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Creating tables in *Microsoft Access 2007*[®]

The aim of this guide is to provide information on using tables in *Microsoft Access 2007*[®]. A basic knowledge of *Microsoft Access*[®] and databases is assumed.

Other documents in the series are:

USER 163	Introduction to <i>Microsoft Access 2007</i> [®]
USER 165	Filters and queries in <i>Microsoft Access 2007</i> [®]
USER 166	Creating forms in <i>Microsoft Access 2007</i> [®]
USER 167	Producing reports from <i>Microsoft Access 2007</i> [®]

Before you start

It is advisable to plan your database on paper first. Consider how many tables you will require, what data the tables will hold and how the tables will be structured. Try to identify and repeated or common types of data.

Why do I need a table?

The data for your database is stored in tables. Records are stored in the rows of the table; fields are stored in the columns of the table. Each record can be uniquely identified through a Primary key field.

Getting started

Open *Microsoft Access 2007*® and create a new database file.

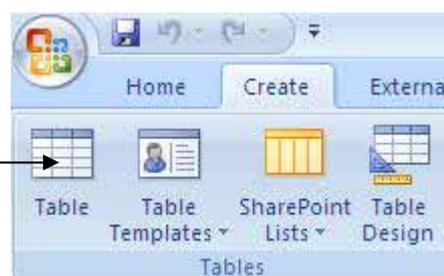
See the guide USER 163: Introduction to *Microsoft Access 2007*® for details of how to do this.

Creating a table

When you open a new database, the first table will be created automatically.

To insert another new table:

- Select the **Create** tab
- Click the **Table** button
- If you would like *Access*® to create a table using sample field names, click the **Table Templates** button and select the type of table you require.



Finding your way around Access®

Access® has two main working views:

- Design View is used to construct the framework of the database, e.g. specifying field names, defining queries and creating forms

blue arrow to the right of the data type field and select an alternative data type.

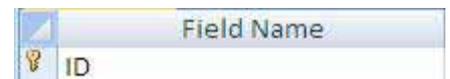
- Press **Enter** on the keyboard. A cell in the Description column will be selected. Enter a description if required.
- Press **Enter** on the keyboard and repeat the above process for other fields.

Primary keys

Each table in a database can be identified by assigning a **Primary Key**. The primary key should be something that is unique, e.g. identification number. Only one primary key need be assigned per table in the database.

To assign a primary key:

- Click inside the field that you want as your primary key
- Click the **Primary Key** button (under the Design tab)
- or
- Right-click and select **Primary Key**
- A 'key' icon will indicate which field contains the Primary key



To remove a primary key:

- Click in the field that has been assigned as the primary key
- Click the **Primary Key** button
- or
- Right-click and select **Primary Key**

Saving a table

It is recommended that you save your table at regular intervals whilst you are working. To save the table, click the **Save** button  at the top of the screen or click the **Office Button**  and select **Save**.

The table will be listed in the **All Tables** window on the left-hand side.

Renaming a table

- Find the table in the **All Tables** list (the left-hand window)
- Right-click on the table and select **Rename**
- Type a new name for the table
- Press Enter on the keyboard

Deleting a table

- Find the table in the All Tables list
- Click once on the table to select it
- Press the Delete key on the keyboard

Changing the order of field names

The order that fields appear in the database can be changed in Design View.

- Select the row that you wish to move, by clicking on the blue square to the left of the field name. The row should become highlighted
- Hold down the left mouse button and drag the field up or down to the new location

Deleting a field name

Click on the text that you wish to delete and press the **Delete** key on the keyboard.

Deleting an entire field

- Click the blue square to the left of the field that you wish to delete. This should select the entire row
- Press the **Delete** key on the keyboard

or

- Right-click at any point in the row and select **Delete Rows**

Field Properties

Setting field properties can give the database extra flexibility and functionality. The table needs to be open in Design View to access field properties.

- Click once on a field name
- The Field Properties will appear at the bottom of the screen.

General	Lookup
Field Size	255
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	

- Click the **General** tab
- Choose a property and click on the white space next to it
- The application of a property depends on its type. You may need to type a value, click a button and choose from a list of options or click a button and use a Wizard to develop the property.
- When you click a property, a description will appear in the space to the right. You can obtain further help by pressing the **F1** key on the keyboard.

Field size: minimizes the size of the database by limiting the number of characters that can be typed into a field, to a maximum of 255 characters. The property is applied by typing a value into the white space

Format: customizes the way that text or numbers are displayed and printed, e.g. colour, alignment etc.

Input mask: sets up the field to receive data in a particular format, e.g. postcodes or telephone numbers. This helps to reduce data entry mistakes.

Caption: adds a label to the field to assist the user, e.g. instructions for entering data

Default value: sets a value to appear in the field before you enter any data

Validation rule: a condition that must be met before the data is accepted into the database. This prevents any mistakes due to incorrect or misspelled data.

Validation text: this appears if a validation rule is not satisfied. It is good practice to set Validation Text when using Validation rules to remind the user of acceptable data types

Required: makes data entry compulsory, so the field cannot be left blank.

Adding data to a table

Once the table has been created and the field and properties are defined, you can start adding data. This is done in Datasheet View. Click on the first empty record and start adding data.

Moving around a table

There are several ways to do this:

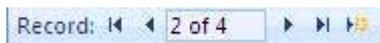
- Use the arrow keys on the keyboard
- Press the **Enter** or **Tab** keys on the keyboard
- Click in a new cell

Working with records

The table needs to be displayed in Datasheet View to edit records.

Selecting a record:

- The left side of the table contains a column of grey buttons
- To select a record, click the button next to the record. The whole record will be highlighted
- Click the button again to deselect the record
- The record number is displayed in the control bar at the bottom of the screen. These controls can also be used to navigate through and add new records.



Inserting a new record:

- A button with an asterisk* indicates the next available record in the table
- To enter a new record, click the **New (blank) record** button* from the control bar at the bottom of the screen

Deleting a record:

- Select the record by clicking the grey button to the left of the record
- Press the **Delete** key on the keyboard

Backing-up a database

It is important to back-up your work regularly, in case work is lost or corrupted. To back up your database in *Access*®:

- Click the **Office** button 
- Click **Manage**
- Click **Back-up Database**



Compacting and repairing a database

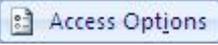
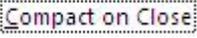
Deleted records, though not visible, still take up disk space. Extensive editing can make the database inefficient in terms of speed and disk usage. Databases can also become corrupted or damaged, which may cause you to lose important work.

Access® has a **Compact and Repair** command, which can help to prevent these problems. You should compact and repair your database regularly.

- You should always make a back-up of your database before running Compact and Repair
- Click the **Office** button 
- Click **Manage**
- Click **Compact and Repair Database**



You can also configure Access® to automatically Compact and Repair when you close the database:

- Click the **Office** button 
- Click **Access Options** 
- Select **Current Database** from the list on the left-hand side
- In the **Application Options** section, check the box next to **Compact on close** 
- Click **OK**

Changing the appearance of a table

Note: to undo any changes that you do not like, click the Undo button at the top of the screen 

Adjusting column width:

- Place the mouse over the right border of the column
 - When the pointer changes to a black cross, hold down the mouse button and drag the guide horizontally
- or
- Right-click on the column heading and choose **Column Width**
 - Enter a new column width value and click **OK**.

Moving a column:

- Click on the column heading
- Click and drag the column to a new position

Hiding columns:

- Click on the column heading
- Right-click and choose **Hide Columns**

To reshow columns:

- Right-click on any column heading and choose **Unhide Columns**
- Check the box next to the column you wish to unhide
- Click **Close**

Freezing columns:

A 'frozen' column will remain static in the table while you scroll through the remaining columns in the table.

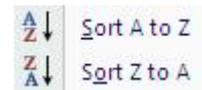
- Select the column that you wish to freeze
- Choose **Freeze Columns**
- The frozen column will automatically be placed on the left of the table

Unfreezing columns:

- Right-click on any column heading
- Choose **Unfreeze All Columns**
- The column will not return to its original position, so you may have to move it

Sorting table data

- Right-click on a cell of the column you wish to sort
- Choose **Sort Ascending** or **Sort Descending**

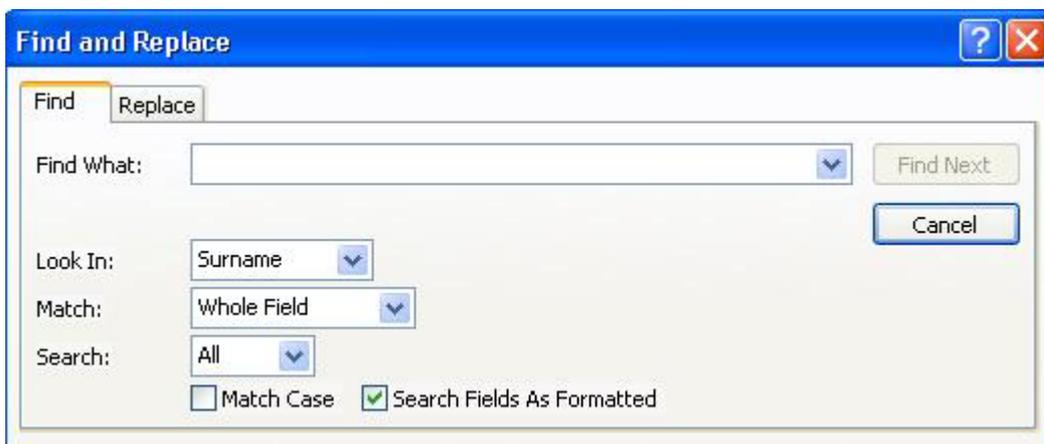


Finding and replacing data

'Find' is a basic search strategy, which will only find one instance of data at a time. For more advanced search techniques, see User 165: Filters and queries in *Microsoft Access 2007*®

Finding data:

- Click on any cell of the column you wish to search in
- Click the **Find** button,  which is located in the top-right corner of the screen
- The Find and Replace window will appear



- Type the data you are searching for

- Complete the boxes

Find What: type in the data you want to find

Look In: select where you wish to search – this can be the current column or the whole table

Match: choose whether the data should match all or just part of your search

- Click the **Find Next** button

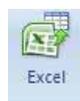
Finding and replacing data:

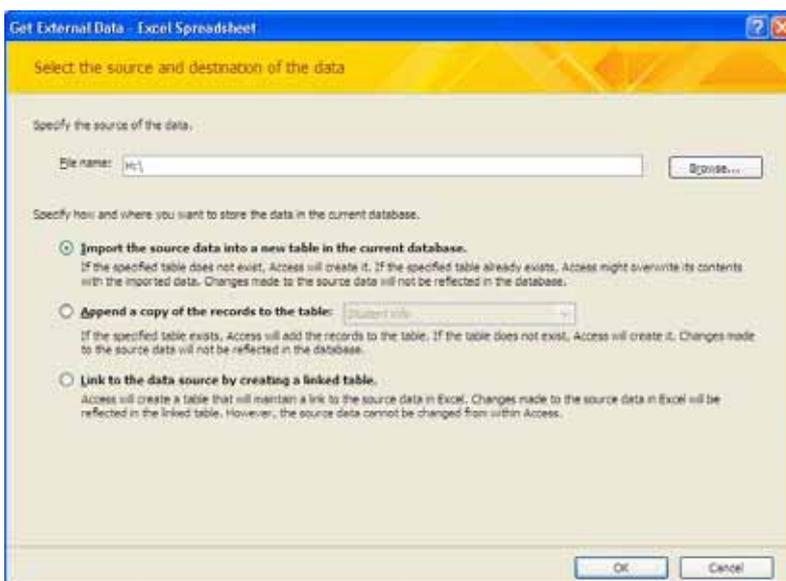
- Click the **Find** button
- Click the **Replace** tab from the **Find and Replace** window

Or

- Click the **Replace** button 

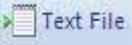
Importing data from *Microsoft Excel*®

- Click the **External Data** tab
- Click the **Excel** button 
- The **Get External Data** window will appear



- Locate your *Excel*® file by clicking the **Browse** button
- Specify whether you want to create a new table, or add data to an existing table by selecting the relevant option
- Click **OK**

Importing data from *Microsoft Word*®

- Make sure that the data in *Microsoft Word*® is separated by commas
 David, Brown, Computing, 12030
 Ian, Smith, History, 410
- Save the *Word*® file in the Text only format
- Click the **External Data** tab in *Access*®
- Click the **Text File** button 
- Locate your file by clicking the **Browse** button
- Specify whether you want to create a new table, or add data to an existing table by selecting the relevant option
- Click **OK**

Printing a table

- Open the table that you wish to print in Datasheet View
- Click the **Office Button**
- Choose **Print**

Printing selected records from a table:

- Select the records that you wish to print by clicking on the box to the left of the record. Hold down the **Shift** key on the keyboard to select more than one record
- Click the **Office Button**

- Choose **Print**
- Choose **Selected Record(s)**

Related tables and relational databases

A very simple database need only have one table, but it would not make an efficient or flexible database. By breaking a large table into several smaller tables and establishing 'relationships' between common themes in these tables, the database will be able to hold a wider range of data, offer greater flexibility when retrieving information and help to prevent duplication of the same information. This type of database is commonly known as a **Relational Database**.

The common theme forming the basis of the relationship between tables is usually a unique code or 'key', of which there are two types, a **primary** key and a **foreign** key. The primary key is used to uniquely identify a record in a table; a foreign key is a field that corresponds to the primary key of another table – this is what forms the basis of the link or relationship between the tables. The table holding the primary key is known as the **Primary table**; the table with the foreign key is the **Child**.

Consider a student database. It could contain a table called 'student_info' and a table called 'award' holding the following details:

student_info	
Field Name	Data Type
Student Reg No	Number
Surname	Text
Address	Text
Tel No	Number
Date of birth	Number
Award code	Number

Primary key

Foreign key

The 'student_info' table would contain a primary key to uniquely identify each student, for example, the student registration number, and also an Award code to link to details about a particular course. The 'award' table would contain a primary key to uniquely identify a course, for example, the Award code.

award		Field Name	Data Type
🔑	Award code	←	Number
	UCAS No		Number
	Title		Text
	Level		Number
	Award Leader No		Number
	School No	←	Number

Primary key

Foreign key

In this instance, the Award code on the 'student_info' table would be a foreign key as it corresponds to the primary key of the 'award' table. The 'student_info' table would be the Primary table and the 'award' table would be the Child table.

There are three different types of relationships between tables:

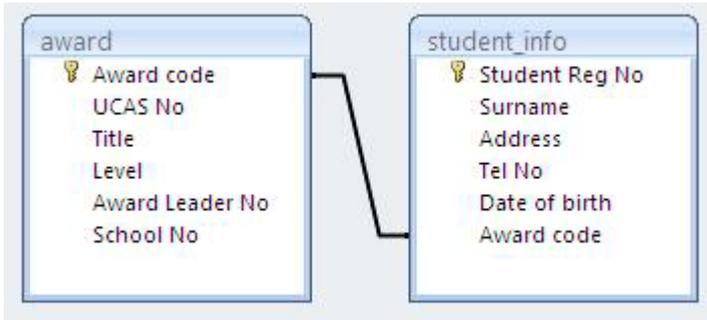
- **One to one** - a record in one table corresponds to one record in another table
- **One to many** – a record in one table corresponds to multiple records in another table. This is the most common type of relationship, for example, an award will have many students
- **Many to many** – multiple records in one table will correspond to multiple records in another table

When creating relationships between tables in *Access*®:

- Work out the relationships on paper first
- 'One to many' is the most common relationship; the other relationships are less common, so you may need to re-consider the design of your database
- There can only be one type of relationship between any two tables
- The tables that form the relationship must be of the same data type and contain the same kind of values
- In 'one to many' relationships, the table on the 'one' side must be the primary table
- You cannot delete the table that is the primary table in a relationship. You must delete the relationship line first

Creating relationships:

Lines are used to display which tables are related.



To create a relationship:

- Close all tables
- Click the **Database Tools** tab
- Click the **Relationships** button 
- The **Show Table** box will appear
- Select the required tables and click **Add**
- Click **Close** when you have finished adding tables

To add a relationship line:

- Locate an instance of the common field appearing in both tables, for example Award code
- Click and drag between the two common fields
- The Relationship Options window will appear to allow you to define the nature of the relationship



- **Enforce Referential Integrity** – this helps to ensure that the relationships are valid. It prevents the entry of links to non-existent records and prevents the deletion of a relationship that would affect the operation of the database
- **Join type** – when you perform a query, *Access*® will look at the join type and take this into consideration when retrieving data

Editing a relationship:

- Open the Relationships window by clicking the **Relationships** button
- Tables can be moved around the Relationship window by dragging and dropping them

Deleting a relationship:

- Click once on the relationship line between the tables
- Press the **Delete** key on the keyboard

Deleting a table from the Relationships window:

- Click once on the table
- Press the **Delete** key on the keyboard

Closing the Relationships window:

When you close the Relationships window, you will be prompted to save the layout if this has not been done already.

Where next

Once you have added data to the tables, the next step is to create queries and searches for your database.

See User 165: Filters and queries in *Microsoft Access 2007*®

Where to go for more help or information

You can get further help from the Information Services Help Desks at:

Thompson Library: 01782 294771

Brindley IT Centre: 01782 294135

Octagon IT Centre: 01785 353339

Online: www.staffs.ac.uk/ishelp

Email: libraryhelpdesk@staffs.ac.uk (for all IT and Library queries)

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