

**PENANG SANGAM HIGH SCHOOL**  
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**LESSON NOTES 18**

**Year/Level: 11      Subjects: Computer Studies**

<b>Strand:</b>	CE 3 Information management
<b>Sub-strand:</b>	CE 11.3.1 Storing, managing and retrieving information
<b>Content Learning Outcome:</b>	DBMS, Menu-driven, Control the integrity and security of data, Common Errors in a Database, database security

**Lesson Notes**

**Database Management System(DBMS)**

Is a program that manages the following five functions:

*Create records*

- ❖ A DBMS provides a structure for the data and identifies the relationships among the data

*Update records*

- ❖ A DBMS allows for the updating of files in the entry of new data and it sees that new data conform to the defined structures already existing.

*Maintain records*

- ❖ A DBMS corrects errors of misspelling, omission in content eg. File name or data.
- ❖ It allows for changes in the structure of the database in cases where important information may have been left out or useless information included.

*Provide Access to records*

- ❖ Data may be accessed through the use of command languages where the user types in the commands or prompting systems where the user selects commands from menus.

**Menu-driven**

When a user makes a selection by tapping/clicking on the list format or graphics, it takes them to the next menu screen until they complete the desired outcome. E.g. websites, software

Advantages

The user does not need to remember a lot of commands

Disadvantages

Menus take large space

*Control the integrity and security of data*

Most systems perform the following to control the integrity and security of files

- a. *Maintain conformity* to the database definition eg. By comparing new entries to the database definitions to see that no errors are made.
- b. *Control updating* particularly when many users use the database simultaneously. Problems may arise when two users are trying to update the same data at the same time.

- c. *Assure the existence of data* in the case of technical problems which may cause the loss of data. This may require complicated techniques in restoring the data.
- d. *Control access to the data* to ensure that users can only see data which they have legal access to
- e. *Resource locking* refers to maintaining a database so that its data are accurately accessed and problems which can rise from having two or more users working interactively with the data can be prevented. For example, the double booking of a plane seat etc.

### Common Errors in a Database

#### *Content Error*

- ❖ Refers to wrong input or misspelling.

#### *Structural Error*

- ❖ Refers to error or flaws in the programming or definitions of the database.

Some common DBMS are: MS Access, Oracle, MS SQL Server, MySQL and DB2

The key components of DBMS software consist of the following:

### **Data Dictionary**

A data dictionary contains a description of the structure of data (fields) used in the database.

### **Query Language**

- A query is simply a question that you can ask the database to provide relevant and specific information only on demand.
- One of the most widely used query language is called the Structured Query Language (SQL).
- SQL uses commands such as ADD, COMPARE, and DISPLAY, SELECT, JOIN, UPDATE to select relevant and specific information only.

### **Report Generation**

This part of the DBMS software enables a user to design and format reports for presentation and decision making.

### **Database Security**

- ❖ Concern is with preventing unauthorized users from gaining access to databases either directly or through a network.
- ❖ Another serious concern is the prevention of the intrusion of a virus.
- ❖ There have been numerous cases where computer viruses have been launched into databases doing un-repairable damages.

### Questions

- 1) What is the purpose of a DBMS and how it is different from a database?
- 2) What are the drawbacks of using file systems to store data?