

# Lecture Note #9: Data and Tables

BUSI 201: Business Data Analysis

Fall 2023

## Topic 1. Tables and Data

Although “Data” and “Tables” often look similar, they play different roles in data analysis. A table is a product of data visualization, which aims to give the reader a glimpse into the properties of the data. For an example, please see Figure 1. Figure 1 contains data on three publicly traded stocks, BRK-B, DIS, and TSLA. The data spans three months from June 1st, 2023 up to Aug. 31st 2023, and has information on daily prices and trade volume of each stock.

The screenshot shows a Microsoft Excel spreadsheet titled 'TABLESvsDATA'. The left side of the screen displays a table of raw data for three stocks (BRK-B, DIS, TSLA) over a period from June 1, 2023, to August 31, 2023. The columns include Ticker, Name, Date, Open, High, Low, Close, and Volume. The right side of the screen displays two summary tables: 'Monthly Average Closing Price' and 'Monthly Average Trade Volume (Thousands)'. The 'Monthly Average Closing Price' table shows the average closing price for each stock across the three months. The 'Monthly Average Trade Volume' table shows the average trade volume in thousands for each stock across the three months.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2		Ticker	Name	Date	Open	High	Low	Close	Volume						
3		BRK-B	Berkshire Hathaway Inc.	1-Jun-23	\$321.42	\$323.22	\$319.53	\$323.12	3,375,300						
4		DIS	The Walt Disney Company	1-Jun-23	\$88.40	\$89.06	\$87.11	\$88.59	11,993,200						
5		TSLA	Tesla Inc	1-Jun-23	\$202.59	\$209.80	\$199.37	\$207.52	148,029,900						
6		BRK-B	Berkshire Hathaway Inc.	2-Jun-23	\$325.16	\$330.67	\$324.42	\$329.48	3,962,200						
7		DIS	The Walt Disney Company	2-Jun-23	\$89.63	\$91.34	\$89.60	\$90.77	14,330,500						
8		TSLA	Tesla Inc	2-Jun-23	\$210.15	\$217.25	\$209.75	\$213.97	164,129,000						
9		BRK-B	Berkshire Hathaway Inc.	5-Jun-23	\$330.89	\$330.89	\$327.57	\$328.58	3,091,800						
10		DIS	The Walt Disney Company	5-Jun-23	\$91.20	\$91.76	\$89.44	\$91.00	18,506,700						
11		TSLA	Tesla Inc	5-Jun-23	\$217.80	\$221.29	\$214.52	\$217.61	151,143,100						
12		BRK-B	Berkshire Hathaway Inc.	6-Jun-23	\$329.04	\$334.16	\$328.68	\$333.41	3,181,400						
13		DIS	The Walt Disney Company	6-Jun-23	\$91.10	\$92.51	\$91.02	\$92.16	12,109,100						
14		TSLA	Tesla Inc	6-Jun-23	\$216.14	\$221.91	\$212.53	\$221.31	146,911,600						
15		BRK-B	Berkshire Hathaway Inc.	7-Jun-23	\$334.01	\$335.82	\$331.43	\$335.42	3,727,800						
16		DIS	The Walt Disney Company	7-Jun-23	\$92.78	\$93.08	\$91.86	\$92.52	11,082,400						
17		TSLA	Tesla Inc	7-Jun-23	\$228.00	\$230.83	\$223.20	\$224.57	185,710,800						
18		BRK-B	Berkshire Hathaway Inc.	8-Jun-23	\$335.49	\$336.32	\$334.10	\$335.95	2,759,300						
19		DIS	The Walt Disney Company	8-Jun-23	\$92.52	\$92.68	\$91.30	\$92.53	9,030,200						
20		TSLA	Tesla Inc	8-Jun-23	\$224.22	\$235.23	\$223.01	\$234.86	164,489,700						
21		BRK-B	Berkshire Hathaway Inc.	9-Jun-23	\$335.76	\$337.59	\$334.92	\$335.29	2,619,200						

Figure 1: Data and Tables

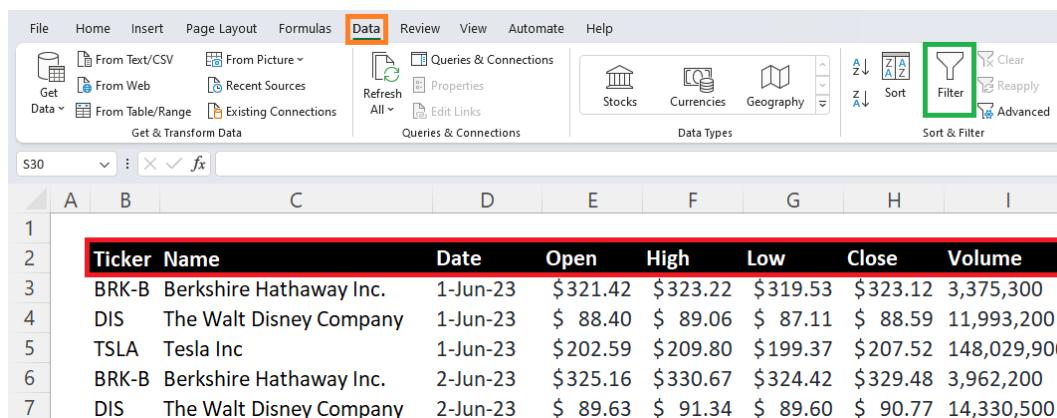
The left of Figure 1 is what we call “data.” Data can be visualized as “information stacked vertically,” where each column contains a different variable. For instance, in the left-hand-side of TABLESvsDATA, we can see that the first column contains information in the ticker, third column containing information on the date of observation, and so on.

Meanwhile, the right hand side of Figure 1 contains information from the data, formatted into a table. Here we use the AVERAGEIFS function to find the relevant information for each cell in the table. Usually, it will be much easier to glean information off from a table compared to the raw data. It would be incredibly difficult to find a clear trend in the average prices or trade volume from the left hand side entry.

## Topic 2. Basic Data Analysis: Filtering

We first look into “filters” in Excel as a means to directly analyze data. Suppose that at the moment we are only interested in stock price information for BRK-B. Filtering offers a handy tool in this situation. To apply filters...

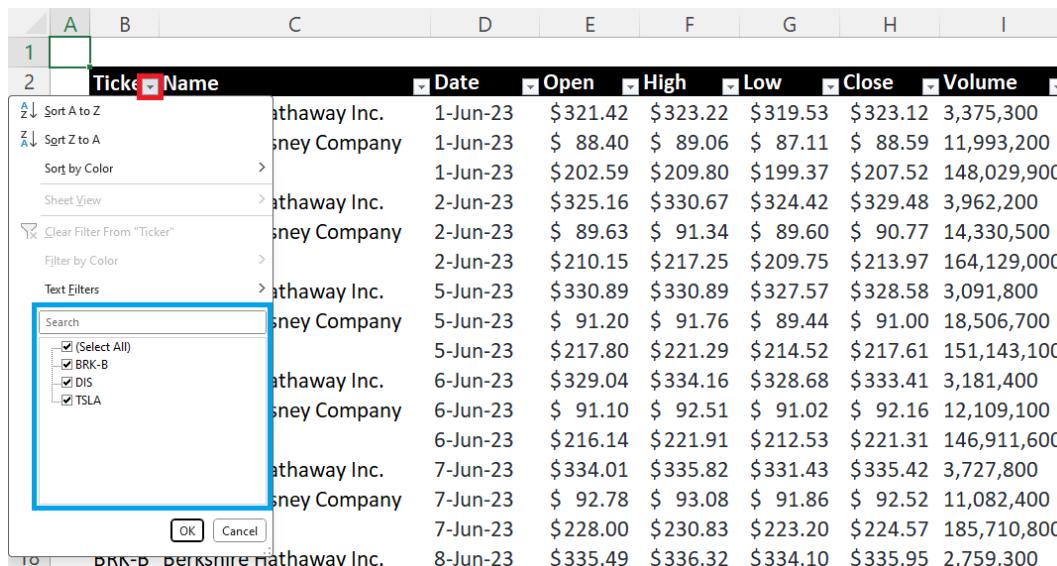
1. Select the variable names of the data to be filtered. In our example, it should be cells **B2:I2**.
2. On the Quick Access Toolbar, navigate to **DATA**.
3. Click **Filter**.



	A	B	C	D	E	F	G	H	I
1		Ticker	Name	Date	Open	High	Low	Close	Volume
2		BRK-B	Berkshire Hathaway Inc.	1-Jun-23	\$321.42	\$323.22	\$319.53	\$323.12	3,375,300
3		DIS	The Walt Disney Company	1-Jun-23	\$ 88.40	\$ 89.06	\$ 87.11	\$ 88.59	11,993,200
4		TSLA	Tesla Inc	1-Jun-23	\$202.59	\$209.80	\$199.37	\$207.52	148,029,900
5		BRK-B	Berkshire Hathaway Inc.	2-Jun-23	\$325.16	\$330.67	\$324.42	\$329.48	3,962,200
6		DIS	The Walt Disney Company	2-Jun-23	\$ 89.63	\$ 91.34	\$ 89.60	\$ 90.77	14,330,500
7									

Figure 2: Applying Filters to Data

As an alternate, you can select the variable names, and then use the hotkey **ctrl+shift+L**. Once the filters are added, you will see a upside-down triangle mark next to each of the variables in the dataset.



	A	B	C	D	E	F	G	H	I
1		Ticker	Name	Date	Open	High	Low	Close	Volume
2		BRK-B	Berkshire Hathaway Inc.	1-Jun-23	\$321.42	\$323.22	\$319.53	\$323.12	3,375,300
3		DIS	The Walt Disney Company	1-Jun-23	\$ 88.40	\$ 89.06	\$ 87.11	\$ 88.59	11,993,200
4		TSLA	Tesla Inc	1-Jun-23	\$202.59	\$209.80	\$199.37	\$207.52	148,029,900
5		BRK-B	Berkshire Hathaway Inc.	2-Jun-23	\$325.16	\$330.67	\$324.42	\$329.48	3,962,200
6		DIS	The Walt Disney Company	2-Jun-23	\$ 89.63	\$ 91.34	\$ 89.60	\$ 90.77	14,330,500
7									

Figure 3: Filtering by Ticker Symbol

Clicking the upside-down triangle mark in the red box in Figure 3, you will see that currently all three types of tickers have a check mark next to it in the blue of in Figure 3. This blue box serves two main purposes for us at this point:

1. It shows us the list of all entries under the Ticker variable in the data, and
2. It shows us which ones are currently “filtered/unfiltered.”

Click on the items DIS and TSLA in the blue box in Figure 4 so that a check mark only appears next to BRK-B, and that next to (Select All) is now a black square as shown in Figure 4, and click Ok in the green box.

A	B	C	D	E	F	G	H	I
1								
2	Ticker	Name	Date	Open	High	Low	Close	Volume
	Sort A to Z	Berkshire Hathaway Inc.	1-Jun-23	\$321.42	\$323.22	\$319.53	\$323.12	3,375,300
	Sort Z to A	Disney Company	1-Jun-23	\$88.40	\$89.06	\$87.11	\$88.59	11,993,200
	Sort by Color	Berkshire Hathaway Inc.	1-Jun-23	\$202.59	\$209.80	\$199.37	\$207.52	148,029,900
	Sheet View	Disney Company	2-Jun-23	\$325.16	\$330.67	\$324.42	\$329.48	3,962,200
	Clear Filter From "Ticker"	Berkshire Hathaway Inc.	2-Jun-23	\$89.63	\$91.34	\$89.60	\$90.77	14,330,500
	Filter by Color	Disney Company	2-Jun-23	\$210.15	\$217.25	\$209.75	\$213.97	164,129,000
	Text Filters	Berkshire Hathaway Inc.	5-Jun-23	\$330.89	\$330.89	\$327.57	\$328.58	3,091,800
	Search	Disney Company	5-Jun-23	\$91.20	\$91.76	\$89.44	\$91.00	18,506,700
	(Select All)	Berkshire Hathaway Inc.	5-Jun-23	\$217.80	\$221.29	\$214.52	\$217.61	151,143,100
	<input checked="" type="checkbox"/> BRK-B	Disney Company	6-Jun-23	\$329.04	\$334.16	\$328.68	\$333.41	3,181,400
	<input type="checkbox"/> DIS	Berkshire Hathaway Inc.	6-Jun-23	\$91.10	\$92.51	\$91.02	\$92.16	12,109,100
	<input type="checkbox"/> TSLA	Disney Company	6-Jun-23	\$216.14	\$221.91	\$212.53	\$221.31	146,911,600
		Berkshire Hathaway Inc.	7-Jun-23	\$334.01	\$335.82	\$331.43	\$335.42	3,727,800
		Disney Company	7-Jun-23	\$92.78	\$93.08	\$91.86	\$92.52	11,082,400
		Berkshire Hathaway Inc.	7-Jun-23	\$228.00	\$230.83	\$223.20	\$224.57	185,710,800
		Berkshire Hathaway Inc.	8-Jun-23	\$335.49	\$336.32	\$334.10	\$335.95	2,759,300

Figure 4: Filtering by Ticker Symbol (cont'd)

Once the filter is applied, the data will resemble Figure 5. The first thing we can notice is that now we only see the data from BRK-B, and the others are “hidden away.” Second, notice that the upside-down triangle next to Ticker is now slightly difference (in the red box), which tells us that a filter is active on Ticker. Finally, the row number indicator to the left hand side (in the blue box) is now blue, and has missing numbers, which also indicates that filters are active on this worksheet.

A	B	C	D	E	F	G	H	I
1								
2	Ticker	Name	Date	Open	High	Low	Close	Volume
3	BRK-B	Berkshire Hathaway Inc.	1-Jun-23	\$321.42	\$323.22	\$319.53	\$323.12	3,375,300
6	BRK-B	Berkshire Hathaway Inc.	2-Jun-23	\$325.16	\$330.67	\$324.42	\$329.48	3,962,200
9	BRK-B	Berkshire Hathaway Inc.	5-Jun-23	\$330.89	\$330.89	\$327.57	\$328.58	3,091,800

Figure 5: Filtered by Ticker Symbol

## Filtering by Dates

In addition to filtering data out by exact text entries, we can sort data by dates as well. Suppose that we want to filter information so that we only see stock trading information for the month of August 2023.

A	B	C	D	E	F	G	H	I
1	Ticker	Name	Date	Open	High	Low	Close	Volume
2	BRK-B	Berkshire Hathaway Inc.	8-Jun-23	\$321.42	\$323.22	\$319.53	\$323.12	3,375,300
3	DIS	The Walt Disney Company	8-Jun-23	\$ 88.40	\$ 89.06	\$ 87.11	\$ 88.59	11,993,200
4	TSLA	Tesla Inc	8-Jun-23	Equals...				
5	BRK-B	Berkshire Hathaway Inc.	9-Jun-23	Before...				
6	DIS	The Walt Disney Company	9-Jun-23	After...				
7	TSLA	Tesla Inc	9-Jun-23	Between...				
8	BRK-B	Berkshire Hathaway Inc.	12-Jun-23	Tomorrow				
9	DIS	The Walt Disney Company	12-Jun-23	Today				
10	TSLA	Tesla Inc	12-Jun-23	Yesterday				
11	BRK-B	Berkshire Hathaway Inc.	12-Jun-23	Next Week				
12	DIS	The Walt Disney Company	12-Jun-23	This Week				
13	TSLA	Tesla Inc	12-Jun-23	Last Week				
14	BRK-B	Berkshire Hathaway Inc.	12-Jun-23	Next Month				
15	DIS	The Walt Disney Company	12-Jun-23	This Month				
16	TSLA	Tesla Inc	12-Jun-23	Last Month				
17	BRK-B	Berkshire Hathaway Inc.	12-Jun-23	Next Quarter				
18	DIS	The Walt Disney Company	12-Jun-23	This Quarter				
19	TSLA	Tesla Inc	12-Jun-23	Last Quarter				
20	BRK-B	Berkshire Hathaway Inc.	12-Jun-23	Next Year				
21	DIS	The Walt Disney Company	12-Jun-23	This Year				
22	TSLA	Tesla Inc	12-Jun-23	Last Year				
23	BRK-B	Berkshire Hathaway Inc.	12-Jun-23	Year to Date				
24				All Dates in the Period				

Figure 6: Filtering by Date

Click on the upside-down triangle to the right of Date in the red box in Figure 5. Then we can head to the region in the green box, and deselect the months of June and July. Alternatively, we can see more options by heading to Date Filters in the blue box. Clicking on Date Filters will lead to Excel showing more advanced options to sort by date as shown in the purple box in Figure 5.

	A	B	C	D	E	F	G	H	I
1									
2		Ticker	Name	Date	Open	High	Low	Close	Volume
126	BRK-B	Berkshire Hathaway Inc.		1-Aug-23	\$ 352.03	\$ 353.42	\$ 351.25	\$ 352.26	2,293,300
127	DIS	The Walt Disney Company		1-Aug-23	\$ 89.12	\$ 89.73	\$ 88.46	\$ 89.03	13,717,500
128	TSLA	Tesla Inc		1-Aug-23	\$ 266.26	\$ 266.47	\$ 260.25	\$ 261.07	83,166,000
129	BRK-B	Berkshire Hathaway Inc.		2-Aug-23	\$ 351.45	\$ 352.89	\$ 349.69	\$ 351.19	3,085,900
130	DIS	The Walt Disney Company		2-Aug-23	\$ 88.26	\$ 88.33	\$ 86.26	\$ 86.30	15,162,700
131	TSLA	Tesla Inc		2-Aug-23	\$ 255.57	\$ 259.52	\$ 250.49	\$ 254.11	101,752,900

Figure 7: Filtered by Date

## Filtering by Numbers

As we were able to filter the data by numbers, it is also possible to filter data by numbers. Suppose for instance, that we are trying to only view data for stock prices only when the trade volume is above 100,000,000 shares. This time, click on the upside-down triangle next to Volume (red box in Figure 8).

A	B	C	D	E	F	G	H	I
1	Ticker	Name	Date	Open	High	Low	Close	Volume
2	BRK-B	Berkshire Hathaway Inc.	1-Jun-23	\$321.42	\$323.22	\$319.53	\$323.	
3	DIS	The Walt Disney Company	1-Jun-23	\$ 88.40	\$ 89.06	\$ 87.11	\$ 88.	
4	TSLA	Tesla Inc	1-Jun-23	\$202.59	\$209.80	\$199.37	\$207.	
5	BRK-B	Berkshire Hathaway Inc.	2-Jun-23	\$325.16	\$330.67	\$324.42	\$329.	
6	DIS	The Walt Disney Company	2-Jun-23	\$ 89.63	\$ 91.34	\$ 8		
7	TSLA	Tesla Inc	2-Jun-23	\$210.15	\$217.25	\$20		
8	BRK-B	Berkshire Hathaway Inc.	5-Jun-23	\$330.89	\$330.89	\$32		
9	DIS	The Walt Disney Company	5-Jun-23	\$ 91.20	\$ 91.76	\$ 8		
10	TSLA	Tesla Inc	5-Jun-23	\$217.80	\$221.29	\$21		
11	BRK-B	Berkshire Hathaway Inc.	6-Jun-23	\$329.04	\$334.16	\$32		
12	DIS	The Walt Disney Company	6-Jun-23	\$ 91.10	\$ 92.51	\$ 91.02	\$ 92.16	12,109,100
13								

Figure 8: Filtering by Numbers

Similar to the previous case when applying filters to data, we can head to the region in the green box and select every entry that is greater than 100,000,000 manually. However, this is a rather tedious process and is prone to mistakes. So we should head to Number Filters in the blue box. Clicking on Number Filters and Greater than or Equal to leads to a new window pop-up as seen in Figure 9.

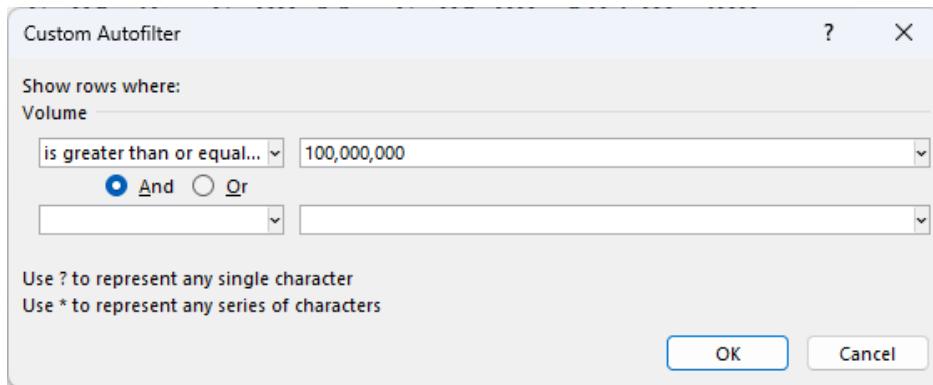


Figure 9: Greater than or Equal to

Inserting 100,000,000 and clicking OK will lead to the data being filtered so that only the entries with greater than 100,000,000 shares being traded appear on the worksheet. Note that what we are doing here is not “filtering the stock that had more than 100,000,000 shares being traded at any time.” You will notice that while TSLA is the only stock in the current data that has days where more than 100,000,000 shares were traded in the market, there are some days missing from the sorted result.

## Using Wildcards in Filters

Recall Wildcards that we covered in a previous lecture note. Sometimes, we may want to create a filter that only displays items that contain a certain word or a certain sequence of numbers. We can use wildcard characters to achieve this goal.

Wildcard	Function
*	Replaces an arbitrary number of characters in the search. (i.e. North* will return North Carolina and North Dakota)
?	Replaces one character in the search. (i.e. N? returns NE, NV, NH, NJ, NM, NY, NC, ND)
~	Used to override other wildcards. (i.e. N~* returns N*)

An example of using wildcard characters in filters can be found in Figure 10. Using the term \*Inc\*, we are able to find any entries under Name that has the term Inc in the official company name listed in the NYSE.

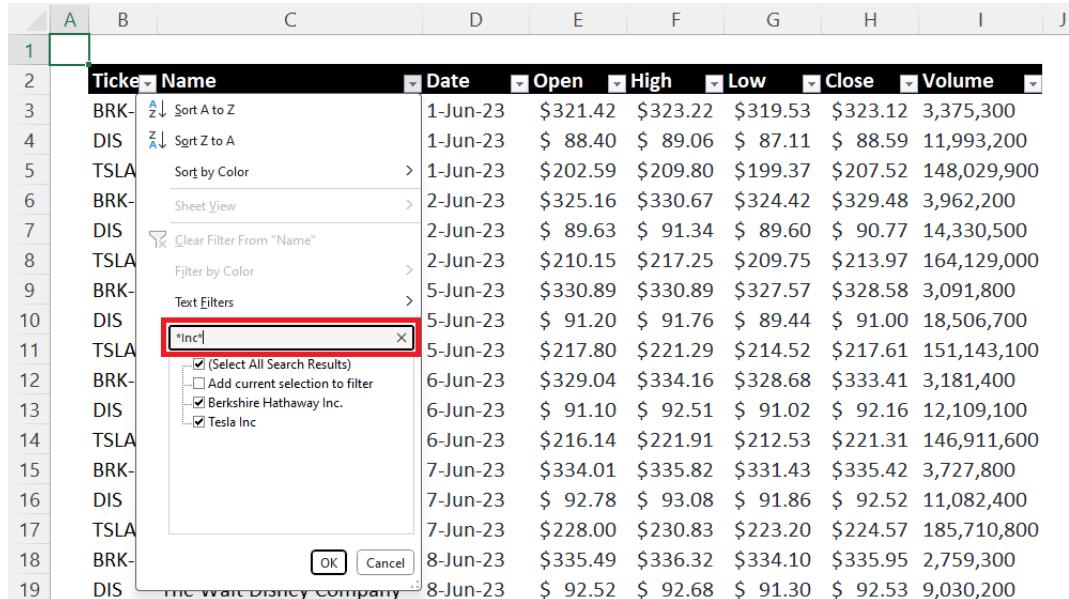


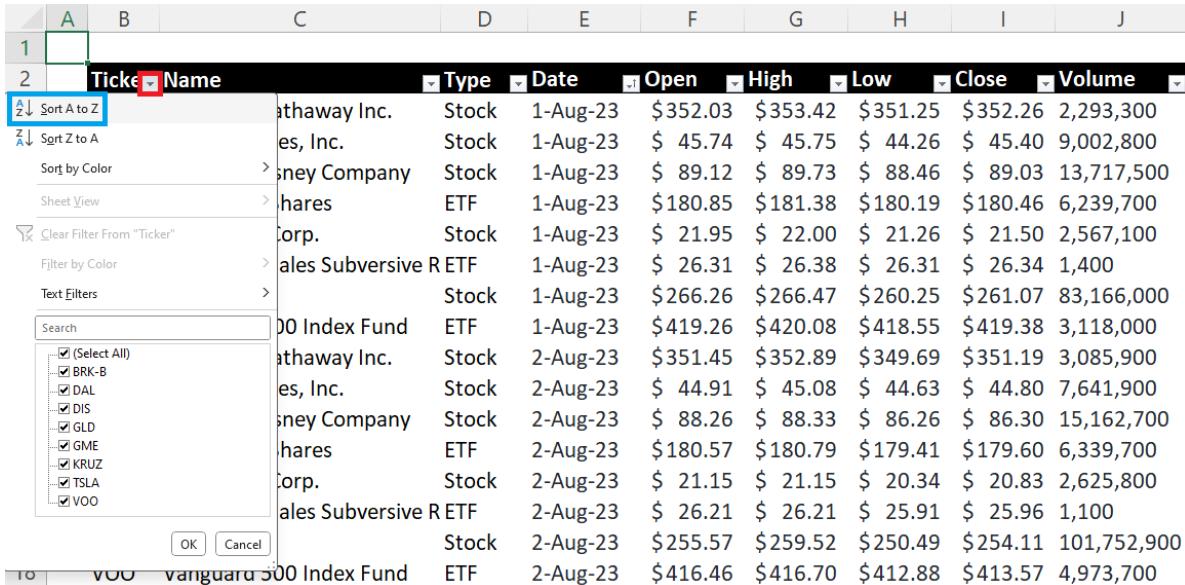
Figure 10: Wildcards in Filters

### Topic 3. Basic Data Analysis: Sorting using Filters

Please navigate to worksheet FILTER in the workbook. This sheet contains a larger dataset that is similar to the previous one in the TABLESvsDATA sheet. Here we have 8 different assets' price information for the month of August 2023. We now look into filters as a tool in Excel as a means to sort data, which will allow us to directly analyze data. As it stands, the data is filtered in the following order:

1. Date (Earlier date first)
2. Ticker (Alphabetical)
3. Type of Asset (Alphabetical)

To see how filters can work to sort data, select the cells that contain variable names (B2 : J2), and apply filters. Suppose that we want sort the data so that we have the data sorted by Ticker alphabetically so that all entries of BRK-B appear before any entry of DAL, which comes before any entry of DIS, and so forth...



A	B	C	D	E	F	G	H	I	J
1									
2	Ticker	Name	Type	Date	Open	High	Low	Close	Volume
	BRK-B	Bethany Inc.	Stock	1-Aug-23	\$352.03	\$353.42	\$351.25	\$352.26	2,293,300
	DAL	es, Inc.	Stock	1-Aug-23	\$45.74	\$45.75	\$44.26	\$45.40	9,002,800
	DIS	ney Company	Stock	1-Aug-23	\$89.12	\$89.73	\$88.46	\$89.03	13,717,500
	GLD	shares	ETF	1-Aug-23	\$180.85	\$181.38	\$180.19	\$180.46	6,239,700
	GME	orp.	Stock	1-Aug-23	\$21.95	\$22.00	\$21.26	\$21.50	2,567,100
	KRUZ	ales Subversive R	ETF	1-Aug-23	\$26.31	\$26.38	\$26.31	\$26.34	1,400
	TSLA	Stock	Stock	1-Aug-23	\$266.26	\$266.47	\$260.25	\$261.07	83,166,000
	VOO	00 Index Fund	ETF	1-Aug-23	\$419.26	\$420.08	\$418.55	\$419.38	3,118,000
	BRK-B	Bethany Inc.	Stock	2-Aug-23	\$351.45	\$352.89	\$349.69	\$351.19	3,085,900
	DAL	es, Inc.	Stock	2-Aug-23	\$44.91	\$45.08	\$44.63	\$44.80	7,641,900
	DIS	ney Company	Stock	2-Aug-23	\$88.26	\$88.33	\$86.26	\$86.30	15,162,700
	GLD	shares	ETF	2-Aug-23	\$180.57	\$180.79	\$179.41	\$179.60	6,339,700
	GME	orp.	Stock	2-Aug-23	\$21.15	\$21.15	\$20.34	\$20.83	2,625,800
	KRUZ	ales Subversive R	ETF	2-Aug-23	\$26.21	\$26.21	\$25.91	\$25.96	1,100
	TSLA	Stock	Stock	2-Aug-23	\$255.57	\$259.52	\$250.49	\$254.11	101,752,900
	VOO	00 Index Fund	ETF	2-Aug-23	\$416.46	\$416.70	\$412.88	\$413.57	4,973,700

Figure 11: Sorting by Ticker Symbol

To achieve this task, click on the upside-down triangle in the red box in Figure 11, and select Sort A to Z to sort alphabetically.<sup>1</sup> However, we may want to sort the data by multiple variables...

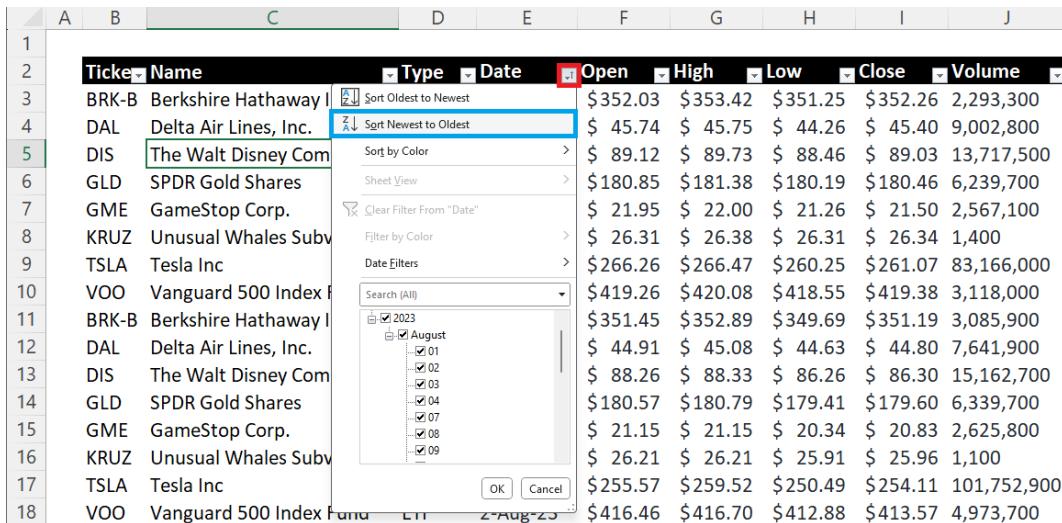
<sup>1</sup>Choosing Sort Z to A will result in the opposite result.

## Sorting by Multiple Variables

Now suppose that we want to sort the data in the following order:

1. Ticker (Alphabetical)
2. Date (Earlier date first)

That is, we want to sort by Ticker alphabetically as we did in the previous example, but within the alphabetically sorted Ticker, have the most recent trade information on top. To get this result, we must first sort by Date, and then sort by Ticker.



The screenshot shows a portion of an Excel spreadsheet with columns A through J. The data includes tickers like BRK-B, DAL, DIS, GLD, GME, KRUZ, TSLA, and VOO, along with their names, types, and financial data. A context menu is open over the 'Date' column header, specifically over the dropdown arrow. The menu is titled 'Sort by Date' and contains two options: 'Sort Oldest to Newest' (which is currently selected, indicated by a blue highlight) and 'Sort Newest to Oldest'. Below these are other options like 'Sort by Color', 'Sheet View', 'Clear Filter From "Date"', 'Filter by Color', 'Text Filters', and a search bar. At the bottom of the menu is a checkbox for '2023' which is checked, and under it is another checkbox for 'August' which is also checked. There are several other checkboxes for days of the month (01, 02, 03, 04, 07, 08, 09) which are not checked. At the very bottom of the menu are 'OK' and 'Cancel' buttons.

Figure 12: Sorting by Ticker-Date: Date



This screenshot shows the same Excel spreadsheet and context menu as Figure 12, but the 'Sort by Date' option is no longer highlighted. Instead, the 'Sort by Ticker' option is highlighted, indicated by a blue border around the 'Name' column header. The rest of the menu and its contents are identical to Figure 12.

Figure 13: Sorting by Ticker-Date: Ticker

The results of the sorting from Figures 12 and 13 is displayed in Figure 14 below. You can see that all entries of BRK-B comes first, with each entry of BRK-B being sorted from newest to oldest information. Scroll down a bit, and you will see that the next entries will be DAL sorted from newest to oldest stock market data.

	A	B	C	D	E	F	G	H	I	J
1	Ticker	Name	Type	Date	Open	High	Low	Close	Volume	
2	BRK-B	Berkshire Hathaway Inc.	Stock	31-Aug-23	\$362.18	\$362.47	\$359.25	\$360.20	2,842,300	
3	BRK-B	Berkshire Hathaway Inc.	Stock	30-Aug-23	\$358.63	\$362.68	\$358.60	\$361.06	3,058,300	
5	BRK-B	Berkshire Hathaway Inc.	Stock	29-Aug-23	\$355.04	\$358.59	\$354.01	\$358.29	2,285,600	
6	BRK-B	Berkshire Hathaway Inc.	Stock	28-Aug-23	\$357.89	\$358.41	\$354.53	\$355.55	1,728,000	
7	BRK-B	Berkshire Hathaway Inc.	Stock	25-Aug-23	\$354.99	\$357.35	\$352.92	\$355.93	2,136,800	
8	BRK-B	Berkshire Hathaway Inc.	Stock	24-Aug-23	\$354.35	\$357.23	\$354.13	\$354.30	2,521,100	
9	BRK-B	Berkshire Hathaway Inc.	Stock	23-Aug-23	\$351.63	\$354.32	\$351.54	\$354.26	2,239,500	
10	BRK-B	Berkshire Hathaway Inc.	Stock	22-Aug-23	\$353.01	\$353.50	\$349.66	\$350.57	2,363,300	

Figure 14: Sorted by Ticker-Date

## Order of Sorting

Reversing the order of sorting, that is by sorting on Ticker first, and then Date, we find the following incorrect result in Figure 15. We can see that while the Ticker is indeed alphabetically sorted, the sorting in the Date variable is of a higher “priority,” as it was sorted last.

	A	B	C	D	E	F	G	H	I	J
1	Ticker	Name	Type	Date	Open	High	Low	Close	Volume	
2	BRK-B	Berkshire Hathaway Inc.	Stock	31-Aug-23	\$362.18	\$362.47	\$359.25	\$360.20	2,842,300	
4	DAL	Delta Air Lines, Inc.	Stock	31-Aug-23	\$ 43.54	\$ 43.58	\$ 42.43	\$ 42.88	6,506,500	
5	DIS	The Walt Disney Company	Stock	31-Aug-23	\$ 84.46	\$ 84.61	\$ 83.64	\$ 83.68	10,448,000	
6	GLD	SPDR Gold Shares	ETF	31-Aug-23	\$180.37	\$180.49	\$179.94	\$180.02	4,795,600	
7	GME	GameStop Corp.	Stock	31-Aug-23	\$ 18.41	\$ 19.42	\$ 18.15	\$ 18.55	4,674,100	
8	KRUZ	Unusual Whales Subversive	ETF	31-Aug-23	\$ 25.70	\$ 25.70	\$ 25.70	\$ 25.70	400	
9	TSLA	Tesla Inc	Stock	31-Aug-23	\$255.98	\$261.18	\$255.05	\$258.08	108,861,700	
10	VOO	Vanguard 500 Index Fund	ETF	31-Aug-23	\$414.98	\$416.12	\$413.66	\$413.83	4,751,100	
11	BRK-B	Berkshire Hathaway Inc.	Stock	30-Aug-23	\$358.63	\$362.68	\$358.60	\$361.06	3,058,300	
12	DAL	Delta Air Lines, Inc.	Stock	30-Aug-23	\$ 43.78	\$ 43.85	\$ 43.22	\$ 43.23	5,511,900	
13	DIS	The Walt Disney Company	Stock	30-Aug-23	\$ 84.40	\$ 84.68	\$ 83.83	\$ 84.28	11,816,600	
14	GLD	SPDR Gold Shares	ETF	30-Aug-23	\$180.58	\$180.88	\$180.29	\$180.32	6,593,700	
15	GME	GameStop Corp.	Stock	30-Aug-23	\$ 18.20	\$ 18.52	\$ 17.91	\$ 18.37	1,884,500	
16	KRUZ	Unusual Whales Subversive	ETF	30-Aug-23	\$ 25.60	\$ 25.74	\$ 25.60	\$ 25.71	4,000	
17	TSLA	Tesla Inc	Stock	30-Aug-23	\$254.20	\$260.51	\$250.59	\$256.90	121,988,400	
18	VOO	Vanguard 500 Index Fund	ETF	30-Aug-23	\$413.03	\$415.03	\$412.40	\$414.36	3,004,500	

Figure 15: Sorted by Date-Ticker (Incorrect)

Thus, if you want the data should be sorted by variables A first, B second, and then C in that order, you must apply the sorting via filters in the opposite order of C > B > A.

## Range of Sorting

Selecting the correct range to apply filters is critical when it comes to using the filters to sort data. Return to worksheet FILTER and remove the filter from cells B2 : J2 by selecting this region, and clicking Data > Filter. Now apply the filter for cells B2 : I2, leaving Volume out when we are setting filters as shown in Figure 16.

A	B	C	D	E	F	G	H	I	J
1	Ticker	Name	Type	Date	Open	High	Low	Close	Volume
2	BRK-B	Berkshire Hathaway Inc.	Stock	1-Aug-23	\$ 352.03	\$ 353.42	\$ 351.25	\$ 352.26	2,293,300
3	DAL	Delta Air Lines, Inc.	Stock	1-Aug-23	\$ 45.74	\$ 45.75	\$ 44.26	\$ 45.40	9,002,800
4	DIS	The Walt Disney Company	Stock	1-Aug-23	\$ 89.12	\$ 89.73	\$ 88.46	\$ 89.03	13,717,500
5	GLD	SPDR Gold Shares	ETF	1-Aug-23	\$ 180.85	\$ 181.38	\$ 180.19	\$ 180.46	6,239,700
6	GME	GameStop Corp.	Stock	1-Aug-23	\$ 21.95	\$ 22.00	\$ 21.26	\$ 21.50	2,567,100
7	KRUZ	Unusual Whales Subversive	ETF	1-Aug-23	\$ 26.31	\$ 26.38	\$ 26.31	\$ 26.34	1,400
8	TSLA	Tesla Inc	Stock	1-Aug-23	\$ 266.26	\$ 266.47	\$ 260.25	\$ 261.07	83,166,000

Figure 16: Incorrect Filter Applied

If we sort this data using the filters, we will see that the variable Volume is left out when sorting the data. Notice that the Volume data did not change when we sorted Ticker alphabetically.

A	B	C	D	E	F	G	H	I	J
1	Ticker	Name	Type	Date	Open	High	Low	Close	Volume
2	BRK-B	Berkshire Hathaway Inc.	Stock	1-Aug-23	\$ 352.03	\$ 353.42	\$ 351.25	\$ 352.26	2,293,300
3	BRK-B	Berkshire Hathaway Inc.	Stock	2-Aug-23	\$ 351.45	\$ 352.89	\$ 349.69	\$ 351.19	9,002,800
4	BRK-B	Berkshire Hathaway Inc.	Stock	3-Aug-23	\$ 350.29	\$ 354.47	\$ 349.42	\$ 353.81	13,717,500
5	BRK-B	Berkshire Hathaway Inc.	Stock	4-Aug-23	\$ 353.99	\$ 355.11	\$ 349.39	\$ 349.99	6,239,700
6	BRK-B	Berkshire Hathaway Inc.	Stock	7-Aug-23	\$ 355.73	\$ 364.63	\$ 355.15	\$ 362.58	2,567,100
7	BRK-B	Berkshire Hathaway Inc.	Stock	8-Aug-23	\$ 359.42	\$ 364.25	\$ 358.85	\$ 363.73	1,400

Figure 17: Consequence of Incorrect Filters