

Manansala, Joshua N.

BSCS-C301

Practice Task # 2: MS Excel Functions

This practice task focuses on mastering essential Excel functions to automate data processing and perform complex calculations efficiently. It covers a wide range of logical, text, mathematical, and statistical formulas—such as VLOOKUP, Nested IFs, and TRIM—designed to clean data and extract meaningful insights. By completing these exercises, you will learn to handle real-world data scenarios, including financial modeling, date manipulation, and error handling.

IF

What does it do?
It checks whether a condition is true or not and on the basis of that returns a value

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

Logical Test
This will be the condition which you want to check, so greater than, less than or equal to signs can be used for numbers. When you want to evaluate a condition based on text value, then use double quotes (") with equal to signs (Row 27 for example)

Value If True
If the logical test holds, then excel will return this value

Value If False
If the logical test does not hold, then excel will return this value

Example
Using IF formula to identify if a student has passed an exam or not

Student ID	Marks	Pass or Fail	Formula
S001	90	Pass	=IF(B2>=40,"Pass","Fail")
S002	70	Pass	=IF(B3>=40,"Pass","Fail")
S003	20	Fail	=IF(B4<=40,"Pass","Fail")
S004	41	Pass	=IF(B5>=40,"Pass","Fail")

Note
If instead of marks, we had Grades A, B, C i.e. text values then the above formulas would have changed by
=IF(B2="A","Pass","Fail")

Exercise
Write a formula using IF. Salary for an AVP will be \$2,000 and for an analyst will be \$1,000

Emp ID	Designation	Salary
E001	AVP	\$2000
E002	Analyst	\$1000
E003	Analyst	\$1000
E004	Analyst	\$1000

CONCATENATE

What does it do?
This function joins several (more than 1) text string into 1 string

Syntax
=CONCATENATE(string1, string2, and so on...)
OR
=String1&String2& so on...

String 1
First string which you want to concatenate

String 2
Second string which you want to join to the first string

Example
Join the 3 strings together using CONCATENATE and & (ampersand) operator

String1	String2	String3	Result	Formula
S001	90	Pass	S00190Pass	=CONCATENATE(A20,B20,C20)
S002	70	Pass	S00270Pass	=CONCATENATE(A21,B21,C21)
S003	20	Fail	S00302Fail	=A23&B23&C23
S004	41	Pass	S00441Pass	=CONCATENATE(A24," ",B24," ",C24)
S006	99	Pass	S00699Pass	"A25" & B25 & C25
S007	11	Fail	S00711Fail	=CONCATENATE(A26," ",B26," ",C26)

Note
In order to add spaces, other special characters between strings, you would need to use double quotes "" and declare the value between them as done in the examples above

Exercise
Join the 3 strings together using CONCATENATE and & (ampersand) operator to get the results as mentioned in the result column

String1	String2	String3	Result	USE	Formula
E001	AVP	800	E001-AVP-800	CONCATENATE	E001-AVP-800
E002	Analyst	500	E002Analyst500	CONCATENATE	E002Analyst500
E003	Analyst	100	E003Analyst100	CONCATENATE	E003Analyst100
E004	Analyst	400	E004-Analyst-400	&	E004-Analyst-400
E005	AVP	1000	E005 AVP 1000	&	E005 AVP 1000
E006	Analyst	250	E006 Analyst 250	&	E006 Analyst 250
E007	Analyst	500	E007Analyst500	&	E007Analyst500

WEEKDAY

What does it do?
 This function returns a number between 1 and 7 depending upon the day of the week. Default return is - Sunday would be 1, Monday 2... so on till Saturday which will be 7. Do note that at times, you may have to change the format of the cell to numeric to get the date in

Syntax
 =WEEKDAY(SERIAL_NUMBER, [return_type])

Serial Number
 Date from which you want to extract the year part

return_type
 Default settings i.e. if you do not mention this, Sunday would be 1, Monday 2 and so on. If you select it as 2, Monday will be given 1, Tuesday 2 and so on.

Example
 Identify today's weekday number basis different return_type value

Col A	Result	Formula
25/02/2016	4	=WEEKDAY(A20)
25/02/2016	3	=WEEKDAY(A21,2)
25/02/2016	2	=WEEKDAY(A22,3)
25/02/2016	7	=WEEKDAY(A23,14)

Exercise 1
 Use WEEKDAY() to calculate weekdays of dates mentioned in 'Date' column using 'Return Value'

Dates	Return Value	Results
01/01/2017	1	1
01/01/2017	2	7
01/01/2017	3	6

Exercise 2
 If any of the dates in the column below falls on Tuesday, then change that date to Friday. Use Weekday function to check weekdays with return value 1. You will have to use IF function. 1st has been done as an example

Dates	Weekday	New Date
28/03/2017	3	24/03/2017
28/03/2017	4	29/03/2017
21/03/2017	3	17/03/2017
01/01/2016	6	01/01/2016
01/01/2017	1	01/01/2017
01/01/2015	5	01/01/2015
01/01/2014	4	01/01/2014

VLOOKUP

What does it do?
 This function is used to lookup a particular value in a table and then return data from a specific column corresponding to that value

Syntax
 =VLOOKUP(lookup_value, Table_Array, Column_Index_Num, [Range_Lookup])

lookup_value
 The value which needs to be looked for in a particular table

Table_Array
 The table in which we are checking for this value to be present and from which we want to retrieve data. By pressing F2 key when you have selected your table, you fix the range. So when you copy formula from one cell to another, the range does not update automatically

Column_Index_Num
 If the value is present in the table, then which column consists of the value we want the function to return

Range_Lookup
 It is optional - It has 2 values - TRUE for approximate match and FALSE (which is default value) for exact match of the value we are searching for in a table

Example 1
 Below in the Lookup table, we have cost for different parts for different car makers. Use VLOOKUP() to get costs in front of items in the second table

Lookup Table	Mercedes	BMW	Audi
GearBox	\$2,500	\$3,000	\$3,000
Engine	\$5,000	\$4,999	\$5,200
Steering	\$1,250	\$1,300	\$1,100
Ignition	\$250	\$300	\$200
C/Nthead	\$300	\$290	\$310

Maker	Spare	Cost	Formula
Mercedes	Ignition	\$250	=VLOOKUP(B31, \$A\$24:\$B\$28, 3, FALSE)
BMW	Gear-Box	\$2,000	=VLOOKUP(B32, \$A\$24:\$C\$28, 3, FALSE)
Audi	Engine	\$5,200	=VLOOKUP(B33, \$A\$24:\$D\$28, 4, FALSE)
Audi	Steering	\$1,100	=VLOOKUP(B34, \$A\$24:\$D\$28, 4, FALSE)
Mercedes	Ignition	\$250	=VLOOKUP(B35, \$A\$24:\$B\$28, 3, FALSE)
Mercedes	C/Nthead	\$300	=VLOOKUP(B36, \$A\$24:\$B\$28, 3, FALSE)
BMW	Gear-Box	\$2,000	=VLOOKUP(B37, \$A\$24:\$C\$28, 3, FALSE)
BMW	Engine	\$4,999	=VLOOKUP(B38, \$A\$24:\$C\$28, 3, FALSE)

1] The first parameter relates to spare part for which we want to get the costs
 2] The second part refers to the data range - so Mercedes spare part information is available in second column of the 'Lookup table' - so that is why you select only first 2 columns - 1st one consists of the spare part name which we are searching for and the second one consists of its cost. For BMW that information is available in 3rd column, thus our data range consists of 3 columns for the second parameter
 3] The 3rd parameter refers to from which column we want to return the value, for Mercedes that would be 2nd column of the selected range, for BMW it would be 3rd and for Audi it would be 4th
 4] FALSE refers to us wanting an exact match and not an approximate one

SUM

What does it do?
 This function returns the sum of the cells or range selected

Syntax
 =SUM(Number 1, Number 2,...)

Number 1
 The first value to sum

Number 2 and so on
 The second (and so on...) value to sum

Example 1
 Use SUM function to get the sum of cells

Col A	Col B	Col C	Result	Formula
5	12	17	34	=SUM(A18:B18)
10	18	23	51	=SUM(A19:B19,C19)
20	100	999	1119	=A20+B20+C20

Example 2
 Use SUM function to get the sum of cells

Row A	5	9	12	21
Row B	1	56	945	23
Row C	2	6	28	34
Row D	4	12	947	12
Total	12	83	927	90

Formula =SUM(B24:B27) =C24+C25 =SUM(D24:D25, D26) =SUM(E24:E25, E26: E27)

Example 3
 Get the SUM of all cells below

Values to be summed	Total	Formula
5	3	16
1	3	=SUM(A34:A36,C34:C36,B35:B36)
1	2	4

Note
 If you want to sum the entire column (I suppose, all you need to do is =SUM(I:I), it will select the entire column) and give you the sum of the numbers in it. Similarly, you can select the entire row as well. If you write, =SUM(41:42), it will return the sum of all numbers in Rows 41 and 42.

STDEV.S

What does it do?
 This function gives the standard deviation of the given set of values or range of values. In terms of statistics, the lower the standard deviation the better, as it implies that there is not much variance in the data. Blank cells, text, and error values are ignored.

Syntax
 =STDEV.S([number1],[number2] and so on...)

[number1],[number2] and so on...
 Numbers for which you want to find out standard deviation

Example
 Calculate standard deviation for the following set of numbers

Range of Numbers	STD DEV	Formula
42, 45, 20, 22	13.07351011	=STDEV.S(A16:D16)
27, 10, 34, 50	16.18061117	=STDEV.S(A17:D17)
26, 32, 11, 28	8.958235434	=STDEV.S(A18:D18)
42, 40, 47, 47	3.559026084	=STDEV.S(A19:D19)

Exercise
 Calculate standard deviation for the following set of numbers

Range of Numbers	Result
7, 7, 2, 3	2.62995564
1, 2, 1, 6	2.380476143
5, 8, 8, 6	1.5
5, 8, 7, 4	1.825741858

PMT, NPV, PV, FV

What does PMT do?
 It calculates the payment of a loan based on constant number of payments and a fixed interest rate

Syntax
 =PMT(rate,npv,pv,[fv],[type])

Rate
 Interest rate

Npv
 Number of payments

Pv
 Present Value of loan taken

FV and Type
 FV and Type are both optional arguments with FV standing for future value of the loan, Types tells whether the payment will be made at the end of the month or not

Suppose person ABC buys a car and agrees to a monthly payment based on an interest rate of 4% over 4 years (i.e. 48 monthly payments). The loan amount is \$80000

Rate	0.33%	Since payments will be monthly, dividing interest rate by 12
NPV	48	
PV	\$80,000	
PMT	\$1,806	The PMT is negative i.e. highlighted red because it is implying that ABC will have to give this much amount of money every month
Formula	=PMT(B24,B25,B26)	

What does NPV do?
 It calculates the number of payments required based on fixed interest rate, constant periodic payments

Syntax
 =NPV(rate,pmt,pv,[fv],[type])

Rate
 Interest rate

PMT
 Regular Payment amount

