

Excel 2016 Advanced for Windows

Creating PivotTables in Excel

PivotTables enable you to extract meaning from large amounts of data, identifying trends and patterns that may be buried in the data. With PivotTables you can easily organize and summarize both numerical data and non-numerical data, perform comparisons and organizing data using row and column headings. For example, you might want to find out how many foreign students major in History at a specific college, then compare that number with the number of foreign students that major in mathematics. PivotTables enable you to organize these multiple sets of data at the same time.

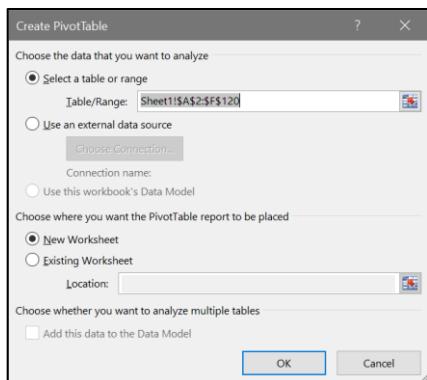
Use a PivotTable report when you want to analyze related totals, especially when you have a long list of figures to sum and you want to compare several facts about each figure. Because a PivotTable report is interactive, you can change the view of the data to see more details or calculate different summaries, such as counts or averages.

To create a PivotTable

Getting Started:

Begin by making sure your table is set up correctly in order to use PivotTables. The first row contains the field or column names. The second and subsequent rows contain the data. There are no blank rows, although individual blank cells may be present.

1. Open an existing Excel spreadsheet which contains data for analyzing.
2. Click on the **Insert** tab, then choose from the **PivotTable** tool either **PivotTable** or **PivotChart** to begin.



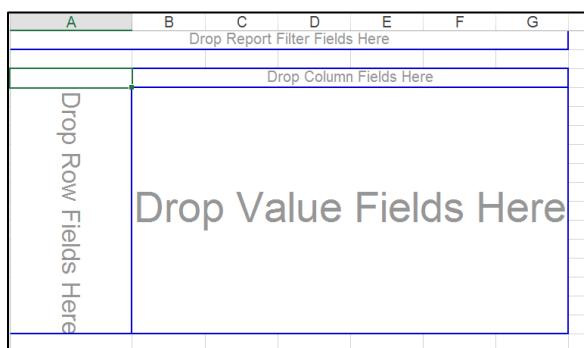
3. Because you already selected a cell or range of cells (step 2), you can find the correct data range on the icon to the right of your **PivotTable Location** box. (The range is surrounded by a pulsing dashed line, also known as a marquee.) If you want to create a PivotTable from external data, select **External Data Source** and select the data source file.

- range of cells where you wish to place the pivot table. Click **OK**.
4. Select **New Worksheet** as the location for the PivotTable Report, then click and drag to select the

5. When you are finished, click **OK**. The PivotTable opens and the **PivotTable Builder** appears (shown to the left).

You now have a PivotTable, but it has no data (shown below). To populate your PivotTable, you need to click and drag the items under **Field Name** to the four main areas, located at the bottom of the PivotTable Builder. These four main areas are (1) **Values Area**, where the actual data will go. The (2) **Row** and (3) **Column Areas** are places where you can add fields or columns from the original data list, and use that to create organization for your PivotTable. Lastly, the (4) **Filter Area** allows you to put fields there which don't affect the structure of the PivotTable; instead, it allows you to filter the contents of the PivotTable based on any field that's in the report Filter Area.

You can ask different questions of the data and look at it in different ways depending on which fields you decide to use for rows, columns, and data. For example, if you want to see which majors are the most popular with men and women of different ethnic groups, drag the gender and ethnicity fields to the Row box on the PivotTable builder. Drag the planned major field to the Column box. Drag the planned major field to the Data box. (Notice that you can use the same field in more than one place.)



Working with PivotTables

PivotTables are dynamic worksheets—you can change and rearrange them to ask different questions and to look at your data in different ways. The first thing you want to do is work with the PivotTable buttons to change the field parameters. For example, when analyzing participation rates, you can change the page field data to display information about any of the participating ethnic groups. You can change the page field altogether to categorize the data differently, by gender or by college, for example.

The illustration to the right shows a PivotTable report of the sample data. The shaded cells are PivotTable buttons. You can drag buttons between rows and columns to change the way data is summarized. Click the arrow on a button to organize the rows/columns.

A	B	C
1	Drop Report Filter Fields Here	
2		
3		
4	Data	
	Sales Rep	
	Sum of Sale total	Sum of Quantity
5	A. Yamamoto	3099.75
6	D.F. Chang	1072.25
7	F. Rosenstein	5575.2
8	J. Wilson	2738.25
9	J.T. Baker	1815.95
10	L. Sanchez	2817.65
11	O. McBride	1567.3
12	Q. Ackerman	3928.9
13	S. Muller	1384.25
14	W. Carver	4137.55
15	Grand Total	28137.05
16		1302

Using the PivotTable Ribbon Option

- The PivotTable Ribbon allows you to work with your PivotTable easily without needing to access the PivotTable and PivotTable Builder. When you create the PivotTable, numerical data is summed by default and non-numerical data is counted. You can change the operation performed on data in a field of the PivotTable by clicking a cell in that field and then clicking the (**Field Settings**) button. Use the PivotTable Field dialog box that appears to specify the operation you want Excel to perform in that field. For example, you can use this button to sum up the total number of students per major in your PivotTable.

Formatting your PivotTable Report

If you click any cell in the body of the PivotTable, and then click the PivotTable contextual tab on the ribbon, you can now apply a style from the PivotTable **Styles** gallery. Click the expand button located in the gallery to see all available styles and scroll down.



If you want to have your odd and even rows with different formatting, for example some lighter and some darker, then you can turn on **banding**. First, select a PivotTable style with different colors on the icon, then click the **Row and Columns** button and click **Banded Rows**.

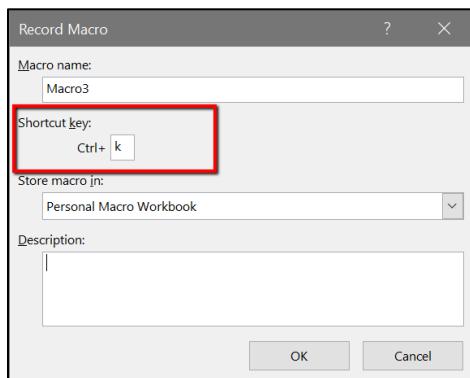
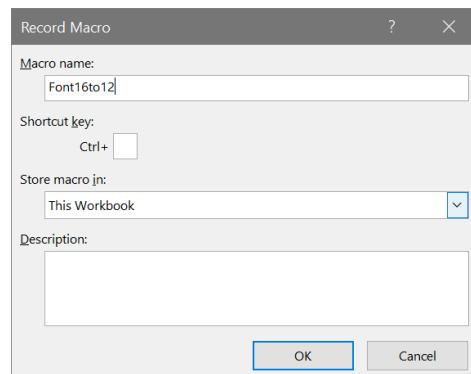


Excel Macros

What's a macro?

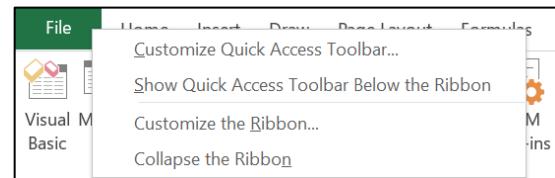
The more you use excel, you will realize that you repeat certain actions often. If you would like to automate those tasks, you can record a macro and run it to save you time. For instance, you can create a macro that will change the formatting of text in the selected cell that is currently 12 pt font, but wish to change it to 18 pt font.

Recording a Macro



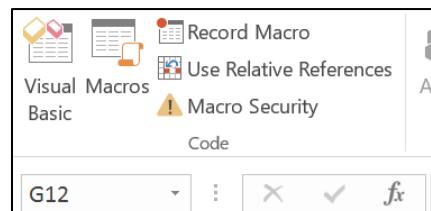
ribbon, go to the **Visual Basic** group, and give the macro a name that is associated with the task.

1. Begin by adding the **Developer** tab on the ribbon. From the File tab, choose Options. Click on Customize Ribbon. Scroll down the list of options and choose Developer. Click OK. The Developer tab now appears. Click on the Developer tab to begin.
 - Alternatively, you can select from the Tools menu, Macro, Record New Macro.



- Macro names must start with a letter, not a number. Numbers are okay after the first character, though.
- A macro name can't contain spaces. You have to use mixed-case capitalization to indicate separate words
- Punctuation marks are off limits, too. If you do use punctuation marks, VBA returns an Invalid procedure name dialog box.

3. Click the **Record** button, and Excel will display the **Record Macro** dialogue



- If you would like to assign a shortcut key to your macro, enter in a number, letter, or symbol next to **Option+Cmd+ _**.
- Choose to **Store Macro** in a **Personal Macro Workbook** so that the macro can be used across your Excel documents (old and new).

4. Click **OK** to start recording
5. On the **Recording** toolbar, click **Stop Recording** once your task is complete. **Note:** Excel doesn't record when you change tabs on the Ribbon, only actions that affect the worksheet.

6. Click a cell in another worksheet you wish to reformat, then under the **Developer** tab, under **Visual Basic** group, click the **Macros** icon.
7. In the **Macro Name** list, click your created macro, and then click **Run**. The text you typed in step 5 appears in the new cell.

Use Relative References

Use the Relative References option when you create a macro so that macros are recorded with actions relative to the initial selected cells. 

Button, button, who's got the button?

Some VBA applications let you assign a new macro to a toolbar button or keyboard shortcut at the time you record the macro. Take advantage of this opportunity — the most convenient way to play back a macro is to trigger it using a button or the keyboard.



To assign a button to a macro

1. Right-click over the **Quick Access** toolbar (upper-left corner of the screen).
2. Choose **Customize Quick Access Toolbar**.
3. Use the pull-down menu and select **Macros**.
4. Locate the **Macro** you want to add as a tool, then click the **Add** button in the middle column.
5. Click **OK** to close. The button is now available in the **Quick Access** toolbar.

How does it work?

The Macro Recorder acts like a tape recorder. As you work, it records your keystrokes and mouse button clicks by translating them into Microsoft Visual Basic® for Applications (VBA) code.

To view VBA code

On the **Tools** menu, point to **Macro**, and then click **Visual Basic Editor (or press Alt+F11)**. In the VBE window, locate the window called **Project**. Select the project that corresponds to the workbook in which you recorded the macro. Click the plus sign (+) to the left of the folder named **Modules**. Double-click **Module 1**.

Here's an example of Visual Basic for Applications code:

```
Sub Convert_2_Value()
```

```
' Convert_2_Value Macro  
  
' Macro recorded 12/14/2006 by John Bansavich  
  
' Keyboard Shortcut: Ctrl+Shift+L  
  
Selection.Copy  
  
Selection.PasteSpecial Paste:=xlPasteValues,  
Operation:=xlNone, SkipBlanks :=False,  
Transpose:=False  
  
Application.CutCopyMode = False  
  
End Sub
```

General Excel Links

<http://spreadsheetpage.com/>