

# Section 2 Understanding Access

## BY THE END OF THIS SECTION YOU WILL BE ABLE TO

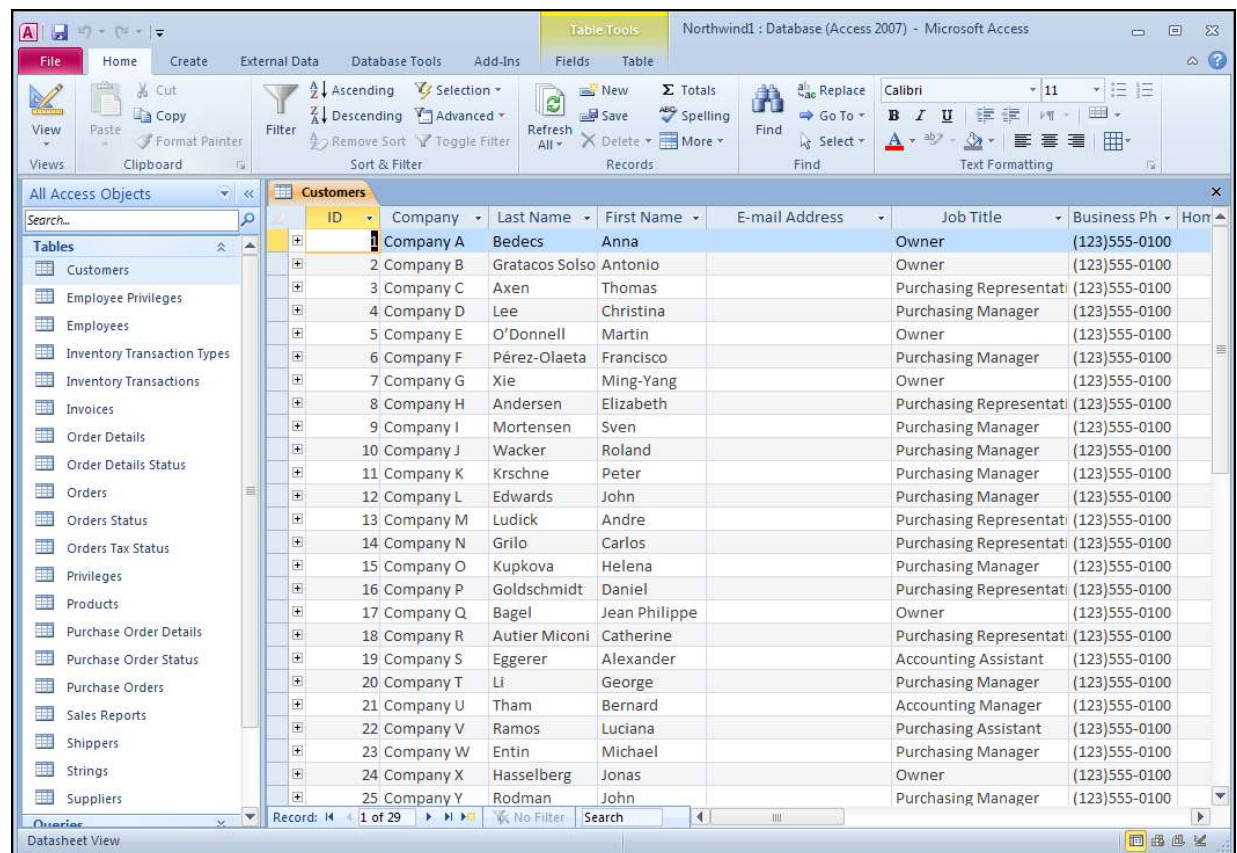
- Plan a database
- Create a database file
- Understand the terminology.
- Understand the tools and ribbons in access
- Understand and set basic options
- Find your way around a database
- Understand access basic security

## What is Microsoft Access?

The primary function of Microsoft Office Access 2010 is an information management program. Information is stored in separate lists called tables, and information in one table may relate to information in one or more other tables. These groups of information, when considered together as a whole, become a database.

Access is designed to use the data in these databases to extract the information relevant to your situation. Access can also generate reports (such as quarterly sales by each employee) based on the data contained in the database. The Office 2010 package also features a lot of interconnectivity between the various programs, including a newly designed SharePoint service that lets users in your organization connect and share information using a special data centre via the Internet.

Consider the following diagram showing an open database:



The new interface design of Access 2010 makes it easy for novice and expert users alike to get working right away. Now that we know a little bit more about the Getting Started page, let's examine the major pieces of the interface that is visible when a file is opened.

In this diagram, we can see the File Tab and Quick Access toolbar present in the upper left-hand corner. At the bottom of the diagram is the Status bar, telling us that we are currently viewing a table in Datasheet view. Now let's explore the real power of Access 2010, including the use of tabs and the ribbon.

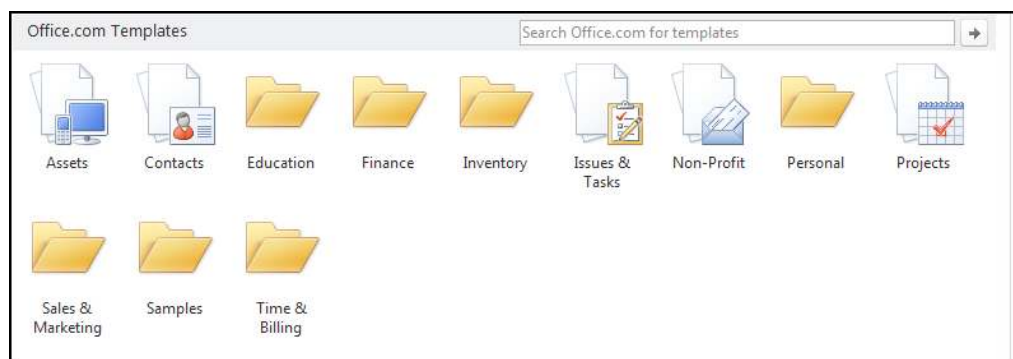
## Using the Getting Started Window

The Getting Started window appears every time you open Access without directly opening a file, or after you close an opened database without actually closing Access. Before you have your own established database(s) you can work on, you will likely visit this page every time you want to create a new database or check out the latest information about Access 2010 using Microsoft Office Online.

In this section, we will learn about the Access starting screen and the view of a typical working database. We will introduce the views piece by piece in this section of the lesson. There are a large number of updates to learn about, but with time you will wonder how you ever managed without them! If you have ever used Access before, the welcome screen for Microsoft Access 2010 has been completely redesigned. However, the layout is much easier to use, especially if you have never used Access before:

### Creating A Database From A Template

When you launch Access 2010, you will see the Getting Started page. From here you can choose from a number of different templates already built into Access. Choose a category in the main part of the screen:



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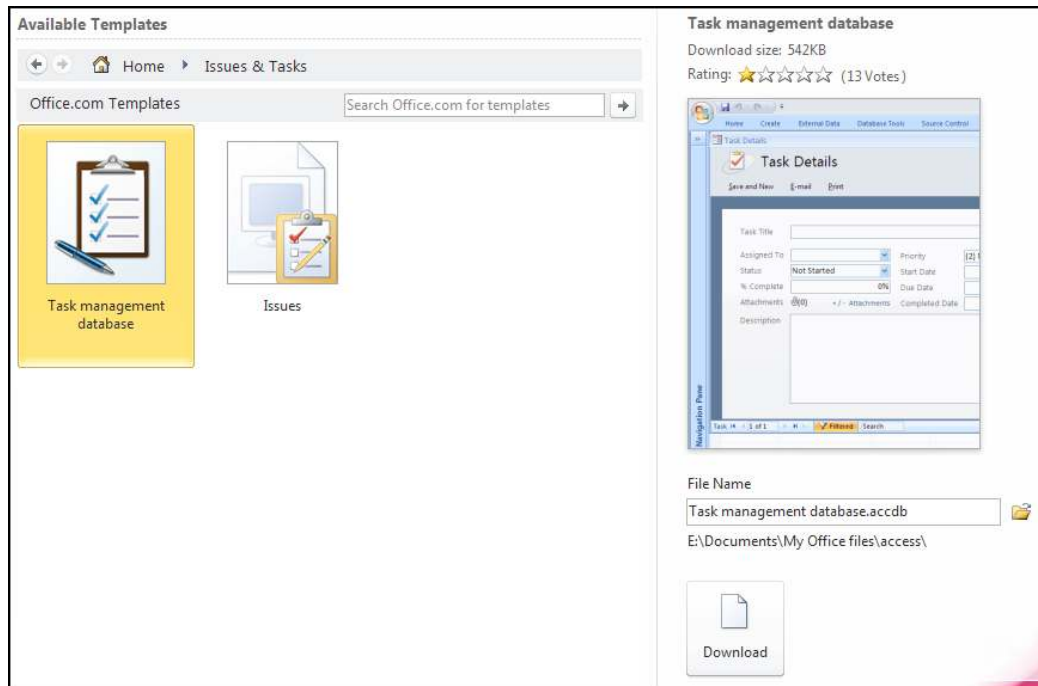


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Then choose a template that best suits your needs from the centre of the window:

Once you have chosen a template, choose a save location (default of My Documents) and then click Download/Open (depending on if you are opening from an online or offline template):



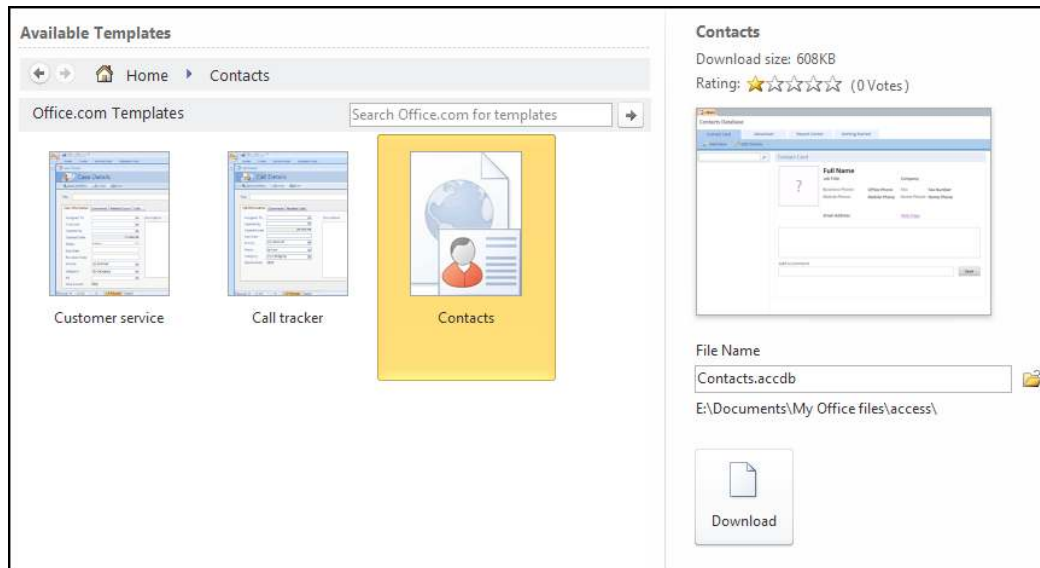
The template will open containing a number of pre-built database objects, including tables and relationships between the tables. Start entering data or modify the design of the objects as you see fit.

### Using A Template

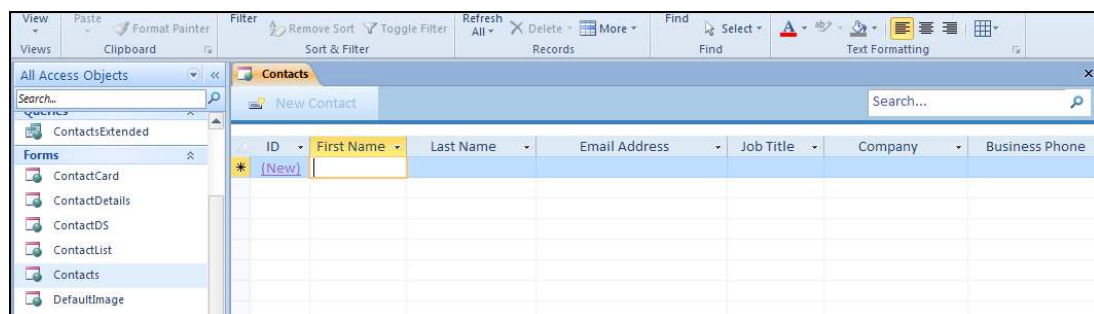
#### ► To use a template.

#### MOUSE

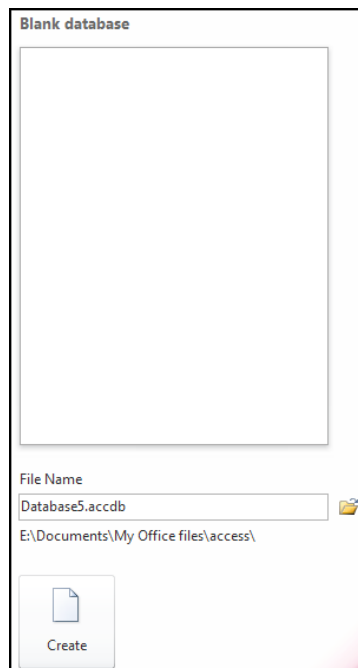
1. Choose a category in the main window. For our purposes, let's start off with something basic. Access contains a straightforward Contact database.



2. Click the Contacts group and you will be navigated to the kinds of contact database that Access can create select the contacts database to prepare to open it:
3. Details about the template will be shown on the right-hand side of the screen, click the Download button to download it from Office Online and open it. When the template opens, close the Access Help window that appears.
4. In the template open the Contacts form which allows you to enter your own contacts one by one into the database. That's all there is to creating a database from a template! All of the objects are already established; all that is required now is for you to enter your data.



## Creating A Blank Database




Although Access contains a number of templates already built in, However, if you prefer to construct your database from the ground up, doing so is easy with only a few clicks. it is important to understand how to create a database from scratch.



### ► To create a blank database

#### MOUSE

1. Go to the **FILE** tab if you are already within access and go to new to see the getting started page.
2. From the Getting Started page, click **BLANK DATABASE** From the suggested choices:
3. On the right-hand side of the screen, give the new database a name by typing it into the **FILE NAME** box.  
If you want to create the database in a specific location, click the small folder icon (  ) to the right of the text box. The new file path you select will be shown underneath the **FILE NAME** text box; Access will by default use the My Documents folder:
4. Finally, click the **CREATE** button. The new empty database will open with a single empty table contained inside:



- Now you know how easy it is to get started with a new database using Access. Later in this manual we will explore the usage of the different objects contained inside, as well as how to properly enter data into a database, or more properly, populate a database.



# Brain power

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## Using Database Objects


A database object is defined as some individual piece of a database that can be used on its own. We have discussed the major objects: tables, queries, forms, reports, and macros.

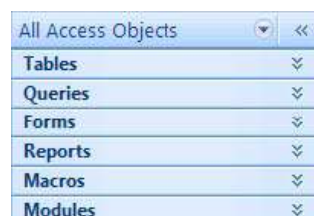


The Navigation Pane is used to control and use the objects of an Access 2010 database.


### ► To view database objects

#### MOUSE

1. Expand the Navigation Pane (  ) and click the pull-down arrow beside the title to show the full Navigation Pane toolbar.
2. Then, click **OBJECT TYPE** to display all objects currently in the database:
3. All objects currently in the database are categorized by their object type:



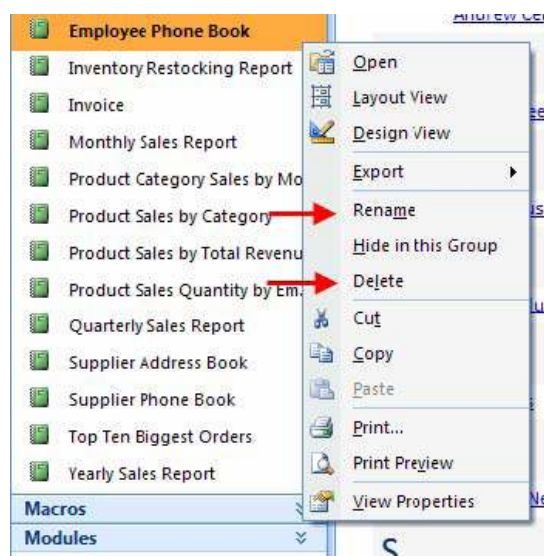


4. If you want to see the different objects in each category, click  to expand that category. Each object contained in each category is listed in alphabetical order:
5. To open an object, simply double-click it. It will open in the main part of the Access window and will have its own identifying tab.

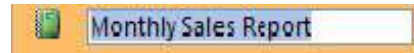


6. Some objects, such as the report, include a time and date stamp right on the object:
7. Access lets you rename or delete objects in your database. However in order to do so, the object must first be closed.

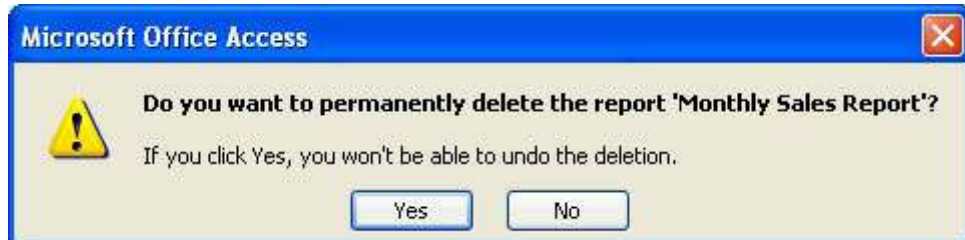
► To delete or rename an object,  
MOUSE



1. You can do so by making use of right-clicking. To do this, Point to an object and click the right mouse button. A drop down menu will appear giving you quick access to certain commands:
2. If you click **RENAME**, simply type a new name for the object, and then press **ENTER**:



3. If you need to delete an object, Access warns you that the delete operation cannot be undone:
4. Click 'Yes' to delete the selected object.

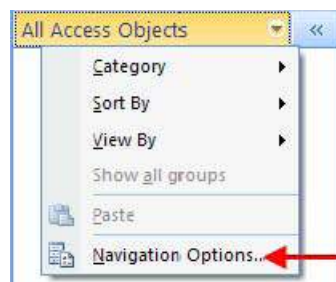


### Setting Navigation Options

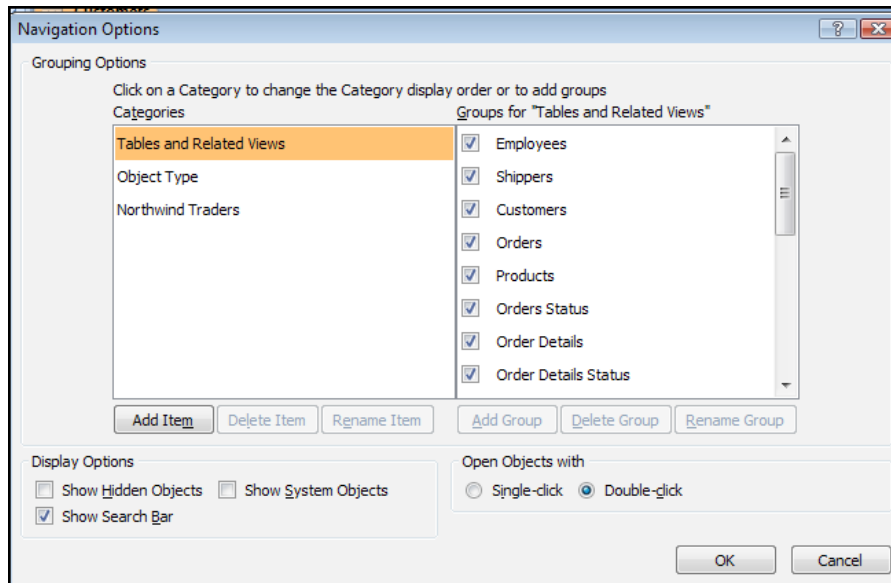
Access 2010 also gives you full ability to customize the Navigation Pane.

#### ► To set the navigation options,

#### MOUSE



1. Right click on the title bar of the Navigation Pane and click **NAVIGATION OPTIONS**:
2. The Navigation Options dialogue box will appear.
3. The following dialogue box is taken from the Northwind Sample database:
4. This dialogue box contains three main parts: a category list, a group list, and a few other options.



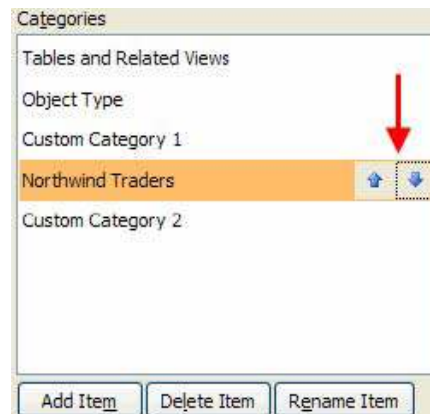
5. The first two options in the Categories list are fixed (Tables and Related Views and Object Type). However, you can create as many custom categories as you like. For example, the Northwind Traders category was added specifically for this database.

"I studied English for 16 years but...  
...I finally learned to speak it in just six lessons"

Jane, Chinese architect

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6. If you highlight the custom category, you have the ability to move it up and down through any custom categories you may have created:
7. Use the **DELETE ITEM** and **RENAME ITEM** buttons at the bottom of the categories list to perform the associated action on the selected category. If you ever need to delete a category, the objects that were in the category will not be deleted.
8. On the right-hand side of the Navigation Options dialogue box is a list of groups that are included in a category. For example, the groups contained in the Object Type category we have already used previously in this manual:
9. Highlighting the Northwind Traders category will display all of the custom groups used in the category:
  - Note that there is one group that is always present in a custom category: Unassigned Objects.

The options at the bottom of the dialogue box give you a bit more flexibility when it comes to the displaying of objects:





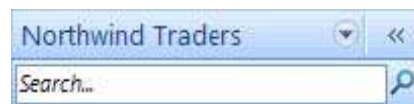
### Show Hidden Objects

If you find your database growing to a level that can be a bit hard to manage, you have the ability to hide certain objects. This means that they simply won't be shown in the Navigation Pane and can make it easier to find the object you need. Checking this check box will override any Hide command that you give to an object.

### Show System Objects

There are some background objects and tables that Access uses when you are using a database. Check this box to display them.

### Show Search Bar



If you end up with a very large and complex database, and would rather not hide any objects, you can use the small, simple search bar which will then appear at the top of the Navigation Pane:



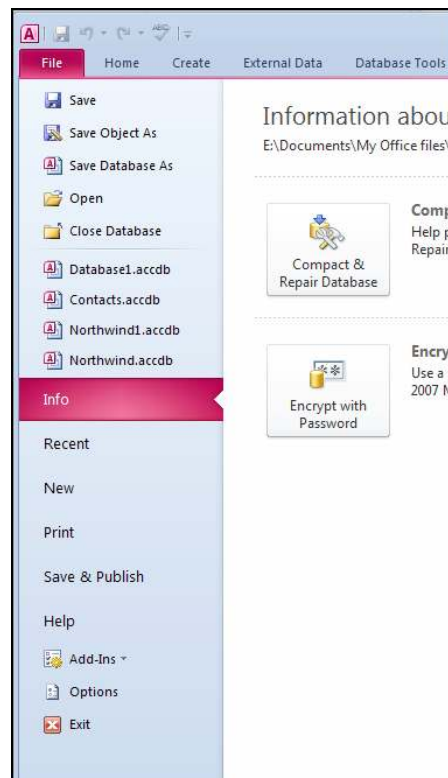
Enter the name of the object you are searching for. As you type, Access will automatically filter the different objects based on the keyword you are inputting.

The search bar does not, however, give you a direct list of results. Instead it filters the relevant names for each group as you type. For example, if you know the object you are looking for includes the word 'order', begin typing it into the search bar. Access will show you all of the relevant results:

Lastly, you have the option to open an object from the Navigation Pane using either a single click (like a Web page hyperlink) or double-click (default).



## The File Ribbon



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The File Tab (Backstage) should be pretty familiar to you now. We have learned that you can open and close files, modify the Access program options, and close Access; all by using the File Tab (Backstage). If you have used Access in the past, the File Tab (Backstage) is very similar in functionality to the File menu in previous versions. Or Office menu in office 2007

Let's take a look at the commands in the File Tab (Backstage).

### Open

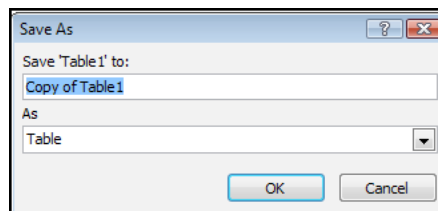
Opens a dialogue box allowing you to search your computer or network for a file.

### Save

Saves any modifications you have made to the current database object.

### Save Object As

Allows you to save the currently open object under a different object name within the current database.

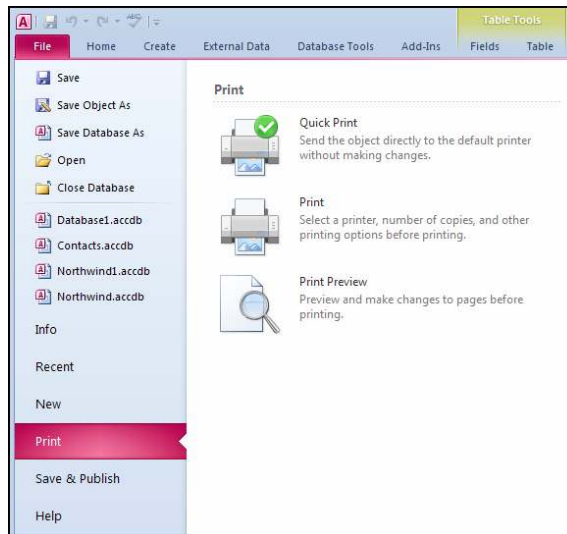


### Save Database As

Allows you to save the currently open database object under another name. This is useful if you want to perform a major revision or update to a particular object.

### Print

Clicking on the print option in backstage offers three options



**QUICK PRINT** sends any open object and its data directly to the printer. This can be a dangerous option to choose if you have not previously seen how the data will appear in printed form as this choice will give no options for allowing changes to layout or to where it will be printed it sends to the default printer

**PRINT** opens the print dialogue to allow the choosing of a printer and various other options such as the range of data to be printed.

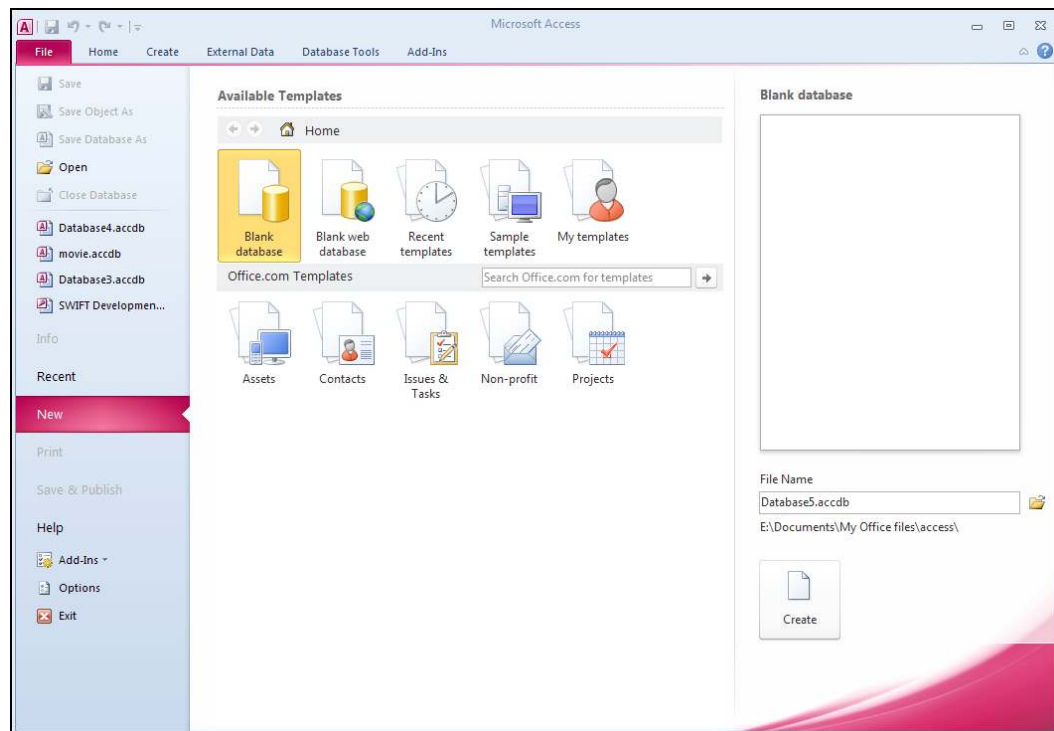
**PRINT PREVIEW** allows the viewing of the data in its future printed form to allow changes to be made prior to it being printed the data will appear a little like page layout in word

We will look deeper into printing at various stages within the manual.

## New

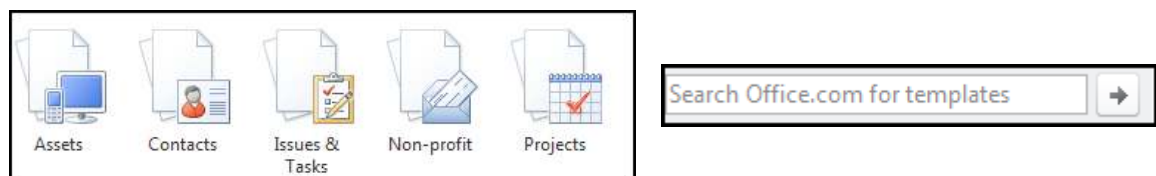
This will open the Getting Started page. Click Blank Database to create a new empty database file. and to close any currently open database files

## Exploring The Access 2010 Getting Started Interface:



## Microsoft Office Online (Office.Com)

The centre of the Access window is a special page that extracts content from Microsoft Office Online (a service provided over the Internet). Microsoft Office Online provides quick links to different templates, training material, and other downloads. It also provides links directly to Office Online where you can read about updates to Office 2010 as they become available.

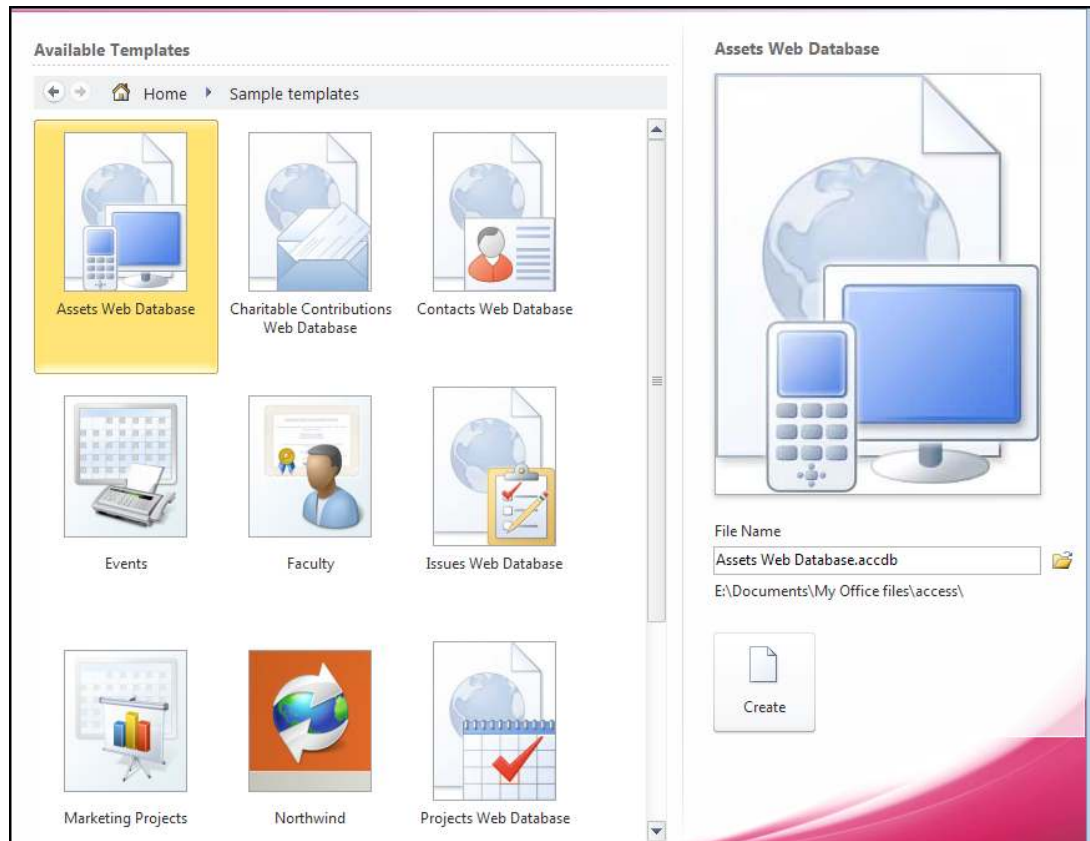


## New Blank Database

In the centre of the window is a link to create a new Blank Database. Use this link to make your own database from scratch.

## Available Templates

In the main part of the Access window are the accessible Template pane: Access has a number of templates built right into the program. To access those click on the sample templates. The different categories of templates are from office online and will show those templates you can download from the internet, simply click a category to see the available template files.



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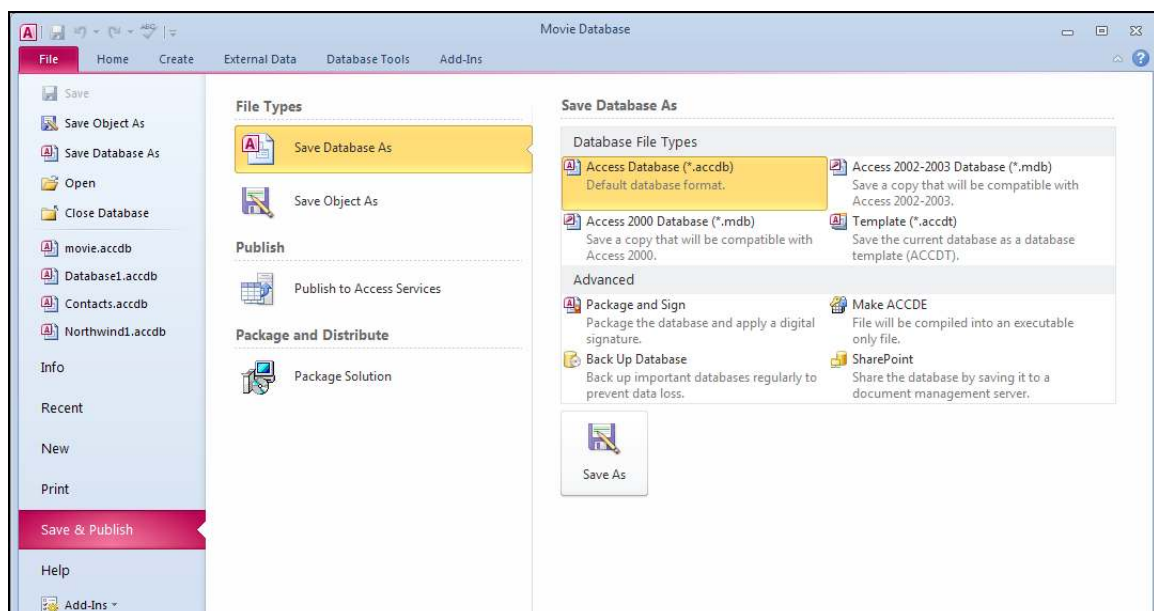
## Recent Files

The left-hand side of the window lists any recently opened database files, just like the Old File menu (2003) or office menu (2007: Click one of the database files to open the file. or click on the recent link on the left to show even more of your recently used files. If you want to open a database file stored somewhere else on your computer or on another network, click the More link and browse to the file you want to open, and then click the Open button.

## Closing Microsoft Access

When you have finished using Access, click either **FILE** Tab, **EXIT ACCESS** or click the program's close button (  ) in the upper-right hand side of the Access window. If you have any unsaved work still open, Access will allow you to save any changes you have made before the program shuts down.

## Save And Publish



## Back Up Database

makes a copy of your entire database file for safe keeping.

## Sharepoint

Save the database to a sharepoint service location

## Save options

There are several options here to save your file in various formats select the option on the right and click the save as button to open the save as dialogue with the various option selected.

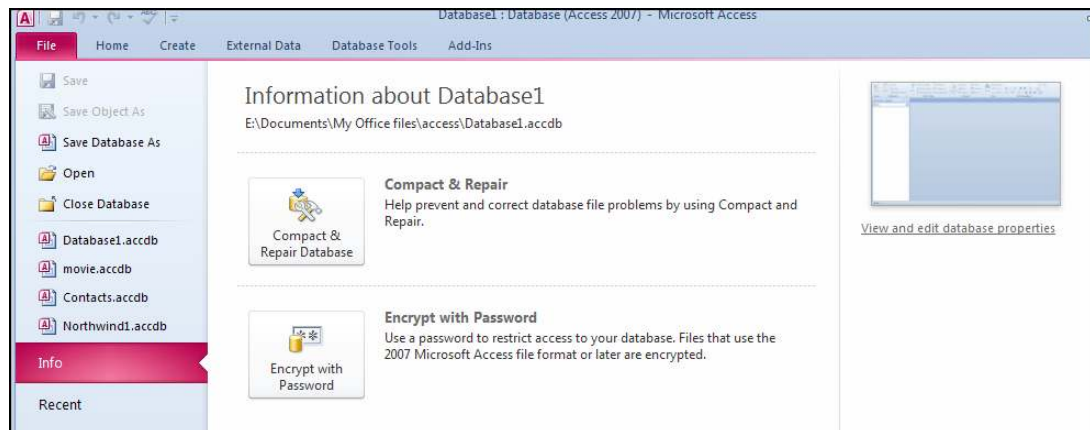


## Publish to access services

Allows the publishing to websites using access databases

## Info

This menu option gives you Three choices:



## Compact and Repair Database

is useful if you are planning to send the database to another person so they can work on it. This command checks the file for errors and compresses the file size a bit by eliminating wasted space. (If you have ever defragmented a hard drive before, the principle is the same.)

## Encrypt With Password

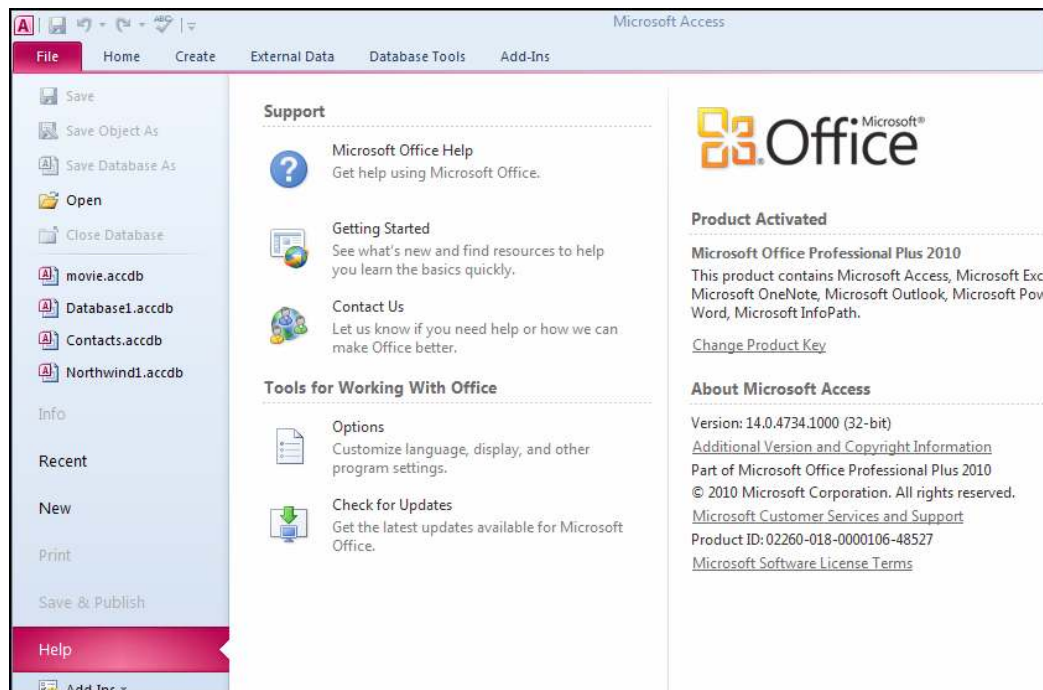
Put a password on your database to protect your data from unauthorised access. (record any passwords created somewhere as this secures your database and losing passwords means losing data.

## Database Properties

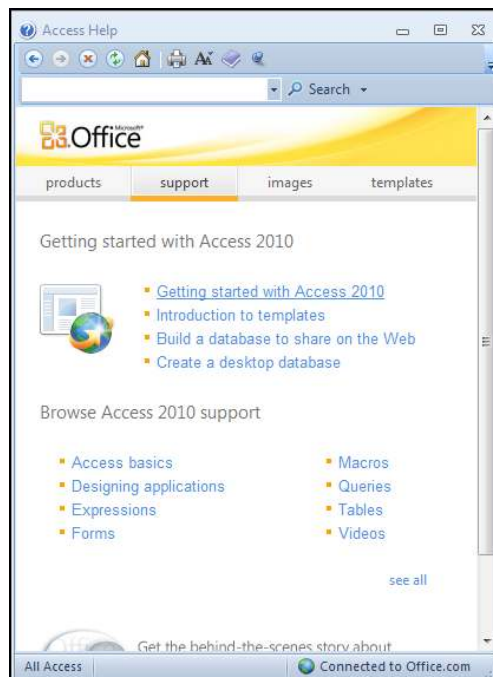
Following the link on the top right allows you to modify and view characteristics specific to your database:

## Help

### In File Tab



The Help here allows you to check on the status of the access product and check for updates it also gives you another point to connect with the help window as well as using the Help button.



## Help Button



The **HELP** button, located directly under the title bar, launches the Access help screen:

Click a topic to view help about that particular subject.

Enter a piece of text in the search bar and search for help on that topic.

As we explore more of the features and functionality of Access, we will discover how to use the rest of the interface.

## The Home Ribbon

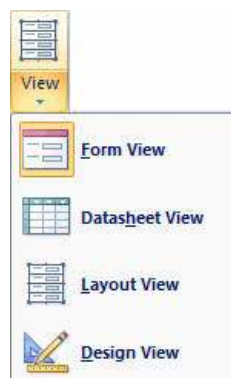
In the following lessons we will explore what commands are included in each command tab and their function. We will start with the **HOME** command tab and ribbon, which contains most of the commonly used commands for databases and working with data using Access. Remember, this is just an overview; don't worry if you don't understand what particular commands do. This is just so you know where to find a command when we begin discussing it.



## Views

### ► To Change views

#### MOUSE



1. Click the **VIEWS** command to cycle through the different views available for each object. (The type of views available will differ depending on the object that is currently open.)
2. You can also click the small down arrow underneath the word **VIEW** to see all of the available views:

## Clipboard

The Clipboard is a special part of the memory of your computer. It is designed to hold an object in temporary memory until it is either placed somewhere else or copied over when a new item enters memory. Before the newer versions of the Windows operating system, a computer could only hold one item at a time in memory. The Office packages have expanded this to a full twenty-four objects whether it is text, spreadsheet data, pictures, or some other piece of data. Items are placed on the clipboard either by selecting some text or object and pressing Ctrl + C on your keyboard. Ctrl + V will paste the object to a new location.

Access 2010 gives you full control of the clipboard on your computer. Select an item and use either the Cut or Copy command, followed by the Paste command. The other command in the Clipboard section of the ribbon (marked Format Painter) is only applicable when designing forms or reports and will be covered later.



### ► To Access the clipboard

#### MOUSE



1. Click the **CLIPBOARD** Dialogue box button (circled in red above) to expand the clipboard and its contents:
2. You can empty the clipboard at any time by clicking the **CLEAR ALL** button.

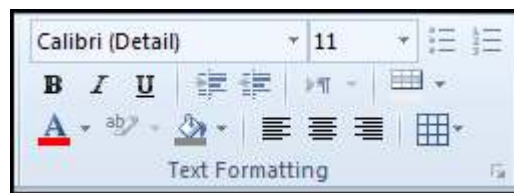
OR,

1. Delete individual items by right-clicking on an item and selecting **DELETE**.

## Text Formatting

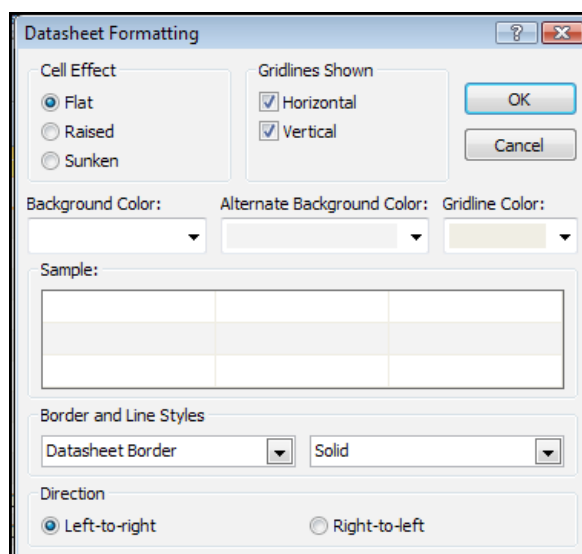
The Font section of the Home ribbon contains all the commands you need to modify how a font looks:

Any of the options that have a small pull-down arrow contain more options than a simple toggle on and off; click the pull-down arrow to see all available options. You can also use the Dialogue box Launcher button in the lower right-hand corner to expand different formatting options for a particular database object.



## Text formatting dialogue

This dialogue is for a table (datasheet view object) options may vary dependant on the object and view.

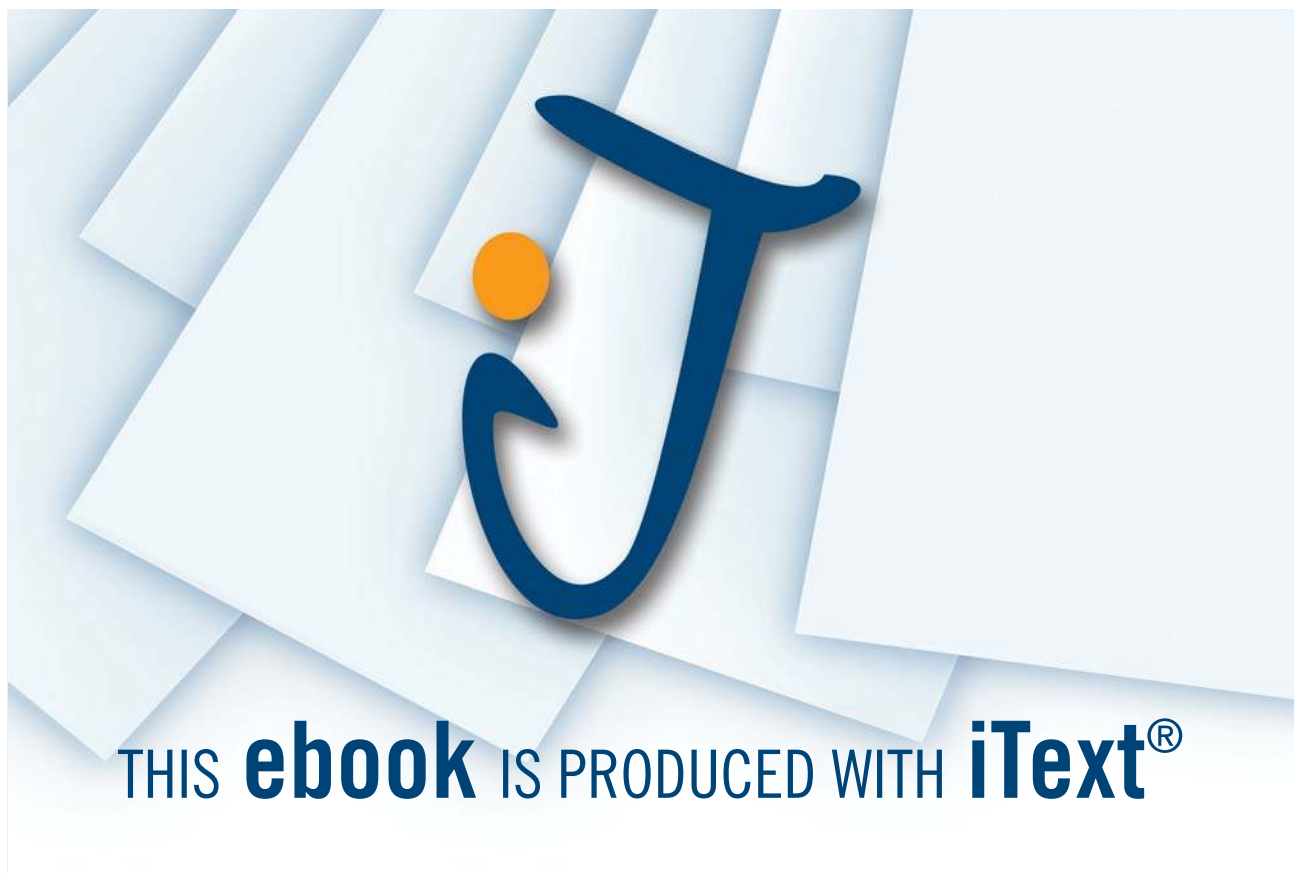
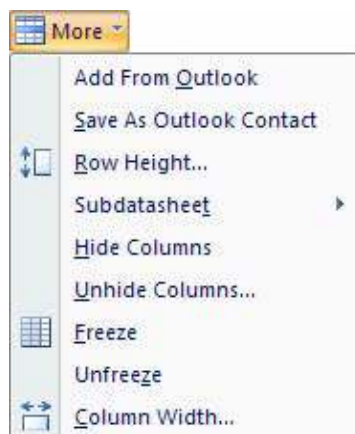


## Records

The **RECORDS** section of the **HOME** ribbon deals with basic data management:



The **REFRESH ALL** command is designed to re-retrieve all the information from the database file. This option becomes particularly useful if your database includes any external data sources (explained later in this manual). If you only want to refresh the data for the current object, click the small pull-down arrow beside the Refresh All command and select Refresh.





The other commands will generate a new record in the object, save any record changes, delete a record, apply a calculation field like sum or average, and check the spelling of the current object.

Clicking the pull-down arrow beside the **MORE** command will show a small menu of more commands that can be performed on the current object:

We will explore some of these commands later in this manual.

## Sort And Filter

The **SORT & FILTER** section of the Home ribbon will apply some sort of organizational method to a database object:



For example, if you wanted to sort a list of names alphabetically, simply click the column header to select the entire column of names and then click the Sort **ASCENDING** command. (We will cover how to perform operations on a table of data later in this manual.)

## Find

If your database should grow substantially in size some day, finding a particular value by hand quickly becomes impractical. Access features a Find command to track down the value you are looking for:



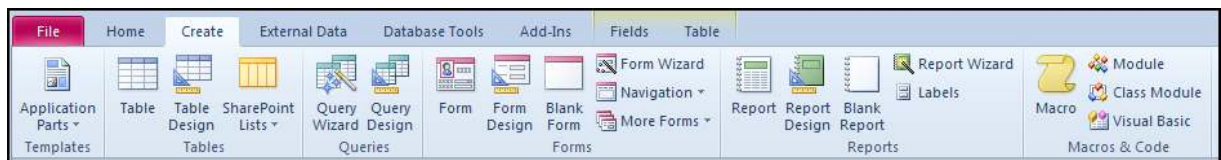
Simply enter the search criteria you are looking for and Access will search the current database object to retrieve the information you are looking for.

As an addition to the **FIND** command, Access can also replace certain values based on search criteria. For example, if you misspelled a place name or if someone's last name has changed, you can use the **REPLACE** command to find all instances of a value and replace it with something else.

Use the **GO TO** command to browse the various records that meet your search criteria. You also have the ability to select an entire row of data containing a 'found' value or select the entire object containing the found value(s).

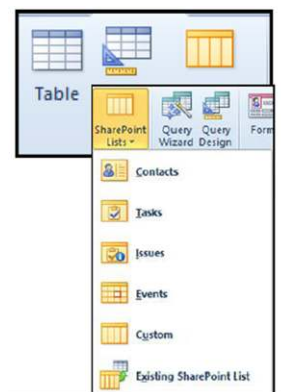
## Create Ribbon

We continue in this section with our exploration of the next main ribbon, the Create Ribbon. The Create ribbon is used to make new database objects:



## Tables

Tables are the main objects used in databases. (Without tables, and thus without data, you don't have much of a database!) We learned in Section 1 of this manual that a table contains one or more records (or rows of data) and a record contains one or more fields. So, use this section of the ribbon to create the tables you need in order to store the data for your database. Let's look at the different options in this section.



### Table

This will open a new empty table in Datasheet view. You can directly enter data into the field this way or enter Design view to modify the structure of the table by hand.

### Sharepoint Lists

SharePoint Lists are a bit beyond the scope of this manual. Essentially they are tables of data that can be linked to another table stored on a SharePoint server across the room or across the world.

► To create a sharepoint list

MOUSE

1. Use the small pull-down arrow to select a table template from the list of options:
2. You must enter a sharepoint location before using this feature when entered. A new table template opens in Datasheet view with a number of pre-defined columns. You can start entering data into the table right away.

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light.

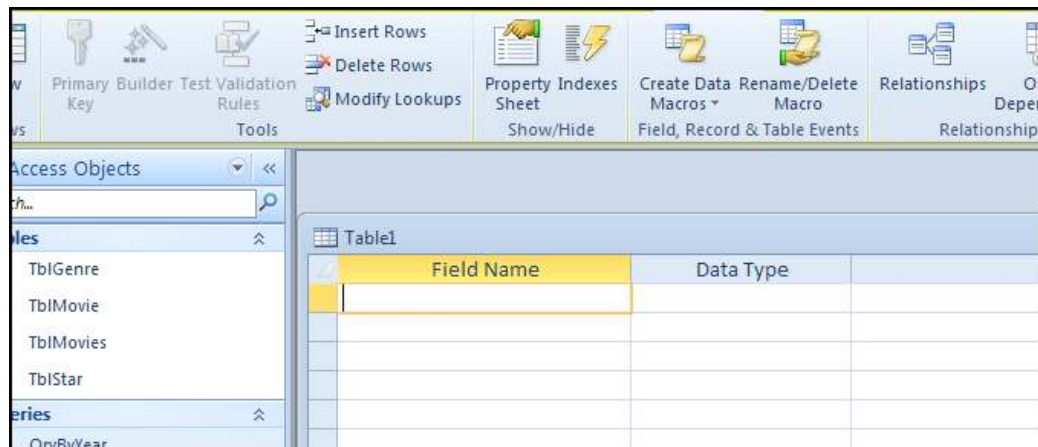
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## Table Design

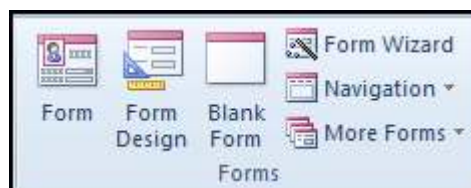
3. Clicking the **TABLE DESIGN** command opens a new empty table in Design View:



Here you can begin the custom construction of the table as you need it. We will explore more of the functionality of table Design view later in this manual.

## Forms

Forms are a way of entering data into a table one record at a time. Forms in Access are comparable to paper forms you would fill out in an office. With a paper form, there is a space for each piece of data required, and once the form is filled out, it will get filed somewhere. The same is true in Access, as you need to have at least one table of data, query, or report in order to make proper use of a form. Use the commands in the Forms section of the Home ribbon to perform different form actions:



### Form

Use this command to create a new form based on the last highlighted object in the Navigation Pane. Each field in the object will be made into a new field in the new form. (We will explore the use of forms later in this manual.)

### Navigation

This command creates a special kind of form that lets you view more than one record at a time. Multiple item forms are very useful in certain situations.

**Blank Form**

Use this command to create a new empty form.

**More Forms**

This command features more advanced commands relevant to the use of forms, including the Form Wizard, used to help you create a form without having to build it manually:

**Form Design**

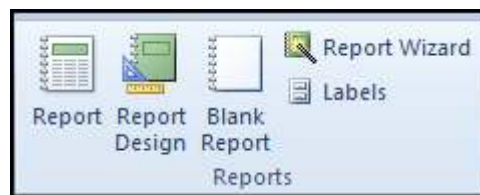
Clicking the Form Design command opens a new empty form in Design view. You can begin constructing a new form right away.

**Form Wizard**

This is a step by step tool allowing you to create a form quickly using existing table fields and inbuilt formatting options

**Reports**

Reports are primarily used to summarize the data returned by a query. Reports can also be used to create a complete table contents listing suitable for printing.

**Report**

Clicking the Report button creates a very simple report based on the last highlighted object in the Navigation Pane. We will explore the use of reports later in this manual.

**Labels**

There is a good chance most of the databases you will use will have some sort of contact table containing names and addresses. Access features the ability to create a mailing list based on the data in a table.

**Blank Report**

This command opens an empty report.

## Report Wizard

This command will walk you through the steps of creating a report based on another database object. The wizard will walk you through the placement of fields as well as a style and layout that works for you.

## Report Design

This command will open a new blank report in Design View where you can start to manually build a form right away.



## Queries

The Queries section of the Create ribbon is devoted to the construction of queries

### Query Wizard

The Query Wizard will walk you through the steps of making a query without requiring any knowledge of database code like SQL (Structured Query Language). Simply pick the fields you want to display in your query and let Access do the rest.

### Query Design

This command will open a new empty query in Design view where you can stipulate with more precision how you want to construct your query.

## Macros & Code

Macros are a set of instructions that you can tell Access to perform. For example, if you are performing a fairly large task with many steps frequently in Access, you can design a macro. It works like a script given to a performer; they read the script and deliver the performance the same way each time.

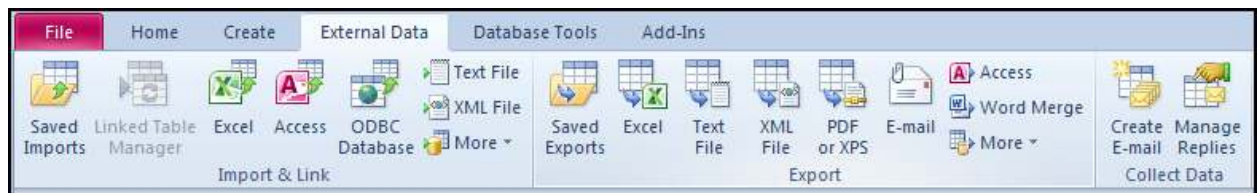




The modules and visual Basic buttons in this section are designed for database programmers to have Access perform more advanced program functionality.

## External Data Ribbon

If you are just starting out with Access, chances are the majority of the databases you will use will be contained on a single machine. You will also likely enter most of the data by hand. This is fine for small databases, but Access gives you the ability to import data from nearly any source and from a wide variety of programs. In this lesson we will learn a little bit more about the External Data ribbon.



### Import& Link

The Import& Link section allows you to bring in data from many different sources, including other Microsoft Office programs Or to be able to access the linked table manager to access and manage any tables that may be linked to other databases or Excel files.

#### Saved Imports

Allows you to retrieve information for a specific source many times. For example, if you extract information from a Microsoft Excel spreadsheet on a regular basis, you can choose to save the import operation so you don't need to set up the same import over and over again.

#### Linked Table Manager

This command is used to perform certain operations pertaining to any linked tables in your database.

#### Excel

The Excel command lets you import data from an Excel file or link to the data contained in a file.

#### Access

This command lets you import data from another Access file or link to the data contained in a file.

## Text File



If you have a large amount of data that is in an organized structure, you can import that data directly into your database file and have Access format it for you.

## XML File

Import the data from an XML (Extensible Mark-Up Language) file directly into a table in your database.

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**More**

Access 2010 features the ability to import data from other database programs. Click the appropriate file type command to start importing that particular type of file:

**SharePoint List**

Use this command to import data from a SharePoint list or link to the data contained in the list.

**Export**

In addition to being able to import data from a number of sources, Access can also export data to several different sources.

**Saved Exports**

If you frequently export data to a particular location or program, you can save the export operation for later use, thereby eliminating having to set up the export each time.

**Excel**

Export the data contained in an object to an Excel spreadsheet.

**Text File**

You can export the data contents from a database object to a plain text file that is usable on virtually any computing platform.

**XML File**

Xml Files use tagged data and can easily be used on the web or any application that allows the use of XML. XML is supported by a wide range of applications and is the standard data format for transporting or handling data outside of a database.

**PDF or XPS**

This option enables the contents of a database object to be distributed to others as a PDF or XPS files. This means you can see database objects without having the need for Access to be installed in every location. (This option may not be available if you have not downloaded and installed the PDF add-in from the Microsoft Web site.)

**Email**

This allows the sending of the data in a format of your choosing (spreadsheet xml etc) and is a one click solution to exporting your data outside of your organisation.

**Access**

Export your data or objects to another access database.

**Word Merge**

Use the merge facility to create mail merge documents utilising the fields and data within the selected table or query.

**More**

Access 2010 allows you to export to many other file types and locations through the use of the More command:

**Word**

Access allows you to export the contents of a database object to Rich Text Format (RTF) for use in Microsoft Word and other word processing applications.

**SharePoint List**

Export the data in a database object to a central SharePoint location.

## Collect Data



One of the more powerful and convenient data collection services is the Collect Data portion of the External Data ribbon. Though the use of these commands is beyond the scope of this manual, their function is certainly worthwhile mentioning.

### Create E-Mail

Use this command to send a self-contained form as an attachment in an e-mail. The recipient can enter some data into the form and then e-mail it back to you.

### Manage Replies

This command is used to sort and store the incoming e-mail that you had distributed.

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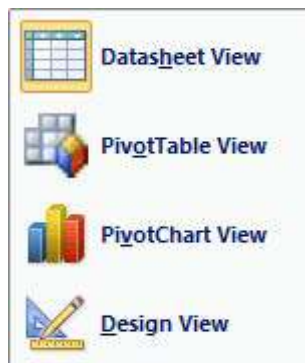
Send us your CV on  
[www.employerforlife.com](http://www.employerforlife.com)



## Viewing Data

We have used Access so far in a simple way, usually opening only one or two objects at a time. In this lesson we will learn a bit more about the different views available in Access as well as some other viewing management options.

### Using The View Menus



We have and will make use of the View menu throughout this manual. The View menu is located in The **HOME** ribbon throughout Access and is different for each object you open.

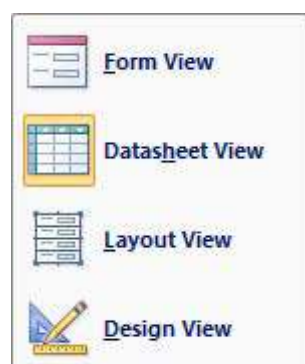
### Table

**DATASHEET** view displays all data in a table in a columnar view.

**PIVOTTABLE AND PIVOTCHART** views they allow you to quickly and graphically compare the values in one field with another.

**DESIGN** view lets you modify the properties of a table to make it contain and display the data you need.

### Form



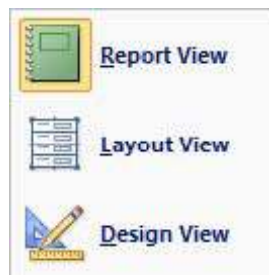
**FORM** view lets you view the form in such a way that you can enter data one record at a time into a table.

**DATASHEET** view is a way of showing you the table that the form references.

**LAYOUT** view is an intermediate step between Form view and Design view. It lets you adjust the location of objects in a form while still being able to see the data it contains.

**DESIGN** view lets you modify the look and feel of a form as well as add different controls to perform actions.

## Report



**REPORT** view displays the contents of the report in a manner suitable for printing or presenting.

**LAYOUT** view is an intermediate step between Report view and Design view. It lets you adjust the location of objects in a report while still being able to see the data it contains.

**DESIGN** view lets you modify the look and feel of a report as well as add different controls to display data or perform actions.

## Query





**DATASHEET** view displays the results of a query in a view similar to a table.

**PIVOTTABLE AND PIVOTCHART** allow you to quickly and graphically compare the values in one field with another.

**SQL (STRUCTURED QUERY LANGUAGE)** view is a way of viewing and modifying the background 'code' used to make a query. SQL editing is beyond the scope of this manual.

**DESIGN** view lets you add and remove fields from the search as well as add criteria to retrieve more specific results. Many other options we will look into later are available in this view.

### Using The View Icons

The **VIEW** menu has a cousin present in the very bottom right-hand corner of the Access window. For example, viewing a table in Datasheet view will show the following buttons:



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**Month 16**

I was a construction  
supervisor in  
the North Sea  
advising and  
helping foremen  
solve problems

Real work  
International opportunities  
Three work placements





These icons are exactly the same as the corresponding items in the View command. The view currently in use is highlighted in orange. If you hover your mouse over an icon to see its description:



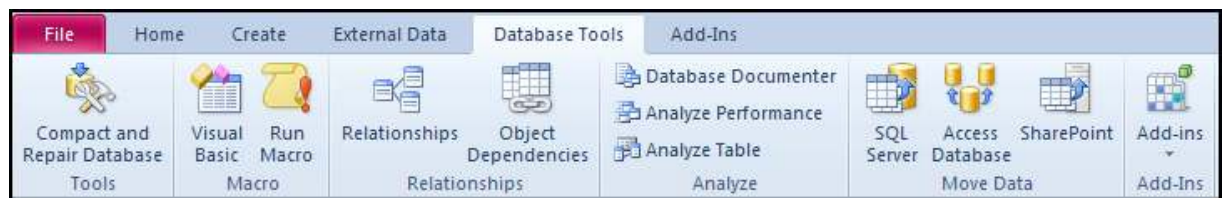
### ► To use the view icons

#### MOUSE

1. Click any of the icons to switch to that view.

## Database Tools Ribbon

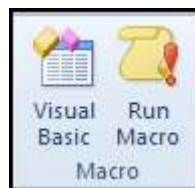
The Database Tools ribbon is the last of the four main command ribbons. It contains most of the advanced and background commands used on an established database. We will explore the basics of this ribbon's functionality in this lesson.



## Macro

We defined a macro earlier as a set of instructions you can save to use again and again on a database. A macro can be used to encompass nearly every command in Access, as well as extra functionality defined by a programmer.

## Visual Basic



This command launches the Visual Basic editor. This program is used to develop VBA code (Visual Basic for Applications) designed to do background operations in a database.

## Run Macro

This command will launch the **RUN MACRO** dialog box. Choose a macro from the combo box and click **OK**.

## Relationships

The **RELATIONSHIPS** section of the ribbon is used to display some of the different characteristics that a database has:



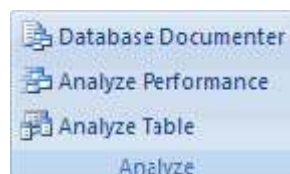
### Relationships

Nearly every database that contains multiple tables also includes a relationship between the information contained in the database file. For example, if you work at a department store, each item likely has some department identification number associated with it (1, 2, 3, etc.). In the store database there is another table that lists the corresponding department name with a number (1 = ladies wear, 2 = furniture, 3 = kitchen & bath, etc.). The table of items and the table of departments share a relationship in that the values of one are related to the values of another. We will explore relationships later in this manual.

### Object Dependencies

As you develop more relationships in your database and build more forms, reports, and queries, you will develop a large number of dependencies. That is, one object, such as a query, depends on many others in order to fulfil its job. Click this button to view these dependencies.

## Analyze



The Analyze section of the ribbon is used to examine how your database is built and how well it will perform. Database performance, as well as the terminology and methodology behind it, is used mainly by database engineers. However, Access makes it easy to perform some optimizations to your data without you needing a PhD in computer science!

### Database Documenter

The Database Documenter tool is used to thoroughly list every feature and property of a database object or group of objects.

## Analyze Performance

This command is a special part of Access that can tell you where you may be able to make improvements to the design of your database. For example, if you end up with duplicate tables or a table, the analyzer can find these and suggest some optimizations to increase the performance of your database.

## Analyze Table

This command launches the Table Analyzer Wizard. This tool works like the Analyze Performance command, but on a finer scale and one table at a time.

## Move Data



The Move Data section of the ribbon is used to perform large scale move and split operations to a database. These commands are beyond the scope of this manual and should only be performed by IT professionals.

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## SQL Server

This will move certain objects or an entire database to an external Microsoft SQL Server.

## Access Database

In certain corporate situations, it may be useful to split up your database across two or more locations such that the tables are situated in one location and other database objects are in other locations. This command will open a wizard that will help you do just that.

## Sharepoint

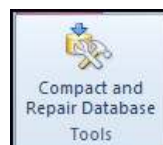
Move your data to a sharpoint list and creates links to that data.

## Add-Ins



An add-in is a special type of third-party program or VBA code that is used to provide extra or specific functionality to the Access interface. If you are familiar with plug-ins used in an Internet browser, the principle is essentially the same.

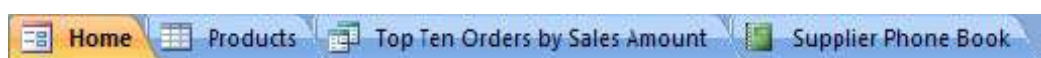
## Tools



The last section of the Database Tools ribbon dealsCompacting and repairing your database to allow the file size to be reduced and the repair of the connectivity within it to allow it to run trouble free.(programming errors cannot be repaired and must be repaired manually.)

## Using The “database”Tabs

In previous versions of Access, opening a new database object meant opening a new window. After only a few objects, your screen would be pretty full and finding objects ‘hidden’ under different windows was frustrating. Access 2010 eliminates that clutter. Each database object you open opens a new tab:



Simply click a tab to view that object.



If you happen to have many objects open at once, arrows will appear on either side of the list of tabs allowing you to scroll back and forth through the opened objects:

### Closing Individual Tabs



To close a database object, highlight its name in the list of tabs and then click the close button underneath the ribbon:

## The Trust Center

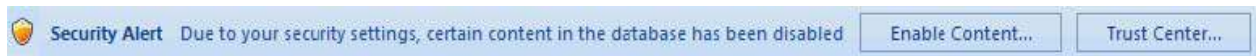
The terms computer security, identity theft, and privacy are being used more and more all the time. There are a few bad apples out there that like to create viruses and spyware for the purpose of disrupting day-to-day business. The Microsoft Windows family of operating systems, as well as a number of third-party developers, work hard every day to keep your private and sensitive data safe. So to does the Office 2010 suite.

In this lesson we will explore some of the measures taken by Access 2010 to keep your computer and yourself from being a victim of an attack or being disrupted while you work.

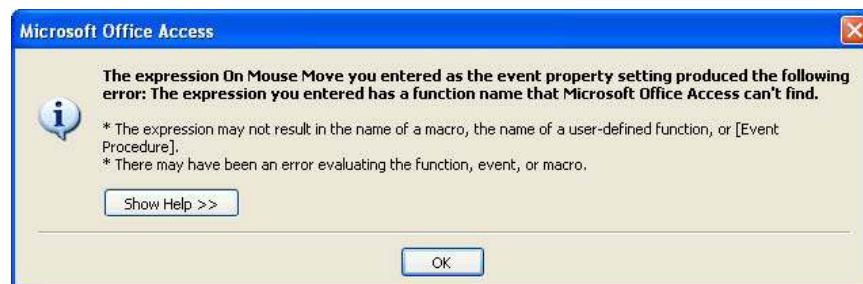
### Warnings You May See when Opening a Database



In opening a database from a non secure location, we would encounter a warning stating that Access has prevented a file from being opened because of the security settings that have been enabled on your computer:



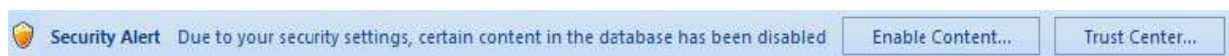
You might also run into other warnings that state Access cannot perform a certain action because a non-standard operation was encountered or some part of the database file seems to be missing. It is possible that the following warning might appear not because a problem was detected, but because a certain section of the database might not be fully constructed:



These warnings are designed to protect you, not scare you. Should you encounter messages like the ones above, think why it may have occurred. If you received the file from someone else, tell them you have encountered a problem before opening the file. If you are unsure about the file, contact your organization's IT department for help; they may be able to diagnose your problem and provide a solution. It may even be that your security settings are a bit too high for this application (which is not always a bad thing). We will discuss what to do in situations like this in this lesson.

## Enabling Content

If you are sure the file you are opening is safe, or you trust the person it came from, simply click the **ENABLE CONTENT** button in the bar that appears under the ribbon:







Doing so will show the Trust In Office dialogue box:

In the picture above, Access gave you a warning because it could not identify who made the file. This does not necessarily mean that it came from an untrustworthy source; perhaps whoever made the file did not bother to apply a digital signature (described in the next section) or security certificate. If you are sure the content is safe, simply click the Enable this content radio button and then click OK. The file will then open normally.

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Jane, Chinese architect

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## About Digital Signatures

Digital signatures serve the same purpose as a written signature or an embossed certificate: they identify who someone or what something is, and no two individual signatures are exactly the same. The same is true with digital signatures. Though the topic of signature application is a bit beyond the scope of this manual, the concept is fairly simple.

If you are part of a corporate network that sends sensitive trade secrets via electronic means, you can apply digital signatures to the files that are created. If you use Access 2010 to organize supplier information, you can safely send information to another individual in your organization. Their computer will hold what is called a digital certificate which is designed to 'decode' your signature. If your signature decodes properly, no problem – the other user will then make use of the supplier information. However if your signature does not decode properly, the other user can choose to block content from you (or perhaps someone masquerading as you!).

You can view and modify different aspects of Access' security via the Microsoft Office Access Trust Centre (described later in this lesson).

## About Trusted Locations

Imagine you are an employee of a large company and you send and receive files every day. Access has been warning you that some files may contain a possible security threat because the sender could not be verified. However, you know the sender and know that they can be trusted. Therefore, instead of being warned every time you try to open a file from them (which can quickly become annoying), you can tell Access that files from a certain location can always be trusted.

Trusted locations can include any location on your computer including shared folders, any other computer on your network, a server on your network, or some external data source across town or across the world!

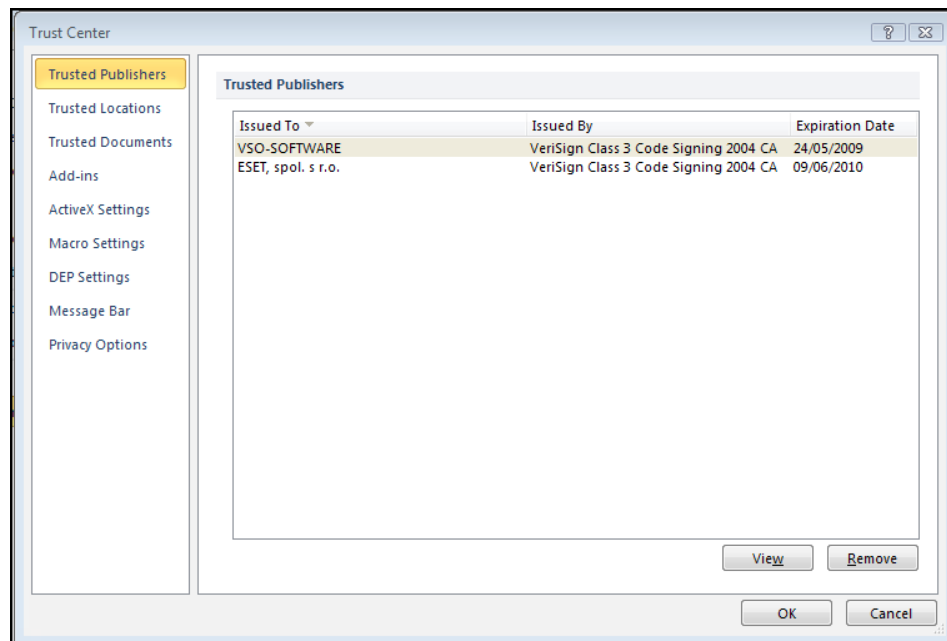
## Opening The Trust Center

All of the security features we have mentioned thus far are accessible through the Trust Centre. Let's quickly explore the different sections and options available in each. To open the Trust Centre.

### ► To access trust centre settings

#### MOUSE

1. Click **FILE** Tab (Backstage) Access **OPTIONS** (located above the Exit button):
2. Down the left-hand side of the Access options window is the link to **TRUST CENTRE**. Click the link, and then click the **TRUST CENTRE SETTINGS** button:
3. The Trust Centre window will then appear, giving you different categories of settings:

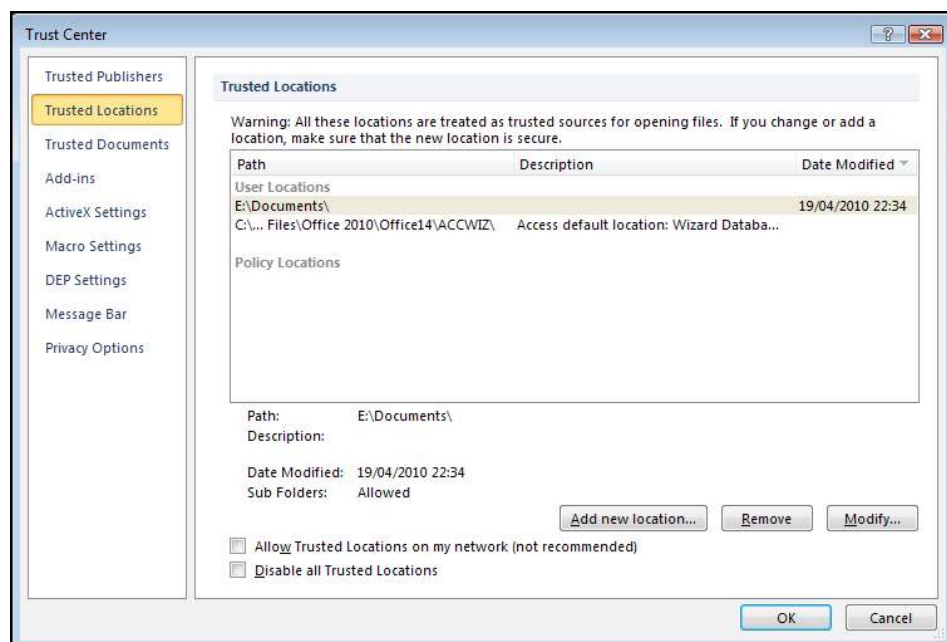


### Trusted Publishers

This pane will show you the security certificates of different individuals or organizations you trust.

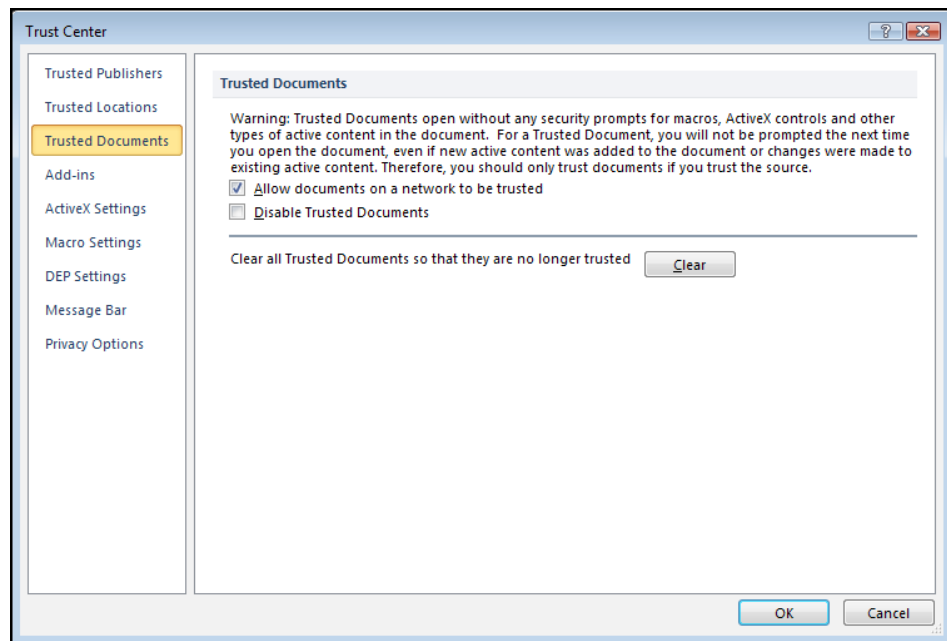
### Trusted Locations

This pane allows you to add, edit, or modify different locations that contain content you can trust.



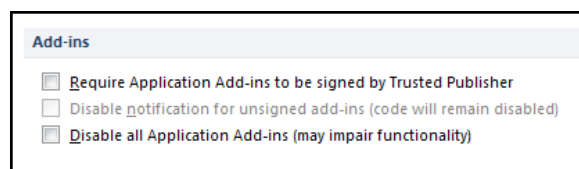
## Trusted Documents

This allows you to clear trusted documents, or modify settings to trust or distrust certain documents.



## Add-ins

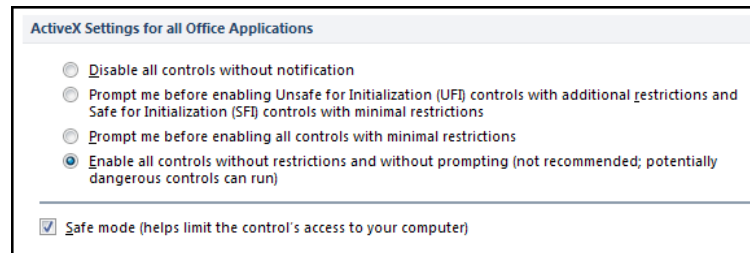
Add-ins are third party programs or code that are designed to perform a specific task to your database. Add-ins have the potential to cause a lot of trouble and ruin the functionality of a database (such as deleting all of the data) if they contain malicious code. This pane allows you to modify how Access will use any add-ins.



(If you are familiar with a third party plug-in for a web browsing program, such as Adobe Acrobat Reader, the principle is essentially the same.)

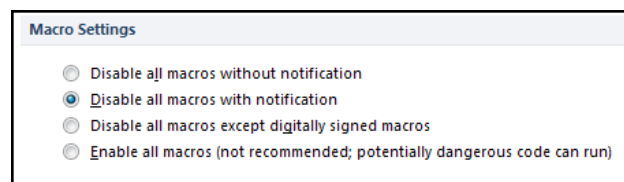
## ActiveX Settings

Allows you to set the default response in handling files with activeX content (activeX content may contain harmful scripts)



### Macro settings

Macros are a group of commands that can be executed all at once in order to perform some action on your database. But because macros can be constructed with special database code, they too can cause undesirable effects if they are from a bad source. Use this option to modify macro security settings.



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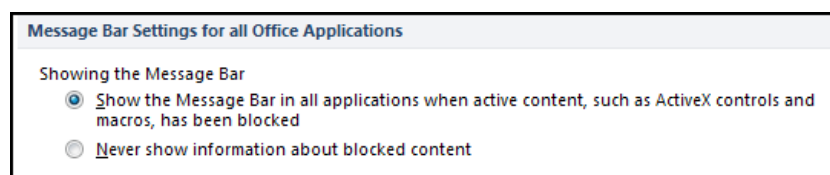
## Dep Settings



Turn on or off Data Execution Protection which protects your computer from harmful scripts that may run

## Message Bar

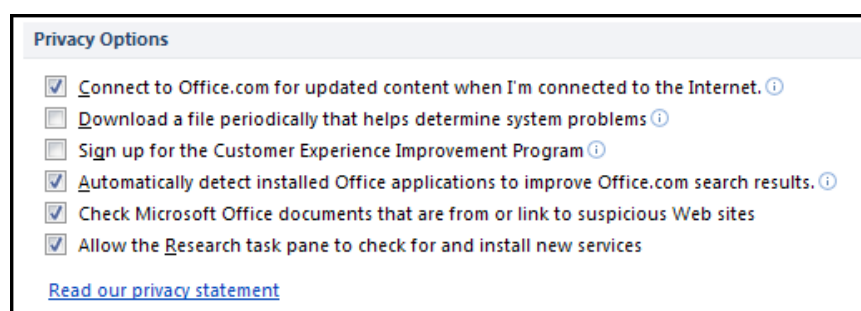
The Message Bar is set by default to prompt you before opening potentially unsafe content. You can turn the Message Bar on or off using this pane.



## Privacy Options

Access (and other programs in the Office suite) can automatically download new content for you, show featured links on Office Online, and provides background access to help diagnose and fix problems. If you would prefer to not see this content, you can modify settings in this pane to disable the content.

You also have the ability to translate certain files based on the languages installed with your operating system, and retrieve reference and research material on the Internet via the Privacy Options pane.



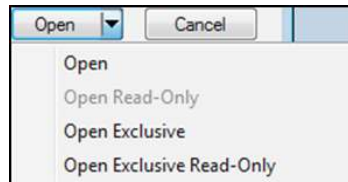
## Assigning A Password To Your Database

If you would rather not bother with more advanced security features but still want to have some protection, you can assign a password to encrypt the database. To set a password, a file must first be opened for exclusive use.

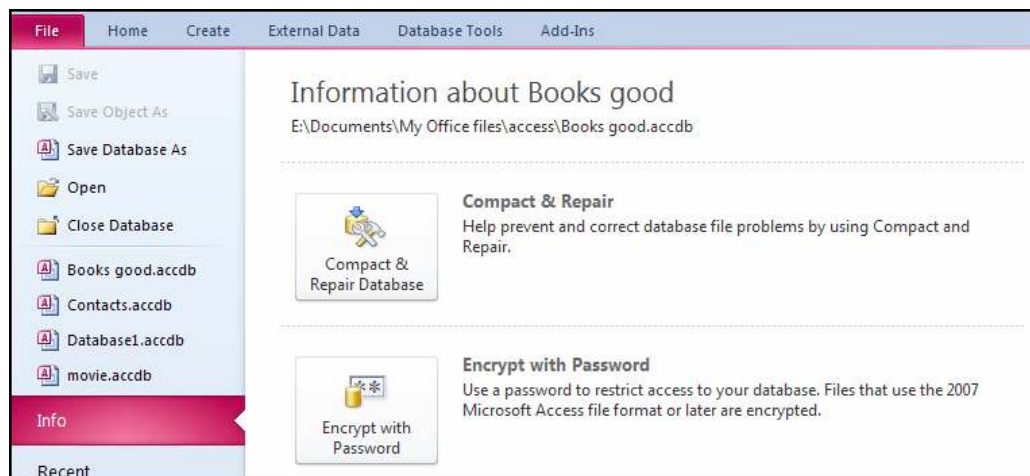
► To set a Password

MOUSE

1. Close any open databases
2. Click **FILE** Tab (Backstage) **OPEN**:

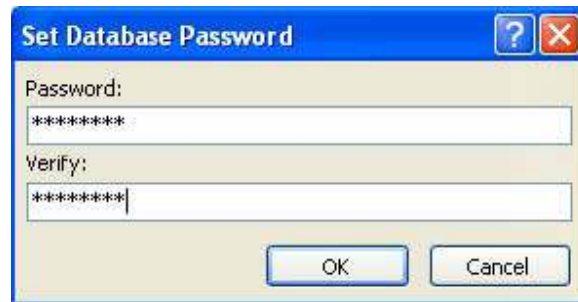


3. Browse to the database file you wish to open
4. Click the small pull-down arrow attached to the **OPEN** button and click **OPEN EXCLUSIVE**:
5. Then, open the database file you wish to protect.
6. Click **FILE** Tab (Backstage) **INFO**:
7. Click **ENCRYPT WITH PASSWORD** in the main section of the Window:



8. When the **SET DATABASE PASSWORD** dialogue box appears, type the password you want to use in the **PASSWORD** field, then type it again in the **VERIFY** field:





9. Once a password is committed to a database file, you must enter the password before Access will open it:
10. Should you need to remove the password, **FILE** Tab (Backstage) **INFO**section again and click **REMOVE DATABASE PASSWORD AND ENCRYPTION**:



11. Then, enter the password a final time to confirm the removal of the password.

## First Steps

Making a database might seem like a pretty big job, but taking the time to design one properly will save a lot of time down the road. You are exposed to databases everyday use them all the time probably without knowing it. In fact, you are likely in several, yourself!

The easiest method of identifying yourself in day to day life is a simple handshake and saying “Hello, my name is...” But you can’t really shake hands with a computer. Using your name, even your full name, isn’t a very good option either because there may be hundreds of people out there with exactly the same name as you. Therefore, you must be assigned some unique identifier, the most recognizable being your Social Security Number (SSN) or Social Insurance Number (SIN). No one else in the country has the same SSN as you.

This practice holds true for databases, too. Earlier in this manual you may recall seeing the term ‘primary key’. Every row in a table should have at least one field that is unique from every other record. That field is usually a number, and the unique field is referred to as the primary key. It is not imperative to have a primary key, but it makes the design of the database much easier and eliminates the possibility of duplicate data (which does nothing but confuse the issue!) It also allows a database program to (in most cases) search faster and more efficiently. Therefore, it is good practice to have a primary key for every table you make.

Let's quickly review what we know about databases: they are made up of tables, and in each table are several records (or rows) of data. Every record is made up of one or more fields, and every record in a table is different from every other record because of the unique primary key. Knowing this, and with the knowledge of the commands we learned so far, we are ready to start making databases!

For the remainder of this manual, let's pretend that you are Bugs Rabbit, CEO of an upstart animation company, Warner Cousins. You want to use Access 2010 to monitor the expenses made by you and your employees.

### Planning A Database

Before you start using Access to create a database, take the time to answer a few questions:

- Why do you need a database? You want to keep track of the expenses made by you and your employees.
- Who will be using the database? Any employee of Warner Cousins will have access to this database.
- What kind of data would be extracted from the database? Total expenses of the company, total expenses by each employee, expenses by each category.

Once you have answered these questions, it is time to decide how to design the tables for your database. What fields of data do you need? What data types will the fields need to be? What tables would be important? Which fields will go in which table, and do the placements make sense?

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Next comes the planning of relationships between the data. A big list of numbers doesn't mean much by itself, but when constructed based on other data, it becomes meaningful. And finally, make sure that you talk to everyone who will be using the database will be able to get the data they need. Let's examine some of the details.

You will obviously need an expense table that contains at least the following: who made the purchase, what did they purchase, how much was it, and when did they purchase it?

The payroll department already has a listing of the people who work for you:

- SIN (or company ID #)
- Name
- Address
- Phone Number
- Company Position

The database now should have two tables: an expenses table and an employee table. Now, there needs to be some sort of link between the two tables. You could use the name of each person, but that may become confusing, especially if your company grows into the hundreds. There is another option, however. You can use the SIN (or company ID) of each employee to tie their purchase to their personal information.

In database design, your most powerful tool is not the computer, but rather a piece of paper and a pencil (and a big eraser). Not only can you easily change the information you might need, but you can also visualize the information.

Consider the following diagram, based on the paragraph above:

| Expenses    |           |              |        | Employees   |             |                |          |       |
|-------------|-----------|--------------|--------|-------------|-------------|----------------|----------|-------|
| Employee ID | Date      | Expense Type | Amount | Employee ID | Name        | Address        | Phone    | Title |
| 2           | 5/7/2006  | Erasers      | 10     | 1           | Bugs Rabbit | 44 Carrot Dr   | 555-1212 | CEO   |
| 2           | 5/25/2006 | Lunch        | 50     | 2           | Elmer Funn  | 123 Wabbit Way | 555-9876 | VP    |
| 1           | 6/1/2006  | Flight       | 600    |             |             |                |          |       |

It might not look like much, but we have a database. It contains fields, records, a primary key for each record in each table, and a relationship between the data. We can see that employee 2 has made two purchases, and employee 1 only one. This might seem silly for an example of this size; why not just say Elmer Funn instead of an employee ID? As mentioned above, this becomes impractical if your organization grows. Imagine that your company has grown to employ thousands of people with hundreds of expenses a day – that becomes a pile of data in a big hurry! You might employ three or four Elmer Funnns by now, so using a unique number to identify each employee becomes much more practical.

## Basic Terminology

Let's take a look at the terminology used in database-speak, starting with the basics. Consider the following diagram:

|                 |       |       |       |
|-----------------|-------|-------|-------|
| <b>Database</b> |       |       |       |
| <b>Table1</b>   |       |       |       |
| <b>Record</b>   | field | field | field |
| <b>Record</b>   | field | field | field |
| <b>Record</b>   | field | field | field |
| <b>Record</b>   | field | field | field |
| <b>Record</b>   | field | field | field |
| <b>Table2</b>   |       |       |       |
| <b>Record</b>   | field | field |       |
| <b>Record</b>   | field | field |       |
| <b>Record</b>   | field | field |       |
| <b>Record</b>   | field | field |       |
| <b>Record</b>   | field | field |       |

### Let's Look At Each Piece Of The Database.

#### Field

A field is the smallest piece of a database; that is, one specific piece of information like a number, a word, a date, a picture, or a reference for some other piece of data. Each column you see in the diagram would all be the same data type; that is, one column of data would all be numbers.

#### Record

A record is a collection of one or more fields together in a row. (In a real database, you would not count the word 'Record' as depicted in the diagram – this is just to help visualize the concept.)

#### Table

A table is comprised of one or more records. Each table also has a unique name.

#### Database

A database is comprised of one or more tables. Each database is also given a unique name.

#### Form

A form is a tool that is used to easily and accurately enter data into a table. A form presents one record of a database at a time to a user, or allows a user to enter data into the database one record at a time.

## Query

A query is just like a question you ask the database. There are two types of queries: select and action. A select query will extract and display data based on criteria you provide. An action query will find all data relevant to your query and perform some sort of operation on it. A query can be performed on one or more tables in a database.

## Report

A report presents the data found by a query. A report can be formatted to show summaries, calculations, charts, and more based on the data returned by a query. Access takes the report one step further by letting you organize and format a report into a sleek, professional document suitable for printing, exporting, or e-mailing.

This might seem like a lot to remember, but don't worry – this terminology will be used heavily throughout this manual and soon it will be second nature!

## What Is A Primary Key?

A *Primary key* consists of one or more fields that uniquely identify each record in a table. An ID number or code often serves as the *Primary key* because this type of value is always different for each record. Access's

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Primary keys are especially flexible, because you can specify any field, not just the first field in the table. 'ACCESS' automatically creates an index for a table's primary key. A *Primary key* is similar to a dbase unique index except that 'ACCESS' automatically keeps the index on the *Primary key* current and uses it to search and sort records. You can also create indexes for other fields you search or sort on often.

### What Is Unique Index?

For example, suppose you had the personnel records for a large company stored on a database. There are over 50,000 employees within the company and it is necessary for you to find different employees record so that they can be updated. If the records were not indexed, every time you try to find the employee record for 'Mr Smith' you will need to read from the beginning of the database until you find 'Mr Smith'. This operation could take hours to complete.

However, if the records were stored or indexed in alphabetical order then finding the record for 'Mr. Smith' would be a great deal easier. What if they are 3 'Mr. Smith'? Which record would be the correct one? This highlights the reason why you should try and make your index (primary key) unique, so that every record is different and can be found easily. Staff numbers would be the ideal field to create as an index, because it is unique, no two employees' numbers are ever the same.

Therefore, if you need to find 'Mr. Smith's record and you know his staff number then the record could be located in a matter of seconds rather than hours.

### Field Properties & Validation

'ACCESS' automatically validates values based on a field data type; for example 'ACCEESS' will not allow text in a numeric field. You can set more specific rules for data validation rules.

### When Should You Validate Data?

Data should be validated:

- When you want to cut down the amount of errors that can occur in data entry
- When you want data to be entered in a specific format only
- With fixed length (only xxx amount of characters can be entered)

For example if you were asking someone a question about their date of birth, you could set up a validation rule that only allowed them to enter their data in a specific format i.e. Day/Month/Year, and only allowed them to enter a date which makes them over the age of 18. This will ensure validity of data and cut down the number of errors made.

### Setting Field Properties

In the lower portion of the table window, you can set properties for the current field. For example, you can set the size of text or numeric fields. This is also where you define validation rules and default values to assist in the data entry and prevent mistakes in your data.



## The Concept Of Normalisation

Data values should not be stored twice. If they are, it is a waste of space and more importantly, leads to updates only being applied to some of the copies of the value.

Each record is a collection of data items, which have some unique key. In any one record, the data items can only have one value for each key.

If a formal system has a set of repeating entries on one form, then each repeating entry becomes a record in a table.

Some business applications can be implemented using only one table, for example a stock file of a mailing database.

Many other applications use several tables; stock monitoring with records of purchase orders being delivered and despatches being sent out.

The correct system for an internal telephone directory giving departments, employees, rooms and extension numbers needs six tables to cope with such concepts as one room having more than one telephone extensions or two employees sharing the same extension.

End-users require an understanding of these concepts before they can design systems, which are capable of solving a problem. The target of the developer should be that, other people could use system without hours of explanation, or volumes of documentation

**THIS IS SELDOM ACHIEVED** – usually due to lack of system design.

The data that is to be stored in tables need to be thought about. One factor that needs to be taken into consideration when deciding what tables will be needed is the reality of the system. How many repeating lines mean a new table is needed?

A simple example of this is a list of companies and their telephone numbers. There could be a field for the switch board number, a fax number and an emergency number. This means that we can use one record per company, with three telephone number fields. If one company has fifty external telephone lines then we should NOT allocate fifty field for the numbers in one record; we should start a new table with one field for each telephone number, and another field to link the telephone number table to the company table. WE do not normally want to repeat the company name in the company name in the telephone number table, as this would be a repetition. If each company has a unique identifier, then this can be stored in the telephone number table.

We have already mentioned that each table normally has a unique key 'ACCESS' allows the key to be constructed from two fields such that the combination of values from the two fields is unique. It is NOT compulsory to have a key for a title; the existence of a key serves more than one purpose though.



## Normalisation Techniques

- The steps in Normalising data are:
- Convert the source data into a list of attributes;
- Put repeating groups of data into separate structures;
- Put data that is only dependent on part of the key into separate structures;
- Put data that is dependent on other non-key data into separate structures;
- Combine structures with identical keys.

The following source document will be used to illustrate the effect of each step.

|                       |             |                |                      |          |               |
|-----------------------|-------------|----------------|----------------------|----------|---------------|
| SALES ORDER RECORD    |             |                |                      |          |               |
| Order No.             | Order Date: |                | Order Value          | Priority | Sales Person  |
| Customer No.          |             | Customer Name: |                      |          |               |
| Invoice Address:      |             |                | Consignee Address:   |          |               |
| Order Details         |             |                |                      |          |               |
| Product Code          | Description |                | QTY                  | Price    | Delivery Data |
|                       |             |                |                      |          |               |
|                       |             |                |                      |          |               |
|                       |             |                |                      |          |               |
|                       |             |                |                      |          |               |
| Delivery Instruction: |             |                | Special Instruction: |          |               |

Convert the source data into a list of attributes

### (UN-NORMALISED FORM (UNF))

UNF

#### **Order No.**

*Order Date*

*Order Value*

*Priority*

*Sales Person*

*Customer No.*

*Customer Name*

*Customer Address*

*Consignee Address*

*Invoice Address*

*Product Code*

*Description*  
*Quantity*  
*Price*  
*Delivery Date*  
*Delivery Instruction*  
 Special Instruction

Put repeating groups data into specific structure

**(First Normal Form (FNF))**

|                             |                         |
|-----------------------------|-------------------------|
| <b><u>Order No.</u></b>     | <b><u>Order No.</u></b> |
| <i>Product Code</i>         |                         |
| <i>Order Value</i>          |                         |
| <i>Order Value</i>          | <i>Description</i>      |
| <i>Priority</i>             | <i>Quantity</i>         |
| <i>Sales Person</i>         | <i>Price</i>            |
| <i>Customer No.</i>         | <i>Delivery Data</i>    |
| <i>Customer Name</i>        |                         |
| <i>Invoice Address</i>      |                         |
| <i>Consignee Address</i>    |                         |
| <i>Delivery Address</i>     |                         |
| <i>Delivery Date</i>        |                         |
| <i>Delivery Instruction</i> |                         |
| <i>Special Instruction</i>  |                         |

**THIS IS CALLED THE FIRST NORMAL FORM (FNF)**

*Put fields which are only dependent on part of the key into separate structures (Second Normal Form)*

**This step is also called ‘removing partial dependencies’.**

The description attributes in the extracted group is only dependent on the product code part of the key, not the order No. So that is extracted to a new group. Its primary key is product code. In simple terms this is saying that the description of a product will always be the same, so why not hold it once under the product code, rather than repeat it every time it is ordered.

There are now three groups of data:

| <u>Order No.</u>           | <u>Order No.</u>    | <u>Product Code</u> |
|----------------------------|---------------------|---------------------|
|                            | <i>Product Code</i> |                     |
| <i>Order Date</i>          |                     | <i>Description</i>  |
| <i>Order Value</i>         | <i>Quantity</i>     | <i>Price</i>        |
| <i>Priority</i>            |                     |                     |
| <i>Sales Person</i>        |                     |                     |
| <i>Customer No.</i>        |                     |                     |
| <i>Customer Name</i>       |                     |                     |
| <i>Invoice Address</i>     |                     |                     |
| <i>Consignee Address</i>   |                     |                     |
| <i>Delivery Address</i>    |                     |                     |
| <i>Special Instruction</i> |                     |                     |

The above example assumes that the price is per unit. The analyst would have to check that, this was the correct meaning and not, say price per unit x quantity ordered.

*Put fields that are dependent on other non-key fields into separate structures.*


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**(THIRD NORMAL FORM (TNF)).**

This step is known as ‘removing mutual dependencies.’

The fields ‘Customer Address,’ and ‘Invoice Address’ are only dependent on the customer number.

They are extracted to a separate group with Customer Number as the primary key.

Customer Number needs to remain in the original data group as a foreign key to provide a link to the extracted data. Again, in simple terms, the reasoning is that if the ‘Customer Address’ and ‘Invoice Address’ will always be the same, hold them only once with the master details of the customer. The foreign key is marked with an ‘\*’.

|                             |                      |                        |                      |
|-----------------------------|----------------------|------------------------|----------------------|
| <i>Order No.</i>            | <i>Order No.</i>     | <i>Product Code</i>    | <i>Customer No.</i>  |
|                             | <i>Product Code</i>  |                        |                      |
| <i>Order Date</i>           |                      | <i>Description</i>     | <i>Customer Name</i> |
| <i>Sales Person</i>         | <i>QuantityPrice</i> | <i>Invoice Address</i> |                      |
| <i>*Customer No.</i>        | <i>Delivery Date</i> |                        |                      |
| <i>Consignee Address</i>    |                      |                        |                      |
| <i>Delivery Instruction</i> |                      |                        |                      |
| <i>Special Instruction</i>  |                      |                        |                      |
| <i>Priority</i>             |                      |                        |                      |

**Key Values**

‘ACCESS’ ensures that no two records in the same table can have the same key. If we use a ‘part number’ to identify a line of stock, then this must be kept unique. If two different lines of stock had the same key, then chaos could be caused.

The key also creates a sequence for the records. However, the user should not try to use values for a key to sequence a report. The data can be presented in different sequence in different printouts without using any keys.

The key also provides quick access to a record, which is important if there are hundreds of records in a file. This feature is used frequently by ‘ACCESS’ when the user is interacting with more than one table at once, via a form, a report or a key.

**Choosing A Key**

Sometimes the choice of a field for a key is self-evident, as with example such as Employee Details (Payroll number) or stock file (Part Number). If the table is a list of companies, then the choice is not so obvious. If the companies were customers, then a Sales Ledger system would specify an account number for each. If they are a mix of useful contacts such as Bank, Inland Revenue, Software support, Consultant and so on, then there is no obvious key.

In this situation, an artificial key needs to be created. The old fashioned way to do this was to use some letters of the company name, a letter to give their relationship to our organisation to our organisation and some geographical reference. This style of solution is now largely discredited, and it is more common to use an artificial numbering system such as A001, A002 and so on. The length of the code should be as short as possible, but providing enough possible values to cope with any predictable number of records.

An alphabetical key provide many more possible values than numeric, but care should be taken to avoid problems such as A 1 not being the same as A1 or A 1.

Sometimes it is desirable to use two fields for a key. If we wish to keep records of daily usage of pool cars, then we could use the combination of the car registration numbers and the date. This would not permit the storage of two records for the same car for the same day though. A system to record quality wines in stock will need to have a list of the wines, and then a second table indicating the number of wines in stock for each year. In this case, the key to the wine table could be vineyard number, and the key to the second table would be the combination of the vineyard number and the year.

It is always possible to create a new field to act a key in one table, and store the other fields as non-key data items.

The advertisement features a portrait of a young woman with red hair on the left side. The right side has a white background with blue and red text. A red diagonal line separates the image from the text.

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