What is the FILTER function?

The FILTER function (available in Microsoft 365) searches for information within a range of cells using criteria you define and copies it to a new location in your wosksheet or workbook. It is a special type of function called an *Array Function*- this means that the result of the formula will extend across more than one cell if necessary without you having to copy the formula downwards.

Why would I use it?

It saves you from manually searching large amounts of data then copying and pasting the results. Another advantage is that is that it keeps the search results up to date without the need to refresh the filter (as you'd need to with the traditional methods of filtering data in Excel).

Is there anything I need to watch out for?

Yes. FILTER is an *array function* so you can't change an individual part of the array (the results of the search) If I need to edit or delete the function, the cursor must be in the cell I wrote it in. I must also leave space below the cell(s) containing the function because it needs room to extend across multiple cells if necessary. If there's no room because you entered data there, Excel will display a #SPILL error, meaning it can't 'spill' the results into the cells below. Delete the data that's blocking the way and the function will work.

What is the syntax for it?

=FILTER(array, include, [if empty]) The first two are required; the third is optional.

- **array** = the range of cells you'd like to filter, i.e. the range containing the information you'd like to display in the results.
- **include** = the criteria for the search. This is like a logical test where you compare the contents of a cell to something else, e.g. A2:A30 = "Aberdeen".
- **[if-empty]** = what you want to return if there are no results, e.g. "No results for that city"

Example

I have a list of customers and their holiday details. I would like to list the names of people going to a specific destination. I enter the destination in cell M2 and want the list to start in cell M5.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	CustID	CustName	Departure Date	Destination	No. in Party	Price per person	Cost	Discount	Amount Due				Destination
2	AND46	Anderson	11/03/2022	Malaga	4	£750.00	£3,000.00		£3,000.00				Las Palmas
3	SMI13	Smith	26/10/2022	New York	2	£2,000.00	£4,000.00		£4,000.00				
4	SCO42	Scott	16/08/2022	Las Palmas	8	£350.00	£2,800.00		£2,800.00				CustName
5	TAY81	Taylor	14/11/2022	Paris	2	£423.75	£847.50		£847.50				Scott
6	WIL16	Williams	11/05/2022	Berlin	3	£1,224.00	£3,672.00		£3,672.00				Powell
7	AND69	Andrews	27/01/2022	Barcelona	4	£523.50	£2,094.00		£2,094.00				Rogers
8	SIM28	Simpson	05/03/2022	Corralejo	10	£361.25	£3,612.50		£3,612.50				
9	JAC100	Jacobs	19/06/2022	Paphos	5	£1,233.75	£6,168.75		£6,168.75				
10	MON72	Montgomery	02/05/2022	Los Cristianos	4	£750.00	£3,000.00		£3,000.00				
11	NIC89	Nicolson	01/09/2022	Cairo	3	£916.67	£2,750.00		£2,750.00				
12	NOO35	Noonan	06/01/2022	Corralejo	6	£1,372.50	£8,235.00		£8,235.00				

The formula in cell M5 appears as **=FILTER(B2:B30,D2:D30=M2,"No customers")** If I change the destination in cell M2, the result will update. It will also update if I change a customer's destination in column D.

- **B2:B30** is the **array**. I want to produce a list of names, so column B is where the FILTER function needs to look for those names.
- **D2:D30** is the **include** range. I've entered the destination I'm looking for (in cell **M2**) so the FILTER function will look for all matching destinations in column D.
- **"No customers"** is the message I want to display if there are no matching destinations. It's essential to include the quotation marks if displaying text.
  Note: if there were no matches and I wanted to leave the result blank, I would type "".

> I don't need to copy the formula down from M5 because FILTER is an array function. The list will expand or shrink, depending on the number of matches it finds.

Editing an array function

You can't edit part of an array. You must make any changes in the cell you entered the function originally. The Formula Bar will display the function in black text in the original cell, but in grey text if your cursor is positioned on any other cell within the array.

Can I use more than one criteria in the Include part?

Yes. You can include multiple criteria. The syntax is a little more complex, depending on whether you are looking for all criteria to be met (AND) or only one to be met (OR).

Example of an AND filter

I want a list of customers going to the destination in cell M2 **and** with the minimum number of travellers in entered in N2:

=FILTER(B2:B30,(D2:D30=M2)*(E2:E30>=N2),"No Customers")

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	CustID	CustName	Departure Date	Destination	No. in Party	Price per person	Cost	Discount	Amount Due				Destination	Min group No.
2	AND46	Anderson	11/03/2022	Malaga	4	£750.00	£3,000.00		£3,000.00				Corralejo	5
3	SMI13	Smith	26/10/2022	New York	2	£2,000.00	£4,000.00		£4,000.00					
4	SCO42	Scott	16/08/2022	Magaluf	8	£350.00	£2,800.00		£2,800.00				CustName	
5	TAY81	Taylor	14/11/2022	Paris	2	£423.75	£847.50		£847.50				Simpson	
6	WIL16	Williams	11/05/2022	Berlin	3	£1,224.00	£3,672.00		£3,672.00				Peacock	
7	AND69	Andrews	27/01/2022	Barcelona	4	£523.50	£2,094.00		£2,094.00					
8	SIM28	Simpson	05/03/2022	Corralejo	10	£361.25	£3,612.50		£3,612.50					
9	JAC100	Jacobs	19/06/2022	Paphos	5	£1,233.75	£6,168.75		£6,168.75					
10	MON72	Montgomery	02/05/2022	Los Cristianos	4	£750.00	£3,000.00		£3,000.00					
11	NIC89	Nicolson	01/09/2022	Cairo	3	£916.67	£2,750.00		£2,750.00					
12	NOO35	Noonan	06/01/2022	Marrakech	6	£1,372.50	£8,235.00		£8,235.00					

Example of an OR filter

I want a list of customers **either** going to the destination in cell M2 **or** with a minimum number of travellers entered in N2:

=FILTER(B2:B30,(D2:D30=M2)+(E2:E30>=N2),"No Customers")

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	CustID	CustName	Departure Date	Destination	No. in Party	Price per person	Cost	Discount	Amount Due				Destination	Min group No.
2	AND46	Anderson	11/03/2022	Malaga	4	£750.00	£3,000.00		£3,000.00				Corralejo	5
3	SMI13	Smith	26/10/2022	New York	2	£2,000.00	£4,000.00		£4,000.00					
4	SCO42	Scott	16/08/2022	Magaluf	8	£350.00	£2,800.00		£2,800.00				CustName	
5	TAY81	Taylor	14/11/2022	Paris	2	£423.75	£847.50		£847.50				Scott	
6	WIL16	Williams	11/05/2022	Berlin	3	£1,224.00	£3,672.00		£3,672.00				Simpson	
7	AND69	Andrews	27/01/2022	Barcelona	4	£523.50	£2,094.00		£2,094.00				Jacobs	
8	SIM28	Simpson	05/03/2022	Corralejo	10	£361.25	£3,612.50		£3,612.50				Noonan	
9	JAC100	Jacobs	19/06/2022	Paphos	5	£1,233.75	£6,168.75		£6,168.75				Paterson	
10	MON72	Montgomery	02/05/2022	Los Cristianos	4	£750.00	£3,000.00		£3,000.00				Peacock	
11	NIC89	Nicolson	01/09/2022	Cairo	3	£916.67	£2,750.00		£2,750.00				Rogers	
12	NOO35	Noonan	06/01/2022	Marrakech	6	£1,372.50	£8,235.00		£8,235.00				Saleh	

Further information and help

Use MyIT to log calls with the IT Service Desk: https://myit.abdn.ac.uk

The FILTER function (Microsoft website) – further details and a video about the function