for input. Grey cell will have a formula added. The image on the following page shows the final layout. The Tables sheet contains a number of named ranges that we will use.

2. Insert a check box control above cell B5 and link it to B5.  
Change the text to Include Lump Sum.  
Change the format to ;;; and name cell B5 chkboxLumpSum
3. Insert 3 option buttons above the range B7:B10. In sequence  
Pay Weekly  
Pay Fortnightly  
Pay Monthly

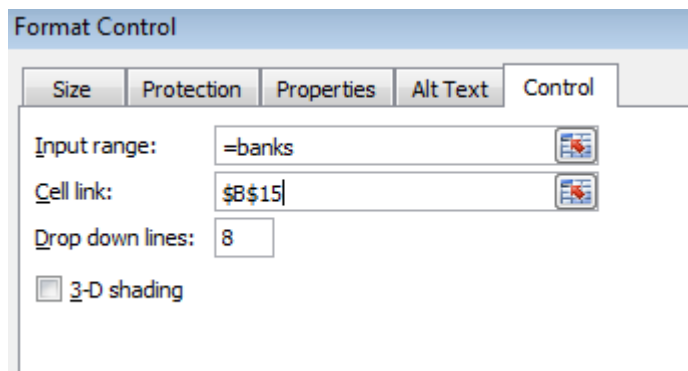
Link one of the option buttons to cell B7 and name that cell optPayment, change the format to ;;;

4. Insert a scroll bar to the right of cell B12 and link it to cell B12.  
Change the parameters to  
Minimum = 10  
Maximum = 30  
Step change = 1  
Page change = 5

Name the cell B12 scrollYears.



5. Insert a combo box above cell B15 and link it to cell B15 and name that cell comboBank.  
Change cell B15 format to ;;;  
Use the named range Banks as the Input Range for the combo box.



6. The sheet should now look like the image below.

	A	B	C	D	E	F
1	<b>Loan Calculator</b>					
2		<b>Input</b>			<b>Results</b>	<b>Per</b>
3	Amount to Borrow	\$400,000		Repayment	\$0.00	Week
4	Lump Sum Amount	\$20,000				
5		<input checked="" type="checkbox"/> Include Lump Sum		Total amount Paid	\$0.00	
6						
7	Payment Options	<input checked="" type="radio"/> Pay Weekly		Total Interest Paid	-\$400,000.00	
8		<input type="radio"/> Pay Fortnightly		Total Fees	\$0.00	
9		<input type="radio"/> Pay Monthly		Total Cost	-\$400,000.00	
10						
11	Repayment Factor					
12	Term of loan in Year	25				
13	Number of repayments	0				
14						
15	Select Bank	Little Bank				
16	Bank Fees					
17	Total Loan Value	\$400,000				
18	Interest Rate					
19	Period Interest Rate	0.0000%				
20	Lump Sum Amount					

7. The last steps involve adding four formulas. The formulas go in the grey cells. The range names relate to names on the Tables sheet.

#### Formulas

cell B11      =IFERROR(INDEX(Factor,optPayment),0)

cell B16      =IFERROR(INDEX(Fees,comboBank),0)

cell B18      =IFERROR(INDEX(Interest\_Rate,comboBank),0)

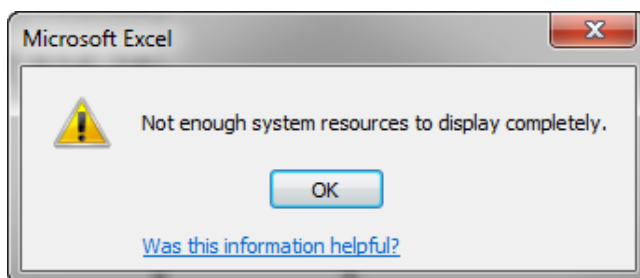
cell B20      =chkbxLumpSum\*B4

8. That completes the sheet. See image below.

	A	B	C	D	E	F
1	<b>Loan Calculator</b>					
2		<b>Input</b>			<b>Results</b>	<b>Per</b>
3	Amount to Borrow	\$400,000		Repayment	-\$621.89	Week
4	Lump Sum Amount	\$20,000				
5		<input checked="" type="checkbox"/> Include Lump Sum		Total amount Paid	-\$808,460.85	
6						
7	Payment Options	<input checked="" type="radio"/> Pay Weekly		Total Interest Paid	\$406,960.85	
8		<input type="radio"/> Pay Fortnightly		Total Fees	\$1,500.00	
9		<input type="radio"/> Pay Monthly		Total Cost	\$408,460.85	
10						
11	Repayment Factor	52				
12	Term of loan in Year	25				
13	Number of repayments	1300				
14						
15	Select Bank	Big Bank				
16	Bank Fees	\$1,500				
17	Total Loan Value	\$401,500				
18	Interest Rate	6.55%				
19	Period Interest Rate	0.1260%				
20	Lump Sum Amount	\$20,000				

### Combo Box Bug Warning

You may occasionally see the following error dialog when using a combo box.



This is caused when there is a higher zoom % on the sheet that has the list compared to the sheet that has the combo box. Setting the same zoom % fixes the issue.