Sum Froduct

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We're a little introspective this month as we announce two internal pieces of news (our very own Steve Kraynak becomes an Excel MVP and we have a new brochure for your perusal), plus take a personal look through our newest MVP at what it's like to attend the very recent Microsoft MVP Summit (expensive, apparently...).

Of course, we have *most* of our usual features. I say "most" as the Power BI Updates announcement has been released too late for this newsletter, but no mind – let's hope they make a *Swift* return next month...

We still have to take a look at why we love merged cells so much (newsflash: we don't), plus there are the usual Beat the Boredom Challenge, Charts & Dashboards tips, Excel for Mac, Visual Basics, Power Pivot Principles, Power Query Pointers and Excel Updates. We even put our A to Z of Keyboard Shortcuts under the **UV** and we have more Excel functions this **MONTH** too...

As always, happy reading and remember: stay safe, stay happy, stay healthy

Liam Bastick, Managing Director, SumProduct



Introducing Our New Brochure

We are excited to launch our new company brochure: SumProduct - Your Partners in Modelling, Excel and Power BI.



This comprehensive guide is designed to showcase our range of consulting and training services, including a complete listing of courses available in various learning formats. Whether you are aiming to enhance your skills in the constantly evolving world of Excel and Power BI or seeking support for a modelling project or customised training solution for your finance team, this brochure outlines our extensive experience and expertise.

Check it out by clicking on the link here. And stay tuned for the upcoming launch of our new website!



Steve Kraynak MVP



We are very pleased to announce US head honcho **Steve Kraynak** has been awarded Microsoft's Most Valuable Professional (MVP) award for Excel. This award recognises exceptional technical community leaders from around the world who voluntarily share their high-quality, realworld expertise with others. Microsoft MVPs are a highly select group of experts representing technology's best and brightest who share a deep commitment to community and a willingness to help others.

Worldwide, there are over 100 million participants in technical communities; of these participants, there are c.3,200 active Microsoft MVPs. In Excel, we believe there are approximately 130 that have received this award – and we presently have three of them here at SumProduct!

We certainly think Steve deserves it. After more than a decade as a Product Manager for the Excel team at Microsoft, where he directly impacted many features in Excel, including new worksheet functions like **IFS** and **TEXTJOIN**, Data from Picture, Excel for Mac, user experience improvements like Smooth Scrolling, and many others, Steve has continued to share his enthusiasm and expertise on all things PivotTable, Power Query and Mac Excel on both LinkedIn and on this very website – check out his latest Friday blog on Excel for Mac here.

Welcome to the madhouse, Steve! Hopefully, **Tim Heng** and **Liam Bastick** can rejoin you in July!

Global MVP Summit: A Personal Perspective from New MVP Steve Kraynak

As mentioned above, Steve Kraynak has just become an Excel Most Valuable Professional (MVP). Again, congratulations Steve! As a result – albeit at the last minute – he was invited to the Microsoft MVP Summit at the Microsoft Redmond Campus in Washington state, USA (Tuesday 12 – Thursday 14 March). Yours truly couldn't go this year, so we asked Steve to provide a personal review (below).

Whilst Steve cannot provide any details regarding content (the details revealed to MVPs remains confidential), there was plenty else to remark upon. Over to you, Steve...

I had a very rare opportunity in early March, as a newly minted Microsoft MVP, to attend my first Global MVP Summit as a guest, less than one year after leaving the Microsoft Excel engineering team. I've been on the hosting side for a dozen Global MVP Summits, and now I was a guest! Let me tell you all about my experience in this new role.

What's a Microsoft MVP?

In case you're not aware, MVP stands for Most Valuable Professional. The MVP Award is Microsoft's way of saying "Thanks!" to outstanding community leaders, who are recognised as experts with regard to Microsoft's products. In their own words, "the contributions MVPs make to the community, ranging from speaking engagements to social media posts, to writing books, and to helping others in online communities have incredible impact".



A group of Microsoft MVPs along with members of the Excel team on the Redmond campus. SumProduct's very own **Steve Kraynak** and **Tim Heng** are third and fourth from left in the front row respectively.

Each year, Microsoft hosts the Global MVP Summit, an exclusive event hosted in Microsoft's global headquarters in Redmond. This is the chance for MVPs and the product teams to come together in-person (and virtually) to share thoughts, ideas, complaints, wishes and experiences with each other. It's also a time to build relationships that sometimes turn into longtime friendships and even business partnerships. Liam, Tim and I can attest to that, given that I met them at past MVP Summits, and now we're in business together with SumProduct.

Global Reach

Excel MVPs are found around the globe, and while many joined the Summit remotely via Microsoft Teams, there were attendees from near and far, representing all continents aside from Antarctica. We

determined that the furthest distance travelled to attend the event was over 15,000 kilometres (9,300 miles for our readers in the US or a half hour's drive for our Australian readers).



MVPs from Australia, Bulgaria, Cambodia, France, Romania, Slovenia, the UK, and the US pose in front of a banner containing the names of all current MVPs.

A Subscription for Success

My first MVP Summit was back in 2012, when I had recently joined the Excel engineering team at Microsoft. In those days, the conference was largely a chance for the engineering team members to give the MVPs a preview of what the next version of Excel would look like and what features it would have. Due to the typical three-year release cycle for Microsoft Office, there wasn't much chance for MVPs to influence the design of new features, but that never stopped them from trying. [Too right! – Ed.]

As a new member of the engineering team, I was prepped before meeting and presenting to the MVPs that there would be lots of tough questions about the product and I should be ready to just say, "That's great feedback, thank you" when I either didn't have an answer or couldn't share the real answer.



MVPs Steve Kraynak (left) and Tim Heng (right) from SumProduct along with MVP Tom Urtis.

Things changed dramatically (for the better) with the advent of Office 365 (now Microsoft 365) subscriptions, which ushered in the era of monthly updates. With this new and much faster release cycle, the MVP Summits became much more interesting. The engineering team was now able to ask the MVPs for their opinion about ideas long before committing to their plans. This has been a great change in terms of product improvements and innovation, and a big reason has been a significant increase in the impact and influence of the MVPs.

Inside and Out

There are typically two distinct perspectives at the MVP Summit – one is Microsoft's perspective and one is that of the MVPs. The Excel MVPs want to learn as much as they can about Microsoft's plans for the product, get explanations about decisions that have been made in the past and share their thoughts and suggestions with the product team to influence the future of Excel. They also want to immerse themselves in the amazing MVP community to network and learn from each other.

On the other side, Microsoft wants to gain insights from the MVPs to help make the products better. To do this most effectively, they share lots of information about their thoughts and plans. They want to hear the opinions about all this from the MVPs, who are experts, and also have extensive knowledge about real-world usage of the products.

It's a win-win situation, but it's not without tension, which comes when honest, frank and passionate feedback highlights any shortcomings of

Connecting and Reconnecting

I was anxious about returning to the place where I spent over 10 years of my career. Those years went by fast, but that's a long time and there are many memories to look back on. If you've ever lived in a house for a long time, then moved away and came back to visit the new owners, you probably have a sense for what I was feeling. I was also reconnecting For example, I worked on new Excel functions around the time that **TEXTJOIN** and **IFS** were released. We were able to show our early designs to the MVPs, who provided feedback that directly impacted our plans. We adjusted some aspects of the function that we did release, and we even cancelled our plans for a few functions that didn't seem important after hearing from MVPs. Microsoft was now much more agile than it had been in the time of three-year release cycles.

the product. Excel is a powerful, flexible and feature-rich application, which opens it up to lots of different opinions. The MVP Summit plays host to many spirited discussions about major product decisions, as well as minor aspects. For example, should "PivotTables" have been called something less "techy"? Should Tabular or Compact layout be the default for PivotTables? Why haven't Tables been made to work better?

Now residing on the MVP side of the fence made for an interesting experience. I worked on some features that are still in development, but now I'm not in a position to speak on Microsoft's behalf about those. I have the inside scoop that's unusual for an MVP, but I also have the MVP perspective that's unusual for a member of the product team. I found myself answering questions to the other MVPs to help them understand the inner workings of Microsoft and describing what it's like on the outside to my former colleagues. It was a weird experience for sure.

with MVPs and connecting with new MVPs, since I missed the 2023 summit. My anxiety quickly went away, thanks to a warm welcome from both Microsoft and the MVPs. It felt great to be back in such an amazing community!

Highlights of the Summit

Overall, Artificial Intelligence (AI) was a highlight, discussed by many of the Summit's attendees. If you've been following any news at all for the past 18 months, you know that AI is all the rage. Opinions about ChatGPT, Copilot and AI were rife. It was truly fascinating to hear the thoughts and predictions of so many talented and intelligent people from the tech industry. Clearly, MVPs learn from each other all the time. There were experts in the room for just about every aspect of Excel, Power Query, Power Pivot, Power BI and many other Microsoft products. We all realised what an amazing opportunity the MVP Summit is to share with each other and learn from the greats. We discussed and learned about how to provide training, create awesome videos, do things faster, use "tables" and dynamic arrays, export and import data, and much more.

Time for Fun!

Surrounding all the serious and technical discussions there was time for connecting on a personal level. Although this group might include a few computer nerds, they know how to have fun.



A group of MVPs attending a mixer held on Microsoft's campus (Steve Kraynak on left, Tim Heng on right).

Here's a sample of the after-work activities:

- Wine, beer and other winning formulae
- "Business meetings" at a popular bar in Bellevue, WA, including trivia night with team names like XLOOKUPS and the Dynamic Arrays
- Enjoying the famous seafood of the area spread across the table, enjoyed with bibs and mallets



MVPs Oz Du Soleil and Cristiano Galvao enjoying the Seattle seafood scene.

- Did I mention wine and beer?
- A bit of culture with the famous Seattle Symphony
- Hiking and sightseeing around the beautiful Seattle area
- Pictures, pictures, pictures



MVP Steve Kraynak of SumProduct waiting for the Seattle Symphony to perform at Benaroya Hall.

The SUMPRODUCT of it all

Multiplying an array of MVPs with the Microsoft Excel product team, Excel topics that everyone was passionate about, and the beautiful weather that surrounded the MVP Summit, resulted in an amazing experience for everyone. I hope to be back for many years to come.

Merged Cells

A couple of weeks ago, someone was trying to extol the virtues of those pesky merged cells:

	А	В	С	D	E	F	G
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2							
3							
4							
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6			Tan	ameigeu	LEII		
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Hmmm... I am not so convinced. If anyone wants to know how to create merged cells, you've come to the wrong newsletter. To be clear, if I were to list the benefits, I might choose from the following:

- It allows you to format your spreadsheet in new, exciting and unexpected ways
- Makes programming in VBA referencing cells much more fun
- Stops end users relying on PivotTables for basic data analysis
- Creates extra spacing in your charts
- Prevents users from sorting, copying, pasting, deleting, filtering, data validating or moving data (pretty much anything, really) easily
- You don't need to figure out how to widen columns
- It allows you to hide pre-existing data in secondary cells forever

- It prevents end users from using those infernal dynamic arrays (pro tip: always type a "|" in a merged cell and centre it for maximum chance of non-detection)
- Easier to perpetrate frauds using SUMIF and VLOOKUP (anything that screws up VLOOKUP is A OK in my book) or using auditing tools
- Provides hours of fun for standard Excel users who cannot figure out how to locate them
- Can cause hours of annoyance for expert Power Query users who cannot determine what's wrong with their M code
- Probably makes Copilot work better in Excel
- For best effect: use merged cells with different numbers of columns and rows in the same column / row.

Get the picture ..?

Beat the Boredom Challenge

With many of us currently "working from home" / quarantined, there are only so Zoom / Teams calls and virtual parties you can make before you reach your (data) limit. Perhaps they should measure data allowance in blood pressure millimetres of mercury (mmHg). To try and keep our readers engaged, we will continue to reproduce some of our popular **Final Friday Fix** challenges from yesteryear in this and upcoming newsletters. One suggested solution may be found later in this newsletter. Here's this month's...

This month, we are pulling inspiration from our consulting work. The problem here relates to how Excel, Power Query and Power Pivot handle a table / Table with similar column names. The premiss here is that we can normally import data from Excel into Power Query, make a couple of data transformations then export the data to Power Pivot to create measures and other calculations with the data table.

Let's just jump right into our example, assume we have the following Table:

Customer ID	Customer Name	Date	Country	Region	Transaction Type	Transaction type	Amount
1004	Harmonic Sonics	5/09/2018	AU	BBE	Payments	Internal	711
1001	Bizuplyz	29/10/2019	AU	SPA	Payments	External	4,459
1003	L. R. Repeat	25/12/2017	AU	JUY	Payments	Internal	644
1003	L. R. Repeat	20/11/2018	AU	SPA	Payments	Internal	2,472
1003	L. R. Repeat	8/03/2019	AU	JUY	Payments	Internal	5,917
1004	Harmonic Sonics	13/08/2018	AU	SPA	Payments	External	2,352
1003	L. R. Repeat	8/05/2020	AU	GFY	Payments	Internal	508
1003	L. R. Repeat	12/05/2020	AU	SPA	Payments	External	3,749
1004	Harmonic Sonics	29/06/2018	AU	GFY	Payments	External	2,764
1002	Plumb'n'Stuff	22/02/2019	AU	SPA	Payments	Internal	675
1002	Plumb'n'Stuff	7/06/2019	AU	GFY	Payments	External	5,716
1004	Harmonic Sonics	23/01/2019	AU	JUY	Payments	External	756
1002	Plumb'n'Stuff	2/12/2018	AU	NHJ	Payments	Internal	2,543
1004	Harmonic Sonics	10/07/2018	AU	GFY	Payments	External	5,516
1002	Plumb'n'Stuff	17/03/2020	AU	NHJ	Payments	External	3,989

We import this into Power Query:

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		2	1001	Bizuplyz	29-Oct-19 12:00:00 AN	I AU	SPA	Payments		External		4459	^	Name		
		3	1003	R. Repeat	25-Dec-17 12:00:00 AN	I AU	JUY	Payments		Internal		644		Sales Data		
		4	1003 1	. R. Repeat	20-Nov-18 12:00:00 AN	f AU	SPA	Payments		Internal		2472		All Properties		
		5	1003 1	. R. Repeat	08-Mar-19 12:00:00 AA	/ AU	JUY	Payments		Internal		5917		▲ APPLIED STEPS		
		6	1004	farmonic Sonics	13-Aug-18 12:00:00 AN	I AU	SPA	Payments		External		2352				
		7	1003 (R. Repeat	08-May-20 12:00:00 AN	1 AU	GFY	Payments		Internal		508		Source		
		8	1003	R. Repeat	12-Moy-20 12:00:00 AN	f AU	SPA	Payments		External		3749		Changed Type × Renamed Column		
		9	1004 1	farmonic Sonics	29-Jun-18 12:00:00 AN	1 AU	GFY	Payments		External		2764		A Renamed Column	IS	
		10	1002	PlumbiniStuff	22-Feb-19 12:00:00 AN	f AU	SPA	Payments		Internal		675				
		11	1002	Plumb'n'Stuff	07-Jun-19 12:00:00 AN	I AU	GFY	Payments		External		5716				
		12	1004	Harmonic Sonics	23-Jan-19 12:00:00 AN	I AU	JUY	Payments		External		756				
		13	1002	Plumb'n'Stuff	02-Dec-18 12:00:00 AN	1 AU	NHU	Payments		Internal		2543				
		14	1004	farmonic Sonics	10-Jul-18 12:00:00 AN	I AU	GFY	Payments		External		5516				
		15	1002	Plumb'n'Stuff	17-Mar-20 12:00:00 AN	I AU	NHJ	Payments		External		3989				
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		21		Plumb'n'Stuff	11-Feb-18 12:00:00 AA		SPA	Payments		Internal		3885				
		22	1001		09-Feb-20 12:00:00 AN		NHU	Payments		Internal		2442				
		23	1001		26-Jan-20 12:00:00 AN		NHU	Payments		External		5587				
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Now, let's imagine we wish to export the data from Power Query into a table in Excel:

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1	Customer ID 🔽	Customer Name 🔽	Date 🗸	Country 🗸	Region 星	Transaction Type 🔽	Transaction type2 🔽	Amount 🚽
2	1004	Harmonic Sonics	05-09-18 0:00	AU	BBE	Payments	Internal	711
3	1001	Bizuplyz	29-10-19 0:00	AU	SPA	Payments	External	4459
4	1003	L. R. Repeat	25-12-17 0:00	AU	JUY	Payments	Internal	644
5	1003	L. R. Repeat	20-11-18 0:00	AU	SPA	Payments	Internal	2472
6	1003	L. R. Repeat	08-03-19 0:00	AU	JUY	Payments	Internal	5917
7		Harmonic Sonics	13-08-18 0:00	AU	SPA	Payments	External	2352
8	1003	L. R. Repeat	08-05-20 0:00	AU	GFY	Payments	Internal	508
9	1003	L. R. Repeat	12-05-20 0:00	AU	SPA	Payments	External	3749
10	1004	Harmonic Sonics	29-06-18 0:00	AU	GFY	Payments	External	2764
11	1002	Plumb'n'Stuff	22-02-19 0:00	AU	SPA	Payments	Internal	675
12	1002	Plumb'n'Stuff	07-06-19 0:00	AU	GFY	Payments	External	5716
13	1004	Harmonic Sonics	23-01-19 0:00	AU	JUY	Payments	External	756
14	1002	Plumb'n'Stuff	02-12-18 0:00	AU	NHJ	Payments	Internal	2543
15	1004	Harmonic Sonics	10-07-18 0:00	AU	GFY	Payments	External	5516
16	1002	Plumb'n'Stuff	17-03-20 0:00	AU	NHJ	Payments	External	3989
17	1003	L. R. Repeat	15-11-18 0:00	AU	NHJ	Payments	External	4702
18	1003	L. R. Repeat	08-02-20 0:00	AU	SPA	Payments	External	5518
19	1004	Harmonic Sonics	26-06-18 0:00	AU	NHJ	Payments	Internal	4011
20		L. R. Repeat	04-10-18 0:00	AU	JUY	Payments	Internal	1826
21		Bizuplyz	05-09-18 0:00	AU	JUY	Payments	Internal	4894
22	1002	Plumb'n'Stuff	11-02-18 0:00	AU	SPA	Payments	Internal	3885
23	1001	Bizuplyz	09-02-20 0:00	AU	NHJ	Payments	Internal	2442
24	1001	Bizuplyz	26-01-20 0:00	AU	NHJ	Payments	External	5587
25	1002	Plumb'n'Stuff	23-05-19 0:00	AU	JUY	Payments	Internal	3676
26	1004	Harmonic Sonics	29-11-18 0:00	AU	SPA	Payments	Internal	3928
27	1001	Bizuplyz	12-11-18 0:00	AU	JUY	Payments	Internal	5762

... no problems here so far.

Now let's try to add the data into the data model in Power Pivot. Excel returns with this error message:

Microso	ft Excel X	;
	We couldn't get data from the Data Model. Here's the error message we got: Duplicate column 'Transaction Type' in the rowset. An error occurred while processing table 'Sales Data'. The current operation was cancelled because another operation in the transaction failed. OK	

This leaves us in a sticky a tricky situation as our data table did not have any duplicate columns, did it? So how do we go about fixing this? This is the challenge for this month: can you find a solution that will allow you to circumvent this error in Excel when adding the table above into the data model in Power Pivot?

Sounds easy? Try it. One solution just might be found later in this newsletter - but no reading ahead!

Excel for Mac

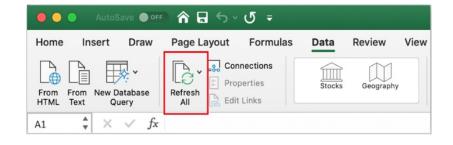
With Steve Kraynak joining the team, we thought we would exploit his knowledge and recant all about Microsoft Excel for Mac. Each month, we'll cover a different topic to help you understand how Excel for Mac is different than Excel for Windows. This month, it's all about Power Query. For a long time, it didn't even exist on Mac, but since it's such a key feature of Excel, the team at Microsoft has been steadily introducing more and more Power Query capability to Excel for Mac. As at the time of writing, it's still missing a few features, but it at least has a good foundation.

Step 1 of the journey: Refresh

Which came first, the query or the refresh? You can't refresh unless there's a query, right? That's correct, but in Excel for Mac, the ability to refresh came first. This meant the query had to be created in Excel for Windows, and then you could refresh it on Mac.

that it didn't have any Power Query features until mid-2019. At that time, Microsoft added the ability to refresh queries that were connected to text files. It seems like a very small step forward, but this was a big milestone, because it meant that the foundation of Power Query was there and working.

If you've been using Excel for Mac for a long time, you might be aware



In 2020, you were able to refresh from more types of data source, including tables / Tables within the workbook, SQL Server databases and the first cloud data import capability, with support for files on SharePoint, SharePoint Lists, SharePoint Folder and OData. While it

didn't enable much more capability, it showed a big foundational step for Power Query. The ability to sign into online sources is important so that other data sources can be supported in the future.

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Step 2: 'Get Data'

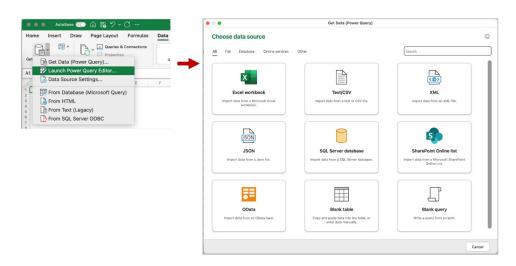
The next big step came in 2021, when the ability to 'Get Data' was introduced. You could now create new queries from local files to begin importing data from Excel files and text files. Previously, you could

refresh queries that were created on Windows, but there was no way to start a new query. The only way to edit a query was by using a VBA workaround, which was not convenient.

Step 3: Transform

In 2022, Microsoft announced that you could not only create new queries, but you could edit them as well with the Power Query editor on Mac. With this update, you could truly 'Get and Transform' your data.

This was a major improvement that really brought Excel for Mac to a level where you can get some serious work done.



Prior to this improvement, if you picked a data source for a new query, there was no ability to do the Transform steps that makes Power Query so powerful. Now, the full query editor is available on Mac, which is an amazing, so you can transform your data, even if you don't have access to a Windows computer.

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Remaining Limitations

Although creating and editing queries makes Power Query on Mac very capable, there are still a few limitations (as of this writing) that you should be aware of:

- Some data sources are not supported. If you look at the 'Get Data' menu in Excel for Windows, you'll notice a long list of data sources, many of which are not available on Mac. One of the key sources is 'From Table/Range', but there are other alternatives. The full list of data sources supported by different versions of Excel is published by Microsoft here: Power Query data sources in Excel versions
- You can't control the destination of the data from your queries, because the 'Load to...' dialog isn't available on Mac. This means that all queries will get loaded into Tables that appear in your worksheets
- Even if the 'Load to...' dialog were available, you wouldn't be able to add your queries to the Data Model since Power Pivot isn't available on Mac.

Since the Power Query features have been gradually introduced to Excel for Mac, we expect more features to be added over time, so keep watching for updates on the Excel team's blog: Excel Blog (microsoft.com).

Word to the Wise

For your reference, we've included links to Microsoft's Announcements about Power Query on Mac:

- May 2019: A Journey to Power Query in Excel for Mac (microsoft365.com)
- July 2020: Updates to Power Query in Excel for Mac (microsoft365.com)
- October 2020: Journey to Power Query in Excel for Mac continues (microsoft365.com)
- May 2021: Import data from local files with Power Query in Excel for Mac (microsoft365.com)
- May 2022: Shape data with Power Query Editor in Excel for Mac Microsoft Community Hub

We hope you find this week's topic helpful. Check back for more details about Excel for Mac and how it's different to Excel for Windows.

We'll continue next month...

Charts and Dashboards

It's time to chart our progress with an introductory series into the world of creating charts and dashboards in Excel. This month, we consider Rolling charts.

A "Rolling" chart is just like a rolling budget: it displays the last **x** months (typically, the past 12 months), but keeps up to date *automatically*. The idea is similar, but not quite the same, as we do not wish to extend the range, simply keep moving the 12 months along the time axis.

To do this, you still create a Table (mine is labelled 'Chart_Data'):

Ch	le Name: art_Data Resize Table Properties	×	Summa Remove Conver	e Dup		tTable
Cł	nart_Data 🔻	:	\times	\checkmark	f_{x}	01/
7 8 9	B C D	E	F ata		G	
10			Date		Sales	
11		- 6	1 Jan 2	0	296	5
12			1 Feb 2	_	405	_
13			1 Mar 2	_	336	
14		-	1 Apr 2	_	451	
15		-	1 May 2	_	179	
16			1 Jun 2	20	123	3
17			1 Jul 2	0	488	3
18			1 Aug 2	20	452	2
19			1 Sep 2	20	459)
20			1 Oct 2	0	101	
21			1 Nov 2	20	290)
22			1 Dec 2	20	476	5
23			1 Jan 2	1	249)
24			1 Feb 2	21	291	
25			1 Mar 2	1	136	5
26			1 Apr 2	1	322	2
27			1 May 2	21	189)
28			1 Jun 2	1	314	
29						-

I then calculate the latest date in the formula by typing =MAX(and then highlighting cells F11:F28 in my example. This gives me the formula

=MAX(Chart_Data[Date])

The great thing about this formula expressed in this way is as the dates extend, the range will update automatically. I use this formula in the final row of a second table (check out cell **L22** in the image below):

L22	•	XV	f_{x}	=MAX(C	Chart	_Data	a[Date])		
	BCDE	F	G	н		1	JK	L	М
7									
8	For Chart	Data					Fro	m Left	
9									
10		Date	Sales					Date	Sales
11		1 Jan 20	296					1 Jul 20	488
12		1 Feb 20	405					1 Aug 20	452
13		1 Mar 20	336					1 Sep 20	459
14		1 Apr 20	451					1 Oct 20	101
15		1 May 20	179					1 Nov 20	290
16		1 Jun 20	123					1 Dec 20	476
17		1 Jul 20	488					1 Jan 21	249
18		1 Aug 20	452					1 Feb 21	291
19		1 Sep 20	459					1 Mar 21	136
20		1 Oct 20	101					1 Apr 21	322
21		1 Nov 20	290					1 May 21	189
22		1 Dec 20	476					1 Jun 21	314
23		1 Jan 21	249						-
24		1 Feb 21	291						
25		1 Mar 21	136						
26		1 Apr 21	322						
27		1 May 21	189						
28		1 Jun 21	314,						
29									

To populate the rest of the data in column L, in cell L21 I write the following formula

=EDATE(L22,-1)

This generates the same day of the month one month earlier. I then copy this formula into cells L11:L20. Finally, I use a LOOKUP formula to derive the Sales data. For example, the formula in the final period here is

=LOOKUP(L22,Chart_Data)

Here, the **LOOKUP** formula will always look for the date in the first column of **Chart_Data** and return the value in the final (second) column. You should note that this chart data table is always 12 rows deep for a 12-month look-back. If you need a rolling budget for a different duration, simply amend the number of rows accordingly. It is this table that populates the chart:





Using Second Table



Until next month.

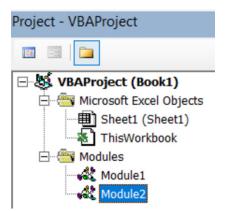
Visual Basics

We thought we'd run an elementary series going through the rudiments of Visual Basic for Applications (VBA) as a springboard for newer users. This month we consider the concept of a variable scope at a project level.

Variables can also be used in different subroutines and functions. If there are items that are known to have constant values throughout the entire workbook, they can be declared explicitly in one place for easy reference.

Project Level

Sharing variables between procedures within the same module was very simple but what if another module wanted to reuse the same variable?



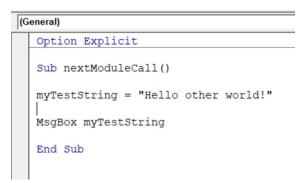
Module2 wants to use myTestString but it is declared in Module1.

(G	eneral)		
	Option Explicit		
	Sub nextModuleCall()	Microsoft Visual Basic for Applications	×
	MsgBox myTestString	Compile error:	
	End Sub	Variable not defined	
		OK Help	

Upon running, it again says the 'Variable not defined'. In order to force a variable to be accessible to the entire workbook the statement, the 'Public' statement may be used.

(G	eneral)
	Option Explicit
	Public myTestString As String
	Sub ScopeTest()
	myTestString = "Hello World!"
	End Sub
	Sub NextScopeTest()
	MsgBox myTestString
	End Sub

Now this will be accessible from **Module2** so when the following code is called.



The variable is used as necessary, and the expected result eventuates.



More next time.

Power Pivot Principles

We continue our series on the Excel COM add-in, Power Pivot. This month, we demonstrate how to use the LASTNONBLANK function.

The **LASTNONBLANK** function returns the last value in the column, where the expression is not blank. This function requires the following syntax to operate:

LASTNONBLANK(column, expression)

The **column** parameter can be a:

- reference to a column
- a table with a single column
- a Boolean expression that defines an individual column.

The **expression** is evaluated on each row of the column for blanks.

In this example, we will be using the following data table:

	А	В	С	D	
1					
2		Sales 🛛 🖵	Category 🖵	Date 💌	
3		115.00	1	1/06/2019	
4		14.00	1	2/06/2019	
5		35.00	2	3/06/2019	
6		169.00	1	4/06/2019	
7		167.00	2	5/06/2019	
8		16.00	2	6/06/2019	
9		45.00	4	7/06/2019	
10		187.00	3	8/06/2019	
11		116.00	3	9/06/2019	
12		146.00	4	10/06/2019	
13					

After we have loaded the Table into Power Pivot and created a PivotTable, we can populate it with some measures:

E	F	G	Н	I		PivotTable F	ields	т Х
		PivotTable1			-	Choose fields to add Search		• ۵ م
		a report, cho e PivotTable I				▶ 🖽 SalesAndCates	jory	
	-					Drag fields between	areas below:	
	-				-	T Filters	III Colu	mns
	_				-	Rows	Σ Value	
	-				-	≡ Kows	2 Value	5

We first create a measure that sums the total Sales:

=SUM(

SalesAndCategory[Sales]	
)	

Now, we can create a measure that retrieves the category of the last sale:

=LASTNONBLANK(

SalesAndCategor [Total Sales])	y[Category],
	Measure

Measure					?	\times
Table name:	SalesAndCateg	ory				~
Measure name:	Last Sale Categ	jory				
Description:						
Formula: f_X	Check formul	a				
	lesAndCate otal Sales]	gory[Category],				
General Number Currency Date TRUE/FALSE		Format:	Whole Number			~
				OK	Cance	4

We can see that the measure is in fact returning with category 4:

	A	В	С		D	Е	F	G	Н	PivotTable Fields		. ×
1												
2		Sales 🔍 🖵	Category	*	Date 🔽		Last Sale Category			Choose fields to add to report:		- di -
3		115.00		1	1/06/2019		4			· · · · ·		
4		14.00		1	2/06/2019					Search		Q
5		35.00		2	3/06/2019					SalesAndCategory		^
6		169.00		1	4/06/2019					Category		
7		167.00		2	5/06/2019					Date		
8		16.00		2	6/06/2019					$\checkmark f_X$ Last Sale Category	/	Ŧ
9		45.00		4	7/06/2019					Drag fields between areas below	c	
10		187.00		3	8/06/2019					T Filters	III Columns	
11		116.00		3	9/06/2019							
12		146.00		4	10/06/2019							
13											Σ Values	
14										-	Last Sale Category	~

which is what we would expect.

Now, what if we want a measure that will retrieve the value of the last sale? Following the logic of the previous measure we can write:



Measure		?	×
Table name: Measure name:	SalesAndCategory Last Sale Amount		~
Description:			
Formula: f_X	Check formula		
[Sa) Formatting Option	lesAndCategory[Sales], ales]		
Category: General	Symbol: \$		
Number Currency Date TRUE/FALSE	Decimal places: 2 💭		_
	ОК	Cancel	

Placing the measure in our PivotTable yields:

	А	В	С	D	E	F	G
1							
2		Sales 📃 👻	Category 🖵	Date 💌		Last Sale Category	Last Sale Amount
3		115.00	1	1/06/2019		4	\$187.00
4		14.00	1	2/06/2019			
5		35.00	2	3/06/2019			
6		169.00	1	4/06/2019			
7		167.00	2	5/06/2019			
8		16.00	2	6/06/2019			
9		45.00	4	7/06/2019			
10		187.00	3	8/06/2019			
11		116.00	3	9/06/2019			
12		146.00	4	10/06/2019			
13							

That's not quite right. This is because it has arranged the sales in descending order before retrieving the last non-blank value. In order to retrieve the last sale amount based on dates, '\$ 146.00', we have to use the **CALCULATE** function:

	BLANK(lesAndCategory[Date], um of Sales]		
)	Measure	?	\times
	Table name: SalesAndCategory Measure name: Last Sale Amount 2 Description:		
	Formatting Options Category: General Number Decimal places: Date TRUE/FALSE OK OK	Cance	

	В	С	D	E	F	G	Н	 PivotTable Fields	Ŧ	×
1								Active All		
2	Sales 🛛 🖵	Category 🔽	Date 🗾		Last Sale Category	Last Sale Amount	Last Sale Amount 2	Choose fields to add to report:		- di -
3	115.00	1	1/06/2019		4	\$187.00	\$146.00			
4	14.00	1	2/06/2019					Search		Q
5	35.00	2	3/06/2019					$\sqrt{f_x}$ Last Sale Categor	DV.	
6	169.00	1	4/06/2019					f_X Total Sales	,	
7	167.00	2	5/06/2019					$\checkmark f_X$ Last Sale Amount	t	
8	16.00	2	6/06/2019					f_X CategoryType f_X Last Sale Amount	+ 2	
9	45.00	4	7/06/2019					f_X Last Sale 3		
10	187.00	3	8/06/2019							Ŧ
11	116.00	3	9/06/2019					Drag fields between areas below	w:	
12	146.00	4	10/06/2019					T Filters	III Columns	
13									Σ Values	Ŧ
14										
15									_	
16									∑ Values Last Sale Category	T
17									Last Sale Amount	
18									Last Sale Amount 2	Ŧ

it now works as expected. These measures are also dynamic: we can insert slicers and have them change accordingly!

	В	С	D	E	F	G	Н	×	PivotTable Fields	~	×
1									Active All		
2	Sales 🛛 🖵	Category 🖵	Date 🔍		Last Sale Category	Last Sale Amount	Last Sale Amount 2		Choose fields to add to report:		-0 v
3	115.00	1	1/06/2019		2	\$167.00	\$16.00				
4	14.00	1	2/06/2019						Search		٩
5	35.00	2	3/06/2019		С	ategory 🏾 🎘 🏹			$\checkmark f_x$ Last Sale Catego		
6	169.00	1	4/06/2019		-		-		f_X Total Sales	, ,	
7	167.00	2				1			$\checkmark f_{\chi}$ Last Sale Amoun	t	
8	16.00	2				2			☐ f _X CategoryType		
9	45.00	4				-			f_X Last Sale Amoun f_X Last Sale 3	τ2	
10	187.00	3				3			yx		Ŧ
11	116.00	3				4			Drag fields between areas belo	w	
12	146.00		10/06/2019						T Filters	Columns	
13	140.00	4	10/00/2013						i riiters	Σ Values	Ŧ
14											
15									E Rows	Σ Values	
16										Last Sale Category	-
17										Last Sale Amount	Ψ.
18										Last Sale Amount 2	Ψ

Note that if we do not use the **CALCULATE** function with the **LASTNONBLANK** function the measure will arrange the sales in descending order before retrieving the last non-blank value. Don't be caught out!

That's it for this month; more next time.

Power Query Pointers

Each month we'll reproduce one of our articles on Power Query (Excel 2010 and 2013) / Get & Transform (Office 365, Excel 2016 and 2019) from www.sumproduct.com/blog. If you wish to read more in the meantime, simply check out our Blog section each Wednesday. This month, we take a look at some tips to help get the best out of Power Query.

Power Query can be used to upload data from a wide range of sources, and it is an excellent tool for cleaning up and formatting data. Here are some ideas that can help along the way to clean and useful data.

1. Quickly rename a column

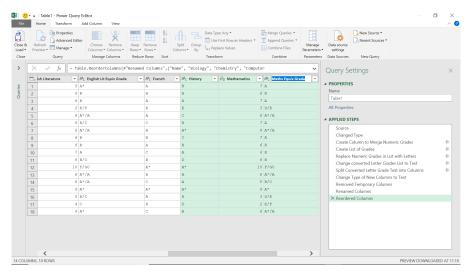
We often spend a lot of time renaming columns - here is the quickest way.

Refresh Preview	Manage * Columns * Columns * Ro	educe Rows		place Values	d Queries *	
×	√ fx = Table.ReorderColumns(#"Ren Science", "English Language" Grade", "French", "History",	, "English Lang E	quiv Grade", "Engl	ish Literature", "English L	It Equiv Query Settings	
🗔, ish Li	terature VIC English Lit Equiv Grade	▼ A ^B C French	✓ ^{AP} _C History	123 Mathematics V Allo Mat	the Equiv Grade All Properties	
1	9 A*	A	в	7 A	Air Properties	
2	6 B	в	В	6 B	▲ APPLIED STEPS	
3	6 B	а	A	7 A	Source	
4	2 E/F	E	Е	3 D/E	Changed Type	
5	8 A*/A	A	C	8 A*/A	Create Column to Merge Numeric Grades	
6	5 B/C	с	В	7 A	Create List of Grades	
7	8 A*/A	в	A*	8 A*/A	Replace Numeric Grades in List with Letters	
8	6 B	в	С	7 A	Change converted Letter Grades List to Text	
9	6 B	A	в	6 B	Split Converted Letter Grade Text into Columns	
10	7 A	с	A	6 B	Change Type of New Columns to Text	
11	5 B/C	в	D	6 B	Removed Temporary Columns	
12	10 F/G0	A*	A*	10 F/G0	Renamed Columns	
13	8 A*/A	в	А	8 A*/A	➤ Reordered Columns	
14	8 A*/A	c	A	5 B/C		
	9 A*	A*	A*	9 A*		
15	5 B/C	А	в	3 D/E		
15				2 E/F		
	4 C	в	D			

Double left-click on the title of any column, and the default action is to rename a column. Not the most exciting tip, but it saves on mouse clicks.

2. Quickly rename a column without a mouse!

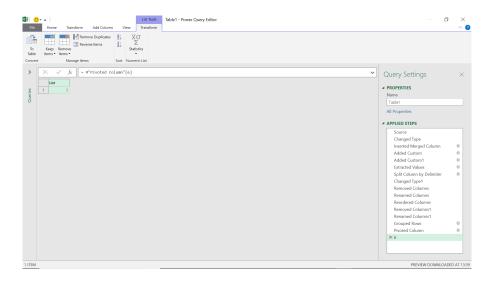
Keyboard shortcuts are always very popular with Excel users! So here's one: to rename a selected column with no clicks, you can use F2 on the keyboard.



If you have several columns selected, then F2 will only allow me to rename the last column you selected.

3. Re-write history

I've gone off on something of a tangent in the next example!



The point where we actually went wrong is at 'Removed Columns1', so we could delete each step in reverse order until we have deleted that step, or we could exit my query and discard the changes if these are the only changes we have made. However, there is an easier way...

d • ise	Re Pre	fresh wiew - Manage Query	Choose Re		Ă,	Group By Transform	Head	Merge Queries *	Manage Parameters * Parameters	Data source settings Data Sources	Reo	v Source ent Sour w Query	ces •		
	×	√ fx	= Table.RemoveColu	ıns(#	"Reordered Columns",{"Biology	", "Chemistry", "Com	puter	Science"})			~	Q	uery	/ Settings	
	1.	A ^B C Name 💌	123 English Language	¥	ABC English Lang Equiv Grade	123 English Literature	¥	ABC English Lit Equiv Grade	✓ A ^B C Fr	ench 💌	AB _C Hist				
	1	Abby		8	A*/A		9	A*	А		в		ROPE	RTIES	
	2	Brian		7	A		6	в	в		в		ame		
		Claire		5	B/C		6	в	А		А	T	Fable1		
	4	Dave		2	E/F		2	E/F	Е		Е	AJ	II Prop	perties	
	5	Ewan		7	A		8	A*/A	Α		с				
		Frank		6	В		5	B/C	с		в	I A I	PPLIE	D STEPS	
		Georgia		9	A*		8	A*/A	в		A*		Sou	irce	
		Harry		7	A		6	в	в		c		Cha	inged Type	
		Ian		6	R		6	в	А		в			erted Merged Column	3
		Jack		6				A	c		- A			ded Custom	\$
		Kylie		5	B/C		5	B/C	в		D			ded Custom1	3
		Liam			F/G0			F/G0	- A*		- A*			racted Values	\$
		Marie		7				A*/A	в		A			it Column by Delimiter	\$
		Nick		6				A*/A	c		A			anged Type1	
		Olivia			A*			A*	A*		A*			noved Columns	5
		Paula		4				B/C	A		B			Edit Settings	-
		Quentin			B/C			c	В		D			Rename	
		Rose			a*/a			A*	C		A	2		Delete	
	0				a /a			~			~			Delete Until End	۰.
														Insert Step After	
													^	Move Up	`
													~	Move Down	
														Extract Previous	1
		<									>		in.	View Native Query	-

If we select the first step we wish to delete, we can right-click and choose to 'Delete Until End'. This removes everything on my tangent, so we can try again! There is even a check just in case we choose this option by mistake.

Aby Aby 2 Brian 3 Claire 4 Dave 5 Ewan 6 Frank 7 Georgia 8 Harry 9 Ian	12g English Language			9 A* 6 B 6 B	ience"}) English Lit Equiv Grade	▼ ^{AB} C Frencl A B A	n ▼ A ^B C H B B A	Query Settings
1 Abby 2 Brian 3 Claire 4 Dave 5 Ewan 6 Frank 7 Georgia 8 Harry		8 A*/A 7 A 5 B/C 2 E/F 7 A 6 B		9 A* 6 B 6 B	English Lit Equiv Grade	AB	BBA	PROPERTIES Name
2 Brian 3 Claire 4 Dave 5 Ewan 6 Frank 7 Georgia 8 Harry		7 A 5 B/C 2 E/F 7 A 6 B	Delete S	6 B		в	B	Name
3 Claire 4 Dave 5 Ewan 6 Frank 7 Georgia 8 Harry		5 B/C 2 E/F 7 A 6 B	Delete S	б В			A	
4 Dave 5 Ewan 6 Frank 7 Georgia 8 Harry		2 E/F 7 A 6 B	Delete S			А		Lable1
5 Ewan 6 Frank 7 Georgia 8 Harry	ia	7 A 6 B	Delete S					
6 Frank 7 Georgia 8 Harry	ia	6 В	Delete S			× Ē	Е	All Properties
7 Georgia 8 Harry	ia		Delete S	ton		Δ.	С	▲ APPLIED STEPS
8 Harry	ia	0.5*	_	tep		2	в	
			Are you sure	e you want to delete until the end	? This will delete the	8	A*	Source Changed Type
0 Tan		7 A	current step	and subsequent steps from your	query.	в	С	Inserted Merged Column
9 1011		6 B				Δ.	в	Added Custom
10 Jack		6 В			Delete Cancel		А	Added Custom1
11 Kylie		5 B/C				3	D	Extracted Values
12 Liam		10 F/G0				h*	A*	Split Column by Delimiter
13 Marie		7 A		8 A*/	'A	в	A	Changed Type1
14 Nick		6 В		8 A*/	(A	с	А	Removed Columns
15 Olivia	a	9 A*		9 A*		A*	A*	Renamed Columns
16 Paula		4 C		5 B/C		А	В	Reordered Columns
17 Quentin	Ln	5 B/C		4 C		В	D	➤ Removed Columns1
18 Rose		8 A*/A		9 A*		с	А	Renamed Columns1
								Grouped Rows Pivoted Column

In this case, we want to forget it all happened, so we'll choose 'Delete'.

] ≈ ×		Fresh view Query	ed Editor	Remove Keep R Columns * Rows * F	ows* Column* By	Data Type: Text • Use First Row as Headers • 1. 2 Replace Values Transform	Append Queries * Combine Files Combine Parameters * Parameters	Data source settings	v Source • ent Sources • w Query	
	×	√ fx			Columns",{"Name", "Biolo			~	Query Settings	×
	1	A ^R C Name Abby Brian	A ^R C Biology B C	A ^B C Chemistry C C	A ^R C Computer Science V A A	8	A ^{II} C English Lang Equiv Grade × A*/A A	1 ² 3 English Literature	PROPERTIES Name	
E	4	Claire Dave Ewan	A E B	A* E C	B E B	2	B/C E/F A		Table1 All Properties	
E	6	Frank Georgia	D C A*	E A	B A	6	А В А*		APPLIED STEPS Source Changed Type	
	9	Harry Ian Jack	B C A	C C B	A D B	6	A B B		Inserted Merged Column Added Custom	* *
	11 12	Kylie Liam	C A*	A A*	С А*	10	B/C F/G0		Added Custom1 Extracted Values Split Column by Delimiter	*
	14	Marie Nick Olivia	C B A*	B C A*	A D A*	6	Α Β Α*		Changed Type1 Removed Columns Renamed Columns	
	17	Paula Quentin Rose	E C A	D D C	C C B	5	C B/C A*/A		× Reordered Columns	
	10			-	-					

It's as if nothing ever happened...

4. Using monospaced font in the Query Editor

This is useful for when I have references made up of a significant number of characters.

	Re Pre		Columns * Columns *	Rows * Rows * Column *	Data Type: Text * Use First Row as iroup By	Combine Files	s • Manage Parameters •	Data source settings	New S	Sources •		
e		Query	Manage Columns	Reduce Rows Sort	Transform	Combine	Parameters	Data Sources	New 0	Query		
	\times	$\sqrt{-f_X} = Table$	AddColumn(#"Added	Custom2", "Improved Departm	ent", each Text.Betw	eenDelimiters([Product	ID], "-", "-",	0, 0))	~	Query S	ettings	
		A ^B C Product ID	ABC Department	123 Product Serial Number	AEC 123 Nominal Code	123 Improved Department	•			· · · ·		
	1	17874-ADMIN-84746	ADMIN	84746	17874	ADMIN				PROPERTING	ES	
	2	34854-SALES-35347	SALES	35347	34854	SALES				Name		
	3	63774-ADMIN-84748	ADMIN	84748	63774	ADMIN				Text_Extra	t	
	4	98756-MGMNT-82645	MGMNT	82645	98756	MGMNT				All Properti	es	
	5	78324-ADMIN-83264	ADMIN	83264	78324	ADMIN						
F	6	56263-SALES-76553	SALES	76553	56263	SALES				APPLIED S	TEPS	
F	7	76353-ADMIN-26753	ADMIN	26753	76353	ADMIN				Source		
	8	36355-SALES-53343	SALES	53343	36355	SALES				Change		
	9	62525-ADMIN-72525	ADMIN	72525	62525	ADMIN				Added		4
		71524-MGMNT-76252	MGMNT	76252	71524	MGMNT					ed Columns	
	11	62543-ACCOUNTING-72535	ACCOU	72535	62543	ACCOUNTING					Custom1	4
											Custom2	4
										× Added	Custom3	Ŕ

In the previous screen, the Product ID column looks messy. That is because of a setting that we may access from the 'File' tab.

	& Load	Options	and settings Query Options		Split (Column •			LL Combine Files	Manage Parameters *	Data source settings		nt Sources •		
Disca	rd & Close	\$	Data source settings			Transform ment", each Text.Bet				Data Sources	New	Query	y Settings	
Optic	ins and settings 🔺				Number *			roved Department				▲ PROP	ERTIES	
						17874	ADMIN					Name		
Help						34854 63774	ADMIN					Text	Extract	
						98756	MGMNT					All Pro	perties	
5	78324-ADMIN-8326	a	ADMIN	83264		78324	ADMIN						perdes	
6	56263-SALES-76553		SALES	76553		56263	SALES					▲ APPLI	ED STEPS	
7	76353-ADMIN-2675		ADMIN	26753		76353	ADMIN						urce	
8	36355-SALES-53343		SALES	53343		36355	SALES						anged Type	
9	62525-ADMIN-7252	5	ADMIN	72525		62525	ADMIN						Ided Custom	
10	71524-MGMNT-762	52	MGMNT	76252		71524	MGMNT						named Columns	
11	62543-ACCOUNTIN	3-72535	ACCOU	72535		62543	ACCOUN	ITING					Ided Custom1 Ided Custom2	
													Ided Custom2 Ided Custom3	

The 'Query Options' available here is much more extensive than the one available from the 'Home' menu.

📲 🛛 🙂 File		Text_Extract - Power Quer	y Editor 1 Column View					a x ^ 🛛
Close & Load • Close		Advanced Editor	Choose Remove Columns • Columns • Manage Columns	Query Options	nata Tener. Sent • The Merrine Dueries • The X	New Sc Recent	Sources -	
Close sites of the second seco	1 2 3 4 5 6 7 8 9 10		Addcolumn(#"Add <u>315</u> Department ADMIN SALES ADMIN MGMNT SALES ADMIN SALES ADMIN MGMNT	GLOBAL Data Load Power Clawy Editor Security Privecy Account Diagnostics CURRENT WORKBOOK Data Load Regional Settings Privecy	Layout Display the Query Settings pane Display the formula Bare Data Preview Do Display preview contents using a monopaeed font. Display preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeed font. Display and the preview contents using a monopaeeed font. Display and the preview contents using a mo	~	All Properties All Properties Source Changed Type Added Custom1 Added Custom2 X Added Custom3	×
5 COLU	INS.	1 ROWS					PREVIEW DOW	NLOADED AT 14:19

In the 'Power Query Editor' section, we can choose to 'Display preview contents using a monospaced font'. Personally, I always prefer to use this setting.

	efresh eview • Query	Choose Remove	Keep Remove Rows * Rows * Reduce Rows Sort	Data Type: Text • Tube Control Text • Data Type: Text • Use First Row as Use First Row as Type: Text •	Headers • Merge Queries •	Manage Data source Parameters • settings	ew Source * cent Sources * ew Query	
\geq	$f_x = Table$	AddColumn(#"Added	Custom2", "Improved Departm	ent", each Text.Betw	eenDelimiters([Product ID]	, "-", "-", 0, 0)) 🗸 🗸	Query Settings	×
	A ^B C Product ID	ABC Department	123 Product Serial Number	ABC 123 Nominal Code	123 Improved Department		, ,	
1	17874-ADMIN-84746	ADMIN	84746	17874	ADMIN		▲ PROPERTIES	
2	34854-SALES-35347	SALES	35347	34854	SALES		Name	
3	63774-ADMIN-84748	ADMIN	84748	63774	ADMIN		Text_Extract	
4	98756-MGMNT-82645	MGMNT	82645	98756	MGMNT		All Properties	
5	78324-ADMIN-83264	ADMIN	83264	78324	ADMIN			
6	56263-SALES-76553	SALES	76553	56263	SALES		▲ APPLIED STEPS	
7	76353-ADMIN-26753	ADMIN	26753	76353	ADMIN		Source	
8	36355-SALES-53343	SALES	53343	36355	SALES		Changed Type	
9	62525-ADMIN-72525	ADMIN	72525	62525	ADMIN		Added Custom	4
10	71524-MGMNT-76252	MGMNT	76252	71524	MGMNT		Renamed Columns	
11	62543-ACCOUNTING-7	ACCOU	72535	62543	ACCOUNTING		Added Custom1	*
							Added Custom2 X Added Custom3	4 6

Now when we access the query, the product ID's are neatly aligned (well, except for that pesky last one..).

5. Avoiding the Advanced Editor when entering comments

The Advanced Editor is not the favourite feature of Power Query for many users. After many years of struggling and pleading from users, IntelliSense has now been added to the Power BI **M** editor and is hopefully on its way to 'Get and Transform'. This will improve the editor, but it's still good to know how to avoid it, and it is possible to enter comments from the Formula bar.

Core is the Properties Course is the Properies Course is the Properties Course is the Prop	×
X /s = Table.AddGolum(#"Renamed Columns", "Product Serial Number", each Text.AfterDelisiter([Product ID], "-", 1))/*Extract Query Settings Product Serial Number from Product ID*/ Product Serial Number from Product ID*/ Name Text.Entropy Text.Entropy Text.Entropy	×
All Devolute ID All Devolute Facial Numbers and	
1 17874-AIMIN-84746 AIMIN 84746 2 34854-SALES-35347 SALES 35347 4 APPLIED STEPS	
3 63774-AIMIN-84748 AIMIN 84748 Source	
4 98756-MCRNTT-82645 MCRNT 82645 Changed Type	
5 78324-AIMIN-83264 AIMIN 83264 Added Custom	*
6 56263-SALES-76553 SALES 76553 Renamed Columns	
7 76353-AIMIN-26753 AIMIN 26753 XAMIN 26753 XAMAN 26753	4
8 36355-SALES-53343 SALES 53343 Added Custom2	*
9 62525-ADMIN-72525 ALMIN 72525 Added Custom3	*
10 71524-MONNT-76252 MONNT 76252	
11 62543-ACCOUNTING-7 ACCOU 72535	
3 COLUMNS, 11 ROWS PREVIEW DOW	VNLOADED AT 14:33

The comments can be added to long steps by using the arrow on the right of the Formula bar to expand the view.

Cose & Refersh Previous Cose or Text Extract	
chan and Toxit Extract	
come and Text_Extract @	
<pre>Signame Trable 27] (Column 7, type text)), provide Source 4, (Column 7, type text), provide Source</pre>	×
1 COLUMNS 11 ROVE PRIVILEY DOWN	ILOADED AT 14:32

The comment is now visible in the Advanced Editor.

2 34854-SAL		umn(#"Renamed Columns", "Produ aartment T Mr St. Product Serial Nur 84746 35347		", each Text.AfterD	Nelimiter([Product ID],	"-", 1))	⊿ PI N	uery Settings ROPERTIES ame	
1 17074-ADM 2 34854-SALA 3 63774-ADM 4 90756-NGM 5 70324-ADM 6 56263-SALA	ADMIN-84746 ADMIN SALES-35347 SALES	84746	nber 💌					Text_Extract	
2 34854-SALI 3 63774-ADM 4 98756-NGM 5 78324-ADM 6 56263-SALI	SALES-35347 SALES						A	Il Properties	
3 63774-ADM 4 98756-MGM 5 78324-ADM 6 56263-SALM		35347							
4 98756-MGMI 5 78324-ADMI 6 56263-SALI	ADMIN-84748 ADMIN						4 A	PPLIED STEPS	
5 78324-ADM		84748						Source	
6 56263-SAL		82645						Changed Type	
		83264						Added Custom	
7 76353-ADM		76553						Renamed Columns	
		26753					2	× Added Custom1	
	SALES-53343 SALES	53343						Added Custom2 Added Custom3	
9 62525-ADM		72525						Added Customs	
10 71524-MGM		76252							
11 62543-ACC	ACCOUNTING-7 ACCOU	72535							

It is not however, visible from the Formula bar. See the next tip!

6. Avoiding the Advanced Editor when viewing comments

The sequel – how to avoid the Advanced Editor and view comments. The answer is to embed the comments in the formula.

File	Re	Advanced Editor	Column View Choose Remove Columns • Columns •	Keep Remove Rows* Rows* Al- Split Gi Column*	Data Type: Text * Toup Use First Row as Headers * By Use Part Row as Headers *	Merge Queries * Append Queries * Combine Files Combine	Manage Parameters •	Data source settings	New Source	iroes *	۳ × ^ (
Close		Query	Manage Columns	Reduce Rows Sort	Transform			Data Sources	New Quer	У	
Queries <	~	√ ∫x = Table. ID], "-		d Columns", "Product Serial	Number"/*embedded comments*	/, each Text.After	Delimiter([Product	4	NUERY Settings PROPERTIES Name Text_Extract	×
			123 Department	123 Product Serial Number					1	All Properties	
		17874-ADMIN-84746	ADMIN	84746							
	-	34854-SALES-35347	SALES	35347					44	APPLIED STEPS	
	-	63774-ADMIN-84748	ADMIN	84748						Source	
	4	98756-MGMNT-82645	MGMNT	82645						Changed Type	
	5	78324-ADMIN-83264	ADMIN	83264						Added Custom	*
	6	56263-SALES-76553	SALES	76553						Renamed Columns	
	7	76353-ADMIN-26753	ADMIN	26753						➤ Added Custom1	
	8	36355-SALES-53343	SALES	53343						Added Custom2	*
	9	62525-ADMIN-72525	ADMIN	72525						Added Custom3	*
	10	71524-MGMNT-76252	MGMNT	76252							
	11	62543-ACCOUNTING-7	ACCOU	72535							

This time, if we exit the Formula bar and go back to it, we can see the comment. It's not the tidiest way to add comments, but it stops Power Query from stripping them out. I thought it might look neater after the '=' sign and before the main body of the formula, but if we put comments there they can only be seen in the Advanced Editor. At some point this

method may not work, as Power Query seems to be programmed to prevent comments from appearing in the Formula Window, and this method is effectively a bug! For now, it seems to be the only way to view comments in the Formula Bar.

7. Change the properties of the query step so the purpose is clear

A typical list of steps generated by Power Query is not very descriptive.

e & d •	Befresh	Propertie Advancec Manage * Query	Editor Choose	Remove Keep Re Columns • Rows • Ro	ws • Column • By	Data Type: Text * Use First Row as Headers * \$42 Replace Values Transform	Append Queries * Combine Files Combine Parameters * Parameters	Data source settings	w Source * zent Sources * zw Query	
	× v					gy", "Chemistry", "Compu	rter Science", "English	~	Query Settings	
	II. ^{Ab} c Na				A ^B C Computer Science			123 English Literature	A PROPERTIES	
	1 Abby			c	A		A*/A		Name	
	2 Brian		c	с	A	7			Table1	
	3 Clair		A	A+	В		B/C			
	4 Dave		E	Е	E		B/F		All Properties	
	5 Ewan			с	В	7			▲ APPLIED STEPS	
	6 Frank		c	ε	8	6			Source	
	7 Georg			A	A	9			Changed Type	
	8 Harry			с	A	7			Inserted Merged Column	-
	9 Ian			с	D	6			Added Custom	-
	10 Jack		A	в	в	6			Added Custom1	-
	11 Kylie			A	c		B/C		Extracted Values	- 1
	12 Lian			A*	A*		F/G0		Split Column by Delimiter	-
	13 Marie		c	В	A	7			Changed Type1	
	14 Nick		в	c	D	6			Removed Columns	
	15 Olivi			λ*	Α*		λ*		Renamed Columns	
	16 Paula			D	c	4			➤ Reordered Columns	
	17 Quent			D	c		8/C			
	18 Rose		λ	с	В	8	A*/A			

'Added Custom' and 'Added Custom1' are my particular favourites here. We can add comments in the Formula bar, as shown in the previous tip, but we can also edit the name and description of each step.

Refresh Preview •		ose Remove Keep Ins • Columns • Rows	Remove Split	Group 1 Deal	First Row as Headers 👻 lace Values	Combine Files Pa	Manage rameters • arameters • Data source settings Data Sources	New Sour	urces *
× ✓	fx = Table.AddC	olumn(#"Inserted P	erged Column", "List	of Grades", e	ach Text.ToList([Temporary Merge]))			Query Settings PROPERTIES Name Table1
erature	✓ A ^B _C French	▼ A ^B _C History	123 Mathematics	N ⁸ C Physics	▼ A ⁸ ⊂ Spanish	✓ [№] C Temporary Merge	 ABC 123 List of Grades 	4119	All Properties
1	9 A	В	7	в	A	8,9,7	List		Air Properties
2	6 в	в	6	с	c	7,6,6	List	4	APPLIED STEPS
3	6 A	A	7	в	в	5,6,7	List		Source
4	2 E	E	3	Е	Е	2,2,3	List		Changed Type
5	8 A	C	8	с	C	7,8,8	List		Inserted Merged Column
6	5 C	в	7	с	с	6,5,7	List		X Add Edit Settings
7	8 B	A*	8	в	A*	9,8,8	List		Ad
8	6 B	c	7	в	А	7,6,7	List		Ex 🗐 Rename
9	6 A	в	6	с	в	6,6,6	List		Sp × Delete
10	7 C	А	6	A	A	6,7,6	List		Ch Delete Until End
11	5 B	D	6	в	в	5,5,6	List		Re Insert Step After
12	10 A*	A*	10	A*	A*	10,10,10	List		Re 🔨 Move Up
13	8 B	А	8	в	D	7,8,8	List		Re 🗸 Move Down
14	8 C	A	5	Б	в	6,8,5	List		Extract Previous
15	9 A*	A*	9	A*	A*	9,9,9	List		View Native Query
16	5 A	в	3	в	в	4,5,3	List		Properties
17	4 B	D	2	с	в	5,4,2	List		
18	9 C	Α	8	в	A	8,9,8	List		

If we select a step and right-click, we have a 'Properties' option at the bottom:

Refresh Preview	Manage • Colur	nose Remove mns • Columns • Rov	p Remove	Split Group 1 Column • By	ata Type: Text • Use First Row as •2 Replace Values iransform	Headers 🔹	I Aj		Manage arameters	Data source settings Data Sources	Rece	Source • nt Sources • / Query		
XV	fx = Table.Add	Column(#"Inserted	Merged Column	", "List of Grade	s", each Text.	ToList([1	Fempor	ary Merge]))			^	Quer	y Settings	
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		<i>c</i> . <i>p</i>			^		1.					Table	1	_
🛄 - eratur		Step Prop	erties			nish		Temporary Merge		List of Grades	4119	All Pro	perties	
1	9 A 6 B	Name				L	8,9		Li				ED STEPS	
2	6 A	Create List of C	rades			<u> </u>	5,		Li					-
3	2 E	Description				<u> </u>	2,1		Li				urce anged Type	
5	8 A		e maths. English I	anguage and English lit	arature	-	7,1		Li				erted Merged Column	
6	5 C	grades					6,		Tris				Ided Custom	
7	8 B						9,1	8,8	Li	st		Ad	Ided Custom1	1
8	6 B						7,1	6,7	Li	st		Ext	tracted Values	
9	6 A						6,1	6,6	Li	st		Sp	lit Column by Delimiter	
10	7 C			OK	Cancel		6,	7,6	Li	st			anged Type1	
11	5 B						5,1	5,6	Li	st			moved Columns	
12	10 A*	λ*		10 A*	A*	_	10	,10,10	Li	st			named Columns	
13	8 B	А		<i>8</i> B	D		7,1	8,8	Li	st		Re	ordered Columns	
14	8 C	А		5 E	в		6,1	8,5	Li	st				
15	9 A*	A*		9 A*	A*		9,1	9,9	Li	st				
16	5 A	в		3 в	В		4,5		Li	st				
17	4 B	D		2 C	В		5,4		Li					
18	9 C	А		8 B	А		8,	9,8	Li	st				

We can change the title and description to make what this step does clear.

File File Close & Load • Close	Home	Advanced Editor Manage * Columns * Columns * Ro	PREMOVE Remove As * Rows * As the second		First Row as Headers 🔻 lace Values	Combine Files Para	anage bata source settings meters Data sources New Query	- 0 × ^ (2
Queries <	×	∫x	, "English Lang E	quiv Grade", "Engli	sh Literature", "E	nglish Lit Equiv	Query Settings PROPERTIES Name Table1	×
	🔲 - lish Literatu	ure 🔍 A ⁸ C English Lit Equiv Grade	A ⁸ C French	▼ A ^g _C History ▼	123 Mathematics	A ⁸ C Maths Equiv Grade	All Properties	
	1	9 A*	A	В		7 A		
	2	6 B	В	В		6 B	APPLIED STEPS	
	3	6 B	А	А		7 A	Source	
	4	2 E/F	Е	Е		3 D/E	Changed Type	
	5	8 A*/A	A	С		8 A*/A	Create Column to Merge Nume	rric Grades 🛛 🕸
	6	5 B/C	С	в		7 A	Create List of Grades	*
	7	8 A*/A	в	A*		8 A*/A	➤ Replace Numeric Grades in List	with Letters
	8	6 B	в	С		7 A	Change converted Letter Grade	
	9	6 в	A	в		6 В	Replace Numeric Grades in	
	10	7 A	с	А		6 в	Replace the numeric grades in	n maths, English language and Engli
	11	5 B/C	в	D		6 в	Removed Temporary Columns	
	12	10 F/G0	A*	A*	1	0 F/G0	Renamed Columns	
	13	8 A*/A	в	A		8 A*/A	× Reordered Columns	
	14	8 A*/A	с	A		5 B/C		
	15	9 A*	A*	A*		9 A*		
	16	5 B/C	A	в		3 D/E		
	17	4 C	в	D		2 E/F		
	18	9 A*	c	A		8 A*/A		
	10							
	<						>	
14 COLU	MNS. 18 ROWS							PREVIEW DOWNLOADED AT 11:18

Once I have done this for several of the steps, we may not only see what is happening from the titles, but I can also hover over a step to see the description.

8. Add a row index to a query from the Excel worksheet

We can add an index from the Query Editor, but if we have a query associated with a table, then we can use another method.

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		Insert Pag		rmulas Data	Review	view Deve	loper Help F		Design	Query						
External ata * C	New Query - [Show Queries From Table Recent Source & Transform	Refresh All •	Connections ⊉↓ Properties Edit Links Å↓	Cast Eller	Clear Reapply Advanced		ve Duplicates	e= Consolic = Relation Manage	ships	What-If For Analysis * SI Forecast	recast	Group + * Ungroup + " Subtotal Outline	5 Anal		
	-	XV	<i>fx</i> Nam	e												
A	В	C V Y Chemist		D	E	a D arahak	F Lang Equiv Grade	Parallala	G	E Carabah I	н			Work	book	< *
Abby	B	C	A	er science 🔤 c	ngiish canguag	8 A*/A	cang Equiv Grade	- Engisti	citerature	9 A*	it Equiv Grau	A	B			
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Claire	A	A*	В			5 B/C				-	ata Properties			?	×	
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Frank	с	E	в			6 B										
Georgia	A*	A	А			9 A*				Name:	Query - Table1					only.
Harry	В	С	Α			7 A				Data format	ting and layout					
lan	С	с	D			6 B					e row numbers	Presen	e column sort/	ilter/layout		ded.
Jack	A	В	В			6 B					t column width					
Kylie	С	A	с			5 B/C										and a
Liam	A*	A*	A*			9 A*					ber of rows in th			refresh:		only.
Marie	C	В	Α			7 A					sert gells for new					
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Olivia	A*	A*	A*			9 A*				00	verwrite existing	cells with ne	ew data, dear ur	used cells		
Paula	E	D	c			4 C 5 B/C							ОК	Can		only.
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														_		
	Sheet	1 Sheet2	Sheet3 She	et4 (+)				4					•	<		

In the previous screenshot, we have selected the **Name** column, and in the 'Data' tab we have accessed 'Properties' from the 'Query' section. We have chosen to 'Include row numbers'. Let's click 'OK' and refresh 'Table1', which is the query associated with our data.

	o•∂•≌ •				Blog 94 tip	s - Excel			Table Too	ols Query Tools	kathryn n	ewitt 🖽 – 🗇 🗙
File		Page I		ormulas Da	ta Review	View Develo			Desigr	Query		
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3	1 Brian	с	с	A			7 A				6 B	6 queries
4	2 Claire	А	A*	В			5 B/C				6 B	Table1
5	3 Dave	E	E	E			2 E/F				2 E/F	18 rows loaded.
6	4 Ewan	В	С	В			7 A				8 A*/A	Grade Equivalents
7	5 Frank	С	E	В			6 B				5 B/C	Connection only.
8	6 Georgia		Α	А			9 A*				8 A*/A	· · · · ·
9	7 Harry	В	С	А			7 A				6 B	🗔 Grades List
10	8 Ian	с	С	D			6 B				6 B	18 rows loaded.
11	9 Jack	A	В	B			6 B				7 A	Equivalents
12	10 Kylie 11 Liam	C A*	A A*	A*			5 B/C 10 F/G0				5 B/C 10 F/G0	Connection only.
14	12 Marie	C.	B	A			7 A				8 A*/A	
15	13 Nick	в	c	D			6 B				8 A*/A	Table1 (2)
16	14 Olivia	A*	A*	A*			9 A*				9 A*	18 rows loaded.
17	15 Paula	E	D	C			4 C				5 B/C	Test_list
18	16 Quentin	c	D	c			5 B/C				4 C	Connection only.
19	17 Rose	А	С	В			8 A*/A				9 A*	
20												
21												
22												
23												
24			10 1 41									$\langle \rangle$
< >	Sheet1 She	etz Sł	heets She	et4 🕘 🕀				1			•	
Ready 😫	1									Average: 7.041	1666667 Count: 266 Sum: 507	E E - + 100%

The column RowNum has been automatically added.

9. Split a query

Queries can get repetitive. Queries can get repetitive. If we want to create a new query which starts off in a very similar way to one I already have, then instead of copying it and deleting the parts we don't need, we can split a query.

Image: Second		er Query Editor Id Column Vier		₹ <u>\$</u> ↓_ ĭ ∟ ==	Data Type: Text *	5 Merge Queries *			New	- O	× ^ 7
Close & Refresh	ditor	Choose Remo			Use First Row as Headers			Data source	Recen	nt Sources *	
Load * Preview * Manage *		Columns * Column			up 1, 2 Replace Values	🔛 Combine Files	Parameters *	settings			
Close Query		Manage Colum	ns Reduce Rows	Sort	Transform	Combine	Parameters	Data Sources	New	Query	
Queries [7]	\sim	√ fx	= Table.AddColu	mn(#"Create List of	Grades", "New Grades Ap	plied", each List.R	eplaceMatchin	gItems	~	Query Settings	×
Grades List Plan A	m.	A ⁸ c Name ▼	ABc Biology	A ⁸ c Chemistry ▼	A ^B C Computer Science	123 English Language	▼ 1 ² 3 English	-	- A	Query settings	^
Grade Equivalents	-	Abby	B BIOLOGY	C Chemistry	A Computer science	1º3 English Language	* 1º3 English	Literature	9 7	A PROPERTIES	
Grades List	2	Brian	c	c	A		2		6 E	Name	
Equivalents	3	Claire	A	A*	в		5		6 2	Grades List Plan A	
Table1 (2)	4	Dave	E	E	5		2		2 8	All Properties	
Test list	5	Ewan	в	c	в		7		8 1		
Grades List Attempt 1	6	Frank	с	Е	в		6		5 C	A APPLIED STEPS	
i orades est Attempt i	7	Georgia	A*	A	λ		9		8 E	Source	
	8	Harry	в	с	Α		7		6 E	Changed Type	
	9	Ian	с	с	D		6		6 P	Create Column to Merge Num Create List of Grades	8
	10	Jack	А	в	в		6		7 c	K Replace Numeric Grades in Lis	8
	11	Kylie	c	Α	С		5		5 E	Change converted Letter Grad	8
	12	Liam	A*	A*	A*		10		10 P	Split Converted Letter Grade T	
	13	Marie	c	В	Α		7		8 E	Change Type of New Columns	
	14	Nick	в	с	D		6		<i>8</i> C	Removed Temporary Columns	
	15	Olivia	A*	A*	λ*		9		9 J	Renamed Columns	
	16	Paula	Е	D	с		4		5 p	Reordered Columns	
	17	Quentin	c	D	c		5		4 E		
	18	Rose	А	с	В		8		9 C		
		<							>		
14 COLUMNS, 18 ROWS										PREVIEW DOWNLOADED	AT 12:07

Here, we have decided to use a different approach to dealing with my grade scenario, and we want to compare the output. We will keep the 'Grades List Plan' query and create a new query 'Grades List First Step' which ends at the step 'Replace Numeric Grades in List':

& Refresh Preview • Query	ditor	Choose Remo Columns • Column Manage Column	ove Keep Removi ins * Rows * Rows *	e Split Gri	Use First Row as Headers *	Combine Files Manage Data Combine Files Parameters * se	source ttings	Source * Int Sources *
ies [7] <	$\left \times \right $	√ fx	= Table.Transfor	rmColumns(#"Replac	e Numeric Grades in List v	with Letters", {"New Grades Applied	", each 🗸 🗸	Query Settings
		^{AB} C Name ▼	^{A8} _C Biology ▼	^{A8} _C Chemistry ▼	A ^B C Computer Science 💌 1	2 ₃ English Language 💌 1 ² 3 English Liter	ature 👻 A	
Grade Equivalents	1	Abby	В	с	λ	8	9 P	A PROPERTIES
Grades List	2	Brian	С	C	Α	7	6 E	Name
Equivalents	3	Claire	А	A*	В	5	6 P	Grades List Plan A
Table1 (2)	4	Dave	E	Е	E	2	2 1	All Properties
Test_list	5	Ewan	в	c	В	7	8 F	A APPLIED STEPS
Grades List Attempt 1	6	Frank	с	Б	В	6	5 C	
	7	Georgia	A*	A	λ	9	8 E	Source
	8	Harry	в	C	Α	7	6 E	
	9	Ian	с	C	D	6	6 P	Create Column to Merge Num Create List of Grades
	10	Jack	A	в	в	6	7 C	Replace Numeric Grades in Lis.
	11	Kylie	с	λ	c	5	5 E	X Change converted Letter Grad
	12	Liam	A*	A*	λ*	10	10 P	Split Cor
	13	Marie	с	В	λ	7	8 E	Change Rename
	14	Nick	в	с	D	6	<i>8</i> C	Remover × Delete
	15	Olivia	A*	A*	λ*	9	9 P	Renamer Delete Until End
	16	Paula	Е	D	C	4	5 P	
	17	Quentin	с	D	C	5	4 E	
	18	Rose	А	с	В	8	9 C	 Move Op Move Down
								Extract Previous
								View Native Quer
								Properties

We move to the step after 'Replace Numeric Grades in List' and right-click. We have an option to 'Extract Previous'.

Refresh Preview - Query	itor	Choose Remo Columns * Colum Manage Column	ve Keep Remov ns * Rows * Rows *	•	Split Column •	Grou By		eaders *	Merge Queries *	Manage Parameters Parameters	 settings 		Source * nt Sources * Query		
ries [7] < Grades List Plan A	×				unns (#"Rep.		Numeric Grades in		ith Letters", {"New 3 English Language		pplied", each	- A	Query	/ Settings	
Grade Equivalents	1	Abby	в	c			A			8		9.7	▲ PROPE	RTIES	
Grades List	2	Brian		c			A			7		6 E	Name		
Equivalents	3	Claire	A	A*[6 7	Grades	s List Plan A	
Table1 (2)	4	Dave	ε	Е						×		2 8	All Prop	perties	
Test list	5	Ewan	в	c	Extra	ct Si	iteps					8 7			
-	6	Frank	с	Е								5 C	A APPLIE	D STEPS	
Grades List Attempt 1	7	Georgia	A*	А	Extract	the st	teps before the selec	ed step	o into a new query.			8 E	Sou	urce	
	8	Harry	в	с	New que	ery na	ame					6 E		anged Type	
	9	Ian	c	с	Grades	List R	Replaced Numbers					6 2		ate Column to Merge Nu	m
	10	Jack	Α	в								7 c		ate List of Grades	
	11	Kylie	c	A					OK Cancel			5 E		olace Numeric Grades in I	
		Liam	A*	A*					OK Cancel			10 F		ange converted Letter Gra	
	13	Marie	c	в								8 E		it Converted Letter Grade	
	14	Nick	в	с			D			6		8 C		ange Type of New Colum moved Temporary Colum	
	15	Olivia	A*	A*			λ*			9		9 2		noved Temporary Colum named Columns	15
	16	Paula	Е	D			с			4		5 p		ordered Columns	
	17	Quentin	c	D			с			5		4 E	Neu	andered conditions	
	18	Rose	А	с			в			8		9 C			

We'll choose the name for our new query and click 'OK'. Since this query will be the new source in 'Grade List Plan A', it's important that the name makes sense.

File Home Transform Home Transform Close & Refresh Load* Close Query		nove Keep Remov mns * Rows * Rows *	e Av Split Gro	Data Type: Text • Use First Row as Headers ' ^{Up} 1 ₉₋₂ Replace Values Transform	Merge Queries * Append Queries * Combine Files Combine	Manage Data source Parameters * settings	∧ () w Source * ent Sources * w Query
Queries [8] < Grades List Plan A Grade Equivalents Grades List Equivalents	1 Abby 2 Brian			olumns", {"Name", "Biology A ^R C Computer Science 1 A A B	/", "Chemistry", "C 2 ₃ English Language	omputer ♥ ♥ A ^R _C English Lang Equiv Grade 8 A ⁺ /A 7 A 5 B/C	Query Settings × PROPERTIES Name Grades List Plan A
Table1 (2) Test_list Grades List Attempt 1	4 Dave 5 Ewan 6 Frank	E B C	A* C E A	в в в х		2 E/F 7 A 6 B 9 A*	All Properties APPLIED STEPS Source
Grades List Replaced	7 Georgia 8 Harry 9 Ian 10 Jack 11 Kylie	A* B C A C	C C B A	х D B C		7 A 6 B 6 B 5 B/C	Change converted Letter Grade ↓ Split Converted Letter Grade T ↓ Change Type of New Columns Removed Temporary Columns Renamed Columns
	12 Liam 13 Marie 14 Nick 15 Olivia 16 Paula	A* C B A*	A* B C A* D	λ* λ Δ λ* C		10 F/G0 7 A 6 B 9 A* 4 C	× Reordered Columns
	17 Quentin 18 Rose	C A	D C	C B		5 B/C 8 h*/h	
14 COLUMNS, 18 ROWS	<					>	PREVIEW DOWNLOADED AT 12:13

Power Query opens the query pane on the left where my new query appears. The steps in the new query have now disappeared from 'Grades List Plan A'.

Refresh Preview Manage V Osse Query		Choose Remi Columns * Colum Manage Colum	ns * Rows * Rows		up 1 o 1 o 1	Merge Queries Append Queries Combine Files Combine	Manage Parameters • Data source settings Data Sources	New Sou	ources *
aries [8] <	×	fx	= Table.AddColu	n(#"Create List of	F Grades", "New Grades Ap	plied", each List.Rep	laceMatchingItems	~ (Query Settings
Grades List Plan A		I [®] c Name ▼	A ⁸ c Biology ~	A ⁸ _C Chemistry ▼	A ^B C Computer Science	123 English Language	123 English Literature	- A	
Grade Equivalents	1	Abby	В	с	λ		8	9.2 4	PROPERTIES
Grades List	2	Brian	с	c	Α		7	6 E	Name
Equivalents	3	Claire	А	A*	В		5	6 P	Grades List Replaced Numbers
Table1 (2)	4	Dave	Ε	В	E		2	2 E	All Properties
Test_list	5	Ewan	в	c	в		7	8 P	
- Grades List Attempt 1	6	Frank	с	В	В		6	5 C 🕈	APPLIED STEPS
Grades List Replaced	7	Georgia	A*	A	Α		9	8 E	Source
Grades List Replaced	8	Harry	в	с	A		7	6 E	Changed Type
	9	Ian	с	с	D		6	6 P	Create Column to Merge Num
	10	Jack	A	в	в		6	7 C	Create List of Grades × Replace Numeric Grades in Lis
	11	Kylie	с	Α	с		5	5 E	 Replace Numeric Grades in Lis
	12	Liam	A*	A*	A*	1	0	10 P	
	13	Marie	c	В	λ		7	8 E	
	14	Nick	в	C	D		6	8 C	
	15	Olivia	A*	A*	A*		9	9 P	
	16	Paula	Е	D	С		4	5 R	
	17	Quentin	c	D	С		5	4 E	
	18	Rose	А	с	В		8	9 C	
	15 16 17	Olivia Paula Quentin	A* E C	д* D D	A* C C		9 4 5	9 p 5 p 4 E	

We can click on the query in the query pane to see that my new query has been created as we expected.

File Home Transform Home Image Properties Close & Load* Refresh Manage* Close Query		dd Column Vier Choose Remo Columns • Colum Manage Column	ve Keep Remo nns * Rows * Rows	re Split Gro ▼ Column ▼ B	Data Type: Text * Use First Row as Headers Use First Row as Headers Use First Row as Headers Transform	Combine Files Paran	Inage meters Data Sources Data Sources	New Sou	rce • ources •	~ 6
Comes () C C C C C C C C C C C C C C C C C C	12	Ac Name Abby Abby Brian Claire Dave Ewan Frank Georgia Harry Ian Jack Kylie Liam Marie		C C C A* B C C C B A C C C B A A A B B C C B A A A A	A A A A B B A A A A A A A A A A A A A A	123 English Language	3 English Literature	9 A 9 A 6 E 6 B 2 E 8 B 5 C 8 E 6 E 7 C 5 E 10 P 8 E	Query Settings PROFERTIES Name Condes List Ran A All Properties Source Onarge converted Letter Grad 8 Split Converted Letter Grad Removed Temporary Columns Renamed Columns Recordered Columns Recordered Columns	
14 COLUMNS 18 ROWS	15 16 17		B A* E C A	C A* D C	D	6 9 4 5 8		8 C 9 A 5 A 4 E 9 C	PREVIEW DOWNLOADED AT	T 12:1

Our original query points to my new query as its source.

Refresh Preview * Manage * Osse Query	ditor	Choose Remo Columns * Column Manage Column	ove Keep Remov ins * Rows * Rows *	e Av Split Gro	Data Type: Text * Use First Row as Headers y t ₉₂ Replace Values Transform	Merge Queries * Append Queries * Ornbine Files Combine	Manage Parameters Parameters Data Sources	New S	t Sources *
veries [9] <	$\left[\times\right]$	√ fx	= #"Grades List	Replaced Numbers"				~	Query Settings
Grades List Plan A		^{A8} c Name ▼	ABC Biology	ABC Chemistry	A ^R C Computer Science	123 English Language	 1²3 English Literature 	- A	, ,
Grade Equivalents	1	Abby	в	с	Α		8	9 P	A PROPERTIES
Grades List	2	Brian	с	с	A		7	6 E	Name
Equivalents	3	Claire	А	A*	в		5	6 F	Grades List Plan B
Table1 (2)	4	Dave	Е	Б	E		2	2 8	All Properties
Test_list	5	Ewan	в	c	В		7	8 P	
Grades List Attempt 1	6	Frank	с	Б	В		6	5 C	A APPLIED STEPS
Grades List Replaced	7	Georgia	A*	A	Α		9	8 E	Source
	8	Harry	в	с	A		7	6 E	
Query1	9	Ian	с	с	D		6	6 P	
	10	Jack	А	в	в		6	7 C	
	11	Kylie	с	А	С		5	5 E	
	12	Liam	A*	A*	λ*	1	10	10 P	
	13	Marie	с	В	Α		7	8 E	
	14	Nick	в	с	D		6	<i>8</i> C	
	15	Olivia	A*	A*	A*		9	9 P	
	16	Paula	Е	D	С		4	5 F	
	17	Quentin	c	D	С		5	4 E	
	18	Rose	А	c	В		8	9 C	
	17	Quentin	c	D	c		5	4 E	

We can use the same source to start a query using our new ideas for the scenario. It's important that the source query is labelled correctly, as any changes to it will affect the dependent queries.

10. Keep learning

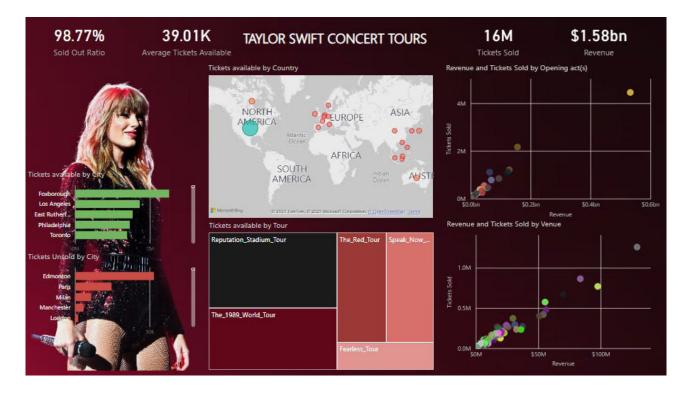
There are lots of articles on the **SumProduct** site about Power Query and other Excel tools. Microsoft frequently improves and changes functionality, and new ways to solve old problems appear not only in these articles, but throughout the Power Query community. One way to access useful information is to search for the *#powerquery* hashtag in Twitter.

Until next month.

Power BI Updates

Softwa	areUpdater	
-	No upda	tes available
	There were no	o updates found.
		Quit

There will be updates for Power BI this month. Unfortunately, we've waited and waited and waited (honestly, it's like trying to get tickets for a Taylor Swift concert),



but our publishing deadline has beaten us for this newsletter. Looks like we will have to Shake It Off this month and put this topic into Exile. We know you know us All Too Well, but we couldn't resist leaving a Blank Space this month [Stop! – Ed.]

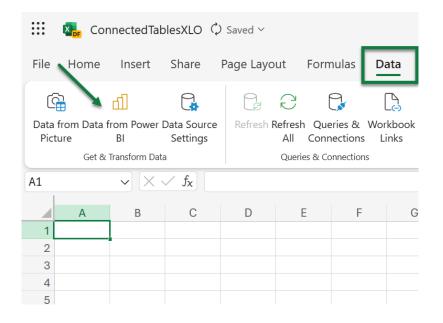
Until next month (hopefully!).

Connected Tables in Excel Online

Whilst there may be no Power BI Updates reviewed this month, there is a crossover item that fits nicely between Power BI and Excel newbies. Back in August last year, Microsoft announced new ways to create connected tables in Excel with Power BI. Since early March, this feature is now available to all in Excel online. It goes further: Microsoft has also been working hard to ensure that all Microsoft 365 update channels are able to use this feature in the Excel desktop application.

To connect directly to data in your semantic model:

• Select 'Data from Power BI' on the Data tab of the Ribbon



• Use the search feature in the 'Power BI Datasets' pane to find the dataset / semantic model you'd like to connect to and select 'Insert Table'

Power BI Datasets ×							
adventure	\times \sim \Box						
Adventure Works	- A - C						
Workspace: PBI Demo Owner: G Refreshed: 10/30/2023, 3:	52:18 PM						
> Tables in this dataset (27):							
> Reports using this data	aset (1):						
+ Insert PivotTable	+ Insert Table						

- Use the 'Create Table' dialog to:
 - o select data to appear in your Table in the Data pane
 - o apply any filters you'd like in the Filters pane
 - o rearrange the field order in the Build pane

This is a table previ	ew that shows only 500 rows. Insert table to see more r	ows. × Build	>>	Filters	≫ ≫	Data	>>
AccountType	Amount	Fields				€ Search	
lssets	553505459.26			~ AccountType	e x	AdventureWorks	
lalances	12171002	Values		Filter type		> 🖽 🗆 DimPromotio	on
low	201323	AccountType	~ X	Basic filtering	~	> 🖽 🗆 DimReseller	
iabilities	553505459.26	Sum of Amount	~ ×			> 🌐 🗌 DimSalesRea	ison
levenue	134117770.02			€ Search		> 🖽 🗆 DimSalesTerr	ritory
		3		- (> DimScenario	
		•		Assets			
				Balances		∨ 🖽 🔳 FactFinance	
				 Expenditures 		Account	tKey
				Flow		∑ 🗹 Amount	
				Liabilities	Ŧ	> 🛅 🗌 Date	
						DateKey	,
				> Amount	×	Departn	nentGroup
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						Scenario	oKey
						✓	Sales
						CarrierT	rackingNu
						Currenc	yKey
					~	Custom	erKey
						Custom	erPONumb

Select 'Insert Table'. You now have a Table connected directly to your Power BI semantic model. Just like with other Connected Table experiences, the workbook contains a connection that you can review and modify in the Queries and Connections properties.

	А	В
1	Data returned for AdventureWo	rks.
2		
3	DimAccount[AccountType] 🗠	[SumAmount]
4	Assets	553505459.3
5	Balances	12171002
6	Flow	201323
7	Liabilities	553505459.3
8	Revenue	134117770
9		

There are some limitations and other points to consider:

- After you select From Power BI in the Excel Ribbon, the artifacts loaded in the pane are not all the semantic models you have access to. They are a selection of your most used semantic models. You should use the search bar in the pane to get additional semantic models
- The order of Power BI semantic models in the pane may be different from their order in the Data hub in the Power BI Service
- For newly created semantic models, recently refreshed semantic models, or semantic models that you just got access to, it may take up to 24 hours for these semantic models to show up in the Power BI Semantic models pane. If you don't see the semantic model you want, navigate to the Power BI OneLake data hub (https://app.powerbi.com/datahub) from the Power BI Semantic models pane in Excel and use 'Analyze in Excel' to create an Excel workbook for that semantic model
- Excel and Power BI visuals use different query languages and data load behaviours, so data load performance may be different between Excel and Power BI.

Updates to the Excel Desktop Application

There is an update on the availability of this feature for users of the Excel desktop application. The connected tables feature is currently available in the M365 Current Channel. It will be available in the Monthly Enterprise Channel in April 2024, and will be rolled out to the Semi-Annual Enterprise Channel in July 2024 as a part of the regular M365 update process.

New Features for Excel

This month sees the 'Chart data' task pane and the ability to use images and Data Types in your PivotTables both now available in Excel for the web. The new default theme for Office is Generally Available in Excel for Windows and Mac too.

You can check out the full list here:

Excel for the web

- 'Chart data' task pane
- Images and Data Types in PivotTables

Excel for Windows

• New default theme for Office

Excel for Mac

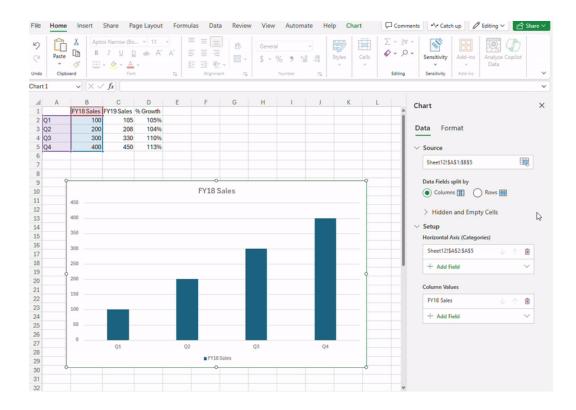
• New default theme for Office.

Let's get started.

'Chart data' task pane

Already supported for Windows and Mac users, you can now use the 'Chart data' task pane to edit your chart's data on the web. The data task pane supports the following:

- change a chart's source data range via range picker user interface [UI] (mouse selection)
- expose new web-first UI to determine how data series are displayed on the chart (including which axis they are displayed on)
- provide controls for configuring how hidden / empty cells appear and whether the source data is split by rows or columns.



Images and Data Types in PivotTables

Images and Data Types in PivotTables are now available in Excel for the web. For example, we can use country flags in company with locations for a sales dataset. Let's consider a sample dataset from Microsoft:

	C D E	F	G	н	1	J	К	L	М	N	0	P	Q	R	S	Т
Pive	otTable															
SP F	xcel and Pictures.xlsm															
Naviga																
1	. Data															
	Data															
	Segment	Country	Product	scount Ba	r Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	COGS	Profit	Date	Month Number	Month Name	Year
	Government	Canada	Carretera	None	1618.5	3	20	32370	0	32370	16185	16185	01 Jan 2014	1.	January	
	Government	Germany	Carretera	None	1321	3	20	26420	0	26420	13210	13210	01 Jan 2014	1.	January	
	Midmarket	France	Carretera	None	2178	3	15	32670	0	32670	21780	10890	01 Jun 2014	6.	June	
	Midmarket	Germany	Carretera	None	888	3	15	13320	0		8880	4440	01 Jun 2014		June	
	Midmarket	Mexico	Carretera		2470	3	15	37050	0		24700	12350	01 Jun 2014		June	
	Government	Germany	Carretera	None	1513	3	350	529550	0		393380		01 Dec 2014		December	
	Midmarket	Germany	Montana	None	921	5	15	13815	0	13815	9210	4605	01 Mar 2014		March	
	Channel Partners	Canada	Montana	None	2518	5	12	30216	0	30216	7554	22662			June	
	Government	France	Montana	None	1899	5	20	37980	0	37980	18990	18990	01 Jun 2014		June	
	Channel Partners	Germany	Montana	None	1545	5	12	18540	0	18540	4635	13905			June	
	Midmarket	Mexico	Montana	None	2470	5	15	37050	0		24700	12350	01 Jun 2014		June	
	Enterprise	Canada	Montana	None	2665.5	5	125	333187.5	0		319860	13327.5	01 Jul 2014		July	
	Small Business	Mexico	Montana	None	958	5	300	287400	0	287400	239500	47900			August	
	Government	Germany	Montana	None	2146	5	7		0	15022	10730	4292			September	
	Enterprise	Canada	Montana	None	345	5	125	43125	0		41400	1725	01 Oct 2013		October	
	Midmarket	United States of America	Montana	None	615	5	15	9225	0		6150	3075	01 Dec 2014		December	
	Government	Canada	Paseo	None	292	10	20	5840	0		2920	2920	01 Feb 2014		February	
	Midmarket	Mexico	Paseo	None	974	10	15	14610	0	14610	9740	4870	01 Feb 2014		February	
	Channel Partners	Canada	Paseo	None	2518	10	12	30216	0	30216	7554	22662			June	
	Government	Germany	Paseo	None	1006	10	350	352100	0	352100	261560	90540	01 Jun 2014		June	
	Channel Partners	Germany	Paseo	None	367	10	12		0	4404	1101	3303	01 Jul 2014		July	
	Government	Mexico	Paseo	None	883	10	7	6181	0		4415	1766			August	
	Midmarket	France	Paseo	None	549	10	15	8235	0		5490	2745			September	
	Small Business	Mexico	Paseo	None	788	10	300	236400	0		197000	39400			September	
	Midmarket	Mexico	Paseo	None	2472	10	15		0	37080	24720	12350	01 Sep 2014		September	
	Government	United States of America Canada	Paseo Paseo	None	1143	10	350	8001 603750	0		5715 448500	2286 155250	01 Oct 2014 01 Nov 2013		October November	
	Channel Partners	United States of America	Paseo		912	10			0		2736	100200	01 Nov 2013		November	
	Channel Partners Midmarket			None		10	12		0	10944		8208			November December	
	Government	Canada	Paseo		2152	10	15	32280	0		21520		01 Dec 2013		December December	
		Canada	Paseo	None	1817	10	20	36340 529550	0	36340 529550	393380	136170	01 Dec 2014 01 Dec 2014		December	
	Government	Germany Mexico	Velo	None	1513	10	350	529550	0	529550	393380	136170	01 Dec 2014 01 Jan 2014		January	
	Enterprise	France	Velo	None	1493	120	125	225500	0	225500	216480	2986	01 Jan 2014 01 Feb 2014		January February	
	Channel Partners	Germany	Velo	None	2161	120	125	225500	0	225500	210480	19449			March	
	Channel Partners Government			None	2161	120	12	352100	0	25932 352100	261560		01 Mar 2014 01 Jun 2014			
	Government	Germany	Velo	none	1006	120	350	352100	0	352100	201560	90540	013002014	6.	June	

We can change Data Type of the **Country** column to Geography (Excel for Windows depicted below):

Get) From Text/CSV III From Picture ~) From Web III Recent Sources From Table/Range III Existing Connecti Get & Transform Data	ons All ~ Queries & Control Queries & Control Properties All ~ & Workbook Li Queries & Control	nks	Recently				
	\sim : $\times \checkmark f_x$ United States of	f America		Highlight	ed			
A I	B C D E	F	G		\frown	607	\wedge	
	ivotTable				Ш		\square	
				Organizatio	n Stocks	Currencies	Geography	
2 S	P Excel and Pictures.xlsm							
3 Na	vigator			From you	r organization			
4]				
5	1. Data							
6				Employee				
7	Data			Linployee				
8	Dum			C. Mari	¢			
9	Segment	Country	Product	iviore	from your organi	24000		
10	Government	Canada	Carretera	None	1618.5		3	20
11	Government	Germany	Carretera	None	1321		3	20
12	Midmarket	France	Carretera	None	2178		3	15
13	Midmarket	Germany	Carretera	None	888		3	15
14	Midmarket	Mexico	Carretera	None	2470		3	15
15	Government	Germany	Carretera	None	1513		3	350
16	Midmarket	Germany	Montana	None	921		5	15
17	Channel Partners	Canada	Montana	None	2518		5	12
18	Government	France	Montana	None	1899		5	20
19	Channel Partners	Germany	Montana	None	1545		5	12
20	Midmarket	Mexico	Montana	None	2470		5	15
21	Enterprise	Canada	Montana	None	2665.5		5	125
22	Small Business	Mexico	Montana	None	958		5	300
23	Government	Germany	Montana	None	2146		5	7
24	Enterprise	Canada	Montana	None	345		5	125
25	Midmarket	United States of America	Montana	None	615		5	15
26	Government	Canada	Paseo	None	292		10	20
27	Midmarket	Mexico	Paseo	None	974		10	15
28	Channel Partners	Canada	Paseo	None	2518		10	12
29	Government	Germany	Paseo	None	1006		10	350
30	Channel Partners	Germany	Paseo	None	367		10	12
31	Government	Mexico	Paseo	None	883		10	7
32	Midmarket	France	Paseo	None	549		10	15
33 34	Small Business	Mexico	Paseo	None	788		10	300
34	Midmarket	Mexico United States of America	Paseo	None	2472		10	15
35		Canada	Paseo Paseo	None	1143		10	7 350
30	Government Channel Partners	United States of America	Paseo	None None	912		10	350
37	Midmarket	Canada	Paseo	None	2152		10	12
38	Government	Canada	Paseo	None	1817		10	20
40	Government	Germany	Paseo	None	1513		10	350
40	Government	Gennany	r asev	NONE	1010		10	300

Then, I can access other information from a Geography type (including flag images). We insert the above as a Table (**CTRL + T**) called **PivotData**. I insert a column **Flag** and use the dot operator (.) to get the flag images of the countries:

1	ABC	D E	F	G	н	1	J
1							
2	SP Exce	and Pictures.xlsm					
3	Navigator						
4	÷						
5	1. Da	ta					
6							
7		Data					
8		Dulu					
9		Segment	Country	Flag	Product	Discount Band	Units Sold
1		Government	仰 Canada	÷	Carretera	None	161
1		Government	仰 Germany		Carretera	None	1:
1		Midmarket	即 France		Carretera	None	2
1		Midmarket	印 Germany	-	Carretera	None	
1	4	Midmarket	印 Mexico		Carretera	None	24
1	5	Government	即 Germany	-	Carretera	None	15
1	6	Midmarket	仰 Germany	_	Montana	None	9
1	7	Channel Partners	仰 Canada	*	Montana	None	25
1	-	Government	仰 France		Montana	None	18
1		Channel Partners	印 Germany		Montana	None	15
2		Midmarket	띠 Mexico	•	Montana	None	24
2		Enterprise	印 Canada	*	Montana	None	266
2		Small Business	印 Mexico		Montana	None	9
2		Government	印 Germany		Montana	None	21
2		Enterprise	印 Canada	*	Montana	None	3
2	-	Midmarket	印 United States		Montana	None	(
2		Government	印 Canada	+	Paseo	None	-
2		Midmarket	印 Mexico	•	Paseo	None	
2		Channel Partners Government	印 Canada	*	Paseo	None	25
2		Channel Partners	印 Germany		Paseo Paseo	None	1(
3		Government	印 Germany 即 Mexico		Paseo	None	
3		Midmarket	即 Mexico 即 France		Paseo	None	
3		Small Business	D Mexico		Paseo	None	-
3		Midmarket	D Mexico		Paseo	None	24
3		Government	D United States		Paseo	None	
3		Government	D Canada	*	Paseo	None	1
3		Channel Partners	D United States		Paseo	None	
3		Midmarket	印 Canada	*	Paseo	None	2
3		Government	即 Canada	*	Paseo	None	- 18
4	D	Government	印 Germany		Paseo	None	15
4	1	Government	印 Mexico		Velo	None	14
4	2	Enterprise	仰 France		Velo	None	1
4	3	Channel Partners	仰 Germany		Velo	None	21
4	4	Government	印 Germany		Velo	None	1(

=[@Country].Image

Then we are able to insert a PivotTable and use images from the column **Flag**, in either row or column fields.

ABCD	E F	G	н	1 J 🔺		
Flags in P	ivotTable				PivotTable Fields	~
	d Pictures.x	lem				
Navigator	iu Fictures.A	19111			Choose fields to add to report:	<
THE PROPERTY					[a	
1. Data					Search	
					Segment	
					Country	
					I Flag	
					Product	
	-				Discount Band	
	Flag -	Sum of Sales	Sum of Units Sold			
		24,887,655 24,354,172	247,429 240,931		Units Sold	
	- -	23,505,341	201,494			
		20,949,352	203.325		Drag fields between areas belo	DWC
		25,029,830	232,628			
	Grand Total	118,726,350	1,125,806		T Filters	III Columns
						Σ Values
						2 10000
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					E Rows	Σ Values
					Flag ~	Sum of Sales
						Sum of Units Sold
				Ψ.		
· · · · F	lags in PivotTab	ala I			Defer Layout Update	

We can use inserted images as row and column fields. However, filters and slicers are not that sophisticated - yet!

	ag 🔄		-		Grand Total	Flag	še ir
^A ∠ Sort A to Z		1,727,502	1,416,127	1,777,583	9,205,248	Image of Can	ada
Z↓ Sort Z to A						Image of Fran	ice
More Sort Options						Image of Gerr	many
Clear Filter From "Flag"						Image of Mexi	со
Label Filters	>					Image of Unit	ed States
<u>V</u> alue Filters	>						
Search							
(Select All)							
οκ	Cancel						

Do remember that this is a feature for pictures inserted into cells only; it is not for the classic floating images over cells. You should also note that presently we cannot load and process inserted images into Power Query:

ose & pad *	Refresh Preview *	Properties	Edito	r Choose Rem Columns + Colum Manage Colum	ove nns * F	Keep Remove lows • Rows • Reduce Rows	Ž↓ Ž↓ Colum Sort	t Group in * By	Data Type: Any • Use First Row as 1 2 Replace Values Transform	Headers *	Merge Queries * Append Queries * Combine Files Combine	Manage Parameters Parameters	-	New Source *
ueries (1	11	< (~	$\sqrt{f_x} = 1$			- /-							
Piv			×						ment", type text				Query Setti	ngs
	otoutu			A ^B _C Segment	*	123 Country		123 Flag	¥	A ^B _C Product	t <mark>▼</mark> A ^B _C Di	scount E	PROPERTIES	
			1	Government		Error		Error		Carretera	None			
			2	Government		Error		Error		Carretera	None	^	Name	
			3	Midmarket		Error		Error		Carretera	None		PivotData	
			4	Midmarket		Error		Error		Carretera	None		All Properties	
			5	Midmarket		Error		Error		Carretera	None		APPLIED STEPS	
			6	Government		Error		Error		Carretera	None			
			7	Midmarket		Error		Error		Montana	None		Source	
			8	Channel Partners		Error		Error		Montana	None		X Changed Typ	be
			9	Government		Error		Error		Montana	None			
			10	Channel Partners		Error		Error		Montana	None			
			11	Midmarket		Error		Error		Montana	None			
			12	Enterprise		Error		Error		Montana	None			
			13	Small Business		Error		Error		Montana	None			
			14	Government		Error		Error		Montana	None			
			15	Enterprise		Error		Error		Montana	None			
			16	Midmarket		Error		Error		Montana	None			
			17	Government		Error		Error		Paseo	None			
			18	Midmarket		Error		Error		Paseo	None			
			19	Channel Partners		Error		Error		Paseo	None			
			20	Government		Error		Error		Paseo	None			
			21	Channel Partners		Error		Error		Paseo	None			
			22	Government		Error		Error		Paseo	None			
			23	Midmarket		Error		Error		Paseo	None	~		
			24	<								>		
			1	DataFormat.Error:	Invalid ce	ell value '#VALU	er.							

You can clearly see that both the Flag and the Country columns (Geography Data Type) are displaying #VALUE! errors.

New default theme for Office

Microsoft has refreshed the Office theme with a new default font, colour palette, style and line weights for Excel for Windows and Excel for Mac. I know life moves on, but I was happy with the old one.

Whilst deciding what to do, Microsoft released five] Calibri replacement candidate fonts to see what users thought:

- 1. Bierstadt
- 2. Grandview
- 3. Seaford
- 4. Skeena
- 5. Tenorite.

The popular choice was Bierstadt as the preferred font, and it has therefore been given a new name, **Aptos**. It supports a variety of weights and includes variants such as narrow, serif and monospace.

ptos (Body) Y 12	∼ Aˆ A˘ A⊘	
Most Recently Used	^ <u>A</u> ~	
Aptos Display	Headings >	Paragraph
(i) Aptos	Body >	Light
Times New Roman	>	
Calibri Light	>	
Calibri	>	Regular
Pinned Fonts	^	Italic
		SemiBold
Arial Nova	>	SemiBold Italic
Bahnschrift	>	Pald
Calibri	>	Bold
Cambria	>	Bold Italic
Consolas	>	ExtraBold
Georgia Pro	>	ExtraBold Italic
Sitka Heading	>	Black
Sitka Text	>	
Times New Roman	>	Black Italic
Verdana Pro	> Ab	out This Font
Office Fonts	~	

Microsoft also researched popular colour palettes and design trends, and created a set of default colours that works well in all Office applications.



The default outline weights have been increased to improve the consistency between shapes and lines, as well as add better contrast.



The default style of Word documents and Outlook emails has been refreshed to make them easy to read, look more professional and easier to navigate.



List Paragraph

As the theme rolls out, all new documents, presentations, worksheets and emails you create in Word, PowerPoint, Excel and Outlook will use the new theme. You can decide for yourself what you think.

It should be noted that:

- your existing documents won't change. They will continue to use the original theme that was applied when they were created if you want to continue using the previous Office theme it's still there. It's been renamed Office Theme 2013 2022
- if neither Aptos nor Calibri are the right fonts for you, there are hundreds of other choices built into Microsoft 365. Simply choose the right typeface for you
- If you wish to revert to older style formatting, you can select 'Word 2013 formatting' from the Document Formatting.

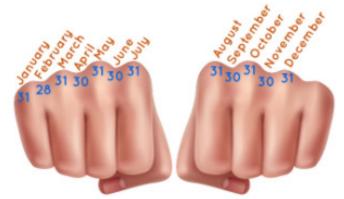
This feature is available to Beta Channel users who are running:

- Win32: Version 2307 (Build 16626.20076) or later
- Mac: Version 16.75 (Build 23071400) or later
- Android: Version 16.0.16626.20076 or later
- Coming later to iOS.

You can check if a specific feature is in your version of Excel here.

Back next month, we're sure.

The A to Z of Excel Functions: MONTH



For some working in financial modelling, it appears that **MONTH** may be the closest they get to a date (groan - Ed.). Seriously, working with time series in Excel is an important part of financial modelling. Since dates in

Excel are merely formatted serial numbers counting from 1 January 1900 (usually), being able to identify the month from a date is not as trivial as you may first think.

Therefore, the **MONTH** function returns the month of a date by a serial number, from 1 (January) to 12 (December). It employs the following syntax to operate:

MONTH(serial_number)

The **MONTH** function has the following argument:

serial_number: this is required and represents the date of the month you are trying to find. Dates should be entered by using the DATE function or as the results of other formulae or functions. For example, you should use DATE(2008,8,17) for the 17th August 2008. Problems may occur if dates are entered as text.

It should be further noted that:

- Microsoft Excel stores dates as sequential serial numbers so they can be used in calculations. By default, January 1, 1900 is serial number 1, and January 1, 2008 is serial number 39448 because it is 39,448 days after January 1, 1900
- values returned by the YEAR, MONTH and DAY functions will be Gregorian values, regardless of the display format for the supplied date value. For example, if the display format of the supplied date is Hijri, the returned values for the YEAR, MONTH and DAY functions will still be values associated with the equivalent Gregorian date.

Please see our example below:

	А	В	С
1	Date	Month	Formula
2	14 February 2022	2	=MONTH(A2)
2			

There is an alternative to this approach, depending upon:

- what you require
- accept that the result will be returned as a text data type, even if it has the appearance of a number.

The **TEXT** function allows you to change the way a number appears by applying formatting to it with format codes. It's useful in situations where you want to display numbers in a more readable format or you want to combine numbers with text or symbols.

However, as mentioned above, the **TEXT** function will convert numbers to text, which may make it difficult to reference in later calculations. It's best to keep your original value in one cell, then use the **TEXT** function in another cell. Then, if you need to build other formulae, always reference the original value and not the **TEXT** function result.

Its syntax is as follows:

=TEXT(value_to_be_formatted, "format_code")

The **TEXT** function has the following arguments:

- value_to_be_formatted: this is required and represents the value to be reformatted
- "format_code": this is required and must be in quotation marks. This represents the custom number formatting required.

For months formats, the following customer number format codes are relevant:

Date Code	Description					
m	Month as a number without leading zeros (1 to 12)					
mm	Month as a number with leading zeros (01 to 12)					
mmm	Month as an abbreviation (Jan – Dec)					
mmmm	Unabbreviated month (January – December)					
mmmmm	First letter of month (J, F, M, A, M, J, J, A, S, O, N, D)					

	А	В	С
1	Date	Month	Formula
2	14 February 2022	2	=TEXT(A2,"m")
3	14 February 2022	02	=TEXT(A3,"mm")
4	14 February 2022	Feb	=TEXT(A4,"mmm")
5	14 February 2022	February	=TEXT(A5,"mmmm")
6	14 February 2022	F	=TEXT(A6,"mmmmm")
7			

The A to Z of Excel Functions: MROUND



The **MROUND** function rounds a number to a desired multiple. There isn't much more to say about it, really (sorry). It employs the following syntax to operate:

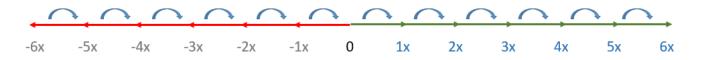
MROUND(number, multiple)

The **MROUND** function has the following arguments:

- number: this is required and represents the value to be rounded
- multiple: also required, this is the multiple for which you wish to round the number.

It should be further noted that:

• **MROUND** rounds up, away from zero (see image, below), if the remainder of dividing the **number** by the given **multiple** is greater than or equal to half the value of the **multiple**

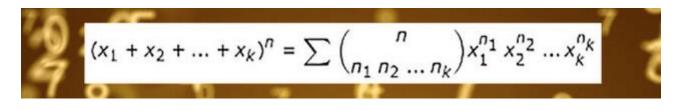


• the number and multiple arguments must have the same sign; if not, an #NUM! error is returned.

Please see our example below:

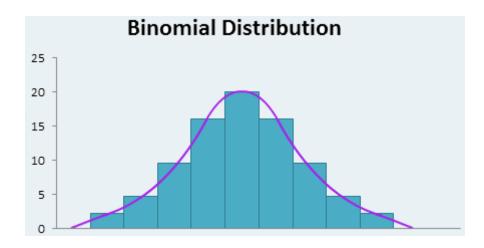
	А	В	С
1	Formula	Description	Result
2	=MROUND(10,3)	Rounds 10 to the nearest multiple of 3	9
3	=MROUND(-10,-3)	Rounds -10 to the nearest multiple of -3	-9
4	=MROUND(10.5,3)	Rounds 10.5 to the nearest multiple of 3	12
5	=MROUND(-10.5,-3)	Rounds -10.5 to the nearest multiple of -3	-12
6	=MROUND(-10.5,3)	Returns the #NUM! error as -10.5 and 3 have different signs.	#NUM!

The A to Z of Excel Functions: MULTINOMIAL



The multinomial distribution is a generalisation of the binomial distribution to two or more events.

In probability theory and statistics, the binomial distribution with parameters \mathbf{n} and \mathbf{p} is the discrete probability distribution of the number of successes in a sequence of \mathbf{n} independent success / failure experiments, each of which yields success with probability \mathbf{p} . For the record, a success / failure experiment is also called a Bernoulli experiment or Bernoulli trial. The binomial distribution is frequently used to model the number of successes in a sample of size \mathbf{n} drawn with replacement from a population of size \mathbf{N} .



of success is constant throughout the experiment. For example, BINOM.

DIST can calculate the probability that two of the next three babies born

This function returns the individual term binomial distribution probability. The **BINOM.DIST** function should be used in problems with a fixed number of tests or trials, when the outcomes of any trial are only success or failure, when trials are independent and when the probability

when trials are independent and when the probability

Therefore, for an experiment with the following characteristics:

- the experiment consists of n independent trials
- each trial has k mutually exclusive outcomes E,
- for each trial the probability of outcome **E**, is **p**,

let $\mathbf{x}_1, ..., \mathbf{x}_k$ be discrete random variables whose values are the number of times outcome \mathbf{E}_i occurs in \mathbf{n} trials. Then, $\mathbf{x}_1, ..., \mathbf{x}_k$ has a *multinomial* distribution. The (joint) probability distribution function (pdf) is defined as follows:

are male.

$$f(x_1,\ldots,x_k) = \frac{n!}{x_1! \cdot \ldots \cdot x_k!} p_1^{x_1} \cdot \ldots \cdot p_k^{x_k}$$

where

$$1 = \sum_{i=1}^{k} p_i$$

The case where k = 2 is equivalent to the binomial distribution.

Key properties of the multinomial distribution are:

- E[x_i] = np_i
- var(x_i) = np_i(1-p_i)
- cov(x_i, x_i) = -np_ip_i for i ≠ j.

The **MULTINOMIAL** function in Excel returns the ratio of the factorial of a sum of values to the product of factorials. It employs the following syntax to operate:

MULTINOMIAL(number1, [number2, ...])

The **MULTINOMIAL** function has the following arguments:

• number1, number2, ...: number1 is required (the rest are optional), and represents one [1] to 255 values for which you require the multinomial.

It should be noted that:

- if any argument is nonnumeric, MULTINOMIAL returns the #VALUE! error value
- if any argument is less than zero, MULTINOMIAL returns the #NUM! error value
- the multinomial is:

MULTINOMIAL
$$(a_1, a_2, ..., a_n) = \frac{(a_1 + a_2 + ... + a_n)!}{a_1! a_2! ... a_n!}$$

As an example, suppose that a bag contains 12 balls: five [5] red, four [4] yellow and three [3] blue (5 + 4 + 3 = 12). You reach in the bag and pull out a ball at random and then replace it before making a subsequent selection. This experiment is repeated a total of 10 times. What is the probability that the outcome will result in exactly six [6] reds, two [2] yellows and two [2] blues (6 + 2 + 2 = 10)?

The possible outcomes for each trial in this experiment are $\mathbf{E}_1 = a$ red ball is drawn, $\mathbf{E}_2 = a$ yellow ball is drawn and $\mathbf{E}_3 = a$ blue ball is drawn. Thus $\mathbf{p}_1 = 5/12$, $\mathbf{p}_2 = 4/12$, $\mathbf{p}_3 = 3/12$, $\mathbf{x}_1 = 6$, $\mathbf{x}_2 = 2$ and $\mathbf{x}_3 = 2$, and so

$$f(6,2,2) = \frac{10!}{6!\,2!\,2!} \left(\frac{5}{12}\right)^6 \left(\frac{4}{12}\right)^2 \left(\frac{3}{12}\right)^2 = 0.045787$$

This has been reproduced in Excel using the MULTINOMIAL function (using three alternative approaches) below:

	Α	В	С	D
1	Description	Variable	Assumption	Formula
2	No. of red balls	n _{red}	5	
3	No. of yellow balls	n _{yellow}	4	
4	No. of blue balls	n _{blue}	3	
5	Probability of a red ball taken	Pred	0.417	=C2/SUM(\$C\$2:\$C\$4)
6	Probability of a yellow ball taken	p _{yellow}	0.333	=C3/SUM(\$C\$2:\$C\$4)
7	Probability of a blue ball taken	P _{blue}	0.250	=C4/SUM(\$C\$2:\$C\$4)
8	No. of red balls selected	× _{red}	6	
9	No. of yellow balls selected	× _{yellow}	2	
10	No. of blue balls selected	× _{blue}	2	
11	Probability of red balls	Pred [^] Xred	0.005233	=C5^C8
12	Probability of yellow balls	p _{yellow} ^x _{yellow}	0.111111	=C6^C9
13	Probability of blue balls	p _{blue} ^x _{blue}	0.062500	=C7^C10
14	Multinomial	Coeffecient	1260	=MULTINOMIAL(C8:C10)
15	Probability	Probability	0.045787	=C14*PRODUCT(C11:C13)
16		Alternative 1	0.045787	=PRODUCT(MULTINOMIAL(C8:C10),C5:C7^C8:C10)
17		Alternative 2	0.045787	=MULTINOMIAL(C8:C10)*EXP(SUMPRODUCT(C8:C10,LN(C5:C7)))
18	1		•	

The A to Z of Excel Functions: MUNIT

$$I_1 = \begin{bmatrix} 1 \end{bmatrix}, \ I_2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, \ I_3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}, \ \dots, \ I_n = \begin{bmatrix} 1 & 0 & 0 & \cdots & 0 \\ 0 & 1 & 0 & \cdots & 0 \\ 0 & 0 & 1 & \cdots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & \cdots & 1 \end{bmatrix}.$$

In matrix algebra, the **MUNIT** function returns the unit matrix for the specified dimension. A unit matrix is simply a square (**n** x **n**) matrix which has the value of one [1] down the leading diagonal (from top left to bottom right) and zero [0] everywhere else.

Described like this, it doesn't sound very exciting!

It has the following syntax:

MUNIT(dimension)

The **MUNIT** function has the following argument:

• **dimension:** this is required and represents an integer specifying the dimension of the unit matrix that you wish to return, resulting in a square (**n** x **n**) array. This **dimension** must be greater than zero [0].

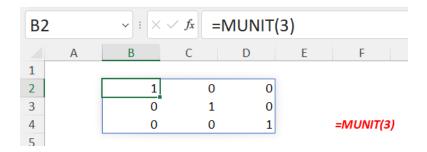
It uses the following equation:

$$1_{N \times N} = \begin{array}{ccccccccc} 1 & 0 & \dots & 0 \\ 0 & 1 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & 1 \end{array}$$

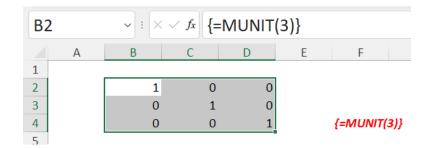
If dimension is a value less than or equal to zero [0], MUNIT returns the #VALUE! error value.

If you are using Microsoft 365, then you can simply enter the formula in the top left-cell of the output range and then press **ENTER** to confirm the formula as a dynamic array formula. Otherwise, the formula must be entered as a legacy array formula by first selecting the output range, entering the formula in the top-left-cell of the output range, and then pressing **CTRL + SHIFT + ENTER** to confirm it. Excel inserts curly brackets (known as **braces**) at the beginning and end of the formula for you.

In Excel 365:



In a "legacy" version of Excel:



So what would you use this function for?

Let's keep this simple, and just consider a 2 x 2 matrix scenario. Matrices are used to transform data, often used in computer graphics, cartoons, *etc.* Sometimes, you wish to maintain a character's direction or bringing it nearer or closer (scaling up or scaling down).

In linear algebra, the term **eigenvector** is used to denote the direction that should remain consistent. The corresponding term **eigenvalue** would denote the scale of the enlargement, *e.g.*

- 1 would mean "no change"
- 2 would mean "double the length"
- -1 would mean point in the opposite direction to the eigenvalue.

Of course, mathematicians (such as myself!) have to complicate this notion in case someone still understands what I am talking about. It may be represented mathematically in the form

where:

- A is a matrix of dimension **n** x **n**
- **v** is a vector, consisting of one row or one column, with **n** elements. This is the eigenvector
- λ is the scalar multiple (*i.e.* it is simply a number) which represents the eigenvalue.

[For what it's worth, "eigen" comes from the German word for "typical", if that helps clarify.]

As an example, let's consider the 2 x 2 matrix

 $\begin{pmatrix} -5 & 2 \\ 5 & 4 \end{pmatrix}$

This has an eigenvector of $\binom{2}{10}$ with an associated eigenvalue of five [5].

How on earth was this calculated? Let's revert to the original premiss:

 $Av = \lambda v$

To ensure I am considering like with like, I will make sure both sides of the equation are matrices, so I will add the 2 x 2 identity matrix, *i.e.* MUNIT(2) here:

Av = λlv

where I is the unitary 2 x 2 matrix. Thus:

Assuming the eigenvector **v** is non-zero, we may solve for the eigenvalue λ by calculating the determinant of the matrix. This is a special calculation in linear algebra, denoted by $|\mathbf{A}|$, meaning the determinant of the square matrix **A**. For a 2 x 2 matrix, the determinant is calculated as

 $Av - \lambda Iv = 0$

$$\begin{vmatrix} \begin{pmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$$

 $|A - \lambda I| = 0$

To solve for λ , we calculate

Therefore,

which reduces to

$$\left| \begin{pmatrix} -5 & 2\\ 5 & 4 \end{pmatrix} - \lambda \begin{pmatrix} 1 & 0\\ 0 & 1 \end{pmatrix} \right| = 0$$
$$\left| \begin{matrix} -5 - \lambda & 2\\ 5 & 4 - \lambda \end{matrix} \right| = 0$$
$$(-5 - \lambda)(4 - \lambda) - (2 \times 5) = 0$$

Calculating this determinant, we get

Which simplifies to a quadratic equation, viz.

which is

 $(\lambda+6)(\lambda-5)=0$

 $\lambda^2 + \lambda - 30 = 0$

i.e. λ equals either -6 or +5. That means there are two distinct eigenvalues, one of which is five [5]. Knowing this, we may now calculate the associated eigenvector:

$$\begin{pmatrix} -5 & 2\\ 5 & 4 \end{pmatrix} \begin{pmatrix} x\\ y \end{pmatrix} = 5 \begin{pmatrix} x\\ y \end{pmatrix}$$

Using standard matrix algebra, we get the two equations

-5x + 2y = 5x 5x + 4y = 5y

-10x + 2y = 05x - y = 0

Bringing all values over to the left-hand side of the equations, we get

Clearly, **y = 5x**, so an eigenvector is any non-zero multiple of the vector
$$\begin{pmatrix} 1 \\ 5 \end{pmatrix}$$
. For example,

$$\begin{pmatrix} -5 & 2\\ 5 & 4 \end{pmatrix} \begin{pmatrix} 2\\ 10 \end{pmatrix} = \begin{pmatrix} 10\\ 50 \end{pmatrix} = 5 \begin{pmatrix} 2\\ 10 \end{pmatrix}$$

i.e. **Αν = λν**

If you wanted to calculate this in Excel, you would need **MUNIT**. Further, if you add up the digits on the leading diagonal (known as the **trace** of the matrix), you will note

-5 + 4 = -1

The two solutions for λ are -6 and +5, which also add up to -1. This is because the sum of the eigenvalues of a matrix equals the trace of that matrix. This can be a good check, which **MUNIT** may also be used for:

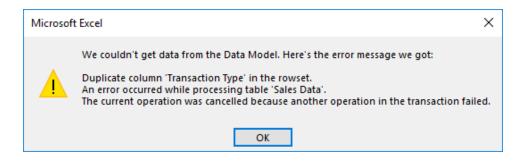
```
trace(A) =SUM( A * MUNIT(ROWS(A)) )
```

So ends today's mathematics lesson. Class dismissed.

More Excel Functions next month.

Beat the Boredom Suggested Solution

Earlier in this month's newsletter, we posted an interesting problem, whereby Power Pivot would return with an error when we loaded a Table with two very similar columns in them.



Do note that these columns were accepted by Power Query and even successfully exported into a Table in Excel.

So, how do we get around this?

The answer may surprise you. Change the column names! If you had not noticed, the original table had two very similar column names 'Transaction Type' and 'Transaction type':

Customer ID	Customer Name	Date	Country	Region	Transaction Type	Internal / External	Amount
1004	Harmonic Sonics	5/09/2018	AU	BBE	Payments	Internal	711
1001	Bizuplyz	29/10/2019	AU	SPA	Payments	External	4,459
1003	L. R. Repeat	25/12/2017	AU	JUY	Payments	Internal	644
1003	L. R. Repeat	20/11/2018	AU	SPA	Payments	Internal	2,472
1003	L. R. Repeat	8/03/2019	AU	JUY	Payments	Internal	5,917
1004	Harmonic Sonics	13/08/2018	AU	SPA	Payments	External	2,352
1003	L. R. Repeat	8/05/2020	AU	GFY	Payments	Internal	508
1003	L. R. Repeat	12/05/2020	AU	SPA	Payments	External	3,749
1004	Harmonic Sonics	29/06/2018	AU	GFY	Payments	External	2,764
1002	Plumb'n'Stuff	22/02/2019	AU	SPA	Payments	Internal	675
1002	Plumb'n'Stuff	7/06/2019	AU	GFY	Payments	External	5,716
1004	Harmonic Sonics	23/01/2019	AU	JUY	Payments	External	756
1002	Plumb'n'Stuff	2/12/2018	AU	NHJ	Payments	Internal	2,543
1004	Harmonic Sonics	10/07/2018	AU	GFY	Payments	External	5,516
1002	Plumb'n'Stuff	17/03/2020	AU	NHJ	Payments	External	3,989

The two columns were only distinguished by the capitalised 'T' in 'type'. Power Pivot does not recognise the capitalisation as a distinguishing factor, therefore treated both columns as duplicates. Therefore, the solution is to simply change the column name:

Customer ID	Customer Name	Date	Country	Region	Transaction Type	Internal / External	Amount
1004	Harmonic Sonics	5/09/2018	AU	BBE	Payments	Internal	711
1001	Bizuplyz	29/10/2019	AU	SPA	Payments	External	4,459
1003	L. R. Repeat	25/12/2017	AU	JUY	Payments	Internal	644
1003	L. R. Repeat	20/11/2018	AU	SPA	Payments	Internal	2,472
1003	L. R. Repeat	8/03/2019	AU	JUY	Payments	Internal	5,917
1004	Harmonic Sonics	13/08/2018	AU	SPA	Payments	External	2,352
1003	L. R. Repeat	8/05/2020	AU	GFY	Payments	Internal	508
1003	L. R. Repeat	12/05/2020	AU	SPA	Payments	External	3,749
1004	Harmonic Sonics	29/06/2018	AU	GFY	Payments	External	2,764
1002	Plumb'n'Stuff	22/02/2019	AU	SPA	Payments	Internal	675
1002	Plumb'n'Stuff	7/06/2019	AU	GFY	Payments	External	5,716
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1002	Plumb'n'Stuff	2/12/2018	AU	NHJ	Payments	Internal	2,543
1004	Harmonic Sonics	10/07/2018	AU	GFY	Payments	External	5,516
1002	Plumb'n'Stuff	17/03/2020	AU	NHJ	Payments	External	3,989

The column 'Transaction type' has been renamed to 'Internal / External'. Let's try to load this Table into our Data Model:

	fx						
ner ID 💽	Customer Name 🖬	Date 💌	Country 🔽	Region 🔽	Transaction Type 💽	Internal / External 🔽	Amount 🔽
1004	Harmonic Sonics	5/09/	AU	BBE	Payments	Internal	711
1001	Bizuplyz	29/10	AU	SPA	Payments	External	4459
1003	L. R. Repeat	25/12	AU	JUY	Payments	Internal	644
1003	L. R. Repeat	20/11	AU	SPA	Payments	Internal	2472
1003	L. R. Repeat	8/03/	AU	JUY	Payments	Internal	5917
1004	Harmonic Sonics	13/08	AU	SPA	Payments	External	2352
1003	L. R. Repeat	8/05/	AU	GFY	Payments	Internal	508
1003	L. R. Repeat	12/05	AU	SPA	Payments	External	3749
1004	Harmonic Sonics	29/06	AU	GFY	Payments	External	2764
1002	Plumb'n'Stuff	22/02	AU	SPA	Payments	Internal	675

Success! We are now able to work with this data table in Power Pivot. So how did you go? Did you find a solution other than changing the column names? Let us know, we'd be keen to hear if you think you have a better way of circumventing this error. Otherwise, more next month.

Upcoming SumProduct Training Courses

Location Co	Course	Course Date	Local Time	UTC	Duration
Virtual (Australia) Ch	ChatGPT Part 2	8 April	09:00 - 12:30 AEST	7 April, 23:00 UTC - 8 April, 02:30 UTC	1 Day

Key Strokes

Each newsletter, we'd like to introduce you to useful keystrokes you may or may not be aware of. We've started going through the alphabet actions. We see the light this month - albeit the UV light...

Keystroke	What it does
CTRL + <u>U</u>	Underline (toggle)
CTRL + SHIFT + <u>U</u>	Expand / collapse Formula bar
CTRL + ALT + SHIFT + <u>U</u>	Adds French accent aigu
ALT + <u>V</u>	Excel 2003 and prior: activate View menu
CTRL + <u>V</u>	Paste
CTRL + ALT + <u>V</u>	'Paste Special' dialog

There are c.550 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file at http://www.sumproduct.com/ thought/keyboard-shortcuts. Also, check out our new daily Excel Tip of the Day feature on the www.sumproduct.com homepage.

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- M&A work
- Model scoping
- Power BI, Power Query & Power Pivot Project finance
- **Real options analysis**
- Refinancing / restructuring .
- Strategic modelling
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- Working capital management

If you require modelling assistance of any kind, please do not hesitate to contact us at contact@sumproduct.com.

Link to Others

These newsletters are not intended to be closely guarded secrets. Please feel free to forward this newsletter to anyone you think might be interested in converting to "the SumProduct way".

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Any Questions?

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