



# EXCEL FOR EVERYBODY

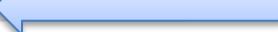
# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE WEEK 1

- When we have multiple sheets that are similar in format and we want to change a certain name of certain cell in all the sheets simultaneously, we can CTRL+SELECT all the similar workbooks and then make changes to a cell. This will be copied to all the worksheets.

Monthly Sales Report					
Name: Aneesa Ahkter			Month: March		
Item Code	Item Price	Quantity	Sales	Commission	
3245	\$129.00	21	\$2,709.00	\$447.80	
3248	\$99.00	2	\$198.00	\$32.73	
3249	\$199.00	35	\$6,965.00	\$1,151.31	
3250	\$199.00	28	\$5,572.00	\$921.05	
3251	\$19.00	28	\$532.00	\$87.94	
3252	\$129.00	14	\$1,806.00	\$298.53	
3256	\$199.00	32	\$6,368.00	\$1,052.63	
3258	\$29.00	5	\$145.00	\$23.97	
3259	\$39.00	7	\$273.00	\$45.13	
3260	\$99.00	27	\$2,723.00	\$441.85	

Q1 Summary   January   February   March   April



- 3D References: If we expand references to include multiple Worksheets, we get a 3-D reference (an extra dimension to specify to identify a cell).

Adding across sheets can be done in a variety of ways

- Go to individual sheets and select the cell number to add as shown below

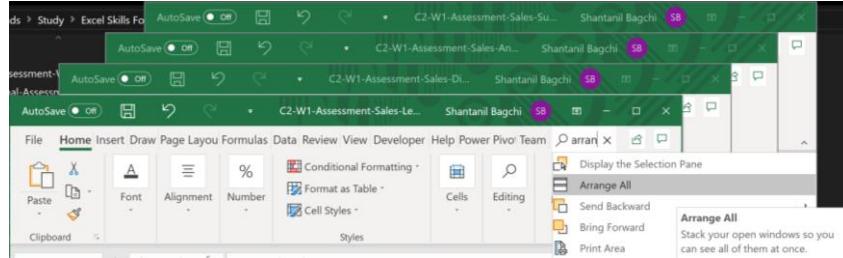
C5						
=January!C5+February!C5+March!C5						
Quarterly Sales Report						
Aneesa Ahkter						
Item Code	Item Price	Quantity	Sales	Commission		
3245	\$129.00	81	\$10,449.00	\$1,727.22		
3248	\$99.00	28	\$2,772.00	\$458.21		
3249	\$199.00	71	\$14,129.00	\$2,335.52		

- The other way to do this is to use SUM function across the sheets. In the main sheet where we need the sum, type =SUM( and select the first cell of the sheet to be added and click SHIFT and go the last sheet and select the cell and type ) and ENTER. (NOTE: All the sheets of interest need to be ordered in the bottom and moving the sheets around can cause the formula to BREAK)

C6						
=SUM(January:March!C6)						
Quarterly Sales Report						
Aneesa Ahkter						
Item Code	Item Price	Quantity	Sales	Commission		
3245	\$129.00	81	\$10,449.00	\$1,727.22		
3248	\$99.00	28	\$2,772.00	\$458.21		
3249	\$199.00	71	\$14,129.00	\$2,335.52		

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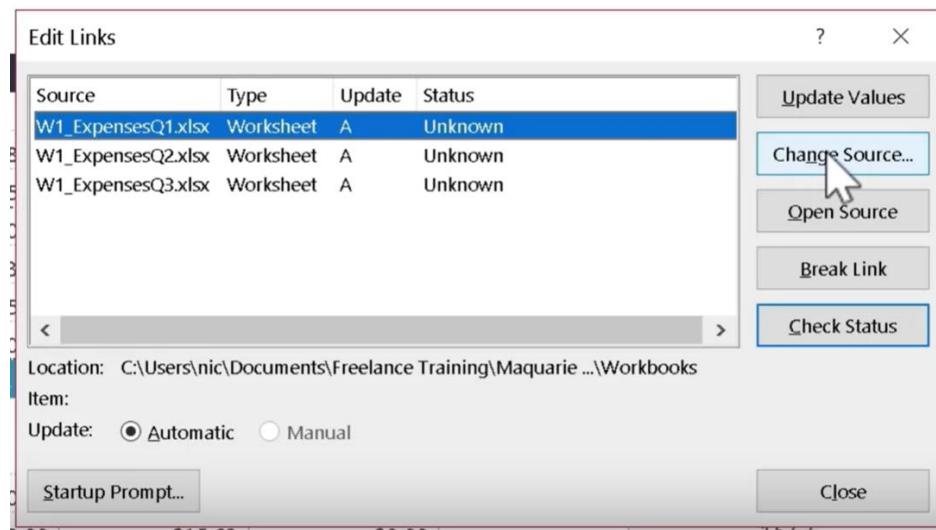
- When we have similar kind of multiple sheets (non similar too) we want to work with, there is a helpful tool to arrange all the workbooks across the screen for ease of work as shown below that arranges all the workbooks. (Select TILED option)



- When we have connections to different workbooks in a single file, changing the name of any of the linked workbook will result in LINK BREAK in the main file. In order to correct it, we can select the option as shown .

A screenshot of the Microsoft Excel ribbon. The 'Data' tab is selected. In the 'Connections' section, the 'Edit Links' button is highlighted with a mouse cursor. Below the ribbon, a table titled 'TRANSPORTATION' is visible, showing data for Q1 and Q4.

Once the following DIALOG BOX opens, we can see the status of the links used. If any workbook name is changes, we can click on the CHANGE SOURCE options shown and select the renamed file.



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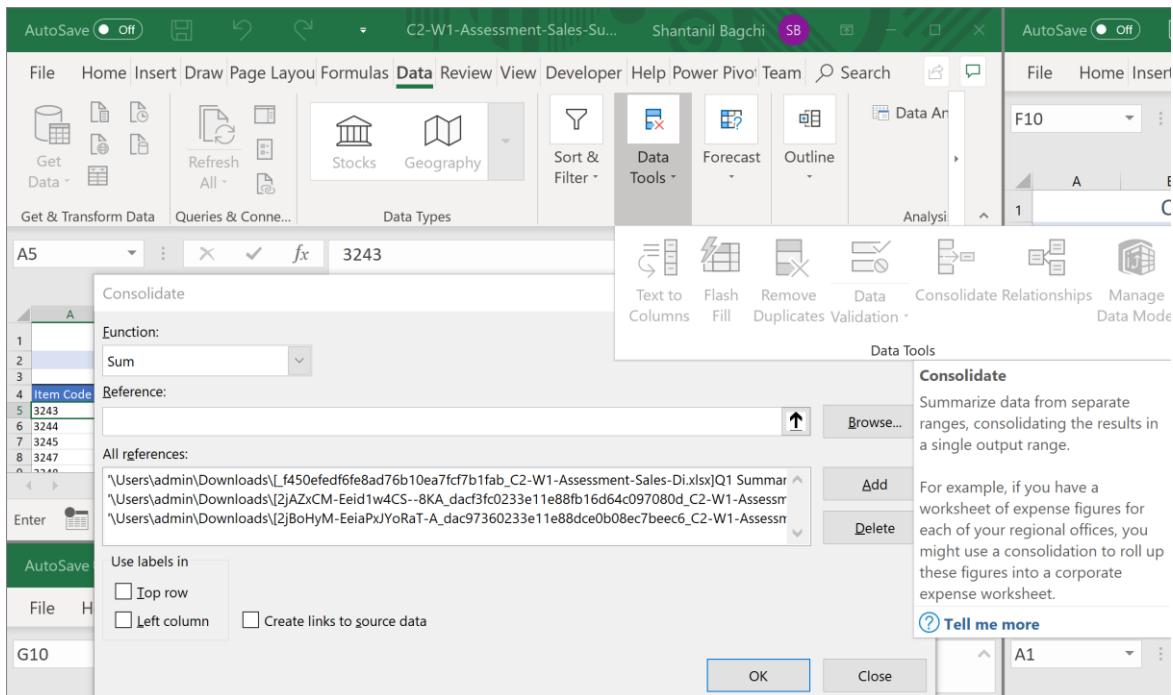
✓ DIFFERENT WAY TO LINK WORKBOOKS (Consolidate Data)

1) A quick way to link all the similar format workbooks is to use consolidate data option as shown below.

There are a lot of options provided to take advantage of.

- 2) We can select custom function provided to populate our sheets.
- 3) We need to select the data ranges in any worksheets and select ADD option to include it in our reference list before selecting the next data range.
- 4) Consolidating the Data creates values only at that time instant i.e. it is not linked to change in data. If any data changes and we need to update the summary sheet, we need to open consolidate data again and just click okay to update the values.
- 5) The other way to avoid this will be to click on 'Create links to source data' at the bottom but it should only be used when we are sure as this creates additional rows and links which can be cumbersome to remove later in case we want to change the formatting.

(NOTE: This only works when all the data have similar row and/or column name. In case there are different names in row or column, we can consolidate by clicking the TOP ROW or LEFT COLUMN option to consolidate the data which is similar to LEFT JOIN function)



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## EXCEL SKILLS: INTERMEDIATE WEEK 2

- ✓ =CONCAT(text1,text2,...) is used to concatenate columns such as First Name and Last Name in the format  
=CONCAT(First\_Name , " " , Last\_Name)
  - ✓ Similar output can also be achieved using '&' in the following way =First\_Name & " " & Last\_Name
  - ✓ =UPPER, =LOWER and =PROPER can be used to format our string cell as required.
  - ✓ We can combine multiple FUNCTION too i.e. =LOWER (CONCAT((First\_Name , " " , Last\_Name, "@mail.mcgill.ca")))
  - ✓ EXTRACTING INFORMATION (Similar to Slicing)
    - =LEFT, =RIGHT, =MID can be used to extract parts of a cell.
    - =LEFT (text, number of characters) will extract mentioned number of characters from the text starting at the 1<sup>st</sup> position
    - =MID works like LEFT with the difference of providing both starting and ending position
    - NESTED Function can be used here too =MID (A2 , 2 , FIND (" " , A2))
  - ✓ =FIND (find\_text, within\_text, [start num]) /start\_num is optional/  
find\_text= What is the character we want to find e.g. "@" , " " etc.
  - ✓ =TEXTJOIN(" ", FALSE, "JOHN", "SMITH") returns JOHN SMITH. The first argument specifies the separator you would like to see between each word (a space in this instance), the second argument specifies whether to ignore empty cells or not, and then the text follows. You can specify the text as a range, so =TEXTJOIN(" ", TRUE, A5:A12) is also valid and the text is contained in the specified range.
  - ✓ =TODAY() returns the current date
  - ✓ =NOW() returns the current date and time
- It is important to note that arithmetic operations using Dates result in answer which is in Days e.g. subtraction. In order to see the result in years we can use =YEARFRAC (start date , end date)

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## EXCEL SKILLS: INTERMEDIATE WEEK 3

✓ Named Range:

Meaningful names can be provided to either a cell or a range of cells to make sense and also for additional benefits in calculations. There are a lot of ways in which this can be achieved.

As shown below, we can see various Named ranges for example Ex\_Rate is a range of rows in a column whereas London is a range of rows and columns.

Clicking the down button in the shown cell below will give us a list of all the named ranges

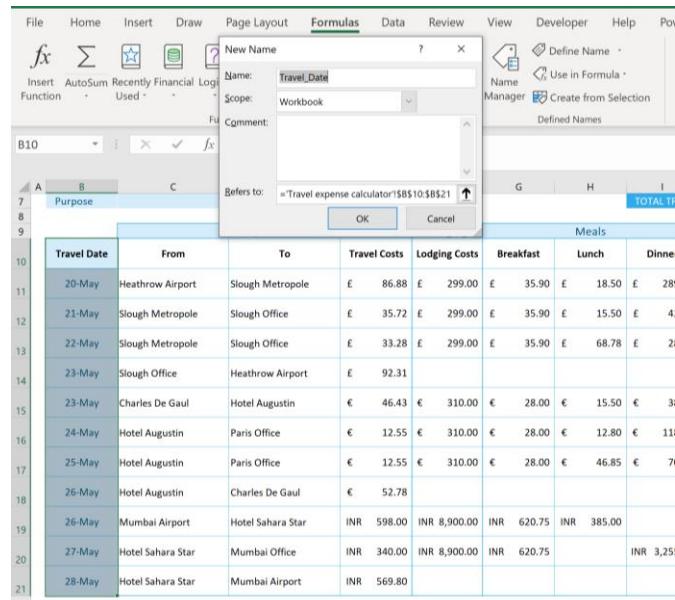
The screenshot shows a Microsoft Excel spreadsheet titled "Travel Expense Calculator". The spreadsheet includes several sections:

- Employee Details:** Rows 2-7 containing information like Employee Name (Mei Wang), Employee ID (MW886), Trip dates (Start on 2017-05-20, End on 2017-05-28), and Purpose (System Rollout).
- Expenses at a glance:** A summary table from row 41 to 46 showing Transportation Expense (\$495.27), Lodging Expense (\$2,546.41), Meal Expense (\$1,279.42), Other Expenses (\$27.49), and TOTAL TRIP EXPENSES (\$4,321.10).
- Transportation:** A table from row 48 to 68 showing travel details for dates from 20-May to 28-May, including From, To, Travel Cost, Lodging Cost, Breakfast, Lunch, Dinner, and Other expenses.
- Named Ranges:** The cell K11 contains the formula =INDIRECT(K11). A blue arrow points to the dropdown arrow next to the formula bar, indicating it is a named range.
- Watermark:** A large watermark reading "London Excel User & Mumbai" is visible across the entire sheet.

The above arrangement of named\_ranges can be seen once the zoom level is reduced below 40%

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- Select the range of cells and click on Define Names in order to give the range a name. Important thing to notice is the scope which is mentioned as Workbook i.e. the Name will be available across the whole workbook. Its important to keep in mind that duplicate Named\_Ranges are not allowed so if we need to copy the sheet later, it may give error. In a case like that, its good to mention the scope to be applicable to just a single sheet.



- A much quicker way to create named\_ranges is to go for 'Create From Selection' button just below the Define Names button. For this we have to include the header whether in the form of column names or row names to create named\_range from the selection. We can select either the top row and/or the left column to create the named ranges. This is a much faster alternative to the previous ways.
- 3 ways to create named ranges are as follows:

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- ✓ If we want to see all the named\_ranges we can select the Name Manager which is present just beside all the buttons shown above. It can be used to actually edit the current names and ranges too. One thing to keep in mind is we can't change the Scope anymore from here so when creating the names, scope should be kept in mind.
- ✓ Named\_Ranges are very useful in calculation as we don't need to provide cumbersome cell references anymore.
- ✓ The Use in Formula button in the middle can help in pasting all the named\_ranges in a separate sheet in order to document all the separate names when the list becomes cumbersome to remember and also to provide quick reference to a new user.

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## EXCEL SKILLS: INTERMEDIATE WEEK 4

- ✓ =COUNT () function counts all the cells that have Numeric Value.
- ✓ For counting Nonnumeric type values leaving blank cells, we can use =COUNTA () function.
- ✓ For counting Blank cells, we can use =COUNTBLANK () function.
- ✓ =COUNTIFS() counts the number of data cells according to some criteria inside a certain range. Multiple criteria arguments can be provided too.

Following are valid format of using it:

=COUNTIFS (State, A5)

=COUNTIFS (Order\_Year, 2013)

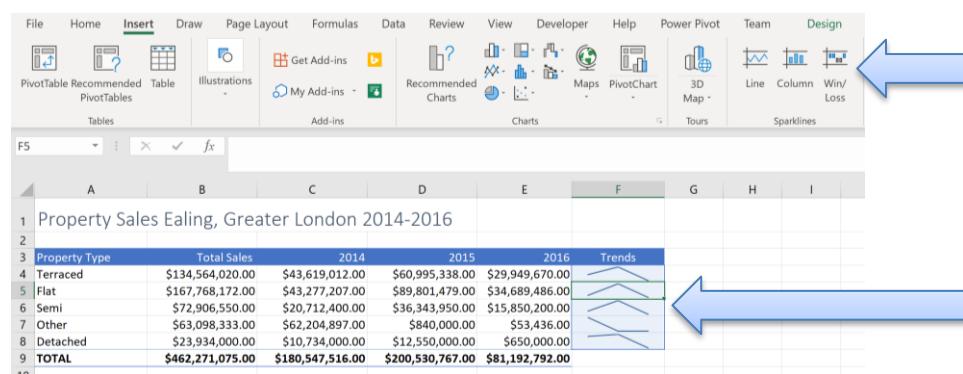
=COUNTIFS (Order\_Priority, "High")

=COUNTIFS (Order\_Quantity, ">40")

- ✓ A similar function that can be used for adding is =SUMIFS()

- ✓ SPARKLINES:

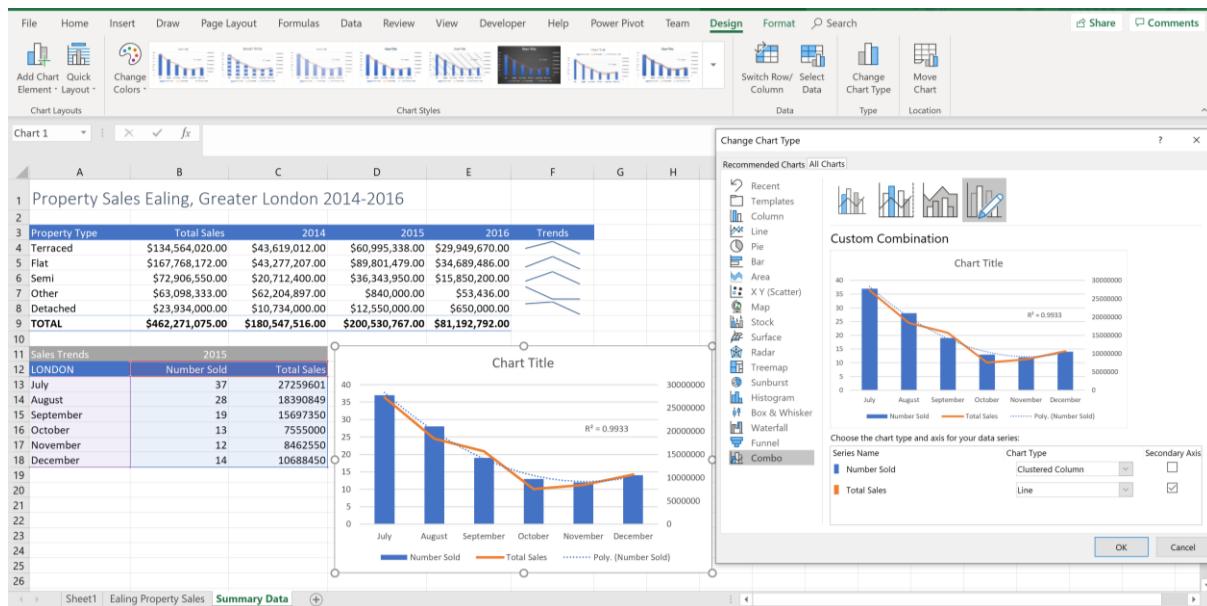
cell level trendline/tiny chart for quick glance. Sparkline is present in the insert tab.



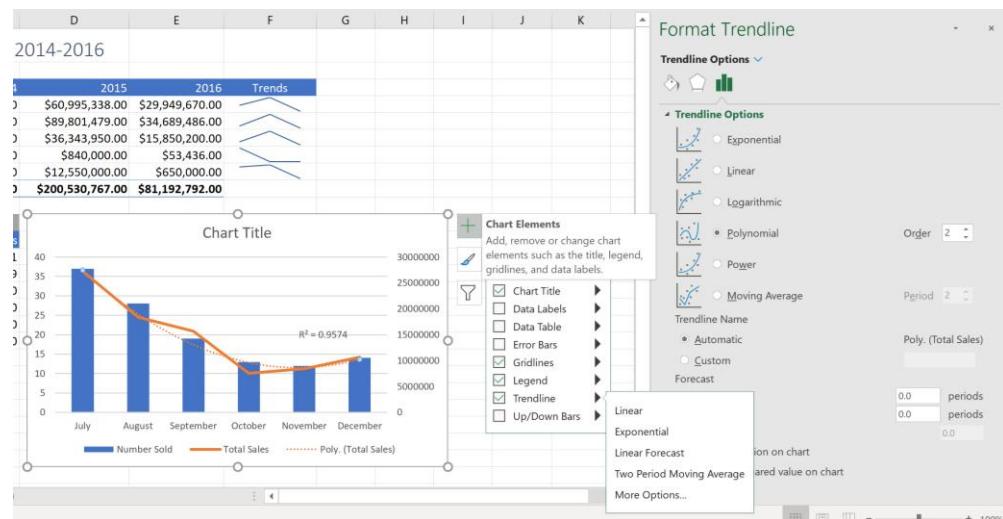
- ✓ Tiny Column chart can also be added as a sparkline. There are also a variety of other options to modify how it looks.

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- ✓ Combo chart can show a lot of data in the same chart as shown below.



- ✓ Future trend can be shown by clicking the + button and selecting Trendlines as shown below. R<sup>2</sup> value can be selected to find the best fit trendline.



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## EXCEL SKILLS: INTERMEDIATE WEEK 5

- ✓ Removing duplicates is easier with Tables so when we need to check for duplicates, we can change out data into a table and check for duplicates. Removing them is also easy without much work. Checking for duplicates and removing them is shown below.

The screenshot shows the Microsoft Excel ribbon with the 'Design' tab selected. In the 'Tools' group of the ribbon, there is a 'Convert to Range' button, which is highlighted with a blue arrow. Below the ribbon, a table titled 'HOMEWARES INVENTORY' is displayed. The table contains product information such as Product Code, Item Description, Supplier, Department, Origin, Location, Rack, In Stock, Target Level, Reorder Level, Discount %, Unit Cost, and Retail Price. The table has several rows of data, including items like Brass Flat-Tipped Butt Hinge, Project Pack - 24 Board Feet 3/4" Select White Ash, and Wicker Patio Chair and Table Set.

- ✓ The Total Row checkbox creates a Total row at the bottom of the table and this gives additional functionality as shown to aggregate the data.

The screenshot shows the Microsoft Excel ribbon with the 'Design' tab selected. In the 'Tools' group of the ribbon, there is a 'Convert to Range' button, which is highlighted with a blue arrow. Below the ribbon, a table titled 'HOMEWARES INVENTORY' is displayed. The table contains product information such as Product Code, Item Description, Supplier, Department, Origin, Location, Rack, In Stock, Target Level, Reorder Level, Discount %, Unit Cost, and Retail Price. The table has several rows of data, including items like Brass Flat-Tipped Butt Hinge, Project Pack - 24 Board Feet 3/4" Select White Ash, and Wicker Patio Chair and Table Set. At the bottom of the table, there is a 'Total' row with a formula =SUBTOTAL(109,[In Stock]).

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- ✓ A cool feature 'Subtotal' isn't available when working with tables. As a result we need to change the table back to range to use this functionality. We can easily do this using the button as shown below.

The screenshot shows the 'Convert to Range' dialog box in the 'Table Tools' ribbon. It contains the message 'Convert this table into a normal range of cells.' and 'All of the data is preserved.' Below this is a preview of the 'HOMEWARES INVENTORY' table in its current table format.

Product Code	Item Description	Supplier	Department	Origin	Location	Rack	In Stock	Target Level	Reorder Level	Discount %	Unit Cost	Retail Price
4 BATH-076	2-Handle Low-Arc 4" Bathroom Faucet Brushed Nickel	MARCO	Bathroom	China	Showroom	01	5	25	10	5%	\$87.00	\$109.00
5 BATH-013	Tuscan Model 24" Double Towel Bar Brass	CASA MIA	Bathroom	China	Showroom	01	6	25	10	5%	\$22.00	\$29.00
6 BATH-049	Amersham Model 24" Single Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	03	7	25	10	15%	\$5.00	\$9.00
7 BATH-033	Amersham Model 24" Double Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	03	8	25	10	5%	\$6.00	\$12.00
8 BATH-057	Tuscan Model 24" Single Towel Bar Brass	CASA MIA	Bathroom	China	Showroom	01	14	25	10	5%	\$14.00	\$19.00
9 BATH-044	Davinci Model 24" Single Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	18	25	10	5%	\$27.00	\$31.00
10 BATH-020	Davinci Model 24" Double Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	22	25	10	10%	\$35.00	\$41.00
11 BATH-082	Antique 8 in. 2-Handle Low Arc Bathroom Faucet Brass	CASA MIA	Bathroom	China	Showroom	02	33	25	10	5%	\$388.00	\$420.00
12 DECK-081	Wicker Patio Chair and Table Set	KESTREL	Deck Patio	Brazil	Basement	02	5	25	10	15%	\$350.00	\$425.00
13 DECK-074	Metal and Glass Patio Chair and Table Set	KESTREL	Deck Patio	Brazil	Basement	02	8	25	10	15%	\$340.00	\$415.00
14 DECO-074	Ebony 9 Ft. 9 in. x 13 Ft. 9 in. Area Rug	KESTREL	Decor	India	Showroom	04	9	25	10	5%	\$42.00	\$56.00
15 DECO-099	Oriental Print 7 ft. 9 in. x 10 ft. 10 in. Indoor / Outdoor Area R	KESTREL	Decor	India	Showroom	04	10	25	10	10%	\$67.43	\$97.99
16 DECO-099	Braided 8 ft. x 11 ft. Area Rug	KESTREL	Decor	India	Showroom	04	12	50	25	5%	\$132.23	\$199.00
17 DECO-047	White Faux Wood Blind, 2 in. Slats, 32 in. W x 64 in. L	KESTREL	Decor	Canada	Showroom	05	12	50	25	5%	\$26.00	\$31.00
18 DECO-004	Cream? 7 ft. 7 in. x 10 ft. 10 in. Indoor and Outdoor Area Rug	KESTREL	Decor	India	Showroom	04	12	50	25	10%	\$52.43	\$108.97
19 DECO-091	White Faux Wood Blind, 2 in. Slats, 35 in. W x 64 in. L	KESTREL	Decor	Canada	Showroom	04	45	50	25	5%	\$28.00	\$33.00
20 DECO-069	White Faux Wood Blind, 2 in. Slats, 28 in. W x 54 in. L	KESTREL	Decor	Canada	Showroom	04	50	50	25	5%	\$25.00	\$39.00
21 HARD-015	Brass Flat-Tipped Butt Hinge	CASA MIA	Hardware	Mexico	Showroom	01	0	100	50	5%	\$1.75	\$2.39
22 HARD-073	Soft Close Clip Top Overlay Hinge	PHISION	Hardware	UK	Showroom	02	12	100	50	5%	\$2.22	\$3.55
23 HARD-067	Slotted 36" Brass Piano Hinge	PHISION	Hardware	China	Showroom	01	22	50	25	5%	\$12.43	\$15.99
24 HARD-070	Concealed Double Jointed Hinge	PHISION	Hardware	USA	Showroom	03	45	100	50	5%	\$3.55	\$5.65
25 HARD-019	Brass Butler Tray Table Hinge	PHISION	Hardware	Mexico	Showroom	03	45	50	25	5%	\$3.23	\$5.65
26 HARD-044	Variable Overlay Decorative Hinge	PHISION	Hardware	USA	Showroom	01	49	100	50	5%	\$2.75	\$3.55
27 HARD-024	Snap Closing Semi Concealed Hinge	PHISION	Hardware	Germany	Showroom	01	52	100	50	5%	\$2.29	\$4.32
28 HARD-014	Back to Back Wraparound Insert Hinge	PHISION	Hardware	Mexico	Showroom	03	64	100	50	5%	\$1.50	\$1.35
29 HARD-084	Self-Closing Face Frame Hinge	PHISION	Hardware	China	Showroom	01	88	100	50	5%	\$4.32	\$5.00

- ✓ We sort the data first by the column which is of importance and then select the Subtotal button and select all the columns for which we want functions to be applied.

The screenshot shows the 'Subtotal' dialog box in the 'Data' ribbon. The table has been sorted by 'Department'. The dialog box is set to 'At each change in: Department' and 'Use function: Sum'. Under 'Add subtotal to:', 'Target Level', 'Reorder Level', and 'Discount %' are checked. The 'Replace current subtotals' checkbox is checked. The 'OK' button is highlighted.

Product Code	Item Description	Supplier	Department	Origin	Location	Rack	In Stock	Target Level	Reorder Level	Discount %	Unit Cost	Retail Price
4 BATH-076	2-Handle Low-Arc 4" Bathroom Faucet Brushed Nickel	MARCO	Bathroom	China	Showroom	01	5	25	10	5%	\$87.00	\$109.00
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6 BATH-049	Amersham Model 24" Single Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	03	7	25	10	15%	\$5.00	\$9.00
7 BATH-033	Amersham Model 24" Double Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	03	8	25	10	5%	\$6.00	\$12.00
8 BATH-057	Tuscan Model 24" Single Towel Bar Brass	CASA MIA	Bathroom	China	Showroom	01	14	25	10	5%	\$14.00	\$19.00
9 BATH-044	Davinci Model 24" Single Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	18	25	10	5%	\$27.00	\$31.00
10 BATH-020	Davinci Model 24" Double Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	22	25	10	10%	\$35.00	\$41.00
11 BATH-082	Antique 8 in. 2-Handle Low Arc Bathroom Faucet Brass	CASA MIA	Bathroom	China	Showroom	02	33	25	10	5%	\$388.00	\$420.00
12 DECK-081	Wicker Patio Chair and Table Set	KESTREL	Deck Patio	Brazil	Basement	02	5	25	10	15%	\$350.00	\$425.00
13 DECK-074	Metal and Glass Patio Chair and Table Set	KESTREL	Deck Patio	Brazil	Basement	02	8	25	10	15%	\$340.00	\$415.00
14 DECO-023	Ebony 9 Ft. 9 in. x 13 Ft. 9 in. Area Rug	KESTREL	Decor	India	Showroom	05	6	25	10	5%	\$42.00	\$56.00
15 DECO-099	Oriental Print 7 ft. 9 in. x 10 ft. 10 in. Indoor / Outdoor Area R	KESTREL	Decor	India	Showroom	04	9	25	10	10%	\$67.43	\$97.99
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17 DECO-047	White Faux Wood Blind, 2 in. Slats, 32 in. W x 64 in. L	KESTREL	Decor	Canada	Showroom	05	12	50	25	5%	\$26.00	\$31.00
18 DECO-004	Cream? 7 ft. 7 in. x 10 ft. 10 in. Indoor and Outdoor Area Rug	KESTREL	Decor	India	Showroom	04	12	50	25	10%	\$52.43	\$108.97
19 DECO-091	White Faux Wood Blind, 2 in. Slats, 35 in. W x 64 in. L	KESTREL	Decor	Canada	Showroom	04	45	50	25	5%	\$28.00	\$33.00
20 DECO-069	White Faux Wood Blind, 2 in. Slats, 28 in. W x 54 in. L	KESTREL	Decor	Canada	Showroom	04	50	50	25	5%	\$25.00	\$39.00
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22 HARD-073	Soft Close Clip Top Overlay Hinge	PHISION	Hardware	UK	Showroom	02	12	100	50	5%	\$2.22	\$3.55
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27 HARD-024	Snap Closing Semi Concealed Hinge	PHISION	Hardware	Germany	Showroom	01	52	100	50	5%	\$2.29	\$4.32
28 HARD-014	Back to Back Wraparound Insert Hinge	PHISION	Hardware	Mexico	Showroom	03	64	100	50	5%	\$1.50	\$1.35
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- ✓ As we can see, the range has been modified with subtotals in between the data. Carefully notice the number or level mentioned on the top right as shown. This can be used to cycle through what we want to show.

The screenshot shows the 'Subtotal' dialog box with 'OK' highlighted. The table has subtotals at rows 13 and 17. The subtotals are labeled 'Bathroom Total' and 'Deck Patio Total' respectively. The 'OK' button is highlighted.

Product Code	Item Description	Supplier	Department	Origin	Location	Rack	In Stock	Target Level	Reorder Level	Discount %	Unit Cost	Retail Price
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6 BATH-049	Amersham Model 24" Single Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	03	7	25	10	15%	\$5.00	\$9.00
7 BATH-033	Amersham Model 24" Double Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	03	8	25	10	5%	\$6.00	\$12.00
8 BATH-057	Tuscan Model 24" Single Towel Bar Brass	CASA MIA	Bathroom	China	Showroom	01	14	25	10	5%	\$14.00	\$19.00
9 BATH-044	Davinci Model 24" Single Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	18	25	10	5%	\$27.00	\$31.00
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14 DECO-023	Ebony 9 Ft. 9 in. x 13 Ft. 9 in. Area Rug	KESTREL	Decor	India	Showroom	05	6	25	10	5%	\$42.00	\$56.00
15 DECO-099	Oriental Print 7 ft. 9 in. x 10 ft. 10 in. Indoor / Outdoor Area R	KESTREL	Decor	India	Showroom	04	9	25	10	10%	\$67.43	\$97.99
16 DECO-099	Braided 8 ft. x 11 ft. Area Rug	KESTREL	Decor	India	Showroom	04	9	25	10	5%	\$132.23	\$199.00
17 DECO-047	White Faux Wood Blind, 2 in. Slats, 32 in. W x 64 in. L	KESTREL	Decor	Canada	Showroom	05	12	50	25	5%	\$26.00	\$31.00
18 DECO-004	Cream? 7 ft. 7 in. x 10 ft. 10 in. Indoor and Outdoor Area Rug	KESTREL	Decor	India	Showroom	04	12	50	25	10%	\$52.43	\$108.97
19 DECO-091	White Faux Wood Blind, 2 in. Slats, 35 in. W x 64 in. L	KESTREL	Decor	Canada	Showroom	04	45	50	25	5%	\$28.00	\$33.00
20 DECO-069	White Faux Wood Blind, 2 in. Slats, 28 in. W x 54 in. L	KESTREL	Decor	Canada	Showroom	04	50	50	25	5%	\$25.00	\$39.00
21 HARD-015	Brass Flat-Tipped Butt Hinge	CASA MIA	Hardware	Mexico	Showroom	01	0	100	50	5%	\$1.75	\$2.39
22 HARD-073	Soft Close Clip Top Overlay Hinge	PHISION	Hardware	UK	Showroom	02	12	100	50	5%	\$2.22	\$3.55
23 HARD-067	Slotted 36" Brass Piano Hinge	PHISION	Hardware	China	Showroom	01	22	50	25	5%	\$12.43	\$15.99
24 HARD-070	Concealed Double Jointed Hinge	PHISION	Hardware	USA	Showroom	03	45	100	50	5%	\$3.55	\$5.65
25 HARD-019	Brass Butler Tray Table Hinge	PHISION	Hardware	Mexico	Showroom	03	45	50	25	5%	\$3.23	\$5.65
26 HARD-044	Variable Overlay Decorative Hinge	PHISION	Hardware	USA	Showroom	01	49	100	50	5%	\$2.75	\$3.55
27 HARD-024	Snap Closing Semi Concealed Hinge	PHISION	Hardware	Germany	Showroom	01	52	100	50	5%	\$2.29	\$4.32
28 HARD-014	Back to Back Wraparound Insert Hinge	PHISION	Hardware	Mexico	Showroom	03	64	100	50	5%	\$1.50	\$1.35
29 HARD-084	Self-Closing Face Frame Hinge	PHISION	Hardware	China	Showroom	01	88	100	50	5%	\$4.32	\$5.00

# EXCEL FOR EVERYBODY

- ✓ Named Ranges and Tables:

Named Ranges and Tables have some overlap in functionality and use, but there are some key differences.

Named Ranges	Tables
Do not automatically extend at the edges of their range	Automatically extend to include rows and columns added
Behaves like an absolute reference when used in a formula – when you copy the formula to another column the reference to the Named Range will remain the same	Structured References behave like a relative reference when used in a formula – when you copy the formula to another column the Structured Reference will change
Do not have formatting tools Named Ranges do not know about other Named Ranges – they do not work together	Can be easily formatted Provide a range of sorting and filtering tools that work with the Table as a whole unit

# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE WEEK 6

- ✓ PIVOT TABLE: Select the table for which pivot table must be added. Once we select the option as has been shown, the following kind of structure will be visible. We can now select various data fields as rows/columns for various insights.

The screenshot shows the Microsoft Excel ribbon with the 'Insert' tab selected. A blue arrow points to the 'PivotTables' icon in the 'Tables' group. The main worksheet displays a PivotTable with data for 'Property Sales'. The PivotTable Fields pane is open on the right, showing a list of fields with checkboxes for selecting them. The 'Sum of Price Paid' field is currently selected in the table.

- ✓ There are a variety of options to view our pivot table such as we can show subtotals and also change report layout too.

The screenshot shows the Microsoft Excel ribbon with the 'Analyze' tab selected. The 'Report Layout' section of the 'PivotTable Options' dialog is open, showing options for 'Subtotals', 'Grand Total', and 'Report Layout'. The main worksheet displays a PivotTable with data for 'Property Sales'.

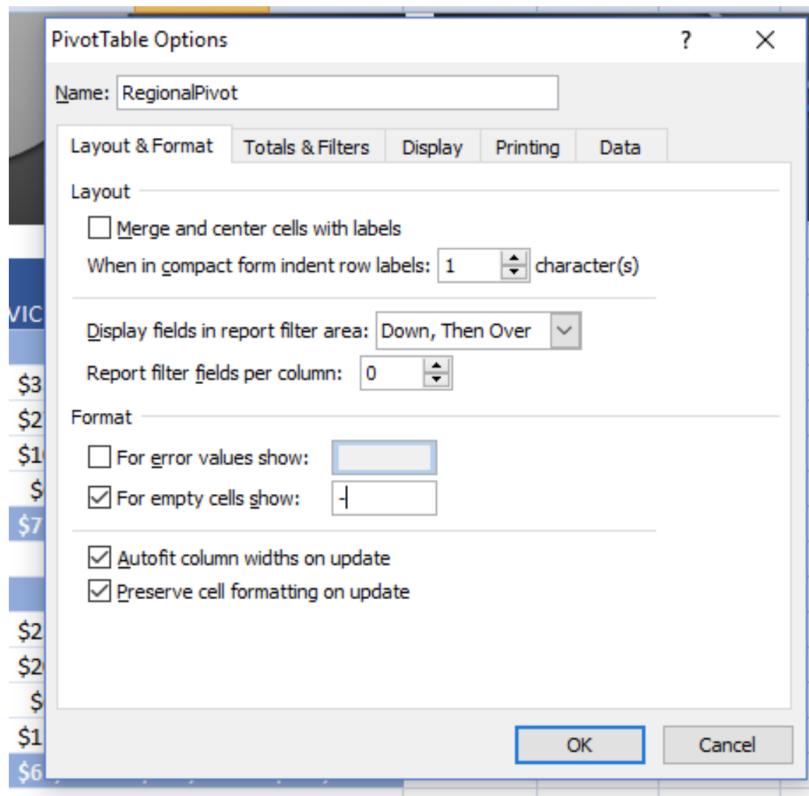
- ✓ Double clicking any cell which has value will open a new sheet that shows what are the various fields that contribute to this value.
- ✓ Go to Pivot Table strip and select Pivot Chart in order to create a chart from the table.

# EXCEL FOR EVERYBODY

- ✓ We can add pivot slicers which can ease the way in which we filter the data as shown below.

The screenshot shows a Microsoft Excel spreadsheet titled 'Property Sales'. A PivotTable is displayed with data for Postcodes (UB2 5QG, UB2 5QJ, UB2 5QP, UBS 4AD, UBS 4EE, UBS 4HZ, UBS 4JA, UBS 4JF) and various financial metrics for the years 2014 and 2015. The 'Analyze' tab is selected in the ribbon. An arrow points from the 'Filter' button in the ribbon to the 'Insert Slicer' button in the 'PivotTable' group. A 'Insert Slicers' dialog box is open on the right, showing a list of fields: ID, Price Paid, Deed Date, Year Sold, Month Sold, Postcode, Property Type, New Build?, Estate Type, Flat Number, Street Number/Flat Name, Street, Town, Quarters, and Years. The 'Postcode' checkbox is checked. Buttons for 'OK' and 'Cancel' are at the bottom of the dialog.

- ✓ We can format empty cells in a pivot table by right-clicking on any cell in the table, then go to Pivot Table Options. In Layout & Format, under Format, you can choose to put a hyphen for every empty cell. A hyphen is one reasonable example of something we could add, we can add something else more appealing for ourself.



# EXCEL FOR EVERYBODY

# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE II WEEK 1

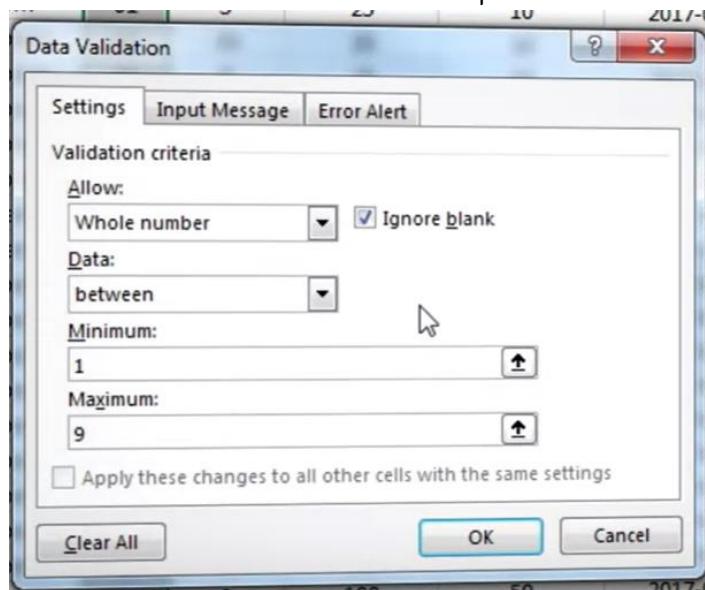
### ✓ DATA VALIDATION:

Sometimes we want cells to be filled by particular values only to reduce typing error and wrong data.

Select the column for which data validation is to be done and click the button as shown below. Once we click it, following dialog box opens.

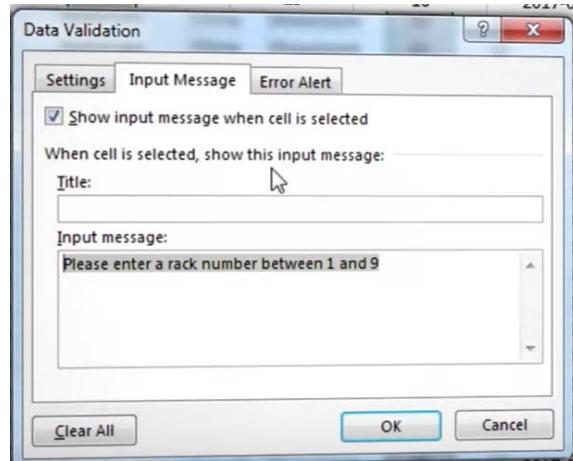
The screenshot shows a Microsoft Excel spreadsheet titled "NORTON HOMEWARES INVENTORY". The table contains columns for Product Code, Item Description, Rack, In Stock, Target Level, Reorder Level, Last Ordered, and Unit Cost. A blue arrow points from the "Data" tab in the ribbon to the "Data Validation" dialog box, which is overlaid on the spreadsheet. The dialog box has tabs for "Settings", "Input Message", and "Error Alert". The "Settings" tab is selected, showing "Validation criteria" with "Allow:" set to "Any value" and "Ignore blank" checked. "Data:" is set to "between" with minimum value "1" and maximum value "9". The "OK" button is highlighted.

- ✓ Drop down menu in the Settings tab will give various options on the type of data that we want to fill for e.g. for rack column only a value between 1 to 9 is allowed. So, we select between and enter 1 and 9 as the min and max values. When the Ignore Blank option is checked, excel will allow blank cells to be kept in the column and will not give any error.

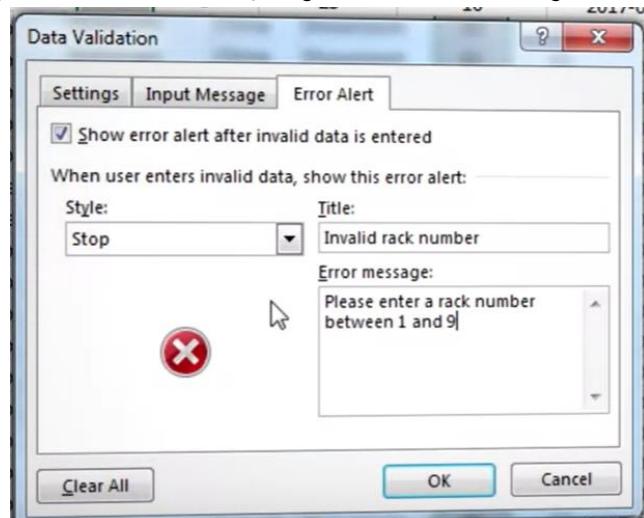


# EXCEL FOR EVERYBODY

- ✓ In the input tab, we will enter the message that we want to be shown.



- ✓ In the error alert, we will once again enter the message else excel will give a nasty error which may take someone off-guard. In the style option, STOP will actually prevent users from entering invalid data, WARNING will give a warning but allow data entry and INFORMATION will just give information message.

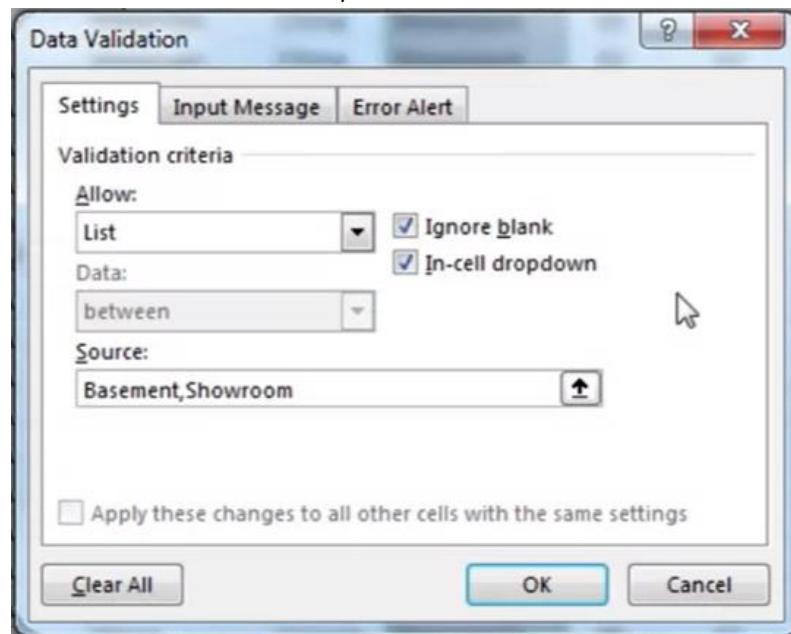


- ✓ For custom validation such as student\_ID, we know that text length must be a constant value e.g. 8 so we can enter such a criterion in the settings tab.

# EXCEL FOR EVERYBODY

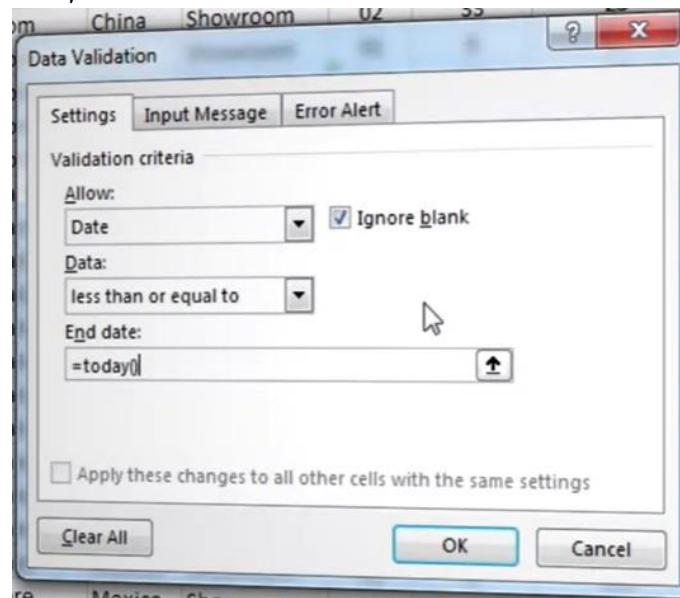
✓ **DROP DOWN LIST:**

Sometimes we want data entry to be out of a predefined list. We can do this in the following way. In the SOURCE, we can either enter a list manually or add a LOOKUP list somewhere in the workbook. In the case, list is entered manually, we need to note that its in alphabetical order as that is how the list is going to be shown. Further, In-cell dropdown should be selected in order to allow the dropdown list in the cells.



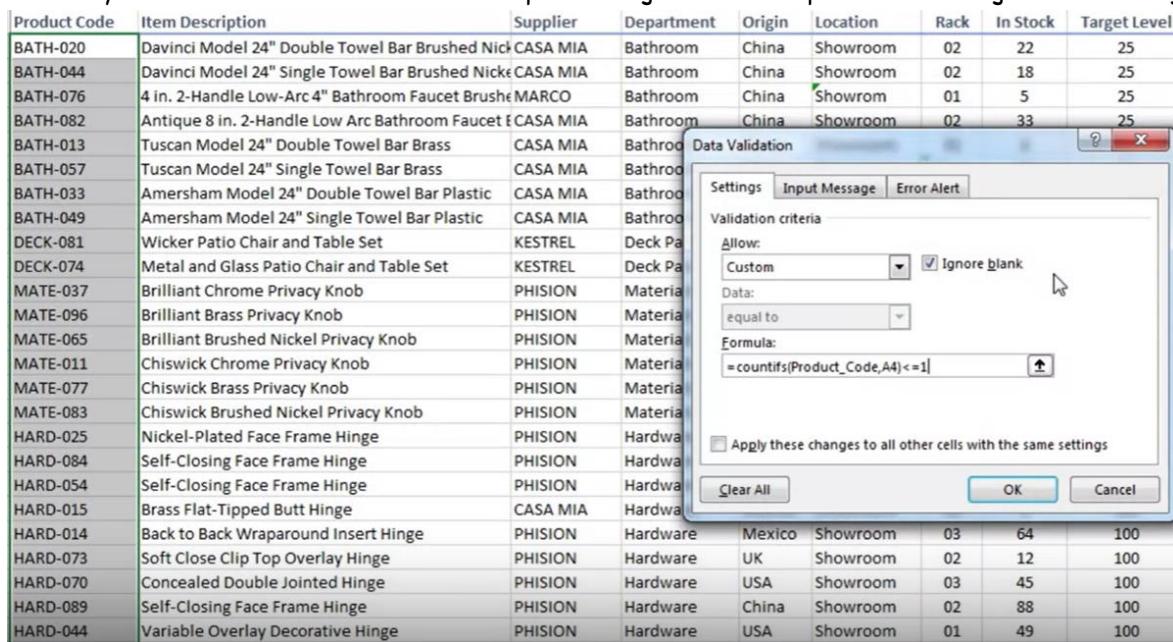
In the case of large amounts of data, a lookup list will work better. In order to fully automate this dropdown list, we need to create a lookup table and give it a name to be used here. This will help in automatically populating the dropdown list when a new entry is done below the table.

✓ We can use functions and formulas too in data validation. An example is shown below for a column in which the date should be strictly less than today.



# EXCEL FOR EVERYBODY

- A slightly more complicated case will be the following. We don't want the product code to be entered twice as its unique. So we can write a formula to check whether the number of entries for a particular product code is less than equal to 1. This formula works since we have given named range for the column in a table which populates automatically. In case we would have used this for a specific range, it can cause problem when we go out of the range.



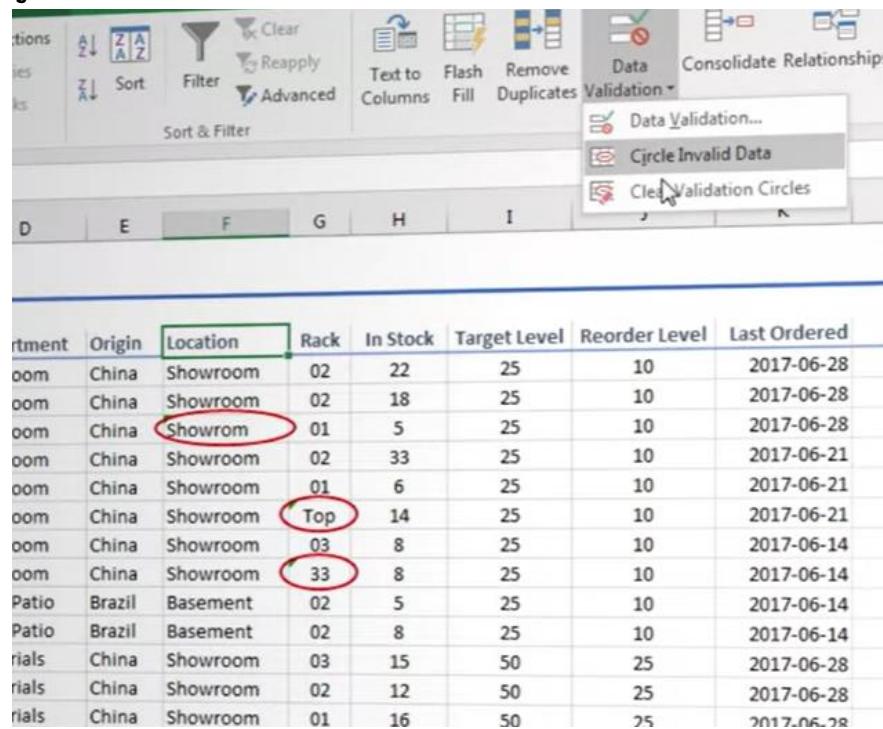
The screenshot shows a Microsoft Excel spreadsheet with a table of products. The table has columns for Product Code, Item Description, Supplier, Department, Origin, Location, Rack, In Stock, and Target Level. A Data Validation dialog box is open over the table, specifically for the 'Product Code' column. The dialog box shows the following settings:

- Allow:** Custom
- Data:** equal to
- Formula:** =countif(Product\_Code,A4)<=1
- Ignore blank:** checked

The 'OK' button is highlighted in the dialog box. The table below shows some sample data from the spreadsheet.

Product Code	Item Description	Supplier	Department	Origin	Location	Rack	In Stock	Target Level
BATH-020	Davinci Model 24" Double Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	22	25
BATH-044	Davinci Model 24" Single Towel Bar Brushed Nickel	CASA MIA	Bathroom	China	Showroom	02	18	25
BATH-076	4 in. 2-Handle Low-Arc 4" Bathroom Faucet	MARCO	Bathroom	China	Showroom	01	5	25
BATH-082	Antique 8 in. 2-Handle Low Arc Bathroom Faucet	CASA MIA	Bathroom	China	Showroom	02	33	25
BATH-013	Tuscan Model 24" Double Towel Bar Brass	CASA MIA	Bathroom	China	Showroom	02	22	25
BATH-057	Tuscan Model 24" Single Towel Bar Brass	CASA MIA	Bathroom	China	Showroom	02	18	25
BATH-033	Amersham Model 24" Double Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	01	5	25
BATH-049	Amersham Model 24" Single Towel Bar Plastic	CASA MIA	Bathroom	China	Showroom	02	33	25
DECK-081	Wicker Patio Chair and Table Set	KESTREL	Deck	Deck	Patio	01	20	25
DECK-074	Metal and Glass Patio Chair and Table Set	KESTREL	Deck	Deck	Patio	01	20	25
MATE-037	Brilliant Chrome Privacy Knob	PHISION	Material	Material	Knob	01	10	100
MATE-096	Brilliant Brass Privacy Knob	PHISION	Material	Material	Knob	01	10	100
MATE-065	Brilliant Brushed Nickel Privacy Knob	PHISION	Material	Material	Knob	01	10	100
MATE-011	Chiswick Chrome Privacy Knob	PHISION	Material	Material	Knob	01	10	100
MATE-077	Chiswick Brass Privacy Knob	PHISION	Material	Material	Knob	01	10	100
MATE-083	Chiswick Brushed Nickel Privacy Knob	PHISION	Material	Material	Knob	01	10	100
HARD-025	Nickel-Plated Face Frame Hinge	PHISION	Hardware	Mexico	Showroom	03	64	100
HARD-084	Self-Closing Face Frame Hinge	PHISION	Hardware	UK	Showroom	02	12	100
HARD-054	Self-Closing Face Frame Hinge	PHISION	Hardware	USA	Showroom	03	45	100
HARD-015	Brass Flat-Tipped Butt Hinge	CASA MIA	Hardware	China	Showroom	02	88	100
HARD-014	Back to Back Wraparound Insert Hinge	PHISION	Hardware	Mexico	Showroom	03	64	100
HARD-073	Soft Close Clip Top Overlay Hinge	PHISION	Hardware	UK	Showroom	02	12	100
HARD-070	Concealed Double Jointed Hinge	PHISION	Hardware	USA	Showroom	03	45	100
HARD-089	Self-Closing Face Frame Hinge	PHISION	Hardware	China	Showroom	02	88	100
HARD-044	Variable Overlay Decorative Hinge	PHISION	Hardware	USA	Showroom	01	49	100

- When we have accidentally used data validation and want to remove it, we can click on the CLEAR ALL button at the bottom to remove the validation check.
- When the existing table for which data validation has been done is filled with some errors, we can use the following way to circle the wrong data entries.

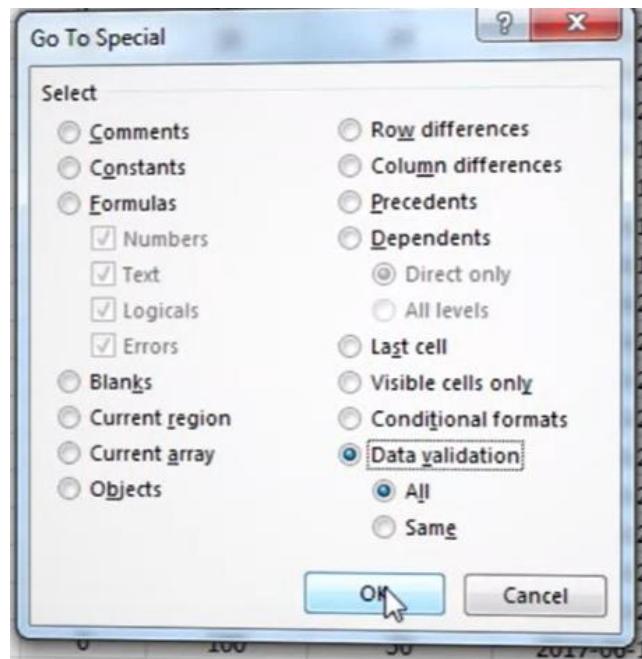


The screenshot shows a Microsoft Excel spreadsheet with a table of data. The table has columns for Department, Origin, Location, Rack, In Stock, Target Level, Reorder Level, and Last Ordered. Some cells in the 'Location' column contain values like 'Showroom', 'Top', and '33', which are circled in red. The 'Data Validation' ribbon tab is selected, and the 'Circle Invalid Data' option is highlighted in the dropdown menu. The table data is as follows:

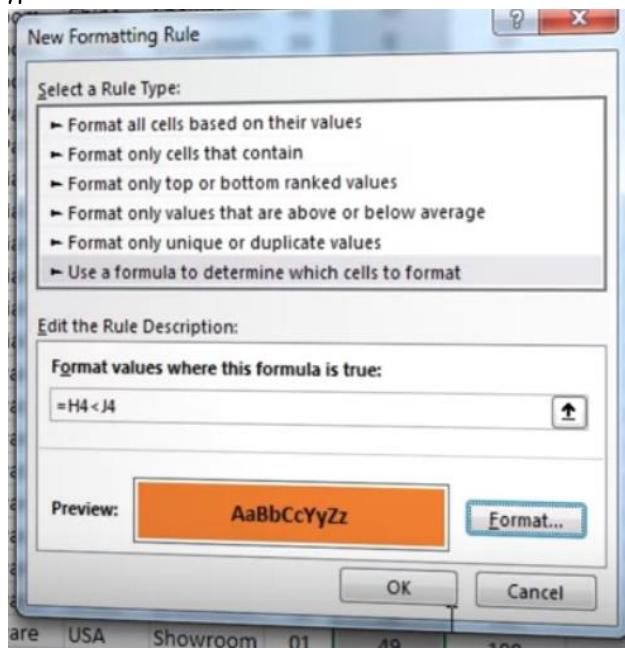
Department	Origin	Location	Rack	In Stock	Target Level	Reorder Level	Last Ordered
Bathroom	China	Showroom	02	22	25	10	2017-06-28
Bathroom	China	Showroom	02	18	25	10	2017-06-28
Bathroom	China	Showroom	01	5	25	10	2017-06-28
Bathroom	China	Showroom	02	33	25	10	2017-06-21
Bathroom	China	Showroom	01	6	25	10	2017-06-21
Bathroom	China	Showroom	Top	14	25	10	2017-06-21
Bathroom	China	Showroom	03	8	25	10	2017-06-14
Bathroom	China	Showroom	33	8	25	10	2017-06-14
Patio	Brazil	Basement	02	5	25	10	2017-06-14
Patio	Brazil	Basement	02	8	25	10	2017-06-14
Furniture	China	Showroom	03	15	50	25	2017-06-28
Furniture	China	Showroom	02	12	50	25	2017-06-28
Furniture	China	Showroom	01	16	50	25	2017-06-28

# EXCEL FOR EVERYBODY

- ✓ In order to see where data validation has been applied to, we can go to HOME tab and select Find and Select where we can find Go To Special. From here we can see all the cells where data validation has been applied to.



- ✓ Suppose we want to highlight e.g. In\_stock cells that are lower than Reorder\_level. To achieve this, we need to go to Home tab, Conditional Formatting and select new rules. We enter the formula as relative reference and click Format to select the color and font type.



# EXCEL FOR EVERYBODY

- ✓ If we want to highlight the whole row based on some rule, for example highlight based on the country selected from dropdown list on the right. The trick to highlight the entire row is the absolute reference for the column i.e. '\$E4' as shown below. This will lead to row highlighting when a particular country has been selected.

The screenshot shows a Microsoft Excel spreadsheet with a data table and a 'New Formatting Rule' dialog box overlaid. The data table has columns: Origin, Location, Rack, In Stock, Target Level, Reorder Level, Last Ordered, Unit Cost, retail Price, and Select Origin. The 'Select Origin' column contains a dropdown menu with 'China' selected. The 'Reorder Level' column for the first five rows (all China) is highlighted in orange. The 'Last Ordered' column for the fifth row (China) is also highlighted in orange. The 'Unit Cost' column for the fifth row (China) is highlighted in orange. The 'retail Price' column for the fifth row (China) is highlighted in orange. The 'Select Origin' dropdown menu is open, showing 'China' as the selected item.

Origin	Location	Rack	In Stock	Target Level	Reorder Level	Last Ordered	Unit Cost	retail Price	Select Origin
China	Showroom	02	22	25	10	2017-06-28	\$35.00	\$41.00	China
China	Showroom	02	18	25	10	2017-06-28	\$27.00	\$31.00	
China	Showroom	01	5	25	10	2017-06-28	\$87.00	\$109.00	
China	Showroom	02	33	25	10	2017-06-21	\$388.00	\$420.00	
China	Showroom	01	6	25	10	2017-06-21	\$22.00	\$29.00	
China	Showroom						\$14.00	\$19.00	
China	Showroom						\$6.00	\$12.00	
China	Showroom						\$5.00	\$9.00	
Brazil	Basement						\$50.00	\$425.00	
Brazil	Basement						\$40.00	\$415.00	
China	Showroom						\$7.50	\$8.99	
China	Showroom						\$5.50	\$7.99	
China	Showroom						\$9.50	\$10.99	
China	Showroom						\$7.50	\$8.99	
China	Showroom						\$5.50	\$7.99	
China	Showroom						\$9.50	\$10.99	
China	Showroom						\$6.32	\$7.49	
China	Showroom						\$4.32	\$5.00	
China	Showroom						\$4.32	\$5.00	
Mexico	Showroom						\$1.75	\$2.39	
Mexico	Showroom						\$1.50	\$1.35	
UK	Showroom						\$2.22	\$3.55	
USA	Showroom						\$3.55	\$5.65	
China	Showroom	02	88	100	50	2017-06-21	\$4.32	\$5.00	

New Formatting Rule

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

Format values where this formula is true:

= \$E4 = \$O\$4

Preview: AaBbCcYyZz

OK Cancel

# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE II WEEK 2

- ✓ =IF (Logical test, [value if True], [value if False] ) can be used to create conditional/logical operations for a certain cell. The 6 logical operators are = 'equals', <> 'not equals', >, <, >=, <=.
- ✓ =AND(logical tests) and =OR(logical tests) are helper functions.
- ✓ A Blank cell is considered as False.
- ✓ Combining logical functions is a good way to achieve complex conditions e.g. =IF (AND(logical test), [true result], [false result] )
- ✓ If we have more than two possible outcomes, then we use nested IF conditions e.g.  
 $=IF(\text{logical test}, IF(\text{logical test 2}, \text{True}, \text{False}), \text{False})$ . Up to 64 nesting can be done.
- ✓ In the case where we are performing some function and it can result in some error which we don't want, we can use the =IFERROR function to mention what excel needs to do if it gets an error while calculation.  
 $=IFERROR(\text{function that we want to perform}, \text{In case of error perform this})$
- ✓ =IFNA (logical test, if NA is returned) is used when we don't want NA to show up when using e.g. a VLOOKUP function.
- ✓ NOT

We can use the NOT function in IF statements like we have used the AND and OR functions. NOT is another logical helper function and it is used to indicate that a logical test is not true. Consider the following example:

$=IF(NOT(A5=1), B5*5\%, 0)$

Reading out this function, it says "If the value in A5 is *not* equal to 1, then multiply the value in B5 by 5%; if the test is not true, return the value 0 (zero)."

- ✓ EXACT

When you use "=" to test if 2 strings are the same, it ignores the case of the strings. If you need to test that 2 strings are exactly equal, including the same case, use the EXACT function. EXACT is another logical helper function. The EXACT function requires the two text strings that you are comparing to be separated by a comma. Consider the following example:

$=IF(Exact(A5, "JOHN"), B5*5\%, 0)$

Reading out this function, it says "If the value in A5 is exactly JOHN, then multiply the value in B5 by 5%; if the test is not true, return the value 0 (zero)."

# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE II WEEK 3

- ✓ CHOOSE: This is a function in the lookup family of functions. This function retrieves a value from a list based on a numeric value you specify. It is good for small lists that won't change often.

This is a good choice when we need to a LOOKUP from a very finite list, that is not likely to change very often.

Item	Loc Code		Category	Retail Price	Discount	Cost	Installation Location	Sub Total
FI-SX-34896	2	=CHOOSE([@Loc Code],\$K\$6,\$K\$7,\$K\$8,\$K\$9,\$K\$10)						
SX-AC-54182	1	building core	2				building core	\$0.00
SX-FI-96655	1	building core	2				data centre	\$0.00
SX-FI-45323	1	building core	4				fibre distribution	\$0.00
SX-FI-95237	1	building core	6				main floors	\$0.00
10G-XF-93212	1	building core	12				remote office buildings	\$0.00
							TOTAL	\$0.00

This will work only when the index is in numeric values.

- ✓ VLOOKUP:

This is a function from the lookup family that is used for retrieving and categorizing data. The way the VLOOKUP works is, given a value, like the Retail Price, it will go and try to match it into a master dataset. When it finds a match, it will then return a corresponding value from the same row. The lookup data needs to be organized vertically and in a sorted order.

=VLOOKUP (lookup value, table, col\_index\_num, TRUE(approximate match)/FALSE(exact match))

Short Description	Retail Price	Cost	DiscCategory
EIF 24 10/100 + 2 Combo GbE	995.00	\$0.00	A
match - the values in the first column of table_array must	VLOOKUP(D4,\$G\$4:\$H\$7,2,TRUE)	0.00	B
20 FE/1000 + 4 C/F GbE	3,295.00	(\$... FALSE - Exact match	C
48-port 10/100/1000 with up to 4-	4,945.00	\$10,000.00	
FIE with 8-port XFP slots and comp	10 995 nn	\$25,000.00	D

- ✓ There are a few limitations with the VLOOKUP. For example, if we had 25 columns to go and type in 25 separate VLOOKUPs, it's not great use of our time. We can't, however, simply copy the VLOOKUP across, because of the column number. That has got to be specified for each VLOOKUP. Also if the VLOOKUP table is fiddled with e.g. change in column position then our data would break.

- ✓ MATCH: This is a function in the family of lookup functions. This function works almost like VLOOKUP. It looks up a value in a row or column and returns a number for the position in which that value is contained. This function is usually used in combination with other lookup functions, e.g. INDEX.

MATCH is a little bit like a miniature VLOOKUP. Given a particular value, it will go and look it up in either a row or a column. It's not worried about horizontal, vertical. When it finds the match, instead of returning a corresponding value, however, it will return the position within that column or row.

=MATCH (lookup value e.g. short description, header row, 0 (exact match)/1 (Less than)/-1 (greater than))

A1	=MATCH(Table2[[#Headers],[Short Description]],parts[[#Headers],	
A	MATCH(lookup_value, lookup_array, [match_type])	Finds the largest value that is less than
1		(...) 1 - Less than
2		(...) 0 - Exact match
3		(...) -1 - Greater than
4	NetTRON - International Price List	
Item Code	Long Description	Short Description
EIF-CZ-73600	24-Port 10/100 with 2-Port GbE Combo RJ-45 (Copper) and SFP (F)	995.00
		A

# EXCEL FOR EVERYBODY

- ✓ So with structured references, if you drag, it's relative, but if you copy, it's absolute.
- ✓ INDEX: This function returns a value, or the reference to a value, from within a table or range.  
 $=INDEX(\text{lookup array}, \text{row\_num}, \text{col\_num})$

Customer Category					
Discount Category	Bronze	Silver	Gold	Platinum	
	A	3.50%	5.50%	7.50%	9.50%
	B	4.50%	6.50%	8.50%	10.50%
	C	5.50%	7.50%	9.50%	11.50%
	D	6.50%	8.50%	10.50%	12.50%
Disc Cat		Row #	Cust Cat	Col#	
C			Silver		
Discount					
$=INDEX(\text{Discounts}, \text{MATCH}(\text{B11}, \text{Discount_Categories}, 0), \text{MATCH}(\text{D11}, \text{Customer_Categories}, 0))$ INDEX(array, row_num, [column_num])					

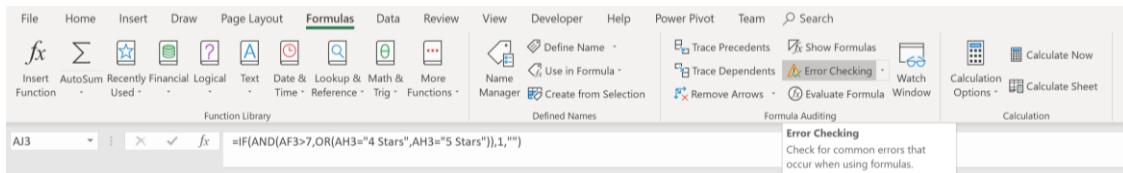
- ✓ #NA This error usually appears when the lookup function cannot find the lookup value in the lookup table.

# EXCEL FOR EVERYBODY

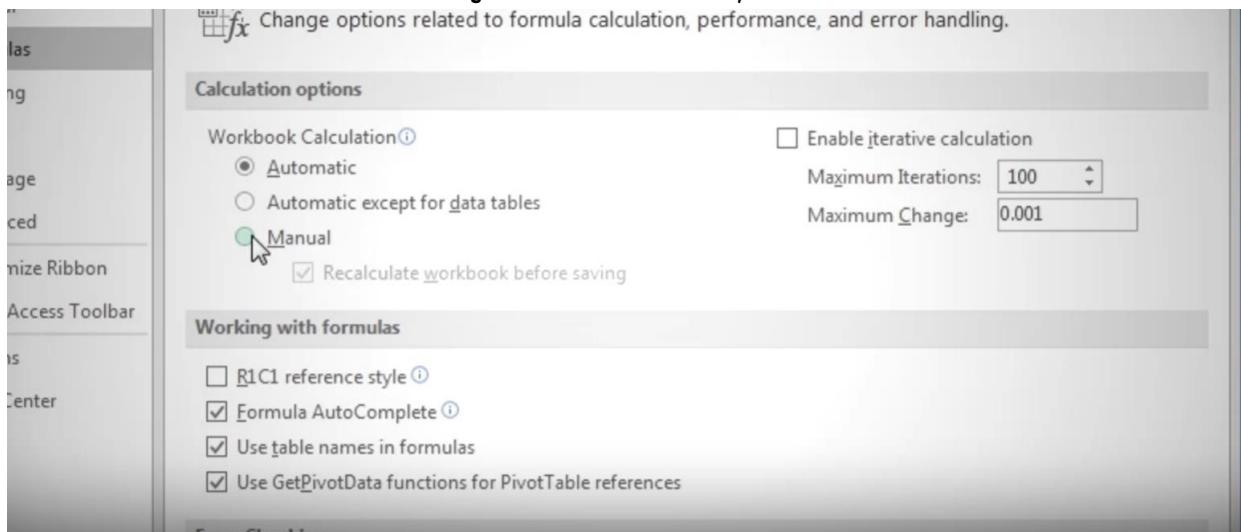
## EXCEL SKILLS: INTERMEDIATE II WEEK 4

- ✓ If we click 'Error Checking', what it's going to do is start from wherever we're clicked, and work systematically through each error in our workbook, giving us the opportunity to correct them, so that's great.

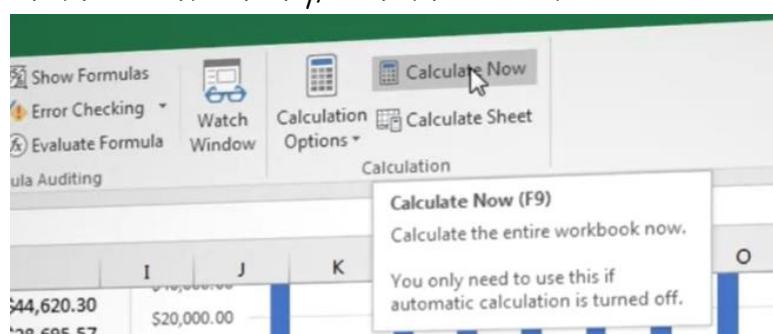
In the drop down, there is a trace error button which will point towards all the cell that are being used in the calculation.



- ✓ The Show Formula button just above Error Checking will show all the formulas used in the sheet and help in comparing with the other cells in case of an error in a particular cell.
- ✓ A circular reference is when the calculation cell includes itself as part of that calculation, and as a result, gets into an infinite loop. They can also occur when a cell indirectly references itself. These are a serious issue in workbooks.
- ✓ Error Checking Options: Now by default Workbook Calculation is set to automatic and what that means is every time you make a change in your workbook all the calculations recalculate. Usually you want this on. However, if you have a massive workbook and it's being very unresponsive, so every time you make a small change you have to wait a couple of minutes for it to do all the calculations again. You can instead set your workbook to manual.



In manual, excel won't calculate cells automatically, so Calculate Now should be clicked when we want it to calculate.

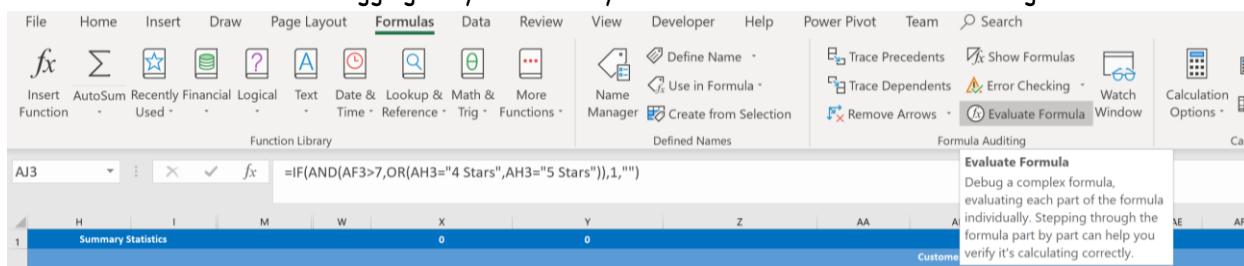


# EXCEL FOR EVERYBODY

- ✓ It's always a good idea to do a double-check to make sure we've corrected all the errors. One good way of auditing a workbook is to create cross-check totals. In other words, to try and get to our totals using different methods and then to make sure that those totals still agree.
- ✓ When we're trying to locate more subtle errors like total not matching, we have two great tools to help us and they're called Trace Precedents and Trace Dependents. A precedent is a cell that is referred to in a formula. A dependent is the opposite - it is a formula that refers to your cell.

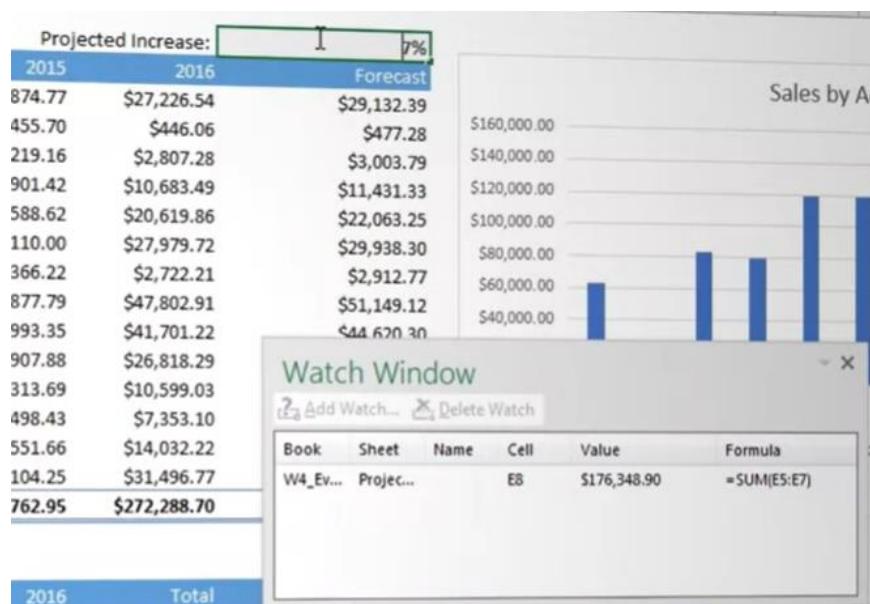
	2013	2014	2015	2016	Total
\$110,215.01	\$205,523.37	\$255,144.84	\$185,959.91	\$646,628.12	
\$49,784.35	\$84,146.17	\$77,429.46	\$61,835.14	\$223,410.76	
\$11,751.44	\$29,562.12	\$20,188.65	\$24,493.65	\$74,244.42	
<b>\$173,763.80</b>	<b>\$319,231.66</b>	<b>\$352,762.95</b>	<b>\$272,288.70</b>	<b>\$944,283.30</b>	

- ✓ Evaluate Formula works like Debugging in Python value by value to see how the formula is working.



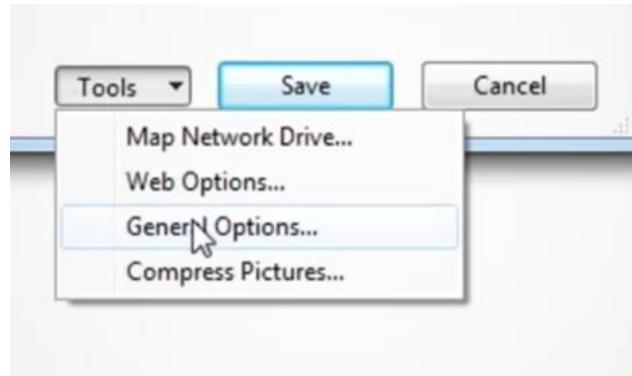
- ✓ Watch Window:

An Excel toolbar which allows you to keep watch of cells and their formulae as you navigate around your Excel workbook. When we want to see some value in a different worksheet which is affected by the current worksheet, we can select the cell/s and add them to watch window.

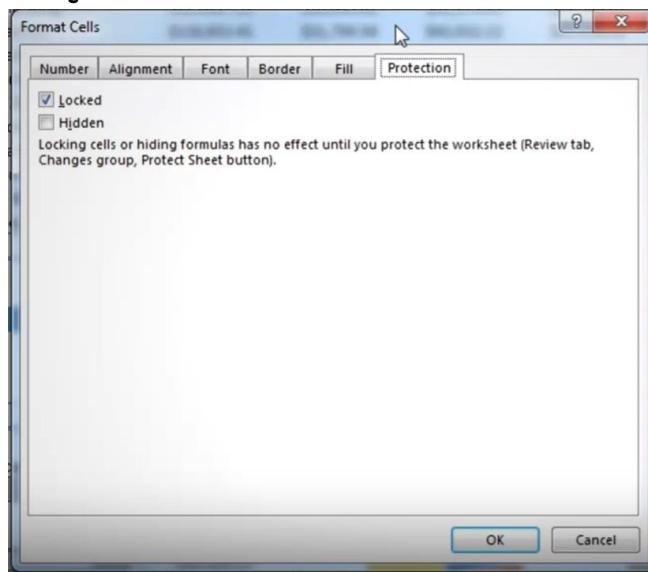


# EXCEL FOR EVERYBODY

- ✓ There are several methods of adding protection to our workbooks to prevent unauthorized access or accidental damage. Protection can be added at three different levels. It can be added at the workbook level. In other words, we can restrict access to the workbook itself. It can be added at the structural level so we can prevent people from adding, moving, or unhiding worksheets. Or it can be added at the worksheet level itself, where we can lock all the cells or just selected cells.



- ✓ Certain cells can be chosen to be unlocked so that once Password protection is done, users can access only these cells. Select the cells and right click to go to format cells.



# EXCEL FOR EVERYBODY

✓ Cell Errors

Error code	Meaning
#DIV/0!	An Excel error which occurs when you have divided by 0 (zero) or an empty cell.
#NAME?	An Excel error which occurs when your formula contains unrecognisable text.
#VALUE!	An Excel error which occurs when a value in your formula is of the wrong data type.
#####	This is not actually an error. This is Excel's way of telling you that the column is not wide enough to show the numeric value of the cell. You can still use the cell in calculations, but you will need to widen the column to see the value of the cell.

✓ Quick tips re tracing precedents/dependents:

Double-click any arrow in order to select the cell at the other end of an arrow.

Once you make any change (e.g., alter your formula or insert cells, etc.), the tracer arrows disappear. Consider making a copy of your workbook/worksheet if you prefer to keep the original tracing.

# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE II WEEK 5

- ✓ SUMPRODUCT allows us to multiply one array by another array and add up each individual result.  
=SUMPRODUCT (array1, array2)
- ✓ We can use SUMPRODUCT in place of COUNTIFS if logic is written properly e.g. =SUMPRODUCT (1\* (Range of cells > 100)) will give number of cells having value greater than 100.
- ✓ DATATABLE:

The first thing you need to do, is to put in your different variables. And you can lay them out either in a column or in a row. Data tables don't mind. Then just above or just to the left of your various percentages, we are actually going to put in the basic calculation. So, we're going to put our previous fixed expense times one plus nine percent. And what that is going to give us is a nine percent increase. That is how much our expenses will be if we do get a nine percent increase. That's the first step, create the formula. Step two is to create the data table. For this, we're going to select that whole block. So, making sure we've got our formula and our alternate input selected, we're then going to come up to our What-If Analysis, and we're going to select Data Table. The data table offers us two options: row input or column input. In this situation, it's the column of values we're changing, not the row. So, make sure you've clicked Column input. And now, what Excel is asking you is, which of the values in your calculation do you want to replace with all of these? And in this case, it's the nine percent. So, we're going to click into E17. We're going to click OK, and it has completed all the values for us nice and quick using only one calculation. Click in the data table and have a look in the formula bar, you'll see it looks slightly unusual. Instead of the normal formula, we've got an =TABLE. And whenever you see that, it means we're dealing with a data table. We can't change a single cell or delete the value, we need to select the whole range for changing.

A15      Estimated Fixed Expenses

	A	B	C	D	E	F	G	H
10	Integrated Testing	110	80	50	80			
11	User Acceptance Testing	130	110	30	100			
12	TOTAL HOURS				1000			
13								
14								
15	Estimated Fixed Expenses	\$100,280.00						
16	5.0%	\$96,600.00						
17	6.5%	\$97,980.00						
18	8.0%	\$99,360.00						
19	9.5%	\$100,740.00						
20	11.0%	\$102,120.00						
21	12.5%	\$103,500.00						
22	14.0%	\$104,880.00						
23	15.5%	\$106,260.00						

Expenses

Previous Fixed Expenses	\$92,000.00
Estimated Increase	9%

Sales

Sale Price	\$35.00
Previous Sales Units	4700
Expected Increase	7%

- ✓ GOAL SEEK:

The way Goal Seek works is given a cell that has a calculation in it, it will adjust that cell to a specified value by changing one of the inputs that you provide. From the What-if Analysis we're going to select Goal Seek. A dialog will pop up, and the first thing it asks is the Set cell. That is the cell that contains your calculation that you want to change the value it's returning. And because we selected it beforehand, you'll see it's already populated. We're going to click in the next box which is asking for the value we want this to equal and that is a zero. And then the final box

# EXCEL FOR EVERYBODY

is which input do we want to change to get to that result? And this value must be in a typed-in value rather than a formula. It helps in finding the break even point for a product.

The screenshot shows a Microsoft Excel spreadsheet titled "Project Costing Overview". The "Data" tab is selected in the ribbon. A "Goal Seek" dialog box is open, centered over the spreadsheet. The dialog box has three main fields: "Set cell:" (set to E20), "To value:" (set to 0), and "By changing cell:" (set to \$B\$5). Below these fields, there is a section titled "Salary calculations (per person per week)" with some numerical values. At the bottom of the dialog box, there are "OK" and "Cancel" buttons, and a note about calculated duration (weeks).

One limitation you may have observed with Goal Seek was you had to choose between either keeping the Goal Seek solution or your original solution.

- ✓ SCENARIO MANAGER:

Scenario Manager allows you to keep different data inputs in a single worksheet. The first thing to do is to name the cells that we will use. Next select the cells and then click on scenario manager. Now in the dialog box, we need to give some name and data values to be stored. Similarly input values for increase and decrease scenario. In the bottom of the dialog box, we will get the summary button which on clicking will generate a nice new worksheet call scenario manager like the one shown below which consolidates all the scenarios for easy viewing.

The screenshot shows a Microsoft Excel spreadsheet with a tab labeled "Scenario Summary". The "Data" tab is selected in the ribbon. The "Scenario Summary" sheet contains a table with four columns: "Current Values:", "Current Price", "Price Decrease", and "Price Increase". Under "Changing Cells:", there are two rows: "Sale\_Price" with a value of \$35.00 and "Quantity\_Sold\_Per\_Manual" with a value of 2,140. Under "Result Cells:", there is one row: "\$E\$20" with a value of \$80,000.00. Below the table, there is a note stating: "Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray."

# EXCEL FOR EVERYBODY

✓ SOLVER:

The screenshot shows a Microsoft Excel spreadsheet and the 'Solver Parameters' dialog box.

**Spreadsheet Data:**

	D	E
<b>Project Duration</b>		
Total effort (hours)	12000	
Total working week (hours)	400	
Calculated duration (weeks)	30	
<b>Salary calculations (per person per week)</b>		
Total hours per week	40	
Base salary (\$50 per hour up to 40 hours per week)	\$2,000.00	
Overtime salary (\$75 per hour over 40 hours per week)	\$375.00	
<b>Revenues</b>		
Sale Price	\$35.00	
Quantity Sold (Per Manual)	2,140	
Per Manual Revenue	\$74,900.00	
Total Revenue	\$898,800.00	
<b>Projected Profit</b>		<b>\$86,300.00</b>

**Solver Parameters Dialog Box:**

- Set Objective:** \$E\$7 (Value Of: 20)
- To:** Max (radio button selected)
- By Changing Variable Cells:** \$B\$7:\$B\$9
- Subject to the Constraints:** (Empty list)
- Options:**
  - Make Unconstrained Variables Non-Negative
  - Select a Solving Method: GRG Nonlinear
  - Solving Method: Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.
- Buttons:** Help, Solve, Close

- ✓ Goal Seek and Solver are similar data analysis tools. However, Goal Seek is simpler and best used for quick computations, while Solver is a more powerful tool which allows you to perform more complex computations.
- ✓ While Scenario Manager gives you the flexibility to choose the number of scenarios, a common technique in scenario analysis is to have a best (optimistic) case, worst (pessimistic) case and base (likely) case.

# EXCEL FOR EVERYBODY

## EXCEL SKILLS: INTERMEDIATE II WEEK 6

### ✓ MACROS:

A set of programming instructions which you can implement in Excel to automate repetitive tasks.

Relative Macro: This is a Macro you would write when the tasks you are trying to automate are not identical. A relative position is what you want recorded e.g. each time you copy, go one step down. Contrast this to cell B9.

Store in a workbook: Macro will travel with the workbook.

Store in Personal Macro workbook: Stored in your Excel Start-up folder and will open up but remain hidden when you open up excel. It can be used with multiple workbooks not specific to one.

Trusted Location: Macros in this location will be enabled automatically without you having to enable them.

When we record our macro, we hit the Record button, we give it a name and specify where we want to store it. We then go through all the steps that we want Excel to remember us doing, and then press Stop. Excel will record each step in a language called VBA or Visual Basic for Applications, and we can then play those steps back as often as we like.

Save the workbook as Macro enabled Excel .xlsm for the Macro to work.

- ✓ Instead of one long macro, it is often better to use short, simple macros which perform the same task.
- ✓ Be careful when you assign a keyboard shortcut to run a macro. It will override any existing Excel command which uses the same shortcut. It is best to use uppercase letters to avoid this problem.
- ✓ When you delete a macro, Excel cannot recover it for you.
- ✓ While you can learn VBA code and use it to write macros, you can still use macros without knowing VBA code.
- ✓ When recording a macro, you will naturally try to avoid making mistakes to improve the efficiency of the macro. However, it is also vital to remember to stop recording the macro when you are finished.
- ✓ To avoid the deletion of your macro when saving your Excel workbook, remember to save the file as an Excel Macro-Enabled Workbook. Excel Binary Workbook and Excel Macro-Enabled Template are also safe to use.
- ✓ Use VBA code comments to document descriptions and updates relating to a macro. This makes it easier for you and others to work with your macros because helpful comments can complement the sometimes-overwhelming VBA codes.
- ✓ Instead of deleting an error code, convert it to a comment by placing an apostrophe at the start of the original code. This allows you and others to review it.