Creating a table in a database

Preparing to create a table

⊟ A table contains a set of **structured** data.

This structure is based on one fundamental element: the **field**.

Each field in the table represents a specific item of information (for example, a Name field will contain a customer's name whereas the Postcode field will contain his/her postal or zip code and so on).

Each set of fields (along with the data they contain) makes up a **record** (in a Customers table, for example, each customer's information is stored in a separate record). Each record in the table is designed to contain the same information, even though some records may contain fields that have not been filled in.

This set of data is brought together in a table composed of columns (the fields) and rows (the records):

Customer ID ▾	Title ▾	First name ▾	Last name ▾	Address ▾	ZIP Code ▾	City ▲
ADA001	Mr	Joseph	ADAMS	1C Portland, Regent Streer	GB W1B 1JA	LONDON
AND001	Miss	Lucy	ANDERSON	60 Hyde Park Gate	SW7 5BB	LONDON
BAK001	Mr	James	BAKER	10 Bina Gardens	WR24EW	WORCESTER
BEL001	Mr	Samuel	BELL	626 Chiswick High Road	BS29LL	BRISTOL
BEN001	Mr	Peter	BENNETT	26-33 Queens Gardens Hyde	NW3 1DR	LONDON
BRO001	Mr	Alexander	BROOKS	31-35 Craven Hill Gardens	CB41JH	CAMBRIDGE
BRO002	Miss	Sarah	BROWN	21 Lowndes Street	SW1X 9ES	LONDON
BRY001	Mr	Anthony	BRYANT	61 Gloucester Road Kensingt	SW7 4PE UK	LONDON
CLA001	Miss	Lola	CLARK	45 St. Martin's Lane	WR24TN	WORCESTER

Record: I◄ ◄ 1 of 67 ► ►I ►❋ 🔍 No Filter | Search

⊟ The table's layout is designed so that you can name the fields on which it is based and define the properties of those fields, such as the type of data they should contain (text, numbers, dates, etc.) and the maximum number of characters that can be entered (the field length).

One of the fields in the table must be used to give each record a unique identity. This is the **primary key** (if you do not define one, Access can do so and manage the data it contains automatically).

Creating a table in Datasheet View

Use this method to create an empty table in which you can add fields in Datasheet View.

⊟ Click the **Table** button in the **Tables** group on the **Create** tab.

*A new table that only contains an **ID** field opens in Datasheet view. The **Click to Add** column is selected.*

ID ▾	Click to Add ▾	
✱	(New)	

⊟ Add your fields to the table, specifying which type of data each field is to contain (see Modifying a table's design in Datasheet View in this chapter). The different types of data (Text, Memo, Number, etc.) are explained in the following section, Creating a table in Design View.

⊟ Then save your table: click the **File** tab, then the **Save** option, or click the **Save** tool button 💾 on the **Quick Access Toolbar**, or simply use the Ctrl S keyboard shortcut.

Type the name of your table in the **Table Name** text box and click the **OK** button.

⊟ Enter the records you require into the table and then close it by clicking the ✕ button.

✍ If the data which are to be added to the table already exist in an Excel spreadsheet, you can copy the Excel spreadsheet data into the Access table when viewing it in Datasheet View mode. After coping the data from the Excel spreadsheet, go back into Access, then click the **Table** button under the **Create** tab (**Tables** group). Keep the **Click to Add** column selected and use the Ctrl V keyboard shortcut to paste the data into the datasheet. Confirm that you want to add the data by clicking the **Yes** button in the message which then appears.

Creating a table in Design View

Use this method to create an empty table in which you can add fields in Design View.

- Click the **Table Design** button in the **Tables** group on the **Create** tab.

  *The table opens in Design View. You see that the context tab called **Design** is activated.*

- For each field you want to insert into the table:
  - Click in the first empty cell in the **Field Name** column and enter the name of the field. You can use between 1 and 64 characters, except for full stops (.), exclamation marks (!), apostrophes (') and square brackets (**[ ]**).
  - Select the **Data Type** that you want the field to accept. To choose a type, click the corresponding cell in the **Data Type** column, open the drop-down list and click the required type:

Text	Alphanumeric characters (letters and/or numbers); the length of a text field is limited to 255 characters.
Memo	Alphanumeric characters (rich text formatting is possible); the length of a Memo field is limited to 63999 characters.
Number	Any numbers, with or without decimal points.
Date/Time	Dates or times (Access checks the validity of the dates and times you enter).
Currency	Values are presented in currency format (e.g. $1,500.00).
AutoNumber	A numeric value, incremented automatically whenever a new record is entered.
Yes/No	Only two items are allowed in this type of field: Yes or No. For example, a field called Paid would only show whether a bill has been paid (Yes) or not (No).
OLE Object	This type of field is used to insert various objects from other Windows applications into the table.
Hyperlink	This type of field contains text used as a hyperlink address.
Attachment	This type of field is used to store pictures, graphics or Office files or any other type of file from another programme.
Calculated	This type of field is used to create an expression which displays the result of a calculation based on other fields in the same table.
Lookup Wizard...	Launches a wizard that creates a field whose value is inserted from another table or based on data you enter.

- If necessary, enter the **Description** of the field contents in the corresponding column. This text appears on the status bar when you add or modify data in that field.
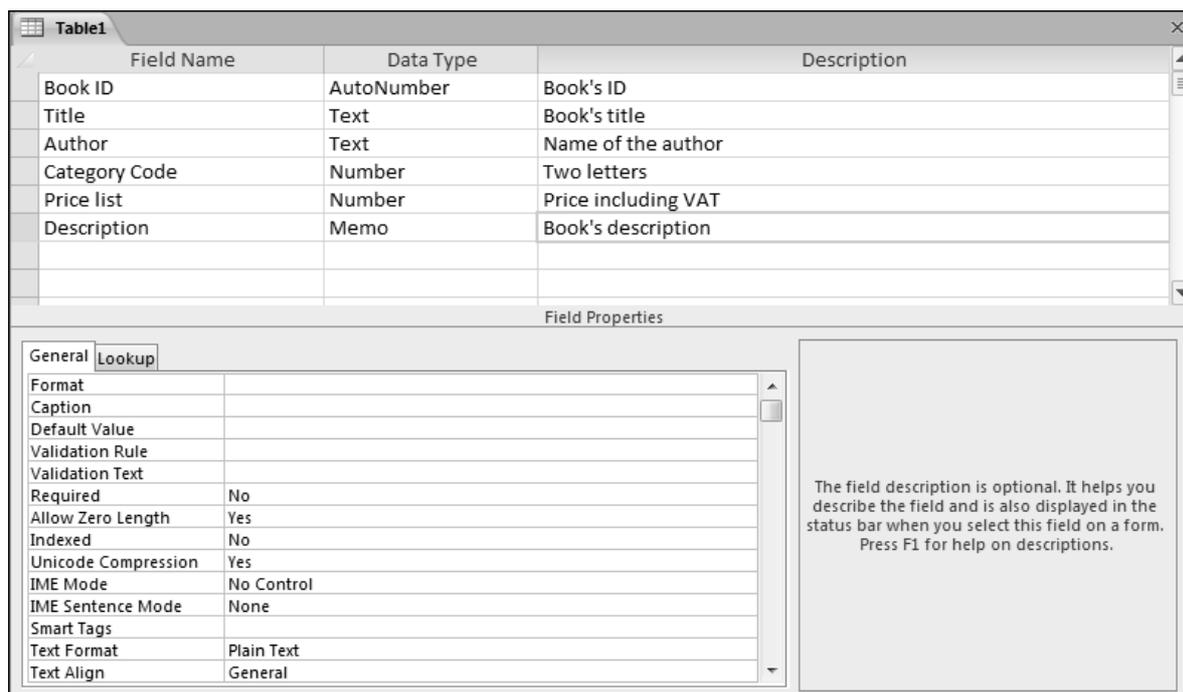
- To define the properties of each field, click the row for that field then fill in the lower part of the window.

  How to modify field properties is described in detail later in this chapter (see Table design – Modifying field properties).

- Specify which field is to be the primary key: click the corresponding row then click the **Primary Key** button in the **Tools** group (**Design** tab).

- Save the table: click the **File** tab, then the **Save** option, or click the **Save** button ![save] on the **Quick Access Toolbar**, or simply use the Ctrl S keyboard shortcut.

  Type the table's name in the **Table Name** text box in the dialogue box that appears and click the **OK** button.

- Close the table by clicking the ![X] button.

✎ If you do not specify which type of data to be included in a field, **Text** type is selected by default. To change the **Default field type**, use the corresponding list in the **Object Designers** category of the **Access Options** dialogue box (**File** tab - **Options** button).

Modifying a table's design in Datasheet View

- In the Navigation Pane, double-click the table whose design you want to modify so that it opens in Datasheet View.

- Click the **Fields** tab.

Adding a new field

The idea is to insert a new column, giving it a name to match the field you want to add.

- To add a field by entering data, click on the cell which can be seen beneath the **Click to Add** heading (last column in the table), enter the field data and then confirm with ↵. The **Data Type** and field **Format** are assigned automatically depending on what you have entered (e.g. if you enter 22:45, then Access will interpret this as **Date/Time** data, in the **Short Time** format). Access assigns the name **Fieldn** to the new field, where **n** is the field number and will vary depending on how many fields have been inserted before it.

  If you wish, you can change the name of the field. Double-click the column (field) header, enter the new name and confirm with the ↵ key.

- To add a field and choose its data type, click the header of the field after which you want the new one to be inserted.

  In the **Fields** tab, click the button which corresponds to the type of field you want to add, which you will find in the **Add & Delete** group, click the **More Fields** button to display the fields gallery.
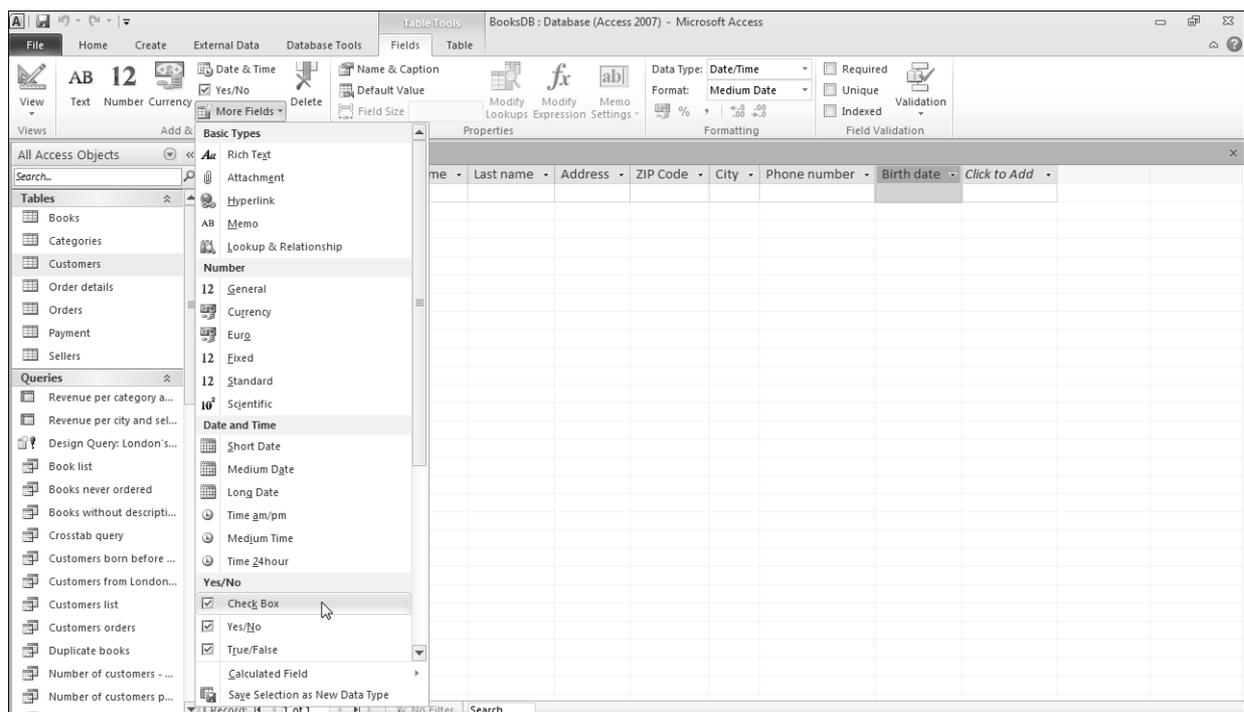
*Fields are arranged by type. Some **Quick Start** category types contain several fields, such as the **Name** type, which enables you to add both **Last Name** and **First Name** fields. Other fields, such as the **Payment Type** field, have lists of predefined choices; for example, the **Payment Type** field offers a choice between **Credit Card**, **Cash**, **Check** and **In Kind**.*

Next, click the type of field you want to add, enter its name in the header line, then confirm with the ⏎ key. The number of characters in the field name must be between 1 and 64, but the full stop (.), exclamation mark (!), apostrophe (') and square bracket (**[ ]**) characters are not allowed.

*If you have added a field by choosing it from the **Quick Start** category, then it will appear to the left of the field you initially selected.*

⊟ Once you have finished adding fields to your table, you can close your table, if you wish, by clicking the

⊠ button.

✎ To add a field by choosing its data type, you can also click on the **Click to Add** header at the top of the last column of the datasheet. From the list which then appears, click the option which matches the type of data to associate with the field.
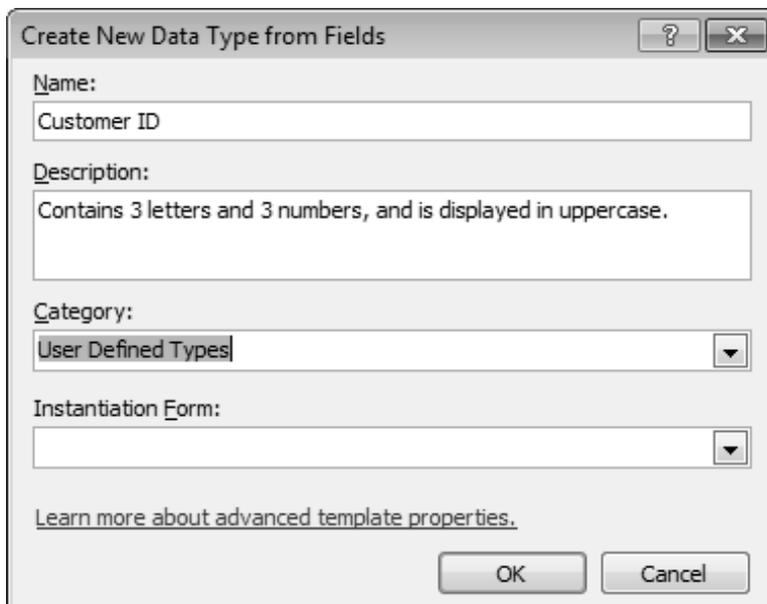
Creating a data type

*This will add a new data type to the **More Fields** list, based on one of the fields in a table's datasheet. Fields added using the data type created in this way will retain all the properties of the field (size, format, input mask, etc.) from which the new data type was created.*

⊟ Click the header of the field which contains the data type you want to save.

⊟ Go to the **Fields** tab, click the **More Fields** button in the **Add & Delete** group, then the **Save Selection as New Data Type** option.

⊟ Enter the **Name** and **Description** for the data type in the corresponding fields.

⊟ From the corresponding list, select the **Category** to which the new data type should be added; you will see the list of categories available from the **More Fields** button.

*The **User Defined Types** category is selected by default.*

⊟ If you want a form to open automatically when you add a field based on this data type, select the form from the **Instantiation Form** list.

Create New Data Type from Fields	? ⊠
Name:	
Customer ID	
Description:	
Contains 3 letters and 3 numbers, and is displayed in uppercase.	
Category:	
User Defined Types	▾
Instantiation Form:	
	▾
Learn more about advanced template properties.	
OK	Cancel

⊟ Click **OK**.

⊟ Click **OK** in the message telling you that the data type template has been saved.

*The new data type will now appear in the **More Fields** list (**Fields** tab - **Add & Delete** group), under the category which was chosen while it was being created.*

✎ To delete a data type, open the **More Fields** button from the **Fields** tab (**Add & Delete** group), right-click the data type you want to delete and then click the **Delete Data Type from Gallery** option. Next, click **Yes** in the message asking you whether you want to delete the template. Only data types that you have created can be deleted.

Moving/renaming/deleting a field

⊟ If you want to move a field, select its column by clicking its header.

Point to the field name, click and drag it to its new location in the table.

When the thick, black vertical line corresponds to where you want to move the field, release the mouse button.

⊟ If you want to rename a field, double-click the field's name in the column header on the datasheet.

Type the field's new name and confirm by pressing the ⏎ key.

⊟ To delete a field, click one of the cells in the column you want to delete, or click the column's header in the datasheet.

Click the **Delete** button in the **Add & Delete** group, or press the Del key.

Click **Yes** in the message asking you to confirm that you want to delete the field and all the data it contains.

If you try to delete a field that is used for one or more relationships, a message informs you that you must first delete its relationships in the Relationships window before deleting the field (see chapter on Relationships between tables).

✍ Be careful because once a field and its data are deleted, you will not be able to undo the action. Also, do not forget that unlike in Design view, you do not have to save any changes you make to a table in Datasheet as they are automatically saved by Access.

Modifying the data type applied to a field

This method lets you change the type of data to be entered into a field (text, number, date, etc.).

⊟ Click one of the cells in the field column whose data type you want to modify.

⊟ Open the **Data Type** list in the **Formatting** group and select the new data type from the list.

If the conversion could cause loss of data, Access lets you know this via a message.

⊟ If this message appears, click the **Yes** button to change the data type, or the **No** button to cancel the data type conversion.

If the field whose data you want to convert contains data that Access is unable to convert, you will see a message informing you that the field's data are about to be deleted.
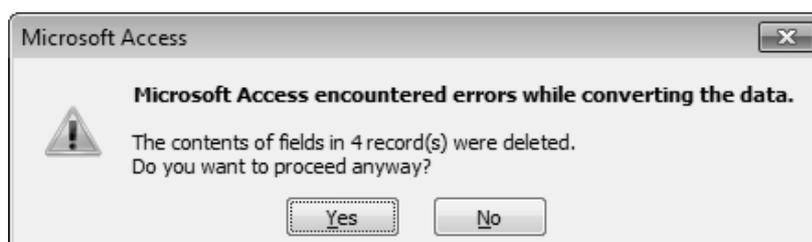
⊟ If this message appears, think carefully before clicking the **Yes** button. In fact, clicking yes will delete all data in the field (4 records in this case). Click the **No** button to cancel the data conversion for this field.

✍ If you try converting the data type for a field that is used in one or more relationships, a message informs you that in order to change the data type for this field, you must first delete its relationships in the Relationships window (see chapter on Table relationships).

The next chapter (Modifying a table's design in Design View) contains a section on data conversion where you can learn more on converting data.

Creating a record validation rule

This operation creates a rule which will be used to restrict what values can be entered into a record. In this way, records will only be validated if they meet the criteria which have been set.

⊡ In the Navigation Pane, double-click the table for which you want to create a validation rule.

⊡ Go to the **Fields** tab and click the **Validation** button in the **Field Validation** group, then click the **Record Validation Rule** option.

*Access displays the **Expression Builder**.*

⊡ Create your expression, which constitutes the validation rule (for more information about the **Expression Builder**, refer to the section on Using the Expression Builder, in the Calculated controls chapter).
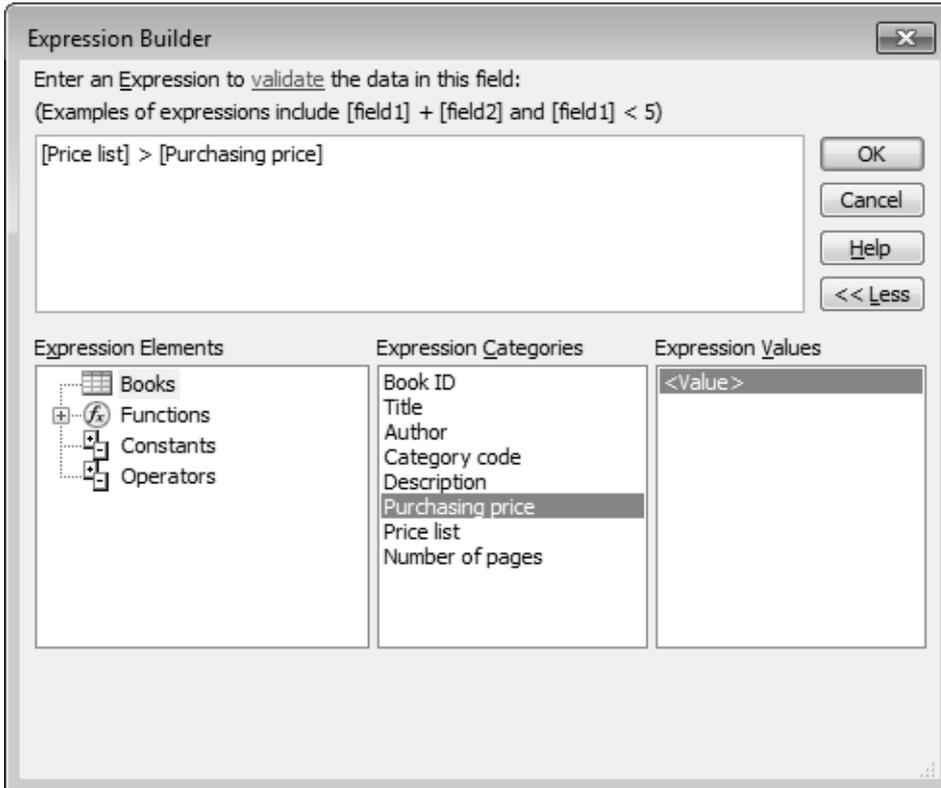
Here, for a record entry to be valid, the amount in the [Price list] field must be greater than the amount in the [Purchasing price] field.

⊡ Click **OK** in the **Expression Builder** dialogue box.

⊡ To enter text which will appear as a message when the data entered into a record do not satisfy the validation rule, click the **Validation** button from the **Fields** tab and then the **Record Validation Message** option.

Enter the message text in the dialogue box which appears.
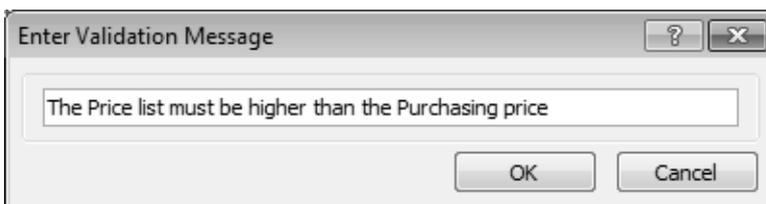
Click **OK**.

✍ To change or delete a record validation rule, go to the **Fields** tab, click the **Validation** button and then the **Record Validation Rule** option; the **Expression Builder** window will appear, from which you can change the expression or delete it.