Lab 02: Business Analytics using Microsoft Excel

Learning Objectives

1. Able to use Excel Built-in Functions for Business Analytics.
2. Able to use Conditional Formatting to highlight important information.

Introduction

Microsoft Excel is a desktop application for data organization and comparison. For example, you may use it for monitoring your personal monthly expenses and checking the balance whether it is out of budget by the end of month. Your personal data are formatted in terms of rows and columns in an Excel's worksheet.

In this laboratory, you will learn how to use some advanced built-in functions to analyze presented data.

Part 1: Excel Built-in Functions

Function	Description
AND	Returns TRUE if all of its arguments are TRUE
OR	Returns TRUE if any argument is TRUE
IF	Use this function to return one value if a condition is true and another value if it's false
COUNTIF	Counts the number of cells within a range that meet the given criteria
SUMIF	Adds the cells in a range that meet the given criteria
VLOOKUP	Use this function when you need to find things in a table or a range by row

1. AND Function

Syntax: AND(logical1, [logical2], …)

Example:

	A	B
1	**Value**	
2	1	
3	2	
4	3	
5	4	

Function	Result
=AND(TRUE, TRUE)	TRUE
=AND(TRUE, FALSE)	FALSE
=AND(A2=A4-A3, A3=2)	
=AND(A5-A3=A3, A4=3, A2=A4)	

2. OR Function

Syntax: OR(logical1, [logical2], …)

Example:

	A	B
1	**Value**	
2	1	
3	2	
4	3	
5	4	

Function	Result
=OR(TRUE, FALSE)	TRUE
=OR(FALSE, FALSE)	FALSE
=OR(A2=A4-A3, A3=2)	
=OR(A5-A3=A1, A4=3, A2=A4)	

3. IF Function

Syntax: IF(logical_test, [value_if_true], [value_if_false])

Example:

	A	B	C	D	E	F
1	**Item**	**Category**	**Price**	**Category Check**	**Price Check**	**Error Check**
2	Pencil	Stationery	$ 58.00	No Error	No Error	
3	Ruler		$ 124.00	Missing Category	No Error	
4	Desk	Furniture	$ -			
5	A4 File		$ (100.00)			
6	Calendar		$ -			

Function	Result
=IF(B2<>"", "No Error", "Missing Category")	No Error
=IF(C2>0, "No Error", "Invalid Price")	No Error

Q1. *How to change the IF Function so that it gives out the same result as "=IF(C2>0, "No Error", "Invalid Price")"?*

Hint: =IF(_____, "Invalid Price", _____)

Ans:

Q2. *How to combine the below two IF Functions into one Function?*

Function	Result
=IF(B5<>"", "No Error", "Missing Category")	Missing Category
=IF(C5>0, "No Error", "Invalid Price")	Invalid Price

Hint: Using 1 AND Function and 2 IF Function

Expected Result:

	A	B	C	D	E	F
1	**Item**	**Category**	**Price**	**Category Check**	**Price Check**	**Error Check**
2	Pencil	Stationery	$ 58.00	No Error	No Error	
3	Ruler		$ 124.00	Missing Category	No Error	
4	Desk	Furniture	$ -			Invalid Price
5	A4 File		$ (100.00)			Missing Category
6	Calendar		$ -			

Ans:

4. COUNTIF Function

Syntax: COUNTIF(range, criteria)

Example:

	A	B	C
1	**Item**	**Category**	**Price**
2	Pencil	Stationery	$ 58.00
3	Ruler	Stationery	$ 124.00
4	Desk	Furniture	$ 550.00
5	A4 File	Stationery	$ 100.00
6	Calendar	Stationery	$ 158.00
7	Bookshelf	Furniture	$ 258.00

5. SUMIF Function

Syntax: SUMIF(range, criteria, [sum_range])

Function	Result
=COUNTIF(B2:B7, "Stationery")	4
=COUNTIF(B2:B7, B4)	
=COUNTIF(C2:C7, ">=150")	
=SUMIF(A2:A7, "Desk", C2:C7)	550
=SUMIF(B2:B7, B2, C2:C7)	

Default value of *range_lookup* is TRUE

6. VLOOKUP Function

Syntax: VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

Example:

	A	B	C	D	E
1	**Spending Over**	**Member Type**	**Discount Rate**	**New Member Discount**	
2	500.00	Silver	0.95	0.90	
3	1000.00	Gold	0.90	0.85	
4	2000.00	Diamond	0.85	0.80	
5					
6					
7	**Member Name**	**Spending**	**Member Type**	**New Member?**	**Discount Rate**
8	Simon	505.00		No	
9	Tony	2010.00		Yes	
10	Kitty	888.00		Yes	
11	Chloe	1234.00		No	

Function	Result
=VLOOKUP(600, A2:D4, 2, TRUE)	Silver
=VLOOKUP(600, A2:D4, 2, FALSE)	#N/A
=VLOOKUP("Gold", B2:D4, 2, FALSE)	

Q1. *How to write the VLOOKUP Function to find out the corresponding Member Type of Kitty?*

Ans:

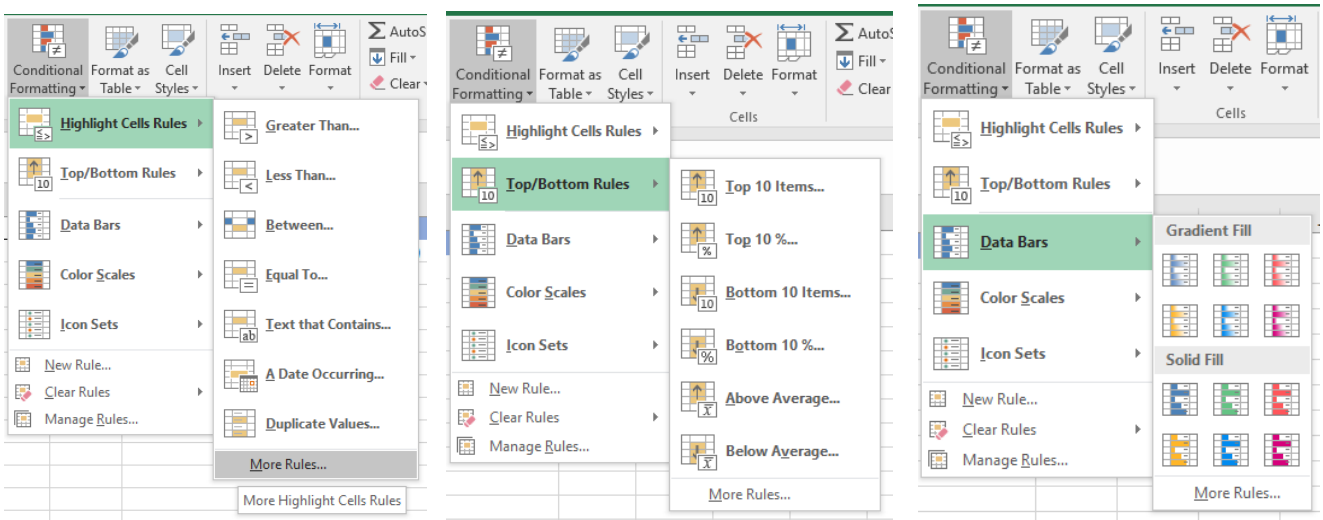
Q2. *If the member is new member, he/she can enjoy the New Member Discount. How to write the VLOOKUP Function to find out the Discount Rate of Tony? (Hint: Using IF Function)*

Ans:

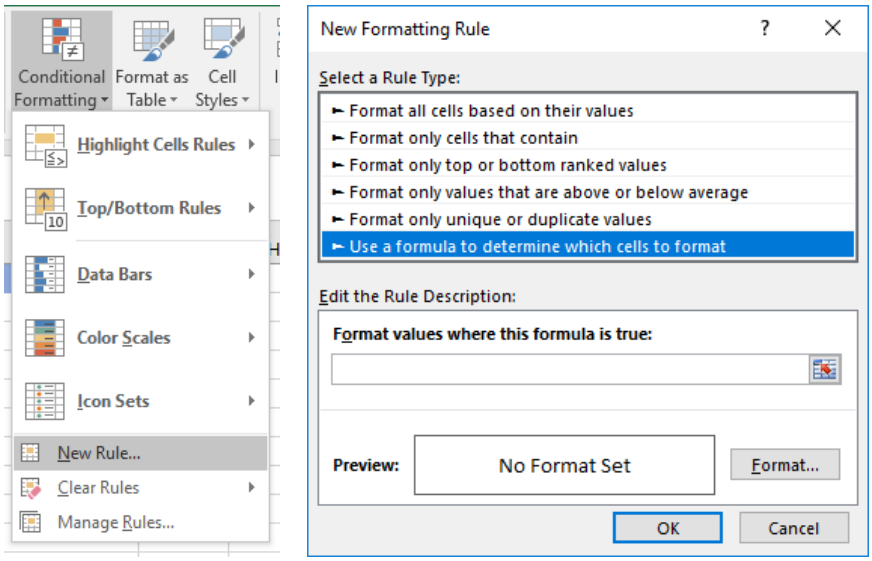
Part 2: Conditional Formatting

Conditional Formatting quickly highlights important information in a spreadsheet. You may use the built-in formatting rules or add your own formula to a conditional formatting rule.

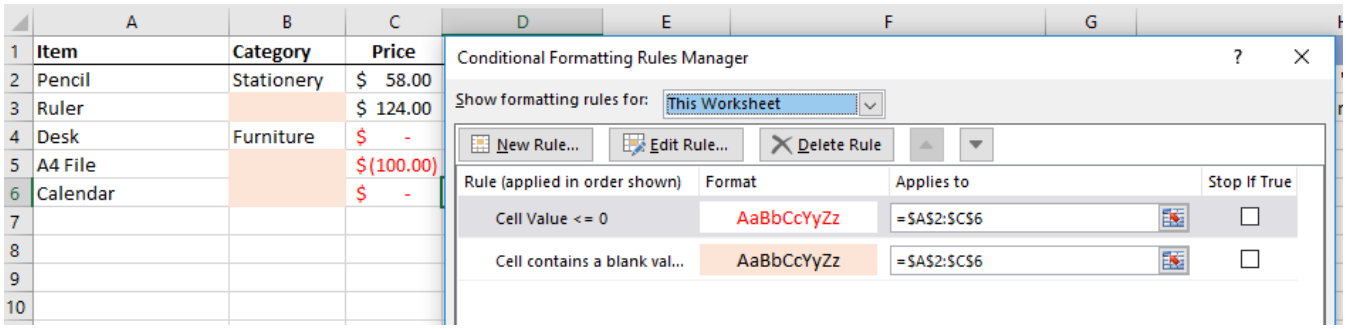
Built-in formatting rules:



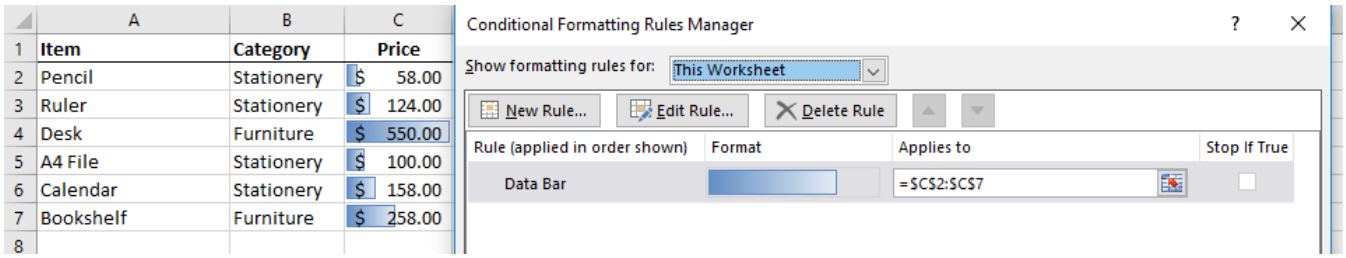
Your own formula:



Highlight Cells Rules example:



Data Bars example:



Challenge Questions [Optional]

Q1. *How to write the IF Function so that it gives out the below expected result?*

Expected Result:

	A	B	C	D
1	**Item**	**Category**	**Price**	**Error Check**
2	Desk	Furniture	$ -	Invalid Price
3	A4 File		$ 100.00	Missing Category
4	Calendar		$ -	Missing Category and Invalid Price

Ans:

Q2. *How to write the IF Function so that it gives out the below expected result?*

Hint: Using Array Formula, Press Ctrl+Shift+Enter to enter the formula

Expected Result:

	A	B	C
1	**Item**	**Category**	**Price**
2	Pencil	Stationery	$ 58.00
3	Ruler	Stationery	$ 124.00
4	Desk	Furniture	$ 550.00
5	A4 File	Stationery	$ 100.00
6	Calendar	Stationery	$ 158.00
7	Bookshelf	Furniture	$ 258.00
8			
9			
10	**Category**	**No. of Item**	**Sum**
11	Stationery	4	$ 440.00
12	Furniture	2	$ 808.00

Ans: