Using VLOOKUP to Combine Data in Microsoft Excel®

Microsoft Excel® includes a very powerful function that helps users combine data from multiple sources into one table in a spreadsheet. For example, if you download multiple sets of practice management system data, you may need to combine data from several spreadsheets to make sense of your data. You may have this year's budget in a one tab of a spreadsheet and the actual expenses in a separate tab on the same spreadsheet. It will be much easier to put both sets of data in the same tab to analyze budgeted vs. actual expenses. The HR department may have a list of employees you want to compare to a separate spreadsheet from your 401(k) provider. If you combine data from multiple spreadsheets into one spreadsheet, you can save hours of time and reduce data entry errors dramatically by learning how to use VLOOKUP. This article will use sample data to demonstrate how to use VLOOKUP in Excel 2010. VLOOKUP has been available for years in Excel. If you have a prior version of Excel, the screen shots may look different, but VLOOKUP works the same way.

[Here is a link to a sample data set that could have been downloaded from a practice management software package.](#) Download the sample spreadsheet and click on the Sheet1 tab to follow along with the VLOOKUP example. You'll see that Sheet1 has a sample list of patients and diagnosis codes. Sheet2 has a table of diagnosis codes and the related descriptions. In this example, we'll use VLOOKUP to add the diagnosis description on Sheet2 to the list of patients and diagnosis codes on Sheet1.

VLOOKUP's Syntax

The syntax to use VLOOKUP is VLOOKUP(**Lookup_value, Table_array, Col_index_num, [Range_lookup]**). The first three parameters are required and **Range_lookup** is optional. Let's review what each parameter means in VLOOKUP.

Lookup_value is the value you want to search for. In our example, we'll use the diagnosis code in Sheet1 to search for the same diagnosis code in Sheet2. **Lookup_value** can be either an actual value, such as 185, or it can be a reference to the value stored in a cell, such as B2. VLOOKUP will search for the **Lookup_value** in the first column of the range you specify in **Table_array**.

Table_array is the range of cells that contains the data that you want to look up. In our example, we'll point VLOOKUP to a range of cells on Sheet2 with both the diagnosis codes and the related descriptions. Remember that the first column of your **Table_array** must contain the values you're trying to look up. Typically **Table_array** is a range of cells, like A2:B198. If you're going to copy your VLOOKUP formula to look up several different values, you'll want to make your **Table_array** an absolute fixed reference so that when you copy the VLOOKUP formula it will always point to the same range of cells. To do that, either add dollar signs when you type the **Table_array**, or use the F4 key to have Excel insert the dollar signs for you. In this example, we'll make our **Table_array** $A$2:$B$198.

Col_index_num is the number of the column in the **Table_array** that contains the data you're looking for. VLOOKUP will find try to find the **Lookup_value** in column 1. **Col_index_num** tells Excel which column in **Table_array** to return if it finds the **Lookup_value** in column 1. In our example, the diagnosis description in Sheet2 is in the second column, so our **Col_index_num** is 2.
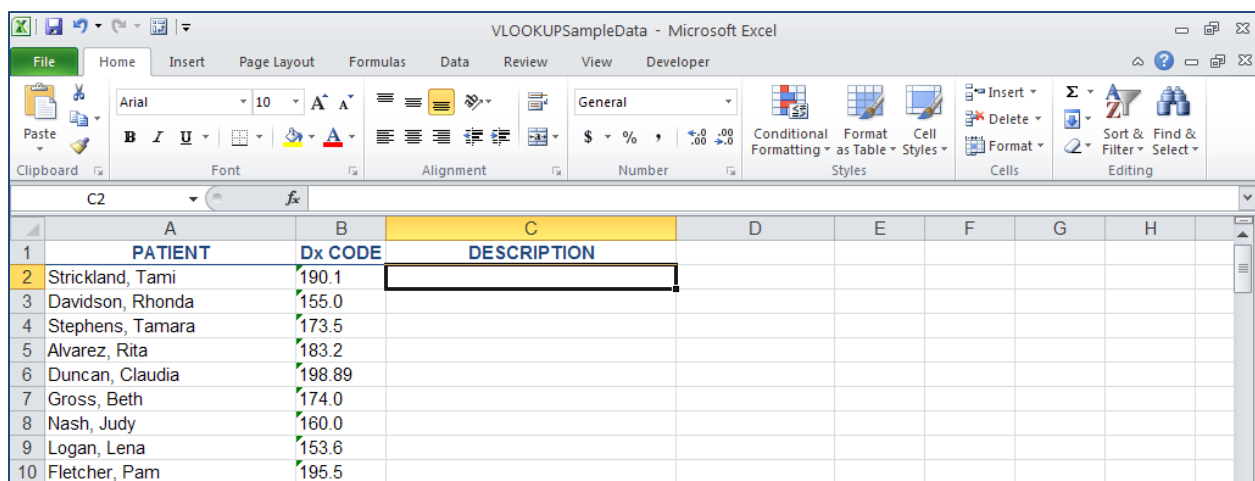
Range_lookup is an optional argument in VLOOKUP that can be either True or False. If VLOOKUP is True, Excel tries to find an exact match for your **Lookup_value**. If Excel can't find an exact match, Excel gives you the next largest value that is less than the **Lookup_value**. It's like the Price is Right approach to VLOOKUP. Excel gives you the closest value to your **Lookup_value**, without going over. For this to work properly when **Range_lookup** is True, make sure your **Table_array** is sorted in ascending order.

If **Range_lookup** is False, Excel looks for an exact match for your **Lookup_value**. If Excel can't find an exact match, VLOOKUP returns #N/A. By default, if you don't enter a **Range_lookup**, Excel assumes that **Range_lookup** is True. Be careful with this default behavior. In my experience, I want an exact match and therefore set **Range_lookup** to False more than 95% of the time, which is just the opposite of the Excel default. In our example, we want to exactly match all of the diagnosis codes in Sheet1 with the **Table_array** in Sheet2, so we'll make **Range_lookup** False.

VLOOKUP in Action

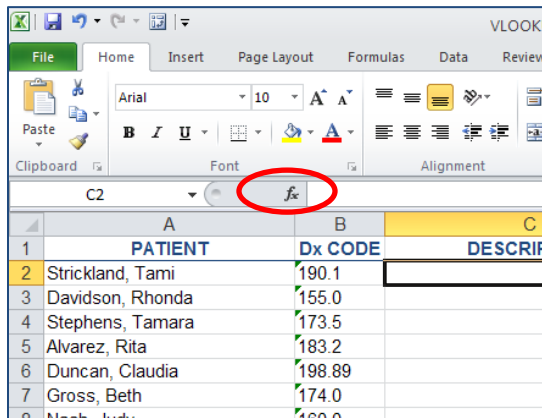Put your cursor in cell C2 of Sheet 1. Your screen should like Figure 1. To get started, click the

Figure 1

Figure 2

Insert Function button, which is circled in red in Figure 2. The **Insert Function** window is shown in Figure 3. You can either select one of your most recently used functions stored in the list below, or you can search for a function in the top box. Note that when you find a function, Excel displays the syntax for the function and a brief description. Type VLOOKUP in the **Search for a**
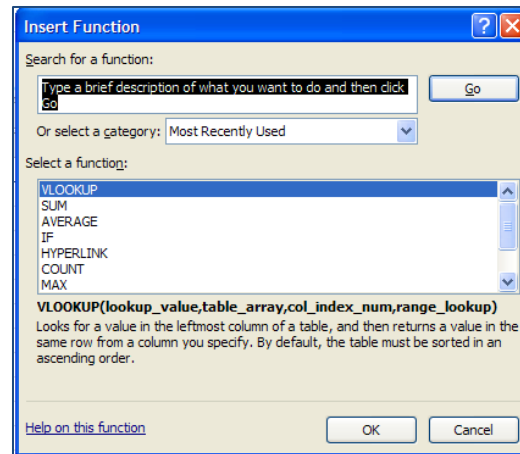
Figure 3

function area and click Go. Select VLOOKUP from the list of functions. You should see the **Function Arguments** window as shown in Figure 4. The **Function Arguments** window can be a good way to learn about Excel functions. You'll see each

Figure 4

of the required elements in bold and the optional elements of the function in plain type on the left of the Function Arguments window. Note the red circle in Figure 4. You can click this button to minimize the **Function Arguments** window so that you can select values from your spreadsheet. Click the button next to **Lookup_value** to minimize the screen. Click on cell B2 on Sheet1. Cell B2 contains the first diagnosis code we're searching for, 190.1. Your screen should look
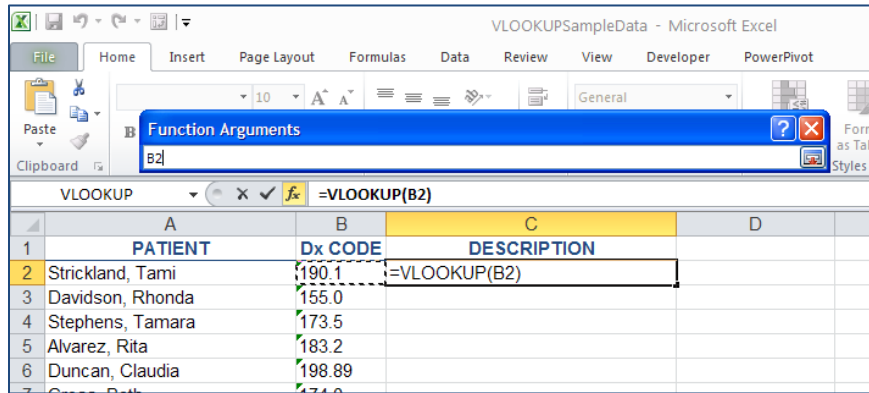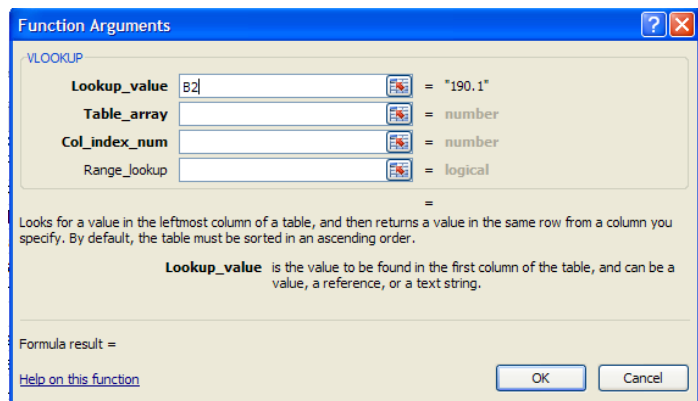
Figure 5

like Figure 5. Note that Excel is starting to build the formula for you. Hit Enter to accept B2 and return to the **Function Arguments** window. Your screen should look like Figure 6.

The next step is to enter the **Table_array**, the place where your diagnosis descriptions are stored. Click the button next to **Table_array** to minimize the window, then click on the Sheet2 tab. Click in cell A2, hold the left mouse button down and drag the mouse to highlight the entire range of data, A2 to B198. We'll want to copy our VLOOKUP formula when we're finished, so we need to lock the cell references in **Table_array**. Again, to lock the cell references, either add dollar signs when you type the **Table_array**, or use the F4 key to have Excel insert the dollar signs for you. Now hit Enter and your screen should look like Figure 7.
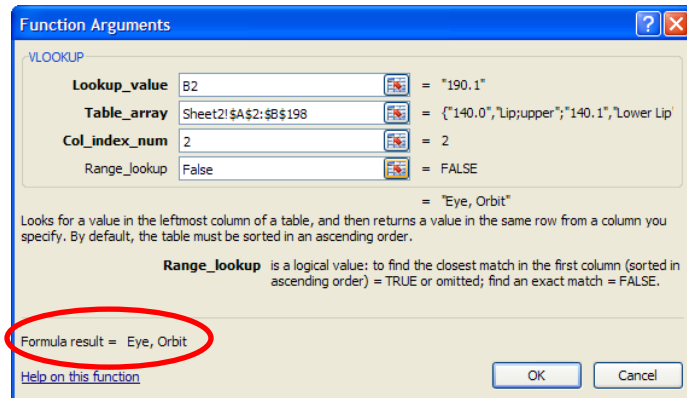
Figure 6

Figure 7
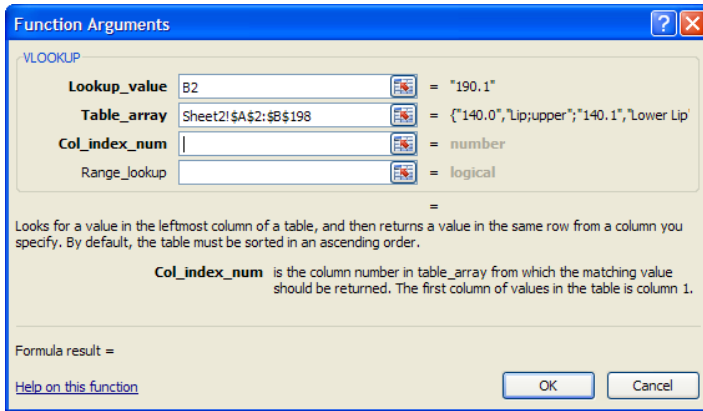
The diagnosis code description we're trying to look up is in the second column of the range we just defined in **Table_array**, so type 2 as the **Col_index_num**. In our example, we want to exactly match all of the diagnosis codes in Sheet1 with the **Table_array** in Sheet2, so type False for **Range_lookup**. Your screen should look like Figure 8.
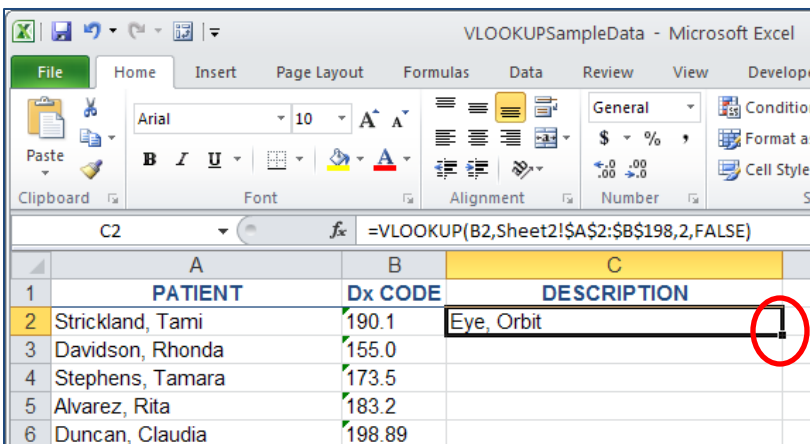
Notice the area circled in red in Figure 8. The **Function Arguments** window is calculating the result of the formula so that you can see the result of the VLOOKUP function

Figure 8

before you close the **Function Arguments** window. Looking up 190.1, the value in cell B2, will give us "Eye, Orbit" when we click OK. Go ahead and click OK. Your screen should look like Figure 9.

Figure 9

Notice how the bottom right-hand corner of the highlighted cell looks slight different than the other 3 corners of the cell. If you hover over this corner the cursor will turn into a small black plus sign. Once your cursor changes shape, double-click and Excel will copy the formula down

until it finds a blank cell in Column A, which is at the bottom of your list. You've now created a VLOOKUP formula for each diagnosis code in your list.

Next Steps

With a little experience, you'll find plenty of applications for VLOOKUP in your practice. Once you're familiar with the basics of VLOOKUP, go to www.mooresolutionsinc.com for several Excel Videos demonstrating more ways to use VLOOKUP. Excel Videos 61 – 69 cover a variety of more advanced ways to use VLOOKUP, including using VLOOKUP with multiple columns, including formulas in VLOOKUP, and dealing with error messages.

Understanding VLOOKUP unlocks the door to more powerful, more accurate spreadsheets that are faster to create and maintain. The more familiar you are with VLOOKUP, the more ways you'll find to use this powerful tool.

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