Chapter 5

Block diagram specification of the proposed Bibliographical Database Management System

5.1 Preamble.

Database functionality is necessary for a large category application which not only confines with in traditional commercial application such as pay roll system or personnel record management but also for modern library. Such applications are difficult to implement because these require a powerful data model for storing a large quantity of information and a powerful operational model to compute the complex operations required by the application. In this chapter, the required data element and data flow of proposed BDMS are designed for library

5.2 BDMS Design.

Systematically approach adopted to understand the problems in designing the database application. The basis for a database specifies the problem that is to be solved the ability of resources that can be used in the solution or some likely approaches to the solutions. To formulate the blueprint of more convenient BDMS model, it can be broken to split steps.

➤ Determine what functions or facial appearance the library would like to streamline.

The first indispensable is to congregate a full understanding of the real needs of the user of a new automated system and determine what function the library would like to automate. Try to identify those repetitive tasks which now occupy of a large amount of man hours. So, priority has to be given for routine works

➤ Decide which capabilities are required to support each specific function. Develop a written checklist of specific functions that are essential and those which are desirable. In addition to issue/return, user database creation and reservation what other functions are needed? What sort of reports must be generated by the system? Does
the library should use the existing student or patron ID number of the Institute? Whether financial accounts conform to certain bookkeeping standards? How does management and clients want to search the database?

- Determine how much data need to be stored: In this step decision has to be taken about the number of titles, volumes, clients, order placed, notices sent, number of vendor etc. In addition books, materials like non-print materials, un-catalogued items, equipments kits, software etc also have to be considered.

### 5.2.1 Identify the basis for the Database Requirement.

A library automation package has to fulfill the functions of acquisition, cataloguing, serial control, circulation control, information processing and service, documentation, information retrieval and processing. Effective Library automation software should be able to mechanize all of the works in library/information center. Thus it helps the library staff to find more time for the vital functions of the information collection, organization and services. The requirements assessed for the central library IIT Kharagpur as a result of an involved survey visiting each section as well as listening to comments of the staff concerned lead to the following points.

- Determination of those functions or features the library would like to be automate.
- Listing of essential and desirable functions.
- Identify what the library absolutely must have vs. what would be nice to have.

### 5.2.2 System Design.

In the process of implementation of Bibliographical Database the various tables are prepared to handle different function of the database. These tables are describe in proceeding chapter seven. System interaction diagrams are prepared to show the interaction between different subsystem and subtasks of a subsystem. Similarly data flow diagrams (DFDs) are drawn to represent the input data to the system, various processing carried out on the data and the output data generated by the system.
Skeleton of System:

Figure 5.1- Integrated Library Information System

Figure 5.2- System Interaction Diagram for the Acquisition.
Figure 5.3- System Interaction Diagram for the Technical processing.

Figure 5.4- Circulation.

Figure 5.5-Current Journal.
Data Flow Diagram

Figure 5.6 - BDMS.

Figure 5.7 - Acquisition Module of BDM Model.
5.8- Processing of Books.

Figure 5.9 -Circulation processing.
Figure 5.11- Conceptual Data model of library.
5.3 Reference.


15. PUJARI, Dr. ARUN KUMAR. *Database Management System*. ISTE; Learning Materials Centre. New Delhi, 2001.


Chapter 6
ER Model of Library In-House Operations Acquisition, Circulation

6.1 Preamble.

The entity Relationship model has existed for more than 20 years ago since the original description of Chan3,4. However E R modeling was never standardized. In an effort to standardized this, a graphical modeling tool called E-R diagram, based on E-R model had been proposed. In this diagram visual symbol are used to indicate each kind of constraints of the E-R model. In other words, the model can be carried out with the help of pictorial representation of entities, attributes and relationship. In this chapter the concepts involved in complex E R modeling for BDMS is considered. The E R model includes semantic concepts other than entities relationship and attributes to study a complete picture mapping of data with E R model for BDMS 13,14,15.

6.2 E R Model.

The basic entity-relationship model as originally proposed by Chen7, provides two modeling primitives (i.e. entities and relationships) for representing database. The E-R data model vies the real world as a set of basic objects (entities) and relationships among these objects. Formally, the basic entity-relationship schema is denoted as a set \( S=\{D, A, E, R\} \) where \( D \) is the database domain, \( A \) is the set of attributes, \( E \) is the set of entity sets and \( R \) is the set of relationship sets. An entity may be concrete (a user, or a book) or abstract (holiday or a concept) 9,10,12,14 which is an object that exists and is distinguishable from other objects. For instance ABHAY KUMAR RASTOGI, ID 9962702 is an entity, and he could be uniquely identified as one particular student of Indian Institute of Technology, Kharagpur. This entity-relationship diagram depicts the major concepts and relationships needed for managing BDMS for capturing the necessary attributes and relationships.
Figure 6.1 - E R Diagram Symbol.

Figure 6.2 - E R Diagram for library In-House Operations Circulation.
Fig 6.3 - E-R Diagram for Circulation

Item $\rightarrow n \rightarrow$ Reserve $\rightarrow m \rightarrow$ Borrower

Fig 6.4 – E R Diagram for item, reserve, borrower

Figure 6.5 - E R Diagram for library In-house operations of Acquisition.
6.3 Reference:


3. CHEN, P. The entity-relationship model: Towards a unified view or data. ACM Transactions on Database Systems 1, 1 (March 1976), 9-36.


