

NIELIT Gorakhpur

Course Name: O Level (1st Sem)

Subject: ITTNB

Topic: Functions [continued]

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Libreoffice [Calc]

Category of function:-

Logical functions:- The Logical functions allow Boolean logic decisions. For example AND, FALSE, IF, NOT, OR, TRUE, .etc.

➤ **AND()**:-Returns TRUE if all the arguments are considered TRUE, and FALSE otherwise. Syntax: AND(argument1; argument2 ...argument30) argument1 to argument30 are up to 30 arguments, each of which may be a logical result or value, or a reference to a cell or range. AND tests every value (as an argument, or in each referenced cell), and returns TRUE if they are all TRUE. Any value which is a non-zero number or text is considered to be TRUE. Example:

If cells A5:B8 all contain TRUE, cell C2 contains =TRUE() and cell C3 contains "dog":

AND(2<4;A5:B8;C2) returns TRUE.

AND(2<4;FALSE) returns FALSE.

AND(C2:C3)) returns TRUE.

➤ **OR()**:- Returns TRUE if any of the arguments are considered TRUE, and FALSE otherwise. Syntax: OR(argument1; argument2 ...argument30) argument1 to argument30 are up to 30 arguments, each of which may be a logical result or value, or a reference to a cell or range. OR tests every value (as an argument, or in a each referenced cell), and returns TRUE if any of them are TRUE. Any non-zero number is considered to be TRUE. Any text cells in ranges are ignored. Example:

OR(TRUE; FALSE) returns TRUE.

OR(0; 5) returns TRUE, because 5 is considered TRUE.

If cells A5:B8 all contain FALSE, and cell C2 contains =TRUE():

OR(1>2; A5:B8; C2) returns TRUE, because cell C2 is TRUE.

➤ **NOT():**- Reverses the logical value. Returns TRUE if the argument is FALSE, and FALSE if the argument is TRUE. Syntax:

NOT(logical_value) where logical_value is the logical value to be reversed. Example: NOT(TRUE()) returns FALSE

➤ **TRUE():**- Returns the logical value TRUE. Syntax: TRUE()

The TRUE() function has no arguments, and always returns the logical value TRUE.

Example:

TRUE() returns TRUE

NOT(TRUE()) returns FALSE

➤ **FALSE():**- Returns the logical value FALSE. Syntax: FALSE()

The FALSE() function has no arguments, and always returns the logical value FALSE.

Example: FALSE() returns FALSE

NOT(FALSE()) returns TRUE

➤ **IF():**-Returns one of two values, depending on a test condition. Syntax:

IF(test; value1; value2) where:

test is or refers to a logical value or expression that returns a logical value (TRUE or FALSE).

value1 is the value that is returned by the function if test yields TRUE.

value2 is the value that is returned by the function if test yields FALSE.

If value2 is omitted it is assumed to be FALSE; if value1 is also omitted it is assumed to be TRUE.

Example:

IF(A1>5; 100; "too small")

returns the number 100 if A1 is greater than 5, and the text "too small" otherwise.

IF(1>2; "nonsense") returns FALSE - because value2 has been omitted and 1 is not greater than 2.

IF(2>1) returns TRUE - because both value1 and value2 have been omitted and 2 is more than 1.

IF(1=2; 1/0; SQRT(4)) returns 2, the square root of 4. IF() only calculates the value chosen - in this case 1/0 would give a #DIV/0! error, but is not calculated.

➤ **COUNTIF()**:-Counts the number of cells in a range that meet a specified condition. Syntax: COUNTIF(test_range; condition)

test_range is the range to be tested.

condition may be: a number, such as 34.5 an expression, such as 2/3 or SQRT(B5) a text string

COUNTIF counts those cells in test_range that are equal to condition, unless condition is a text string that starts with a comparator:

>, <, >=, <=, =, <>

In this case COUNTIF compares those cells in test_range with the remainder of the text string (interpreted as a number if possible or text otherwise).

For example the condition ">4.5" tests if the content of each cell is greater than the number 4.5, and the condition "<dog" tests if the content of each cell would come alphabetically before the text dog.

It can be very important to check the settings on the Tools menu – Options - OpenOffice.org Calc - Calculate dialog:

If the checkbox is ticked for search criteria = and <> must apply to whole cells, then the condition "red" will match only red; if unticked it will match red, Fred, red herring.

If the checkbox is ticked for Enable regular expressions in formulas, the condition will match using regular expressions - so for example "r.d" will match red, rod, rid, and "red.*" will match red, redraw, redder.

The checkbox for Case sensitive has no effect (no attention is paid to case). See the examples for how to achieve a case sensitive match.

Example:

COUNTIF(C2:C8; ">=20") returns the number of cells in C2:C8 whose contents are numerically greater than or equal to 20.

COUNTIF(C2:C8; F1) where F1 contains the text >=20, returns the same number.

COUNTIF(C2:C8; "<"&F2) where **F2** contains **20** returns the number of cells in **C2:C8** whose contents are numerically less than **20**. (*Advanced topic*: this works because the **&** operator converts the content of **F2** to text, and concatenates it with **"<"**; **COUNTIF** then converts it back to a number).

COUNTIF(A2:A8; ">=P") returns the number of cells in **A2:A8** whose contents begin with the letter **P** or later in the alphabet.

COUNTIF(B2:B8; "red") returns the number of cells in **B2:B8** containing **red**, but this number may depend on the option settings discussed above.

➤ **SUMIF()**:-Conditionally sums the contents of cells in a range. Syntax:

SUMIF(test_range; condition; sum_range)

This function identifies those cells in the range **test_range** that meet the condition, and sums the corresponding cells in the range **sum_range**. If **sum_range** is omitted the cells in **test_range** are summed.

condition may be:

a number, such as 34.5 an expression, such as 2/3 or SQRT(B5) a text string
SUMIF looks for cells in **test_range** that are equal to condition, unless condition is a text string that starts with a comparator:
>, <, >=, <=, =, <>

In this case SUMIF compares those cells in **test_range** with the remainder of the text string (interpreted as a number if possible or text otherwise).

For example the condition ">4.5" tests if the content of each cell is greater than the number 4.5, and the condition "<dog" tests if the content of each cell would come alphabetically before the text dog.

Example:

SUMIF(A1:A9;"<0") returns the sum of the negative numbers in A1:A9.

SUMIF(A1:A9; F1)

where F1 contains the text >=0 (without double quotes) returns the sum of the positive numbers in A1:A9.

SUMIF(B2:B4; "<"&F2; C2:C4)

where F2 contains 10 and cells B2, B3, B4 contain 7, 9, 11, returns the sum of C2 and C3, because cells B2 and B3 are less than 10.

SUMIF(D1:D9; "apples"; E1:E9)

where cells in D1:D9 contain either apples or pears and cells in E1:E9 contain the corresponding quantities of each fruit, returns the total quantity of apples.

Assignment:-

1-Enter name of six students subjects and their marks and do the following.

A- Calculate total marks of all individual students.

B- Calculate average marks of all individual students.

C- Display result of student like passed or fail by displaying message.

2-Explain logical function in LibreOffice calc?