

Neale Blackwood:

This is the third in this series on Dynamic Arrays. Now, just a reminder, Dynamic Arrays are brand new in Excel, but they are only available in the subscription version of Excel, which is now called Microsoft 365, used to be called Office 365. So just a heads up, you can only use these in the subscription versions of Excel, so be careful sharing files around with people who don't have the subscription version. It's probably not going to hit the full version until 2021 or 2022, something like that.

Neale Blackwood:

So this session is based on my July article. The July article covered four separate Dynamic Array functions, but first SORT. In the previous podcast, we looked at the FILTER function, so that limited the values that you could bring out of a table, the SORT function will sort the whole table. So you can basically have your data table in one section and then in another section, you can use the SORT function to sort it into a specific order. Now, this is really useful for things like dashboards, where you might want, let's say, the top 10. So you might get the top 10 sales by product or by customer or something like that, and so the sorting... so the table can stay in its normal state, and then you can use a formula to create a listing of the table in a certain sequence. So you can sort in ascending or descending, I think it defaults to the ascending order, but you can switch that. So you can sort numerically on, obviously, value columns or alphabetic sort on a text type column.

Neale Blackwood:

Now, this is really useful because we've never been really able to do this, except using Array formulas, which I mentioned in the very first podcast on Dynamic Arrays. It was always a manual step, so you had to do it manually to do the sorting. Pivot tables though, they could automate the sort, but again, the problems with pivot tables is they need to be refreshed if the data changes, so there's always this extra step required. With the SORT function, it's automatic, so as soon as the data changes, the sort will update. So it's a great leap forward in terms of what we can do with sorting.

Neale Blackwood:

So it's really handy for if you wanted to create your top 10, top 5 type lists, you can get those created using the SORT. And of course you can add... These functions work really well together, so for example, the UNIQUE function that we looked at in the previous podcast, or the previous two podcasts, they will produce a list, but the list is in the same sequence that the values are found in whatever list they're doing. So they'll give you a unique list, but there's no order in that list, it's just whatever the order is down the table. So you can add the SORT function around the UNIQUE function to actually sort it so that you can get an alphabetic listing of States or branches or departments, whatever you're looking at. So the SORT function works really well with the UNIQUE function, to provide a sorted, unique list.

Neale Blackwood:

You may have the situation where you want to sort by a column that you don't want to display. So for example, you might want a list of all of your customers in descending order based on sales. So obviously the sales will be in a separate column, and then the name. You can use the SORTBY function, so SORTBY allows you to create a list with one column based on a value in another column, which may be the sales or the margin or whatever you're analysing. And so you have the flexibility that you can sort by a column that you don't need to include in the table, so that's what the SORTBY allows you to do. They work very similarly, but as I said, you have the extra option of selecting the column that you want to sort by, which is different to the one you want to display in the sort.

Neale Blackwood:

Now, the next function that is really useful is the SEQUENCE function. So the SEQUENCE function allows you to create sequential numbers, and great for things like budgets, financial models where you might want a flexible number of periods. So you could use it for years or months, you could use it for quarters as well. The default is starting at one and going up by one, so that's the default setting. So if you just go =SEQUENCE and then say 20, close the bracket, it's going to give you a list of 20 numbers from 1 to 20, as simple as that. Now if that 20 was in a cell, then changing the cell will automatically update those numbers, so you can have an input cell that tells you 12, 24, 36 that refer to that cell, and that's how many sequential numbers will be created. And then, you can run your model off that sequence of numbers.

Neale Blackwood:

Remember to refer to the Dynamic Spilled range, so just a heads up on some terminology again that we've looked at before, the Spilled range can go either horizontally or vertically, it can also go two dimensionally, so rows and columns. The formula for a Dynamic Array is always in the top left cell of the range. Now, to refer to that whole range, you just refer to that cell, so maybe C2, and you put the hash symbol after it. And so in doing that, if you refer to the very first cell that has the SEQUENCE function in it, if you refer to that cell with the hash on the end then your formula will automatically spill to match whatever the SEQUENCE function is doing. And so the formulas that you create will go, very common to go 12, 24, or 36 columns across in a financial model or a budget, and you can do that dynamically by just changing a value in a cell, and all your formulas can flow across to that many columns. So it really adds a lot of flexibility to the way you create formulas.

Neale Blackwood:

Now, in the magazine article, I used a loan schedule as an example, so that went down the page, and basically I use that for the number of periods in the loan schedule. And so you could change a cell entry, and that changed how many entries were made in the loan schedule going down the page. Now, in terms of the options that you can change, you can create a two dimensional sequence, so you can go across the page and down the page if you want, typically you'll go one or the other, across or down, so you can set those. As I mentioned, the default is you start at one and you step one, but you don't have to, you can start at zero and step one, you can start at zero and step three, and so that would give you quarters. So you have zero, three, or you can start at three and then step three and go 3, 6, 9, 12, so if you wanted quarter numbers. So you have the option to specify the starting number, as well as whatever the step amount is to increment the value.

Neale Blackwood:

The last function that's been included with Dynamic Arrays as a new function is RANDARRAY. So, R-A-N-D-A-R-R-A-Y, RANDARRAY, stands for Random Array. Now, for accounting purposes, this is probably the least useful of all of the functions. It does have a place if you're doing some sort of Monte Carlo analysis in a financial model, where you want some random numbers, but apart from that, I don't know that you'd use it much. I use random numbers for my training and also for testing and also examples, but in terms of straight accounting, I can't see a lot of use for it. So what it does, it generates random numbers. Now the numbers are not unique, okay, so the numbers could repeat, so might not work for your lotto numbers, okay? So the numbers can repeat, unless you're doing Powerball, I guess.

Neale Blackwood:

Now, apart from testing, or so generating numbers for training, as I said, I don't see a lot of use for the Random or the RANDARRAY formulas. There is a Random Between function, which I tend to use for most of my work, and that's been around for a couple of versions of Excel, so you can check that one out as well, that's just a standard function. But the Random Array allows you to generate numbers in a matrix, so you can either go down the page, across the page, or both. And so for a Monte Carlo analysis, it might be a worthwhile for financial models.

Neale Blackwood:

Okay, so the six new functions, again, UNIQUE, FILTER, SORT, SORTBY, SEQUENCE, and RANDARRAY. So they're brand new functions in Excel that produce amazing and useful output, that used to be really hard to get using Array formulas, but now are really, really easy. And just a reminder that Excel's normal functions now will work differently if you have the Dynamic Array update. So they can do some weird and wonderful things, which you can make use of, and I'll touch on some of those in the next podcast, which we'll look at more of the practical applications of using all of these functions together, plus Excel's existing functions. So that will be in the next podcast. Talk to you then. Thanks for listening.