Microsoft Excel III — Intermediate Skills

As of 10/16/2023

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Introduction

Microsoft Excel is widely used in business to build numerical spreadsheets with calculation formulas, and to analyze data. Aside from simple math, it can do date math, manipulate text and generate pie charts, bar charts and more.

This course gives you the basics so you can build the simplest of spreadsheets and gain the base knowledge for proceeding through the intermediate and advanced Excel courses.

For this handout (in color) and more, visit my teacher's website at:

www.clearcutcomputing.com/school

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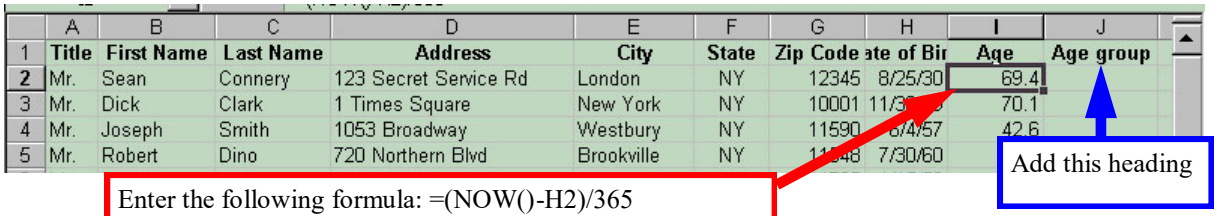
The "If" Function — Easily the most popular of the conditional functions. This function applies a test to a cell or formula and allows you to apply one value if the test is successful (true) or a different value if the test fails (false). First, let's prepare our Mail Merge DB spreadsheet as follows:



	A	B	C	D	E	F	G	H	I	J
1	Title	First Name	Last Name	Address	City	State	Zip Code	ate of Bir	Age	Age group
2	Mr.	Sean	Connery	123 Secret Service Rd	London	NY	12345	8/25/30	69.4	
3	Mr.	Dick	Clark	1 Times Square	New York	NY	10001	11/3	70.1	
4	Mr.	Joseph	Smith	1053 Broadway	Westbury	NY	11590	6/4/57	42.6	
5	Mr.	Robert	Dino	720 Northern Blvd	Brookville	NY	11548	7/30/60		

We want to test the age of each person in the list and if they are over the age of 59.5, we would like to have the **Age Group** say "SENIOR." Otherwise, the function should place "Too young" in this column. The syntax for the If function is as follows:

IF(logical_test,value_if_true,value_if_false)

Let's break down what we want for each of the three parameters:

logical_value:	I2 > 59.5	{is the contents of the first age column greater than 59.5?}
value_if_true:	"SENIOR"	{if yes, enter the word "SENIOR" - be sure to include the quotes}
value_if_false:	"Too young"	{if no, enter the words "Too young" - again, with the quotes}

Put it all together, and you should have entered into cell J2: **=IF(I2>59.5, "SENIOR", "Too young")**

Copy the formula down into all the necessary cells below and you should see different results depending on the various age values. Try changing a few of the birth dates to make different people older that 59.5 and the **Age Group** value should change automatically.

COMPARISON SIGNS

= is equal to
> is greater than
< is less than
>= is greater than or equal to
<= is less than or equal to
<> not equal to

NOT(test)

We really don't need to list the non-seniors as "Too young." Let's make the **Age Group** cells for those people be blank. To do this, just remove the **value_if_false** component of the function – BUT LEAVE THE COMMA. Hence, chnge the formula to: **=IF(I2>59.5, "SENIOR",)** and copy it to the necessary cells below it.

But this should produce zeros for the non-seniors – not exactly what we wanted. This is because of the formatting of the cell to display zero values, which is the equivalent to a **False** result from a logical test. To fix this, we could create a custom number format for these cells of a single "#" symbol. BUT, there is an easier way to do this within the **IF** function. Change the formula of the first cell to: **=IF(I2>59.5, "SENIOR","")** and copy it to the necessary cells below it. Notice that the **value_if_false** parameter is set to a pair of double quotes with no space in-between. This tells Excel that we want to put the NULL value in the cell.

Nesting IF functions – it is possible to create many layers of IF tests in a formula. The process is referred to as "nesting."

In our example above, we now want to display the word "Minor" in the **Age Group** for the people under 21 years old. We still want our over-59.5 folks to be shown as "SENIOR" and the rest to be blank. In words, we wish to perform the test: "if not a senior, test to see if a minor." Well, "if not a senior" the **value_if_false** would be applied. So, in place of the double-quotes, we will insert another **IF** function. Hence, the first cell should be as follows:

=IF(I2>59.5, "SENIOR", IF(I2<21, "Minor" ,""))

Enter this formula and copy it to the necessary cells below it. Try changing the birth dates of various people to see the effect of this function.

This tutorial used the IF function to place text in cells. It could also be used to conditionally place a numeric value. For example, if you were to insert the sales tax rate based on a State column, you could build an IF function as follows: **=IF(F2="NY", 0.085, IF(F2="CT", 0.06 ,0))** which simply says that if the State is "NY," put 8.5% in the target cell; if not, and the State is "CT," put 6% in the target cell; otherwise use zero (the zero is unnecessary, but helps the "readability" of the formula).

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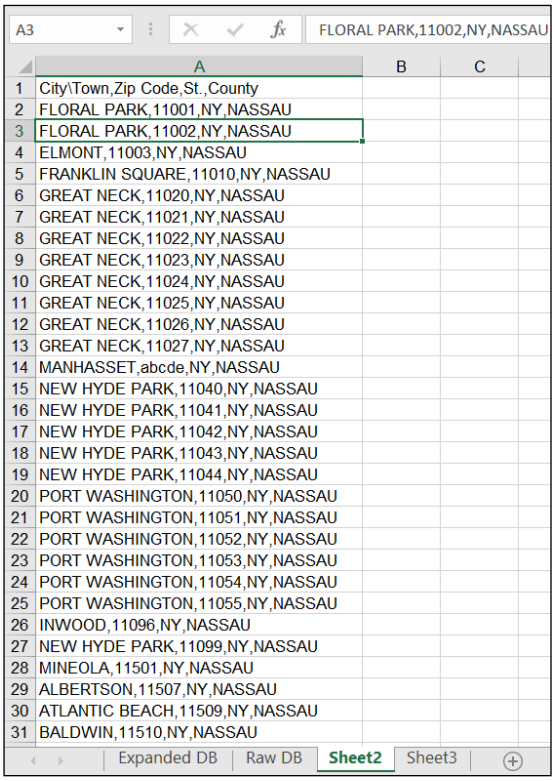
Importing and Parsing Data — In many job functions, you may need to bring data into Excel from an outside source. Often, other databases provide a feature to "Save as an Excel Workbook." But there are times where you may simply copy & paste data from a source (such as the internet).
Here, we need to build our lookup reference sheet.

```
City\Town,Zip Code,St.,County
FLORAL PARK,11001,NY,NASSAU
FLORAL PARK,11002,NY,NASSAU
ELMONT,11003,NY,NASSAU
FRANKLIN SQUARE,11010,NY,NASSAU
GREAT NECK,11020,NY,NASSAU
GREAT NECK,11021,NY,NASSAU
GREAT NECK,11022,NY,NASSAU
GREAT NECK,11023,NY,NASSAU
GREAT NECK,11024,NY,NASSAU
GREAT NECK,11025,NY,NASSAU
GREAT NECK,11026,NY,NASSAU
GREAT NECK,11027,NY,NASSAU
MANHASSET,abcde,NY,NASSAU
NEW HYDE PARK,11040,NY,NASSAU
NEW HYDE PARK,11041,NY,NASSAU
NEW HYDE PARK,11042,NY,NASSAU
NEW HYDE PARK,11043,NY,NASSAU
NEW HYDE PARK,11044,NY,NASSAU
PORT WASHINGTON,11050,NY,NASSAU
PORT WASHINGTON,11051,NY,NASSAU
PORT WASHINGTON,11052,NY,NASSAU
PORT WASHINGTON,11053,NY,NASSAU
PORT WASHINGTON,11054,NY,NASSAU
PORT WASHINGTON,11055,NY,NASSAU
INWOOD,11096,NY,NASSAU
NEW HYDE PARK,11099,NY,NASSAU
MINEOLA,11501,NY,NASSAU
ALBERTSON,11507,NY,NASSAU
ATLANTIC BEACH,11509,NY,NASSAU
BALDWIN,11510,NY,NASSAU
```

Copy the text and paste it into a new sheet.

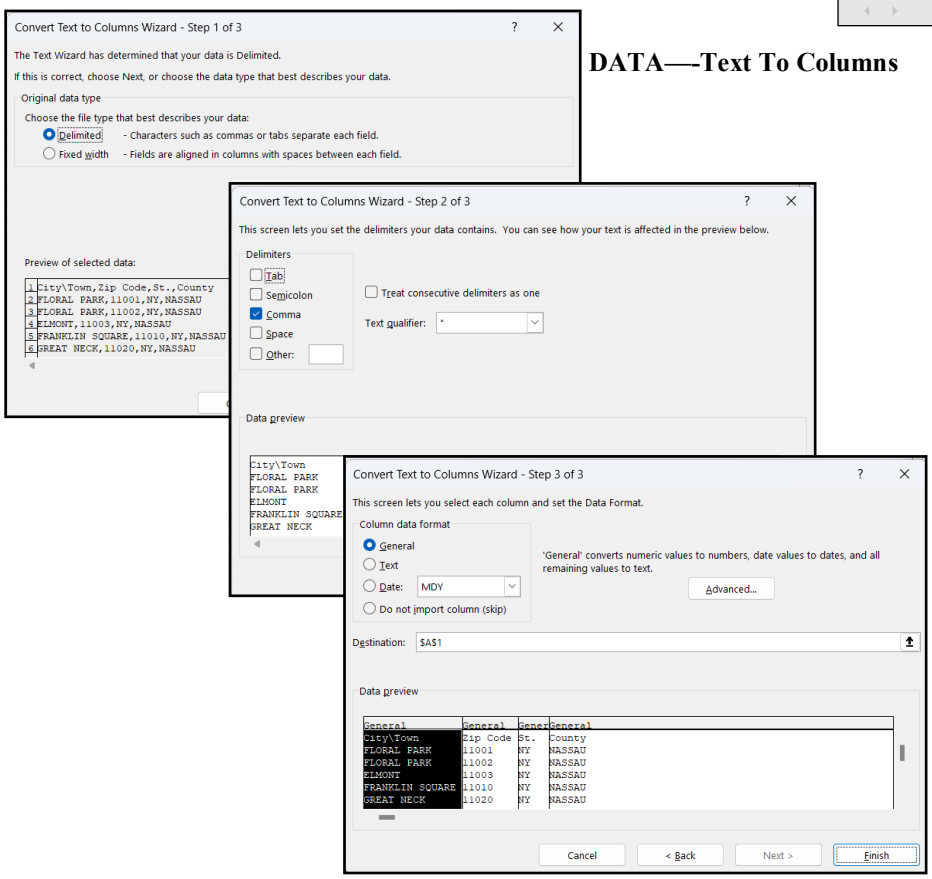
Notice, each line of data went into individual cells of one column.

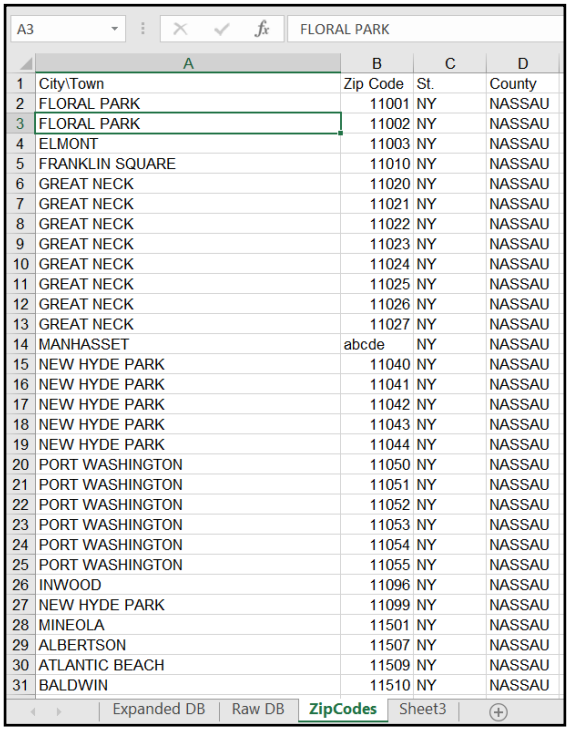


	A	B	C
1	City\Town,Zip Code,St.,County		
2	FLORAL PARK,11001,NY,NASSAU		
3	FLORAL PARK,11002,NY,NASSAU		
4	ELMONT,11003,NY,NASSAU		
5	FRANKLIN SQUARE,11010,NY,NASSAU		
6	GREAT NECK,11020,NY,NASSAU		
7	GREAT NECK,11021,NY,NASSAU		
8	GREAT NECK,11022,NY,NASSAU		
9	GREAT NECK,11023,NY,NASSAU		
10	GREAT NECK,11024,NY,NASSAU		
11	GREAT NECK,11025,NY,NASSAU		
12	GREAT NECK,11026,NY,NASSAU		
13	GREAT NECK,11027,NY,NASSAU		
14	MANHASSET,abcde,NY,NASSAU		
15	NEW HYDE PARK,11040,NY,NASSAU		
16	NEW HYDE PARK,11041,NY,NASSAU		
17	NEW HYDE PARK,11042,NY,NASSAU		
18	NEW HYDE PARK,11043,NY,NASSAU		
19	NEW HYDE PARK,11044,NY,NASSAU		
20	PORT WASHINGTON,11050,NY,NASSAU		
21	PORT WASHINGTON,11051,NY,NASSAU		
22	PORT WASHINGTON,11052,NY,NASSAU		
23	PORT WASHINGTON,11053,NY,NASSAU		
24	PORT WASHINGTON,11054,NY,NASSAU		
25	PORT WASHINGTON,11055,NY,NASSAU		
26	INWOOD,11096,NY,NASSAU		
27	NEW HYDE PARK,11099,NY,NASSAU		
28	MINEOLA,11501,NY,NASSAU		
29	ALBERTSON,11507,NY,NASSAU		
30	ATLANTIC BEACH,11509,NY,NASSAU		
31	BALDWIN,11510,NY,NASSAU		

Expanded DB | Raw DB | Sheet2 | Sheet3

DATA—-Text To Columns





	A	B	C	D
1	City\Town	Zip Code	St.	County
2	FLORAL PARK	11001	NY	NASSAU
3	FLORAL PARK	11002	NY	NASSAU
4	ELMONT	11003	NY	NASSAU
5	FRANKLIN SQUARE	11010	NY	NASSAU
6	GREAT NECK	11020	NY	NASSAU
7	GREAT NECK	11021	NY	NASSAU
8	GREAT NECK	11022	NY	NASSAU
9	GREAT NECK	11023	NY	NASSAU
10	GREAT NECK	11024	NY	NASSAU
11	GREAT NECK	11025	NY	NASSAU
12	GREAT NECK	11026	NY	NASSAU
13	GREAT NECK	11027	NY	NASSAU
14	MANHASSET	abcde	NY	NASSAU
15	NEW HYDE PARK	11040	NY	NASSAU
16	NEW HYDE PARK	11041	NY	NASSAU
17	NEW HYDE PARK	11042	NY	NASSAU
18	NEW HYDE PARK	11043	NY	NASSAU
19	NEW HYDE PARK	11044	NY	NASSAU
20	PORT WASHINGTON	11050	NY	NASSAU
21	PORT WASHINGTON	11051	NY	NASSAU
22	PORT WASHINGTON	11052	NY	NASSAU
23	PORT WASHINGTON	11053	NY	NASSAU
24	PORT WASHINGTON	11054	NY	NASSAU
25	PORT WASHINGTON	11055	NY	NASSAU
26	INWOOD	11096	NY	NASSAU
27	NEW HYDE PARK	11099	NY	NASSAU
28	MINEOLA	11501	NY	NASSAU
29	ALBERTSON	11507	NY	NASSAU
30	ATLANTIC BEACH	11509	NY	NASSAU
31	BALDWIN	11510	NY	NASSAU

Expanded DB | Raw DB | ZipCodes | Sheet3

Microsoft Excel III — Intermediate Skills

The Lookup Functions — In the sheet segment below, we are going to lookup the Zip Code in the record of row 3 and return the City.

DATA SHEET:

E3 | Great Neck

	A	B	C	D	E	F	G	H	I	J
1	**Title**	**First Name**	**Last Name**	**Address**	**City**	**State**	**Zip Code**	**DOB**	**Age**	**Name**
2	Mr.	Dick	Clark	1 Times Square	New York	NY	10001	11/30/29	93	Clark, Dick
3	Ms.	Ronda	Tolstoy	30 Cucumber Avenue	Great Neck	NY	11020	10/10/77	45	Tolstoy, Ronda
4	Ms.	Marilyn	Struddle	235 N. Pond Avenue	Freeport	NY	11520	2/29/80	43	Struddle, Marilyn
5	Dr.	James	Newsworthy	2 College Way	Garden City	NY	11530	8/31/66	56	Newsworthy, James

There are three Lookup functions in the function library:

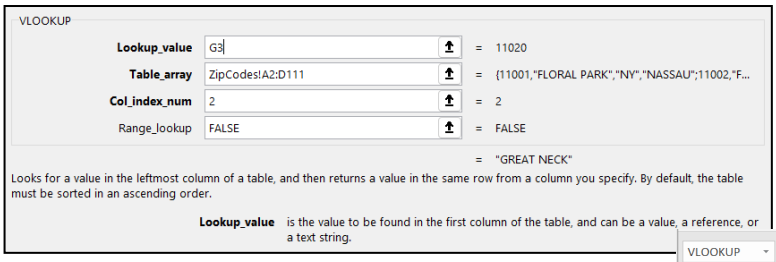
HLOOKUP -is a "Horizontal" lookup
LOOKUP -is the most powerful version of the Lookup functions
VLOOKUP -is a "Vertical" lookup and the most commonly used of the three. Your reference data must be arranged in a list fashion and follow strict rules. We will demonstrate this one.

The syntax for the VLOOKUP is:

=VLOOKUP(lookup_value,table_array, col_index_num, [range_lookup])

- An important requirement for VLOOKUP is that the reference table in this ZipCodes) must have the first column be the value you are looking up and it must be sorted by that column (by the Zip Codes).
  Thus, here we have reorganized the columns to put the Zip Codes first and sorted the data by Zip Code.

	A	B	C	D
1	Zip Code	City\Town	St.	County
2	11001	FLORAL PARK	NY	NASSAU
3	11002	FLORAL PARK	NY	NASSAU
4	11003	ELMONT	NY	NASSAU
5	11010	FRANKLIN SQUARE	NY	NASSAU
6	11020	GREAT NECK	NY	NASSAU
7	11021	GREAT NECK	NY	NASSAU
8	11022	GREAT NECK	NY	NASSAU
9	11023	GREAT NECK	NY	NASSAU
10	11024	GREAT NECK	NY	NASSAU
11	11025	GREAT NECK	NY	NASSAU



- **Lookup_value** = the zip code of the record in the Data Sheet.
- **Table_array** =The ZipCodes range, minus its column headings.
- **Col_Index_num** =The list of answers we want,
- **Range_lookup** =in this case, we want an exact match only.

- This VLOOKUP formula would appear as show in row 3 in the image on the right:
  =VLOOKUP(G3,ZipCodes!A2:D111,2,FALSE)

- Here is the result of the lookup, when set for an exact match, it yields errors (#N/A).

- We can use an IF function to provide a more appealing presentation of the unfound matches.

VLOOKUP | =VLOOKUP(G3,ZipCodes!A2:D111,2,FALSE)

	A	B	C	D	E	F	G
1	**Title**	**First Name**	**Last Name**	**Address**	**City**	**State**	**Zip Code**
2	Mr.	Dick	Clark	1 Times Square	#N/A	NY	10001
3	Ms.	Ronda	Tolstoy	30 Cucumber Avenue	D111,2,FALSE)	NY	11020
4	Ms.	Marilyn	Struddle	235 N. Pond Avenue	FREEPORT	NY	11520
5	Dr.	James	Newsworthy	2 College Way	GARDEN CITY	NY	11530
6	Mr.	Walter	Smith	56 St Patrick Avenue	GARDEN CITY	NY	11530
7	Mr.	Robert	Dino	720 Northern Blvd	GREENVALE	NY	11548
8	Mr.	Joseph	Smith	1053 Broadway	GREENVALE	NY	11548
9	Ms.	Diane	Balle	PO Box 11576	GREENVALE	NY	11548
10	Ms.	Maryanne	Northrup	1775 E. Chestnut Street	LONG BEACH	NY	11561
11	Mr.	Louis	Hues	150 Washington St.	FARMINGDALE	NY	11735
12	Dr.	John	Egon	100 Eagle Place	LEVITTOWN	NY	11756
13	Dr.	Andrew	Milner	100 Stewart Ave.	LEVITTOWN	NY	11756
14	Mr.	Pete	Gwangi	4925 Mexico Road	LEVITTOWN	NY	11756
15	Mr.	Ken	Smith	200 Jerusallem Ave.	LEVITTOWN	NY	11756
16	Ms.	Betty	Barfello	2345 South Service Road	PLAINVIEW	NY	11803
17		Geogian	Krespe	50 Roosevelt Drive	PLAINVIEW	NY	11803
18	Mr.	Sean	Connery	123 Secret Service Rd	#N/A	NY	12345
19	Mr.	Ignatz	Schmurtz	1500 Seamans Neck Road	#N/A	NY	TBA
20	Mrs.	Marion	Eberthal	PO Box 9999	#N/A	NY	TBA
21	Mr.	Dick	Clark	1 Times Square	#N/A	NY	10001

Microsoft Excel III — Intermediate Skills

The more versatile, but complex, LOOKUP function

– a very powerful set of functions are the LOOKUP functions. This enables you to create a separate table of values to use as a source, and automatically fill in values on another sheet based on this table. Typical applications are price lists and zip codes. We'll design a lookup for our Mail Merge DB spreadsheet.

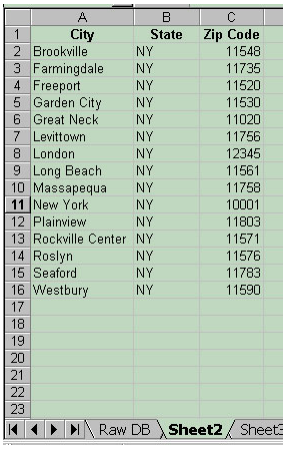
	A	B	C
1	City	State	Zip Code
2	London	NY	12345
3	New York	NY	10001
4	Westbury	NY	11590
5	Brookville	NY	11548
6	Farmingdale	NY	11735
7	Freeport	NY	11520
8	Garden City	NY	11530
9	Great Neck	NY	11020
10	Levittown	NY	11756
11	Long Beach	NY	11561
12	Massapequa	NY	11758
13	Rockville Center	NY	11571
14	Plainview	NY	11803
15	Roslyn	NY	11576
16	Seaford	NY	11783
17			
18			
19			
20			
21			
22			
23			

Raw DB | **Sheet2** | Sheet3

On **Sheet2**, create a list as shown on the left. You can do this by copying the **City, State** and **Zip Code** columns from the **Raw DB** sheet and pasting them into **Sheet2**.

Then sort the list alphabetically by City, in ascending order. This is an <u>important</u> step – *the **LOOKUP** functions will not work unless the lookup list is sorted alphabetically!*

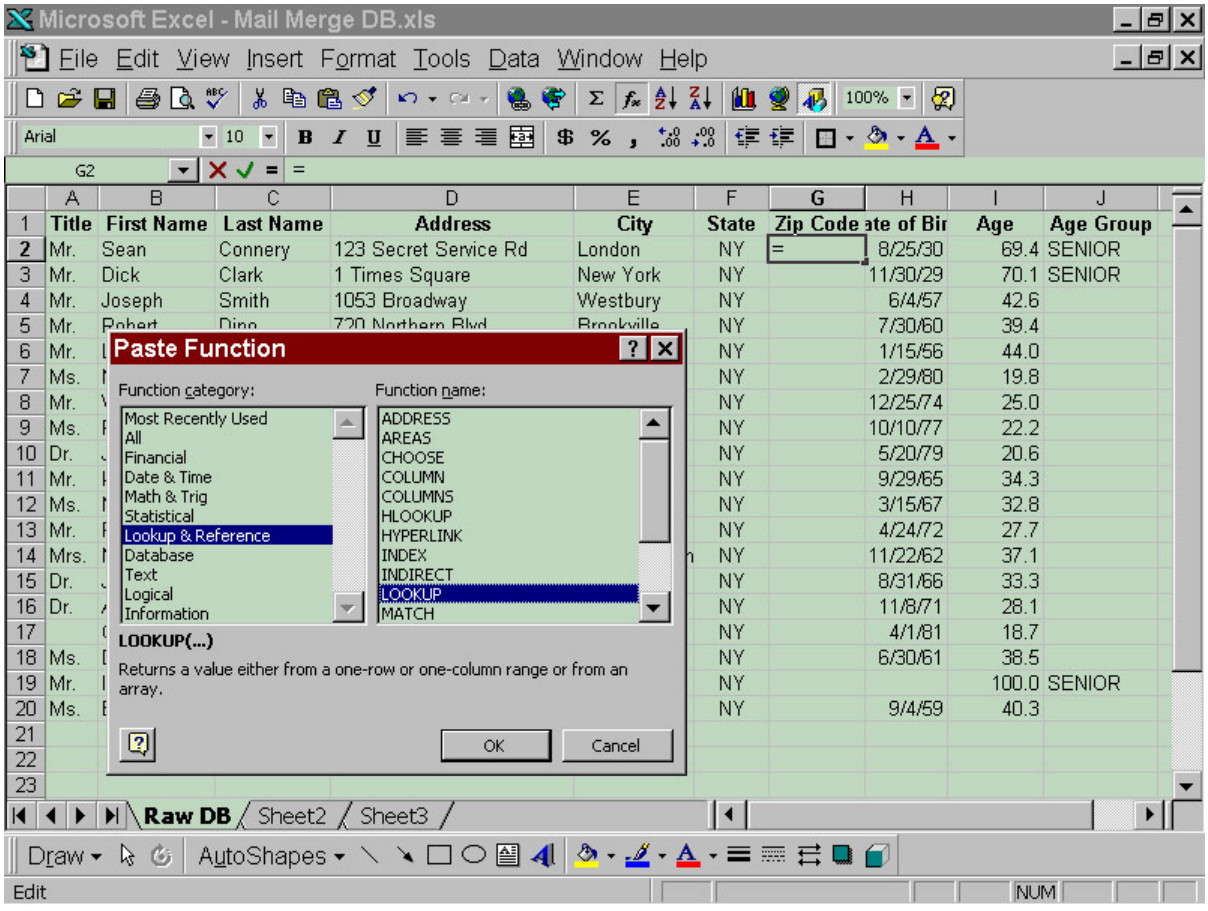
Create your list on **Sheet2**; this will be your lookup sheet.



	A	B	C
1	City	State	Zip Code
2	Brookville	NY	11548
3	Farmingdale	NY	11735
4	Freeport	NY	11520
5	Garden City	NY	11530
6	Great Neck	NY	11020
7	Levittown	NY	11756
8	London	NY	12345
9	Long Beach	NY	11561
10	Massapequa	NY	11758
11	New York	NY	10001
12	Plainview	NY	11803
13	Rockville Center	NY	11571
14	Roslyn	NY	11576
15	Seaford	NY	11783
16	Westbury	NY	11590
17			
18			
19			
20			
21			
22			
23			

Raw DB | **Sheet2** | Sheet3

Now let's return to the **RawDB** tab. Delete all of the values in the **Zip Code** column, and select the first cell under the **Zip Code** heading (cell G2 in the diagram below). Now choose **Insert➡Function** from the menu (or click the function button: ***fx***). In the Paste Function window, select the *Function category* : **Lookup & Reference**; then select the *Function name*: **LOOKUP**.
Click **OK** and you should have the **Select Arguments** window on the next page.



	A	B	C	D	E	F	G	H	I	J
1	Title	First Name	Last Name	Address	City	State	Zip Code	ate of Bir	Age	Age Group
2	Mr.	Sean	Connery	123 Secret Service Rd	London	NY	=	8/25/30	69.4	SENIOR
3	Mr.	Dick	Clark	1 Times Square	New York	NY		11/30/29	70.1	SENIOR
4	Mr.	Joseph	Smith	1053 Broadway	Westbury	NY		6/4/57	42.6	
5	Mr.	Robert	Dino	720 Northern Blvd	Brookville	NY		7/30/60	39.4	
6	Mr.					NY		1/15/56	44.0	
7	Ms.					NY		2/29/80	19.8	
8	Mr.					NY		12/25/74	25.0	
9	Ms.					NY		10/10/77	22.2	
10	Dr.					NY		5/20/79	20.6	
11	Mr.					NY		9/29/65	34.3	
12	Ms.					NY		3/15/67	32.8	
13	Mr.					NY		4/24/72	27.7	
14	Mrs.					NY		11/22/62	37.1	
15	Dr.					NY		8/31/66	33.3	
16	Dr.					NY		11/8/71	28.1	
17						NY		4/1/81	18.7	
18	Ms.					NY		6/30/61	38.5	
19	Mr.					NY			100.0	SENIOR
20	Ms.					NY		9/4/59	40.3	
21										
22										
23										

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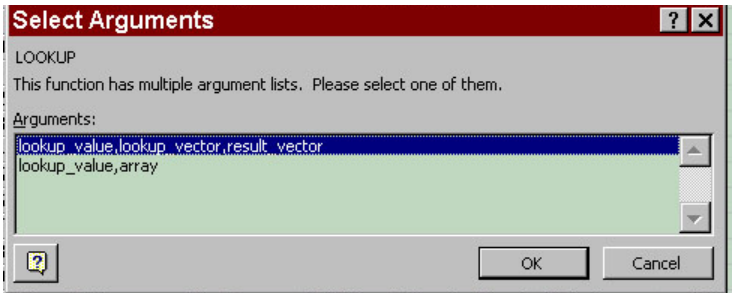
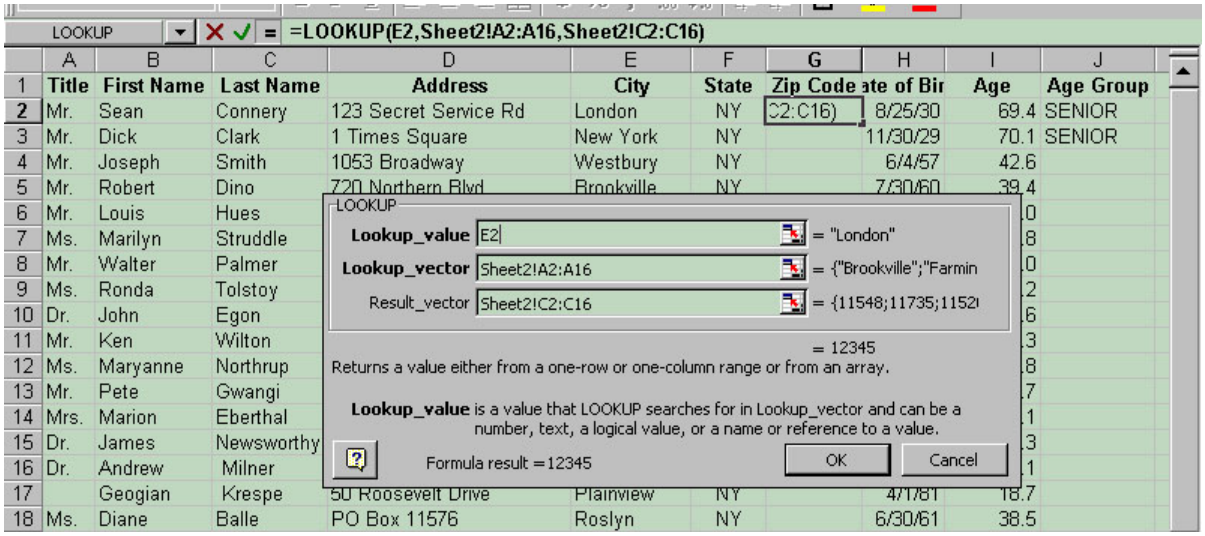
The Select Arguments windows offers you a choice of two kinds of LOOKUP functions.



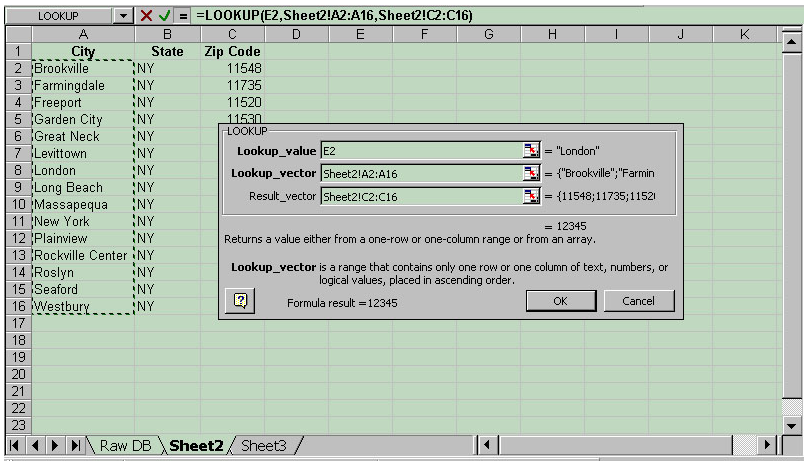
The second one, "Lookup_value, array," is a simple version which is easy to use, but has, among its limitations, the requirement of a list with no more than two columns.

We'll focus on the more versatile: "Lookup_value, lookup_vector,result_vector."

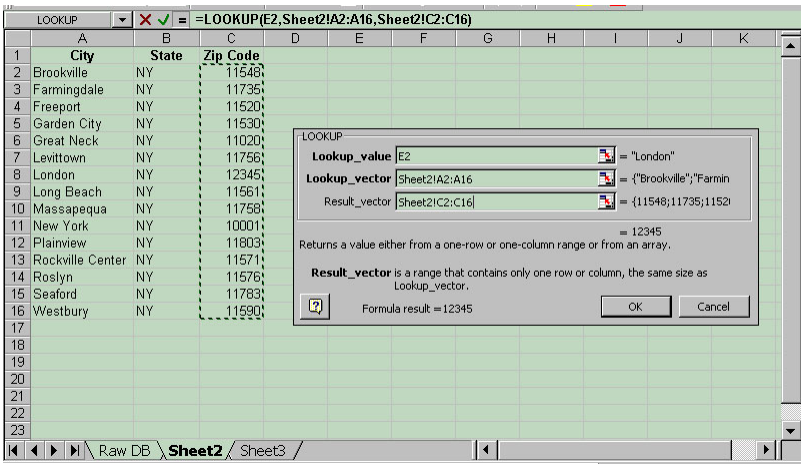
Click on the **OK** button above, to reveal the function editor window show below (*yours might be in the upper left corner of your sheet, to move it, click on a dead area and drag it to a more appropriate location)*.
There are three fields to fill out:



- **Lookup_value**: is the cell or value you want the function to use when it refers to the lookup list. In the figure above, you want to take "London" (the contents of cell E2) and go find it in the lookup list on **Sheet2**.
- **Lookup_vector**: is the range of cells in the lookup list that the function will try to find match with the **Lookup_value** you specified. In this example, click on **Sheet2**, and select the range of cells containing the city names as shown on the right.



- **Result_vector**: is the range of cells containing the value that should be returned when a match is found between the **Lookup_value** and the **Lookup_vector**. In the figure below, you can see that the entire range of data in the **Zip Code** column is what must be selected.



Click the **OK** button and the resulting formula will be placed in our cell: G2.

=LOOKUP(E2,Sheet2!A2:A16,Sheet2!C2:C16)

Before we copy this formula into all the appropriate cells below it, let's stop and think about what will happen. Remember that the cell references will update as we copy it to a new location. Thus, if we copy this formula from G2 to G3, the **Lookup_value** of E2 will become E3 – just like we want. However, the **Lookup_vector** range will also increment by one from Sheet2!A2:A16 to Sheet2!A3:A17 – ruining our formula! To prevent this from occurring, we must employ absolute cell references to the portion of the formula that we want to hold steady. Hence:

=LOOKUP(E2,Sheet2!$A$2:$A$16,Sheet2!$C$2:$C$16)

Now it's safe to copy this formula into all the necessary cells below it. When you do, you should see that the zip codes from the list in **Sheet2** are returned for all rows.

Try changing a city name in the **RawDB** sheet. You should see the zip code change as soon as you complete entry on the city cell (by hitting the Tab, Enter or arrow keys). BUT BEWARE, if you type a city that is NOT in the list, the **Result_vector** value of the next nearest match is used. Try typing "Mexico" into a city cell; you'll see the zip code for "Massapequa" displayed! To fix this, you could try modifying the formula so it first tests the comparison to see if an exact match is found. To do this, you could employ the **IF** function, MATCH function and the **ISNA** function to create a formula as shown below:

=IF(ISNA(MATCH(E2,Sheet2!$A$2:$A$16,0)),"not listed",LOOKUP(E2,Sheet2!$A$2:$A$16,Sheet2!$C$2:$C$16))

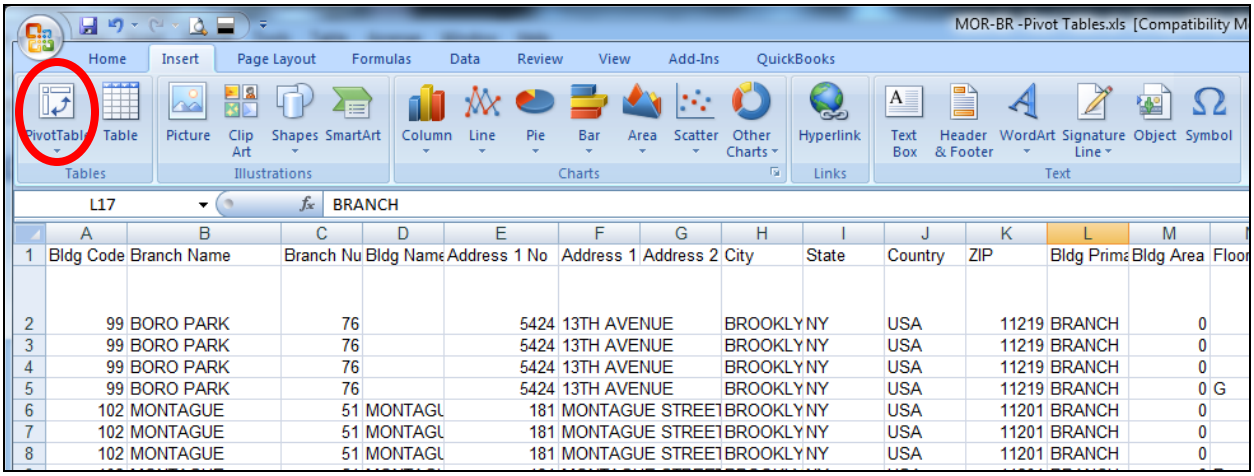
The **MATCH** function, as shown, tests the comparison to see if an exact match exists (the last zero is the key to this). If an exact match does not exist, this function returns a value of "#NA" - which we test for using the **ISNA** function. Putting it all together with the **IF** function tells instructs our formula to:

1. See if the result of the **MATCH** is the value "#NA"
2. If it is, enter the text "not listed" into the zip code cell
3. If it isn't, then an exact match was found and display the matching zip code

Microsoft Excel III — Intermediate Skills

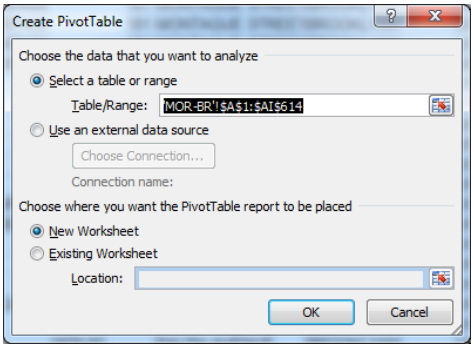
PivotTables

PivotTables can be a powerful way to analyze data in Excel. As with all data functions in Excel, it is key that you have your data set up properly. Don't skip rows (just to make it look nice) and try not to skip columns. The first row (and only the first row) should have your column headings in it.



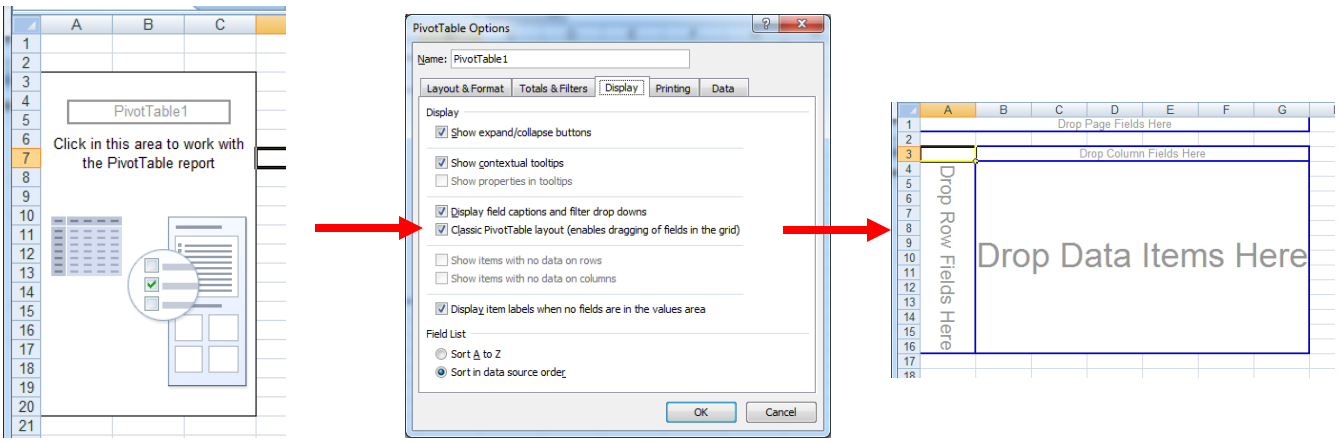
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Bldg Code	Branch Name	Branch Nu	Bldg Name	Address 1 No	Address 1	Address 2	City	State	Country	ZIP	Bldg Prima	Bldg Area
2	99	BORO PARK	76		5424	13TH AVENUE		BROOKLY	NY	USA	11219	BRANCH	0
3	99	BORO PARK	76		5424	13TH AVENUE		BROOKLY	NY	USA	11219	BRANCH	0
4	99	BORO PARK	76		5424	13TH AVENUE		BROOKLY	NY	USA	11219	BRANCH	0
5	99	BORO PARK	76		5424	13TH AVENUE		BROOKLY	NY	USA	11219	BRANCH	0
6	102	MONTAGUE	51	MONTAGU	181	MONTAGUE	STREET	BROOKLY	NY	USA	11201	BRANCH	0
7	102	MONTAGUE	51	MONTAGU	181	MONTAGUE	STREET	BROOKLY	NY	USA	11201	BRANCH	0
8	102	MONTAGUE	51	MONTAGU	181	MONTAGUE	STREET	BROOKLY	NY	USA	11201	BRANCH	0

Before you get started, simply click on any cell inside the data range that you want to use. Then, on the Insert tab of the ribbon, click the top of the PivotTable button to start the process inserting a PivotTable (if you want a PivotChart, the bottom half of that button in choosing from the short menu that appears). The window to the right should appear with the range predetermined based on Excel's artificial intelligence in the cell that you clicked on in the data range. At the bottom you can choose to insert the PivotTable into a new worksheet or into the existing one and you have the data on.



Turning on the Drag-And-Drop Version of the PivotTable Tool

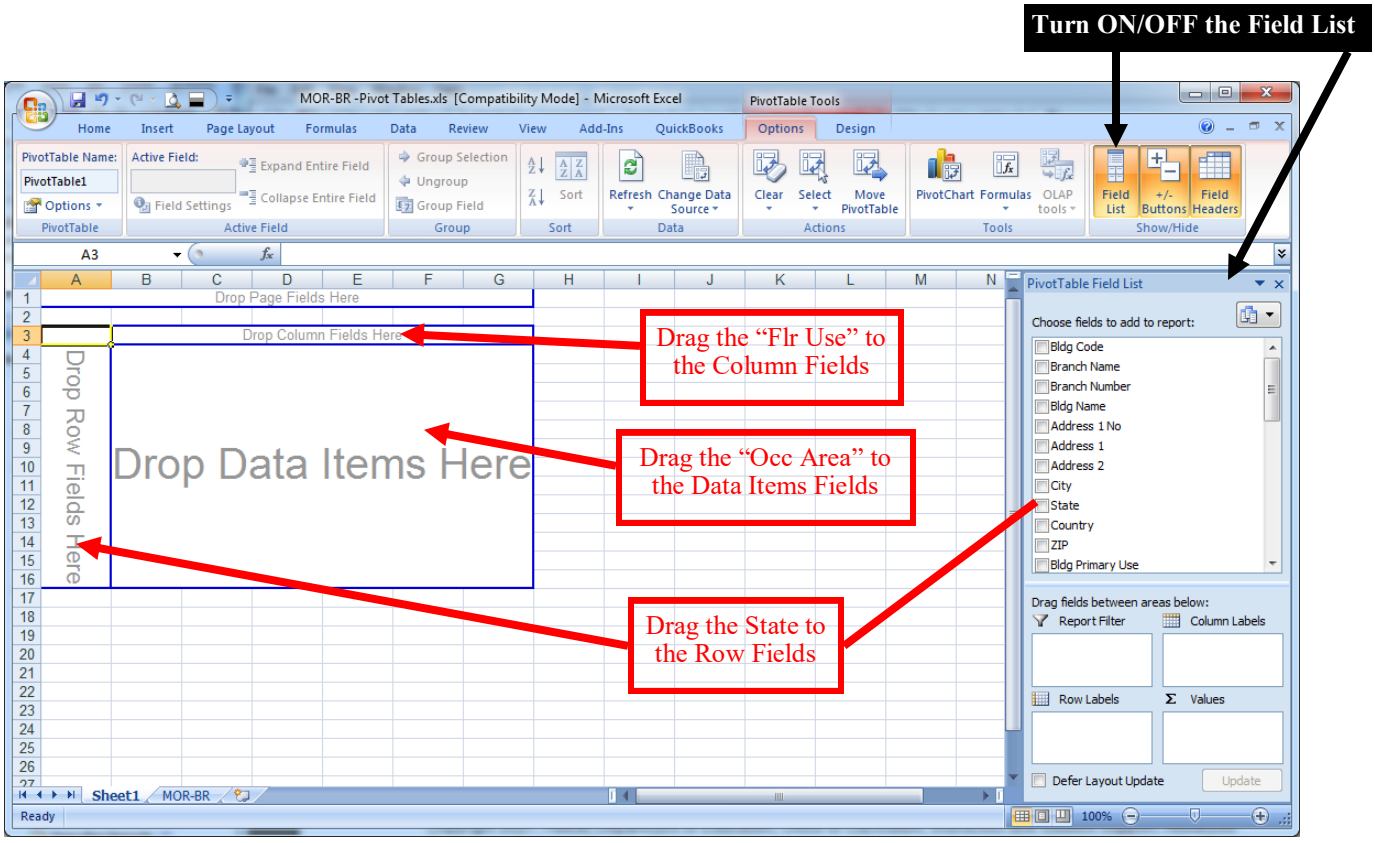
If the PivotTable tool does not look like the illustration on the right, below, then you must set it for PivotTable table input from the PivotTable options. To access the PivotTable options, point to the toolbox on the left, below, and right-click. Then choose PivotTable options for the menu. On the window that appears, click on the display tab and check off the box pointed to below.

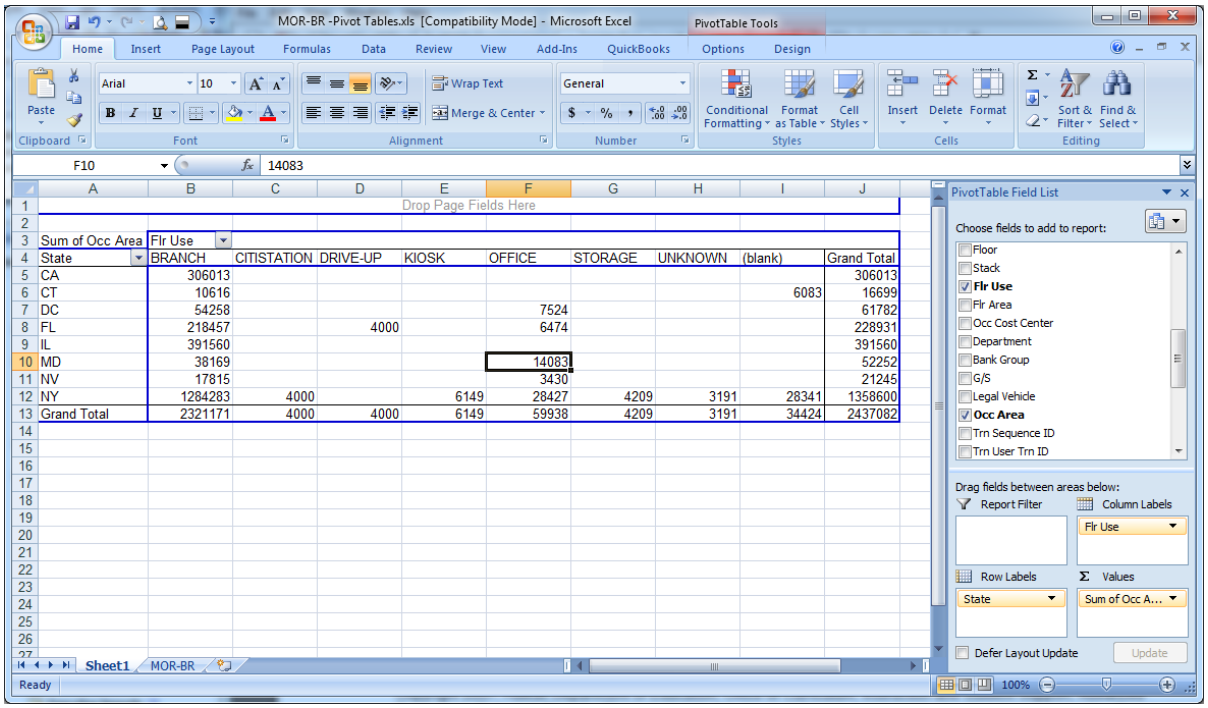


Microsoft Excel III — Intermediate Skills

Let us discuss the data that we will be using in this document. Is a list of branches for a major banking corporation. The data spans multiple cities in multiple states and shows occupied square footage as well as rental cost.

We will start with a simple example. Let's summarize the occupied square footage by State and break it down by "Flr Use."





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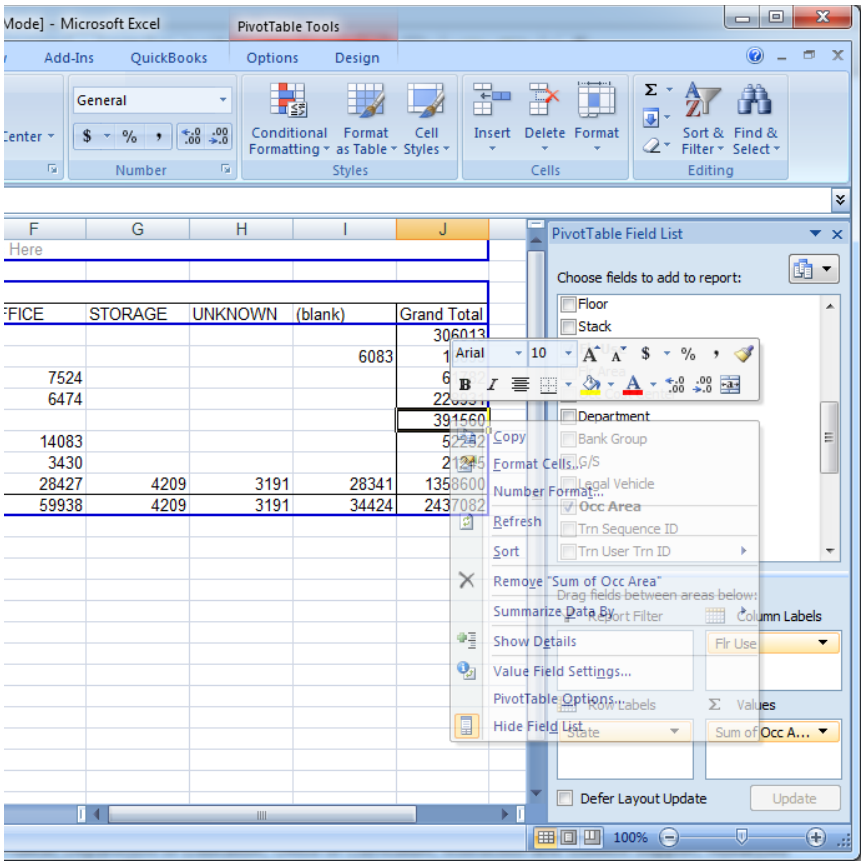

Formatting the Numbers in the PivotTable

To format the numbers on the page for commas at the thousand separators, it is best to click on any number inside the data and right-click, then choose number format from the menu. Using this method will format all of the numbers in the data section. If you used the buttons on the ribbon, it would only format the one cell that you had selected.

"Drilling Down" on the Data

Another interesting feature on this right-click menu is that if you click on a number (for example the total of 61,782 for DC) and choose show details, a new sheet will be added showing the data that makes up that number.

	Bldg Code	Branch Name	Branch Number	Bldg Name	Address 1 No	Address 1	Address 2	City	State	Cou
2	4256	PALISADES	905		5250	MACARTHUR BLVD NW		WASHINGTON	DC	USA
3	4256	PALISADES	905		5250	MACARTHUR BLVD NW		WASHINGTON	DC	USA
4	4249	EAST RIVER PARK	922		3917	MINNESOTA AVENUE, N.E.	SUITE 200	WASHINGTON	DC	USA
5	4249	EAST RIVER PARK	922		3917	MINNESOTA AVENUE, N.E.	SUITE 200	WASHINGTON	DC	USA
6	4248	ADAMS MORGAN	924	COLUMBIA ROAD SHOPPING CENTER	1751-1753	COLUMBIA ROAD, N.W.		WASHINGTON	DC	USA
7	531	DUPONT CIRCLE	919	1225 CONNECTICUT AVENUE	1225	CONNECTICUT AVENUE, N.W.		WASHINGTON	DC	USA
8	530	MCPHERSON SQUARE	912		1000	VERMONT AVENUE, N.W.		WASHINGTON	DC	USA
9	525	CHEVY CHASE	903		5700	& 5704 CONNECTICUT AVENU		WASHINGTON	DC	USA
10	518	BROOKLAND	909		3800	12TH STREET NE		WASHINGTON	DC	USA
11	516	FRIENDSHIP HEIGHTS	908		5001	WISCONSIN AVENUE		WASHINGTON	DC	USA
12	516	FRIENDSHIP HEIGHTS	908		5001	WISCONSIN AVENUE		WASHINGTON	DC	USA
13	515	FARRAGUT NORTH	904		1000	CONNECTICUT AVENUE		WASHINGTON	DC	USA
14	514	FEDERAL TRIANGLE	907		1001	PENNSYLVANIA AVENUE, N.W		WASHINGTON	DC	USA
15	513	METROPOLITAN SQUARE	911		1400	G STREET, N.W.		WASHINGTON	DC	USA
16	510	GEORGETOWN NORTH	923		1901	WISCONSIN AVENUE, NW		WASHINGTON	DC	USA
17	510	GEORGETOWN NORTH	923		1901	WISCONSIN AVENUE, NW		WASHINGTON	DC	USA
18	503	HECHINGER MALL	921	HECHINGER MALL	1544	BENNING ROAD, N.E.		WASHINGTON	DC	USA
19	4256	PALISADES	905		5250	MACARTHUR BLVD NW		WASHINGTON	DC	USA
20	4256	PALISADES	905		5250	MACARTHUR BLVD NW		WASHINGTON	DC	USA

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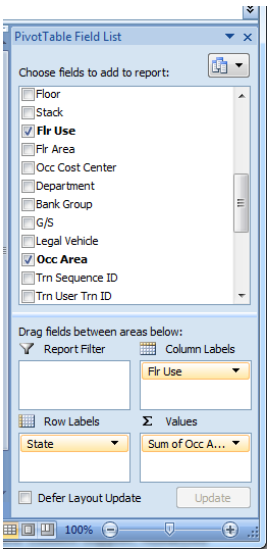
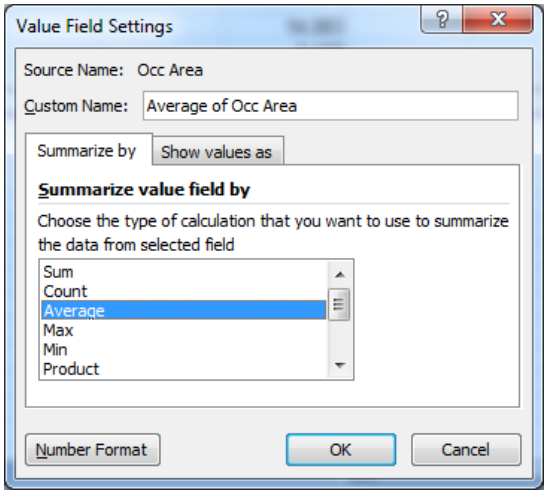


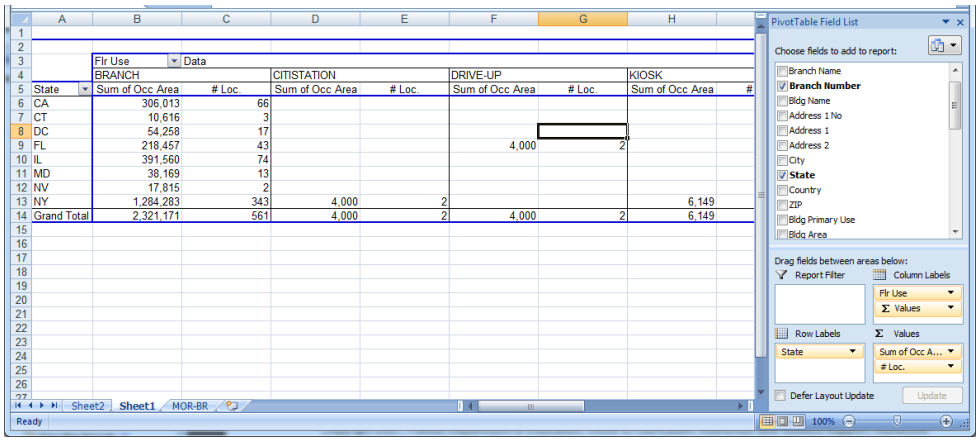
Changing the Formula

Maybe we don't want the total (Sum) of the square footage shown in the PivotTable. There are four boxes at the bottom of the PivotTable field list. This allows us to customize what information is shown. To change the number calculation, click on the "Sum of Occ Area" in the Values box. In the pulldown menu that appears, click on “Value Field Settings” and choose “Average” in the lower half of that window. Note that you can also click the “Number Format” button and format the numbers from this window.

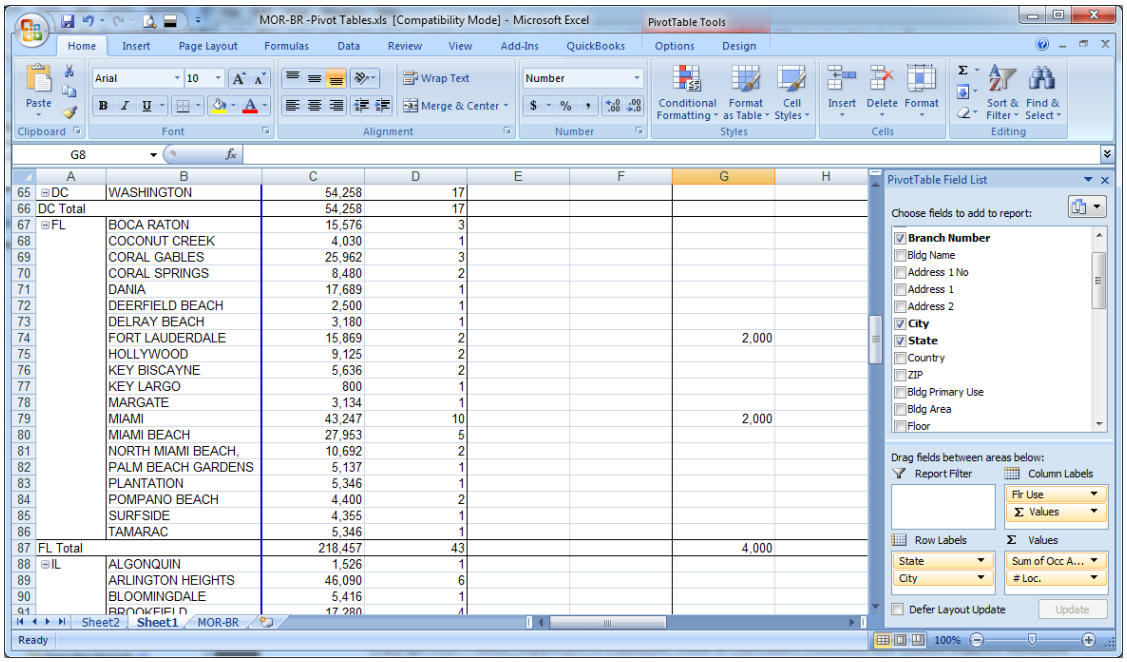


Multi-Level Analysis

We can show more than one data value. Let's drag the “Branch Number” field down to the values (below the one it's their already: “Occupied Area”). You will see that Excel automatically assumes that you want to do a count of these branches - which is what we want. But the heading of the column, "Count of Branch Number" is a bit large for our liking. So, let's click the pulldown in this newly added field and choose “Value Field Settings” again. In the field labeled, "Custom Name," change the text to simply read, "# Loc." This will make the column widths narrower.



Now let's further breakdown each state to show all the cities within the State. Simply drag the City field down to the “Row Labels” box, below the State field, which is already there. Instantly the added level of breakdown is displayed.



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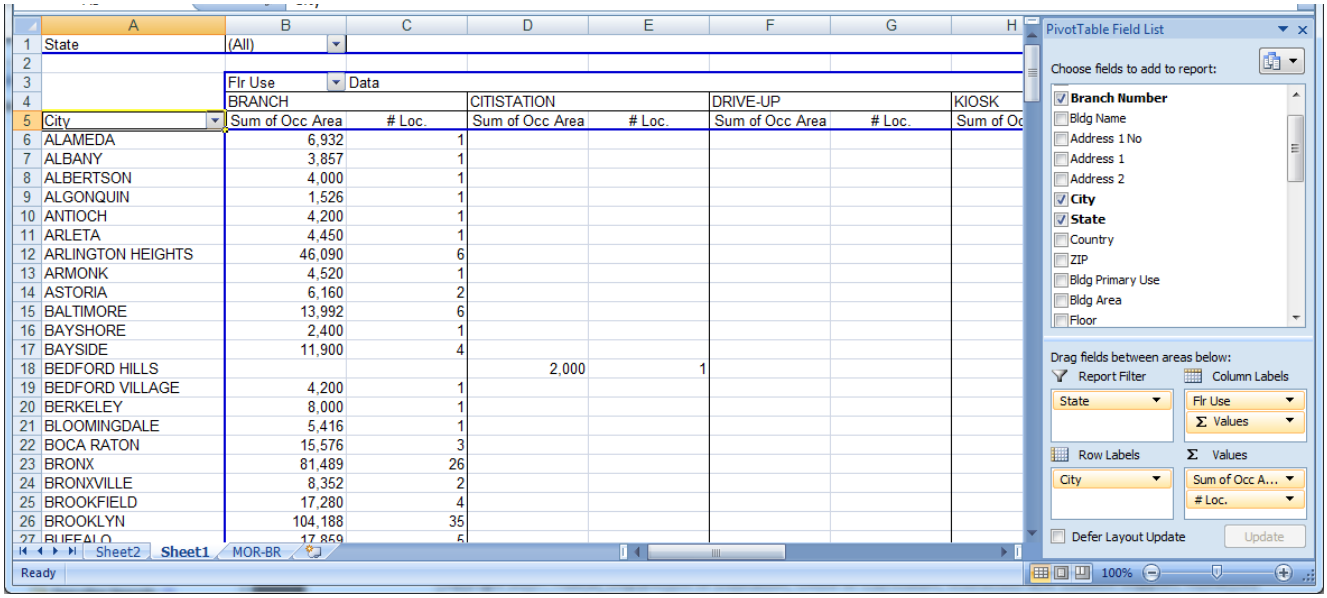
FILTERING THE PIVOTTABLE

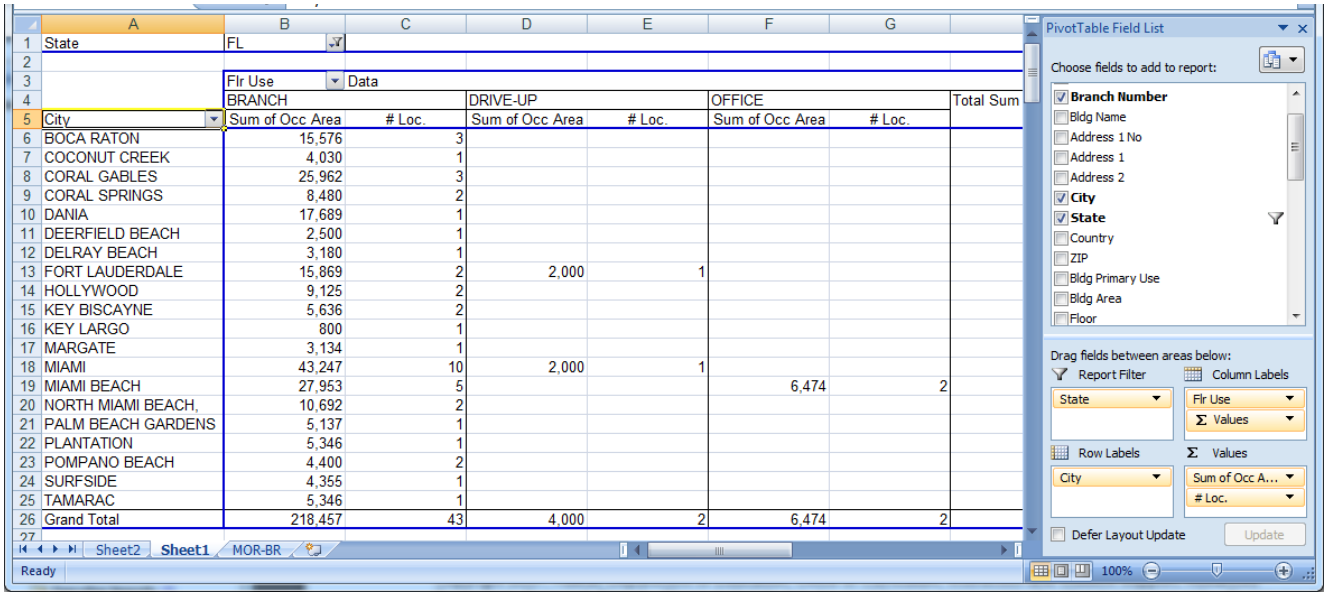
There are two ways we can filter a PivotTable.

First- you may have noticed the report filter box on the bottom of the field list. Let's drag the State field from the row labels to the report filter. This results in the State field now being shown on the left above the actual PivotTable. You can click the pulldown arrow on the second column and choose which State you want to show the data for.

Second– in the City heading, you could click the pulldown in the column on the left and check off exactly which cities you want to show in your table.



	A	B	C	D	E	F	G	H
1	State	(All)						
2								
3		Flr Use	Data					
4		BRANCH		CITISTATION		DRIVE-UP		KIOSK
5	City	Sum of Occ Area	# Loc.	Sum of Occ Area	# Loc.	Sum of Occ Area	# Loc.	Sum of Oc
6	ALAMEDA	6,932	1					
7	ALBANY	3,857	1					
8	ALBERTSON	4,000	1					
9	ALGONQUIN	1,526	1					
10	ANTIOCH	4,200	1					
11	ARLETA	4,450	1					
12	ARLINGTON HEIGHTS	46,090	6					
13	ARMONK	4,520	1					
14	ASTORIA	6,160	2					
15	BALTIMORE	13,992	6					
16	BAYSHORE	2,400	1					
17	BAYSIDE	11,900	4					
18	BEDFORD HILLS			2,000	1			
19	BEDFORD VILLAGE	4,200	1					
20	BERKELEY	8,000	1					
21	BLOOMINGDALE	5,416	1					
22	BOCA RATON	15,576	3					
23	BRONX	81,489	26					
24	BRONXVILLE	8,352	2					
25	BROOKFIELD	17,280	4					
26	BROOKLYN	104,188	35					
27	BUFFALO	17,869	5					



	A	B	C	D	E	F	G
1	State	FL					
2							
3		Flr Use	Data				
4		BRANCH		DRIVE-UP		OFFICE		Total Sum
5	City	Sum of Occ Area	# Loc.	Sum of Occ Area	# Loc.	Sum of Occ Area	# Loc.	
6	BOCA RATON	15,576	3					
7	COCONUT CREEK	4,030	1					
8	CORAL GABLES	25,962	3					
9	CORAL SPRINGS	8,480	2					
10	DANIA	17,689	1					
11	DEERFIELD BEACH	2,500	1					
12	DELRAY BEACH	3,180	1					
13	FORT LAUDERDALE	15,869	2	2,000	1			
14	HOLLYWOOD	9,125	2					
15	KEY BISCAYNE	5,636	2					
16	KEY LARGO	800	1					
17	MARGATE	3,134	1					
18	MIAMI	43,247	10	2,000	1			
19	MIAMI BEACH	27,953	5			6,474	2	
20	NORTH MIAMI BEACH,	10,692	2					
21	PALM BEACH GARDENS	5,137	1					
22	PLANTATION	5,346	1					
23	POMPANO BEACH	4,400	2					
24	SURFSIDE	4,355	1					
25	TAMARAC	5,346	1					
26	Grand Total	218,457	43	4,000	2	6,474	2	
27								

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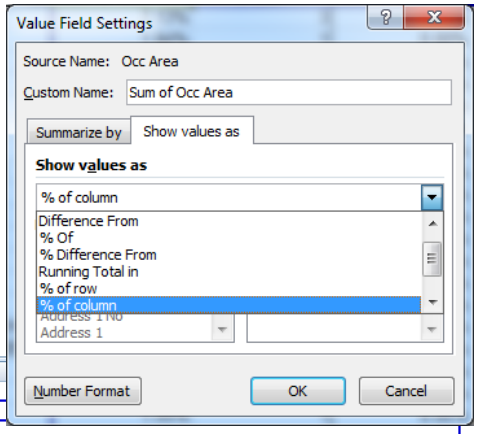
Changing the Type of Values Displayed

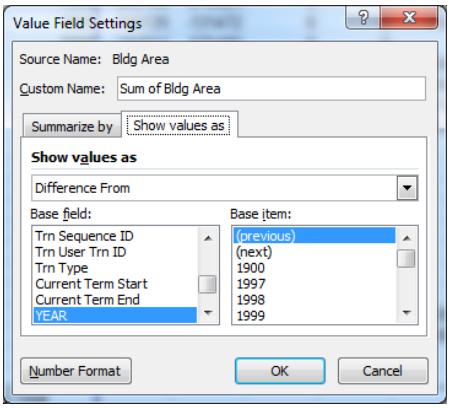
Suppose we want to change the values of the "Sum of Occ Area" to be percentages of the total? Right-click on the column heading, "Sum of Occ Area," and click the tab labeled "Show values as." Then click the pulldown under "Show values as" and select choose "% of column." All the sums are now shown as percentages.

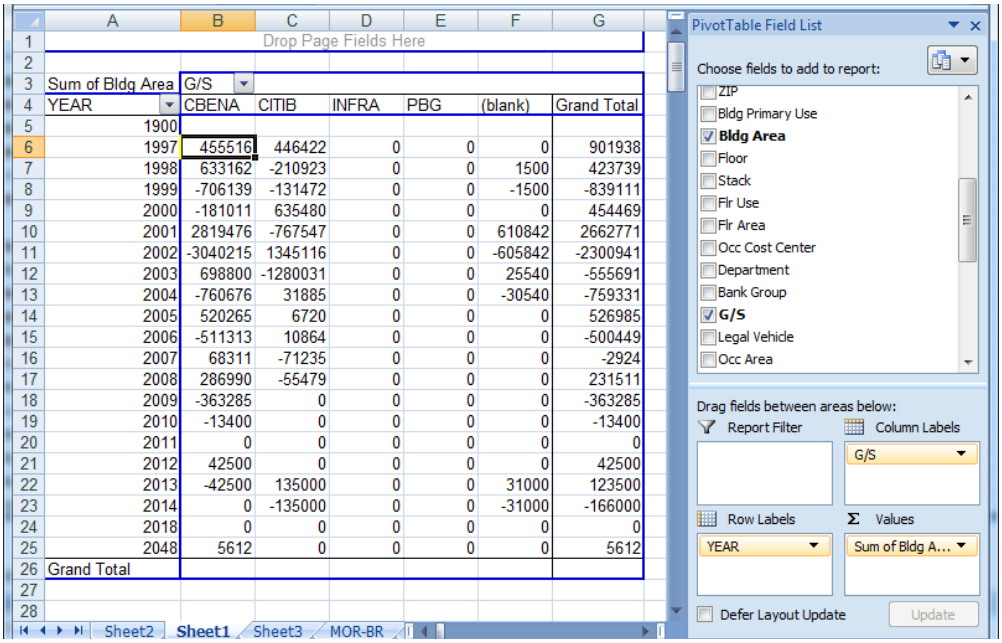


	A	B	C	D	E	F	G
1	State	FL					
2							
3		Flr Use	Data				
4		BRANCH		DRIVE-UP		OFFICE		Total Sum of Occ Area	Total # Loc.
5	City	Sum of Occ Area	# Loc.	Sum of Occ Area	# Loc.	Sum of Occ Area	# Loc.		
6	BOCA RATON	7.13%	3	0.00%		0.00%		6.80%	3
7	COCONUT CREEK	1.84%	1	0.00%		0.00%		1.76%	1
8	CORAL GABLES	11.88%	3	0.00%		0.00%		11.34%	3
9	CORAL SPRINGS	3.88%	2	0.00%		0.00%		3.70%	2
10	DANIA	8.10%	1	0.00%		0.00%		7.73%	1
11	DEERFIELD BEACH	1.14%	1	0.00%		0.00%		1.09%	1
12	DELRAY BEACH	1.46%	1	0.00%		0.00%		1.39%	1
13	FORT LAUDERDALE	7.26%	2	50.00%	1	0.00%		7.81%	3
14	HOLLYWOOD	4.18%	2	0.00%		0.00%		3.99%	2
15	KEY BISCAYNE	2.58%	2	0.00%		0.00%		2.46%	2
16	KEY LARGO	0.37%	1	0.00%		0.00%		0.35%	1
17	MARGATE	1.43%	1	0.00%		0.00%		1.37%	1
18	MIAMI	19.80%	10	50.00%	1	0.00%		19.76%	11
19	MIAMI BEACH	12.80%	5	0.00%		100.00%	2	15.04%	7
20	NORTH MIAMI BEACH,	4.89%	2	0.00%		0.00%		4.67%	2
21	PALM BEACH GARDENS	2.35%	1	0.00%		0.00%		2.24%	1
22	PLANTATION	2.45%	1	0.00%		0.00%		2.34%	1
23	POMPANO BEACH	2.01%	2	0.00%		0.00%		1.92%	2
24	SURFSIDE	1.99%	1	0.00%		0.00%		1.90%	1
25	TAMARAC	2.45%	1	0.00%		0.00%		2.34%	1
26	Grand Total	100.00%	43	100.00%	2	100.00%	2	100.00%	47
27									

Special Value Calculations

Before you setup the next PivotTable, you must add a column to the data sheet to pull out the Year of the"Current Term End." Be sure to refresh the PivotTable. Once you setup the PivotTable below, click the pulldown on the "Sum of Bldg Area" and choose "Value Field Settings." Set the parameters as shown (on the left) on the "Show values as" tab. This shows the difference in the building area from the previous year—in essence how much the area has changed as each year passes.



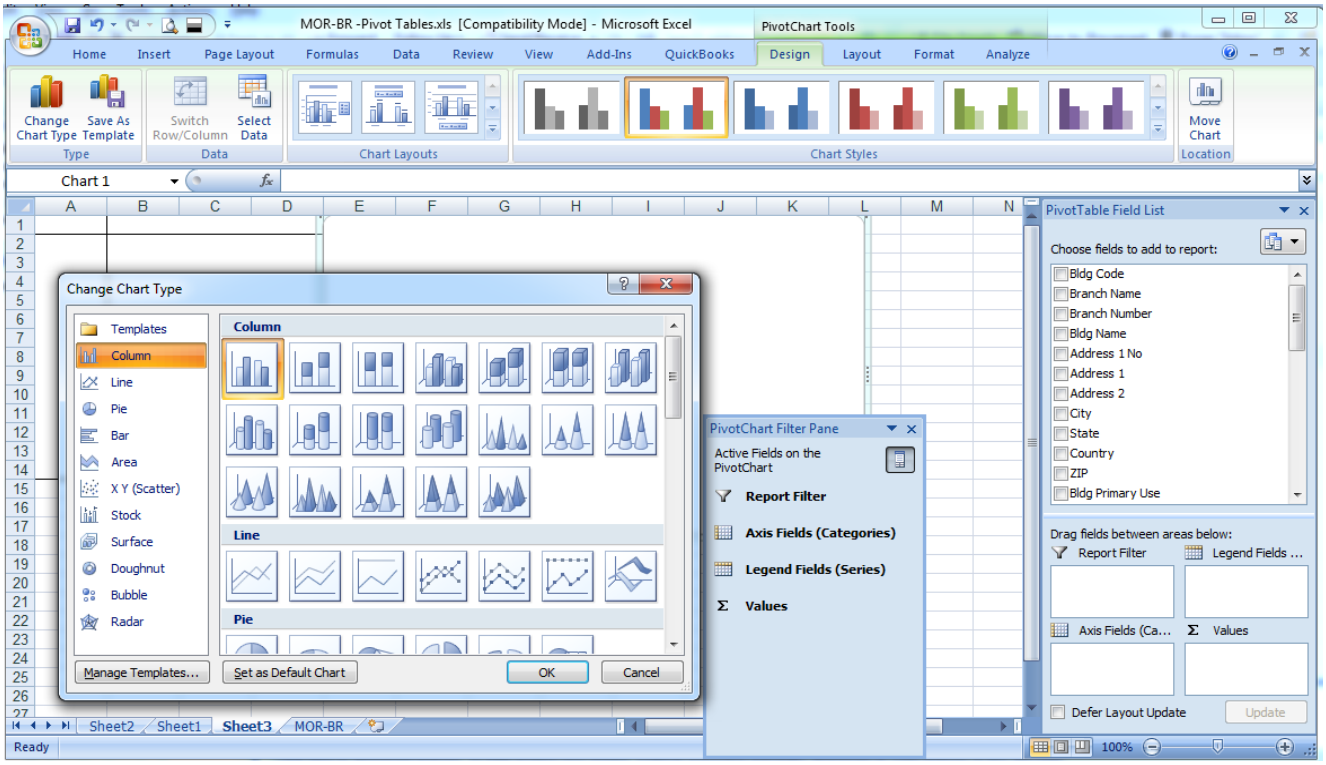


	A	B	C	D	E	F	G
1		Drop Page Fields Here					
2							
3	Sum of Bldg Area	G/S					
4	YEAR	CBENA	CITIB	INFRA	PBG	(blank)	Grand Total
5	1900						
6	1997	455516	446422	0	0	0	901938
7	1998	633162	-210923	0	0	1500	423739
8	1999	-706139	-131472	0	0	-1500	-839111
9	2000	-181011	635480	0	0	0	454469
10	2001	2819476	-767547	0	0	610842	2662771
11	2002	-3040215	1345116	0	0	-605842	-2300941
12	2003	698800	-1280031	0	0	25540	-555691
13	2004	-760676	31885	0	0	-30540	-759331
14	2005	520265	6720	0	0	0	526985
15	2006	-511313	10864	0	0	0	-500449
16	2007	68311	-71235	0	0	0	-2924
17	2008	286990	-55479	0	0	0	231511
18	2009	-363285	0	0	0	0	-363285
19	2010	-13400	0	0	0	0	-13400
20	2011	0	0	0	0	0	0
21	2012	42500	0	0	0	0	42500
22	2013	-42500	135000	0	0	31000	123500
23	2014	0	-135000	0	0	-31000	-166000
24	2018	0	0	0	0	0	0
25	2048	5612	0	0	0	0	5612
26	Grand Total						
27							
28							

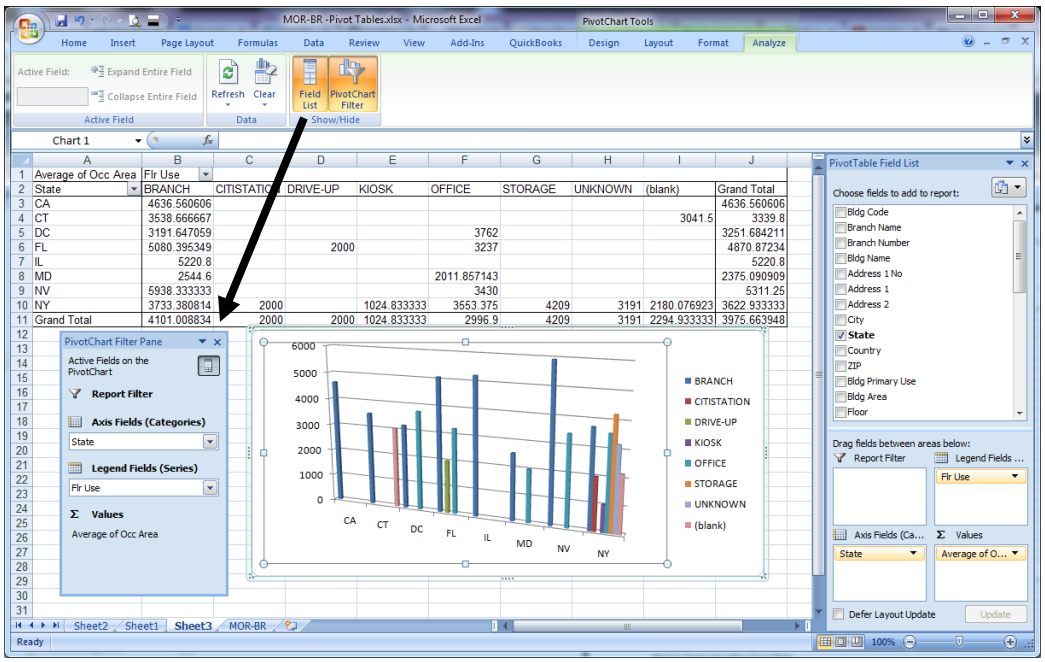
Microsoft Excel III — Intermediate Skills

PivotCharts

Go back to our original data and click the bottom half of the PivotTable button on the Insert tab of the ribbon, but this time let's choose PivotChart. A new sheet will be created with the controls and it to build our chart. If we don't want column chart (the default) we can click "Change Chart Type" on the left of the ribbon. Screen below shows what you should have.



Let's drag the same three fields into the chart area: State, Flr Use and Occ Area. If they don't produce the chart that you have below, drag the fields into the right boxes at the bottom of the field list. The numbers for "Branch" may be too big to allow the other numbers to show well enough on our chart. So let's change the value format of the number to compute the averages. When you're done your chart should look like the one on the right.



Microsoft Excel III — Intermediate Skills

Some Useful Keyboard Shortcuts

FORMATTING

Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Bold text	Ctrl+B
Italic text	Ctrl+I
Underline text	Ctrl+U
Open Format Font Window	Ctrl+Shift+P
Format as currency (with red negatives)	Ctrl+Shift+$
Format as a percent	Ctrl+Shift+%

INSERTING

Insert today's date	Ctrl+;
Invoke the SUM function	Alt+=
Insert a Function	Shift+F3

MOVING AROUND

Move one cell **down** (unless program options changed)	Enter key
Move one cell **up**	Shift+Enter
Move one cell to the **right**	Tab key
Move one cell to the **left**	Shift+Tab
Go to cell **A1** (or to the top left of the worksheet)	Ctrl+Home
Go to the **lower right** of Overall worksheet size	Ctrl+End
Move to the first column in the current row	Home
Skip over blank or filled cells	Ctrl+<arrow>
Move one screen downward	Ctrl+Page Down
Move one screen upward	Ctrl+Page Up

MISCELLANEOUS

HIDE the current ROW	Ctrl+9
HIDE the current COLUMN	Ctrl+0
SELECT the entire ROW	Shift+Spacebar
SELECT the entire COLUMN	Ctrl+Spacebar
Select the Entire sheet	Ctrl+A
Undo the last action	Ctrl+Z
Redo the last Undo action	Ctrl+Y
Display FORMAT CELLS Window	Ctrl+1
Print Preview	Alt+Ctrl+I or Ctrl+P
Save the Spreadsheet	Ctrl+S
To enter "In-Cell Editing"	F2