

# MICROSOFT EXCEL XP IV

Excel Database Functions



University of South Florida  
Health Sciences Center  
Information Services  
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# **OBJECTIVE**

The objective of this document is to give the user a basic understanding of the database functions that excel has, by showing the user the use of sorting, filtering, data validation, subtotaling and other functions. This is the fourth document in a four part series. It is used as a guide to help one navigate through the application, and is to complement the class taught here at the University of South Florida's Health Sciences Center.

# Creating a Database

## Creating the Field Names

On a new worksheet, label the cells in row 1 with the field names you will be using. Example, Lastname, Firstname, Address, Phone Number etc.

- Click cell A1 and choose Data → Form. A form pops up with data entry boxes for each field you have created.
- Enter the data for each field. Use the Tab key to move from field to field. Press Enter when you are done entering the information for that record. This brings up a blank entry form for a new record. You can also click new to bring up a blank entry form to enter a new record.



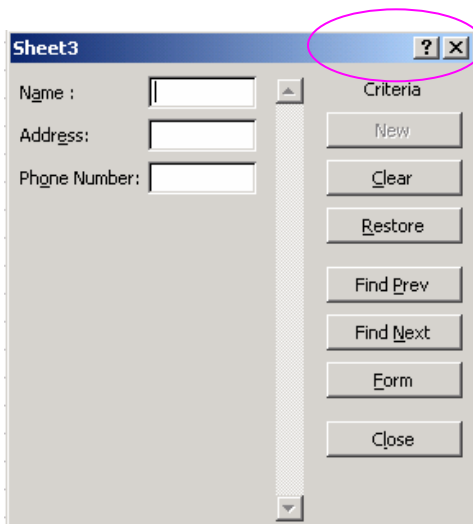
The screenshot shows a dialog box titled 'Sheet2' with a status bar indicating '1 of 6'. The form contains the following fields and values:

last name:	Jones
first name:	Philip
stud #:	345654
course:	Psych200
code:	200
semester:	Fall
fee:	600
balance:	300

Buttons on the right side include: New, Delete, Restore, Find Prev, Find Next, Criteria, and Close.

## Finding a Record

On the Data Form, when you click the Criteria button the form becomes a search tool. You can search for a particular record by any criteria. If you are not in the data form, then just press Ctrl+F to bring up the Find box, and you can find your record that way.



The screenshot shows a dialog box titled 'Sheet3' in 'Criteria' mode. The form has three input fields: Name, Address, and Phone Number. The status bar at the top right shows '? X'. A pink oval highlights the status bar, and a pink arrow points from it to a text box on the right.

Notice how this says **criteria** now, instead of **1 of 6**. Though the form otherwise looks the same. This is now saying, using the field categories, search for any record.

## Adding a Record

You can add a new record using the Data Form by clicking on the New button or simply type new entries directly on the Excel worksheet.

## Deleting a Record

You can delete a record using the Data Form by clicking on the Clear button or from the Excel worksheet simply highlight the row, Click Edit on the toolbar and then Delete. (*NOTE: if you highlight the row and press the delete key, it will just delete the data and leave a blank row.*)

## Adding a Field

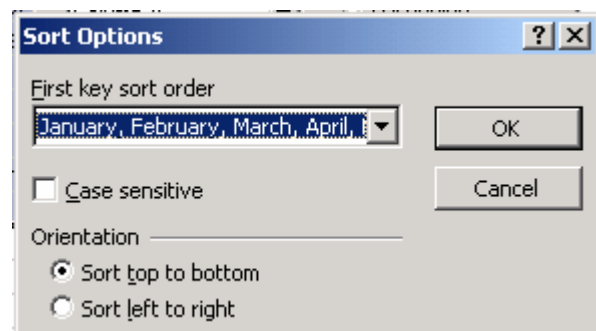
You can add a field to your database at any time. Insert a new column anywhere in the worksheet. Give the column a field name, and add the new data. Go to Data, Form and the new field will be incorporated into your database.

## Deleting a Field

You can delete a Field (column) from the Excel worksheet by simply highlighting the column, Click Edit on the toolbar and then Delete. (*NOTE: if you highlight the column and press the delete key, it will just delete the data and leave a blank row.*)

# Sorting Records

Select any cell in a list and click Data → Sort. The Sort dialog box pops up. Select a field to sort by and choose from Ascending or Descending. Select Then By to choose a secondary field to sort by.



By default, Excel's sort options reorder data alphabetically or numerically. However a basic A-Z or 1-10 sort isn't always appropriate. Dates and weekdays would be sorted alphabetically, not in the calendar order. If you need to sort a list like months of the year or days of the week, then choose Options... on the Sort Dialog box. Any lists that have been previously created including days of the week and months of the year will appear in this drop down list.

# Filtering Records

Filtering records means extracting records that match a certain criteria. Filtering data is similar to sorting, but filtering the data does not change the order in which the data originally appears, as does sorting, but just hides the data that does not match the criteria, making it easy for one to look at records. When AutoFilter is applied, excel changes the color of the dropdown for the field that you select to blue. You will also notice gaps in row numbering when you filter a list. Notice that the row numbers are changed to a blue color when they are filtered out.

## AutoFilter

From the Data menu select Filter→AutoFilter. Drop-down arrows appear on the field headers. Click an arrow on a column to filter by that field. The dropdown will contain all of the unique data in that column. If that column contains two data items that are identical, it will only list it once. Some of the other options to filter by that are contained in the drop down are listed below. To turn off the AutoFilter Go back to Data→ Filter→ AutoFilter and uncheck it and see all of your records again.

### All

Show all records in the list. Use this option to remove AutoFilter criteria from a column. (This is the default.)

### Blanks

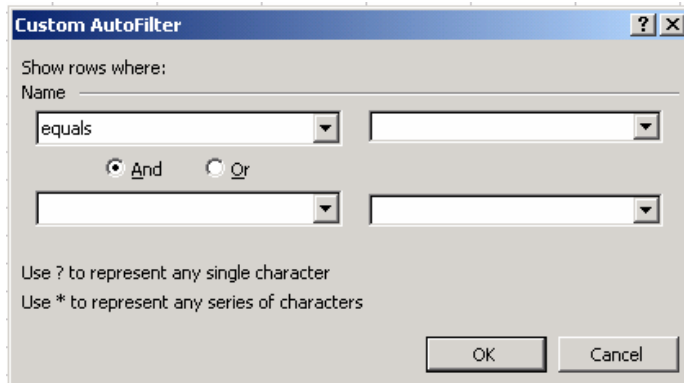
Display only records that contain no data in the selected column. This option is available only if the selected column contains one or more blank cells.

### Non Blanks

Display all records that contain data in the selected column, hiding blank records. This option is available only if the selected column contains one or more blank cells.

## Custom AutoFilters

Click the AutoFilter arrow for the field that you want to use, and then select the Custom option. The Custom AutoFilter Dialog Box will come up. Use the comparison operators to define criteria. You can combine up to two criteria using this option.



The Custom Auto Filter dialog Box enables you to use any of the following Comparison Operators:

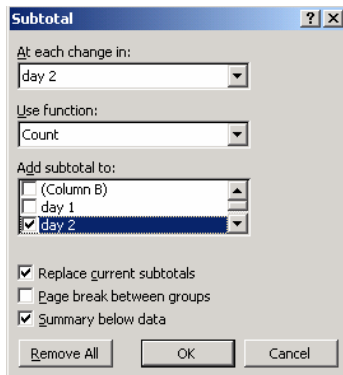
- Equals/does not equal
- Is greater than/Is less than
- Is greater than or equal to /Is less than or equal to
- Begins with/does not begin with
- Ends with/does not end with
- Contains/does not contain

You can also combine two criteria for a single field using the logical operator AND or the OR operator.

# Subtotals

Microsoft Excel can automatically calculate subtotal and grand total values in a list. When you insert automatic subtotals, Excel outlines the list so that you can display and hide the detail rows for each subtotal.

To insert subtotals, go to Data on the Menu bar and select Subtotals. A dialog box like this one will appear. You can then calculate subtotals for any column that contains numbers.



## Subtotals

Excel calculates subtotal values with a summary function, such as Sum or Average. You can display subtotals in a list with more than one type of calculation at a time.

## Grand totals

Grand total values are derived from detail data, not from the values in the subtotal rows. For example, if you use the Average summary function, the grand total row

displays an average of all detail rows in the list, not an average of the values in the subtotal rows.

	A	B
1	<b>Sport</b>	<b>Sales</b>
2	Golf	\$6,000
3	Golf	\$2,000
4	Golf	\$1,500
5	<b>Golf Total</b>	<b>\$8,500</b>
6	Safari	\$9,000
7	Safari	\$4,000
8	<b>Safari Total</b>	<b>\$13,000</b>
11	<b>Tennis Total</b>	<b>\$2,000</b>
12	<b>Grand Total</b>	<b>\$23,500</b>

## Automatic recalculation

Excel recalculates subtotal and grand total values automatically as you edit the detail data.

	A	B	C
1	<b>Region</b>	<b>Sport</b>	<b>Sales</b>
2	East	Golf	\$6,000
3	East	Golf	\$2,000
4		<b>Golf Total</b>	<b>\$7,000</b>
5	East	Tennis	\$1,500
6	East	Tennis	\$500
7		<b>Tennis Total</b>	<b>\$2,000</b>
8	<b>East Total</b>		<b>\$9,000</b>
9	West	Golf	\$3,500
10	West	Golf	\$2,500
11		<b>Golf Total</b>	<b>\$6,000</b>
12		<b>Tennis Total</b>	<b>\$9,200</b>
13	<b>West Total</b>		<b>\$13,000</b>

## Nesting subtotals

You can insert subtotals for smaller groups within existing subtotal groups. In the example below, subtotals for each sport are in a list that already has subtotals for each region.

1 Outer subtotals

2 Nested subtotals

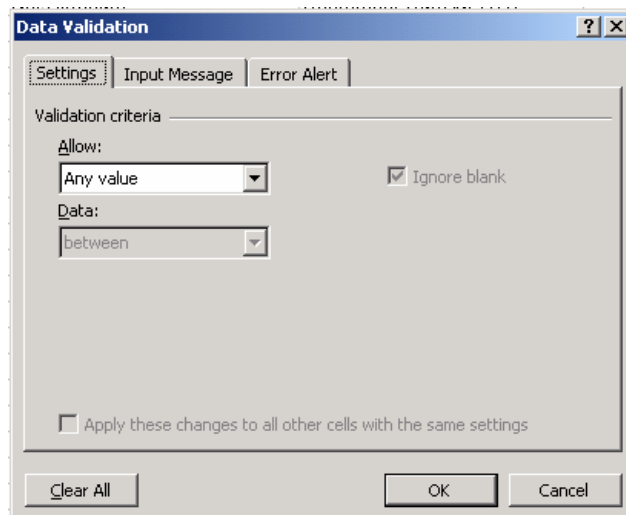
Before inserting nested subtotals, be sure to sort the list by all the columns for which you want subtotal values, so that the rows you want subtotaled are grouped together.

# Data Validation

Data validation is a good tool to use to ensure that the data that is being entered is correct. Whatever column or range of data you want to apply the data to, highlight it first. Then click Data on the Toolbar, then Validation.... A Dialog box comes up with three tabs to choose from.

## Settings

This screen is where you set the data rules. For instance if there is a column where a state is to be entered, and you only want the two-character abbreviation. You can set a rule to that column to only allow two characters to be entered in the cells. This is where you would set that rule

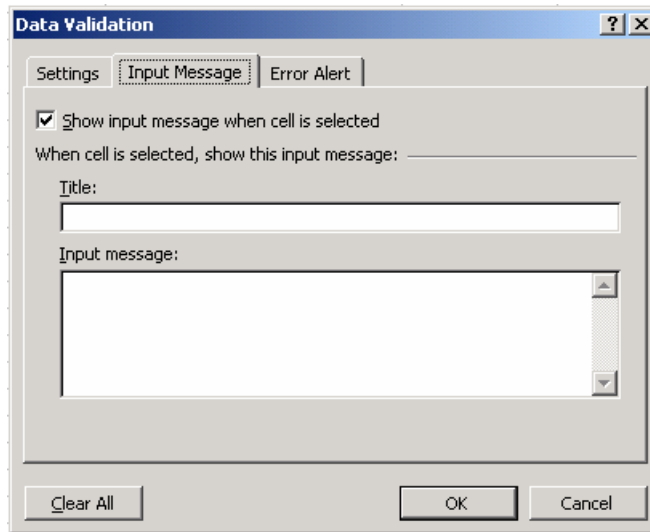


## Creating a drop down list

Here is where you can create a drop down list so that when you click on a certain cell, a list of options appears from which one can be chosen. Here is how you do that: Before you even get to this point, you have to create the list. The list can be on the same page as the data, or on another page. (Typically it should be on another page but always within the same workbook). You want to name that range of data. Then highlight the column that you want the validation to apply to, then click on Data → Validation and go to the settings tab. Where it says “Allow:” click on the drop down and choose list. Then there will be a place that says source. Type “=” followed by the name of that range. When you hit okay, a dropdown will appear to all of those cells when you click on them.

## Input Message

Here is where you can put a message. When someone clicks on that cell that this validation applies to, then a yellow box will come up with that message. A good idea of what to put for a message is what should be entered into that particular cell. If your animation character is on, such as the paperclip or the dog, it will appear as a thought bubble above its head.



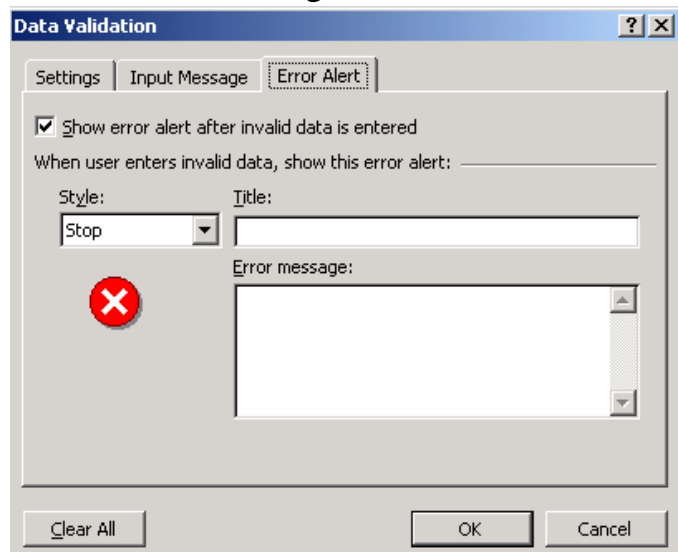
## Error Alert

Here is where a message or alert can be created when wrong data is entered into a cell. There are three styles:

**Stop:** This setting will not allow the user enter the wrong data. It will make the user retry until the right data is entered

**Warning:** This setting allows the user to enter the wrong data, but displays a warning message

**Information:** This setting allows the user to enter the wrong data, and displays an information message.



# Text to Columns

This Function is useful when you have a column in which contains data that you want separated into two columns. For instance, if the first column has a title of Name and contains both first and last name, this function can separate the two names into two columns.

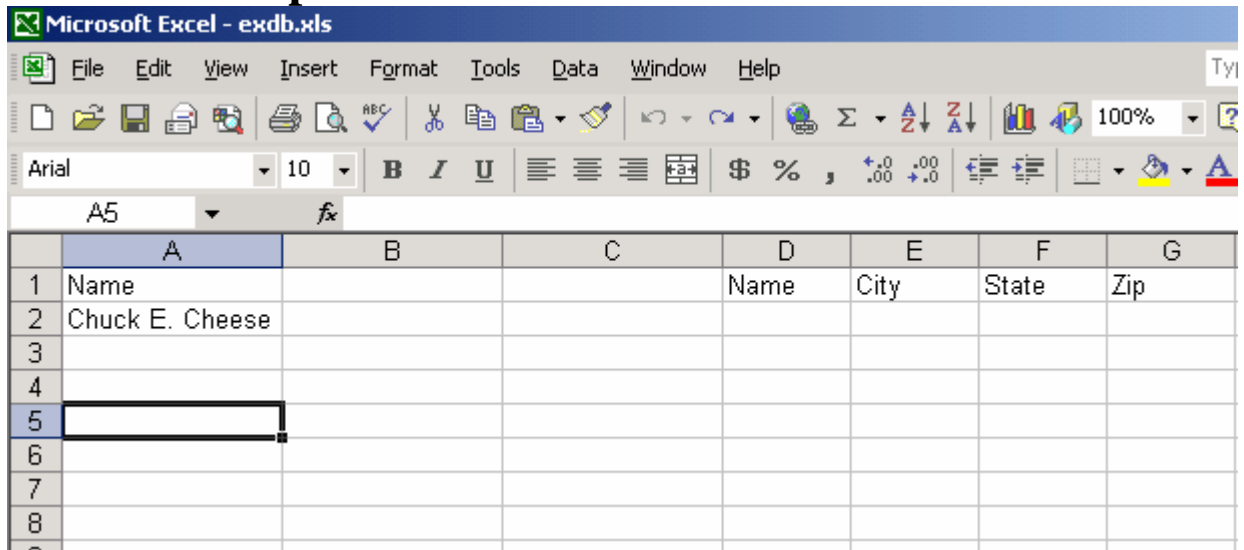
Excel will separate the data into two columns. If a second column already exists with other data in it, Excel will prompt the user about replacing the data that currently exist in that column with the new data. If you say cancel, it will abort the whole operation. If you say okay, then it will replace the data that is in the second column.

In order to avoid this, I suggest first inserting a new column for the new data. If you are separating two pieces of data, then create a new column for the second piece of data, (the first piece of data will remain in the current column.) If you have more than two pieces of data, then for every piece that you will separate, add a new column.

Highlight the column that contains all the data and click Data → Text to Columns....

This will bring up the Text to Columns Wizard dialog box. This brings you through a three step process.

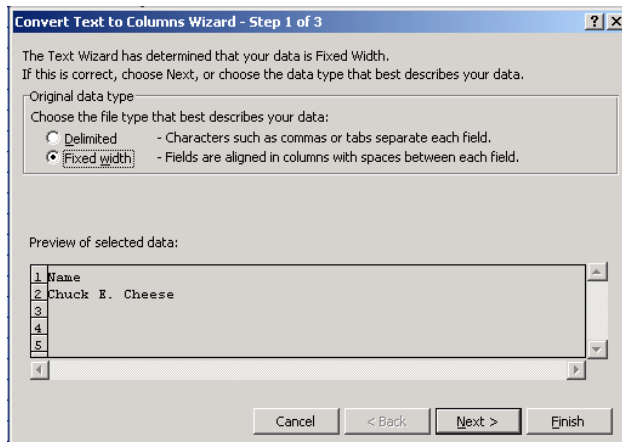
## Picture Example



If you notice here, I have the Name Chuck E. Cheese in the first column, and I have added two other columns to allow for Excel to separate my data. (I can name the columns after the process is complete.)

## Step 1

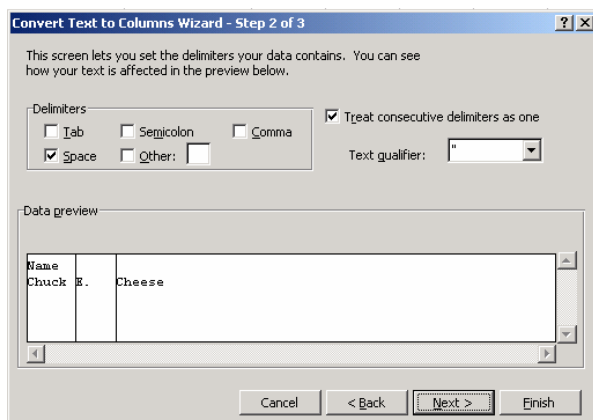
The wizard asks about the data and how it is separated. Delimited is probably the best option. It gives you more options about how the data can be separated. It also shows a preview of the current data. Click next for step 2.



## Step 2

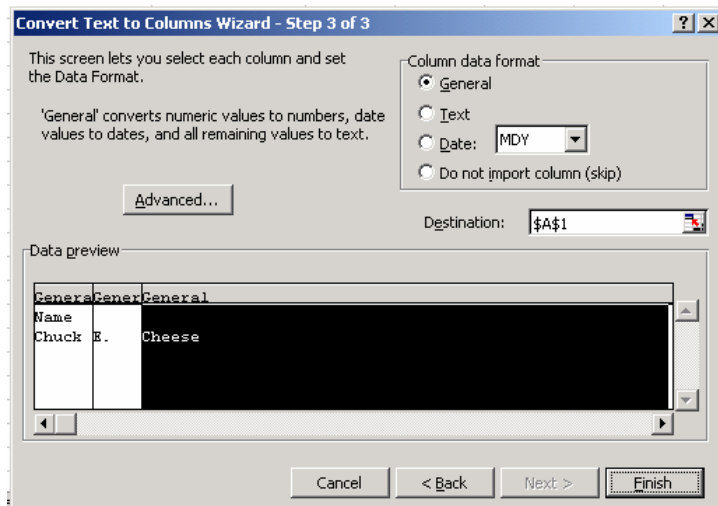
Notice here that it asks about what the delimiters are. Space was chosen because there is a space in between each word. It also gives the option of tab, semicolon, comma, or other.

In the Data Preview screen it shows how the data will be separated. If everything looks right, click next for step 3.



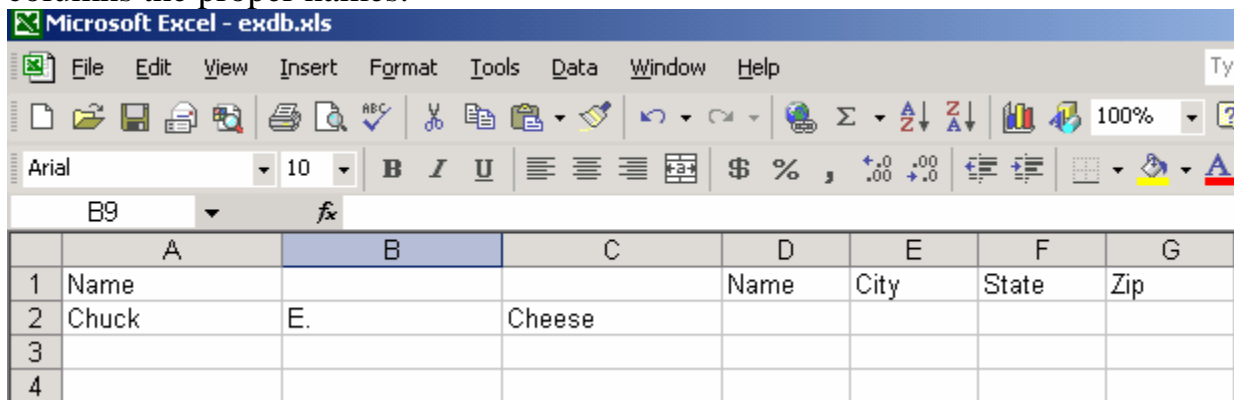
## Step 3

In step three, you can format the data that is in each column. Then you can tell it where you want to put the data. Where ever the column of data began, is where the destination will be. In this case, the data started in cell A1. Excel will start to put the data there in cell A1 and bring in into the next column(s) thereafter. When satisfied press the Finish button.



## Result

Notice how the data is now separated into three columns. Now I can name the columns the proper names.

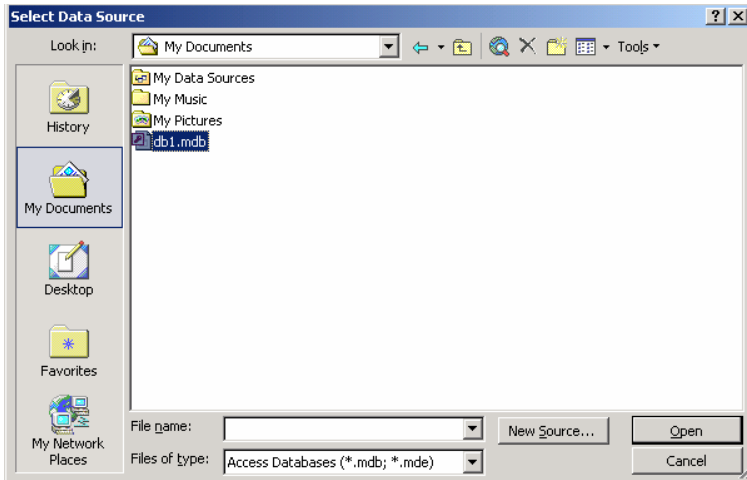


The screenshot shows the Microsoft Excel interface with the file 'exdb.xls' open. The menu bar includes File, Edit, View, Insert, Format, Tools, Data, Window, and Help. The toolbar shows various icons for file operations and editing. The formula bar shows 'B9' and the function 'fx'. The spreadsheet grid shows the following data:

	A	B	C	D	E	F	G
1	Name			Name	City	State	Zip
2	Chuck	E.	Cheese				
3							
4							

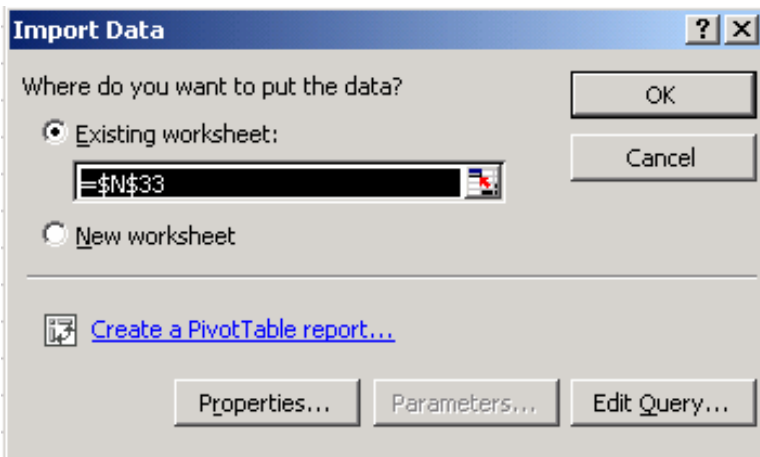
# Importing External Data

Excel allows one to import external data from other sources like Access or Word. To do this, click on Data → Import External Data → Import Data.



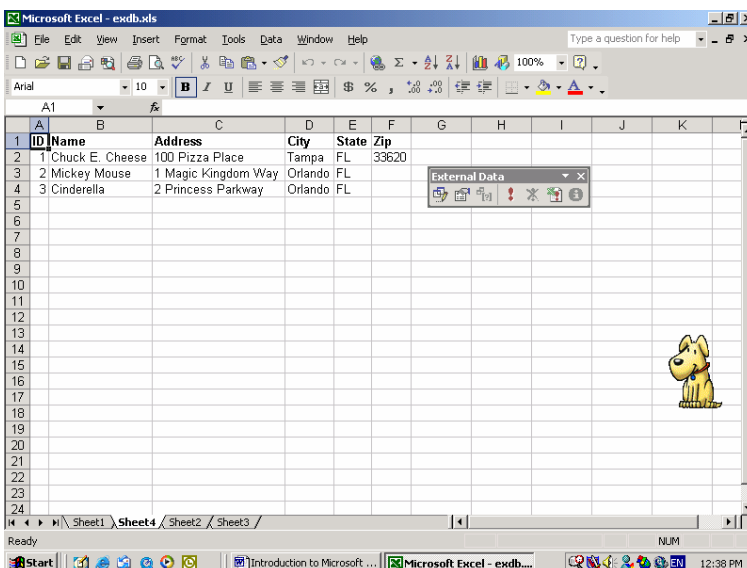
## Select the data source

A Dialog box appears, and asks you to select the data source. (What & where your data is). Select the data and press open



## Import Data

The next step asks where you want to put the imported data; in the existing worksheet and where or in a new worksheet. Make the selection and press ok.



Now the data is imported. Excel recognizes the format, and imports the data smoothly.

If the data was in a text file format, excel would bring you through a process similar to “text to columns”. Notice how the external data toolbar appears.

## Advanced Date Functions

Maybe you are making appointments and you want to enter the date that is 90 days from today's date. Try this

In cell A1 enter today's date or the formula =Today().

Then in cell A2 enter this formula: = (A1+90)

*(Note: if you enter the formula =Today() it will update with the change of each new day)*

Want to find out when you can start collecting your retirement? Try this:

*(This formula is for someone who will start collecting retirement the first day of the month after they turn 70 ½. If yours is different adjust the numbers)*

Enter your birthday in cell A1. Then in cell A2 enter this formula

=DATE(YEAR(A1)+70,MONTH(A1)+7,1)

This is how the formula reads:

Equals the date when the year is 70 more than that of cell A1, and the month is 7 more than that of cell (A1) and the day is the first day of the month.