

## **Data Base Management System in Library Usage - An Overview**

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### **Abstract**

The software that allows one or more persons to use, store, delete, modify and retrieve data that is stored in a database is a Data Base Management System (DBMS). Basic characteristics of DBMS are : Data Manipulation Language (DML), Data Definition Language (DDL), Data Base Manager. The author provides a schematic representation of a DBMS system and mentions its components i.e. entity set, attributes / keys, and relationship. The DBMS enables a user to create and update files, to select, retrieve and sort data and to generate reports. Therefore, the DBMS is a vital part of the information management in libraries.

### **Introduction**

In the library horizon past few years have witnessed drastic change so far as computer service is concerned and in the manner we store, retrieve and present computerised information. The impact of DBMS on Library and Information field is enormous. A library / information centre has a large amount of data kept for a long period of time in a computer. This data might include information about books; i.e. Author, Title, Publisher, price etc. Typical relationships that may be presented are, between Author and Title, Publisher and Authors, Publisher and Title etc.

Data, as above, that is stored more or less permanently in a computer are called Database. The Software that allows one or more persons to use store, delete, modify and retrieve data that is stored in a database is a Data Base Management System (DBMS).

### **Basic Characteristics of DBMS**

Some basic characteristics consisting of DBMS are mentioned below. A schematic representation of a DBMS System is provided in Fig 1.

#### **i) DML (Data Manipulation Language)**

In relation to library database, suppose a user wanted to know whether a specific book of an author is available in the library or not, he / she

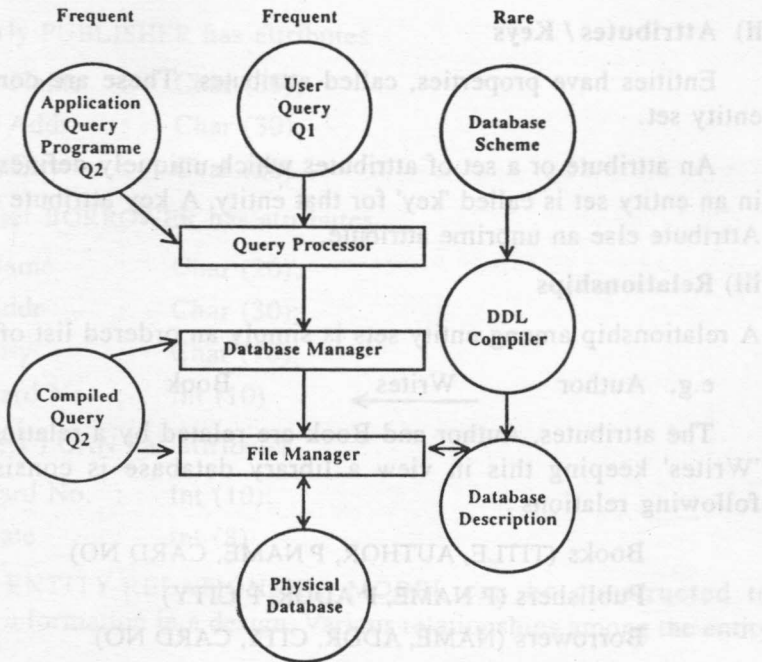


Fig.1 : Schematic representation of a Data Base System

will formulate his / her query in a query language called Data Manipulation Language (DML).

## ii) DDL (Data Definition Language)

Description of database is written in a particular computer language (like PASCAL, C, COBOL, etc.) which is called HOST language or DDL.

## iii) Data Base Manager

The processed query is passed to a collection of programmes written which are called 'Database Manager' which translates the query into terms that 'File Manager' can understand.

## Components

Some components that consist the physical database are :

### i) Entity set

Entity is an existing and distinguishable thing i.e. we can discriminate one entity from another. A group of similar entities form an 'Entity Set';

e.g. A group of books

A group of authors

A group of publishers etc.

## ii) Attributes / Keys

Entities have properties, called attributes. These are components of entity set.

An attribute or a set of attributes which uniquely defines each entity in an entity set is called 'key' for that entity. A key attribute is the prime Attribute else an unprime attribute.

## iii) Relationships

A relationship among entity sets is simply an ordered list of entity sets.

e.g. Author  $\xrightarrow{\text{Writes}}$  Book

The attributes, Author and Book are related by a relationship called 'Writes' keeping this in view a library database is consisting of the following relations :

Books (TITLE, AUTHOR, P NAME, CARD NO)

Publishers (P NAME, P ADDR, P CITY)

Borrowers (NAME, ADDR, CITY, CARD NO)

Loan (CARD NO, DATE)

Books, Publishers, Borrowers, Loan are 'Entity sets' where

P Name = Publisher's Name

P Addr = Publisher's Address

P City = City name of the publisher

Card No. = Library Card Number

Date = The date on which book was borrowed.

In a database language, Char(n) means 'n' number of characters (e.g. a b c d ....., or a name) and int (n) means an integer number of n-bits (e.g. 232 is an int 3(n))

1. So an Entity set Books has attributes

Title : Char (30); i.e. Title of book is of 30 characters, e.g. Principles of Database Management.

Author : Char (20);

P Name : Char (30);

Card No. : Int (10);

2. Similarly PUBLISHER has attributes

P Name : Char (30);

P Addr : Char (30);

P City : Char (20)

3. Entity set BORROWER has attributes

Name : Char (20);

Addr : Char (30);

City : Char (10);

Card No. : Int (10)

4. Entity set LOAN has attributes

Card No. : Int (10);

Date : Int (8)

So an ENTITY-RELATIONSHIP MODEL can be constructed to summarise information in a design. Various relationships among the entity sets are:

- Relationship 'PUBLISH' between 'PUBLISHERS' and 'Books' which is one book can be published by only one publisher. But a publisher may publish more than one book. So between 'PUBLISHERS' and 'Books' relationship 'PUBLISH' is a one-many relation (i.e. One publisher  $\equiv$  many books; one book  $\neq$  many publishers)
- Relationship 'BORROWS' between entity set 'Books' and 'BORROWERS'. A borrower can borrow more than one book i.e. many borrowers many books. So 'BORROWS' relationship is a many-many relation (i.e. many borrowers = many books).
- Relationship 'IS GIVEN TO' between 'LOAN' and 'BOOK'. Only limited number of books can be given on loan to anybody and here it is assumed that one book can be issued to one borrower and again after returning the issued book another book will be issued. So 'IS GIVEN TO' relationship is one-one relation. (i.e. one book is given on loan at one time).

## Conclusion

The database improves efficiency for retrieval of information because all the files are found logically related in a single place. All uses of the database must be handled through the Data Base Management System. The DBMS enables a user to create and update files; to select, retrieve

and sort data and to generate reports. Therefore the DBMS is a vital part of the information management in libraries.

## References

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