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# SOFTWARES FOR LIBRARY AUTOMATION DATABASE CREATION & SEARCH

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## 1.0 Introduction

The need for information is growing and libraries "the store houses of information" play a major role in the collection, organisation and dissemination of information. Availability of precise and timely information is critical. Keeping this in mind libraries in India are also being computerised and automated to meet the growing needs.

The INFLIBNET Programme in the initial implementation proposes to computerize University Libraries, create databases of their holdings at a national level and link the libraries through suitable networking.

This paper discusses the softwares to be used by the participating libraries for the database creation, search and automation.

## 2.0 Standardization

When we talk of a computerised database of bibliographic records of library materials, the volume of the database in question would be huge. Thus some standardization in the data elements, standard procedures of data-entry and storage of data is essential.

In the INFLIBNET Programme, a computerised union catalog is being developed to provide a broad perspective about information resources available in the participating libraries. A set of bibliographical standards for the participating nodes in INFLIBNET is required to ensure compatibility for interconnection and easy transfer of information. A Task Group involving eminent professionals in the field was constituted to decide on the bibliographic standards for data capturing and data exchange. The data capturing format standardized by INFLIBNET is based on the Common Communication Format (CCF), whereas, for exchange of data/information ISO 2709 format has been recommended. INFLIBNET Programme, has generated a document, on the Guidelines

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for Data Capturing. This document provides guidelines for creation of machine readable bibliographic records of books, serials, theses and dissertations with illustrative examples. Efforts are in progress for generating similar documents for non-book materials, research projects, etc.

### **3.0 Application Software**

The application software is the most critical subsystem in library automation and the success of automation depends on its correct implementation. Library Management Software, developed commercially and institutionally, deals with the various house-keeping activities of the library: creation of databases and information retrieval & dissemination. Some of the software packages available in India are:

- 1) CDS/ISIS
- 2) LIBRIS
- 3) MAITRAIYEE
- 4) TULIPS
- 5) LIBSYS
- 6) DELMS

One of the most popular software in India for bibliographic database creation is CDS/ISIS. It is a menu driven generalized Information Storage package which allows user to build and manage structured and textual database. CDS/ISIS is good for the database creation and maintenance. It is also versatile in Report generation and information retrieval.

The CDS/ISIS package is available on various platforms like DOS, Novel Network and VAX/VMS. The beta version of UNIX CDS/ISIS is also available. Very soon UNESCO will release the UNIX version. To start with the database creation, INFLIBNET recommends the use of CDS/ISIS package. As the package is CCF and ISO 2709 compatible, switching on to some other software will be very easy. Moreover the data files created in CDS/ISIS under different operating systems are compatible which solves the problem of information exchange.

So far as the house-keeping functions are concerned, CDS/ISIS does not have any inbuilt house-keeping function. Efforts are being made by NISSAT to add the house-keeping functions in CDS/ISIS. SANJAY software is such an effort in that direction by NISSAT.

Several modules have been prepared at INFLIBNET using CDS/ISIS to facilitate libraries for creating their databases with predefined

formats and standards. This will also ease the task for creation of the Union catalogues. One such module is described below.

#### **4.0 Software for Serial Database Creation:**

The Software is completely based on CDS/ISIS Version 2.3 and 3.0. This allows user to enter data in predefined databases. The main objective of developing this additional software is to help libraries to create a computerised databases of holdings of periodicals in their libraries. This in turn will also help INFLIBNET to create a Union Catalogue of periodicals by collecting databases from various university libraries. The software allows user to enter data in the database and to generate several reports. Above this, a user friendly retrieval module is added to make effective use of the database by the user.

There are four main modules provided in the system:

- a) **DATA ENTRY MODULE** : It enables the entry of data in the system.
- b) **REPORT GENERATION MODULE**: There are mainly three reports provided in the system. User will be able to generate these reports by single key stroke. The reports are Catalogue card, Subject catalogue card and Title Index.
- c) **INFORMATION RETRIEVAL SERVICES**: A user friendly interface is provided to retrieve information with predefined data element such as Title, ISSN, Subject descriptors, Frequency and Publisher. In addition to this, Free Text Search and Boolean Search is also included.
- D) **INFORMATION EXCHANGE MODULE** : This module will allow the user to export the database in ISO 2709 format. This will help them in exchanging the data. By using this module user will create a data file, which can be directly merged with the Union Catalogue created at INFLIBNET.

**A similar software for the creation of book database has also been developed using CDS/ISIS, and a software for the creation of these & dissertations is being developed.**

#### **5.0 Software for Library House-keeping Activities :**

There is a requirement for software which caters to the various house-keeping needs of a library and follows all the standards and format prescribed by INFLIBNET.

INFLIBNET is having Memorandum of understanding with

DESIDOC, Delhi for the Defense Library Management System (DELMS) V2.0. DELMS is written in COBOL language and is usually implemented on 386-based multi-user systems with UNIX operating system. DELMS is an integrated software for library automation which includes house-keeping functions like Circulation control, Acquisition and On-line catalogue.

The Distinctive feature of DELMS is variable field and variable record length based on ISO 2709 Format. It also follows the CCF standard.

Modifications in some modules of DELMS have been done in order to meet the needs of University Libraries. Modifications in some modules is still going on. The software is to be loaded at one or two universities for Beta testing. Feedback from the universities will help make the required modifications.

## **6.0 Retrieval of Information from the Union Catalogue**

INFLIBNET Programme is in the process of creation of

1. Union Catalogue of periodicals
2. Union Catalogue of theses & dissertations
3. Union Catalogue of books

Considering the Union Catalogue of periodicals, data collected from a University Library with large holdings forms the master database and the holdings database. This data is available in the form of a Union Catalogue and adheres to the standards and formats set by INFLIBNET. Data sent by other Universities has to be checked against the master database. If the periodical exists in the master database, the location field has to be updated, and holding details noted in the holdings database. In case the periodical does not exist in the master database, an addition of the periodical details is required. Before adding the data to the master database, the details are verified for authenticity & spelling mistakes. Software for automating this procedure has also been developed. Dataflow is as shown in Figure-1. As the initial phase of database creation is in CDS/ISIS, this software is developed in CDS/ISIS pascal interface. Once the union Catalogue of periodical is developed, Retrieval of data from this is most critical. Software for this has been also developed in CDS/ISIS pascal Interface. The retrieval software has been optimized to be fast & efficient.

The software has user friendly menu the following options:

1. University Details: Information Details on the various Universities whose data forms the Union Catalog is available.

2. Title Search
3. ISSN Search
4. Keyword Search
5. Boolean Search

Printouts of the search results are also possible either on-line into a printer or into a file.

Availability of Journals at particular locations, the holdings details, i.e. available issues and missing issues can be obtained.

Demonstration of this Union Catalogue of Periodicals & the Retrieval Software can be seen.

A Similar software for the Union Catalogue of Books, and Theses & Dissertations is also being developed.

### **7.0 Access of the Union Catalogue**

As of now the Union Catalogue is being developed in CDS/ISIS on Novel Netware and the Unix versions of CDS/ISIS is still under Beta testing. The Retrieval Softwares are developed in CDS/ISIS - Pascal Interface.

Our requirement is a multi-user environment capable of handling large volumes of data, a reliable database management systems and simultaneous access and operation of the databases.

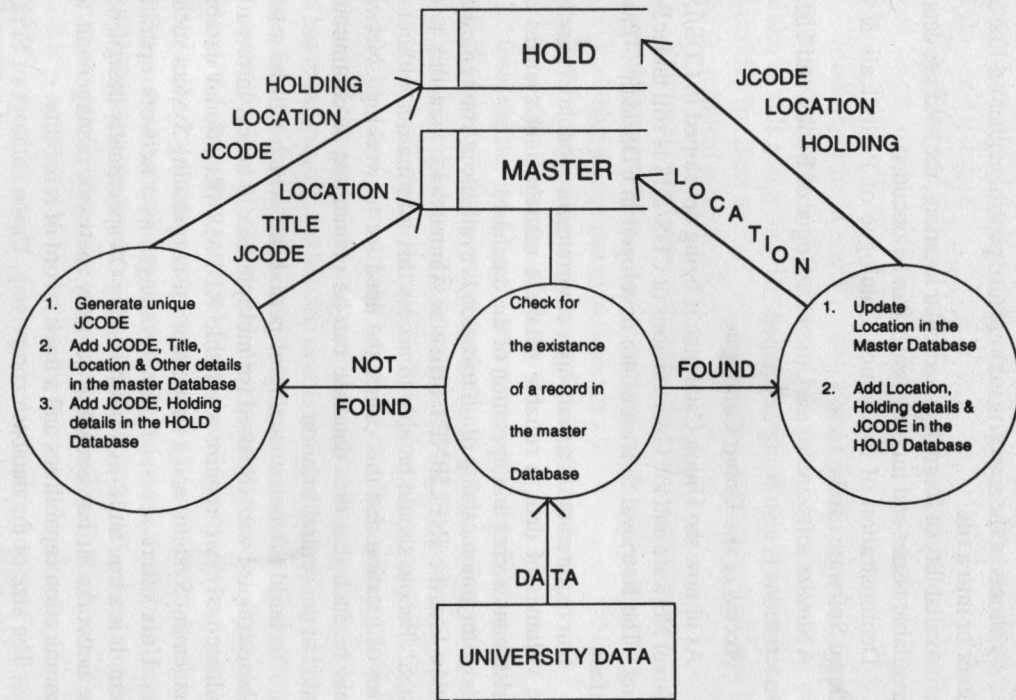
If the union catalog of information is available at one centralized location like the INFLIBNET office at Ahmedabad, then this is not enough. People should be able to access this information without the barrier of location and this comes the need for networking. Network should be such that the database can be maintained & continuously updated at the central location.

To build the union catalog of periodicals which will be a large database coupled with the need for multiple user to access information simultaneously, we require a reliable RDBMS (Relational database Management System) and a stable multi-user operating System such as unix. Unix offers several major advantages as a network operating system. It is a true multi-user, multitasking OS specifically designed for large networks. It has excellent security, network management and communication capabilities and a track record of reliability.

The size of the database comprising, Union catalogs of Serials, Theses & Dissertations, and Books would be voluminous. Fast & efficient retrievals of data from these databases is critical. The need of a RDBMS arises when fast data retrievals is required simultaneously from



FIGURE-1



different locations over a communication network.

Communication to the Novel server can be done using Netware connect of a Communication Server over PSTN lines or using data networking from remote locations. Looking into the large volumes of data that would be generated and the number of people accessing the database simultaneously the Union catalogue would be shifted into an RDBMS on the UNIX platform. INFLIBNET is in the process of obtaining a RISC based machine with 2 GB Harddisk Space and an RDBMS. Software for Union Catalogue Updatons and Maintenance would be developed in RDBMS/C interface.

Major software development efforts would be required in the retrieval of information from the Union Catalogue.

There would be two types of retrieval mechanisms available:

1. Off-line Search
2. On line Search

Any user wanting to search the Union Catalogue can send a query in a pre-specified format as to what he wishes to search using electronic mail. The Software will decode the in-coming mail, search the Union Catalogue, and send a return mail with the answers to his queries. This software is at present being developed at INFLIBNET. Dataflow is as shown in Figure-2. This type of search mechanism is called Off-line Search as it does not involve direct on-line communication between the user & the database.

Retrieval Software for On-line Search would be similar to that developed in CDS/ISIS Pascal, conducting search by ISSN, Title, Keyboard or Boolean Search in the case of the Union Catalogue of Periodicals. Software for search of the Union Catalogue of Books, Theses & Dissertations would also be available.

On-line Search would be possible through direct STD DIALUP, through X.28 Inet, X.25 Inet or through Login via NIC-NET or ERNET. At present INFLIBNET has only a X.28 dial-up Inet connection, but it is in the process of getting a X.25 INET connection. Direct Connectivity through NICNET and ERNET is in the process of being established.

### **Conclusion**

The process of database creation at University Libraries has been initiated with the help of the standards defined & the softwares for database creation in CDS/ISIS. The generation of the Union Catalogue of Periodicals, Theses & Dissertations, Books is an on-going process

and the size of the databases is growing rapidly. Efficient & User Friendly retrieval Softwares are available in CDS/ISIS-Pascal Interface.

Software for Library Automotion and House-keeping functions is being tailored to meet the needs of University Libraries.

With the increase in size of the database, and need for efficient data communication, transfer of the Union Catalogue from CDS/ISIS on Novel Netware to RDBMS on UNIX is in the pipe-line. With the establishment of proper communication networks, on-line, off-line searches would both be soon possible.

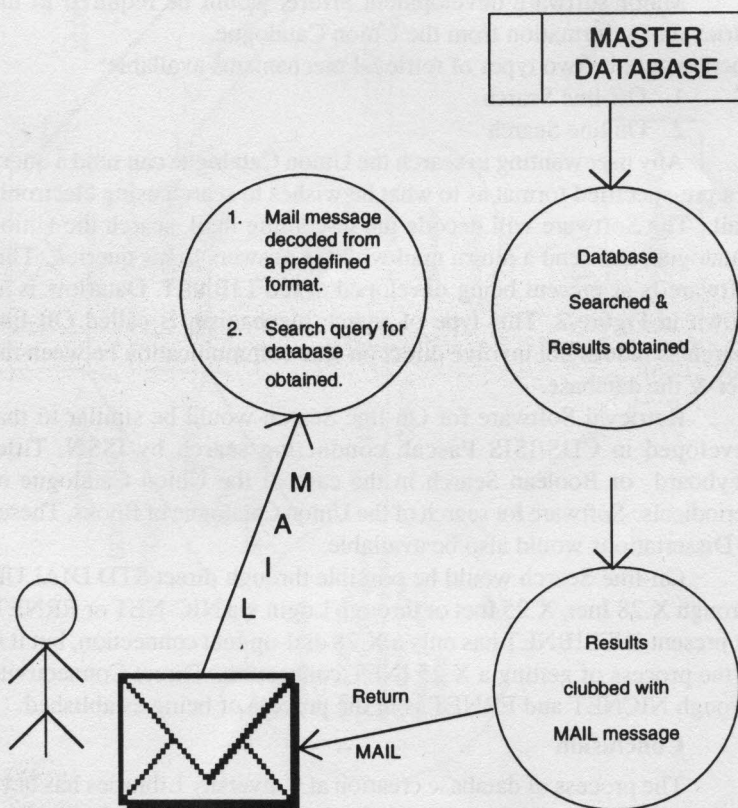


Figure - 2