

DR. ALVIN'S PUBLICATIONS

DATA WRANGLING WITH EXCEL PART I

DR. ALVIN ANG



1 | PAGE

COPYRIGHTED BY DR ALVIN ANG
WWW.ALVINANG.SG

CONTENTS

<i>I. Preliminaries.....</i>	<i>6</i>
A. Split Text	6
1. Split Name.....	6
2. Split Email.....	8
B. Protect Excel Workbook	10
1. Password Protect Excel Workbook From Opening	10
2. Read Only Workbook.....	12
3. Password Protect Excel Workbook From Creating New Worksheets	14
4. Password Protect WorkSheet from Editing	15
<i>II. Sort.....</i>	<i>16</i>
A. Sort Single Column.....	16
B. Sort Multiple Column	17
C. Custom Sort	18
D. Sort by Colour.....	21
<i>III. Filter.....</i>	<i>23</i>
A. Filter By USA and Quarter	23
B. Remove the Filter.....	25
C. Faster Way of Filtering	26
D. Number Filter	27
E. Text Filter	28
F. Date Filter	29
G. Advanced Filter	31
1. Or Criteria.....	34
2. Formula as Criteria	35
H. Data Form.....	36
I. Removing Duplicates	40
1. Duplicates in All Columns.....	40
2. Duplicates in Selected Columns	42

J.	Extracting Unique Rows.....	43
K.	Outlining Data.....	44
1.	Subtotal.....	44
2.	Group.....	46
3.	Remove All Filters.....	48
<i>IV.</i>	<i>Tables.....</i>	<i>49</i>
A.	Sort Table.....	50
B.	Filter Table.....	51
C.	Total Row.....	52
D.	Structured References.....	53
E.	Remove All Filters.....	56
<i>V.</i>	<i>Conditional Formatting.....</i>	<i>58</i>
A.	Highlight Cell Rules.....	58
B.	Clear Rules.....	59
C.	Top / Bottom.....	60
D.	With Formulas.....	62
1.	Formula 1.....	62
2.	Formula 2.....	64
E.	Clear Conditional Formatting.....	65
F.	Managing Rules.....	66
G.	Data Bars.....	67
H.	Color Scales.....	70
I.	Icon Sets.....	72
J.	Find Duplicates.....	76
1.	Duplicate Values.....	76
2.	Triplicates.....	77
3.	Duplicate Rows.....	78
K.	Shade Alternate Rows.....	81
L.	Heat Map.....	83

<i>VI. Data Validation</i>	<i>85</i>
A. Setting a Validation Rule.....	85
B. How to Delete Away Data Validation.....	88
C. Rejecting invalid Dates.....	89
D. Prevent User from Entering Saturday or Sunday.....	91
E. Prevent Exceed Budget Limit	94
F. Prevent Duplicate Entries in Excel.....	96
G. Prevent Keying In Wrong Product Code Formats.....	99
<i>VII. Data Validation: Drop Down List</i>	<i>102</i>
A. How to Create a Drop Down List	102
B. Hiding the Drop Down List.....	104
C. Creating Immediate Drop Down List	105
D. Allowing Other Entries.....	106
E. Inserting and Deleting New Names	108
F. Dynamic Drop Down List.....	110
G. Removing Drop Down List	113
H. Dependent Drop Down List	114
<i>VIII. Date</i>	<i>120</i>
A. Key in Date	120
B. Key In Time.....	120
C. Display Year.....	121
D. Add Days to Date	121
E. Add Years + Months + Date.....	122
F. Current Date & Time.....	122
G. Current Date	123
H. Get the Hour / Minute / Second.....	123

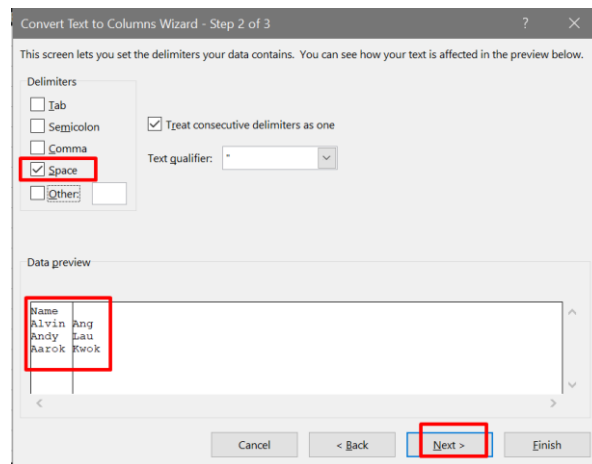
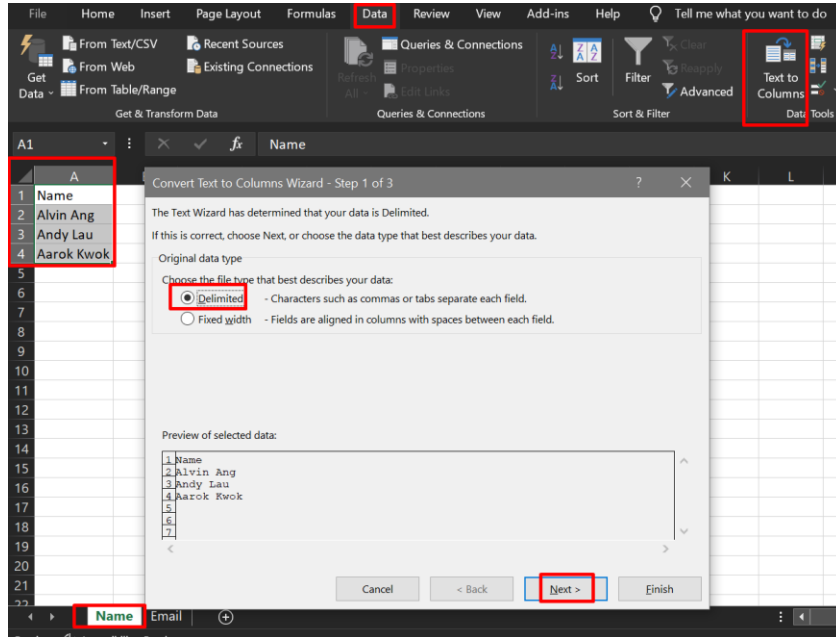
I. DateDif.....	125
J. Weekday.....	127
<i>About Dr Alvin Ang.....</i>	<i>128</i>

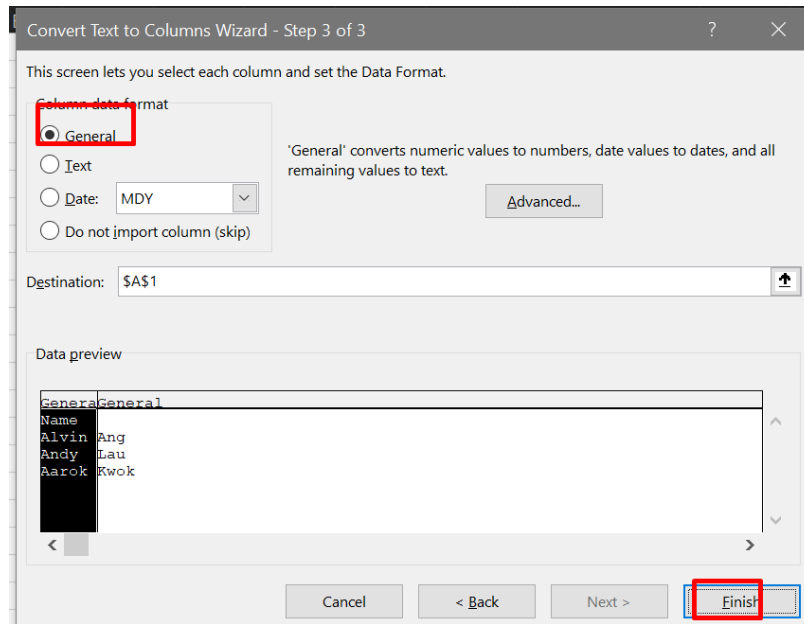
I. PRELIMINARIES

A. SPLIT TEXT

File: <https://www.alvinang.sg/s/Split-Text.xlsx>

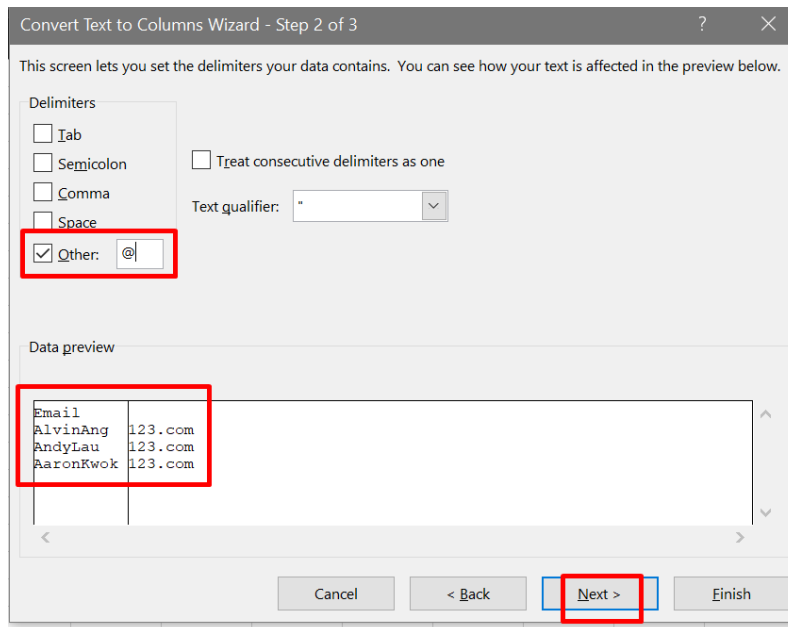
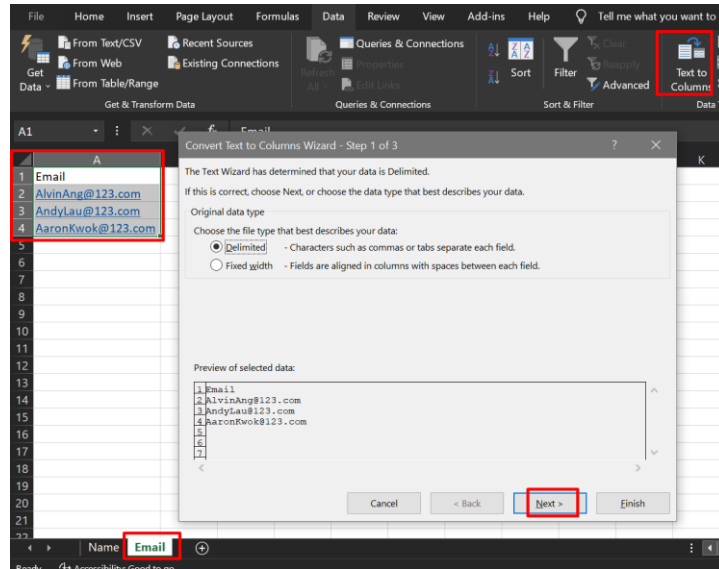
1. SPLIT NAME

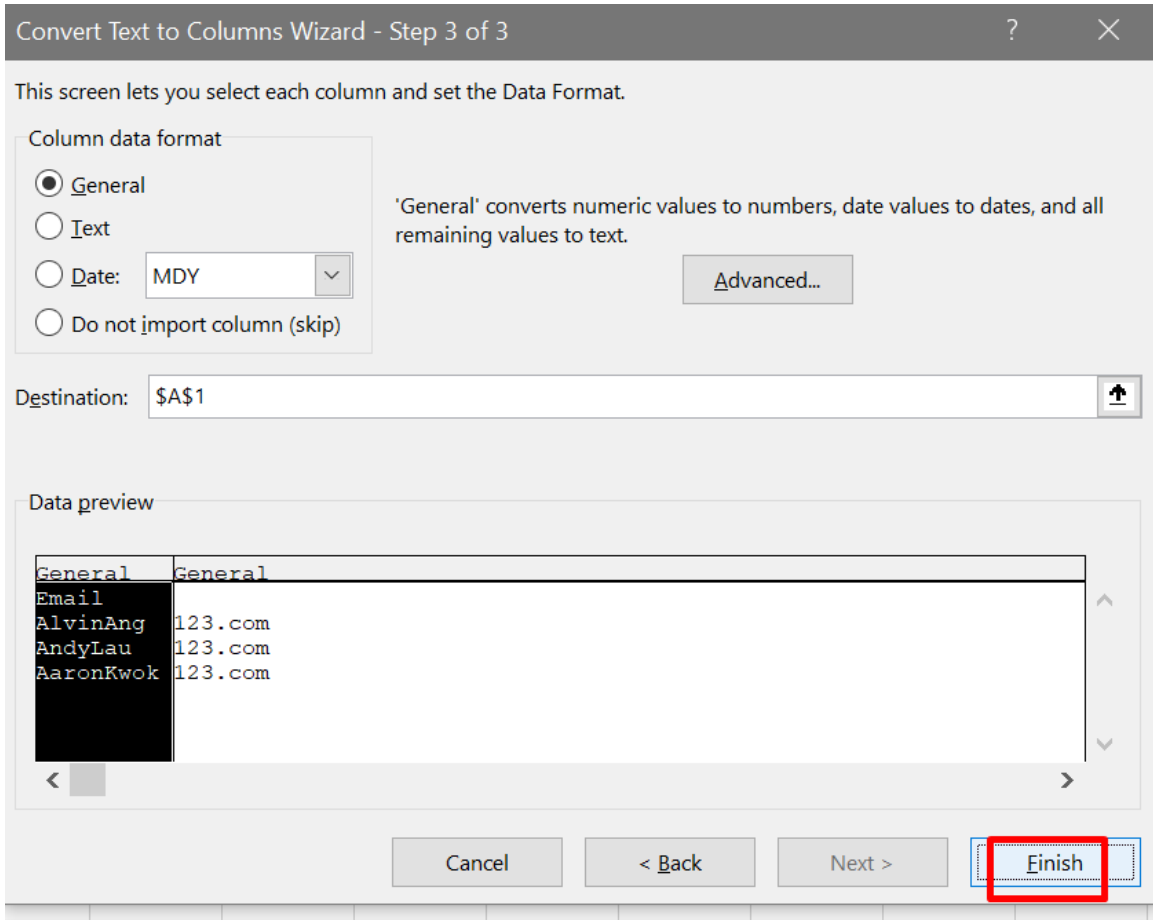




	A	B	
1	Name		
2	Alvin	Ang	
3	Andy	Lau	
4	Aarok	Kwok	
5			

2. SPLIT EMAIL

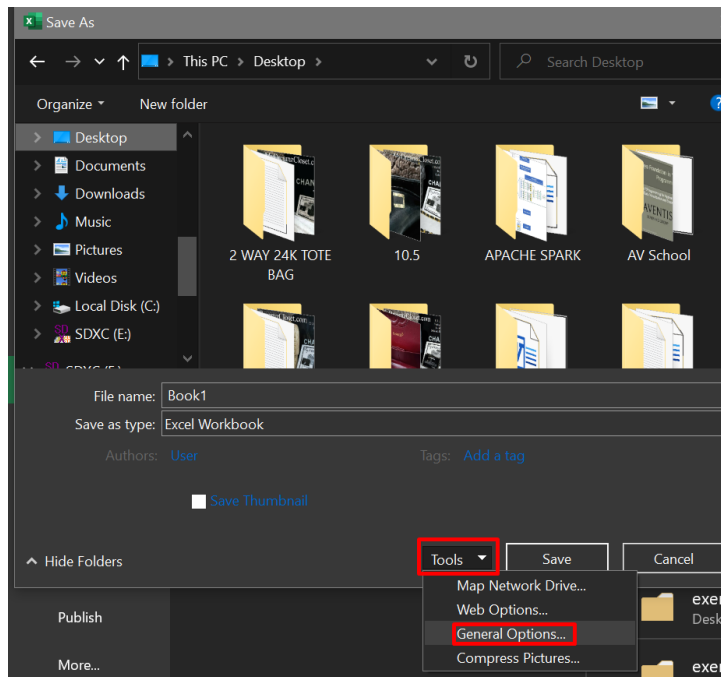
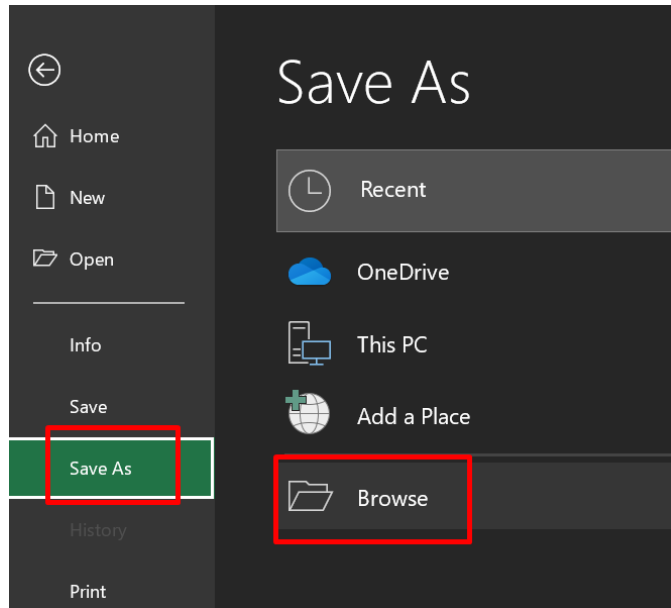


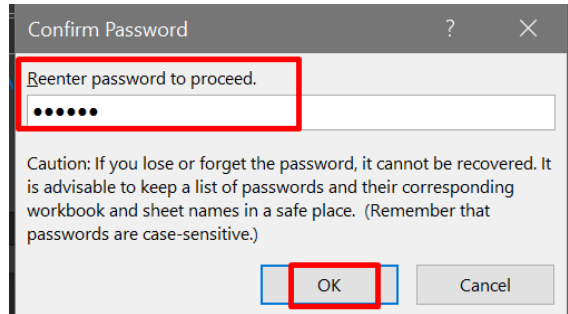
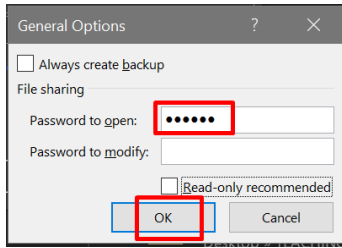


	A	B
1	Email	
2	AlvinAng	123.com
3	AndyLau	123.com
4	AaronKwok	123.com
5		

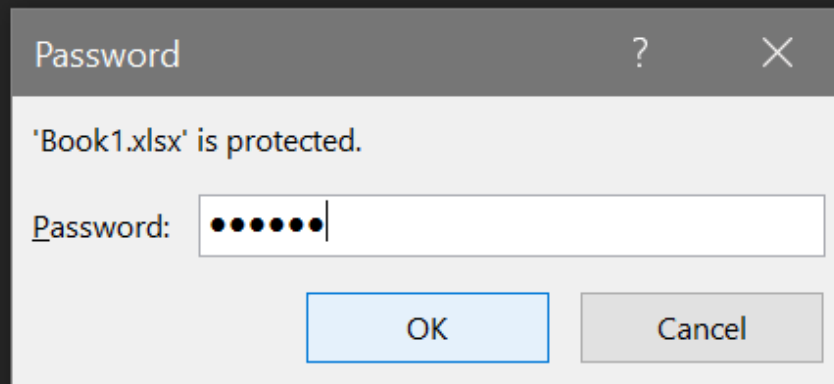
B. PROTECT EXCEL WORKBOOK

1. PASSWORD PROTECT EXCEL WORKBOOK FROM OPENING

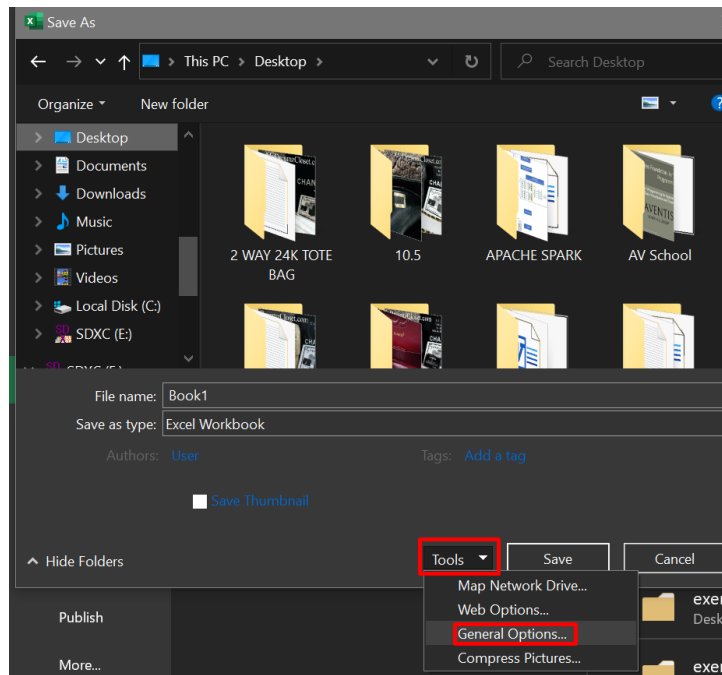
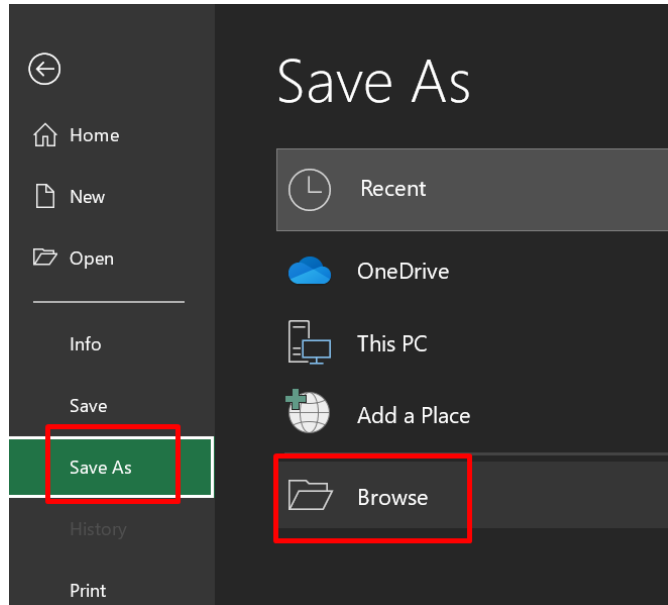


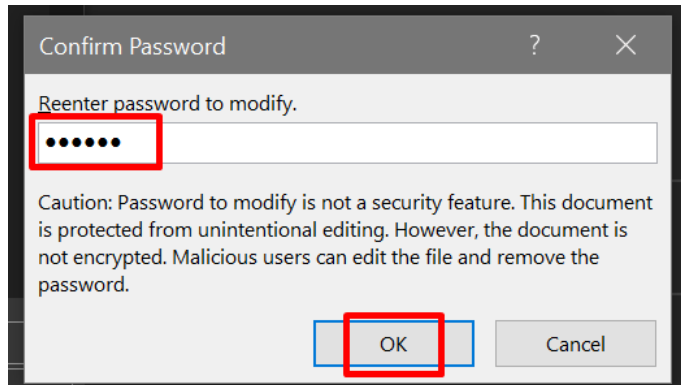
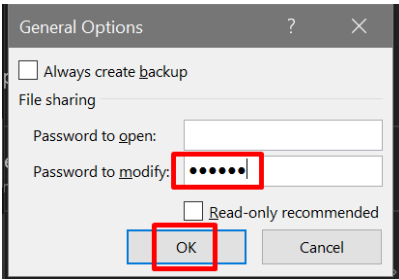


when u try to open it....

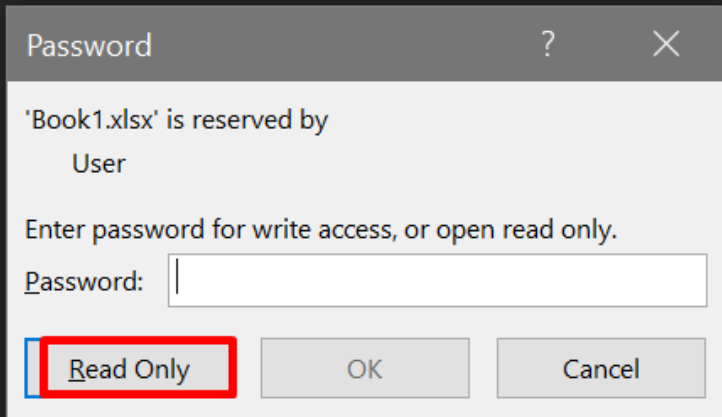


2. READ ONLY WORKBOOK

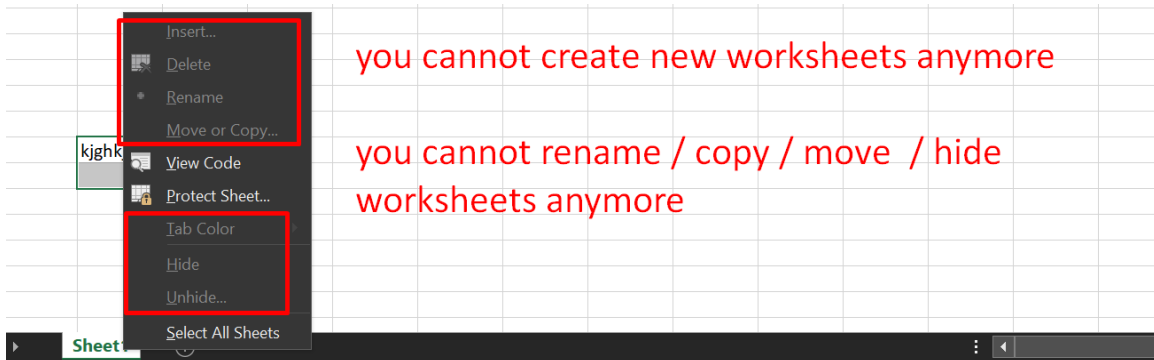
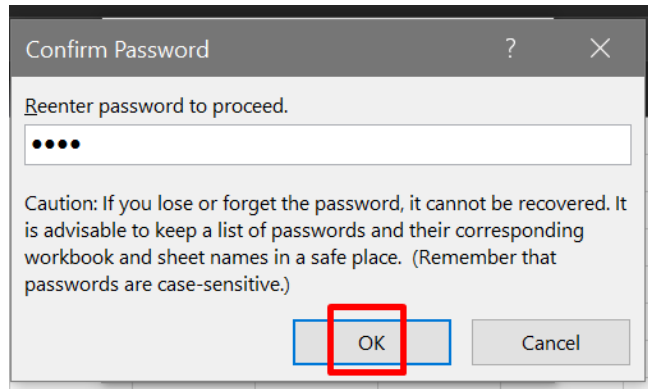
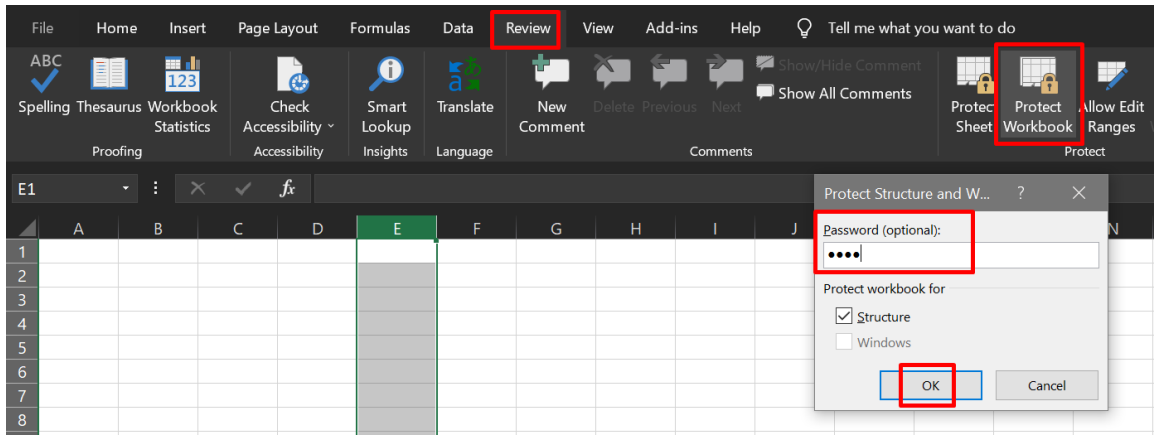




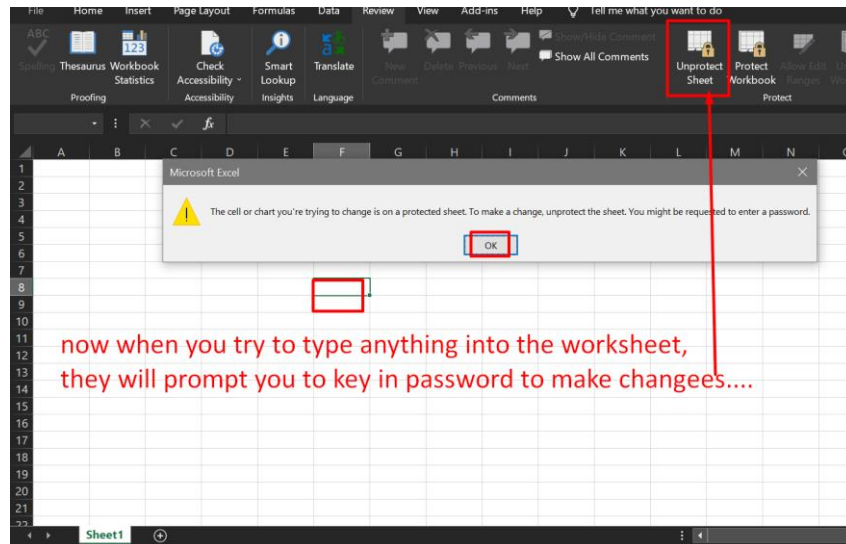
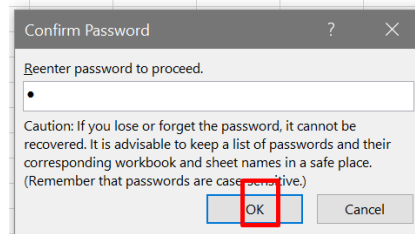
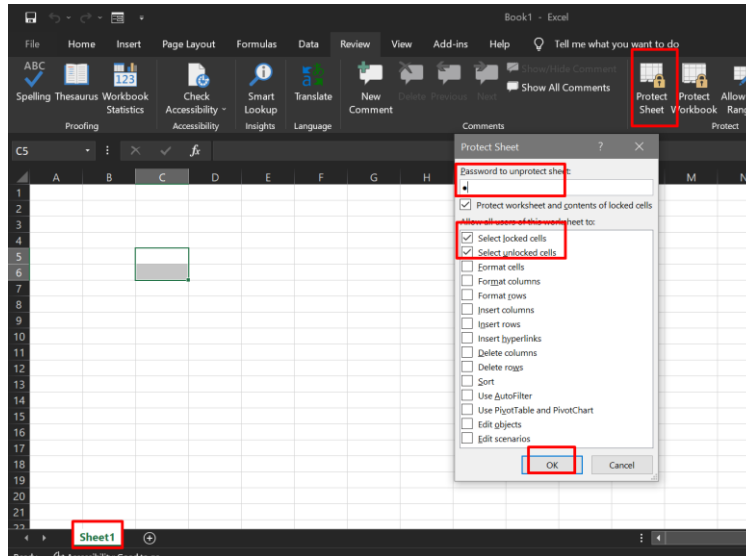
when u try to open it.....



3. PASSWORD PROTECT EXCEL WORKBOOK FROM CREATING NEW WORKSHEETS



4. PASSWORD PROTECT WORKSHEET FROM EDITING



II. SORT

File: <https://www.alvinang.sg/s/data-set.xlsx>

A. SORT SINGLE COLUMN

Last Name	Sales	Country	Quarter
Smith	\$6,753.00	UK	Qtr 3
Johnson	\$14,808.00	USA	Qtr 4
Williams	\$10,644.00	UK	Qtr 2
Jones	\$1,390.00	USA	Qtr 3
Brown	\$4,865.00	USA	Qtr 4
Williams	\$12,438.00	UK	Qtr 1
Johnson	\$9,339.00	UK	Qtr 2
Smith	\$18,919.00	USA	Qtr 3
Jones	\$9,213.00	USA	Qtr 4
Jones	\$7,433.00	UK	Qtr 1
Brown	\$3,255.00	USA	Qtr 2
Williams	\$14,867.00	USA	Qtr 3
Williams	\$19,302.00	UK	Qtr 4
Smith	\$9,698.00	USA	Qtr 1

Last Name	Sales	Country	Quarter
Brown	\$4,865.00	USA	Qtr 4
Brown	\$3,255.00	USA	Qtr 2
Johnson	\$14,808.00	USA	Qtr 4
Johnson	\$9,339.00	UK	Qtr 2
Jones	\$1,390.00	USA	Qtr 3
Jones	\$9,213.00	USA	Qtr 4
Jones	\$7,433.00	UK	Qtr 1
Smith	\$16,753.00	UK	Qtr 3
Smith	\$18,919.00	USA	Qtr 3
Smith	\$9,698.00	USA	Qtr 1
Williams	\$10,644.00	UK	Qtr 2
Williams	\$12,438.00	UK	Qtr 1
Williams	\$14,867.00	USA	Qtr 3
Williams	\$19,302.00	UK	Qtr 4

B. SORT MULTIPLE COLUMN

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter		
2	Brown	\$4,865.00	USA	Qtr 4		
3	Brown	\$3,255.00	USA	Qtr 2		
4	Johnson	\$14,808.00	USA	Qtr 4		
5	Johnson	\$9,339.00	UK	Qtr 2		
6	Jones	\$1,390.00	USA	Qtr 3		
7	Jones	\$9,213.00	USA	Qtr 4		
8	Jones	\$7,433.00	UK	Qtr 1		
9	Smith	\$16,753.00	UK	Qtr 3		
10	Smith	\$18,010.00	USA	Qtr 2		

Sort

Add Level Delete Level Copy Level Options... My data has headers

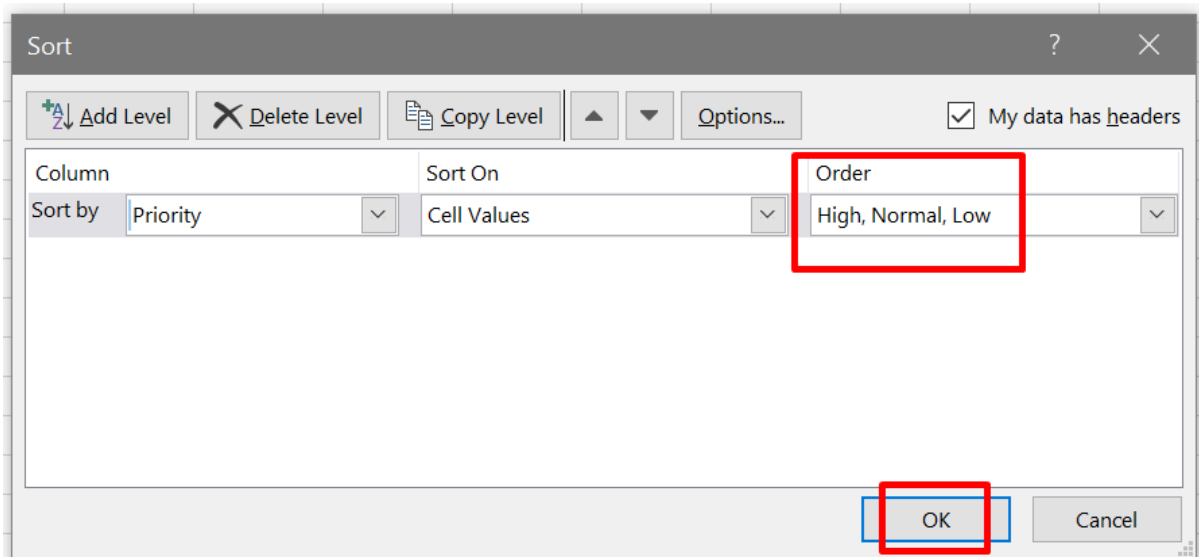
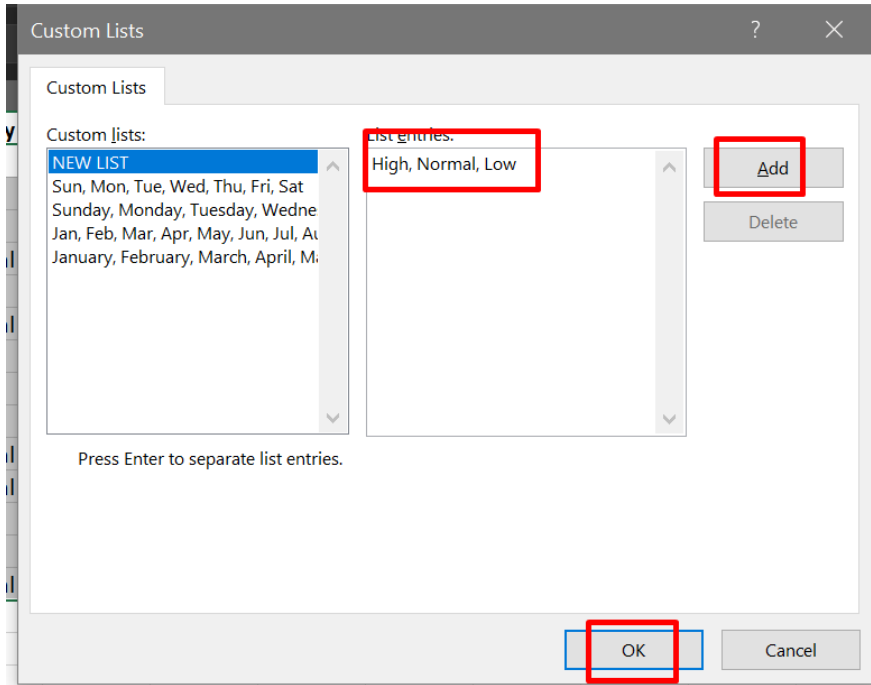
Column	Sort On	Order
Sort by Last Name	Cell Values	A to Z
Then by Sales	Cell Values	Smallest to Largest

C. CUSTOM SORT

File: <https://www.alvinang.sg/s/custom-sort-order.xlsx>

select this cell

Last Name	Sales	Country	Quarter	Priority
Smith	\$16,753.00	UK	Qtr 3	Low
Johnson	\$14,808.00	USA	Qtr 4	High
Williams	\$10,644.00	UK	Qtr 2	Low
Jones	\$1,390.00	USA	Qtr 3	Normal
Brown	\$4,865.00	USA	Qtr 4	High
Williams	\$12,438.00	UK	Qtr 1	Normal
Johnson	\$9,339.00	UK	Qtr 2	High
Smith	\$18,919.00	USA	Qtr 3	High
Jones	\$9,213.00	USA	Qtr 4	Low
Jones	\$7,433.00	UK	Qtr 1	Normal
Brown	\$3,255.00	USA	Qtr 2	Normal
Williams	\$14,867.00	USA	Qtr 3	Low
Williams	\$19,302.00	UK	Qtr 4	High
Smith	\$9,698.00	USA	Qtr 1	Normal



	A	B	C	D	E	F	G
1	Last Name	Sales	Country	Quarter	Priority		
2	Johnson	\$14,808.00	USA	Qtr 4	High		
3	Brown	\$4,865.00	USA	Qtr 4	High	sorted according to custom list	
4	Johnson	\$9,339.00	UK	Qtr 2	High		
5	Smith	\$18,919.00	USA	Qtr 3	High		
6	Williams	\$19,302.00	UK	Qtr 4	High		
7	Jones	\$1,390.00	USA	Qtr 3	Normal		
8	Williams	\$12,438.00	UK	Qtr 1	Normal		
9	Jones	\$7,433.00	UK	Qtr 1	Normal		
10	Brown	\$3,255.00	USA	Qtr 2	Normal		
11	Smith	\$9,698.00	USA	Qtr 1	Normal		
12	Smith	\$16,753.00	UK	Qtr 3	Low		
13	Williams	\$10,644.00	UK	Qtr 2	Low		
14	Jones	\$9,213.00	USA	Qtr 4	Low		
15	Williams	\$14,867.00	USA	Qtr 3	Low		

D. SORT BY COLOUR

File: <https://www.alvinang.sg/s/sort-by-color.xlsx>

select any cell in the table

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Last Name	Sales	Country	Quarter												
2	Smith	\$16,753.00	UK	Qtr 3												
3	Johnson	\$14,808.00	USA	Qtr 4												
4	Williams	\$10,644.00	UK	Qtr 2												
5	Jones	\$1,390.00	USA	Qtr 3												
6	Brown	\$4,865.00	USA	Qtr 4												
7	Williams	\$12,438.00	UK	Qtr 1												
8	Johnson	\$9,339.00	UK	Qtr 2												
9	Smith	\$18,919.00	USA	Qtr 3												
10	Jones	\$9,213.00	USA	Qtr 4												
11	Jones	\$7,433.00	UK	Qtr 1												
12	Brown	\$3,255.00	USA	Qtr 2												
13	Williams	\$14,867.00	USA	Qtr 3												
14	Williams	\$19,302.00	UK	Qtr 4												
15	Smith	\$9,698.00	USA	Qtr 1												

OK

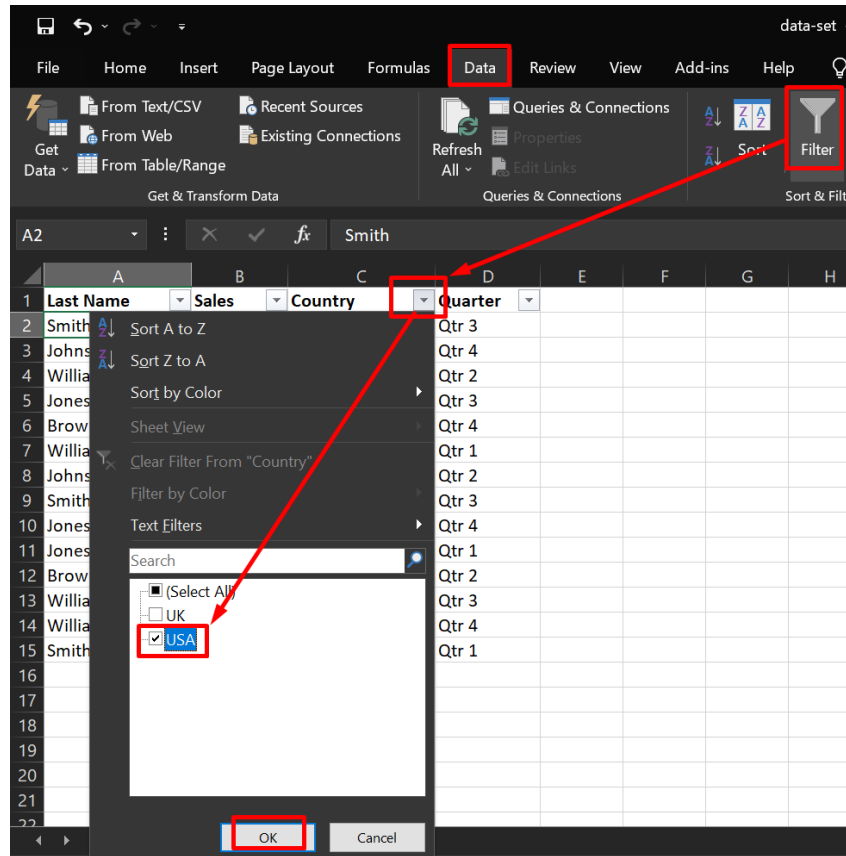
	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter		
2	Johnson	\$14,808.00	USA	Qtr 4		
3	Brown	\$4,865.00	USA	Qtr 4		
4	Smith	\$18,919.00	USA	Qtr 3		
5	Jones	\$9,213.00	USA	Qtr 4		
6	Williams	\$14,867.00	USA	Qtr 3		
7	Williams	\$19,302.00	UK	Qtr 4		
8	Smith	\$16,753.00	UK	Qtr 3		
9	Williams	\$12,438.00	UK	Qtr 1		
10	Jones	\$7,433.00	UK	Qtr 1		
11	Williams	\$10,644.00	UK	Qtr 2		
12	Jones	\$1,390.00	USA	Qtr 3		
13	Johnson	\$9,339.00	UK	Qtr 2		
14	Brown	\$3,255.00	USA	Qtr 2		
15	Smith	\$9,698.00	USA	Qtr 1		
16						

sorted
by
colours

III. FILTER

File: <https://www.alvinang.sg/s/data-set.xlsx>

A. FILTER BY USA AND QUARTER



	A	B	C	D
1	Last Name	Sales	Country	Quarter
3	Johnson	\$14,808.00	USA	Qtr 4
5	Jones	\$1,390.00	USA	Qtr 3
6	Brown	\$4,865.00	USA	Qtr 4
9	Smith	\$18,919.00	USA	Qtr 3
10	Jones	\$9,213.00	USA	Qtr 4
12	Brown	\$3,255.00	USA	Qtr 2
13	Williams	\$14,867.00	USA	Qtr 3
15	Smith	\$9,698.00	USA	Qtr 1
16				
17				
18				

only USA displayed

The screenshot shows the 'Filter' task pane for the 'Quarter' column. The pane includes options for sorting and filtering. The 'Filter by Text' section is expanded, showing a list of filters. The 'Qtr 4' filter is selected, indicated by a checkmark and a blue highlight. The 'OK' button at the bottom of the pane is also highlighted with a red box.

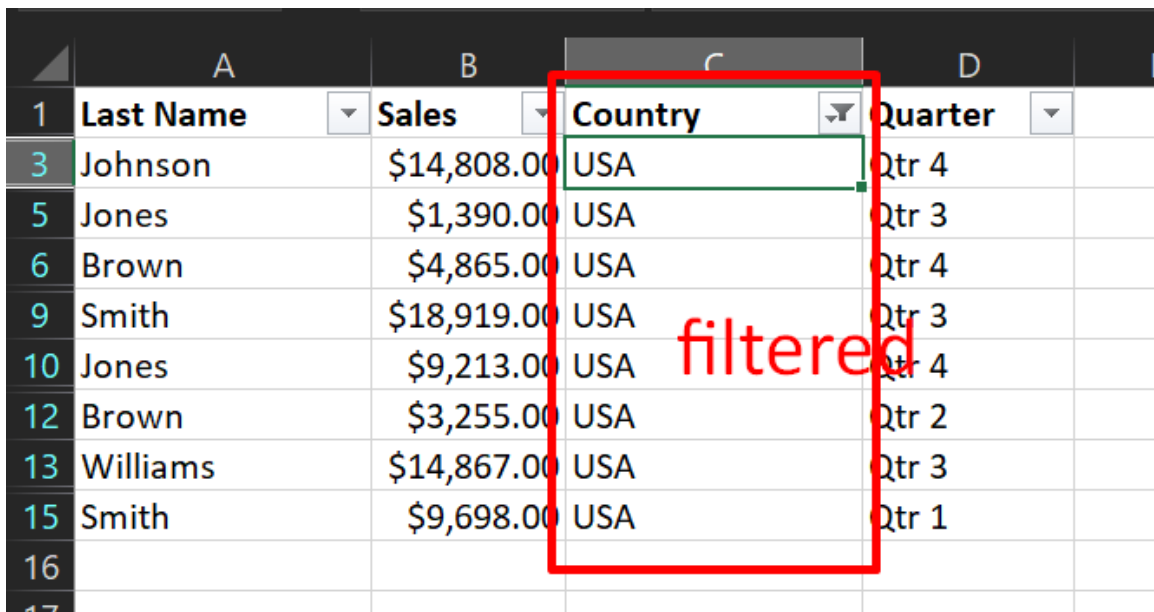
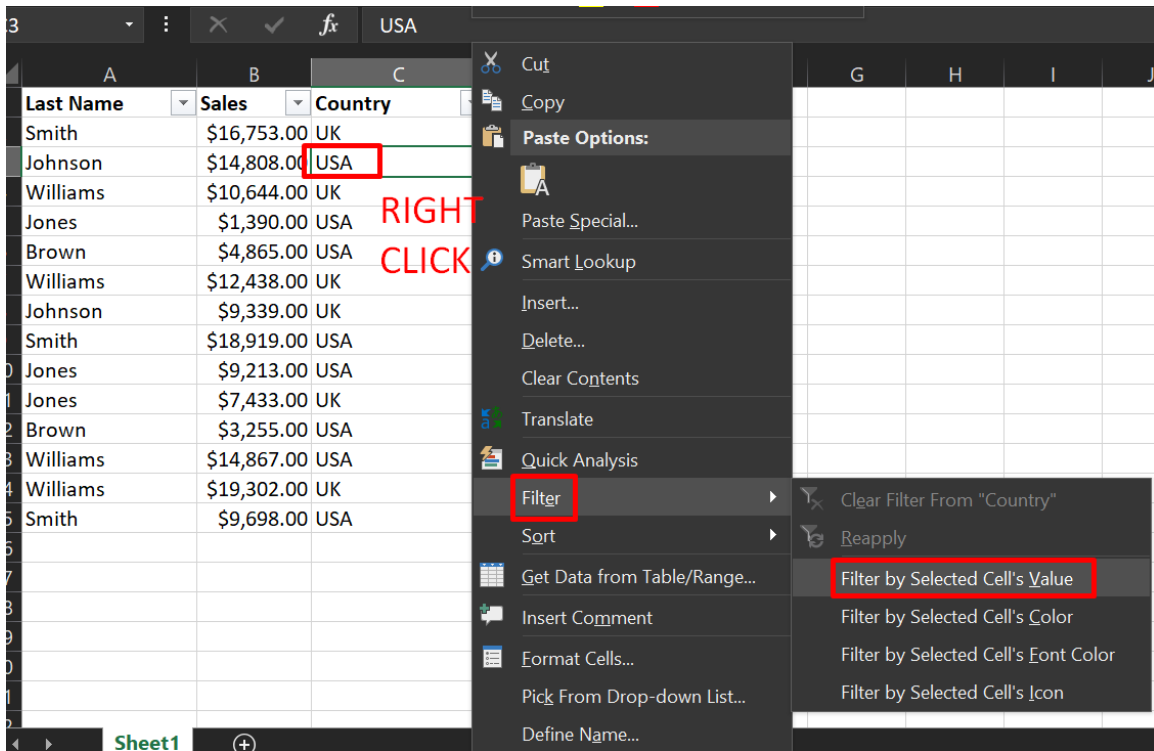
	A	B	C	D
1	Last Name	Sales	Country	Quarter
3	Johnson	\$14,808.00	USA	Qtr 4
6	Brown	\$4,865.00	USA	Qtr 4
10	Jones	\$9,213.00	USA	Qtr 4
16				
17				

B. REMOVE THE FILTER

The screenshot shows the Microsoft Excel interface. The 'Data' ribbon is active, and the 'Filter' button is highlighted with a red box. A red arrow points from the 'Clear' option within the 'Filter' button to the 'Quarter' column header in the spreadsheet below. The spreadsheet contains the following data:

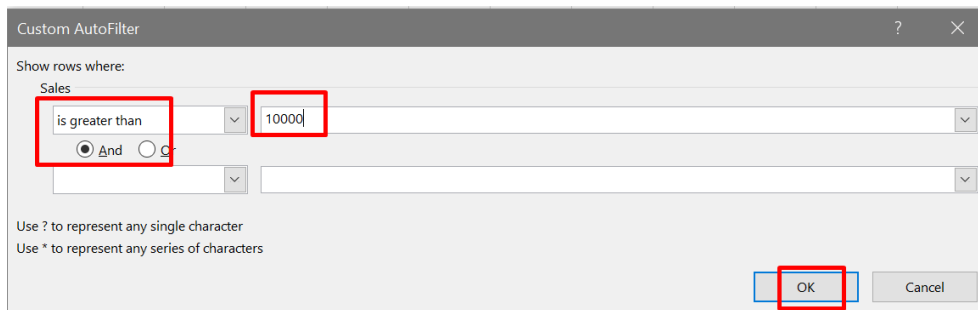
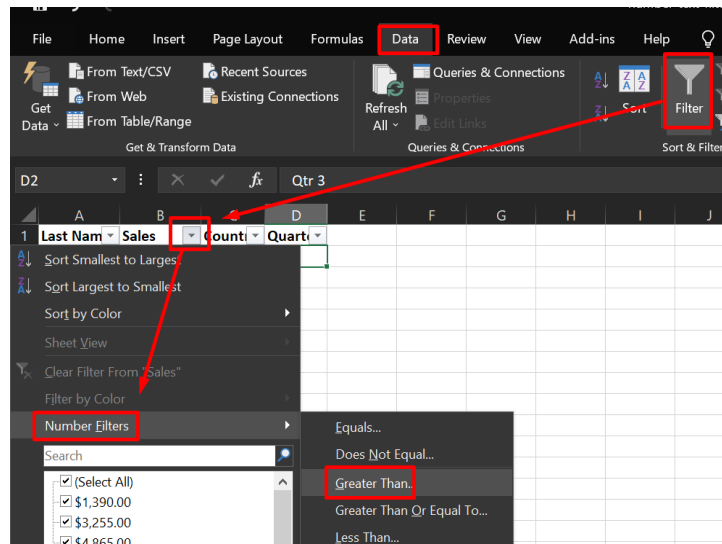
	A	B	C	D	E	F	G	H	I
1	Last Name	Sales	Country	Quarter					
2	Smith	\$16,753.00	UK	Qtr 3					
3	Johnson	\$14,808.00	USA	Qtr 4					
4	Williams	\$10,644.00	UK	Qtr 2					
5	Jones	\$1,390.00	USA	Qtr 3					
6	Brown	\$4,865.00	USA	Qtr 4					
7	Williams	\$12,438.00	UK	Qtr 1					
8	Johnson	\$9,339.00	UK	Qtr 2					
9	Smith	\$18,919.00	USA	Qtr 3					
10	Jones	\$9,213.00	USA	Qtr 4					
11	Jones	\$7,433.00	UK	Qtr 1					
12	Brown	\$3,255.00	USA	Qtr 2					
13	Williams	\$14,867.00	USA	Qtr 3					
14	Williams	\$19,302.00	UK	Qtr 4					
15	Smith	\$9,698.00	USA	Qtr 1					

C. FASTER WAY OF FILTERING



D. NUMBER FILTER

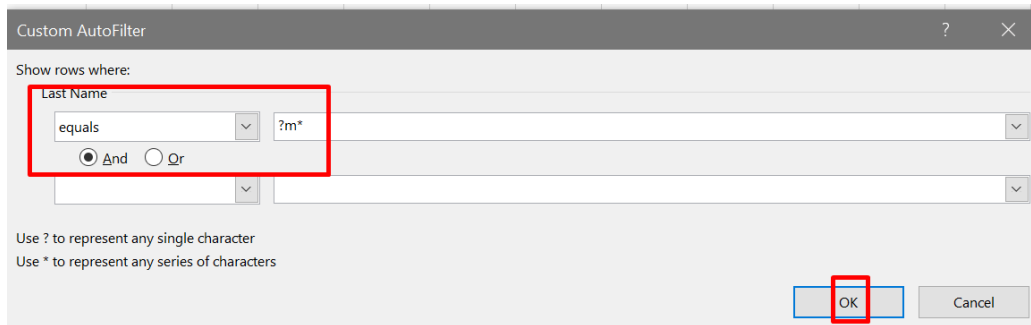
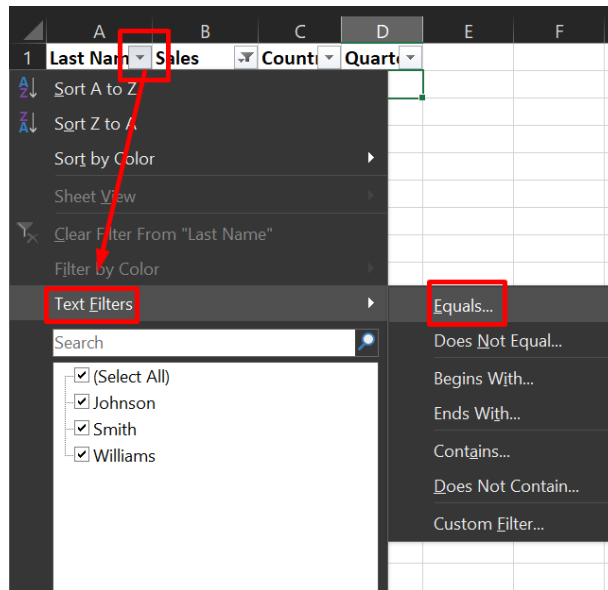
File: <https://www.alvinang.sg/s/number-text-filters.xlsx>



	A	B	C	D
1	Last Nam	Sales	Count	Quart
2	Smith	\$16,753.00	JK	Qtr 3
3	Johnson	\$14,808.00	JSA	Qtr 4
4	Williams	\$10,644.00	JK	Qtr 2
7	Williams	\$12,438.00	JK	Qtr 1
9	Smith	\$18,919.00	JSA	Qtr 3
13	Williams	\$14,867.00	JSA	Qtr 3
14	Williams	\$19,302.00	JK	Qtr 4
16				
17				
18				

displays only > \$10,000

E. TEXT FILTER

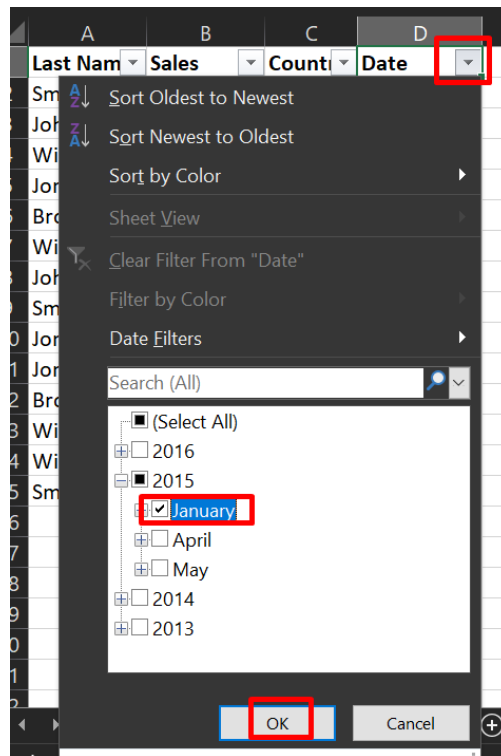


	A	B	C	D	E	F	G
1	Last Name	Sales	Count	Quart			
2	Smith	\$16,753.00	UK	Qtr 3			
9	Smith	\$18,919.00	USA	Qtr 3			
16							
17							
18							
19							
20							
21							
22							
23							

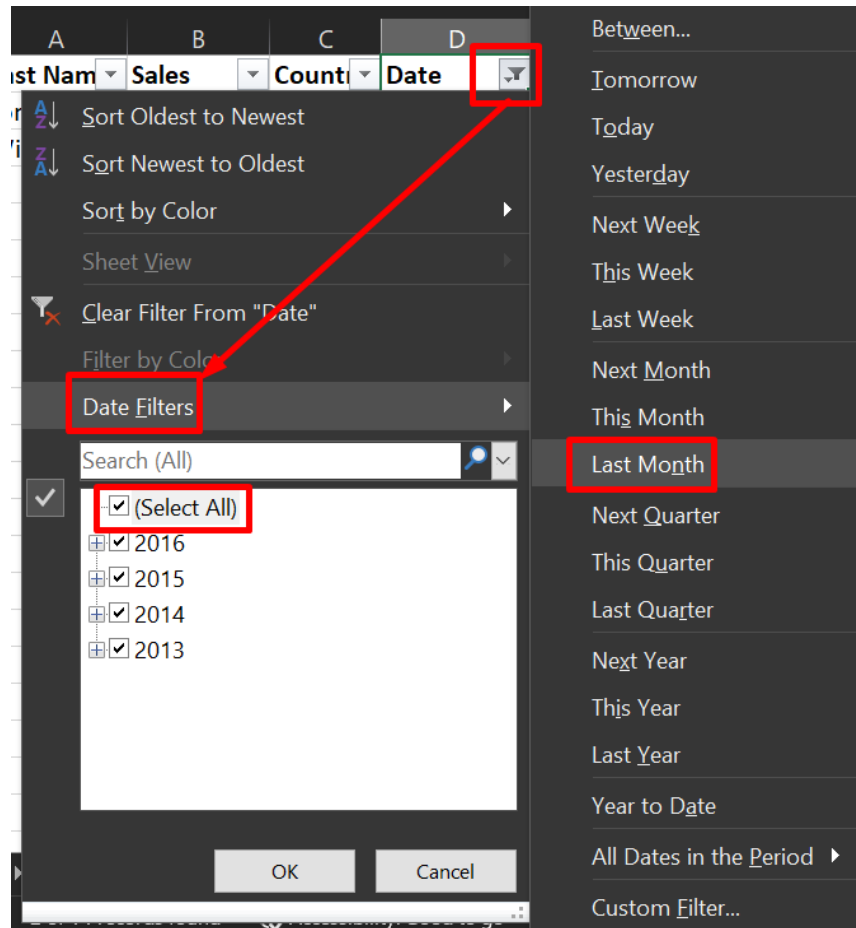
Smith is filtered...earning above \$10k
 ? = one character match
 m* = matches zero or more characters

F. DATE FILTER

File: <https://www.alvinang.sg/s/date-filters.xlsx>



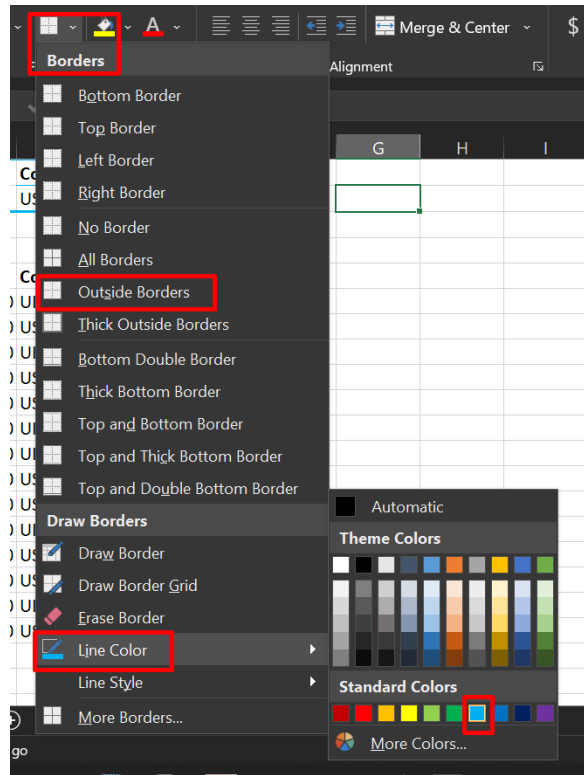
	A	B	C	D
1	Last Nam	Sales	Count	Date
10	Jones	\$9,213.00	USA	1/26/2015
13	Williams	\$14,867.00	USA	1/5/2015
16				
17	only Jan 2015 showed			



	A	B	C	D	E
1	Last Nam	Sales	Count	Date	
16					
17	displays nothing because what is				
18	today's date? only last month will be				
19	shown				
20					

G. ADVANCED FILTER

File: <https://www.alvinang.sg/s/advanced-filter.xlsx>



The image shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter		
2			USA	Qtr 4		
3						
4						
5	Last Name	Sales	Country	Quarter		
6	Smith	\$16,753.00	UK	Qtr 3		
7	Johnson	\$14,808.00	USA	Qtr 4		
8	Williams	\$10,644.00	UK	Qtr 2		
9	Jones	\$1,390.00	USA	Qtr 3		
10	Brown	\$4,865.00	USA	Qtr 4		
11	Williams	\$12,438.00	UK	Qtr 1		
12	Johnson	\$9,339.00	UK	Qtr 2		
13	Smith	\$18,919.00	USA	Qtr 3		
14	Jones	\$9,213.00	USA	Qtr 4		
15	Jones	\$7,433.00	UK	Qtr 1		
16	Brown	\$3,255.00	USA	Qtr 2		
17	Williams	\$14,867.00	USA	Qtr 3		
18	Williams	\$19,302.00	UK	Qtr 4		
19	Smith	\$9,698.00	USA	Qtr 1		

type this in and shade the borders blue

The screenshot shows the Microsoft Excel interface with the 'Advanced Filter' dialog box open. The dialog box has the following settings:

- Action: Filter the list, in-place
- List range: \$A\$5:\$D\$19
- Criteria range: Sheet1!\$A\$1:\$D\$2
- Copy to: (empty)
- Unique records only:

The 'OK' button is highlighted with a red box. In the background, a data table is visible with columns 'Last Name', 'Sales', 'Country', and 'Quarter'. The data rows are highlighted with a red border, and the criteria range (rows 1 and 2) is highlighted with a blue border.

Last Name	Sales	Country	Quarter
Smith	\$16,753.00	UK	Qtr 3
Johnson	\$14,808.00	USA	Qtr 4
Williams	\$10,644.00	UK	Qtr 2
Jones	\$1,390.00	USA	Qtr 3
Brown	\$4,865.00	USA	Qtr 4
Williams	\$12,438.00	UK	Qtr 1
Johnson	\$9,339.00	UK	Qtr 2
Smith	\$18,919.00	USA	Qtr 3
Jones	\$9,213.00	USA	Qtr 4
Jones	\$7,433.00	UK	Qtr 1
Brown	\$3,255.00	USA	Qtr 2
Williams	\$14,867.00	USA	Qtr 3
Williams	\$19,302.00	UK	Qtr 4
Smith	\$9,698.00	USA	Qtr 1

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2			USA	Qtr 4	
3					
4					
5	Last Name	Sales	Country	Quarter	
7	Johnson	\$14,808.00	USA	Qtr 4	
10	Brown	\$4,865.00	USA	Qtr 4	
14	Jones	\$9,213.00	USA	Qtr 4	
20	filtered according to blue area				
21					
22					

1. OR CRITERIA

The screenshot shows the 'Advanced Filter' dialog box in Microsoft Excel. The dialog is open over a table with columns 'Last Name', 'Sales', 'Country', and 'Quarter'. The 'Criteria range' is set to '\$A\$1:\$D\$3', which is highlighted with a red box. The 'List range' is '\$A\$5:\$D\$19'. The 'Action' is 'Filter the list, in-place'. The 'OK' button is also highlighted with a red box.

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2			USA	Qtr 4	
3			USA	Qtr 3	
4					
5	Last Name	Sales	Country	Quarter	
7	Johnson	\$14,808.00	USA	Qtr 4	
9	Jones	\$1,390.00	USA	Qtr 3	
10	Brown	\$4,865.00	USA	Qtr 4	
13	Smith	\$18,919.00	USA	Qtr 3	
14	Jones	\$9,213.00	USA	Qtr 4	
17	Williams	\$14,867.00	USA	Qtr 3	
20					
21					
22					
23					

Qtr 3 and 4

2. FORMULA AS CRITERIA

The screenshot shows the Excel interface with the 'Advanced Filter' dialog box open. The formula bar at the top displays the formula `=B6>10000`. The dialog box has the following settings:

- Action:** Filter the list, in-place
- List range:** Sheet1!\$A\$5:\$D\$19
- Criteria range:** Sheet1!\$A\$1:\$E\$3
- Copy to:** (empty)
- Unique records only

The 'OK' button is highlighted with a red box. The spreadsheet data is as follows:

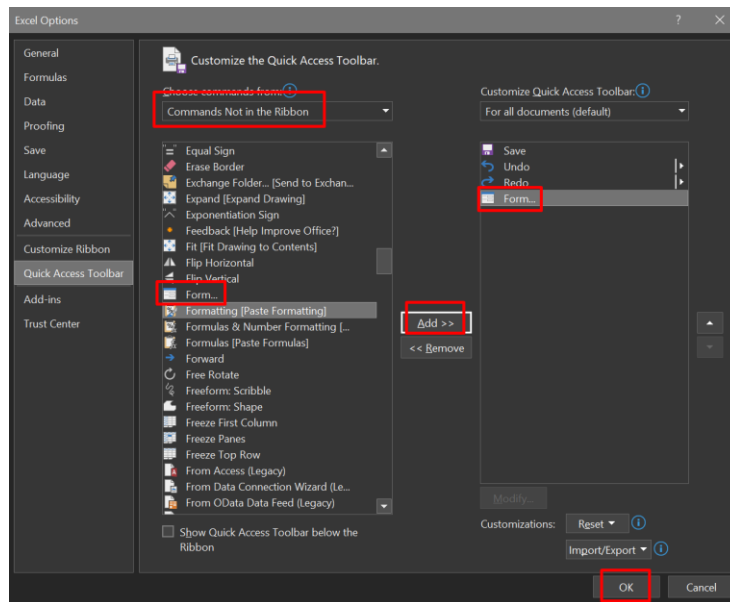
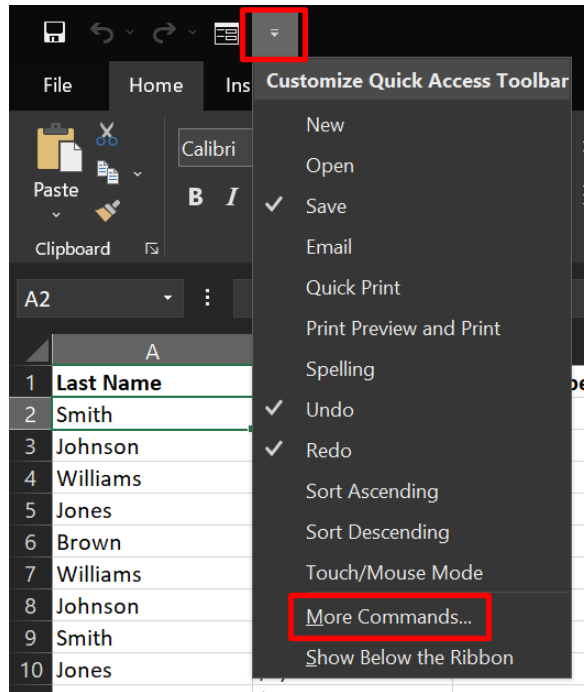
	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2			USA	Qtr 4	TRUE
3			UK	Qtr 1	
4					
5	Last Name	Sales	Country	Quarter	
6	Smith	\$16,753.00	UK	Qtr 3	
7	Johnson	\$14,808.00	USA	Qtr 4	
8	Williams	\$10,644.00	UK	Qtr 2	
9	Jones	\$1,390.00	USA	Qtr 3	
10	Brown	\$4,865.00	USA	Qtr 4	
11	Williams	\$12,438.00	UK	Qtr 1	
12	Johnson	\$9,339.00	UK	Qtr 2	
13	Smith	\$18,919.00	USA	Qtr 3	
14	Jones	\$9,213.00	USA	Qtr 4	
15	Jones	\$7,433.00	UK	Qtr 1	
16	Brown	\$3,255.00	USA	Qtr 2	
17	Williams	\$14,867.00	USA	Qtr 3	
18	Williams	\$19,302.00	UK	Qtr 4	
19	Smith	\$9,698.00	USA	Qtr 1	

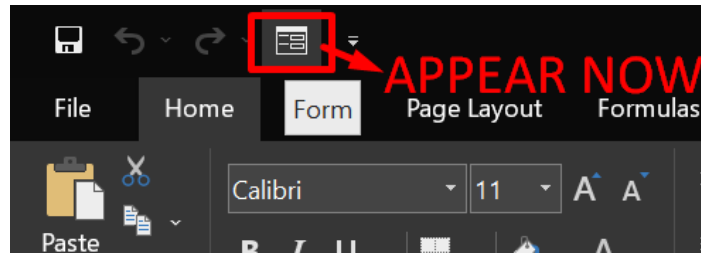
Note: Always place a formula in a new column!

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter		
2			USA	Qtr 4	TRUE	
3			UK	Qtr 1		
4						
5	Last Name	Sales	Country	Quarter		
7	Johnson	\$14,808.00	USA	Qtr 4		
11	Williams	\$12,438.00	UK	Qtr 1		
15	Jones	\$7,433.00	UK	Qtr 1		
20						
21	Result of the Criteria					
22						
23						

H. DATA FORM

File: <https://www.alvinang.sg/s/data-form.xlsx>





	A	B	Product
1	Last Name	Sales	
2	Smith	\$1,675.00	EEE-312
3	Johnson	\$1,480.00	DC-1
4	Williams	\$1,064.00	EE-2
5	Jones	\$1,390.00	DF-3
6	Brown	\$4,865.00	EEE-45
7	Williams	\$1,243.00	FD-2
8	Johnson	\$9,339.00	DC-1
9	Smith	\$1,891.00	EEE-312
10	Jones	\$9,213.00	FG-5
11	Jones	\$7,433.00	DF-7
12	Brown	\$3,255.00	FD-2
13	Williams	\$1,486.00	A-34
14	Williams	\$1,930.00	A-34
15	Smith	\$9,698.00	F-3334
16			
17			

Sales

Last Name: Johnson

Sales: 1480

Product Type: DC-1

Company: Wok N Roll

Contact Person: Rogers

Phone: 030 569 378

Country: United States of America

City: New York

Discount: No

Quarter: 4

Month: October

Status: Production

2 of 14

New

Delete

Restore

Find Prev

Find Next

Criteria

Close

try click this

Sales

1 of 14

Last Name:

Sales:

Product Type:

Company:

Contact Person:

Phong:

Country:

City:

Discount:

Quarter:

Month:

Status:

Buttons: New, Delete, Restore, Find Prev, Find Next, **Criteria**, Close

click here all will blank

Sales

Criteria

Last Name:

Sales:

Product Type:

Company:

Contact Person:

Phong:

Country:

City:

Discount:

Quarter:

Month:

Status:

Buttons: New, Clear, Restore, Find Prev, Find Next, **Form**, Close

key this in then click FORM

Sales ? X

Last Name: Williams 6 of 14

Sales: 1243 New

Product Type: FD-2 Delete

Company: Kung Food Restore

Contact Person: Mccoy Find Prev

Phone: 025 109 994 FIND NEXT Find Next

Country: United Kingdom Criteria

City: London Close

Discount: No

Quarter: 1

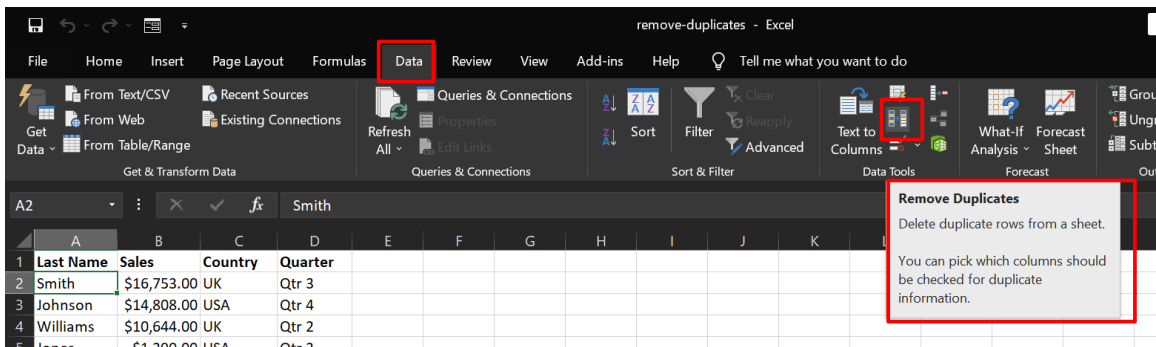
Month: January

Status: Production

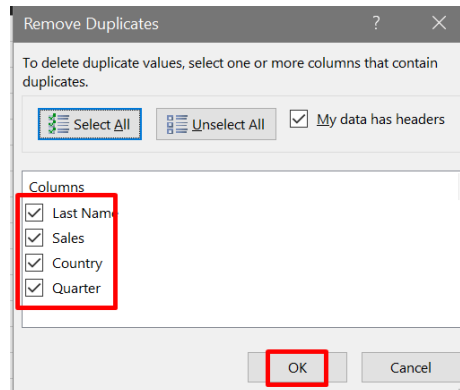
if u keep clicking FIND NEXT they will only display UK Country

I. REMOVING DUPLICATES

File: <https://www.alvinang.sg/s/remove-duplicates.xlsx>



1. DUPLICATES IN ALL COLUMNS

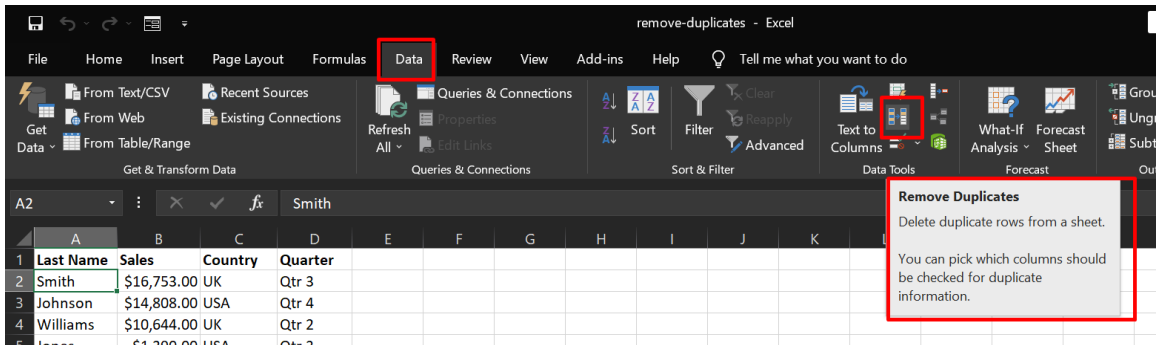


The screenshot shows a Microsoft Excel window with a spreadsheet containing 15 rows of data. The columns are labeled 'Last Name', 'Sales', 'Country', and 'Quarter'. A dialog box is open over the spreadsheet, displaying the message: '2 duplicate values found and removed; 14 unique values remain.' The 'OK' button in the dialog box is highlighted with a red rectangle.

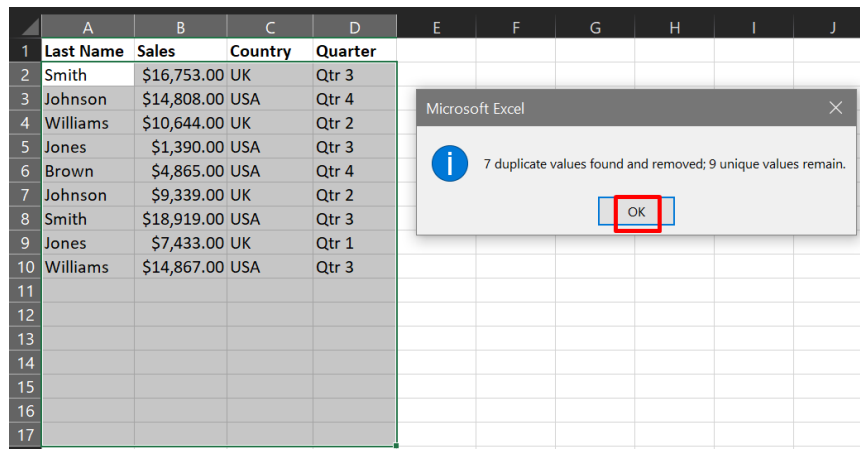
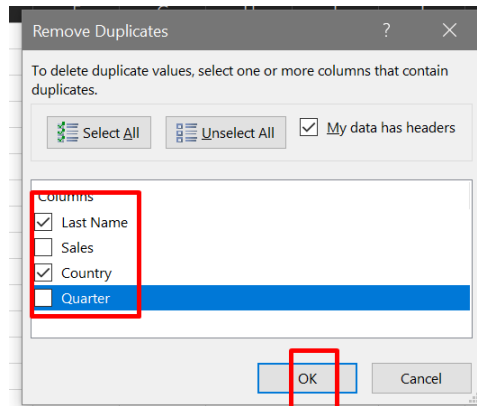
	A	B	C	D	E	F	G	H	I	J
1	Last Name	Sales	Country	Quarter						
2	Smith	\$16,753.00	UK	Qtr 3						
3	Johnson	\$14,808.00	USA	Qtr 4						
4	Williams	\$10,644.00	UK	Qtr 2						
5	Jones	\$1,390.00	USA	Qtr 3						
6	Brown	\$4,865.00	USA	Qtr 4						
7	Williams	\$12,438.00	UK	Qtr 1						
8	Johnson	\$9,339.00	UK	Qtr 2						
9	Smith	\$18,919.00	USA	Qtr 3						
10	Jones	\$9,213.00	USA	Qtr 4						
11	Jones	\$7,433.00	UK	Qtr 1						
12	Brown	\$3,255.00	USA	Qtr 2						
13	Williams	\$14,867.00	USA	Qtr 3						
14	Williams	\$19,302.00	UK	Qtr 4						
15	Smith	\$9,698.00	USA	Qtr 1						
16										
17										
18										

2. DUPLICATES IN SELECTED COLUMNS

Press Ctrl Z to undo previous Filter



Do the above again



J. EXTRACTING UNIQUE ROWS

File: <https://www.alvinang.sg/s/remove-duplicates.xlsx>

The screenshot shows an Excel spreadsheet with columns A, B, C, and D. Column A contains last names, B contains sales figures, C contains countries, and D contains quarters. The data is as follows:

Last Name	Sales	Country	Quarter
Smith	\$16,753.00	UK	Qtr 3
Johnson	\$14,808.00	USA	Qtr 4
Williams	\$10,644.00	UK	Qtr 2
Jones	\$1,390.00	USA	Qtr 3
Brown	\$4,865.00	USA	Qtr 4
Smith	\$16,753.00	UK	Qtr 3
Williams	\$12,438.00	UK	Qtr 1
Johnson	\$9,339.00	UK	Qtr 2
Smith	\$18,919.00	USA	Qtr 3
Jones	\$9,213.00	USA	Qtr 4
Jones	\$7,433.00	UK	Qtr 1
Smith	\$16,753.00	UK	Qtr 3
Brown	\$3,255.00	USA	Qtr 2
Williams	\$14,867.00	USA	Qtr 3
Williams	\$19,302.00	UK	Qtr 4
Smith	\$9,698.00	USA	Qtr 1

The 'Advanced Filter' dialog box is open, showing the following settings:

- Action: Copy to another location
- List range: \$A\$1:\$A\$17
- Criteria range: (empty)
- Copy to: \$F\$1
- Unique records only

The OK button is highlighted.

The screenshot shows the same Excel spreadsheet as above, but with the 'Advanced Filter' dialog box closed. The unique last names are now listed in column F:

Last Name
Smith
Johnson
Williams
Jones
Brown

A red arrow points from the first row of the original data (Smith) to the first row of the filtered data (Smith).

K. OUTLINING DATA

File: <https://www.alvinang.sg/s/outlining-data.xlsx>

1. SUBTOTAL

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected in the ribbon. The 'Subtotal' button in the 'Data Tools' group is highlighted with a red box. The 'Subtotal' dialog box is open, showing the following settings:

- At each change in: Company
- Use function: Count
- Add subtotal to: Product Type (checked), Company (checked)
- Replace current subtotals:
- Page break between groups:
- Summary below data:

The 'OK' button in the dialog box is highlighted with a red box. The background spreadsheet shows a table with columns: Last Name, Sales, Product Type, and Company.

	A	B	C	D
1	Last Name	Sales	Product Type	Company
2	Jones	\$1,390.00	DF-3	Kung Food
3	Williams	\$1,243.00	FD-2	Kung Food
4	Johnson	\$9,339.00	DC-1	Kung Food
5	Jones	\$7,433.00	DF-7	Kung Food
6	Brown	\$3,255.00	FD-2	Pancakes on the Rocks
7	Williams	\$1,930.00	A-34	Pancakes on the Rocks
8	Williams	\$1,064.00	EE-2	Peace A Pizza
9	Brown	\$4,865.00	EEE-45	Peace A Pizza
10	Smith	\$9,698.00	F-3334	Peace A Pizza
11	Smith	\$1,675.00	EEE-312	Wok N Roll
12	Johnson	\$1,480.00	DC-1	Wok N Roll
13	Smith	\$1,891.00	EEE-312	Wok N Roll
14	Jones	\$9,213.00	FG-5	Wok N Roll
15	Williams	\$1,486.00	A-34	Wok N Roll

D2 X ✓ fx Kung Food *click 2 to see it change*

	A	B	C	D	E
1	Last Name	Sales	Product Type	Company	
2	Jones	\$1,390.00	DF-3	Kung Food	
3	Williams	\$1,243.00	FD-2	Kung Food	
4	Johnson	\$9,339.00	DC-1	Kung Food	
5	Jones	\$7,433.00	DF-7	Kung Food	
6			Kung Food Count		4
7	Brown	\$3,255.00	FD-2	Pancakes on the Rocks	
8	Williams	\$1,930.00	A-34	Pancakes on the Rocks	
9			Pancakes on the Rocks Count		2
10	Williams	\$1,064.00	EE-2	Peace A Pizza	
11	Brown	\$4,865.00	EEE-45	Peace A Pizza	
12	Smith	\$9,698.00	F-3334	Peace A Pizza	
13			Peace A Pizza Count		3
14	Smith	\$1,675.00	EEE-312	Wok N Roll	
15	Johnson	\$1,480.00	DC-1	Wok N Roll	
16	Smith	\$1,891.00	EEE-312	Wok N Roll	
17	Jones	\$9,213.00	FG-5	Wok N Roll	
18	Williams	\$1,486.00	A-34	Wok N Roll	
19			Wok N Roll Count		5
20			Grand Count		14
21					
22					

Sales +

2. GROUP

select these 2 columns then click GROUP

	A	B	C	D	E	F	G	H	I	J
1	Last Name	Sales	Product Type	Company						
2	Jones	\$1,390.00	DF-3	Kung Food						
3	Jones Count				1					
4	Williams	\$1,243.00	FD-2	Kung Food						
5	Williams Count				1					
6	Johnson	\$9,339.00	DC-1	Kung Food						
7	Johnson Count				1					
8	Jones	\$7,433.00	DF-7	Kung Food						
9	Jones Count				1					
10	Brown	\$3,255.00	FD-2	Pancakes on the Rocks						
11	Brown Count				1					
12	Williams	\$1,930.00	A-34	Pancakes on the Rocks						
13	Williams	\$1,064.00	EE-2	Peace A Pizza						
14	Williams Count				2					
15	Brown	\$4,865.00	EEE-45	Peace A Pizza						
16	Brown Count				1					
17	Smith	\$9,698.00	F-3334	Peace A Pizza						
18	Smith	\$1,675.00	EEE-312	Wok N Roll						
19	Smith Count				2					
20	Johnson	\$1,480.00	DC-1	Wok N Roll						
21	Johnson Count				1					

click this - button to collapse A and B

	A	B	C	D	E
1	Last Name	Sales	Product Type	Company	
2	Jones	\$1,390.00	DF-3	Kung Food	
3	Jones Count				1
4	Williams	\$1,243.00	FD-2	Kung Food	
5	Williams Count				1
6	Johnson	\$9,339.00	DC-1	Kung Food	
7	Johnson Count				1
8	Jones	\$7,433.00	DF-7	Kung Food	
9	Jones Count				1
10	Brown	\$3,255.00	FD-2	Pancakes on the Rocks	
11	Brown Count				1
12	Williams	\$1,930.00	A-34	Pancakes on the Rocks	
13	Williams	\$1,064.00	EE-2	Peace A Pizza	
14	Williams Count				2
15	Brown	\$4,865.00	EEE-45	Peace A Pizza	
16	Brown Count				1
17	Smith	\$9,698.00	F-3334	Peace A Pizza	
18	Smith	\$1,675.00	EEE-312	Wok N Roll	
19	Smith Count				2

1	2	3	C	D	E	F
1			Product Type	Company		
2			DF-3	Kung Food		
3					1	
4			FD-2	Kung Food		
5					1	
6			DC-1	Kung Food		
7					1	
8			DF-7	Kung Food		
9					1	
10			FD-2	Pancakes on the Rocks		
11					1	
12			A-34	Pancakes on the Rocks		
13			EE-2	Peace A Pizza		
14					2	
15			EEE-45	Peace A Pizza		
16					1	
17			F-3334	Peace A Pizza		
18			EEE-312	Wok N Roll		
19					2	
20			DC-1	Wok N Roll		
21					1	
22			EEE-312	Wok N Roll		
23					1	
24			FG-5	Wok N Roll		
25					1	
26			A-34	Wok N Roll		
27					1	
28					14	
29						

final
display

3. REMOVE ALL FILTERS

The screenshot shows the Microsoft Excel interface with the Subtotal dialog box open. The ribbon at the top includes the 'Subtotal' button, which is highlighted with a red box. The data table below has a red box around the 'Product Type' header cell in row 3. The Subtotal dialog box has the 'Remove All' button highlighted with a red box. Red arrows point from the text annotations to these elements.

select any cell inside here

click REMOVE ALL

Product Type	Company	
DF-3	Kung Food	1
FD-2	Kung Food	1
DC-1	Kung Food	1
DF-7	Kung Food	1
FD-2	Pancakes on the Rocks	1
A-34	Pancakes on the Rocks	1
EE-2	Peace A Pizza	2
EEE-45	Peace A Pizza	1
F-3334	Peace A Pizza	2
EEE-312	Wok N Roll	1
DC-1	Wok N Roll	1
EEE-312	Wok N Roll	1
FG-5	Wok N Roll	1
A-34	Wok N Roll	1

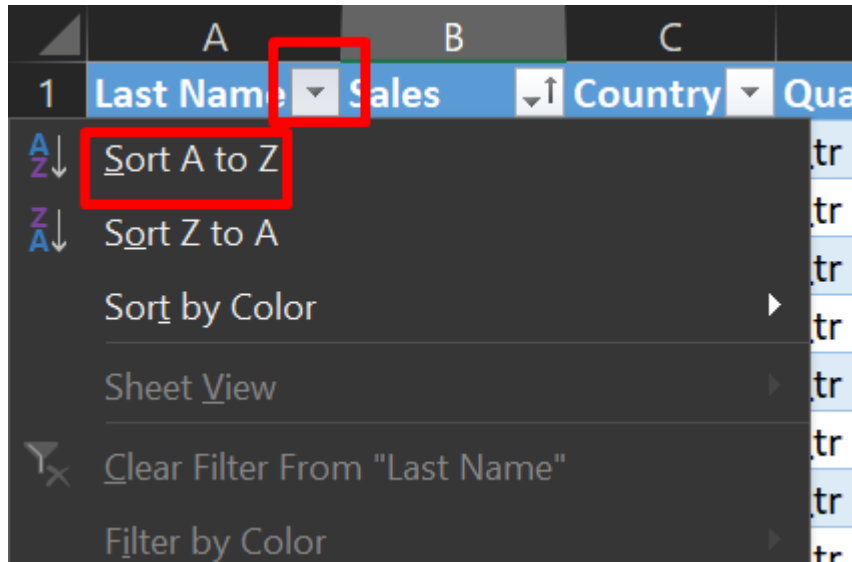
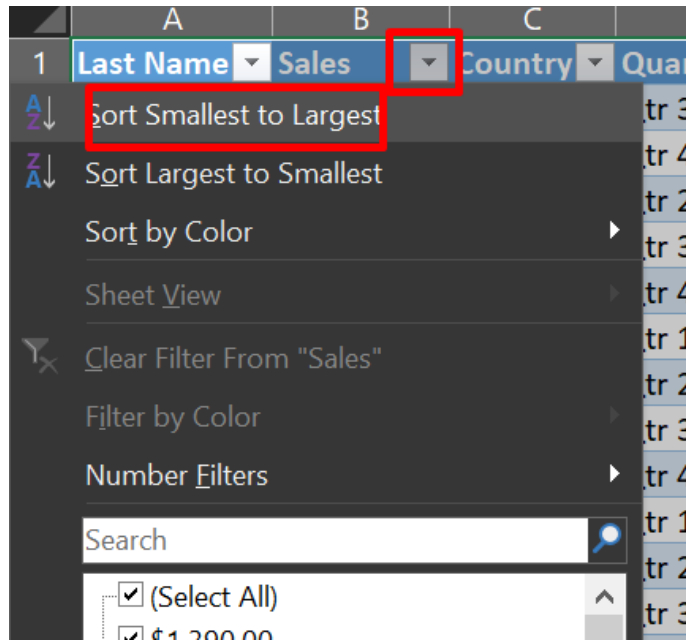
IV. TABLES

File: <https://www.alvinang.sg/s/tables.xlsx>

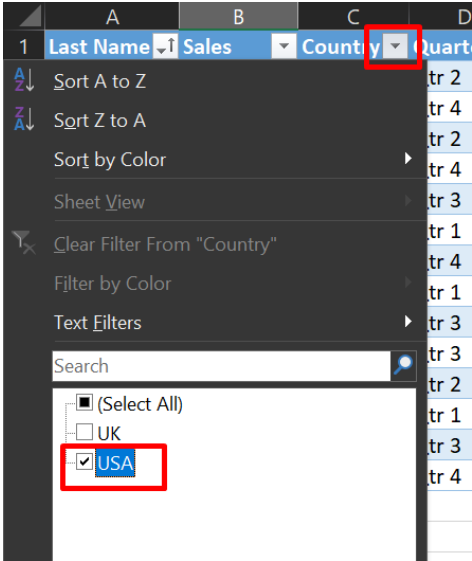
select anywhere inside the data

Last Name	Sales	Country	Quarter
Smith	\$16,753.00	UK	Qtr 3
Johnson	\$14,808.00	USA	Qtr 4
Williams	\$10,644.00	UK	Qtr 2
Jones	\$1,390.00	USA	Qtr 3
Brown	\$4,865.00	USA	Qtr 4
Williams	\$12,438.00	UK	Qtr 1
Johnson	\$9,339.00	UK	Qtr 2
Smith	\$18,919.00	USA	Qtr 3
Jones	\$9,213.00	USA	Qtr 4
Jones	\$7,433.00	UK	Qtr 1
Brown	\$3,255.00	USA	Qtr 2
Williams	\$14,867.00	USA	Qtr 3
Williams	\$19,302.00	UK	Qtr 4
Smith	\$9,698.00	USA	Qtr 1

A. SORT TABLE



B. FILTER TABLE



C. TOTAL ROW

The screenshot displays the Microsoft Excel interface with the 'Table Design' tab selected. The PivotTable 'Table2' is shown with columns: Last Name, Sales, Country, and Quarter. The Total Row (row 16) is highlighted, and a dropdown menu is open for the 'Sales' field, showing 'Sum' as the selected aggregation function. The formula bar displays '=SUBTOTAL(109,[Sales])'. The 'Total Row' checkbox in the 'Table Design' ribbon is checked.

	A	B	C	D	E	F	G	H	I	J	K
1	Last Name	Sales	Country	Quarter							
2	Brown	\$3,255.00	USA	Qtr 2							
3	Brown	\$4,865.00	USA	Qtr 4							
5	Johnson	\$14,808.00	USA	Qtr 4							
6	Jones	\$1,390.00	USA	Qtr 3							
8	Jones	\$9,213.00	USA	Qtr 4							
9	Smith	\$9,698.00	USA	Qtr 1							
11	Smith	\$18,919.00	USA	Qtr 3							
14	Williams	\$14,867.00	USA	Qtr 3							
16	Total	\$77,015.00		8							

D. STRUCTURED REFERENCES

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter	Bonus	
2	Brown	\$3,255.00	USA	Qtr 2		
3	Brown	\$4,865.00	USA	Qtr 4		
5	Johnson	\$14,808.00	USA	Qtr 4		
6	Jones	\$1,390.00	USA	Qtr 3		
8	Jones	\$9,213.00	USA	Qtr 4		
9	Smith	\$9,698.00	USA	Qtr 1		
11	Smith	\$18,919.00	USA	Qtr 3		
14	Williams	\$14,867.00	USA	Qtr 3		
16	Total	\$77,015.00		8		
17						

Red annotations in the image include a red box around the 'Bonus' header in the formula bar and another red box around the 'Bonus' header in cell E1. Red text 'type in BONUS here' is written in the cells below the Bonus header.

Clipboard Font Alignment

SUM \times \checkmark fx **=0.02*[**

	A	B	C	D	F
1	Last Name	Sales	Country	Quarter	
2	Brown	\$3,255.00	USA	Qtr 2	
3	Brown	\$4,865.00	USA	Qtr 4	
5	Johnson	\$14,808.00	USA	Qtr 4	
6	Jones	\$1,390.00	USA	Qtr 3	
8	Jones	\$9,213.00	USA	Qtr 4	
9	Smith	\$9,698.00	USA	Qtr 1	
11	Smith	\$18,919.00	USA	Qtr 3	
14	Williams	\$14,867.00	USA	Qtr 3	
16	Total	\$77,015.00		8	

@ - This Row
 (...) Last Name
 (...) **Sales**
 (...) Country
 (...) Quarter
 (...) Bonus

select E2 and type this in

File Home Insert Page Layout Formulas Data Review View Add-ins Help **Table Design**

Table Name: **Table2**

Table Style Options: Header Row First Column Total Row Last Column Banded Rows Banded Columns

E3 \times \checkmark fx **=0.02*[Sales]**

	A	B	C	D	E	F	G	H	I	J	K
1	Last Name	Sales	Country	Quarter	Bonus						
2	Brown	\$3,255.00	USA	Qtr 2	\$65.10						
3	Brown	\$4,865.00	USA	Qtr 4	\$97.30						
5	Johnson	\$14,808.00	USA	Qtr 4	\$296.16						
6	Jones	\$1,390.00	USA	Qtr 3	\$27.80						
8	Jones	\$9,213.00	USA	Qtr 4	\$184.26						
9	Smith	\$9,698.00	USA	Qtr 1	\$193.96						
11	Smith	\$18,919.00	USA	Qtr 3	\$378.38						
14	Williams	\$14,867.00	USA	Qtr 3	\$297.34						
16	Total	\$77,015.00		8							

you can see from here that the Table Name is Table2

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter	Bonus	
2	Brown	\$3,255.00	USA	Qtr 2	\$65.10	
3	Brown	\$4,865.00	USA	Qtr 4	\$97.30	
5	Johnson	\$14,808.00	USA	Qtr 4	\$296.16	
6	Jones	\$1,390.00	USA	Qtr 3	\$27.80	
8	Jones	\$9,213.00	USA	Qtr 4	\$184.26	
9	Smith	\$9,698.00	USA	Qtr 1	\$193.96	
11	Smith	\$18,919.00	USA	Qtr 3	\$378.38	
14	Williams	\$14,867.00	USA	Qtr 3	\$297.34	
16	Total	\$77,015.00		8		
17						
18					\$152,924.00	
19						

=SUM(Table2[Sales])

E. REMOVE ALL FILTERS

The screenshot shows the 'Table Design' ribbon in Microsoft Excel. The 'Convert to Range' option is highlighted with a red box. A dialog box titled 'Convert to Range' is open, displaying the message: 'Convert this table into a normal range of cells. All of the data is preserved.' In the background, a data table is visible with columns for Last Name, Sales, Country, Quarter, and Bonus. A red box highlights a cell in the Bonus column, with the text 'select anywhere inside the data table' written next to it.

Last Name	Sales	Country	Quarter	Bonus
Brown	\$3,255.00	USA	Qtr 2	\$65.10
Brown	\$4,865.00	USA	Qtr 4	\$97.30
Johnson	\$14,808.00	USA	Qtr 4	\$296.16
Jones	\$1,390.00	USA	Qtr 3	\$27.80
Jones	\$9,213.00	USA	Qtr 4	\$184.26
Smith	\$9,698.00	USA	Qtr 1	\$193.96
Smith	\$18,919.00	USA	Qtr 3	\$378.38
Williams	\$14,867.00	USA	Qtr 3	\$297.34
Total	\$77,015.00		8	

The screenshot shows the 'Convert to Range' dialog box in Microsoft Excel. The dialog box is titled 'Microsoft Excel' and contains the message: 'Do you want to convert the table to a normal range?'. The 'Yes' button is highlighted with a red box.

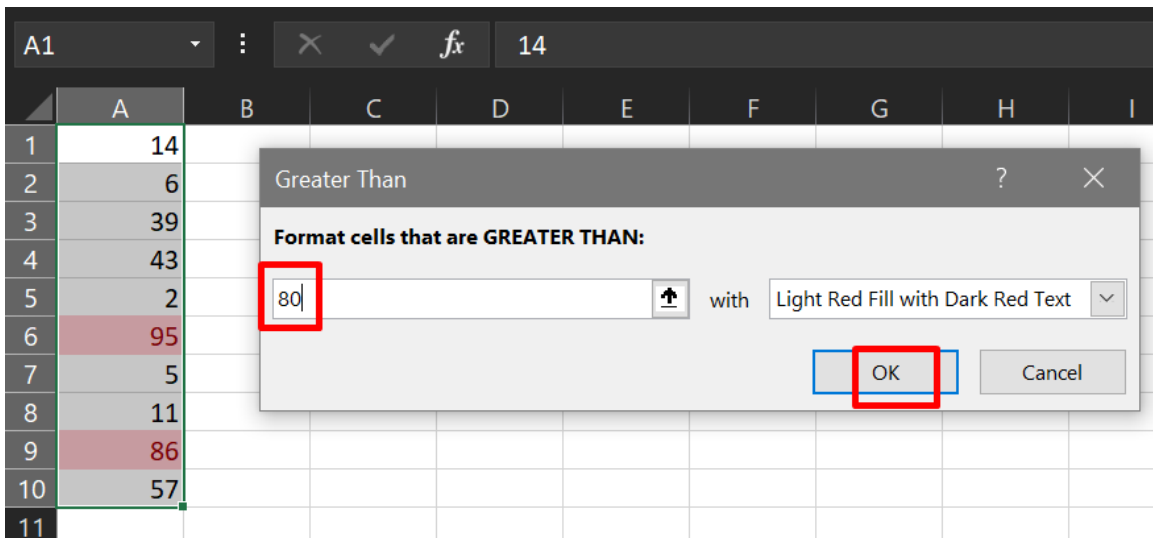
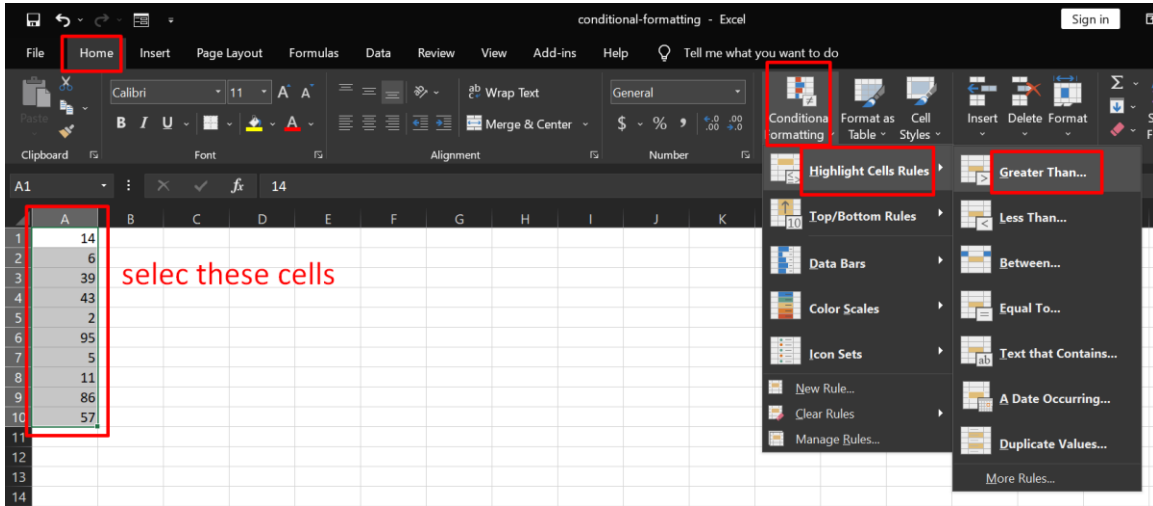
Last Name	Sales	Country	Quarter	Bonus
Brown	\$3,255.00	USA	Qtr 2	\$65.10
Brown	\$4,865.00	USA	Qtr 4	\$97.30
Johnson	\$14,808.00	USA	Qtr 4	\$296.16
Jones	\$1,390.00	USA	Qtr 3	\$27.80
Jones	\$9,213.00	USA	Qtr 4	\$184.26
Smith	\$9,698.00	USA	Qtr 1	\$193.96
Smith	\$18,919.00	USA	Qtr 3	\$378.38
Williams	\$14,867.00	USA	Qtr 3	\$297.34
Total	\$77,015.00		8	

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter	Bonus	
2	Brown	\$3,255.00	USA	Qtr 2	\$65.10	
3	Brown	\$4,865.00	USA	Qtr 4	\$97.30	
4	Johnson	\$9,339.00	UK	Qtr 2	\$186.78	
5	Johnson	\$14,808.00	USA	Qtr 4	\$296.16	
6	Jones	\$1,390.00	USA	Qtr 3	\$27.80	
7	Jones	\$7,433.00	UK	Qtr 1	\$148.66	
8	Jones	\$9,213.00	USA	Qtr 4	\$184.26	
9	Smith	\$9,698.00	USA	Qtr 1	\$193.96	
10	Smith	\$16,753.00	UK	Qtr 3	\$335.06	
11	Smith	\$18,919.00	USA	Qtr 3	\$378.38	
12	Williams	\$10,644.00	UK	Qtr 2	\$212.88	
13	Williams	\$12,438.00	UK	Qtr 1	\$248.76	
14	Williams	\$14,867.00	USA	Qtr 3	\$297.34	
15	Williams	\$19,302.00	UK	Qtr 4	\$386.04	
16	Total	\$152,924.00		14		
17						
18					\$152,924.00	
19	original state					

V. CONDITIONAL FORMATTING

File: <https://www.alvinang.sg/s/conditional-formatting.xlsx>

A. HIGHLIGHT CELL RULES



	A	B	C	D	E
1	81				
2	6				
3	39				
4	43				
5	2				
6	95				
7	5				
8	11				
9	86				
10	57				
11					

change the value of cell A1 to 81

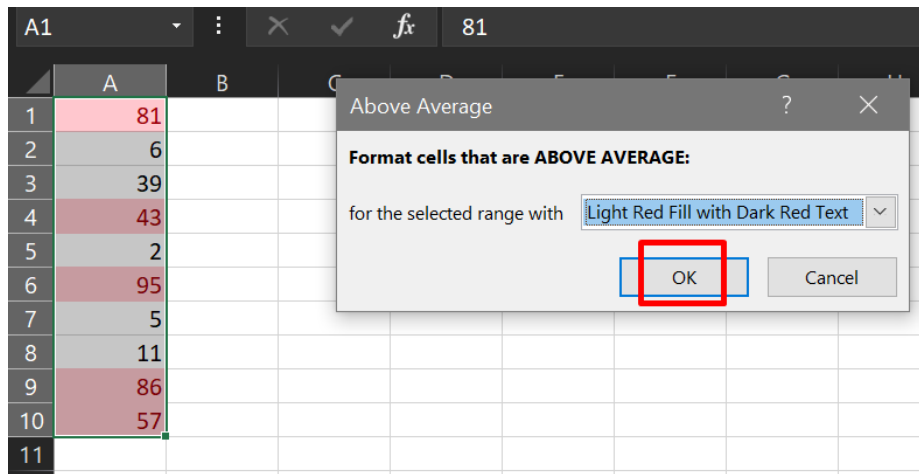
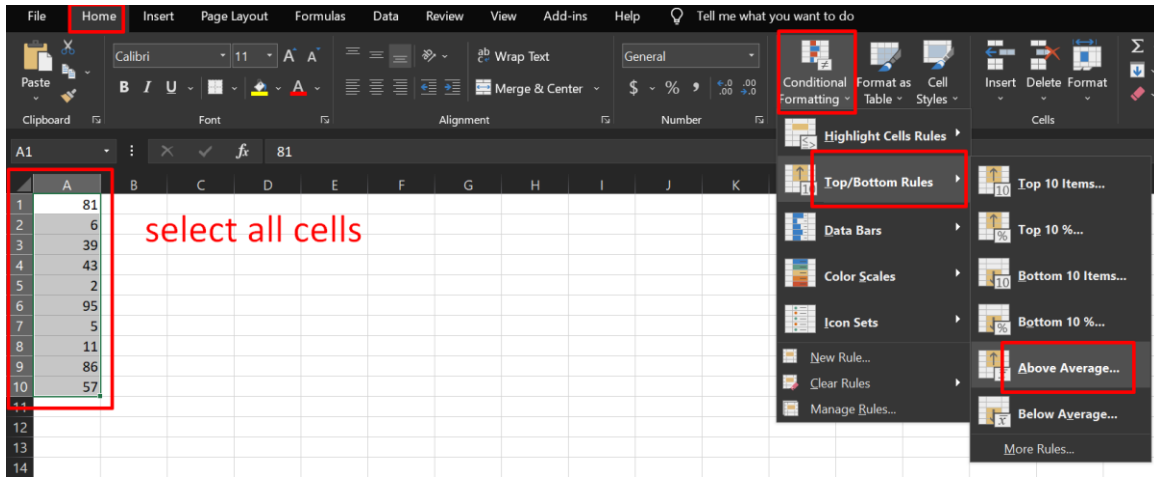
and see the color change

B. CLEAR RULES

select all these cells

C. TOP / BOTTOM

File: <https://www.alvinang.sg/s/conditional-formatting.xlsx>



	A	B	C	
1	81			
2	6			
3	39			
4	43	final		
5	2	display		
6	95			
7	5			
8	11			
9	86			
10	57			
11				

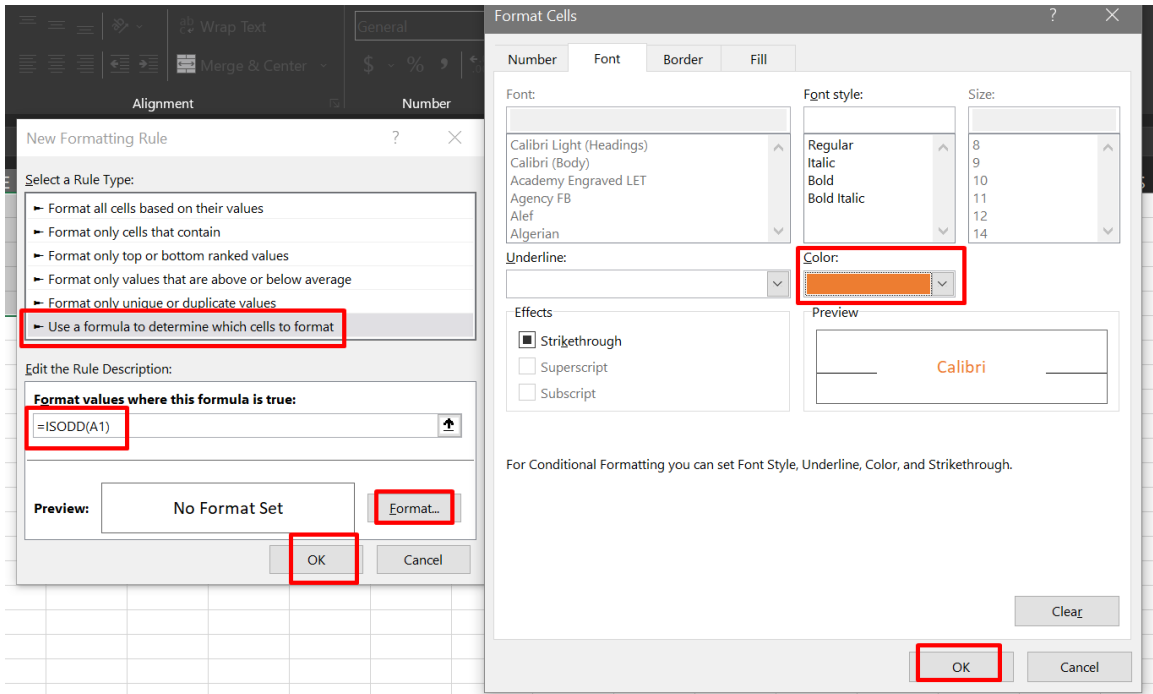
D. WITH FORMULAS

File: <https://www.alvinang.sg/s/conditional-formatting.xlsx>

1. FORMULA 1

The screenshot shows the Microsoft Excel interface. The 'Home' tab is selected on the ribbon. A range of cells (A1:E6) is selected, highlighted in grey. The formula bar shows the value '90'. The 'Conditional Formatting' dropdown menu is open, showing options like 'Highlight Cells Rules', 'Top/Bottom Rules', 'Data Bars', 'Color Scales', 'Icon Sets', 'New Rule...', 'Clear Rules', and 'Manage Rules...'. The 'New Rule...' option is highlighted with a red box. A red box also highlights the selected data range. The text 'select all cells here' is written in red next to the selected range.

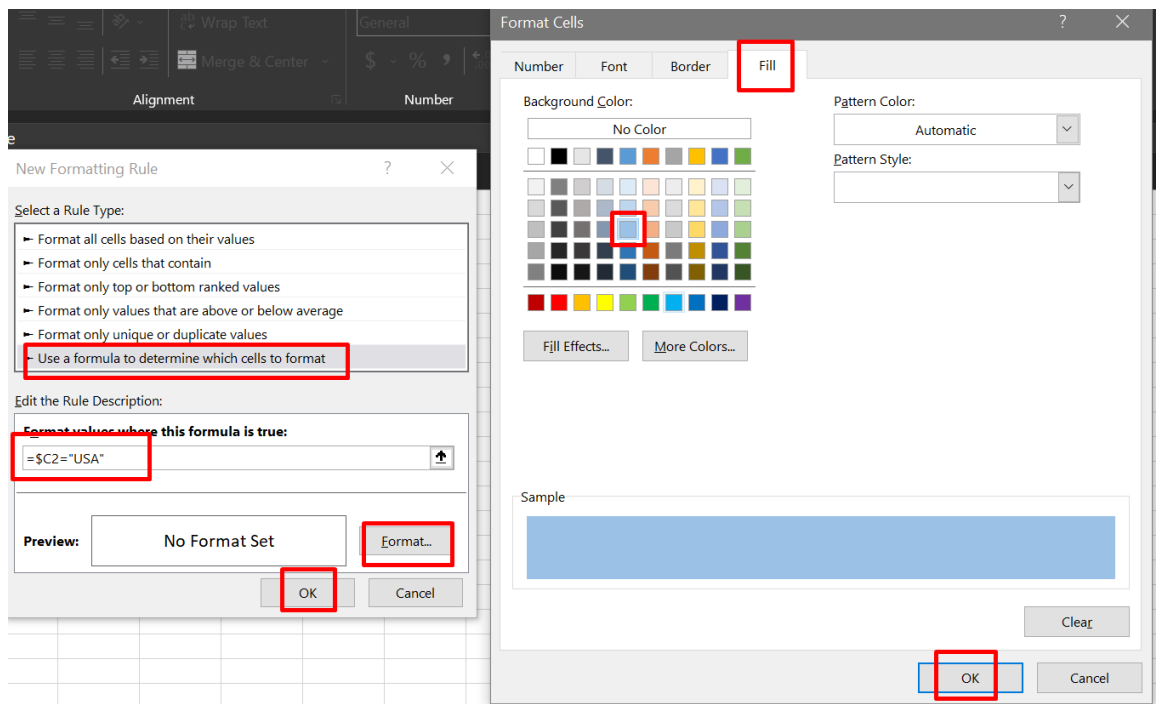
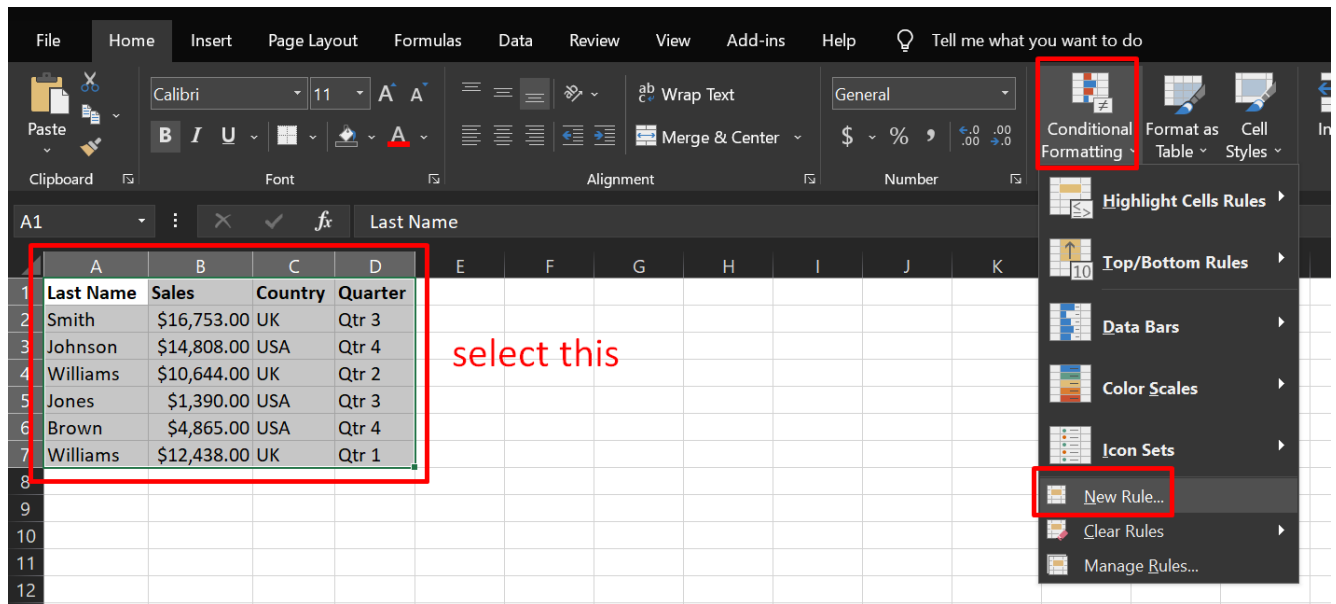
A	B	C	D	E
90	77	33	20	96
59	66	20	61	44
94	99	97	41	52
36	43	70	13	54
15	6	28	28	15



	A	B	C	D	E	F
1	90	77	33	20	96	
2	59	66	20	61	44	
3	94	99	97	41	52	
4	36	43	70	13	54	
5	15	6	28	28	15	
6						
7	all odd numbers are highlighted					
8						

2. FORMULA 2

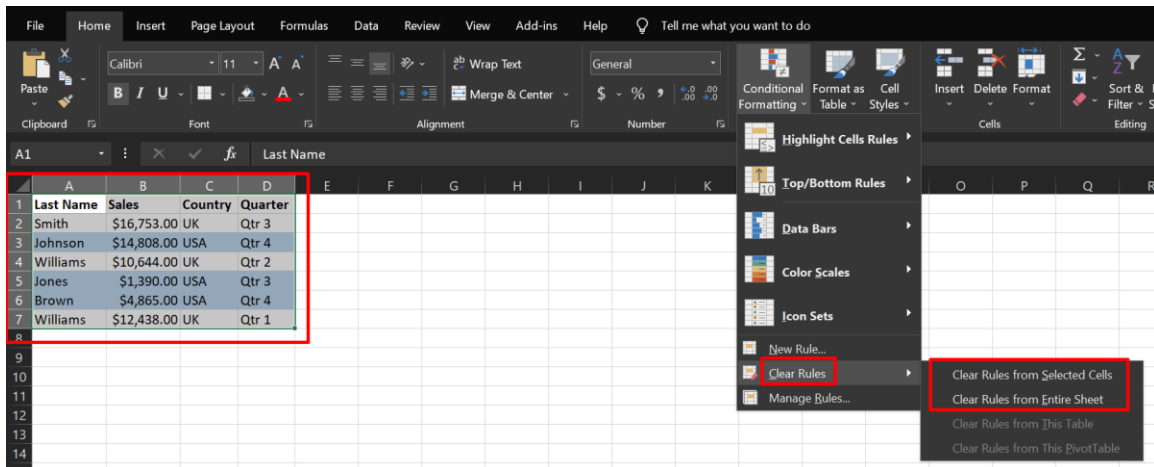
File: <https://www.alvinang.sg/s/conditional-formatting.xlsx>



	A	B	C	D
1	Last Name	Sales	Country	Quarter
2	Smith	\$16,753.00	UK	Qtr 3
3	Johnson	\$14,808.00	USA	Qtr 4
4	Williams	\$10,644.00	UK	Qtr 2
5	Jones	\$1,390.00	USA	Qtr 3
6	Brown	\$4,865.00	USA	Qtr 4
7	Williams	\$12,438.00	UK	Qtr 1
8				
9				

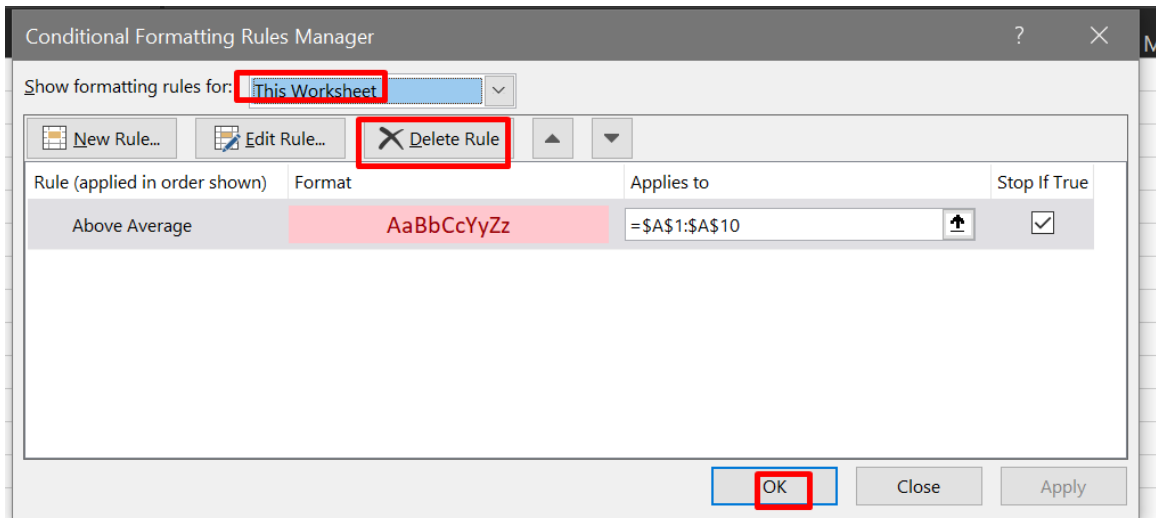
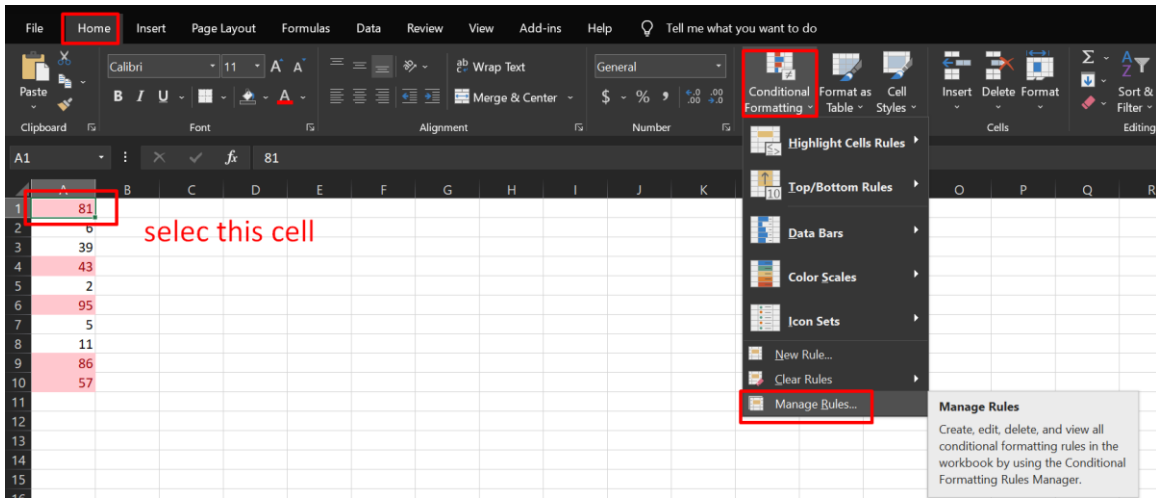
(not sure why its not showing all USA...)

E. CLEAR CONDITIONAL FORMATTING



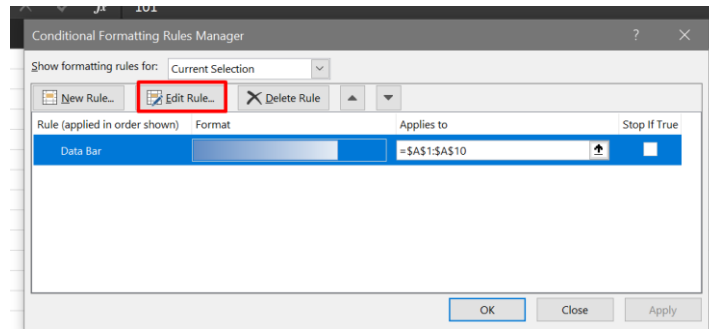
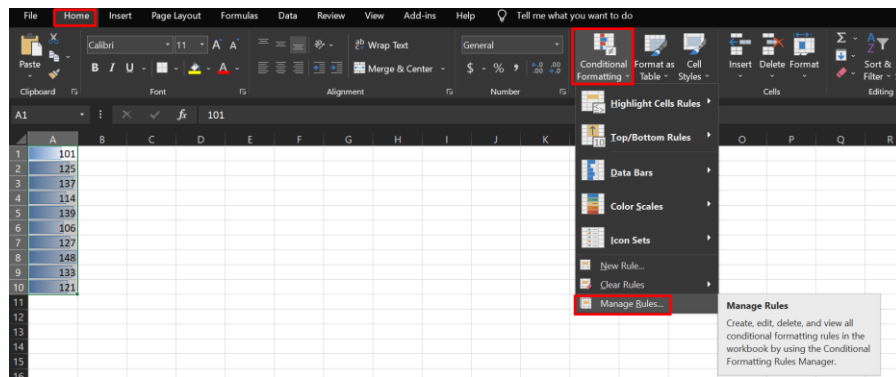
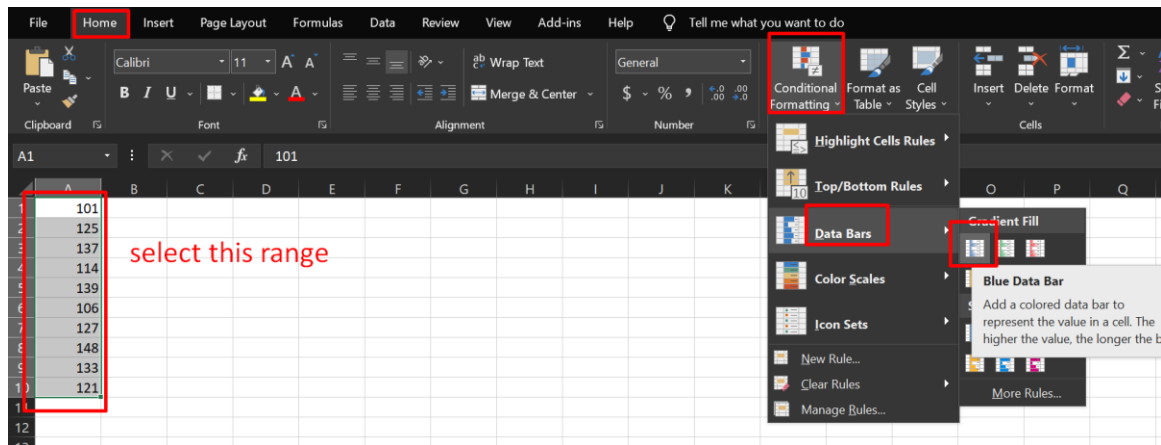
F. MANAGING RULES

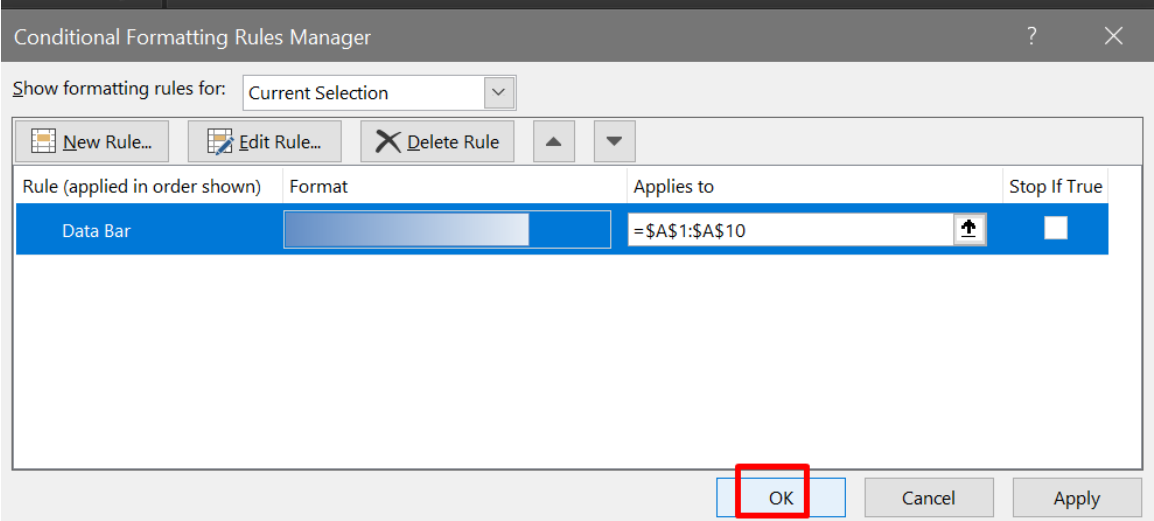
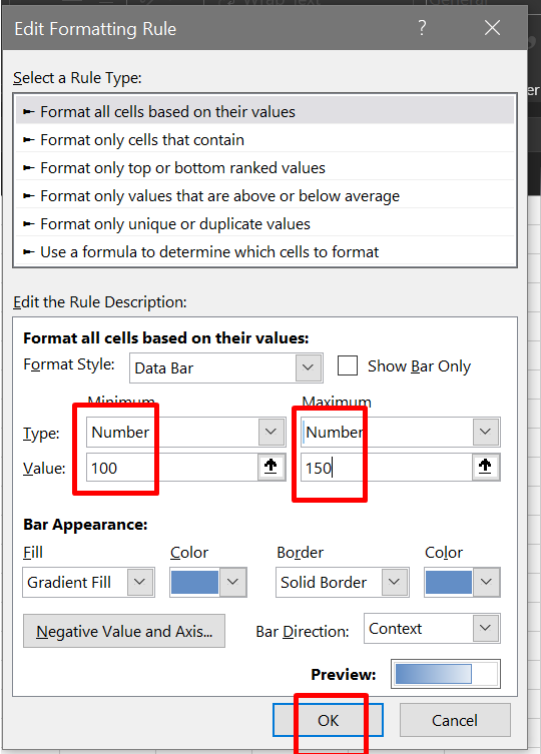
File: <https://www.alvinang.sg/s/conditional-formatting.xlsx>



G. DATA BARS

File: <https://www.alvinang.sg/s/data-bars.xlsx>





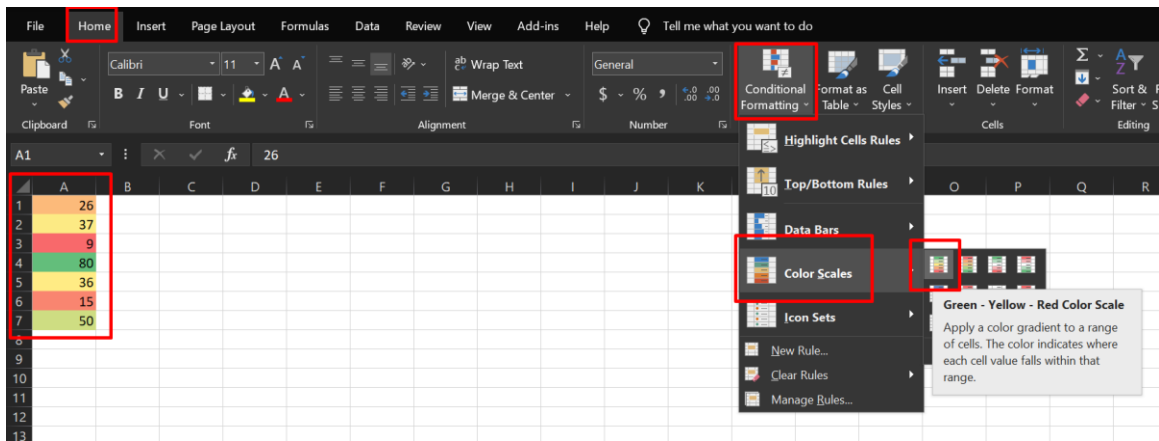
	A	B	C	D
1	101			
2	125			
3	137			
4	114			
5	139			
6	106			
7	127			
8	148			
9	133			
10	121			
11				

100 no bar

150 max bar

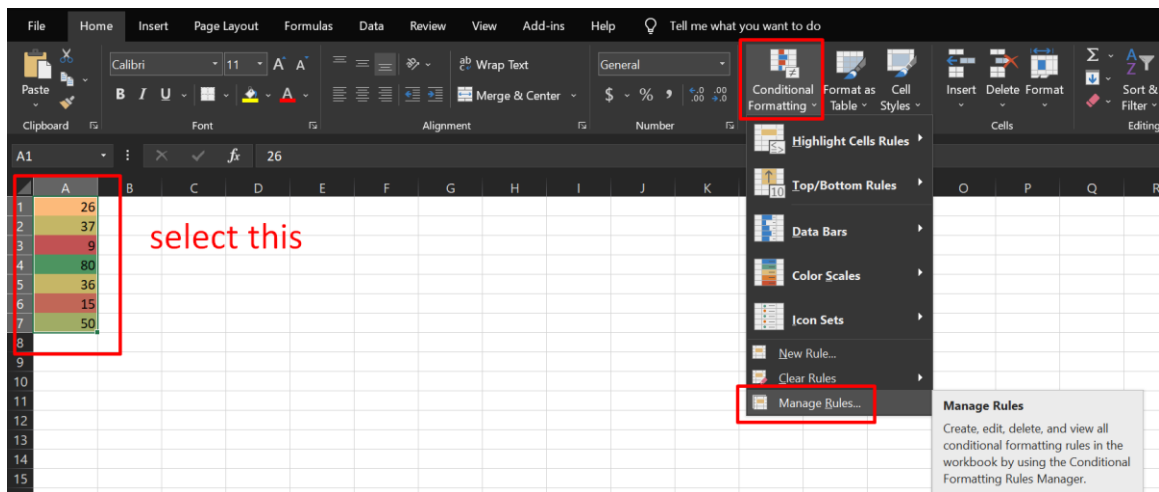
H. COLOR SCALES

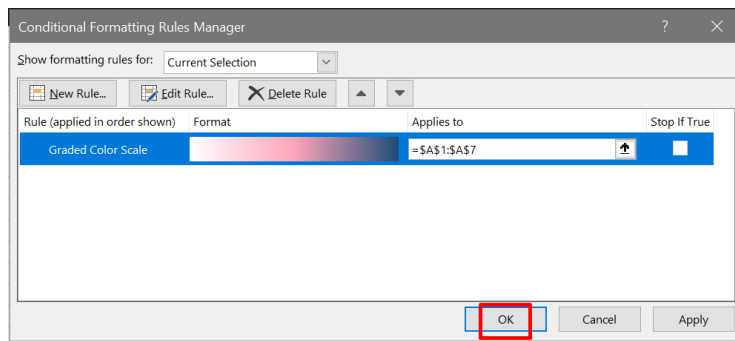
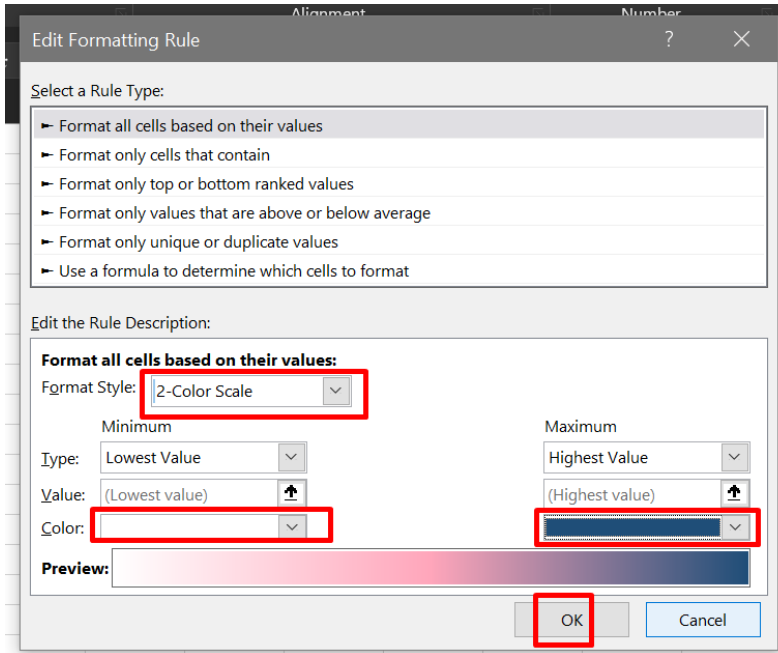
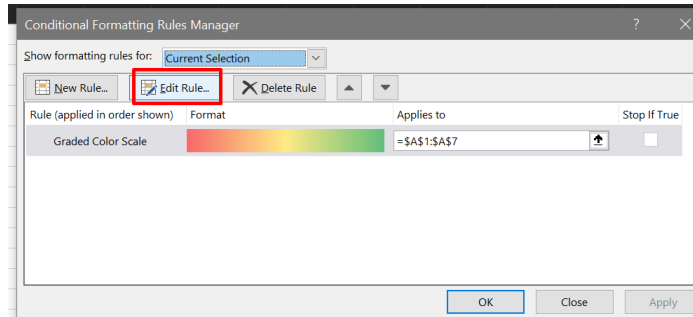
File: <https://www.alvinang.sg/s/color-scales.xlsx>



	A	B	C
1	26		
2	37		
3	9		
4	80		
5	36		
6	15		
7	50		
8			
9			

we want to further customize this





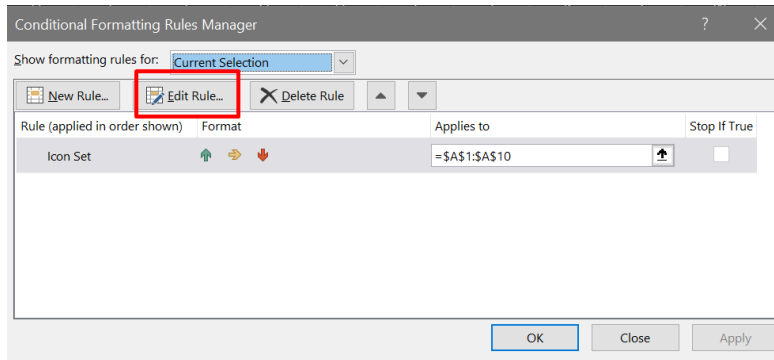
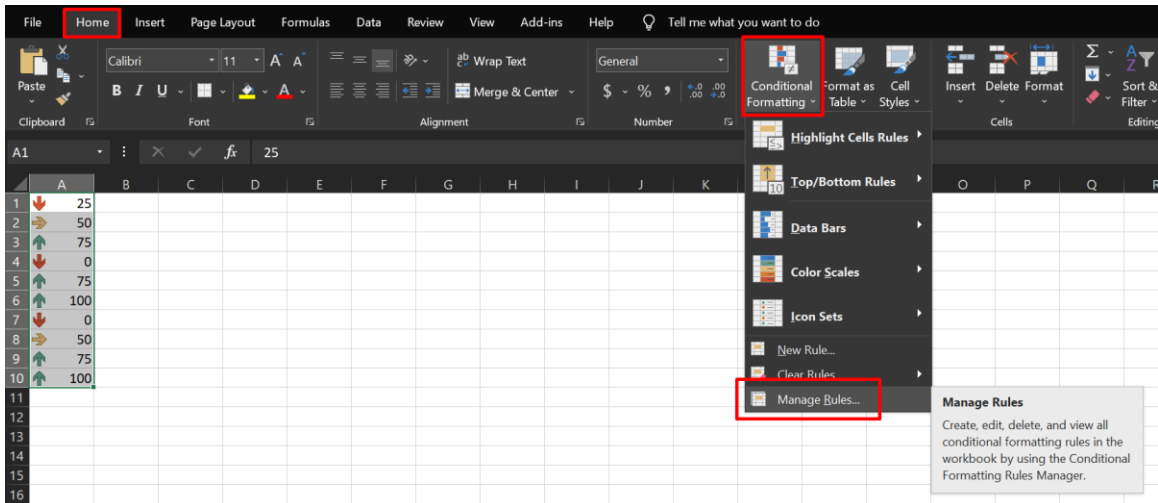
	A	B	C
1	26		
2	37	END	
3	9		
4	80	RESULT	
5	36		
6	15		
7	50		
8			
9			

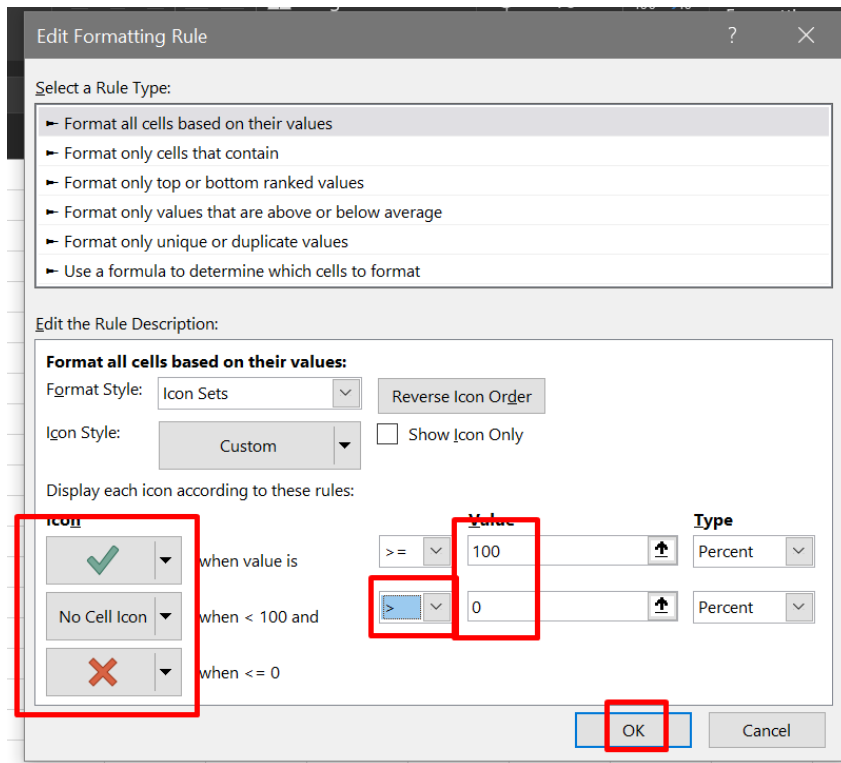
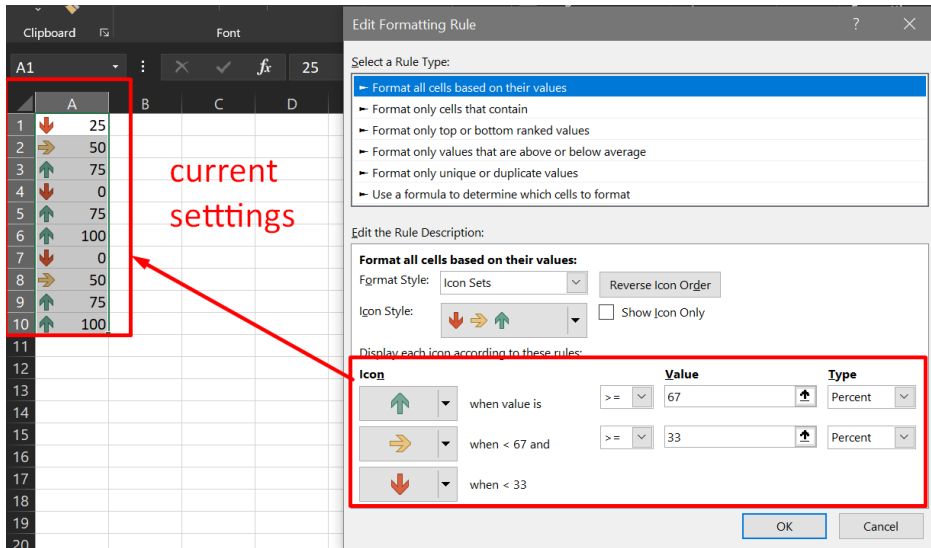
I. ICON SETS

File: <https://www.alvinang.sg/s/icon-sets.xlsx>

select this range of data

	A	B	C
1	25		
2	50		
3	75		
4	0		
5	75		
6	100		
7	0		
8	50		
9	75		
10	100		



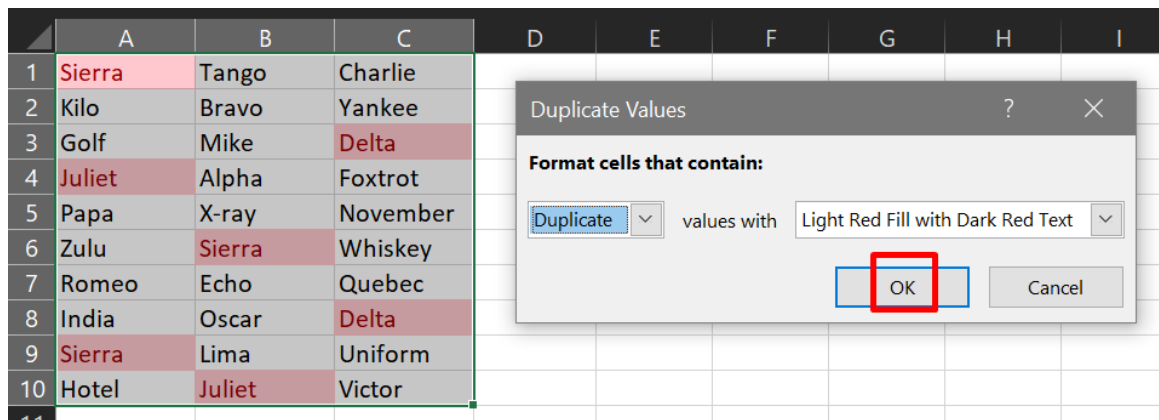
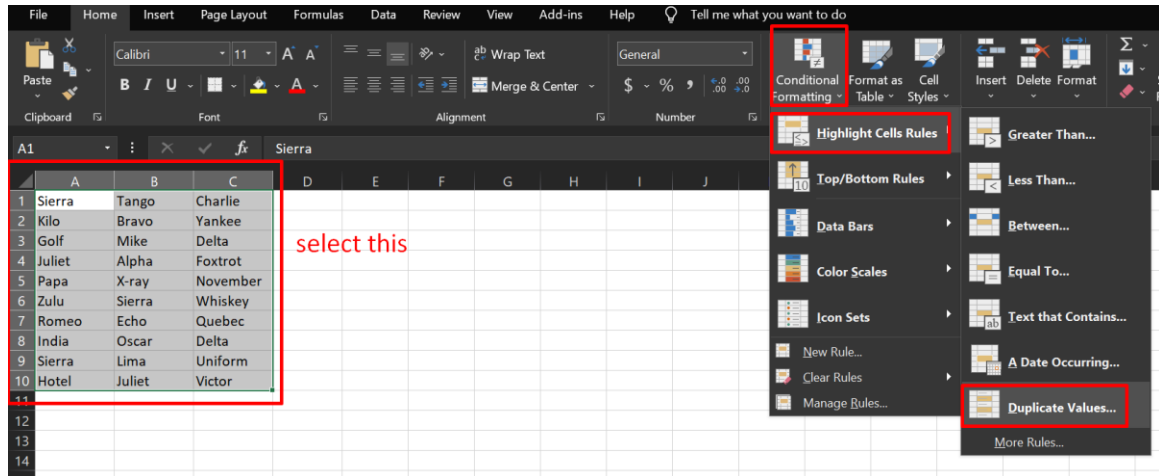


	A	
1	25	
2	50	
3	75	
4	✗	0
5	75	
6	✓	100
7	✗	0
8	50	
9	75	
10	✓	100
11		

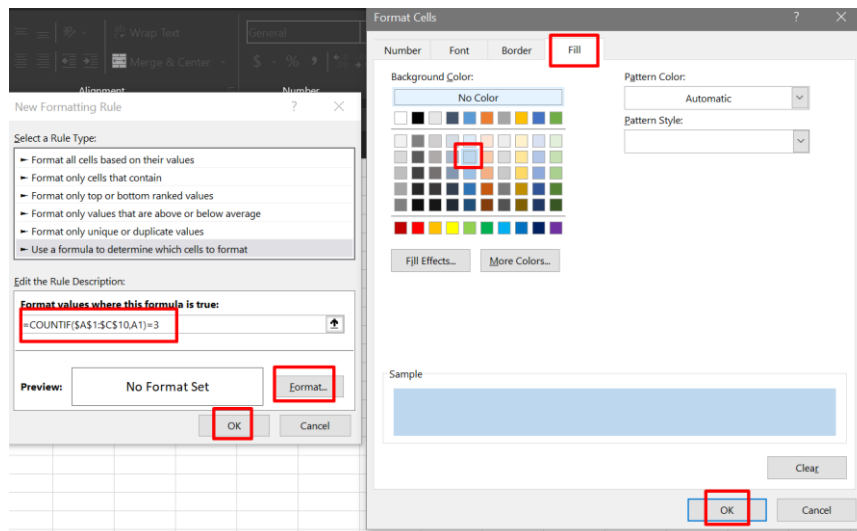
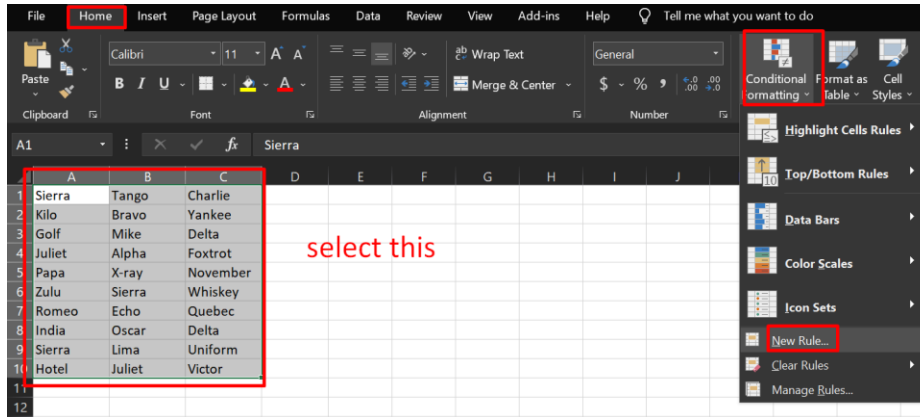
J. FIND DUPLICATES

1. DUPLICATE VALUES

File: <https://www.alvinang.sg/s/find-duplicates.xlsx>



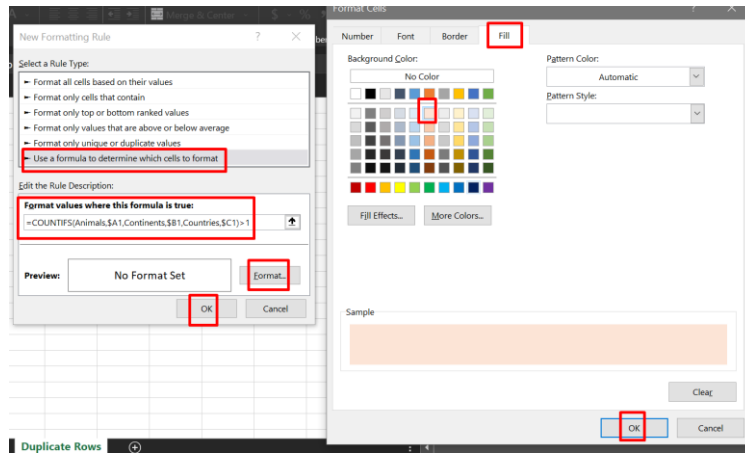
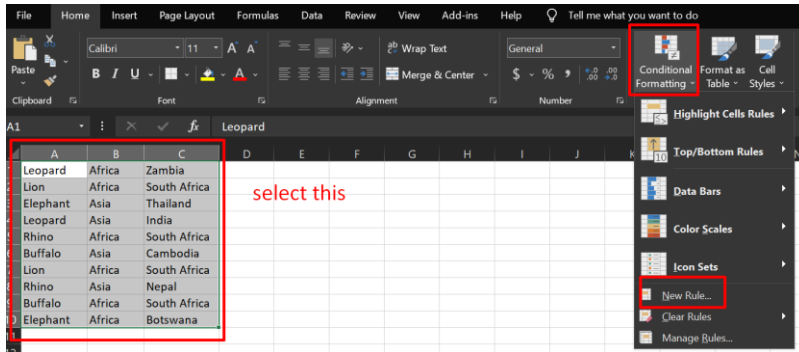
2. TRIPPLICATES



	A	B	C
1	Sierra	Tango	Charlie
2	Kilo	Bravo	Yankee
3	Golf	Mike	Delta
4	Juliet	Alpha	Foxtrot
5	Papa	X-ray	November
6	Zulu	Sierra	Whiskey
7	Romeo	Echo	Quebec
8	India	Oscar	Delta
9	Sierra	Lima	Uniform
10	Hotel	Juliet	Victor
11			
12			

triplicate names

3. DUPLICATE ROWS



`=COUNTIFS(Animals,$A1,Continents,$B1,Countries,$C1)>1`

	A	B	C
1	Leopard	Africa	Zambia
2	Lion	Africa	South Africa
3	Elephant	Asia	Thailand
4	Leopard	Asia	India
5	Rhino	Africa	South Africa
6	Buffalo	Asia	Cambodia
7	Lion	Africa	South Africa
8	Rhino	Asia	Nepal
9	Buffalo	Africa	South Africa
10	Elephant	Africa	Botswana
11			

File Home Insert Page Layout Formulas **Data** Review View Add-ins Help Tell me what you want to do

Get Data From Text/CSV From Web From Table/Range Recent Sources Existing Connections

Refresh All Properties Edit Links Queries & Connections

Sort Filter Clear Reapply Advanced Text to Columns Data Tools What-If Analysis Forecast Sheet

C1 Zambia

Remove Duplicates
Delete duplicate rows from a sheet.
You can pick which columns should be checked for duplicate information.

select any cell within the 3 columns of data

	A	B	C	D	E	F	G	H	I	J	K
1	Leopard	Africa	Zambia								
2	Lion	Africa	South Africa								
3	Elephant	Asia	Thailand								
4	Leopard	Asia	India								
5	Rhino	Africa	South Africa								
6	Buffalo	Asia	Cambodia								
7	Lion	Africa	South Africa								
8	Rhino	Asia	Nepal								
9	Buffalo	Africa	South Africa								
10	Elephant	Africa	Botswana								
11											

Get & Transform Data

A1

	A	B	C
1	Leopard	Africa	Zambia
2	Lion	Africa	South Africa
3	Elephant	Asia	Thailand
4	Leopard	Asia	India
5	Rhino	Africa	South Africa
6	Buffalo	Asia	Cambodia
7	Lion	Africa	South Africa
8	Rhino	Asia	Nepal
9	Buffalo	Africa	South Africa
10	Elephant	Africa	Botswana
11			

Remove Duplicates

To delete duplicate values, select one or more columns that contain duplicates.


Select All Unselect All My data has headers

Columns

- Column A
- Column B
- Column C

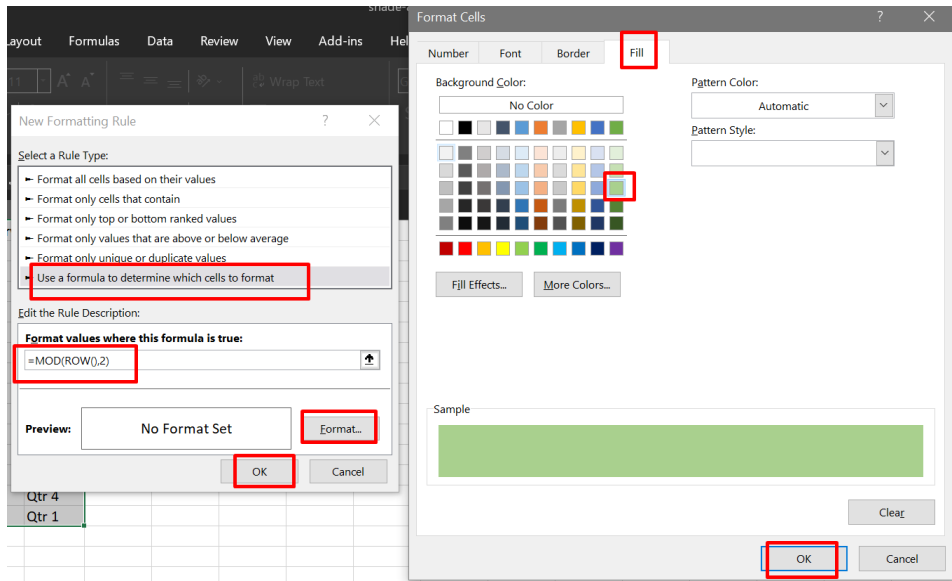
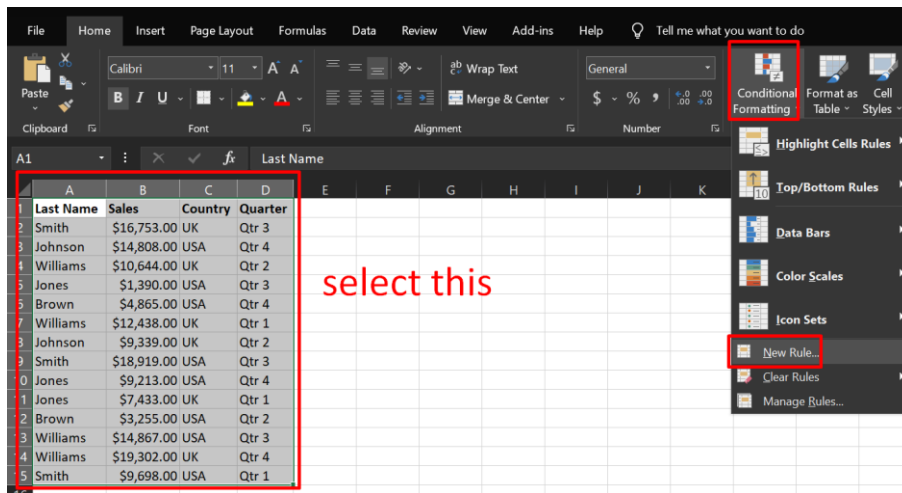
	A	B	C	D	E	F	G	H	I
1	Leopard	Africa	Zambia						
2	Lion	Africa	South Africa						
3	Elephant	Asia	Thailand						
4	Leopard	Asia	India						
5	Rhino	Africa	South Africa						
6	Buffalo	Asia	Cambodia						
7	Rhino	Asia	Nepal						
8	Buffalo	Africa	South Africa						
9	Elephant	Africa	Botswana						
10									

Microsoft Excel

 1 duplicate values found and removed; 9 unique values remain.

K. SHADE ALTERNATE ROWS

File: <https://www.alvinang.sg/s/shade-alternate-rows.xlsx>



=MOD(ROW(),2)

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2	Smith	\$16,753.00	UK	Qtr 3	
3	Johnson	\$14,808.00	USA	Qtr 4	
4	Williams	\$10,644.00	UK	Qtr 2	
5	Jones	\$1,390.00	USA	Qtr 3	
6	Brown	\$4,865.00	USA	Qtr 4	
7	Williams	\$12,438.00	UK	Qtr 1	
8	Johnson	\$9,339.00	UK	Qtr 2	
9	Smith	\$18,919.00	USA	Qtr 3	
10	Jones	\$9,213.00	USA	Qtr 4	
11	Jones	\$7,433.00	UK	Qtr 1	
12	Brown	\$3,255.00	USA	Qtr 2	
13	Williams	\$14,867.00	USA	Qtr 3	
14	Williams	\$19,302.00	UK	Qtr 4	
15	Smith	\$9,698.00	USA	Qtr 1	
16					

L. HEAT MAP

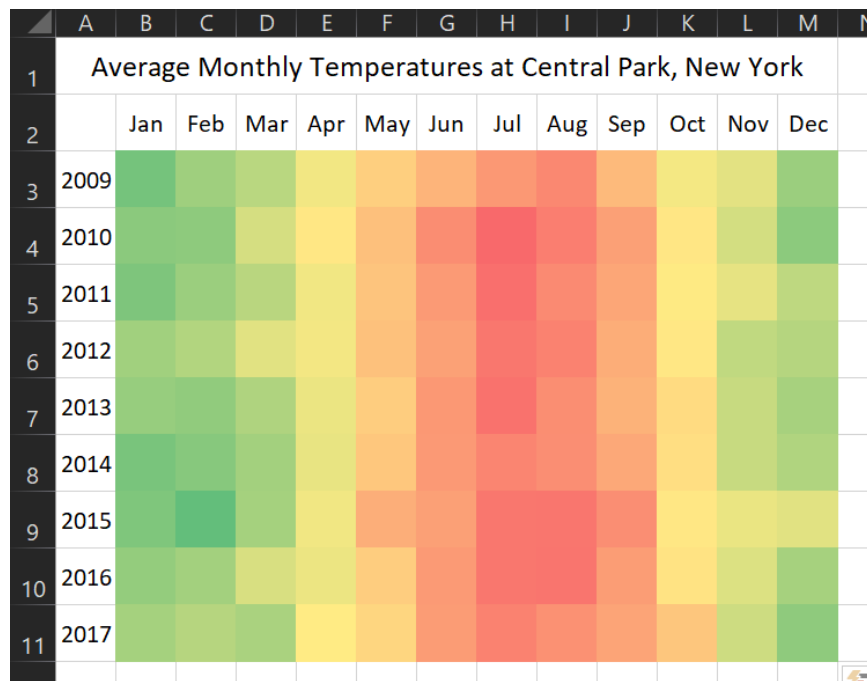
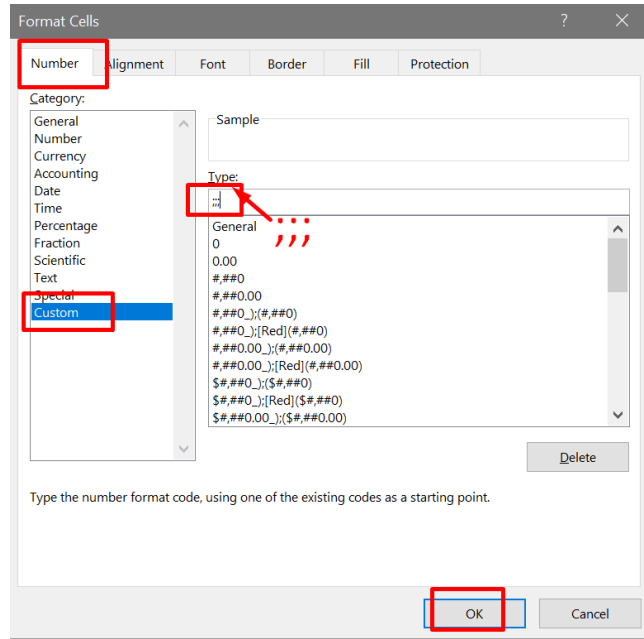
File: <https://www.alvinang.sg/s/heat-map.xlsx>

select B3 to M11 only!!!

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	27.9	36.7	42.4	54.5	62.5	67.5	72.7	75.7	66.3	55	51.2	35.9
2010	32.5	33.1	48.2	57.9	65.3	74.7	81.3	77.4	71.1	58.1	47.9	32.8
2011	29.7	36	42.3	54.3	64.5	72.3	80.2	75.3	70	57.1	51.9	43.3
2012	37.3	40.9	50.9	54.8	65.1	71	78.8	76.7	68.8	58	43.9	41.5
2013	35.1	33.9	40.1	53	62.8	72.7	79.8	74.6	67.9	60.2	45.3	38.5
2014	28.6	31.6	37.7	52.3	64	72.5	76.1	74.5	69.7	59.6	45.3	40.5
2015	29.9	23.9	38.1	54.3	68.5	71.2	78.8	79	74.5	58	52.8	50.8
2016	34.5	37.7	48.9	53.3	62.8	72.3	78.7	79.2	71.8	58.8	49.8	38.3
2017	38	41.6	39.2	57.2	61.1	72	76.8	74	70.5	64.1	46.6	33.4

right click anywhere only B3 to M11!!!

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	27.9	36.7	42.4	54.5	62.5	67.5	72.7	75.7	66.3	55	51.2	35.9
2010	32.5	33.1	48.2	57.9	65.3	74.7	81.3	77.4	71.1	58.1	47.9	32.8
2011	29.7	36	42.3	54.3	64.5	72.3	80.2	75.3	70	57.1	51.9	43.3
2012	37.3	40.9	50.9	54.8	65.1	71	78.8	76.7	68.8	58	43.9	41.5
2013	35.1	33.9	40.1	53	62.8	72.7	79.8	74.6	67.9	60.2	45.3	38.5
2014	28.6	31.6	37.7	52.3	64	72.5	76.1	74.5	69.7	59.6	45.3	40.5
2015	29.9	23.9	38.1	54.3	68.5	71.2	78.8	79	74.5	58	52.8	50.8
2016	34.5	37.7	48.9	53.3	62.8	72.3	78.7	79.2	71.8	58.8	49.8	38.3
2017	38	41.6	39.2	57.2	61.1	72	76.8	74	70.5	64.1	46.6	33.4



VI. DATA VALIDATION

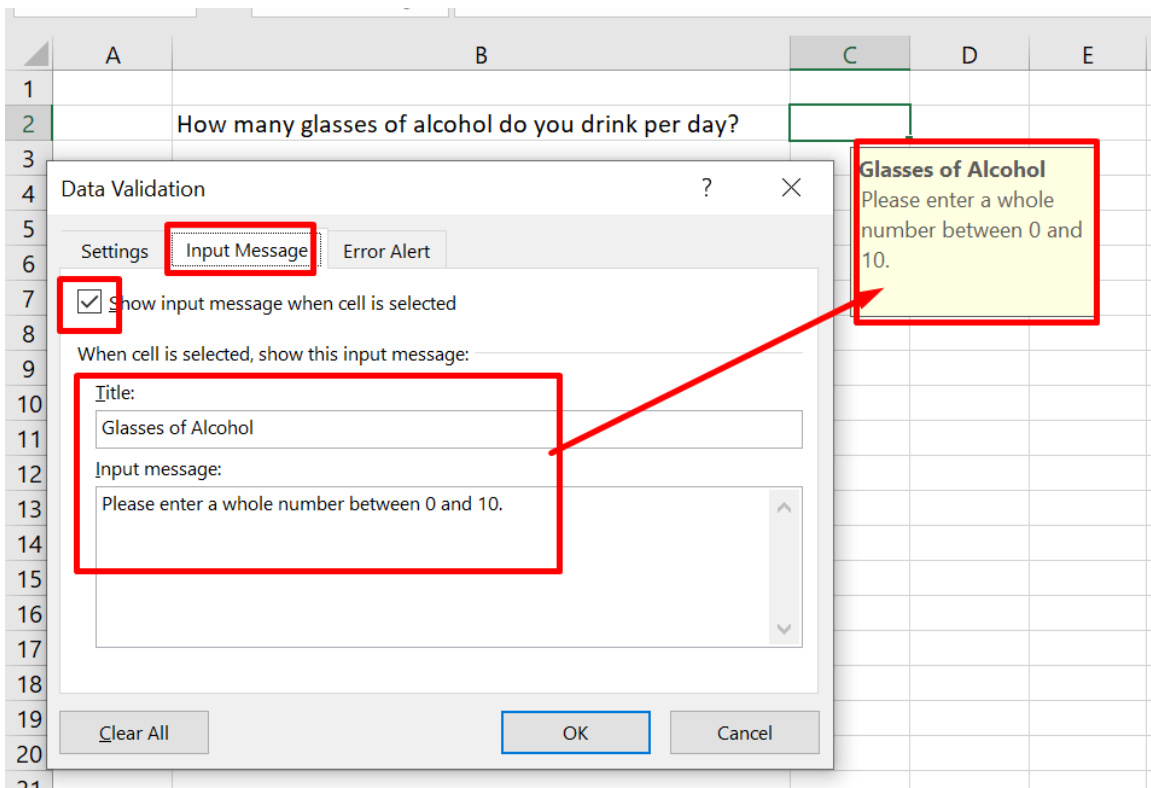
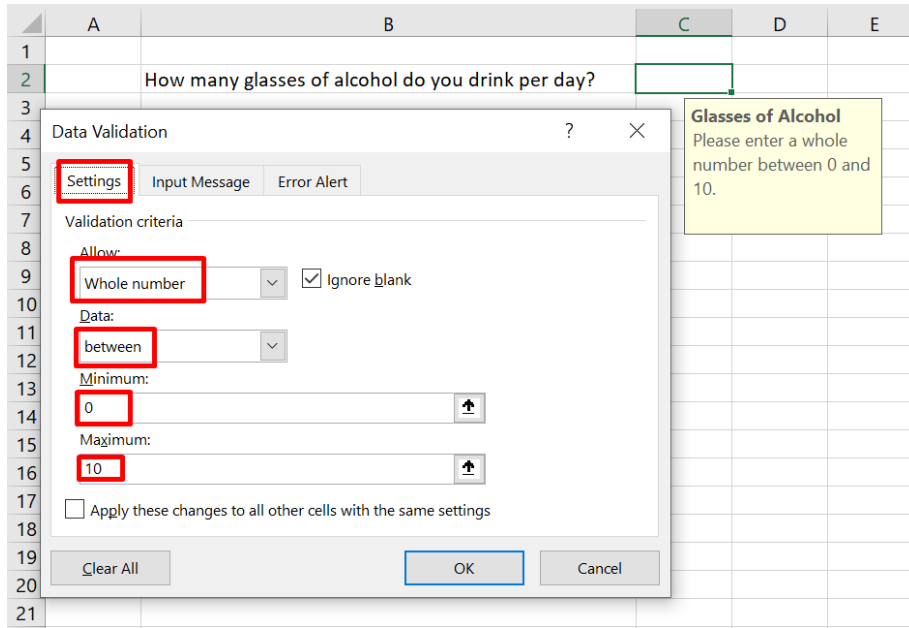
Data Validation =

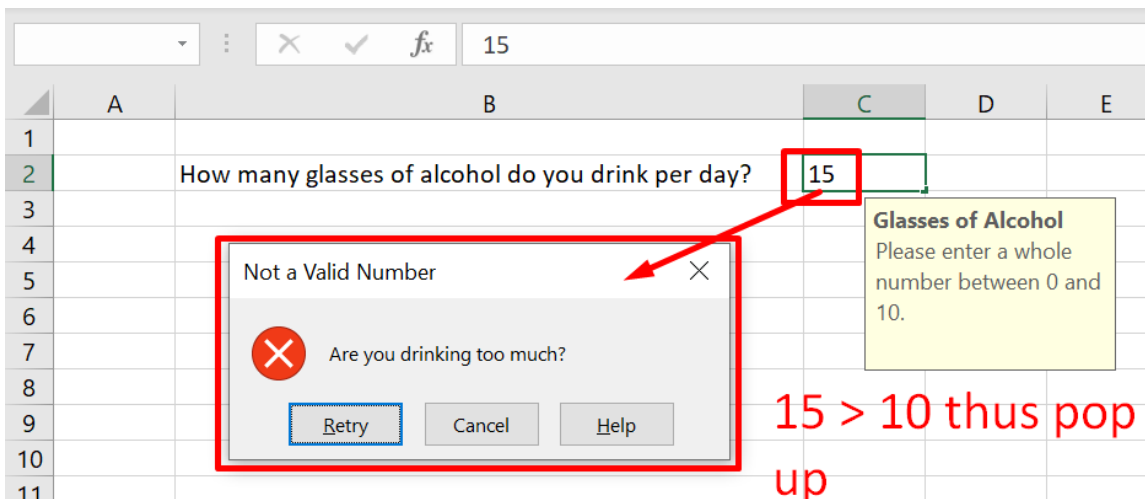
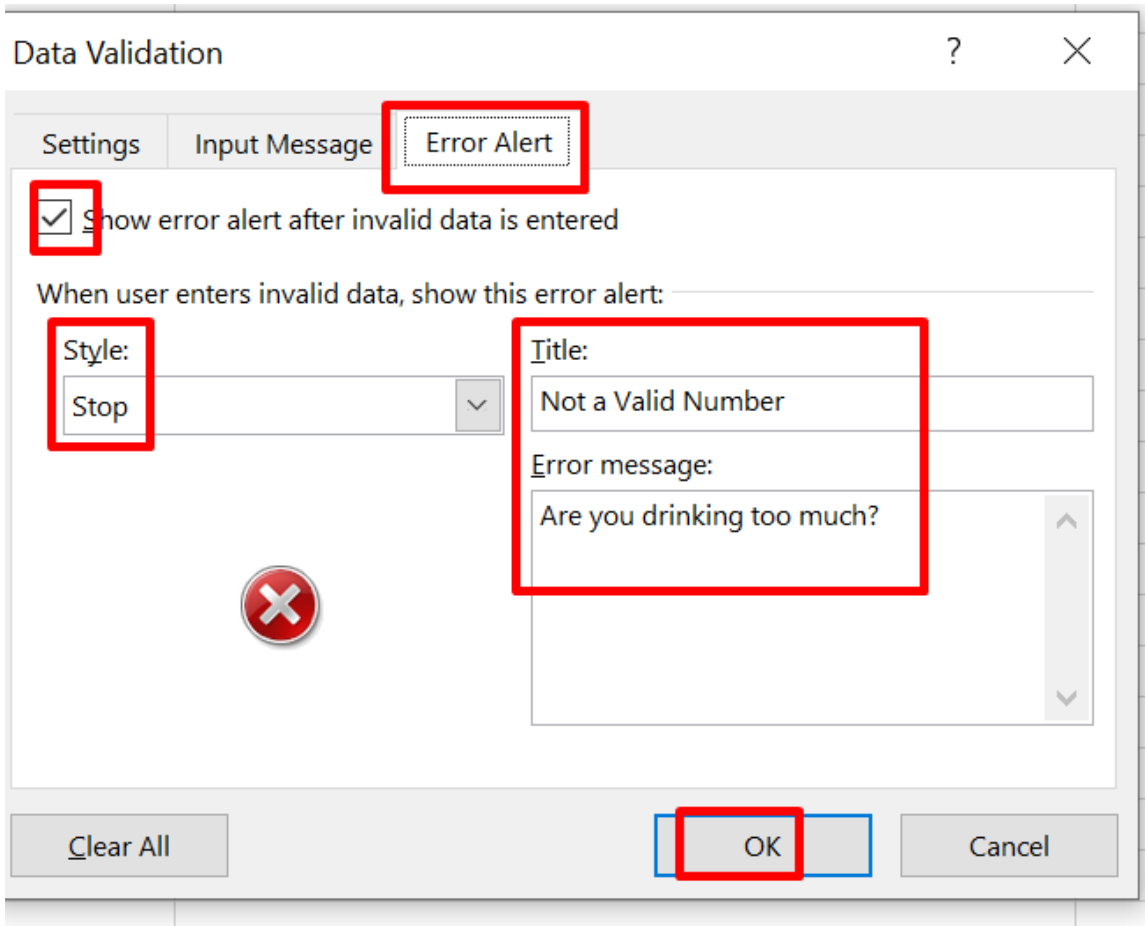
- Prevent users from entering wrong values
- Limit the inputs of users
- Ensure that users **ONLY** enter certain values into a cell.

A. SETTING A VALIDATION RULE

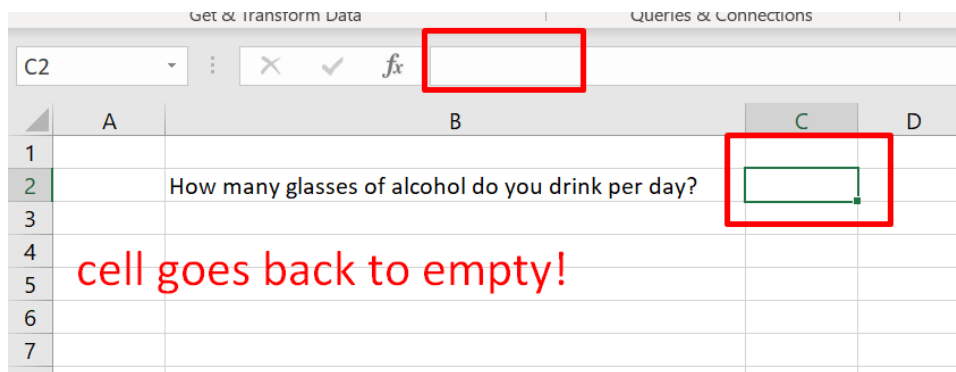
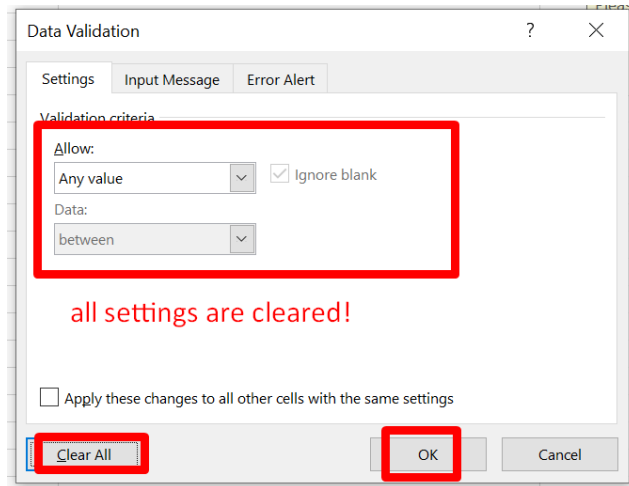
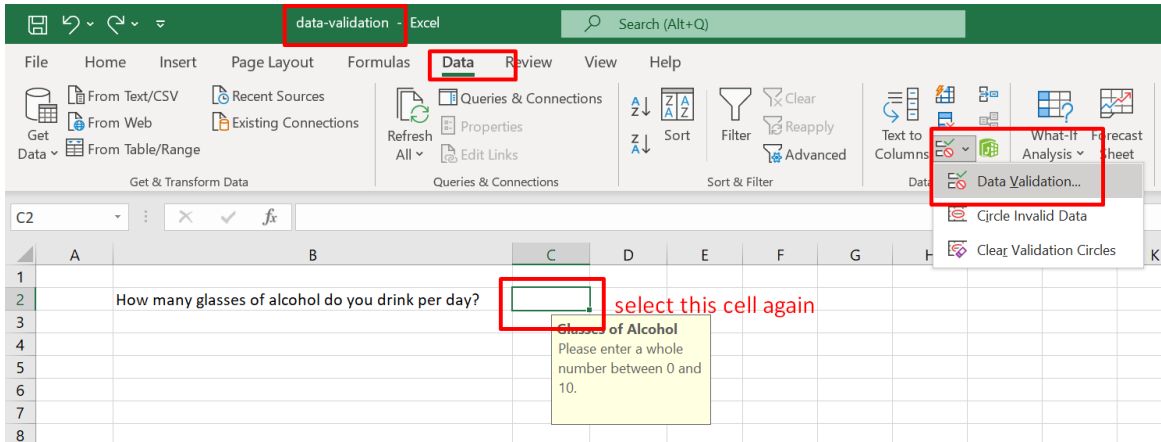
<https://www.alvinang.sg/s/data-validation.xlsx>

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Data Validation' button in the ribbon is highlighted with a red box. A dropdown menu is open, showing options like 'Circle Invalid Data' and 'Clear Validation Circles'. In the spreadsheet, cell C2 is selected, and a tooltip displays the validation rule: 'Glasses of Alcohol Please enter a whole number between 0 and 10.' The text 'select this cell' is written in red next to the selected cell.



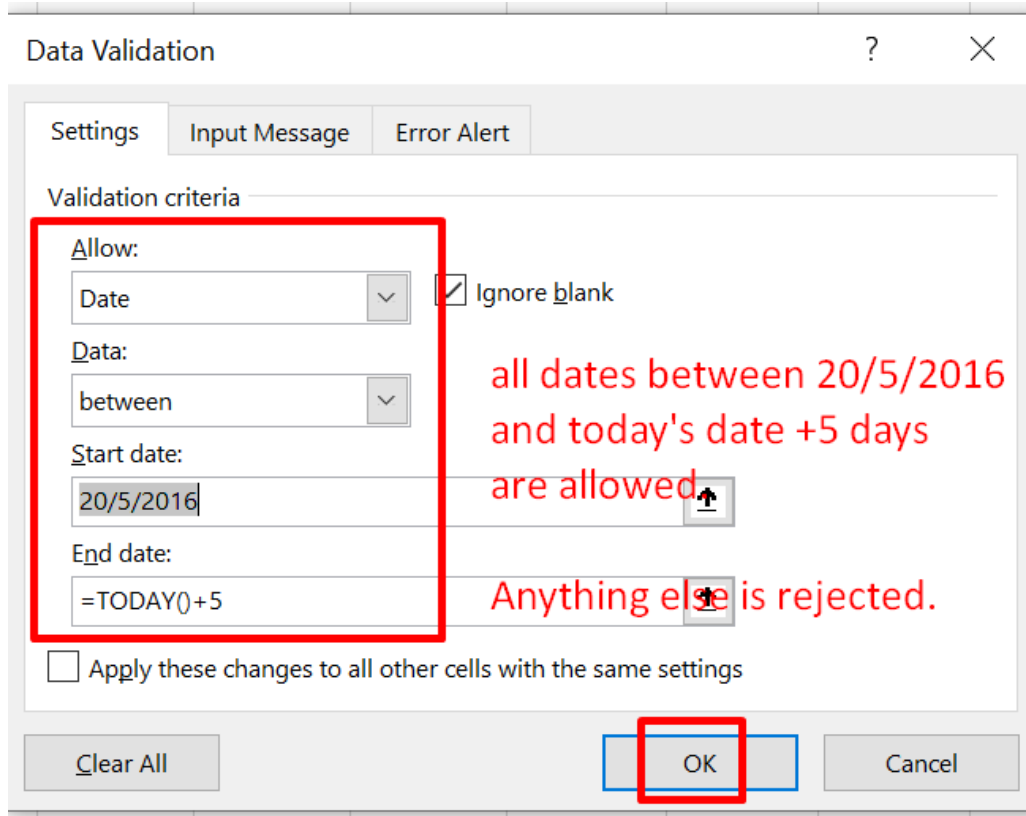
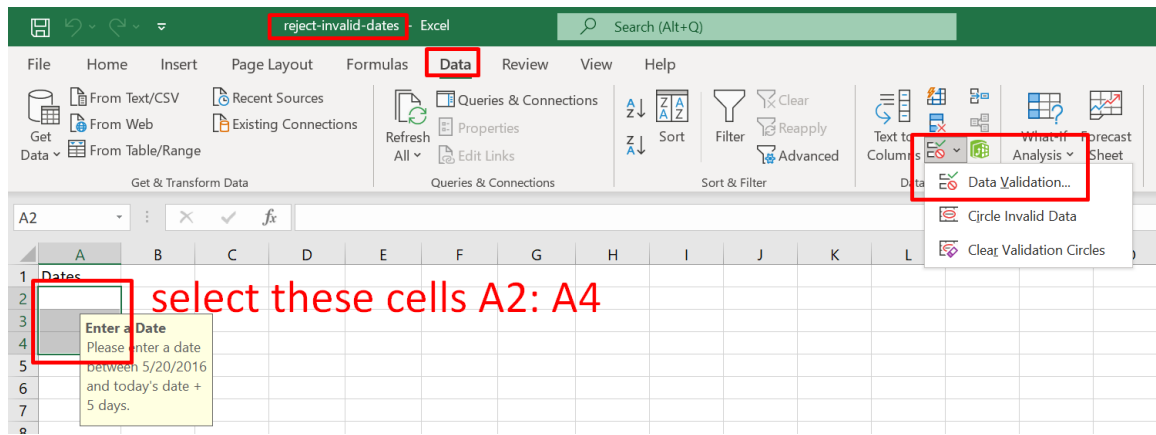


B. HOW TO DELETE AWAY DATA VALIDATION



C. REJECTING INVALID DATES

<https://www.alvinang.sg/s/reject-invalid-dates.xlsx>



19/5/2016

input this and you get an error pop up

19/5/2016

Enter a Date
Please enter a date between 5/20/2016 and today's date + 5 days.

Invalid Date if u wanna change this msg go to Input Message and Error Alert Tab

Date cannot be before 5/20/2016 or after today's date + 5 days.

Retry Cancel Help

Data Validation

Settings Input Message Error Alert

Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

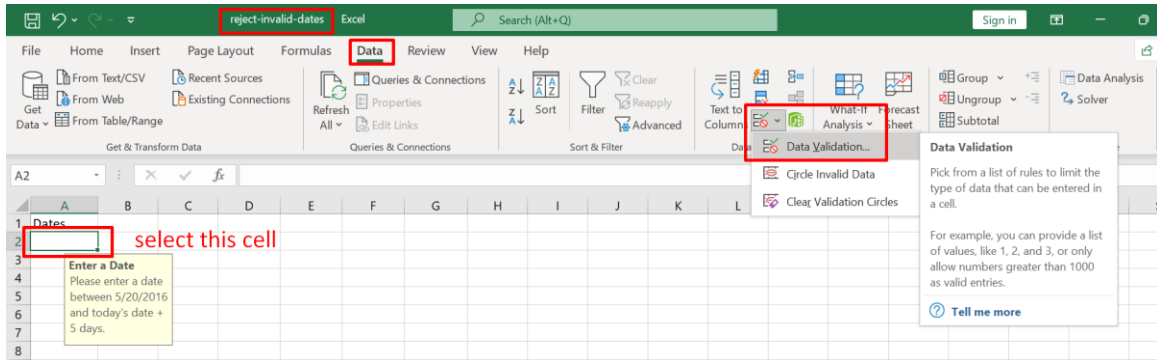
Style: Stop Title: Invalid Date

key this in and try again!

Error message:
Date cannot be before 5/20/2016 or after today's date + 5 days.
WHY YOU SO STUPID???
WHY YOU CANNOT FOLLOW SIMPLE INSTRUCTIONS?

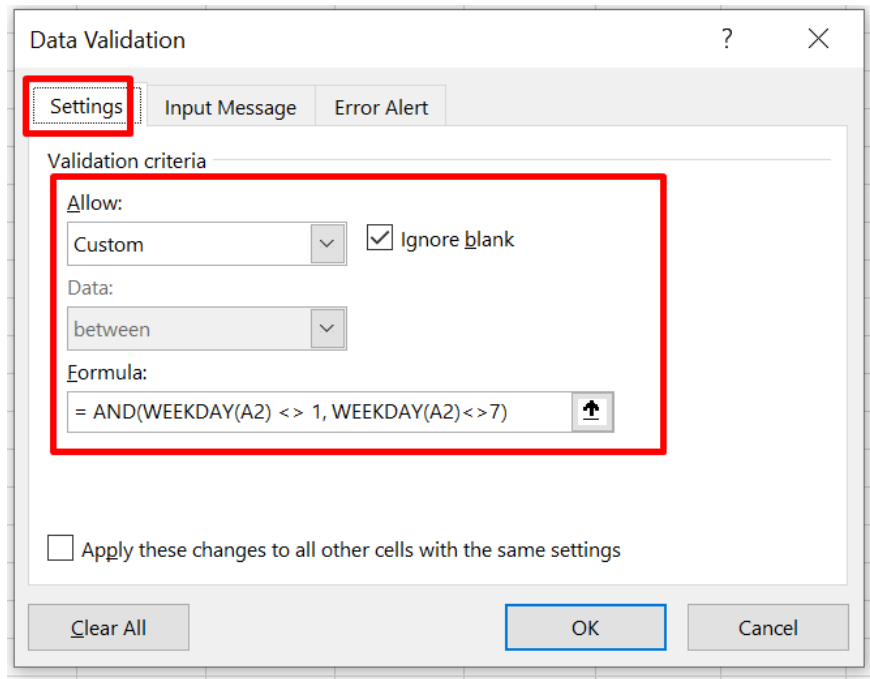
Clear All OK Cancel

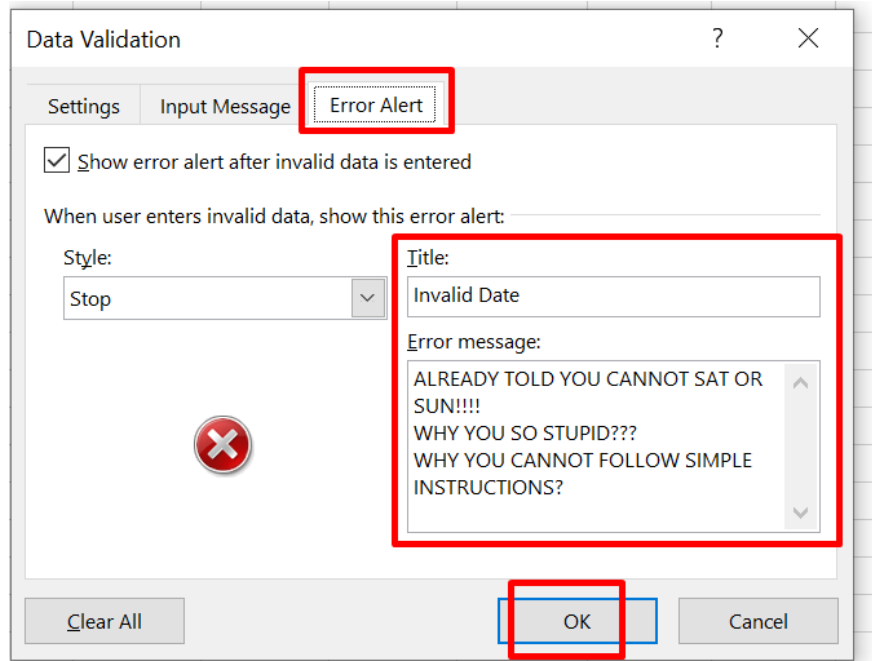
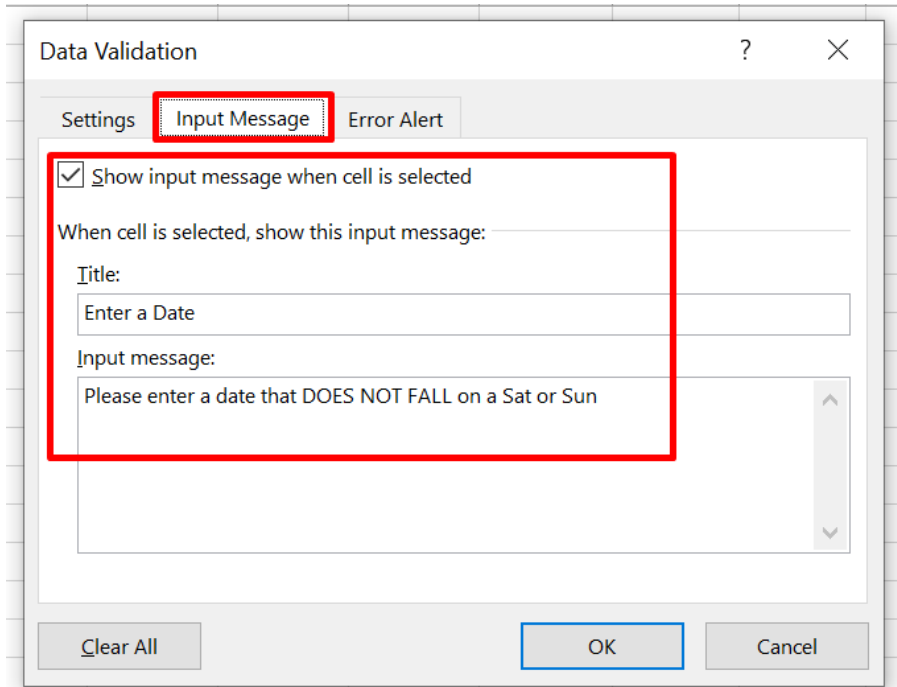
D. PREVENT USER FROM ENTERING SATURDAY OR SUNDAY

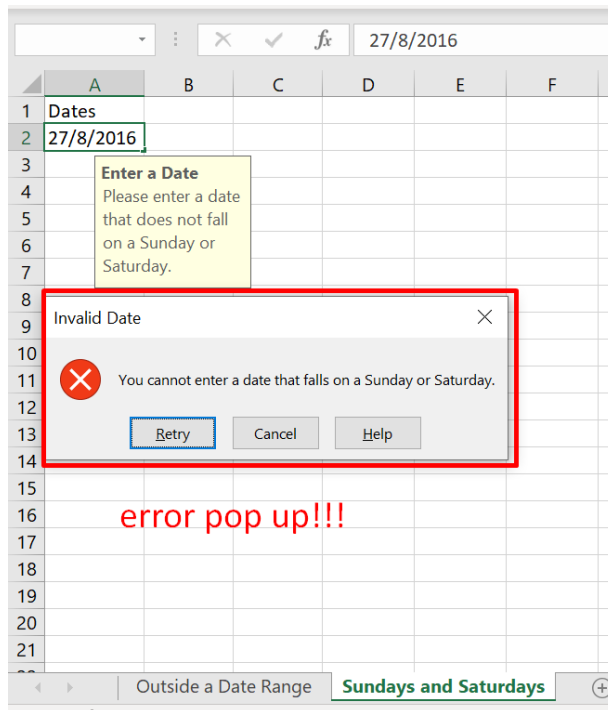
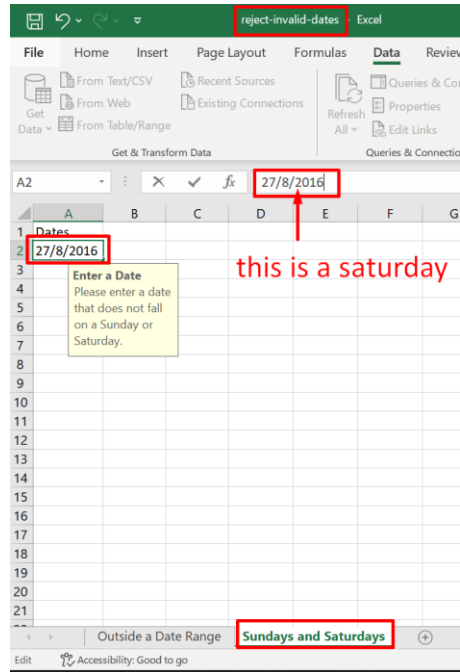


CODE:

```
=AND(WEEKDAY(A2)<>1,WEEKDAY(A2)<>7)
```







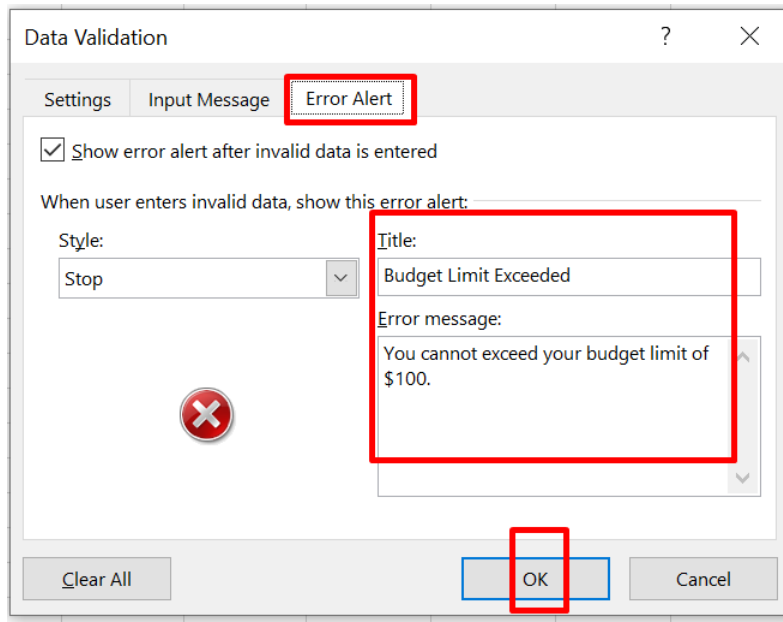
E. PREVENT EXCEED BUDGET LIMIT

<https://www.alvinang.sg/s/budget-limit.xlsx>

The screenshot shows the Excel interface with the 'Party Budget' spreadsheet. The 'Data' tab is active, and the 'Data Validation' button in the ribbon is highlighted with a red box. A red box is drawn around the cells B2 through B8, which contain the following values: \$10.00, \$5.00, \$5.00, \$40.00, \$10.00, and \$10.00. A red arrow points to these cells with the text 'select these cells'. The 'Data Validation' task pane is open on the right, showing options like 'Circle Invalid Data' and 'Clear Validation Circles'.

The 'Data Validation' dialog box is shown with the 'Settings' tab selected. The 'Allow' dropdown is set to 'Custom', and the 'Ignore blank' checkbox is checked. The formula field contains the formula `=SUM(B2:B8) <= 100`. The 'Data' dropdown is set to 'between'. The 'Apply these changes to all other cells with the same settings' checkbox is unchecked. The 'OK' button is highlighted.

The 'Data Validation' dialog box is shown with the 'Input Message' tab selected. The 'Show input message when cell is selected' checkbox is checked. The 'When cell is selected, show this input message:' section has a 'Title' field and an 'Input message' text area containing the text 'LEAVE BLANK' in red. The 'OK' button is highlighted.



KEY IN \$50 AND REJECTED because TOTAL > \$100!!

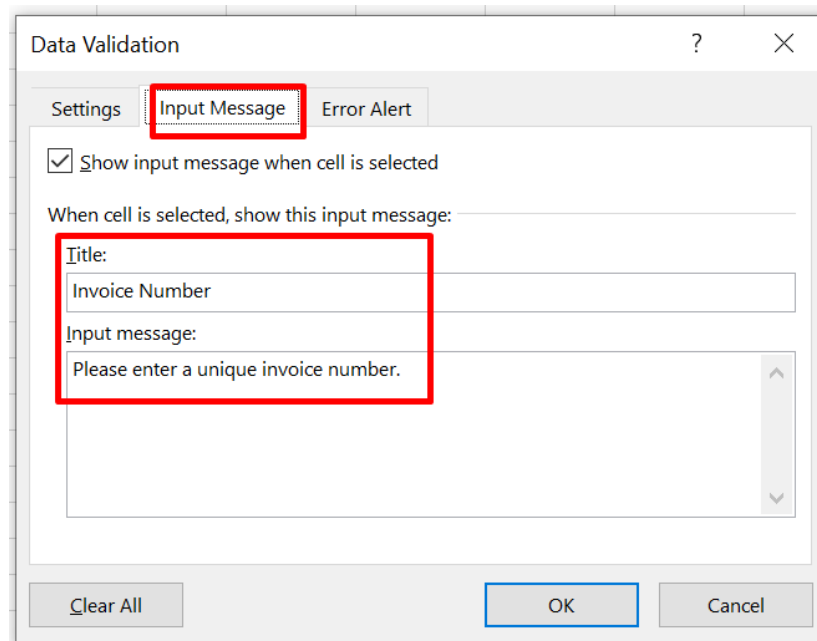
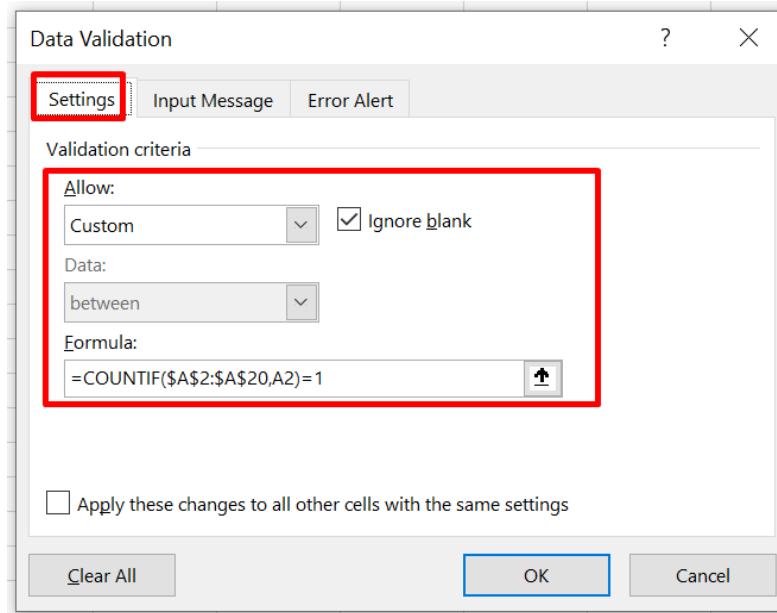
	A	B	C	D	E	F	G
1	Party Budget						
2	Balloons	\$10.00					
3	Confetti	\$5.00					
4	Cups	\$5.00					
5	Drinks	\$40.00					
6	Cake	\$10.00					
7	Snacks	50					
8	Ice Cream	\$10.00					
9							
10	Total	\$80.00					
11							

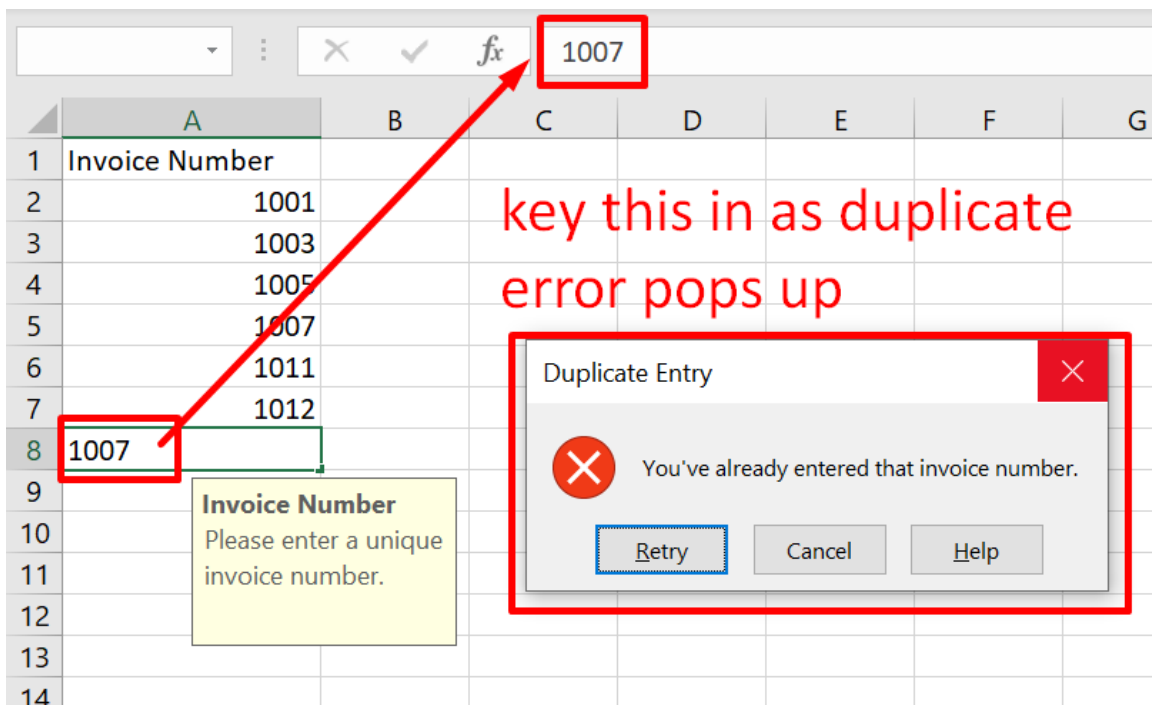
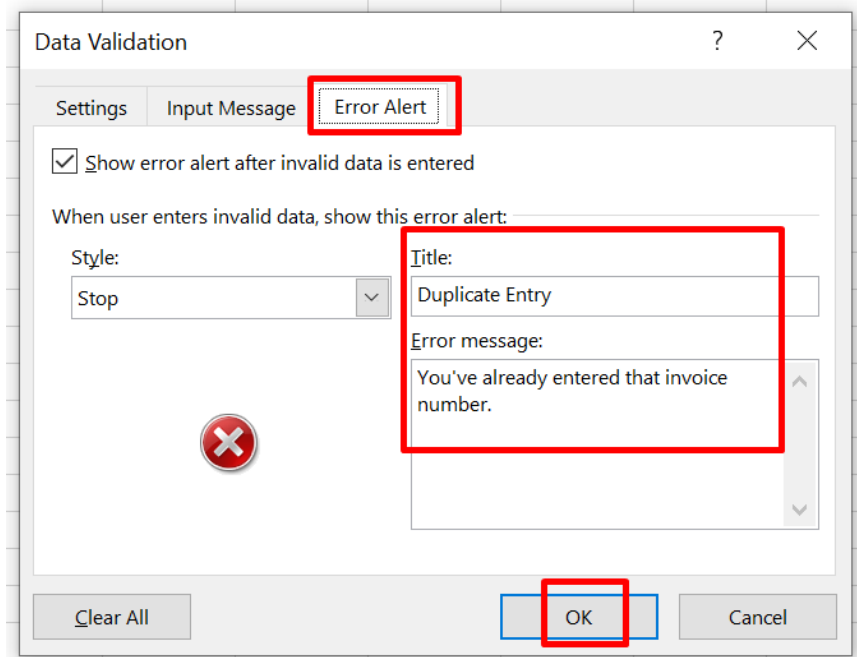
The screenshot shows an error dialog box titled 'Budget Limit Exceeded' with a red 'X' icon. The message reads: 'You cannot exceed your budget limit of \$100.'. The 'Retry' button is highlighted with a red box.

F. PREVENT DUPLICATE ENTRIES IN EXCEL

<https://www.alvinang.sg/s/prevent-duplicate-entries.xlsx>

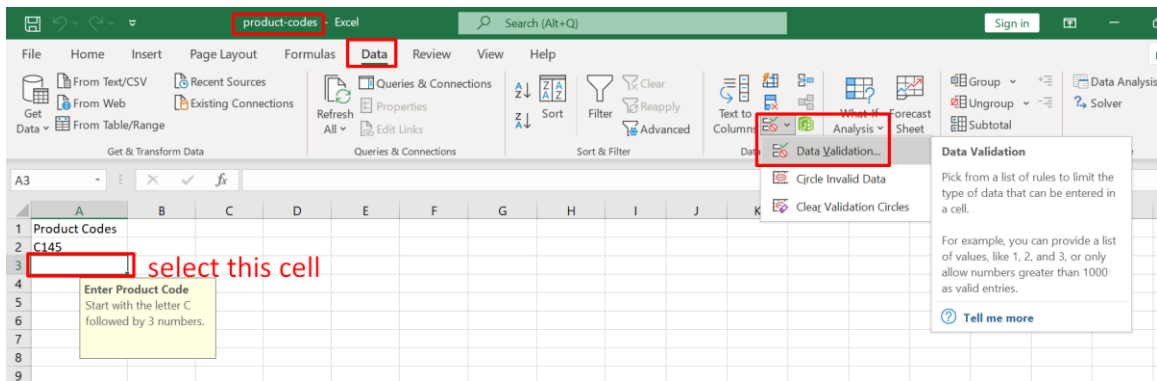
The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Data Validation' button in the ribbon is highlighted with a red box. A dropdown menu is open, showing options like 'Data Validation...', 'Circle Invalid Data', and 'Clear Validation Circles'. In the worksheet, cell A2 contains '1001' and cell A3 contains '1001'. A yellow error message box is displayed over cell A3, stating 'Invoice Number Please enter a unique invoice number.' A red rectangular box highlights the range of cells from A2 to A21. The text 'select these cells' is written in red next to this box. The status bar at the bottom indicates 'Average: 1006.5 Count: 6 Sum: 6039'.





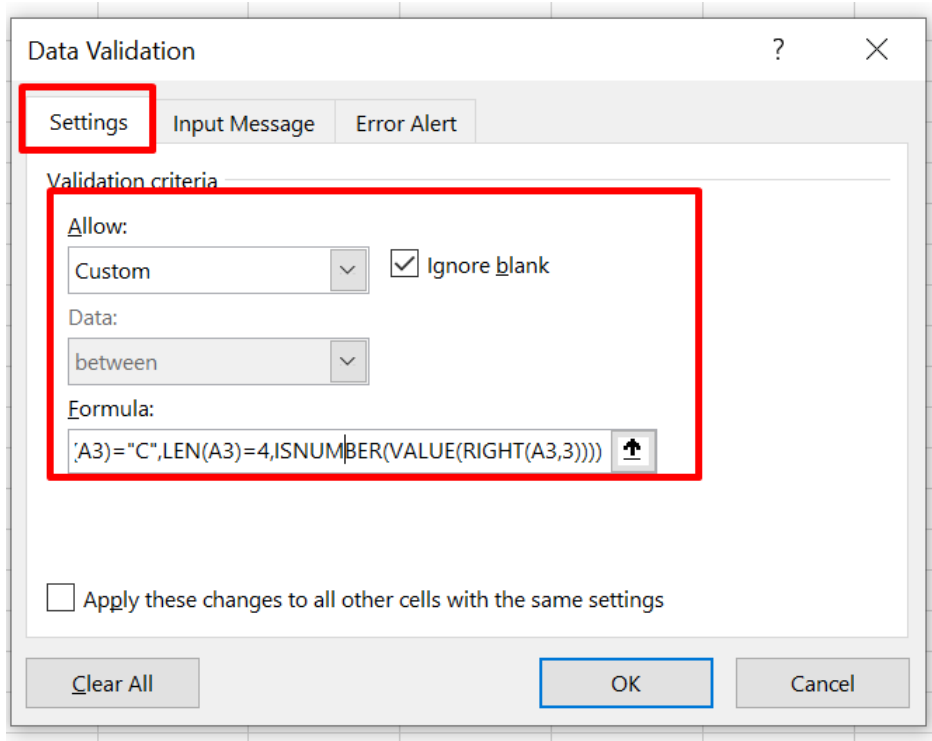
G. PREVENT KEYING IN WRONG PRODUCT CODE FORMATS

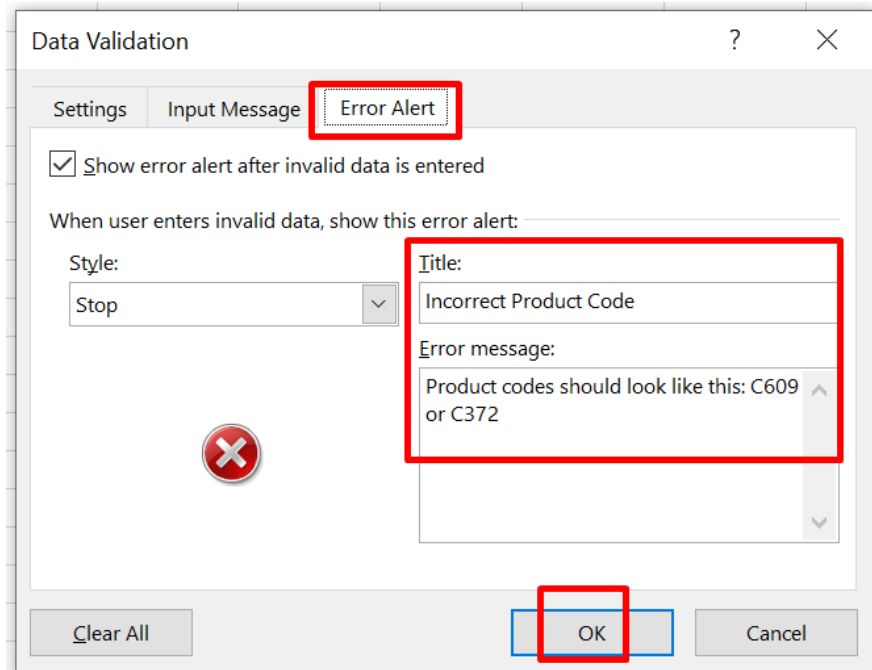
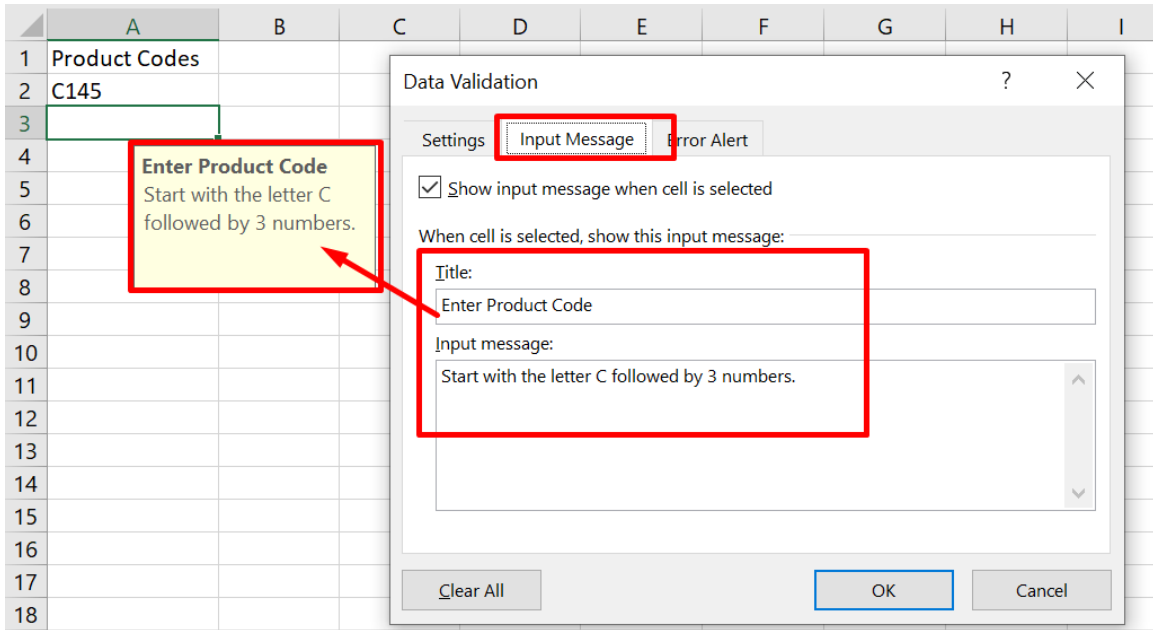
<https://www.alvinang.sg/s/product-codes.xlsx>

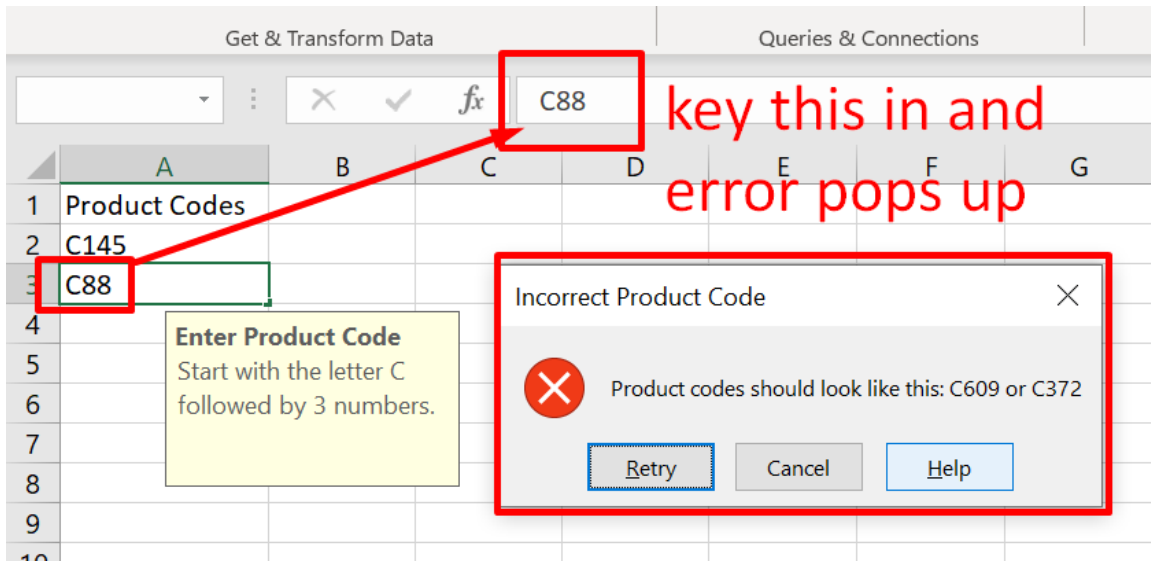


CODE:

```
=AND(LEFT(A3)="C",LEN(A3)=4,ISNUMBER(VALUE(RIGHT(A3,3))))
```







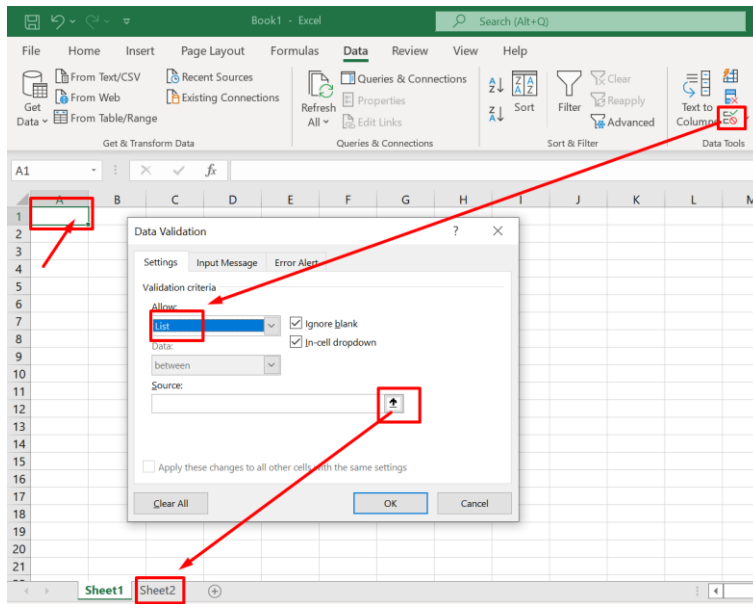
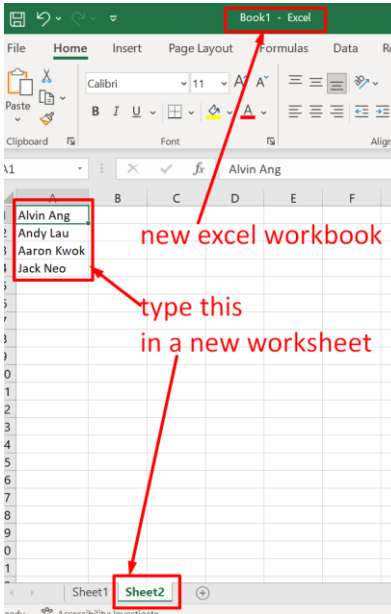
CODE:

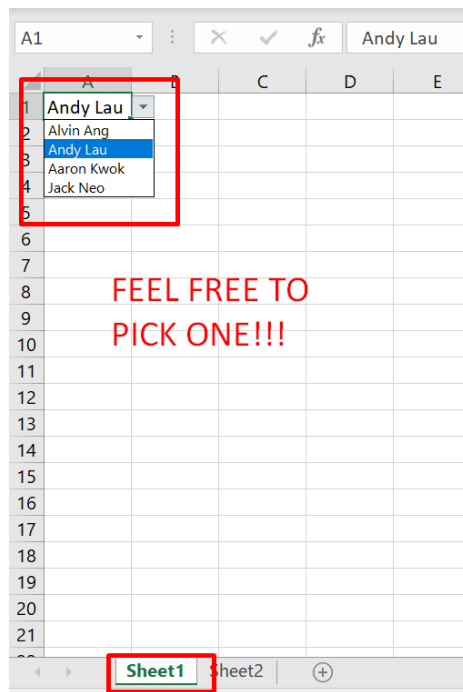
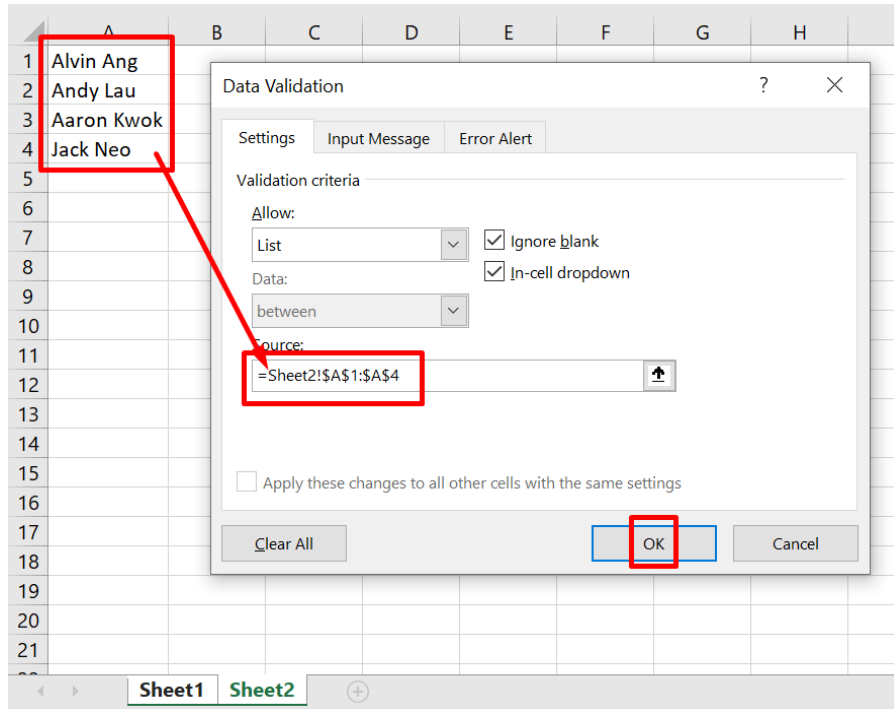
```
=AND(LEFT(A3)="C",LEN(A3)=4,ISNUMBER(VALUE(RIGHT(A3,3))))
```

- this AND function has three arguments.
- LEFT(A2)="C" forces the user to start with the letter C.
- LEN(A2)=4 forces the user to enter a string with a length of 4 characters.
- ISNUMBER(VALUE(RIGHT(A2,3))) forces the user to end with 3 numbers.
- RIGHT(A2,3) extracts the 3 rightmost characters from the text string.
- The VALUE function converts this text string to a number.
- ISNUMBER checks whether this value is a number.
- The AND Function returns TRUE if all conditions are true.
- Because we selected the range A2:A7 before we clicked on Data Validation, Excel automatically copies the formula to the other cells.

VII. DATA VALIDATION: DROP DOWN LIST

A. HOW TO CREATE A DROP DOWN LIST





B. HIDING THE DROP DOWN LIST

right click
note:
if u do
not want
your users to
access the items
in sheet 2, you
can hide it
(right click)

Book1 - Excel

File Home Insert Page Layout Formulas Data

Get Data From Text/CSV From Web From Table/Range Recent Sources Existing Connections Refresh All

Get & Transform Data

A1 Alvin Ang

	A	B	C	D	E	F
1	Alvin Ang					
2	Andy Lau					
3	Aaron Kwok					
4	Jack Neo					
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						

Sheet1 Sheet2

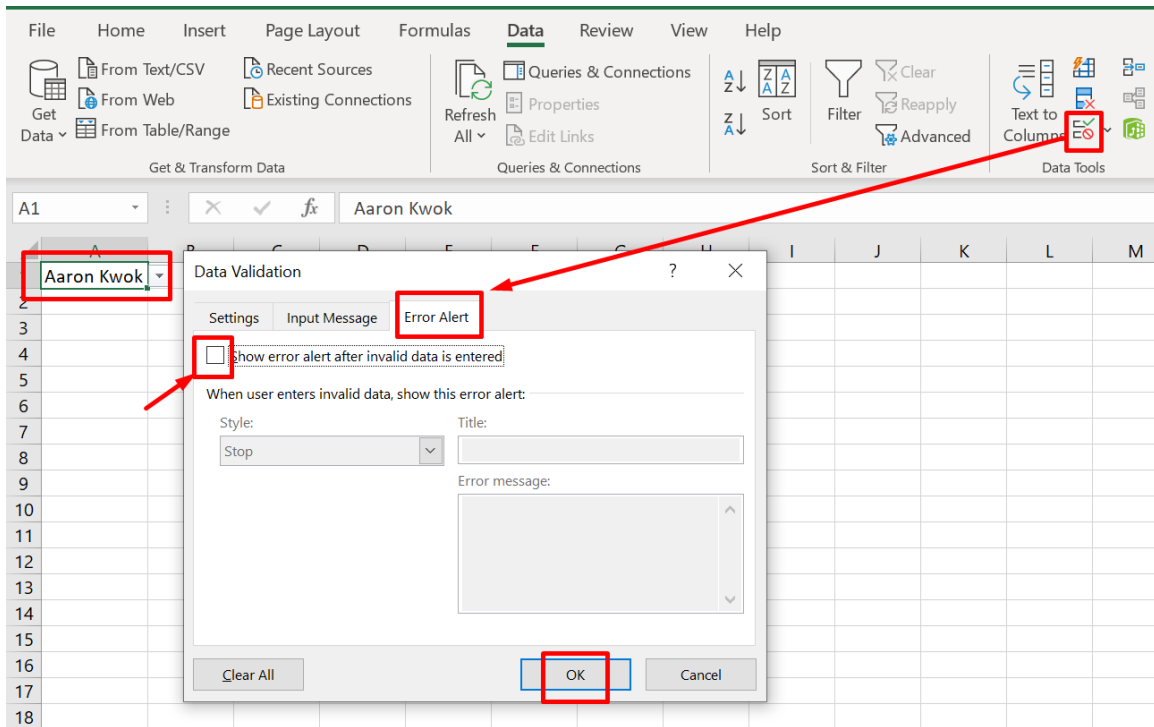
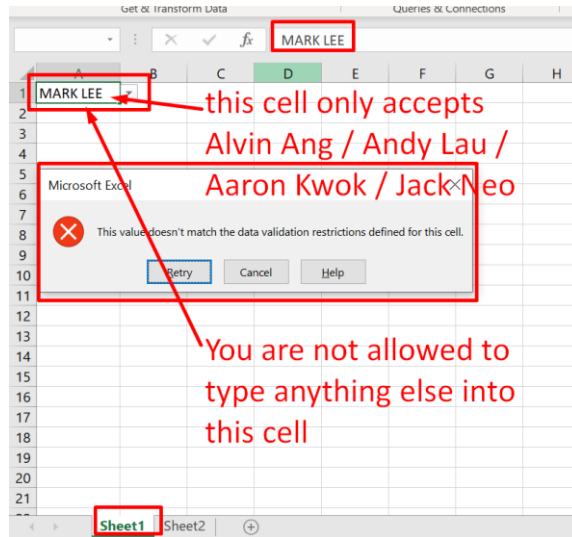
C. CREATING IMMEDIATE DROP DOWN LIST

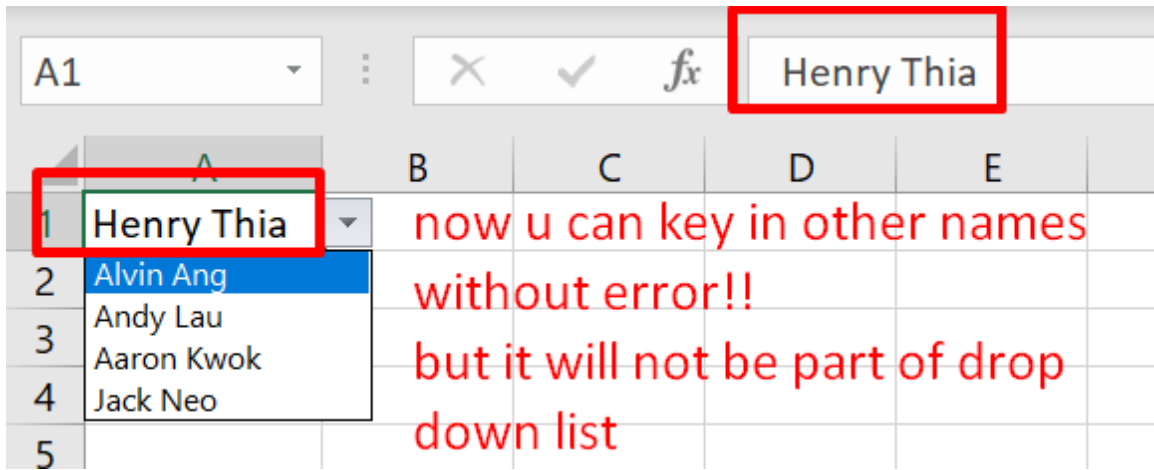
just choose any empty cell

directly type into it the list that you want

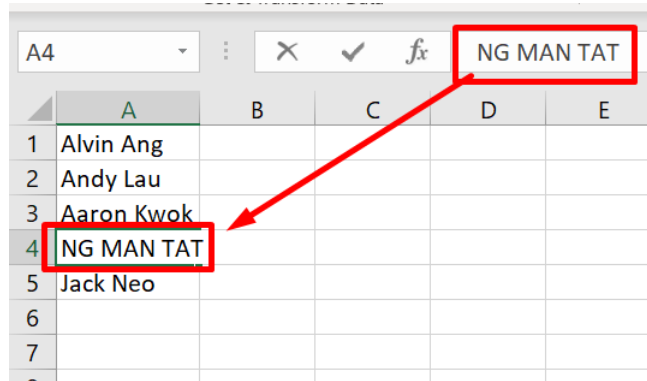
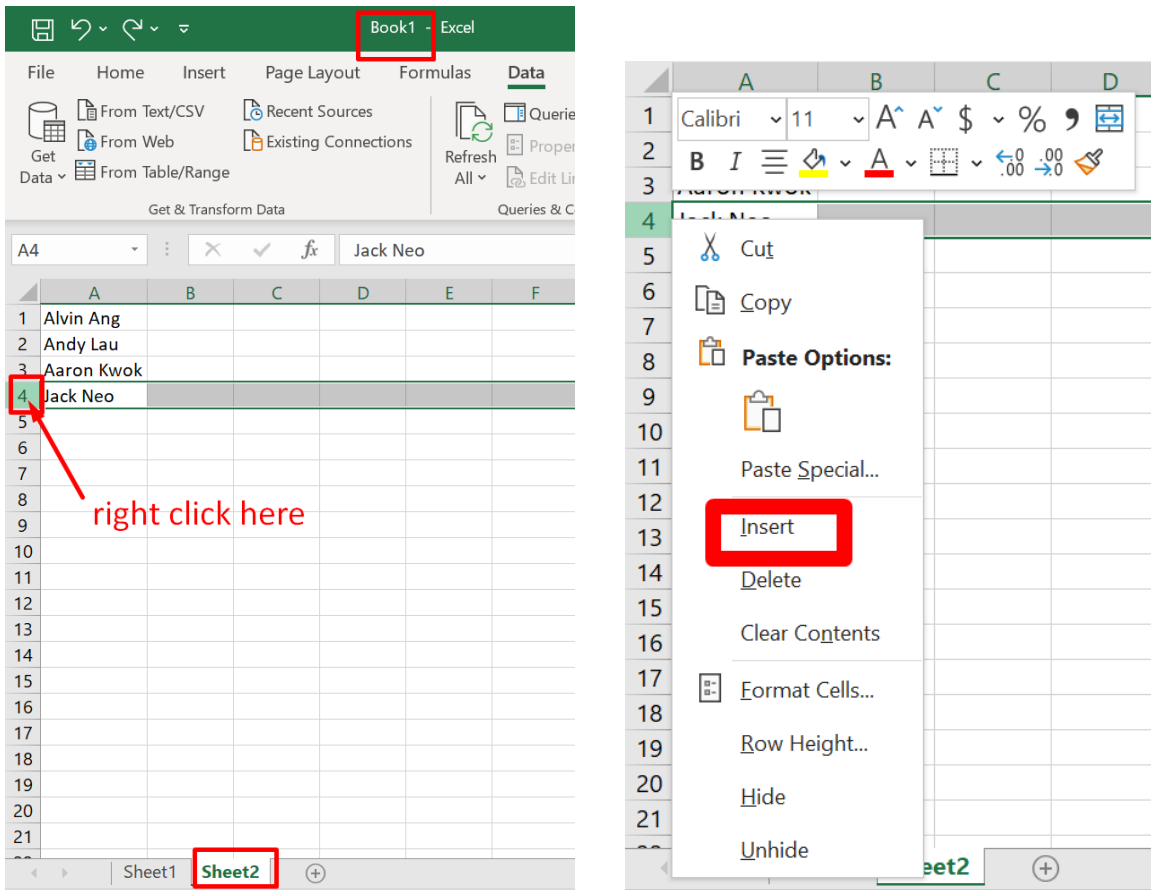
pick one!!!

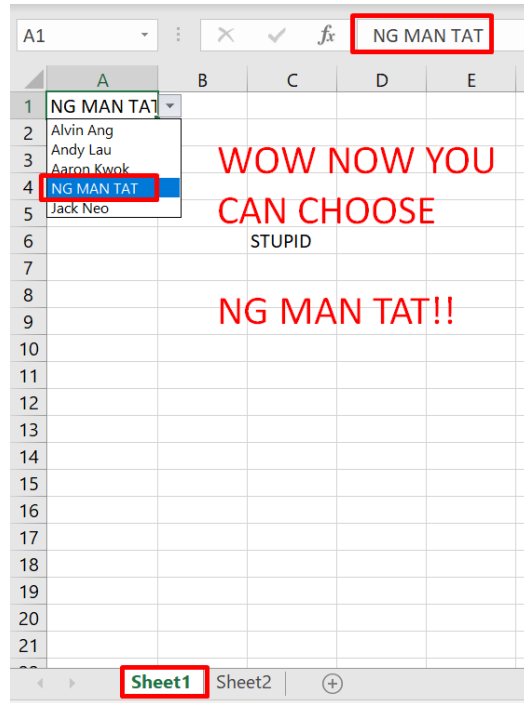
D. ALLOWING OTHER ENTRIES





E. INSERTING AND DELETING NEW NAMES





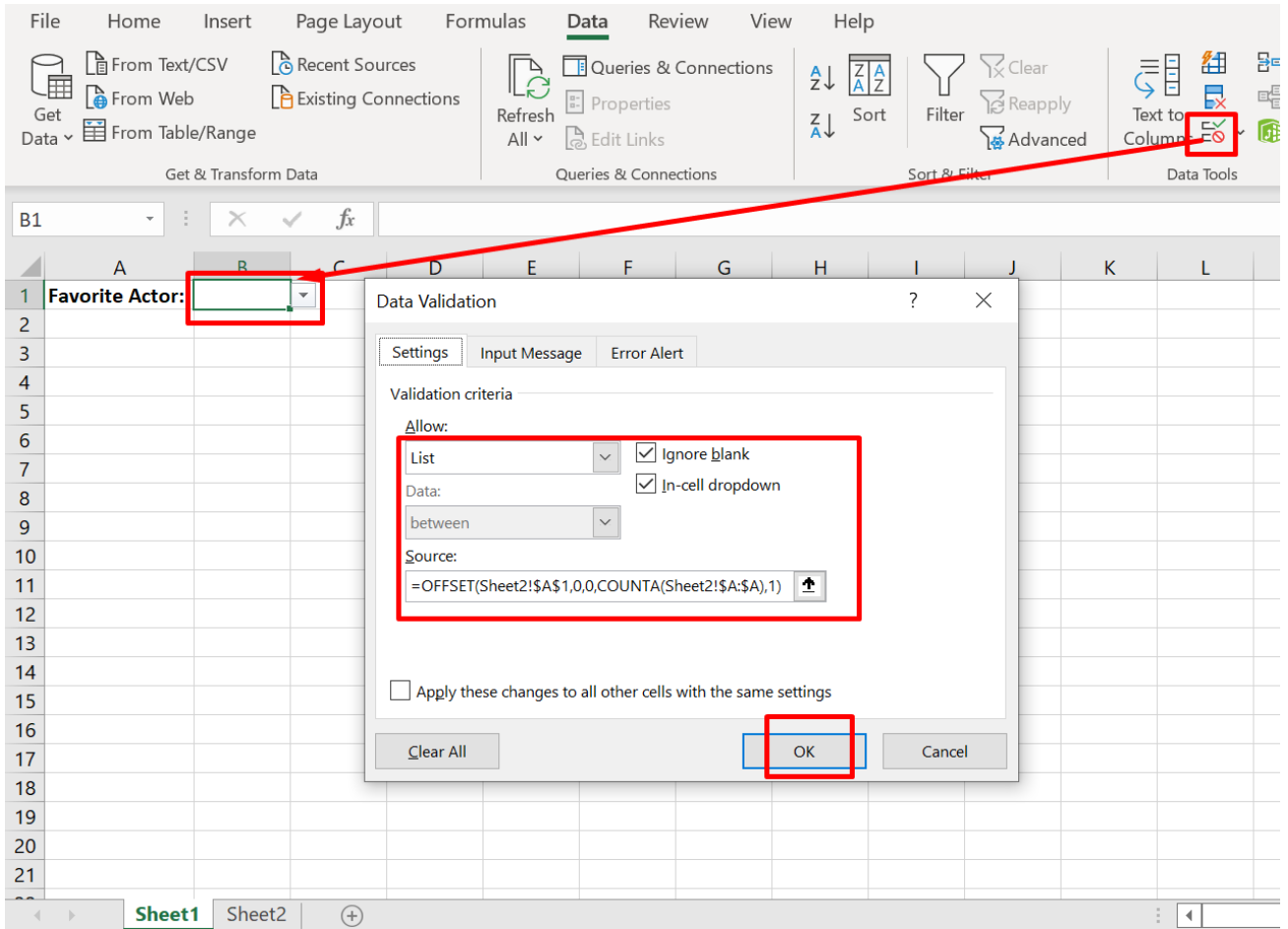
You may repeat the steps above **to Delete** any names away from the Drop Down List.

Just select DELETE and SHIFT CELLS UP.

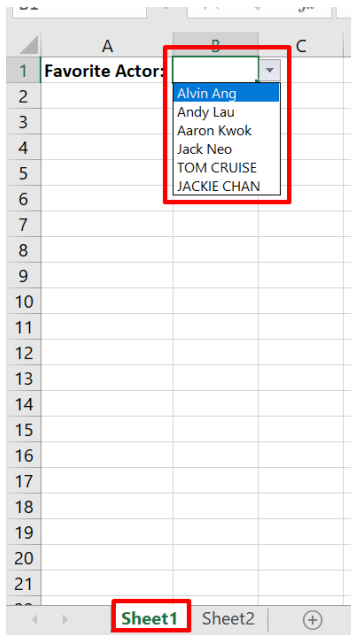
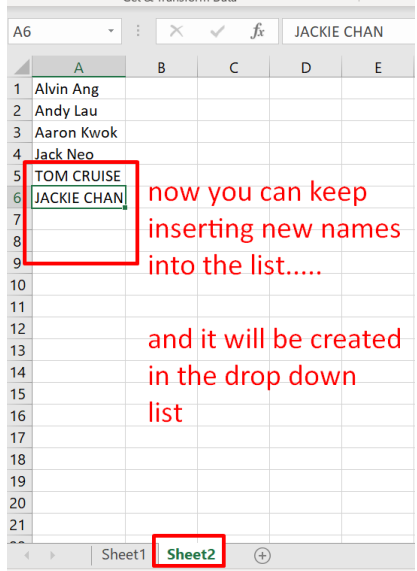
F. DYNAMIC DROP DOWN LIST

The screenshot displays the Microsoft Excel interface. The ribbon is set to 'Home'. In the worksheet, a list of names is entered in column A, rows 1 through 4: Alvin Ang, Andy Lau, Aaron Kwok, and Jack Neo. A red rectangular box encloses this list, with the red text 'create this list first' positioned to its right. Below the list, a red arrow points diagonally down to the 'Sheet2' tab at the bottom of the window, which is also highlighted with a red box. The red text 'in this new sheet' is placed above the arrow. The status bar at the bottom shows 'Sheet1' and 'Sheet2'.

A	B	C	D	E	F
Alvin Ang					
Andy Lau					
Aaron Kwok					
Jack Neo					



=OFFSET(Sheet2!\$A\$1,0,0,COUNTA(Sheet2!\$A:\$A),1)



G. REMOVING DROP DOWN LIST

File Home Insert Page Layout Formulas **Data** Review View Help

Get Data From Text/CSV Recent Sources Refresh All Queries & Connections Properties Edit Links Sort Filter Clear Reapply Advanced Text to Columns

B1

1 Favorite Actor

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

Sheet1 Sheet2

Data Validation

Settings Input Message Error Alert

Validation criteria

Allow: List Ignore blank

Data: between In-cell dropdown

Source: =OFFSET(Sheet2!\$A\$1,0,0,COUNTA(Sheet2!\$A:\$A),1)

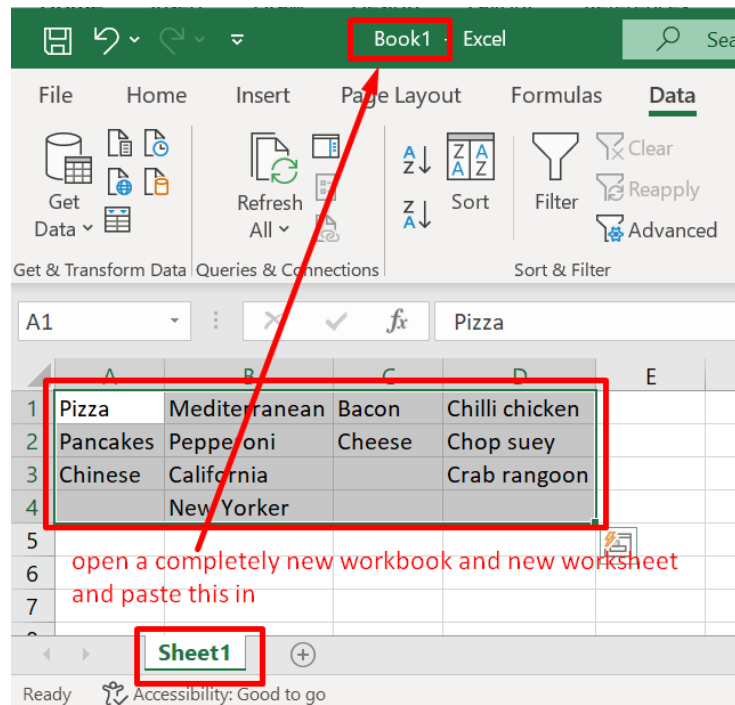
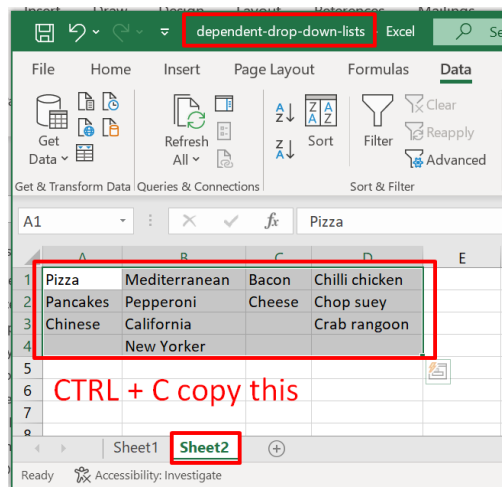
Apply these changes to all other cells with the same settings

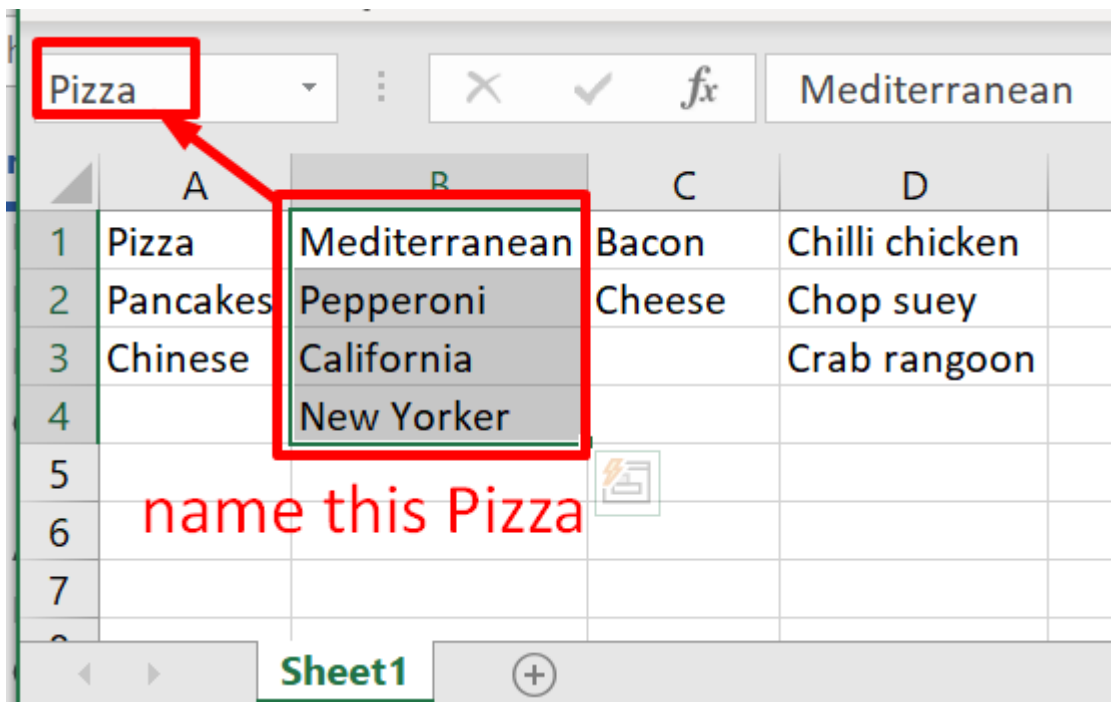
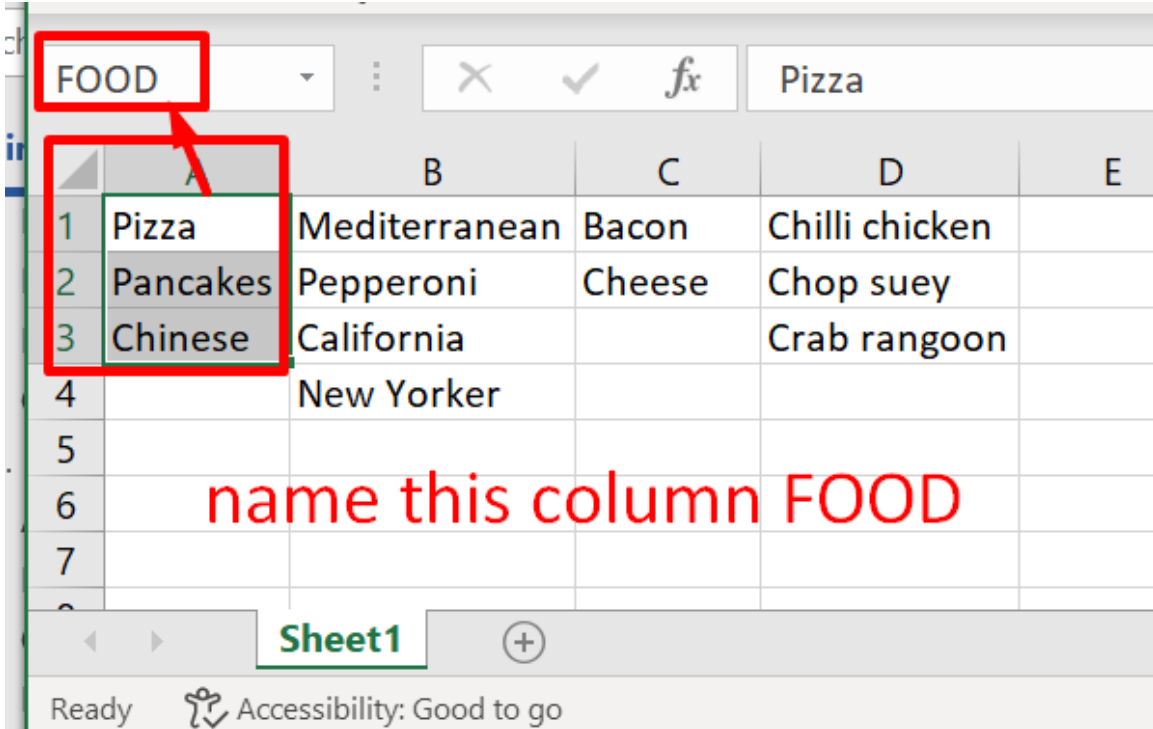
Clear All OK Cancel

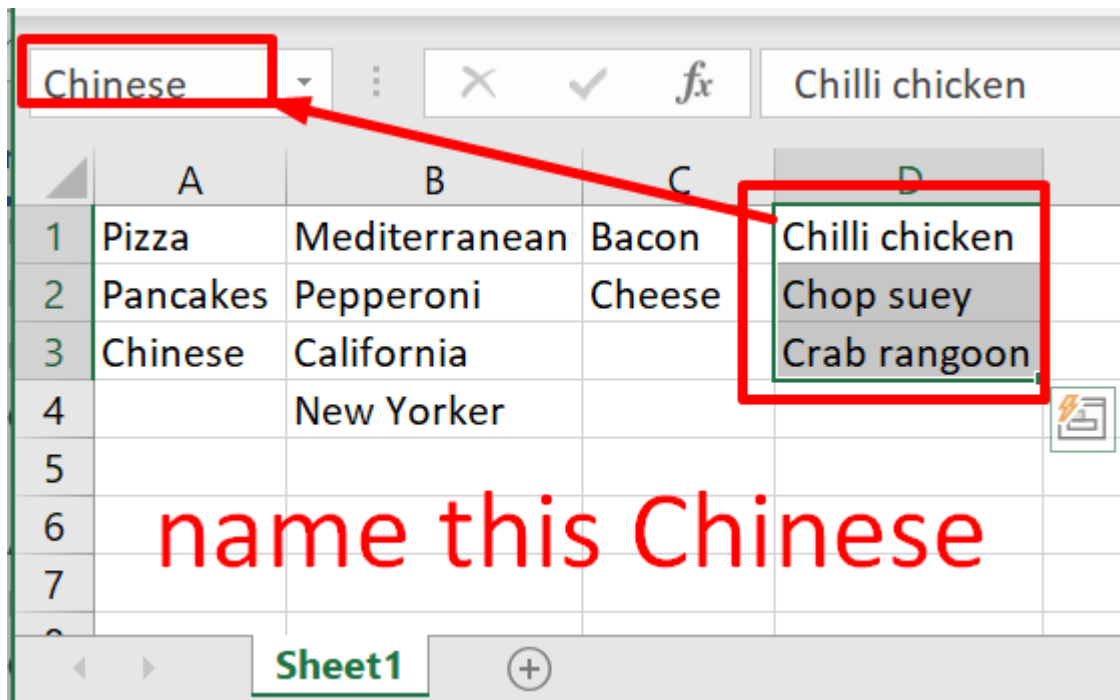
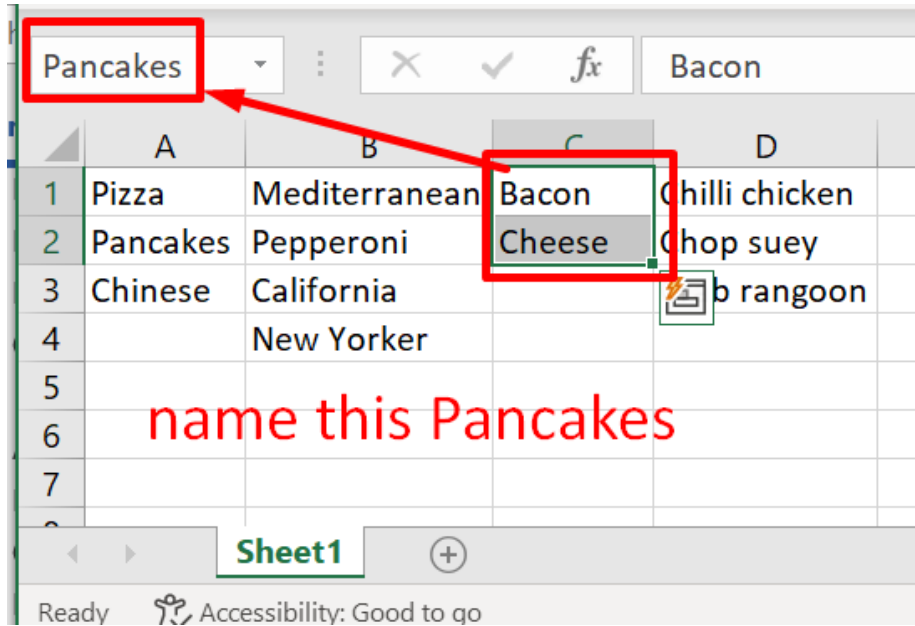
choosing this will delete away your drop down list

H. DEPENDENT DROP DOWN LIST

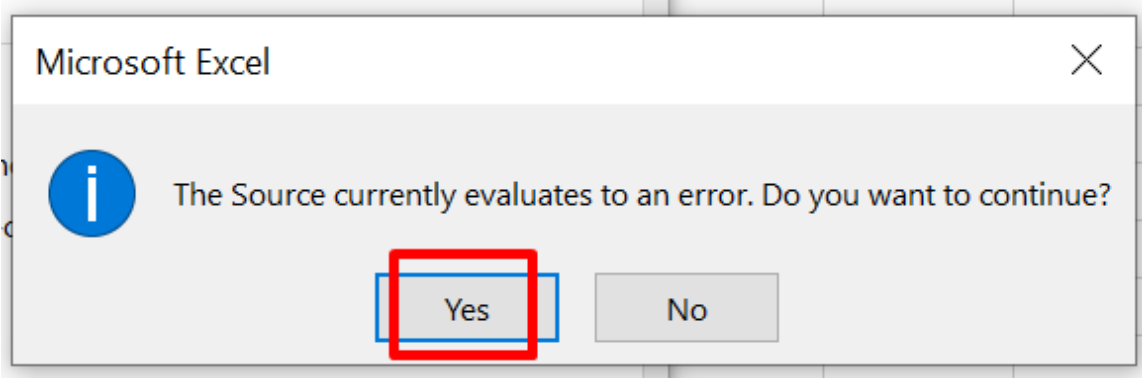
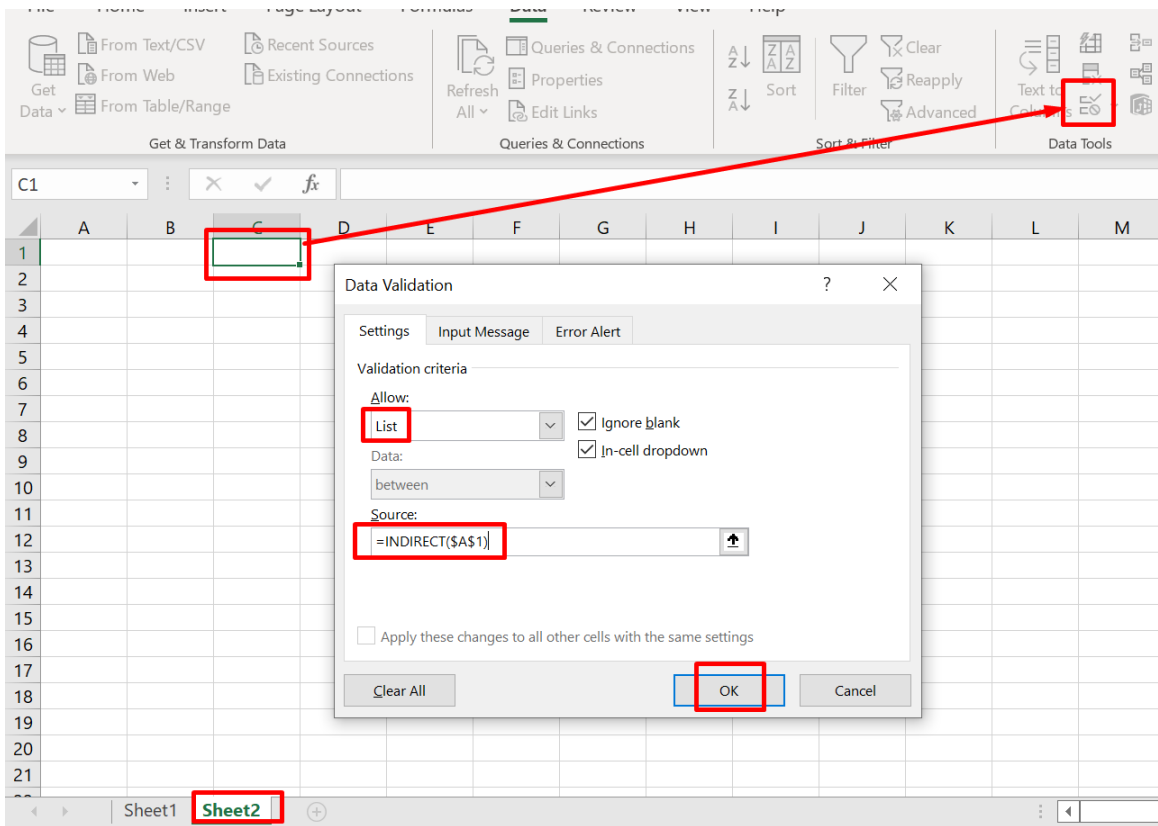
<https://www.alvinang.sg/s/dependent-drop-down-lists.xlsx>







The screenshot shows the Microsoft Excel interface with the **Data** ribbon selected. In the **Data Tools** group, the **Data Validation** icon is highlighted with a red box. A red arrow points from this icon to the **Data Validation** dialog box. The dialog box is open, showing the **Settings** tab. Under **Validation criteria**, the **Allow** dropdown is set to **List** (highlighted with a red box). The **Source** field contains the formula **=FOOD** (highlighted with a red box). The **OK** button is also highlighted with a red box. In the background, cell A1 is highlighted with a red box. At the bottom of the window, the **Sheet2** tab is highlighted with a red box. The text **open up a new worksheet** is written in red below the dialog box.



An Excel spreadsheet with columns A, B, C, and D, and rows 1 through 5. Cell A1 contains the text 'Pancakes'. Cell C1 has a dropdown menu open, showing 'Bacon' selected and 'Cheese' as an alternative option. Red boxes highlight the text in A1 and the dropdown menu in C1, with a red arrow pointing from A1 to C1.

	A	B	C	D
1	Pancakes		Bacon Cheese	
2				
3				
4				
5				

An Excel spreadsheet with columns A, B, C, and D, and rows 1 through 4. Cell A1 contains the text 'Chinese'. Cell C1 has a dropdown menu open, showing 'Chilli chicken' selected and 'Chop suey' and 'Crab rangoon' as alternative options. Red boxes highlight the text in A1 and the dropdown menu in C1, with a red arrow pointing from A1 to C1.

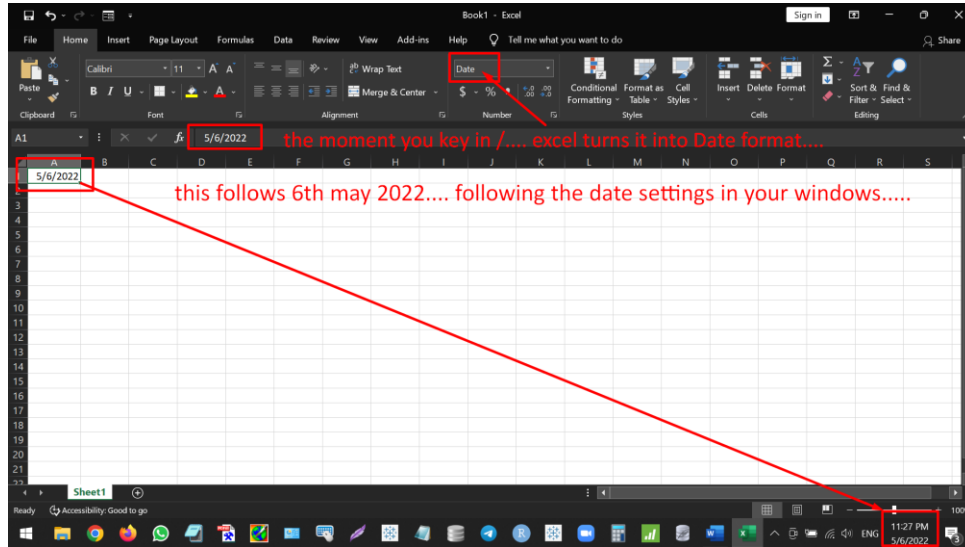
	A	B	C	D
1	Chinese		Chilli chicken Chop suey Crab rangoon	
2				
3				
4				

An Excel spreadsheet with columns A, B, C, and D, and rows 1 through 5. Cell A1 contains the text 'Pizza'. Cell C1 has a dropdown menu open, showing 'Mediterranean' selected and 'Pepperoni', 'California', and 'New Yorker' as alternative options. Red boxes highlight the text in A1 and the dropdown menu in C1, with a red arrow pointing from A1 to C1.

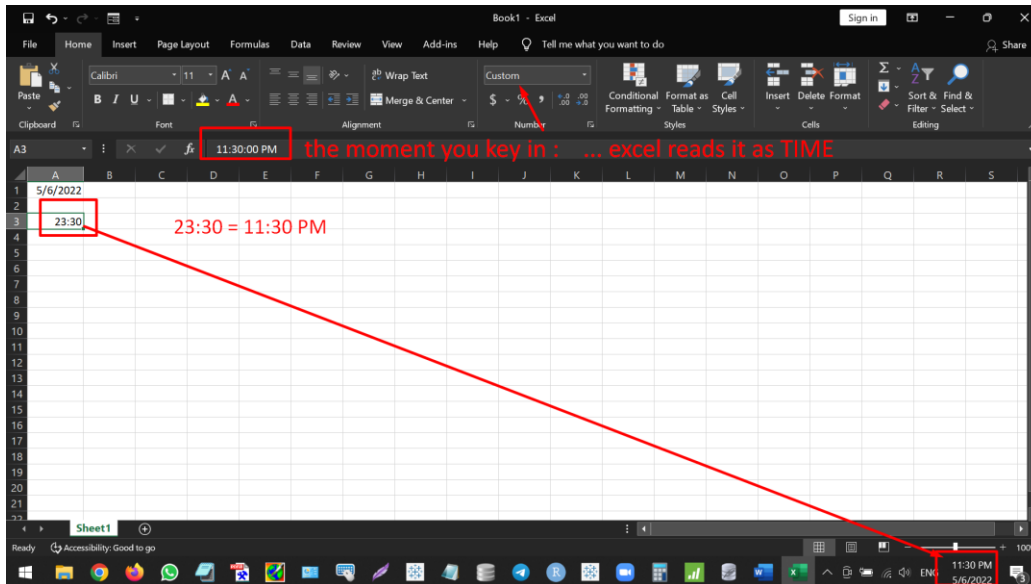
	A	B	C	D
1	Pizza		Mediterranean Pepperoni California New Yorker	
2				
3				
4				
5				

VIII. DATE

A. KEY IN DATE



B. KEY IN TIME



C. DISPLAY YEAR

The screenshot shows the Microsoft Excel interface with the Home tab selected. The formula bar displays `=YEAR(A1)` in cell B1. The spreadsheet shows cell A1 containing the date `5/7/2022` and cell B1 displaying the year `2022`. Red boxes highlight the formula bar and cell B1, with a red arrow pointing from the formula bar to cell B1. A red text annotation reads "this will display the year".

	A	B	C	D	E	F	G	H	I
1	5/7/2022	2022							
2									
3									
4									
5									

D. ADD DAYS TO DATE

The screenshot shows the Microsoft Excel interface with the Home tab selected. The formula bar displays `=A1+5` in cell B1. The spreadsheet shows cell A1 containing the date `5/7/2022` and cell B1 displaying the date `5/12/2022`. Red boxes highlight the formula bar and cell B1. A red text annotation reads "this will add 5 days to the date".

	A	B	C	D	E	F	G	H	I
1	5/7/2022	5/12/2022							
2									
3									
4									

E. ADD YEARS + MONTHS + DATE

The screenshot shows the Microsoft Excel interface with the Home tab selected. The formula bar displays the formula `=DATE(YEAR(A1)+4,MONTH(A1)+2,DAY(A1)+9)`. The formula bar also shows a red 'x' icon, indicating an error. The spreadsheet shows cell A1 containing the date 5/7/2022 and cell B1 containing the result 7/16/2026. A red text overlay reads "Add 4 years, 2 months and 9 days to cell A1".

	A	B	C	D	E	F	G	H	I	J	K
1	5/7/2022	7/16/2026									
2											
3											
4											
5											
6											
7											
8											

F. CURRENT DATE & TIME

The screenshot shows the Microsoft Excel interface with the Home tab selected. The formula bar displays the formula `=NOW()`. The spreadsheet shows cell A1 containing the current date and time 5/7/2022 19:59. A red text overlay reads "displays current date and time".

	A	B	C	D	E	F	G	H
1	5/7/2022 19:59							
2								
3								

G. CURRENT DATE

The screenshot shows the Microsoft Excel interface with the Home tab selected. The ribbon includes options for Clipboard, Font, Alignment, and Number. The formula bar at the top displays the formula `=TODAY()` in cell A1. The cell A1 in the grid contains the date 5/7/2022. A red box highlights the 'Date' dropdown menu in the ribbon, and another red box highlights the formula bar. A red text overlay reads 'DISPLAYS current date'.

	A	B	C	D	E	F	G	H	I
1	5/7/2022								
2									
3									

H. GET THE HOUR / MINUTE / SECOND

The screenshot shows the Microsoft Excel interface with the Home tab selected. The ribbon includes options for Clipboard, Font, Alignment, and Number. The formula bar at the top displays the formula `=HOUR(A1)` in cell B1. The cell A1 in the grid contains the time 6:45, and cell B1 contains the result 6. A red box highlights the formula bar. A red text overlay reads 'displays the hour'.

	A	B	C	D	E	F	G	H	I
1	6:45	6							
2									
3									

Book3 - Excel

File Home Insert Page Layout Formulas Data Review View Add-ins

Clipboard Font Alignment Number

B1 `=MINUTE(A1)`

	A	B	C	D	E	F	G	H	I
1	6:45	45							
2									
3									

get the minute

File Home Insert Page Layout Formulas Data Review View Add-ins

Clipboard Font Alignment Number

B1 `=SECOND(A1)`

	A	B	C	D	E	F	G	H	I
1	6:45	0							
2									

gets the second

I. DATEDIF

The screenshot shows the Excel ribbon with the formula bar containing `=DATEDIF(A1, A2, "d")`. The spreadsheet below has dates 4/18/2009 in A1 and 6/23/2016 in A2. Cell A4 contains the result 2623. A red text annotation reads "difference of 2623 days".

	A	B	C	D	E	F
1	4/18/2009					
2	6/23/2016					
3						
4	2623					
5						
6						

The screenshot shows the Excel ribbon with the formula bar containing `=DATEDIF(A1, A2, "m")`. The spreadsheet below has dates 4/18/2009 in A1 and 6/23/2016 in A2. Cell A4 contains the result 86. A red text annotation reads "difference of 86 months".

	A	B	C	D	E	F
1	4/18/2009					
2	6/23/2016					
3						
4	86					
5						

The screenshot shows the Excel ribbon with the formula bar containing `=DATEDIF(A1, A2, "y")`. The spreadsheet below has dates 4/18/2009 in A1 and 6/23/2016 in A2. Cell A4 contains the result 7. A red text annotation reads "difference of 7 years".

	A	B	C	D	E	F	G
1	4/18/2009						
2	6/23/2016						
3							
4	7						
5							

Clipboard Font Alignment

A4 `=DATEDIF(A1, A2, "yd")`

	A	B	C	D	E	F	G
1	4/18/2009						
2	6/23/2016						
3							
4	66						
5							

ignore years
 difference of 66 days between
 18 april and 23 june

A4 `=DATEDIF(A1, A2, "md")`

	A	B	C	D	E	F	G
1	4/18/2009						
2	6/23/2016						
3							
4	5						
5							
6							

ignore months _years
 5 days between 18 to 23

A4 `=DATEDIF(A1, A2, "ym")`

	A	B	C	D	E	F	G
1	4/18/2009						
2	6/23/2016						
3							
4	2						
5							

ignore years
 2 months between 4 _6

J. WEEKDAY

	A	B	C	D	E	F	G	H	I	J
1	12/22/2025	2								
2		1 = sunday								
3		2 = monday								
4									
5		7 = saturday								

	A	B	C	D	E	F	G	C
1	12/22/2025	Monday						
2								
3								
4								

	A	B	C	D	E	F	G	H
1	12/22/2025	December						
2								
3								
4								

ABOUT DR ALVIN ANG



Dr. Alvin Ang earned his Ph.D., Masters and Bachelor degrees from NTU, Singapore. He is a scientist, entrepreneur, as well as a personal/business advisor. More about him at www.AlvinAng.sg.