ACC575: Data Analytics for Accounting
LN1. Introduction to Excel

Jaeyoon Yu, Ph.D.
Central Michigan University

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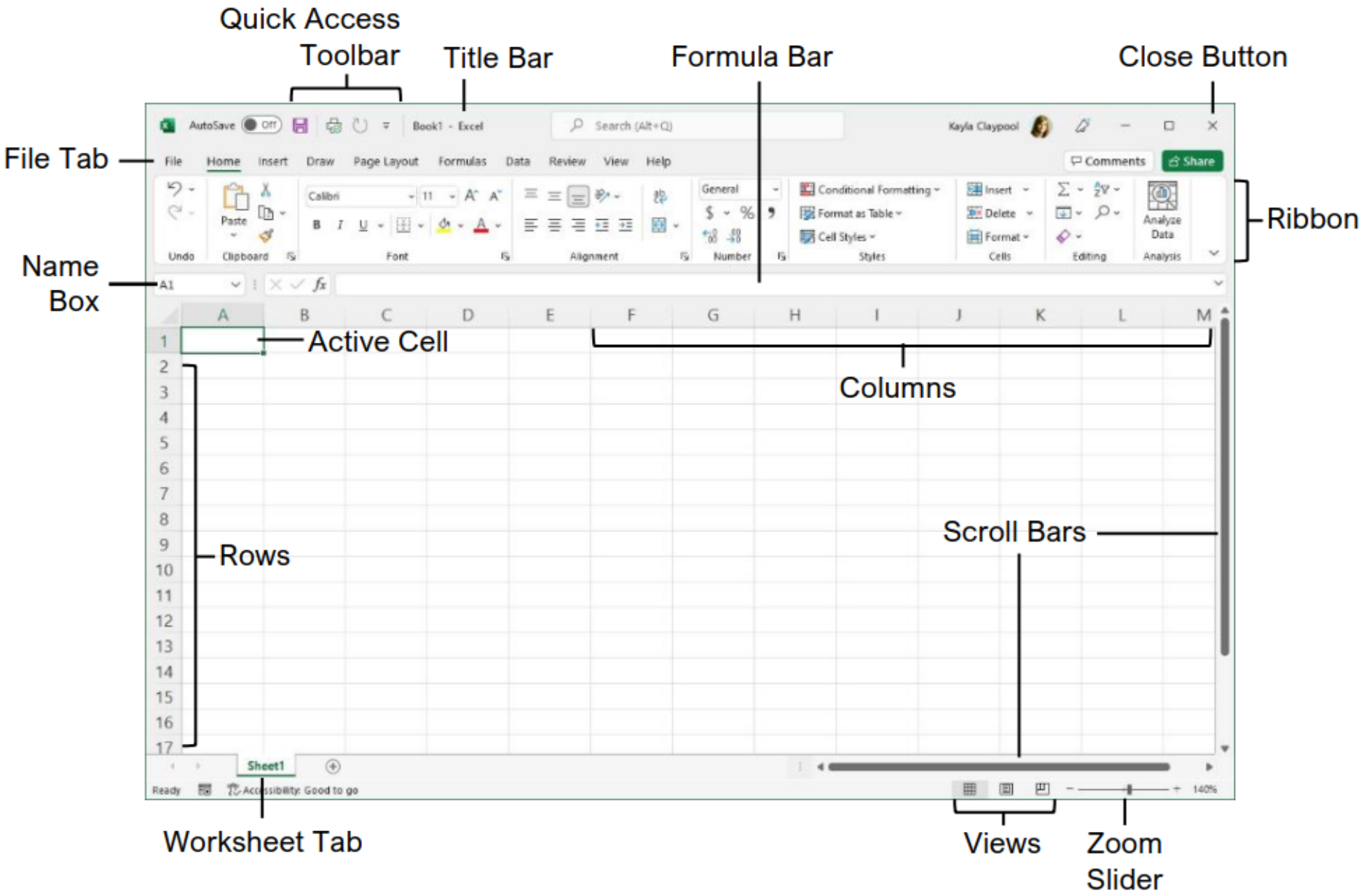
Excel screen

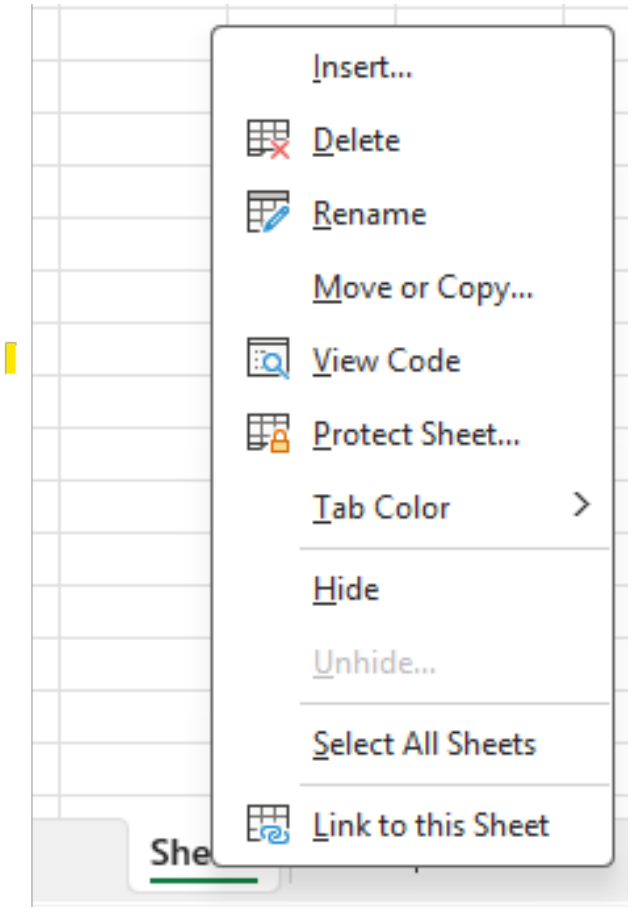


Worksheets in a Workbook

- A worksheet is a grid made up of rows and columns.
- A worksheet is a page in a workbook.
- A workbook can have multiple worksheets.

You can:

1. insert a new worksheet.
2. delete a worksheet.
3. *Be careful:* Deleting a worksheet cannot be undone!
4. rename a worksheet.
5. move or copy a worksheet.



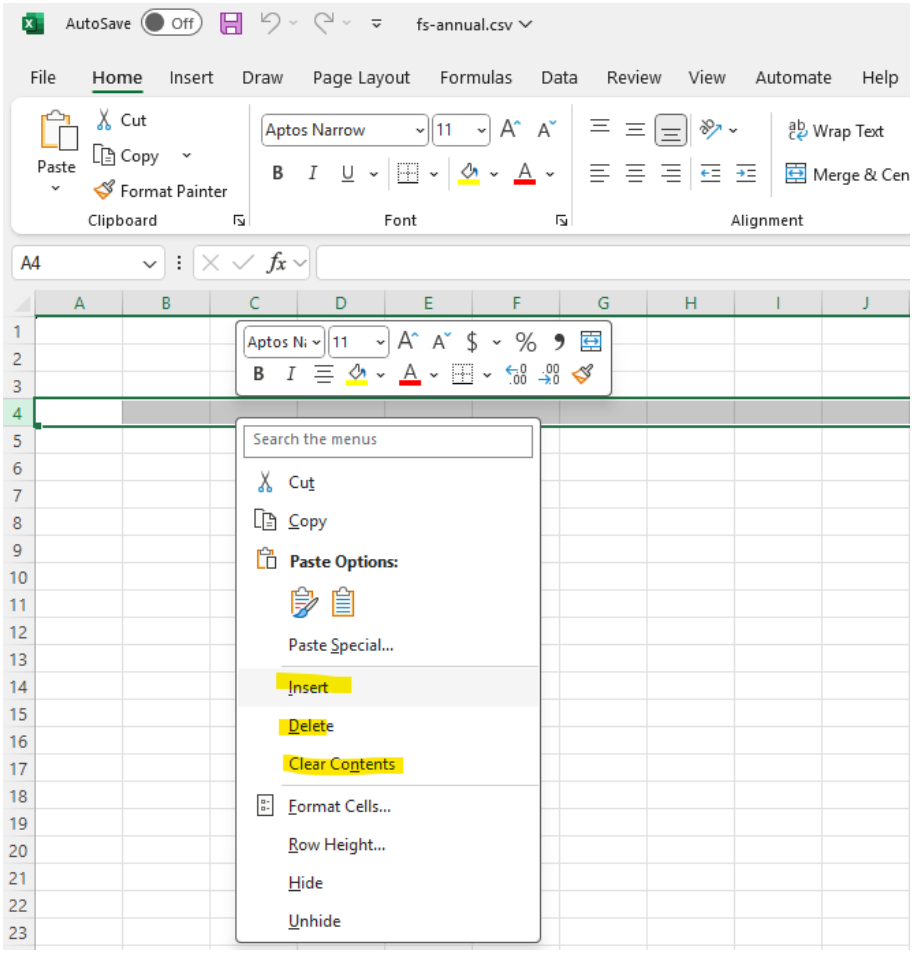
Rows, Columns, and Cells

What are cells, rows, and columns?

- Rows are horizontal lines.
- Columns are vertical lines.
- Cells are the intersection of a row and a column.
- Cells can have values or references to other cells.

Insert, Delete, and Clear a Row or Column

- Choose a row.
- Right click on the row.
- Choose insert, delete, or clear contents.
- You can choose multiple rows or columns at once using **shift** or **ctrl** keys.



Name a Cell

How to name a cell?

- Go to the cell you want to name.
- Click the Name Box in the formula bar.
- Type the name of the cell.

How to use the name of a cell?

- Use the name of the cell in a formula.
- Use the name of the cell in a function.
- Use the name of the cell in a condition.

Name a Cell: Example

Calculate tax payment for three items using a named cell for the tax rate.

- Cell B1.
- **This should be named TaxRate in the Name Box in the formula bar.**
- Column C: Tax payment (using the named cell `TaxRate`)

Spreadsheet Structure:

	A	B	C
1	**TaxRate:**	**0.06**	
2			
3	**Item**	**Price**	**Tax Payment on Price**
4	Apple	2.50	=C2*TaxRate
5	Banana	1.80	=C3*TaxRate
6	Carrot	1.20	=C4*TaxRate

In this example, the **tax rate (0.06)** is stored in cell B2 (named **TaxRate**). Each item's tax payment is calculated by multiplying its price.

Excel Shortcuts

- Using shortcuts is much more efficient than using the menu. You are expected to use these shortcuts in this course.
- *Mac has different shortcuts. For many of them, **Command** instead of **Ctrl**.

Useful shortcuts:

- **Ctrl + C**: Copy
- **Ctrl + V**: Paste
- **Ctrl + X**: Cut
- **Ctrl + Z**: Undo
- **Ctrl + Y**: Redo
- **Ctrl + F**: Search
- **Ctrl + H**: Replace
- **Ctrl + A**: Select All
- **Ctrl + B**: Bold

Excel Shortcuts

- **F2**: Edit in a selected cell
- **F4**: Toggle between absolute and relative references
- **F5**: Go to a specific cell
- **Alt**: See shortcuts on the menu bar.

Excel Shortcuts - Navigation

- **Ctrl + Home**: Go to cell A1
- **Ctrl + End**: Go to the last cell with data
- **Ctrl + Arrow Keys**: Jump to the edge of the data region in the direction of the arrow
- **Shift + Arrow Keys**: Select cells
- **Ctrl + Shift + Arrow Keys**: Jump while selecting cells

Excel Shortcuts - Navigation

Play with these shortcuts in your example sheet to see how they help you move and select data quickly!

	A	B	C	D	E
1					
2	**1**				**3**
3					
4					
5	**2**				**4**

- **Ctrl + Home**: Moves the cursor to cell **A1**, the very top-left cell of the worksheet.
- **Ctrl + End**: Moves the cursor to the last cell that contains data. In this example, the last data is in cell **E5**, so Ctrl+End will take you to E5.
- **Ctrl + Arrow Keys**: If you start in cell A2 and press **Ctrl + Right Arrow**, you will jump to E2 (the next filled cell in that row).
- **Ctrl + Shift + Arrow Keys**: Starting at A2 and pressing **Ctrl + Shift + Right Arrow** will select A2 through E2.

Data types

- **Numbers**: Whole numbers, decimals, and fractions
- **Dates**: Calendar dates in various formats
- **Text**: Letters, words, and sentences
- **Formulas**: Mathematical expressions that calculate values (e.g., `=A1+B1`)

	A	B	C	D
1	**Transaction_ID**	**Date**	**Transaction_Type**	**Amount**
2	1	1/1/2025	Return	-27.32
3	2	1/1/2025	Sale	38.2
4	3	1/1/2025	Sale	99.77
5	4	1/1/2025	Return	-53.67
6	5	1/1/2025	Return	-46.47
7	6	1/2/2025	Sale	38.36
8	7	1/2/2025	Return	-3.64
9	8	1/2/2025	Sale	1.79
10	9	1/3/2025	Return	-55.89

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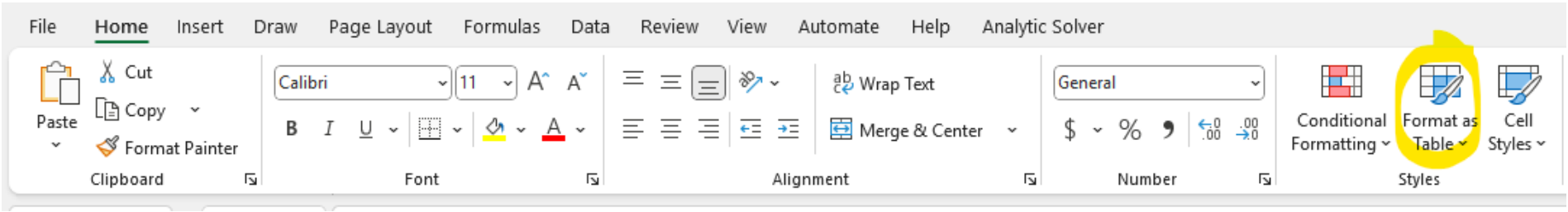
Range and Table

- Any set of cells, rows, or columns can be considered as a **range**.
- A **table** is a collection of data organized in rows and columns.
- **Table** formatting and built-in features like auto-update makes data management easier than regular ranges.

How to create a **table**?

- Select the range of data.
- Go to the **Home** tab.
- Click the **Format as Table** button under **Style**.
- Or, use a shortcut **Ctrl + T**.



Ex. Data in Range [Lab4-1]

Description:

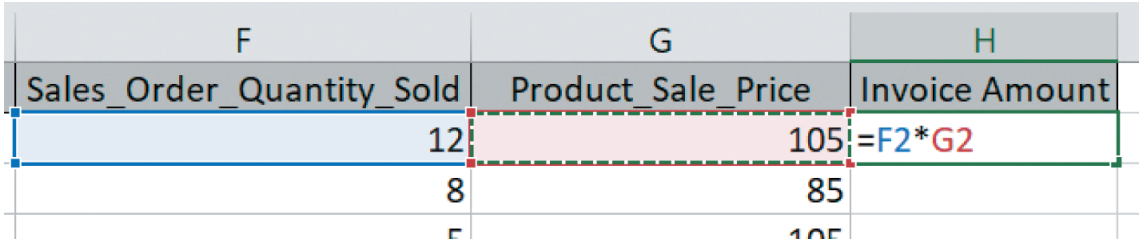
- In Excel, there are three primary ways to organize data: a **range**, a **table**, and a **pivot table**.
- Data: Sales order data including 100+ sales orders.

Required:

1. Create a new column - **Invoice Amount**.
2. Calculate the **sum** of the new column.

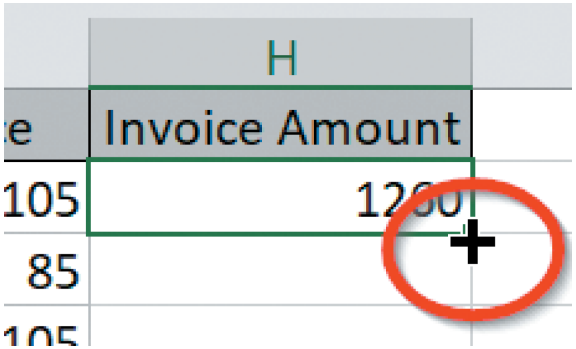
	A	B	C	D	E	F	G
1	Sales_Order_ID	Sales_Order_Date	Sales_Employee_ID	Customer_ID	Product_Code	Sales_Order_Quantity_Sold	Product_Sale_Price
2	20062	11/22/2024	1007	2001	2004	12	105
3	20168	12/27/2024	1007	2001	2005	8	85
4	20383	3/4/2025	1007	2001	2004	5	105
5	20564	4/28/2025	1007	2001	2002	6	120

1. Create a new column - **Invoice Amount**.
   - This data is formatted well.
   - This data has column headers.
   - But still **not** formatted as a **table**.
   - Of course, we can still use this data to analyze the data.
   - Type **F2 * G2** in a cell **H2** to get **Invoice Amount**.



F	G	H
Sales_Order_Quantity_Sold	Product_Sale_Price	Invoice Amount
12	105	=F2*G2
8	85	

- Drag cell **H2** to the end of the column to get **Invoice Amount**.
- Check what we have in cell **H4**.
- There is **F4*G4**, not **F2*G2**.
- It's because of **relative reference** (covered later).
- A cell in H refers to the cell in F and G in **the same row**.



F	G	H
Sales_Order_Quantity_Sold	Product_Sale_Price	Invoice Amount
12	105	1260
8	85	680
5	105	=F4*G4
6	120	720
5	95	475

2. Calculate the **sum** of the new column.
   - Go to the bottom of the column of **Invoice Amount**.
   - Use sum() function.
   - Select the range of **Invoice Amount**.
   - Click OK.

Ex. Data in Table [Lab4-1]

Description:

- Data is formatted in a better way in a **table**.
- Each column has a header with a drop-down arrow (for sorting and filtering).

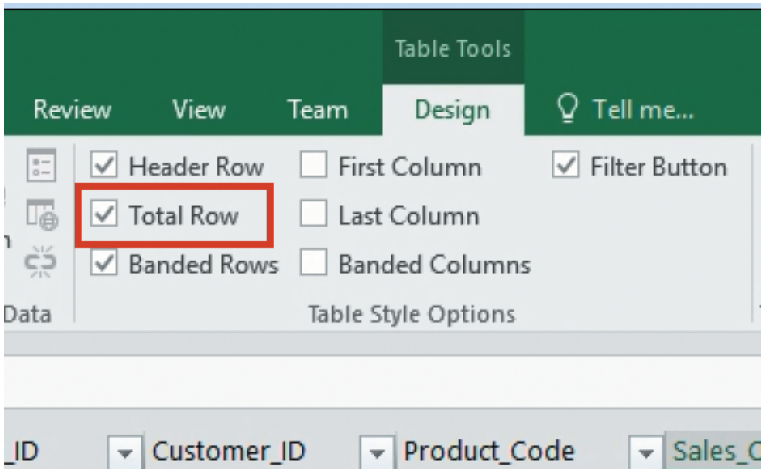
Required:

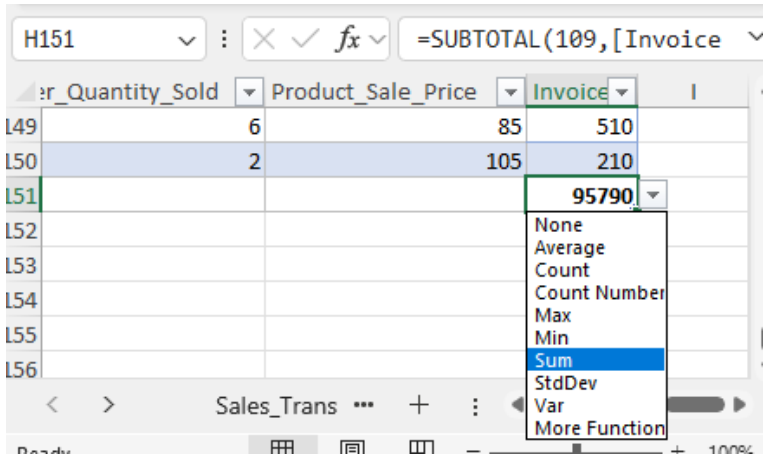
1. Create a new column - **Invoice Amount**.
2. Calculate the sum of the new column.

	A	B	C	D	E	F	G
1	Sales_Order_ID	Sales_Order_Date	Sales_Employee_ID	Customer_ID	Product_Code	Sales_Order_Quantity_Sold	Product_Sale_Price
2	20062	11/22/2024	1007	2001	2004	12	105
3	20168	12/27/2024	1007	2001	2005	8	85
4	20383	3/4/2025	1007	2001	2004	5	105
5	20564	4/28/2025	1007	2001	2002	6	120
6	20140	12/20/2024	1006	2002	2001	5	95

1. Create a new column - **Invoice Amount**.
   - Type "Invoice Amount" in a cell **H1**.
   - Type **F2 * G2** in a cell **H2** to get **Invoice Amount**.
   - You **don't have to drag** the formula to the end of the column!
   - See what's in cell **H2**.

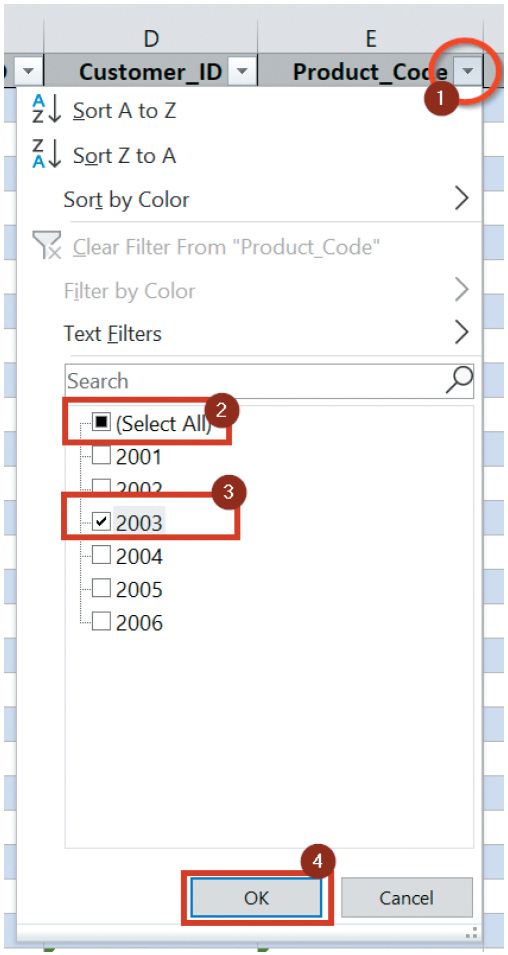
2. Calculate the **sum** of the new column.
   - Table Design (or Design) tab > Total Row.
   - Scroll down to see the total row.
   - Select the button next to the Total value. You can see the list of options.
   - Choose **Sum**.

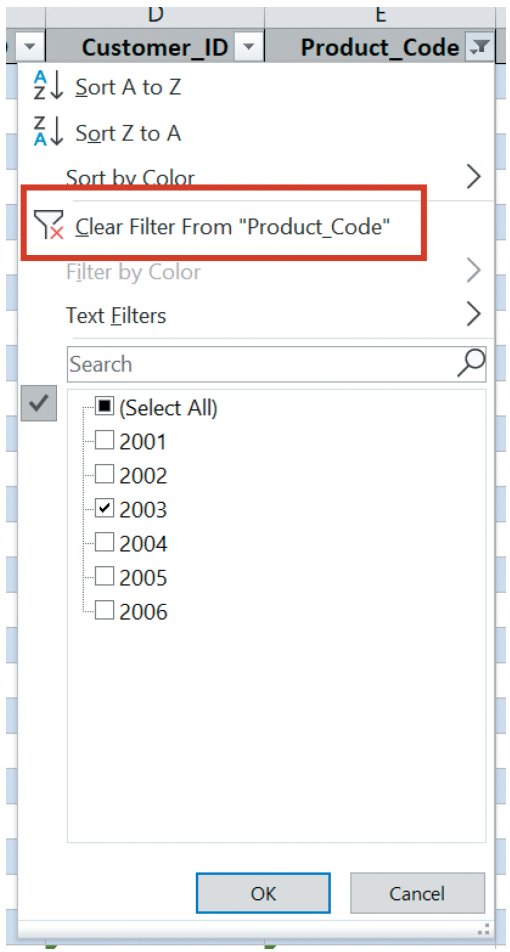




Filtering in a Table

- Click the drop-down arrow in the header of column E.
- Select 2003 to filter the data to only include 2003.
- Then, Clear Filter to get all the data back (or simply ctrl + z).





Filtering in a Table - Example

Suppose you are a manager and you would like to evaluate performance of your employees.

- How many employees in the data?
- Who has sold the most?

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Visualization

- Visualization is the process of creating a visual representation of data.
- Visualization is useful for communicating data to others.
- Visualization is also useful for analyzing data.

Ex. Descriptive Statistics for Retail industry [Lab5-1]

Descriptions

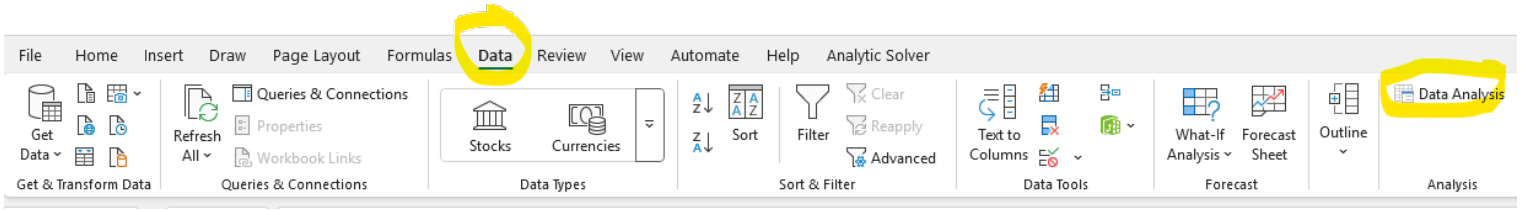
1. The dataset includes information of 500+ firm-year observations.

Required:

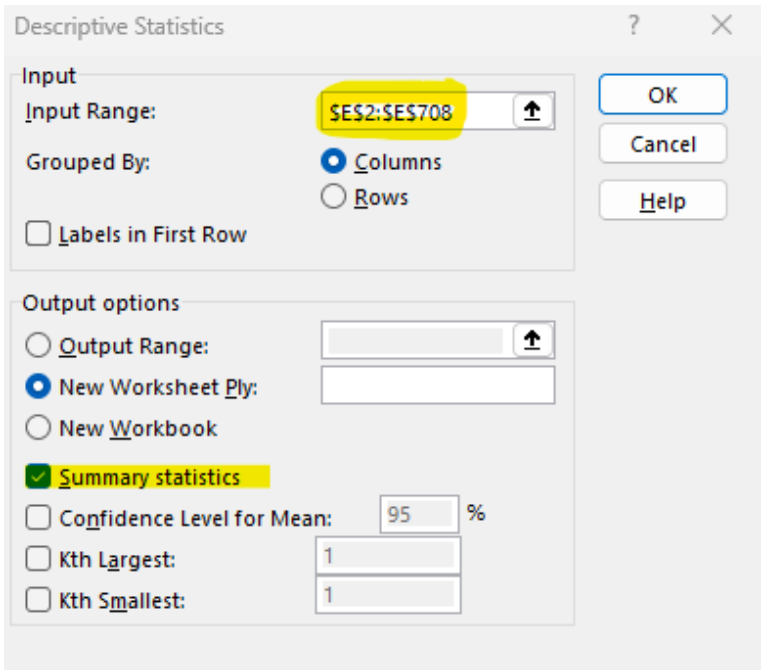
1. Get descriptive statistics for **total assets**.
2. Get the histogram of **ROA** (Net Income / Total Assets).

	A	B	C	D	E	F	G	H	I
1	GVKEY	Data Date	Fiscal Year	Ticker	Total Assets	Net Income	Total Revenue	SIC Code	Company Name
2	37234	20191231	2019	WNW	3.244	-1.755	7.683	5961	WUNONG NET TEC COM LTD
3	183307	20201231	2020	SCFFF	3.623	-2.433	4.098	5812	SPOT COFFEE LTD CDA
4	183307	20191231	2019	SCFFF	4.43	-2.514	8.592	5812	SPOT COFFEE LTD CDA
5	65482	20190131	2018	STRZ	6.425	-0.541	26.036	5812	STAR BUFFET INC
6	36906	20191031	2019	JZXN	7.066	3.24	7.978	5500	JIUZI HOLDINGS INC -REDH
7	24142	20190630	2019	BTB	10.847	-0.933	0.402	5411	BIT BROTHER LTD
8	31806	20201231	2020	GGBBF	13.888	-7.711	13.777	5600	LXRANDCO INC

1. Get descriptive statistics for total assets.
   1. Data > Data Analysis (which is Analysis Toolpak Add-in)
   2. Select Descriptive Statistics.



   3. Select total asset column in the input range.
   4. Mark the **Summary Statistics** checkbox.



1. Get descriptive statistics for total assets.

Total Assets	
Mean	8529.49
Standard Error	1108.26
Median	1266.91
Mode	22360
Standard Deviation	29468
Sample Variance	8.7E+08
Kurtosis	58.431
Skewness	7.27065
Range	321192
Minimum	3.244
Maximum	321195
Sum	6030351
Count	707

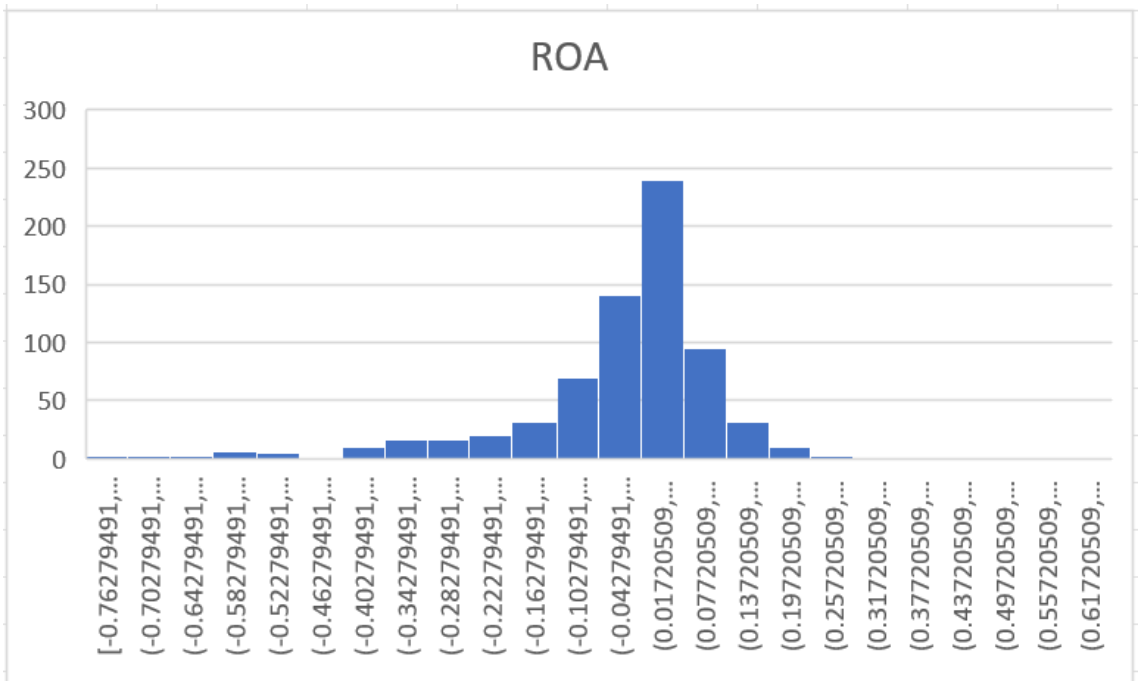
2. Get the histogram of ROA (Net Income / Total Assets).

1. Add ROA column.

J2 =F2/E2

	A	B	C	D	E	F	G	H	I	J
1	GVKEY	Data Date	Fiscal Year	Ticker	Total Assets	Net Income	Total Revenue	SIC Code	Company Name	ROA
2	37234	20191231	2019	WNW	3.244	-1.755	7.683	5961	WUNONG NET TEC COM LTD	-0.541
3	183307	20201231	2020	SCFFF	3.623	-2.433	4.098	5812	SPOT COFFEE LTD CDA	-0.67154
4	183307	20191231	2019	SCFFF	4.43	-2.514	8.592	5812	SPOT COFFEE LTD CDA	-0.56749
5	65482	20190131	2018	STRZ	6.425	-0.541	26.036	5812	STAR BUFFET INC	-0.0842

2. Select ROA column.
3. Insert > Charts > All Charts > Select Histogram.



Critial Thinking:

- Does the graph look visually appealing?
- How would you improve the graph?
- What about descriptive statitistics?
- How would you improve the descriptive statistics?