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The tutorial shows how to create multiple IF statements in Excel with AND as well as OR logic. Also, you will learn how to use IF together with other Excel functions. In the first part of our Excel IF tutorial, we looked at how to construct a simple IF statement with one condition for text, numbers, dates, blanks and non-blanks. For powerful data analysis, however, you may often need to evaluate multiple conditions at a time. The below formula examples will show you the most effective ways to do this. In essence, there are two types of the IF formula with multiple criteria based on the AND / OR logic. Consequently, in the logical test of your IF formula, you should use one of these functions: AND function - returns TRUE if all the conditions are met; FALSE otherwise. OR function - returns TRUE if any single condition is met; FALSE otherwise. To better illustrate the point, let's investigate some real-life formulas examples. The generic formula of Excel IF with two or more conditions is this: IF(AND(condition1, condition2,), value if true, value if false) Translated into a human language, the formula says: If condition 1 is true AND condition 2 is true, return value if true; else return value if false. Suppose you have a table listing the scores of two tests in columns B and C. To pass the final exam, a student must have both scores greater than 50. For the logical test, you use the following AND statement: AND(B2>50, C2>50) If both conditions are true, the formula will return "Pass", if any condition is false - "Fail". =IF(AND(B2>50, B2>50), "Pass", "Fail") Easy, isn't it? The screenshot below proves that our Excel IF / AND formula works right. In a similar manner, you can use the Excel IF function with multiple text conditions. For instance, to output "Good" if both B2 and C2 are greater than 50, "Bad" otherwise, the formula is: =IF(AND(B2="pass", C2="pass"), "Good!", "Bad!") Important note! The AND function checks all the conditions, even if the already tested one(s) evaluated to FALSE. Such behavior is a bit unusual since in most of programming languages, subsequent conditions are not tested if any of the previous tests has returned FALSE. In practice, a seemingly correct IF statement may result in an error because of this specificity. For example, the below formula would return #DIV/0! ("divide by zero" error) if cell A2 is equal to 0: =IF(AND(A20, (1/A2)>0.5), "Good", "Bad") The avoid this, you should use a nested IF function: =IF(A20, IF(1/A2>0.5, "Good", "Bad")) For more information, please see IF AND formula in Excel. To do one thing if any condition is met, otherwise do something else, use this combination of the IF and OR functions: IF(OR(condition1, condition2,), value if true, value if false) The difference from the IF / AND formula discussed above is that Excel returns TRUE if any of the specified conditions is true. So, if in the previous formula, we use OR instead of AND: =IF(OR(B2>50, B2>50), "Pass", "Fail") Then anyone who has more than 50 points in either exam will get "Pass" in column D. With such conditions, our students have a better chance to pass the final exam (Yvette being particularly unlucky falling by just 1 point.) Tip. In case you are creating a multiple IF statement with text and testing a value in one cell with the OR logic (i.e. a cell can be "this" or "that"), then you can build a more compact formula using an array constant. For example, to mark a sale as "closed" if cell B2 is either "delivered" or "paid", the formula is: =IF(OR(B2="delivered", "paid"), "Closed", "") More formula examples can be found in Excel IF OR function. Your task requires evaluating several sets of multiple conditions, you will have to utilize both AND & OR functions at a time. In our sample table, suppose you have the following criteria for checking the exam results: Condition 1: exam1>50 and exam2>50 Condition 2: exam1>40 and exam2>60 If either of the conditions is met, the final exam is deemed passed. At first sight, the formula seems a little tricky, but in fact it is not! You just express each of the above conditions as an AND statement and nest them in the OR function (since it's not necessary to meet both conditions, either will suffice): OR(AND(B2>50, C2>50), AND(B2>40, C2>60)) Then, use the OR function for the logical test of IF and supply the desired value if true and value if false values. As the result, you get the following IF formula with multiple AND / OR conditions: =IF(OR(AND(B2>50, C2>50), AND(B2>40, C2>60)), "Pass", "Fail") The screenshot below indicates that we've done the formula right. Naturally, you are not limited to using only two AND/OR functions in your IF formulas. You can use as many of them as your business logic requires, provided that: In Excel 2007 and higher, you have no more than 255 arguments, and the total length of the IF formula does not exceed 8,192 characters. In Excel 2003 and lower, there are no more than 30 arguments, and the total length of your IF formula does not exceed 1,024 characters. If you want to evaluate multiple logical tests within a single formula, then you can nest several functions one into another. Such functions are called nested IF functions. They prove particularly useful when you wish to return different values depending on the logical tests' results. Here's a typical example: suppose you want to qualify the students' achievements as "Good", "Satisfactory" and "Poor" based on the following scores: Good: 60 or more (>=60) Satisfactory: between 40 and 60 (>40 and 40, "Satisfactory", "Poor") Naturally, you can nest more functions if needed (up to 64 in modern versions). For more information, please see How to use multiple nested IF statements in Excel. Another way to get an Excel IF to test multiple conditions is by using an array formula. To evaluate conditions with the AND logic, use the asterisk: IF(condition1) * (condition2) * , value if true, value if false To test conditions with the OR logic, use the plus sign: IF(condition1) + (condition2) + , value if true, value if false To complete an array formula correctly, press the Ctrl + Shift + Enter keys together. In Excel 365 and Excel 2021, this also works as a regular formula due to support for dynamic arrays. For example, to get "Pass" if both B2 and C2 are greater than 50, the formula is: =IF((B2>50) * (C2>50), "Pass", "Fail") In my Excel 365, a normal formula works just fine (as you can see in the screenshots above). In Excel 2019 and lower, remember to make it an array formula by using the Ctrl + Shift + Enter shortcut. To evaluate multiple conditions with the OR logic, the formula is: =IF((B2>50) + (C2>50), "Pass", "Fail") This section explains how to use IF in combination with other Excel functions and what benefits this gives to you. When VLOOKUP or other lookup function cannot find something, it returns a #N/A error. To make your tables look nicer, you can return zero, blank, or specific text if #N/A. For this, use this generic formula: IF(ISNA(VLOOKUP(I, VLOOKUP(E1, A2:B10, 2, FALSE))) If #N/A return certain text: If the lookup value is not found, the formula returns specific text. =IF(ISNA(VLOOKUP(E1, A2:B10, 2, FALSE)), "Not found", VLOOKUP(E1, A2:B10, 2, FALSE)) For more formula examples, please see VLOOKUP with IF statement in Excel. To sum cell values based on certain criteria, Excel provides the SUMIF and SUMIFS functions. In some situations, your business logic may require including the SUM function in the logical test of IF. For example, to return different text labels depending on the sum of the values in B2 and C2, the formula is: =IF(SUM(B2:C2)>130, "Good", IF(SUM(B2:C2)>110, "Satisfactory", "Poor")) If the sum is greater than 130, the result is "good"; if greater than 110 "satisfactory", if 110 or lower "poor". In a similar fashion, you can embed the AVERAGE function in the logical test of IF and return different labels based on the average score: =IF(AVERAGE(B2:C2)>65, "Good", IF(AVERAGE(B2:C2)>55, "Satisfactory", "Poor")) Assuming the total score is in column D, you can identify the highest and lowest values with the help of the MAX and MIN functions: =IF(D2=MAX(\$D\$2:\$D\$10), "Best result", "") =IF(D2=MAX(\$D\$2:\$D\$10), "Best result", "") To have both labels in one column, nest the above functions one into another: =IF(D2=MAX(\$D\$2:\$D\$10), "Best result", IF(D2=MIN(\$D\$2:\$D\$10), "Worst result", "")) Likewise, you can use IF together with your custom functions. For example, you can combine it with GetCellColor or GetCellFontColor to return different results based on a cell color. In addition, Excel provides a number of functions to calculate data based on conditions. For detailed formula examples, please check out the following tutorials: COUNTIF - count cells that meet a condition COUNTIFS - count cells with multiple criteria SUMIF - conditionally sum cells SUMIFS - sum cells with multiple criteria To identify text, numbers and blank cells, Microsoft Excel provides special functions such as ISTEXT, ISNUMBER and ISBLANK. By placing them in the logical tests of three nested IF statements, you can identify all different data types in one go: =IF(ISTEXT(A2), "Text", IF(ISNUMBER(A2), "Number", IF(ISBLANK(A2), "Blank", ""))) To output the result of IF and some text into one cell, use the CONCATENATE or CONCAT (in Excel 2016 - 365) and IF functions together. For example: =CONCATENATE("You performed ", IF(B1>100, "fantastic!", IF(B1>50, "well", "poor"))) Looking at the screenshot below, you'll hardly need an explanation of what the formula does: The modern versions of Excel have special functions to trap errors and replace them with another calculation or predefined value - IFERROR (in Excel 2007 and later) and IFNA (in Excel 2013 and later). In earlier Excel versions, you can use the IF ISERROR and IF ISNA combinations instead. The difference is that IFERROR and ISERROR handle all possible Excel errors, including #VALUE!, #N/A, #NAME?, #REF!, #NUM!, #DIV/0!, and #NULL!. While IFNA and ISNA specialize solely in #N/A errors. For example, to replace the "divide by zero" error (#DIV/0!) with your custom text, you can use the following formula: =IF(ISERROR(A2/B2), "N/A", A2/B2) And that's all I have to say about using the IF function in Excel. I thank you for reading and hope to see you on our blog next week! Excel IF multiple criteria - examples (xlsx file) In this article I will guide you to write simple if functions as well as the complex if functions with multiple conditions or we also call it nested if functions. Lets start with simple if function in Excel formulas: The syntax is like :=IF(condition, value if true, value if false) So there are 3 arguments, first is the condition like a>b, second is the result if the condition result is true, 3rd argument is the result if the condition is false, e.g. =IF(A1>B1, A1 is greater, A1 is lesser) This explains the simple if with one condition but we have more conditions like we also have to check say the difference between the 2 numbers is > 30 of not then we will have to use nested if like: =IF(A1>B1, IF(A1-B1>30, difference is >30, difference is30), difference is >30, difference isB1) if it comes true then it will check the next condition A1-B1>30 and similarly there are 2 results if this condition is true or false. If we have to write this entire thing in vba code or any coding algorithm it will look like this: if A1> B1 Then If (A1-B1) > 30 Then MsgBox "difference is >30" Else MsgBox "difference is

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