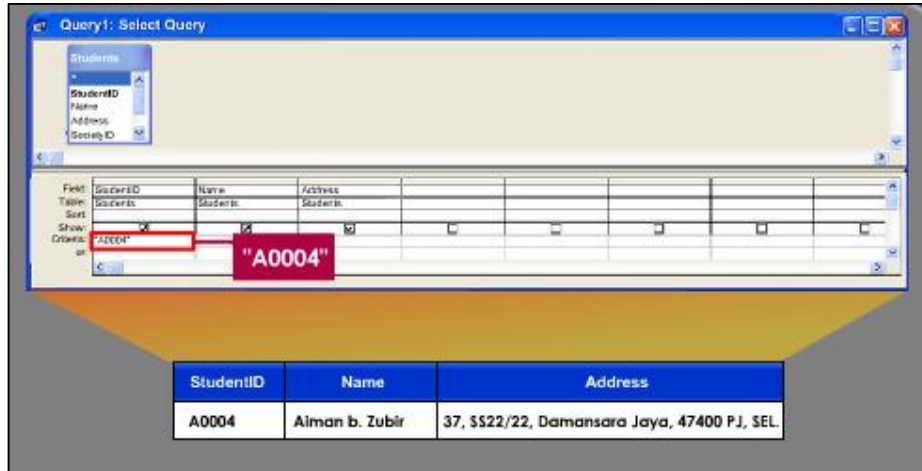


## LESSON 1 DATABASE OBJECT-QUERY

### DEFINE THE QUERY AS ONE OF THE DATABASE OBJECTS

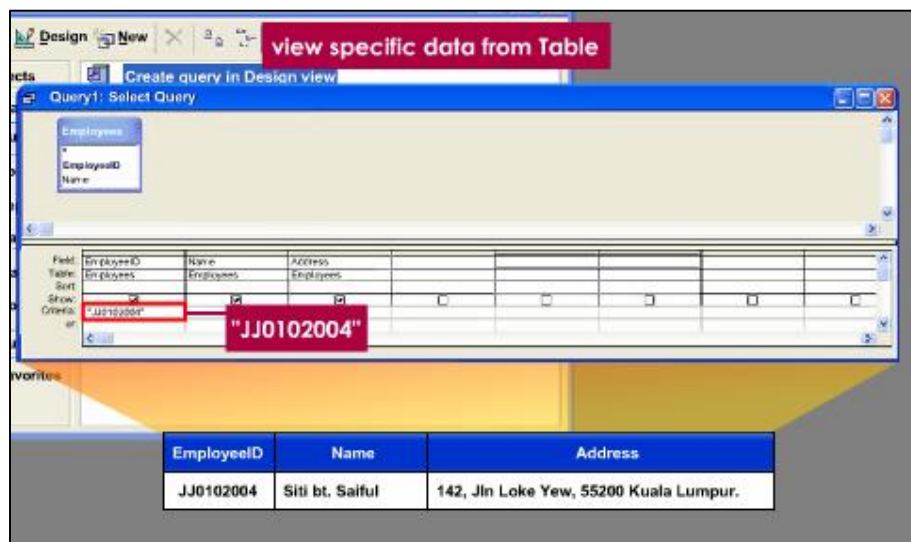
A Query is database object that retrieves specific information from a database.

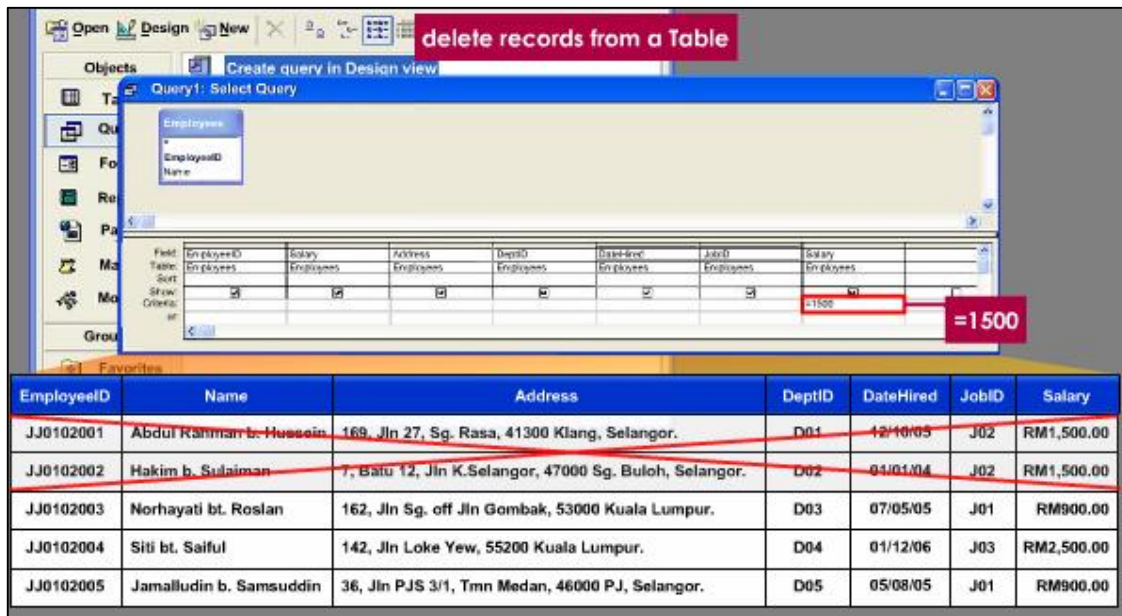
For example, you can retrieve a student's name and address from the database.



With Access Queries, you can do the following :

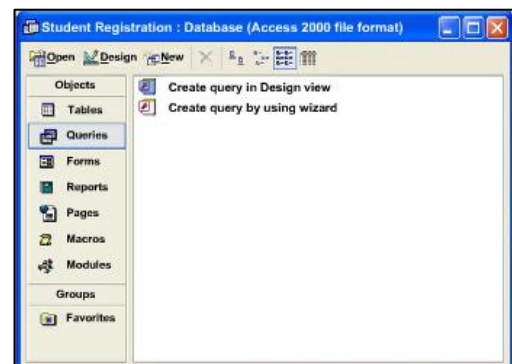
- ✚ View specific data from Table.
- ✚ Perform calculations on selected records.
- ✚ Delete record from a table.





You can create new Queries using one of the methods.

- ✚ Create query in Design View.
- ✚ Create query by using wizard.



## CREATING A RELATIONSHIP



You need to create the relationship between Tables before you can create Queries.

- See Demonstrations From the CD

Referential Integrity is a set of rules that ensures relationships between Tables within a database are all valid.

## CREATING A QUERY IN DESIGN VIEW

- See Demonstrations From the CD

## CREATING A QUERY BY USING WIZARD

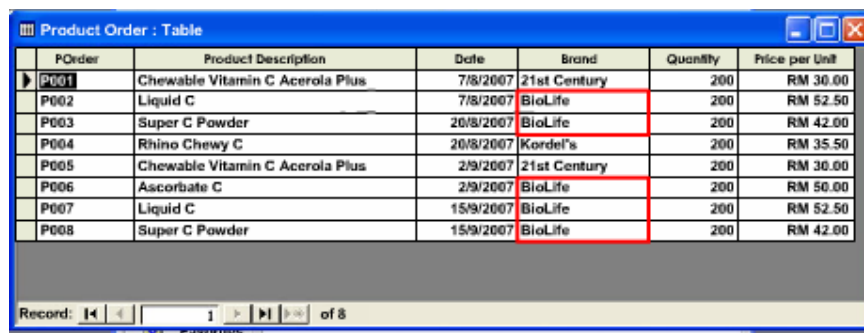
- See Demonstrations From the CD

## TO RUN A QUERY

- See Demonstrations From the CD

## EXTENSION : USING PARAMETER

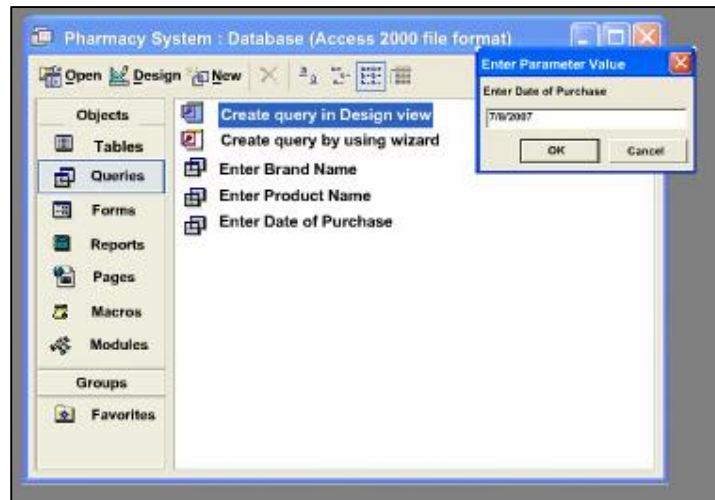
Parameter is a value in a specific field used to retrieve information from the Query such as BioLife in "Brand" field.



POrder	Product Description	Date	Brand	Quantity	Price per Unit
P001	Chewable Vitamin C Acerola Plus	7/8/2007	21st Century	200	RM 30.00
P002	Liquid C	7/8/2007	BioLife	200	RM 52.50
P003	Super C Powder	26/8/2007	BioLife	200	RM 42.00
P004	Rhino Chewy C	26/8/2007	Kordef's	200	RM 35.50
P005	Chewable Vitamin C Acerola Plus	2/9/2007	21st Century	200	RM 30.00
P006	Ascorbate C	2/9/2007	BioLife	200	RM 50.00
P007	Liquid C	15/9/2007	BioLife	200	RM 52.50
P008	Super C Powder	15/9/2007	BioLife	200	RM 42.00

Record: 1 of 8

Another example, you can type in the date of purchase of vitamin C for the month of August.



Only the information on vitamin C for the month of August which is specified in the perimeter will be displayed.

A screenshot of a query result table titled "Enter Date of Purchase : Select Query". The table has six columns: "POrder", "Product Description", "Date", "Brand", "Quantity", and "Price per Unit". There are two records displayed. The first record has POrder "P001", Product Description "Chewable Vitamin C Acerola Plus", Date "7/8/2007", Brand "21st Century", Quantity "200", and Price per Unit "RM 36.00". The second record has POrder "P002", Product Description "Liquid C", Date "7/8/2007", Brand "BioLife", Quantity "200", and Price per Unit "RM 52.50". The "Date" column is highlighted with a red border. At the bottom, there is a record navigation bar showing "Record: 1 of 2".

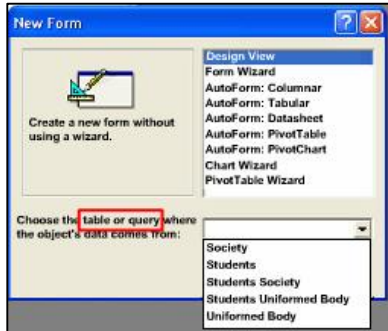
POrder	Product Description	Date	Brand	Quantity	Price per Unit
P001	Chewable Vitamin C Acerola Plus	7/8/2007	21st Century	200	RM 36.00
P002	Liquid C	7/8/2007	BioLife	200	RM 52.50

It is used when searching for a particular piece of information. This enhances the system performance speed.

## LESSON 2

### DATABASE OBJECT-FORM

## DEFINE THE FORM AS ONE OF THE DATABASE OBJECTS



A Form is a database object that allows users to add, modify and view information.

Form can be created based on the Table or Query.

A Form is an organised and formatted view of selected fields from selected Tables or Queries.

By using Table, you need to scroll down to fill in the new data. This data entry process will take time.

StudentID	Name	MyKad Number	Date of Birth	Gender	Address	Contact Number
A0012	Abu b. Ramli	900408-08-5627	8/04/1990	Male	60, SS23/2, Taman SEA, 47400 PJ, SEL.	03 78068512
A0013	Abdullah b. Ali	900228-08-5367	28/02/1990	Male	50, SS22/20 Damansara Jaya, 47400 PJ, SEL.	03 77295632
A0014	Zakaria b. Ismail	900814-08-5629	14/08/1990	Male	25, SS22/19, Damansara Jaya, 47400 PJ, SEL.	03 78045874
A0015	Fizah bt. Abu Bakar	901225-08-5124	25/12/1990	Female	100A, SS23/5, Taman Megah, 47301 PJ, SEL.	03 77296984
A0016	Nurul bt. Ahmad	901107-07-5990	7/11/1990	Female	20, SS23/1, Taman SEA, 47400 PJ, SEL.	03 78085124
A0017	Noraini bt. Shahrir	901010-08-6000	10/10/1990	Female	58A, SS23/2, Taman Megah, 47301 PJ, SEL.	03 78096512
A0018	Lim Siew Qing	900808-07-5142	8/08/1990	Female	A201, PJU3/1, Riana Green Condo, 47410 PJ, SEL.	03 78075598

However, when Form is used, it is easier as you need to click on the new record button to fill in the new data.

This will speed up the data entry process.

When you add new data into Forms, you are automatically also adding the data into the Table.

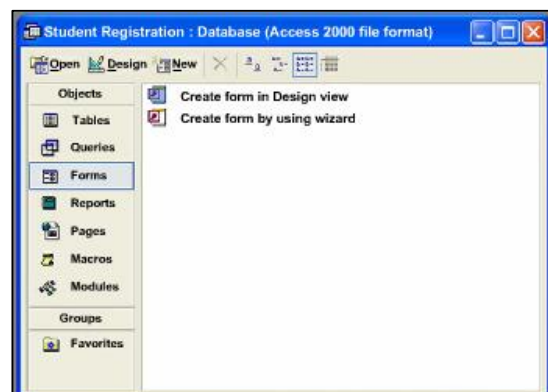
When you modify data on Forms, you are automatically also modifying the data in the Table.

StudentID	Name	MyKad Number	Date of Birth	Gender	Address	Contact Number
A0016	Nurul bt. Ahmad	901107-07-5990	7/11/1990	Female	20, 5523/1, Taman SEA, 47400 PJ, SEL.	03 78085124
A0017	Noraini bt. Shahrir	901010-08-6000	10/10/1990	Female	58A, 5523/2, Taman Megah, 47301 PJ, SEL.	03 78096512
A0018	Lim Siew Qing	900808-07-5142	8/08/1990	Female	A201, PJU3/1, Riana Green Condo, 47410 PJ, SEL.	03 78075596
A0019	Chong Boon Hock	900531-08-5663	31/05/1990	Male	A100, PJU2/1, Riana Green Condo, 47410 PJ, SEL.	03 78058743
A0020	Norizah bt. Kassim	901218-07-5332	18/12/1990	Female	Lot 512, Kampung Kayu Ara, 47400 PJ, SEL.	03 78011254
A0021	Mulu a/l Sami	901231-08-5713	31/12/1990	Male	35, 5522/21, Damansara Jaya, 47400 PJ, SEL.	03 77280873

The table is shown alongside a 'Students' form window. A red label 'Table' points to the table, and a red label 'Form' points to the form window. The form window shows the same fields as the first screenshot, but with empty input boxes. The record navigation bar in the form shows 'Record: 22 of 22'.

You can create new Form using one of the methods.

- + Create form in Design View.
- + Create form by using wizard.



## CREATING A FORM IN DESIGN VIEW

- See Demonstrations From the CD

## CREATING A FORM BY USING WIZARD

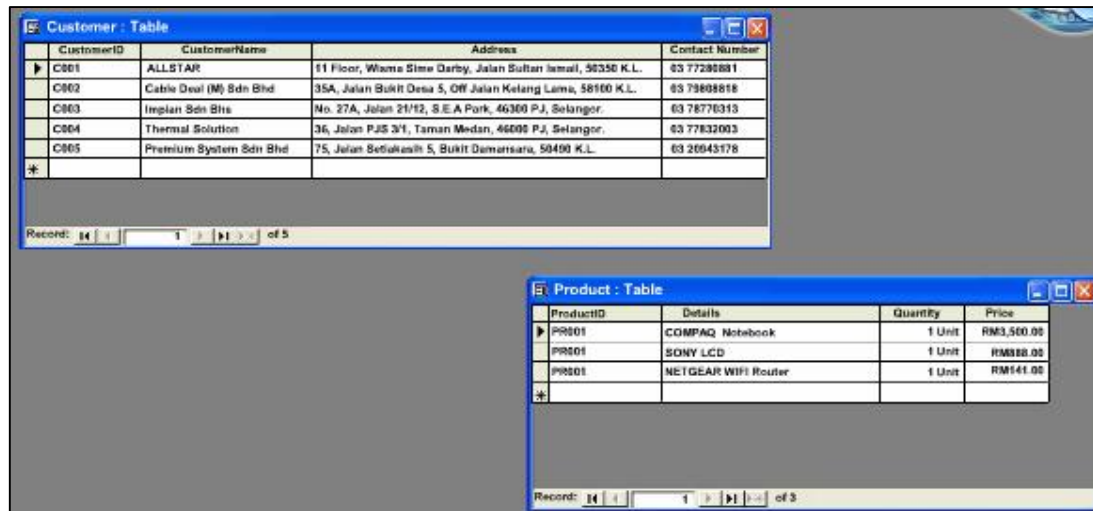
- See Demonstrations From the CD

## ENTERING DATA IN A FORM

- See Demonstrations From the CD

## EXTENSION : MAIN FORM AND SUBFORM

Sometimes, you want to get the information from two Tables to design a Form.



For example, you want to design an invoice form to contain customer and product details.

In this situation, you need a main form and a subform. A main form contains customer information.

A subform is inserted into a main form.

The screenshot shows an 'Invoice' window. The 'main form' contains fields for CustomerName (ALLSTAR), Address (11 Floor, Wisma Sime Darby, Jalan Sultan Ismail, 50350 K.L.), and Contact Number (03 77280881). Below this is a 'subform' containing a table of Product Details:

ProductID	Details	Quantity	Price
PR001	COMPAQ Notebook	1 Unit	RM3,500.00
PR002	SONY LCD	1 Unit	RM888.00
PR003	NETGEAR WIFI Router	1 Unit	RM141.00

Navigation controls at the bottom show 'Record: 1 of 3' for the subform and 'Record: 1 of 5' for the main form.

The invoice form gets information from two Tables that are Customer Table and Product Table.

This screenshot shows the invoice form with two data source tables visible at the bottom. The 'Customer Table' provides data for the main form, and the 'Product Table' provides data for the subform.

CustomerID	CustomerName	Address	ContactNumber
C001	ALLSTAR	11 Floor, Wisma Sime Darby, Jalan Sultan Ismail, 50350 K.L.	03 77280881
C002	Cable Deal (M) Sdn Bhd	35A, Jalan Bukit Desa 5, Off Jalan Kelang Lama, 58100 K.L.	03 79808818
C003	Impian Sdn Bhd	No. 27A, Jalan 21/12, S.E.A Park, 46300 P.J, Selangor.	03 78770313
C004	Thermal Solution	15, Jalan PJS 3/1, Taman Medan, 46000 P.J, Selangor.	03 77832003
C005	Premium System Sdn Bhd	75, Jalan Setiakashih 5, Bukit Damansara, 50490 K.L.	03 20943178

ProductID	Details	Quantity	Price
PR001	COMPAQ Notebook	1 Unit	RM3,500.00
PR002	SONY LCD	1 Unit	RM888.00
PR003	NETGEAR WIFI Router	1 Unit	RM141.00

In the invoice form, the Customer Table supplies data such as CustomerName, Address and ContactNumber for the main form.

This screenshot shows a close-up of the 'Customer : Table' data source. The table contains the following data:

CustomerID	CustomerName	Address	Contact Number
C001	ALLSTAR	11 Floor, Wisma Sime Darby, Jalan Sultan Ismail, 50350 K.L.	03 77280881
C002	Cable Deal (M) Sdn Bhd	35A, Jalan Bukit Desa 5, Off Jalan Kelang Lama, 58100 K.L.	03 79808818
C003	Impian Sdn Bhd	No. 27A, Jalan 21/12, S.E.A Park, 46300 P.J, Selangor.	03 78770313
C004	Thermal Solution	36, Jalan PJS 3/1, Taman Medan, 46000 P.J, Selangor.	03 77832003
C005	Premium System Sdn Bhd	75, Jalan Setiakashih 5, Bukit Damansara, 50490 K.L.	03 20943178

Product Table gives data for the subform. It contains specific details such as ProductID, Details, Quantity and Price purchased by the customer.

The screenshot shows an 'Invoice' window with the following data:

CustomerName: ALLSTAR  
 Address: 11 Floor, Wisma Sime Darby, Jalan Sultan Ismail, 50350 K.L.  
 Contact Number: 03 77280881

Product Details Table:

ProductID	Details	Quantity	Price
PR001	COMPAQ Notebook	1 Unit	RM3,500.00
PR002	SONY LCD	1 Unit	RM888.00
PR003	NETGEAR WIFI Router	1 Unit	RM141.00

The subform 'Product : Table' displays the same data as the main form's table.

By using main form and subform, you can view the information together. The main form and subform appear in the same window.

This annotated screenshot shows the 'Invoice' window with the following labels:

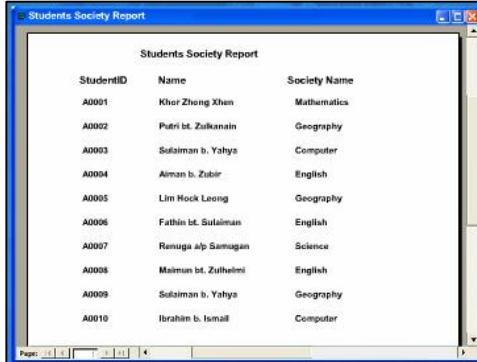
- subform:** Points to the 'Product Details' table area.
- main form:** Points to the entire 'Invoice' window.

The data in the 'Product Details' table is identical to the previous screenshot:

ProductID	Details	Quantity	Price
PR001	COMPAQ Notebook	1 Unit	RM3,500.00
PR002	SONY LCD	1 Unit	RM888.00
PR003	NETGEAR WIFI Router	1 Unit	RM141.00

## LESSON 3 DATABASE OBJECT-REPORT

### DEFINE THE REPORT AS ONE OF THE DATABASE OBJECTS



StudentID	Name	Society Name
A0001	Khor Zhong Khan	Mathematics
A0002	Putri bt. Zulkarnain	Geography
A0003	Sulaiman b. Yahya	Computer
A0004	Aiman b. Zubir	English
A0005	Lim Hock Leong	Geography
A0006	Fathin bt. Sulaiman	English
A0007	Remuga alp Samagan	Science
A0008	Maimun bt. Zulhelmi	English
A0009	Sulaiman b. Yahya	Geography
A0010	Ibrahim b. Ismail	Computer

A Report summarises information from the database.

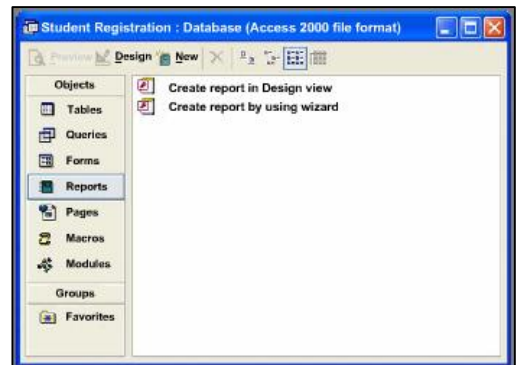
A Report is a database object that presents selected information from Tables or Queries, for printing purposes.

When designing a Report, consider the point you are making, the audience and the level of information they needed.

Reports can be created based on the Table or Query.

You can create new Queries using one of the methods.

- ✚ Create report in Design View.
- ✚ Create report by using wizard.



### CREATING A REPORT IN DESIGN VIEW

- See Demonstrations From the CD

### CREATING A REPORT BY USING WIZARD

- See Demonstrations From the CD

### EXTENSION : PUBLISH YOUR REPORTS TO WEB PAGE

A Web Page is resource of information that can be accessed through a Web browser.

The purpose of publishing your Reports on the Web is to allow people from multiple locations in your organisation to view your Report.



For example, if your company sells many items, the inventory report has to be updated weekly. You could produce inventory Report and export that Report as an HTML file. The Report has to be converted to HTML format before being published.

This file is transferred to the Web Server and can be accessed by all staffs in the organisation.

## **LESSON 4**

### **DATA MANIPULATION**

---

Data manipulation refers to the operations of accessing, locating, organising, modifying and managing data contained in the database.

Basic operations of data manipulation :

- + Update
- + Insert
- + Delete
- + Retrieve
- + Sort
- + Filter
- + Search

### **UPDATING RECORDS**

The Update operation is used for changing data in a database Table.

- *See Demonstrations From the CD.*

### **INSERTING RECORDS**

The Insert operation is used for adding records to a database Table.

- *See Demonstrations From the CD.*

### **DELETING RECORDS**

The Delete operation is used for removing records from a database Table.

- *See Demonstrations From the CD.*

### **RETRIEVING RECORDS**

The Retrieve operation is used for retrieving records from a database Table.

- *See Demonstrations From the CD.*

### **SORTING RECORDS**

The Sort operation is used for sorting records in a records in a database Table.

- *See Demonstrations From the CD.*

## FILTERING RECORDS

The Filter operation is used for filtering records from a database table.

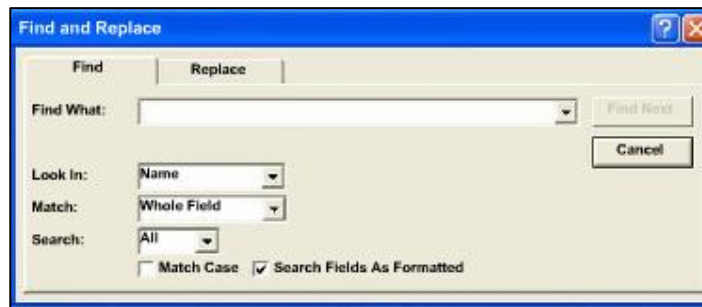
Instead of displaying all the records in a Table, you can use a filter to display only those records that you want to see or edit.

- See Demonstrations From the CD.

## SEARCHING RECORDS

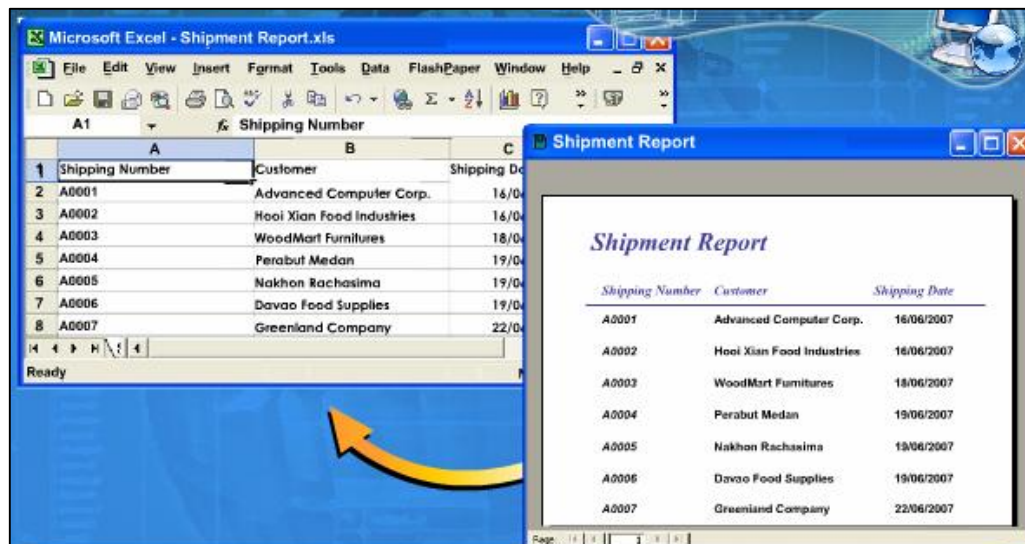
The Search operation is used for finding record from a database table.

You can use the Find function in Microsoft Access to search for the records. You can use the "Find" feature to locate one or more records to find specific data.



## EXTENSION : DATA EXPORT

The transferring of data from a format to another is called the data export. For example, in Microsoft Access Table, Queries, Forms and Reports can be exported to a spreadsheet format.



Sometimes, you will come across situations where your data is stored in Microsoft Access but you need to move or copy it to Microsoft Excel.

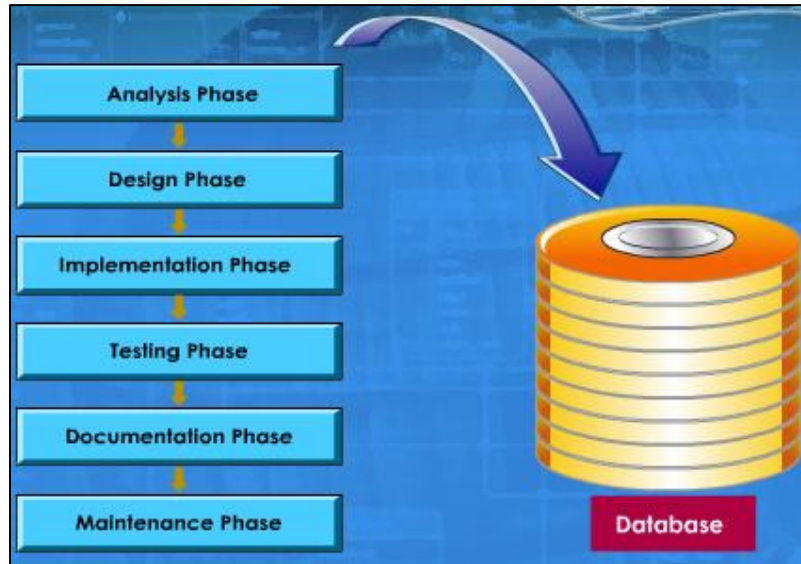
For example, you might want to give your report to a group of users who like to view the data in the form of a chart or graph.

You might also want to manipulate your data using line chart where you can see the shipping date clearer.

Data Export is a lot easier than retyping the data in a spreadsheet.

## LESSON 5 PHASES OF SYSTEM DEVELOPMENT

The system development phase is a series of steps used to develop a database program.



These phases describe the processes that system developers carry out in order to develop a database program.

### OVERVIEW OF SYSTEM DEVELOPMENT PHASES

#### Analysis Phase

During the Analysis Phase, system developers will perform problem analysis by finding out the needs of target users. System developers also identify the input, process and output for the new system.

#### Design Phase

Based on the needs of target users, the system developers will design an Entity Relationship Diagram (ERD). This phase is known as the Design Phase.

#### Implementation Phase

Implementation Phase is the phase where system developers create database using database software.

#### Testing Phase

The system will be tested by the target users in the Testing Phase. If there is any error detected, the system developers will fix the error.

#### Documentation Phase

System developers will produce the documents for the program during the Documentation Phase.

### **Maintenance Phase**

The system developers continue to provide support during the Maintenance Phase. They monitor the system performance and make changes when needed.

## **EXTENSION : PRACTICES OF DEVELOPING A NEW INFORMATION SYSTEM**

Some practices of developing a new information system:

### **Work as a group**

When you want to develop an information system, you must work as a group. All group members must work together to complete tasks like data entry and analysis.

### **Involves many people**

Involve as many people as possible in your project. This means that you should not only think of people in your group but also friends and teachers who will use your information system.

### **Willing to accept changes**

Create a culture among yourselves to accept changes. For example, each of you should try changing roles throughout your project so that everyone learns each other's responsibilities.

You must be willing to accept changes when others give comments or recommendations.

### **Share with others**

Tell as many people as you can about what your group is doing. This encourages sharing of ideas and learning from one another.

## LESSON 6 ANALYSIS PHASE

### ANALYSIS PHASE OF SYSTEM DEVELOPMENT



The Analysis Phase is the first phase of system development.

In this phase, the system developers would need to define problems faced by target users.

The target users will indicate their requirements. They need to give a description of what a system must do and the main functions of the system.

By doing this, the system developers can define the purpose of the system. It would help system developers set the focus of the system.

### PROBLEM ANALYSIS

During the Analysis Phase, the system developers will interview the target users to find out their needs.

For example, in the School Resource Centre, the system developers found out that the target users are currently using the manual system.

They are facing difficulties in keeping resource materials organised as the volume of books is increasing.

The target users require a new system that is a School Resource System to register and catalogue their books.

By doing problem analysis, the system developers would have to understand the needs of the target users.

The new system should store all book details as in a manual system.

The new system should be faster, easier to use and have a larger storage.

#### Current System Problems:

- they have been using the manual system
- the school librarians are facing difficulties in keeping library materials organised
- this problem arised with the increasing volume of books and number of students

#### New System Requirements:

- can store book details into database
- fast performance
- easy to use
- can store large amounts of data

In the School Resource System, the system developers need to identify the input, process and output for the system.

The system developers identify the input, for example AuthorName, PublisherName, CategoryName, BookTitle and BookPrice.

The system developers identify the process for all the system. All new books purchased by the School Resource Centre would have all their data keyed into the School Resource System.

The system developers identify the output for the system. For example, the books which have been keyed in will be printed out as document references in the School Resource Centre.

Input, Process and Output (IPO)		
Input	Process	Output
Request AuthorName Request PublisherName Request CategoryName Request BookTitle Request BookPrice	Verify data for Author, Publisher, Category, Book	List of Authors List of Book Category Name Publisher Name

By doing this problem analysis, the system developers can come up with the design of the system.

## EXTENSION : STANDARDISATION

Standardisation is a set of rules and procedures that system developers require target users to accept and follow.

For example, system developers need standardisation for the coding of stock name. In Analysis Phase, system developers need to understand the terms used by target users in order to set a standardisation for input, process and output.

If the stock code is set to S00001, the target user must follow the standard by using the prefix S for the rest of the stock code. For example S00002, S00003 and so on.

Standardisation is used to help people working on the same development project to produce consistent results. Without standardisation, the system will not function correctly. Setting standards avoids confusion in the whole process of system development.

## LESSON 7 DESIGN PHASE

### DESIGN PHASE

The Design Phase is the second phase in system development. It refers to the planning of the system design.

### GUIDELINES FOR DESIGNING A DATABASE:

#### Choose data

Choose the necessary data you need to store in the database. For example, in the School Resource System, the necessary data are Author, Book, Category and Publisher.

#### Ensure table contains the necessary data

In this School Resource System, there are four Tables involved, namely Author, Book, Category and Publisher.

From the analysis, the system developers found out that:

- ✚ An author can have one or more books.
- ✚ A publisher has one or more books.
- ✚ A category has many books.

#### Determine field

You need to ensure Tables contain the necessary data.

You need to determine what fields to include and the suitable data type format for those fields.

- ✚ Author Table consists of AuthorID and AuthorName.
- ✚ Book Table consists of BookID, BookTitle and BookPrice.
- ✚ Category Table consists of CategoryID and CategoryName.
- ✚ Publisher Table consists of PublisherID and PublisherName.

Author	
AuthorID	AuthorName

Book		
BookID	BookTitle	BookPrice

Category	
CategoryID	CategoryName

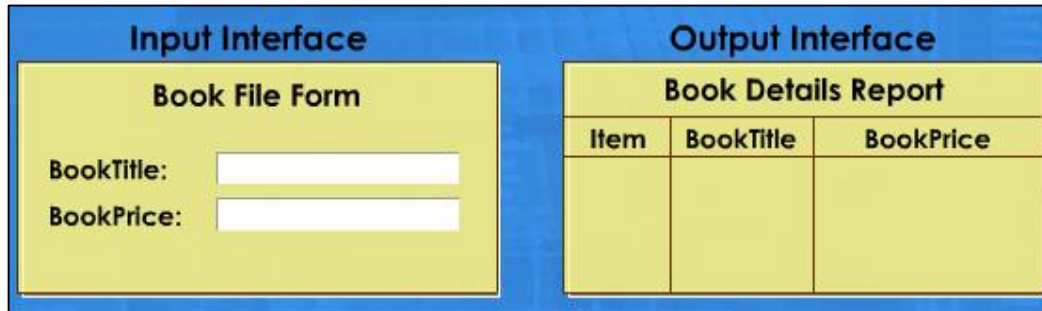
Publisher	
PublisherID	PublisherName

These are the technical plans we designed during the Design Phase.

In the Design Phase, the system developers will seek to provide input interface and output interface.

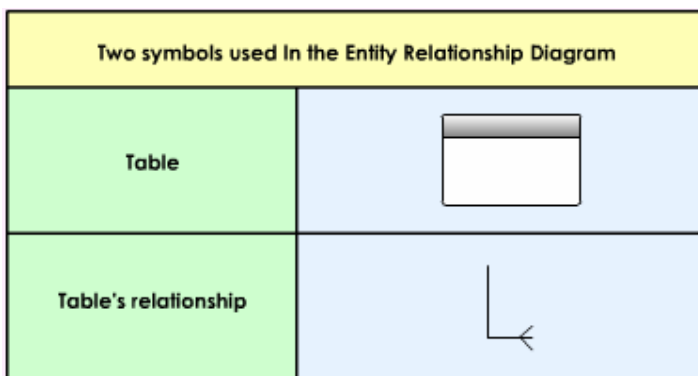
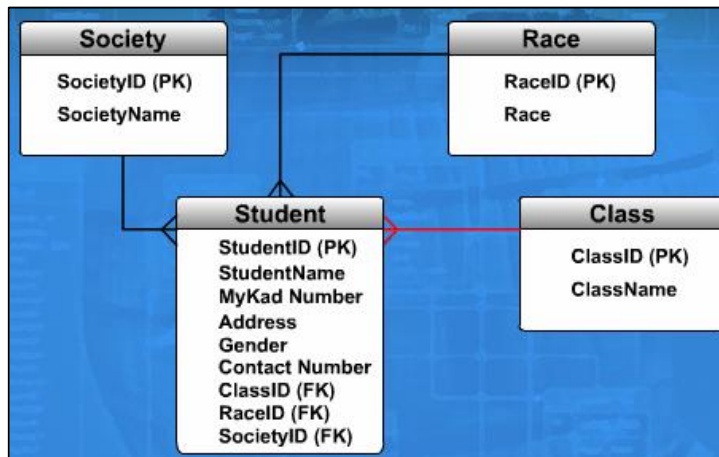
System developers will provide an input interface where the user can do data entry.

The user can also retrieve information from a database using an output interface.



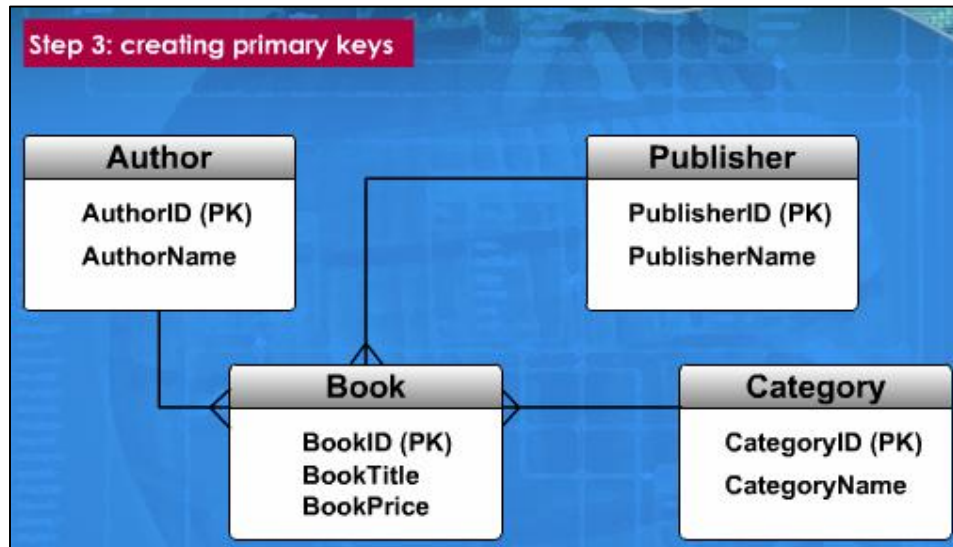
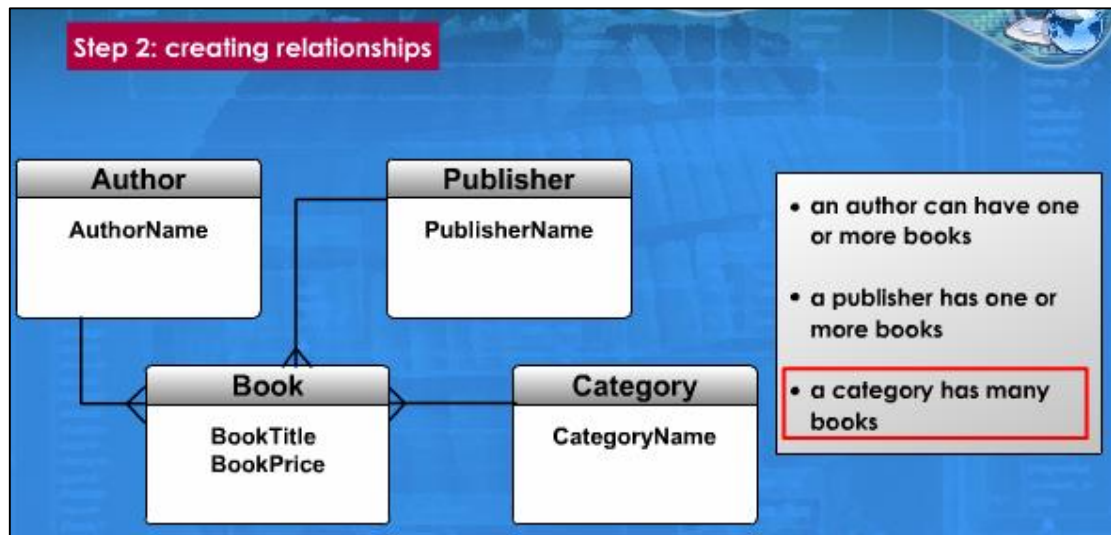
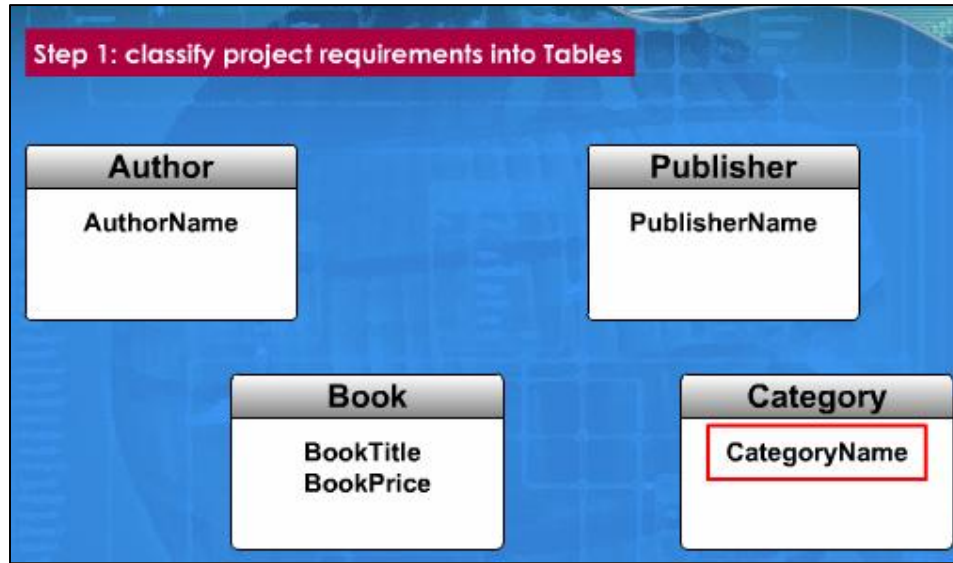
## ENTITY RELATIONSHIP DIAGRAM

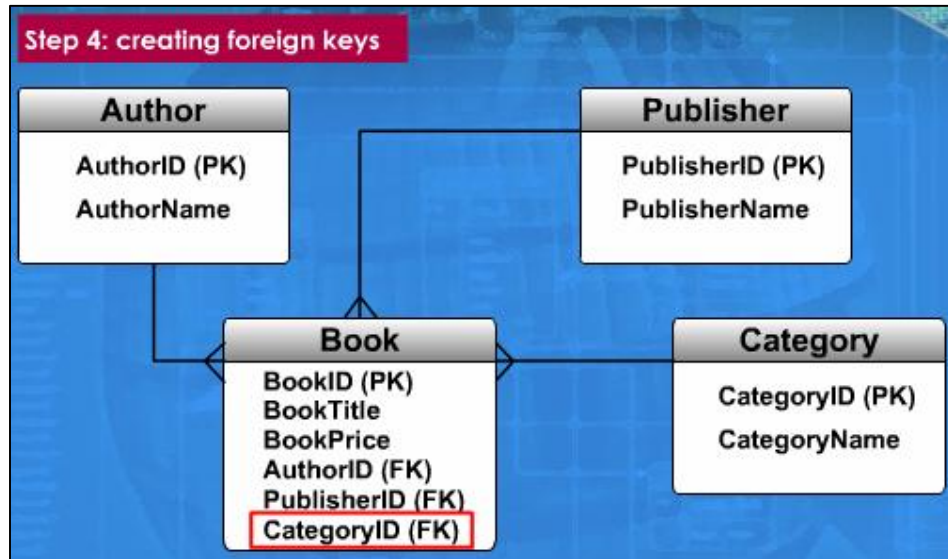
Entity Relationship Diagram (ERD) is one of the diagrams that show how Tables are organised and related to one another.



There are two symbols used in an Entity Relationship Diagram.

In the School Resource System, system developers can use the Entity Relationship Diagram to describe all Tables and their fields.





**Steps of creating Entity Relationship Diagram**

Step 1: classify project requirements into Tables

Step 2: creating relationships

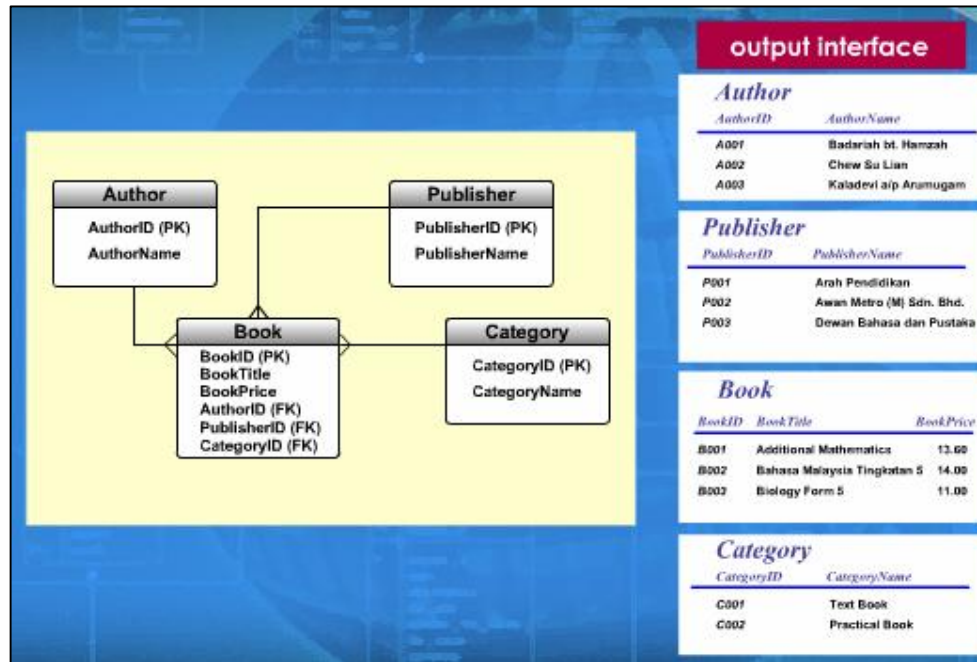
Step 3: creating primary keys

Step 4: creating foreign keys

**input interface**

The input interface consists of four forms, each corresponding to an entity in the ER diagram:

- Author Form:** Input fields for AuthorID and AuthorName.
- Publisher Form:** Input fields for PublisherID and PublisherName.
- Book Form:** Input fields for BookID, BookTitle, and BookPrice.
- Category Form:** Input fields for CategoryID and CategoryName.

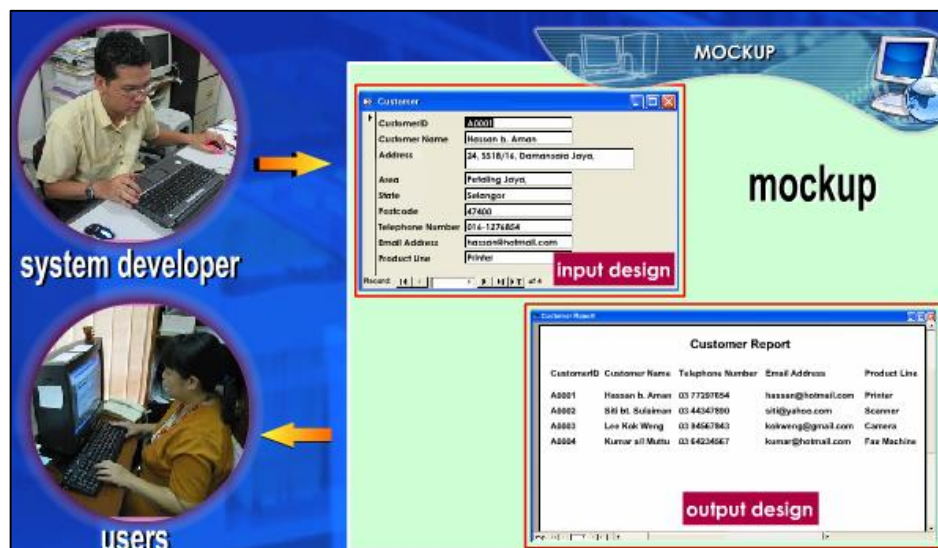


## EXTENSION : MOCKUP

A mockup is a sample of the input or output that contains actual data. A mockup is needed when handling a big database program so that the system developer and target user understands the system better.

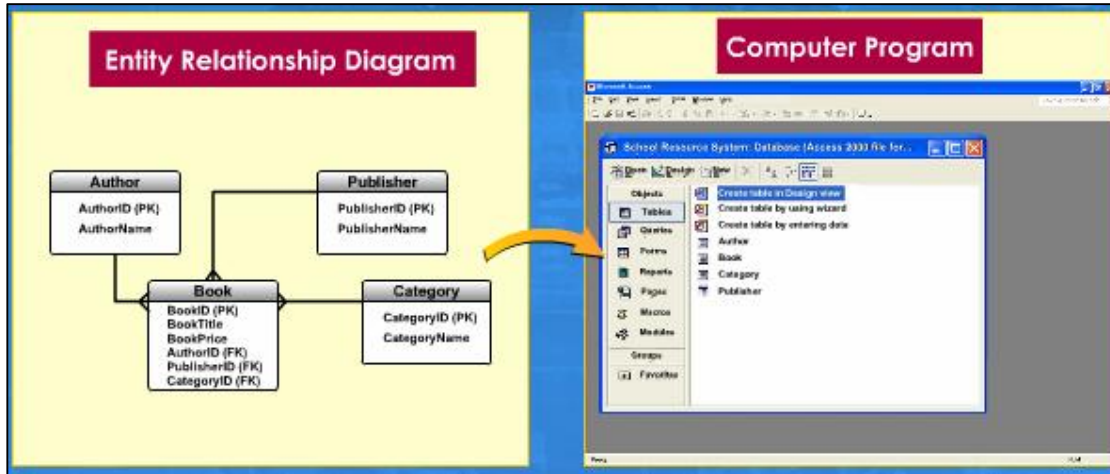
The system developers show mockups to users for their approval. It is important to involve users during input and output design stages because users finally will work with those designs.

Users must give their approval on all inputs and outputs before system developers proceed with database design. A mockup ensures input and output designs meet the needs of users.



## LESSON 8 IMPLEMENTATION PHASE

The Implementation Phase is the third phase of system development. In the Implementation Phase, the system developers will convert the technical plan and design plan into a computer program.



The Implementation Phase is the phase where a system is created.

## CREATING DATABASE



In this phase, a system developer uses database software such as Microsoft Access as the development tool to create a Scholl Resource System.

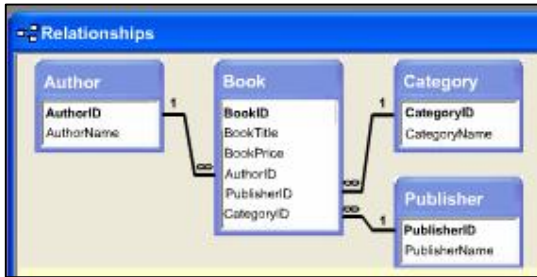
- See Demonstrations From the CD.

## CREATING TABLES

You can use Design View to create tables to store data. You are to create four tables: Author, Book, Publisher and Category for the School Resource System.

- See Demonstrations From the CD.

## ASSIGNING TABLE RELATIONSHIP



See Demonstrations From the CD.

Referential Integrity is a set of rules that ensures relationships between Tables within a database are all valid.

## CREATING QUERIES

- See Demonstrations From the CD.

## CREATING FORMS

You can use Forms to perform data entry and retrieve related data.

- See Demonstrations From the CD.

## CREATING REPORTS

You can use Reports to summaries information from the database. You can create new Report using wizard.

You can use Reports to retrieve information from the database using Table or Query.

- See Demonstrations From the CD.

## EXTENSION : TYPES OF RELATIONSHIP

### One-To-One

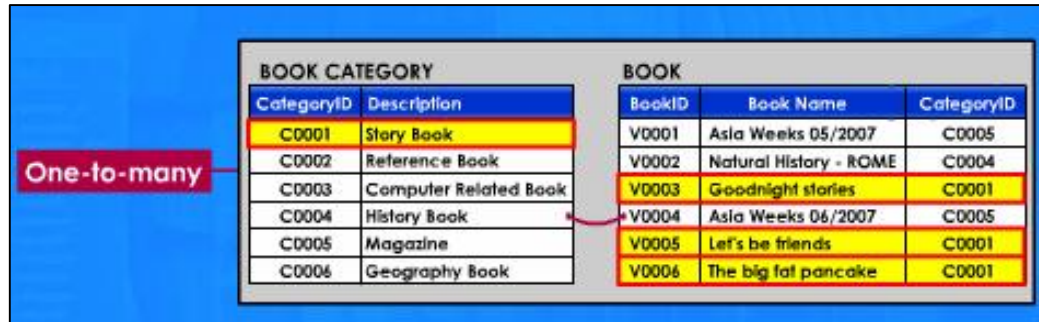
For example, each member has only one address record.

LIBRARY MEMBER		MEMBER CONTACT		
MemberID	Name	MemberID	Address	Phone Number
0001	Zaki b. Musa	0001	233-235, Jalan Pudu, 55100 K.L.	03 24756498
0002	Rahman b. Talib	0002	No. 19, Jalan Dua, Off Jalan Chan Slow Lin, 55200 K.L.	03 45786214
0003	Rehani bl. Yusof	0003	No. 9-2, Highway Centre, Jalan 51/205, 46050 P.J. SEL.	03 78771095
0004	Jamal b. Ghazali	0004	24, Jalan USJ 1/33, 47600 Subang Jaya, SEL.	03 80234801
0005	Sulaiman b. Hassan	0005	26, Jalan Loke Yew, 55200 K.L.	03 92211539
0006	Aminah bl. Hussein	0006	309, Jalan Desa Utama, 58100 K.L.	03 79827626

One-to-one

## One-To-Many

For example, each book has only one category. Each Category has many books.



One-to-one relationships happen when there is only one record in Library Member to another one record in Member Contact.

One-to-many relationships happen when each record in Book Category has many related records in Book.



## LESSON 9 TESTING PHASE



Testing Phase is the fourth phase of system development. It involves the system developer and user in the Testing Phase.

To ensure the quality of a database, the system developers act as quality controllers and will run tests on it.

The purpose of system testing is to ensure the system runs correctly and is error free.

### DATA ENTRY IN TESTING PHASE

Before testing the database, data must be entered into the Tables. Enter data for four Tables : Author, Book, Category and Publisher.

- See Demonstrations From the CD.

### TESTING ON DATABASE OBJECT

You can do the testing to verify that each database object is functioning. You need to conduct testing to detect any error present.

- See Demonstrations From the CD.

### TESTING ON FUNCTIONALITY OF THE SYSTEM

You can also conduct a test to verify that all systems work together properly.

- See Demonstrations From the CD.

### EXTENSION : DATA VALIDATION

Validation is the process of comparing the data to a set of rules or values to determine if the data is accurate.



For example, the quantity a user keyed in should be less or equal to 1000. The message will pop up if the quantity is over 1000.

A range check is another example of a validity check.

For example, the salary a user keyed in should be between 900 and 1500. The message will pop up if the salary is over 1500.

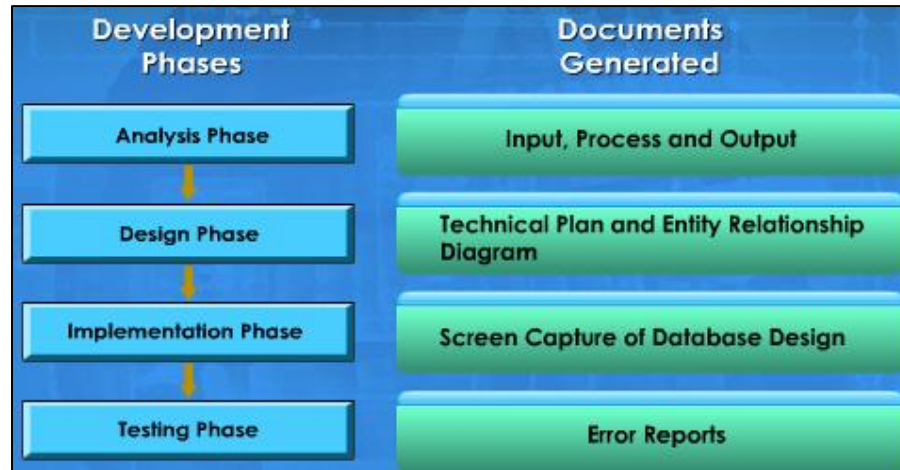


By implementing data validation, it minimises data entry errors.

## LESSON 10 DOCUMENTATION PHASE

The Documentation Phase is the fifth phase in system development.

Documentation refers to the written materials generated throughout phases of system development.



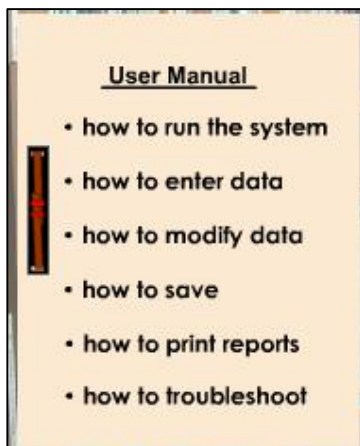
### DOCUMENTATION

Documentation is very important when the system requires changes in the future. Documentation tells new system developers what was done in the program.

It helps to reduce the amount of time a new system developer spends learning about existing programs.

A number of documents are produced during the development of a new computer application.

### User Manual



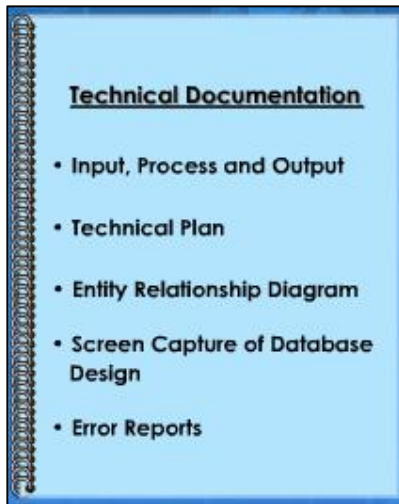
The User Manual helps the user to use the system.

User Manuals are written in simple language rather than technical language.

The User Manual should cover how to run the system, how to enter data, how to modify data and how to save and print reports.

The User Manual should include ways to overcome errors.

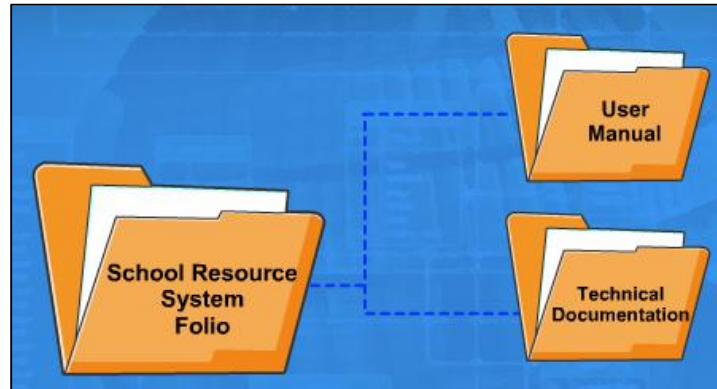
### Technical Documentation



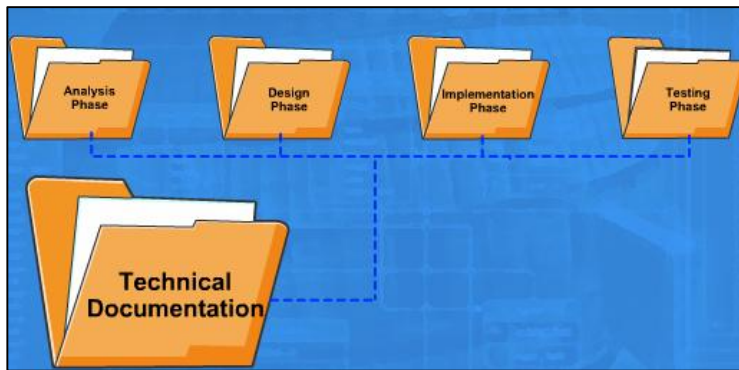
Technical Documentation is used by system developers as a reference.

Technical Documentation is useful for system improvement.

In Documentation Phase, User Manual and Technical Documentation are found in a folio.



You need to gather all the documents from the system development phases into a folio.



You can compile your Technical Documentation in the form of a hard copy.

Documentation can also be gathered in a soft copy.

All documentation must be ready by the end the system development. The system developers should ensure that all documentation is complete and accurate.

## EXTENSION : CREATING A HELP FILE

A Help File is a documentation file that brings together help information of all the database objects in a project.

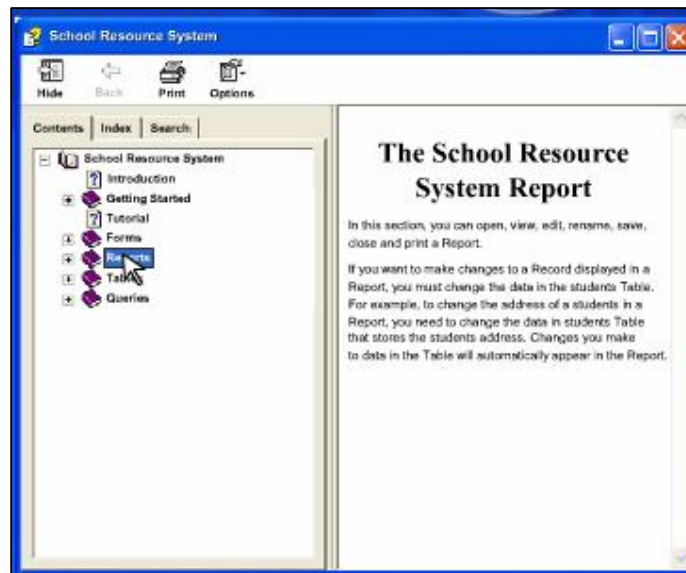
### Topics in Help File:

- introduction
- getting started
- tutorial
- Forms
- Reports
- Tables
- Querles

This file is a guideline for the user when the user needs any help in operating the program.

System developers will create a Help File at the final stage of a project.

For example, system developers can use Help Generator Wizard to create a Help File for School Resource System.



## LESSON 11 MAINTENANCE PHASE



The Maintenance Phase is the last phase in system development.

Maintenance refers to the changes in the system by fixing or enhancing its functionality.

System developers are involved in the Maintenance Phase.

### Three types of Maintenance:

- Corrective Maintenance
- Perfective Maintenance
- Preventive Maintenance

System maintenance involves checking, changing and enhancing to improve its performance.

All systems need to be maintained to take care of new requirements that were not discovered previously.

## CORRECTIVE MAINTENANCE

Corrective Maintenance is changing maintenance carried out to repair an error in system design.

This maintenance is used when errors are detected and need to be rectified.

For example, in the School Resource System, you need to add the International Standard Book Number (ISBN) field.

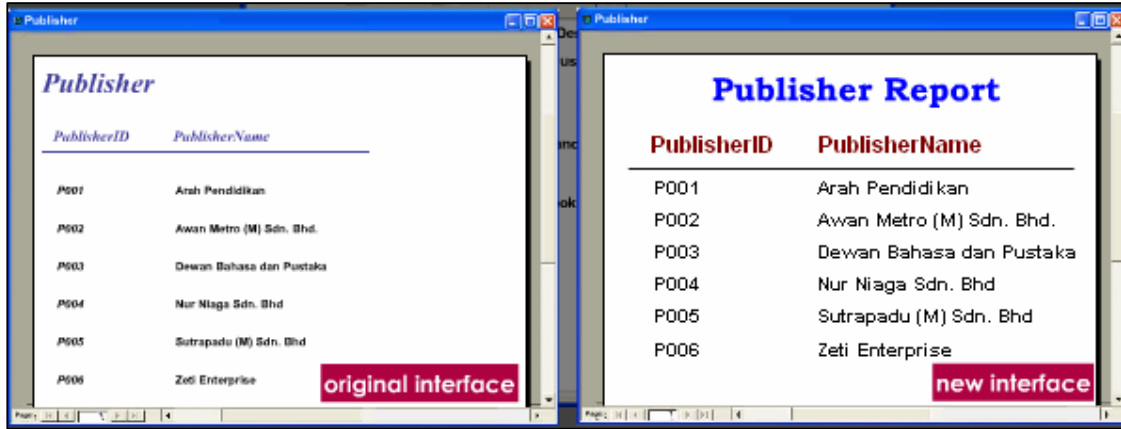
- See *Demonstrations From the CD*.

## PERFECTIVE MAINTENANCE

Perfective Maintenance is a system maintenance performed to improve a computer program.

Perfective Maintenance is done when the users require changes in the interfaces.

For example, in the School Resource System, you can modify the layout of the Book Form by changing the font colour, type, size and adding "Book Form" title.



## PREVENTIVE MAINTENANCE



Preventive Maintenance is a maintenance aimed at the prevention of future breakdowns and failures.

This maintenance is carried out when there is a possibility or risk of failure while operating.

For example, in the School Resource System, you want to assign a password before a user accesses the database.



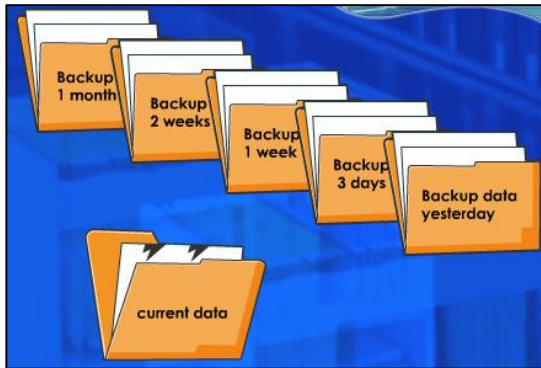
Some users may only be allowed to view data in a particular Table.

Some may only be allowed to add records to a Table while others may be given the right to view and modify information.

The use of passwords thus helps to prevent unauthorised access to confidential information.

Preventive Maintenance needs to be done to avoid possible future problems.

## EXTENSION : BACKUP A DATABASE



Backup is a process of making copies of data. To backup a database involves the backup of a whole database system.

The backup can be used to restore the original data to prevent data loss caused by virus or power failure.

Backup of database should be done regularly. In this way, you can still access to your backup if anything goes wrong.

Backups should be done on an external medium with a USB memory stick, external hard drive, CD, DVD or server.

## LESSON 12 DEVELOP A DATABASE PROJECT

### PROJECT WORK

- See example From the CD.

## LESSON 13 WEB-BASED APPLICATIONS

Technological advancements in large database development and high speed digital transmission networks will result in global information systems.



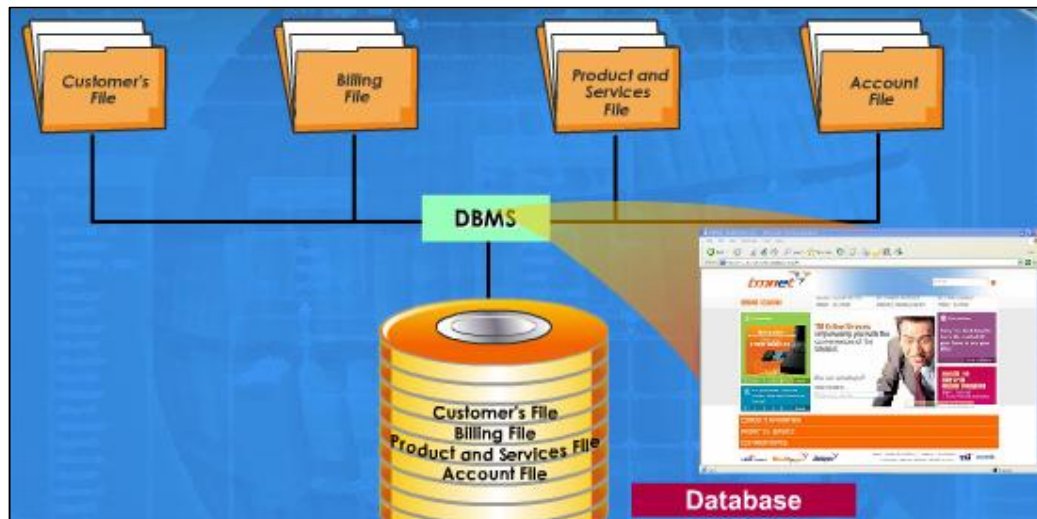
These developments will influence how people interact with information. Through the Internet, a user can get fast responses and have two-way communication using video conferencing and e-mail.

By using the global information systems, people from all over the world can be equipped with knowledge in many areas.

### GLOBAL INFORMATION SYSTEM

Web-based applications are delivered to users from a Web server over the Internet.

Web-based applications store information in a database system such as Microsoft SQL Server or Oracle.



### Examples of Web-based applications:

- Global Resource Centre
- Global Disaster Alert and Coordination System
- Global Data Monitoring Information System

## GLOBAL RESOURCE CENTRE



Global Resource Center is a Web-based information system used in developing human resources for health.

Global Resource Center offers a global library of human resources for health, focusing on developing countries.

For example, healthcare personnel can store their individual details in this database. This database can be accessed by a country that needs the healthcare support.

The healthcare personnel can then be contacted via this Web-based database and called to the service.

By using this system, countries with health needs can be met. This resources center is managed by Capacity Project and USAID-funded global project.

## GLOBAL DISASTER ALERT AND COORDINATION SYSTEM



Global Disaster Alert and Coordination System is a Web-based disaster information management system.

Global Disaster Alert and Coordination System stores disaster events in the database.

The data is automatically analysed to determine the help needed by the affected country.

For example, from the Current Disaster Events column, you can be informed of the flood that happened in China.

This alerts people of the surrounding regions to evacuate and move to safer places.

## 6.0 INFORMATION SYSTEMS

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People living in Vietnam and Laos will take necessary precautions when floods happen in China.

By using this system, it helps to coordinate the international responses during the disaster.

Global Disaster Alert and Coordination System is a joint initiative of the United Nations and European Commission.

### **GLOBAL DATA MONITORING INFORMATION SYSTEM**

Global Data Monitoring Information System is a Web-based information system that collects data worldwide to sustain social and economic progress in all countries.



Global Data Monitoring Information System is to help countries overcome problems of poverty, health and education.

For example, data collected on HIV statistics is analysed and it was found that millions of death were caused by AIDS.

By using this system, medical assistance can be promptly given to those countries affected.

It is an effort by Millennium Development Goals under the World Bank group.