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Cell Reference | Range Reference | Call Range | Reference sheet Use the indirect function in Excel to convert a text string to a valid reference. You can use the & operator to create text strings. Reference Cell Use the indirect function in Excel to convert a text string to a valid cell reference. 1. For example, take a look at the below indirect function. Explanation: = indirect(A1) reduced to = indirect(D1). The indirect function converts the text string D1 to a valid cell reference. In other words, =indirect(D1) reduced to = D1. 2. The simple indirect function below produces the exact same result. 3. Do we really need the indirect function? Yes. Without using the indirect function, this would be the result No. 4. Use the & operator join the screenshot string with the value in cell A1. Explanation: The above formula is reduced to = INDIRECT(D1). Again, = indirect(D1) reduced to = D1. Range Reference Use the indirect function in Excel to convert a text string to a valid range reference. For example, use SUM and indirect. Explanation: The above formula is reduced to =SUM(INDIRECT(D3:D6)). The indirect function converts the text string D3:D6 to a valid range reference. In other words, =SUM(INDIRECT(D3:D6)) reduced to =SUM(D3:D6). Use the INDIRECT function of Excel to convert a text string to a valid named range. 1. For example, the AVERAGE function below uses the named range scores. Explanation: Note named notes in the range D1:D3. 2. However, the AVERAGE function below returns an error. Explanation: =AVERAGE(Note) returns an error because Excel cannot calculate the average of a text string! 3. The below indirect function does the trick. Explanation: =AVERAGE(INDIRECT(Score)) decreases the = AVERAGE(Score). Reference worksheet Use the indirect function in Excel to create a dynamic worksheet reference. 1. This is what a simple worksheet reference looks like. Note: cell A1 on Sheet1 contains the value 10. Cell A1 on Sheet2 contains the value 20. Cell A1 on Sheet3 contains the value 30. 2. On the summary sheet, enter the indirect function shown as below. Use the & operator join the sheet name in cell A1 with ! A1. Explanation: the above formula to reduce the =INDIRECT(Sheet1! A1). The indirect function converts the text string Sheet1! A1 in a valid worksheet reference. In other words, = INDIRECT(Sheet1! A1) Reduced to = Sheet1! A1. 3. If your sheet name contains spaces or other special characters, enclose the sheet name in single quotation marks. Modify the indirect function as shown below. Roy has a formula that references a cell in another workbook, such as =[Timesheets.xlsm]Week01'! L6. It would be like to have the formula pick up the name of the worksheet (Week01) from another cell, so that the formula becomes more general-purpose. Roy wonders how it should change the formula so he can use what all worksheet name is in cell B9. The easiest way to handle this is to use the indirect worksheet function. Essentially, it takes address cellular and use it as a pointer and then retrieve the value from that cell. For example, you could use the following: =INDIRECT(L6) This result of the value in cell L6 has been searched and used as the pointer to what you really want. So if cell L6 contains A7, then the function returns the value of whatever that is in cell A7. Interestingly, if you invoke the function in this way you get a different result: =INDIRECT(L6) The result is the contents of cell L6 instead of using the cell contents L6 as a mentor. With this information, you could easily put together an address which will work well with the indirect function: =INDIRECT([Timesheets.xlsm]&gt; K2 &'! L6) This formula supposes that the name of the desired worksheet is stored in cell K2. If a valid worksheet name is not in this cell the formula returns a #REF error. A significant gotcha with this approach is that you have to make sure that the workbook (Timesheets.xlsm) is opened. Indirect will not occur in a non-closing workbook. If it is not open, then you will get an error #REF instead of the desired value. If you want to make the formula even more general-purpose, you could pull the workbook name, worksheet name, and entire cell reference from cells in your worksheet, as in this way: =INDIRECT([[&gt; K1&] &gt;! Orleans > K3) In this example, K1 would include the workbook name (Timesheets.xlsm), K2 would contain the worksheet name (Week01), and K3 would contain the desired cell (L6). ExcelTips is your source for cost-effective Microsoft Excel training. This tip (6069) is applied to Microsoft Excel 2007, 2010, 2013, 2016, 2019, and Excel in Office 365. I have 2 worksheets: Summarize with SERVER-ONE. In cell A5 on the Summary worksheet, I added the SERVER-ONE value. Next to it, in cell B5, I would like a formula that uses the value in A5 to display the value of G7 in the worksheet of the same name (SERVER-ONE). I was able to manually use: ='SERVER-ONE'! G7 However I would like this to be dynamic, so I can easily add more worksheets. I tried the obvious with no joy: ="A5'! G7 Any suggestions? Sometimes you want to make a reference to certain worksheet dynamically by using the Indirect Excel function. For example if you have data in the same split format on multiple worksheets and you want to select data from different sheets dynamic. In this case, you can use the Function Indirect() function, which is available in both Excel and Google Spreadsheets. I'll show you how to use it by running in a quick example. INDIRECT(): Returns the reference specified by a text string. References are immediately evaluated to display the following. Use Indirect() to dynamically refer to a worksheet in this example we want to look up the products of a specific product by dynamically referring to the data sheets of each product. We have a folk income in which we want to see the revenue for a specific product. Next, we have two sheets and sales and revenue data for two products: Product1 Product2. Normally you can only reference to one worksheet We want to revive the sheets to display the incomes of a specific product and to be able to update the dynamical numbers when we change cell D1. Unfortunately we cannot use a reference to D1 to specify the sheet we want to look up the products of a specific product by dynamically referring to the data sheets of each product. For this to work, we have to use the indirect() function. It allows us to use the value in cell D1 to create a dynamic VLOOKUP referring to ranges on multiple sheets. Using sheet names as variables and indirect() Now you can change cell D1 to Product2 and the income numbers will be dynamiical to update and get the numbers from the second worksheet. INDIRECT() in Excel so they can recap, you can use indirect() to refer to multiple worksheet variables as this: =INDIRECT('D1&gt;!&gt; A3:D6)Indirect() in Google Spreadsheets You can use indirect() in Google Spreadsheets in a similar way: = INDIRECT(CONCATENATE(D1, ! A3:D6) As always, let me know in the comments if this approach worked or if you have any questions! To be able to reference cells and ranges is what makes any spreadsheet tools work. And Excel is the best and most powerful one out there. In this tutorial, I will cover all you need to know about how to reference cell and ranges in Excel. Apart from basic references on the same sheet, the largest part of this tutorial should be about how to reference another sheet or workbook in Excel. While there isn't much difference in how it works, when you reference another sheet in the same file or reference a completely separate Excel file, the format in which reference changes a bit. Also, there are some important things you need to keep in mind when referencing another sheet or other external file. But worry... nothing too crazy! By the time you are doing with this tutorial, you will know all there has to know about reference cells and ranges in Excel (to be in the same workbook or another workbook). Let's start! Reference a cell in Same Sheet This is the most fundamental level of reference where you refer to a cell on the same sheet. For example, if I'm in cell B1 and I want to refer to cell A1, the format should be: =A1 When you do so, the value in the cell where you use this reference will be the same as that in cell A1. And in case you make any changes to cell A1, these should be reflected in the cell where you used this reference. Reference a cell to another sheet If you have to reference another sheet in the same workbook, you need to use the below formatting: Sheet_name! Cell_address first, you have the sheet name followed by an exclamation sign which is followed by the cell reference. So if you need to refer to cell A1 in Sheet 1, you need to use this reference: =Sheet1! A1 And if you want to refer to a range of cells in another sheet, you need to use this format: Sheet_name! First_cell: Last_cell so if you want to refer to the range A1:C10 at sheet in the same workbook, you need to use the below reference: =Sheet1! A1:C10 Note that I have only shown you the reference to the cell or the range. In fact, you should use these in formulas. But the formatting of these references, as explained above will be stayed the same in many cases, the worksheet you refer to would contain multiple words in the name. For example, it might be Project Data or Sales Data. In case you have spaces or non-alphabetical characters (such as @, !, #, -, etc.), you need to use the name of single quotes. For example, if you want to refer to the sheet named Sales Data, you will use the below reference: ='Sales-Data'! A1 And in case the name of the sheet is Sales-Data, then refer to cell A1 in this sheet, you need to use the below reference: ='Sales-Data'! A1 When you refer to a sheet in the same workbook, and then later change the name of the worksheet, you don't need to worry about the break down reference. Excel will automatically update these references for you. While it's great to know the format of these references, in practice, it's not such a good idea to manually type these every time. It would be time-consuming and very mistake-prone. Let me show you a better way to create cell references in Excel. Automatically create References to another worksheet in Same Workbook A the best way to create cell references in another sheet is simply point Excel to the cell/range which you want to create the reference and let Excel create it itself. This will ensure that you don't need to worry about the exclamation point or quotes being missing or other crop format up. Excel will automatically create the correct reference for you. Below are the steps to automatically create a reference to another sheet: Select the cell of the current worksheet where you need to reference the formula until you need to reference the (or an equal-to if you just want the reference) Select the sheet in which you need to refer to Select cells/rows that you want to refer to Hit Enter to get the result of the formula (or continue working on the formula) the above steps would automatically create a reference to the cell/range in another sheet. You'll also be able to see these references in the formula bar. Once you're done, you can simply hit the Enter key and it will give you the result. For example, if you have some data in cell A1:A10 in a sheet named Sales Data, and you want to get the sum of these values in current sheet, these will be the following steps: Type this formula into current sheet (where you need the result): =Sum(Select 'Sales Data' sheet. Select the range that you want to add (A1:A10). As soon as you do so, Excel will automatically create a reference to this range (you can see that in the formula bar) Hit the Enter key. When creating a long formula, you may need to refer to a cell or a range in another sheet, and then there is a need to go back to the origin and refer for some cells/the range. When you do so, you will notice that Excel automatically searches a sheet reference in the sheet where you have the formula. While this is fine and not wrong, it is not needed. In this case, you can choose to keep the reference or remove it manually. Another thing you need to know when creating references by selecting the sheet and then the cell/range is that Excel will always create a relative reference (i.e., reference and n0$sign). This means that if I copy and paste the formula (one with reference to another sheet) in some other cells, it would automatically adjust the reference. Here is an example that explains relative references. Supposing I use this formula in cell A1 in current sheet (see cell A1 in a SalesData sheet name) = SalesData! A1 Now if I copy this formula and paste into cell A2, the formula will be changed to: =SalesData! A1 This happens because the formula is relative and when I copy and paste it, the references will be automatically adjusted. In case I want to reference this always refer to cell A1 in the SalesData name, I will have to use the below formula: =SalesData!$A$1 the dollar sign before the row and column number close these references as well that these are not changed. Here is a detailed tutorial where you can learn more about absolute, mixed, and relative references. Now that we've covered how to reference another sheet in the same workbook, let's see how we can refer to another workbook. How to Reference Another Workbook in Excel When you refer to a cell or a range in another Excel workbook, the format of this reference would depend on whether the workbook is open or closed. And of course, the name of the workbook and worksheets also play a role in determining the format (depending on whether you have space or non-alphabetic characters in the name or not). So let's see the different formats of external references to another workbook in different scenarios. External references to an opened workbook when it comes to referring to an external opened workbook, you need to specify the workbook name, the worksheet name, and the cell address/range. Below is the format you need to use when referring to an external workbook open = '[FileName] SheetName! Supposing you have a workbook 'ExampleFile.xlsx' and you want to refer to cell A1 of Sheet1 in this workbook. Below is the reference for this: = [ExampleFile.xlsx] SalesData! A1 In case there are spaces in the external workbook name or the sheet name (or both), then you need to add the file name (in square brackets) with the sheet name in single quotes. Below are the examples where you would need to have the names in single quotes: ='[Example File.xlsx]SalesData! A1 = '[EGPFile.xlsx] Sales Data'! A1 ='[Example File.xlsx] Sales Data'! A1 How to Create Reference to Another Workbook (Automatically) Again, while it's good to know the formatting, it's better not to type it manually. Instead, just point Excel in the right direction it will create these references for you. This is a lot faster and way less likely to mistake. For example, if you have some data in cell A1:A10 of a workbook named 'Example File' in the sheet named 'Sales Data', and you want to get the following sum of current sheet, these will be the following steps: Type this formula into current sheet (where you need the result): =Sum(Go to the Example File' Workbook 'Select the Sales sheet' Sheet. Select the range that you want to add (A1:A10). As soon as you do so, Excel will automatically create a reference to this range (you can see that in the formula bar) Hit the Enter key. This would at least create the formula with the correct references. Something you'd notice when creating a reference to an external workbook is that it will always create absolute references. This means that there is a $ sign before the row and column numbers. This means that if you copy and paste this formula to other cells, it would keep the same reference range due to absolute references. In case you want this to change, you need to change the references manually. External references to a Closed Workbook When an external workbook is opened and you refer to this workbook, you just need to specify the file name, sheet name, and the cell address/range. But then is locked, Excel has no cycle where you look for the cells/rows you refer to. Therefore when you create a reference to a closed workbook, you also need to specify the file path. Below is a reference that refers to cell A1 in the sheet1 worksheet of the ExampleFile.xlsx. Since this file is not opened, it also refers to the location where the file is saved. ='C:\Users\sumit\Desktop\[Example File.xlsx]Sheet1! $A$1 The above reference contains the following parts: File Path – the location on your system or network where the external file is located No – the name of the external workbook. This would include the file extension as well. Sheet Name – the name of the sheet in which you are referring to the cells/ranges cell/Address Range – the exact cell address/range in which you are referring When you create an external reference to an opened workbook and then close the workbook, you would notice that the reference is automatically changed. After the external task is locked, Excel automatically delve a reference to the file path as well. The Impact of Change File Location on Reference When you create a reference to a cell/range in an external Excel file and then close it, the reference now uses the file path as well. But then if you change the file location, nothing will change in your workbook (in which you create the reference). But since you've changed the location, the link has now been broken. So if you close and open this book, it will tell you that the link is broken and you need to either update the link or break it completely. It will show you a prompt as shown as below: When you click Update, it will show you another where you can choose the links editor options (which will show you the following linked files, you can specify the new location of the file by clicking On Update Value. Excel opens a dialog box for you where you can specify the new file location by navigating to and selecting it. References to a defined name (in the same workbook or external) When you have to refer to cells and ranges, a better way is to create defined names for the ranges. This is useful as it makes it easy for you to refer to these ranges using a name instead of a long and complicated reference using cell address/range. For example, it's much easier to use =SalesData instead of =[Example File.xlsx]!$A$1:$A$10 and in case you used this defined named in multiple formulas and you need to change the reference, you only need to do it once. Here are the steps to create a named range for a range of cells: Select all the cells that you want to include in the range named Click the Formula tab Click the Define Name option (it's the Defined Name group) in the New Name dialog box, give this range a name (I'm using the SalesData name in this example). Remember you can't have space in the Name keep the scope as Workbook (unless you have a strong reason to make it sheet-level) Make sure that the refers are in the correct range. Click OK. Now your rows have been created and you can use it instead to reference the cells with cell address. For example, if I want to get the sum of all these cells in the SalesData range, you can use the below formula: =SUM(SalesData) and what if you want to use this named range in other worksheets or even other workbooks? you can! You just need to follow the same format we discussed in the section above. There is no need back at the beginning of this article. Let me give you all the examples here itself to get the idea. Workbook Vs Worksheet Level named ranges: When you create a workbook level named range, could only be a range with that name. So if you refer to it in external workbook or worksheets within the same workbook, you do not need to specify the worksheet name (as it is available for use in the whole workbook). In case you use the worksheet level to named range, you will only be able to use it in the worksheet and while referring to it, you will also have to specify the worksheet name. Referencing the defined name of the same workbook or worksheet level named range, you will need to specify the name for the workbook level, you can use it anywhere in the workbook by just using the defined name itself. For example, if I want to get the sum of all the cells in the named range we created (SaledData), I can use the following formula: =SUM(SaledData) In case you have created a worksheet level named range, you can use this formula only if the named range has been created in the same sheet where you are using the formula. In case you want to use it on another sheet (says Sheet2), you need to use this formula: And in case there are spaces or alphanumeric characters in the sheet name, you will have to insert the name into single quotes. =SUM('Sheet 1'!$A$1:$A$10) Referencing the defined name of another workbook (Open or Close) When you want to reference a named range to another workbook, you will have to specify the workbook name and then , the name of the series. For example, if you have an Excel workbook with ExampleFile.xlsx name and a named range with the SalesData name, then you can use the below formula to get the sum of this range from another workbook: =SUM(EGFile.xlsx! CommercialData) In case there are spaces in the name, then you need to use these in single quotes.=SUM('Example File.xlsx'! CommercialData) In case you have sheet-level named ranges, then you need to specify the name of the workbook as well as the worksheet when referencing it in an external workbook. Below is an example referencing a sheet-level named range: =SUM('[Example File.xlsx]Sheet1'! As I mentioned above as well, it's always best to create workbook level named ranges, unless you have a strong reason to create a worksheet level. In case you're referencing a named range of a closed workbook, you'll have to specify the file path as well. Below is an example of this: =SUM('C:\Users\sumit\Desktop\File.xlsx'! CommercialData) When you create a reference to a named range in an opened workbook and then close the workbook, Excel automatically changes the reference and adds the file path. How to create References in a Range named If you create and work with a lot of named ranges, it is not possible to remember each one's name. Excel helps you by showing you a list of all the named ranges that you created and allows you to insert these into formulas with one click. Supposing you have created a range named SalesData which you want to use in a formula to sum all the values in the named range. Here are the steps to do so: Select the cell in which you want to enter the formula. Enter the formula to point out where you need the named range to be inserted F3 key on your keyboard. This will open the Paste Name dialog box with the list of all the names you created Double-click the name that you want to insert. The above steps would insert the name of the formula and you can continue working on the formula. Note: This technique only works for the name ranges which are in the same workbook. If you want to find out the names of an external workbook, you will have to go there, check the name by using the Paste Name dialog box and then go back and use it in your formula (in the correct format using the file name). This is all you need to know about how to reference other sheets or workbooks and how to create an external reference in Excel. Hope you find this tutorial helpful. You may also like the following Excel tutorials: tutorials: