

Lecture Note #2: Extra Options in Excel

BUSI 201: Business Data Analysis

Spring 2024

Topic 1. Auto Recovery Options

While the occurrence of sudden power loss resulting in the loss of hours of work is becoming rarer due to the prevalence of laptops with battery backup, it's still a possible scenario. It's wise to configure Excel to automatically save your progress to mitigate this risk. To set this up, follow these steps: navigate to **File** > **Options** > **Save**. This will lead you to a window resembling the one shown in Figure 1.

The default autosave frequency is typically set at 10 minutes, and the minimum interval is 1 minute. Frequent saving ensures that you lose minimal work in the event of an unexpected event. However, it might also lead to performance issues if your device is older, the spreadsheet contains extensive data, or numerous functions are being utilized. This setting depends on your preferences and tolerance for risk.

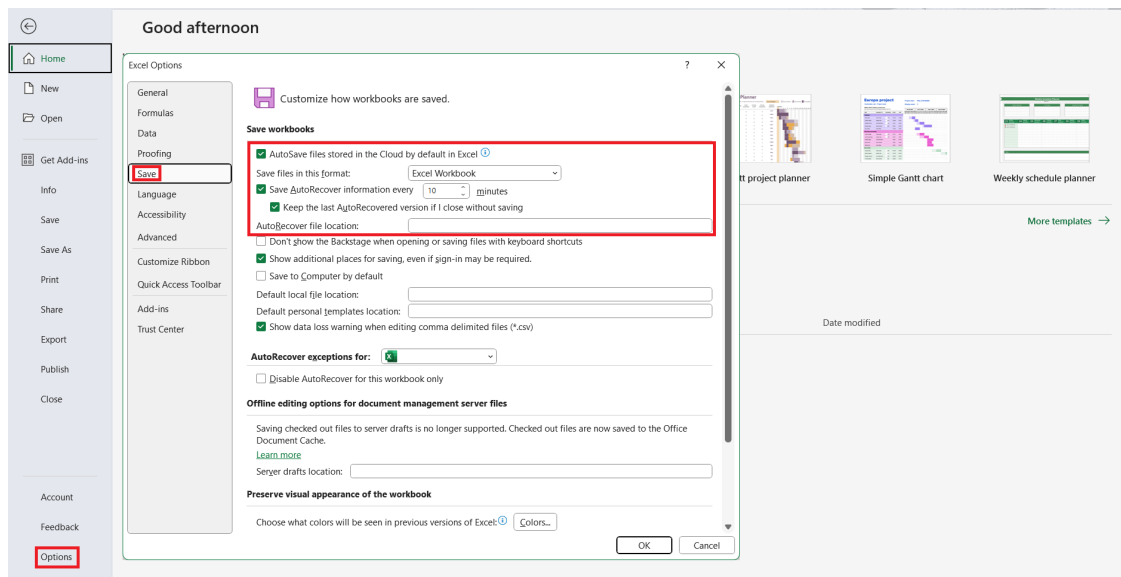


Figure 1: AutoRecovery Options

After configuring this setting, your spreadsheet will be automatically saved every N minutes to the file location specified in **AutoRecover file location**. However, if this file is relatively new and hasn't been manually saved at least once, it might be stored in a temporary **Unsaved** folder. To recover documents from the **Unsaved** folder, follow these steps: navigate to **File** > **Open** > **Recent**. There you will find the **Recover Unsaved Workbooks** button.

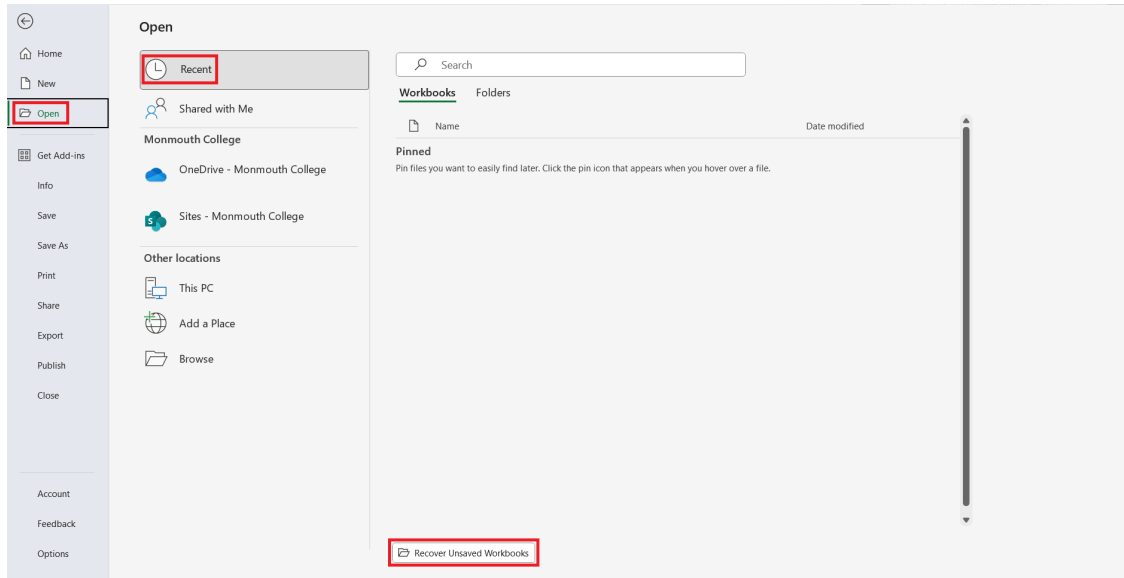


Figure 2: Unsaved Workbooks

Topic 2. Find and Replace

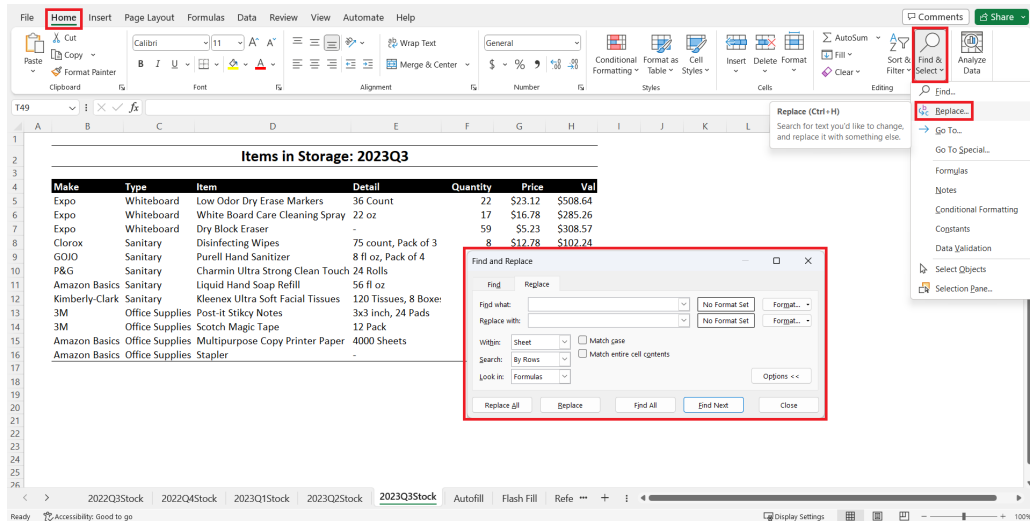


Figure 3: Find and replace

Find and Replace Values

The more information each worksheet contains, it becomes increasingly difficult to locate cells containing specific information. We will learn of more efficient methods later in the semester, but for now we will explore another powerful tool, Find and Replace. To access this function, navigate to **Home** > **Find&Select** > **Replace**. If you are on PC, you can also use the hotkey **ctrl+H**.

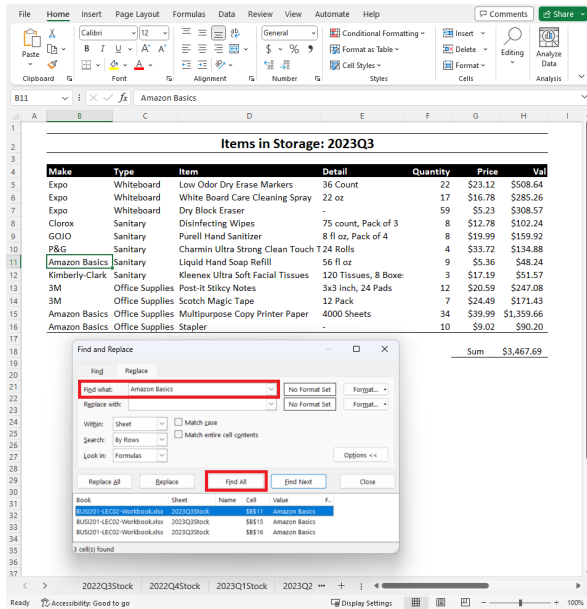


Figure 4: Finding Amazon Basic

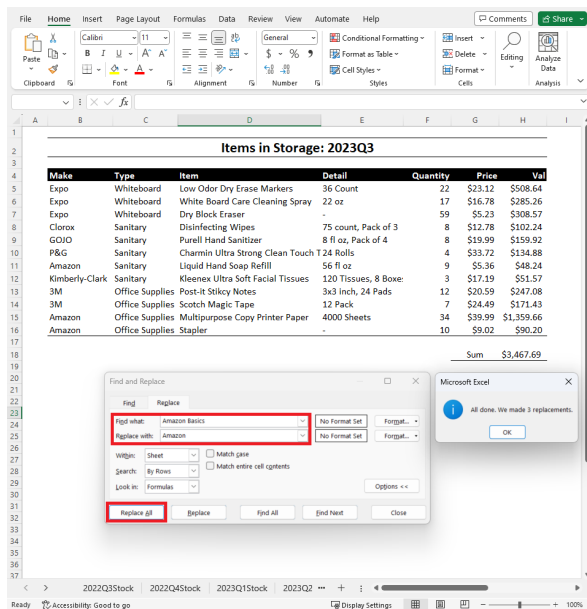


Figure 5: Replacing Amazon Basic to Amazon

One word of caution before we move on to our next topic: you should never press “Replace All” prematurely. As you may have observed in Figure 5, Excel doesn’t provide details about which cells it changes; it only confirms that it carried out the command. The best practice is to initially click on “Find All,” review the list to ensure that Excel is only targeting the items you intend to change, and then proceed with “Replace All.”

Please open the 2023Q3Stock sheet in BUSI201-LEC02-Workbook.xlsx. We will now attempt to locate all occurrences of Amazon Basics on this specific worksheet. You can achieve this by using the “Find and Replace” tool, typing Amazon Basics next to “Find what,” and clicking on “Find All.” As shown in Figure 4, all instances of Amazon Basics will be listed in the “Find and Replace” window.

By clicking on the items in the “Find and Replace” window, you can navigate between each occurrence of Amazon Basics. I encourage you to try this with other items as well.

Now, let’s say we want to change Amazon Basics to the more concise term Amazon. In this specific example, this task is simple since we only have three instances to change. However, for a large dataset, manually finding and changing each occurrence would become a tedious process. Thankfully, the “Find and Replace” function can help us accomplish this task efficiently.

In this particular case, you can input Amazon Basics next to “Find what,” and Amazon in the “Replace with” field. Afterward, click on “Replace All.” Excel will then display a notification similar to Figure 5, indicating that all three instances of Amazon Basics have been changed to Amazon.

Find and Replace Options

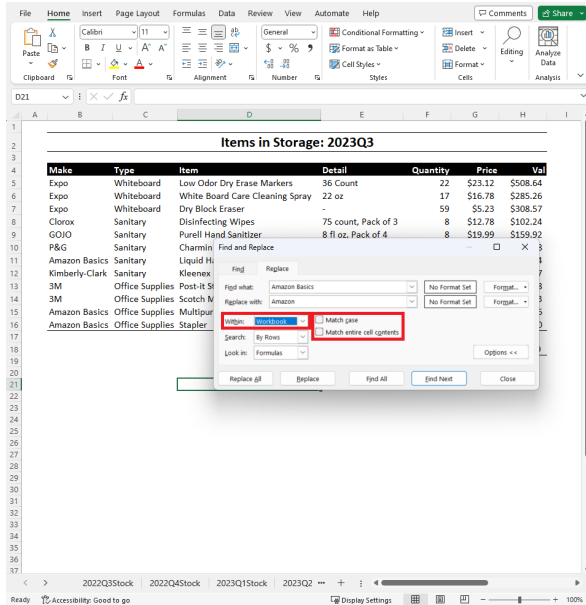


Figure 6: Replacing Across Sheets

In the previous example, we explored how to find and replace specific values within a given worksheet. However, if we want to replace instances of Amazon Basics with Amazon not only for 2023Q3 but also for all other quarters, we need to adjust the value in the “Within” field to Workbook. By changing the search scope from the individual worksheet to the entire workbook, we can update all occurrences of Amazon Basics to Amazon.

Additionally, there are other options worth considering, such as the “Match Case” and “Match Entire Cell Contents” options.

Find and Replace Formats

This “Find and Replace” function also provides the capability to select cells that share a specific format, such as font, font size, or cell color, and replace it with a new format. Let’s consider the worksheet 2023Q3Stock in the workbook BUSI201-S2024-LEC02-Workbook .xlsx. Imagine that you wish to change the cell color of the row containing variable names in the sheet 2023Q3Stock to dark gray instead of black.

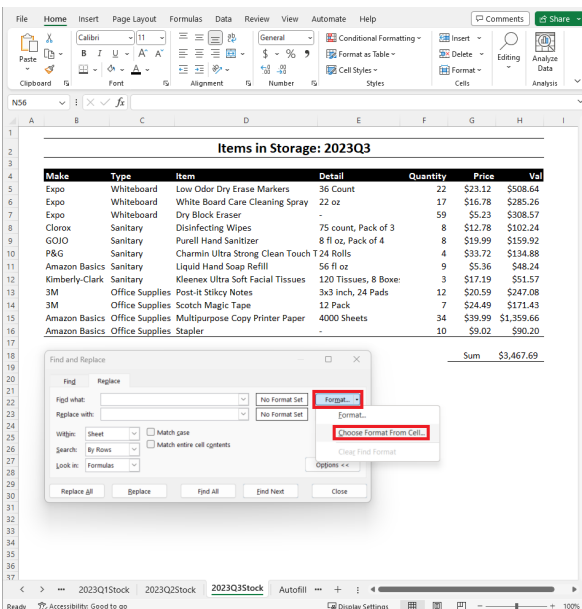


Figure 7: Selecting the cells to change

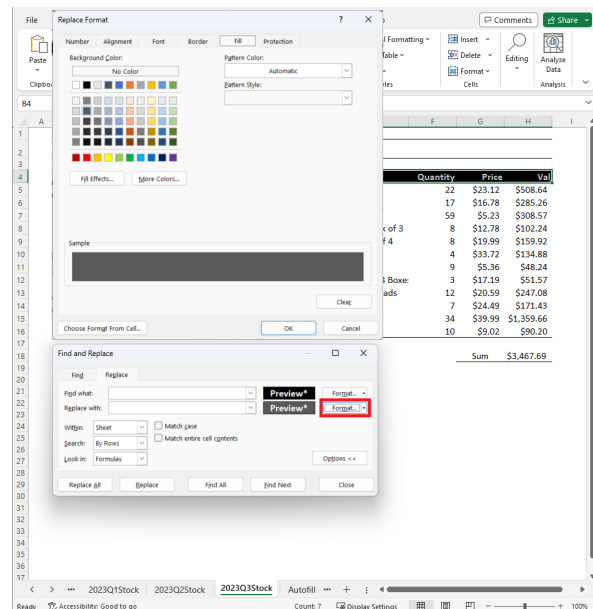


Figure 8: Target format

Open the “Find and Replace” window to match the setup shown in Figure 7. Then, choose **Choose format from Cell** and select the cells you want to modify. Afterward, select the replacement format, as illustrated in Figure 8. In this instance, we’re altering the cell background color; however, you have the ability to modify various formats such as font, font size, cell number format, alignment, borders, and more.

Topic 3. Autofill

Excel’s autofill function operates by analyzing the data to identify any existing patterns and then applying that pattern to automatically populate empty cells. Please open the **Autofill** sheet in the workbook **BUSI201-S2024-LEC02-Workbook.xlsx** to practice. Below is a brief summary of some of the rules that Excel follows when autofilling cells:

	Select Single Cell		Select Multiple Cells	
	Drag	Drag + ctrl	Drag	Drag + ctrl
Text		Repeat Same Value(s)		
Number	Repeat Value	Increasing by 1	Recognize Pattern	Repeat Selected Values
Date	Increasing by 1 day	Repeat Same Value	Recognize Pattern	Repeat Selected Values
Time	Increasing by 1 hour	Repeat Same Value	Recognize Pattern	Repeat Selected Values
Text + Number	Last Number Increases by 1	Repeat Same Value	Recognize Pattern	Repeat Selected Values

After autofilling a section of the spreadsheet, you should have the opportunity to review certain autofill options that were applied during the process. This option will appear, as shown in Figures 9 and 10. The specific options presented may vary depending on the type (format) of data that Excel autofilled. Figure 10 illustrates the options presented when the autofilled cells are recognized as dates.

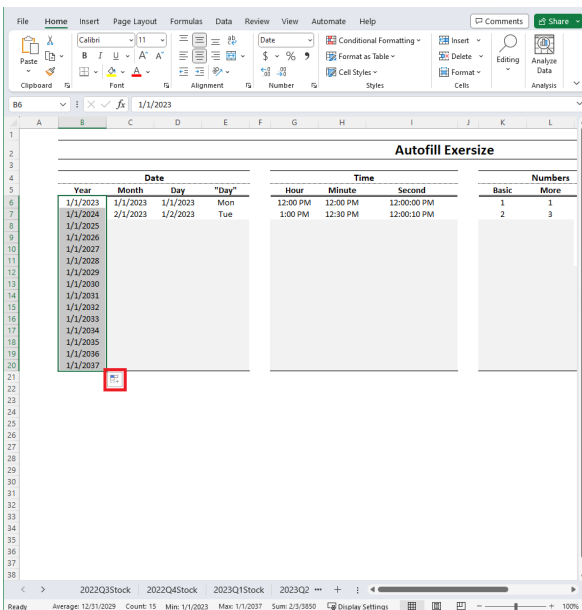


Figure 9: Accessing autofill options

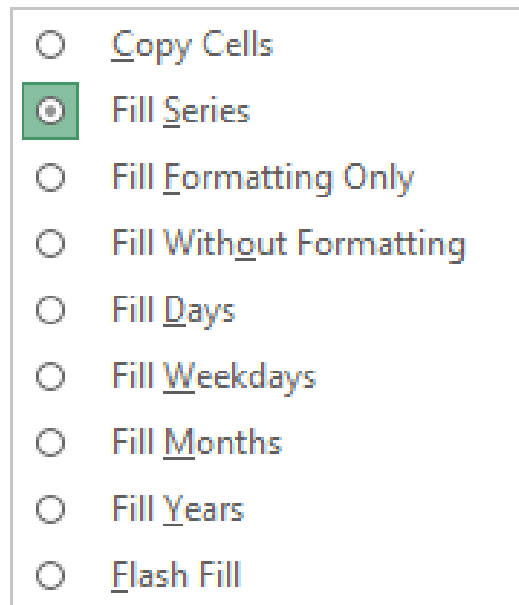


Figure 10: Example of autofill options

Custom Lists

While Excel provides a range of useful autofill patterns, there may be instances where you frequently use certain custom patterns. For example, imagine you regularly create weekly incident reports detailing accidents or consumer complaints. In such cases, you might want Excel to automatically populate certain cells as part of your report.

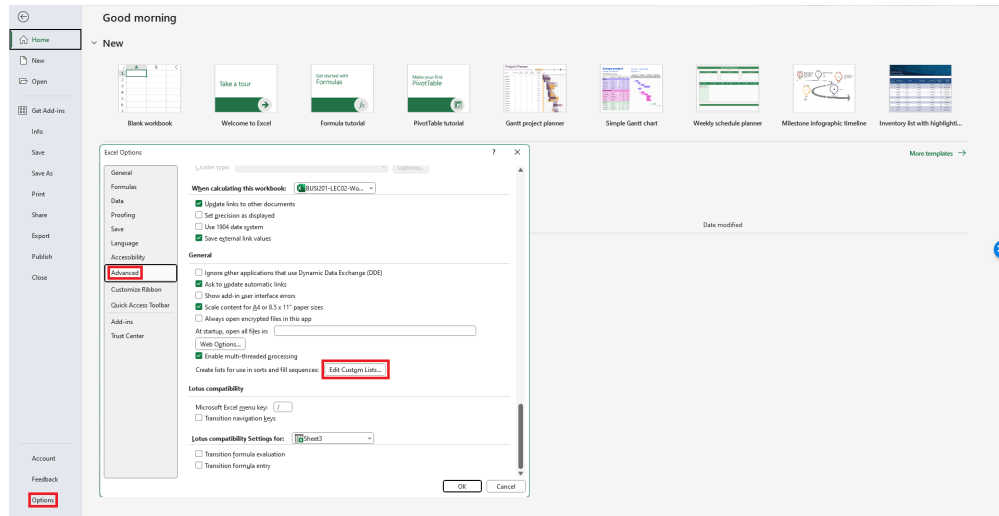


Figure 11: Navigate to custom lists

To achieve this goal, navigate to **File** > **Options** > **Advanced**. Scroll down until you locate **Edit Custom Lists**. Here, you can add your own custom list that will be available for future autofills. Figure 12 demonstrates the application of a custom list.

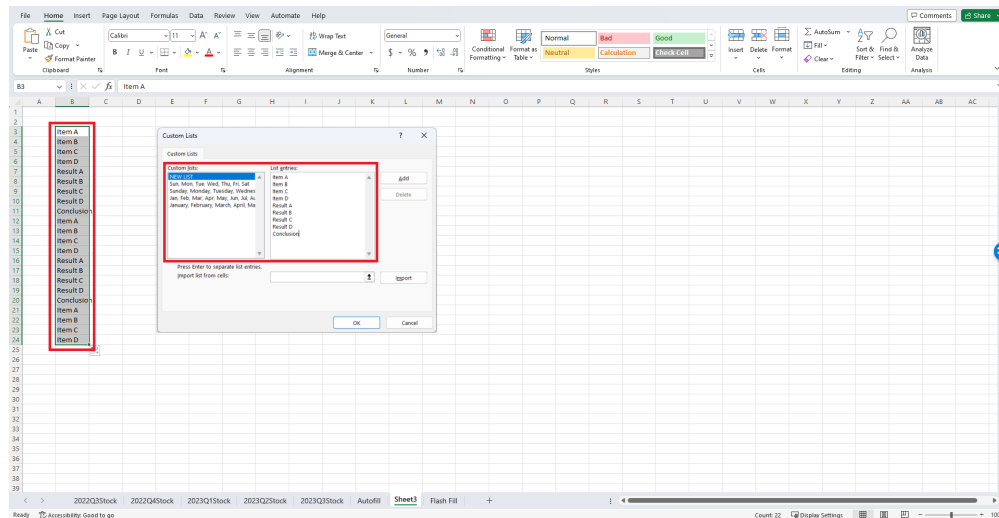


Figure 12: Applying custom lists

Topic 4. Flash Fill

Flash Fill is an Excel function that bears some similarity to autofill, as it offers user convenience by attempting to recognize patterns in existing data and automatically filling out certain cells. To practice this feature, please open the Flash Fill sheet in the workbook BUSI201-LEC02-Workbook.xlsx, which contains a list of the Business and Economics faculty at Monmouth College. Let's say we want to extract information like first and last names, login IDs, office numbers, and phone extensions. A straightforward method to achieve this is through a variation of autofill, known as flash fill.

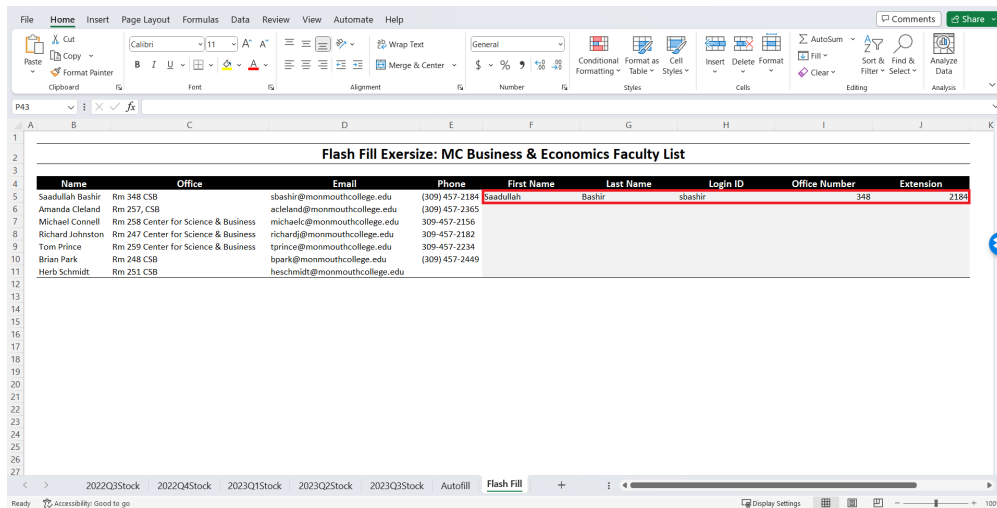


Figure 13: Flash fill setup

To initiate flash fill, you first need to manually fill out the (at least the) first row. Excel will utilize this information to deduce the pattern it should apply to fill out the remaining rows. Once the first row is completed, select a cell directly below the first row and use the hotkey `ctrl+E`. In Figure 14, you can observe that flash fill effectively extracts the first names.

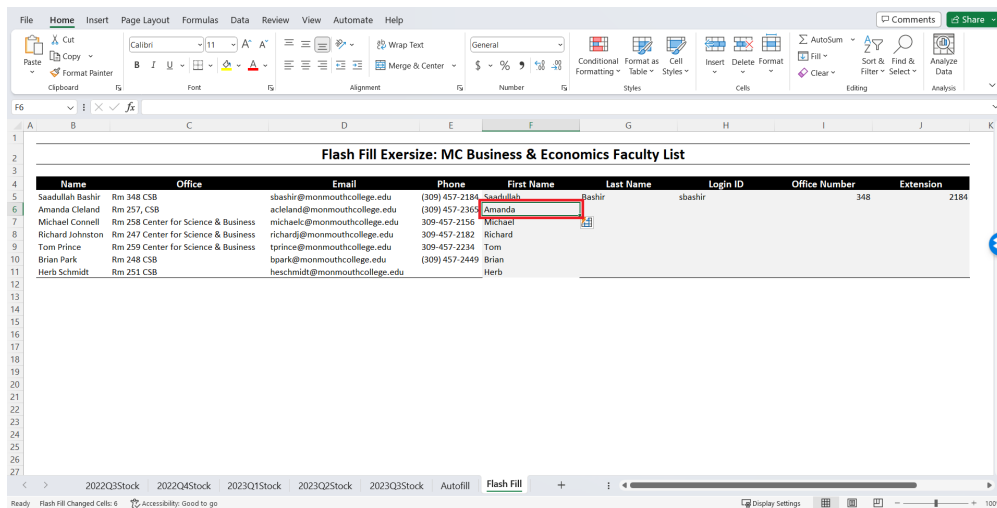


Figure 14: Flash filled second row

Topic 5. Status Bar

The status bar is situated at the bottom of your spreadsheet, as depicted in Figure 15. When you select a range of numerical data, the status bar provides you with three default statistics for your selected numbers: the average, the count, and the sum.

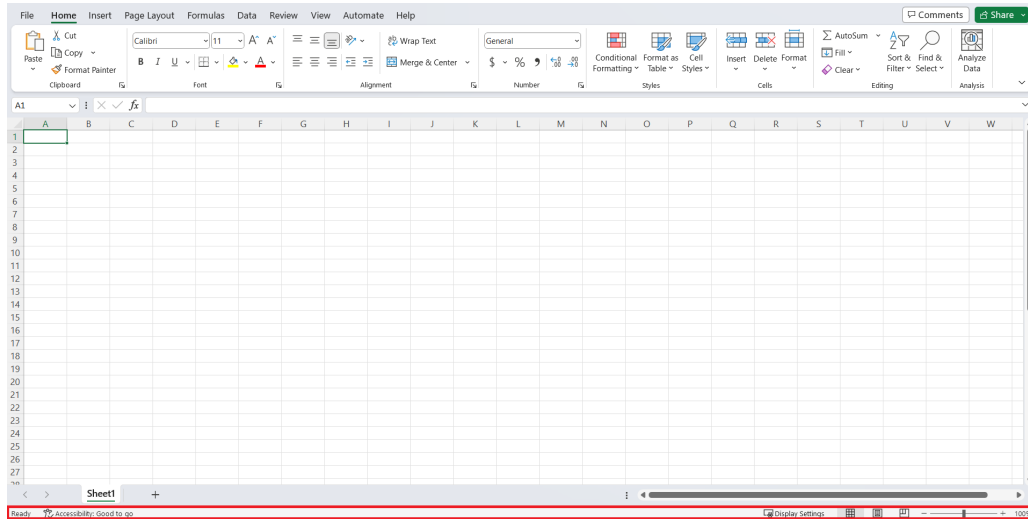


Figure 15: Status bar

Mistakes are all too common when dealing with data and tables, and having quick calculations provided in real-time could prove incredibly useful. That being said, if you're dealing with a large amount of information, it's a better idea to rely on functions or pivot tables. However, using the status bar can be far more convenient when the dataset is small.

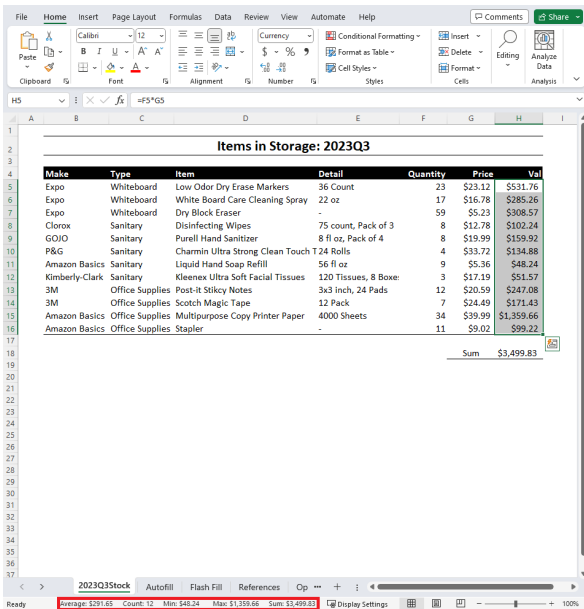


Figure 16: Text Only

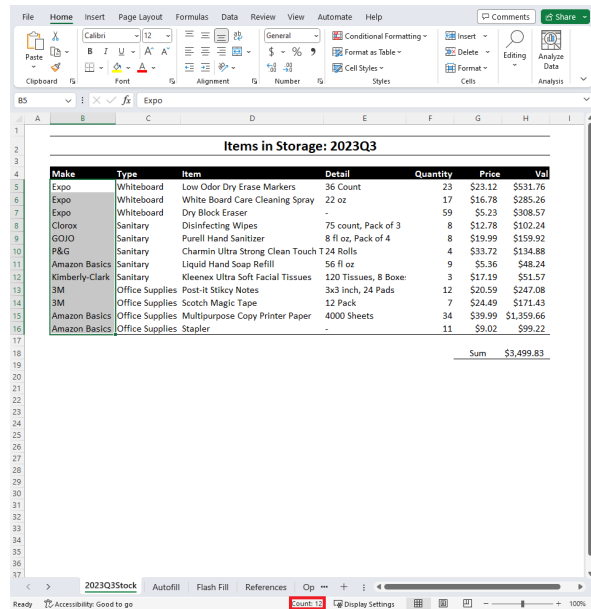


Figure 17: Numbers Only

Please open the 2023Q3Stock sheet of the BUSI201-S2024-LEC02-Workbook.xlsx workbook. When you select a region containing text data, only the count information is returned, indicating the number of items in the given region. Try this by selecting cells B5 : B16, as shown in Figure 16. To do this, left-click on cell B5, then drag the mouse cursor while holding down the left mouse button to cell B16, and finally release the left mouse button.

On the other hand, if you select a region with numerical data, the status bar will display three values. First is the count: the number of items included in the region. Second is the average value of the numbers in the selected region. Third is the sum of all values included in the region. Experiment with this by selecting cells H5 : H16, as shown in Figure 19.

If you choose a mixture of text and numbers, the status bar will show you the average and sum of the numbers, but it will display the count of all cells containing any type of data. Hence, exercise caution when interpreting the numbers provided by the status bar.¹

Adding Min / Max to the Status Bar

In practice, the average, count, and sum are all significant statistics. Nevertheless, you often need to determine the minimum and maximum values across all cells. These statistics can also be added to the status bar. Right-clicking on the status bar will bring up the menu depicted in Figure 18. After selecting **Minimum** and **Maximum**, you will notice that these two values now appear on the status bar alongside the default count, sum, and average values.

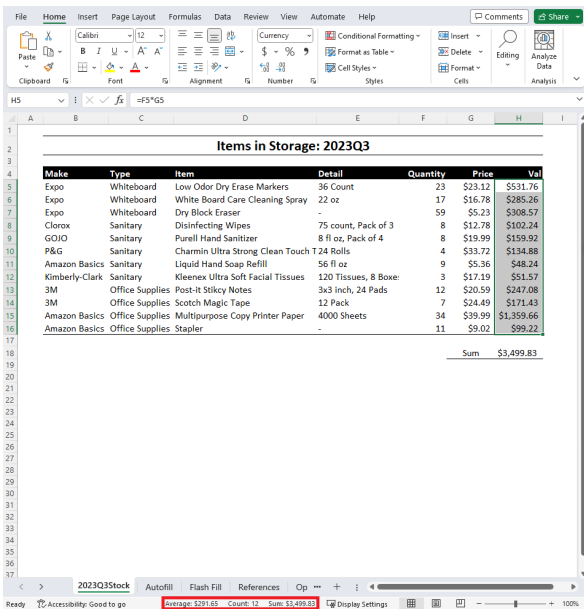


Figure 18: Adding items to status bar

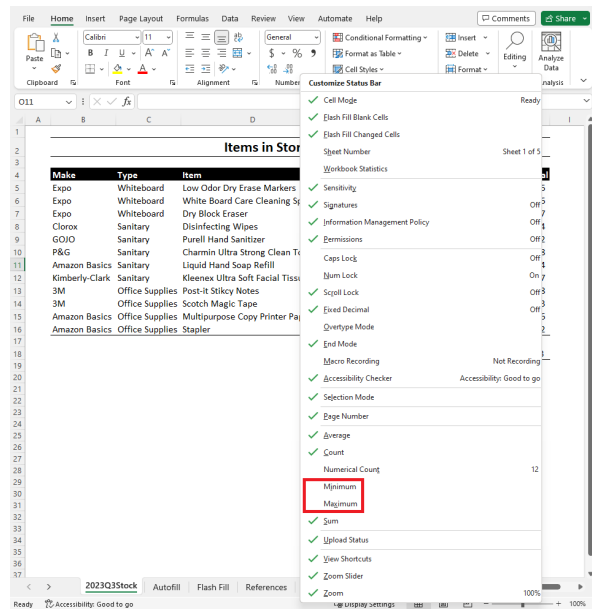


Figure 19: New items in status bar

¹There is a workaround where you can add a “numerical count” that reports the count of numerical items.

Topic 6. Hotkeys

The following is a nonexhaustive list of some hotkeys that are frequently used in Excel:

- **ctrl**+Arrow Keys: Move to the “End”
- **shift**+Arrow Keys: Start Selecting a Region
- **ctrl**+**shift**+Arrow Keys: Select to the “End”
- **ctrl**+**Z**: Undo
- **ctrl**+**Y**: Redo
- **ctrl**+**C**: Copy
- **ctrl**+**V**: Paste
- **ctrl**+**alt**+**V**: Paste (with Options)
- **ctrl**+**S**: Save
- **ctrl**+**A**: Select “All”
- **ctrl**+**N**: Create New Document
- **shift**+**F11**: Create New Sheet
- **ctrl**+**pageup**: Move to Previous Sheet
- **ctrl**+**pagedown**: Move to Next Sheet
- **ctrl**+Mouse Wheel: Zoom In / Out
- **elt**+**enter**: Line Break within Cell
- **ctrl**+**F**: Find
- **ctrl**+**H**: Find and Replace
- **ctrl**+**D**: Autofill with Content Above
- **ctrl**+**R**: Autofill with Content to the Left
- **ctrl**+**E**: Flash Fill
- **ctrl**+**+**: Call “Insert” Menu
- **ctrl**+**-**: Call “Delete” Menu
- **F2**: Edit Selected Cell
- **F4**: Repeat Previous Task

Topic 8. Custom Hotkeys

You might frequently need to use a set of characters that aren't readily available on a standard keyboard. For example, arrows, Roman numerals, bullet points, and the like. It would be inefficient to navigate through a character map each time you need one of these symbols. That's why you can establish an autocorrect function. To set this up, go to **File** > **Proofing** > **AutoCorrect Options**.

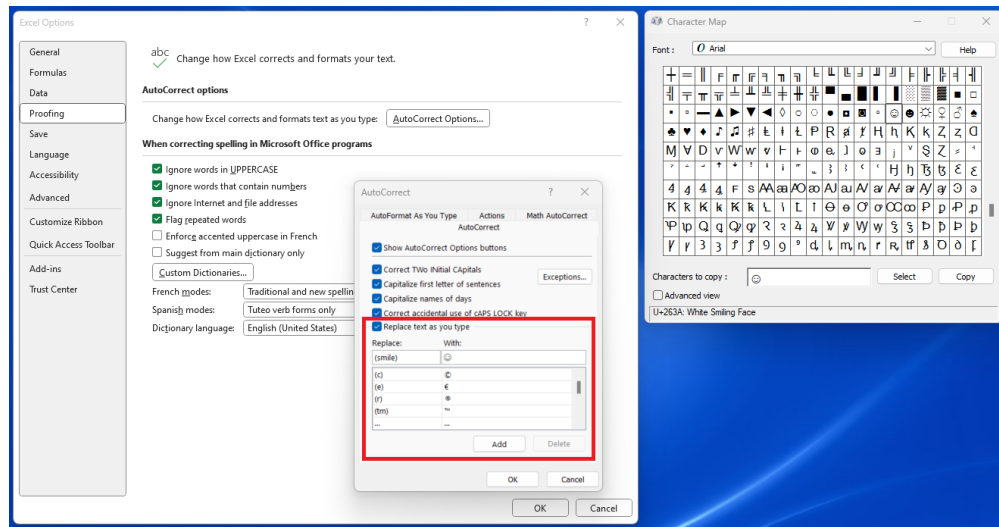


Figure 20: Using Autocorrect as a Hotkey

Here, you have the option to establish a custom shortcut by adding an autocorrect rule. For example, if we follow the settings shown in Figure 20, entering (smile) will automatically be corrected to ☺. Additionally, you might find yourself frequently using specific functions that lack default hotkeys. In such cases, you can create your own “hotkey.” To do this, navigate to **Customize Quick Access Toolbar** > **More Commands** on the top of the window.

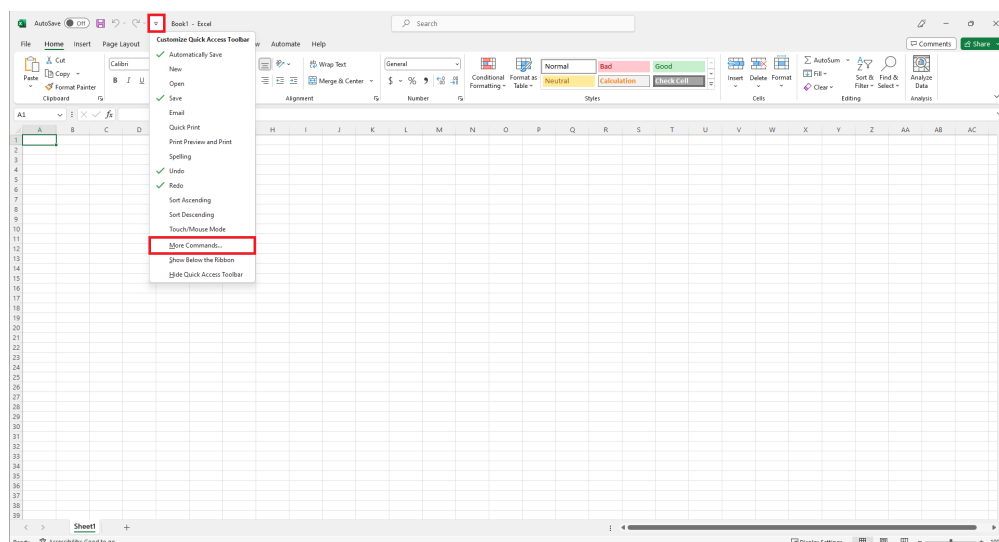


Figure 21: Creating Custom Hotkeys

Afterward, you should be able to bring up the following window. Locate a function that you would like to have readily accessible and add it to the Quick Access Toolbar. As an illustration, in this case, I am adding the Merge&Center function.

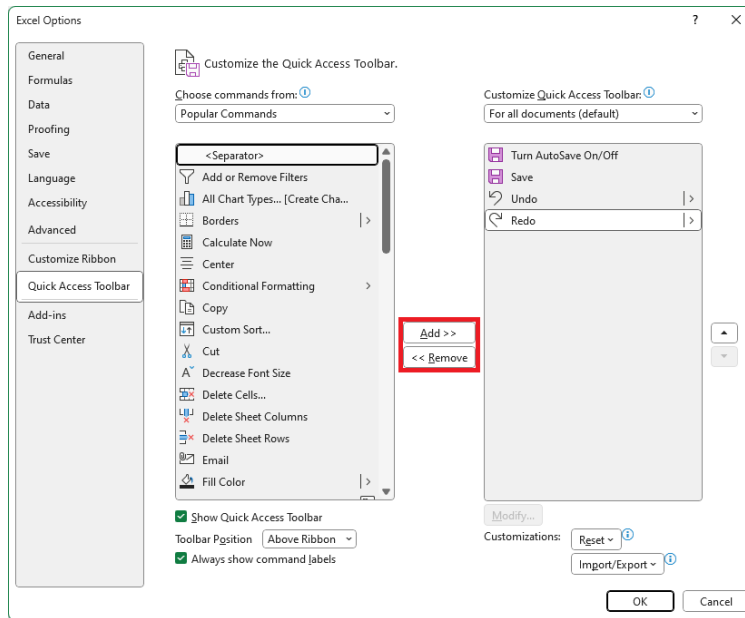


Figure 22: Creating Custom Hotkeys

You will see that the Merge&Center key is now located in the top left corner of the window. Holding **alt** shows you which key to press to access the newly added function. Under this setup, we can access the Merge&Center key by pressing **alt**→**5**.

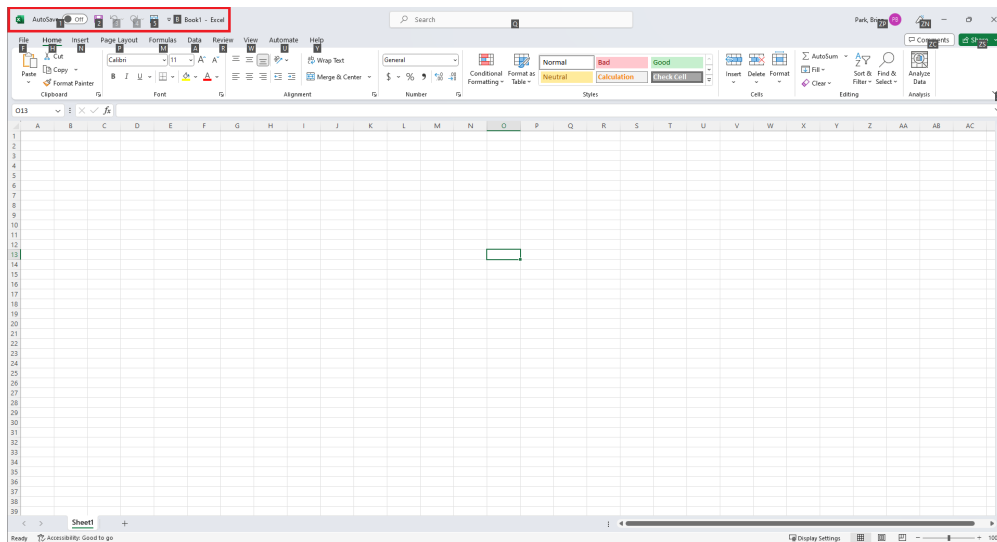


Figure 23: Using Custom Hotkeys

Topic 9. Errors

Before we begin discussing functions, let's take some time to understand some of the common errors you may encounter. We'll start by addressing some of the more straightforward error messages. *The first two are not actually "errors."*

Error Message	Cause	Solution
#####	Column width insufficient to display numerical data.	Adjust column width.
1E+11	Numerical value too large to express directly. (Exceeds 10 ¹¹)	Adjust format of cell.
#NAME?	Function name (or function's domain) is incorrect.	Double check the function's name or domain.
#N/A	Reference function could not locate items.	Double check the function and range.
#VALUE!	Items in the function's domain is incompatible.	Double check the function's domain.
#REF!	The function is referencing cells that have been removed.	Adjust function's domain.
#DIV/0	Dividing a number by 0 or an empty cell.	Adjust function's domain.

"Covert" Errors: Green Triangles

It's relatively easy to notice when an error has been detected in your worksheet due to the presence of an error message. However, there are instances where Excel will display a green triangle in the top-left corner of a cell. This triangle indicates that Excel "suspects" you may have made an error. The four cases listed below are the most common cases you will encounter.

- Function returns an error.
- Some cells (that Excel thinks should be included) are left out.
- Numerical values are stored as text.
- Formulae are not consistent with adjacent cells.

Resolving Green Triangle Errors

Let's walk through an example of how these green triangle errors are reported and can be resolved. Please open sheet Error 1 in BUSI201-S2024-LECO2-Workbook.xlsx. The table is designed to track photo equipment within a hypothetical company. As depicted in figure 24, there is a green triangle present in cell G17, which is intended to display the total value of all items stored.

	Make	Type	Item	Quantity	Unit Price	Value
3	Canon	Body	EOS 70D	8	\$ 316.67	\$ 2,533.33
4	Canon	Body	EOS 80D	10	\$ 541.67	\$ 5,416.67
5	Canon	Body	EOS 90D	13	\$ 1,100.00	\$ 14,300.00
6	Canon	Body	EOS 7D Mark II	15	\$ 558.33	\$ 8,375.00
7	Canon	Lens	EF-M 32mm F1.4 STM	14	\$ 440.83	\$ 6,171.67
8	Canon	Lens	EF 24-70mm F2.8L II USM	8	\$ 1,525.00	\$ 12,200.00
9	Canon	Lens	RF 24-105mm F4L IS USM	9	\$ 908.33	\$ 8,175.00
10	Nikon	Body	Nikon D5	14	\$ 4,800.00	\$ 67,200.00
11	Nikon	Body	Nikon D7500	14	\$ 675.00	\$ 9,450.00
12	Nikon	Lens	AF-S NIKKOR 24-70mm F2.8E ED VR	9	\$ 1,491.67	\$ 13,425.00
13	Nikon	Lens	AF-S NIKKOR 14-24mm F2.8G ED	12	\$ 1,166.67	\$ 14,000.00
14	Nikon	Lens	AF-S NIKKOR 200-500m F5.6E ED VR	15	\$ 1,000.00	\$ 15,000.00
15	Nikon	Lens	AF-S NIKKOR 20mm F1.8G ED	13	\$ 600.00	\$ 7,800.00
17	Total:					\$ 176,246.67

Figure 24: Green Triangle

If you hover the mouse cursor over the box with an exclamation mark in it, an error message “The formula in this cell refers to a range that has additional numbers adjacent to it.” is revealed. This means that there is at least one number that has been left out in calculating the sum.

	Quantity	Unit Price	Value	
3	8	\$ 316.67	\$ 2,533.33	
4	10	\$ 541.67	\$ 5,416.67	
5	13	\$ 1,100.00	\$ 14,300.00	
6	15	\$ 558.33	\$ 8,375.00	
7	14	\$ 440.83	\$ 6,171.67	
8	8	\$ 1,525.00	\$ 12,200.00	
9	9	\$ 908.33	\$ 8,175.00	
10	14	\$ 4,800.00	\$ 67,200.00	
11	14	\$ 675.00	\$ 9,450.00	
12	ED VR	9	\$ 1,491.67	\$ 13,425.00
13	ED	12	\$ 1,166.67	\$ 14,000.00
14	ED VR	15	\$ 1,000.00	\$ 15,000.00
15		13	\$ 600.00	\$ 7,800.00
17	Total:			=SUM(G3:G14)

Figure 25: The SUM function

The function used in this cell is the SUM function, which returns the sum of all values included in the range. Notice that the range is set as G3:G14, which leaves out the value of the last item on the list. You can correct this error by replacing the range with G3:G15.

Another way to correct the error is to click the “Update Formula to Include Cells” option shown in Figure 24. You can access this menu by left-clicking on the box with the exclamation mark that appears when you select cell G17. I would advise you to check if the updated formula indeed reflects your intentions, as there is no guarantee that what Excel *thinks* is correct is what the user intended.

Correcting Multiple Green Triangle Errors

You may also encounter cases where there are multiple green triangle errors in a single worksheet. In such cases, correcting one error at a time would be an inefficient use of your time. Let's walk through one more example with a different type of error to learn how to deal with multiple errors of the same type. Please open the sheet **Error 2** in the file named **BUSI201-S2024-LEC02-Workbook.xlsx**.

The screenshot shows an Excel spreadsheet with a table of appliance sales data. The table has columns for 'Item', 'Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', and 'Sum'. A red box highlights the error in cell C3, which contains the number '52'. The error message is 'Number Stored as Text'. The 'Sum' column (I) shows the total for each item, with the total for 'Refrigerator' being 0, indicating the error is affecting the calculation.

Item	Jan	Feb	Mar	Apr	May	Jun	Sum
Refrigerator	52	91	61	67	87	77	0
Washing machine	98	85	96	93	74	0	0
Microwave oven	64	89	96	100	94	0	0
Dishwasher	90	67	76	75	79	0	0
Oven	76	50	88	86	99	0	0
Vacuum cleaner	76	50	68	63	93	67	0
Coffee maker	76	51	99	83	88	87	0
Toaster	51	74	68	94	77	65	0
Blender	91	65	92	81	81	87	0
Air conditioner	76	51	72	61	56	83	0
Clothes dryer	77	95	92	99	83	67	0
Water heater	69	62	97	99	56	93	0
Iron	65	70	77	83	73	62	0
Food processor	99	98	96	99	76	75	0
Hair dryer	84	78	92	97	81	91	0
Electric kettle	97	52	66	77	71	96	0
Slow cooker	73	91	64	98	84	68	0
Electric fan	94	88	63	100	54	77	0

Figure 26: Green Triangles

The error in this specific case is that some numbers are stored as text, rather than being stored as numbers. This can be achieved when you insert an apostrophe in front of a number. We can see that this is causing the SUM function to not work as intended in column I.

The screenshot shows the same Excel spreadsheet as Figure 26, but with the error in cell C3 corrected. The error message 'Number Stored as Text' is now 'Convert to Number'. The 'Sum' column (I) now shows the correct total for each item, with the total for 'Refrigerator' being 520, indicating the error has been resolved.

Item	Jan	Feb	Mar	Apr	May	Jun	Sum
Refrigerator	52	91	61	67	87	77	520
Washing machine	98	85	96	93	74	0	467
Microwave oven	64	89	96	100	94	0	443
Dishwasher	90	67	76	75	79	0	387
Oven	76	50	88	86	99	0	399
Vacuum cleaner	76	50	68	63	93	67	457
Coffee maker	76	51	99	83	88	87	484
Toaster	51	74	68	94	77	65	429
Blender	91	65	92	81	81	87	507
Air conditioner	76	51	72	61	56	83	399
Clothes dryer	77	95	92	99	83	67	513
Water heater	69	62	97	99	56	93	516
Iron	65	70	77	83	73	62	430
Food processor	99	98	96	99	76	75	643
Hair dryer	84	78	92	97	81	91	523
Electric kettle	97	52	66	77	71	96	469
Slow cooker	73	91	64	98	84	68	578
Electric fan	94	88	63	100	54	77	576

Figure 27: Numbers as Texts

To correct this error, we first select the range C3:H20 which are the cells that share a common error. Then, click on the box with the exclamation mark, and then click "Convert to number" to correct the error.

After the error has been corrected, you can immediately notice that the SUM function now works as intended, displaying the total number of each appliance sold between the months of Jan~Jun. If you navigate to each cell that once displayed the green triangle error, you can see that the apostrophe has been removed.

Ignoring Green Triangles: NOT Recommended

From time to time, you may encounter cases where Excel *thinks* that something you did intentionally was, in fact, an error. For instance, you may intentionally want to leave out one row's worth of data when calculating a sum, as it includes information about expenses that are not reimbursable. In this scenario, Excel will still think you made an error by excluding one row. You may choose to leave the green triangle alone, but you do have an option to ignore these errors.

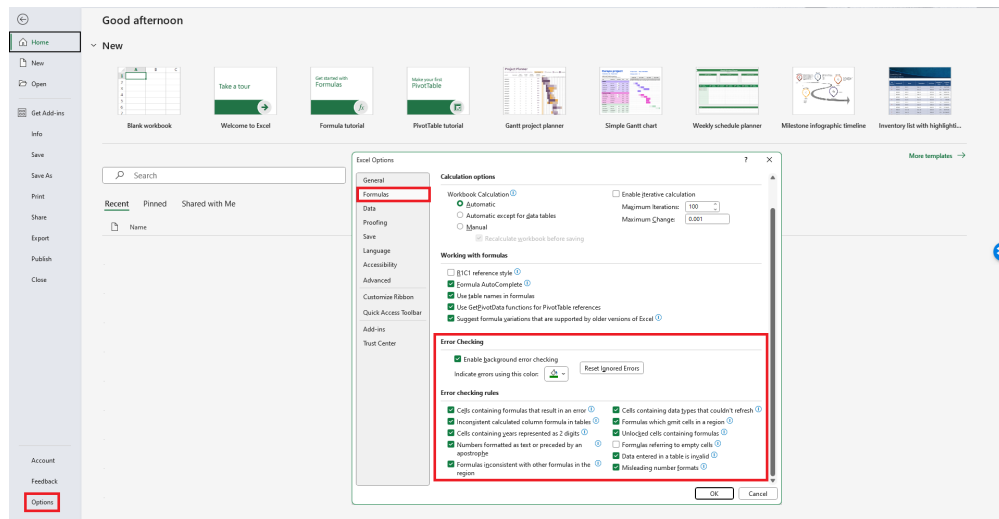


Figure 28: Ignoring Errors

Navigate to **File** > **Options** > **Formulas**. Under “Error Checking,” you can disable background error checking completely by deselecting ‘Enable background error checking.’ You may also customize the rules that Excel applies when determining if a cell contains an error. You can do this by selecting or deselecting items under “Error checking rules.”

Checking for Errors Manually

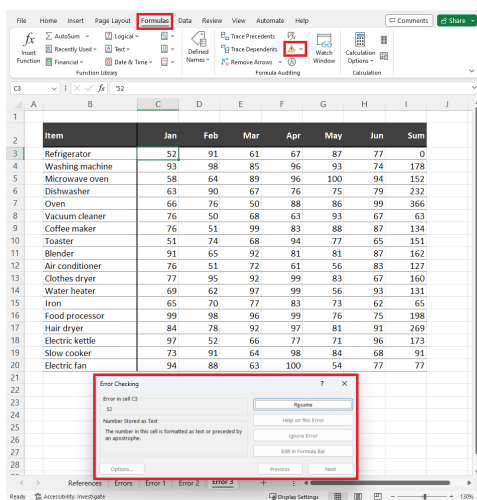


Figure 29: Numbers as Texts

If you come across a situation where you want to manually prompt Excel to check for errors, you can navigate to **Formulas** > **Error Checking**. The icon should look like a yellow triangle with an exclamation mark embedded inside.

The error checking window will show you if there are any suspected errors, the location of the error, and give you a choice to either fix the error automatically or ignore the error.