Day 1

1:30pm-2:30pm

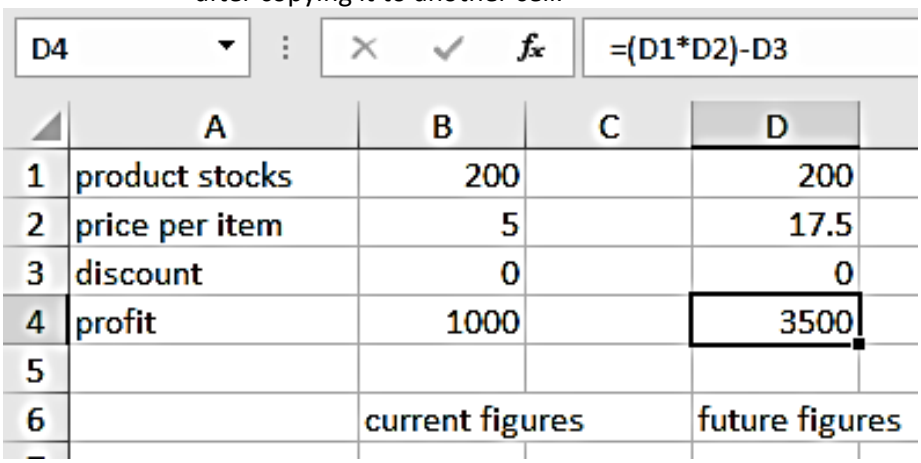
IDENTIFY AND DEFINE THE ESSENTIAL COMPONENTS OF EXCEL FORMULAS

- Using Relative value for cell reference as primary source of formula
- Using Absolute value for cell reference as primary source of formula
- Managing Names of Cell Reference by Using Name box to calculate data across worksheets.

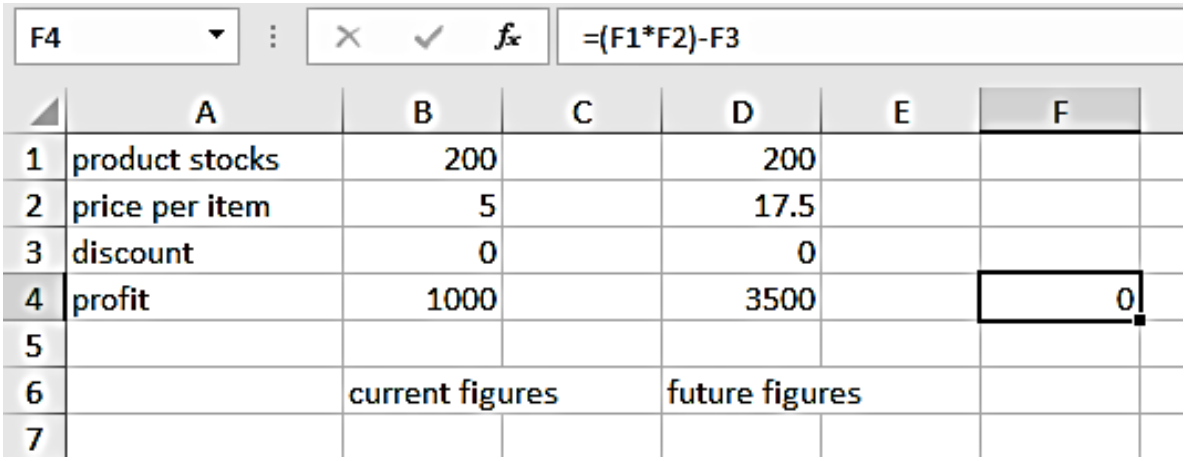
Absolute Cell References

A. When copy-pasting formulas, excel will try to use relative cell references. This means that based on the formula that you have copied, excel will not copy the formula "exactly" but rather change the formula elements to cells that has the same relative position as the original formula. Example of relative cell reference in copied formulas:

   i. I will be copying the formula on the highlighted cell. Check the formula on the formula bar before and after copying it to another cell.



	A	B	C	D
1	product stocks	200		200
2	price per item	5		17.5
3	discount	0		0
4	profit	1000		3500
5				
6		current figures		future figures



	A	B	C	D	E	F
1	product stocks	200		200		
2	price per item	5		17.5		
3	discount	0		0		
4	profit	1000		3500		0
5						
6		current figures		future figures		
7						

   ii. If you want formulas that can be copied "as-is" you have to change that formula to use "absolute cell reference", that is, you have to add a dollar symbol "$" on each letter and number of the cell reference in the formula (shortcut, highlight formula in formula bar then press f4 to convert a relative formula to an absolute formula). See example, check formula before and after it has been copied.

D4 =($D$1*$D$2)-$D$3

	A	B	C	D	E
1	product stocks	200		200	
2	price per item	5		17.5	
3	discount	0		0	
4	profit	1000		3500	
5					
6		current figures		future figures	
7					

F4 =($D$1*$D$2)-$D$3

	A	B	C	D	E	F
1	product stocks	200		200		
2	price per item	5		17.5		
3	discount	0		0		
4	profit	1000		3500		3500
5						
6		current figures		future figures		

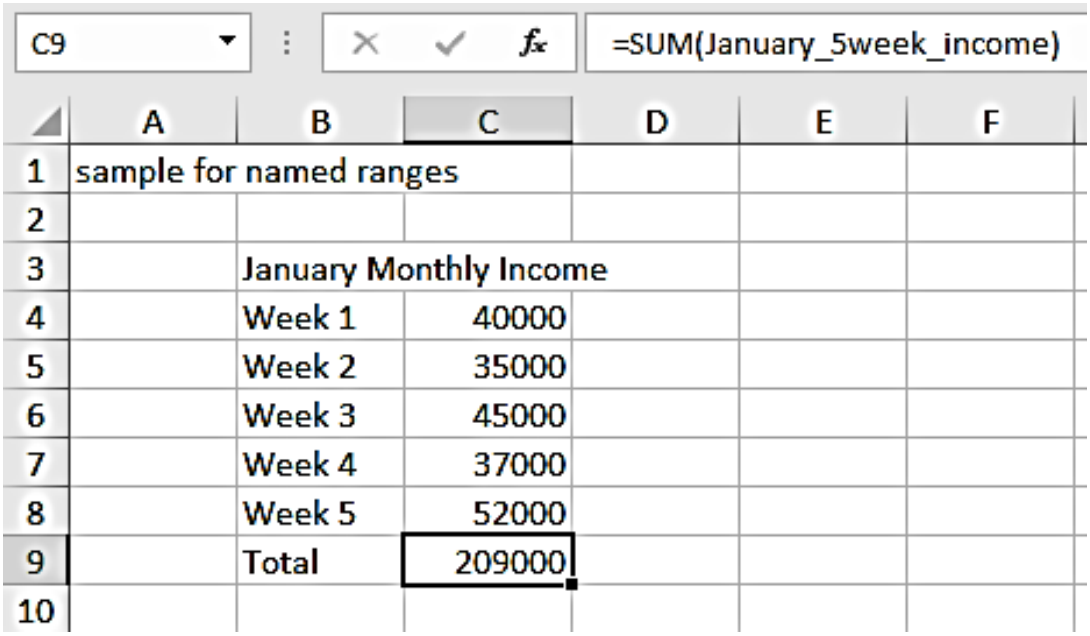
Named Ranges in Excel

A. You can provide a name (like an "alias") to substitute your cell ranges in formulas or other uses.
B. Instead of having this:

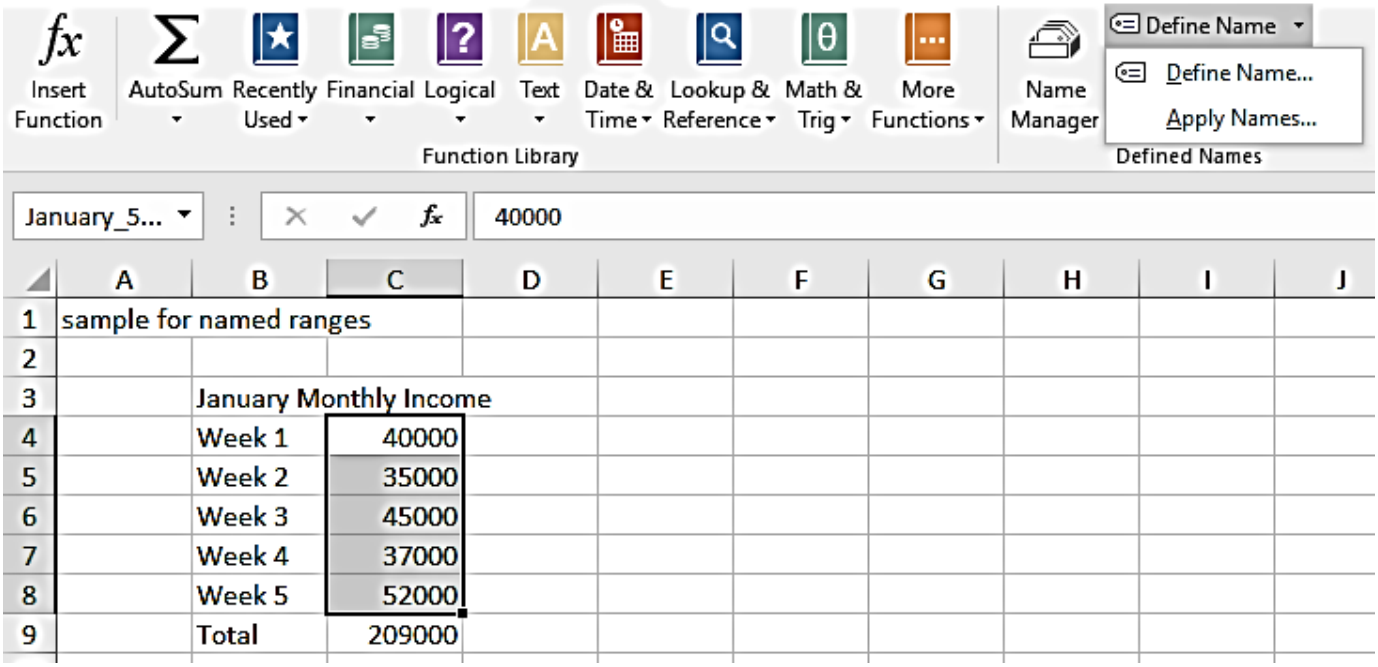
C9 =SUM(C4:C8)

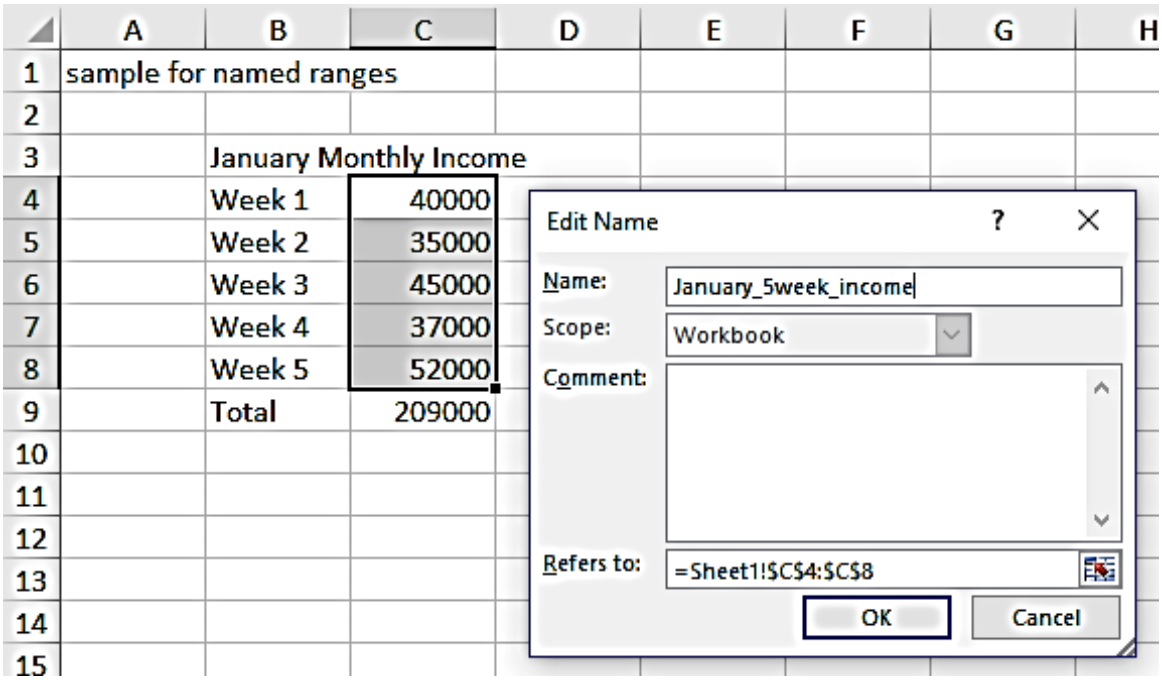
	A	B	C	D	E
1	sample for named ranges				
2					
3		January Monthly Income			
4		Week 1	40000		
5		Week 2	35000		
6		Week 3	45000		
7		Week 4	37000		
8		Week 5	52000		
9		Total	209000		
10					

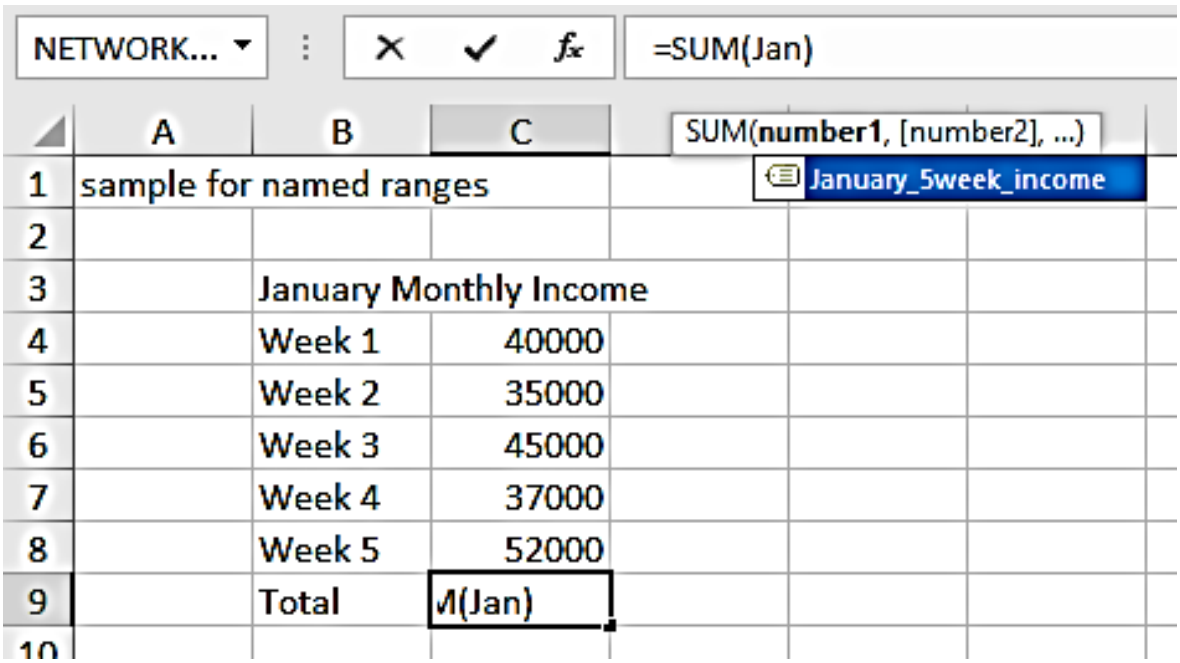
C. You can have this:

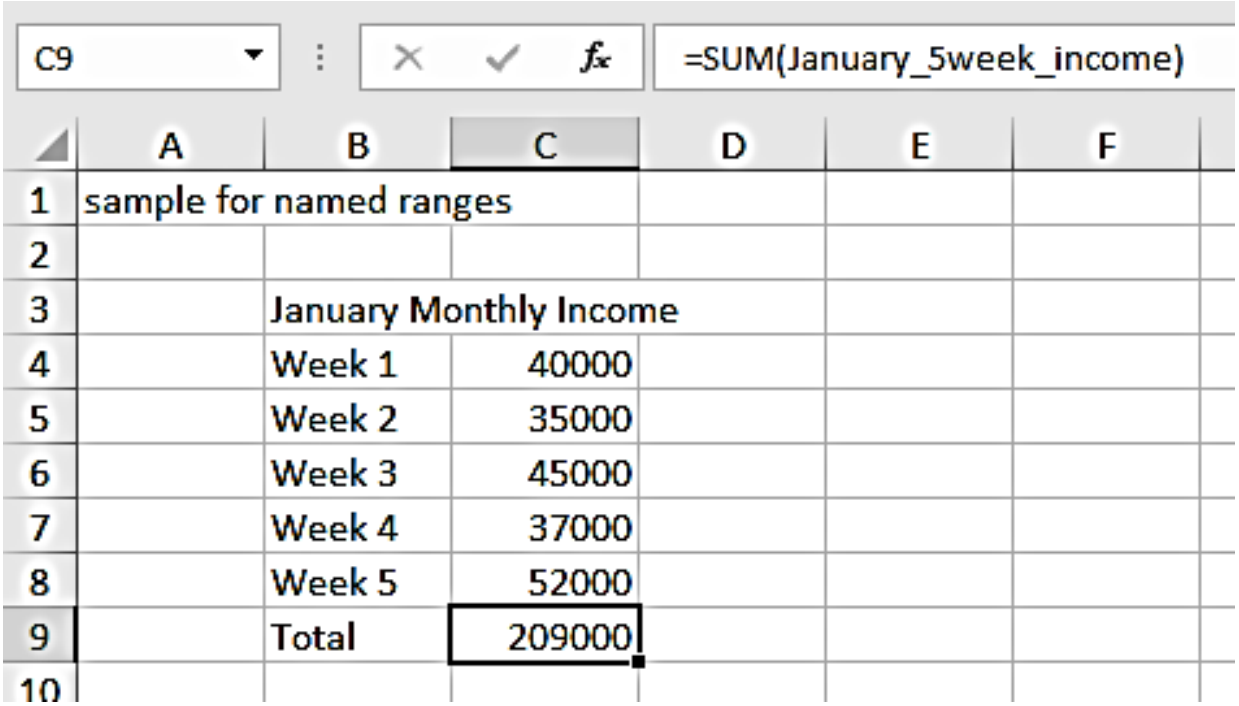


D. To define named ranges, highlight the cell range then go to Formulas→Define Name




sample for named ranges
January Monthly Income
Week 1 40000
Week 2 35000
Week 3 45000
Week 4 37000
Week 5 52000
Total 209000
Edit Name
Name: January_5week_income
Scope: Workbook
Comment:
Refers to: =Sheet1!$C$4:$C$8
OK
Cancel


NETWORK...
=SUM(Jan)
SUM(number1, [number2], ...)
January_5week_income
sample for named ranges
January Monthly Income
Week 1 40000
Week 2 35000
Week 3 45000
Week 4 37000
Week 5 52000
Total M(Jan)



2:30pm-3:30pm

TOPIC 2: PERFORMING ADVANCED FORMULAS

• Simplify Number Functions: SUM, COUNT AVERAGE, MAX, MIN with Name Manager (demo)

• Create Solutions in TEXT data using the text functions: Change Case, Trim Case, Combine Case and Find and Replace text methods.
(demo)

3:30pm-4:30pm

• Date and Time functions

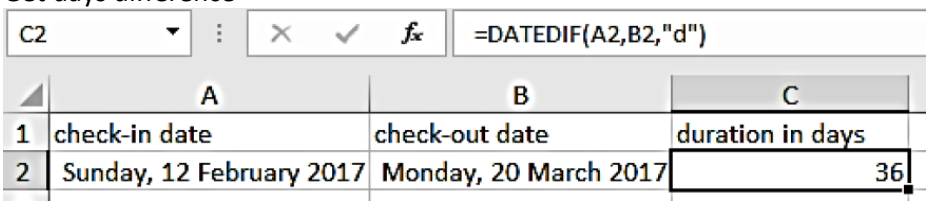
1. Using DATES
   →get current date:

```
=NOW()
```

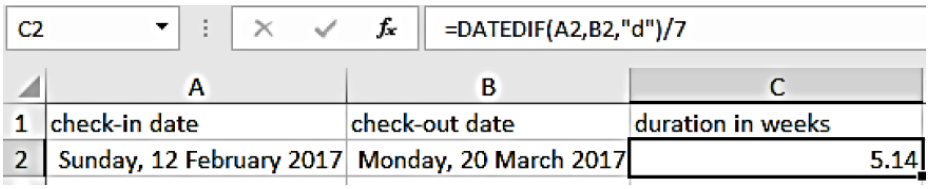
   →you can format how the date is displayed in the home tab

2. Using DATEDIF function

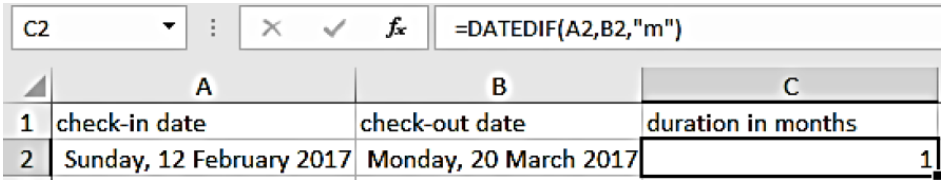
   Get days difference



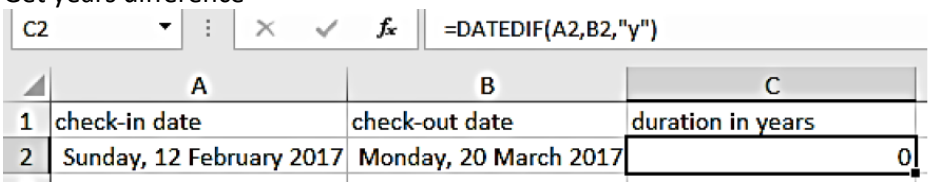
Get weeks difference



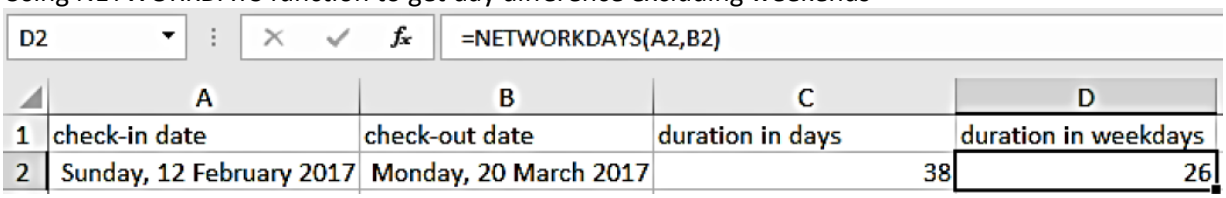
Get months difference



Get years difference

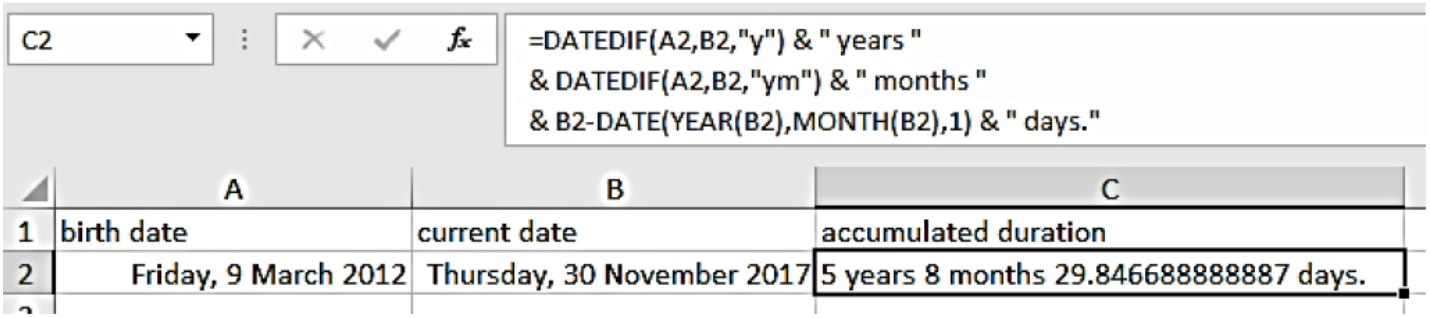


3. Using NETWORKDAYS function to get day difference excluding weekends

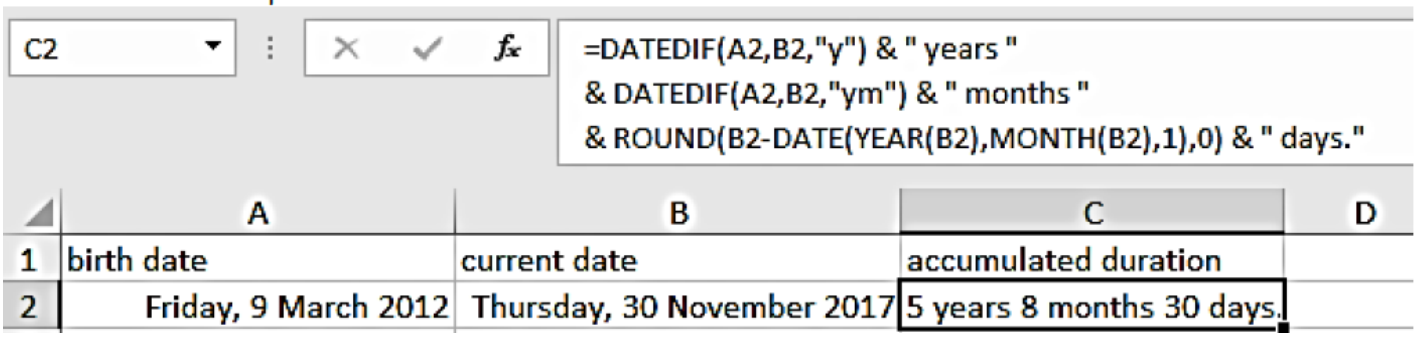


4. You can also use a manual formula to get the years, months and days difference

- Calculate duration in accumulated years, months, days. Note: ALT + Enter to add line breaks to formula and Ctrl + Shift + U to view the entire formula.



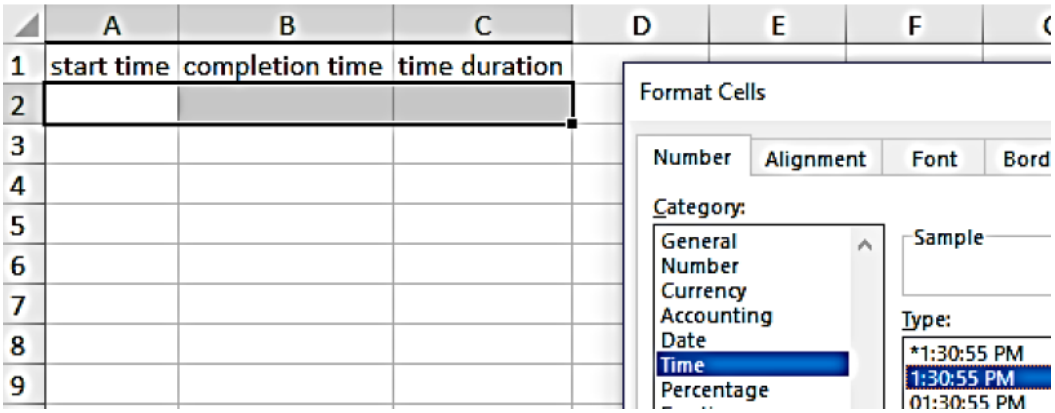
You can also round it up



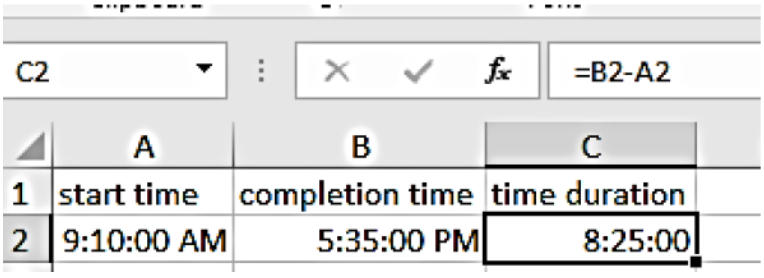
5. Using TIME

=NOW()

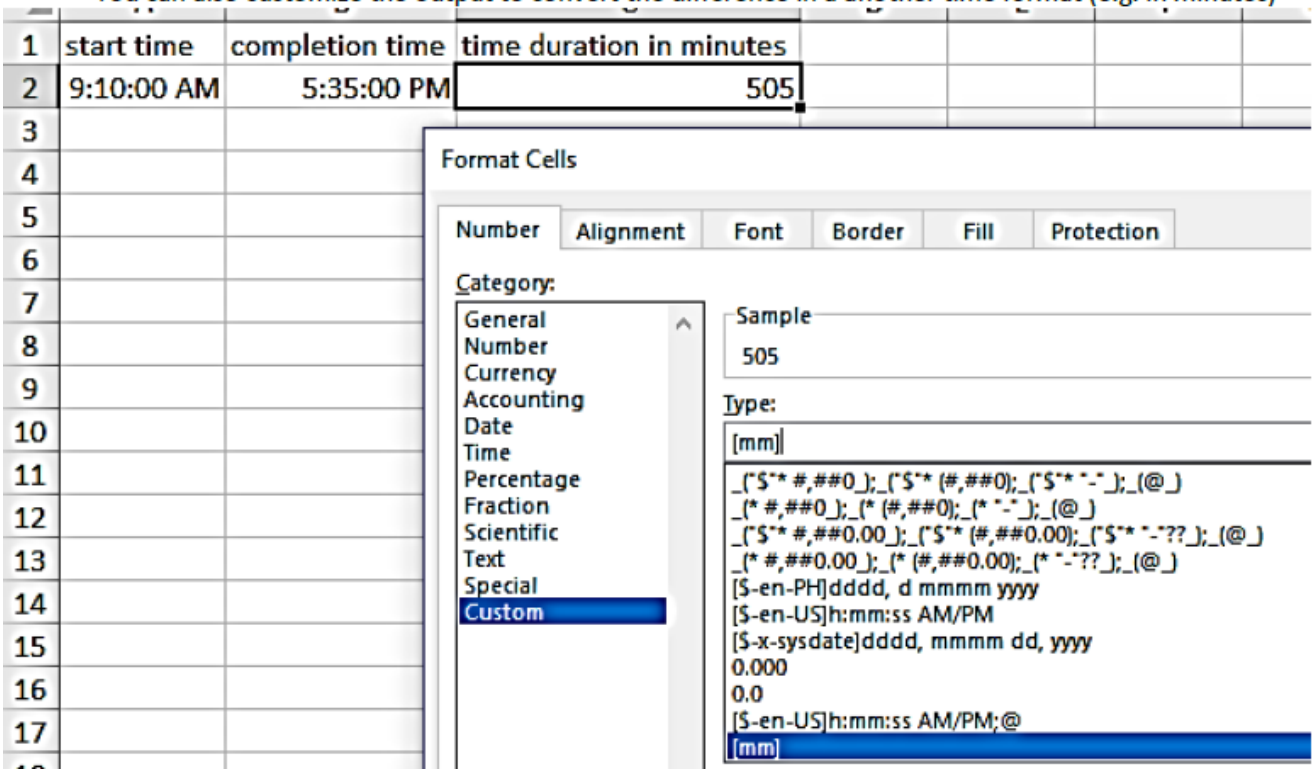
- Format the cell for time



6. Get time difference
   - Add time values. Get the time difference then format the cell to extract hour and minutes

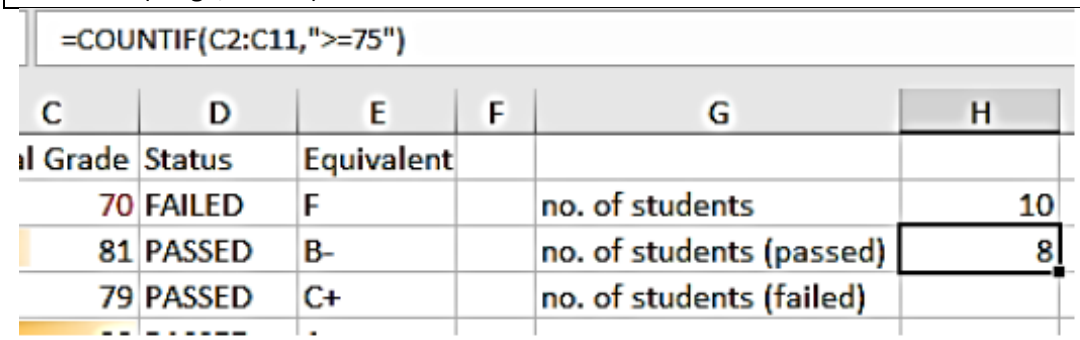


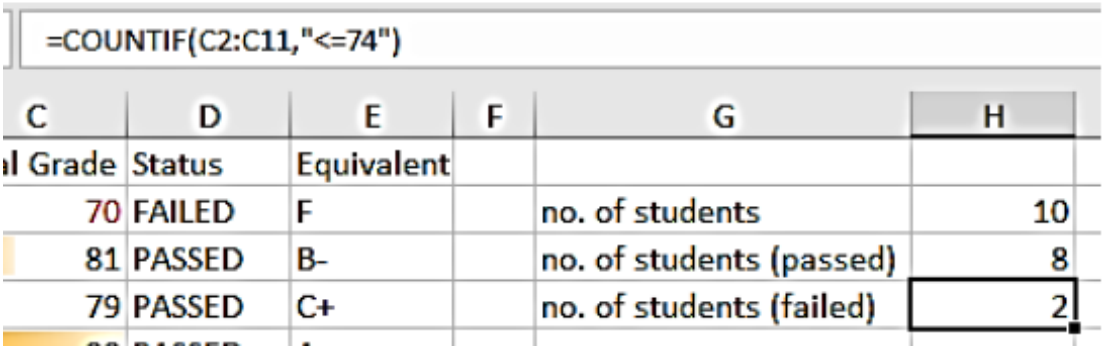
- You can also customize the output to convert the difference in a another time format (e.g. in minutes)



- Using IF condition and Logical functions: SUMIF, COUNTIF, AVERAGEIF to create dynamic reporting in Excel
  1. Using COUNTIF

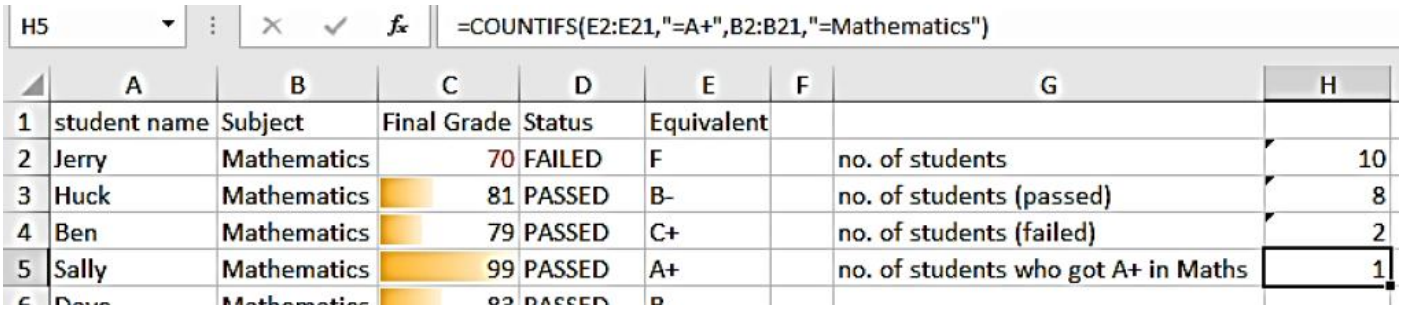
=COUNTIF(range,criteria)





2. Using COUNTIFS

=COUNTIFS(range1,criteria,range2,criteria2,range3,criteria3,…)

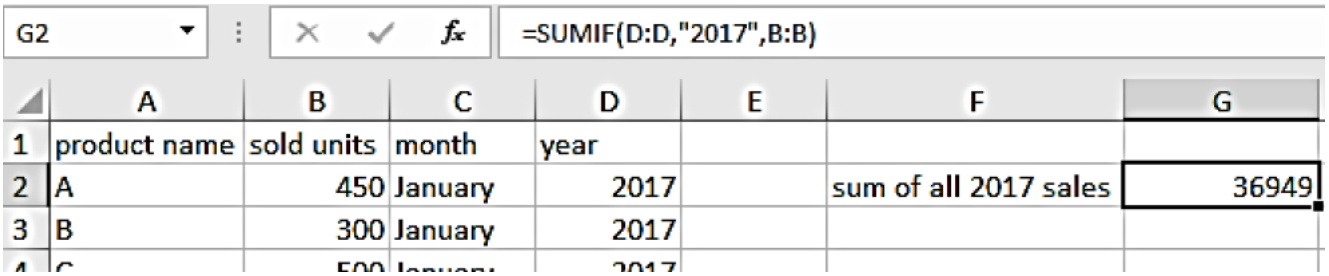


H5 | =COUNTIFS(E2:E21,"=A+",B2:B21,"=Mathematics")

	A	B	C	D	E	F	G	H
1	student name	Subject	Final Grade	Status	Equivalent			
2	Jerry	Mathematics	70	FAILED	F		no. of students	10
3	Huck	Mathematics	81	PASSED	B-		no. of students (passed)	8
4	Ben	Mathematics	79	PASSED	C+		no. of students (failed)	2
5	Sally	Mathematics	99	PASSED	A+		no. of students who got A+ in Maths	1

3. Using SUMIF

=SUMIF(range,criteria,sum_range)

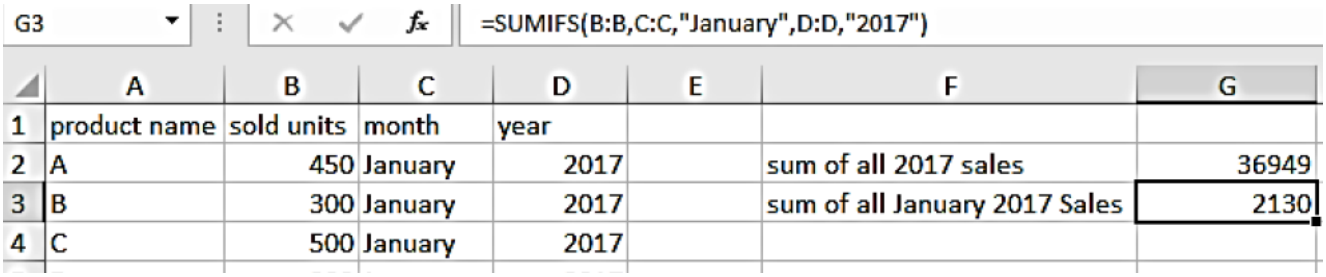


G2 | =SUMIF(D:D,"2017",B:B)

	A	B	C	D	E	F	G
1	product name	sold units	month	year			
2	A	450	January	2017		sum of all 2017 sales	36949
3	B	300	January	2017			

4. Using SUMIFS

=SUMIFS(sum_range,range1,criteria1,range2,criteria2,range3,criteria3,…)

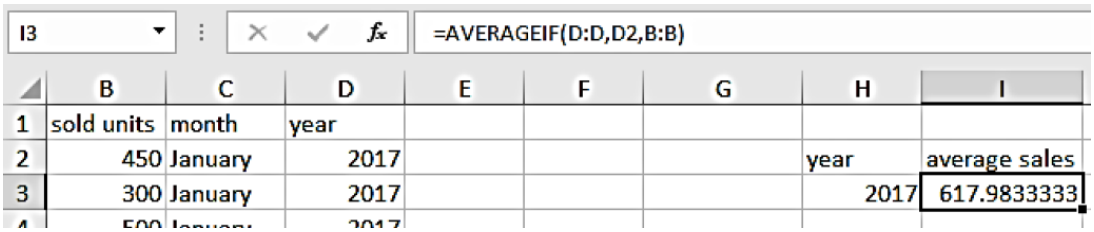


G3 | =SUMIFS(B:B,C:C,"January",D:D,"2017")

	A	B	C	D	E	F	G
1	product name	sold units	month	year			
2	A	450	January	2017		sum of all 2017 sales	36949
3	B	300	January	2017		sum of all January 2017 Sales	2130
4	C	500	January	2017			

1. Using AVERAGEIF function
→highlight cell where to place the answer→click on the insert function (*fx*) near the formula bar→choose AVERAGEIF

→range: choose the column range (including column header) where the criteria will be fetched
→criteria: choose a cell on the range that contains the value that you will use for the condition
→average_range: this is the column that has the values to be computed



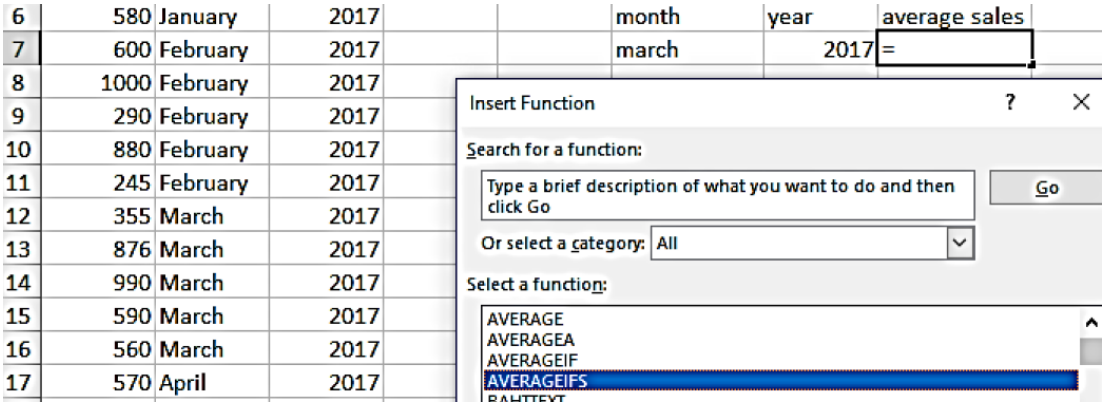
I3 | =AVERAGEIF(D:D,D2,B:B)

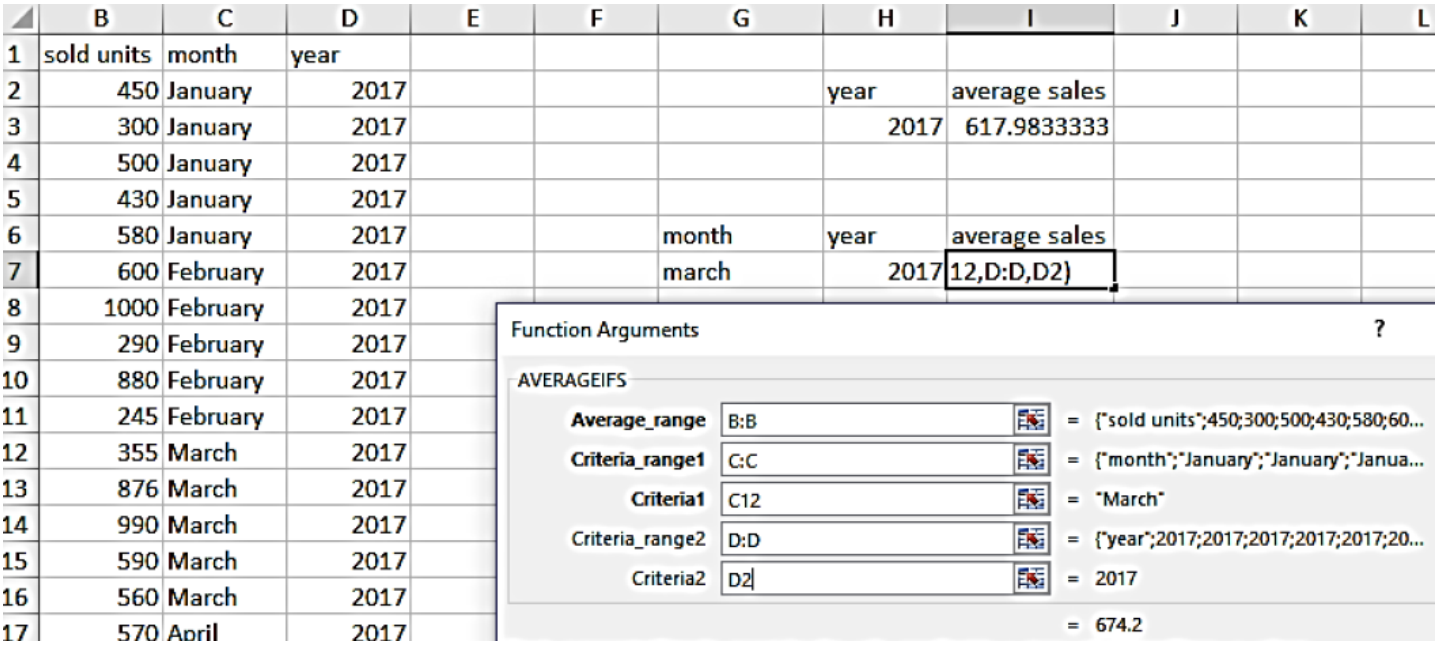
	B	C	D	E	F	G	H	I
1	sold units	month	year					
2	450	January	2017				year	average sales
3	300	January	2017				2017	617.9833333

2. Using AVERAGEIFS

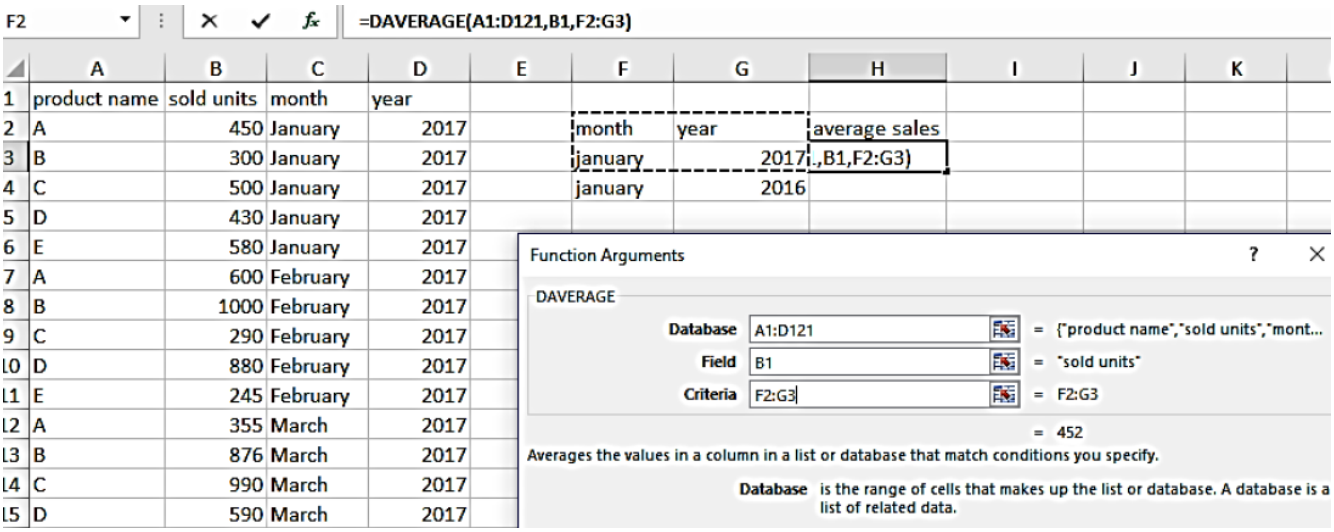
AVERAGEIFS(average_range,criteria1_range,criteria1 value,criteria2_range,criteria2_value)

→highlight cell where to place the answer→click on the insert function (*fx*) near the formula bar→choose AVERAGEIFS



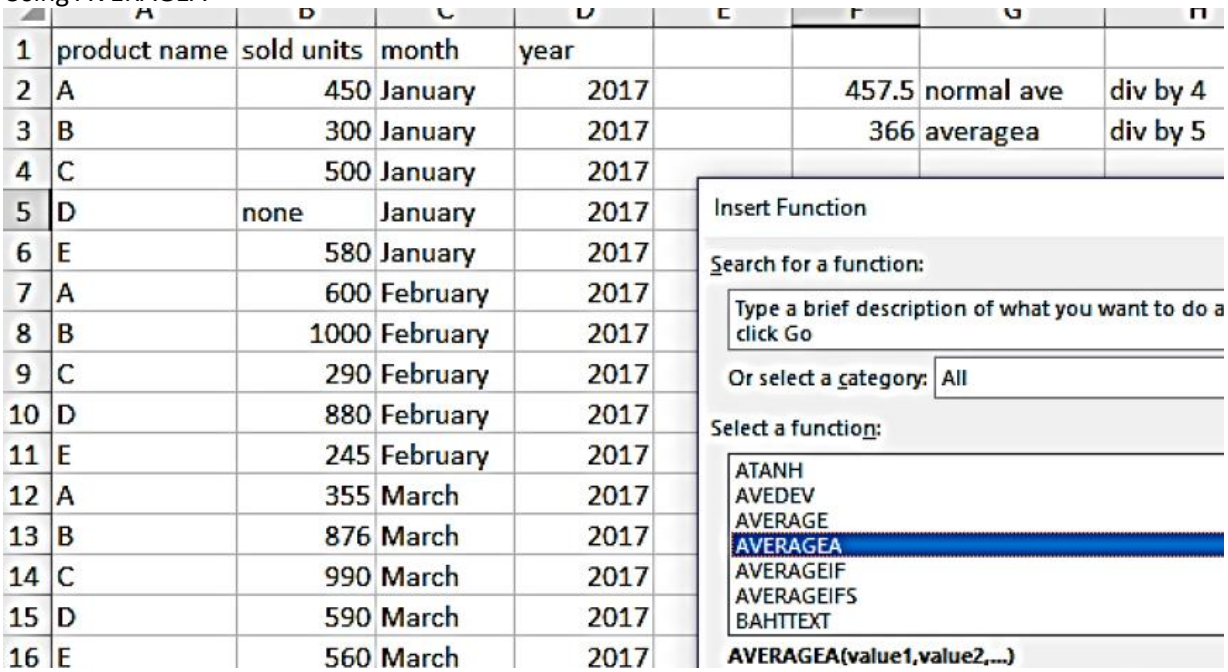


3. Using DAVERAGE
   - Create criteria for the average
   - Insert a function on the cell where to display the answer(DAVERAGE).
   - Database: select the range of cells holding values (including the column headers)
   - Field: this is the column (in word—with double quotes, in cell reference, or in cell number position)
   - Criteria: select the criteria you have created



	A	B	C	D	E	F	G	H	I	J	K
1	product name	sold units	month	year							
2	A	450	January	2017		month	year	average sales			
3	B	300	January	2017		january	2017	,B1,F2:G3)			
4	C	500	January	2017		january	2016				
5	D	430	January	2017							
6	E	580	January	2017							
7	A	600	February	2017							
8	B	1000	February	2017							
9	C	290	February	2017							
10	D	880	February	2017							
11	E	245	February	2017							
12	A	355	March	2017							
13	B	876	March	2017							
14	C	990	March	2017							
15	D	590	March	2017							

4. Using AVERAGEA



	A	B	C	D	E	F	G	H
1	product name	sold units	month	year				
2	A	450	January	2017		457.5	normal ave	div by 4
3	B	300	January	2017		366	averagea	div by 5
4	C	500	January	2017				
5	D	none	January	2017				
6	E	580	January	2017				
7	A	600	February	2017				
8	B	1000	February	2017				
9	C	290	February	2017				
10	D	880	February	2017				
11	E	245	February	2017				
12	A	355	March	2017				
13	B	876	March	2017				
14	C	990	March	2017				
15	D	590	March	2017				
16	E	560	March	2017				

• Regular average function skips non-numeric values during the average computation so values, after getting the total, will be divided only with how many cells have actual value.
• The AVERAGEA function treats non-numeric cells as cells with the value 0. Thus, the cells with non-numeric values are included as items to be divided

- Activity: How to Create an Aging Report

Step 1:
Label the following cells:
A1: Customer
B1: Order #
C1: Date
D1: Amount Due.
Enter in the corresponding information for your customers and their orders underneath the headlines.

Step 2:
Add additional headers for each column as:
E1: Days Outstanding
F1: Not Due
G1: 0-30 Days
H1: 31-60 days
I1: 61-90 days
J1: >90 days

Step 3:
Next, we will input a formula for the "Days Outstanding" column that will let us know how many days that invoice has gone unpaid since the due date.
In cell E2, enter in the following formula: =IF(TODAY()>C2,TODAY()-C2,0)

Step 4:
Drag the fill handler from cell E2 all the way to the last customer. This will populate the formula down the whole column so you do not have to enter it in over again.

Step 5:
Now we want to give our aging report some color, so that we can easily see who is the most overdue versus who is still in the clear. Highlight all the rows in the E column then click Conditional Formatting on the Home tab and New Rule.

Step 6:
A separate window will open named "New Formatting Rule".
Click the "Format Style" drop down and select 3-color scale.
Click the "Type" drop down and select Number
Under "Values", enter 0 for minimum, 60 for midpoint and 90 for maximum.
Finally, select the colors that make the most sense for you, usually three colors that are very far apart on the color scale.

Step 7:
In cell F2 we will find out who is not yet due on their invoices. The formula will check for anything in the "Days Outstanding" column that is equal to zero.
In cell F2, enter in the following formula: =IF(E2=0,D2,0)
Drag the fill handler down the column to populate.

Step 8:
The formula for 0-30 days basically says, "Check to see if the difference between today's date and C2's date are less than or equal to 30. If it is, input the data from D2. If it isn't, leave as 0".
Enter in cell G2 the following formula: =IF(C2<TODAY(),(IF(TODAY()-C2<=30,D2,0)),0)
Drag the fill handler down the column to populate.

Step 9:
The next formula will use an AND statement, which will basically say that if the difference between today's date and that date in C2 is less than or equal to 60 days AND greater than 30 days, then input the data from D2. Otherwise, input 0.
In cell H2, enter in the following formula: =IF (AND(TODAY()-$C2<=60,TODAY()-$C2>30),$D2,0)
Drag the fill handler down the column to populate.

Step 10:
Under the 61-90 days column, the formula will be similar in concept to the one input in step 9.
In cell I2, enter in the following formula: =IF(AND(TODAY()-$C2<=90,TODAY()-$C2>60),$D2,0)
Drag the fill handler down the column to populate.

Step 11:
To find the unpaid invoices greater than 90 days, the formula is quite simple. It is simply stating that if the difference between today's date and the due date is greater than 90 to input the data from cell D2. Otherwise, input 0.
In cell J2, enter in the following formula: =IF(TODAY()-$C2>90,D2,0)
Drag the fill handler down the column to populate.

Step 12:
To sum up the value of all of the invoices in each column to know how much cash you have floating among each simply click and drag from the first empty cell underneath the "Not Due" column to the ">90" column. Then press ALT+=.

4:30pm-5:30pm

• Use Lookup Functions to simplify IF condition formulas.

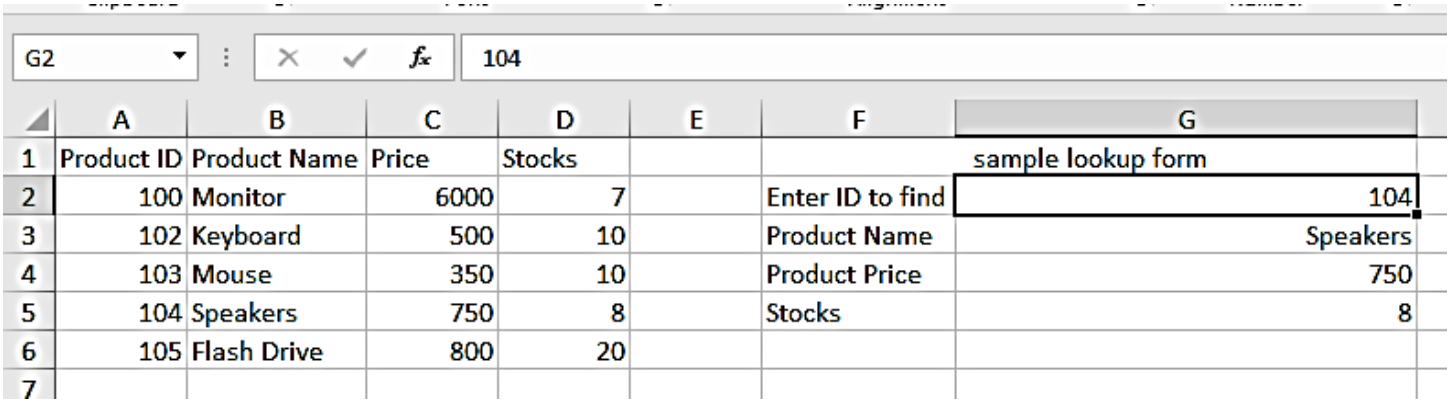
The LOOKUP Function

A. Enables you to find a value from a corresponding cell.

i. Prepare some data

	A	B	C	D	E
1	Product ID	Product Name	Price	Stocks	
2	100	Monitor	6000	7	
3	102	Keyboard	500	10	
4	103	Mouse	350	10	
5	104	Speakers	750	8	
6	105	Flash Drive	800	20	

ii. Use the following function (check the examples given for the usage of the lookup formula: =LOOKUP(lookup_value, lookup_vector, result_vector)



	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks			sample lookup form
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			
7							

G3 =LOOKUP(G2,A2:A6,B2:B6)

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks		sample lookup form	
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			

G4 =LOOKUP(G2,A2:A6,C2:C6)

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks		sample lookup form	
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			
7							

G5 =LOOKUP(G2,A2:A6,D2:D6)

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks		sample lookup form	
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			

The VLOOKUP Function in Excel

A. Another function that aids you in finding corresponding values in a row. The VLOOKUP function needs at least three arguments—lookup_value, Entire data table range (where the lookup value will come from the first column), and the column number where you expect to get the result. See the following example:

G2 104

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks			sample vlookup form
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			

G3 =VLOOKUP(G2,A2:D6,2)

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks			sample vlookup form
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			
7							

G4 =VLOOKUP(G2,A2:D6,3)

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks			sample vlookup form
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			

G5 =VLOOKUP(G2,A2:D6,4)

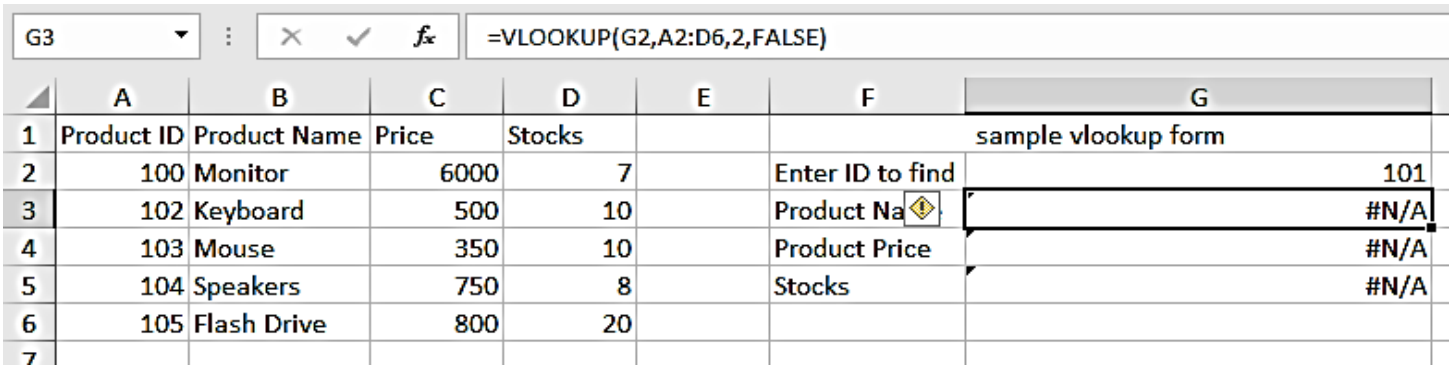
	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks			sample vlookup form
2	100	Monitor	6000	7		Enter ID to find	104
3	102	Keyboard	500	10		Product Name	Speakers
4	103	Mouse	350	10		Product Price	750
5	104	Speakers	750	8		Stocks	8
6	105	Flash Drive	800	20			
7							

B. Note that if enter a value in G2 that doesn't have a match in A2:A6, it will try to find the lowest nearest number. For example, if I entered "101" in G2:

G2 101

	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks			sample vlookup form
2	100	Monitor	6000	7		Enter ID to find	101
3	102	Keyboard	500	10		Product Name	Monitor
4	103	Mouse	350	10		Product Price	6000
5	104	Speakers	750	8		Stocks	7
6	105	Flash Drive	800	20			

C. If you do not like this behavior and want excel to find an "exact match", add a fourth argument in VLOOKUP:



G3 | =VLOOKUP(G2,A2:D6,2,FALSE)

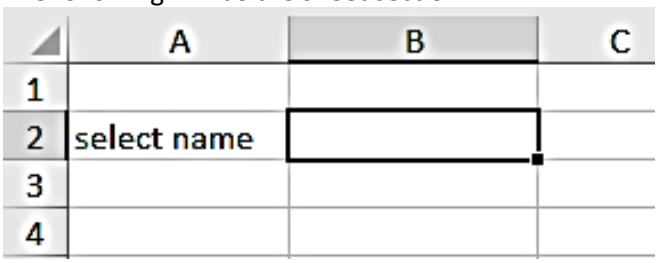
	A	B	C	D	E	F	G
1	Product ID	Product Name	Price	Stocks		sample vlookup form	
2	100	Monitor	6000	7		Enter ID to find	101
3	102	Keyboard	500	10		Product Na	#N/A
4	103	Mouse	350	10		Product Price	#N/A
5	104	Speakers	750	8		Stocks	#N/A
6	105	Flash Drive	800	20			

Drop Down Lists in Excel

If you have to type the same data into cells all the time, then adding a drop down list to your spreadsheet could be the answer. In Excel, this comes under the heading of Data Validation.

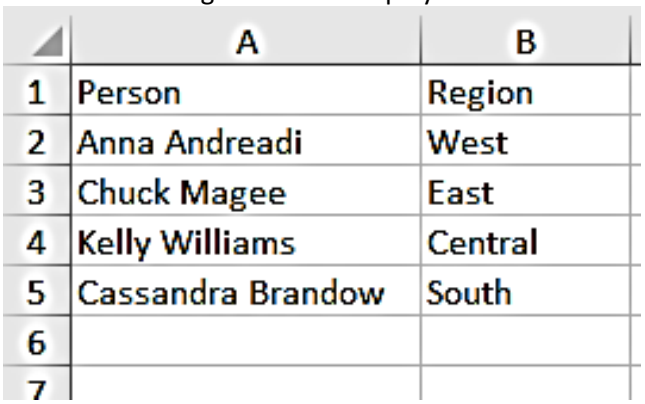
For example, we wish to display an input for the names, but we want the input to be restricted only to the list that we will provide.

The following will be the sheet section:



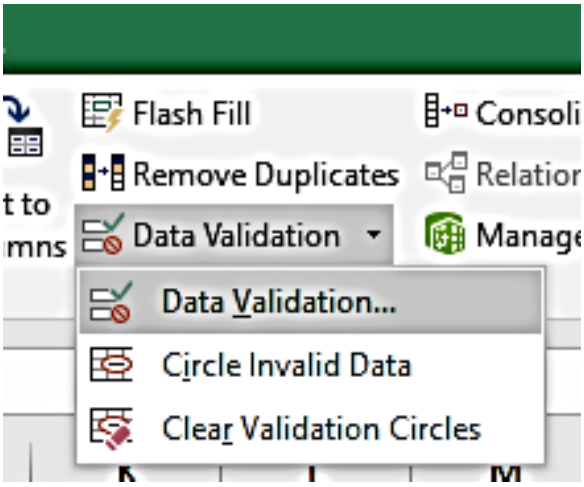
	A	B	C
1			
2	select name		
3			
4			

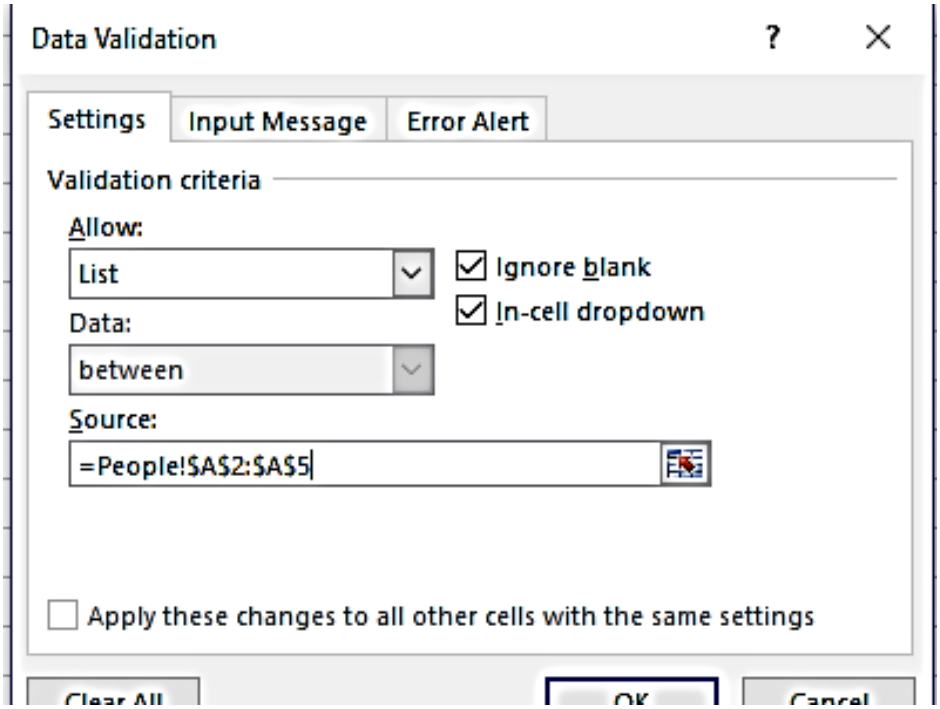
And the following will be the display source:

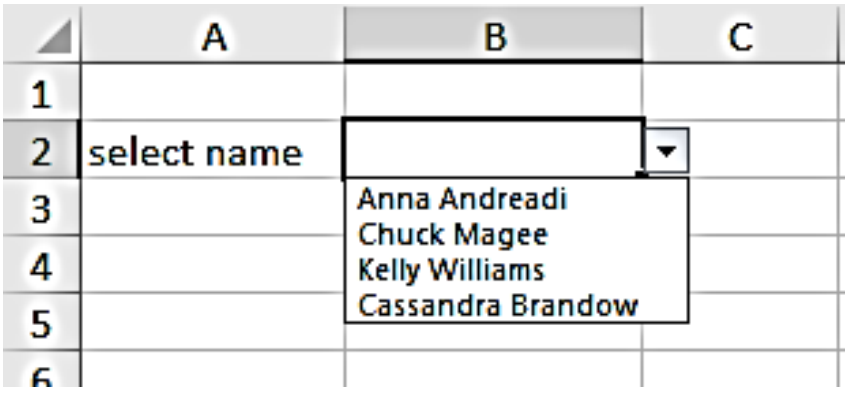


	A	B
1	Person	Region
2	Anna Andreadi	West
3	Chuck Magee	East
4	Kelly Williams	Central
5	Cassandra Brandow	South
6		
7		

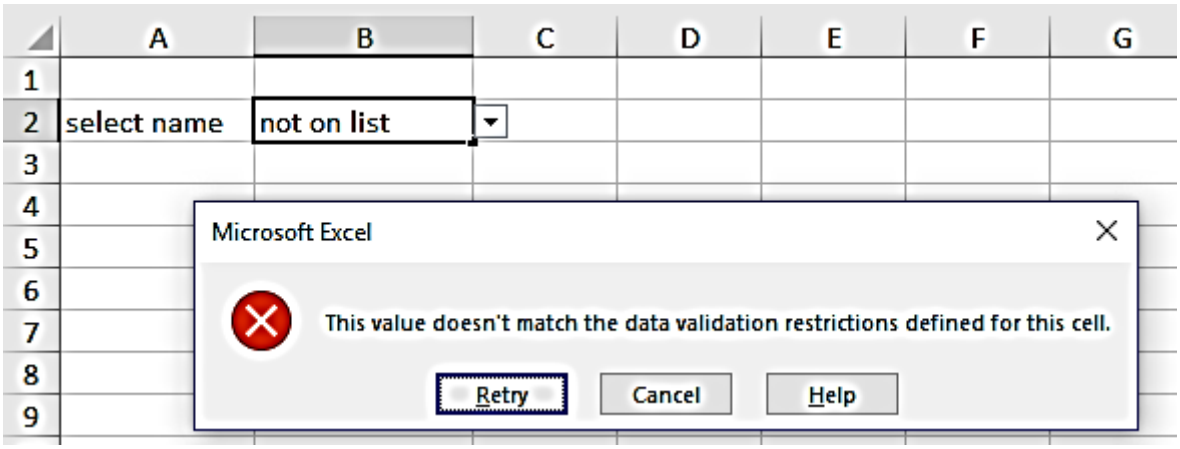
To create a dropdown list:



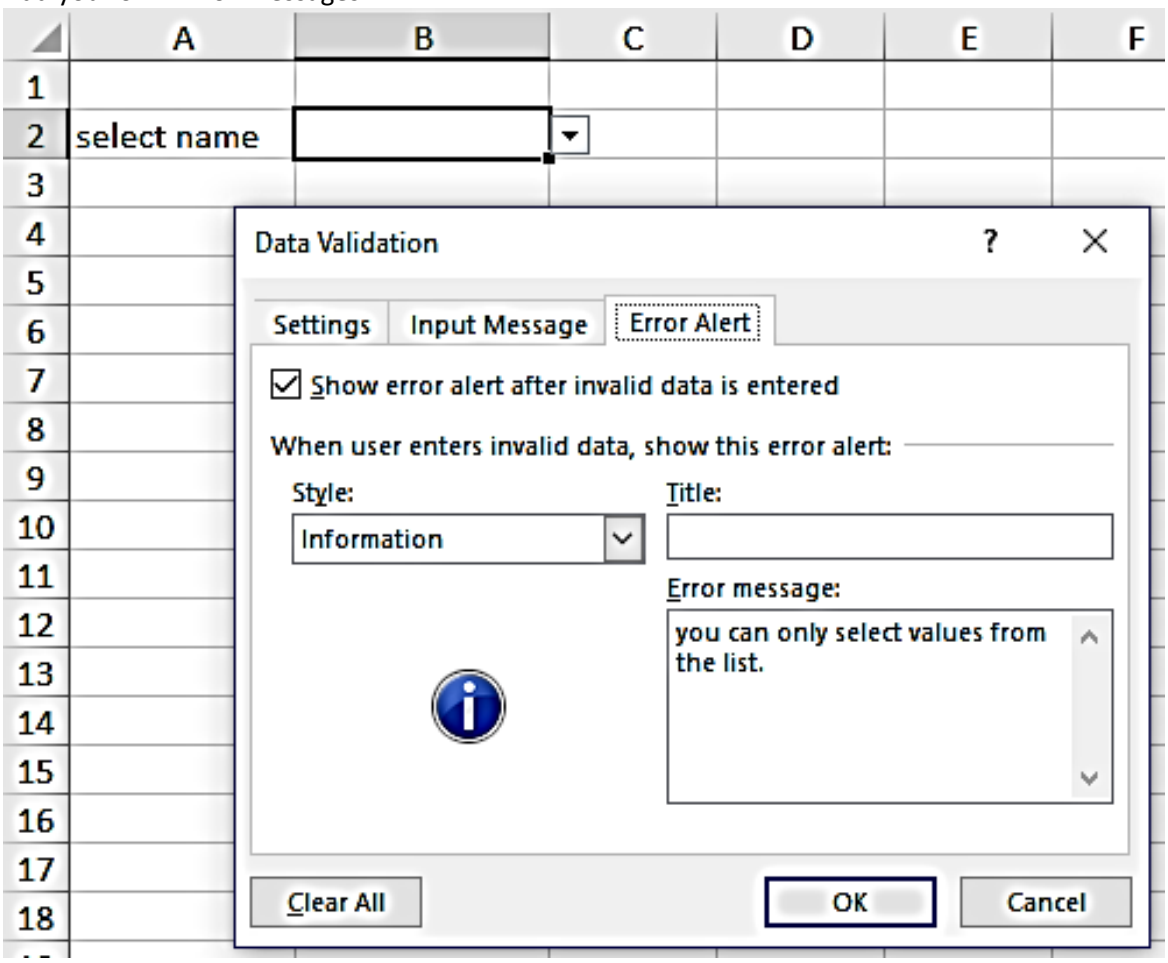


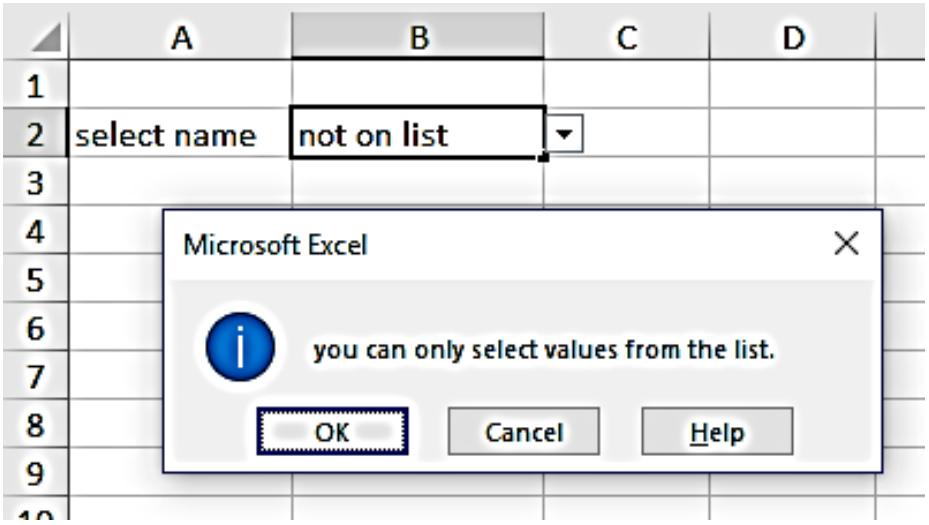


Entering values not on the list will prompt an error message



Add your own Error Messages





Buffer Topics:

Reference other Worksheets

A. Reference cell from another sheet within the same workbook

='sheet name'!A1:C20

B. Reference cell from another sheet from a different workbook (if workbook file is open)

='[workbook name]sheet name'!$A$1:$C$20

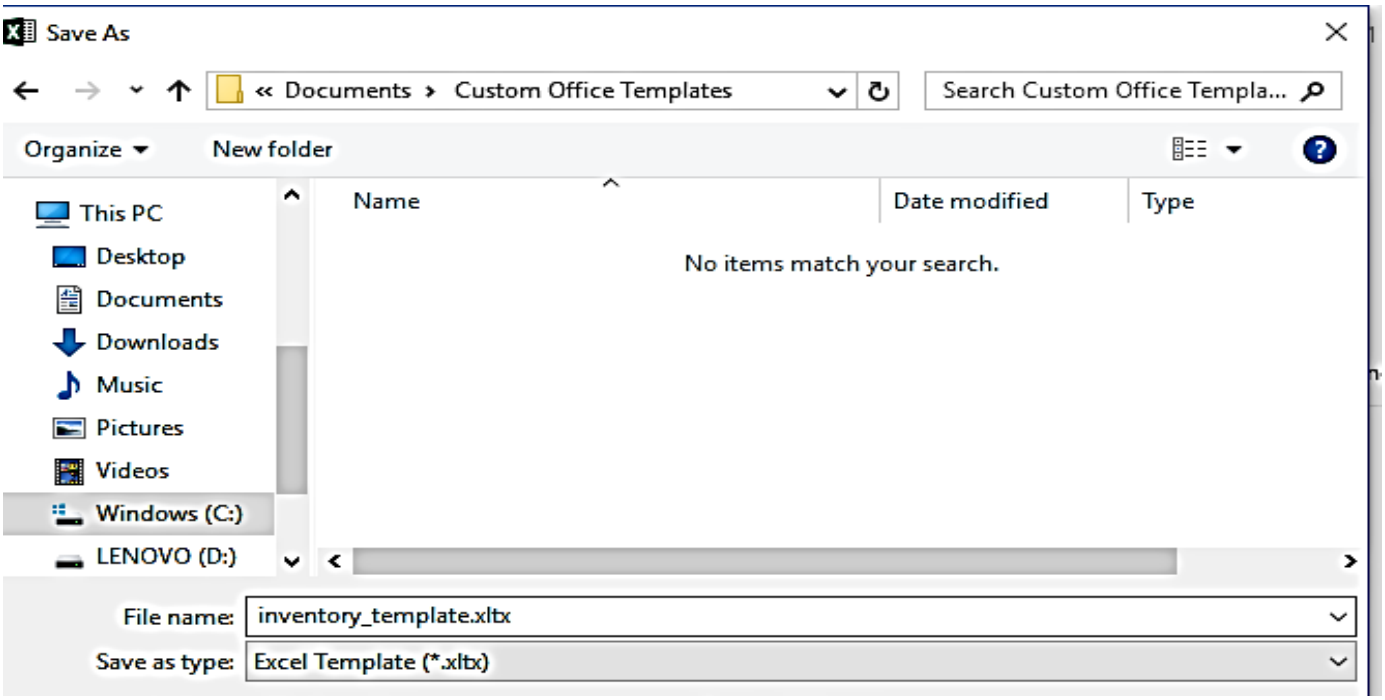
C. Reference cell from another sheet from a different workbook (if workbook file is not open)

='C:\path\to\the\[workbook name]sheet name'!$A$1:$C$20

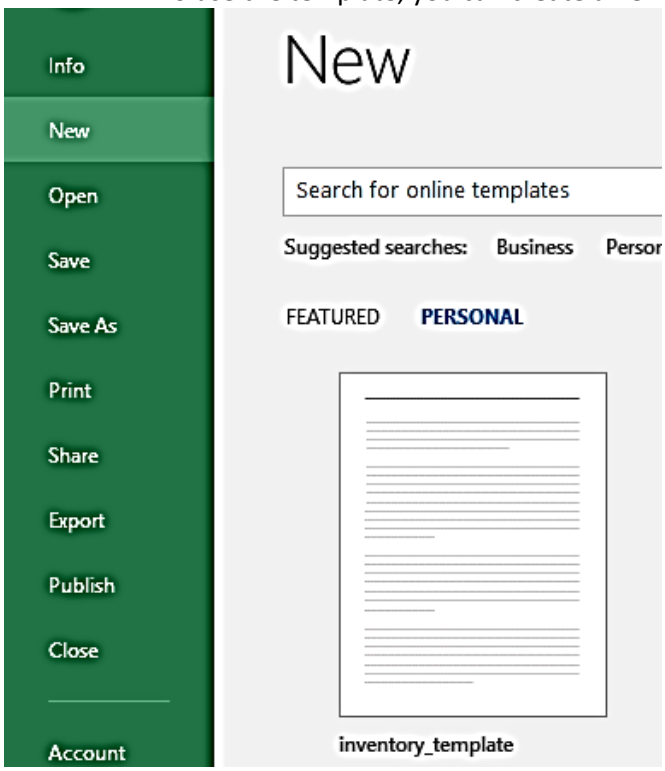
How to Create an Excel Template

A. If you often have to create new workbooks having almost the same structures, you can just create an excel template as follows:
   i. Create a new workbook (or a previous workbook which you want to base your template with). Keep the structure (like worksheets and table headers) but no data.
   ii. Save it as excel template (xltx)

	A	B	C	D	E
1	INVENTORY FOR YEAR:				
2					
3	Item ID	Item Name	Description	Stocks	Price
4					
5					
6					
7					



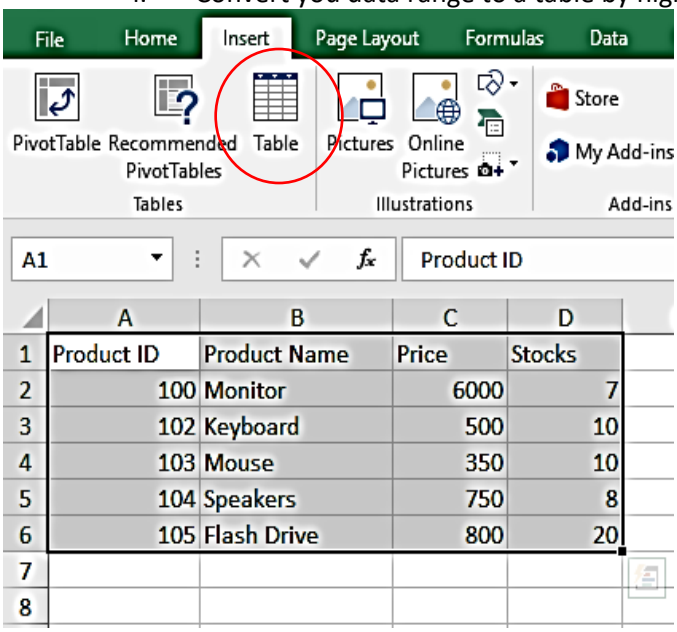
iii. To use the template, you can create a new excel workbook and select it from the PERSONAL templates.

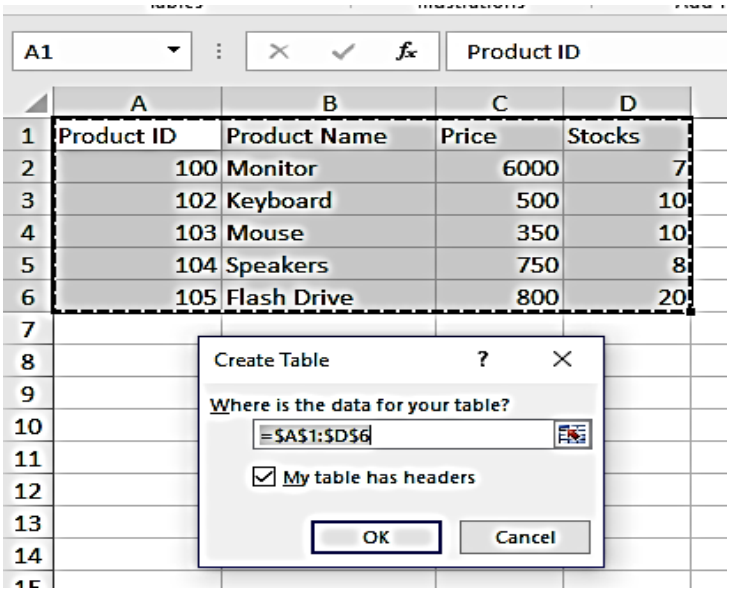


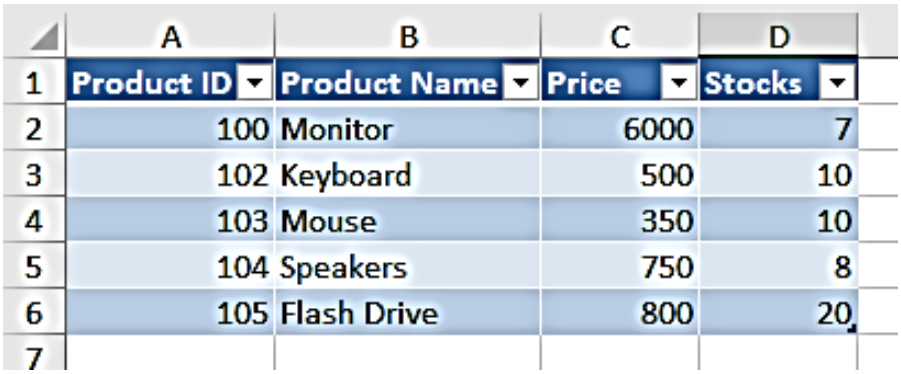
Data Forms in Excel

A. For large sheets, adding-deleting-updating rows might be troublesome. Adding a data entry form might be a good alternative.

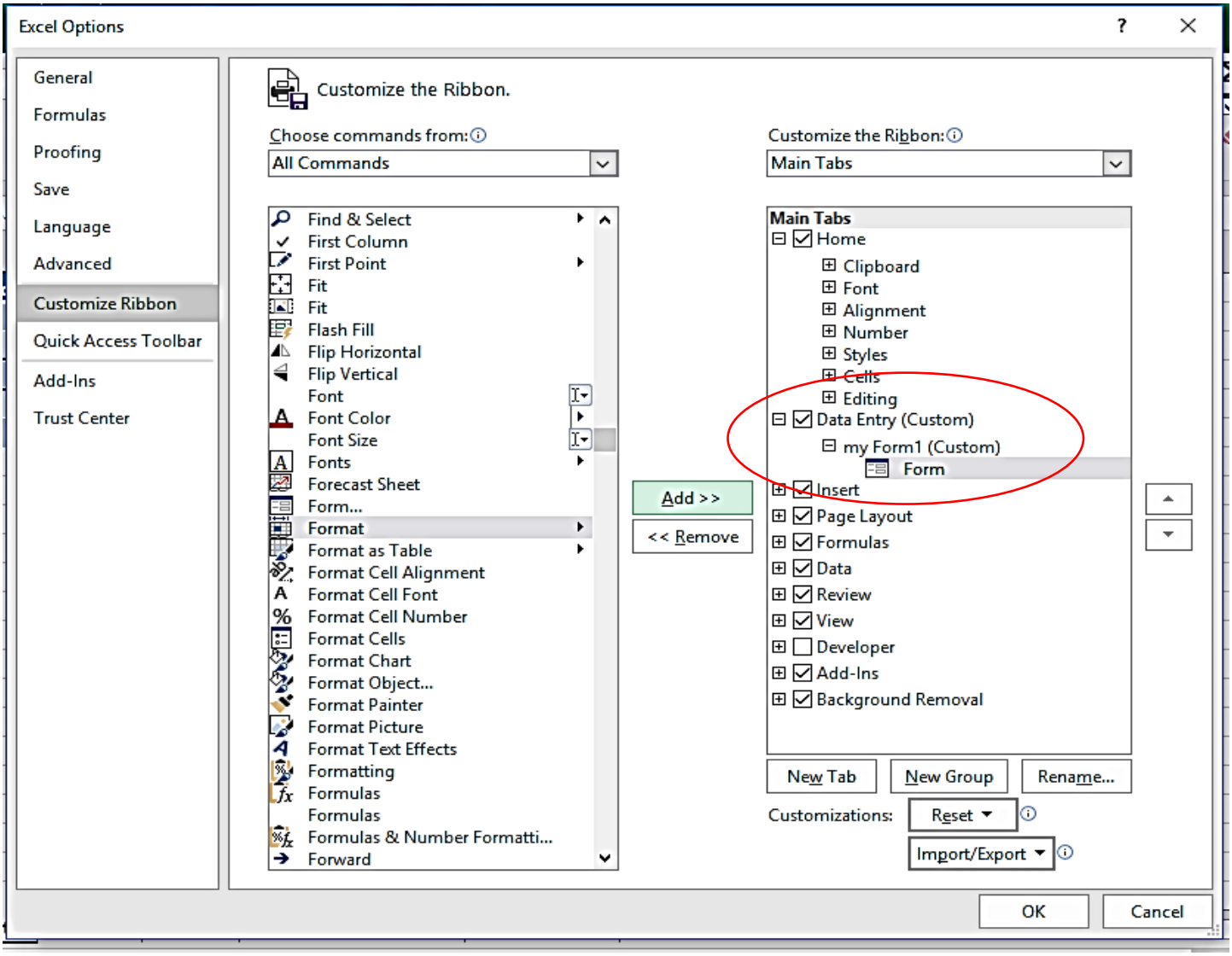
i. Convert you data range to a table by highlighting the entire data range then insert→table



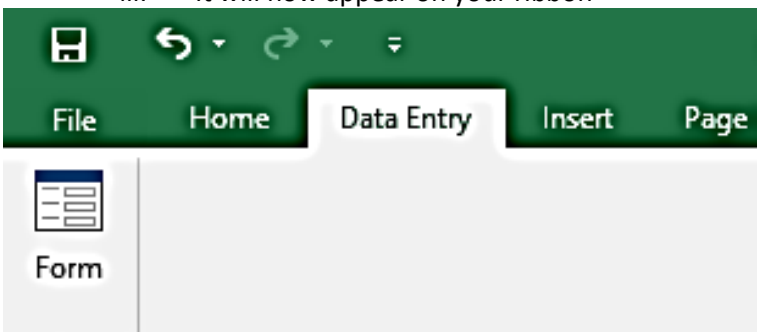




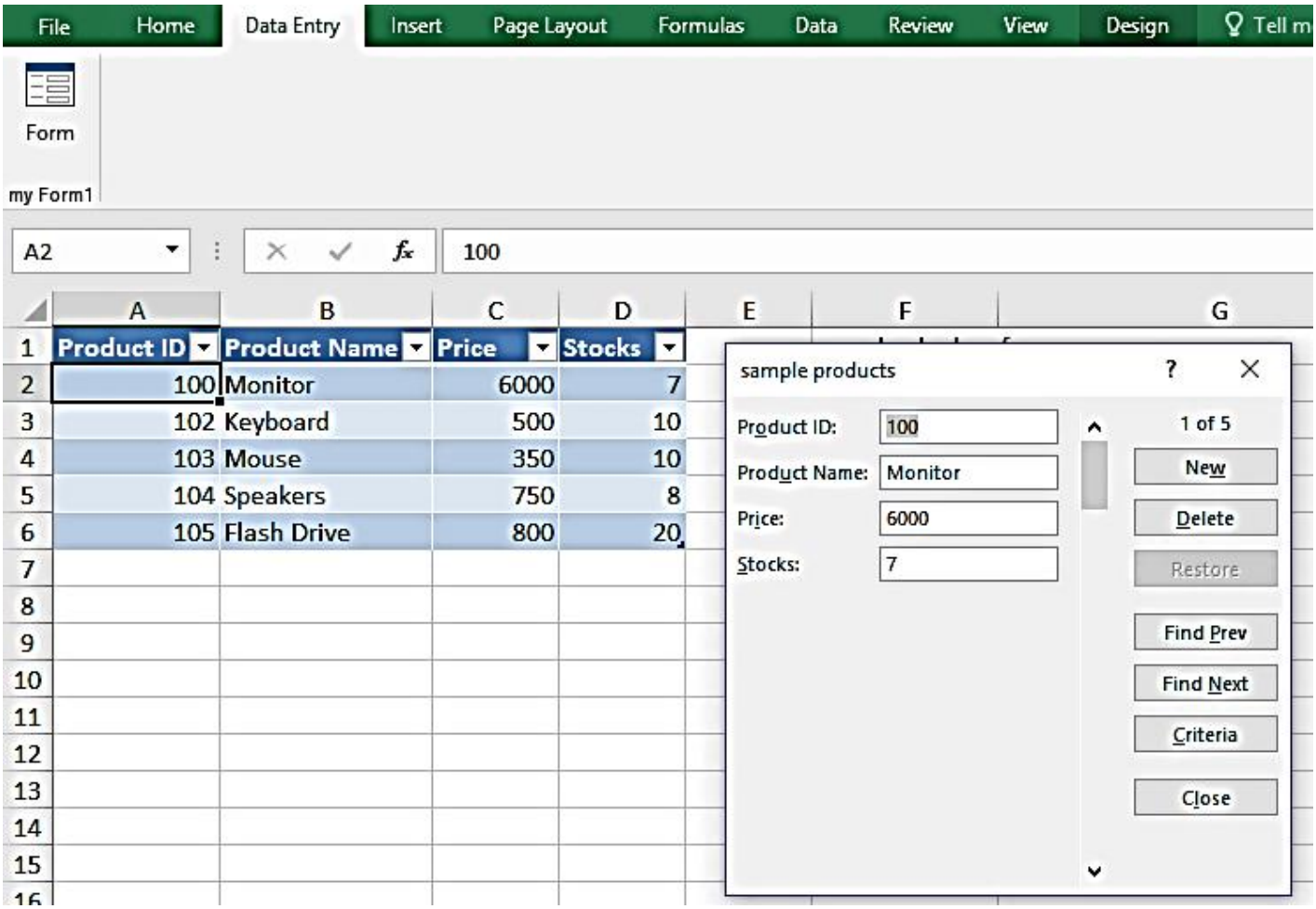
ii. After converting your range to a table, we need to add the form control in our ribbon or quick access toolbar by clicking FILE→OPTIONS→customize ribbon (or QAT). Add a new tab and a new group. Locate the FORM command on the commands list and add it to your newly created group.



iii. It will now appear on your ribbon



iv. To use it, click on any cell of your table then click on the form command on the ribbon. It should display a data entry form as follows:



v. Note: if you want your table reverted to a normal range, click on any cell of your table then go to TABLE TOOLS DESIGN→CONVERT TO RANGE. Then revert the color of table design by selecting the worksheet and going to HOME→CELL STYLES→normal