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# Excel 2000 Advanced



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# Templates and Styles

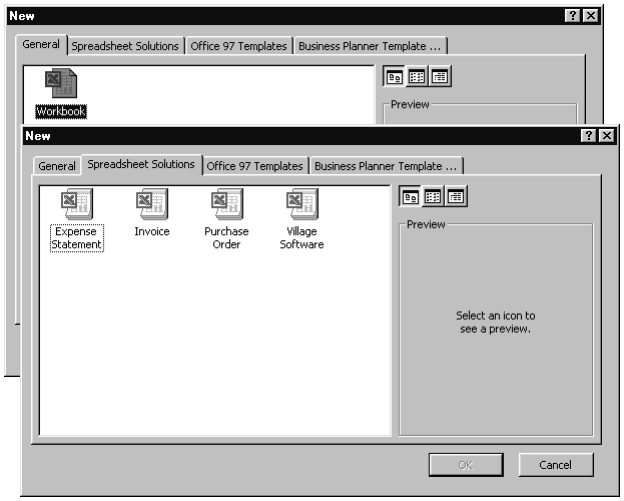
## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Create a template
- Use a template
- Create a style
- Use a style
- Edit a style

## What Are Templates?

- **Templates are pre-designed and formatted spreadsheets**
  - **They provide consistency of layout/structure**
  - **They save time and repetition of work**

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# What are Templates?

**Background**

Frequently when working with spreadsheets you want to use the same layout or design. You can re-create the design every time you want to use it, or you can create a spreadsheet to use as a pattern. The spreadsheet pattern is called a template.



Templates can be produced that include the following elements:

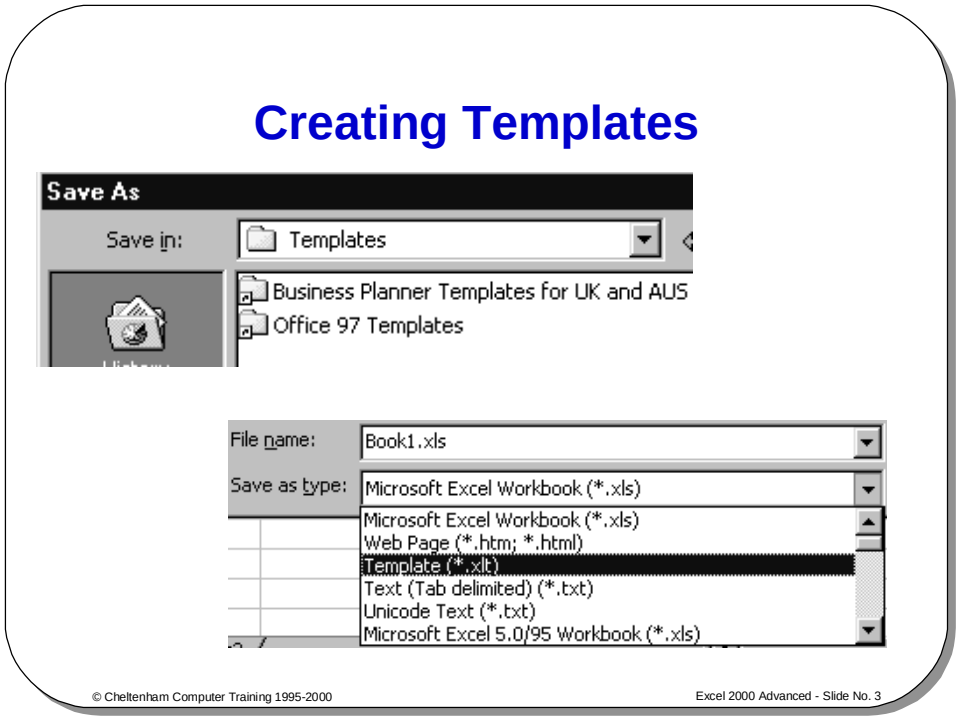
- Text and graphics
- Formatting information - Layouts, Styles
- Headers and Footers
- Formulas
- Macros



Templates are stored with the extension **.XLT** and when they are accessed to create a new sheet, a copy of the original is made. The original template is left untouched ready for further use.



A template is produced by creating a spreadsheet that contains all the elements you want, and then saving it as an **.XLT** file.

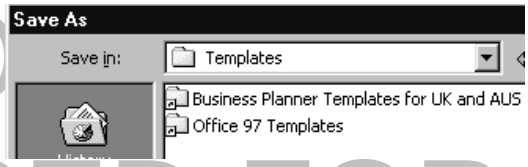



## Creating Templates

**To create a template**

- Create the workbook you wish to save as a template.
- From the **File** menu, select **Save As** to display the **Save As** dialog box.
- Type the name for the template in the **File name** text box.
- From the **Save as type** drop down list box, select **Template**.

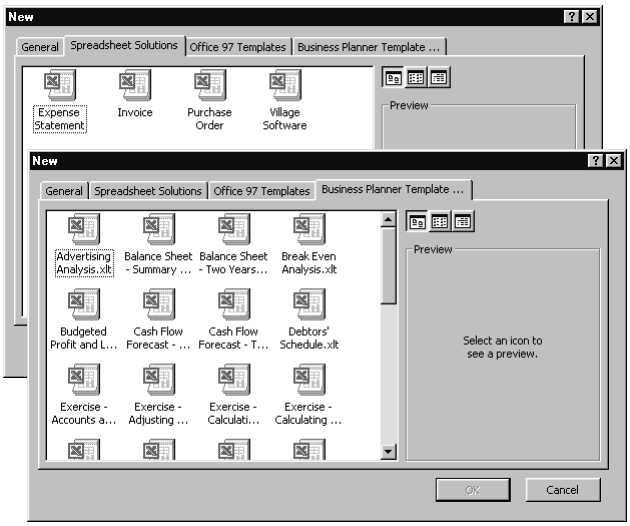
You should find that the folder automatically changes from the default of **My Documents** to the **Templates** folder, as illustrated below.




- Select **Save**. The extension **.XLT** is added to the file name and the template is saved in the **Templates** folder.

## Using Templates

- **From the File menu, select New to display the New dialog box**

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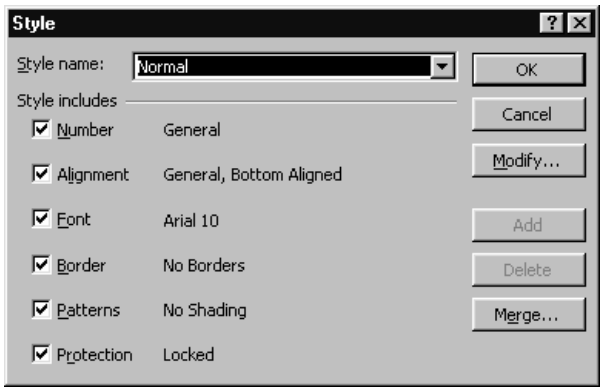
## Using Templates

**To use a template**

- From the **File** menu, select **New** to display the **New** dialog box.
- Select the template you require. Notice that you normally see a number of tabs on this dialog box, such as **General** and **Spreadsheet Solutions**. If you wish to use the default template, select **Workbook** from the **General** tab.
- Select **OK** to open a copy of the template, i.e. a **Workbook**.

## What are Styles?

- **Styles are sets of information about how a spreadsheet is formatted**

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## What are Styles?

**Background**

A collection of cell formatting information is often referred to as a style. If formatting information is assigned to cells using styles it is possible to easily update the appearance of a sheet by modifying the styles.



Change one style and all cells that have that style assigned to them will reflect the changes made.

The information held in a style includes the following formatting details:

- Number
- Font
- Alignment
- Border
- Patterns
- Protection



You have the choice when defining styles to exclude any of the above as you wish.

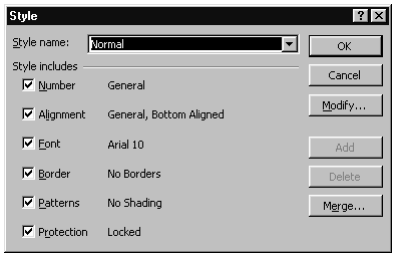


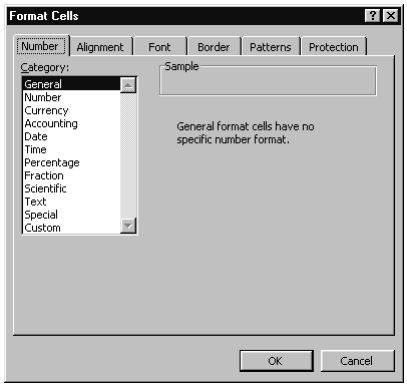
Excel comes with a number of styles pre-defined, by default all cells have the **Normal** style assigned to them.

It is possible to copy styles from one Workbook to another.

## Creating and Using Styles

- **From the Format menu, select Style to display the Style dialog box**
- **Type the style name in the Style name drop-down list**







## Creating and Using Styles

**To create a style**

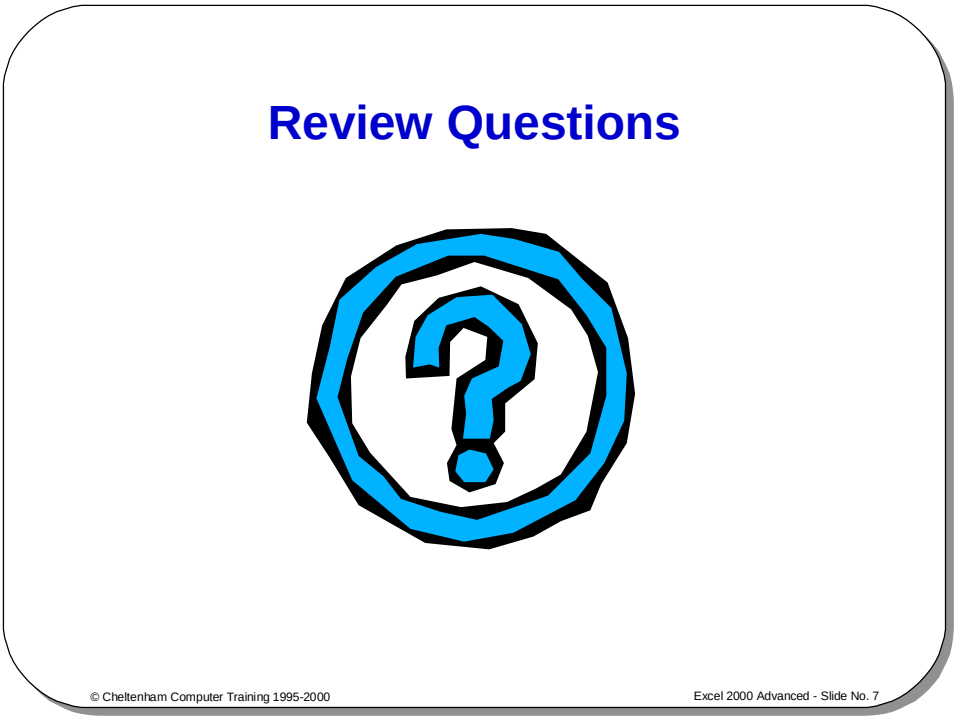
- Select a cell formatted with the attributes you require.
- From the **Format** menu, select **Style** to display the **Style** dialog box.
- Type the style name in the **Style name** drop down list.
- Select the **Modify** button to change any of the attributes. The **Format Cells** dialog box will be displayed. Click on the **Number**, **Alignment**, **Font**, **Border**, **Patterns** and **Protection** tabs and make any changes required. Select **OK** to return to the **Style** dialog box.
- Select **OK**.

**To use a style**

- Select the range you wish to format.
- From the **Format** menu, select **Style** to display the **Style** dialog box.
- Select the style from the **Style name** drop down list box.
- Select **OK**.

**To edit a style**

- From the **Format** menu, select **Style** to display the **Style** dialog box.
- Select the style you want to change from the **Style name** drop down list box.
- Click the **Modify** button. Make the changes required by clicking on the various tabs, and choose **OK** to return to the **Style** dialog box.
- Select **OK**. All the cells which are formatted with this style will be updated to reflect the changes.




## Review Questions - How Would You ...

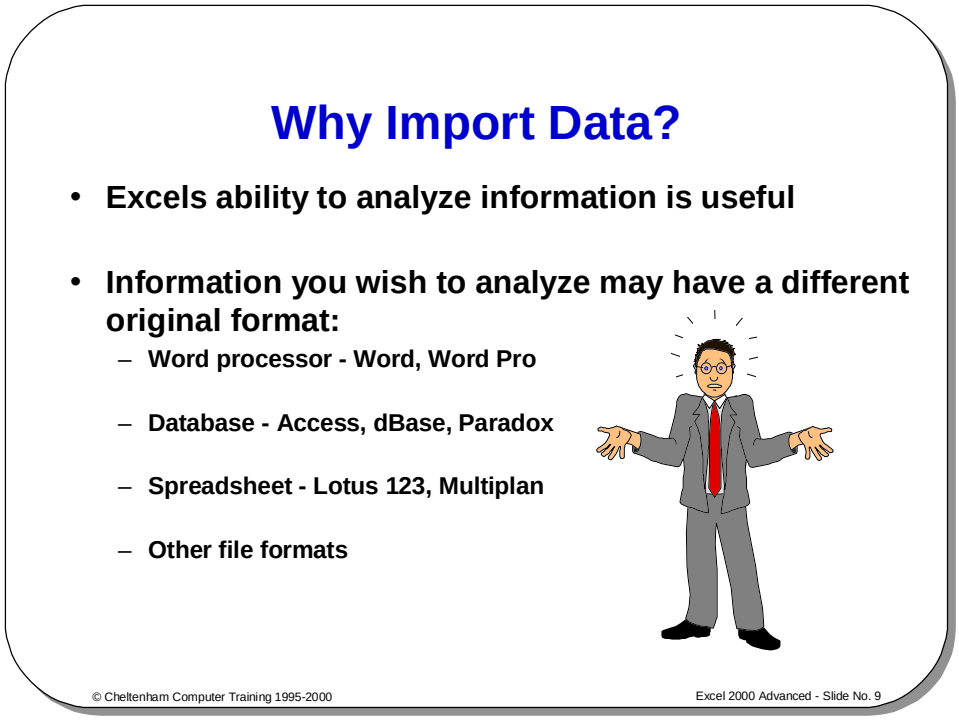
| | |
|---|---|
| 1. | Create a template? |
| 2. | Use a template? |
| 3. | Create a style? |
| 4. | Use a style? |
| 5. | Edit a style? |

# Importing Data

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Import text into a sheet using the Text Wizard
- Import data from a Database
- Use Microsoft Query to interrogate an external database




## Why Import Data?

**Background**

Excel as we have already seen is capable of carrying out analysis of data, and producing graphical representations of the same.

If the information you have is in a Word/Text Processor in the form of a report it would need to be in a format that Excel can recognize in order to be imported into the spreadsheet, rather than re-entered (typed).



**The following Text Formats are the most common:**

What happens if the text to be imported is not in a recognized format?

If the text to be imported is not in a recognized format Excel will automatically launch the **Text Wizard** to give you assistance.

**Text**

Text files are plain text with no formatting information contained except line returns. It is usual for this file type to have one record of information per line but the means of identifying fields varies.

**Text (Tab Delimited)**

In this text file format tabs are used to define fields.

**Formatted Text**

Formatted text files make use of position to define fields, each field starts at a defined position on the line.

You may find this field type also referred to as **Space Delimited, Fixed Width,** and **Column Delimited**.

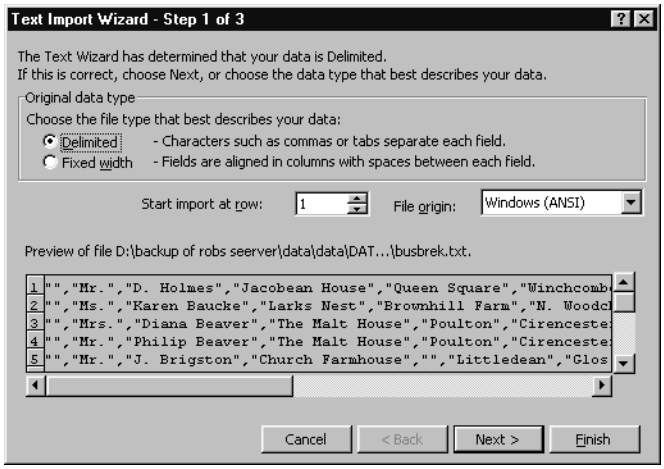
**CSV (Comma Separated Values)**

Commas are used by CSV text files to delimit (separate) fields. Whilst these are called Comma Separated Values text files, commas do not have to be the delimiter.

Comma delimited fields can make use of the vertical bar ( | ) and the at ( @ ) sign as the delimiter.

## The Text Wizard

- **In the Open dialog box, select Text Files in the Files of type field**

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# The Text Wizard

**Background**

The **Text Wizard** is a set of dialog boxes that guide you, the user, through the stages of importing text into an Excel spreadsheet.

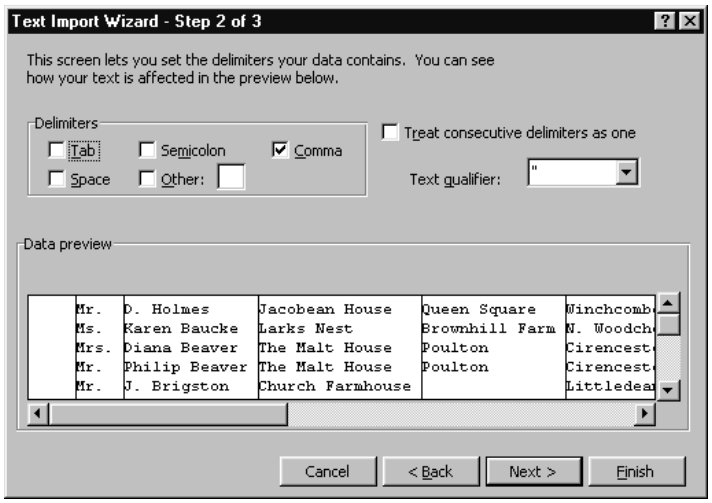
**To import text into a sheet using the Text Wizard**

- Open the **File** menu and select the **Open** option.
- Click on the down arrow next to the **Files of type** field and select **Text Files**.
- Highlight and choose the file you wish to open and select **Open**.
- You will see the **Text Import Wizard (Step 1 of 3)** dialog box, as illustrated.



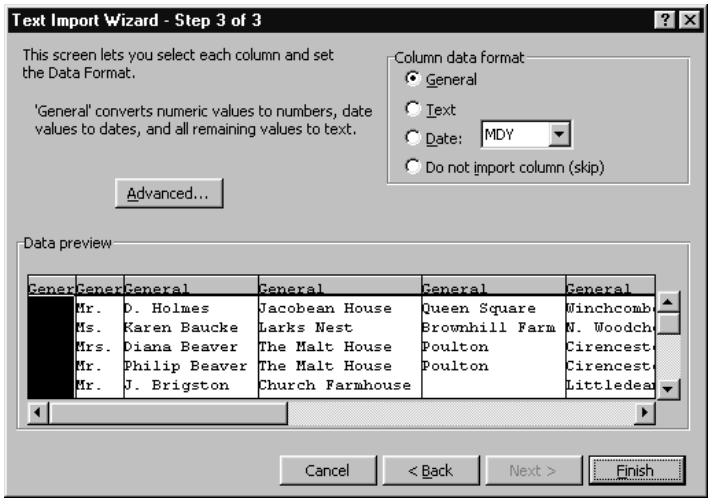
Notice that the dialog box has two effective areas, the upper referring to choices you can make, the lower showing the data you are about to import. The wizard takes an educated look at your source data and the original file format and determines whether it is delimited or not. You can choose to alter this decision if you wish.

- Having made your choices click **Next** and the **Text Import Wizard (Step 2 of 3)** dialog box is displayed. The upper half of this box allows you to select the required field delimiter. The default is **Tab**.

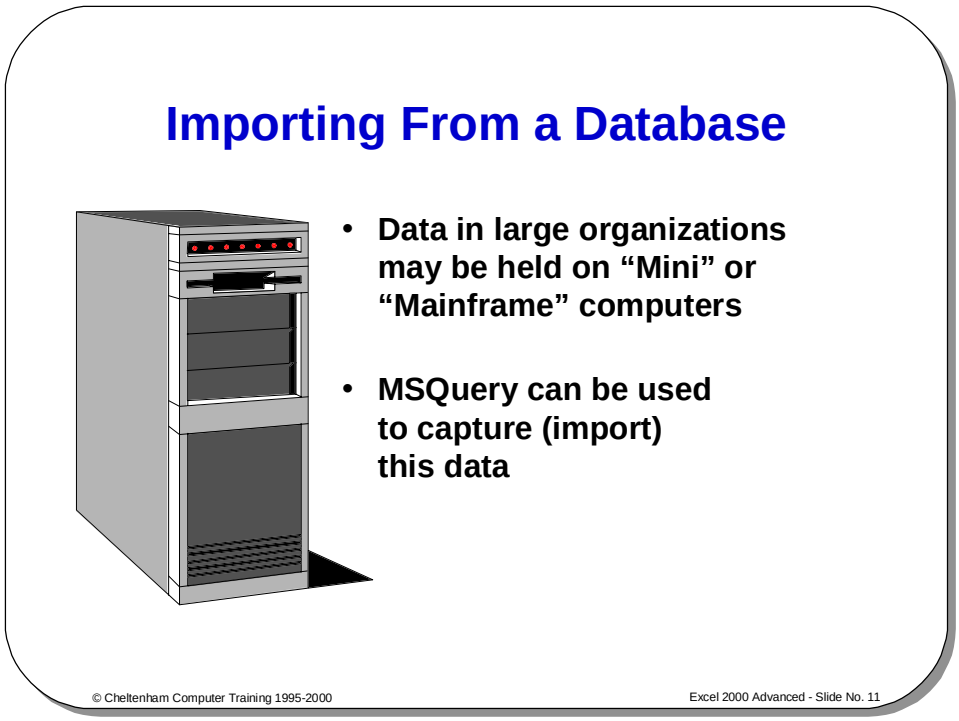



- Make the appropriate choice(s) as more than one can be selected.
- When you have chosen your delimiter the data display in the lower half of the dialog box shows the effect.
- When this is as you want click **Next**.

- The **Text Import Wizard (Step 3 of 3)** dialog box is displayed.




- You now select the data format for each of the columns. You can also decide whether you wish to import a column or not.
- When you have made your decisions click on the **Finish** button to import the text into your spreadsheet.




## Importing From a Database

**Background**

Often, in a corporate environment, data is not created and stored within Excel but may be stored on mainframes or mini-computers. The data may be created and stored within other dedicated database programs. Commonly used programs include Access, dBase, Paradox, SQL Server, Oracle or DB2.



Shipped with Excel is a separate program called Microsoft Query, which is supplied with a separate user manual. This is an excellent tool for querying an external database.



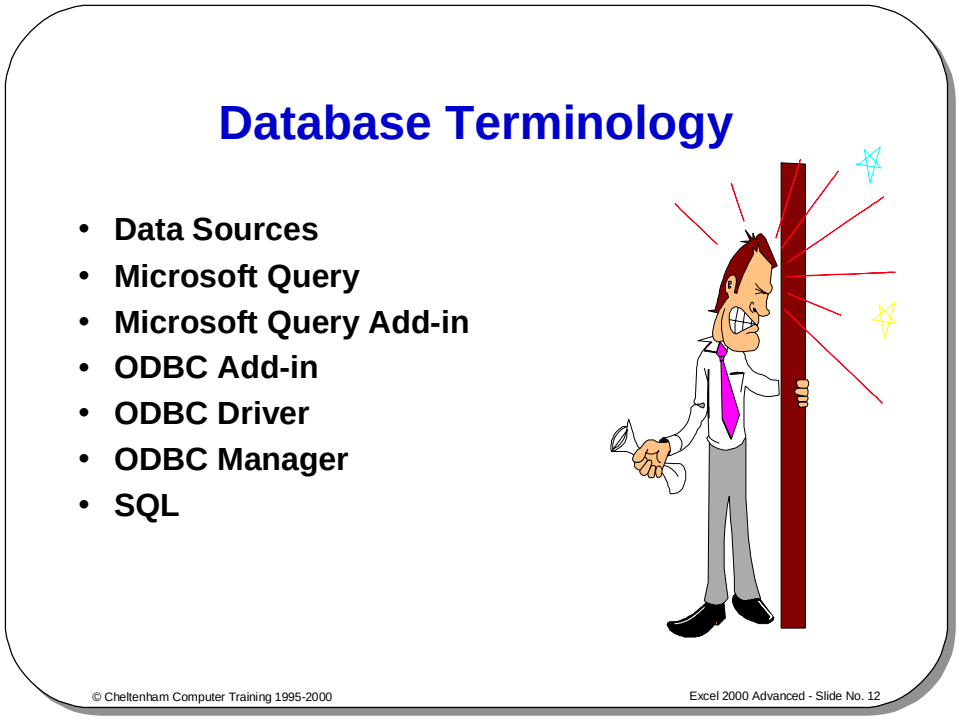
Other methods of accessing external database files include:

- Using the **Open** command located under the **File** drop down menu, and using the **List of type** box, to select the following types of file:
- Lotus 123
- Quattro Pro
- Microsoft Works
- DBase
- SYLK
- Data Interchange Format (DIF)
- HTML files
- Previous versions of Excel

If your mini or mainframe application can output files in text format, again you can use the **Open** command, and specify text files and use the Text Wizard.

Applications such as Microsoft Access can save files in Excel format, which can be loaded directly into Excel in the normal way.

Pivot Tables may be used for accessing and integrating external databases.




## Database Terminology

| | |
|---|---|
| **Data Sources** | The data source (defined in the ODBC Manager) informs the ODBC Manager about the type of data being used and location. |
| **Microsoft Query** | A stand-alone program supplied with Excel. It acts as an interface allowing you to make many queries that are translated into SQL format. |
| **Microsoft Query Add-in** | Used to integrate Microsoft Query and Excel. |
| **ODBC Add-in** | It allows Excel to communicate with the ODBC Manager directly (without using the Microsoft Query as an intermediary).<br><br>It also provides the SQL.REQUEST worksheet function, as well as providing an **Application Programmers Interface (API)** for application developers. |
| **ODBC Driver** | The ODBC Manager uses the ODBC driver as an intermediate step.<br><br>ODBC drivers supplied with Excel include, Access, dBase, FoxPro, Paradox, SQL Server, Oracle, Excel Worksheets and text files. |
| **ODBC Manager** | Open Database Connectivity. This is a Microsoft derived technology that allows programs such as Excel and Microsoft Query to interface with a range of different databases.<br><br>When you perform a Microsoft query, an SQL statement is sent to the ODBC Manager. The ODBC Manager then acts as an intermediary between the application and the database.<br><br>This has the advantage that the same query may be used to access different database servers, including SQL Server, Oracle, dBase or Paradox. |
| **SQL** | Structured Query Language. An industry standard language used for database communication. Excel queries using Microsoft Query use SQL behind the scenes. |

## Using Microsoft Query

**Microsoft Query allows you to interrogate an external database**

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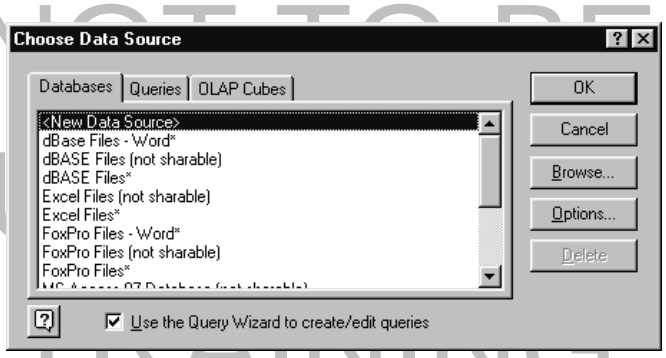
# Using Microsoft Query

**Background**

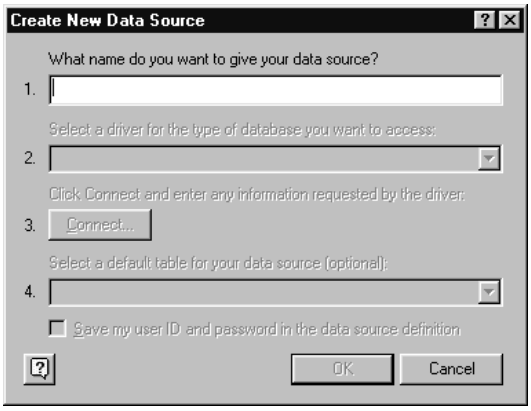
Microsoft Query is a stand-alone program so may be started independently from Excel by double clicking on the icon. It is much more convenient however to run Microsoft Query from within Excel.

**To Create a New Query**

- Make sure that Microsoft Query is installed.
- From the **Data** drop down menu, click on **Get External Data**.
- This displays a sub-menu from which you can select **New Database Query**. This will display the **Choose Data Source** dialog box.



- Click on the **OK** button, to see the **Create New Data Source** dialog box.

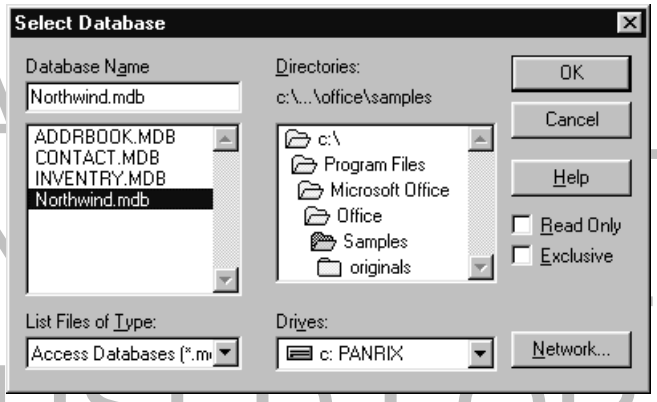



- In the first dialog box field, enter a name for the new data source (in this case we have entered **My Data**).
- In the second dialog box field, click on the down arrow and select the type of data, in the example shown we have selected **Microsoft Access Driver [*.MDB]**.

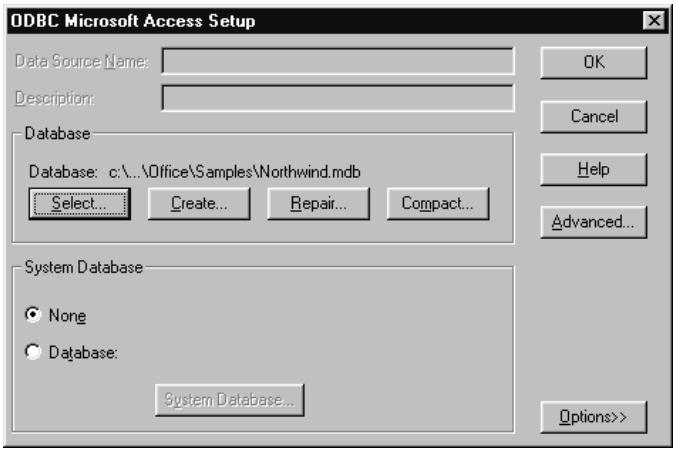
- Click on the **Connect** button. In this case you will see the dialog below.


- Click on the **Select** button, and you will see the following dialog box.

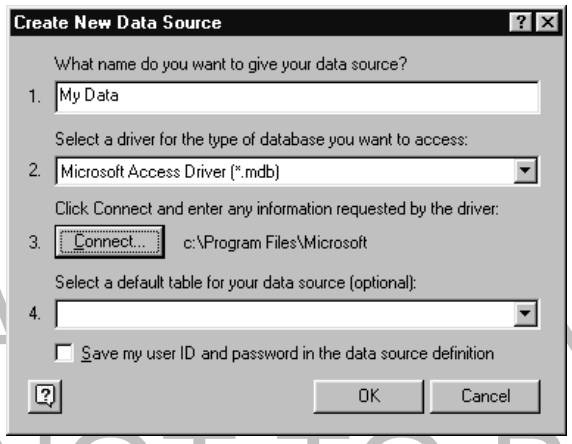
  Change to the folder containing the database that you wish to use. In this case we will use the NorthWind database, which is a sample database supplied with Access. You will normally find this in the following location.
  **/Program Files/Microsoft Office/Office/Samples/Northwind.mdb**
  *If cannot find this file ask your tutor for assistance.*



- Click on the **OK** button, and you will see the following dialog box.

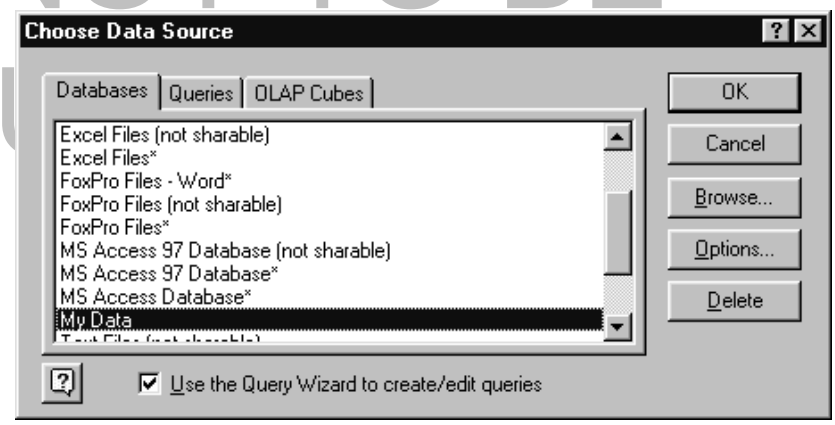



- Click on the **OK** button, and you will see the following.

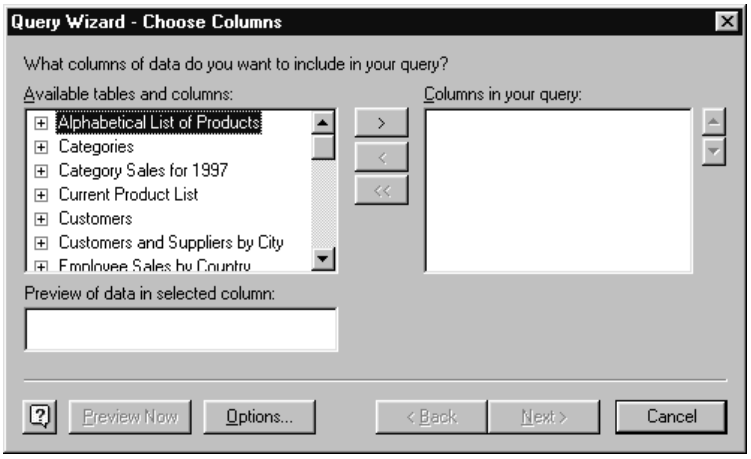




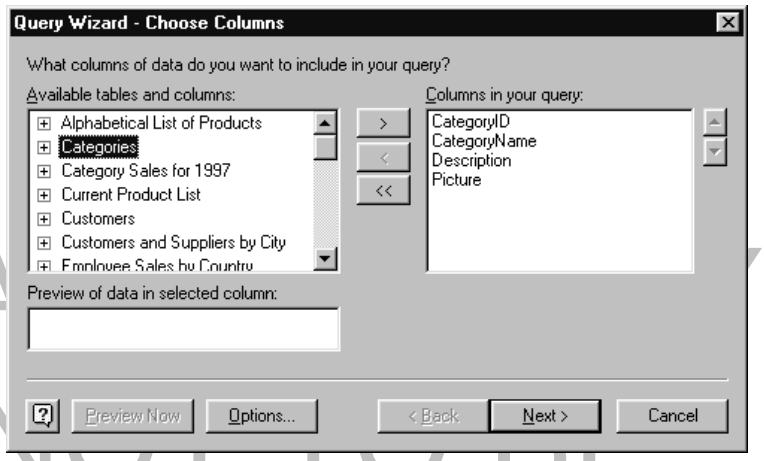

- Click on the **OK** button, and you will see the following.



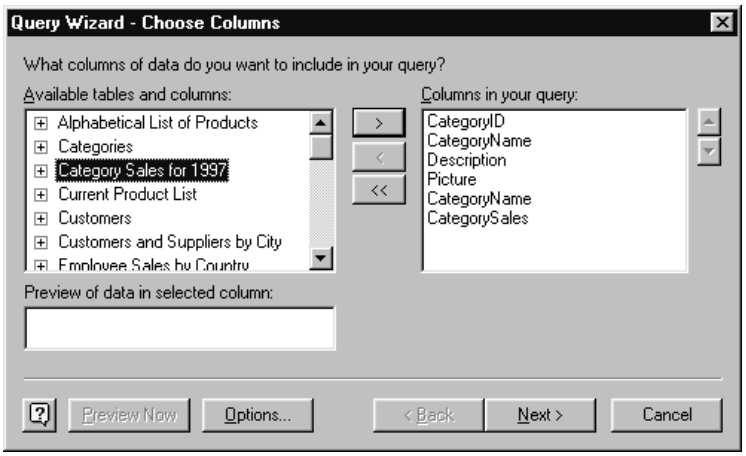
- Click on the **OK** button and you will see the following dialog box.



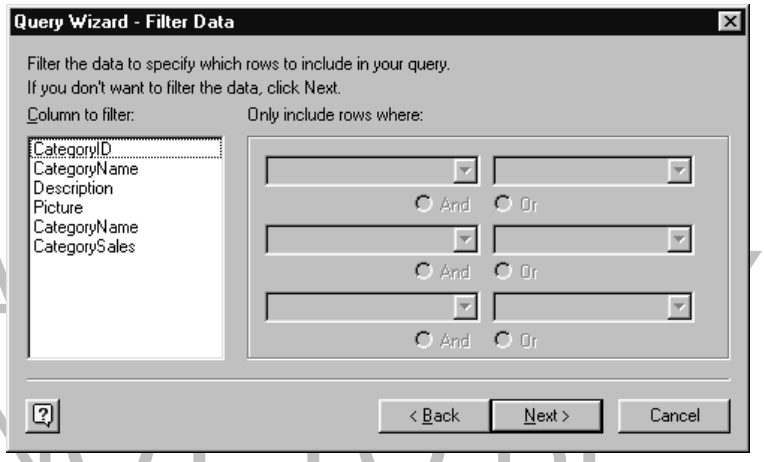

- Make sure that **Categories** is selected and then click on the arrow that points to the right. You will see the following.



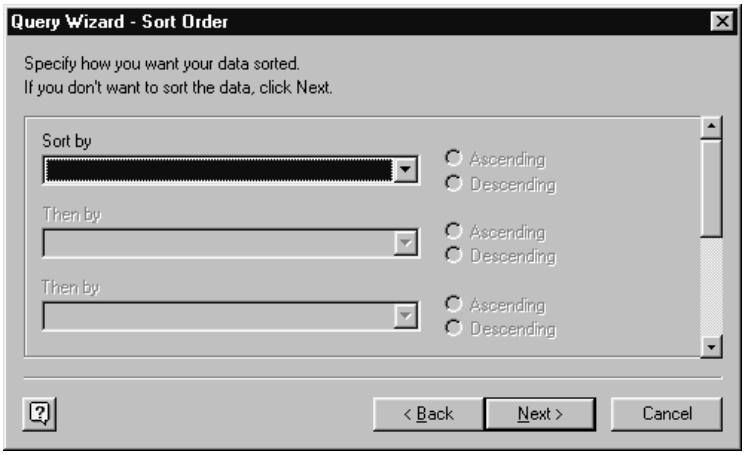
- Then select **Category Sales for 1997** and click on the arrow that points to the right, you will see the following.



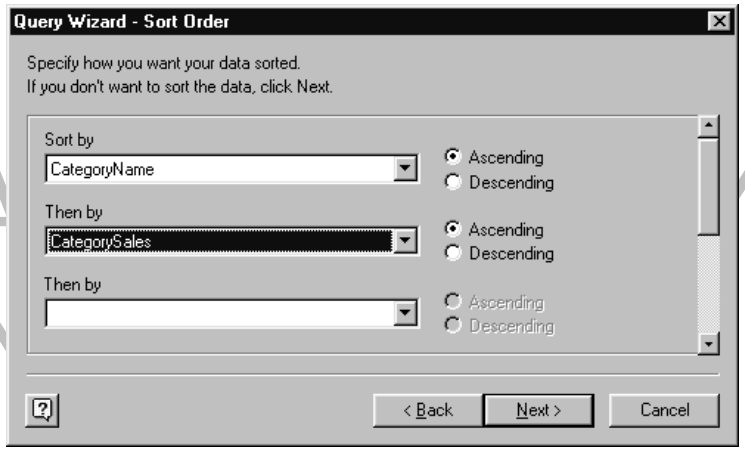

- Click on the **Next** button and you will see the following dialog box.



- Click on the **Next** button and you will see the following dialog box.



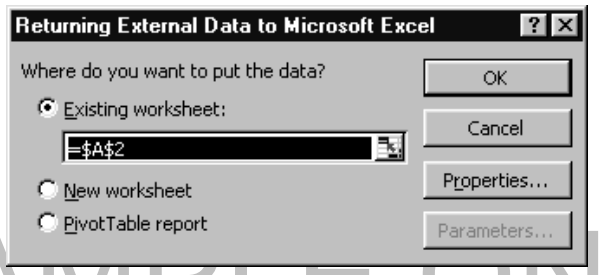

- Click on the **Down arrow** next to the **Sort by** field, and from the list displayed select **CategoryName**.
- Click on the **Down arrow** next to the **Then by** field, and from the list displayed select **CategorySales**.
- The dialog box is now as illustrated below.



- Click on the **Next** button.


- Ensure that the **Return Data to Microsoft Excel** box is selected, and then click on the **Finish** button.

- Click on the **Finish** button. You will see the following dialog box.

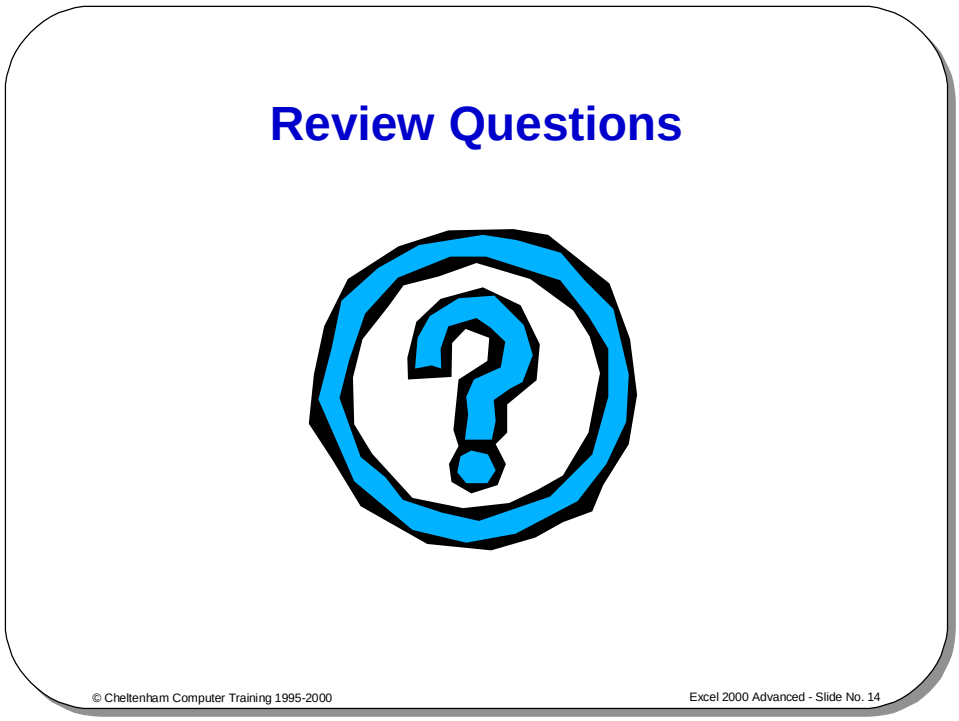





- Click on the **OK** button and the following data will be returned to your Worksheet.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | **CategoryID** | **CategoryName** | **Description** | **CategoryName** | **CategorySales** |
| 3 | 1 | Beverages | Soft drinks, coffees, teas, beers, and ales | Beverages | 102074.29 |
| 4 | 2 | Condiments | Sweet and savory sauces, relishes, spreads, and seasonings | Condiments | 55277.56 |
| 5 | 3 | Confections | Desserts, candies, and sweet breads | Confections | 80894.11 |
| 6 | 4 | Dairy Products | Cheeses | Dairy Products | 114749.75 |
| 7 | 5 | Grains/Cereals | Breads, crackers, pasta, and cereal | Grains/Cereals | 55948.82 |
| 8 | 6 | Meat/Poultry | Prepared meats | Meat/Poultry | 81338.06 |
| 9 | 7 | Produce | Dried fruit and bean curd | Produce | 53019.98 |
| 10 | 8 | Seafood | Seaweed and fish | Seafood | 65544.19 |
| 11 | | | | | |

External Data




## Review Questions - How Would You ...

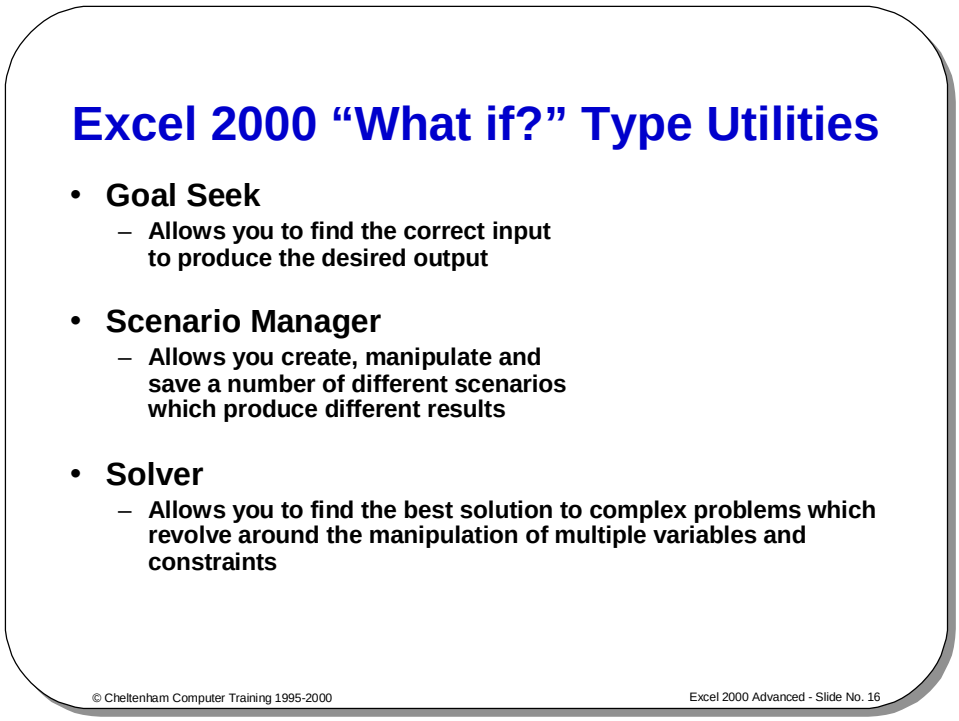
| | |
|---|---|
| 1. | Import text into a sheet using the Text Wizard? |
| 2. | Import data from a Database? |
| 3. | Create a New Query? |

# "What If?" Utilities

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Use Goal Seek
- Use Graphical Goal Seeking
- Use the Scenario Manager
- View alternative scenarios
- Use Solver




## Excel "What If?" Type Utilities

**Background** Excel provides a number of tools to help you find answers to "what if" type questions.

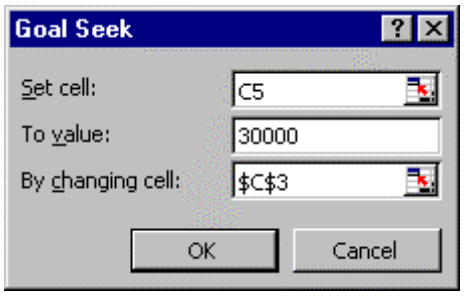
**Goal Seek** Allows you to find the correct input to produce the desired output. Simple to use, but limited in power and flexibility.

**Scenario Manager** Allows you create, manipulate and save a number of different scenarios that use different input variables which produce different results. Simple to use, limited in power and flexibility.

**Solver** Allows you to find the best solution to complex problems which revolve around the manipulation of multiple variables and constraints. Harder to use, but very powerful and extremely flexible.

## Goal Seek

- **Goal seeking is the means to say "This is the value that I want to achieve - change this input value in order to do so"**







# Goal Seek

**Background**

When using a spreadsheet we regularly know the end result we require and have to work out the values to reach this result. The Goal Seek command will allow us to do this in a very easy manner.

**Goal Seek - an example**

You wish to purchase a car, your current vehicle is worth $4,000 in part exchange.

This part exchange value plus your cash down payment of $1000 makes up the 20% deposit required towards the cost of the new car.

A spreadsheet to show this is illustrated and shows that you can afford a new car costing $25,000. The only formula in the spreadsheet is in cell C5:
**=(C3+C4)*5**

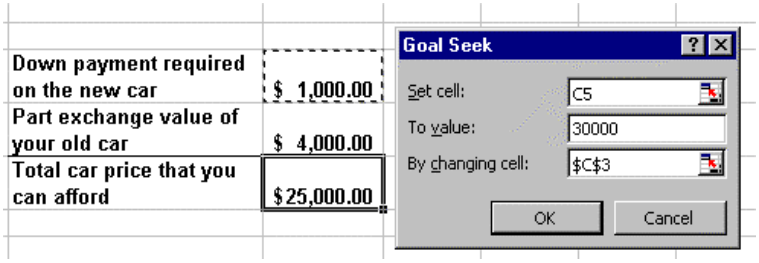


C5 = =(C3+C4)*5

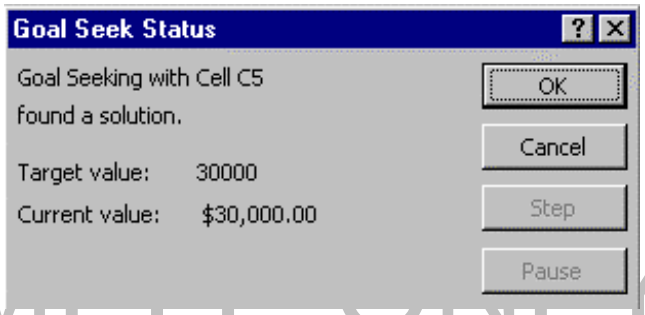
| | A | B | C |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | Down payment required on the new car | $ 1,000.00 |
| 4 | | Part exchange value of your old car | $ 4,000.00 |
| 5 | | Total car price that you can afford | $25,000.00 |

If we suppose that you have seen a car costing $30,000 your question would likely be. What will my cash down payment now need to be? You could experiment by entering various values into the **Down Payment** cell or you could use **Goal Seek**.

- Make cell **C5** ***i.e. the total car price that you can afford*** your active cell (by clicking on this cell).
- Start **Goal Seek** by opening the **Tools** menu and selecting **Goal Seek**.
- Enter **30000** in the **To value** text dialog box and the press the **Tab** key to move to the field in the **Goal Seek** dialog box called **By changing cell**.

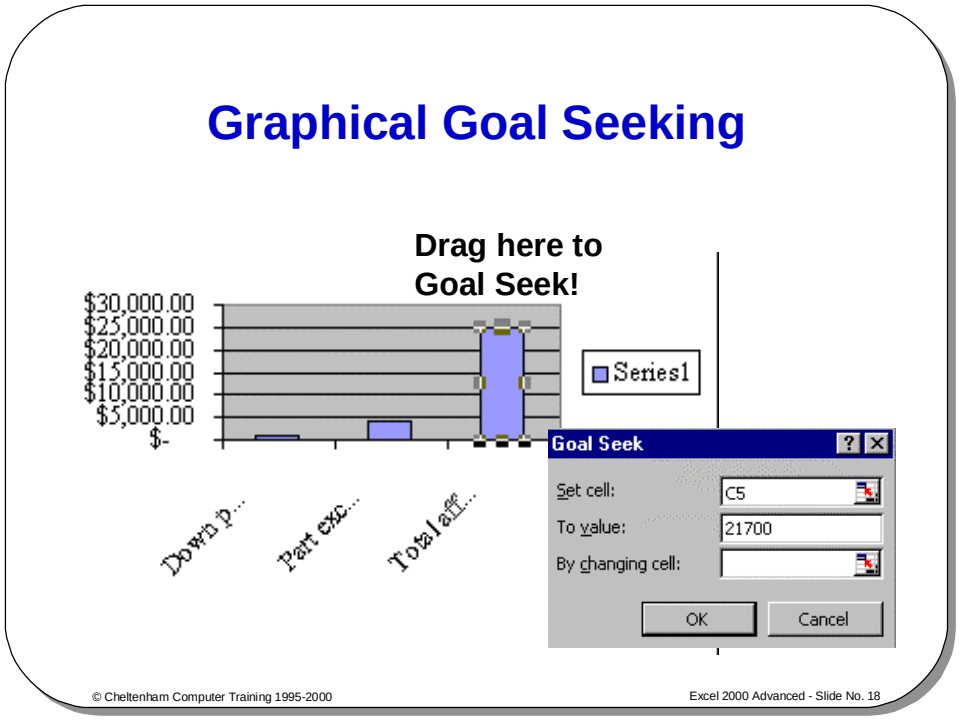



- Use the mouse to click on the cell **C3**. This means that when we click on the **OK** button, the contents of this cell will change to fit in with our desired result.
- Click **OK**. The **Goal Seek Status** dialog box is displayed and the value of **your Down Payment** has changed to **$2000.00**. This is the new amount you would have to pay to obtain this car.






- If you click **OK** these changes are accepted or if you click **Cancel** these changes are not accepted.




## Graphical Goal Seeking

**Background**

We have seen the text-based method for carrying out a goal seek, there is however another method of carrying out this task using a chart.

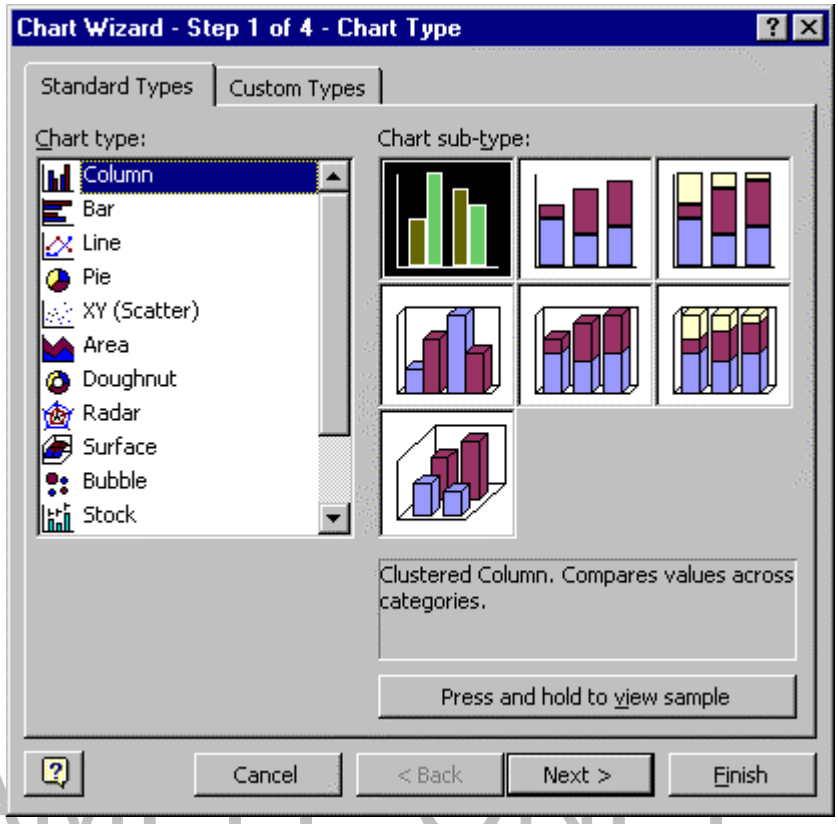
We will use the same example that we used for text based goal seeking, i.e. working out what new car we can afford!

If we suppose that you have seen a car costing $14,000 your question would likely be. What will my cash down payment now need to be?

- First select the data as illustrated below.

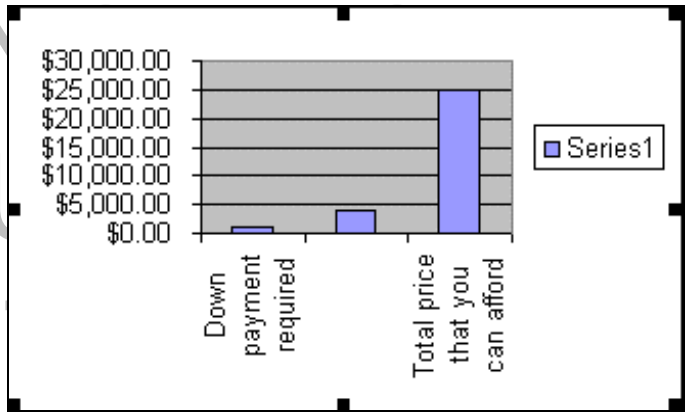
| | A | B | C |
|---|---|---|---|
| 2 | | | |
| 3 | | Down payment required on the new car | $1,000.00 |
| 4 | | Part exchange value of your old car | $4,000.00 |
| 5 | | Total price that you can afford to buy a new car | $25,000.00 |
| 6 | | | |

- Click on the **Chart Wizard** icon in the **Standard** toolbar and when the **Chart Wizard** dialog box is displayed, as shown below, click on the **Finish** button to create a bar chart using default formats.

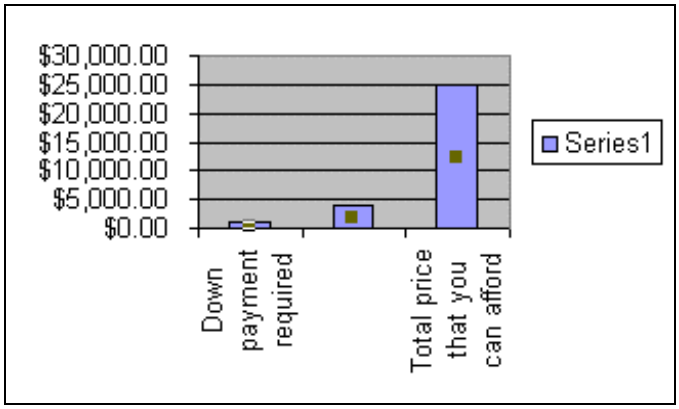





The bar chart produced should resemble that shown below.

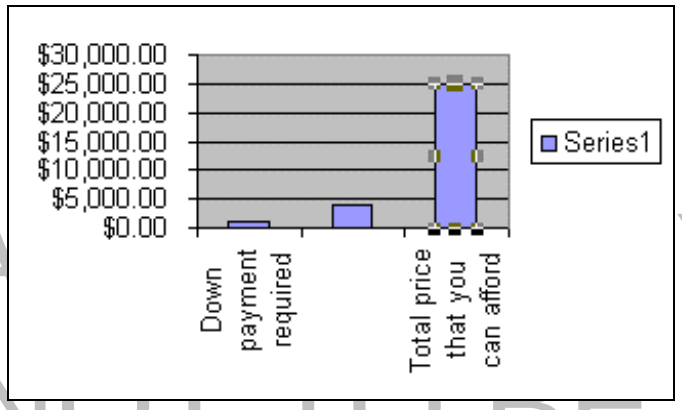


- Click **once** on the column representing the **Total price that you can afford**. You will see the column change as illustrated below.

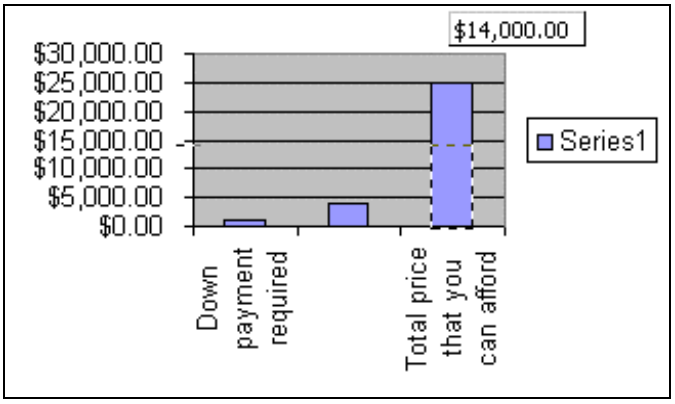



You will see a small rectangular square in the center of each column.

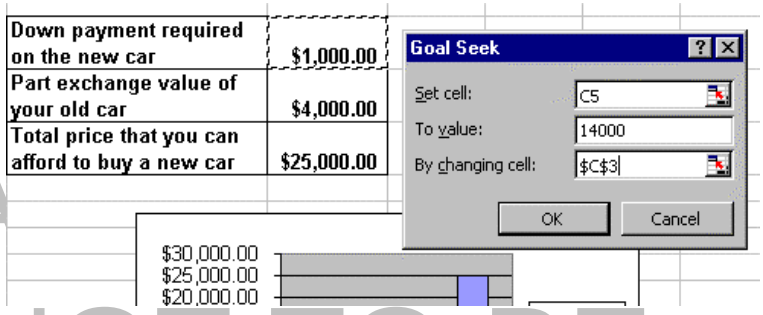
- Click **once** on this column again, and the display will change as illustrated below.



- Move the mouse pointer to the top of this column and then drag and drop the column up or down and required. You will see a small rectangular box is displayed, which indicates the value that you have dragged to. In the example shown, we have dragged to $14,000.

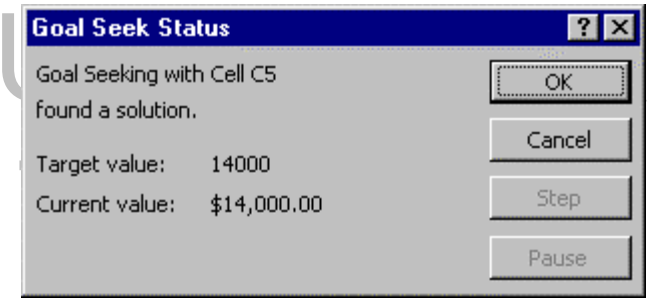



- The **Goal Seek** dialog box appears ready for you to enter a cell reference into the **By changing cell** text box.
- Click on the cell **C3**, to place this value into the **By changing cell** text box, as illustrated below.






- Click on the **OK** button to display the **Goal Seek Status** dialog box, illustrated below.




- Click on the **OK** button to accept these changes and exit from the **Goal Seek Status** dialog box.

## Scenario Manager

- **You will frequently want to look at a number of differing options within your spreadsheet**
- **The Scenario Manager allows you to do so and keep your scenarios to review later**

**What if I Juggle the figures?**

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# Scenario Manager

**Background**

The Scenario Manager is similar to Goal Seek. However it allows you to change multiple cells in order to see changes (not just one as is the case with Goal Seek).

One of the advantages of scenarios is that they are kept for later reference and can be printed in summary form.



**Scenario Manager - an example**

Look at the illustration below. It shows a sheet that is calculating yearly payments on specific items this year and details expected percentage increase in these costs. You may be interested in knowing how the figures are effected if we make a range of assumptions about how each item might increase.



| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | This years costs | Expected percentage increase | Additional cost caused by this percentage increase |
| 3 | | **Rent** | $30,000 | 10 | $3,000 |
| 4 | | **Staff** | $95,000 | 10 | $9,500 |
| 5 | | **Energy** | $20,000 | 20 | $4,000 |
| 6 | | **Other** | $55,000 | 5 | $2,750 |
| 7 | | **Totals** | $200,000 | | $19,250 |

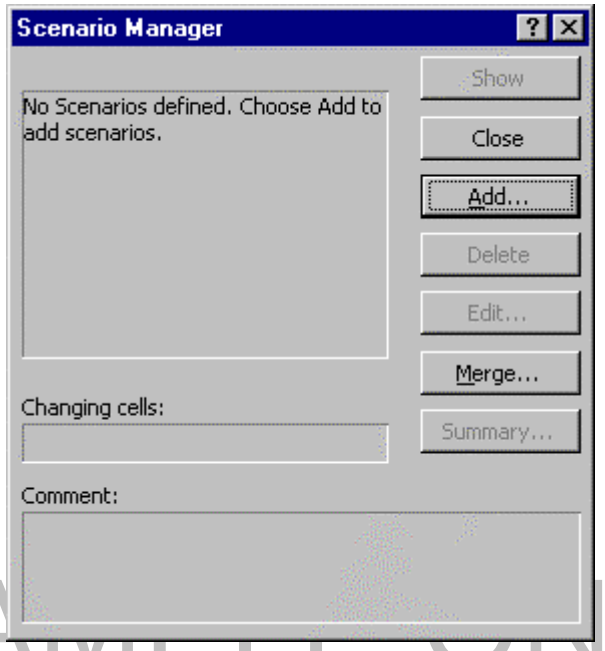


The cell E3 contain the formula **=C3*D3%**
The cell E4 contain the formula **=C4*D4%**
The cell E5 contain the formula **=C5*D5%**
The cell E6 contain the formula **=C6*D6%**
The cell E7 contain the formula **=SUM(E3:E6)**
The cell C7 contain the formula **=SUM(C3:C6)**

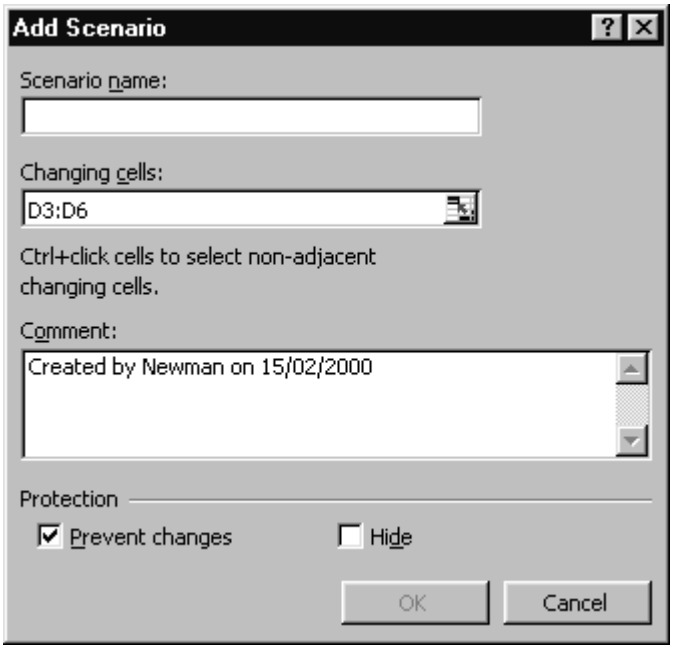
We are going to create scenarios for the following situations:

- Staff Low - 2.5%
- Staff Low, Energy High - 2.5%, 35%

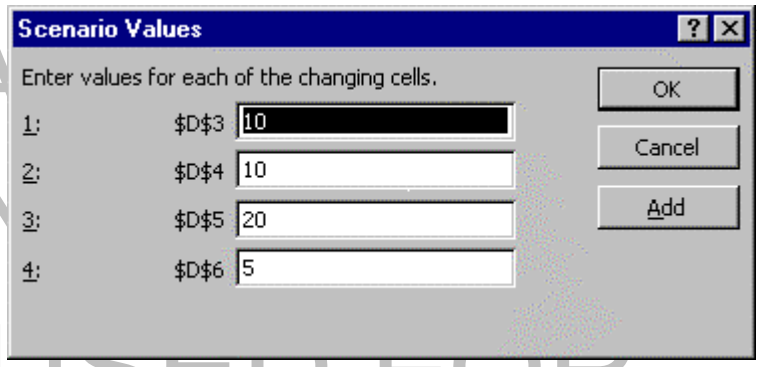
- Once the above data and formulas have been created.
- Select the changing cells, in this case the range **D3:D6**.
- Click on the **Tools** drop down menu and select the **Scenarios** option.
- If no previous scenarios have been created you will see the following dialog box.



- Click on the **Add** button and the **Add Scenario** dialog box is displayed.



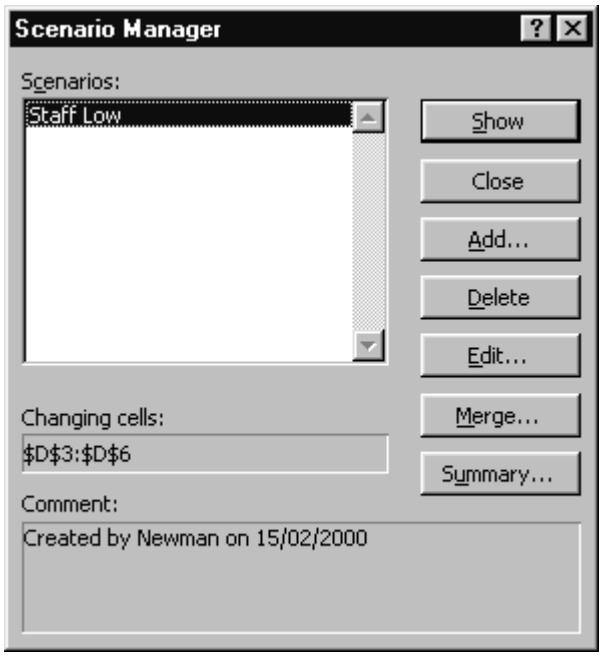

- Enter a name for the scenario you are about to create. In this case enter the name **Staff Low** into the **Scenario name** text box and then click on the **OK** button. The **Scenario Values** dialog box will be displayed as illustrated below.





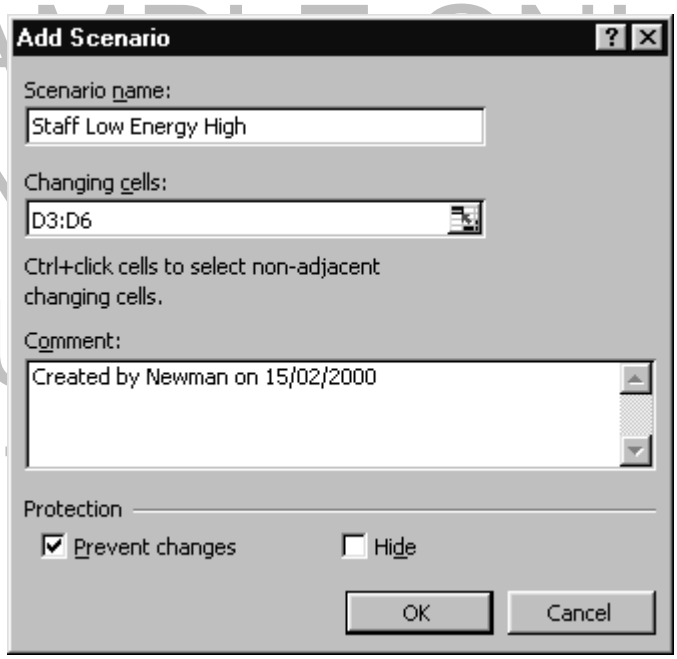

- The percentage rise in staff costs are located in cell **D4** and we need to change the contents of this cell. In the dialog box enter a low value, i.e. **2.5** in the text box, next to **$D$4**.

- Click on the **OK** button and you will be returned to the main **Scenario Manager** dialog box, as illustrated below.

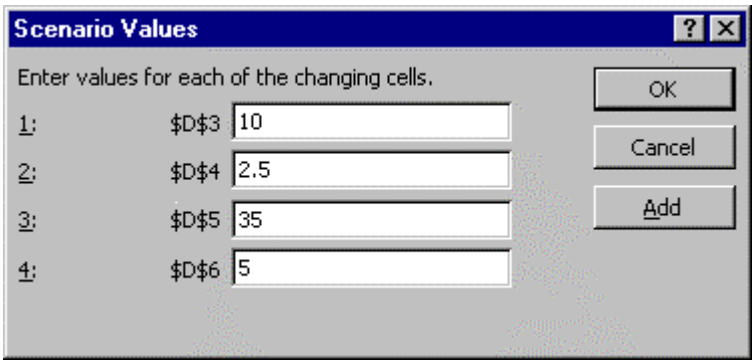



- Next we will add a second scenario where staff cost increases are low, but energy costs increases are high. Click on the **Add** button and enter the name for the next scenario, in this case **Staff Low Energy High**.





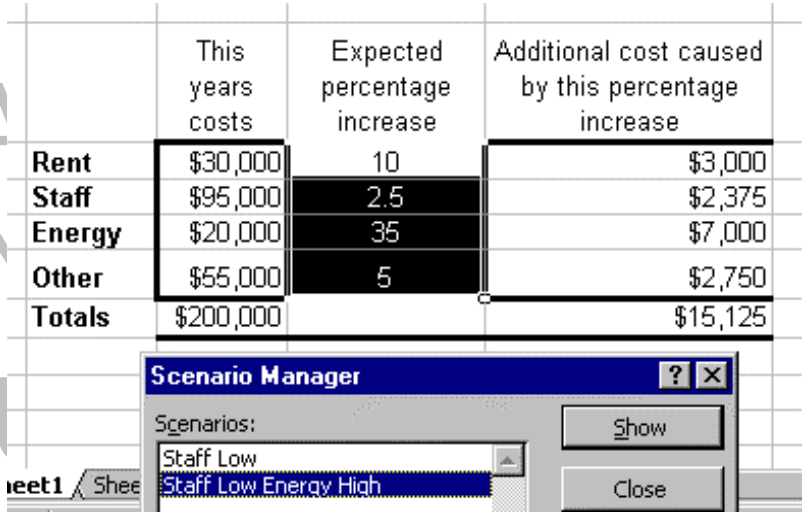
- Click on the **OK** button, and change the two cells as below.
- I.e. in the **$D$4** text box enter **2.5**
- I.e. in the **$D$5** text box enter **35**




- Click on the **OK** button.
- You will be returned to the main **Scenario Manger** dialog box. You can go on adding different scenarios in the way outlined above. In this case we will content ourselves with just these two scenarios.

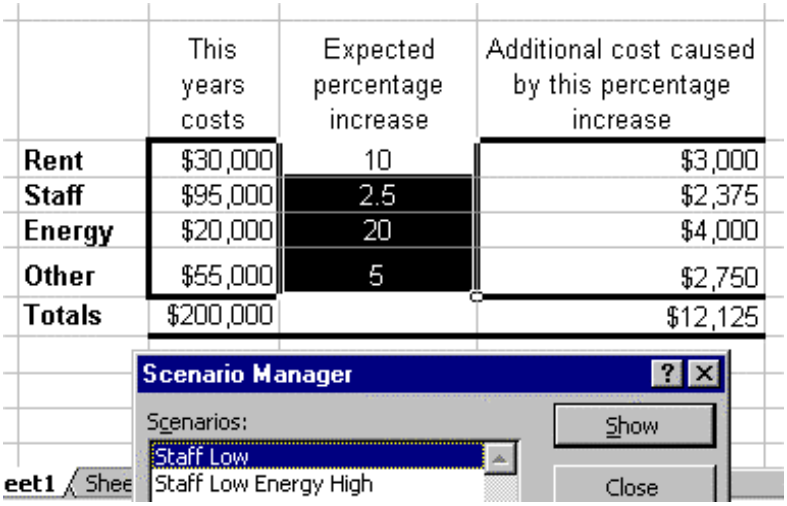
**To show a scenario**

- We have set up two scenarios. To see the effect of one of these scenarios, select the scenario from the main **Scenario Manager** dialog box.
- In this case we have selected **Staff Low Energy High**.
- Click on the **Show** button.



**To view an alternative scenario**

- In this case select the **Staff Low** scenario from the **Scenario Manager** and click on the **Show** button. The data will change as illustrated below.




- Click on the **Close** button to close the **Scenario Manager** dialog box.

## Solver

- Most versatile "what if" tool
- Can handle many different variables
- Where possible Solver will produce the optimum answer

 Excel 2000 Advanced - Slide No. 20

# Solver

## Solver Terminology

- Target Cell
  - The cell that will be set to a value, maximum or minimum. Often this cell is where you specify the maximum cost of a project
- Changing Cell
  - The cells that Solver will change the contents of to achieve the desired objective
- Constraints
  - Contains the changes that Excel will make

 Excel 2000 Advanced - Slide No. 21

# Solver Terminology

## Solver - An Example

- **We need to purchase as many new cars as possible**
- **We need a mix of small, medium and large cars**
- **We have a number of constraints however:**
  - **Our total budget is limited to $500,000**
  - **We need at least 4 small cars**
  - **We need at least 3 medium sized cars**
  - **We need at least 2 large sized cars**
  - **The number of cars must be a whole number**

 Excel 2000 Advanced - Slide No. 22

# Solver – An Example

- In this example we have a budget to purchase as many new cars as possible for the new company car fleet. We need a mix of small, medium and large cars.

**We have a number of constraints however:**

- Our total budget is limited to $500,000
- We need at least 4 small cars
- We need at least 3 medium sized cars
- We need at least 2 large sized cars
- Also if we are going to let the computer calculate a mix of the different number of cars to meet our requirements and budget, then we will have to specify to Excel that buying part of a car is no use, i.e. the numbers of each type of car bought must be whole numbers (integers)!



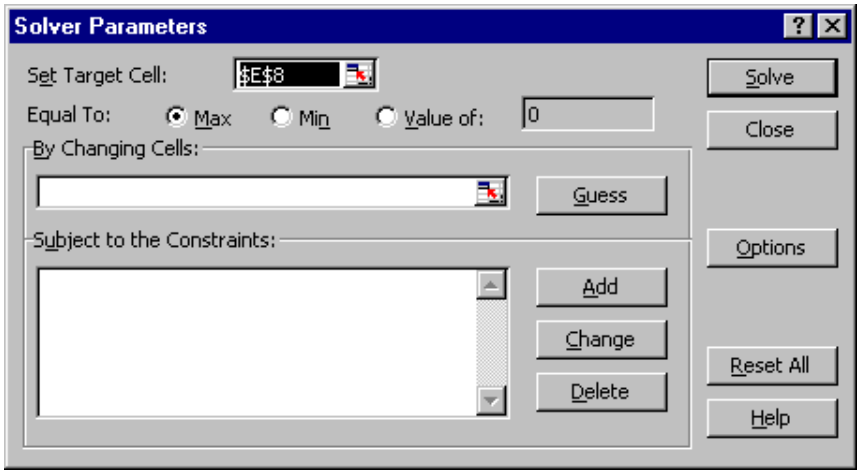
**First construct your spreadsheet**

- We have constructed the following data.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | The New Car Fleet | | | |
| 2 | | | | | |
| 3 | | Class of Car | Cost per Car | No of Cars in Class | Total price/class |
| 4 | | Small | $14,000 | 1 | $14,000 |
| 5 | | Medium Sized | $20,000 | 1 | $20,000 |
| 6 | | Large | $40,000 | 1 | $40,000 |
| 7 | | | | | |
| 8 | | | | Total cost of the car fleet | $74,000 |

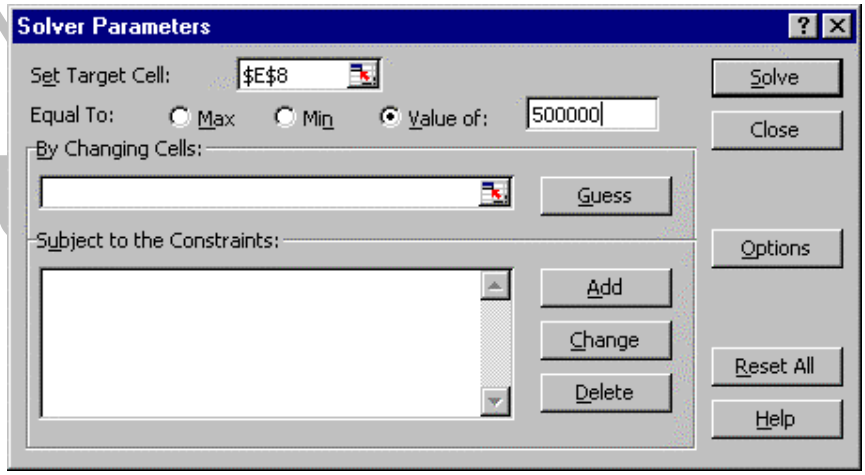
- **Formulas and functions used:**
- In cell E4 we have used the formula =C4*D4
- In cell E5 we have used the formula =C5*D5
- In cell E6 we have used the formula =C6*D6
- In cell E8 we have used the function =SUM(E4:E7)

- When you have entered all the data, formulas and functions as outlined above, click on the cell **E8**.
- Click on the **Tools** drop down menu, and select **Solver**. You will see the **Solver** dialog box, as illustrated below.



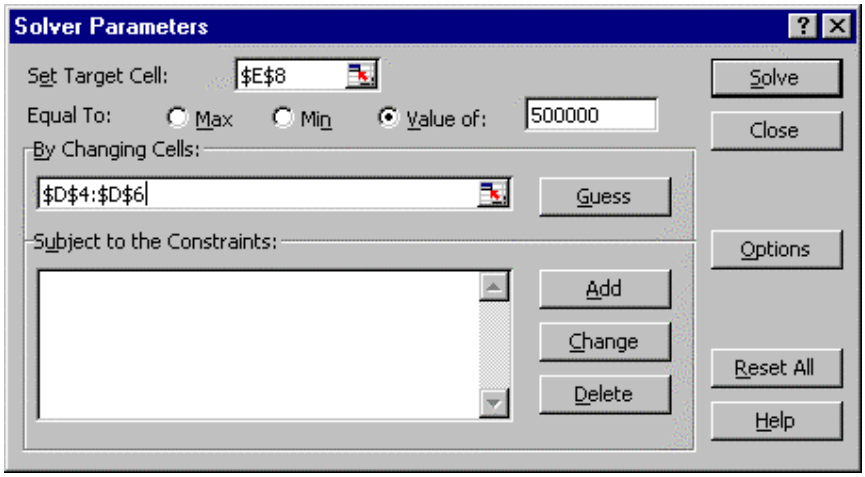

- Make sure that the text box, **Set Target Cell** contains **$E$8**. If you selected this cell prior to starting Solver this cell reference should be entered here automatically.
- Click on the **Value of** button and in the text box to the side of it enter the number **500000** (this is setting the maximum size of our budget). The dialog should appear as illustrated below.





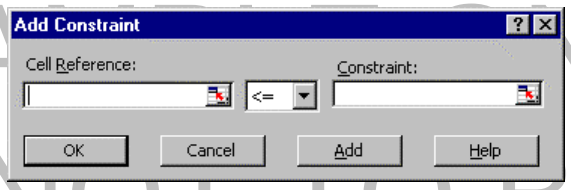
- Next we need to decide which values need to change in order to fit our requirements. In this case the values to be changed are the numbers of each class of car that we can afford.
- Click in the **By Changing Cells** part of the dialog box
- Either enter the information required by typing in **$D$4:$D$6**

  ***OR*** use the mouse to drag across these cells **D4** to **D6** and the cell reference will be entered automatically.

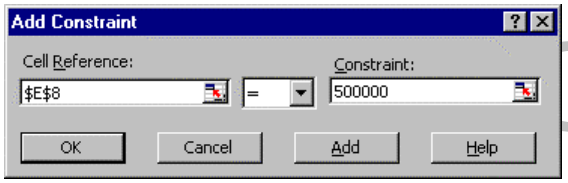



- Next we need to tell Excel what constraints we have, such as limited budget etc.
- Click on the **Add** button and you will see the **Add Constraint** dialog box, as illustrated below.





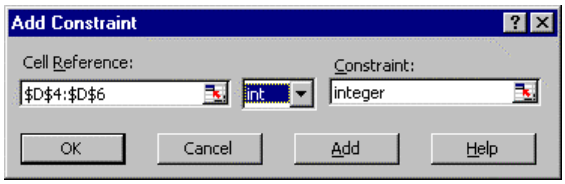

- To enter the restraint that we have a budget limited to $500,000 , in the **Cell Reference** text box enter the cell **$E$8**.
- Then click on the down arrow in the center part of the dialog box, and select the = symbol.
- In the **Constraint** part of the dialog, enter the number **500000**.
- The dialog box will resemble that shown below.



- To force Excel to realize that we can not buy part of a car just whole numbers of cars we need to add another constraint.
- Click on the **Add** button ***(NOT THE OK BUTTON).***
- In the **Cell Reference** text box either enter the information **$D$4:$D$6**

  ***OR*** use the mouse to drag across these cells **D4** to **D6** and the cell reference will be entered automatically.

- In the central part of the dialog box, click on the down arrow and select **int** which will force Excel to only use integer (i.e. whole) numbers in the selected range. The dialog box will look as below.

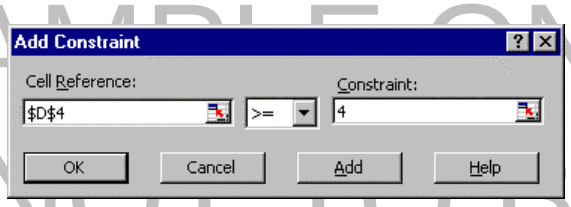



- Next we need to tell Excel that we must have a minimum of **four** small cars.
- Click on the **Add** button.
- In the **Cell Reference** text box either enter the reference **$D$4**

  ***OR*** use the mouse to click on the cell **D4** and the cell reference will be entered automatically.

- Select **>=** from the central part of the dialog box.
- In the **Constraint** box, enter the value **4**.

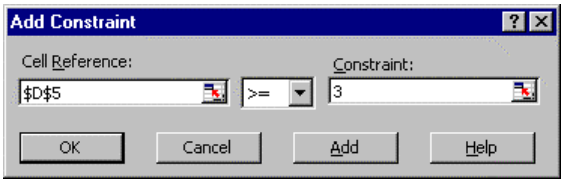
- The dialog will be as illustrated below.



- Next we need to tell Excel that we must have a minimum of **three** medium sized cars.
- Click on the **Add** button.
- In the **Cell Reference** text box either enter the reference **$D$5**

  ***OR*** use the mouse to click on the cell **D5** and the cell reference will be entered automatically.

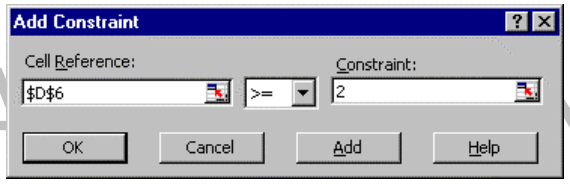
- Select **>=** from the central part of the dialog box.
- In the **Constraint** box, enter the value **3**. The dialog will be as illustrated below.



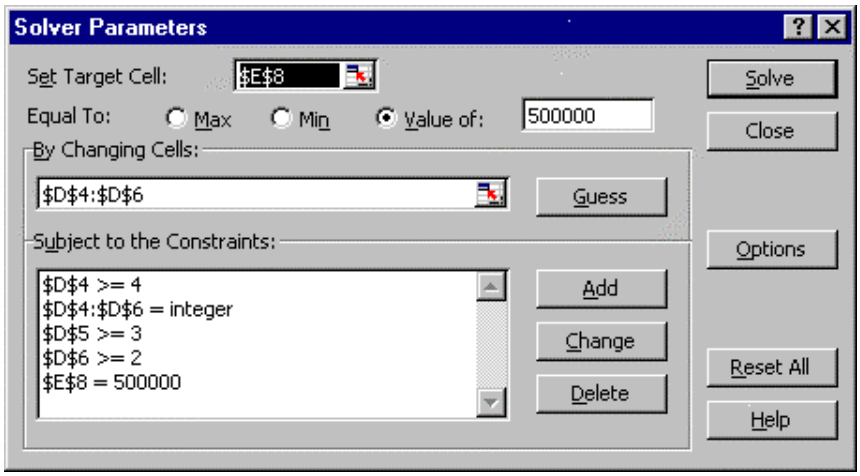

- Next we need to tell Excel that we must have a minimum of **two** large cars.
- Click on the **Add** button.
- In the **Cell Reference** text box either enter the reference **$D$6**

  ***OR*** use the mouse to click on the cell **D6** and the cell reference will be entered automatically.

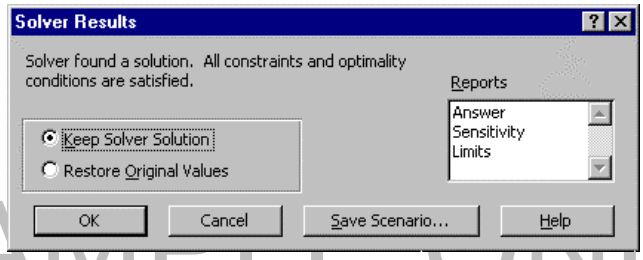
- Select **>=** from the central part of the dialog box.
- In the **Constraint** box, enter the value **2**. The dialog will be as illustrated below.



- We are now ready to solve the purchasing problem.
- Click on the **OK** button and you will see the dialog box below.




- Click on the **Solve** button. After a short time you will see the following dialog box.

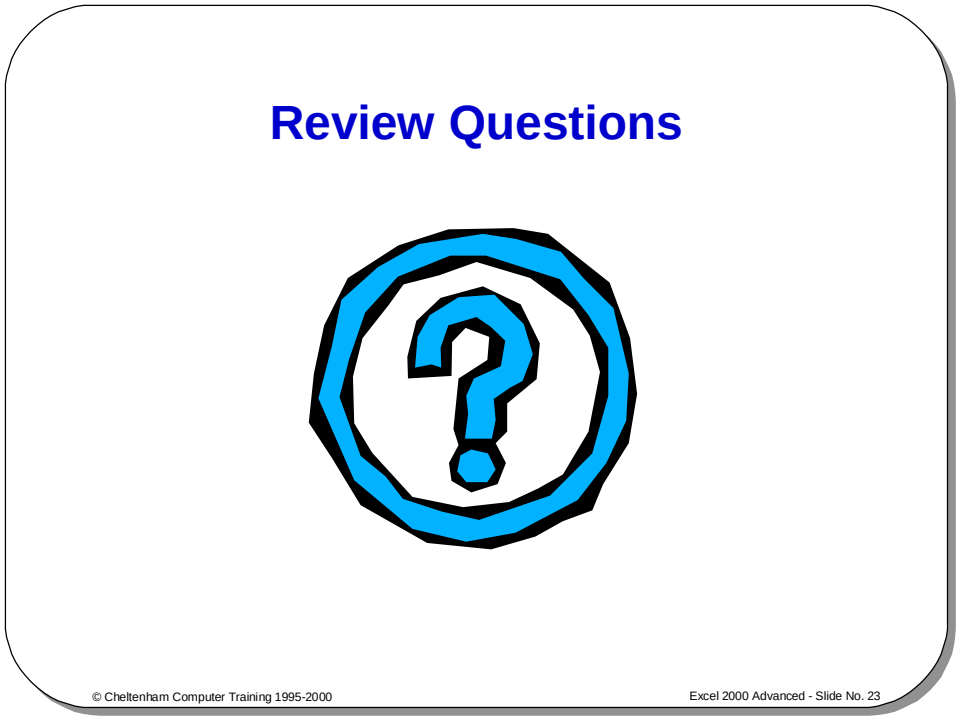





- Click on the **OK** button to accept the solution.
- The data in your workbook will now be as illustrated below.



| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | **The New Car Fleet** | | | |
| 2 | | | | | |
| 3 | | **Class of Car** | **Cost per Car** | **No of Cars in Class** | **Total price/class** |
| 4 | | **Small** | $14,000 | 10 | $140,000 |
| 5 | | **Medium Sized** | $20,000 | 6 | $120,000 |
| 6 | | **Large** | $40,000 | 6 | $240,000 |
| 7 | | | | | |
| 8 | | | | **Total cost of the car fleet** | $500,000 |




## Review Questions - How Would You ...

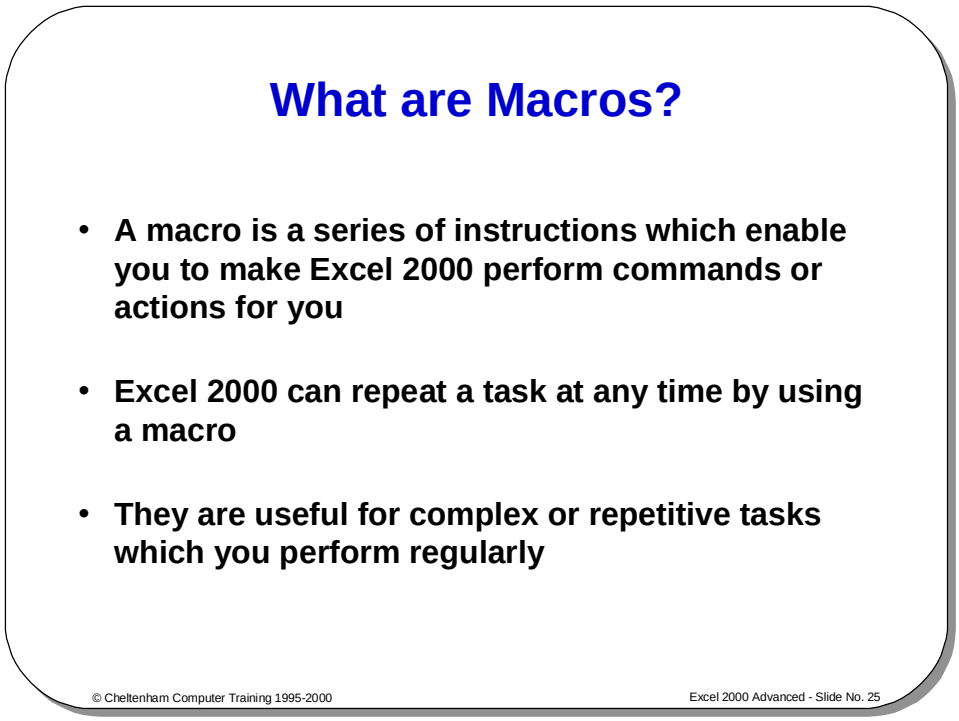
| | |
|---|---|
| 1. | Use Goal Seek? |
| 2. | Use Graphical Goal Seeking? |
| 3. | Use the Scenario Manager? |
| 4. | View alternative scenarios? |
| 5. | Use Solver? |

# Macros and Custom Controls

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Record a Macro
- Assign a macro to a shortcut key
- Run a macro using the Tools Macro command
- Run a macro assigned to a shortcut key
- Create option buttons
- Attach a macros to a button
- Assign a macro to a button which already exists
- Format the text inside a button

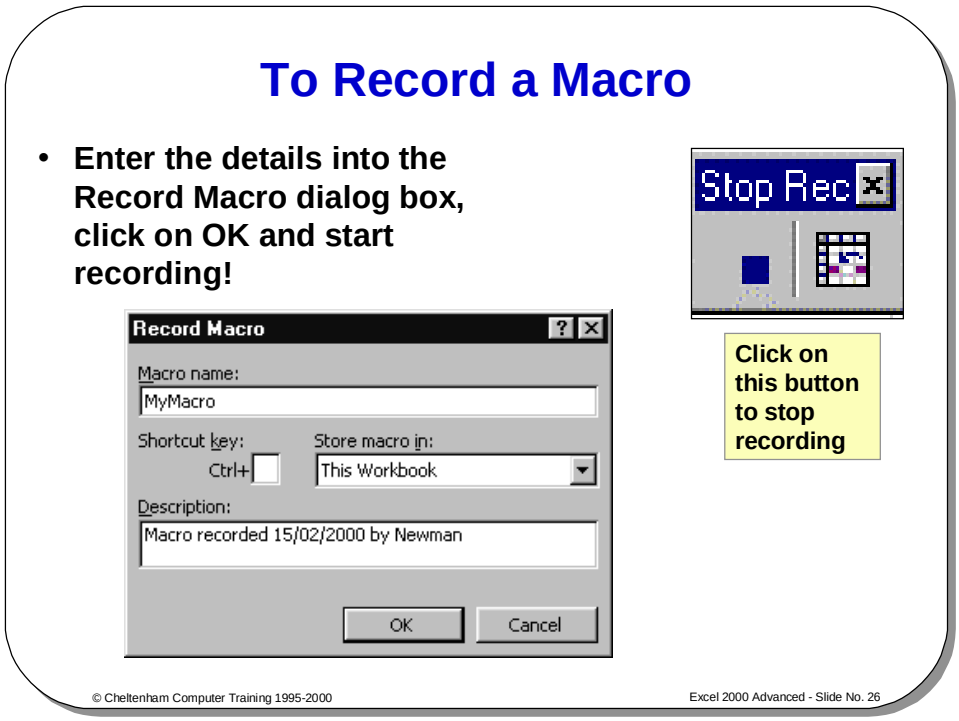



## What are Macros?

**Background**

If you are not a programmer then do not worry! Macros do not necessarily involve programming! The easiest way to create a new macro is to have Excel record your actions and then store these actions as a macro.

Macros can be played back at any time or modified at any time.

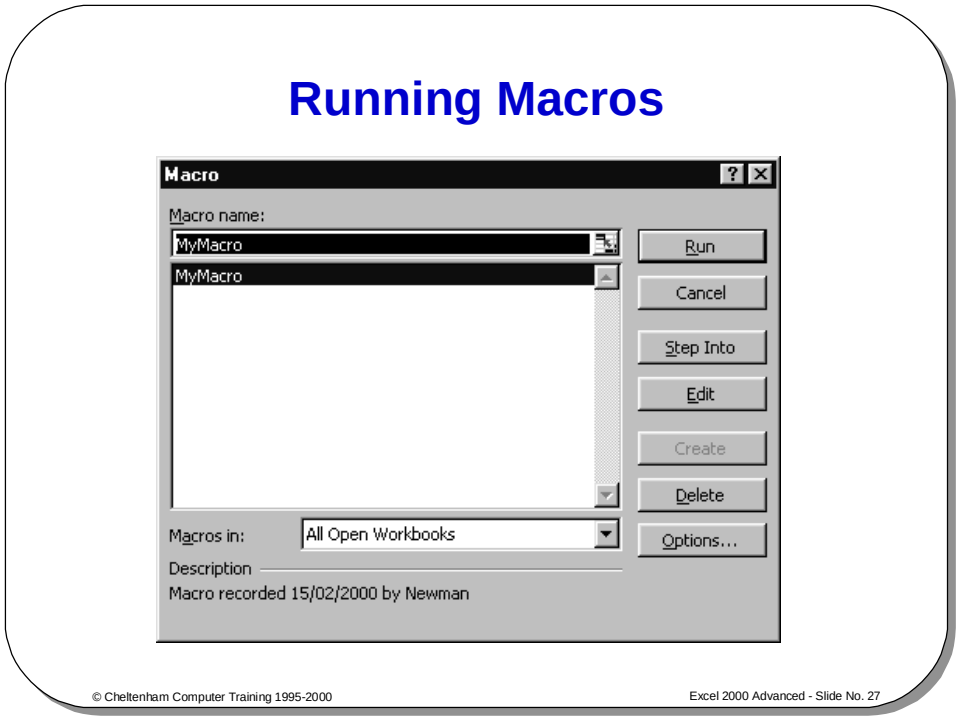



## To Record a Macro

- Select **Macro** from the **Tools** menu.
- Select **Record New Macro** to display the **Record Macro** dialog box.
- Enter a name for the macro in the **Macro name** text box.
- The default description is displayed in the **Description** text box, and contains the date and user name. If required, click in the **Description** text box and enter a new description.
- To begin recording, select **OK**.
- Start performing the actions you want the macro to record. Excel will record them.
- To stop recording, click the **Stop Recording** button on the **Stop Recording** toolbar, or choose the **Tools Macro Stop Recording** command.

**To assign a macro to a shortcut key**

- From the **Tools** menu, choose **Macro** and then **Macros** to display the **Macro** dialog box.
- Click on the macro name to which you want to assign a shortcut key.
- Select the **Options** button to display the **Macro Options** dialog box.
- Type a letter into the **Ctrl+** text box. This key combination will be used to invoke the macro.
- Select **OK** to return to the **Macro** dialog box.
- Click on the **Close** icon in the top right of the dialog box.




## Running Macros

**To run a macro using the Tools Macro command**

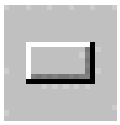
- From the **Tools** menu, select **Macro** and then **Macros** to display the **Macro** dialog box.
- Click on the name of the macro you wish to run in the **Macro Name** list box.
- Select the **Run** button.

**To run a macro assigned to a shortcut key**

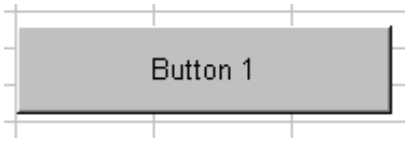
- Press **Ctrl+** the letter which you assigned.

## Creating a Button in a Worksheet and Assigning a Macro to it

– **Create a button using the Forms toolbar, and assign a macro to it**

**Button Icon**

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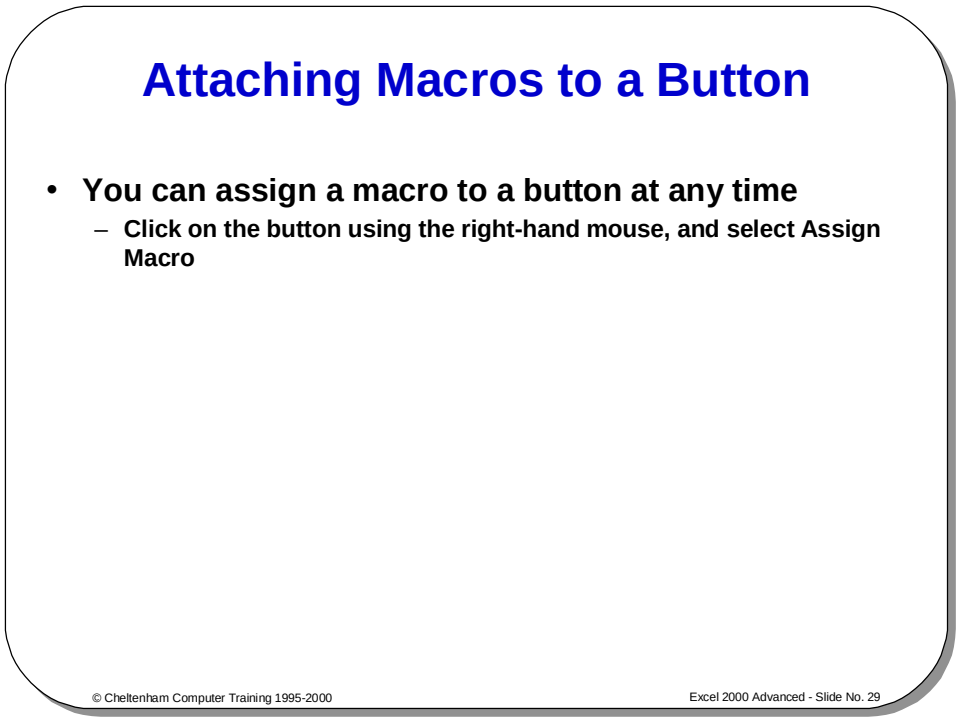
## Creating a Button in a Worksheet and Assigning a Macro to it

**To create a button and assign a macro to it**

- To display the Forms toolbar, right click on any toolbar that is visible and from the pop-up menu that is displayed select **Forms**.
- Select the **Button** icon from the **Forms** toolbar.
- To create a button, click and drag on the worksheet.
- When you release the mouse button, the **Assign Macro** dialog box will be displayed.
- Click on the **Record** button, and the **Record Macro** dialog box will be displayed.
- Enter a name for the macro, in the **Macro name** text box.
- Click on the **OK** button.
- Record your macro in the normal way, and click on the **Stop Macro** button when you have finished.
- To rename the button text, right click on the button and select **Edit Text** from the pop-up menu.
- To run the macro simply click on the button.




## Attaching Macros to a Button

**To assign a macro to a button which already exists**

- Click on the button with the right-hand mouse button to display the shortcut menu.
- Select **Assign Macro** to display the **Assign Macro** dialog box. From the **Macro name** list box, choose a macro or record a new one using the **Record** button.
- To assign the macro to the button, select **OK**. If there is already a macro assigned to the button, it will be changed.

**To delete a button from a worksheet**

- Display the shortcut menu by clicking on the button you want to delete with the right-hand mouse button.
- Click on the gray area surrounding the box.
- To delete the button, press the **Delete** key.

## Drawing, Editing and Formatting Buttons

- **You can create buttons which may be inserted into an Excel 2000 worksheet and macros can then be attached to them**
- **If you click on these buttons you can run the macro (or any other action associated with the button)**
- **Make sure that you know how:**
  - **To draw a button on a worksheet**
  - **To change a button name**
  - **To format the text inside a button**

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# Drawing, Editing and Formatting Buttons

**To draw a button on a worksheet**

- On the **Forms** toolbar, click on the **Create Button** icon.
- Click on the worksheet, and drag diagonally to create a button of any size. The **Assign Macro** dialog box will be displayed to allow you to attach a macro to the new button.
- If you do not have a macro, you can either record one by choosing the **Record** button, or click the **Cancel** button to remove the dialog box.
- If the macro you want to use is displayed in the **Macro name** text box, click on it and choose **OK** to attach it to the button.

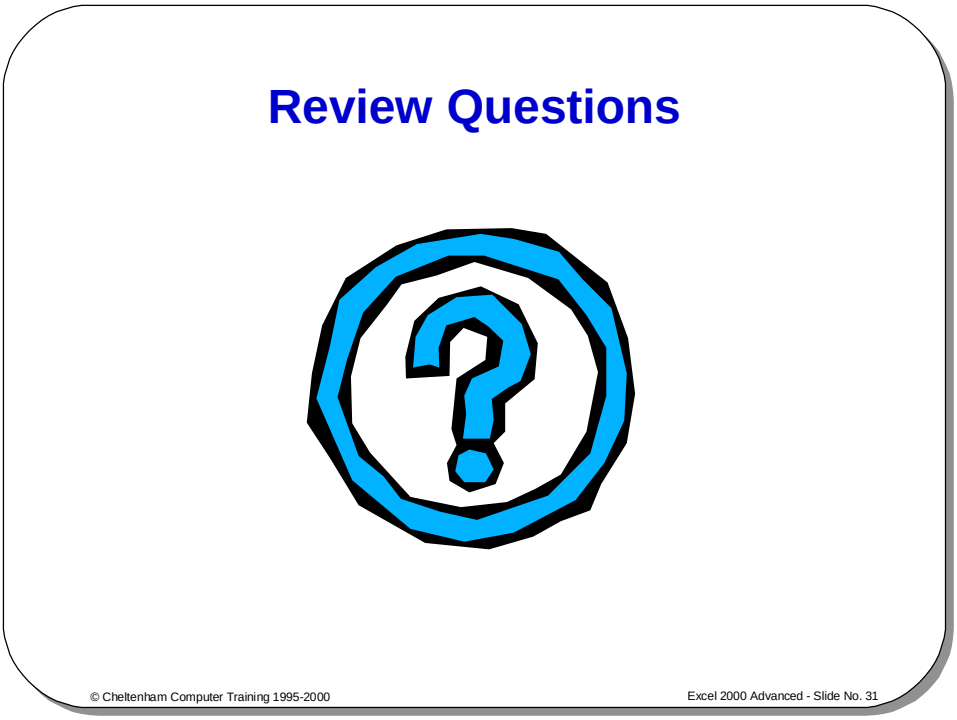
**NOTE:** Clicking on an existing button with the right-hand mouse button, allows you to move it via a shortcut menu. If you click on the button's border with the left-hand mouse button you can drag the button to a new location. If there is no macro attached to the button, you can drag it with the left-hand mouse button.

**To change a button name**

- Click on the button with the right-hand mouse button to display the shortcut menu.
- Remove the shortcut menu by clicking on the face of the button with the left-hand mouse button. This lets Excel know that you want to edit the button.
- Click on the existing title text with the left-hand mouse button to highlight the title.
- Type in a new title and click on a cell to deselect the button.

**To format the text inside a button**

- To display the shortcut menu, click on the button with the right-hand mouse button.
- From the shortcut menu, choose **Format Control** to display the **Format Control** dialog box.
- To select a font and other types of formats for the button text, choose the **Font** tab.
- To align the text inside the button, click on the **Alignment** tab. You can also change the orientation of the button text.
- Select **OK** when you have finished.




## Review Questions - How Would You ...

| | |
|---|---|
| 1. | Record a Macro? |
| 2. | Assign a macro to a shortcut key? |
| 3. | Run a macro using the Tools Macro command? |
| 4. | Run a macro assigned to a shortcut key? |
| 5. | Create option buttons? |
| 6. | Attach a macros to a button? |
| 7. | Assign a macro to a button which already exists? |
| 8. | Format the text inside a button? |

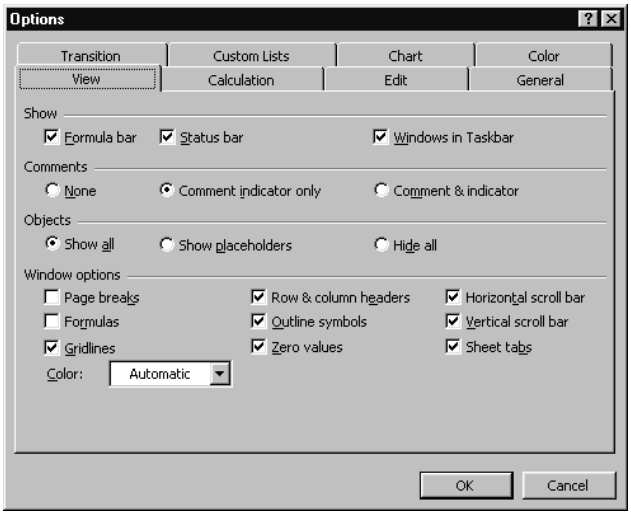
# Customizing Excel

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Use the View Options
- Use the Calculation Options
- Use the Edit Options
- Use the Transition Options
- Use the General Options
- Use the Custom Lists Options
- Use the Chart Options
- Use the Color Options
- Customize a toolbar
- Reset a toolbar which you have customized

## Customizing Excel 2000 - Options

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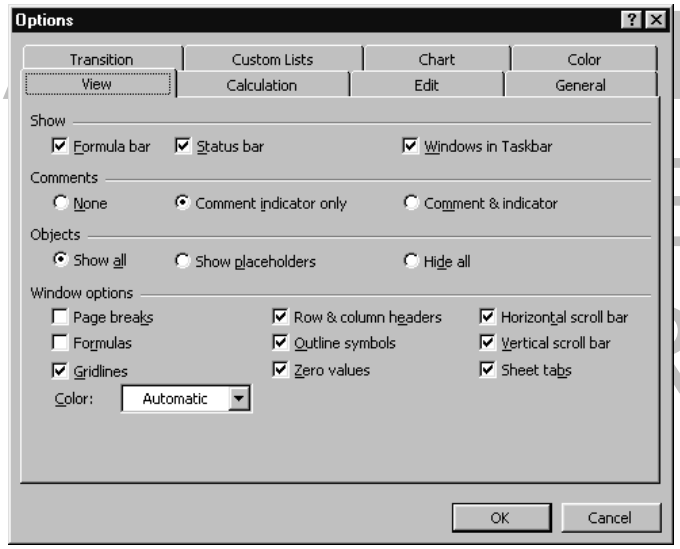
# Customizing Excel 2000 - Options

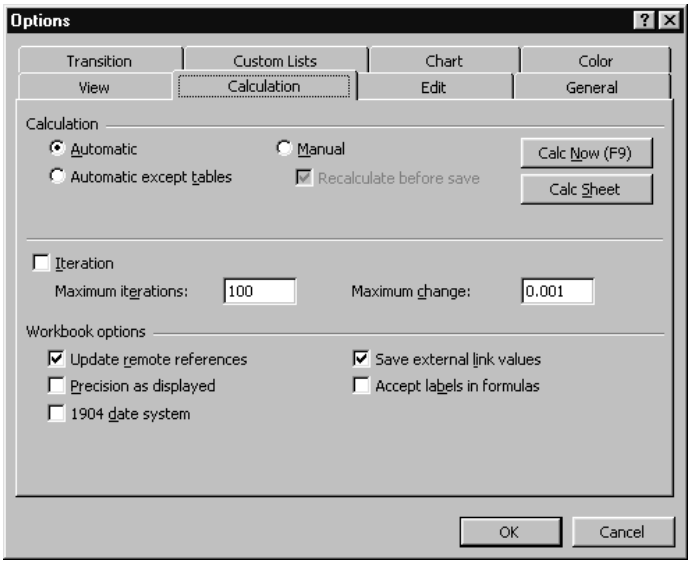
**To view Excel Options**

- Click on the **Tools** drop down menu and select **Options** command.
- The available tabs are as follows.

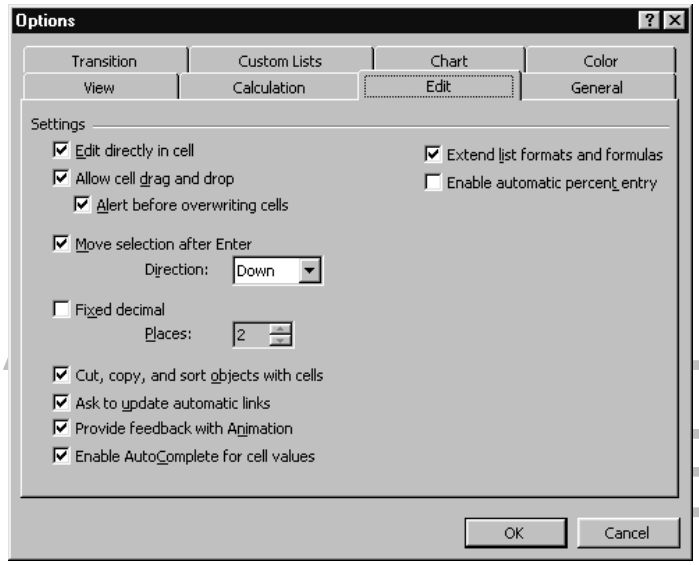
**View**



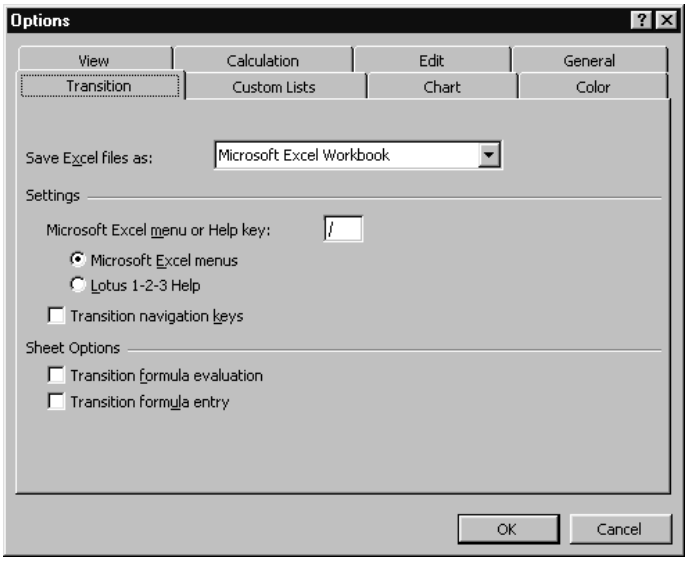
## Calculation



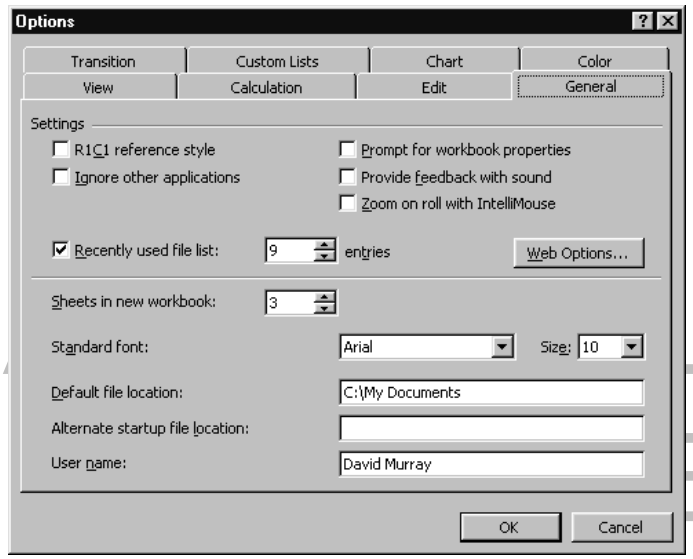

## Edit



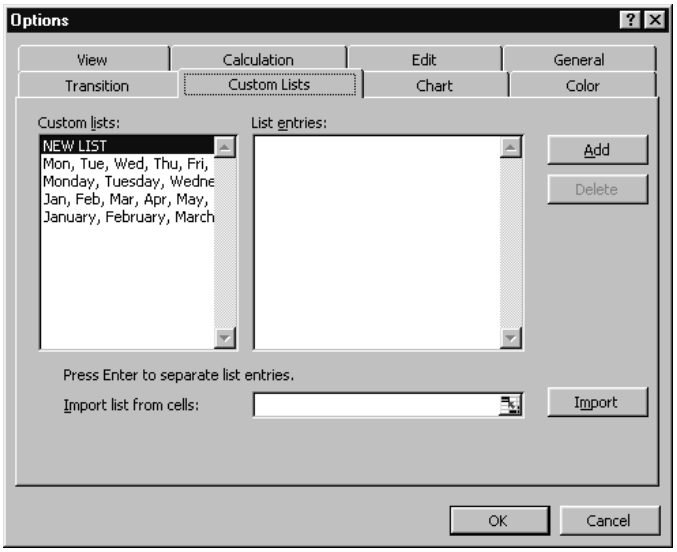
**Transition**



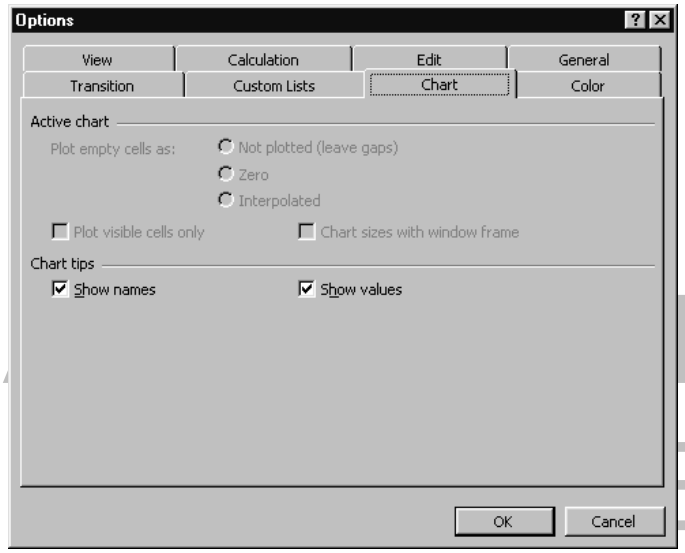

**General**



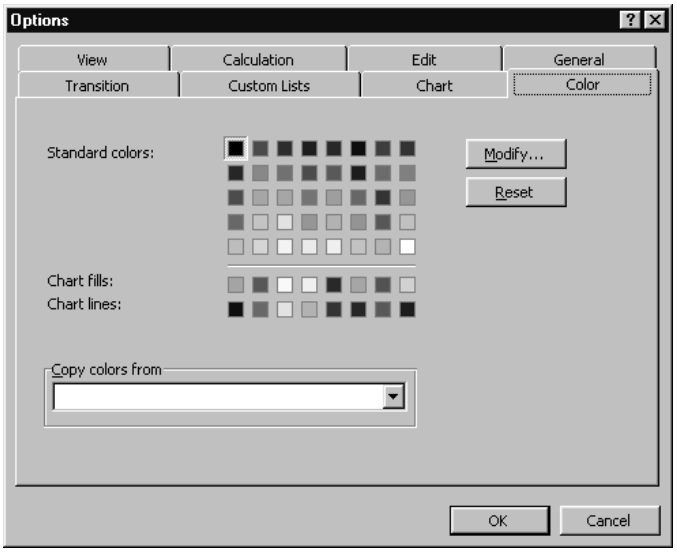
## Custom Lists

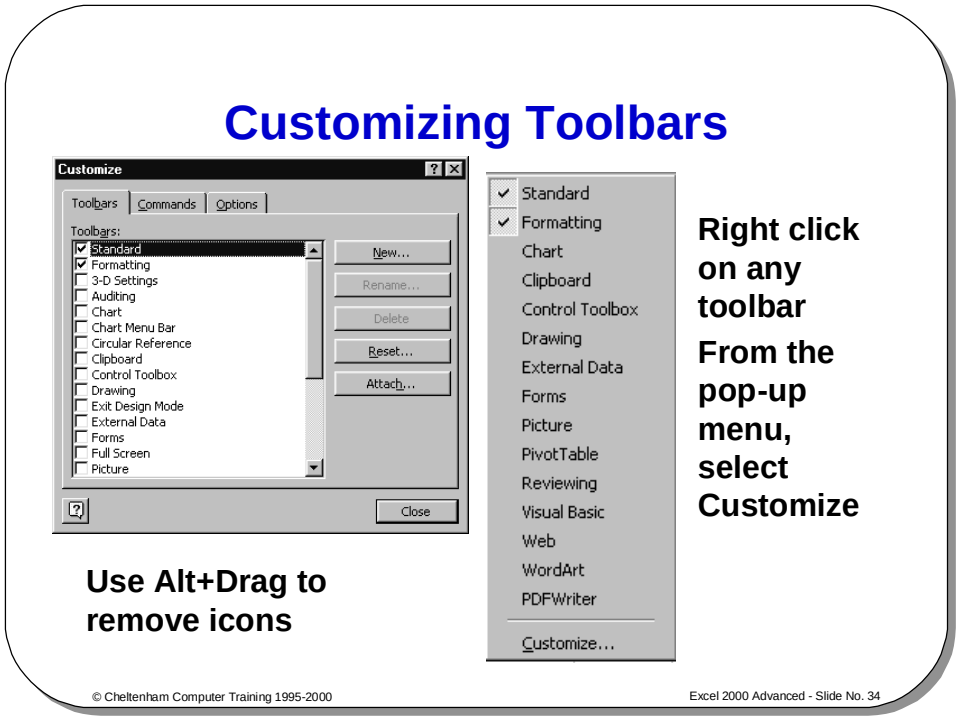



## Chart



**Color**






## Customizing Toolbars

**To move a toolbar**

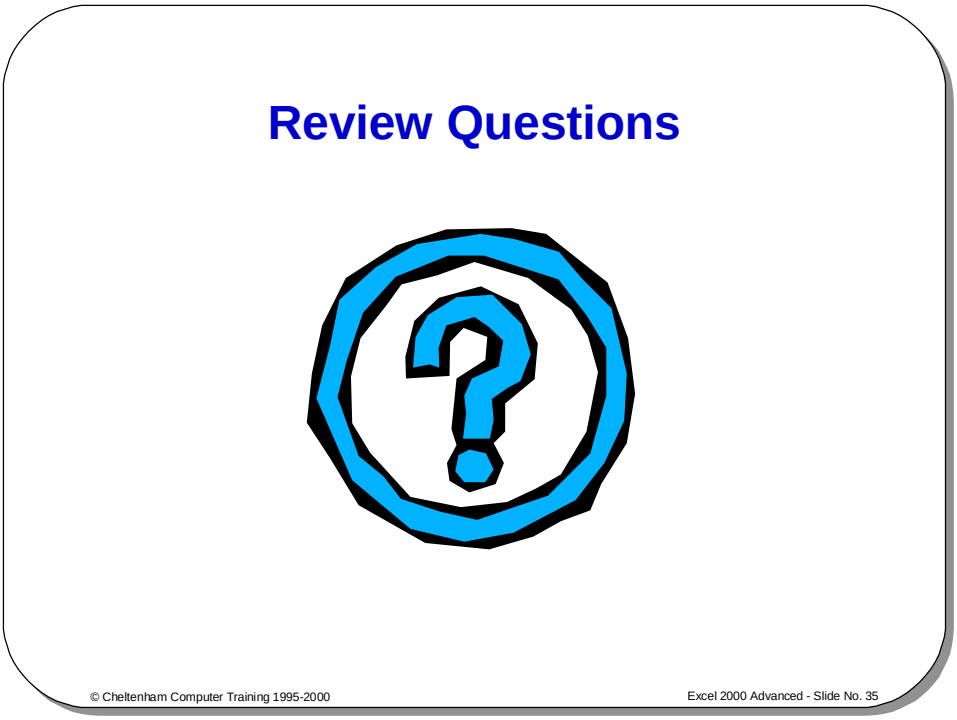
- Click on the toolbar you wish to move. Make sure you click on the toolbar background, not the buttons.
- Drag the toolbar to a new location.

**To customize a toolbar**

- Display the toolbar you wish to customize.
- From the **View** menu, select **Toolbars** and then **Customize** to display the **Customize** dialog box.
- Click on the **Commands** tab to display the **Commands** folder.
- To add a button to the toolbar, select the category you require from the **Categories** list box. Click on the button you want and drag it to the toolbar.
- To delete a button, drag it off the toolbar.
- Select **Close** when you have finished.

**To reset a toolbar which you have customized**

- From the **View** menu, select **Toolbars** and then **Customize** to display the **Customize** dialog box.
- Click on the **Toolbars** tab to display the **Toolbars** folder.
- In the **Toolbars** list box, highlight the name of the toolbar.
- Click the **Reset** button to return the toolbar to its original format.
- Select **Close** when you have finished.




## Review Questions - How Would You ...

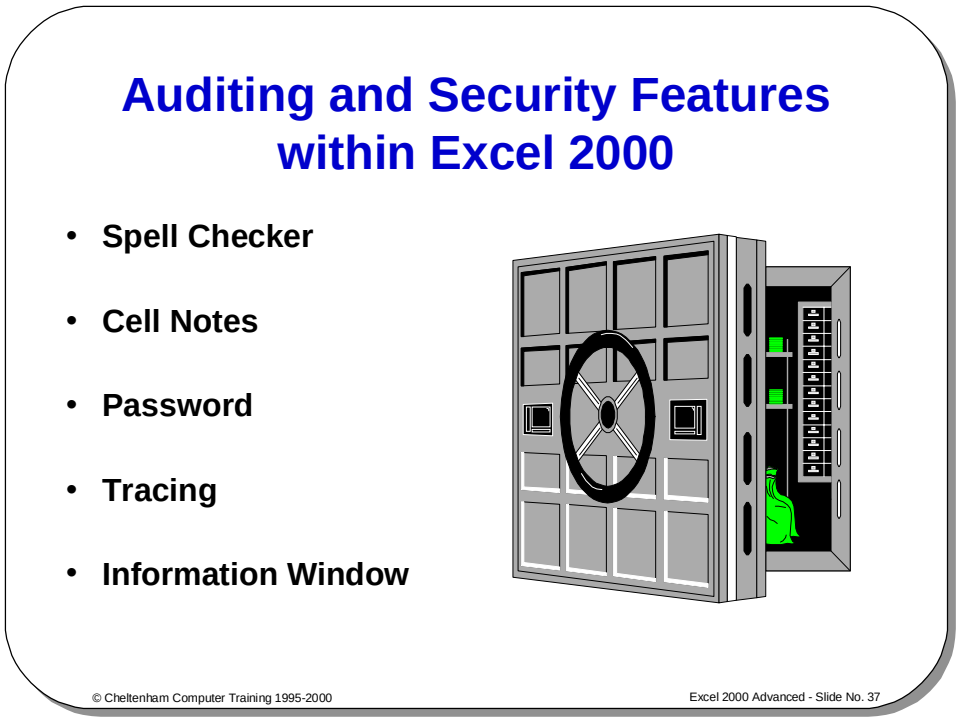
| | |
|---|---|
| 1. | Use the View Options? |
| 2. | Use the Calculation Options? |
| 3. | Use the Edit Options? |
| 4. | Use the Transition Options? |
| 5. | Use the General Options? |
| 6. | Use the Custom Lists Options? |
| 7. | Use the Chart Options? |
| 8. | Use the Color Options? |
| 9. | Customize a toolbar? |
| 10. | Reset a toolbar which you have customized? |

# Security and Proofing within Excel

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Use the spell checker
- Share a workbook
- Set data validation for a range of cells
- Set Input messages
- Set Error Alerts
- Specify a password for opening or saving a workbook
- Use passwords
- Create backups
- Hide worksheet elements
- Protect cells
- Use Auditing Tools
- Manipulate comments




## Auditing and Security Features within Excel 2000

**Background**

If worksheets are developed for other users, it is important that the users find them easy to use, and hard to "break". Protection should be built-in to the worksheets to prevent unauthorized tampering with the sheet, but allow data entry, as required, to specific parts of the sheet.

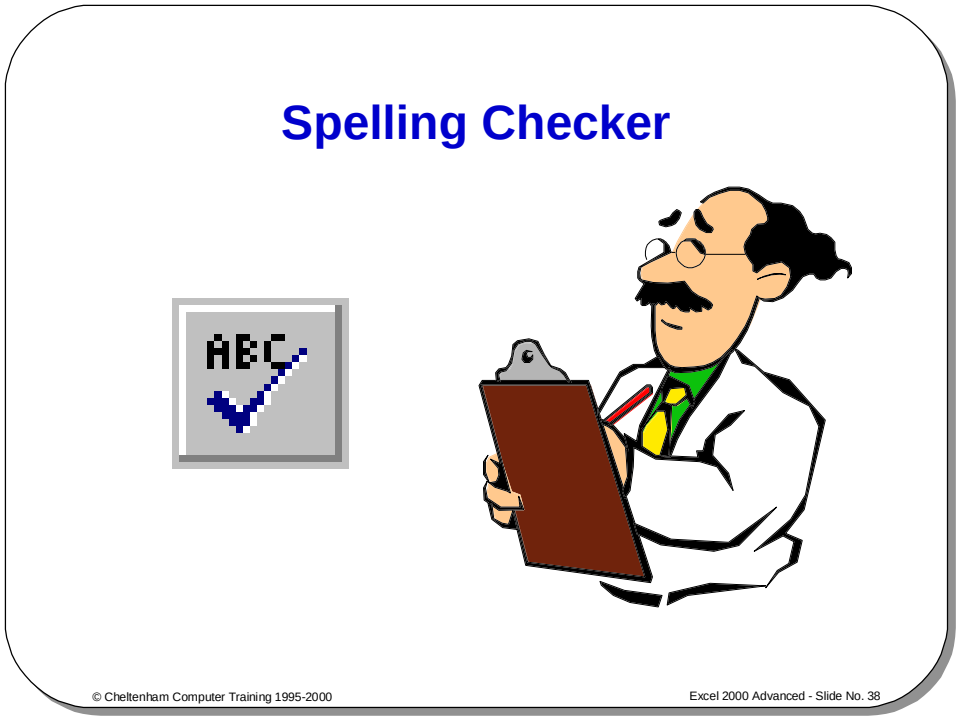
It is also very important that a worksheet is properly audited for errors, prior to release on other unsuspecting users.

When developing worksheets for others bare in mind the following:

- Protect items such as formulas and data that must not be changed.
- Protect or hide any sensitive information contained within the worksheet.
- You may want worksheets to be shared across a network.
- You should document any calculation or concepts contained within a workbook.

Levels of security offered by Excel:

- Top level security is offered by use of a password that restricts unauthorized users from opening a workbook file.
- Workbook protection.
- Worksheet protection.
- Object protection (cells or charts).




## The Spell Checker

**To use the spell checker**

- Select a single cell to check the entire worksheet.
- From the **Tools** menu, select **Spelling**.
- If no incorrect words are found, the **Spelling** dialog box will not appear. A box will appear to tell you that Excel has finished checking the spelling.
- If the **Spelling** dialog box is displayed, select one of the following options:

| | |
|---|---|
| **Add** | Will add the word to the current custom dictionary. |
| **Cancel** | Will stop the spelling check. |
| **Change** | Will change this occurrence of the word to the word displayed in the **Change to** text box. |
| **Change All** | Will change all occurrences of the word to the word displayed in the **Change to** text box. |
| **Ignore** | Will ignore the word and continue. |
| **Ignore All** | Will ignore all further occurrences of the word in the document. |
| **Suggest** | Will suggest alternative words from the dictionary. |

- If you began the spelling check in the middle of the worksheet, you may be asked whether you want to continue checking at the beginning of the sheet. Select **Yes**.
- When the spelling check is complete, a box will appear. Select **OK**.

## What Are Shared Workbooks?

- **A workbook can be made available over a network and many people can work on the shared workbook at the same time**
- **Each user can modify the workbook (including the data, rows, columns etc)**
- **Each user can apply filters to the data and not affect other users sharing the workbook**

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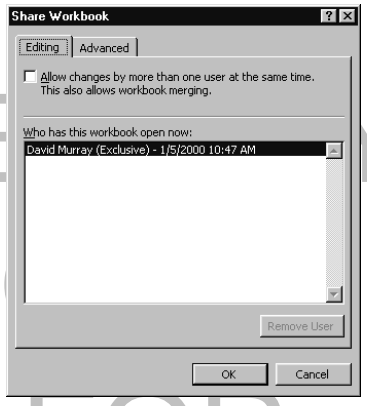
# What Are Shared Workbooks?

**To allow workbook sharing**

- From the **Tools** drop down menu, select the **Share Workbook** command, which will display the **Share Workbook** dialog box.
- Click on the **Allow changes by more than one user at the same time** check box.
- Click on the **OK** button and the system will force you to save your workbook at this point.
- When you re-open the **Share Workbook** dialog box, you will notice that the Workbook is no longer marked as exclusive.



## Advanced Workbook Sharing Options

- **Track Changes**
- **Update Changes**
- **Conflicting Changes Between Users**
- **Include in Personal View**



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## Advanced Workbook Sharing Options

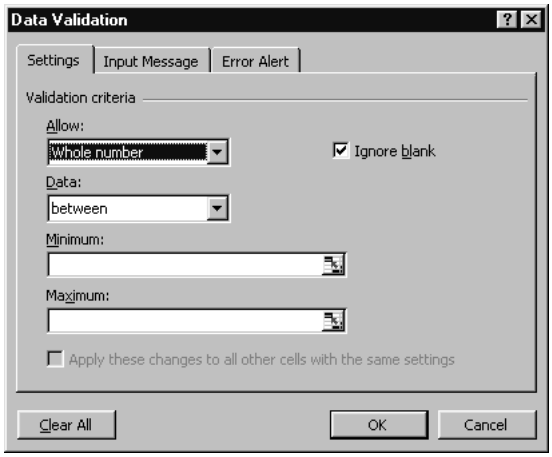
**To customize the Advanced Workbook Sharing Options**

- Click on the **Tools** drop down menu and select the **Share Workbook** command. The **Share Workbook** dialog box will be displayed.
- Set the options as required.

| | |
|---|---|
| **Track changes** | Allows you to keep a log of changes which by default will be kept for 30 days. |
| **Update changes** | Allows you to see your changes and changes made by others each time you save. |
| **Conflicting changes between users** | The default **Ask me which changes win**, will cause the **Resolve Conflict** dialog to be displayed from which you can decide how to handle conflicting data. |
| **Include in personal view** | Allows you to specify your own print and filter details which will always be available to you when you use the workbook. |

## Data Validation

- **Allows you to specify the type of data that is entered into a range of cells**

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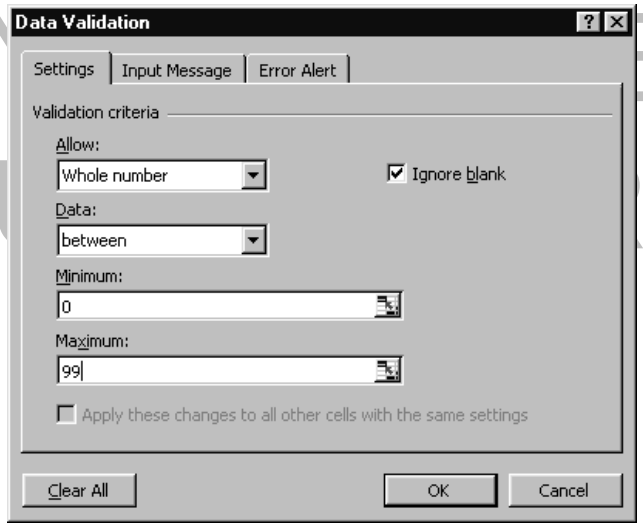
## Data Validation

**To set data validation for a range of cells**

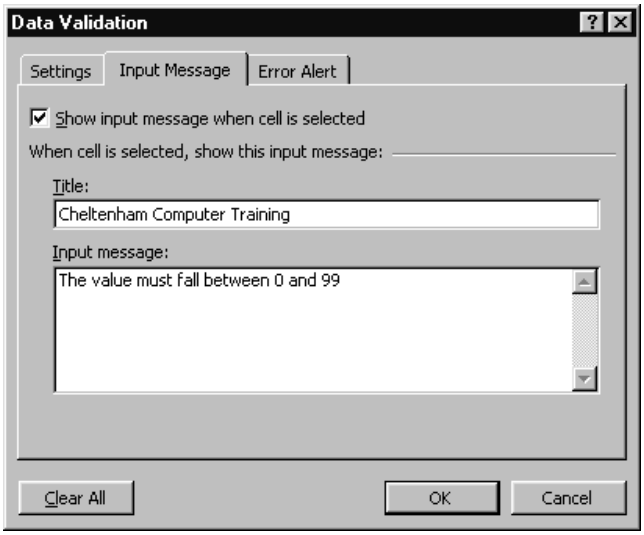
- Select a range within the worksheet that you wish to set data validation for.
- Click on the **Data** drop down menu and then select the **Validation** command, which will display the **Data Validation** dialog box.
- Click on the **Allow** drop down list, and select the type of data that you wish to allow to be entered into the selected range.
- In this case we have selected Whole number. Also we have decided to only allow whole numbers between 0 and 99.





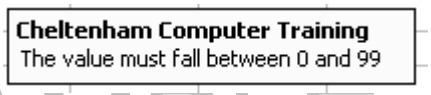
**To set Input messages**

- From the **Data Validation** dialog box, select the **Input Message** tab.
- In the **Title** text box enter the title for the message.
- In the **Input message** text box, enter the text of your message.



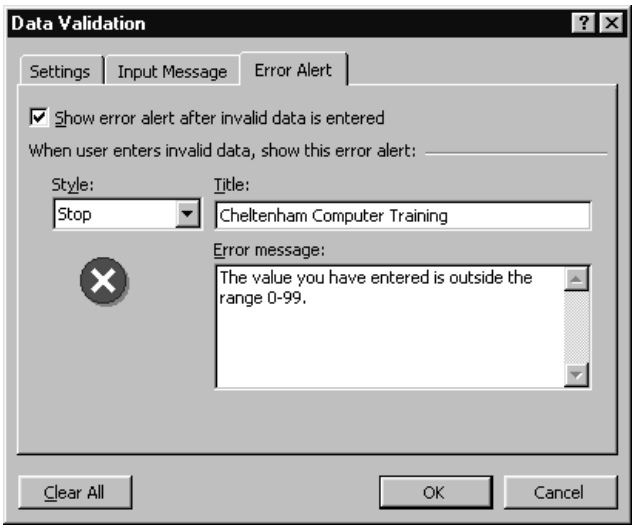

**To display Input messages**

- Once you have set an input message and closed the **Data Validation** dialog box, simply clicking on a cell that has been formatted with an input message will display the message, as illustrated below.



**To set Error Alerts**

- From the **Data Validation** dialog box, select the **Error Alert** tab.
- Use the **Style** drop down to select the style or error alert, **Stop**, **Warning** or **Information**.
- In the **Title** text box enter the title for the message.
- In the **Error message** text box, enter the text of your message.



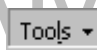

**To display an error alert**

- Once you have set an input message and closed the **Data Validation** dialog box, when you try to enter the wrong type of data into a data validated cell it will cause the error alert to be displayed when you press the Enter key, as illustrated below.


## Workbook Password Protection

**To specify a password for opening a workbook**

- From the **File** drop down menu select **Save As**.
- From the **Save As** dialog box, click on the **Tools** icon,




and from the drop down list displayed select **General Options**, which will display the **Save Options** dialog box, as illustrated right.


- Enter a password into the **Password to open** text box. In future you will be required to enter this password in order to open the file.
- Click on the **OK** button. You will be asked to re-type the password to ensure that it is consistent.
- The password can be up to 15 characters in length and is case sensitive.
- You will also be prompted for this password if a formula is entered in a different workbook, that refers to a cell(s) in the protected workbook.

**WARNING!**
If you forget the password there is no way to retrieve the information contained within the workbook.

**To specify a password for saving a workbook**

- From the **File** drop down menu select **Save As**.
- From the **Save As** dialog box, click on the **Tools** icon, 

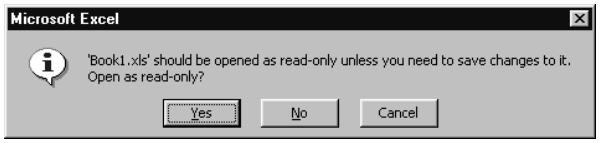
and from the drop down list displayed select **General Options**, which will display the **Save Options** dialog box.
- Enter a password into the **Password to modify** text box. In future you will be required to enter this password in order to save the file.
- Click on the **OK** button. You will be asked to re-type the password to ensure that it is consistent.
- The password can be up to 15 characters in length and is case sensitive.

This gives others the ability to open, view and edit a workbook, but not to save it with the same name. They must use the **Save As** command under the **File** drop down menu to save a modified version of the workbook with a different name.

**WARNING:** It is possible for another user to open a workbook file that is "Write Reservation Password" protected. They can save it to another name, and then use the underlying operating system (i.e. DOS) to rename the new version of the file with the original version of the protected file.

**To use the "Read-only recommended" option**

If this check box is checked, the following dialog box is displayed when the file is re-opened.




This option is useful as it deters people from "messing about" with workbooks that should not be altered, but at the same time allows people the chance to make changes if really required.

**To use the "Always create backup" option**

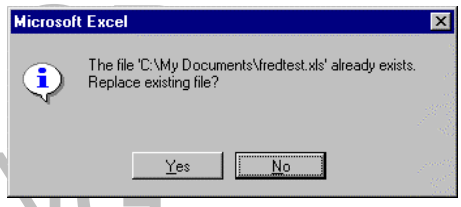
This check box forces Excel to create a backup copy of the file every time a worksheet file is saved. The file extension **BAK** is used, and the backup file is saved in the same folder as the original file.

You can open the backup file if the original file becomes corrupted, or if you have made a series of mistakes in the original (which you did not notice until you re-saved the original).

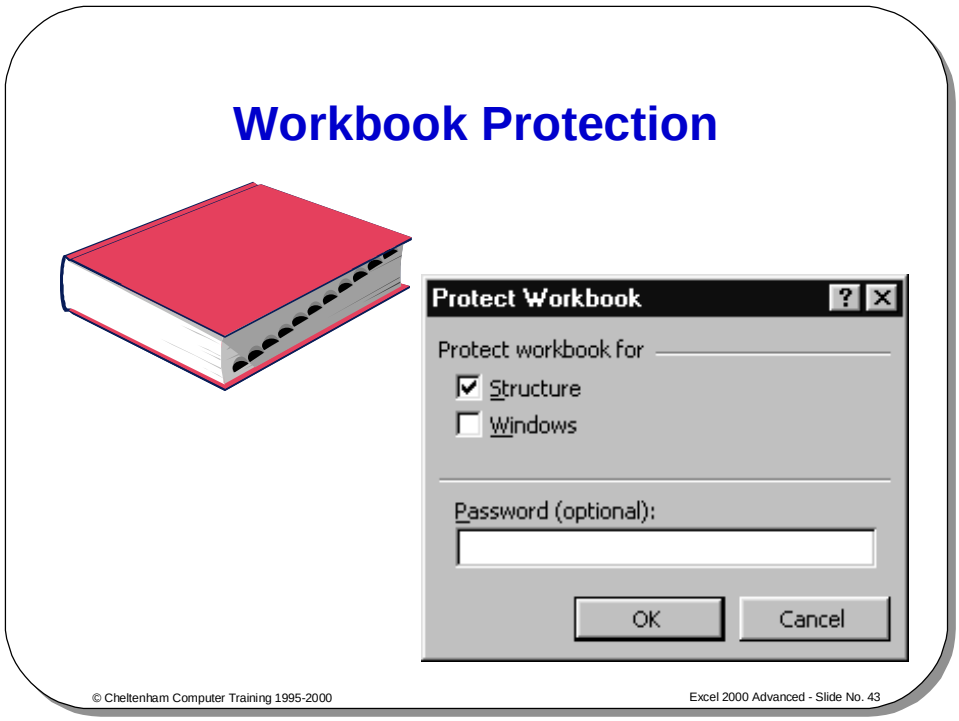
**WARNING!** All Excel automatic backup files are stored with the file extension **BAK**. If you had two files in the same folder, one called **CCT.XLS** and the other called **CCT.XLT**, then the backup files would overwrite each other!

**To remove a password from an Excel workbook**

- Open the workbook containing the password you wish to remove (by entering the password when prompted). From the **File** drop down menu select the **Save As** command, and then click on the **Tools** icon and then select the **General Options** command.




- Clear either or both passwords (asterisks will display that there is a password).
- Click on the **OK** button to close the **Save Options** dialog box.
- Click on the **Save** button to save the file, which will display the dialog box above.
- Click on the **Yes** button. The password has now been removed from the file




## Workbook Protection

**To protect a workbook**

- Select the **Protection** command from the **Tools** drop down menu, then select **Protect Workbook**.
- This will display the **Protect Workbook** dialog box as shown above.



| | |
|---|---|
| **Password** | Optional password of up to 255 characters, which is case sensitive. |
| **Structure** | Prevents any changes to the structure of the workbook if checked. I.e. you will be unable to edit, insert, delete, rename, copy, move or hide sheets. |
| **Windows** | Prevents changes to the workbooks size. The windows re-sizing controls (close, maximize, minimize and restore) are hidden. |

**WARNING**
Protecting a workbook will mean:

- You will be unable to add a new chart sheet using the ChartWizard
- You will be unable to display source data for a cell in a pivot table
- You will be unable to record a macro onto a new sheet
- You will be unable to use the scenario manager to create a new scenario

**To un-protect a workbook**

- Select the **Protection** command from the **Tools** drop down menu.
- Select the **Unprotect Workbook** command and if prompted, enter the required password.

## Worksheet Protection

- **Worksheet protection of**
  - **Cells and Charts**
  - **Graphic Objects**
  - **Scenarios**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# Worksheet Protection

**Background** Used to prevent users from altering the contents of a worksheet.

**To protect a worksheet**

- Select the **Protection** command from the **Tools** drop down menu.
- Select **Protect Sheet**, which displays the **Protect Sheet** dialog box, as illustrated above.

| | |
|---|---|
| **Password** | The password is optional and can be up to 255 characters. It is case sensitive. |
| **Contents** | Protects worksheet cells and charts. |
| **Objects** | Protects graphic objects on worksheets (including embedded charts). |
| **Scenarios** | Protects scenarios and prevents changes to scenario definitions. |

**To un-protect a worksheet**

- Select the **Protection** command from the **Tools** drop down menu.
- Select **Unprotect Sheet**.
- If prompted, enter the required password.

**Hiding sheets, rows or columns**

**TIP:** Instead of protecting a worksheet, you can hide an entire sheet, a row, or a column.

**To hide an entire sheet**

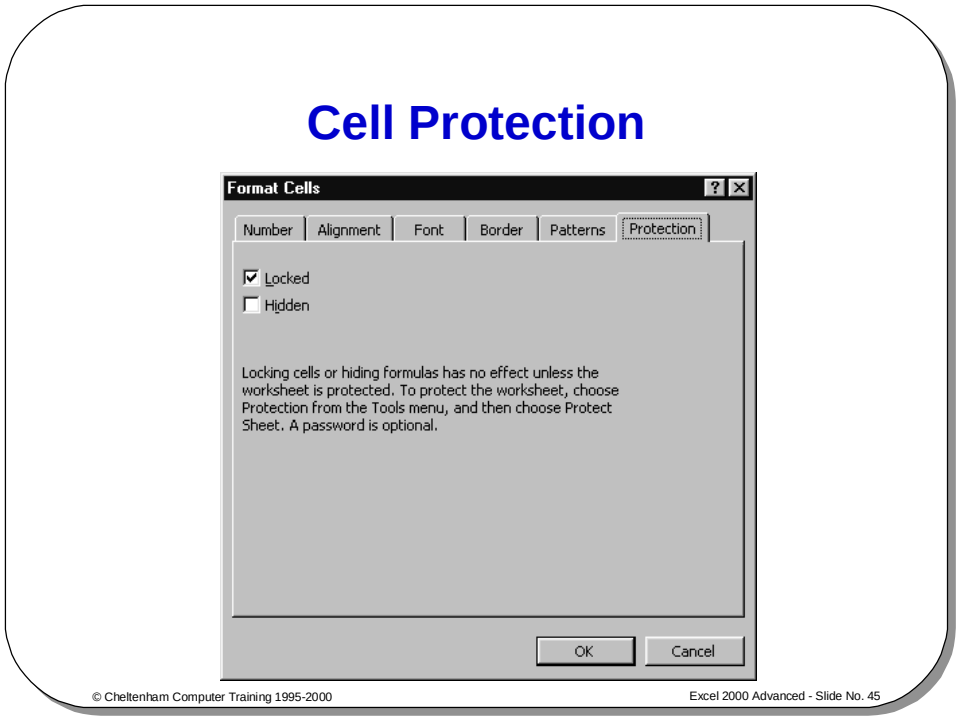
- Select **Sheet** from the **Format** drop down menu.
- Select **Hide**.

**To hide a row**

- Select the row you wish to hide.
- Select the **Row** command from the **Format** drop down menu.
- Select **Hide**.

**To hide a column**

- Select the column you wish to hide.
- Select the **Column** command from the **Format** drop down menu.
- Select **Hide**.




## Cell Protection

**To protect a cell**

- Select the **Cells** command from the **Format** drop down menu, which displays the **Format Cells** dialog box, and select the **Protection** tab as illustrated above.

**Locked** Prevents any modification to cells once the sheet is protected.

**Hidden** Hides formulae, after the sheet is protected.

**NOTE:**

1. Cell protection will not take effect until the worksheet is protected (with **Contents** checked).
2. By default all cells are locked. You must unlock any cell that you wish users to be able to edit BEFORE YOU LOCK THE WORKSHEET!

## Excel 2000 Auditing Tools

- **The audit feature allows you to detect problems which may occur in your worksheet formulas**
- **The toolbar can be displayed by selecting Toolbars from the View menu to display the Toolbars menu and then selecting Customize**
- **Click on the Toolbars tab and select the check box next to Auditing in the Toolbars list box and then select Close**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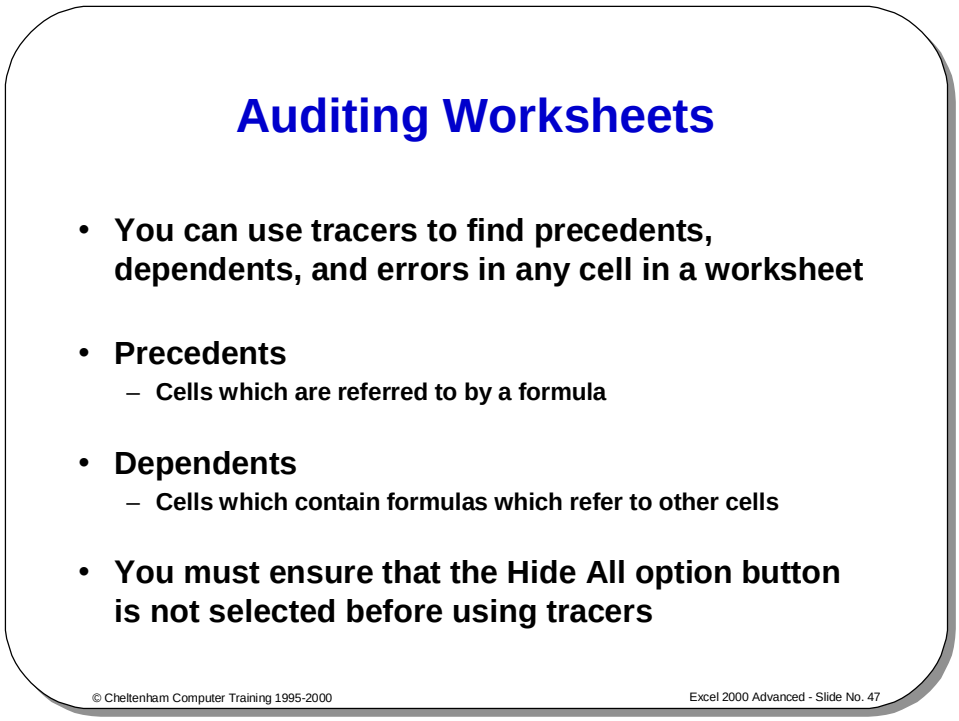
## Excel 2000 Auditing Tools

| | | |
|---|---|---|
| **New Comment** |  | Will display the **Cell Note** dialog box to enable you to attach text or audio comments. |
| **Remove All Arrows** |  | Will delete all arrows from an active worksheet. |
| **Remove Dependent Arrows** |  | Will delete dependent tracer arrows from an active worksheet. |
| **Remove Precedent Arrows** |  | Will delete the precedent tracer arrows from an active worksheet. |
| **Trace Dependants** |  | Arrows are drawn from the active cells to cells containing formulas which use the values in the active cell (*dependants*). |
| **Trace Error** |  | Will draw an arrow from cells which may have caused an error to an error value in an active cell. |
| **Trace Precedents** |  | Arrows are drawn from all cells which supply values directly to the formula in the active cell (*precedents*). |




## Auditing Worksheets

**To use tracers to audit a worksheet**

You can use tracers to find precedents, dependants and errors in any cell in a worksheet.

- **Precedents** - Cells which are referred to by a formula.
- **Dependants** - Cells which contain formulas which refer to other cells.



- You must ensure that the **Hide All** option button is not selected before using tracers. From the **Tools** menu, choose **Options** and click on the **View** tab. The **Hide All** option button in the **Objects** area should be white (not selected).
- Choose **OK** to exit.

**To trace the precedents of a cell**

- Highlight a cell which contains the formula you wish to trace.
- From the **Tools** menu, choose **Auditing Trace Precedents** or click on the **Trace Precedents** icon on the **Auditing** toolbar. Tracer arrows will be displayed. Solid or blue arrows indicate direct precedents of a selected formula; dotted or red arrows indicate a formula which refers to error values; dashed arrows with a spreadsheet icon refer to external worksheets.
- Whilst working with tracers you can click on the **Remove All Arrows** icon to remove all the tracers, or click the **Remove Precedent Arrows** icon on the **Auditing** toolbar to remove one level of precedents at a time.

**To trace the dependants of a cell**

- Highlight the cell (which should be referenced in a formula) you wish to trace.
- From the **Tools** menu, select **Auditing Trace Dependants** or click on the **Trace Dependants** button on the **Auditing** toolbar. Tracer arrows will be displayed, with blue or solid arrows indicating dependants of the selected formula.
- Whilst working with tracers you can click on the **Remove All Arrows** button to remove all the tracers, or click the **Remove Dependent Arrows** button on the **Auditing** toolbar to remove one level of dependants at a time.

**To trace errors in a cell**

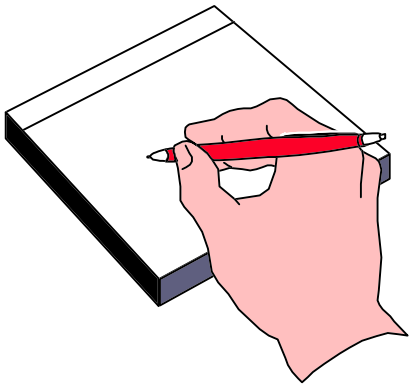
- Highlight a cell which contains an error value: #DIV /0!, #N/A, #NAME?, #NULL!, #NUM!, #REF!, #VALUE!.
- From the **Tools** menu, choose **Auditing Trace Error**, or click on the **Trace Error** button on the **Auditing** toolbar. Tracer arrows will be displayed, pointing to the cells.

**Dotted or red arrows** - indicate that the first precedent formula contains an error.
**Solid or blue arrows** - indicate that precedents of the first formula are producing an error.

- On the **Auditing** toolbar, click the **Remove All Arrows** button, or select **Auditing Remove All Arrows** from the **Tools** menu.

## Cell Notes and Documentation

- **A useful means of documenting the spreadsheet**



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## Cell Comments

**Background**

It is vitally important that complex worksheets are properly documented. This means that you will still be able to understand what you have done a month from now, and other people will easily understand any “clever bits” you have devised. One of the changes made within Excel 2000 is that cell notes now “pop-up” when you hold the mouse over cells that contain them.



**To add a comment**

- Select the cell to which you want to add the comment.
- From the **Insert** menu, choose **Comment** to display the **Cell Note** dialog box.
- Enter the text in the **Text Note** box.
- Click outside the box when finished.

**To display a comment**

- Move your mouse and hover over the cell containing the comment - after a short pause the comment will be displayed.

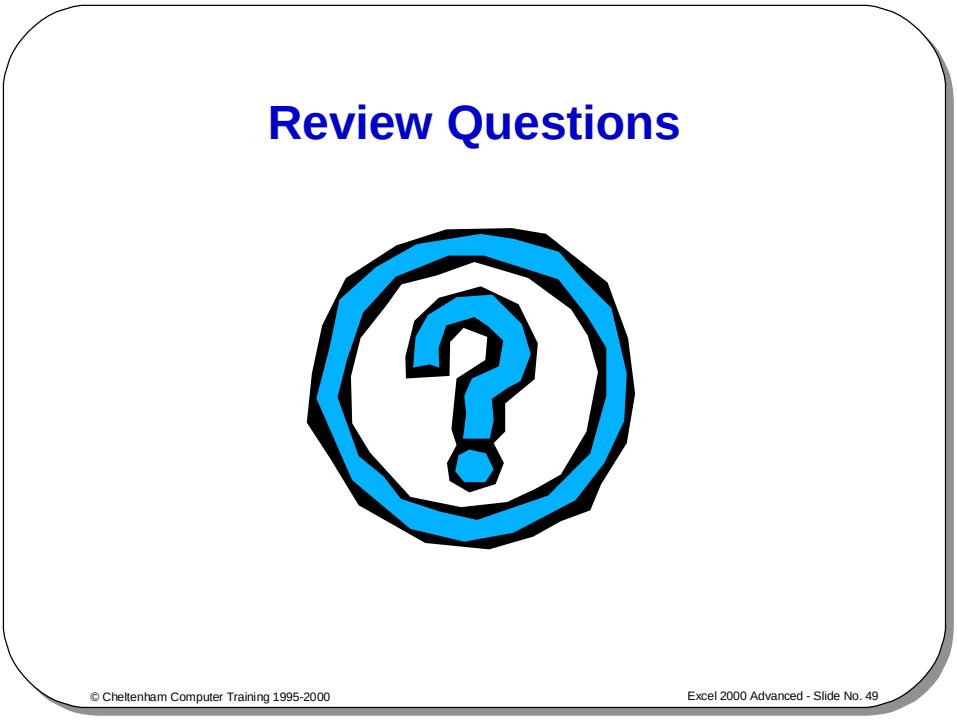

- There will be a small red marker in the top right-hand corner of the cell to indicate that it contains a comment.

**To edit a comment**

- Right click on the cell containing the comment you want to edit.
- From the shortcut menu displayed, select the **Edit Comment** command.
- Edit the text in the **Text Note** box.
- Click outside the box when finished.

**To delete a comment**

- Right click on the cell containing the comment you want to delete.
- From the shortcut menu displayed, select the **Delete Comment** command.




## Review Questions - How Would You ...

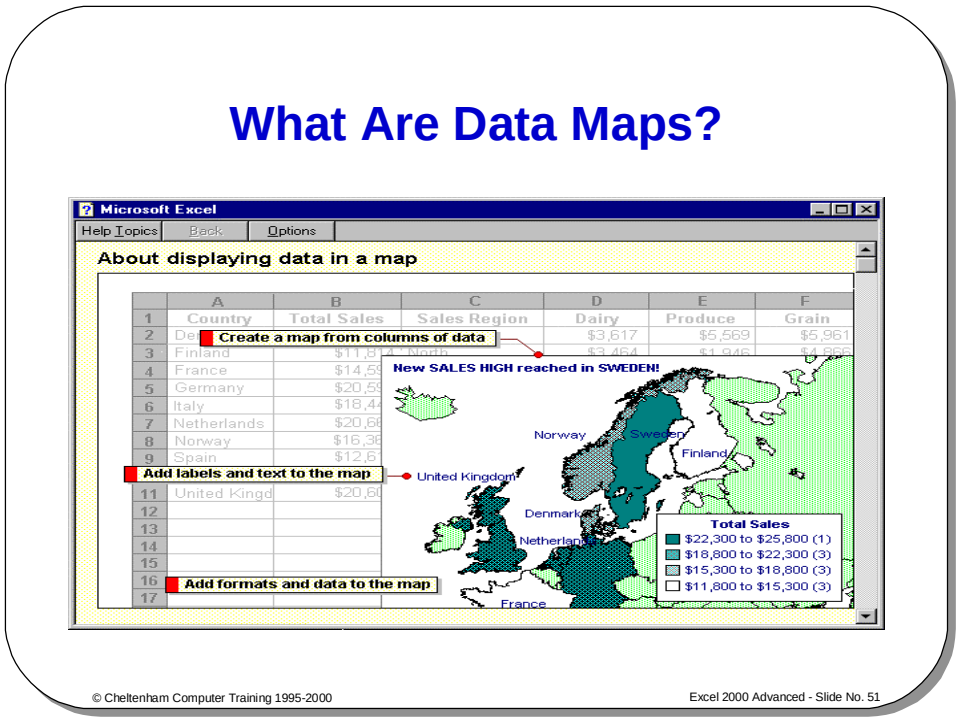
| | |
|---|---|
| 1. | Use the spell checker? |
| 2. | Share a workbook? |
| 3. | Set data validation for a range of cells? |
| 4. | Set Input messages? |
| 5. | Set Error Alerts? |
| 6. | Specify a password for opening or saving a workbook? |
| 7. | Use passwords? |
| 8. | Create backups? |
| 9. | Hide worksheet elements? |
| 10. | Protect cells? |
| 11. | Use Auditing Tools? |
| 12. | Manipulate comments? |

# Data Maps

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Place data onto a map
- Format a Data Map




## What Are Data Maps?

**Background**

Excel 2000 has the ability to produce data maps to display your data as shaded areas on maps. A workbook called **`Mapstats.xls`** containing demographic data for each map available should be located in the following folder on your system:

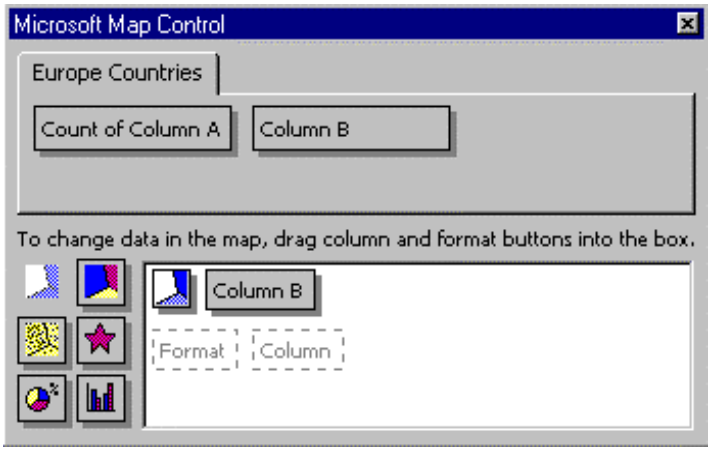
**`C:\Program Files\Common Files\Microsoft Shared\Datamap\Data`**



**To create a data map**

- Enter the data you require to be mapped into columns on your worksheet.
- The first column must contain geographical data about the map - area names, abbreviations or post codes (formatted as text).
  Area name information is defined in the **`Mapstats.xls`** workbook.
- Select the information to be mapped (as when creating charts).
- Click on the Insert drop down menu and select the **Object** command. The **Object** dialog box will be displayed.
- Select Microsoft Map from the **Object type** list.
- Click on the OK button to close the Object dialog box and
- At this point you may be asked to select the type of map you require, in which case select the map from the list and click on **OK**.

## The Data Map
## Data Control Dialog Box

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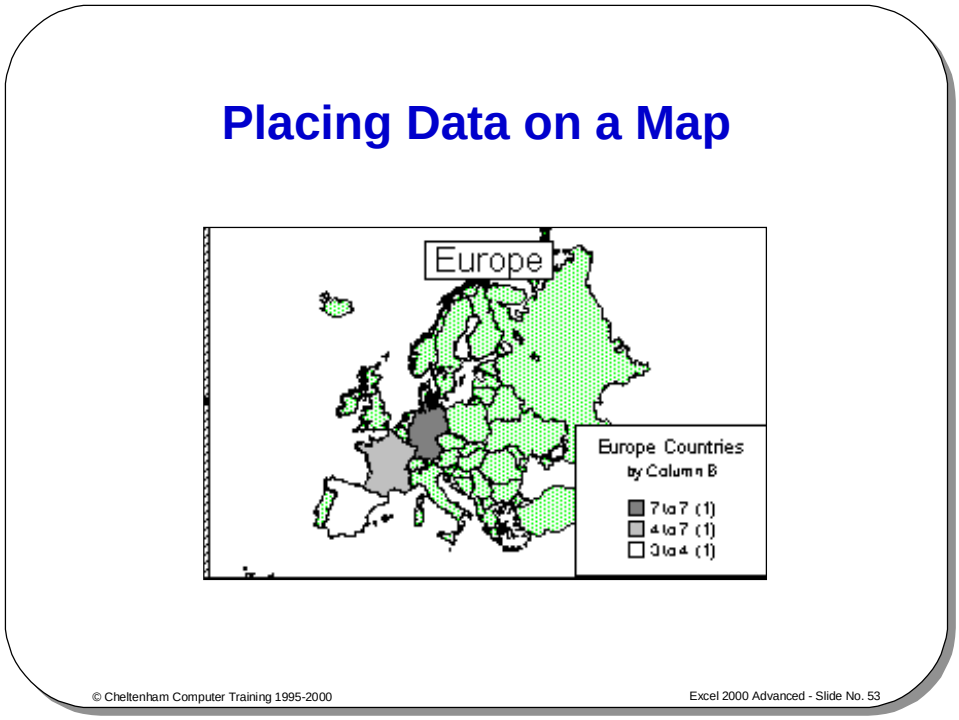
# The Data Map Control Dialog Box

If the data map control dialog box is not visible when you have selected the map click the **Show/Hide Microsoft Map Control** icon on the **Data Map** toolbar.

| | | |
|---|---|---|
| **Value Shading** |  | Different shades of the same color are used to represent numeric data values. Generally the darker the shade the greater the value. |
| **Category Shading** |  | Various colors are used to show how regions belong to differing categories of information. |
| **Dot Density** |  | Numeric data values are represented by dots (e.g. 1 dot per thousand). The greater the number of dots the higher the value. |
| **Graduated Symbols** |  | Numeric data values are represented by a symbol, the larger the symbol the greater the value. |
| **Pie Chart** |  | In this format small pie charts are placed on each area to show the data for each area. |
| **Column Chart** |  | Similar to the pie chart this format uses small column (bar) charts to display data in each area. |

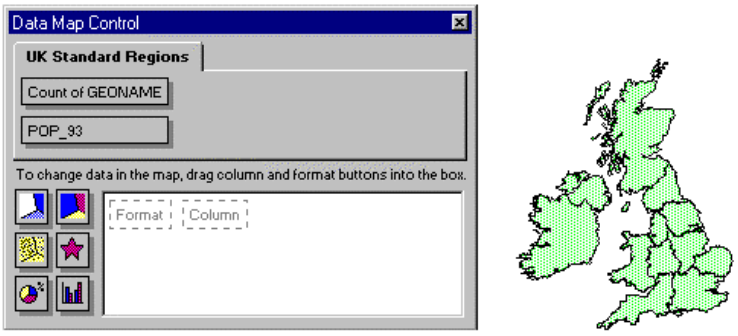



## Placing Data on a Map

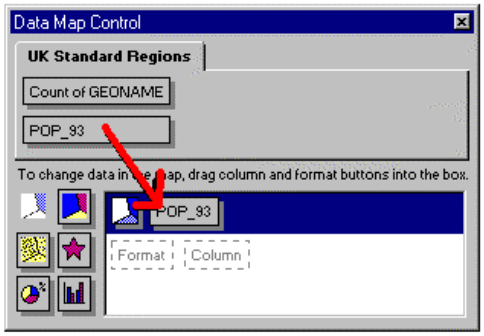
**To place data onto a map**

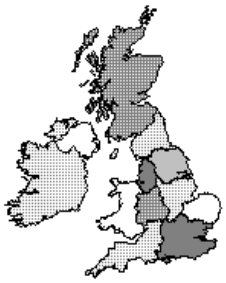
- The **Data Map Control** dialog box may look like the one shown below with no data in the working area. The map displayed for this has no data mapped onto it.





- Using the mouse, drag the required data onto the work area and place it over the dotted **Column** box, and release.
- The **Value Shading** format option is automatically applied to the dotted **Format** box within the work area (as shown below).
- Note that the map now shows shadings for the data that has been mapped onto it.



## Formatting a Data Map

- **Use the Microsoft Map toolbar that is displayed automatically when you create or edit a Data Map**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## Formatting a Data Map

| | | |
|---|---|---|
| **To reposition items on the map** | • Click on the **Select Objects** icon.<br>• Drag the required objects to a new position. |  |
| **To reposition a map within its frame** | • Click the **Grabber** icon.<br>• Drag the map around the frame to the position where you want it and release the mouse button. |  |
| **To center the map** | • Click the **Center Map** icon. |  |
| **To add labels to a map** | • Click the **Map Labels** icon.<br>• Select the features to label.<br>• Move the cursor over the map. When the label is visible in the position you want it, click to place the label. |  |
| **To add text to a map** | • Click the **Add Text** icon.<br>• Place the cursor where the text is required and click once.<br>• Type the text and complete with **Enter**. |  |
| **To create a custom pin** | • Click the **Custom Pin Map** icon. |  |
| **To view whole map** | • Click the **Display Entire** icon. |  |
| **To redraw a data map** | • Click the **Redraw Map** icon. |  |

## Review Questions

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## Review Questions - How Would You ...

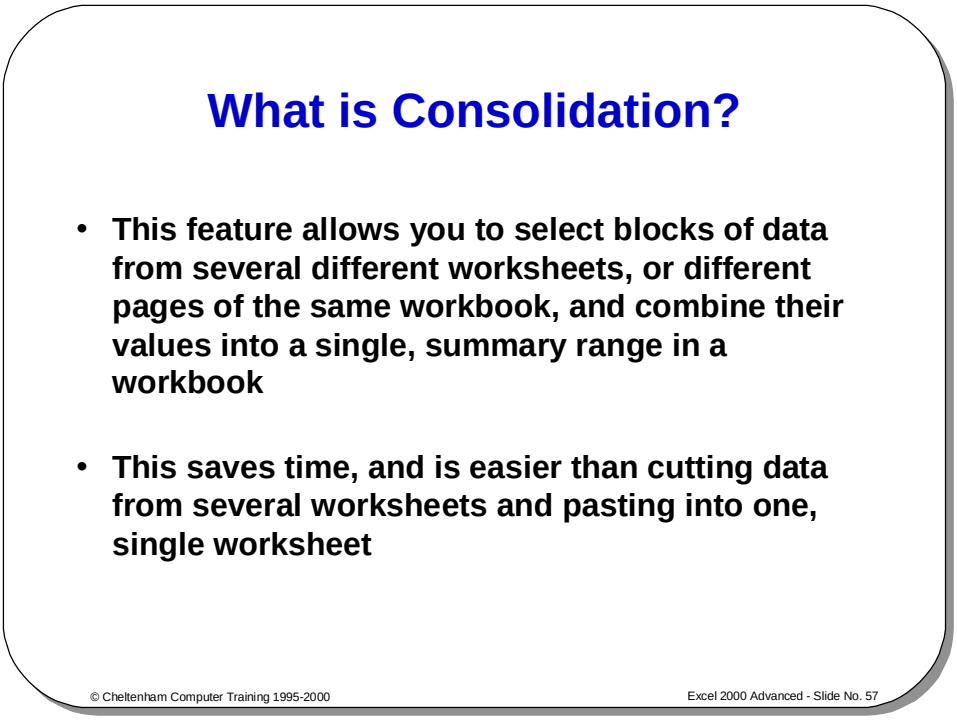
| | |
|---|---|
| 1. | Place data onto a map? |
| 2. | Format a Data Map? |

# Consolidation

## Learning Module Objectives

**When you have completed this learning module you will have seen how to:**

- Consolidate data over several worksheets or worksheet pages
- Consolidate selected rows and columns from several worksheets or pages




## What is Consolidation?

**To consolidate data over several worksheets or worksheet pages**

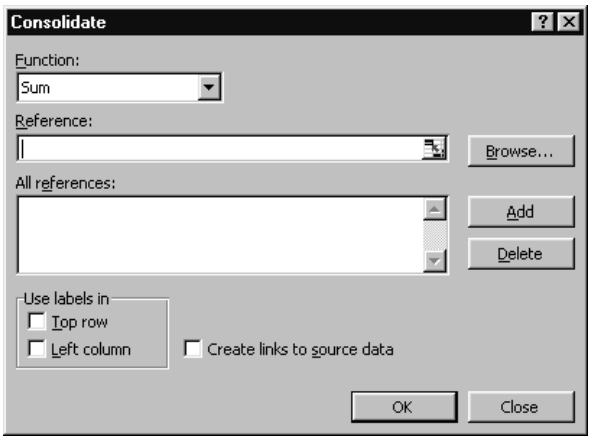
- Highlight a cell on a blank worksheet page, or a blank area of a worksheet.
- Select **Consolidate** from the **Data** menu to display the **Consolidate** dialog box.
- Select the first area you wish to consolidate by clicking on the worksheet and dragging to highlight the area required. Do not include row and column text, only numeric data. Use the sheet tabs to change between worksheets.
- The selection will appear in the **Reference** text box.

**Note:** Any formulas in the source area will only be used as values, i.e. only values in the cells will be used in the consolidation.

- Click on the **Add** button when you have highlighted the required range.
- Continue highlighting and adding the remaining areas in the consolidation.
- From the **Function** drop-down list, select the function you require. The default is **Sum** which will add the data across the selected range.
- If you want the summary report to create linking formulas to the source data automatically, select the **Create links to source data** check box.
- Select **OK** to complete the consolidation.

## Consolidating Rows and Columns

- **Select Data Consolidate from the menu**

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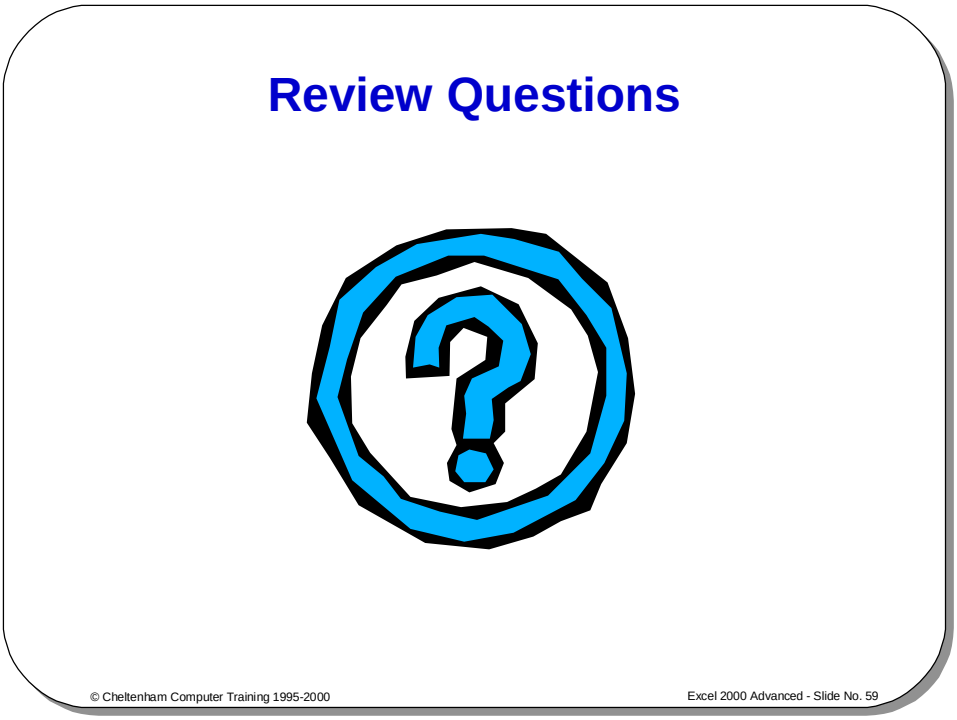
# Consolidating Rows and Columns

**To consolidate selected rows and columns from several worksheets or pages**

- Insert the row or column text you want to consolidate from the source ranges in a blank worksheet page, or on a blank area of the worksheet. Ensure that you type the text exactly as it appears in the source data ranges.
- Highlight the row or column labels you entered.
- Select **Consolidate** from the **Data** menu to display the **Consolidate** dialog box.
- Select the first area you wish to consolidate by clicking on the worksheet and dragging to highlight the area required. Make sure you include row and column text in the source areas, as well as numeric data. Use the sheet tabs to change between worksheets.
- The selection will appear in the **Reference** text box. **Note:** Any formulas in the source area will only be used as values, i.e. only values in the cells will be used in the consolidation.
- Click on the **Add** button when you have highlighted the required range.
- Continue highlighting and adding the remaining areas in the consolidation.
- From the **Function** drop down list, select the function you require. The default is **Sum** which will add the data across the selected range.
- If you want the summary report to create linking formulas to the source data automatically, select the **Create links to source data** check box.
- If row text was entered at the first step, select the **Top row** check box in the **Use labels in** area. If column text was entered, select the **Left column** check box.
- To complete the consolidation, select **OK**.




## Review Questions - How Would You ...

| | |
|---|---|
| 1. | Consolidate data over several worksheets or worksheet pages? |
| 2. | Consolidate selected rows and columns from several worksheets or pages? |