MODULAR SYSTEM

MICROSOFT ACCESS 2003

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Access 2003

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Introduction to Databases

About Databases

A database is a collection of records stored in a computer in a systematic way that so that it can easily be accessed, managed and updated. Whenever you make a list of data, such as with names, addresses, or phone numbers, you are, in fact, creating a database.

There are a number of different ways of organizing a database, known as data models. A flat database is a simple database model, where all the information is stored in a plain text file, one database record per line. The data is **"flat"**, as in a sheet of paper, as compared to a more complex model such as a relational database. A flat database is ideal to store small amounts of data.

SchoolID
LastName
FirstName
Address
BookID
SchoolID
BorrowDate
ReturnDate

A Flat Database Model

The model most common is the relational model; all information in the database stored in related tables each consisting of rows and columns. The tables can be linked to each other in the database.The relational model represents relationships by the use of values common to more than one table. The relational database model provides database integrity and saving in file size, which is important when dealing with large volumes of data.

Tables

tblMembers	tblLoans	tblBooks
SchoolID	BookID	BookID
LastName	SchoolID	Author
FirstName	BorrowDate	Category
Address	ReturnDate	Published

A Relational Database Model

Microsoft Access

Microsoft Access is a powerful relational database application that you can use to store all kinds of data from a simple list of recipes to a catalog with tens of thousands of products. After the data is stored in an Access database, it's easy to;

❖ Find the related data;

❖ Analyze, manage, manipulate, and retrieve the data,

❖ Display the information as a chart, graph, or Web page;

Chapter 1

❖ Print or publish user friendly reports;

❖ Automate auto repetitive tasks;

❖ Export the data to other programs such as Microsoft Excel and Microsoft Word;

❖ Protect the data from errors.

Access or Excel?

An Excel spreadsheet is a good choice to do calculations, analysis such and graphing. But Excel is relatively poor at handling lots of different sets of related data. When you have more than one table that store related data; such as a SchoolID which is common in several tables of a school database; managing and keeping data integrity between the tables becomes a problem in an Excel spreadsheet.

An Access database is used for storing lots of data in a format that can be searched and summarized on reports. It is ideal for setting up and managing sets of related data, but is relatively poor at the mathematical analysis whereas Excel is good at.

Microsoft Access Database Objects

A database usually consist of several objects. An Access database might contain up to seven different database object types;

Object	Description
Tables	Tables store a database's data in rows (records) and columns (fields). For example, one table could store a list of customers and their addresses while another table could store the customers' orders. A database must always contain at least one table where it can store information.
Queries	Queries ask a question of data stored in a table. For example, a query might only display customers who are from Paris.
Forms	Forms are custom screens that provide an easy way to enter and view data in a table or query.
Reports	Reports present data from a table or query in a printed format.

Object	Description
Pages	A special type of Web page designed for viewing and working with Access data from an intranet or over the Internet.
Macros	Macros help you perform routine tasks by automating them into a single command. For example, you could create a macro that automatically opens and prints a report.
Modules	Like macros, modules automate tasks but by using a built-in programming language called Visual Basic for Applications or VBA. Modules are much more powerful and complex than macros.

An Access Database Structure
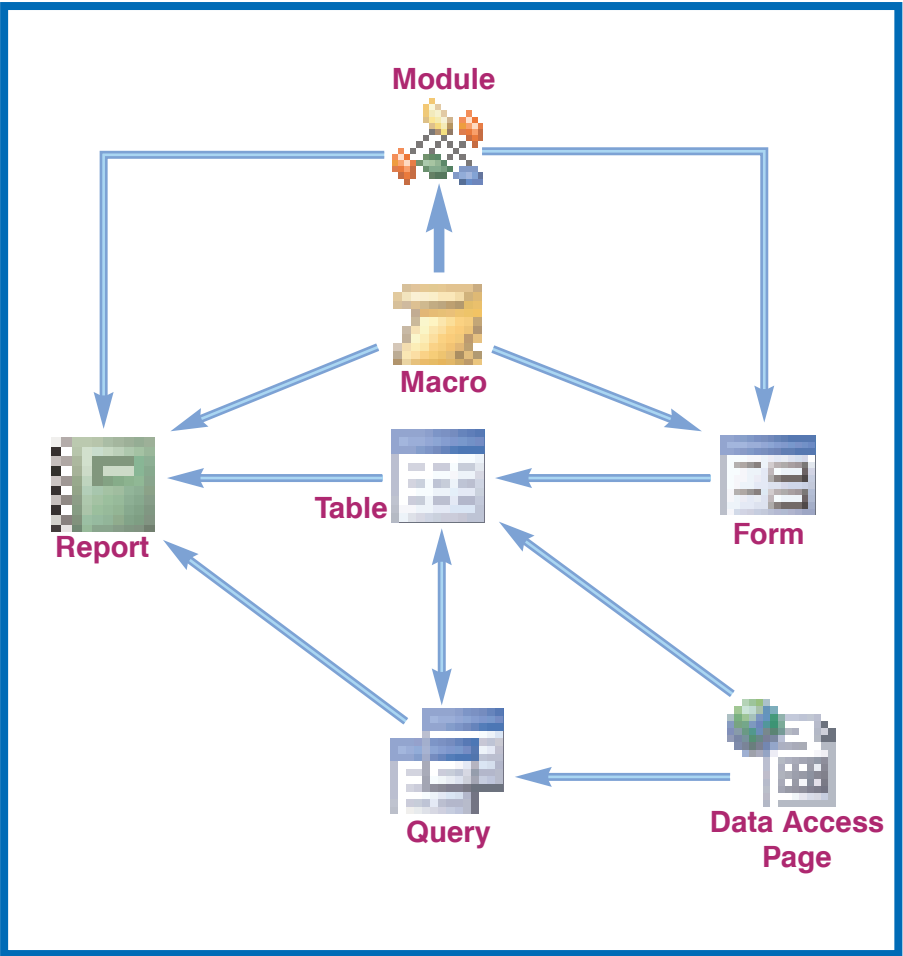
Starting the Access Program

There are several ways to start Access program;

1. On the Windows taskbar, click the Start button at the bottom left corner of your screen.

2. On the Start menu, select All Programs.

3. Move the mouse pointer up and point to Microsoft Office.

4. Move the mouse pointer over and click on Microsoft Office Access 2003.

If Microsoft Access is not listed on the Start menu;

5. On the Start menu; click Run, enter "**msaccess.exe**" in the Run dialog box.

Understanding the Access Program Screen
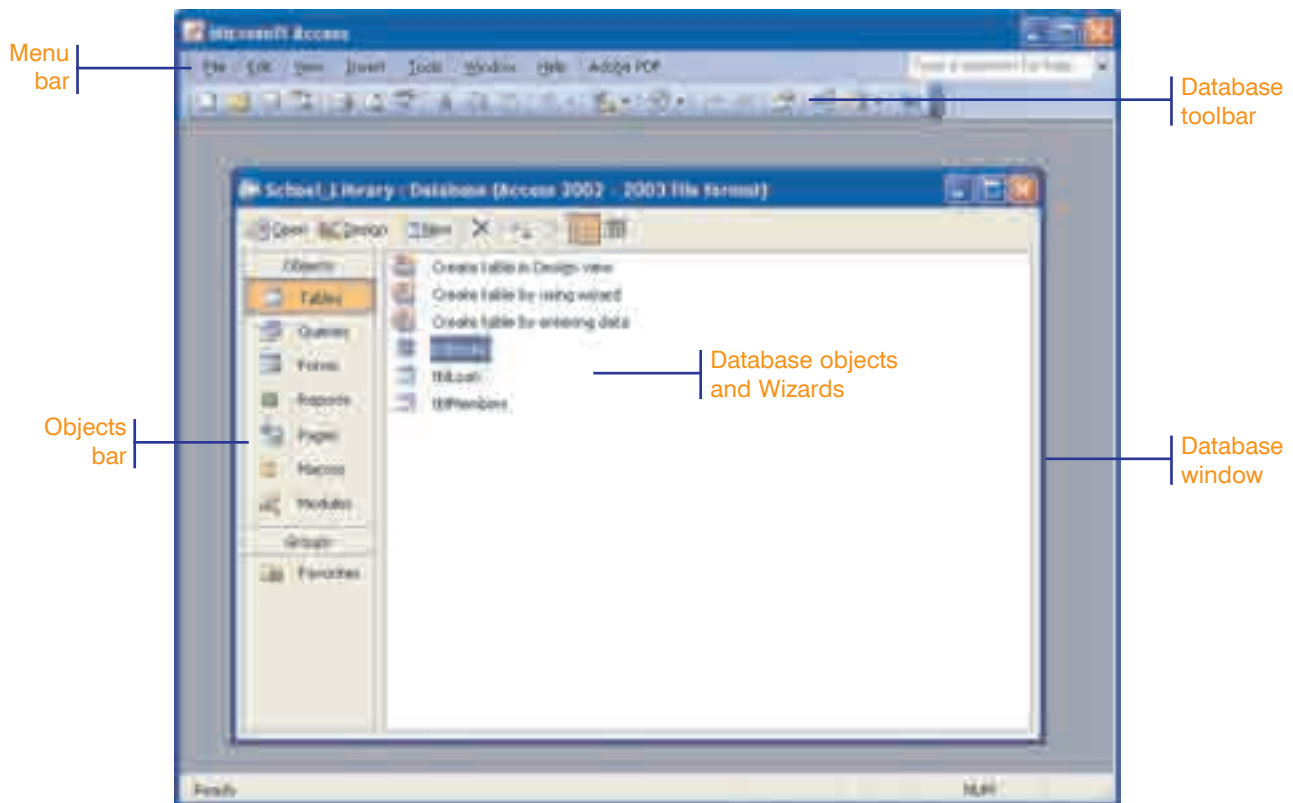
The Database Toolbar

The Database toolbar allows you perform tasks quickly without using the menus. Some of the buttons, in light gray, are not available until a table or object is opened.
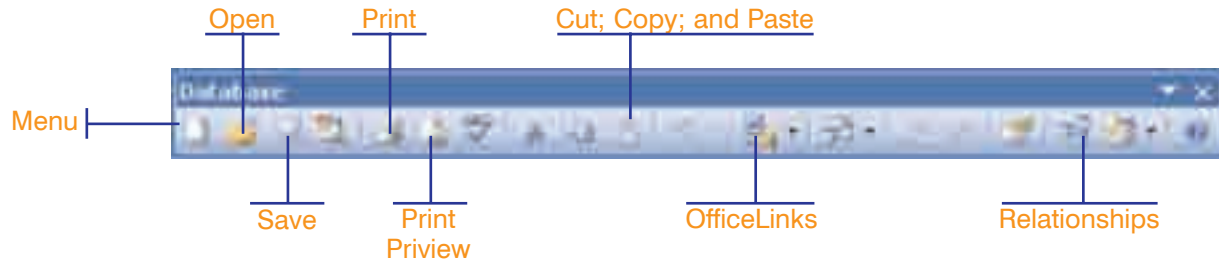
The Database Toolbar

Opening a Database

You can easily open an existing Access database;

1. From the Menu bar, choose File, and Open

   Or on the Database toolbar, click the Open button

   Or press Ctrl + O
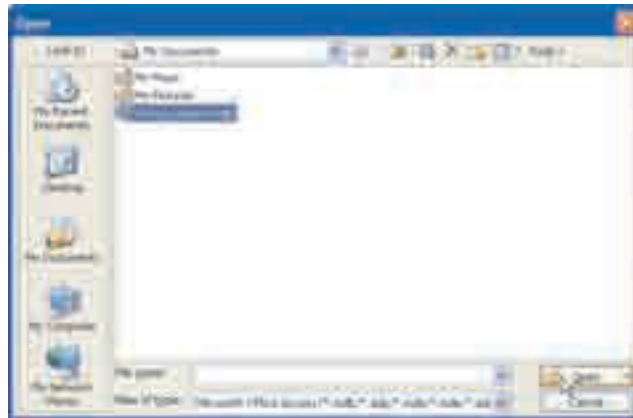
The Open dialog box opens.

2. Use the **Look In** drop-down menu to select the drive and folder which contains the file you want.

3. Either double click on the file name or select the file by clicking on it, and than click the Open button to open the file you want.

Creating a Blank Database

A blank database is a database file which contains no database object or data. You can create a blank database and later add the database objects such as tables, forms, queries, and reports. There are several ways to create a blank database;

To create a new blank database;
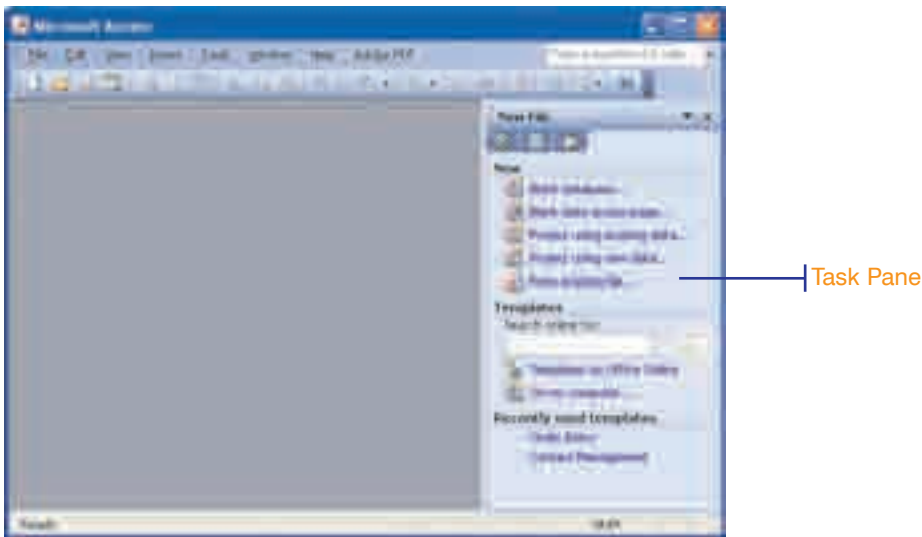
Task Pane

1. On the Task Pane, select New File, then Blank Database.
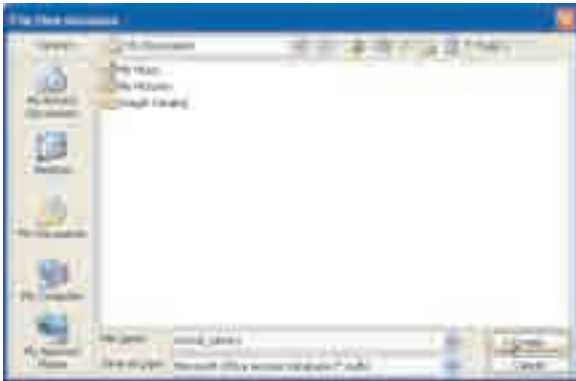
The File New Database dialog box opens.

2. In the Save In list box, enter **School_Library** as database name for the new database.

3. Specify a location to save the database. Click Create.

A blank database is created at the Save In location and the database gets *.mdb file extension. Access displays the Database window for the database and highlights the Tables button under the Objects bar.

A Blank Database.
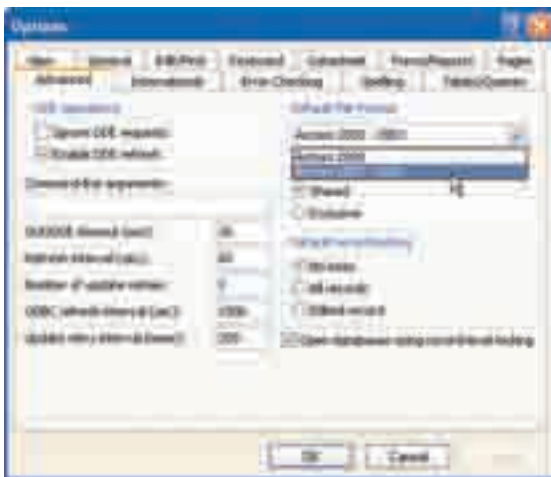
The Option dialog box

Access File Formats

Access supports two different file formats. By default, when a database is created Access uses Access 2000 file format which is fully compatible with the previous Access versions. You can also choose Access 2002-2003 file format to take advantage of features that are specific to Access 2002 or later. A database in Access 2002 - 2003 format can only be opened in Access 2002 or later.

To change the default file format;

1. On the Menu bar, select Tools, Options.

2. Click the Advanced tab, in the Default File format list box select **Access 2002-2003** file format.

Converting a Database

A database with Access 2000 file format can be easily converted to Access 2002-2003 file format;

1. On the Menu bar, select Tools, Database Utilities, convert Database, and To Access 2002 - 2003 File Format. The Convert Database Into dialog box appears.

2. Name the database and click Save.

Compacting and Repairing an Access Database File

As you work on your database, it will grow and expand over time. Microsoft Access files never automatically get smaller in size, even when you have deleted data from them. The Compact Database option reduces database size by removing temporary objects.

A database file is damaged when a table, form, or a report is corrupted. The Repair option repairs these database problems. Access detects whether an Access database file is damaged when you try to open it and gives you the option to repair it at that time.

To Compact and Repair an Access database;

1. Open the database you want to Compact and Repair on

2. On the Menu bar, choose Tools, Database Utilities, and Compact and Repair Database…

Using Templates and the Database Wizard

Access provides several templates to create a new database. By using templates and the Database wizard, you can create a database with little effort. The database might not be exactly what you want but you can make necessary modifications after the Wizard process.

To create a database with Templates and the Database Wizard;

1. On the Task pane, click **On my Computer**… link.

2. Click the Databases tab and select a database template. Click OK.

3. Name the database.

4. Follow the series of the steps to finish the database.

Exercises

Fill in the blanks

1. The _____ database model represents relationships by the use of values common to more than one table.

2. A database is created gets _____ file extension.

3. Tables store a database's data in _____ and _____.

True or False

1. A database must always contain at least one table where it can store information.

   ☐ True   ☐ False

2. The Compact option reduces database size by removing temporary objects.

   ☐ True   ☐ False

3. A database in Access 2002 - 2003 format can be opened in previous Access versions.

   ☐ True   ☐ False

Multiple Choice Questions

1. Which one of the following Access 2002 tools do you use to generate generic database templates for users with no Access database experience?
   - a. The database wizard
   - b. The query wizard
   - c. The form wizard
   - d. The table wizard

2. Which one of the following is the best for the definition of a database?
   - a. Performs calculations, analyze information and manage lists.
   - b. Allows you to perform tasks quickly without using a calculator.
   - c. Creates text and graphics
   - d. A database is a collection of records stored in a computer in a systematic way.

3. Which of the following database objects asks a question of information in a database and then displays the results?
   - a. Forms
   - b. Tables
   - c. Queries
   - d. Reports

4. What are the columns in a Microsoft Access table called?
   - a. Rows
   - b. Fields
   - c. Records
   - d. Cells

5. To open a database, click Programs on the Start menu, and then click _____ on the Programs submenu.
   - a. Open Database
   - b. Microsoft Office
   - c. Access 2003
   - d. Microsoft Access

6. To compact and repair a database, close the database, click Tools on the menu bar, point to _____, and then click Compact and Repair Database.
   - a. Database Operations
   - b. Macro
   - c. Database Utilities
   - d. AutoCorrect Options

7. When you compact and repair a database, _____. Choose two answers.
   - a. errors in the database are found and fixed.
   - b. the original database is reduced in size.
   - c. a new database is created.
   - d. it corrupts the database.

8. A record in Access is composed of a series of _____.
   - a. Tables
   - b. Templates
   - c. Records
   - d. Fields

9. Which of the following describes a relational database?
   - a. It provides several templates to create a database with little effort.
   - b. It presents data in a printed format .
   - c. It stores all data in separate tables of related data.
   - d. It stores all data in a plain text file

10. Select the options you can with relational database. Choose three.
   - a. Analyze, manage, and retrieve data.
   - b. Edit and manipulate images.
   - c. Export the data the other programs.
   - d. Find the related data.

Summary

A **database** is a collection of data stored in a computer in a systematic way that so that it can easily be accessed, managed and updated.

A **flat database** is simple database model, where all the information is stored in a plain text file, one database record per line.

The **relational model**; all information in the database stored in related tables each consisting of rows and columns.

Microsoft Access is a powerful relational database application that you can use to store all kinds of data from a simple list of recipes to a catalog with tens of thousands of products.

An Access database might contain up to seven different **database object types**; **Tables, Queries, Forms, Reports, Pages, Macros,** and **Modules.**

The **Database toolbar** allows you perform tasks quickly without using the menus.

A **blank database** is a database file which contains no database object or data.

An Access database gets ***.mdb file extension**.

A database with **Access 2000** file format can be easily converted to **Access 2002-2003** file format with **Convert** database utility.

The **Compact** option reduces database size by removing temporary objects.

By using **templates** and the **Database wizard**, you can create a database with little effort.

Microsoft
Access 2003

CHAPTER 2

Microsoft Office
Access 2003
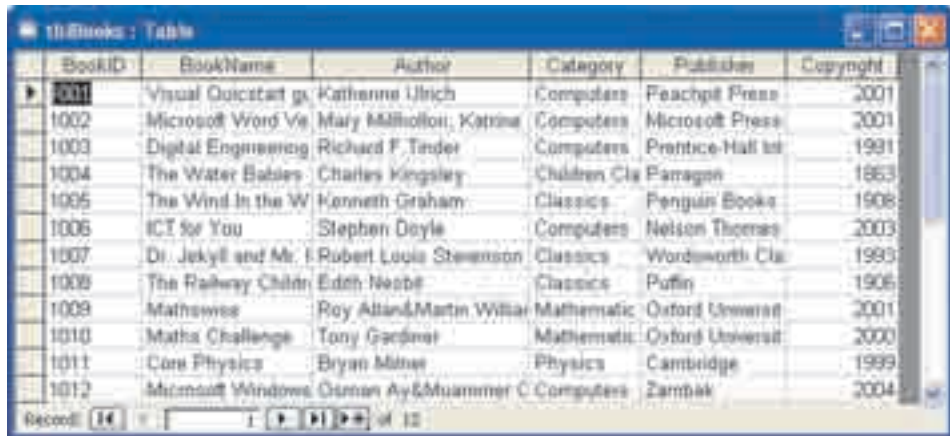
- Understanding Tables
- Creating Tables
- Primary Key
- The Table Design View
- Field Data Types

Designing a Database and Creating Tables

Understanding Tables

Tables are the foundation of a relational database. A Table stores the data which are displayed in forms, queries, reports, and data access pages of a database. An Access database must always have at least one table. When you start a blank database, the first thing you do is to create a table to store your data.

A Table in Datasheet view

The data in a table should be limited to a single subject such as personal data of a library member or loan activities of the members. The fields also should be related to table subject such as first name, birth date of a library member.

You can keep all your data in a single table but it is not recommended for large databases. As you enter all data in a table, it grows in size and complexity. Working with a very big table may cause organization problems and results in slower computer performance. It is a good approach to distribute data in different tables in a database structure.

A good table and database structure ensures efficiency, accuracy, data integrity, and control of your database.

The Table Views

Access provides multiple views of each object in the Database window. You can work with a table in Datasheet view or in Design view.

Datasheet view allows you to enter data directly into a table. Design view is used to create a table from scratch or edit the structure of an existing table. You can easily switch between the table views;

To switch to Design view from Datasheet view;

1. Select View, and Design, on the Menu bar,

Or, click the View button on the Table Datasheet toolbar.

Switching Views

In Datasheet view, a table displays the data in columns and rows. The columns are called Fields which holds similar data such as text, numbers, and dates.

A field is a part of rows which is called Records. A record is all the related information around a specific subject. A standard Access database might contain thousands or even more records.

The Table Datasheet toolbar
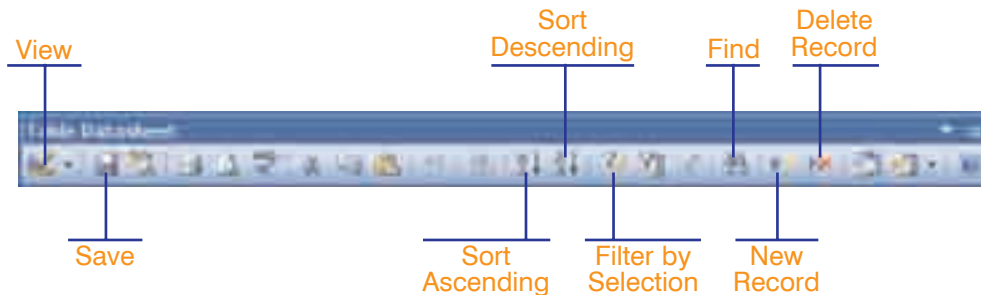
The Table Datasheet toolbar

Creating Tables

There are several ways to create a table. The Table Wizard, Datasheet view or by entering data into a blank table, and Design view.

Datasheet view or entering data into a blank table; Access creates the fields and assigns data types to each field based on the data you have entered in the table.

The Table Wizard; The Table Wizard asks you a series of questions about fields you want to appear in the table

Design view; The most powerful and flexible way to design a new table. It gives you much more control and precision than designing a table from Datasheet view or the Table Wizard.

Creating a Table by Entering Data

You might create a basic table by entering data in Datasheet view. After entering data into the table, you can later design the table structure, field, and data properties in Design view. If a table is to contain lots of fields, use the Table Wizard or Design view to create the table structure.
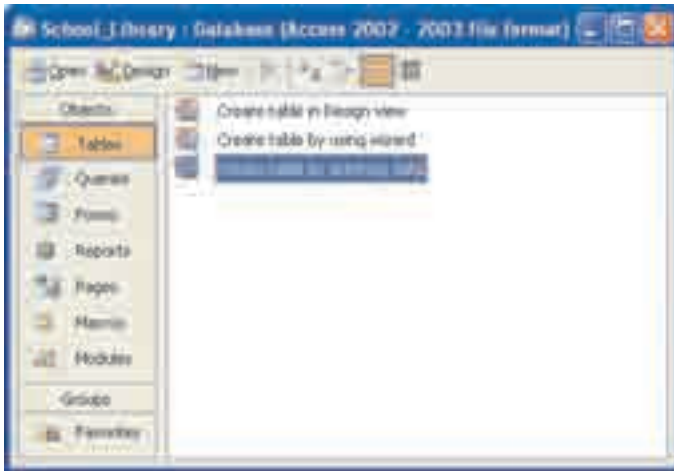
The database shows the Tables window.

In the following example, you will create a database that will store contact list and email addresses of the members of the School Library database;

1. Open the **School_Library** database.
2. Click the New button in the Database window. Select Datasheet view in the list.

   Or, click Create table by entering data in the Table window.
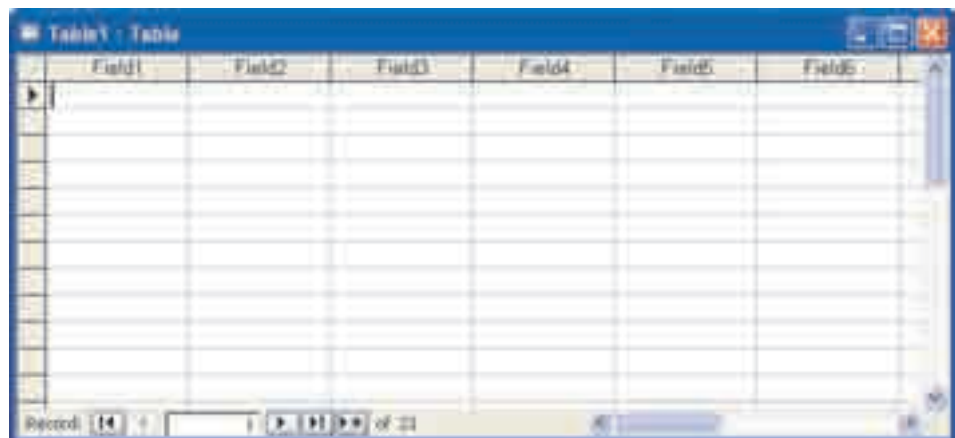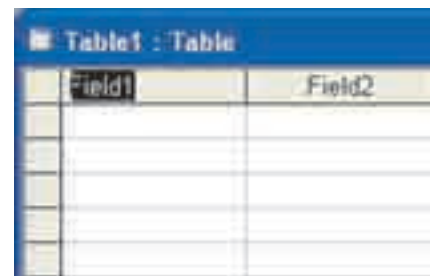
Datasheet view opens

Field Names

Field names are displayed at the top of the columns of a table. You can easily rename a field by double-clicking on its column header.
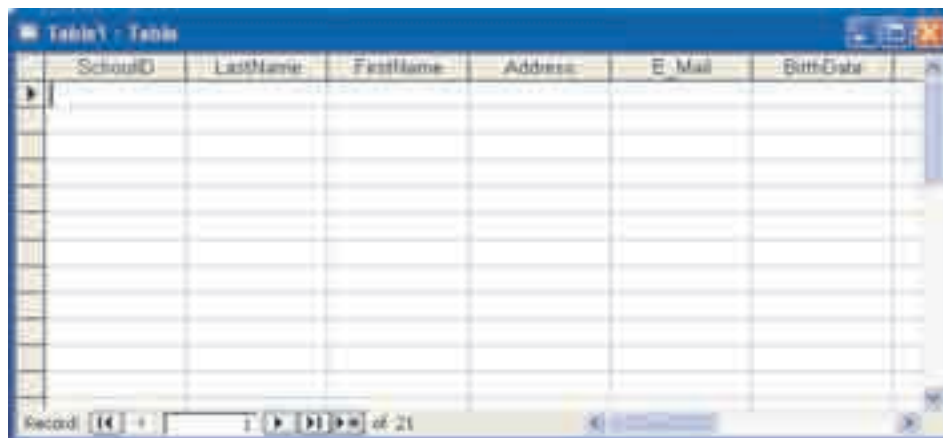
Choose short but descriptive names and use no spaces in the field names as spaces might cause difficulties with working same database objects. You can rename a default field name in several ways;

1. Double click in the column header.

    Or, on the Menu bar; select, Format, and Rename Column.

    The insertion point is located in the field header.

Renaming fields

2. Name the fields as follows SchoolID, LastName, FirstName, Address, E-mail, and BirthDate.

3. Click in the first row of the SchoolID field.

Entering data in a table

You can resize the Table Datasheet window by dragging from its borders.

4. Type in a School number in the field, use **Enter** or **Tab** key to advance to next column.

You can enter any data type such as text, number, and date in a field. Access automatically recognizes the data types and assigns the appropriate format to the each field.

5. Type in the **LastName** and **FirstName** fields. In the **Address** field, type an address.

6. Enter the E-mail address of the person in the **E-mail** field.

Designing a Database and Creating Tables

Entering a record

To create more records, do one of the following;

7. Click in second row of the table

    Or, use the **New** record button on the Navigation toolbar.

    Or, on the Menu Bar; select Insert, New Record.

8. Type in the data into related fields.

Table with records

The Navigation toolbar

At the bottom of a table, the Navigation toolbar is seen. The buttons on the Navigation toolbar are used to move between records and create new records. The Navigation toolbar also displays the total number of records in a table.
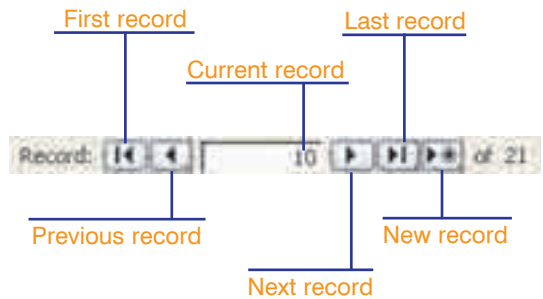
The Navigation Toolbar

If the data inside a field does not match the field width, you can resize the field by dragging its right border in the column header and a row by dragging its bottom border in the row header. When a column is resized, it will only affect the active column. A change in a row height is applied to all the rows in the table.

Resizing a column

Saving a Table

After you are finished with entering the data, you need to save the table structure. When you enter the data into a record of a table, the data is automatically saved. There is no need to save a table as you move to the next record, add a new record, or close the table unless you make a change in its design such as resizing a column width.

To save the table;

1. Click the Save button on the Table Datasheet toolbar.

   Or, on the Menu bar, select File, and Save.

2. Name the table as **tblMembers**. Click OK.

Save as dialog box appears.
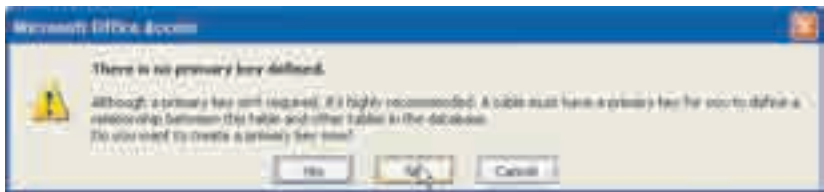
Access displays a warning dialog box.

The Primary key is explained later in this chapter. You can not define a primary key as you create a table by typing in data.

3. Click **No** to continue.

The empty rows in the table disappear except the one at the bottom.
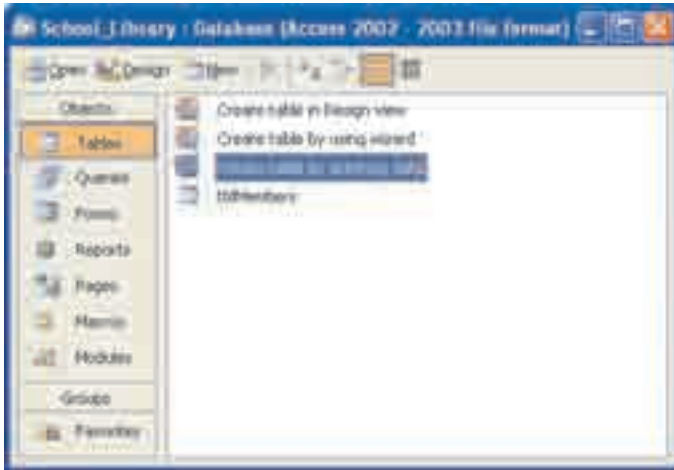
The tblMembers table is displayed in the Database window.

To close a table;

4. Click the Close button on the upper-right of the table.

    Or, on the Menu bar, select File, and Close.

Opening a Table

To see, and edit the contents of a table;

1. Double-click over the table name,

    Or, select the table name and click the Open button on the Database toolbar.

The Table Wizard

The Table Wizard provides the most common data fields used in tables such as the FirstName, LastName, and Phone fields. You can create a table with fields from the sample tables in the Table Wizard quite easily.

To create a table with the Table Wizard;

1. Double-click the **Create table by using wizard** link.

The Table Wizard asks for input in a series of windows;

2. In the first window; select a table from **Sample Tables**. The Table Wizard includes 25 predefined tables for business uses and 20 for personal uses.

Designing a Database and Creating Tables
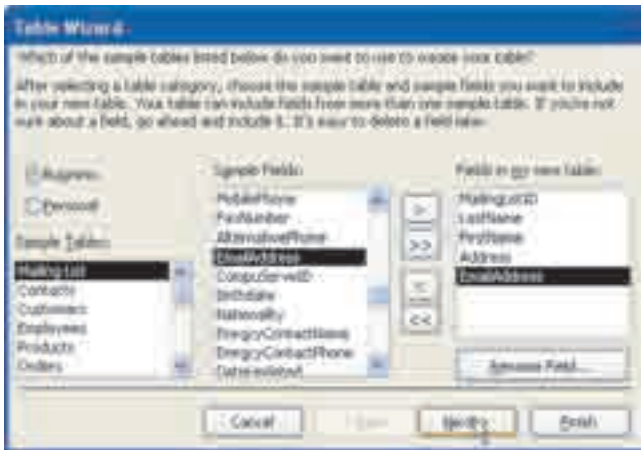
The Table Wizard window opens.
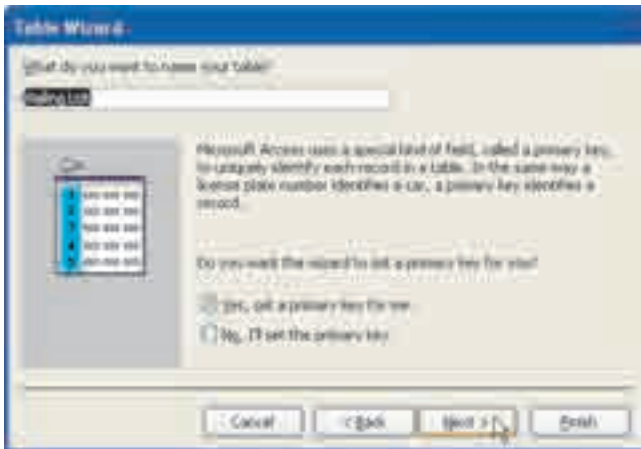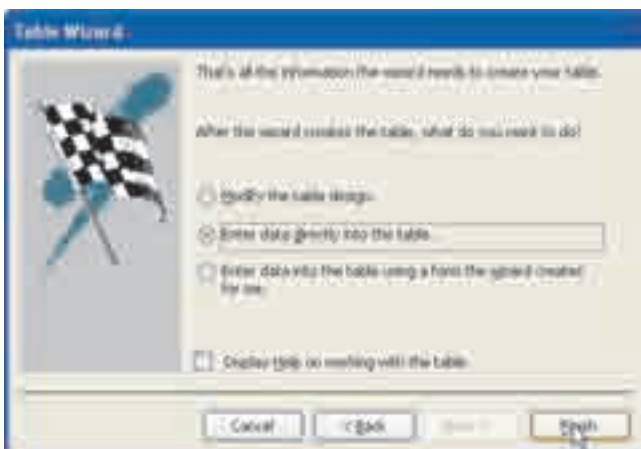
3. Available fields in the sample table are displayed in the **Sample Fields** list.

Double-click over the field names or use the buttons on the Table Wizard to add the fields.

4. Add the fields from the Sample Fields into **Fields in my new table** window. You can rename the fields with the **Rename Field** button after adding them.

5. Click Next.

Setting a Primary Key

6. Name the table. Leave the set primary key option as default so Access sets a primary key for you. Click Next.

Setting a Primary Key

7. Select **Enter data directly in the table** option. Click Finish.
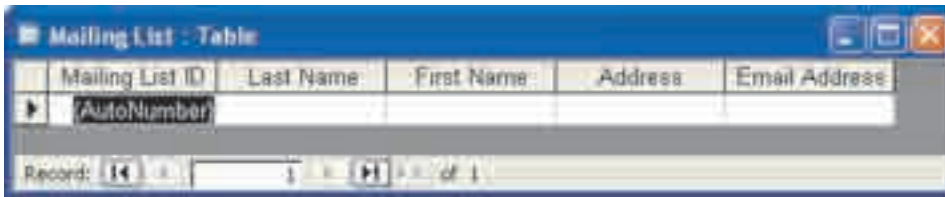
The table opens in Datasheet view.

8. Close the table.

Primary Keys

A **primary key** is used to uniquely identify each record in a table. It prevents duplicate values so no two records can have the same value in a field of the table. A School ID, Passport ID, or Social Security number might be used as primary keys for a field.

You can have more than one primary key in a table. If you let Access to set the primary key; a new field is added to the table, and an **AutoNumber** is created for each record as primary key.

Deleting Tables

To delete a table;

1. Select the **Mailing List** table.

2. Click the **Delete** button on the Database toolbar.

Or, use the **Delete** key on your keyboard

3. Access displays a warning message. Click Yes to delete the Mailing List table.
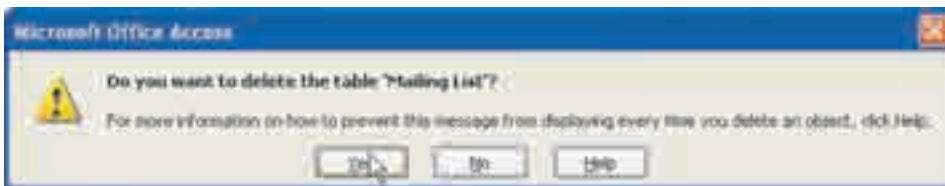
You can not undo the action of deleting a table.

The Table Design View

Design view lets you to design structure of a table at first, and then you can enter data in the table. You can also modify an existing table in Design view.
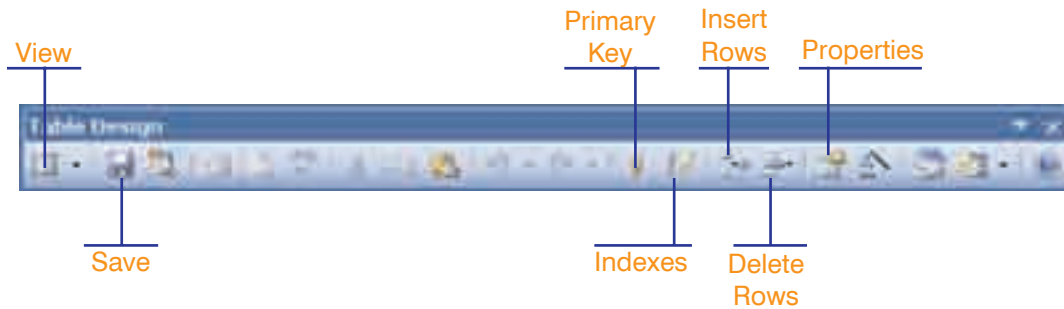
The Table Design toolbar

In the following exercise, you will create a table in Design view;
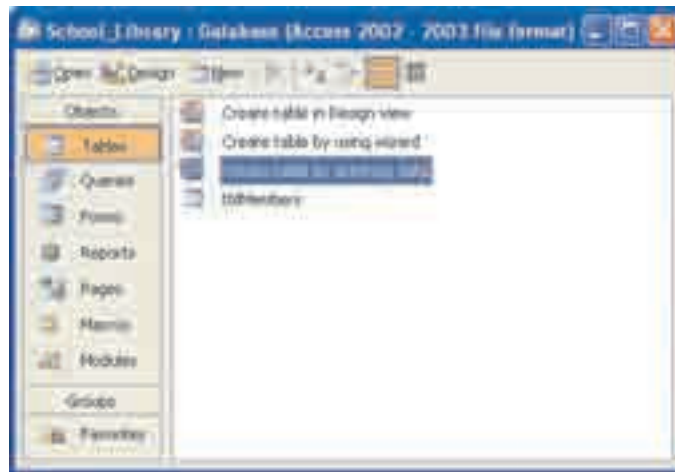
Selecting Design View

1. Click the New button in the Database window. Select **Design view** in the list.

    Or, click **Create table in Design view** link in the **Tables** window.
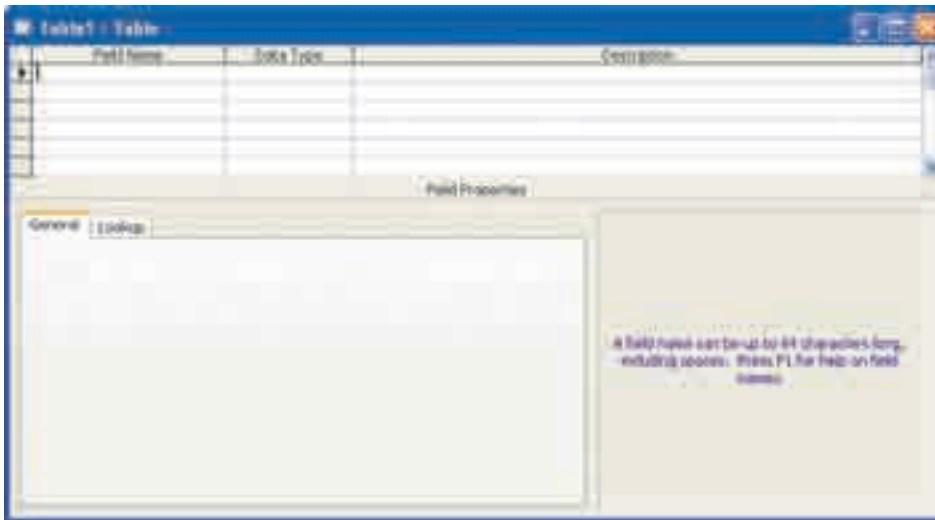
A blank Table Design window opens.

The upper part of the table is used to enter field names, data types, and optional description of fields. The lower part defines the properties of each field such as field size, format, input mask, and validation rules.

2. Click on the first row of the Field Name column. Type in **BookID** as the field name.

3. Press Enter or Tab key to move the next column.

The insertion point moves to the Data Type column in which you need to select data type of the field.
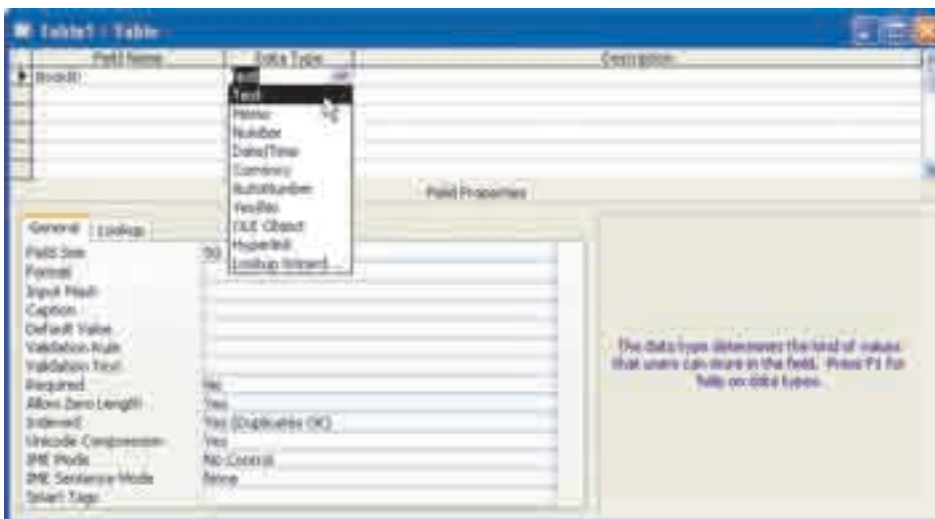
Selecting a Data type

Designing a Database and Creating Tables

4. By default Access chooses Text data for a new field. Do not change the data type.

   In the Description column; enter a phrase to describe the field. This column is optional to fill.

   To use another data type rather than Text, click the arrow button in the **Data Type** cell and select the **Data Type** from the drop-down list.

5. Advance to the next row. Enter the field names and data types; seen below; for the remaining of the table.

Field Name	Data Type
BookName	Text
Author	Text
Category	Text
Publisher	Text
Copyright	Number
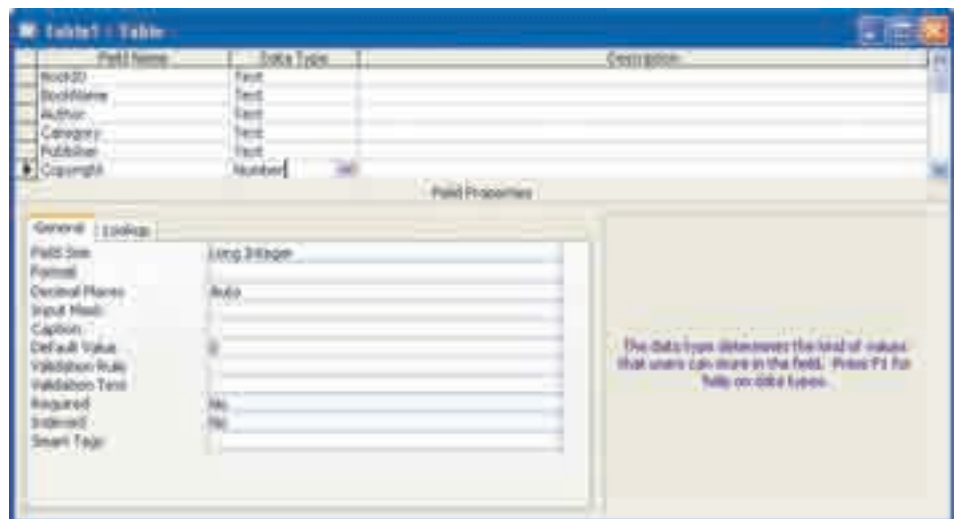
The fields in Design view

6. Set the BookID field as primary key by clicking the Primary Key button on the Table Design toolbar.

   Or, right-click in the field name of the BookID row and choose Primary Key from the pop-up menu

A small key symbol appears on the row heading of the BookID field.
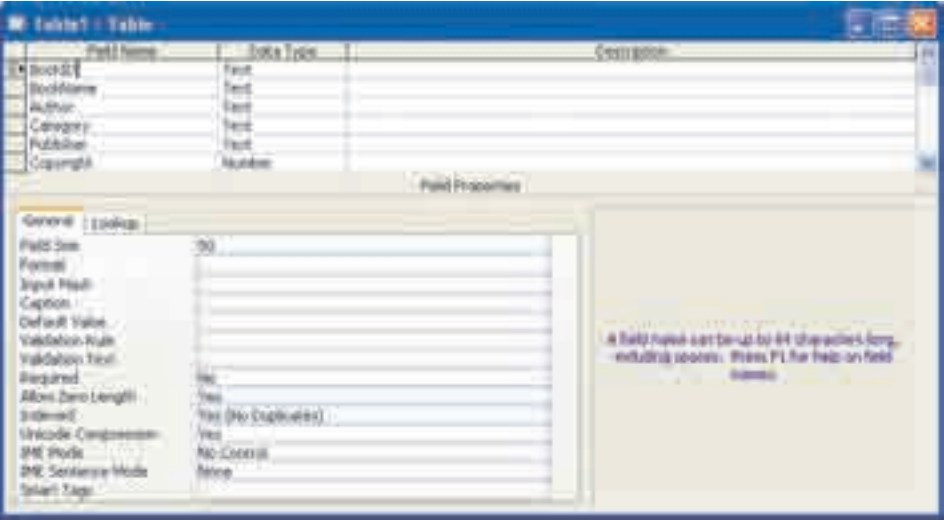
Setting the Primary Key field

7. Save the table as tblBooks. Switch to Datasheet view by clicking the View icon on the Table Design toolbar.
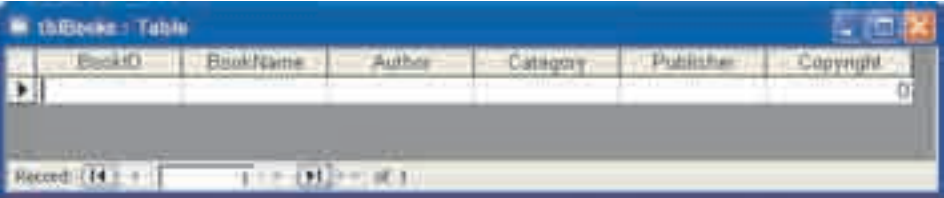
The table opens in the datasheet view.

8. Enter 10 records into the table. Use your school library for source data.

The tblBooks table

Designing a Database and Creating Tables

Field Data Types

Data type a field tells Access how to handle and store the contents of the field. By setting the proper data types of fields you can do arithmetic operations such as getting the sum and average numbers. Access supports 9 different data types. You should make the field size the smallest one possible; Access runs faster with smaller field sizes.

The following table shows the data types and how they are used.

Text	Used to store any text or numbers that does not require calculations up to 255 characters in length.
Memo	Used to store paragraphs, sentences or large blocks of text up to 65,535 characters in length.
Number	Various kinds of numbers that are used in calculations.
Currency	It is used to store currency values.
AutoNumber	Unique sequential or random values generated for use as primary key
Date/Time	Used to store Dates and times.
Yes/No	Two-valued data. Yes or No field appears as a checkbox in a table
OLE object	Used to get data from Windows based applications such as images, graphs, and movie clips.
Hyperlink	A link to a document, a file on your computer or an internet source.

Case Study

1. Open the School_Library database.
2. Click **Create table in Design view** link in the Tables window.
3. Create the following fields with given data types.

Field Name	Data Type
LoanID	Text
BookID	Text
SchoolID	Number
LoanDate	Date/Time
DueDate	Date/Time
Returned	Yes/No

The tblLoan table in Datasheet view

4. Save the Table as **tblLoan**.

The tblLoan table will store the data about the books loaned by school library members.

Exercises

Match the Items

1. Date/Time field

2. Number field

3. Memo field

4. Currency

5. OLE object

a. used to large blocks of text up to 65,535 characters.

b. used to get data from Windows based applications.

c. numbers that are used in calculations.

d. used to store Dates and times.

e. used to store currency values.

Fill in the blanks

1. A _____ is used to uniquely identify each record in a table.

2. A _____ type tells Access how to handle and store the contents of the field.

3. _____ is the most powerful and flexible way to design a new table.

True or False

1. An Access database must always have at least one table.

☐ True　　　☐ False

2. When a column resized, it will affect all the columns in a table.

☐ True　　　☐ False

3. When you enter the data into a record of a table, the data is automatically saved.

☐ True　　　☐ False

Multiple Choice Questions

1. To prevent duplicate data entries in a field of a table which of the followings is used?

    a. Main key

    b. Data Field

    c. Validations

    d. Primary Key

2. _____ indicates to Access the type of data the field will contain.

    a. Field name

    b. Description

    c. Data type

    d. Text

3. The small box or bar that, when clicked, selects the entire row is called the _____.

    a. row indicator

    b. row selector

    c. row arrow

    d. row designer

4. You can change the data type of a data field by using_____.

    a. Design View - Data Type

    b. Table Wizard - Data Fields

    c. Design View - Properties

    d. Datasheet View - Filter

5. To save a table, click the Save button on the _____ toolbar.

    a. Database

    b. Save

    c. Table Design

    d. Formatting

6. To add additional records to a table, click the _____ button on the Navigation toolbar.

    a. New

    b. New Record

    c. Add Record

    d. Record

7. The database you design will have picture, movie, and sound objects. Which of the following data types is appropriate for these objects?

    a. OLE

    b. Multimedia

    c. Memo

    d. Ms Objects

8. Which of the followings can you do in datasheet view? Choose two answers.

    a. Enter, delete, and modify data

    b. Specify a field's data type

    c. Create a table

    d. Specify field properties

9. You want to insert a text that contains 500 characters for the field? Which of the following data types should be used?

    a. Numbers

    b. Text

    c. OLE

    d. Memo

Word Search Puzzle

Find the words in the word search puzzle. Do you remember what each word means?

Flat	Record	Compact	Report	Field
Relational	Blank	Mdb	Form	Macro
Design	Navigation	Text	TableWizard	PrimaryKey

I	G	Y	W	X	F	H	S	P	B	R	J	G	P	H	K	I
J	D	T	Y	Z	Q	U	N	A	V	I	G	A	T	I	O	N
R	P	V	G	B	V	D	A	T	A	S	H	E	E	T	U	A
E	S	R	P	R	I	M	A	R	Y	K	E	Y	S	U	V	C
P	R	X	E	K	G	A	F	B	J	H	J	X	U	T	X	O
O	P	E	L	C	I	U	Z	L	O	F	F	D	X	A	J	M
R	H	A	L	X	O	P	B	A	R	I	L	N	O	B	Y	P
T	M	M	K	A	B	R	V	N	T	E	A	Z	T	L	Z	A
X	E	Q	D	E	T	A	D	K	G	L	T	D	U	E	B	C
F	C	Y	A	B	G	I	O	S	A	D	L	P	E	W	X	T
S	T	L	T	S	R	F	O	R	M	O	W	G	R	I	X	T
U	Z	V	A	N	E	M	M	N	R	R	S	J	P	Z	P	L
D	U	J	B	A	P	T	R	M	A	S	U	T	R	A	T	Q
F	C	Q	A	U	O	G	I	O	X	L	M	A	C	R	O	K
M	I	S	S	B	N	J	V	H	S	I	H	Y	Y	D	N	X
U	U	H	E	I	D	E	S	I	G	N	W	H	E	V	Q	N
M	P	M	O	O	K	T	O	O	L	B	A	R	Y	Q	D	T

Summary

Tables are the foundation of a relational database.

An Access database must always **have at least one table**.

The **data in a table should be limited** to a single subject.

A good table structure ensures efficiency, accuracy, data integrity and control of your database.

Datasheet view allows you to enter data directly into a table. **Design view** is used to create a table from scratch or edit the structure of an existing table.

The columns are called **Fields** that holds similar data such as text, numbers, and dates. A field is a part of rows, which is called **Records**.

You can create a basic table **by entering data in Datasheet view**.

The **field names** are displayed at the top of the columns.

The buttons on the **Navigation toolbar** are used to move between records and create new records.

When you enter the data into a record of a table, the data is **automatically saved**.

The **Table Wizard** provides most common data fields used in tables such as the FirstName, LastName, and Phone fields.

A **primary key** is used to uniquely identify each record in a table. It **prevents duplicate values** so no two records can have the same value in a field of a table.

Data type of a field tells Access how to handle and store the contents of the field.

Microsoft Office
Access 2003

Working with Tables
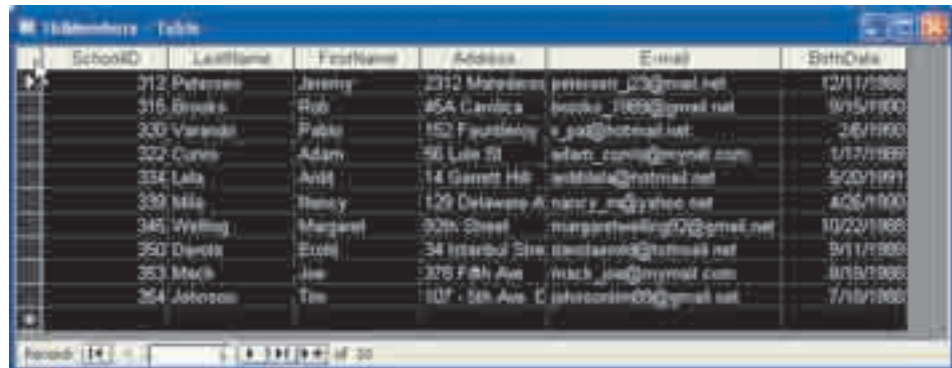
Working with Tables

The Table Datasheet view is mainly used for data entry. However; it can also be used to make changes to a table's design. You can add new fields, delete a field, change a field name, or format a table to get better view of data in Datasheet view. In order to make more complex changes; such as changing a field's data type, creating input mask, and validation rule; on the structure of a table, you should work in Design view.

Selecting Records and Fields

You need to select records or fields to edit the data in a table. To select all the records of a table;

1. Open the School_Library database.
2. Open the **tblMembers** table.
3. Click in the gray cell at the left top of the table.

Selecting all the records of a table

To select a record;

1. Click on the row header of the record.

Selecting a record

You can select more than one record at a time;

1. Select the first record; drag and release the mouse over the adjacent records.

To select a field;

1. Click over the field header.

To select multiple fields;

1. Select the first field; drag and release the mouse over the field headers.

Editing Data in Records

To edit data in a record;

Selecting more than one record at a time

1. Open the table in Datasheet view,

2. Click in the field you want to edit and enter the new value.

Selecting a field

Deleting Records and Fields

When a record is deleted, it is permanently removed from the table.

To delete an entire record,

1. Click in the record you want to delete

   Or, if you want to delete multiple records, select the records.

2. On the Menu bar, select Edit, and Delete record.

   Or, click the row header of the record. The record is highlighted.

   Press the Delete key on the keyboard.

Working with Tables

A dialog box warns that you are about to delete the record.

3. Click Yes to delete the record.

To delete a field (column);

1. On the Menu bar, select Edit, and Delete Column.

Or, right click on the Column header, select Delete Column.

A dialog box warns that you are about to delete a field.

2. Click Yes to delete the field.

When a field is deleted all the data in the field is deleted too. Pay extra caution while using the Delete command, you will not be able to use the **Undo** command to restore back the records or fields after you have deleted them. If the field is related to any other table in the database, you need to remove the relationship between the tables first. You will learn more about table relationships in the following chapter.

Adding Fields

To add a field;

1. Open the **tblMembers** table.

2. Locate the insertion point where you want to insert the field.

3. On the Menu bar, select **Insert**, and **Column**.

4. Rename the field as **Photo**.

5. Save the tblMembers table.

Datasheet Formatting

You can format the way a table looks; apply a 3D effect and border styles to the cells in the datasheet; eliminate the gridlines, change the gridline

A new field is inserted on the left side of the current field.
colors or background colors.

To format the Datasheet view of a table;

> While the table is open in Datasheet view;

1. On the Menu bar; select Format, and Datasheet.
2. Use the Combo boxes and checkboxes on the Datasheet Formatting dialog box to format the table.

The Datasheet Formatting dialog box

A formatted table

3. Close the **tblMembers** table. If you want to save changes, click **Yes** in the dialog box.

Using Design View

You can create and edit anything about a table in Design view.

To open a table in Design view;

1. Select **tblMembers** table in the Database window.

2. Click the **Design** button on the Database toolbar to switch to Design view.

The Design view of the tblMembers

TO DO	DO THIS
To select a field;	click on the row header.
To rename a field;	click over the field name and type a new name.
To move a field;	select the fields, click and drag the field to its new location.
To add a new field;	locate the insertion point after the last field, and select Insert, Row or click the Insert, Row button on the Table Design toolbar.
To delete fields;	select the fields, on the Menu bar, select Edit, Delete or Delete Rows or press the Delete key.

3. Move the BirthDate field before the Photo field.
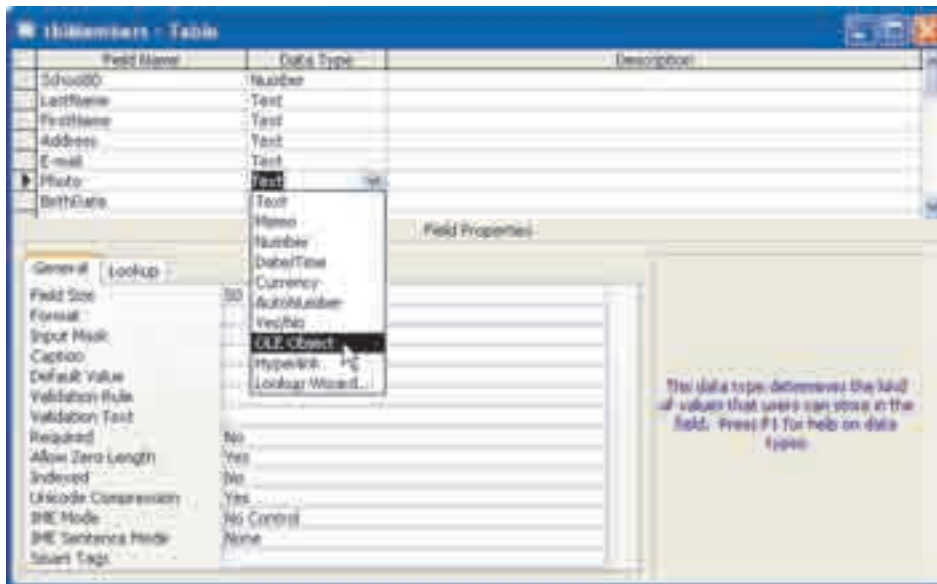
Changing the data type

4. Change the data type of the Photo field to OLE object.

5. Click the Photo field's Data Type box, click the arrow button, and select OLE Object.

6. Save the table.

Working with Tables

OLE Object

An OLE Object stores objects created in other programs such as graphics, pictures, Excel spreadsheets, Word documents, or Web pages or Hyperlinks. OLE objects are only visible in a form or report. When you open a table that contains OLE objects in Datasheet view, you only see text that tells what the object is. Access 2003 displays only images with **.bmp** image format. If you have images with other formats; **.gif** or **.jpeg**; convert your images to **.bmp** files.

In the following exercise, you will enter the each member's photo to the tblMembers table;

The Objects dialog box opens.

1. Create a folder in the same folder you store your **School_Library** database. Name the folder as Member Photos and move the all the member's photos to the folder.

2. Open the **tblMembers** table, and click in the **Photo** field.

3. On the Menu bar, select Insert, and Object.

4. Select **Create from File** to insert an existing photo.

5. Browse the Member Photos folder and double-click the image document to insert.

6. Leave the **Link** check box blank and click **OK** to close the **Objects** dialog box.

Browsing the picture

A text in the Photo field explains the contents.

7. The text **Bitmap Image** appear in the first field of the Images column in the table.   Enter the photos of the all the remaining members into the table.

To see the photo of a member, double-click on the Photo field. The photo is displayed in the default picture view application installed on your computer.
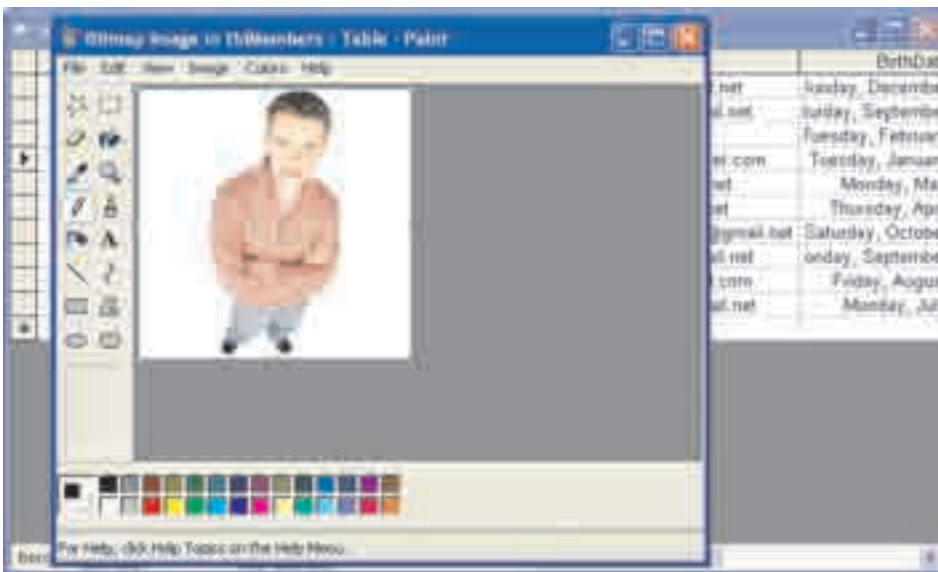
Displaying an image in a table

Access embeds images in a database by default. When you embed an OLE object in a table, the database file grows in size to accommodate any images. You can choose Linked instead of Embedded as the PictureType property to allow Access to store an image file outside the database file.

Working with Tables

Setting Field Properties

A property is an attribute that you set to define appearance, behavior or characteristics of an object. Every field in a table has its own properties. You can set properties of a field with the **Field Properties** window in Design view.

The available properties for each field vary according to its data type. The following table shows most common field properties.

Field Size Property;	defines the maximum number of character to be entered in a text field. For Number fields, it defines size and type of number to enter.
Format Property;	manages the display of Dates and Numbers.
Input Mask;	used to create a data entry format, for phone numbers, Zip codes and etc…, which assist users when entering data.
Default value;	The data value that automatically entered into a field if no other value supplied.
Validation rule;	An expression which validates the data entry.
Validation Text;	The text that is displayed when the data validation is broken.
Required;	defines whether a data value must be entered in the field.

To change a field's property;

1. Open the tblMembers table in the Design view.

2. Select the **FirstName** field. The field has the Text data type.

   Usually, a first name field length does not exceed 15 characters.

3. In the Field properties window, click in **Field Size** property. Change the default value from 50 to 15.
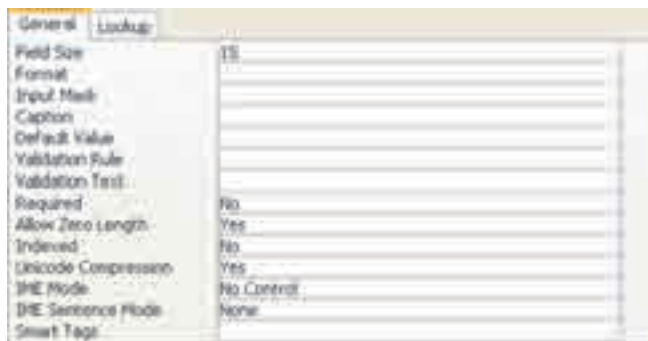
Changing field properties

By using proper field sizes you can decrease the size of your database, and this increases speed and efficiency of your database.

Data Lookup

A Lookup field chooses values from a Lookup list or another table in the database and restricts the data entry to those values.

To create a lookup field;

1. Open the **tblBooks** table in Design view;
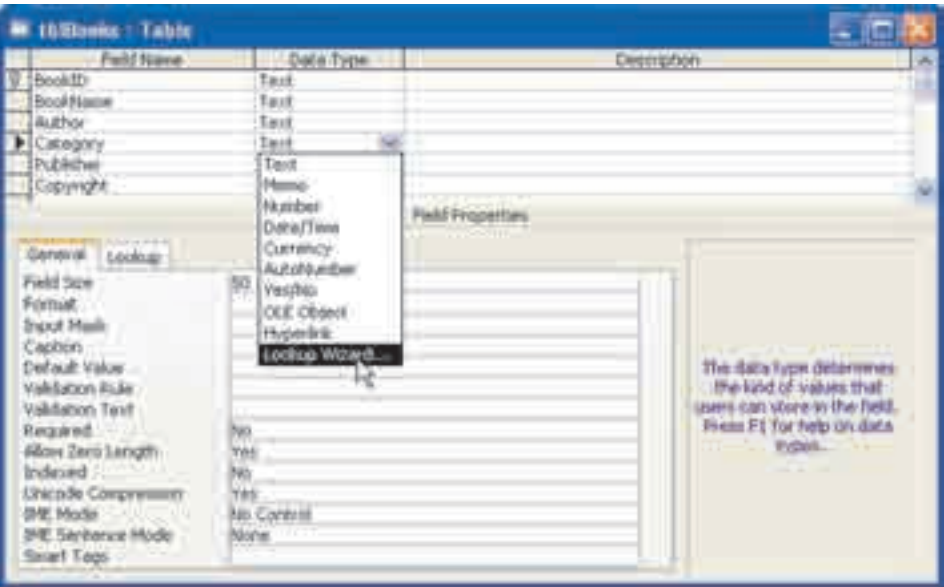
Selecting Lookup field

2. Click on the Data type box of the **Category** field and choose **Lookup Wizard** from the drop-down list.
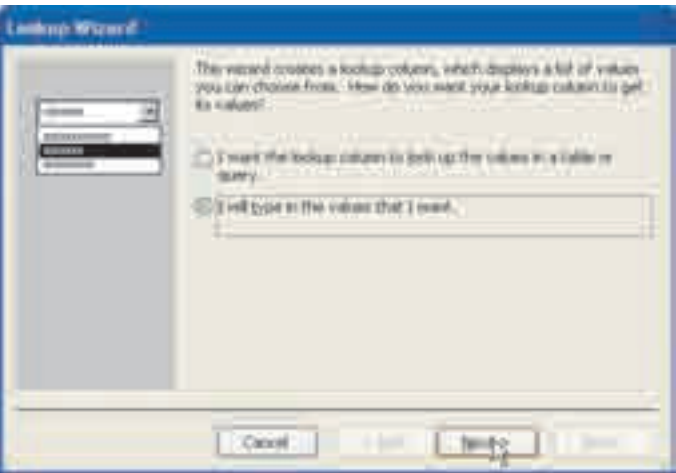
The Lookup Wizard window

3. Select **I will type the values that I want** option. Click Next.

4. On the second window; type the values as shown. The lookup field will display the values in a drop-down box in the category field of the table. Click **Next**.
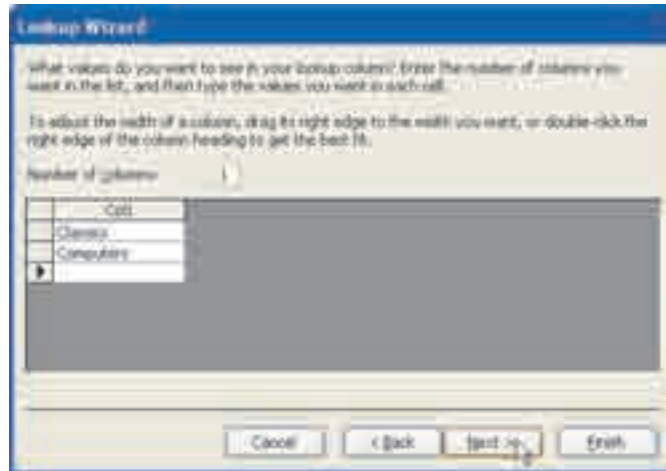
Typing the values

5. On the next window, name the lookup as Category column and click Finish. Save the table and switch to Datasheet view.

6. Click in the **Category** field to see the Lookup values.

The Lookup Field shows a list of book categories.

You can click the arrow button in the field and select the values from the drop-down list. As you type the first letter of any value in the lookup list, Access displays the value.

Creating Input Masks

You might want to view the information in the Microsoft Access forms, or store the information in your database tables, using a particular format. An Input Masks prevents users from typing characters that don't fit into a pre-defined data format. You can define an input mask for the Text, Number, Date/Time, and Currency data types.

In the following exercise, you will create an Input Mask;

1. Open the tblMembers table in Design view.

2. Select the **BirthDate** field.

3. In the Field properties window, click in the **Input Mask** property, and click the three dot button in the cell. The Input Mask window appears.

4. Select the **Short Data** input mask for the **BirthDate** field.

5. Click Finish.
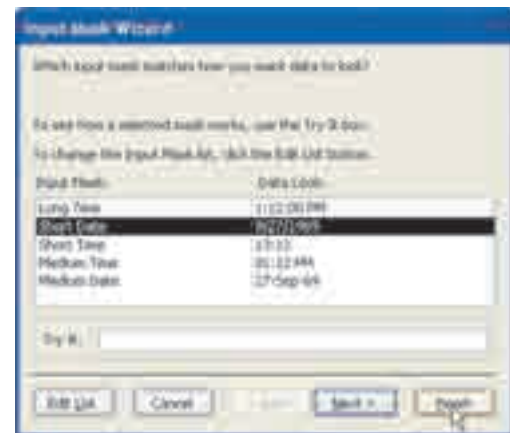
Defining Input Mask

If you want to further edit the Input Mask, click the Next button to get the next window of the Input Mask wizard.

A field with Input Mask

6. Save and open the table in Datasheet view.

7. Click in an empty the BirthDate field to see the Input Mask.

Validating Data Entry

A data type limits the data, such as text, number, date, and OLE, entered in a field. If you want to further limit data entries to ensure that users cannot enter incorrect data in a field, you should use validation rule property.

When you set a validation rule property, you should also set the validation text property. This property displays a dialog box that opens whenever the validation rule is broken.

In the following exercise, you will set a validation rule.

1. Open the tblMembers table in Design view

2. Click on the **BirthDate** field and then click inside the **Validation** Rule cell.

3. Type in **"between #01/01/85# and #01/01/95#"** in the property to limit the data entry between those dates.

4. In the **Validation Text** property, type **"Please only the dates between 01/01/1985 and 01/01/1995"**.

Setting a Validation Rule

5. Save the table.

6. Access displays a warning message to apply the validation rule to the existing data in the table. Click **OK**.

7. Switch to Datasheet view.

In the BirthDate field, when you try to enter a date before 01/01/1985 or after 01/01/1995, Access warns you with the validation text you set.

Creating Indexes

An Index helps you to find and sort records faster by keeping the indexed fields and their location inside the database in an internal table. You can create an index for a field which stores data you frequently search or sort by. Using an Index is like using the Index page of a printed book. A Primary key field is automatically indexed by Access.

To create an Index;

1. Open the tblMembers table in Design view.   Click on the **LastName** field.

2. Click on the **Indexed** property box, and then click the down arrow.

3. Set the **Indexed** property for the field to **Yes (Duplicates OK)**.
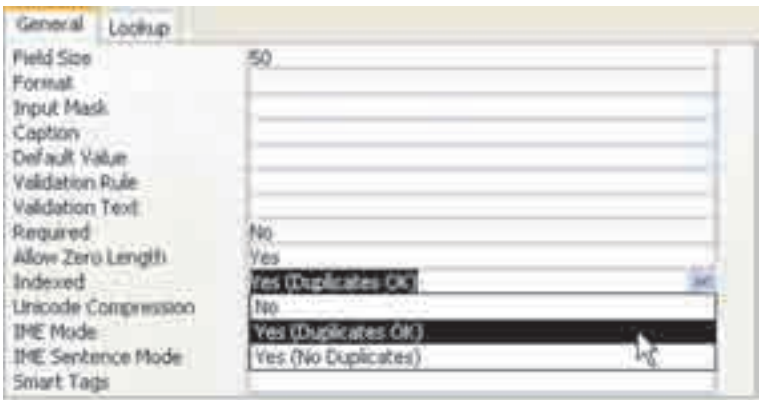
Indexing a field

4. Save the table.

To view all the indexed fields in a table;

1. On the Menu bar, select **View**, and **Indexes**.
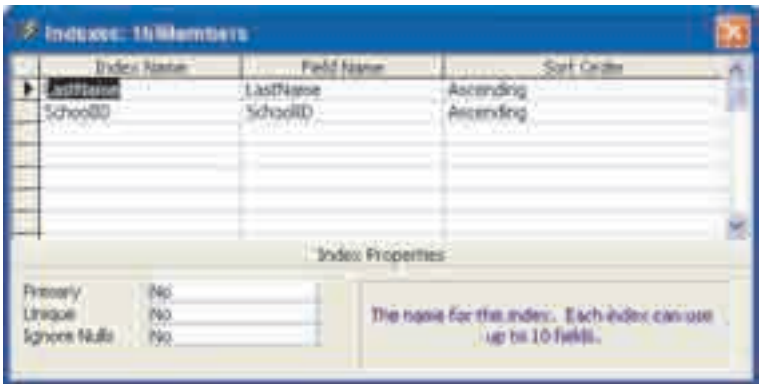
Displaying indexes in a table

Working with Tables

Finding and Replacing Records

When you have a lot of records in your database, finding a specific record can be difficult. The **Find** and **Replace** dialog box provides all necessary options to find records.

To find records;

1. Open the tblMembers table in Datasheet view.

2. On the Menu bar, select Edit, and Find.

   The Find and Replace dialog box opens.

3. Type in the data you want to find in the **Find What** box.

The Find and Replace dialog box.

In the Look In box, you can choose between the fields in which the insertion point is positioned or the entire table to search.

In the **Match** box, you can use **Whole Field** option to get an exact match of the data, **Any part of the Field** option to find all records that contain the data anywhere in the field, or **Start of field** option to find data at the start of the field.

Sorting Records

The data in a table is sorted automatically by the value in the primary field. You can change the way that data is sorted. Changing the sort order only changes the display of data in a table.

In the following exercise, you will sort the tblMembers by the LastName field;

1. Locate the insertion point, in the field that you want to sort by.

2. On the Menu bar, select **Records**, **Sort**, **Sort Ascending** or **Sort Descending**.

   Or; click the **Sort Ascending** or **Sort Descending** buttons on the Database toolbar.

3. Click the **Sort Ascending** button.

You can also use pop-up menu to sort records;

1. Right click the mouse inside the field, select the **Sort Ascending** or **Sort Descending** option.

Pop-up menu

The field is sorted by in ascending order.

Filtering Records

You can use the filter option to see all records in a table that meets criteria. A filter hides the unwanted data in a field. There are several types of filters; **Filter by Selection**, **Filter Excluding selection**, **Filter by Form**, **Advanced Filter**/**Sort**. **Filter By Selection** displays all records same as the selected value in the field.

To apply a filter with **Filter by Selection**;
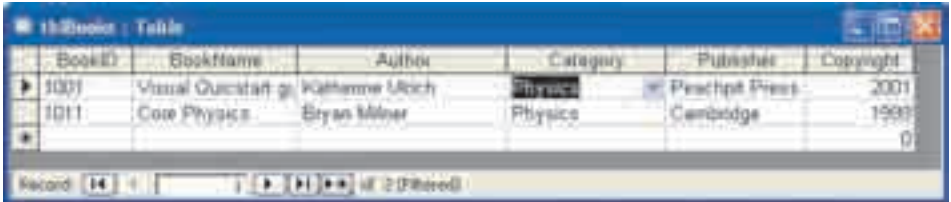
1. Open the **tblBooks** in Datasheet view.

2. Click in the field that you want to filter

3. Click the **Filter By Selection** button on the Database toolbar.

   Or, on the Menu bar, select **Records**, **Filter**, and **Filter By Selection**.

   Or, right click inside the field; choose **Filter By Selection** from the pop up menu.

To remove a filter;

1. Click the **Remove Filter** icon on the Database toolbar.

The filter displays only the records with same value of the selected field.

Working with Tables

Exercises

Fill in the blanks

1. An _____ prevents users from typing characters that do not fit into a pre-defined data format.

3. The _____object stores objects created in other programs such as graphics, pictures, Excel spreadsheets, Word documents.

2. The _____ displays a dialog box that opens whenever the validation rule is broken.

True or False

1. Datasheet View lets you view and modify the structure of any database object.

   ☐ True   ☐ False

2. A Primary key field is automatically indexed by Access.

   ☐ True   ☐ False

3. You can restore back the records you delete.

   ☐ True   ☐ False

Projects

In the tblBooks table;

1. Create a lookup list in the Publisher field.

2. Create an Input Mask for the E-Mail field so the field will display the following format by default.

   _____@_____

3. Set a validation rule for the Copyright field so data entry will be restricted between 1800 and 2007 years.

In the tblMembers table;

4. Create a filter which will only display the users with **@gmail.net** addresses.

Multiple Choice Questions

1. Which field property controls the expression that determines the values Access will accept?

   a. Validation Text   b. Validation Rule

   c. Format   d. Default Value

2. Which of the following happens in Datasheet view if you delete a field in Design view?

   a. The field is deleted but the data is preserved.

   b. The field remains but its data is deleted.

   c. The field and its data are preserved.

   d. The field and its data are deleted.

3. You want to sort the data in a table by increasing order according to the "LastName" field. What should you do?

   a. Select the field; on the Menu bar, Sorting, and Descending

   b. Design view, choose the field, Sorting and Ascending

   c. Select the field; on the Datasheet toolbar, click Sort Ascending button.

   d. On the Menu bar; Tools, Data, Ascending

4. You want to create a field that lets you add a category's name by picking it from a list. Which of the following fields would let you do this?

   a. A memo field   b. An OLE field

   c. A lookup field   d. A list field.

5. You want that user can not enter a value into a Date field which is less than April1, 1960. What should you do?

   a. Validation Rule : > #04/01/60#

   b. Input Mask : #04/01/60#

   c. Condition : > #04/01/60#

   d. Validation Text : > #04/01/60#

6. What is the corresponding text for the **<#1/1/95#** Validation rule setting?

   a. Enter a value less than 1/1/95.

   b. Enter a date before 1996.

   c. Value must be less than 95 characters.

   d. Enter a value greater than 1/1/95.

7. To specify a default value, select the desired field, click the _____ property box and then type the value.

   a. Validation Rule   b. Default Value

   c. Required Text   d. Validation

8. You should create an index on a field if _____.

   a. You frequently search or sort by the field

   b. You want to find a value in the field

   c. The field is not the primary key of the table

   d. You want to see all records that meets criteria

9. Which of the following fields would NOT make a suitable primary key?

   a. A car's license plate

   b. A passport serial number

   c. A student's school number

   d. A date field

Working with Tables

Summary

You can **add new fields**, **delete a field**, **change a field name**, or **format the table** to get better view of data in **Datasheet view**.

To make more **complex changes** on the structure of a table, you need to work in **Design view**.

Pay extra caution while using the **Delete** command, you will not be able to use the Undo command to restore back the records or fields after you delete them.

You can **format the way a table looks**; apply a 3D effect and border styles to the cells in the datasheet; eliminate the gridlines, change the gridline colors or background colors.

The **OLE Object** stores objects created in other programs such as graphics, pictures, Excel spreadsheets, Word documents, or Web pages or Hyperlinks.

A **property** is an attribute that you set to define an object's appearance, behavior, or characteristics of an object.

With **proper field sizes** you can decrease the size of your database, and this increases speed and efficiency of your database.

A **Lookup field** chooses values from a Lookup list or another table in the database and restricts the data entry to those values.

An **Input Masks** prevents users from typing characters that do not fit into a pre-defined data format.

A **Validation Rule** ensures that users ca not enter incorrect data in a field by limiting data entries

The **Find and Replace** dialog box provides all necessary options to find records.

The data in a table is **sorted automatically** by the data in the primary field.

A **Filter** hides the unwanted data in a field.

Microsoft Office
Access 2003

- About Table Relationships
- Defining and Creating a Relationship
- Enforcing Referential Integrity
- Subdatasheets

Table Relationships

About Table Relationships

You might need to get data from two or more tables and use it in queries, forms or reports. By using relationships, you can use the existing data from a table in the other tables without reentering it and thus create data integrity in the database.

In order to set up a relationship between two or more tables, you need to use a common field in the tables. The common field must be of the same data type and contain same kind of data. In most cases, a relationship is set on a primary key field in the tables.

You can create relationships at any time but it is better to relate tables when they are empty. There are three types of relationships;

One-to-many; it is the most common relationship type. Each record in the table in which primary key field is stored, can have many matching records in the related table.

One-to-one; it has only one matching record in both tables.

Many-to-many; both tables can have many matching records in this relationship.

Defining and Creating a Relationship

The tables, seen below, have the SchoolID field of same data type and same kind of data. A relationship can easily be established over the **SchoolID** field.

tblMembers	tblLoan
SchoolID	BookID
LastName	SchoolID
FirstName	BorrowDate
Address	ReturnDate
e-mail	
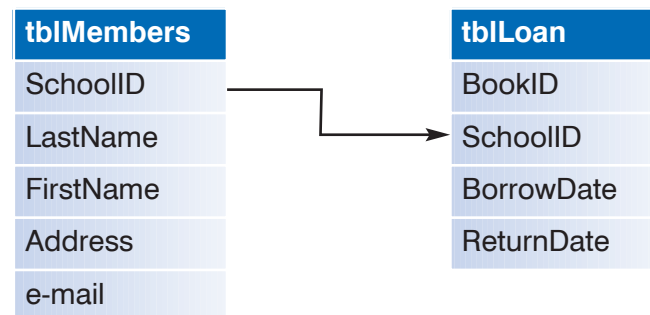
The tblMembers table stores the list of students and their information. Each student in the table has a unique identity and the SchoolID field is set as primary key in the table.

The tblLoan table stores data about book loan activitie from the school library. It is possible for a student to loan more than one book at a time.

Therefore, a SchoolID can be found in the tblLoan table.

SchoolID	FirstName
312	Jeremy
315	Rob
320	Pablo
322	Adam

SchoolID	BookID
312	1002
312	1008
320	1009

To create the relationship, you need to;

1. Close all the open tables and return to the Database window.

2. Click the **Relationships** button on the Database toolbar.

   Or, on the Menu bar, select **Tools**, and **Relationships**.

If no relationship exists in a database; the **Show Table** dialog box opens in the **Relationships** window.

The Relationships button
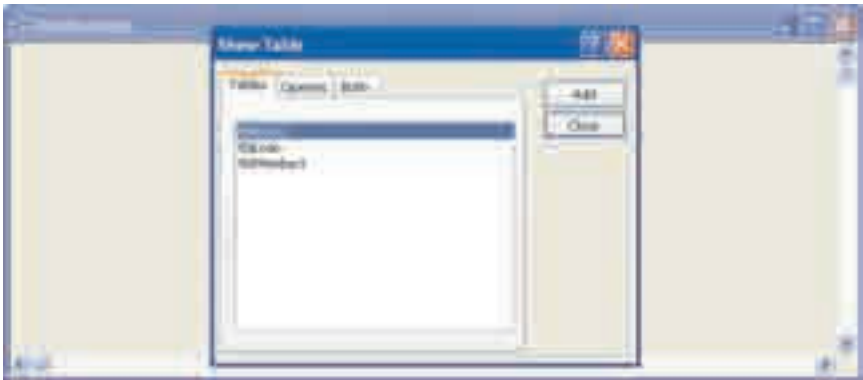
The Relationship window

The **Show Table** dialog box lists all available tables and queries in the database. The **Relationships** window shows the tables and how the tables are linked in the relationship. It also provides necessary tools to create and edit a relationship.

3. Select the tblMembers table and then click **Add** button to add the table into the **Relationships** window.

   Or, double-click over the table name.

4. Using the same method, add the **tblLoan** table.

5. Click Close.

The tables in the Relationships window

The **Show Table** dialog box closs and the **Relationships** window displys the added tables. If you accidentally add a table or want to remove a table from the **Relationship** window, select the table by clicking over it and press the Delete key on your keyboard.

You can arrange and resize the tables to see all the fields. The Primary key fields are displayed in boldface.

6. Drag the **SchoolID** field of the **tblMembers** table and release it on the **SchoolID** field of the **tblLoan** table.

The Edit Relationship dialog box

When a relationship is created, it is automatically saved in the database. As you release the mouse button, the **Edit Relationship** dialog box would appear and Access automatically recognizes the appropriate relationship between the tables.

After setting up a relationship between the tables, whenever you make changes to the **SchoolID** field in the **tblMembers** table, it will be updated to the **tblLoan** table.

Enforcing Referential Integrity

You need to enforce relational integrity between the tables. **The Enforce Referential** Integrity option ensures that the related data is not accidentally deleted or edited.

For instance, you can not delete or change a record in the **tblMembers** table if there is a matching record in the **tblLoan** table when the tables are related.

Two options allow you override some restrictions imposed by the **Enforce Referential Integrity** option;

Cascade Update Related Fields,	any change in the primary key field table, is updated in the related field of the table
Cascade Delete Related Records,	deleting a record in the primary key field table, deletes any related records in the related table

1. Check the **Enforce Referential Integrity**, **Cascade Update Related Fields,** and **Cascade Delete Related Records** boxes.

2. Click Create.

Access displays the **Relationships** window. A joinng line is drawn between related tables indicating a relationship. The "1" and "∞" symbols at the each end of the line shows a "one-to-many" relationship. The "1" shows the main (primary key table), and the "∞" symbol shows the many side of the relationship.

Enforcing Referential Integrity
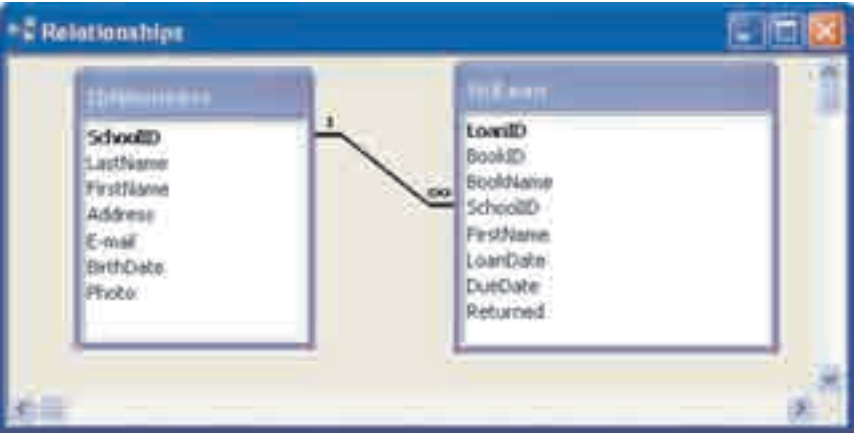
A Relationship is set

3. Close the **Relationships** window to retur to the **Database window**.

A warnng message appears. You need to save layout of the tables in the **Relationships** dialog box.

4. Click the **Save** button on the **Relationship** toolbar to save layout of the tables.

Editing Relationships

You can edit and delete relationships if you create the wrong relationship or made a mistake in the relationship settings.

To edit a relationship, you need to close all the related tables in the database;

1. Open the **Relationships** dialog box.
2. On the **Relationships** toolbar, click the **Show All Relationships** icon.
3. Double-click the joining line between the related tables.

The **Edit Relationships** dialog box opens.

4. Apply your changes on the Edit Relationships dialog box.

To delete a relationship;

1. Click on the joining line between the tables.
2. Press the **Delete** key on the keyboard.
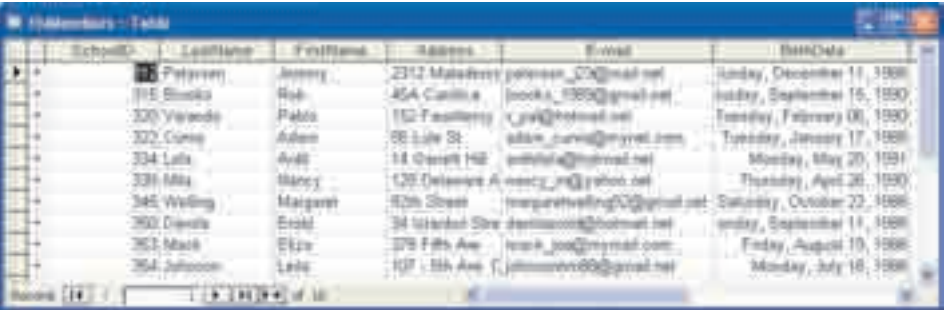
3. Click **Yes** to delete the relationship.

Subdatasheets

Subdatasheets provide a hierarchical view of related tables or queries in a single window. Access auomatically creates a subdatasheet on the main side of a relationship. With the subdatasheets, you can see and edit the records on the many side of the relationship of the main table. You can also use subdatasheets to create **SubForms** in forms.

1. Open the **tblMembers** table in Datasheet view.

Subdatasheets

A plus sign is shown at the left of each record. The (+) signs, at the left of each record, show that the field is linked to one or more records in another table.

2. Click on the plus sign at the first record. **tblLoan** table is displayed inside the **tblMembers** table. So you can look up and edit data in the tblLoan table.

Working with Subdatasheets

3. To close the subdatasheet, click (-) sign at the left of the record.

Exercises

Fill in the blanks

1. The **"1"** and "∞" symbols at the each end of the line show a _____ relationship.

2. The _____ ensures that the related data is not accidentally deleted or edited.

3. The _____ fields are displayed in boldface in the relationship window.

True or False

1. If the **Cascade Delete Related Records** referential integrity option is selected, deleting a record in the main table, deletes any related records in the related table

   ☐ True   ☐ False

2. You can use fields with different data types to link two tables.

   ☐ True   ☐ False

3. When a relationship is created, it is automatically saved in the database.

   ☐ True   ☐ False

Project

1. Create a One-to-Many relationship between tblLoan and tblBooks. Determine the one side of the relationship

Multiple Choice Questions

1. How can you add a table to the Relationships window?
   a. On the Menu bar, select View and Add Table from the menu.
   b. Select Tools, Add Table from the menu.
   c. Select the table from the Show Table dialog box, click Add.
   d. Click Relationships button.

2. Which of the following statements are true about Table Relationships? Choose two answers.
   a. Relationships are used to create data integrity between tables.
   b. A relationship can be set between a text field and a number field.
   c. Once a relationship is created between two tables it can not be removed.
   d. You can easily display the relationships in a database.

3. Which of the followings are types of relationships? Choose all that apply.
   a. One-to-many   b. One-to-one
   c. Many-to-many   d. Many-to-one

4. What is the purpose of a subdatasheet?
   a. To provide a hierarchical view of related tables or queries in a single window
   b. To display summarized data
   c. To create related tables
   d. To display relationships in a database

5. When you try to delete a relationship between two tables by removing the joining line you get an error message. What is the possible cause?
   a. The tables do not exist in the database anymore.
   b. There is a referential integrity between the tables.

c. The tables are in use
d. The relationship is secured

6. Which side of a one-to-many relationship between two tables has the primary key?
   a. Many side
   b. Both side
   c. One Side
   d. None of the tables

7. How can you ensure that a change in a related field is updated to other fields in the related tables?
   a. Using Cascade Related Records
   b. Using auto updates
   c. Using an up-to-date operating system
   d. Using Cascade Update Related Records

8. To set a relationship between two tables, the common field must_____. Choose two answers.
   a. contain same kind of data.
   b. be of text data type.
   c. be same data type.
   d. have no data initially.

9. Select the database objects you can use in a relationship. Choose two answers.
   a. Tables   b. Forms
   c. Reports   d. Queries

10. How is a primary key field of a table distinguished in Relationships window?
    a. In Italic fontface.
    b. In Bold fontface.
    c. With a ∞ symbol.
    d. With black background.

Summary

By using **relationships**, you can use the existing data from a table in the other tables without reentering it and thus create data integrity in the database.

One-to-many is the most common relationship type. Each record in the table in which primary key field is stored can have many matching records in the related table.

The **Show Table** dialog box lists all available tables and queries in the database.

The **Relationships window** shows the tables and how the tables are linked in the relationship.

The **Primary key fields** are displayed in boldface in the **Relationship** window.

When a relationship is created, it is **automatically saved** in the database

A **joining line** is drawn between related tables indicating a relationship.

The "1" shows the **one side (primary key table)**, and the infinity symbol shows the **many side** of the one-to-many relationship.

The **Enforce Referential Integrity** ensures that the related data is not accidentally deleted or edited.

Subdatasheets provide a hierarchical view of related tables or queries in a single window.

You can **edit and delete relationships** if you create the wrong relationship or made a mistake in the relationship settings.

Microsoft Office
Access 2003

Working with Forms

About Forms

Table Datasheet view displays each record of a table in a single row. When the table contains several fields, seeing an entire record becomes quite difficult because all the fields of the record have to fit into one row. Also, entering and editing data in Datasheet view could be quite tedious as the number of records increased in the table. You need the scroll up and down to find the record you are looking for and place insertion point in the right place.
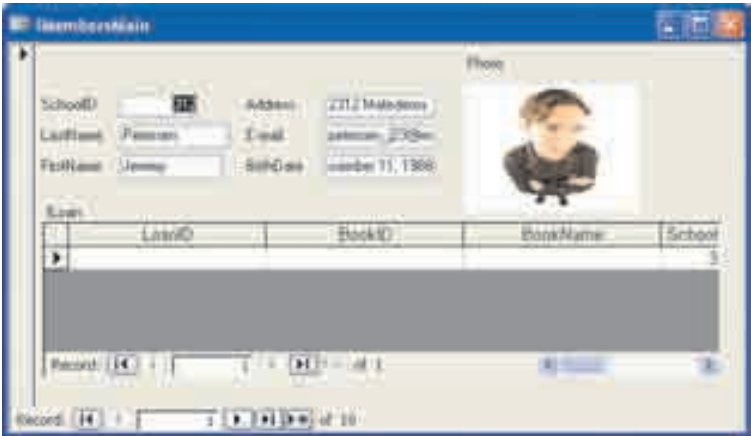
Forms provide an easy way to display and edit a record's fields.

A Form provides an easy way to enter, edit, and view data in tables. By using forms; you can select and display the all fields of a record, work with related tables and enter data in more than one table at a time. **A Form** displays only one record at a time.

Form Design view allows you to create or edit a form's layout. Form view allows you to enter and change the data. To switch between Design view and **Form view**, use the buttons on the Database toolbar or View menu on the Menu bar.

You can create a form by using;

AutoForm	automatically creates a form without asking any questions or steps.
Form wizard	allows you create a form by selecting form fields, form layout, and background style through a series of windows.
Design view	is used to build a form from scratch.

Creating a Form with AutoForm

AutoForm is the fastest and the easiest way to create a form. **AutoForm** automatically creates a form that displays the data from a single table.

In the following exercise, you will create a form with AutoForm;

1. Open the School_Library database.
2. Click the **Forms** button to switch the Forms window.
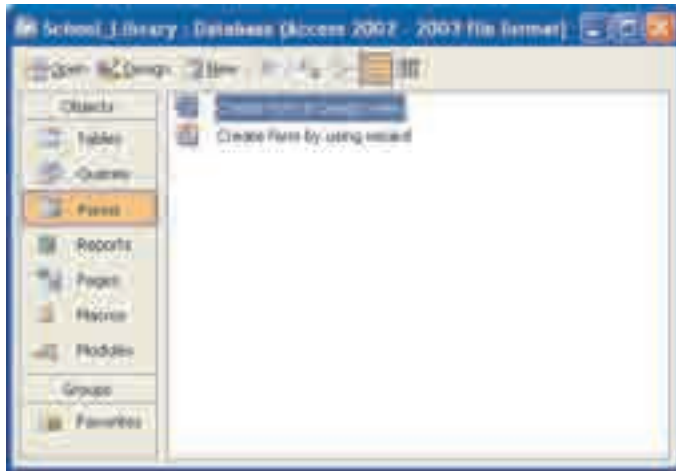
The Form window

3. Click **New** button on the Database toolbar.

   Or, on the Menu bar; select **Insert**, Form.

The New Form dialog box opens.

4. Select AutoForm: **Columnar**.

5. A Form only displays the data from its source **Table**/**Query**. Click the drop-down arrow on the lower part of the dialog box; select the **tblBooks** table as the source data of the form.

6. Click OK.

Working with Forms

A new form opens.

Each field has a label on the left side of the form. The labels contain the descriptive text about the fields. The field values are displayed in text boxes that are bound to a field in the source table or query. Whenever you edit a value in a text box, you are actually making the change directly to the data in the source table or query.

The **Record Selector** is a bar on the left side of a record. It allows the user to select all of the fields' contents of a record.
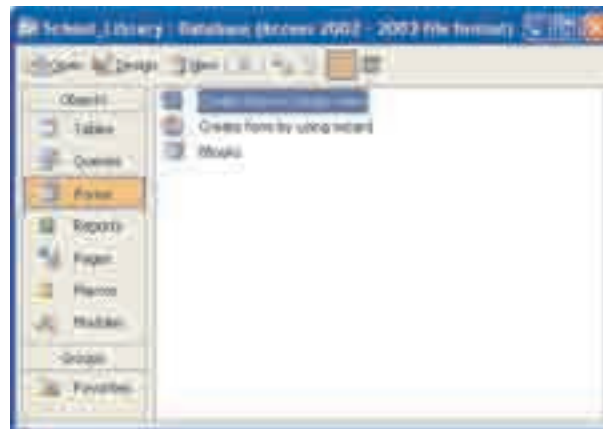
The fBooks form in the Form window

When a form opens, Access selects and highlights the first field in the form. To move from one field to the next, press the TAB key. At the bottom of the form, the Navigation bar is located. You can use the Navigation bar to switch between records and create new records.

7. Click the **Save** button on the **Form View** toolbar to save the form.

8. Save the form as **fBooks**.

Form Layouts

The form layout determines the general look of a form. The layout affects only how the form looks on the screen.

Columnar

aligns the fields in one or more column, displays one record at a time

Tabular

places field names as labels in the form header and displays many records

Datasheet

displays multiple records like a table in the datasheet view

The Form Wizard

The **Form Wizard** quickly creates a form based on your selections.

In the following exercise, you will create a form by using the Form Wizard;

The Form Wizard dialog window opens.

1. Double-click **Create form by using wizard** in the Database window.

OR, click the **New** button on the Database toolbar. The **New Form** dialog box appears. Select the **Form Wizard** option and click **OK**.

 The Tables/Queries list of the dialog box allows you to select the source data of the form.

2. Click on the drop-down arrow in the **Tables**/**Queries** box, and select the **tblLoan** table as the source data.

 The **Available Fields** list box shows entire fields from the selected **Table**/**Query**.
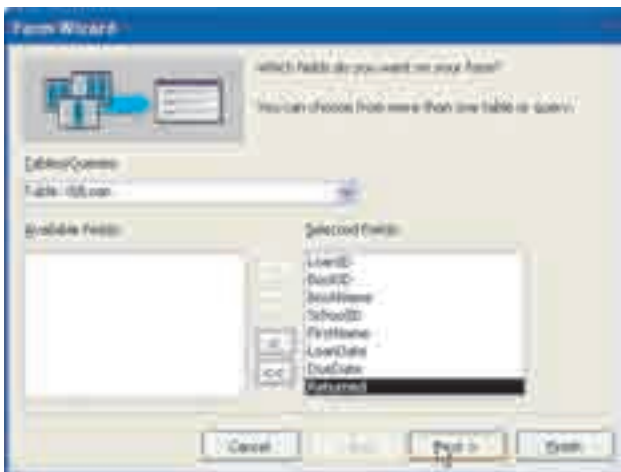
Selected Fields

3. In the **Available Fields** list box, select and move the fields to the **Selected Fields** box by clicking ">" button.

 You can add all available fields with ">>" button or remove added fields with "<<" button.

4. Click **Next**.

On the next window, select a layout for the form. As you click an option, you can see the graphic sample of the selected layout. Columnar layout displays one record at a time and data fields are displayed in newspaper-style columns.

5. Choose the **Columnar layout**, and then click **Next**.
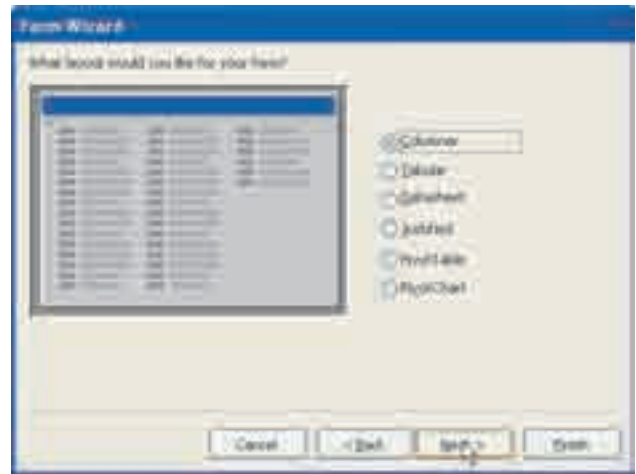
Select Layout

The **Form Wizard** displays available style options for the form. The style only affects the appearance of a form. When you select an option, the **Form Wizard** displays a preview.

6. Select a style and click **Next**.

7. On the final window nam the form as **fLoan**.

8. Select the **Open the form to view or enter information** option.

Select style

9. Click **Finish**.

10. Type in the fields and create a new record.

11. Save the form by clicking the **Save** button on the Form view toolbar.
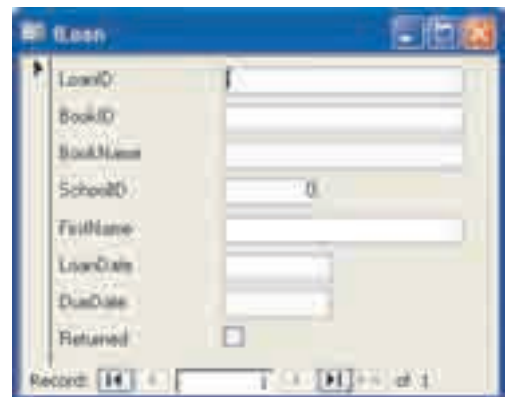
The fLoan form appears in Form view.

Working with Forms

The Form Design Toolbar

The Form Design toolbar

Creating a Form in Design View

You can make further changes to a form or build a form from the scratch in Design view.

To create a form in Design view;

1. Open the **New Form** dialog box, and select Design view.
2. Select the **tblMembers** table as the source data of the form.
3. Click OK.
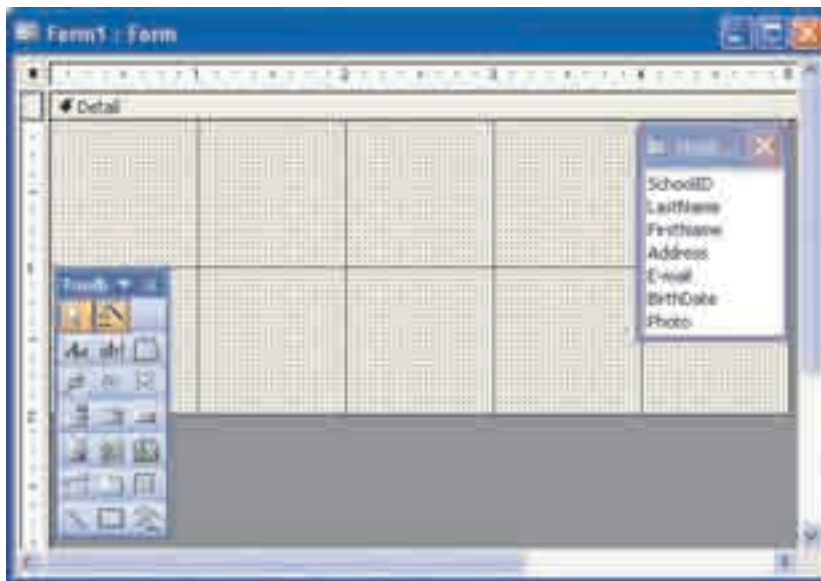
A blank form design window opens.

The Design window show the detail section, the **Toolbox** and the **Field List**. The detail section is the place that fields and controls are placed. You can resize the detail section by dragging from its borders.

The **Field List** shows available fields in the source table or query. The other sections of a form are page header, page footer, form header, and form footer.

Understanding Controls

Controls are the objects; such as a text box, check box, scroll bar, or command button; to display data, or perform a calculation.

There are three types of controls;

A Bound Control;	gets its value from a field in the form's source table or query. A Text box, a list box, and a Subform are bound controls
An Unbound Control;	has no link to any record source or data. A field label, a line or shape, command buttons, images are examples of unbound controls
A Calculated Control;	uses expressions and calculates values based on one or more fields from the form's source table or query

TO DO	DO THIS;
To select a control	Simply click over it. If you want to select more than one control; click in the gray area on the form, and then drag the mouse through all of the controls that you want to include in your selection.
To move a control	Drag the control from the larger handles located on the top left of the control. You can also move a control by using the arrow keys on the keyboard.
To resize a control	Use the smaller handles around and on the corners of a control.
To delete a control	Select the control and press the Delete key.

The Toolbox

The **Toolbox** provides quick access to controls. It contains all types of the controls. If the Toolbox is not visible; on the Menu bar; select **View**, and **Toolbox**.

Label · Text box · Check box · Image · Page Break · Line · More Control · Rectangle
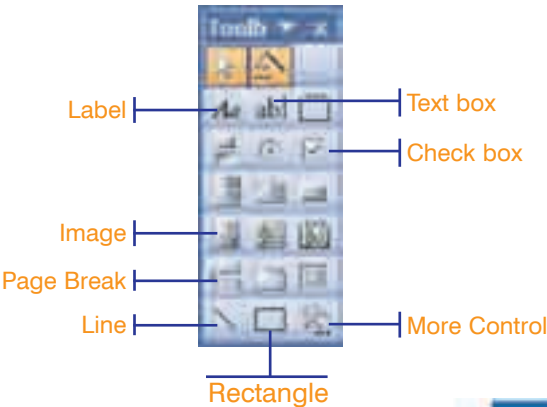
In the following exercise, you will add a control onto the form window;

1. Select the **SchoolID** field from the **Form** list; drag and drop the field into the form. When a field is added, you'll see two pieces appeared - the label on the left and the text box on the right.
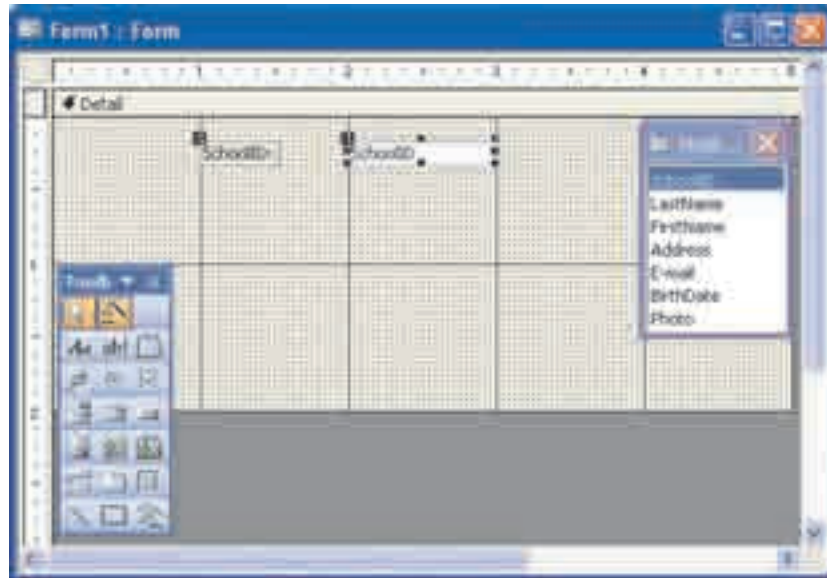
Inserting a Field

2. Add the **LastName**, **FirstName**, **Address**, **E-mail**, **BirthDate**, and **Photo fields** into the form.

Selecting, Moving, and Resizing Controls

Chapter 5
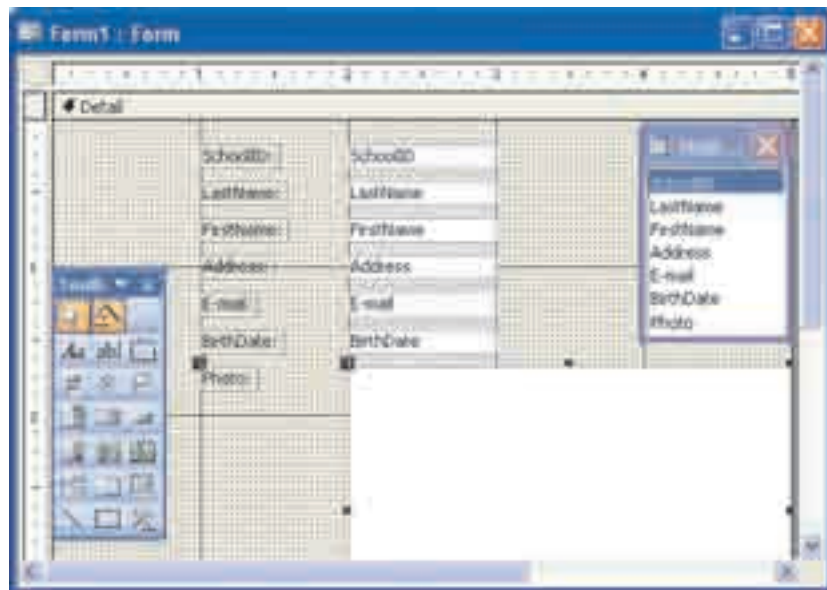
The Ruler and the Grid help you to position a control on the form.

3. On the Menu bar, select **View**, **Ruler** or **Grid** to hide and unhide the **Ruler** or **Grid**.

You can align, change vertical and horizontal space between the controls on a form.

4. Select the controls you want to align. On the Menu bar, select **Format**, then choose **Align**, **Vertical spacing**, or **Horizontal spacing**.
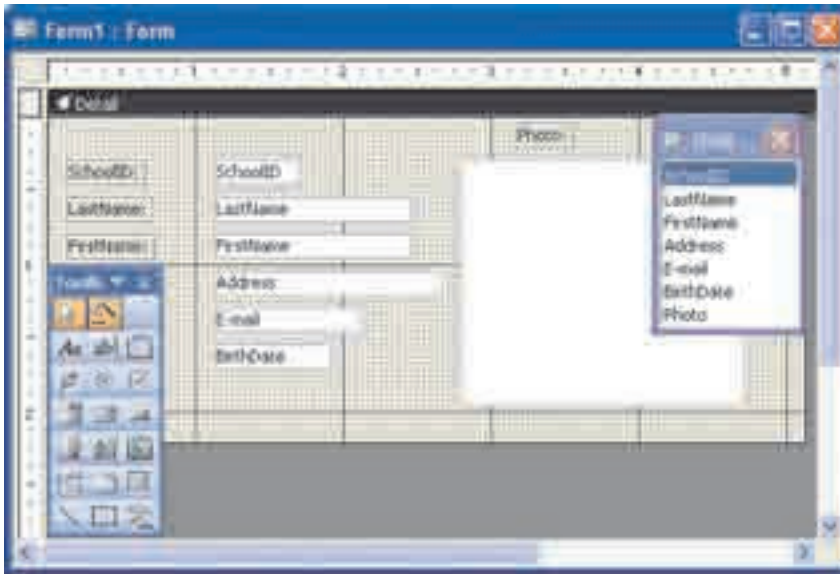
Aligning the Fields

5. Resize the Detail section by dragging from its borders.
6. Save the form as **fMembers** and switch to Form view.

The fMembers form in Form view

Form and Control Properties

The **Format property** dialog box is used to modify the characteristics; such as font size, alignment, name, or behavior; of a control or a form. A control inherits its set of properties from Table Design view. If you want to display a different format in a form field than table datasheet view, you could set the **Format property** for the control.

To open the **Properties** window of a ontrol;

1. Open the **Form** in Design view.
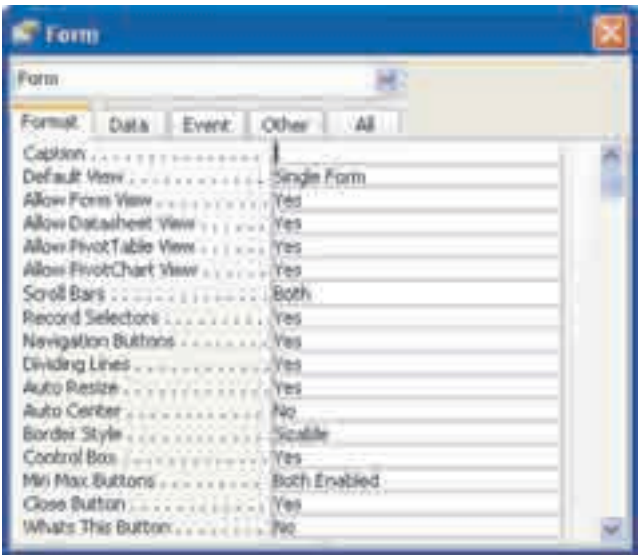
The Form properties dialog box opens.

2. Click the **Properties** button on the **Form Design** toolbar.

   OR; on the Menu bar, select **View**, and **Properties**.

   OR; right click on the gray area of the form and from the pop-up menu, select **Properties**.

   You can use the drop-down list box at the top of the **Properties** dialog box to select an object.

Format tab;	changes the appearance of the form.
Data tab;	manages the data resource of the form, filters the data.
Event tab;	sets behavior for a control
All tab;	displays all categories in the same window.

To change the properties of the **Photo** control;

3. Select the **Photo** control in the **Properties** dialog box.

4. Click the **Format** tab of the Photo control.

5. In the **Properties** list, click in the **Size Mode** property from the drop-down list, and choose **Stretch**

6. Save the **fMembers**.
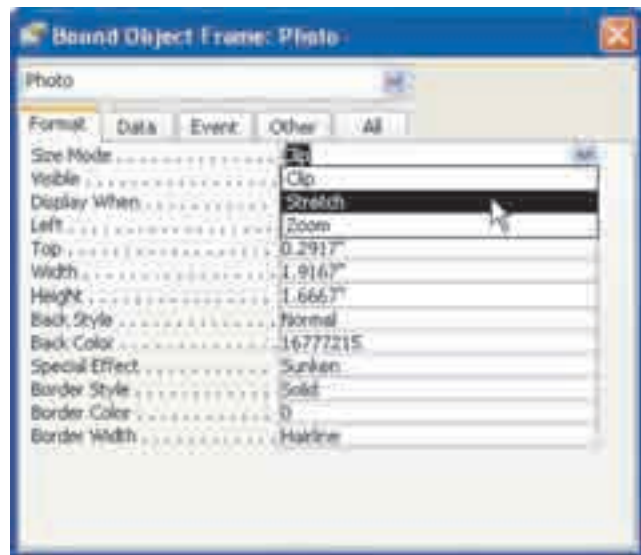
The Size Mode property

The Photo matches to its frame.

Creating a Calculated Control

A calculated control returns a value of an expression which is based on one or more fields from the form's source table or query. Calculated controls do not make changes data in the fields of the source tables.

By using an unbound text box, you can create a calculated control. When you drag a field from the **Field List** onto a form, you create a bound control. If you select the **Text Control** on the **Toolbox** and drag out on the Form Design window, you ceate an unbound text box control.

Working with Forms

In the following exercise, you will create a calculated control that shows a message if birthday of a member is the current day;

1. Open the **fMembers** form in Design view.

2. Click the **Text Box** tool in the **Toolbox** and then drag out a rectangle into the **form**.
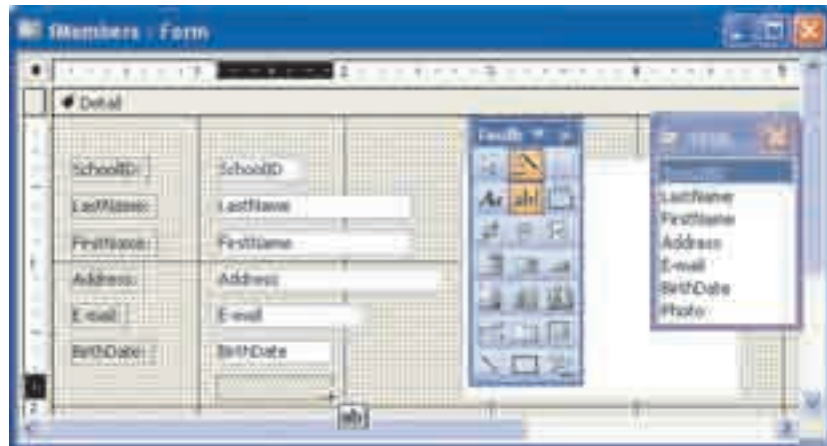
Creating an Unbound Control

3. Name the **Text box label** as **Age**.
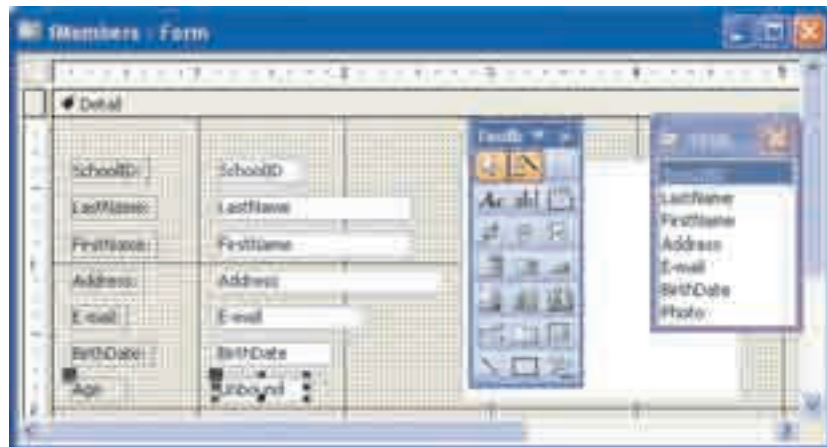
Selecting, Moving, and Resizing Controls

4. Select the text box, click the **Properties** button on the **Form Design** toolbar to open the **Properties** dialog box. Click on the **Data tab**.

5. Click in the **Control Source** Property..

   If is a built-in Access function. It returns one value if a condition you specify evaluates to **TRUE** and another value if it evaluates to **FALSE**.

It has the following syntax; **IIf(expr, truepart, falsepart)**

Date() returns the current date of the computer. **DateDiff** returns the difference between two dates. **Now()** returns the current date & time of the computer

6. A calculated control must always begin with an "**=**" sign. The following expression calculates the age of a person of the **tblMembers** table. Type in the expression in the in the Control Source text box

=DateDiff("yyyy", [Birthdate], Now())+ Int(Format(now(), "mmdd") < Format([Birthdate], "mmdd"))
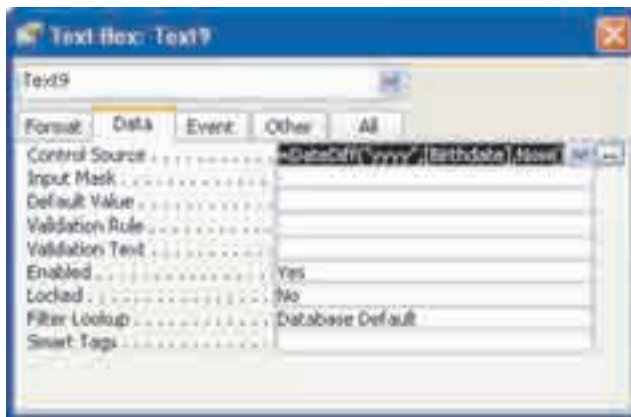
The Control Source

7. Save the **Form** and close the **Properties** dialog box.

8. Open the **Form** in **Form view**.
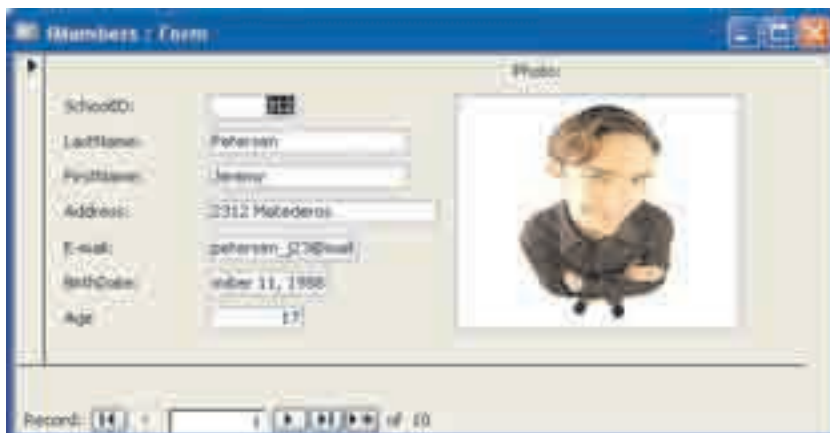
The fMembers form displays the age of the person.

Working with Forms

Creating a Form with a SubForm

A **SubForm** is a form within another form, called main form. A **SubForm** and a **main form** require having a **one-to-many** relationship between them. The SubForm displays the records on the many side table of the relationship.

You can create a main form and a subform in several ways. The **Form wizard** allows you to create a main form and a subform at the same time.

1. Open the **Form Wizard** dialog window box. Toselect the fields to include in the main form;

2. Select the **tblMembers** table from the **Tables**/**Queries** as the source data.

   The **Available Fields** list box shows fields of the tblMembers table.

3. In the **Available Fields** list box, select the **SchoolID**, **LastName**, **FirstName**, **Address**, **E-mail** and **Photo** fields.

4. Click the **Add** selected field button.

   To select the fields for the subform;

5. Select the **tblLoan** table from the Tables/Queries and select and add all the fields except the **FirstName** field of the tblLoan table.

6. Click **Next**.
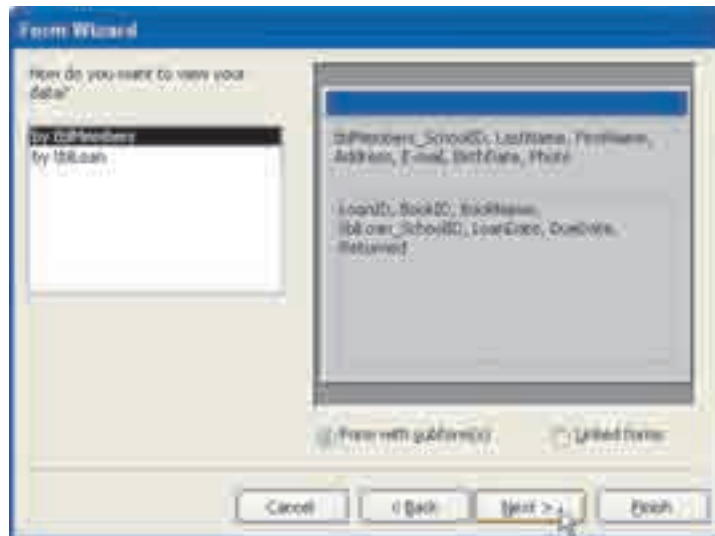
Selecting main table

7. On the next window, accept he default options **Form with SubForm(s)** and click **Next**.

8. Choose the Datasheet layout for the subform and click **Next**.
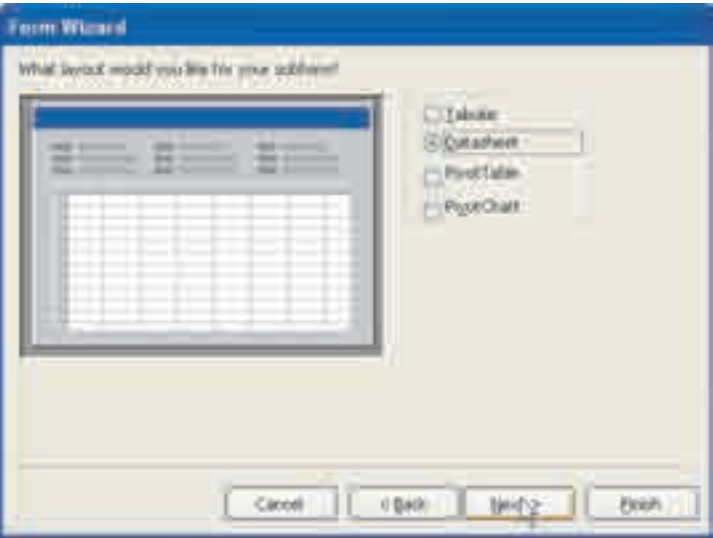
Selecting subform layout

9. Choose a style for the form and click **Next**.

10. Name main form and subform titles and click **Finish**.

11. Align the controls in Design view.
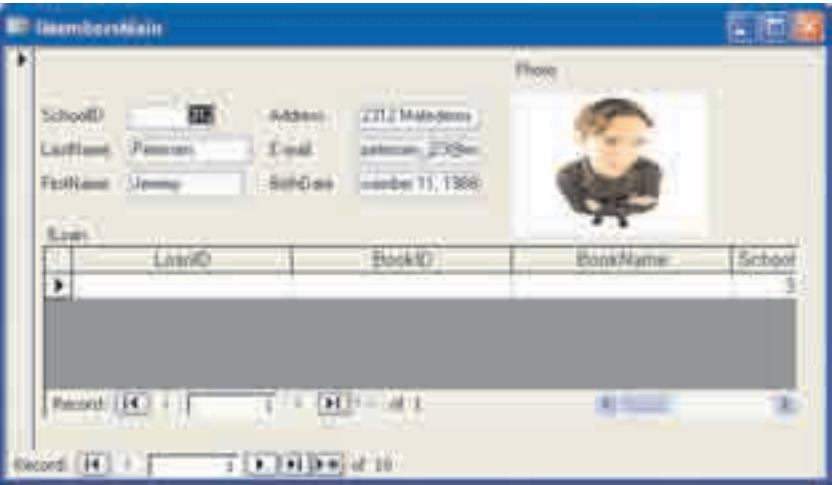
The form with a subform

The screen and the SubForm is displayed as a datasheet inside the form. You can enter the information into the **tblMembers** table and the **tblLoan** table or display data from the both tables at a time.

Case Study

1. Open the **fMembers** form. Switch the Design view.

2. Create a new unbound control.

3. Select the text box part of the control and open the properties window.

4. Open the Control tab and click in the Control Source property.

5. Type the following sentence in the control property.

> =IIf(Month(Date())=Month([BirthDate]),IIf(Day(Date())=
>
> Day([BirthDate]),""Happy Birth Date",""),"")

The expression displays a message on the form. If the current date and the BirthDate field have the same month and day value, it returns "HAPPY BIRTH DAY" message, else it returns no message.

6. Save the form with a different name. Switch to Form view.

Exercises

Fill in the blanks

1. _____automatically creates a form without asking any questions or steps.

2. _____ layout aligns the fields in one or more column, displays one record at a time.

3. A text box is a _____control.

True or False

1. Format tab of a control manages the data resource of the form, filters the data.

   ☐ True   ☐ False

2. An expression in a calculated control must always begin with an equal sign.

   ☐ True   ☐ False

3. You can use more than one table as the data source of a form.

   ☐ True   ☐ False

Multiple Choice Questions

1. What type of relationships does SubForms have a relationship with main forms?

   a. Many-To-Many
   b. Unique
   c. One-To-One
   d. One-to-Many

2. Which property determines what is displayed in a control?

   a. The Display property.
   b. The Comes From property.
   c. The Control Source property.
   d. The Data property.

3. The form in which a subform is displayed is called a _____ .

   a. target form
   b. mother form
   c. main form
   d. subform

4. To resize a control, _____ .

   a. right-click it, then click Resize on the shortcut menu
   b. use the smaller handles around and on the corners of a control.
   c. click it, then click the Resize button
   d. drag the mouse over the control.

5. _____ have no link to any record source or data.

   a. Bound controls
   b. Toolbox
   c. Unbound controls
   d. Calculated controls

6. Select the available form layouts that form design allows. Choose three answers.

   a. Columnar
   b. Tabular
   c. Datasheet
   d. Subform

7. The objects to perform a calculation on a form are called _____.

   a. sections
   b. form headers
   c. rulers
   d. calculated controls

8. To change field properties, right-click the desired field, then select _____ on the pop-up menu.

   a. Change Properties
   b. Edit
   c. View
   d. Properties

9. Which of the following built-in Access function returns the current date?

   a. Date()
   b. Time()
   c. Now()
   d. DateDiff()

10. Which of the following expressions are valid? Choose two.

    a. =[Quantity]*[Price]
    b. Date()
    c. =IIf([temperature]>15,"Hot" , "Cold")
    d. Day(Date())=

Working with Forms

Summary

A **Form** provides an easy way to enter, edit, and view data in tables. By using forms; you can select and display the all fields of a record, work with related tables and enter data in more than one table at a time

Form Design view allows you to create or edit layout of a form. **Form view** allows you to enter and change the data.

AutoForm is the fastest and the easiest way to create a form.

The Form wizard allows you create a form by selecting form fields, form layout, and background style through a series of windows

Columnar layout displays one record at a time and data fields are displayed in newspaper-style columns.

Style of a form only affects the appearance of a form.

You can make further changes to a form or build a form from the scratch in **Design view**.

The **Form Design** window shows the detail section, the Toolbox and the Field list.

Controls are the objects; such as a text box, check box, scroll bar, or command button; to display data, or perform a calculation.

The **Format property** window is used to modify the characteristics; such as font size, alignment, name, or behavior; of a control or a form.

A **calculated control** returns a value of an expression which is based on one or more fields from the form's source table or query.

IIf is a built-in Access function. It returns one value if a condition you specify evaluates to **TRUE** and another value if it evaluates to **FALSE**.

A calculated control must always begin with **an equal sign**.

A **SubForm** is a form within another form, called main form.

Microsoft Office
Access 2003

- About Queries
- Creating and Modifying a Query in Design View
- Filtering Data in a Query
- Using Parameter Queries
- Using Calculated Fields in a Query
- SQL

Working with Queries

About Queries

A Query is a database object that can include or exclude specific rows or columns from a table; select and combine fields from one or more tables, sort records, calculate sums, get averages of the field values. You can also make changes and update fields to tables in a database with queries.

There are several types of queries;

Select Queries; select and display information from one or more tables and queries in a specific order. **Parameter Queries**, that prompt the user for criteria when the user opens the query, are also select queries.

Action Queries; enables you to change, edit, update, delete data in existing tables, or create new tables.

Crosstab Queries; display, calculate, and summary two types of information.

Book Name	Author	Category
Digital Engineering Design	R. F. Tinder	Computers
The Water Babies	C. Kingsley	Children Classics
The Wind In the Willows	K. Graham	Classics
ICT for You	S. Doyle	Computers
Dr. Jekyll and Mr. Hyde	R. L. Stevenson	Classics
Core Physics	B. Milner	Physics
Microsoft Windows XP	O. Ay&M. Oksuz	Computers

Book Name	Author	Category
Digital Engineering Design	R. F. Tinder	Computers
ICT for You	S. Doyle	Computers
Microsoft Windows XP	O. Ay&M. Oksuz	Computers

The Select query; seen above; displays the records from the Computer Category. It uses a single table as a source data.

Datasheet view of a table and a query look alike, but they are quite different. Each time you run a select query, the result is re-created with the current records from the source tables in a datasheet which is called a **Recordset**. You can select, print, and update the data in a recordset. But unlike a real table, a recordset does not actually exist in a database. When you create and save a query, you only save the query's structure, sorts, criteria, and expressions. The records themselves are stored in source tables.

SchoolID	BookName	DueDate
312	Mathswise	1/20/2006
312	Maths Challenge	3/15/2006
320	ICT for You	12/26/1005

SchoolID	LastName
312	Petersen
315	Petersen
320	Brooks

LastName	BookName	LoanDate	DueDate
Petersen	Mathswise	1/13/2006	1/20/2006
Petersen	Maths Challenge	3/11/2006	3/15/2006
Brooks	ICT for You	12/21/2005	12/26/1005

The qDueDates query

The Select query, displays records from the **tblBooks** and **tblLoan**. It uses two different tables as a source data.

Queries have both Datasheet and Design views. Datasheet view, also called the recordset, displays the query results and Design view allows editing and creating new queries.

Working with Queries

Creating a Select Query with the Query Wizard

Select queries are the most common queries and can be used for viewing and a data source for forms, reports, and other queries.

The **Query Wizard** asks you questions about which tables you require and which fields within the tables to use. After you answer the questions, Access creates a Query for you.

1. Click the **Queries** button on the Objects bar.
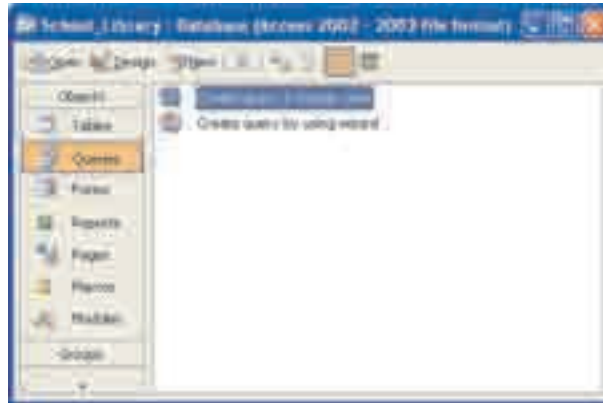
The Queries window

2. Double-click **Create query by using wizard** option in the Queries window.

The Simple Query Wizard opens.

3. Click in the **Tables**/**Queries** list box, and then choose **tblMembers** table. A query must have at least one field. Add the **SchoolID**, **FirstName**, and **BirthDate** fields to **Selected Fields** window.
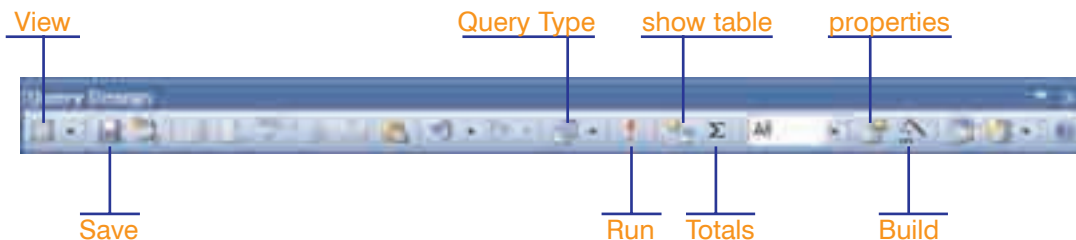
4. Click **Next**.

5. Select a descriptive name for the query and click **Finish**.

The qBirthDateList query displays the recordset.

The Query Design toolbar

The Query Design toolbar

Creating and Modifying a Query in Design View

Most of the time, you will use the Design view option to create a query structure from scratch or modify an existing query.

In the following exercise, you will create a select query which displays all the library members who have loaned a book;

1. Double-click **Create Query in Design View** icon.

   Or, on the Menu bar, select **Insert**, and **Query**. The **New Query** dialog box opens and choose Design View option.

Working with Queries
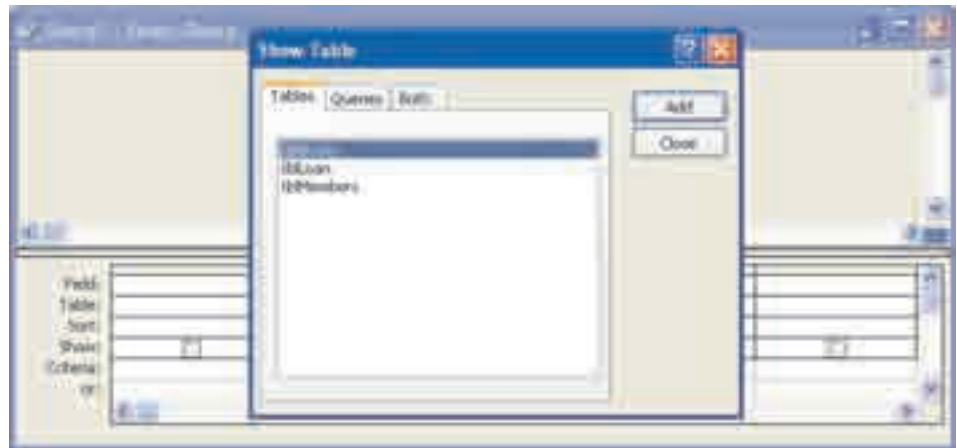
The Query Design window opens and The Show Table dialog box is displayed.

In the **Show Table** dialog box, you can select the tables you want to use as source data of a query.

2. Double-click over the **tblBooks**, **tblLoan** and **tblMembers** tables to include them in the query structure.

The Query Design window has two parts. The **upper window** shows the tables used as the source data for the query. The **lower window** is called **Design** grid and displays the fields included in the query. In Design grid, you can create the criteria for the query, sort and filter the query results, and add calculated fields.
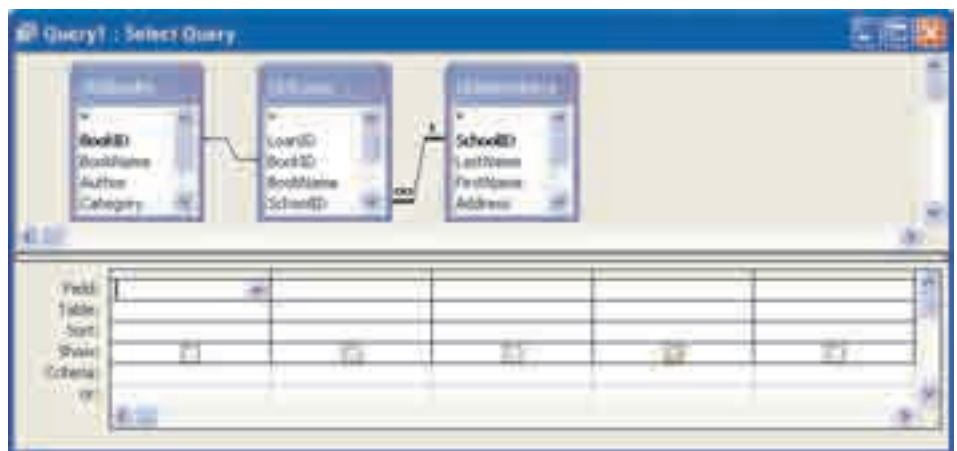
The Query design window automatically links the tables

Access automatically places joining lines on the common fields to relate the tables. You also can manually join two tables by dragging a field from the field list of one table to the matching field in the field list of the other table.

The first row of the Design grid is used to select fields from the tables to add to the query or to create expressions for a calculated field.

3. Double-click the field name; Access adds the field in the Design grid.

Or, drag the field name to over a column in the Design grid.

Or, double-click over the table title and drag all the fields to Design grid.

Or, select a field from the Field drop-down list in the Design grid.

If you double-click the asterisk at the top of a field list, you can add all the fields in it to the design grid.

The second row of the Design grid shows the name of the table that contains the field.
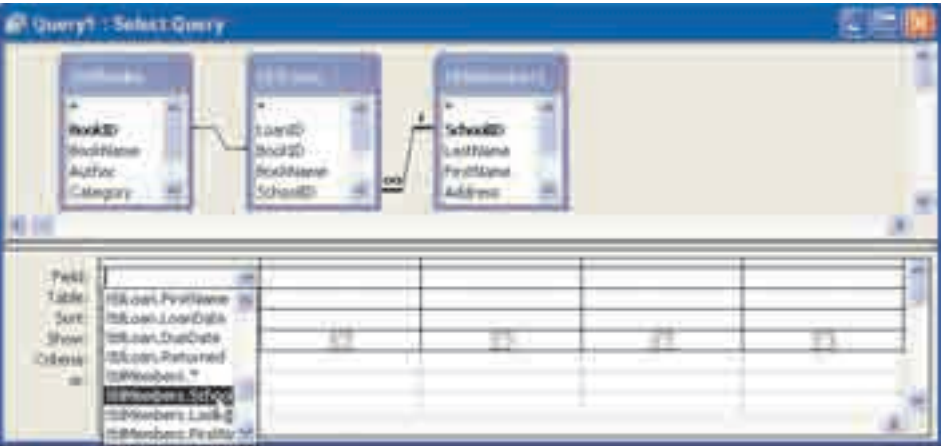
Adding fields into the Design grid.

4. Add the following fields to Design grid.

Field Name	Table Name
SchoolID	tblMembers
FirstName	tblMembers
LastName	tblMembers
BookName	tblBooks
LoanDate	tblLoan
DueDate	tblLoan
Returned	tblLoan

Working with Queries
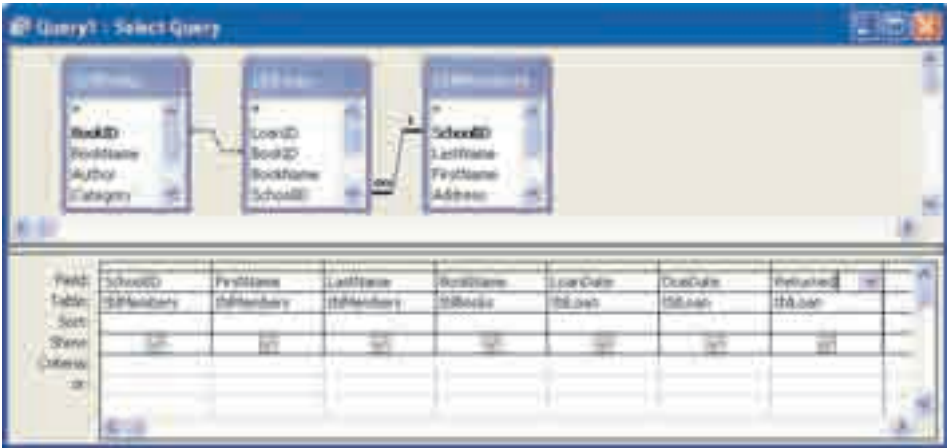
The Query with the fields

The Run Query button

5. You need to run a query to see the results. Click **Run** button on the Database toolbar.

Or, on the Menu bar, select **Query**, and **Run**.

The query shows the results in a recordset.

6. Save the query as **qDueDates** and switch back to Design view.

TO DO	DO THIS
To delete a table from the query structure;	select the table, and press Del key on the keyboard. The table is deleted from the query but it remains intact in the database structure.
To select a field;	move the mouse pointer over the field selector row and click mouse button.
To delete a field;	select the field and press the Del key on the keyboard.
To change the order of a field;	select the field and drag and release it to its new position.
To hide a field temporarily in the datasheet view;	uncheck the checkbox, in the show cell of the field.

Setting Field Properties

A Properties of a field are inherited from its source table. If you want to change the way a field is displayed in query's Datasheet view, you need to use the **Field Properties** dialog box.

To set the properties of the DueDate field;

1. Click in the DueDate field in Design grid.

2. On the Query Design toolbar, click the **Properties** button.

   Or, on the Menu bar, select **View,** and **Properties**.

3. In the **Format property**, click the arrow button on the right side of the cell, and choose **Long Date** format.

4. Close the **Format Properties** dialog box, and switch to Datasheet view.

The Field Properties dialog box.

The query displays the DueDate field with Long Date format.

Sorting Data in a Query

You can easily analyze results of a query sorting by any field or combination of fields in the query. If you do not specify a sort option, Access sorts the query results according to the first field of the query.

In the following exercise, you will change the sort options and the field to sort by;

1. Click in the third row of the Design grid.

2. In the Sort cell of the field you want to sort by, click the arrow button on the right side of the cell, and choose **Ascending** or **Descending** order.
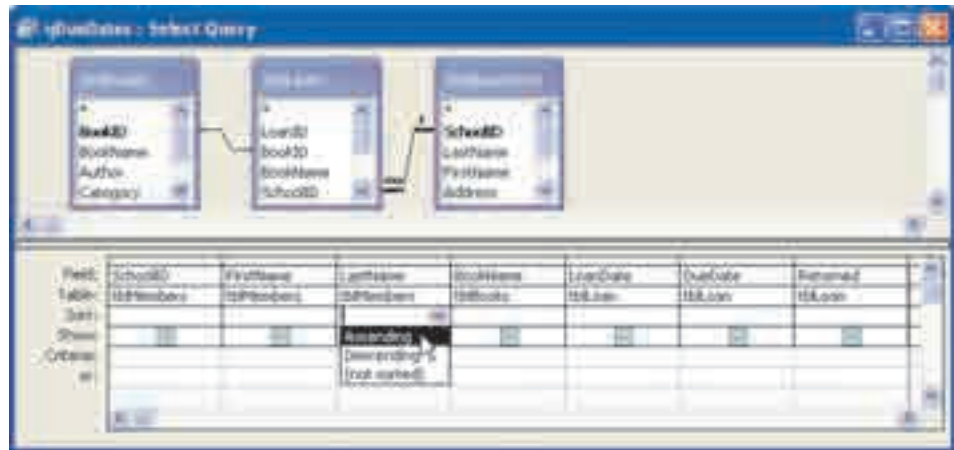
Selecting a Sort option

3. Switch to Database view.

The recordset is sorted by the field you've selected.

4. Save the changes and return back to Design view.

Filtering Data in a Query

Filters limit the data displayed of a field by using criteria. A Criteria; which is an expression with symbols and operators; shows you only the matching records in the query result. If you do not define any criteria for a query, Access displays everything in the fields.

If you get no records when you run a filter, it means that Access can not find anything to match your criteria. You can use filters for more than one field.

In the following exercise, a query will retrieve the book list to be returned in a specific time interval.

1. In the Criteria cell of DueDate field, type **Between #5/1/2006# And #12/1/2006#**
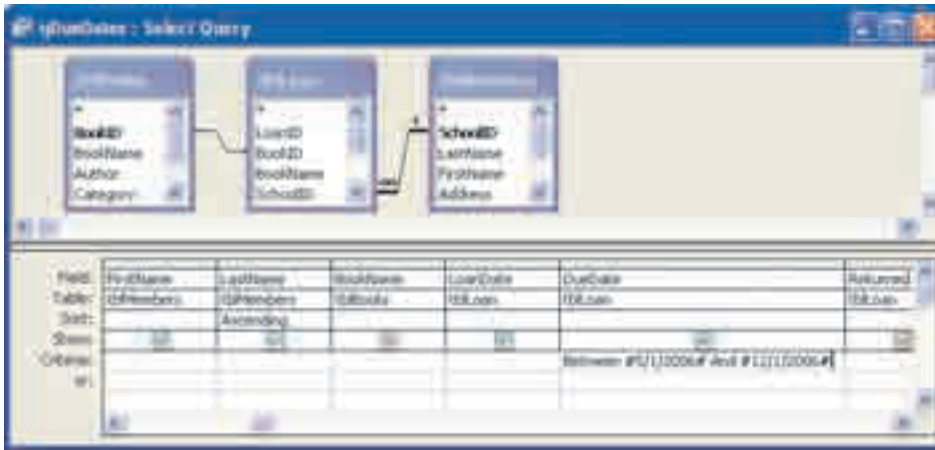
Entering a Criteria

2. Run the query, and do not save the changes.
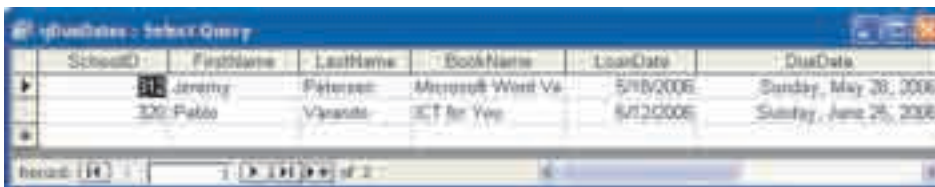
The query displays the records between given dates.

Using Parameter Queries

By using a parameter query, you can change a query's criteria without having to use Design view. Whenever a parameter query is run, it prompts a dialog box for the user to enter a value. You can have as many parameters as you like in a parameter query.

To create a parameter query;

1. Open the qDueDates query in Design view.

The parameter must be contained within square brackets **[ ]**.

2. In the criteria cell of the **LastName** field column; type the text **[Please enter a Surname]**.
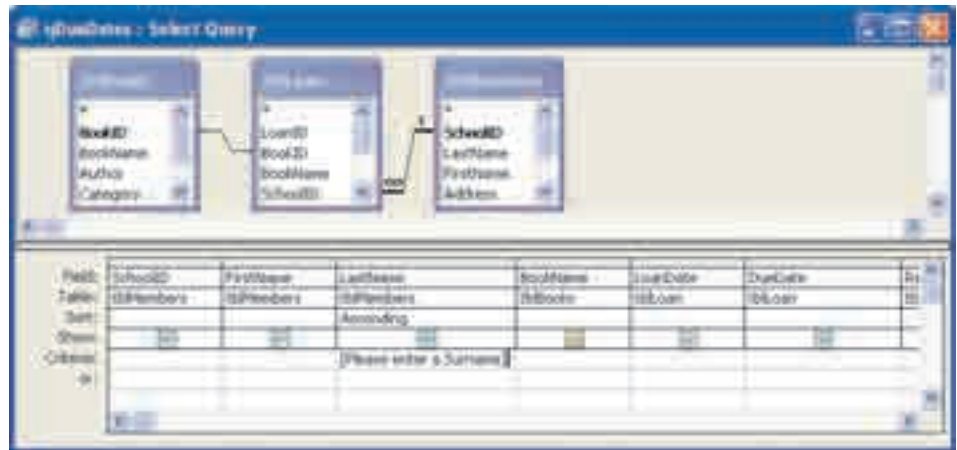
Setting a Parameter

Enter Parameter Value dialog box opens

3. Run the query.

4. Enter a **LastName** that you want to display. Click OK.

The recordset shows only the records defined by the parameter.

5. Do not save the changes.

Using Calculated Fields in a Query

A calculated field performs calculations based on the the fields of query. Access provides many built-in functions to create calculated fields.

In the following exercise, you will create a calculated field that concatenates the **FirstName** and the **LastName** fields;

1. Open the DueDate query in Design view. Make sure that you have no filters or parameters applied to the query.

2. Click in an empty field column in the Design grid.

3. Type the following expression in the field.

> **FullName: [tblMembers]![LastName] & ", " & [tblMembers]![FirstName]**

The ampersand character (&) between the fields concatenates them.
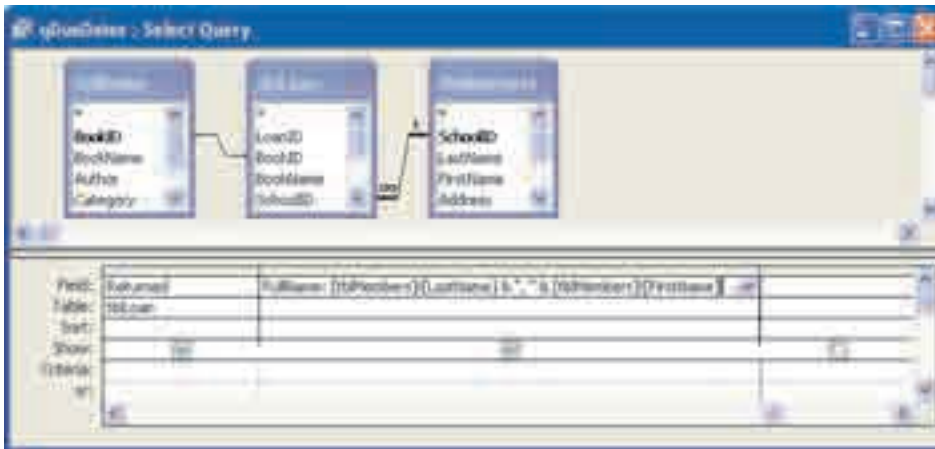
Entering an expression

4. Run the Query, do not save the changes.

The query displays the concatenated FullName field.

The Expression Builder

Access has an **Expression builder** to create complex expressions. To open the Expression Builder;

The Build button

1. Open the **qDueDates** query in Design view.

2. Click in an empty field column in the Design grid where you want to place the expression, and then click **Build** button on the Database toolbar in the Query Design view.

   OR, right-click in the cell and choose **Build** from the pop-up menu.

3. On the lower pane of the Expressions builder, open **Functions**, and Built-In Functions or type in the following expression in the Expression builder.
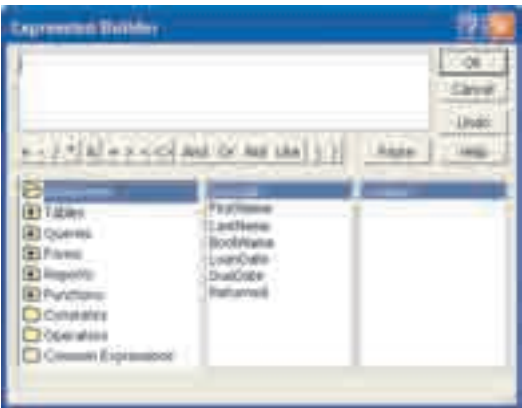
Expression Builder dialog box opens.

IIf([Returned]=No, IIf(Date()>[DueDate], "OverDue"," ")," ")
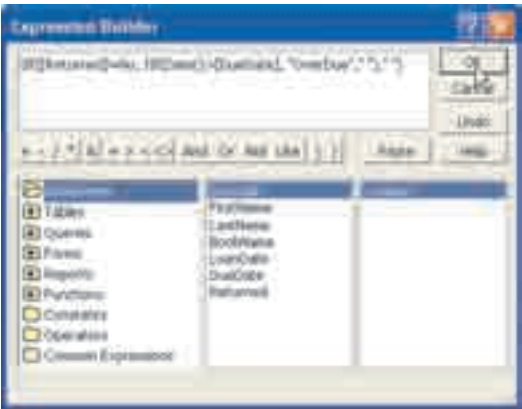
IIf function compares the current date to the return date. If the current date is greater than the return date and the **Returned** field is unchecked then the field displays "**Overdue**" message.

Entering an expression

4. Click OK to return query Design window.
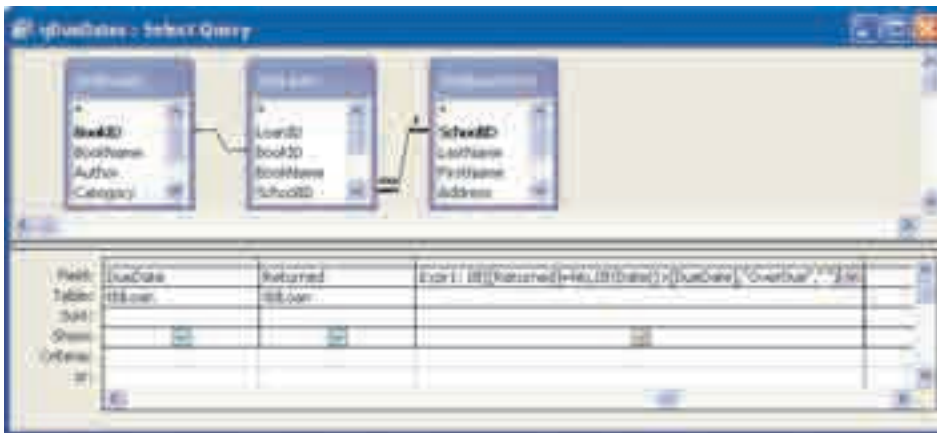
A new field with the Expression builder

5. Save as the query **qOverdues**.

6. Run the **query**.

A new field with the Expression builder

7. Return the Design view and rename the title of the new field as Overdue.

Structured Query Language (SQL)

Structured Query Language (SQL) is standard language for extracting information from a relational database. When you use the graphical tools of the Query Design window to create a query, Access converts what you create into SQL statement.

SQL is not particularly difficult, but writing a long SQL statement can be tedious and error-prone. Building a query in Design view at first, and then viewing SQL statement in the SQL view can be a good approach to learn SQL.

Working with Queries

To see the SQL statement of the qDueDates query;

1. Run the **qDueDates** query.

2. On the Menu bar, select **View**, and **SQL** view.

   OR, right-click in Design window, choose SQL view from the pop-up menu.

SQL view of the qDueDates query

The SQL editor in which contains the SQL statement of the qDueDates query opens. There are four main clauses in a SQL statement;

SELECT	specifies which fields to select from the table or tables.
FROM	specifies the source table of the query.
WHERE	specifies one or more conditions that filter the records that will be displayed.
ORDER	specifies the order in which the query result is displayed.

You can create an entire SQL statement on a single line. However, using line breaks make the SQL statement more readable. A semicolon shows the end of a SQL statement.

In the following exercise, you will create a query in the SQL editor;

1. Double-click **Create Query in Design View** option.

   OR, on the Menu bar, select **Insert**, and **Query**.

2. In the Show Table dialog box, add the **tblBooks** to query design window.

3. On the Menu bar, select **View**, and **SQL** view.

4. The SQL editor window opens. Type the following SQL statement in the SQL editor;

SELECT category, COUNT (category) FROM tblBooks
GROUP BY category;

Typing the SQL sentence

The "**SELECT category, COUNT (category) FROM tblBooks GROUP BY category;**" statement selects the Category field from the tblBooks and returns the number of the books in each category.

COUNT; an aggregate function; returns the number of records in a field. Aggregate Functions; built in functions such as Sum, Avg, Min, and Max; are similar to the functions in Excel.

GROUP BY clause specifies fields over which to combine data based on the values in the fields of a table.

5. Return to Design view by using View, Design on the Menu bar.
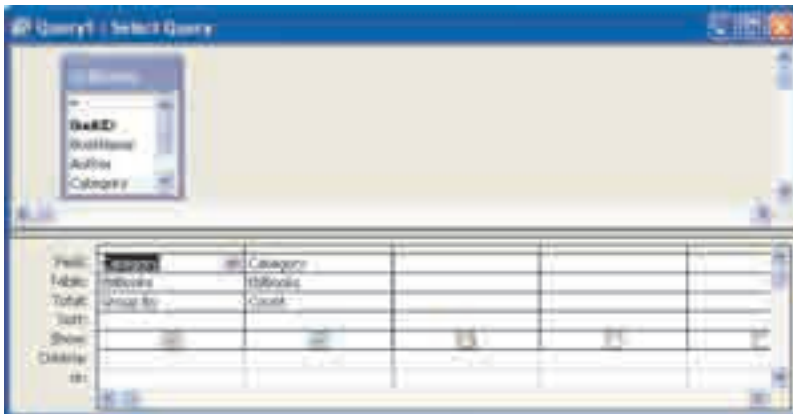
Entering the SQL sentence

6. Design view shows the changes you have made in the SQL window.
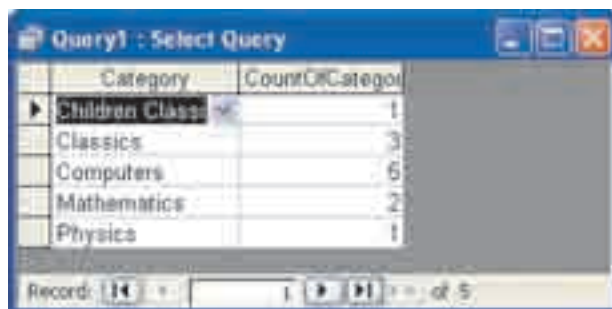
7. Run the query, the **Query recordset** displays the total number of books in each category.

8. Save the query as **qCategoryCount**.

Working with Queries

Case Study

1. Open the qOverdues query. Switch to Design view.

2. In the OverDue field, set criteria to "Overdue" text.

   The query displays only overdue books

3. In an empty field, use the Expression Builder and create the following expression;

   DateDiff("d",[DueDate],Date())

The expression calculates the difference current date and the due date of an overdue book in days.

4. Define an amount of fine in your local currency for each day for an overdue book. Create another field and multiply the amount of day with the fine.

5. Save the Query as qOverDueFine.

Exercises

Fill in the blanks

1. _____ select and display information from one or more tables and queries in a specific order.

2. _____ is standard language for extracting information from a relational database.

3. _____ limits the data displayed of a field by using criteria.

Projects

1. Design a query that gives the list of the books currently available in the School Library database.

2. Design a query that lists the books currently at library members

3. Design a query that lists the most popular books

4. Design a parameter query that displays the books loaned between two specific dates.

Multiple Choice Questions

1. When writing an expression for the criteria of a query, which functions is used to return the number of records in a field?

   a. Count() **b.** Group By()

   c. Now() **d.** Select()

2. Which of the following is not a query type?

   a. Parameter Query **b.** SQL Query

   c. Select Query **d.** Action Query

3. What language is the industry standard for database queries?

   a. Visual Basic **b.** C++

   c. Pascal **d.** SQL

4. Which of the following SQL command is used to filter records?

   a. Parameter **b.** Criteria

   c. Where **d.** Select

5. Where is the result of the query displayed?

   a. Form **b.** Row

   c. Recordset **d.** Column

6. A ____ prompts a dialog box for the user to enter the value.

   a. Parameter query **b.** Select query

   c. subform **d.** Expression Builder

7. Select the actions you can do with queries. Choose three answers.

   a. Sort Records

   b. Update records to tables

   c. Set relationship between tables

   d. Get averages of the field values

8. What happens when you uncheck the Show column of a field in query Design grid?

   a. The field is unselected

   b. The field is deleted

   c. The field becomes hidden in the recordset

   d. The query is sorted by the field

9. Which of the following statements are true about Queries? Choose two.

   a. You can create expressions in queries

   b. The data in a query can be alphabetically sorted

   c. To create a query more than one table is needed

   d. At least each database should have one query.

Working with Queries

Summary

A **Query** is a database object that can include or exclude specific rows or columns from a table; select and combine fields from one or more tables, sort records, calculate sums, get averages of the field values.

Select Queries selects and displays information from one or more tables and queries in a specific order.

Each time you run a select query the result is re-created with the current records from the source tables in a datasheet which is called a **recordset**.

The **Query Wizard** asks you questions about tables you require and fields within the tables to use.

A query must have at least **one field**.

The **Design view** is used to create a query structure from scratch or modify an existing query.

The **Design grid** displays the fields included in a query.

Access automatically places **joining lines** on the common fields to relate the tables in the query.

Uncheck the checkbox in show cell of the field cell **to hide a field temporarily** in the datasheet view.

Properties of a field are **inherited** from its source table.

A **Criteria**; an expression with symbols and operators; shows you only the matching records in the query result.

You can easily analyze results of a query **sorting by any field or combination of fields** in the query.

Access has an **Expression builder** to create complex expressions.

Structured Query Language (SQL) is standard language for extracting information from a relational database.

There are four main clauses in a SQL statement; **SELECT**, **FROM**, **WHERE**, and **ORDER.**

Microsoft Office
Access 2003

- About Reports
- Working in the Print Preview
- Printing Reports
- Creating a Report in Design View

Working with Reports

About Reports

Reports are used to summarize, group, and print data in an attractive and user friendly format. You can create totals, calculate averages or other statistics on reports.

A Report can be viewed on screen or printed on paper. You can use a table to get printout of your data. However, if a table contains many fields, printing directly from Datasheet view of a table will not fit the width of your paper. You can create a report layout to show results that are not displayed in a table format.
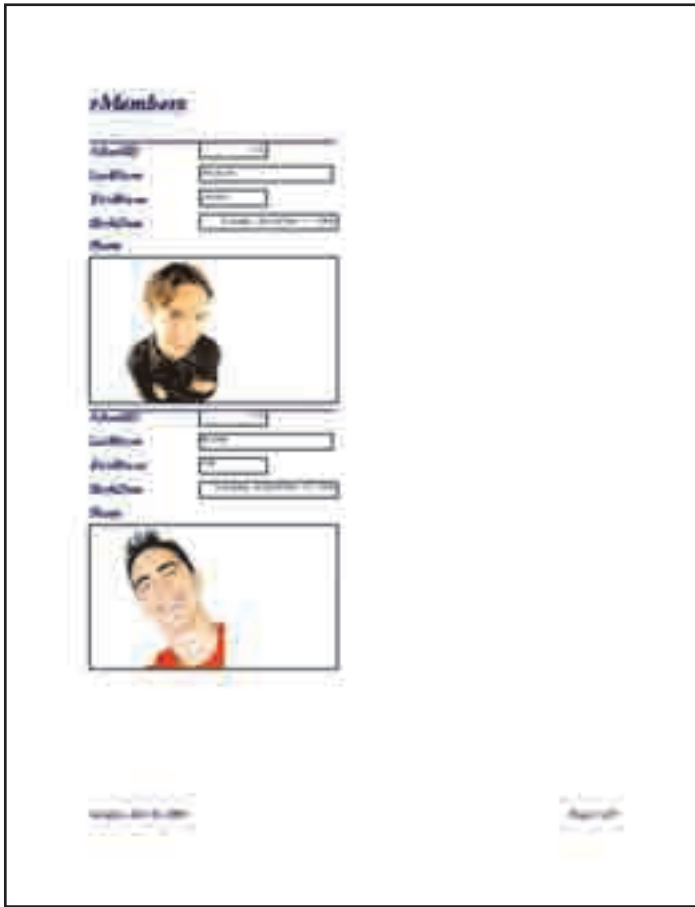
Forms and Reports have many similarities in view or in design process. But the purpose of a form and report is different. Forms are the input objects of a database, and are used to have direct access to tables in the database for entering and viewing data. Reports are used for sharing and presenting of your data on a permanent form like a printout, often to other people.

In Access, you can create a number of different report types;

Tabular reports; similar to a table that displays data in rows and columns with groupings and totals.

Columnar reports; displays each field on a separate line. Use tabular reports when you want to get a list of records on a single page; such as the member list of the School_Library database.

Groups/Totals reports; organizes larger quantities of information into groups similar to the Tabular form but allows for more data, and for the addition of functions

To open the Reports window;

1. Open the **School_Library** database.
2. Click the **Reports** button on the Objects bar.

Using the Report Wizard

The Report Wizard meets your needs when you want to create a basic report. It works much as the Form Wizard.

A Report uses a table or query that is bound to several tables as its source data. If you select a table or query before starting the Report Wizard, that table or query becomes the source data for the report.

The Reports window opens.

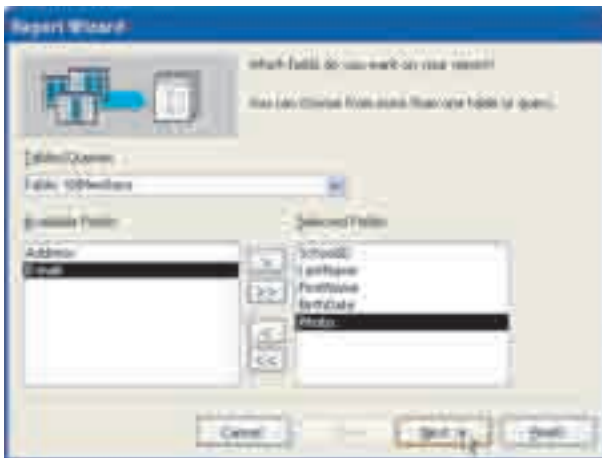In the following exercise, you will create a report that prints Member ID cards of the School_Library database;

1. Open the **Reports** window

2   Double-click **Create report by using wizard** option in the Reports window toopen The **Report Wizard** dialog box.
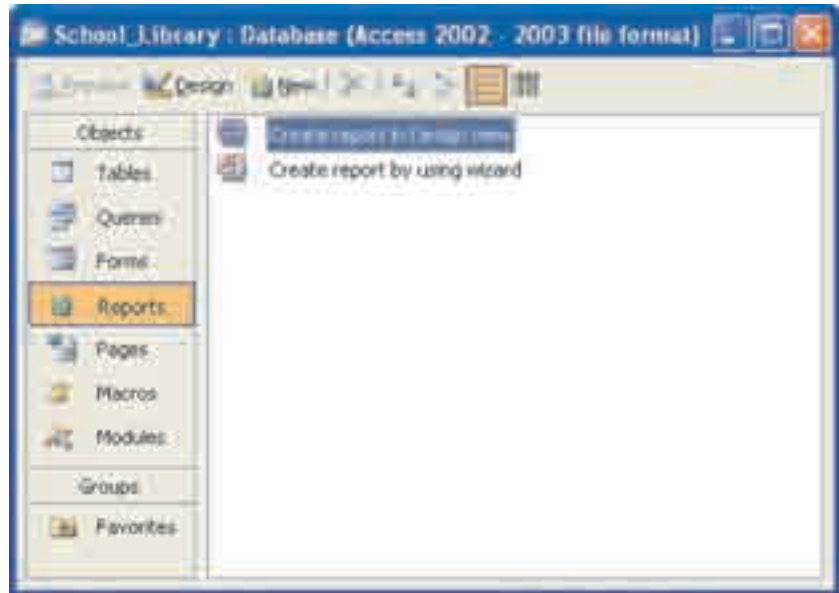
   OR, on the Menu bar, select **Insert**, and **Report**

   OR, click New on the Database toolbar. The **New Report** dialog box opens.


Report Wizard selecting fields

3. Select the **Report Wizard** from the dialog box. The **Report Wizard** dialog box opens.

4. Select **tblMembers** table in the Tables/Queries from the drop-down list.

5. Add **SchoolID**, **LastName**, **FirstName**, **BirthDate**, and **Photo** fields from the **Available Fields** to the **Selected Fields** window.
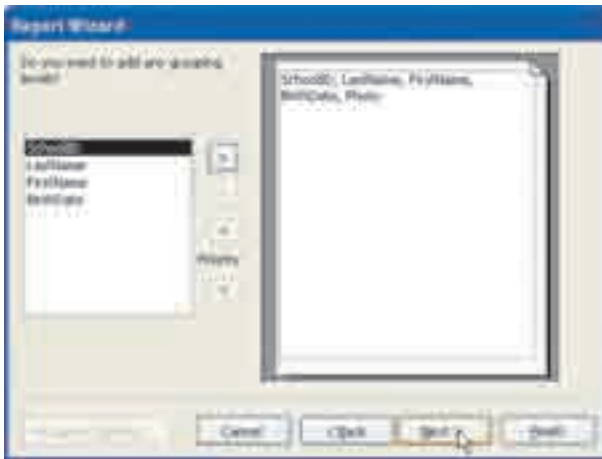
Report Wizard grouping levels

6. The next window of te **Report wizard** lets you specify grouping options for the report. Groups are used to combine data with same value for a given field. Click **Next**.
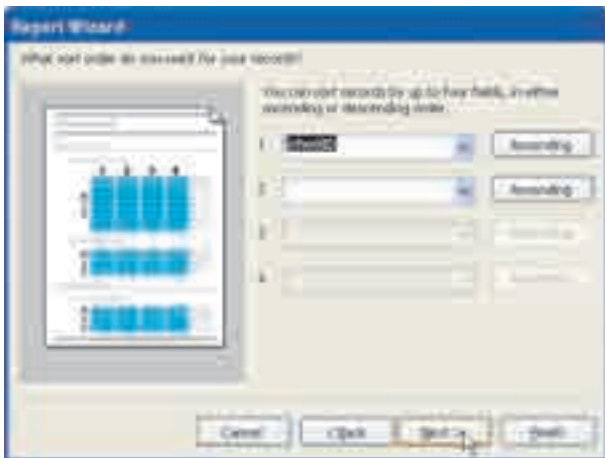
Report Wizard Sorting Records

7. Specify sorting options for the records. The records are automatically sorted in ascending order. If you like to sort the records in descending order, click the descending button to the right of the drop-down box. You can use up to 4 sorting level. Select the **SchoolID** field from the first drop-down list. Click **Next**.
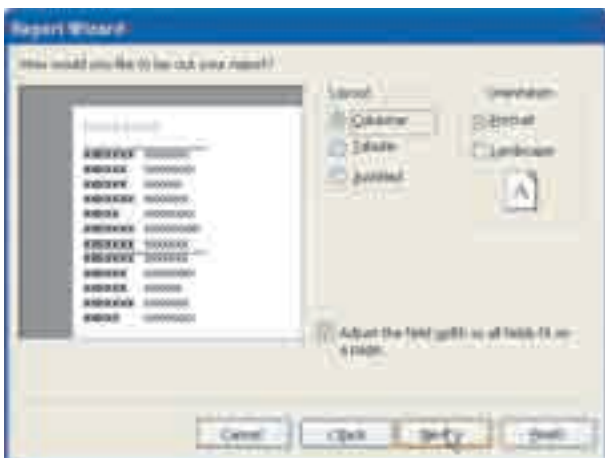
Report Wizard Selecting Layout

8. Select a lay out for the report. By clicking in the option buttons you can see the lay out preview of the report. Leave the **Orientation** to **Portrait**. If you have lots of fields in a record, you change the report orientation to Landscape.

9. Choose **Columnar** option and click **Next**.

10. Select a style for the report. By using the styles you can change the colors and fonts of a report. Click **Next**.

11. On the final step of the Report Wizard, name your report and click **Finish**.

Report Wizard Selecting Style

Working in the Print Preview

When the **Report Wizard** finishes creating a report, **Print Preview** opens. **Print Preview** allows you to preview an existing report as it will be printed on a printer. You can view your report with the actual fonts, graphics, and data. It also allows you to move around the pages, look multiple pages at a time and to use magnification to see more details of the report. A printer should be installed to the computer to use Print Preview view.

To see an existing report in Print Preview view;

1. Double-click over the report in **Reports** window.

Or click the **Print Preview** button on the toolbar.

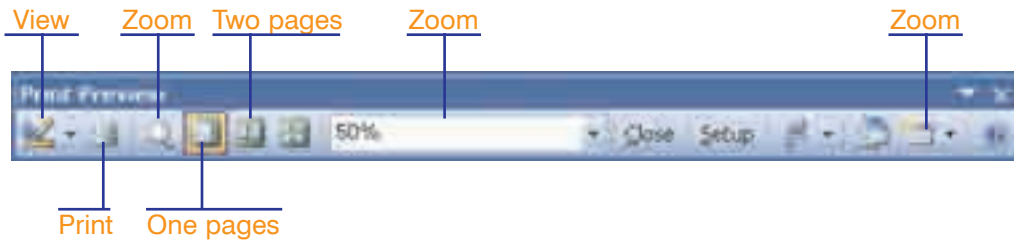As you work in Design view, you can switch to Print Preview to see the changes.

To switch to Print Preview from the Design view;

1. On the Menu bar; select **View**, and **Print Preview**.

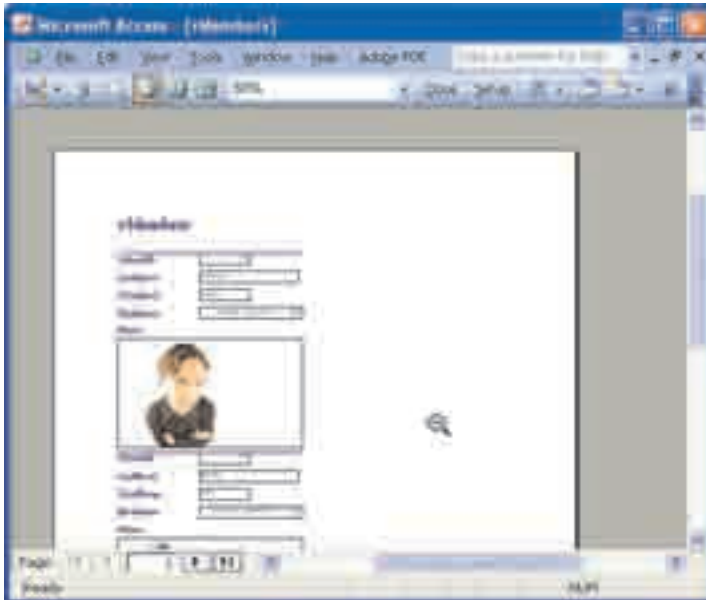Or, click the Print Preview button on the Report Design toolbar.
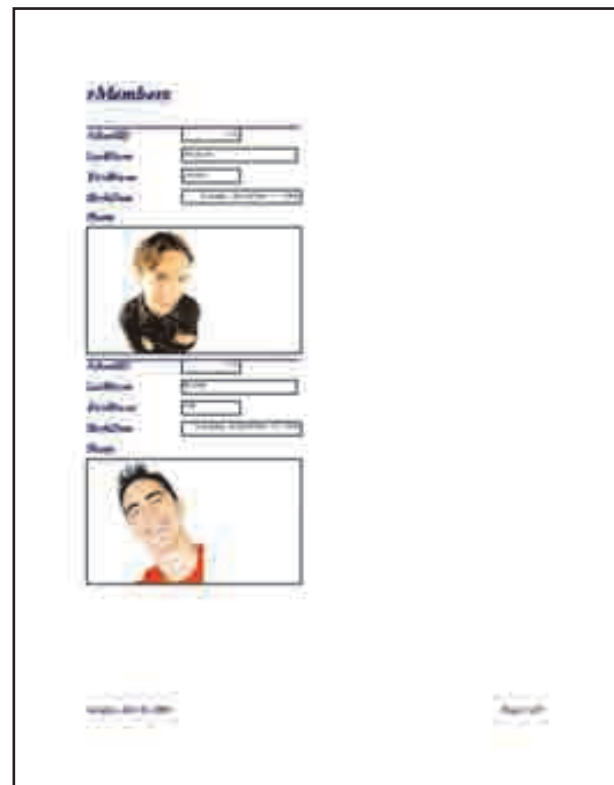
The report opens in Print Preview.

Working with Reports

Print Preview displays only the Print Preview toolbar.

The Print Preview toolbar

Report with magnifying glass

When you place the mouse pointer over a report it turns into a magnifying glass. By clicking the magnifying glass, you can zoom in see more details and zoom out to see overall layout of the report. Use the buttons on the Navigation toolbar to move among the pages or to jump a specific page.

Printing Reports

After you have created your report, select the **Printer** button on the Print Preview toolbar to print the report. You can print a report in different ways;

In following exercise, you will print **rMembers** report;

1. Click the **Print** button on the Print Preview toolbar. This action sends the report directly to default printer installed on your computer.

2. Select report name or open the report; on the Menu bar, select **File**, and **Print**.
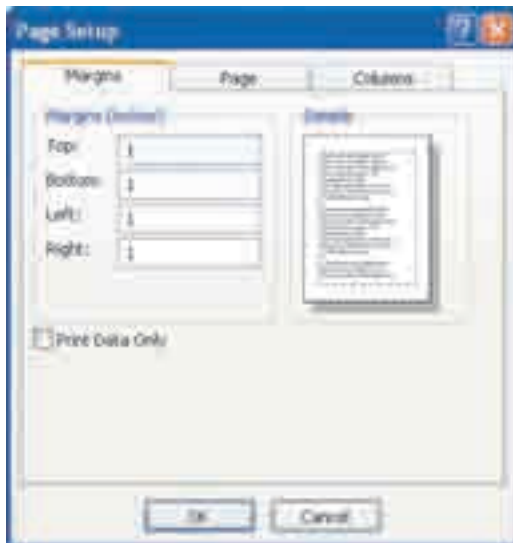
Or, right-click on the report, select **Print** from the pop-up menu.

These actions open the **Print** dialog box where you can change the printer settings and specify the pages that will be printed.

If you want to modify page setup settings such as the margins, the page layout, the page size of the report; use the **Page Setup** dialog box;
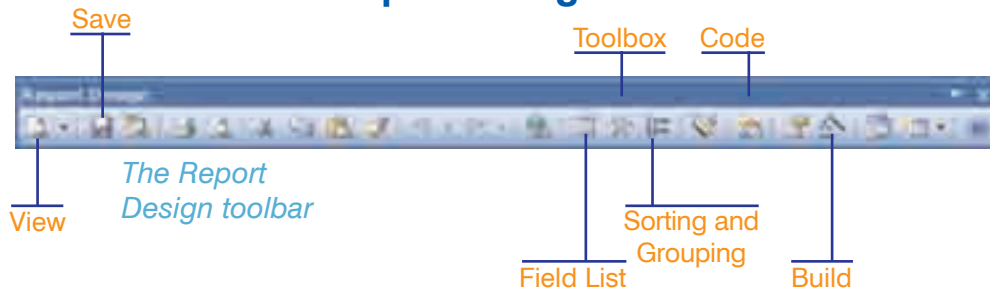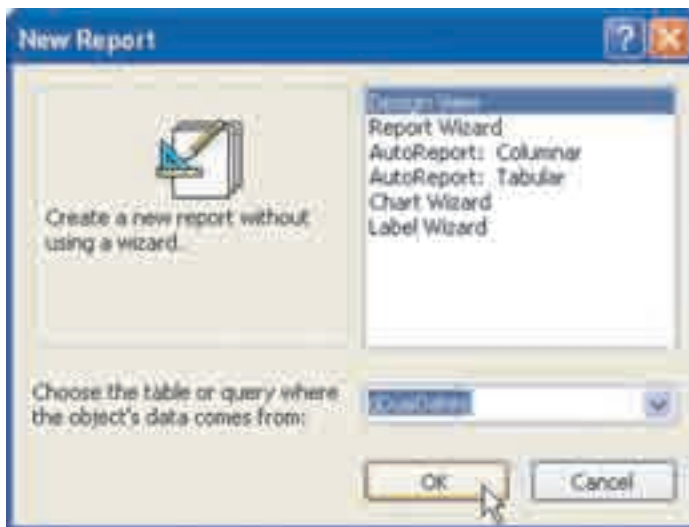

The Print Dialog box

The Page Setup dialog box.

3. On the Menu bar, select **File**, **Page Setup**.

The Report Design toolbar

Save

Toolbox   Code

The Report Design toolbar

View

Sorting and Grouping

Field List   Build

Creating a Report in Design View

Selecting Design view

A Report usually gets its source data from several tables. Before building a complex report, bringing the source data from the tables into a single query saves time in design process. Furthermore, with a source query you can create search criteria and sort the data in the report. After building the source query, start creating your report in Design view.

In the following exercise, you will create a report that displays all loaned books in the **School_Library** database;

1. On the Menu bar, select **Insert**, **Report**.

   OR, click the **New Object** button on the Database toolbar and select Report from the drop-down list.

2. The **New Report** dialog box opens. Select the **Design view** option; and from the lower part of the dialog box, choose the **qDueDates** query.

3. Click **OK**.

The Report Design window, the tolbox, and the Field List of the report open.

A report consists of horizontal sections. Each section defines what to will happen in the report at that time. The Report Design window has thre sections displayed initially;

Page Header and **Page Footer** sections allow you to enter the information such as page number that appears at the top and at the bottom on every page on the report.

Detail section has all the controls that will be printed. Reports and forms use the same controls.
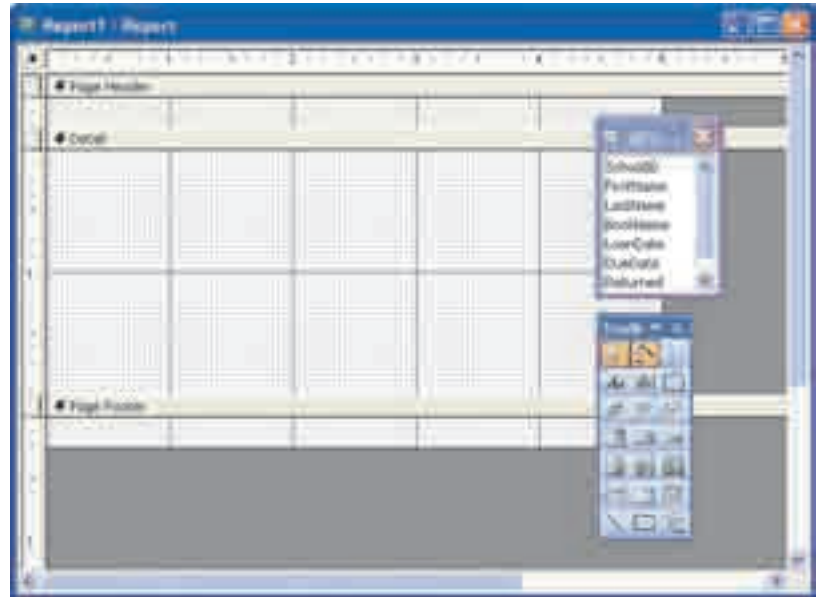
The Report Design window

The **Report Header** is to display the report title, the **Report Footer** to calculate grand totals for the report, and **Group Header** to display the information for each group in a report.

By clicking on border of a section and dragging, you can resize size of a section. To change the entire width of a report, click on the right border of the report and drag the report area. **The Rulers** at the top and left edges of the Report window help youplan space on the report. The **Field List** displays all available fields from the source data query.

Sorting and Grouping

Groups are used to combine data with same value for a given field. You can group the data by using the **Sorting and Grouping** window.

To defin sorting and grouping of a report;

1. On the **Sorting and Grouping** button on the Report Design toolbar.

2. Click in the first row of the **Field**/**Expression** column, from the down arrow select **SchoolID** field.

3. In the **Group properties** section; set the **Group Header** option to **Yes**.

Sorting and
Grouping dialog box

Now, the reports design header displays another section name SchoolID Header. The report will group and print action of library members by their SchoolID's.

Inserting Fields

1. From the Field list, drag and drop the **SchoolID** field into the **Group Header** section. If the **Field List** is not visible; on the Menu bar, select **View**, and **Field List**.
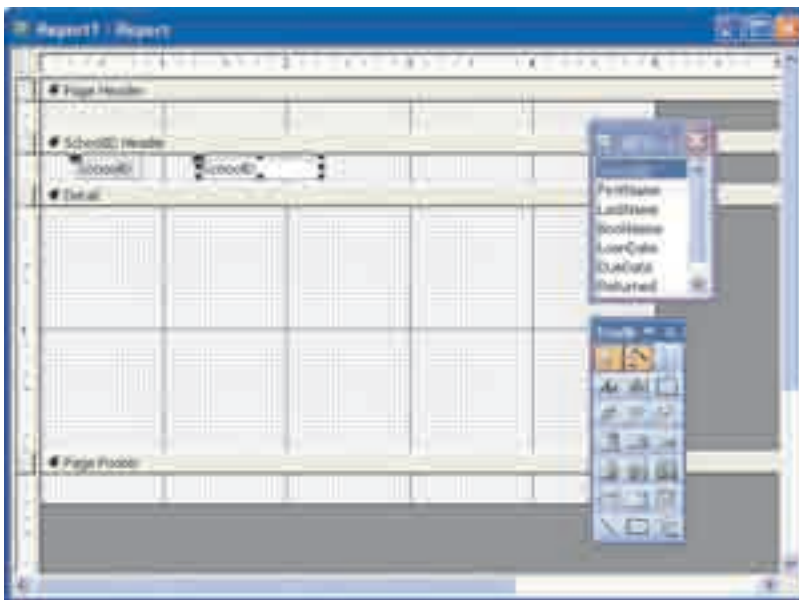

Inserting a field on
the report

The **SchoolID** text box and its label are inserted into the Group Header section.

2. Select the **SchoolID** label. Use the Formatting toolbar; change font size to 14, font color to Blue. Select the **SchoolID** field and change its font size to 14.

3. Resize the **SchoolID** label by dragging its handles so it will display all the characters in it.

   Or, on the Menu bar, select **Format**, **Size** and **To Fit**.

4. Widen the Group Header section. Insert the **FirstName** and **LastName** fields into the Group Header section.

5. Format these control as **SchoolID** label and field.

6. Align the controls on the grid as you see in the picture.
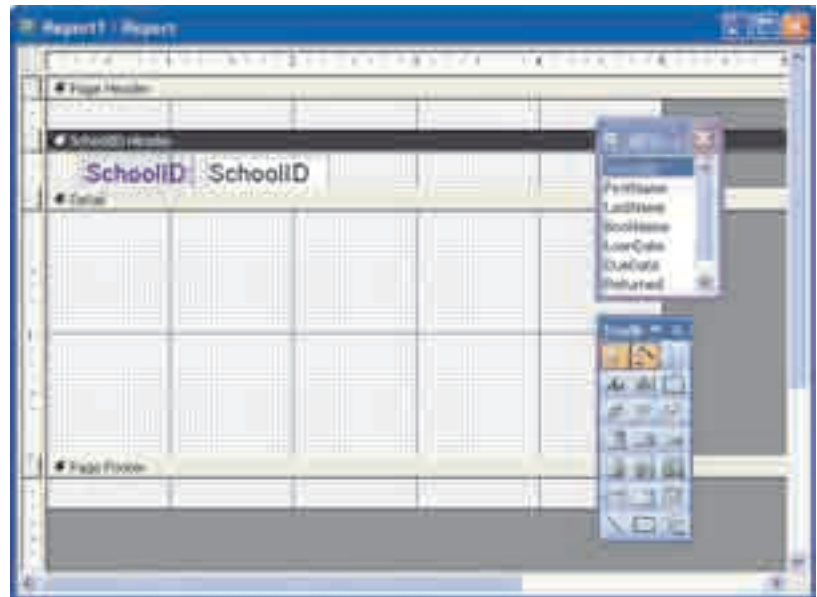
Adding a field

7. Drag and drop the **BookID**, **LoanDate**, and **DueDate** fields into the Design section. Move the **BookID**, **LoanDate**, and **DueDate** labels to the Group Header. So the labels will not be printed again and again for each grouped record.
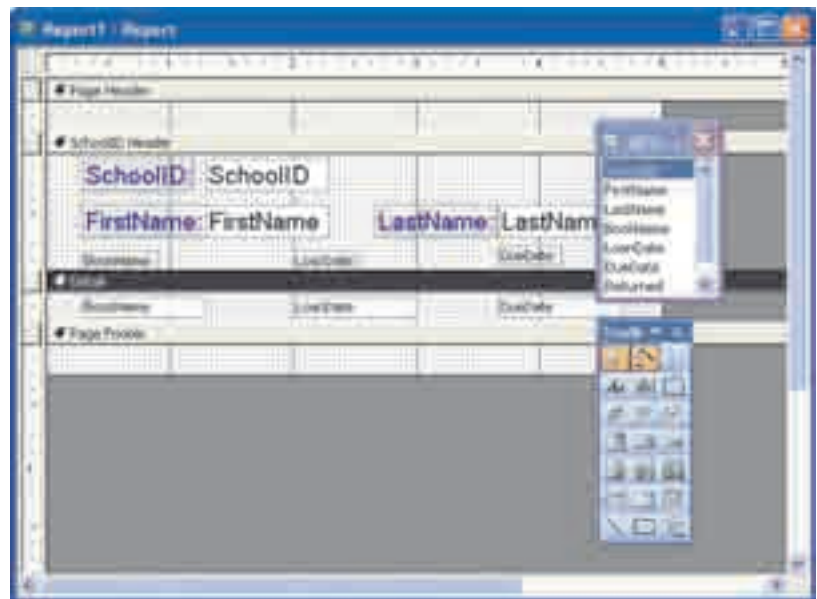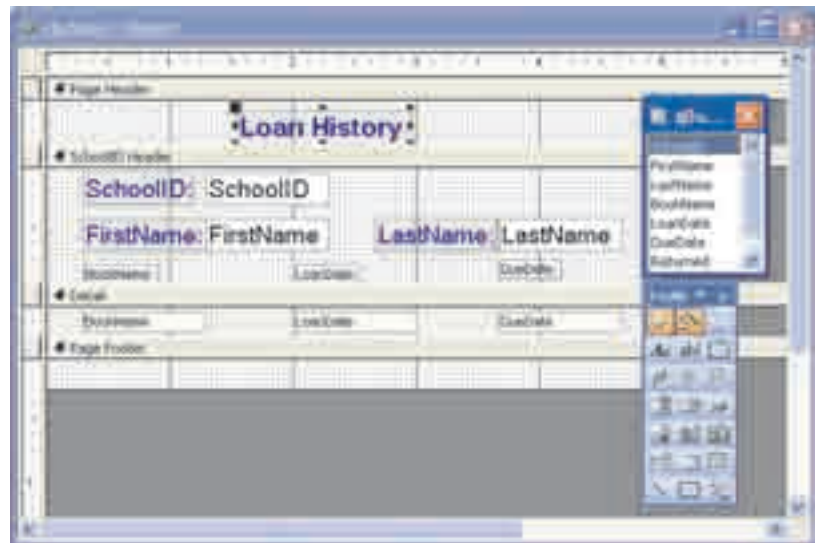

Finishing the report

rActions report

8. Save the Report as **rActions**. Switch to **Print preview** view to see the results.

Inserting a Title

9. Switch back to **Design view**.

To create page headers;

1. Click the Label control on the Toolbox; draw a label in the Page Header section.

2. Type "**Members Action**" in the Label.

To insert page numbers on each report page;

1. On the Menu bar, select **Insert**, **Page Number**.

2. Choose the format and the location of the page number and click **OK**.

3. Switch back to **Print Preview** view.

Dialog box of the page number opens

Chapter 7

Using the Properties Window

To format poperties of a control;

1. Double-click on a control.

   Or open the **Properties** windows, select a control by using the drop-down arrow at the top of the Properties window.

2. Select te **Loan History** label.

3. On the **Properties** window, scroll down nd click in the **Special Effect** row.

4. Use the drop-down arrow and choose "**Shadowed**" option.

5. Switch to **Print Preview** view.
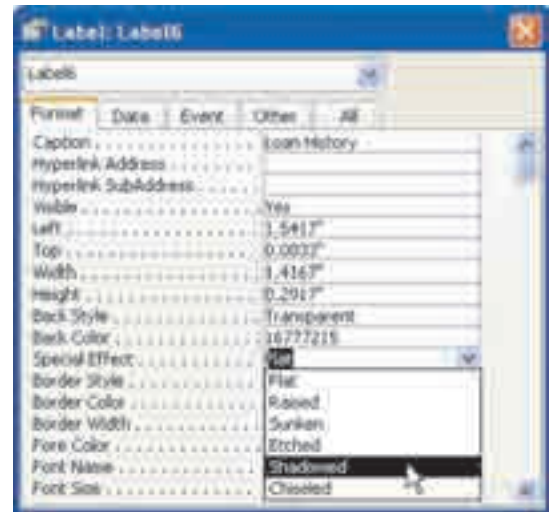
Changing Control Properties

Exercises

True or False

1. You can use more than one table as source data of a report.

   ☐ True   ☐ False

2. Reports are the input objects of a database

   ☐ True   ☐ False

3. The Page Setup dialog box lets you to change the printer settings and specify the pages that will be printed.

   ☐ True   ☐ False

Projects

1. Design a report that prints the list of the books currently available in the school library.

2. Design a report that prints only a specific book category. The report should prompt to user what to print.

3. Design a report that prints the list and total number of overdue books in the library.

4. Design a report that prints the FirstName and the BirthName of the Library members.

Working with Reports

Multiple Choice Questions

1. Which of the following is not a report section?
   a. Summary section
   b. Report Header section
   c. Details section
   d. Page Header section

2. To preview what your report looks like with sample data, click the _____ button on the Report Design toolbar.
   a. Preview
   b. Sample
   c. Print Preview
   d. Data Preview

3. Select the report types you can use in Access. Choose two.
   a. Tabular reports
   b. Update reports
   c. Groups/Totals reports
   d. Section reports

4. Select the Database objects that can be used as report sources. Choose two answers.
   a. Queries
   b. Forms
   c. Tables
   d. Reports

5. What exactly a report is used for?
   a. Enter information into a database
   b. Ask a question to users
   c. Organize information in a database
   d. Summarize and display data in attractive fashion on the printed page

6. What is central body of the report and is printed once for every record in report?
   a. Detail section
   b. Page footer
   c. Group header
   d. Report header

7. Print Preview allows you_____. Choose two answers.
   a. to insert an additional section on the report.
   b. to see the actual fonts, graphics, and data on the report.
   c. to move around the pages.
   d. to use calculated controls.

8. A report allows you to; _____. Choose two answers.
   a. Sort the records in ascending or descending order.
   b. Create calculated fields to get totals for a field.
   c. Provide data validation for data entry in fields.
   d. Set relationships between tables and source queries

9. Select the formatting options to resize or align fields on section of a report. Choose two answers.
   a. Vertical Spacing
   b. Size
   c. Align
   d. Event

Crossword Puzzle

1 Across / O N E T O M A N Y (filled-in answer shown in grid)
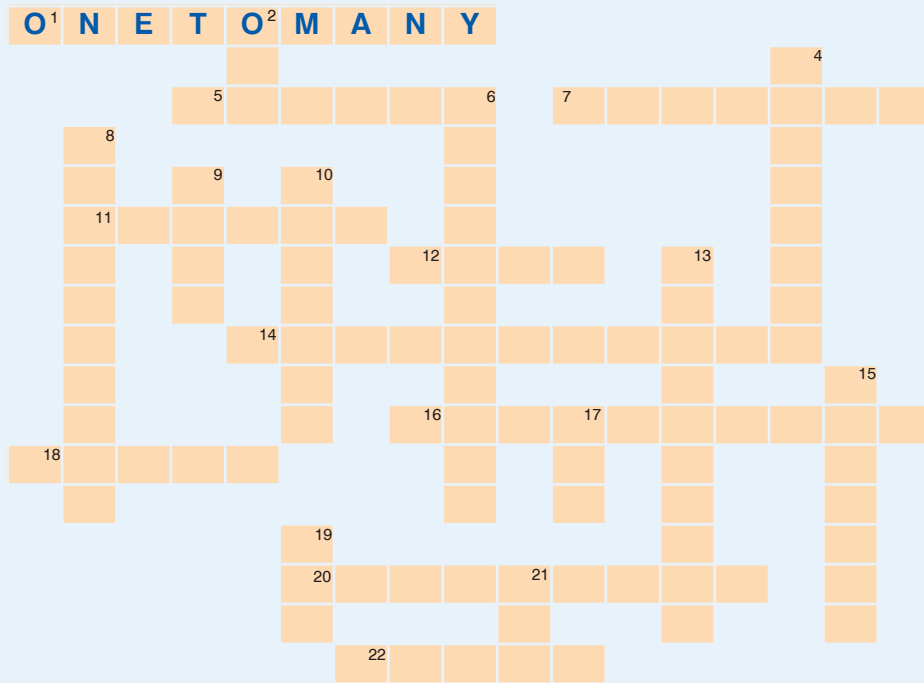
ACROSS

1. **The most common relationship type.**
5. Presents data from a table or query in a printed format
7. An option which reduces database size.
11. Chooses values from a list.
12. Used to store any text up to 255 characters in length.
14. Indicates a relationship between related tables
16. The toolbar which allows moving between the records
18. Performs routine tasks by automating them.
20. View that allows you enter data directly into a table.
22. Column in a table.

DOWN

2. Stores objects created in other programs.
4. A collection of data stored in a computer in a systematic way.
6. Asks you a series of questions about which fields you want to appear in your table.
8. Database model where all information stored in related tables.
9. Custom screens that provide an easy way to enter and view data.
10. A form within another form.
13. Prevents duplicate values in a field of a table.
15. An object; such as a text box, check box, scroll bar, or command buton.
17. A built-in Access function
19. Access file extension
21. Standard language for extracting information from a relational database

Summary

Reports are used to summarize, group, and print data in an attractive and user friendly format.

A Report can be viewed on **screen** or **printed** on a paper.

Forms and **Reports** have many similarities in view or in design process.

Tabular reports; similar to a table that displays data in rows and columns with groupings and totals.

A Report uses a **table or query** that is bound to several tables as its source data.

Groups are used to combine data with same value for a given field.

Records are automatically sorted in **ascending order** in a report.

Print Preview allows you to preview an existing report as it will be printed on a printer.

A **printer** should be installed to the computer to use Print Preview view.

When you place the **mouse** pointer over a report it turns into a **magnifying glass**.

Use the **Page Setup** dialog box to modify page setup settings such as the margins, the page layout, and the page size of a report;

Before building a complex report, bringing the source data from the tables into **a single query** saves time in design process.

Detail section has all the controls that will be printed. Reports and forms use the same controls.

Microsoft·Office
Access 2003

- About Data Access Pages
- Importing and Linking Objects
- Importing Spreadsheet Data
- Exporting Data the Other Formats

Working with Pages & Exchanging Data

About Data Access Pages

Data Access Pages (DAP) allow you to view, update, and print data in a database by using a Web browser. Data access pages are different from any of the other database objects. The data entered with Data access pages is stored in the database file. However, Access does not store data access pages physically inside the database like other database objects. They are HTM files listed as links in the database window and are stored with .htm extension.

Data access pages are dynamic web pages which let you access the data on the Internet or Intranet. Data access pages work only with Access tables and queries.

You must view Data Access Pages on a computer that has Internet Explorer 5 or above and that has Microsoft Office installed.

Creating a data access page is similar to creating a form or a report by using the **Page Wizard** or building it from scratch in Design view.

A Data Access Page

Creating Static Web Pages

A Static web page displays data without letting users to edit it. It is a read-only file that is neither stored nor linked to an Access database.

To create a static web page;
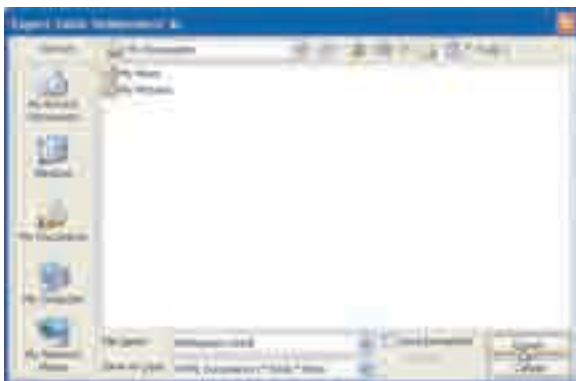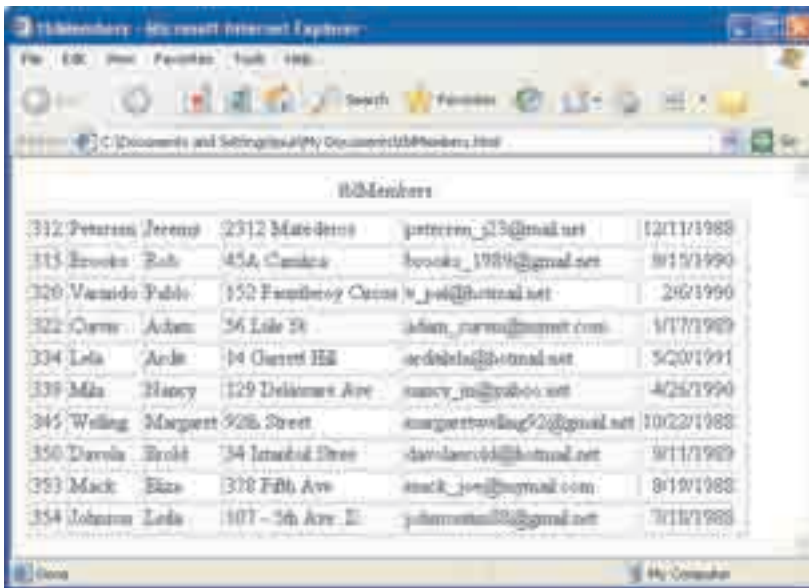
1. Click **Tables** button on the **Object** bar in the Database window.
. Open the **tblMembers** table.
3. On the Menu bar, select **File**, **Export** to display the **Export** dialog box.
4. Select a location to save the page and in the **Save as type** box, choose HTML Documents.
5. Click **Export**.

Exporting a Table

6. Open the document from the **Save in** location.

The Static Web Page opens.

The data in the page is static, so you can not edit it. If you want a web page with dynamic data, you should create a data access page.

Creating Data Access Pages in Design View

You can create and format a data access page in Design view. The process is similar to modifying tables, queries, forms, and reports in Design view.

In the following exercise, you will create a data access page in Design view;

1. Click **Pages** button on the **Object bar** in the Database window.

2 Double-click **Create data access page in Design View** option.

Or click **New** on the Database toolbar.
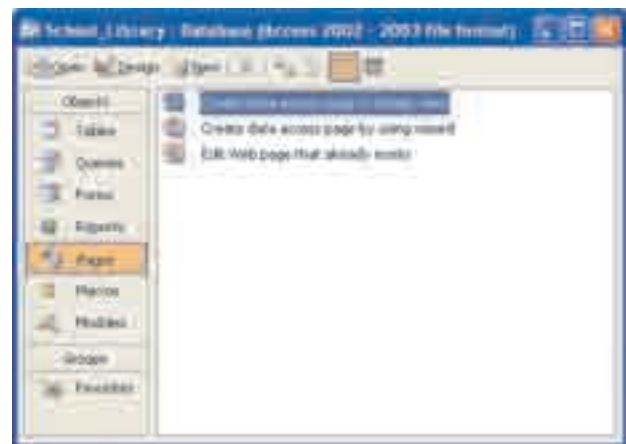
The Page Window

The New Data Access Page dialog box opens.

3. Select the **Design view** option; and from the lower part of the dialog box, choose the **tblBooks** table.

4. Click **OK**.
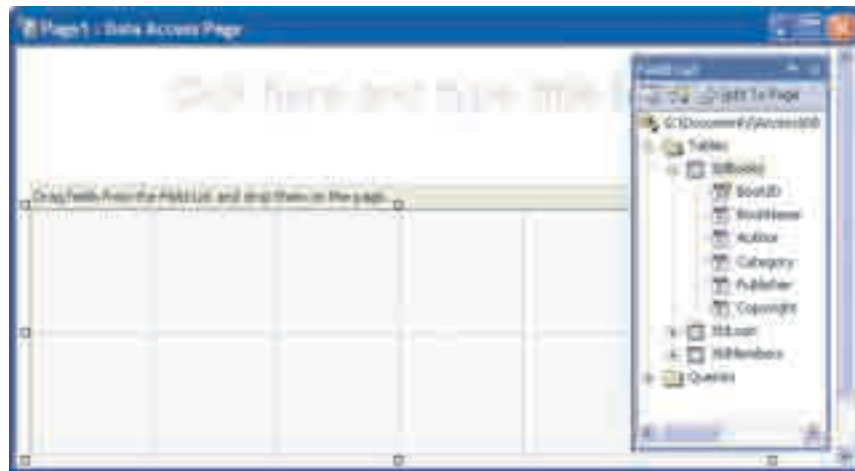
Page Design view opens.

5. Click in the title text area and type "**Table Books**".


Entering the Title

6. Click in the section "**Drag fields from the Field List and drop them on the page**" to select it.

7. In the Field list, click plus (+) sign next to the **tblBooks** table or double-click the table to show all the fields from this table. If the Field list is not displayed, on the Menu bar, select **View**, Field list.

8. Drag and drop all the fields into selected section of the page.

9. Align the fields and then resize the labels to make them fully readable by using the **Formatting** toolbar.

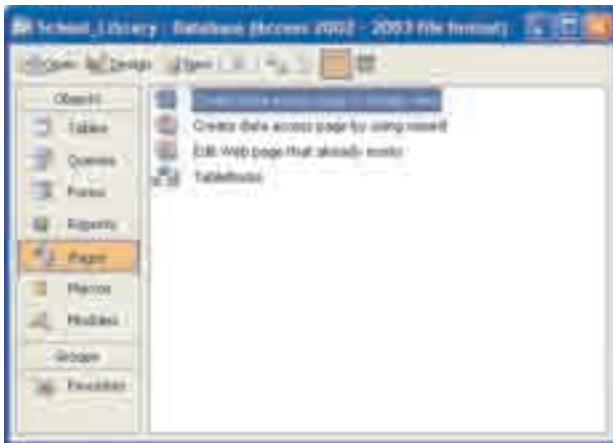10. Resize the section by dragging from its borders.

Inserting Fields

11. On the Menu bar, select **Format**, **Theme**.

12. Select a theme from the list and click OK.
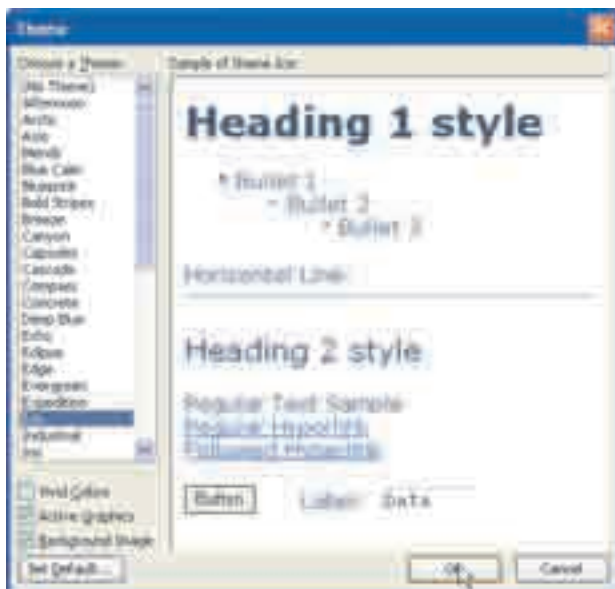
The Theme dialog box opens.
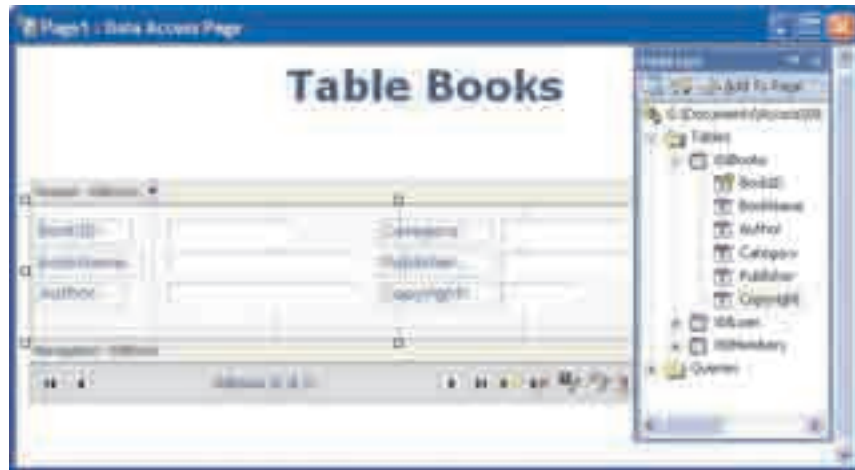
Applying a Theme

Data Access Page in Pages window

13. Click **Save** button on the **Page Design** toolbar. The **Save As Data Access Page** dialog box appears.

14. Access saves the page as a HTML document at the **Save in** location and a link is inserted in the Pages window.

**15** Switch to **Page view** to see the data access page.

The Table Books data access page opens.

Using Data Access Pages

You can share the HTML file on your intranet or publish it on the Internet. With the proper file permissions, users will be able to enter and edit data in the database through the data access page.

In the following exercise, you will enter and edit data through the **tblBooks** data access page;

1. Open the folder that includes the **tblBooks.htm** data access page and double click the file name.

2. Click the **New** button on the Navigation bar to create a record in the **tblMembers** table.
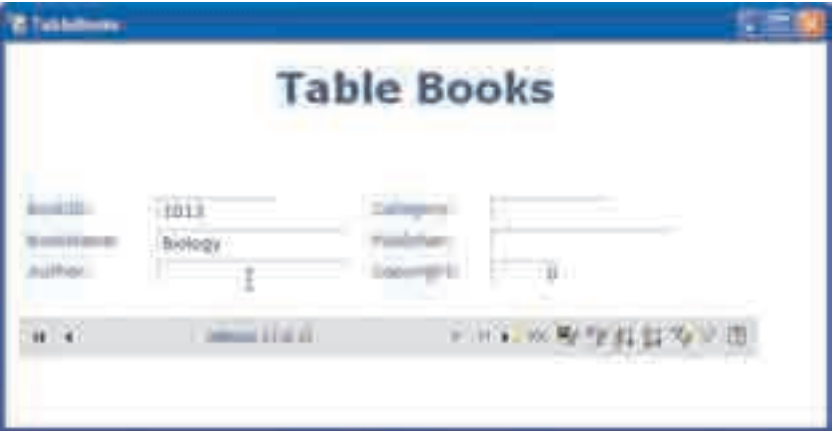
Entering a new record

3. Open Access, in the Tables window, doule-click the **tblMembers** table to open it.

The tblBooks table displays the new record.

Saving Database Objects as Data Access Pages

You can use an existing table, query, form, or report to convert it to a data access page.

In the following exercise, you will convert **fMembers** form to as a data access page;

1. Click the **Forms** button on the Object bar.

2. Select the **fMembers** form.
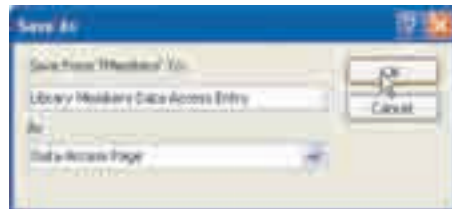
Library Members Data Access Entry

3. On the Menu bar, select **File**, **Save As**.

4. Change the name to "**Library Members Data Access Entry**".

5. Select Data Access Page from the drop-down list and click **OK**.

6. Select a location to save the page.

The Library Members Data Access Entry opens

Importing and Linking Objects

If the data you need is stored in other document; another Access database, a text file, and a spreadsheet; you can either link to or import that external data into your database.

Importing is to copy in the data into a database from other data sources. You should use importing if you need to use the data only in the database and not to depend on the original source.

Linking is to connect the other data sources without copying in the data. Access does not store the actual data; instead a link is placed in the database to the source document. Therefore, you can not modify a linked table and change its field properties. Use linking, if the data change constantly at its original source and the size of the data is large.

Importing Database Objects

You can import any type of Access object into a database; tables, queries, forms, reports, data access pages.

In the following exercise, you will import a table;

1. Create a blank database. This database will be the destination database in which a table will be imported

2. Save the database as **Import_Export**.

3. On the Menu bar, select **File**, **Get External Data**, and **Import**.

   OR, on the Tables window, clic New.
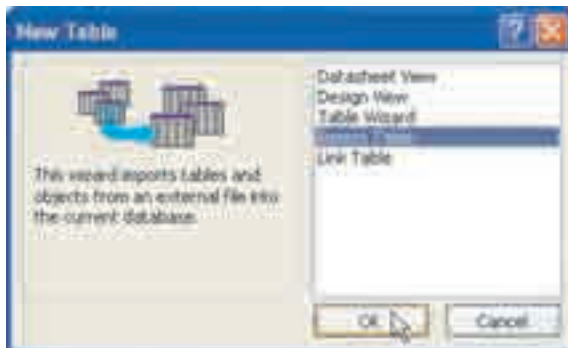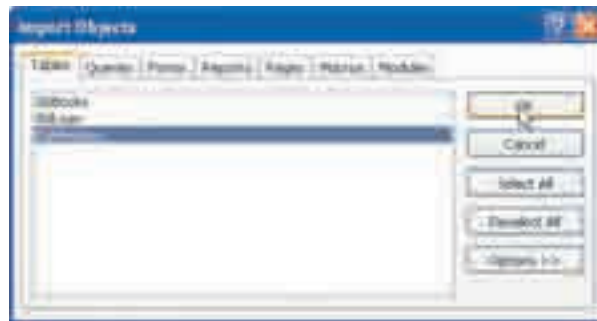

The New Table dialog box opens.

4. Choose the **School_Library** database which contains the data to import and click **Import**.

The Import Dialog box opens.

5. Select the **tblMembers** table to import and click **OK**.

The Import objects dialog box opens

The **tblMembers** table is imported to the **Import_Export** database and a new table is created in the database.

Linking Database Objects

Linking tables from another Access database enables you to use the data without copying it to your database. It doesn't increase the database size, and the data is always up-to-date from the data source.

To create a link to a table from another database;

1. Open the **Import_Export** database.

2. On the Menu bar, select **File**, **Get External Data**, and **Link**.

Or, on the **Tables** window, click**New**.

3. Select the **Link Table** option. The **Link objects** dialog box opens.

4. Choose the **School_Library** database and click Import.

The Link tables dialog box opens

5. Select the **tblBooks** table to Link and click **OK**.

The tblBooks table is displayed as a link in the **Import_Export** database. The link is shown by an arrow on the left side of the table. To remove the link from the database, press **Delete** key on your keyboard.
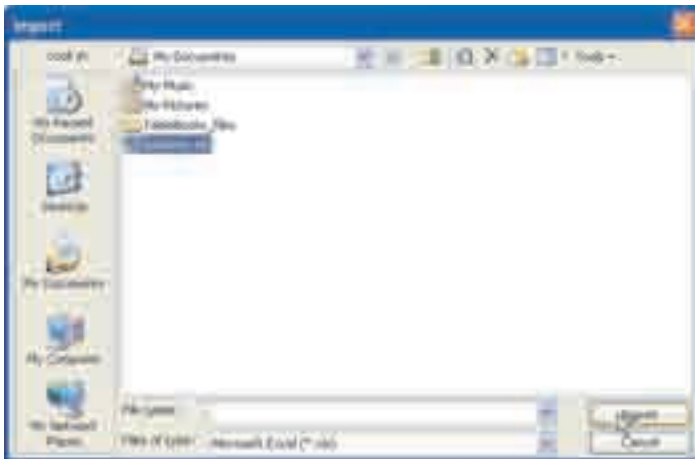
Linked Table

Importing Data from an Excel Document

You can import data from an Excel document to a table or create a new table. An Excel document displays data in worksheets. The data must be in columnar format and each column must have the same data type in the Excel worksheet.
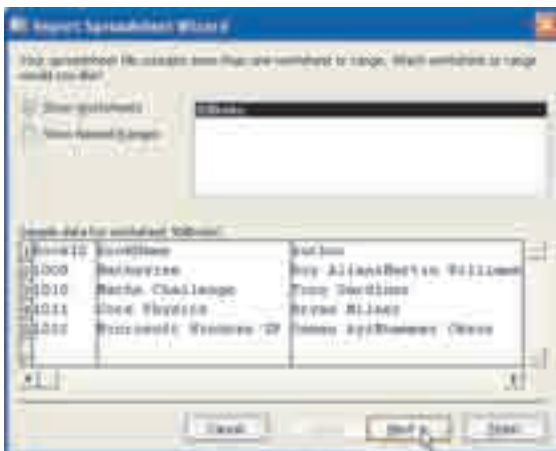

BookList.xls

Working with Pages & Exchanging Data

Selecting an Excel document

To import data from an Excel spreadsheet;

1. On the Menu bar, select **File**, **Get External Data**, and **Import**.

2. Select Microsoft Excel in the **Files of Type** list. Select the **BookList.xls** excel document to import and click **Import**.

Importing Excel worksheet

You can select a worksheet or a named range of cells. An Excel document may contain one or more worksheet to store data. If you want to import more than one worksheet you must import them separately.

3. Select the **tblBooks** worksheet and click **Next**.
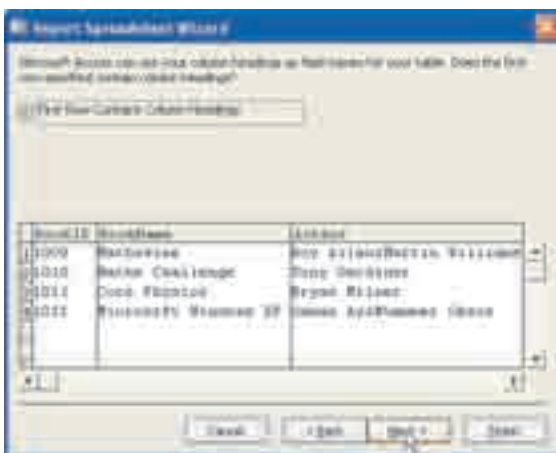
Selecting the Column Headings

If the first row of the worksheet contains column headings, you can use them as field names in the Access table.

4. Check the **First Row Contains Column Headings** box. If there is no column heading in the Excel document, keep the box clear and click **Next**.

5. On the next window of the izard, you can choose where to store the imported data. Select **In a New Table** option and click **Next**.

6. On the next window, you canselect the fields to import and set the field properties such as field name, field data type if applicable. If you do not want to import a specific field, check the **Do not import field (Skip)** checkbox. Click **Next**.
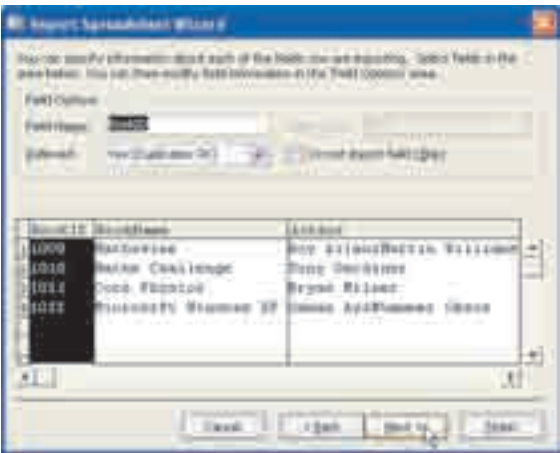
Importing the Fields

7. Choose the **BookID** field as the primary key. The data in the field you set for the primary key must be unique for each record. If you do not want to use a primary key, choose **No primary key** option and click **Next**.
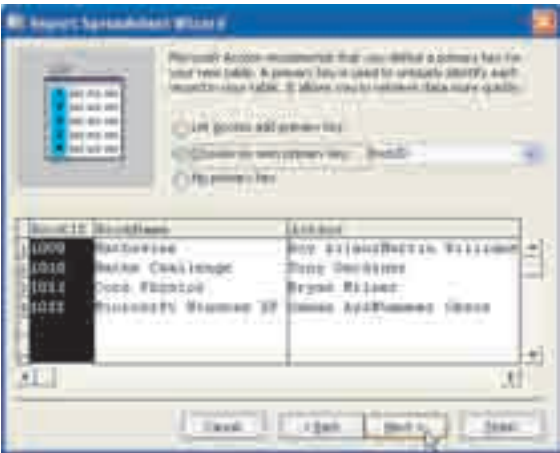
Setting Primary Key

8. On the final window, name thetable and click **Finish**.

9. You will get a confirmation dialog box. Click **OK**.

The tblBooksImported table

10. Open the imported table in Datasheet view to see the results.

Working with Pages & Exchanging Data

Exporting Data to the Other Formats

Access can copy data to another Access database or other file formats. This process of copying Access tables to an external document is called exporting.

Using Copy and Paste

When you need to use just a few records from a table, use copy and paste. Access and other Microsoft Office applications use the same menus and short-cut keys for copying and pasting data.

In the following exercise, you will export **tblBooks** table;

1. Open the **School_Library** database.

2. Open the **tblBooks** table, select the first three records.

3. Copy the selection.

4. Open Excel program. In the worksheet, right-click and choose Paste to insert the records.

You can also use drag and drop to copy selected records;

The records are exported to Excel.

1. Open Microsoft Word;

2. Align Access program window and Word pogram window horizontally so you can see both windows at the same time.

3. In Access, move the mouse pointer just below a selected column header in the table. The mouse pointer turns in to a white arrow.

4. Hold down your mouse key and drag the drop records into Word document.

The records exported into the Word document.

Exporting with the Export Command

By using the Export command in the File menu, you can export an Access object to other applications. The Export command starts a wizard that takes you through the export process.

In the following exercise, you will export a table to Excel file by using the Export command;

1. Select the **tblBooks** to export.

2. On the Menu bar, select **File**, and **Export**.

3. In the Save as type list, select the **Microsoft Excel 97-2003** file type.

4. Name the file and click **Export**. The document is saved in the Save In location.

5. Open the Excel document.

Exercises

Fill in the blanks

1. The process of copying Access tables to an external document is called _____.

2. _____ allow you to view, update, and print data by using a Web browser.

3. Use_____, if the data change constantly at its original source and the size of the data is large.

True or False

1. A Data Access Page does not increase the database size at all.

   ☐ True   ☐ False

2. When a table is exported it is constantly updated from its original source.

   ☐ True   ☐ False

3. You can import more than one worksheet at a time.

   ☐ True   ☐ False

Multiple Choice Questions

1. Select the file formats you can use to export Access tables? Choose three answers.
   a. Word (*.doc)
   b. Excel (*.xls)
   c. Data Access Pages
   d. HTML documents(*.htm)

2. The data of a table in a database should be updated frequently from a table in another database. Which of the following method should be used?
   a. Linking
   b. Exporting
   c. Importing
   d. Copy and Paste

3. A Data Access Page is shared with full permissions on a local intranet. Which of the following database operations is allowed to users?
   a. Create and delete tables
   b. Edit and update records
   c. Set relationships
   d. Rename field names

4. Which of the following database objects can be imported in a database? Choose three answers.
   a. Relationships
   b. Tables
   c. Queries
   d. Forms

5. How is a linked table distinguished from an imported table?
   a. There is not a remarkable sign
   b. The data in a linked table has subdatasheets
   c. The linked table name is displayed in boldface
   d. With an arrow on the left side of the table

6. When a link table is deleted what happens the source in the other database?
   a. The source table is deleted too.
   b. Nothing happens.
   c. A warning message appears to proceed to delete both tables
   d. The content of the table is deleted but the table remains

7. A web page displays data without letting users to neither change nor update data? What kind of page is it?
   a. Data Access Page
   b. Linked Web Page
   c. Static Web Page
   d. Dynamic Web Page

8. How can remote users get access to a Data Access Page to edit and update the data? Choose two answers.
   a. With storage devices
   b. Through a web site
   c. With shared forms
   d. Inside a shared folder on the local intranet

9. Select the database object you can use to create data access pages? Choose all that apply.
   a. Forms
   b. Queries
   c. Reports
   d. Tables

10. Select the methods you can use for importing or exporting data. Choose three answers.
    a. Import menu
    b. Export menu
    c. Copy and Paste
    d. Clipboard

Summary

Data Access Pages (DAP) allow you to view, update, and print data by using a Web browser.

You must view Data Access Pages on a computer that has **Internet Explorer 5** or above and that has **Microsoft Office** installed.

A **Static web page** displays data without letting users to edit it. It's a **read-only file** that is neither stored nor linked to an Access database.

Access saves a data access page as an **HTML document** and inserts a link in the Pages window.

With the proper **file permissions**, users will be able to **enter and edit data** in the database through the data access page.

You can use an existing **table, query, form,** or **report** to **convert** it to a data access page.

Importing is to copy in the data into a database from other data sources.

Linking is to connect the other data sources without copying in the data.

You can import **every type of Access object** into a database; tables, queries, forms, reports, data access pages.

Linking tables **does not increase the database size**, and the data is always **up-to-date** from the data source.

You can import data from an **Excel document** to a table or create a new table.

If you want to import more than one worksheet you must **import them separately**.

Access can **copy data to another Access database or other file formats**. This process of copying Access tables to an external documents is called **exporting**.

When you need to use just a few records from a table, use **copy and paste**. Access and other Microsoft Office applications use the **same menus** and **short-cut keys** for copying and pasting data.

Microsoft Office
Access 2003

- About Macros
- Event Property
- VBA and Modules
- The Visual Basic Editor

Understanding Macros and Modules

About Macros

A macro is a database object that allows you to automate a series of commands and functions which perform a particular operation, such as opening a form, printing a report. Macros are limited in functionality compared to VBA (Visual Basic for Applications) code, but they're also easier to learn and to write. You do not have to know a single line of programming language to create a macro.

You can use a macro for;

❖ Opening a form or running a report when a certain condition is true.

❖ Validating data while it is being entered into the database.

❖ Performing actions with a command button.

Creating a Macro

In Excel or Word, you can create macros with a Macro recorder to record your commands, keystrokes, and mouse clicks. But, there isn't a Macro recorder or Macro Wizard to help you create a macro in Access. Instead, you create macros by entering the actions and arguments directly in Macro Design view.

In the following exercise you will create a macro that validates data in a field;

1. Open the **School_Library** database.

2. Click the **Macros** button to open the Macros window.
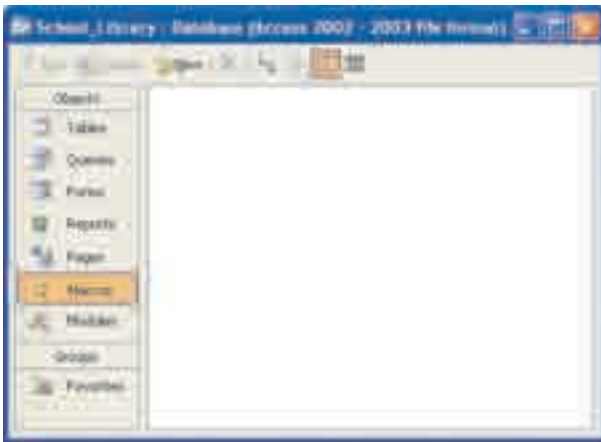
The Macros window

The Macro Design view displays two columns, Action and Comment. The lower part of the window displays macro arguments.

A Macro action, or command, instructs Access to take a specific action. There are more than 50 available actions. Macro arguments defines the specifics of the selected action. Each type of action has its own set of arguments.

In the comment column, you can type an explanation about the macro.

The Macro Design view has two more hidden columns, condition and Macro names. You display these columns by selecting **View**, and **Conditions** or **Macro Names** on the **Menu** bar. The Macro names column is used to enter macro names.

A condition is used to check the value of a field, or compare the value in the field to another value. You can execute or trigger a macro only when a certain condition is true.
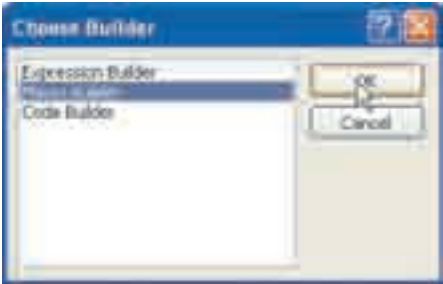
Event Property

An event is something that occurs to a certain object. When an event occurs, you can have Access respond with a specific action by running a macro or executing a VBA procedure.

An Access event can occur when a user moves from one record to another in a form, closes a report, change the contents of a text box or combo box control, or clicks on a command button on a form.
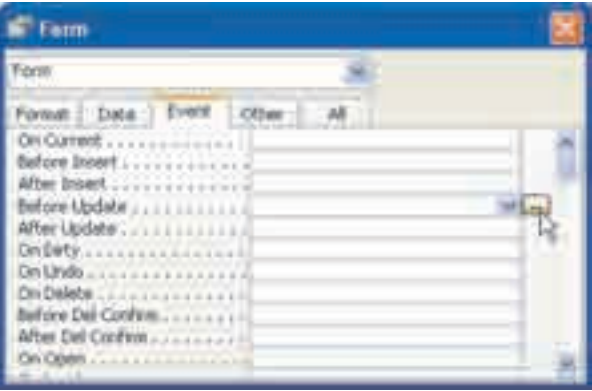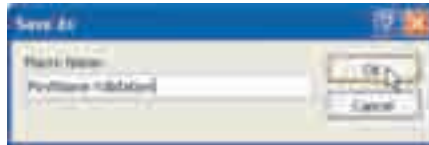

Selecting Before Update property

1. Open the **fMembers** form.

2. Open the **Properties** window of the form and click on the Event tab.
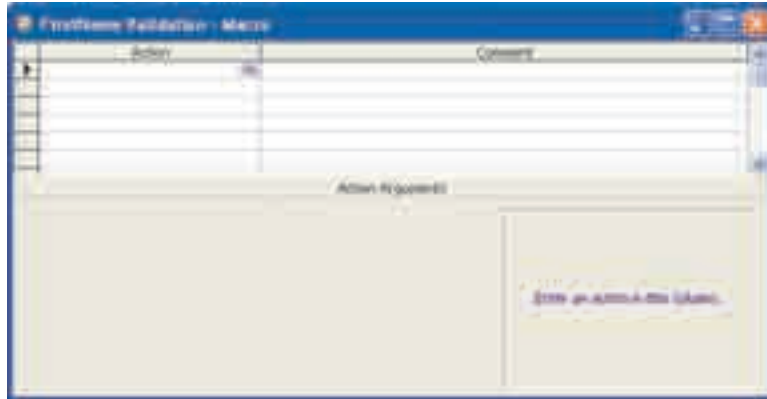

3. Click in the **Before Update property** box, and choose the **Macro builder** by clicking the three dot icon.

The Choose Builder dialog box

Naming the Macro

4. Enter a name for the Macro in the **Save As** dialog box.

5. Click **OK**.

The Macro Design view opens.

6. Open the Condition column by clicking the Conditions button on the Macro design toolbar or on the Menu bar, select View and Conditions.

7. In the first row of the Condition column, type the following expression; **[FirstName] Is Null**. The expression checks the value in the **FirstName** field of the **tblMembers** form.

8. In the first row of the **Action** column, select a **CancelEvent** action from the drop down list.

Selecting an Action

9. In the Comment column, type "**The record is not saved if the field is left blank**".

10. In the second row of the macro condition column, enter a "**...**".This allows you to create multiple actions to a condition.

11. In the second row of the **Action** column, choose **MsgBox** from the drop-down list.

12. Depending on the action you choose, you will see additional criteria appear in the Action Arguments pane In the message box of Action Arguments pane, add your message text "**You need to enter a value in the FirstName field.**".

13. In the **Type field**, select **MsgBox** type and enter a title. This will now provide information to the user as to why the record will not be saved if the Customer Name field is left blank, and will inform them that this is required data.

14. Finally, you add the **GoToControl** action that will return the insertion point back to the control that requires data.

15. In the third row of the Condition column, add another ellipsis "**...**" and add the **GoToControl** action from the drop-down list in the **Action** column.

16. In the Action Arguments pane, in the Control Name text box, type in **[FirstName]**. Add the comment "**Moves the insertion point back to the FirstName field.**"
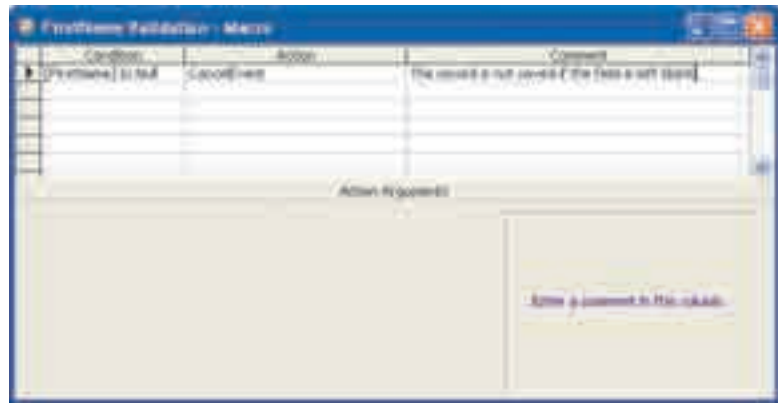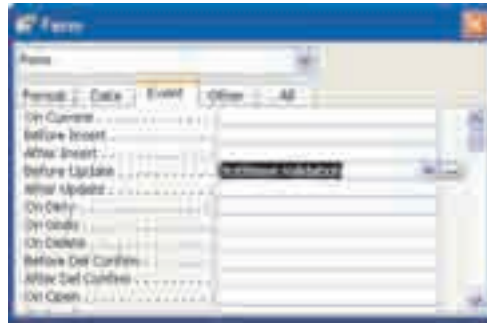

Adding a comment

Assigning a second action

Defining the field

FirstName validation

17. Save the **Macro** and close the Macro window. The macro is attached to the **Before Update** event property of the form, as shown below;

18. Test the macro by attempting to save a record that contains no data in the FirstName field.

Warning Message

VBA and Modules

VBA (Visual Basic for Applications) is an object-oriented programming language for Microsoft Access 2003. Visual Basic code is saved in a database in modules. Modules are the principal objects of the Visual Basic programming environment. A module contains user defined functions and subroutines.

Access provides two ways to implement a module: as a module object and as part of a form or report object. A module object is called a Standard module.

To view all module objects in your Access database;

1. Click the **Modules** button on the Object bar.

To view the contents of a module;

2. Select the **module** and choose **Design** from toolbar of the database window.

You can create Standard modules by selecting the **Modules** icon in the Database window and then clicking **New**. After you create a Standard module, you can associate it with a form or report. A Class module is a part of a form or a report and its code is placed within the form or the report.

Macro or VBA?

There are some key advantages to using VBA instead of a macro. The advantages that VBA has over macros;

❖ VBA enables you to provide complex logical structures such as **Select Case** statements or nested If...Then constructs. Macros do not support complex logical structures.

❖ You can easily handle errors using VBA. Macros do not support error handling and if a macro encounters an error, it stops.

❖ VBA code is faster to execute than macros.

❖ Using VBA allows you to interact with other applications as Word, Excel, and Outlook. Macros do not have the same functionality.

❖ Using VBA gives you more control over your code.

The Visual Basic Editor

You write all VBA code in the Visual Basic Editor (VBE). Access places you in the VBE any time you attempt to access the code in a Standard or Class module. The VBE is a separate window from that of Access.

You can open the VBA Editor in several ways;

1. On the Menu bar; select **Tools**, **Macro**, and **Visual Basic Editor**.

   Or on a **Form** or a **Report**; open the **Properties** dialog box, click the **Events tab**, select an event, click the **Ellipses button** (. . .), and choose **Code Builder**.

The Visual Basic Module window and its associated menu and toolbar open to enable you to create or edit your procedures. The code window displays the name of the control you are working with and the event you chose. Whenever you choose to build code, a subroutine is created for you automatically.

Creating a Standard Module

Using the Modules window, you can create and edit Visual Basic code.

In the following exercise, a standard module is used to convert the text to uppercase text in a field.

1. Click the **Module** button.

2. Click the **New** on the Database toolbar.

Access opens Visual Basic Editor and creates a new module, named
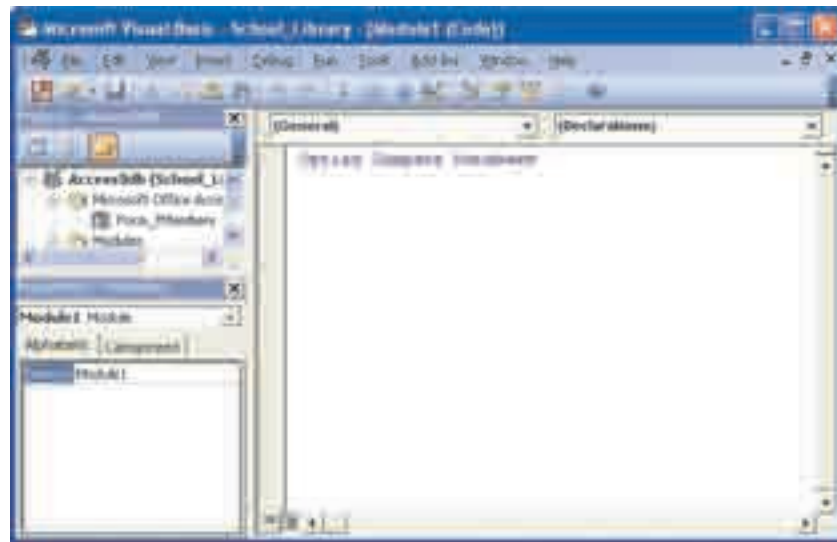
The Visual Basic Editor

Module1, in a Module window. Access places two lines of text in the first line in the window, beginning with **Option Compare Database** and then **Option Explicit**.

3. Type the following code in the code window.

Typing the Code

4. Save the module as **ProperCase** by selecting **File**, **Save**.

5. Close the **VBE window**.
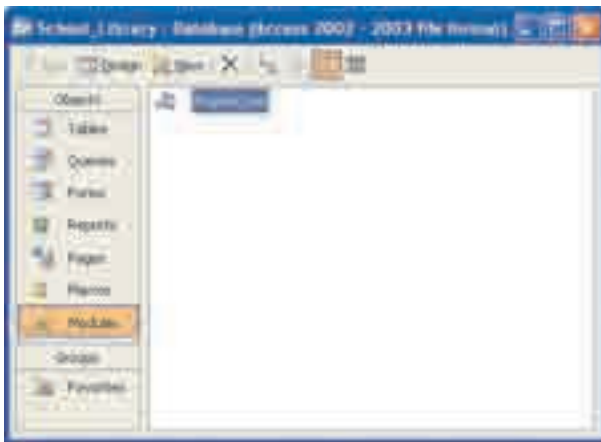
The ProperCase module in Modules window

The module is displayed in the Modules window.

Now, you can call this module from inside a form.

1. Open the **fMembers** form in Design view.

2. Select the **LastName** field; on the **Properties** window, click the **Event tab**.

3. Click inside the **After Update** event and click the **ellipses** button **(. . .)**, and choose **Code Builder**.

4. Type the following code in the code window.

Understanding Macros and Modules

5. Save the code and close the VBE.

6. Open the form. Edit in a **LastName** field of a record or create a new record. As you proceed to a new field, the text **LastName** field is converted to Uppercase.

Validating a Form field with a Class Module

Generally, you ensure valid data is entered in a form by specifying a validation rule for the control in the form or by setting record and field validation rules in the table design. For more complex data validation, use a module to specify the rule.

The **BeforeUpdate** property is triggered before a change or entry to a form or control is committed.

In the following exercise, you will create a module that validates date fields;

1. Open the **fLoan** form in Design view. Select the **DueDate** field.

2. On the **Properties** window of the **DueDate** field, click **Event tab**.

3. Click in the **Before Update** property box, and choose the code builder by clicking the three dot icon.

4. In the **Code** window, type the following code.

5. Save the code and return the Form window.

```
Private Sub DueDate _BeforeUpdate(Cancel As Integer)
If Me. DueDate > Date Then
     msgbox "(" DueDate must be after the Loan Date".)"
End If
End Sub
```

6. On the **fLoan**, try the validation by entering a **DueDate** smaller than a **LoanDate**. The validation fails and the error message is displayed using the **MsgBox** function.

Exercises

True or False

1. A Standard module is a part of a form and its code is placed within the form.

   ☐ True   ☐ False

2. Macros may contain more than one action to perform several steps in sequence.

   ☐ True   ☐ False

3. You can easily create macros with the Macro recorder.

   ☐ True   ☐ False

Multiple Choice Questions

1. Many actions require additional information, called ____.

   a. comments   b. arguments

   c. motions   d. add-ons

2. The various steps in a macro are called ____.

   a. actions   b. moves

   c. switches   d. events

3. Which database object can be used to in a form to automate any repetitive task?

   a. Data Access Page   b. Module

   c. Macro   d. SQL

4. The actions in a(n) ____ are executed when a particular event occurs.

   a. switchboard   b. macro

   c. tab order   d. argument

5. Which of the following statements are true about macros? Choose two answers.

   a. Macros are easier to learn compared to VBA modules

   b. Using Macros gives you more control over your code.

   c. Macros are faster to execute than VBA code.

   d. A macro is stored as a separate object in the database.

Summary

A **Macro** is a database object that allows you to automate a series of commands and functions which perform a particular operation, such as opening a form, printing a report.

You don't have to know a single line of **programming language** to create a macro.

A macro is stored as a **separate object** in the database window.

You create macros by entering the actions and arguments directly in **Macro Design** view.

A **macro action**, or command, instructs Access to take a specific action.

A **condition** is used to check the value of a field, or compare the value in the field to another value.

An **event** is something that occurs to a certain object. When an event occurs, you can have Access respond with a specific action by running a macro or executing a VBA procedure.

By using macros, you can have a **better control of the information** that your users enter into a database.

Depending on the action you choose, you will see additional criteria appear in the **Action Arguments pane**.

VBA (Visual Basic for Applications) is an object-oriented programming language for Microsoft Access 2003.

Access provides two ways to implement a module: as a **module object** or as **part of a form or report object**.

A **Class module** is a part of a form or a report and its code is placed within the form or the report.

You write all VBA code in the **Visual Basic Editor (VBE)**.

Whenever you choose to build code, a **subroutine** is created for you automatically.

The **BeforeUpdate** property is triggered before a change or entry to a form or control is committed.

Answer Key

Chapter1

Fill in the blanks
1. Relational
2. .mdb
3. Rows and columns

True or False
1. True
2. True
3. False

Multiple Choice Questions
1. a
2. d
3. c
4. b
5. b
6. c
7. a, b
8. d
9. c
10. a, c, d

Chapter2

Match the Items
1. d
2. c
3. a
4. e
5. b

Fill in the blanks
1. Primary Key
2. Data type
3. Design view

True or False
1. True
2. False
3. True

Multiple Choice Questions
1. d
2. c
3. b
4. a
5. a
6. b
7. a
8. a, c
9. b

Word Search Puzzle

I	G	Y	W	X	F	H	S	P	B	R	J	G	P	H	K	I
J	D	T	Y	Z	Q	U	N	A	V	I	G	A	T	I	O	N
R	P	V	G	B	V	D	A	T	A	S	H	E	E	T	U	A
E	S	R	P	R	I	M	A	R	Y	K	E	Y	S	U	V	C
P	R	X	E	K	G	A	F	B	J	H	J	X	U	T	X	O
O	P	E	L	C	I	U	Z	L	O	F	F	D	X	A	J	M
R	H	A	L	X	O	P	B	A	R	I	L	N	O	B	Y	P
T	M	M	K	A	B	R	V	N	T	E	A	Z	T	L	Z	A
X	E	Q	D	E	T	A	D	K	G	L	T	D	U	E	B	C
F	C	Y	A	B	G	I	O	S	A	D	L	P	E	W	X	T
S	T	L	T	S	R	F	O	R	M	O	W	G	R	I	X	T
U	Z	V	A	N	E	M	M	N	R	R	S	J	P	Z	P	L
D	U	J	B	A	P	T	R	M	A	S	U	T	R	A	T	Q
F	C	Q	A	U	O	G	I	O	X	L	M	A	C	R	O	K
M	I	S	S	B	N	J	V	H	S	I	H	Y	Y	D	N	X
U	U	H	E	I	D	E	S	I	G	N	W	H	E	V	Q	N
M	P	M	O	O	K	T	O	O	L	B	A	R	Y	Q	D	T
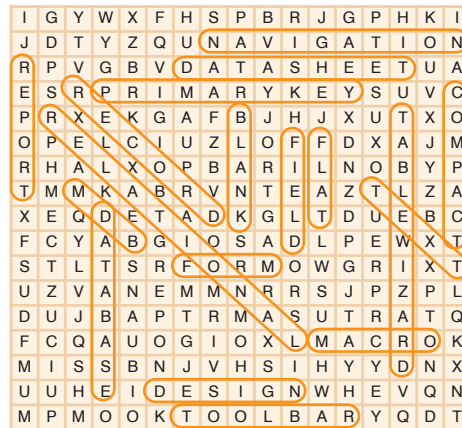
Chapter3

Fill in the blanks
1. Input mask
2. OLE
3. Validation text

True or False
1. False
2. True
3. False

Multiple Choice Questions
1. b
2. d
3. c
4. c
5. a
6. a
7. b
8. a
9. d

Chapter4

Fill in the blanks
1. One-to-many
2. Enforce Referential
3. Primary Key

True or False
1. True
2. False
3. True

Multiple Choice Questions
1. c
2. a, d
3. a, b, c
4. a
5. c
6. c
7. b
8. a, c
9. a, d
10. b

Chapter5

Fill in the blanks
1. AutoForm
2. Columnar
3. Bound

True or False
1. False
2. True
3. True

Multiple Choice Questions
1. d
2. c
3. c
4. b
5. c
6. a, b, c
7. d
8. d
9. a
10. a, c

Chapter 6

Fill in the blanks
1. Select Queries
2. SQL
3. A filter

Multiple Choice Questions
1. a
2. d
3. d
4. c
5. c
6. a
7. a, b, d
8. c
9. a, b

Chapter 7

True or False
1. True
2. False
3. True

Multiple Choice Questions
1. a
2. c
3. b
4. a, c
5. d
6. a
7. b, c
8. a, b
9. a, c

Crossword Puzzle

Chapter8

Fill in the blanks
1. Exporting
2. Data Access Pages
3. Linking

True or False
1. True
2. False
3. True

Multiple Choice Questions
1. a, b, d
2. a
3. b
4. b, c, d
5. d
6. b
7. c
8. b, d
9. a, b, c, d
10. a, b, c

Chapter9

True or False
1. True
2. True
3. False

Multiple Choice Questions
1. b
2. a
3. b
4. b
5. a, d

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