



**University of Brighton**

Information Services

# Excel Conditional Formatting

## Using colour to make data analysis easier

Excel conditional formatting automatically formats cells in your worksheet if specified criteria are met, giving you a visual aid for analysing your data.

These workshop notes use Excel 2013. This workbook can also be used with Excel 2010 and 2007, however some techniques are only available in Excel 2013.

It's good to have an understanding of Excel formulae and functions in Excel before working through this document.

	A	B	C	D
1	Project name	Sponsor	Due Date	Status
2	Wild Poseidon	Franklin Coleridge-Ginger	21/11/2013	completed
3	Rich Subtle Waffle	Nora Millipedetrotter	29/11/2013	in progress
4	Hollow Toupee	Fern Yeats-Bilborough	05/06/2014	in progress
5	Risky Bird	Isaac Furnace-Coldbath	28/02/2013	Completed
6	Maximum Dinosaur	Beatrix Wormsmacker	26/12/2013	Completed
7	Intense Crayon	Finn Plewpp	13/08/2013	In progress
8	Severe Albatross	Archibald Lizardswizzler	02/01/2015	In progress
9	Insane Trombone	Iris Deadparade	16/11/2016	In progress
10	Rapid Scissor	Isaac Furnace-Coldbath	30/11/2013	In progress

Last updated

by Faye Brockwell

09 March 2016

This document and other Excel documents are held online on our website:

<https://staff.brighton.ac.uk/is/training/Pages/Excel/Excel.aspx>

## Contents

1	Introduction .....	3
2	Predefined conditional formatting .....	3
	<b>Exercise A.</b> Highlighting cells .....	4
	<b>Exercise B.</b> Top and Bottom Rules .....	4
3	Clearing conditional formatting .....	5
	<b>Exercise C.</b> Using Data bars and Colour Scales .....	6
	<b>Exercise D.</b> Using icon sets .....	7
4	Using your own rules .....	8
4.1	Rules manager .....	8
4.1.1	The rules hierarchy .....	9
4.2	Creating a new conditional formatting rule .....	10
	<b>Exercise E.</b> Creating a Simple Rule .....	11
	<b>Exercise F.</b> Relative, absolute and mixed referencing refresher .....	12
	<b>Exercise G.</b> Creating a rule using OR .....	16
	<b>Exercise H.</b> Colour coding entire rows .....	17
	<b>Exercise I.</b> Creating a rule using AND .....	18
4.3	Dates .....	21
4.3.1	Date format in Excel sheets .....	21
4.3.2	Using dates in a formula .....	21
	<b>Exercise J.</b> Using dates in conditional formatting .....	22
	<b>Exercise K.</b> Changing the rules hierarchy .....	24
4.4	Comparing with cells on another sheet using VLOOKUP .....	26
4.4.1	Note for using conditional formatting on cells containing formulae ....	28
5	Filtering using conditional formatting .....	28

## 1 Introduction

Excel conditional formatting automatically formats cells in your worksheet if specified criteria are met. For example, you can:

- Change the text of a cell to red if a project has gone over budget
- Put a coloured border around cells that are duplicates
- Change the colour of a row to orange if a project is nearing its deadline
- Add an icon to highlight any figures that were an improvement on this time last year.
- Change the colour of the top 10 results in a list to green.

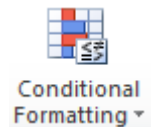
Using conditional formatting gives you a visual aid when analysing your data. You can also filter by colour to easily focus.

## 2 Predefined conditional formatting


There are lots of predefined rules you can use for conditional formatting.

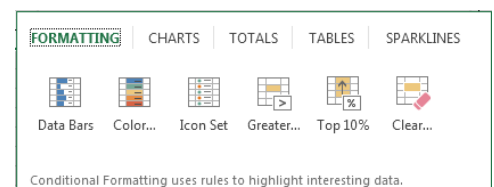
To use these, the technique is:

- Select the area in your worksheet to which you want to apply conditional formatting.
- On the **Home** tab, click on the **Conditional Formatting** icon.
- Choose the type of conditional formatting you want from the list.
- Adjust the settings to meet your requirements.



In Excel 2013 you can also use Quick Analysis to apply some types of conditional formatting:

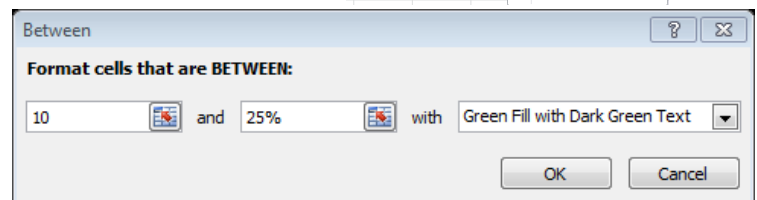
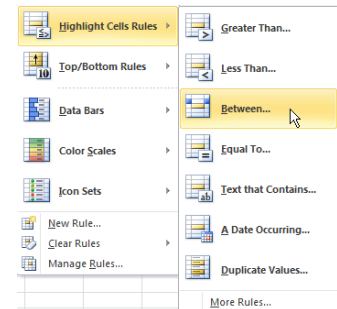
- Select the area in your worksheet to which you want to apply conditional formatting.
- Click on the **Quick Analysis** icon  that appears at the bottom right of the selection.
- Click on the **FORMATTING** tab in the pop-up window.
- Choose the type of conditional formatting you want from the suggestions. *Hover over each one first to see what the result would be.*
- Adjust the settings to meet your requirements.



The following exercises suggest some applications for some of the pre-defined conditional formats.

### Exercise A. Highlighting cells

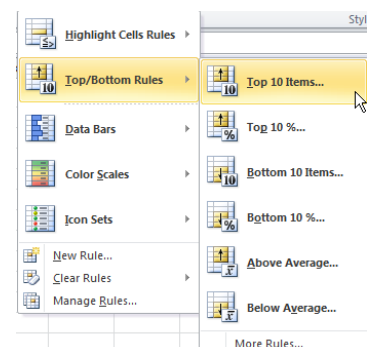
1. Open up the file Highlight cell rules.xlsx
2. Select cells B28 to F35
3. On the **Home** tab, click on the **Conditional Formatting** icon.
4. Hover over **Highlight Cell Rules**.
5. Click on **Between**.
6. Use the boxes to specify that you want to fill cells green if they contain a value between 10% and 15% and click **OK**.
7. Using the other areas on the worksheet, experiment with some of the other **Highlight Cells Rules** available.



The Percentage of the Number of Participants					
Flavour	Age Group				
	10-18	19-25	26-40	41-55	56+
Vanilla	14%	11%	7%	14%	25%
Strawberry	17%	7%	7%	13%	7%
Chocolate	25%	29%	25%	13%	11%
Coffee	12%	20%	31%	35%	27%
Caramel	13%	8%	7%	7%	13%
Lime	8%	8%	6%	3%	2%
Blue Heaven	4%	9%	12%	9%	12%
Other	7%	7%	6%	6%	3%

### Exercise B. Top and Bottom Rules

1. Open up the file Top bottom rules.xlsx
2. Select cells B5 to B26
3. On the **Home** tab, click on the **Conditional Formatting** icon
4. Hover over **Top/bottom rules**.
5. Click on **Top 10 items**.
6. Use the boxes to specify that you want to fill cells containing the top 10 items red.
7. Select cells C5 to C26



8. On the **Home** tab, click on the **Conditional Formatting**
9. Hover over **Top/bottom rules**.
10. Click on **Below Average**.
11. Use the boxes to specify that you want to fill cells yellow which contain a figure that is below the average for the selected cells.



	A	B	C	D	E
1	Spa Products Exhibition Day				
2					
3		People	People	Sales	
4		Registered	Attended	Generated	
5	Manchester	250	175	£ 12,500	
6	Liverpool	310	260	£ 7,800	
7	Bournemouth	170	175	£ 9,800	
8	Reading	390	280	£ 10,750	
9	Bristol	400	415	£ 672	
10	Durham	210	178	£ 4,500	
11	Dublin	150	149	£ 8,900	
12	Edinburgh	275	290	£ 270	
13	Luton	540	510	£ 7,987	
14	Hull	415	412	£ 15,794	

### 3 Clearing conditional formatting

To clear conditional formatting:

- Select the cells containing that have conditional formatting applied.
- On the **Home** tab, click on the **Conditional Formatting** icon
- Click on **Clear Rules**
- Click on **Clear Rules from selected cells** (or click on **Clear Rules from Entire Sheet** if you want to get rid of all rules in the worksheet).

Or in Excel 2013 you can:

- Select the cells containing that have conditional formatting applied.
- Click on the **Quick Analysis** icon  that appears at the bottom right of the selection.
- Click on the **FORMATTING** tab in the pop-up window.
- Click on the **Clear**  icon.

## Exercise C. Using Data bars and Colour Scales


Data bars appear in each cell of a selected area. The length of the data bar represents the value of the cell relative to the other cells.

Colour scales appear in each cell of a selected range. The colour and shade represent higher and lower values.

1. Open the file **More predefined formatting.xls**
2. Click on the Data Bars worksheet and select the range B4 to G11
3. On the **Home** tab, click on the **Conditional Formatting**
4. Hover over **Data bars** and choose one of the options.
5. Clear the conditional formatting from the sheet.
6. This time select the range B4 to F11 (excluding the totals).
7. On the **Home** tab, click on the **Conditional Formatting**, hover over **Colour scales** and choose one of the options.

	A	B	C	D	E	F	G	H
1		Age Group						
2	Module	10-18	19-25	26-40	41-55	56+	Total	
3								
4	Sausages	25	20	12	25	45	127	
5	ICT	30	12	12	23	12	89	
6	Human An	45	52	45	24	20	186	
7	The scienc	22	36	56	63	48	225	
8	Blended Le	24	15	12	13	23	87	
9	Digital med	14	15	11	5	4	49	
10	Statistics	8	17	22	17	22	86	
11	Crop rotati	12	13	10	10	6	51	


	A	B	C	D	E	F	G
1		Age Group					
2	Module	10-18	19-25	26-40	41-55	56+	Total
3							
4	Sausages	25	20	12	25	45	127
5	ICT	30	12	12	23	12	89
6	Human An	45	52	45	24	20	186
7	The scienc	22	36	56	63	48	225
8	Blended Le	24	15	12	13	23	87
9	Digital med	14	15	11	5	4	49
10	Statistics	8	17	22	17	22	86
11	Crop rotati	12	13	10	10	6	51













Data bars and Colour Scales are also available via the Quick Analysis icon  in Excel 2013, although the colour selection is limited.

## Exercise D. Using icon sets

Icon sets allow you to classify data into categories by value.

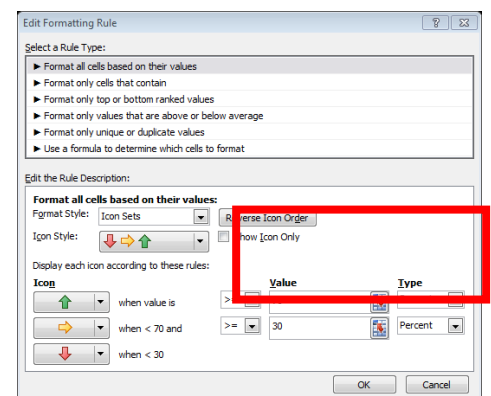
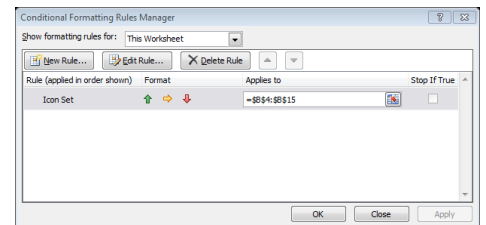
1. Continue with the **More predefined formatting.xls** file
2. Click on the Icon sets worksheet and select the range B4 to B15
3. On the **Home** tab, click on the **Conditional Formatting**
4. Hover over **Icon sets** and choose the first option
 


Directional  

5. Note how the icons have been added to the figures.

	A	B	C
1	Grades		
2			
3	Student	Mark	
4	Fred	 80	
5	Jane	 30	
6	Bill	 55	
7	Chris	 63	
8	Jill	 32	
9	Jon	 77	
10	Lucy	 44	
11	Katie	 76	
12	Marion	 42	
13	Adam	 99	
14	Fiona	 65	
15	Faye	 12	
16			

To set the thresholds for the icons, on the **Home** tab, click on the **Conditional Formatting** and click on **Manage Rules**

6. Click on the drop down in the **Show Formatting Rules for:** box and choose **This Worksheet**.
7. Click to select the icon set rule and click on **Edit Rule**.
8. Change the threshold values to 70% for the green arrow and 30% for the yellow arrow. Click **OK**.
9. Click **Apply** and then click **OK**



Icon sets are also available via the Quick Analysis icon  in Excel 2013, although the icon selection is limited.

## 4 Using your own rules

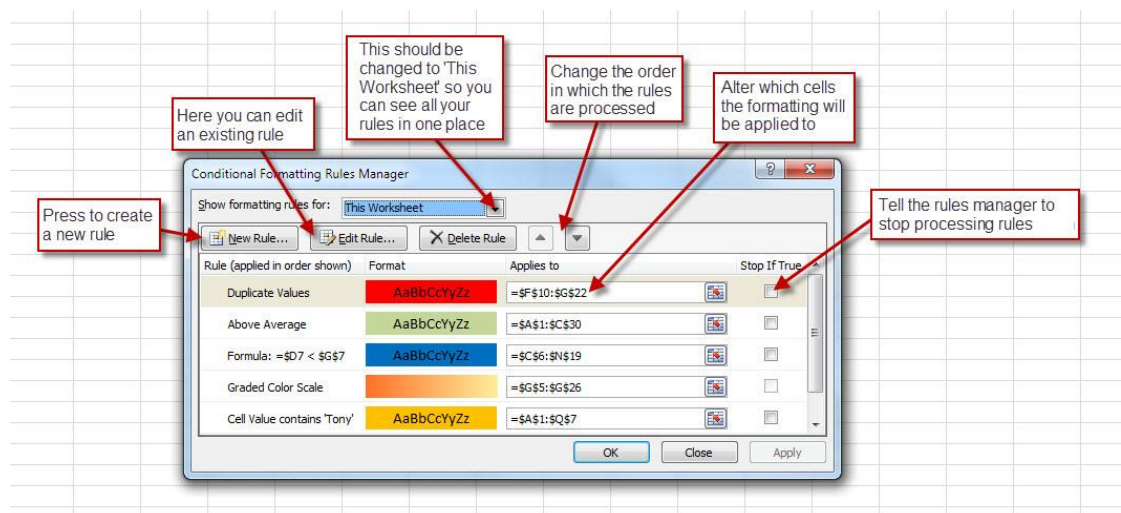
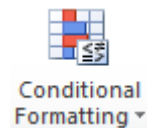
In addition to the predefined conditional formatting options, you can also set conditional formatting according to your own rules. Before we get started on this, let's introduce the rules manager.

### 4.1 Rules manager

The rules manager is a really simple way of being able to get a handle on all of the conditional formatting you have in a workbook. As your spreadsheets become more complex you'll need to make sure you know where to quickly reference all of the formatting rules you have setup and what data they may be affecting.

To access the Rules Manager:

- Click on the **Home** tab
- Click on the **Conditional Formatting** icon
- Click the **Manage Rules...** option from the drop down menu



The rules manager allows you to

- View all rules in your workbook, individual worksheets or even just the selected cells
- Create new rules using the pre-existing templates or by using formulas and statements
- Edit and delete any existing rules
- Edit the cell range that the rule is being applied to
- Change the order of the hierarchy





#### 4.1.1 The rules hierarchy

There are some occasions where it is useful to run the rules in a particular order.

Be aware that rules are processed from the top downwards. This means that for each cell in your selected range the top rule will be run first and then the second one and so on...

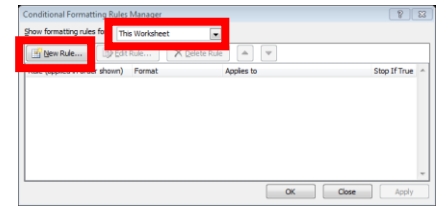
*What happens if a cell satisfies the criteria of more than one rule?*

If two rules are true, only one can apply. The rule that is higher in the hierarchy always takes precedence.

If a cell meets the criteria of the top two rules in the screenshot above (one is trying to turn it red because it is a duplicate value and the other is trying to turn it green because it is above the average) then the rule that is higher in the order is the one that will be applied. Therefore our cell would turn red because that is the first rule in the hierarchy.

## 4.2 Creating a new conditional formatting rule

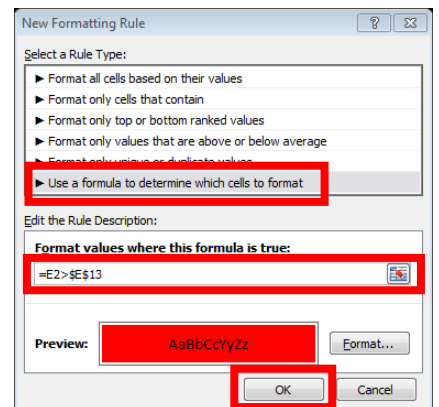
- Open the Rules Manager (Click on the **Home** tab, click on the **Conditional Formatting** icon and click on **Manage Rules...**)



- Click on the drop down in the **Show Formatting Rules for:** box and choose **This Worksheet**

- Click on **New Rule**

- Choose **Use a formula to determine which cells to format**




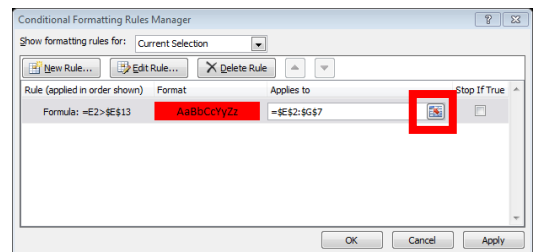
- Type the condition formula in the box
  - Always start the formula with an = sign
  - The result of the formula must always be **TRUE** or **FALSE**
  - Build the formula for one cell – you can then apply the formula to other cells
  - Use \$ signs to control how cell references behave when the formula is applied to other cells
  - Don't use arrow keys to move your cursor within the formula as this will change your cell references.

- Click on **Format** to choose how to format the cells if the condition is true

- Click **OK**.

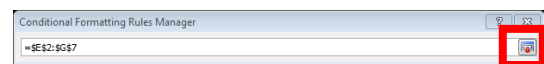
You have defined your rule. Now you need to specify the cells to which that rule will apply.


- In the rules manager, click on the  icon for that rule.



- Use your mouse to select the range of cells in your worksheet that you want to apply that conditional formatting rule to.

- Excel will automatically complete the cell references for you.



- Click on  to expand the Rules Manager again.

- Click **Apply** and then **OK**.

## Exercise E. Creating a Simple Rule

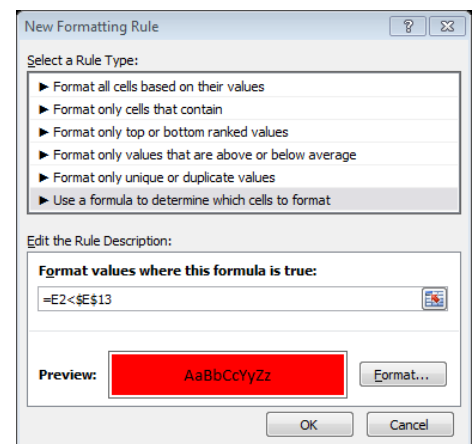
1. Open up the file **Ghostbusters.xls** and click on the **Simple Rule** tab.

	A	B	C	D	E	F	G	H
1	Name	Age	Department	Job title	Ghosts Busted June	Ghosts Busted July	Ghosts Busted August	Total Ghosts busted
2	Peter Venkman	33	Estates and Facilities Management	Ghostbuster	8	15	16	39
3	Egon Spengler	36	Estates and Facilities Management	Ghostbuster	5	7	12	24
4	Ray Stantz	29	Estates and Facilities Management	Ghostbuster	10	15	13	38
5	Winstone Zeddemore	29	Estates and Facilities Management	Ghostbuster	9	12	13	34
6	Janine Melnitz	26	Administration	Administrative assistant	0	0	1	1
7	Louis Tully	27	Estates and Facilities Management	Junior Ghostbuster	1	3	0	4
8								
9								
10								
11								
12								
13				Target	11			
14								

This spreadsheet shows the number of ghosts busted by each member of staff on our ghostbusting team. We are going to create a rule that highlights in red any months where our target has not been met.



*Note that this rule could also be set up using predefined conditional formatting rules, but we're using it as a simple example to explain how to set up your own rule.*

2. Click in cell E2.
3. Open up the Conditional Formatting Rules Manager and show all rules for this worksheet.
4. Click on **New Rule** and click to choose **Use a formula to determine which cells to format**
5. When building the rule, we will build it for cell E2 as this is the first cell in the range of cells to which we will apply our conditional formatting rule.
6. In the formula box type **=E2<E13**  
This formula will check whether the number of ghosts in cell E2 is less than the target specified in cell E13
7. Click your mouse on the E13 cell reference in your formula and press the F4 key.



This will add dollar signs to the cell reference for the target number of ghosts busted. Without making this cell reference absolute using the dollar signs, when we apply the conditional formatting rule to other cells in the worksheet, this cell reference will be changed in relation to where the new cells are, which will affect the result of the formula.

For more information on Absolute Referencing, see the Exercise F which gives a refresher on absolute referencing.

8. Click on the **Format** button, choose to fill the cells with red and click **OK**.
9. Click **OK**.
10. In the rules manager, click on the  icon for our new rule to specify the range of cells to which we want to apply this rule.
11. On the worksheet itself, use your mouse to select the cell range E2 to G7. Then click  to expand the Rules Manager again.
12. Click **Apply** then **OK** to apply the rule.

	A	B	C	D	E	F	G	H
1	<b>Name</b>	<b>Age</b>	<b>Department</b>	<b>Job title</b>	<b>Ghosts Busted June</b>	<b>Ghosts Busted July</b>	<b>Ghosts Busted August</b>	<b>Total Ghosts busted</b>
2	Peter Venkman	33	Estates and Facilities Management	Ghostbuster	8	15	16	39
3	Egon Spengler	36	Estates and Facilities Management	Ghostbuster	5	7	12	24
4	Ray Stantz	29	Estates and Facilities Management	Ghostbuster	10	15	13	38
5	Winstone Zeddemore	29	Estates and Facilities Management	Ghostbuster	9	12	13	34
6	Janine Melnitz	26	Administration	Administrative assistant	0	0	1	1
7	Louis Tully	27	Estates and Facilities Management	Junior Ghostbuster	1	3	0	4

### Exercise F. Relative, absolute and mixed referencing refresher

Confused about \$ signs and cell referencing? These are key to using conditional formatting, so let's remind ourselves how relative, mixed and absolute cell references work.

1. Open up the file **Absolute referencing.xls**
2. This file shows the prices for a list of products and the surcharges and discounts applied.
3. Build a formula in cell C11 to calculate the surcharge for that row =B11\*B5
4. Use autofill to copy the formula down column C. There is a problem!
5. Double click on cell C11. The boxes show the cell references. These are OK.
6. Press Esc and then double click on cell C12. The boxes show the cell references. This surcharge cell reference is incorrect. Instead of pointing to cell B5, the cell reference has changed to B6. *This is because the cell reference is relative, Excel adds 1 to any row number in a formula when that formula is copied down a column.*
7. Press Esc and then double click on cell C13. The boxes show the cell references. The surcharge cell reference is incorrect. Instead of pointing to cell B5, the cell reference has changed to B7. *This is because the cell reference is relative, Excel adds 1 to any row number in a formula when that formula is copied down a column.*

	A	B	C
1	Alphelus Global Enterprises		
2	Product Pricing		
3			
4			
5	Head Office Surcharge	12%	
6			
7			
8		Net of	Inc
9	Product	Surcharge	Surcharge
10			Sum
11	World Communicator 223	234.50	=B11*B5
12	Planet Tamer 34e		

	A	B	C
1	Alphelus Global Enterprises		
2	Product Pricing		
3			
4			
5	Head Office Surcharge	12%	
6			
7			
8		Net of	Inc
9	Product	Surcharge	Surcharge
10			Sum
11	World Communicator 223	234.50	28.14
12	Planet Tamer 34e	344.55	=B12*B5
13	Master Communicator 10 Plus	1,245.50	0.00

	A	B	C
1	Alphelus Global Enterprises		
2	Product Pricing		
3			
4			
5	Head Office Surcharge	12%	
6			
7			
8		Net of	Inc
9	Product	Surcharge	Surcharge
10			Sum
11	World Communicator 223	234.50	28.14
12	Planet Tamer 34e	344.55	0.00
13	Master Communicator 10 Plus	1,245.50	=B13*B5
14	Master Communicator 20 Plus	1,155.00	

This is what has happened to our formula as it was copied down column C:

Cell	Formula
C11 (original formula)	=B11*B5
C12	=B12*B6
C13	=B13*B7

We want the first cell reference to increment by 1 for each row, but we always want our formula to refer to cell B5 for the surcharge regardless of the current row. To do this, we must make the cell reference absolute.

8. Press Esc and double click on cell C11.
9. Click your insertion point so that it is flashing on the B5 cell reference in your formula.
10. Press the F4 key. This will add \$ signs to your cell reference so that your formula reads =B11\*\$B\$5. This instructs Excel to anchor the B5 cell reference when the formula is copied to other cells, to not change the column letter or row number. The cell reference is absolute and the formula must always use cell B5.

	A	B	C
1	Alpheius Global Enterprises		
2	Product Pricing		
3			
4			
5	Head Office Surcharge	12%	
6			
7			
8	Product	Nett of Surcharge	Surcharge
9			
10			
11	World Communicator 223	234.50	28.14
12	Planet Tamer 34e	344.55	41.35
13	Master Communicator 10 Plus	1,245.50	149.46
14	Master Communicator 20 Plus	13,455.00	1,614.60

11. Press ENTER to save the formula.

Use autofill to copy the new formula down column C and double click to check the formula in cells C12 and C13 as before.

12. This is what has happened to our formula as it was copied down column C. Unlike before, the B5 cell reference is copied correctly to the other cells as the \$ signs have marked this reference as absolute.

	A	B	C
1	Alpheius Global Enterprises		
2	Product Pricing		
3			
4			
5	Head Office Surcharge	12%	
6			
7			
8	Product	Nett of Surcharge	Surcharge
9			
10			
11	World Communicator 223	234.50	28.14
12	Planet Tamer 34e	344.55	41.35
13	Master Communicator 10 Plus	1,245.50	149.46
14	Master Communicator 20 Plus	13,455.00	1,614.60

Cell	Formula
C11 (original formula)	=B11*\$B\$5
C12	=B12*\$B\$5
C13	=B13*\$B\$5

A	B	C	D	E	F	G	H
<b>Alpheus Global Enterprises</b>							
<b>Product Pricing</b>							
Head Office Surcharge	12%						
				<b>Volume Discounts</b>			
<b>Product</b>	<b>Nett of Surcharge</b>	<b>Surcharge</b>	<b>Including Surcharge</b>	<b>1 - 5 5.0%</b>	<b>6 - 9 12.0%</b>	<b>10+ 15.0%</b>	
World Communicator 223	234.50	28.14	262.64				
Planet Tamer 34e	344.55	41.35	385.90				
Master Communicator 10 Plus	1,245.50	149.46	1,394.96				
Master Communicator 20 Plus	13,455.00	1,614.60	15,069.60				

In columns E to G in the worksheet, the volume discount that will be applied according to the number of items purchased: 5% will be discounted if 1-5 items are purchased: 12% will be discounted if 6-9 items are purchased; and there is a discount of 15% for buying more than 10..

The formula to calculate the final price will be: price including surcharge \* volume discount.

Let's build that formula in cell E:

- Click in cell E11 and build the formula:  
=D11\*\$E\$9

Learning from the earlier part of this exercise we know we want to make the discount percentage, so we've put the dollar signs around the E9 cell reference.

- Use autofill to copy the formula down the column and double click to check the cell references in the formula of some of the newly populated cells.

This has worked!

- Now use autofill to copy the formula across columns F and G.

- Double click to check the cell references in the formula of some of the newly populated cells.

What has happened? Columns F and G are picking up the 5% discount from column E as we made our E9 cell reference absolute.

This is not correct. We actually needed to only fix the row number. This is called a mixed reference.

- Double click on our original formula in cell E11 again. Click on the E9 cell reference and press F4 again. Pressing F4 toggles through the \$ sign combinations for our cell reference and will give us E\$9.

*This will anchor row 9 in our cell reference, but allow Excel to increment the column letter when the formula is copied to other columns.*

- Use autofill to copy the new formula down column E. Double click to check the cell references in the formula of some of the newly populated cells.

*This works!*

Product	Net of Surcharge	Surcharge	Including Surcharge	Volume Discounts
World Communicator 223	234.50	28.14	262.64	\$13.13
Planet Tamer 34e	344.55	41.35	385.90	\$19.29
Master Communicator 10 Plus	1,245.50	149.46	1,394.96	\$69.75
Master Communicator 20 Plus	13,455.00	1,614.60	15,069.60	\$753.48
Global Roamer 514	112.34	13.48	125.82	\$6.29
Global Roamer 516	166.70	20.00	186.70	\$9.34
Global Roamer 517	198.00	23.76	221.76	\$11.09
Sat Direct 1460	566.80	68.02	634.82	\$31.59

- Use autofill to copy the new formula across columns F and G. Double click to check the cell references in the formula of some of the newly populated cells.

*The % discount is correct, but our first cell reference has moved across the columns so the formula is no longer calculating a percentage of the price including surcharge in column D. We need to change this cell reference in our original formula to be a mixed reference, anchoring the column.*

- Double click on our original formula in cell E11 again. Click on the D11 cell reference and press F4 three times. Pressing F4 toggles through the \$ sign combinations for our cell reference and will give us \$D11.

*This will anchor column D in our cell reference, but allow Excel to increment the row number when the formula is copied down a column.*

- Use autofill to copy the new formula down column E. Double click to check the cell references in the formula of some of the newly populated cells.

*This works!*

- Use autofill to copy the new formula across columns F and G. Double click to check the cell references in the formula of some of the newly populated cells.

*This works!*

So the position of your dollar signs is crucial. You can:

- Create an absolute reference by anchoring both column and row reference (\$E\$9)
- Create a mixed reference to anchor just the row reference (e.g. E\$9) or just the column reference (e.g. \$E9)
- Leave a cell reference as relative so that both the column and row reference update according to the formula's position.

## Exercise G. Creating a rule using OR

### 1. Open up the file **OR statements.xls**

	A	B	C	D
1	<b>Student name</b>	<b>Student number</b>	<b>Course</b>	<b>Grade</b>
2	Benedict Cumberbatch	123785	Nursing	D
3	Jumblewart Jumbleslack	568412	Psychology	B
4	Cribbleslink Sparklelatch	985214	Sports science	C
5	Vandlelack Candlestrum	126543	Nursing	A
6	Humblestack Danglesack	462187	Information technology	A
7	Ramblesnort Candlescratch	126508	Mathematics	F
8	Wanglewart Crumpletorte	105362	Aeronautical Engineering	D
9	Brambleclack Jumbledrink	175038	Musicality	C
10	Jumbleplink Banderslink	138460	PGCE	A

This spreadsheet shows the grade for each of our students. We are going to create a rule that highlights in yellow where a student has attained grade A, B or C.

To do this, we will use the OR operator in our formula. This has the syntax:

**=OR(first condition, second condition)**

e.g. **=OR(D2="A",D2="B",D2="C")** will check if D2 contains A B or C.

### 2. Click in cell D2 and create a new rule in the Rules Manager.

When building the rule, we will build it for cell D2 as this is the first cell in the range of cells to which we will apply our conditional formatting rule

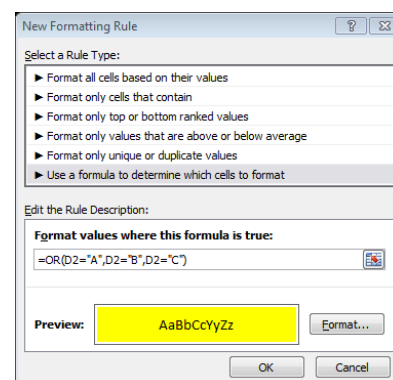
### 3. In the formula box type **=OR(D2="A",D2="B",D2="C")**

This formula will check whether the grade in cell D2 is A, B or C.

### 4. Click on the **Format** button, choose to fill the cells with yellow and click **OK**.

### 5. In the Rules Manager, apply the rule to cells D2 to D10.

### 6. Click **Apply** then **OK** to apply the rule.



	A	B	C	D
1	<b>Student name</b>	<b>Student number</b>	<b>Course</b>	<b>Grade</b>
2	Benedict Cumberbatch	123785	Nursing	D
3	Jumblewart Jumbleslack	568412	Psychology	B
4	Cribbleslink Sparklelatch	985214	Sports science	C
5	Vandlelack Candlestrum	126543	Nursing	A
6	Humblestack Danglesack	462187	Information technology	A
7	Ramblesnort Candlescratch	126508	Mathematics	F
8	Wanglewart Crumpletorte	105362	Aeronautical Engineering	D
9	Brambleclack Jumbledrink	175038	Musicality	C
10	Jumbleplink Banderslink	138460	PGCE	A





## Exercise H. Colour coding entire rows

To colour code entire rows according to a condition, apply the conditional formatting rule to all of the columns.

Usually you will need the column letter in your cell references absolute using the \$ signs to ensure that the condition still works correctly, e.g. \$E2

Let's see an example:

1. Continue with the file from the previous exercise.
2. Click in cell D2 and open the **Rules Manager**.
3. Click on the  icon for our rule to change the range of cells to which we want to apply this rule.
4. On the worksheet itself, use your mouse to select the cell range A2 to D10. Then click  to expand the **Rules Manager** again.
5. Click **Apply** then **OK** to apply the rule.

Nothing has happened. Why?

*This is because when the rule is applied to other columns in a sheet, any cell references that have not been made absolute are changed according to the cells relative position.*

*So cells in column A will be checking if column A= A, B or C, not the contents of column.*

So what do we do? We make the column in our cell reference absolute.

6. Open the rules manager and show the rules for the entire worksheet.
7. Click on the rule and click on Edit rule.
8. Add a \$ sign before each column letter in your formula so that it reads  
`=OR($D2="A",$D2="B",$D2="C")`  
This will fix the column reference in the conditional formatting rule so that, wherever you apply the rule, the rule will refer to that fixed column rather than updating the rule.
9. Click **Apply** then **OK** to apply the rule.

The rows should be colour coded as shown:

	A	B	C	D
1	<b>Student name</b>	<b>Student number</b>	<b>Course</b>	<b>Grade</b>
2	Benedict Cumberbatch	123785	Nursing	D
3	Jumblewart Jumbleslack	568412	Psychology	B
4	Cribbleslink Sparklelatch	985214	Sports science	C
5	Vandlelack Candlestrum	126543	Nursing	A
6	Humblestack Danglesack	462187	Information technology	A
7	Ramblesnort Candlescratch	126508	Mathematics	F
8	Wanglewart Crumpletorte	105362	Aeronautical Engineering	D
9	Brambleclack Jumbledrink	175038	Musicality	C
10	Jumbleplink Banderslink	138460	PGCE	A
11				

### Exercise 1. Creating a rule using AND

1. Go back to or reopen up the file **Ghostbusters.xls** and click on the **AND operator** worksheet tab.

	A	B	C	D	E	F	G	H	I
1	<b>Name</b>	<b>Age</b>	<b>Department</b>	<b>Job title</b>	<b>Ghosts Busted June</b>	<b>Ghosts Busted July</b>	<b>Ghosts Busted August</b>	<b>Total Ghosts busted</b>	
2	Peter Venkman	33	Estates and Facilities Management	Ghostbuster	8	15	16	39	
3	Egon Spengler	36	Estates and Facilities Management	Ghostbuster	5	7	12	24	
4	Ray Stantz	29	Estates and Facilities Management	Ghostbuster	10	15	13	38	
5	Winstone Zeddemore	29	Estates and Facilities Management	Ghostbuster	9	12	13	34	
6	Janine Melnitz	26	Administration	Administrative assistant	0	0	1	1	
7	Louis Tully	27	Estates and Facilities Management	Junior Ghostbuster	1	3	0	4	
8									
9									
10									
11			Target	Ghostbuster	11				
12				Junior Ghostbuster	2				
13									

In exercise 5 we used a similar spreadsheet to mark in red any months where the target number of ghosts busted was not reached.

The rule applied to everyone in the sheet, which we feel is a little unfair as Junior Ghostbusters are being compared directly against their more experienced Ghostbuster colleagues.

To address this, we are going to create a rule that colours cells in red if the person has the job title Ghostbuster and they have not reached the target number of ghosts busted.

To do this, we will use the AND operator in our formula. This has the syntax:

**=AND(first condition, second condition,...)**

e.g. **=AND(D2=D11,E2<E11)** checks if **D2 matches as D11** and that **E2 is less than E11**).

2. Click in cell E2 and open up the Conditional Formatting Rules Manager and show all rules for this worksheet.
3. Click on **New Rule** and click to choose **Use a formula to determine which cells to format**

4. When building the rule, we will build it for cell E2 as this is the first cell in the range of cells to which we will apply our conditional formatting rule.

5. In the formula box type **=AND(D2=D11,E2<E11)**

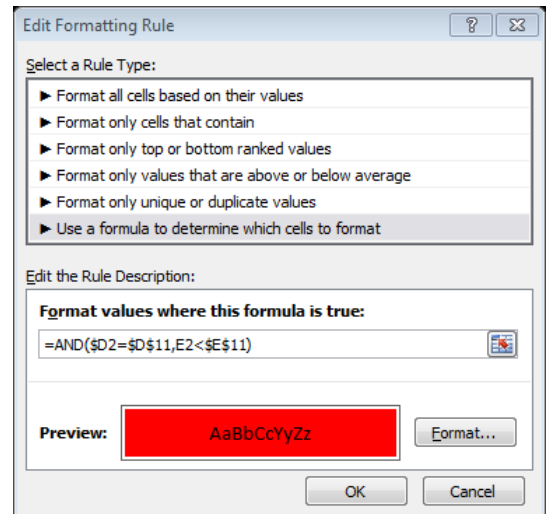
This formula will check whether the person has the job title Ghostbuster (D2=D11) **and** the number of ghosts in cell E2 is less than the target specified in cell E11.

6. Add a dollar sign in front of the D2 reference.

This will make the column in the cell reference absolute so that the formula always checks against column D when checking the job title of the person.

7. Click your mouse on the D11 cell reference in your formula and press the F4 key.

This will add dollar signs to make the cell reference absolute so that the formula always checks against cell D11 when checking to see if the person has the job title Ghostbuster. Without making this cell reference absolute using the dollar signs, when we apply the conditional formatting rule to other cells in the worksheet, this cell reference will be changed in relation to where the new cells are, which will affect the result of the formula.





8. Click your mouse on the E11 cell reference in your formula and press the F4 key. This will add dollar signs to make the cell reference absolute so that the formula always checks against cell E11 when checking for the target number of ghosts busted.

9. Your formula should now read: **=AND(\$D2=\$D\$11,E2<\$E\$11)**

10. Click on the **Format** button, choose to fill the cells with red and click **OK**.

11. Click **OK**.

12. In the rules manager, click on the  icon for our new rule to specify the range of cells to which we want to apply this rule.

13. On the worksheet itself, use your mouse to select the cell range E2 to G7. Then click  to expand the Rules Manager again.

14. Click **Apply** then **OK** to apply the rule.

	A	B	C	D	E	F	G	H
1	<b>Name</b>	<b>Age</b>	<b>Department</b>	<b>Job title</b>	<b>Ghosts Busted June</b>	<b>Ghosts Busted July</b>	<b>Ghosts Busted August</b>	<b>Total Ghosts busted</b>
2	Peter Venkman	33	Estates and Facilities Management	Ghostbuster	8	15	16	39
3	Egon Spengler	36	Estates and Facilities Management	Ghostbuster	5	7	12	24
4	Ray Stantz	29	Estates and Facilities Management	Ghostbuster	10	15	13	38
5	Winstone Zeddemore	29	Estates and Facilities Management	Ghostbuster	9	12	13	34
6	Janine Melnitz	26	Administration	Administrative assistant	0	0	1	1
7	Louis Tully	27	Estates and Facilities Management	Junior Ghostbuster	1	3	0	4
8								
9								
10								
11		Target		Ghostbuster	11			
12				Junior Ghostbuster	2			
13								
14								

15. Create another rule to check whether the junior ghostbusters have met their target in cell E12.

	A	B	C	D	E	F	G	H
1	<b>Name</b>	<b>Age</b>	<b>Department</b>	<b>Job title</b>	<b>Ghosts Busted June</b>	<b>Ghosts Busted July</b>	<b>Ghosts Busted August</b>	<b>Total Ghosts busted</b>
2	Peter Venkman	33	Estates and Facilities Management	Ghostbuster	8	15	16	39
3	Egon Spengler	36	Estates and Facilities Management	Ghostbuster	5	7	12	24
4	Ray Stantz	29	Estates and Facilities Management	Ghostbuster	10	15	13	38
5	Winstone Zeddemore	29	Estates and Facilities Management	Ghostbuster	9	12	13	34
6	Janine Melnitz	26	Administration	Administrative assistant	0	0	1	1
7	Louis Tully	27	Estates and Facilities Management	Junior Ghostbuster	1	3	0	4
8								
9								
10								
11		Target		Ghostbuster	11			
12				Junior Ghostbuster	2			
13								
14								

## 4.3 Dates

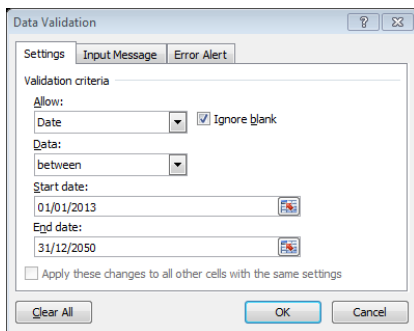
Dates can be used in conditional formatting. For example, you can highlight where a date has passed or when a deadline is near.

### 4.3.1 Date format in Excel sheets

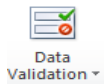
To be able to use dates in your formulae, the date must be typed into the spreadsheet correctly in the first place. For instance, 31/12/13 is a format Excel will recognize as a date, whereas 31.12.13 is not.

To avoid problems in your spreadsheets, we recommend that you always type your dates in dd/mm/yy format. You can always format the cells so that the date is displayed in a different format if you prefer, e.g. 31 December 2013.

You can also set data validation on cells to produce an error message when a date is typed incorrectly. To do this:



- Select the cells you want to validate (e.g. a column)
- On the **Data** tab click on **Data Validation**
- In the **Allow** field, choose **Date** from the drop down
- Specify a date range for the validation
- Click **OK**



A message will appear if an incorrect date format is typed into a cell.

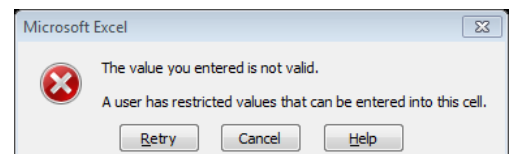
### 4.3.2 Using dates in a formula

As long as the date has been input in the correct way, you can use your date in your formula as you would any other cell. Excel holds the date as a number in the background.

If you would like to compare a date against today, you can use the TODAY function. To see how this function works:

- Type **=TODAY()** in any empty cell on your sheet and press ENTER

This returns today's date in the cell. Let's see how we can use this in conditional formatting.



## Exercise J. Using dates in conditional formatting

### 1. Open up the file **Dates.xls**

	A	B	C	D
1	<b>Project name</b>	<b>Sponsor</b>	<b>Due Date</b>	<b>Status</b>
2	Wild Poseidon	Franklin Coleridge-Ginger	15/03/2016	completed
3	Rich Subtle Waffle	Nora Millipedetrotter	17/03/2016	in progress
4	Hollow Toupee	Fern Yeats-Bilborough	05/11/2016	in progress
5	Risky Bird	Isaac Furnace-Coldbath	11/12/2015	Completed
6	Maximum Dinosaur	Beatrix Wormsmacker	27/03/2016	Completed
7	Intense Crayon	Finn Plewpp	15/01/2016	In progress
8	Severe Albatross	Archibald Lizardswizzler	01/08/2016	In progress
9	Insane Trombone	Iris Deadparade	05/05/2016	In progress
10	Rapid Scissor	Isaac Furnace-Coldbath	18/03/2016	In progress



This spreadsheet shows the due date and status for some projects running in our department.

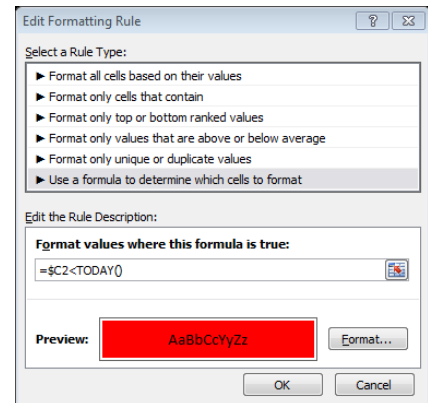
We are going to set conditional formatting to:

- Mark the entire row in red for any projects where the due date has passed
  - Mark the entire row in yellow for any projects where the due date is in 2 weeks or less
2. If you have downloaded the exercise file from our website, it will possibly be out of date. So this exercise will work, change the dates in column C so that:
- C5 and C7 dates are in the past
  - C4, C6, C8 and C9 are dates that are more than 2 weeks in the future
  - C2, C3 and C10 are dates within the next 2 weeks.

For example, the dates shown at the top of the page would work for 9<sup>th</sup> March 2016.

3. Click in cell C2 and open up the Conditional Formatting Rules Manager and show all rules for this worksheet.
4. Click on **New Rule** and click to choose **Use a formula to determine which cells to format**



5. When building the rule, we will build it for cell C2 as this is the first cell in the range of cells to which we will apply our conditional formatting rule.
6. Type the formula = $C2 < TODAY()$   
This will check whether the due date in column C is in the past (less than today's date).
7. Click on the **Format** button, choose to fill the cells with red and click **OK**.
8. Click **OK**.
9. In the rules manager, click on the  icon for our new rule to specify the range of cells to which we want to apply this rule.
10. On the worksheet itself, use your mouse to select the cell range A2 to D10. Then click  to expand the Rules Manager again.
11. Click **Apply** then **OK** to apply the rule.

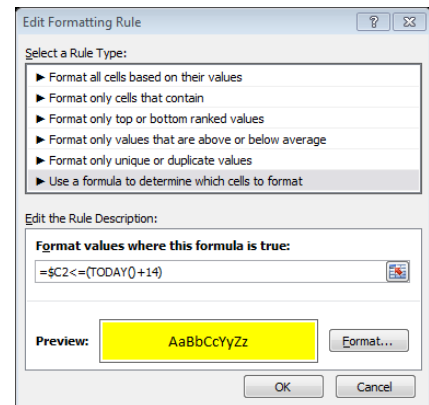


	A	B	C	D
1	<b>Project name</b>	<b>Sponsor</b>	<b>Due Date</b>	<b>Status</b>
2	Wild Poseidon	Franklin Coleridge-Ginger	15/03/2016	completed
3	Rich Subtle Waffle	Nora Millipedetrotter	17/03/2016	in progress
4	Hollow Toupee	Fern Yeats-Bilborough	05/11/2016	in progress
5	Risky Bird	Isaac Furnace-Coldbath	11/12/2015	Completed
6	Maximum Dinosaur	Beatrix Wormsmacker	27/03/2016	Completed
7	Intense Crayon	Finn Plewpp	15/01/2016	In progress
8	Severe Albatross	Archibald Lizardswizzler	01/08/2016	In progress
9	Insane Trombone	Iris Deadparade	05/05/2016	In progress
10	Rapid Scissor	Isaac Furnace-Coldbath	18/03/2016	In progress

All of the rows with a date in the past are marked in red. Let's mark the rows for any projects nearing the deadline.

12. Click on cell C2 and open up the Conditional Formatting Rules Manager and show all rules for this worksheet.
13. Click on **New Rule** and click to choose **Use a formula to determine which cells to format**

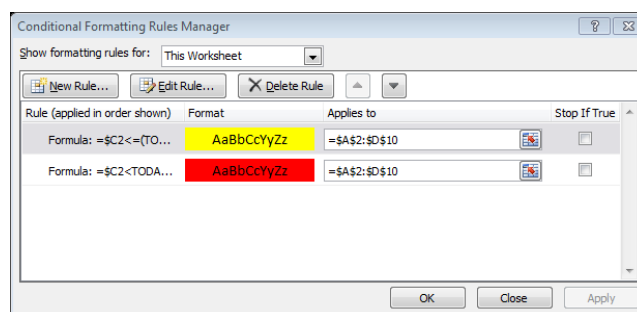
14. When building the rule, we will again build it for cell C2 as this is the first cell in the range of cells to which we will apply our conditional formatting rule.
15. Type the formula = $\$C2 \leq (TODAY()+14)$   
This will check whether the due date in column C is in 2 weeks or less (less than or equal to today + 14 days)
16. Click on the **Format** button, choose to fill the cells with yellow and click **OK**.
17. Click **OK**.
18. In the rules manager, click on the  icon for our new rule to specify the range of cells to which we want to apply this rule.
19. On the worksheet itself, use your mouse to select the cell range A2 to D10. Then click  to expand the Rules Manager again.
20. Click **Apply** then **OK** to apply the rule.



	A	B	C	D
1	<b>Project name</b>	<b>Sponsor</b>	<b>Due Date</b>	<b>Status</b>
2	Wild Poseidon	Franklin Coleridge-Ginger	15/03/2016	completed
3	Rich Subtle Waffle	Nora Millipedetrotter	17/03/2016	in progress
4	Hollow Toupee	Fern Yeats-Bilborough	05/11/2016	in progress
5	Risky Bird	Isaac Furnace-Coldbath	11/12/2015	Completed
6	Maximum Dinosaur	Beatrix Wormsmacker	27/03/2016	Completed
7	Intense Crayon	Finn Plewpp	15/01/2016	In progress
8	Severe Albatross	Archibald Lizardswizzler	01/08/2016	In progress
9	Insane Trombone	Iris Deadparade	05/05/2016	In progress
10	Rapid Scissor	Isaac Furnace-Coldbath	18/03/2016	In progress

## Exercise K. Changing the rules hierarchy



None of our rows are red now. Why? If we open up our rules manager, we can see that our red rule for projects with a completion date in the past is still there. So why hasn't it been applied?



For rows with a date in the past, both our rules are true. The date IS less than 2 weeks from today AND is in the past.



However, if two rules exist, only one can apply. The rule that is higher in the hierarchy in the rules manager always takes precedence.

To control the order of rules in the hierarchy, use the   buttons to move rules up and down the list.

**21.** Move the yellow rule down so that it appears below the red row in the rules hierarchy.

**22.** Click on **Apply** and click **OK**.

	A	B	C	D
1	<b>Project name</b>	<b>Sponsor</b>	<b>Due Date</b>	<b>Status</b>
2	Wild Poseidon	Franklin Coleridge-Ginger	15/03/2016	completed
3	Rich Subtle Waffle	Nora Millipedetrotter	17/03/2016	in progress
4	Hollow Toupee	Fern Yeats-Bilborough	05/11/2016	in progress
5	Risky Bird	Isaac Furnace-Coldbath	11/12/2015	Completed
6	Maximum Dinosaur	Beatrix Wormsmacker	27/03/2016	Completed
7	Intense Crayon	Finn Plewpp	15/01/2016	In progress
8	Severe Albatross	Archibald Lizardswizzler	01/08/2016	In progress
9	Insane Trombone	Iris Deadparade	05/05/2016	In progress
10	Rapid Scissor	Isaac Furnace-Coldbath	18/03/2016	In progress

**23.** Add another rule to the top of the list to turn rows green if the status is **Completed** in column D.

	A	B	C	D
1	<b>Project name</b>	<b>Sponsor</b>	<b>Due Date</b>	<b>Status</b>
2	Wild Poseidon	Franklin Coleridge-Ginger	15/03/2016	completed
3	Rich Subtle Waffle	Nora Millipedetrotter	17/03/2016	in progress
4	Hollow Toupee	Fern Yeats-Bilborough	05/11/2016	in progress
5	Risky Bird	Isaac Furnace-Coldbath	11/12/2015	Completed
6	Maximum Dinosaur	Beatrix Wormsmacker	27/03/2016	Completed
7	Intense Crayon	Finn Plewpp	15/01/2016	In progress
8	Severe Albatross	Archibald Lizardswizzler	01/08/2016	In progress
9	Insane Trombone	Iris Deadparade	05/05/2016	In progress
10	Rapid Scissor	Isaac Furnace-Coldbath	18/03/2016	In progress

## 4.4 Comparing with cells on another sheet using VLOOKUP

You can use VLOOKUP within your conditional formatting formulae, to compare a value against a value on a different sheet.


### Exercise L. Comparing data on other sheets using VLOOKUP

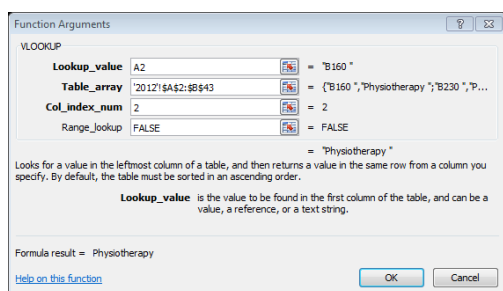
Note: this exercise assumes an understanding of the VLOOKUP function.

#### 1. Open up the file **VLOOKUP.xls**

	A	B	C	D	E
1	Course code	Course Title	Course existed in 2012? (VLOOKUP)	Website hits	
2	B160	Physiotherapy	Physiotherapy	148	
3	B230	Pharmacy (4 years)	Pharmacy (4 years)	29	
4	B340	Complementary Healthcare	Complementary Healthcare	0	
5	B720	Midwifery	Midwifery	104	
6	B721	Midwifery (18 Months)	#N/A	55	
7	B730	Nursing (Child)	Nursing (Child)	85	
8	B760	Nursing (Mental Health)	Nursing (Mental Health)	82	
9	B780	Paramedic Practice	Paramedic Practice	327	
10	B7L0	Nursing (Adult)	Nursing (Adult)	0	
11	B940	Biomedical Science	Biomedical Science	54	
12	B941	Person-Centred Counselling	Person-Centred Counselling	37	
13	B995	Pediatrics	Pediatrics	65	

- This workbook lists the number of hits each course we run received on our website in 2012 and 2013. Column C on the 2013 worksheet contains a VLOOKUP formula to check whether the course existed in 2012.

Double click on cell C2 and then click on the  icon on the formula bar to see how VLOOKUP formulae are built. This formula checks:





- If cell A2 exists in the data table with the range A2 to B43 on the 2012 sheet
- if it exists, the contents of column 2 will be returned
- the formula will check for exact matches only.

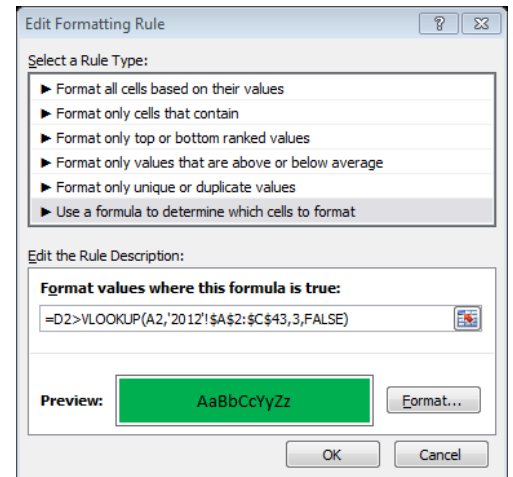
Let's try building a VLOOKUP into a conditional formatting rule. We'll colour all cells in column D on the 2013 sheet where value is larger than the number of hits for that course in column C on the 2012 sheet.

- Click in cell D2 and open up the Conditional Formatting Rules Manager and show all rules for this worksheet.

4. Click on **New Rule** and click to choose **Use a formula to determine which cells to format**
5. When building the rule, we will build it for cell D2 as this is the first cell in the range of cells to which we will apply our conditional formatting rule.
6. Type the formula  
`=D2>VLOOKUP(A2,'2012!$A$2:$C$43,3,FALSE)`

This checks whether the number in D2 is greater than the corresponding figure for that course code on the 2012 worksheet.

7. Click on the **Format** button, choose to fill the cells with green and click **OK**.
8. Click **OK**.
9. In the rules manager, click on the  icon for our new rule to specify the range of cells to which we want to apply this rule.
10. On the worksheet itself, use your mouse to select the cell range D2 to D28. Then click  to expand the Rules Manager again.
11. Click **Apply** then **OK** to apply the rule.



	Name Box	B	C	D
1	Course code	Course Title	Course existed in 2012? (VLOOKUP)	Website hits
2	B160	Physiotherapy	Physiotherapy	148
3	B230	Pharmacy (4 years)	Pharmacy (4 years)	29
4	B340	Complementary Healthcare	Complementary Healthcare	0
5	B720	Midwifery	Midwifery	104
6	B721	Midwifery (18 Months)	#N/A	55
7	B730	Nursing (Child)	Nursing (Child)	85
8	B760	Nursing (Mental Health)	Nursing (Mental Health)	82
9	B780	Paramedic Practice	Paramedic Practice	327
10	B7L0	Nursing (Adult)	Nursing (Adult)	0
11	B940	Biomedical Science	Biomedical Science	54
12	B941	Person-Centred Counselling	Person-Centred Counselling	37
13	B985	Podiatry	Podiatry	85
14	C100	Biology	Biology	26
15	C110	Biological Sciences (City College Brighton & Hove)	Biological Sciences (City College Brighton & Hove)	24

#### 4.4.1 Note for using conditional formatting on cells containing formulae

You cannot check for #N/A within a cell when using conditional formatting.

i.e. In the previous exercise, you could not set up a conditional formatting rule in column C on the 2013 sheet to colour any cells containing #N/A.

To do this, you would need to use the IFERROR() function along with your VLOOKUP to return some text instead of #N/A if the result is an error.

e.g. the formula in cell C2 would read:

**=IFERROR(VLOOKUP(A2,'2012'!\$A\$2:\$B\$43,2,FALSE),"-")**

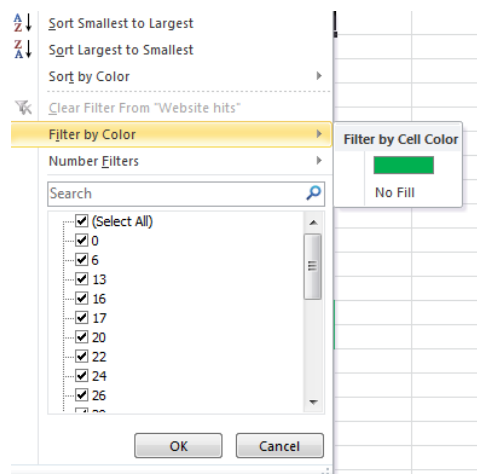
to show – instead of #N/A in any cells where there is an error as the result of the formula.

## 5 Filtering using conditional formatting

Once conditional formatting is applied to a column, the formatting will be available for you to filter the column according to format.

### Exercise M. Filtering

1. Open the file **Filtering.xls**
2. Click in column D.
3. On the **Home** tab, click on the **Sort and Filter** icon.
4. Click on **Filter**.
5. Click on the drop down arrow in cell A1 to choose the filter.
6. Point at **Filter by color** and click to choose green.
7. The sheet will be filtered to only show rows where column D is green.



	A	B	C	D
1	Course code	Course Title	Course existed in 2012? (VLOOKUP)	Website hits
7	B730	Nursing (Child)	Nursing (Child)	85
9	B780	Paramedic Practice	Paramedic Practice	327
14	C100	Biology	Biology	26
15	C110	Biological Sciences (City College Brighton & Hove)	Biological Sciences (City College Brighton & Hove)	24
24	CL82	Politics and Applied Psychology	Politics and Applied Psychology	30
27	CX13	Environmental Biology and Education	Environmental Biology and Education	17