Chapter 7

Integrated Library Management Software
CHAPTER 7
INTEGRATED LIBRARY MANAGEMENT SOFTWARE

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1 Introduction

Software is the means by which a general purpose computer system is made to perform specific tasks. It contains a complete and clear description of each task in terms of available operations of the computer. In other words, software may be conceived as a set of programs for a computer. Each program is a complete specification of the processing to be performed on the data supplied to the computer.

The importance of software cannot be over emphasised because it is the software which supplies power of the computer to the user’s problems. It has been stated that the rapid increase in the capabilities of computer systems has not been matched by corresponding increases in availability and quality of software. Hence, there appears to be a software ‘backlog’. This may be due to the fact that computers demand completeness and precision in their instructions. Computers do only what they are told to and therefore, their orders cannot contain any ambiguity. Writing software involves a firm understanding of the application domain and also a knowledge of the technology domain such as of computer system and programming language; also an ability to communicate and observe; and talent for innovation and integration. Software development requires many skills and varieties of knowledge. These might perhaps be the reasons for the existence of software ‘backlog’. Software is generally grouped into two categories: (a) systems software (b) applications software. (a) System software is generally looking after by hardware, so we are not concern with this

2 Applications Software

As has been mentioned earlier, software may conveniently be divided into; systems software (i.e., programs designed to control the execution of other programs and to utilize hardware effectively) and applications software (i.e., programs to solve users problems). We look at some general points on applications software. Applications software
comprises the procedures and instructions which enable computer systems to do what the user requires. Software design essentially involves three abstract concepts. These are: algorithms, data structures, and file structures. Algorithms are procedures; or recipes, for computation. They may either be numerical or non-numerical, for example, sorting, text searching, etc. Data structures on the other hand, indicate the way in which information is organised in the computer's memory, for example, in array or in tree structure.

File structures indicate the way in which large amounts of information is stored for example: sequential, direct access or inverted file. Although, users need not have an in-depth knowledge of these concepts, it is desirable to have some understanding of the terminology, since it is often used in the literature of software vendors. Once a software procedure is expressed in these terms, it can be coded into a form which the computer can use, by means of programming languages of which there are a variety in use. It is not necessary for users of a package to have any knowledge of the language in which it is written.

There are literally thousands of applications programs designed to help the user use the computer to accomplish some task or the other. A growing number of programmers the world over, are working alone or in teams developing new applications in response to the demand for software. The potential is really boundless, and new applications are being developed for solving different problems in new areas using computer. Even so, five types of computerised applications are widely used in all professions.

Increased competition among software companies has provided the user with a wide selection of software that not only addresses new needs but also allows choice among a series of offerings in the major application areas. Trends towards making applications software easy to use, have further added to benefits that end-users enjoy.
Although the bulk of applications software is still character based, an increasing percentage is following Graphic User Interface (GUI) formats. This adds to the ease of use of the software and allows the beginners to utilise it. In other words, the applications software that is being currently developed is more user-friendly. In the present situation software developers have been financially motivated to listen to the demands of the users, and the users are asking for simpler and better software.

3 Software Scenario

3.1 Stage 1 (1960-70)

Payroll was amongst the first applications taken up for computerisation by most Indian business houses. This was more so in medium-to-large companies having more than 500 employees, where manual computation was time-consuming as well as error-prone.

3.2 Stage 2 (1970-80)

Corporate realised that financial accounting was quite tedious and eminently computerisable. In the absence of interactive computers, companies would raise manual vouchers and enter them into a computer in a batch mode and then do processing and take put financial and accounting reports. Some amount of inventory accounting like stock valuation was also carried out at this stage.

3.3 Stage 3 (late 1980 early 1993)

The application software scenario in India underwent a paradigm shift with the availability of PCs, Unix-based minicomputers and networking, around 1987. At this stage, the aura around a computer was removed.

3.4 Stage 4 (1993-98)

Lack of integration was a fundamental problem with several in-house developed systems. At the same time, talk of integrated, standard packages or enterprise management systems (EMS) began to be heard worldwide and in India. These later became known as enterprise resource
planning (ERP) systems. The introduction of ERP was a paradigm shift, not only in India, but worldwide. ERP is a standard product, which manages integrated business processes across the entire enterprise. It gives an integrated view of an enterprise as a whole, and breaks functional silos. In a way, ERP brought about collaborative computing.

3.5 Stage 5 (1999 to present)
Widespread availability of Internet within India was the next paradigm shift for the Indian application software industry. Internet presented a low-cost medium for connecting companies to their customers on one end, and suppliers on the other.

3.6 Stage 6 – The Future
Internet has gained popularity, both worldwide as well as in India. However, currently, Internet is used mainly as a medium of rapid information gathering and dissemination. With enhancements in network bandwidths, security methods and electronic fund transfer techniques, Internet is now being viewed as a platform for carrying out business. The e-commerce and e-business are the new buzzwords today. People would like to shop from the comfort of their homes, pay by credit cards and receive home delivery. Companies would like to reach hitherto untapped markets, cut out the middleman (distributor, dealer, retailer etc.) and get to the customer directly, thereby decreasing transaction costs. This has lead to the massive interest in Internet as a platform for e-commerce, which in turn presents another paradigm for enterprise applications.

4 Nature And Types Of Software Packages
Software packages are commercially supplied products which typically provide solutions to a particular range of software development or applications problems. Since they are developed for commercial sale in a competitive market for use by a variety of customers, a great amount of skills and effort is put into their development. Therefore, they are reliable, easy to use and in many instances, well documented. Ready-made
Library and Information personnel are primarily concerned with software packages for text or information retrieval. In addition to special purpose retrieval packages, there are also a number of general purpose packages which offer some information retrieval functions. The different types of software can be identified as: (i) basic software, (ii) word processing software, (iii) database management systems (DBMS), (iv) text-retrieval packages, (v) software associated with online retrieval systems, and (vi) inhouse keeping.

A brief description of each of the above mentioned types of software is furnished in the following paragraphs.

4.1 Basic Software

The basic software is also referred to as utilities. Basic software packages are available for performing operations such as data entry and validations, sorting and merging files and editing data. A data entry and validation software typically allows the users to define a format to be displayed on a screen (VDU) and by using other prompts enables data to be entered in the specific format defined by the user. Some simple checks on the data entered are also possible with this software, for instance, ensuring that there are no alphabetic characters in a numerical data field, etc. File sorting and file merging facilities are provided in such package. Some sophisticated packages offer editing capabilities of certain specific lines in the text or even full screen editing facilities as well as automatic input and output.

4.2 Word Processing Software

Word processing is one of most wide spread applications software types in use today. Developed as a successor to primitive text-editors that were only possible on mainframe computers, word processing program allows interactive editing of documents, enabling easy redrafting and
merging of chunks of existing documents, without the need for extensive retyping. Most of the popular programs contain features such as spell checks, outlining, choice of fonts, line drawing and page layout facilities. Word processing software permits the user to manipulate the text. This is a very handy feature when laying out tables or columns of the text.

4.3 Database Management Systems

These are essentially programming frameworks, and can offer good storage and retrieval systems. They are mainly intended for programmers to interact with and need a programmer in order to make them usable to libraries. This is specially applicable in case of network and hierarchical models. DBMS in general terms, have many attractions for the librarian wishing to implement automation of microcomputers.

There are three types of DBMS available to a micro-computer. They are: file or data management systems, relational DBMS and network and hierarchical DBMS. Of these, the first two types are easy to comprehend and do not call for intense knowledge in programming for developing library applications using them.

4.4 Text Retrieval Packages

Text retrieval comprises storage and subsequent retrieval of records, essentially textual rather than numerical, tabular or graphical. Although, each of the earlier mentioned software can be used for text retrieval purposes to some extent, there are special purpose packages which are written specially for the type of retrieval functions related to libraries and information centres. The characteristic features of such software packages are: (a) the software is normally self-contained and can be set up with a minimum involvement of a computer specialist staff; (b) the records in this software are independent, of variable length and are composed mostly of natural language texts; (c) access to data is by content rather than by structural position; (d) primary access is through inverted file of text terms drawn from the records as they are placed on the database. Thus, an important feature of the package is user interfaces, which allows a non-
programmer to understand and use them directly. Search and indexing facilities are the most important features of this type of software.

4.5 Software for Searching Online Retrieval Systems

Each of the major online systems has its own software which supports its activities on a host computer. Many of these hosts have begun to offer private facilities with the help of which end-users can exploit the sophisticated software developed by supporting large databases with many searches. If the user is familiar with the command language of the host, then a private file on that system avoids the need for familiarisation with a further software package.

Private file facilities are expensive since a telecommunication charge is incurred each time the host computer is used. The second type of software generated in association with online searching of external databases, enables more economical access to host systems. There are a number of packages, mainly for use on micros, which support online interaction with an external database and permit the development and editing of search profiles and search outputs locally.

4.6 Library Housekeeping Software

The market is flooded with a variety of packages specially designed to support library housekeeping operations such as acquisitions, cataloguing, circulation control, serials control, etc. Some of these are integrated packages covering many functions, while others concentrate on individual routines like cataloguing, etc.

5 Criteria for Software Selection

5.1 General

❖ User Experiences: A well tested package that is established in the market place, with several applications, is generally to be preferred. Such a package will be less likely to have bugs and should have adequate support. Other people’s experiences are useful in indicating the potential and problems of a software package.
Cost: Cost is clearly a consideration, but since, in general you get what you pay for, cost should not be a primary consideration. Software cost may also be a small component of the costs of the entire system, and better software may significantly reduce operating cost. Annual maintenance cost and revised version of the package must be kept in mind at the time of cost consideration, so that it gives compatibility with present and future systems.

Originator: The reputation of the systems house responsible for writing a software package is important to consider. Experience with other packages from the same originator may be useful in assessing a new package.

Supplier: With specialist software the supplier is often the originator, but with standard business packages there is often an agent acting as supplier. The user may look to the supplier for support and needs to feel confident that this will be forthcoming. The supplier’s reputation and history should be considered. Supplier should provide training in the use of the program. Ease of availability of maintenance engineer should be kept in mind. Even though the software package is best, the system some times fails without timely and proper customers support in maintenance.

5.2 Technical Criteria for Software Selection

Language: It is important that the language used permits the application to be run efficiently in terms of machine time and storage requirements. The programming language in which the software is written may be a high-level language or assembler or, often, a combination of both. If an application package is written in a particular language, a compiler or interpreter must be available on the system that is to run the package. Or application software language should be compatible with the compiler/interpreter available with the existing hardware system in library.
Technical consideration and compatibility: The software must run under the operating system available in the hardware configuration to be used, and must also be available in a version that is compatible with the hardware. Compatibility is less of a problem that it was once, due to the move towards UNIX based system and extensive use of DOS in microcomputer systems. Multi-user environment is preferred software must be compatible with the hardware available for use and not visa-versa.

Ease of Use: The quality of the human computer interface is important for any software package. One must observe how user friendly is the system? It is menu driven (file and functions on the screen for user to choose)? Are the commands and operations easily learned and handled by documentation Staff? Minimum key operations are preferred for change in menus. Software package must be in a position to cover all library in-house functions also few or no changes in library functions according to software are acceptable but not more or all. Similarly modifications or provisions must be available in the software for new functions or services to be started in future.

Support: Most suppliers or originators offer some support. Good, reliable manuals should be the norm. Other support may take the form of on-site training, off-site training, consultancy, assistance in setting up a system, and a help desk. Some software packages have associated user groups and user group membership may provide a valuable source of information on the package. Both the quality and the cost of these support events must be considered.

Supplied Format: the supplied format may be particularly important for microcomputer system. Software can be supplied on 3 ½ " or 5 ½ " size disks or tapes that can be run on the system and, if necessary, transferred to another medium such as hard disk.

Interface and Integration: Most software packages should be able to export and import data to and from the other packages, of the same
kind. Such as between word processing packages and two database packages. Some software will also export data to other kind of packages as from, for instance, a database package to a word processing package e.g. Data from dBase files can be converted to LIBSYS format or database in CDS/ISIS can be converted into dBase format. Software package should support different activities such as word processing, database, graphics and spreadsheets. It is important to be able to reuse data in a system in different formats so a high level of flexibility should be sought.

❖ Retrospective Conversion: Vendor should convert the existing database and should train librarians for import export function.

❖ Documentation: It includes both printed documentation and online help systems. Any reasonable system should have both. Ideally, different kindly of documentation (manuals) should be available for different kinds of user. It should include an introductory explanation of basic features, a full account of all features, a list of commands and an online help system.

❖ Advice in setting up: In addition to tutorial support some assistance in implementing a software package is to be expected. With the larger systems the contract for the purchase of the software will include a number of hours' assistance from suppliers in order to help establish databases, input forms, report forms and other features.

❖ Training: It may be availed from the system supplier or from the training centres licensed by the system supplier. With the larger system both on-site and off-site training is available. Different group of staff should be suitably get trained.

❖ Maintenance: The software package should be appropriately maintained by the supplier. Maintenance involves removing bugs or errors and improving the software so that it incorporates new facilities and concepts. Many software suppliers offer Annual Maintenance Contracts (AMC) at about 10% of the price of the original package and
this entitles users to new releases of the software. Other suppliers offer special discounted rates for upgrades to existing users.

♦ User Group: Many of the larger and some smaller well established software packages have user clubs or user groups. User clubs are groups of users of software packages that have two main functions: to share expertise and experience in the application of the package between different users; and to discuss and present a concerted front to software suppliers concerning problems and desirable improvements and developments.

All the above criteria are applicable to the selection of any software package for any application including library software package.

6 Library and Information Storage and Retrieval Software

IBM (International Business Machines Corporation) was one of the earliest to invest money to develop software packages intended for Information Storage and Retrieval.

The well known package STAIRS (an acronym for Storage and Information Retrieval System) was developed to be used on IBM machines, that too mainframe series. STAIRS was a machine dependent program which was commercially made available for any one who could afford its cost. This package has been used by some organisations to manage bibliographic databases. It was a powerful text-retrieval system which enable string searching from any part of the record. Following the introduction of STAIRS, similar programs soon became available on mainframes as well as minicomputers. Packages like ISIS, MINISIS came into existence. But most of these packages were hardware dependent, and therefore could not be used on a wider scale due to lack of portability. Hence, need was felt to develop software packages which could be used for library and information storage and retrieval operations on a wider range of computers, especially microcomputer systems. Several attempts were made in this direction by commercial firms and international
organisations like UNESCO, resulting in the proliferation of a number of microcomputer oriented software packages. Many of such packages are being commercially marketed, while a few packages like CDS/ISIS are supplied almost free of cost to educational and non-profit making institutions, particularly in India.

Today, there are a number of microcomputer oriented software package intended for automating library routines and information retrieval operations.

In recent years, the movement towards integrated modular software, which means that the librarian can spread the cost and effort of implementation without the risk of software incompatibility, has become common. There are packages such as ‘Bookshelf’ which contain programs for individual operations like acquisitions, cataloguing, serials control, etc. Each of these modules can be purchased separately, if necessary, and one can use the same set of records without the need to re-enter data each time.

6.1 Microcomputer Software Packages

There are a number of possibilities for using microcomputers in libraries and information centres. What the microcomputer can accomplish is limited by two main factors. The first one is the librarian’s imaginative outlook and his perception regarding the potentialities of this gadget, and the second one is the availability of suitable hardware and software. The point to be emphasised here is that the librarian need not be satisfied at the automation of mere library routines. He may try to examine and think of areas, where the application of microcomputer leads to improved performance. Some of the areas, where microcomputer might be used with advantage are:

i) compilation and maintenance of reference and fact files;

ii) compilation of current and retrospective bibliographies (both on demand and on a regular basis);

iii) compilation of catalogues;
iv) preparation of indexes to journal articles for special collection of material;

v) online searching from commercially available databases;

vi) provision of SDI services and many other services to the users.

It is essential to consider some important factors related to library and information storage and retrieval operations in order to make effective use of such software. Some of the factors are:

i) How large a record can the software program handle?

ii) The maximum number of records in a file. That is to say the upper limit to the number of records that the software can manipulate at one time;

iii) Search facility will be the most vital part of any ISAR system;

iv) Whether the software can handle only fixed field or can it also process variable fields?

v) Rapid access to stored data in the file is yet another important feature to be looked into.

For example, inverted file techniques provide access to the file by a field other than key fields. This facility has a great impact on the response time.

6.2 Category of Library & Information Software

Computer software for library and information work can be categorized into the following groups:

❖ Library Management functions: Acquisition, cataloguing, circulation and serials control.

❖ Management support functions: Statistics, MIS, accounting and Budget control.

❖ DBMS & information retrieval functions: Database creation, database searching, generation of SDI, indexes and bibliographies, directory generation, etc.
6.3 Library Software Packages

A number of library software packages have been designed and developed indigenously and these are being used in various libraries and information centres. Some of the library software packages are given in Table 1. Since there are many software packages and it may not be possible to discuss all the software packages in detail, only few selected software packages specialized nature designed for library operations including recently developed ones are discussed in brief.

Table - 1

6.3.0 Some library software packages and their developing agencies

<table>
<thead>
<tr>
<th>No</th>
<th>Software Package</th>
<th>Developing Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acquas, Ascat, Ascir, Asire, Seras</td>
<td>Ober Information System, Calcutta</td>
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<td>2</td>
<td>Alice for windows</td>
<td>Softlink India, Softlink International, Australia</td>
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<td>3</td>
<td>Archives (1,2,3)</td>
<td>Minifax Electronics (P) Ltd., Bombay</td>
</tr>
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<td>4</td>
<td>Basisplus &amp; Techlibplus</td>
<td>Information Dimension Inc. (IDI), USA (Marketed in India by NIC)</td>
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<td>5</td>
<td>Catman</td>
<td>INSDOC, New Delhi</td>
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<td>7</td>
<td>CDS/ISIS</td>
<td>UNESCO</td>
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<td>8</td>
<td>Defence Library Management System (DELMS)</td>
<td>DESIDOC, New Delhi</td>
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<td>9</td>
<td>Golden Libra</td>
<td>Golden Age Software Technologies, Bombay</td>
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<tr>
<td>10</td>
<td>Granthalaya</td>
<td>INSDOC, New Delhi</td>
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<tr>
<td>11</td>
<td>Grateful Med</td>
<td>National Library of Medicine, USA</td>
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<td>12</td>
<td>Inmagic Software</td>
<td>Warner-Eddison Associates in 1980</td>
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<td>The IV + IV System</td>
<td>Institute for Machine Documentation (IMD) Graz,</td>
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<td>Software Package</td>
<td>Developing Agency</td>
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<td></td>
<td>Software</td>
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<td>Lamp</td>
<td>Information Systems, Bangalore</td>
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<td>16</td>
<td>Lib Data</td>
<td>Murphy Associates, Secunderabad</td>
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<td>Lib Info</td>
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<td>Libra</td>
<td>Ivy System Ltd., New Delhi</td>
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<td>Librarian</td>
<td>Soft-Aid, Pune</td>
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<td>21</td>
<td>Library Catalog System</td>
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<td>22</td>
<td>Library Management</td>
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<td>Library Management System (LMS)</td>
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<td>SDI Package</td>
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<td>Serials PAC Software</td>
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</table>

6.3.1 Archives

This is an integrated library package developed in multi-user FoxBASE by Minifax Electronics (P) Ltd., Bombay. It runs on PC, PC/XT, PC/AT. It is a comprehensive package offering acquisition control, serials control, budgetary control, cataloguing, circulation control, information storage and retrieval, SDI, etc. Its 'speed search' facility using Norton Utilities saves time, efforts and minimizes errors.

6.3.2 BASISPLUS and TECHLIBPLUS

BASISPLUS software, designed and developed by Information Dimensions, Inc (IDI), USA, is being marketed in India by the National Informatics Centre (NIC), New Delhi. The Basisplus provides facilities for the storage, retrieval and electronic management of documents. It is based on relational technology and supports client-server architecture. The software has the following integrated features:

- Relational Database Management System (RDBMS)
- Full text capability with free text searching and thesaurus
- Object management
- Converter technology for document interchange
- Library automation
TECHLIBPLUS is built on Basisplus and designed to streamline and facilitate all the day-to-day operations of fully electronic library. TECHLIBPLUS provides patron access, catalogue maintenance, circulation, serial management, acquisition, processing and MARC cataloguing.

6.3.3 Computer Assisted Information / Library Retrieval System (CAIRS)

This package used for Information retrieval and management of numeric and non-numeric data was developed by Leatherhead Food Research Association Surrey, England, in 1972. It is distributed by Info/Doc, Washington, D.C. It runs on mainframe, mini and microcomputers in for data entry methods i.e. direct online entry batch data entry, document data preparation and data prepared by using external systems.

6.3.4 CDS/ISIS

Micro CDS/ISIS is an advanced non-numerical information storage and retrieval software package. It was developed by UNESCO in 1985 to meet the requirements of many institutions, specially in developing countries. It is meant to facilitate streamlining of the information processing activities in developing countries with the help of relatively inexpensive modern technologies. This software was originally based on the mainframe version of CDS/ISIS started in the '60s.

Main Features

The main features of CDS/ISIS software may briefly be summarised as follows:

- The handling of variable length records, fields and sub-fields, thus saving disk space and making it possible to store greater amounts of bibliographic information.
- It comprises a data base definition component which allows the user to define the data to be processed for a specific application;
- It has a data entry component which facilitates entering and modifying data through user-created database specific worksheets;
• Possesses an information retrieval component with a powerful search language providing for field level and proximity search operators, in addition to Boolean search techniques along with facilities for free-text searching;

• It has a powerful report generator facility allowing the user to create desired printed products such as catalogues, indexes, etc., according to required formats of the users.

• It has a data interchange application programming language (CDS/ISIS Pascal) which allows the user to tailor the software to specific needs;

• It functions helping the user to build pseudo-relational databases;

• The package also contains an interface between the micro CDS/ISIS and the IDAMS software for statistical analysis.

• It provides for CC & and I sorrow.

Since the beginning CDS/ISIS has been created as a multi-lingual software, providing integrated facilities for development of different linguistic versions. UNESCO supplies the package in English, French, and Spanish Versions.

Historic Perspective

UNESCO developed version 1.0 of the software package in 1985. It was designed to run on IBM PC/XT with 256K RAM and hard disk capacity. Six different programs were required to execute the various functions. Version 1.0 was limited to databases containing 32,000 records. In the year 1989, version 2.0 of CDS/ISIS was developed by Unesco with integration of all programs into one and the additional advantage of extending the capacity of the database to 16,000,000 records. The special feature of this version is the introduction of the CDS/ISIS Pascal programming language interface. The CD-ROM version of the CDS/ISIS also came out in 1989. In 1993, Version 3.0 which supports Local Area Network (LAN) was developed. Also, in 1993 the development of UNIX version of CDS/ISIS became available. In 1991, Version of 1.0 of CDS/ISIS
for Windows was developed. It may be stated that at present Unesco maintains three fully compatible versions of the software for different hardware/software platforms, which have been developed by Unewco in response to user needs and/or to the technological developments which have taken place during recent years.

The three versions are:

- The MS-DOS Version, which supports the local area networks as version 3.0,
- The UNIX Version, initially developed to provide multi-user remote access especially through the Internet and,
- The Windows Version.

As a result of a strategic development policy enunciated by Unesco, it was decided to completely rewrite the CDS/ISIS software in C++ in order to provide a common standardised language for all its versions. This effort resulted in reducing maintenance costs of different versions of CDS/ISIS. Also, this helps in the adoption of a multi-platform software development system in order to increase the level of portability to different hardware as well as operating systems. In other words the present change results in the portability level being increased to cover a range of hardware from standalone PC's to powerful mini-computers. This obviously leads to the implementation of a Client Server architecture using market standard interfaces.

**Micro CDS/ISIS Application**

In libraries there are a number of repetitive operations. If one follows the procedures for ordering, receiving, processing and circulating a book, one can observe that the same basic information such as author, title, date of publication, etc. is used in acquisition forms, catalogue cards, circulation lists, etc. This leads to duplication of effort. Micro-computer-based database management programs like CDS/ISIS are being used to obviate this type of duplication in library work. This can be done by entering
different pieces of information such as author, etc., into the database management programs like CDS/ISIS are then manipulating it to produce various types of outputs. This section discusses how micro CDS/ISIS is used in developing a micro CDS/ISIS application. In developing a CDS/ISIS application the following tasks must be performed.

a) Application Design
b) Database Definition
c) Data entry and Indexing
d) Searching

a) Application Design

Micro CDS/ISIS is a text oriented software package. It is a good choice if one wishes to store textual data, retrieve the data by certain criteria, and display or print the data in a convenient user defined format. A machine-readable library catalogue is one of its typical applications. All the data describing a book or any other document is stored in the form of a record and all such records are stored in the form of master file. In the same manner, we can store data pertaining to any entity such as plants, persons, institutions, etc. The machine-readable master file is known as a database. While designing a database, the data elements and their corresponding characteristics must be specified. In a bibliographical database, one can specify data elements such as:

i) author names
ii) titles
iii) publication data
iv) subject descriptors, etc.

It is also necessary to specify which of the fields can occur in a particular database. The specification includes:

i) a numerical identifier called tag
ii) a descriptive name
iii) the maximum length (field length)
iv) an indicator for repeatability of a field
CDS/ISIS requires the fields into which a record is to be divided. It also requires specification of maximum length for a field, although that could be modified later. CDS/ISIS package is designed to handle fields and records of varying length with a maximum record length of 4096 characters. Deciding on the field and sub-field structure of a database is a highly responsible task. One must think not only of the precise data entry and the correct printing/displaying capabilities, but also of the feasibility of the record and field structure for different types of searches.

b) Database Definition

There are four basic steps involved in defining a database. They are:

i) Creating a Field Definition Table (FDT): The possible content of data records should be determined in a Field Definition Table (FDT). This table is set up by using The Line Editor of micro CDS/ISIS. Tag number, name, maximum length, repeatability and possible sub-field identifiers are to be specified for each field.

ii) Creating a Data Entry Worksheet: A default data entry worksheet is to be compiled. Worksheet editor facilitates this job. Separate worksheets can be compiled to suit different requirement using the facilities of worksheet editor.

iii) Defining the Display/Print Formats: A default display/print format has to be specified. The output sequence and layout of the fields are to be described with the help of Print Formatting Language. This language is used throughout the system to specify field manipulations. Separate display formats can be specified as per the requirements.

iv) Creating the Field Selection Table (FST): Entering of data and creating indexes for searching is a very important feature associated with any information storage and retrieval software package. User-friendliness, reliability and data validation are the major aspects to be considered in this context. Worksheet should be defined by the system manager before any data is entered into the file. After the
worksheet is created then data entry is accomplished with the help of data entry menu. Entering and editing aspects of fields is controlled by the Field Editor. It provides the following features:

i) insert and overwrite mode  
ii) moving cursor within a field  
iii) text deletion to the end of the field  
iv) cut and paste facilities  

Moving back and forth among fields and pages of worksheet can be done on the fly. If the field is found to be erroneous, error messages and audio signals are issued by the program. Also, multiple values of a field can be entered continuously if these are separated by a (%) sign.

c) Indexing  
The CDS/ISIS package indexes all fields selected for indexing into a single file. This file is known as 'inverted file'. There are indexing techniques for building index elements from lines, phrases enclosed in triangular brackets (<...>) or slashes (/...) and from each word in the field. Non-significant words may be ignored by defining them in a stop work file.

Once the new records are entered into the database, the inverted file must be updated so as to enable new records to be retrieved in searches. The CDS/ISIS allows you to select appropriate time for updating the inverted file.  
d) Searching the Database  
Searching the database and printing the results of a search are important features associated with CDS/ISIS package. The query formulation strategy provided in the package uses basically Boolean logic which is enriched by proximity operators. The software allows searching only on indexed fields (through FST). Searches may be combined by using Boolean operators to further refine the searches. The search results may be output in a variety of formats by using the formatting language.
Distribution of the Package

In the last 12 years of its existence CDS/ISIS software has become one of the most popular packages of its kind. It is estimated that there are about 20,000 users of this package distributed all over the world. Although, Unesco distributes directly many copies of the package from Paris, the policy is to promote the establishment of distribution centres in as many countries as possible, provided the number of users is significant so as to reduce the financial burden on Unesco. There are 138 officially appointed distributors around the World of which 72 are national members of Unesco. The conditions for the use of CDS/ISIS are specified in the form of a license Agreement signed between UNESCO (or the official distributor) and the receiving institution, the package is distributed free of charge (or at cost price) for non-profit making organizations. The basic information relating to CDS/ISIS package may be found from the Internet DS/ISIS Home Page.

6.3.5 DELPHI-ISIS : A front-end for CDS/ISIS Database under windows 95/NT.

Recently in Information Studies Vol.4, No. 4, Oct. 1998, a new front-end user interface for CDS/ISIS databases under Windows 95/NT has been reported. The interface attempts to provide solutions to some of the problems faced by users with standard DOS version of CDS/ISIS.

DELPHI-ISIS is a graphical user interface (GUI) based 32 bit application and uses Borland's Rapid Application Development (RAD) tools. Using the Single Document Interface model (SDI) it brings together in a single Window the entire, search, browse, display, sorting, printing and downloading functions. User gets concurrent access to search history, retrieved records, dictionary of search terms and Any terms. User can customize search output, and search two or more databases concurrently. DELPHI-ISIS comes on a single diskette with an install feature making it easy for users to install the software and configure it for their machines.
The full software can be had on payment of the cost from Shri L.J. Haravu, 69 Krishnapuri Colony, Hyderabad.

6.3.6 Defense Library Management System

This software package is developed by Defence Scientific Information and Documentation Centre (DESIDOC), Delhi. It is written in COBOL language supported by UNIX operating system. Software is developed into four modules i.e. Acquisition, Circulation, Serial, Online Catalogue. Variable field and variable record length, ISO-2709 format, stand as input format (CCF) are the distinctive feature of the software.

6.3.7 DELSIS

DELSIS, the networking software, is an integrated modular package developed on Basisplus by DELNET to undertake complex cataloguing and union cataloguing functions in the libraries, library networks and information centres. Some of its special features include:

- Enquiries through OPAC by author/ title/ subject/ call no. / series / keyword, etc.
- Boolean enquiries
- Full text search retrieval
- Display records in AACR II format
- Data import/export
- Automatic index generation
- Input format: common communication format CCF developed by UNESCO
- Duplicate checking of records
- Creation of bibliographic records in Indian languages for 13 languages (using GIST card)
- Interface to CDS/ISIS

All DELNET databases and online inter-library loan facility etc., are functioning on this software presently.
6.3.8 GOLDEN LIBRA

Golden Libra software package is developed by Golden Age Software Technologies, Bombay. It is a library management software that runs on IBM PC XT compatibles. It keeps track of subscription, and storage and retrieval of books/periodicals. Reports on various matters such as overdue periodicals, list of magazines and books, reports of publishers and members for non-receipt of periodicals and books can be generated.

6.3.9 GRANTHALAYA

It is a complete library automation package, designed and developed in FoxPro by the Indian National Scientific Documentation Centre (INSDOC), New Delhi. This package is available in MS-DOS. Salient features of the packages are as follows:

❖ Modularity
❖ Object Oriented Design
❖ CCF Compatibility
❖ Dictionary Concept
❖ Powerful Query and Search Facilities
❖ Ease of use

INSDOC is marketing and promoting this package for library automation in India. The package has already been implemented at National science Library, INSDOC, New Delhi. Its UNIX version has been implemented at the Nuclear Science Centre Library, New Delhi.

6.3.10 GRATEFUL MED

It is developed by National Library of Medicine (USA) for searching NLM's database, including MEDLINE by the individuals from their personal computers. Version 2.0 of GRATEFUL MED comes on to floppy disks with simple instructions for installation on IBM PC or compatibles.

6.3.11 INMAGIC SOFTWARE

Software is developed by Warner-Eddision Associates in 1980 for minicomputers and in 1984 for micro computers. It is quite flexible package for information management and fast retrieval.
6.3.12 The IV + IV System Software

The package is developed by Institute for Machine Documentation (IMD), Graz, Australia. It is called IV + IV System (Information Ver Mittlung and Verav – Beitung). Main functions of this package are database creation and maintenance, data entry, data editing, information search and retrieval, production of various types of outputs. It is a single user system written in Pascal language with CCF format.

6.3.13 KRVGER LIBRARY MANAGER:

It is a menu-driven and user friendly software developed by Blitz Audio Visuals, Pune. It is a complete library management package for online information. It runs on PC/XT/AT compatibles. It includes facilities for validation of data entry, circulation control, catalogue card printing, information services for books, reports, articles, and periodicals. Preparation of catalogue cards according to AACR II and searches by author, subject, accession number, etc. are possible. Circulation control allows printing of list of books pending with members.

6.3.14 LAMP

Library Administration and Management Package (LAMP) is developed for IBM PC/XT users by professionals in information systems, Bangalore.

6.3.15 LIB DATA

It is developed by Murphy Associates, Secunderabad for PC users. It enables to develop a database of books, periodicals, articles, patents or reports. Sorting of records, printout of catalogue cards, various reports in a desired format, search by sophisticated search formulation techniques is possible with the help of this package.

6.3.16 LIB INFO

This package is developed by M.N. Dastur & Co., Madras. It contains four subsystems like Acquisition, Circulation, Maintenance and Reports. It works on IBM PC XT/AT compatible.
6.3.17 LIBMAN

Datapro Consultancy Services, Pune has developed a library management software package called LIBMAN. Creation of databases of books, members, issue and return, inter-library loan, generation of overdue lists, computation of fines, etc. are possible with this software. It allows printing of reports such as accession number register, list by author, title, call number etc. Generation of lists of new additions, subject bibliographies, books withdrawn, stock verification; compilation of statistical data on circulation, query search by title, author, call number, subject, and Boolean combinations, etc. are also possible.

6.3.18 LIBRA

LIBRA is a multi-user, multilingual, user-friendly package available from Ivy Systems Ltd., New Delhi. It facilitates acquisition control, circulation control, cataloguing, and online retrieval. It also offers data security and data privacy and can be linked with Dialog and similar services.

6.3.19 LIBRARIAN

This software package is developed by Soft-Aid, Pune. It is a library management software developed by a team of computer professionals in consultation with experienced librarian personnel. This menu-driven user-friendly software operates in single user mode. Multi-user version is also available under Xenix and Novell Netware environment. It provides facility for cataloguing, circulation, serial control, acquisition, budget and bibliographic service.

6.3.20 Library Catalogue System

Ultra Business System (P) Ltd., Bangalore have developed a Library catalogue system. Data Entry is done through interactive filling up of forms at the terminal. Custom tailored files suited to individual libraries can be created. All fields can be treated as keys. Automatic saving of data input every five record is provided. The system needs ultra microcomputers, which are CP/M machines.
6.3.21 Library Management System (LMS)

This user-friendly package is developed in dbase for PC XT/AT by U&I Software (P) Ltd., Bangalore. Data entry provides for data security, data validation and error recovery procedures. Book ordering, database querying on various keys, exception reporting, pending order, budgeting and funds management are all available.

6.3.22 Library Manager

This menu driven and user friendly software is developed by system Data Controls Ltd., Bombay. This needs IBM PC XT with a minimum 384 kb core memory. Maintaining a file of books, details of members, complete range of circulation control etc. are taken care by the software. List of books, reference books, reserved books, weeded items etc. can be printed out.

6.3.23 LIBRIS

LIBRIS is a comprehensive, user-friendly and menu-driven library management system developed by Frontier Information Technologies Pvt. Ltd., Secunderabad. The system covers all the functional aspects of library activities viz., acquisition, cataloguing, circulation, periodicals, newspapers, enquiries and library administration.

6.3.24 LIBSYS

LIBSYS is an integrated library management system LIBSYS supports all the activities related to library in-house functions and user services. It is now being widely used in India. The details information is given in comparison in 7.4.

6.3.25 MAITRAYEE

MAITRAYEE is a library computerization and networking software. It has been developed by CMC Ltd. Under CALIBNET (Calcutta Library Network) Project funded by NISSAT. The package aims to provide library computerization, resource sharing, standardization, connectivity and modularity.
Main feature of the software are as follows:

- It has been developed on INGRES ver 5.0/6.0 RDBMS, supported by UNIX 3.2 and can be upgraded with new features based on ISO 2709 for internal structure and networking.
- It uses TCP/IP with X.25 protocol for networking. It can be used as a MARC communication software.
- It is an open-ended software and its design is such that the enhancement (both in hardware and software) can be adapted quite easily.
- With little modification, CCF or UNIMARC content designators can be incorporated. So the communication from one format to the other is possible.
- SDI is developed by searching article titles against user profile.
- Several hardware enhancements like incorporating barcode reader, OCR, colour workstations, LAN-WAN gateways, etc. is possible.

6.3.26 MINISIS

MINISIS is an ideal package for bibliographic information management and textual database applications. It has been developed the International Development Research Centre, Canada. MINISIS installation requirements was originally written in Hewlett Packard’s System programming Language (SPL). Therefore MINISIS then runs only on HP-3000 mini-computers with minimum 512 KB memory. It is an online interactive system for information processing, storage and retrieval, and provides facility for online catalogue, circulation control, serials control, report generation, etc. It also provides interfaces to remote online information systems. To facilitate interchange of information with other organizations, MINISIS conforms to ISO 2709. It is also compatible with Unimore format as well as standard database like AGRIS DEVSI etc. however minisis is now delinked with H.P. computers. The new minisis version is now available an microcomputers.
6.3.27 SALIM

Uptron India Ltd., New Delhi has developed a software package called SALIM (Software for Automation of Library Information Management). It runs on hard disk of 40-80mb. It facilitates serial control, circulation control, stock verification, catalogue printing, querying masterfile, etc. Various outputs from the package like Accession Register, Alphabetical lists of publishers, vendors, subjects, serials, authors, or titles. Search by topic, title, author, publisher or language is possible.

6.3.28 SANJAY

A Library Automation Package Based On CDS/ISIS (Version 2.3), named SANJAY, was developed by DESIDOC for NISSAT. It is an integrated package that interfaces about 25 Pascal programs with CDS/ISIS. It is more flexible and user friendly than CDS/ISIS. A number of predefined display formats, print and sort worksheets have been provided for generating different types of reports. The package is capable of interlinking two or more databases for a single application. It is also capable of handling numerical calculations and carrying out some other library housekeeping activities. For the purpose of data security and to provide selective access, the whole system has been divided into following modules:

❖ Maintenance Module
❖ User Module
❖ Circulation Module
❖ Online Catalogue Module

6.3.29 SCI-MATE

This software is developed by Institute for Scientific Information, Philadelphia. It is a menu driven package and runs on microcomputers. It is designed specially for menu-driven searching of a variety of online databases and for the management of textual information. Its commands guide the users through searches on DIALOGUE, ISI, BRS, SDC and MEDLINE databases making the search process simpler. With the help of
Sci-mate, users can create their own databases. This software is available on floppy disk for IBM PC, Vector 3 & 4, Apple II, TRS-80-model II microcomputers.

6.3.30 SDI Package

SDI package using PSI microcomputer based, on CP/M86 and dBase II is developed by Rading Cybernetics (P) Ltd., Secunderabad. It is for journal articles only. Each article can be indexed and abstract can be added.

6.3.31 SEARCHER

The package written for IBM PC is developed by INDATA, New Delhi. It is basically searching tool for unstructured text data. It is user friendly and flexible.

6.3.32 Serials PAC Software

It is developed by Informatics India Pvt. Ltd., Bangalore. It is easy to install and use.

6.3.33 Soft link / Alice for Window

This is an international software package which is marketed through a number of agencies. In our country (India), Softlink Library Automation Package is marketed by Soft link Asia Pvt. Ltd., New Delhi.

Recently, the company has taken a decision to call this software with two names OASIS for DOS version of the package and Alice for windows version all over the world to maintain consistency in nomenclature.

The softlink library automation package is available to all the customers in four distinct versions. These are:

- The public library version
- The special library version
- The academy library version
- The school version

It is a modular package and has a number of salient features. Some of these are:
• It enables a library to purchase only those modules which suit its immediate requirements;
• It facilitates a library to undertake its automation activities in stage;
• The package allows the automated library to expand its services;
• The package has inbuilt capabilities to enable libraries to respond to the changing needs of their clientele.

The modules of the software package have been categorised into: standard modules; advanced modules and special modules. For the management of day to day functions in any library, it is necessary to have all the standard modules. These modules are:

1) Management, Reports and Utilities;
2) Circulation;
3) Inquiry (OPAC)

On the other hand, the advanced modules facilities the extension and the useability of the automated library. These modules comprise Acquisitions, Periodicals, Communications, Journal Indexing and Remote Inquiry. Special modules are useful to libraries which have specialised needs. In this manner, there is a certain amount of flexibility and freedom to the libraries to acquire only such modules of the software, which are essential and of immediate use to them.

6.3.34 SOUL (Software for University Libraries)

INFLIBNET centre, develop a library management software. The detail information is given in comparison 7.5.

6.3.35 SUCHIKA (version 1.0)

SUCHIKA is an integrated software package for library automation, designed and developed during 1996 by the Defence Scientific Information & Documentation Centre (DESIDOC), Delhi for its Defence Science Library and other libraries/technical information centres (TICs) of Defence Research & Development Organization (DRDO), scattered all over India. The purpose of developing this software is to automate all the DRDO libraries/TICS, to create and maintain a DRDO libraries holdings' database
and help the libraries to follow uniform standard practices. The package has been developed in C++ language in MS-DOS and UNIX versions keeping in view the requirements of big and small libraries of DRDO. The package is menu-driven and user-friendly. The package conforms to international standards like Common Communication Format (CCF), ISO-2709, AACR2 and allows data conversion from CDS/ISIS etc.

SUCHIKA has powerful search facilities. Search can be conducted on any field by specifying the field(s) or through the various indexes like author, subject, keywords, report No., patent No., etc. Query may be typed or selected by using the concerned index. Boolean search operators can also be used. Suchika also provides facility for free text searching. Search results can be displayed according to desired format, and after selecting the relevant records, printouts can also be taken. Suchika has inbuilt facility for data validation and data duplication checking. This package has been developed in modular form, such as acquisition, circulation, OPAC, serials control modules. Therefore, its implementation is quite easy. Either all the modules may be implemented at one time, or module-wise implementation can also be made depending upon the needs of library. The package (both DOS and UNIX versions) has been implemented at Defence Science Library and it is under implementation in other DRDO libraries/TiCs. DESIDOC, being a Government agency, has decided to offer this software package to non-DRDO libraries also at nominal price to help them in their automation.

6.3.36 SUPER DOC

This package is developed by the Thermodata Group in Grenble, France. It can run on IBM compatible microcomputers. It is also a user friendly package flexible to apply in many field of library and information science such as publication of indexes, catalogue, bibliographics, etc.

6.3.37 TRISHNA

Developed by NISTADS, New Delhi under contract from NISSAT, TRISHNA – version and retrieval in Indian language scripts such as
Assamese, Bengali, Gujarati, Hindi, Kannada, Malayalam, Oriya, Punjabi, Tamil and Telugu. NISSAT provides free software and technical support and training at nominal cost.

6.3.38 ULYSIS

Wipro Information Technology Ltd., Secunderabad offers a comprehensive library software package called ULYSIS (Universal Library Information System). The package is developed in C language for use on WIPRO PC-AT (Xenix OS), Wipro S-6820 (UNIX OS) and WIPRO S-386 (UNIX OS) machines.

It is a fully integrated system taking care of acquisition, serials control, circulation and has a powerful query function software. Acquisition module includes suggestions from readers, pre-order searching, order placement, reminders, vendor evaluation, funds control, payment, accessioning and information requesters. Circulation module is comprehensive including calculation of fines, circulation statistics, special loans, due date slips, order letter for lost books, etc. Maintenance module covers binding, stock checking and cataloguing. Query module provides three types of queries (i) precise access point when user knows exactly how an author, title or keyword is entered into the system (ii) right truncated search, and (iii) any term searches.

6.3.39 UNILIB

Most comprehensive library management software package is developed by M/s Hindustan Computers Ltd., Bangalore. It works under UNIX/XENIX environment. This package is fully integrated multi-user and easy to operate in menu driven package. Maximum productivity, minimum data entry requirement, efficient search and query facilities are provided. It has two level security features ensuring privacy to each user and library staff.

6.3.40 WILISYS:

WILISYS (WIPRO Integrated Library Information System) is an integrated library automation software package. It aims at mechanizing the
routine library activities and effective dissemination of information to the library users. It is developed in ‘C’ language. It uses UNIFY RDBMS for data management. WILISYS also provides different levels of data security for the users and library staff.

WILISYS comprises of two packages, viz. WILIMAX (WIPRO Library Management System) and WILITRAX (Wipro Library Abstracts System).

WILIMAX covers the books and periodicals management part of the library activities. It aims at mechanization of the in-house activities like request processing, order placement, monitoring the receipts of the documents, accessioning, circulation, maintenance, cataloguing and queries about the various documents. It is divided into five modules namely, Acquisition, Circulation, Maintenance, Search and Query, and Periodicals.

WILITRAX provides an effective means of storing and retrieving abstracts. Main functions of this package are the exchange of information (abstracts) with different sources and databases, retrospective search facility through a WILISYS Query Language (WQL), selective dissemination of information, maintenance of a user profile, report generation, etc.

Main modules of WILITRAX are as follows:

❖ Data Entry and File Maintenance: This module enables the user to enter data through the data entry screens; modifications and amendments to the entered data can be done through the file maintenance module.

❖ Selective Dissemination of Information: The database of users may contain abstracts pertaining to any specialized field of knowledge. A member profile is maintained in which the details of the members along with their areas of interest are entered. This program can be run periodically to generate reports of the latest abstracts for all the members, based on the member profile.

❖ Retrospective Search: Retrospective search of the database is possible through a specially written WILISYS Query Language, which enables
the user to query on the database in simple English. The output of the query can either be displayed on the screen or printed using print option.

- Reports: Both routine and detail reports can be generated in a formatted manner. The report outputs can either be displayed on screen, listed on the printer or directed to a file.
- Utilities: Some general purpose Utilities have also been provided to the user for house-keeping tasks. These include backup and cleanup programs.

7 Comparison of Library Software

The comparative study of library software packages are here from the aspects of hardware requirements, operating system platform, language of development, various facilities available related to library activities, search techniques, data storage techniques, etc. The main purpose of comparison of software packages is to provide some idea to libraries for selecting suitable software.

7.1 Library software packages, their operating systems and minimum hardware requirements:

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<th>Operating System</th>
<th>Minimum hardware requirements</th>
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<td>1.</td>
<td>Alice</td>
<td>MS DOS Novell’s Netware Windows’ s NT</td>
<td>640 K RAM 80 Mb HD</td>
</tr>
<tr>
<td>2.</td>
<td>Basisplus and Techlibplus</td>
<td>UNIX SVR 4.0 or above</td>
<td>1. Basic server Intel 80X86, Pentium RAM 16 MB, 150 MB Cartridge 2. Basis Client Intel 80386 Ms-Window 3.1</td>
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</table>
3. CDS/ISIS
   1. MS-DOS 8Mb RAM
   2. Windows NT 4 Mb HD
4. Granthalaya
   1. MS DOS 6.0 and above PC-Ar 486 RAM 8 MB
   3. SCO UNIX ver 5.3.2 HD 540 MB
   4. Ingres ver 6.2 or above
   5. Oracle ver 6.2 or above
5. Krveger Library
   Manager MS DOS PC XT/AT
6. Librarian
   XENIX PC-AT 386 LAN
7. Libsys
   1. MS DOS 6.0 and above PC-AT
   2. SCO XENIX PAC-AT
   3. SCO UNIX PC-AT 386, 486, Motorola
   4. VMS or ULTRIX 68000/
   5. NOVEL LAN Intel 386/486 based mini
   6. Windows NT Micro VAX
8. Maitrayee UNIX 3.2 PAC 386
9. Sanjay (version MS DOS ver 3.2 or above PC-AT
   2.0) (developed by augmenting
   CDS/ISIS (V 2.3) 1MB RAM and
   40 MB HD
10. Suchika
    1. MS DOS 6.0 on higher PC-AT 486,
       8MB RAM
    2. UNIX 540 MB HD
       PC-AT 486 or above
### Table 3

<table>
<thead>
<tr>
<th>No.</th>
<th>Software package</th>
<th>Programming Language</th>
<th>Data Storage Technique</th>
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<tr>
<td>1</td>
<td>Alice</td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Archives</td>
<td>FOXPRO</td>
<td>Relational database</td>
</tr>
<tr>
<td>3</td>
<td>Basisplus &amp; Techlibplus</td>
<td>Visual Basic</td>
<td>Relational database</td>
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<tr>
<td>4</td>
<td>DELMS</td>
<td>Cobol</td>
<td>B-tree</td>
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<tr>
<td>5</td>
<td>Delsis</td>
<td>Visual Basic (developed on Basisplus)</td>
<td>Relational database</td>
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<td>6</td>
<td>Granthalaya</td>
<td>FOXPRO</td>
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<td>7</td>
<td>Libman</td>
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<td>8</td>
<td>Librarian</td>
<td>Clipper &amp; Foxbase</td>
<td>Relational database</td>
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<td>Libris</td>
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<td>Relational database</td>
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<td>10</td>
<td>Libsys</td>
<td>C</td>
<td>Inverted file and B-tree</td>
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<td>Maitrayee</td>
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<td>12</td>
<td>Sanjay</td>
<td>CDS/ISIS, PASCAL</td>
<td>Inverted file</td>
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<td>13</td>
<td>Suchika</td>
<td>C++</td>
<td>B-tree</td>
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<td>Tulib</td>
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<td>Ulysis</td>
<td>C</td>
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<td>16</td>
<td>Wilisys</td>
<td>Unify RDBMS and C</td>
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### Table - 4

<table>
<thead>
<tr>
<th>No</th>
<th>Software package</th>
<th>Acquisition</th>
<th>Cataloguing</th>
<th>Serial Control</th>
<th>Circulation</th>
<th>OPAC</th>
<th>Online help</th>
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<td>Sanjay</td>
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<td>20.</td>
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<td>23.</td>
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<td>Y</td>
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</table>
Y = Yes; N= No

7.4 LIBSYS

LIBSYS is most comprehensive Library software package available in India, today. It is developed by Info-Tek Consultant Pvt. Ltd., New Delhi. It is a fully integrated multi-user system designed to run on supermicro/mini computers (including PC’s) under MS-DOS 6.0 and above, SCO UNIX, SCO XENIX, VMS or ULTRIX, NOVEL LAN, Windows NT environment. It is developed in ‘C’ language. It has an index generation procedure and therefore, does not require any separate database software. However if required, LIBSYS can be modified to operate with other software such as ORACLE, UNIFY, INGRES, etc. LIBSYS also support CD-ROM, networking and multilingual use. LIBSYS is easy to operate and the library staff can begin to use it quickly without any pre-requisite programming/computer skills. In ensure high productivity because of minimal data entry requirements, maximum possible integration of functions and powerful search and query facilities.

Hardware Requirements

LIBSYS support following hardware and software requirements.

Platforms

LIBSYS support following Platforms:

♦ UNIX (V.3.2/SVR4; SCO/AT&T: 386/486 Pentium Based)
♦ UNIX (RISC based system)
♦ DOS (5.0 or above: PC/AT)
♦ NOVELL LAN
♦ XENIX (SCO; PC/AT)
♦ UNIX (Motorola 68000)
♦ VMS (MicroVAX/VAX)
♦ WINDOWS NT
These are separate versions of LIBSYS, which are not object compatible. The functional capabilities of LIBSYS on the entire above platform are same.

❖ Distribution

LIBSYS Software distribution consists as follows:

UNIX/XENIX: Seven high density floppies having compressed files.

Installation : One (I1)
Libraries : One (L1)
Programs : Six (P1-P6)

LAN/DOS: Fifteen high-density floppies without compression

Installation : One (I1)
Base System (cataloguing) : Four (M1-M6)
Acquisition System : Two (A1-A2)
Circulation system : Four (C1-C3)
Serial System : Four (S1-S3)

❖ RAM Requirements

LIBSYS comprise more than 300 TP’s (Transaction processes) each of which can run independently on 1MB RAM. However, the RAM requirements would depend upon the number of terminals attached with the main file server. For DOS or NOVELL LAN, each node/work station should have at least 1.5 MB

❖ Disk Space

LIBSYS software occupies around 12 MB. The bibliographic data in LIBSYS is stored using international standard ANSI Z39 format. Following minimum disk space requirement for the database is recommended.

Bibliographic Records : 1.2 MB per 1000 records
Member’s data : 5.0 KB per record
Journal data : 1 KB per record
Bound volumes : 2 KB per record

Searching on bibliographic database also need work space on disk. Following disk size is suggested based on the library collection:
Upto 20,000 titles : 80 MB disk
Upto 50,000 titles : 150-200 MB disk
Upto 100,000 titles : 300 MB disk
More than 120,000 titles : 1 GB disks

❖ Terminals Supported

LIBSYS supports different terminal types including PC's emulation. LIBSYS maintains the characteristics of different terminals in its own database, which could be defined through its one of the utilities.

❖ Printers

LIBSYS supports spool line printer capabilities of UNIX alongwith option to print on local printer connected with the terminal. All the print output can be saved as ASCII files which can further be edited or exported to another system for printing. These files can be saved in user defined directory paths.

STRONG FEATURES OF LIBSYS

Following are few of the strong features of LIBSYS.

➢ LIBSYS is a fully integrated and run on super-micro/mini computers (including PC's) under MS-DOS 6.0 and above, SCO UNIX, SCO XENIX, VMS or ULTRIX, NOVEL LAN, and Windows NT environment.

➢ Well-designed screens, logically arranged functions with extensive help messages make the software user friendly.

➢ It is based on client server architecture allowing scalability to the users.

➢ LIBSYS does not need an extensive training. With very little familiarity, one can begin using it.

➢ It is a multi-user software and there is no limit on simultaneous accesses.

➢ Supports internationally known standards such as CCF and AACR II. etc.

➢ Provides export and import facility and adheres to ISO 2709 format.
Incorporates all required features to work in a networked environment i.e., LAN and WAN.

OPAC is versatile and very user-friendly with all options in-built.

Provides comprehensive list of reports, master databases and authority files.

Retrospective Conversion facility is available.

The LIBSYS has been divided into following modules as Shown in the Figure 7.4.1

**MAIN MENU**

<table>
<thead>
<tr>
<th>LIBSYS SYSTEMS</th>
<th>HOUSE-KEEPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Acquisition</td>
<td>♦ System Setup</td>
</tr>
<tr>
<td>♦ Cataloguing</td>
<td>♦ Record Keeping</td>
</tr>
<tr>
<td>♦ Circulation</td>
<td>♦ Utilities</td>
</tr>
<tr>
<td>♦ Serial Control</td>
<td></td>
</tr>
<tr>
<td>♦ Article Indexing</td>
<td></td>
</tr>
<tr>
<td>♦ OPAC</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 7.4.1**

The system broadly caters to the following functions, enquiry facilities and output reports in each of the above functional area

(A) LIBSYS SYSTEMS

ACQUISITION

The acquisition basically deals with selection and ordering of books and other library materials such as reprint of articles, standards, patents, thesis, conference proceedings, micro-fich, tapes, slides etc. and their subsequent procurement including processing of payment of bills. It also supports budget and expenditure monitoring by Department/Centre. Acquisition module comprises following sub-modules as give in the Figure 7.4.2
Initiate Titles for ordering - which may either be requested by various Departments/Centres and users or received 'on approval' from vendors.
- Check for duplication of title
- Precludes reentry of data for ordering of additional copies or another edition of an existing title

Approval Process - involves printing of approval form and subsequent updation of status of each title as 'approved' or 'rejected'.
- Flexibility in including specific titles in an approval form
- Amendments in approval form prior to its printing
- Expenditure analysis by budget head/departments

Placing Order - both for firm order and material received 'on approval'.

Figure 7.4.2
> Prints order form for direct mailing
> Flexibility in including approved titles in an order by publishers, vendor, specific title
> Amendment/cancellation or order
> Facility to specify special delivery instructions in the order form
> Handles outstanding orders

❖ Receiving - simple procedure to record the details of items received against firm orders and also those received on gratis, exchange, and deposit.
> Maintains in-process file of such items including those `on approval' items ordered, for subsequent accessioning

❖ Invoice Processing - which also includes accessioning of items.
> More than one invoice for a order
> Allows changes in unit price, discount and exchange rate etc.
> Accession number (consisting of an alphabet and a serial no.) given automatically by the system with option for accepting user defined number
> Keeps uptodate status of order with respect to titles ordered, received, accessioned
> Separate procedure for accessioning those items received on gratis, exchange and deposit

❖ Payment Requisition - provides effective procedure for getting sanctions from Account people and making payment to vendors.

❖ Order Follow-up for a specific title on order or for an entire order.
> Periodic overdue notices/reminders
> Online printing of follow-up notice

❖ Online Queries - the acquisition related enquiries include:
> Titles in the process of acquisition
> Pending order, overdue orders and for a specific order, details of title ordered, titles received, pending titles, its invoices.
List of invoices with library and invoices with the Accounts Section and for a specific invoice, details of items accessioned against it and payment details, if any.

List of vendor, giving titles received "On approval", pending titles against firm orders, orders placed, invoices received.

Budget analysis of titles in the acquisition process and expenditure by Department/Centre

Order details by Accession no. new arrivals

New arrivals

Reports – various reports generated by the acquisition system include:

- Approval request form
- Order form
- Overdue/follow-up notice
- Budget and expenditure analysis
- Payment requisition report
- Payment cheque delivery notices
- List of titles on order
- Accession register
- Bill register
- List of recent arrivals, etc.

CATALOGUING

Catalogued modules function begins with selecting the items that have already been accessioned in the previous modules and furnishing rest of the information as per AACR-II rules. Providing user services such as recent addition services, CAS, SDI, Bibliography etc. are other major functions supported by LIBSYS. A comprehensive worksheet covering almost every field facilitates data entry of all types of documents. This module allows the library staff to conduct online searches for existing items before cataloguing new items and has provision of import and Export data, retrospective conversion, stock verification, etc. Functionally this module has been organised into following sub-modules as given in Figure 7.4.3
CATALOGUING

- Maintenance
- Online Searches
- Current Awareness
- Bibliography
- SDI

- Print Catalogue Cards
- Print Catalogues
- Reports
- System Setup
- House-Keeping
- Data-Import/Export
- Stock Verification

Figure 7.4.3

- Maintaining In-process Titles – those accessioned in Acquisition but yet to be catalogued.

- Catalogue Production – either by bibliographic data import or by entering data in well designed screens for various user defined document types.
  - Bibliographic data can be updated and cataloguing details added for titles accessioned in acquisition.
  - Entire data can be entered for new titles received on gratis, exchange or deposit (if not entered in acquisition)
  - Powerful editing features for data entry
  - No limit on individual field size
  - Data import/export possible in standard exchange format (AACR-II based)

- Catalogue Maintenance – allows changes in any bibliographic data including data removal facility. It also includes transfer of material to departments/centres.

- Thesaurus Construction – capabilities for synonyms and broader/narrower terms.

- Authority Files – maintains authors, classified subjects and publishers authority files.

- Holding Updates – provision to specific copies for reference or for circulation or as ‘text’
- Addition of new copies
- Transferring from reference to circulation and vice-versa
- Withdrawals

❖ Holding Summary – for user defined ranges of call numbers, which can be of great value in collection development
- Gives separate count of titles and volumes
- Reflects strength and weakness of certain subject area

❖ Catalogue Cards – printing of complete set of 3" x 5" cards as per AACR-II standards.

❖ Current Awareness Services – which could even be personalized, based on members subject interests profile.
- Special bibliographies
- List of recent arrivals
- SDI facility

❖ CIRCULATION

The proposed system maintains (i) up-to-date membership records and (ii) the latest status of collection meant for circulation. It performs all the functions related to circulation providing suitable checks at every stage. It takes care of infrequent, but routine functions such as bindery record management, display of recent additions, and so on. All these functions have been organised into following sub-modules as given in Figure 7.4.4.

CIRCULATION SYSTEM – Figure 7.4.4

<table>
<thead>
<tr>
<th>♦ Member Records</th>
<th>♦ Enquiries</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Collection Updates</td>
<td>♦ Reports</td>
</tr>
<tr>
<td>♦ Check-out</td>
<td>♦ System Setup</td>
</tr>
<tr>
<td>♦ Check-in</td>
<td>♦ House-Keeping</td>
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<tr>
<td>♦ Renewal</td>
<td>♦ Serial circulation</td>
</tr>
<tr>
<td>♦ Reservation</td>
<td>♦ Fine Collection</td>
</tr>
<tr>
<td>♦ Recall/Follow-up</td>
<td>♦ Management Reporting</td>
</tr>
<tr>
<td>♦ Inter Library Loan</td>
<td>♦ Member History</td>
</tr>
</tbody>
</table>
Front Desk Operations – which include issues, renewals, returns, reserves/holds.
   - Operations handled efficiently with least possible data entry
   - Suitable blocks both on member and item
   - Override facility on blocks based on passwords

Membership Records Keeping – registration and membership record updates.
   - Lost or stolen cards are invalidated immediately
   - Issue of duplicate membership cards
   - Delinquent records with user defined reasons
   - Institutional borrower records for inter-library loans

Collection Updates – collection records meant for circulation created automatically while Cataloguing.
   - Keeps track of lost, missing, damaged, written-off withdrawn items
   - Monitoring of items on display and in bindery

Overdue Follow-up and Recalls – generates overdue reminders and makes possible recalling issued material before due date.
   - User defined no. of reminders and period between reminders based on membership category
   - Online printing or recall notice for a specific title

Inter-library Loans – makes it easy to keep record of both inward and outward loans of accessioned material to other libraries and institutions.

Stock Verification – besides generating list of collection of shelf and also list of items which are currently issued, for stock verification purpose, there is simple procedure to record the material present on shelf and then getting the list of unaccountable material.

Flexible Operation – fully parametrically driven operations with no preset schemes.
   - Options to want bar codes for capturing member and item identifications.
   - Operations based on membership category and material type
Due dates given after taking into account user defined working days pattern and holdings calendar

Management Reporting – both routine and exceptional which can be great help in decision-making.

- List of highly reserved titles and comparison with present no. of copies in collection for planning future acquisition
- Title/Borrower wise statistics on no. of issues
- List of delinquency cases
- Non-circulating material list for weeding out titles
- Circulating statistics yearly/monthly/hourly by subjects, borrower category and overall

Online Queries – comprehensive enquiry facilities based on both borrowers and collections. Circulation statistics can be generated yearly/monthly/hourly both by subject and membership category.

Reports – various reports include:
- Overdue, collect and recall notices
- List of ‘no responses’
- List of highly reserved titles
- List of non-circulating material
- Issues to a borrower
- Stock verification list
- Delinquency records
- Statistics on no. of issues by specific title/borrower
- Statistics by subject/borrower category
- Bindery order notice

Transactions Log – maintains records of all the circulation related transactions, which can either be viewed on screen or printed.

SERIALS

This system provides control on periodical subscription and subsequent monitoring of the scheduled arrival of individual issues. It maintains records of budget sanctioned for serials under different categories, amount
encumbered and expended, thus provides complete budgetary control.
This sub-system also handles serials, which may be on gratis or on exchange. These functions have been grouped under following logical sub-modules as given in Figure 7.4.5

SERIAL MENU

<table>
<thead>
<tr>
<th>Subscription</th>
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<tbody>
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<td>❦ New Subscription</td>
<td>❦ Registering Issues</td>
</tr>
<tr>
<td>❦ Renewal</td>
<td>❦ Additional Issue</td>
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<tr>
<td>❦ Invoicing</td>
<td>❦ Annual Issue</td>
</tr>
<tr>
<td>❦ Payment Request</td>
<td>❦ Claim monitoring</td>
</tr>
<tr>
<td>❦ Payment Updates</td>
<td>❦ Binding/BVs collection</td>
</tr>
</tbody>
</table>

Figure 7.4.5

❖ New Subscription – New serials initiated, goes through approval and then ordering
  ➢ Check for duplicate title
  ➢ Prints approval forms and provides for subsequent updation of status of each serial as ‘approved’ or ‘rejected’
  ➢ Prints order form for direct mailing
  ➢ Provides for perfect monitoring of status of each new serial until 1st issue received.

❖ Subscription Renewal – initiates renewal approval process followed by ordering
  ➢ Renewal request form printed either by Department/Centre or for the whole library based on subscription expiry date – status of each serial updated as ‘approved’ or ‘rejected’
  ➢ Separate order forms for renewals and additional serials

❖ Subscription Extension – which may be as a result of claims on missing/untraced issues.
  ➢ Extension specified as period extended upto or number of issues involved or last volume and issues.
 Invoice Processing – both for new subscription and subscription renewal.
➢ Allows more than one invoice for an order
➢ Allows change in subscription, period, and volumes etc.
➢ Accepts supplementary invoices for any title

 Receiving Issue – most repetitive function performed in the easiest possible way.
➢ Well designed screens requiring entry of minimum possible data
➢ Recording of issues by volume/issue number/period whichever applicable for the serial
➢ Facility to record receipt of regular issues, various indexes, special issues and additional issues
➢ Records damaged/soiled issues for subsequent replacement

 Claims Monitoring – makes possible timely follow-up of `not received’, overdue and damaged/soiled issues.
➢ Reminders printed automatically based on periodicity of each serial
➢ Takes into account feedback received from vendor/publisher about delayed, out-of-print, out-of-stock, already mailed issues
➢ Irregular issues monitored by entering expected schedule of issues.
➢ Online printing of reminder/follow-up notice for a specific issue number of a serial

 Bindery Management – informs when to send a serial for binding and provides for their monitoring.
➢ Generates volumes completion report to initiate binding process
➢ Flexibility in generating binding order notice
➢ Keeps track of volumes sent to bindery and received back

 Bound Volume Recording – allows updating complete serials collection of a library.

 Routing and Circulation – both for loose issues and bound volumes.
➢ User specified routing for each serial
Routing gets activated on registering an issue after a display period.

- Checking-out/checking-in of loose issues
- Circulation of bound volumes based on accession number
- Overdue notices

- Online Queries – Serials related enquiries include:
  - New serials, renewed serials, current serials and subscribed serials giving their latest status
  - By vendor; giving current serials, status of orders placed with the vendor and list of invoices received with their current status.
  - List of serials and expenditure analysis by Department/Centre
  - Searches on titles and subjects
  - Titles in bindery
  - Recent arrivals

- Reports – various reports generated by Serial sub-system include
  - Approval request form
  - New subscription order
  - Subscription renewal order
  - Notices for ‘not received, ‘overdue’ ‘soiled/damaged’ issues
  - Missing issues list
  - List of duplicate issues
  - List of completed volumes
  - Bindery notice
  - Accession register (for bound collection)
  - Current arrival
  - Various classified and specialized indexes/lists of serials as per requirement
  - Budget and expenditure analysis

- ARTICLES INDEXING AND ABSTRACTING:

The ‘Articles Indexing’ module of LIBSYS provides for maintaining a database of the selected articles from journals and periodicals along with...
comprehensive searching/retrieval of the same for reference. The capabilities of this module as given in Figure 7.4.6.

**ARTICLE INDEXING**

<table>
<thead>
<tr>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Update Inverted Files</td>
</tr>
<tr>
<td>♦ Rebuild Inverted Files</td>
</tr>
<tr>
<td>♦ Print Keywords</td>
</tr>
<tr>
<td>♦ Data Import</td>
</tr>
<tr>
<td>♦ Develop File</td>
</tr>
<tr>
<td>♦ Data Export</td>
</tr>
<tr>
<td>♦ Remove File</td>
</tr>
<tr>
<td>♦ Subject Updates</td>
</tr>
</tbody>
</table>

| Search Fields |

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Retrievals</th>
<th>SDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Add</td>
<td>♦ Online Searches</td>
<td>♦ Subject/Strategies</td>
</tr>
<tr>
<td>♦ Modify</td>
<td>♦ Documentation</td>
<td>♦ Interest Profile</td>
</tr>
<tr>
<td>♦ Remove</td>
<td>♦ Bibliography</td>
<td>♦ Develop SDI</td>
</tr>
<tr>
<td>♦ Details</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ Check List</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 7.4.6**

- Data Base Maintenance – allows for addition, modification and removal of articles in well designed screens with option for variable field length. There is facility for data entry in multiple files and update of database using these files.

- Online Indexes – following indexes available online:
  - Author index
  - Title index
  - Keyword/subject index
• Boolean searches – can be made on words/phrases from any of the bibliographic data such as author, title, keywords/subjects, etc. The use of the logical connectors ‘OR’, ‘AND’, and ‘AND’ and ‘NOT’ is allowed. The search which is similar to ‘DIALOG’, is facilitated by using
  ➢ Truncation
  ➢ User of parentheses
  ➢ Proximity connectors
The searching can be restricted by specifying year of articles. The search result can either be viewed on screen or printed or downloaded on a diskette.
• Documentation List – Current awareness list for selected articles printed subject wise or alphabetically along with indexes and contents.
• SDI – personalized articles alert service based on individual interest profile defined using boolean search strategies. More than 25 keyword fields are provided.
  ➢ Members record keeping
  ➢ Define boolean strategies
  ➢ Define member’s subject interest profile based on boolean strategies
  ➢ SDI on selected articles from the database or complete database
• Bibliographies – flexible and easy procedure to develop bibliographies on specific subjects.
• Online Public Access – facility for patrons to make searches on the Data Base.
• ONLINE PUBLIC ACCESS CATALOGUE (OPAC)
One of the major attractions of LIBSYS is that it has a powerful Online Public Access Catalogue as given in Figure 7.4.7 with the choice of search option and variety of display formats. User in library can search the bibliographic database and find specific information online which would not normally be possible from traditional catalogues. The search facility also tells the availability of each item for circulation, including current status of
individual copies of a title. The scope of these services include: Figure 7.4.7.

**OPAC**

<table>
<thead>
<tr>
<th>Searches</th>
<th>New Additions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books &amp; other Documents</td>
<td>Books &amp; other Documents</td>
</tr>
<tr>
<td>Articles Database</td>
<td>Journals</td>
</tr>
<tr>
<td>Journals</td>
<td></td>
</tr>
<tr>
<td>Journals by Subject</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items Status</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-out/Reserves</td>
<td>Change Password</td>
</tr>
<tr>
<td>Item Status/Reserves</td>
<td>Default Database</td>
</tr>
<tr>
<td>Check-out</td>
<td>Request for Acquisition</td>
</tr>
<tr>
<td>Put on Reserve</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 7.4.7**

- **Online Catalogue** — following catalogues are available online:
  - Title catalogue
  - Author catalogue
  - Subject catalogue
  - Classified catalogue
  - KWIC/KWOC Indexes

- **Boolean Searches** — the boolean searches can be made on words/phrases from any of the bibliographic data. The use of the logical connectors `OR`, `AND` and `NOT` is allowed. The search is facilitate by using:
  - Truncation
  - Use of parentheses
  - Proximity connectors

  There is option to conduct searches on specific bibliographic fields or on all the fields. The search result can either be viewed on screen or printed or down loaded on a diskette.

- **Specialized Services** — which include:
Electronic mail facility for putting reservations online; SDI; Notices; Circulars, etc.

- Monitoring of text books, thesis and books banks
- Current Awareness Services
- Special bibliographies
- Selective Dissemination of Information (based on individual interests profile)

(B) HOUSE-KEEPING

❖ SYSTEM SETUP

To define the operating environment of the library using LIBSYS, various options, default values and parameters are to be updated before starting LIBSYS operations. The setup default values are automatically picked whenever not specified while working on a function. Various options set the operating environment of the library. The setup of parameters gives flexibility in various operations. Following setup options outlined for each of the system separately, give flexibility in working with LIBSYS. This module has been organised into following sub-modules as given in Figure 7.4.8.

<table>
<thead>
<tr>
<th>SYSTEM SETUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Accession No.</td>
</tr>
<tr>
<td>♦ Member ID</td>
</tr>
<tr>
<td>♦ Acquisition</td>
</tr>
<tr>
<td>♦ Serial</td>
</tr>
<tr>
<td>♦ Cataloguing</td>
</tr>
<tr>
<td>♦ OPAC</td>
</tr>
<tr>
<td>♦ System Environment</td>
</tr>
</tbody>
</table>

Figure 7.4.8

- Accession Nos.
- Member ID
- Acquisition system
Defaults
- Vendor
- Budget head
- Approval authority
- Acquisition mode
- Is approval required?
- Mode of delivery
- Discount

Options
- Ref. No. in purchase order to include vendor code?
- Approval form contents
- Which exchange rates applicable?
- OA Requisition, Approval no, Order No, Payment Sanction No. to be system generated or user defined?
- For approval form: Is serial nos. contiguous? Control no. to be printed?

Parameters
- National currency
- For firm order
  - Acknowledgement period
  - Receipt period
  - Expiry period
  - Overdue grace period
  - Reminders interval

Serials Systems

Defaults
- Vendor
- Budget head
- Approval authority
- Subscription mode
- Is approval required?
- Mode of delivery
  Options
  - Ref. No. in purchase order to include vendor code?
  - Which exchange rate applicable?
  - Control Nos. to be system generated or user defined?

Parameters
- Loose issues charging period
  - Personal borrower
  - Institutional borrower
- Overdue grace period
- Reminder interval
- Discount

- Cataloguing System
  Defaults
  - Document type
  - Document level
  - Send to printer?
  - Charge period
  - Max. reserves
  - Fine category
  - No. of copies
  - Accn. Series
  - Material category

Options
- Valid document types
- Classification scheme
- Last name of personal author
- Library type
- New accession Nos. allowed?
- Printing allowed in OPAC?
- 'p' and 'ed.' To be inserted in the bibliographic entry?
- New additions list/SDI list based on classified subject
  - Class No. or subject order
  - Subject headings
- Lost of title for rebuilding inverted files
- Keyword options
- Fields to be included in cards while printing
- Current list, OPAC, Author, Title, Subject/Classified catalogue and Boolean searched
- Card format
  - To define Issue period, Fine category for each material category
Parameters
  - Library name
  - Indention for 3x5 cards

- Circulation System
  - Defaults
    - Fine category
  - Options
    - Borrower ID
    - Borrower address type
    - Borrower directory order Alpha or code
    - Late fine applicable?
    - Address in notices
    - Is group mandatory?
    - Cut-off publishing year for charging
    - Identify card No.
Parameters
  - Registration period
  - Maximum No. of reminders for overdue material
  - Interval between reminders
  - Grace period for first reminder
  - Maximum No. of reissues allowed
- Registration expiry notices period
- Collect period
- Display period
- Days in bindery
- Maximum no. of charges
- Charge period
- Maximum no. of reserves

- On-line Public Access Catalogue
  Options
  - Facility allowed?
    - Searches
    - Recent arrivals
    - Item status
  - User ID required to access OPAC

- RECORD KEEPING
  LIBSYS provides maintenance of various authority files. To run all the functions of LIBSYS, various entities should be properly coded and their respective authority files should be updated. This module comprises following sub-modules as given in Figure 7.4.9

RECORD KEEPING

<table>
<thead>
<tr>
<th>Acquisition</th>
<th>Cataloguing</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Budget</td>
<td>♦ Stop Words</td>
</tr>
<tr>
<td>♦ Subject Updates</td>
<td>♦ Subject Updates</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Circulation</th>
<th>Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Delinquency Reasons</td>
<td>♦ Budget</td>
</tr>
<tr>
<td>♦ Cancellation Reasons</td>
<td>♦ Languages</td>
</tr>
<tr>
<td>♦ Withdrawn Reasons</td>
<td>♦ Serial Types</td>
</tr>
<tr>
<td>♦ Working Days</td>
<td>♦ Types of Binding</td>
</tr>
<tr>
<td>♦ Holidays Calendar</td>
<td>♦ Subscription Modes</td>
</tr>
</tbody>
</table>

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The Records keeping functions of respective systems enable the maintenance of the following authority files:

- **Acquisition System**
  - Budget
- **Cataloguing system**
  - Stop Words
  - Subject Updates
- **Circulation System**
  - Delinquency Reasons
  - Cancellation Reasons
  - Withdrawn Reasons
  - Working Days
  - Holidays Calendar
- **Serials System**
  - Budget
  - Languages
  - Serial Types
  - Types of Binding
  - Subscription Modes
- **Miscellaneous**
  - Types of Documents
  - Member Category
- Vendors
- Budget Heads
- Currencies
- Exchange Rates
- Notice Text

❖ UTILITIES

There are following house-keeping utilities provided in LIBSYS as given in Figure 7.4.10.

UTILITIES

<table>
<thead>
<tr>
<th>♦ Functions Security</th>
<th>♦ Check title Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Print files Path</td>
<td>♦ Check Ordered Copies</td>
</tr>
<tr>
<td>♦ Check Accn Nos.</td>
<td>♦ Find Record No.</td>
</tr>
<tr>
<td>♦ Colour Settings</td>
<td>♦ Title Record</td>
</tr>
<tr>
<td>♦ Reservation Links</td>
<td>♦ Update Title Status</td>
</tr>
<tr>
<td>♦ Check-out Links (Bks)</td>
<td>♦ Missing Accn Nos.</td>
</tr>
<tr>
<td>♦ Check-out Links (BVs)</td>
<td></td>
</tr>
<tr>
<td>♦ Check-out Links (JVs)</td>
<td></td>
</tr>
<tr>
<td>♦ Check Loaned Items</td>
<td></td>
</tr>
</tbody>
</table>

Figure 7.4.10

❖ FUNCTION SECURITY

To restrict the access to various functions of LIBSYS, there is facility to define valid users and assigning them access to specific system and functions as per the library requirements. It may be noted that only super user can define the function security and if LIBSYS is logged on with super user, it has access to all the functions of LIBSYS. There are following options available:

- Make user
- Update functions security
- Change password
- Remove user
7.5 SOFTWARE FOR UNIVERSITY LIBRARIES (SOUL)

The SOUL is a state-of-the-art library automation software designed and developed by the INFLIBNET centre Ahmedabad, eruct project. It is a user-friendly software developed to work under client-server environment. Although looking at the name of the software, one may think that it is meant for University libraries only, but in fact it is flexible enough to be used for automating any type or size of library in India. While designing this software, the international standards, bibliographic formats, networking protocols, and typical functions of all types and sizes of libraries, particularly at university level, have been taken into account. The functions have been grouped into six categories, looking into the functional divisions of Indian University libraries. At present SOUL uses RDBMS on Windows N.T. operating system as back end to store and retrieve the data. However, keeping in view the trends in IT towards Linux operating system, efforts are under way also to provide SOUL to work on Linux platform. The inputs received from expert team consisting of practising librarians and the feed backs received from users of our earlier software, ILMS, have given a strong base for designing this software. SOUL is near total solution offered by INFLIBNET to Indian libraries. It puts library staff at ease in exploring all the functions to their advantages with the help of professionally prepared manual.

Hardware and Software Requirements:
The minimum hardware and software configuration required to use the SOUL is given below.

Server:
Pentium @233 MHz with 64 MB RAM
1.2 GB HDD
32 x CDROM Drive

Client:
Pentium @233 MHz with 32 MB RAM
1.2GBHDD with 10MB Free space
1.44" Floppy Drive
Colour Monitor (SVGA)
Ethernet card 10/100 Mbps
Windows-NT Operating System
MS-SQL Server 6.5

Strong Features of SOUL

Following are few of the strong features of SOUL, which should induce librarians to use SOUL in their libraries.

- Windows based user friendly software.
- Well-designed screens, logically arranged functions with extensive help messages make the software user friendly.
- It is based on client server architecture allowing scalability to the users.
- It uses RDBMS to organise and query the data.
- SOUL does not need an extensive training. With very little familiarity, one can begin using it.
- It is specially designed to work in the large academic libraries, capable of handling large number of records.
- It is a multi-user software and there is no limit on simultaneous accesses.
- Supports internationally known standards such as CCF and AACR II. Etc.
- Provides export and import facility and adheres to ISO 2709 format.
- Incorporates all required features to work in a networked environment i.e., LAN and WAN.
- OPAC is versatile and very user-friendly with all options in-built.
- OPAC is accessible over the web using any GUI based browsers.
- Provides comprehensive list of reports, master databases and authority files.
- Provides facility to create, view and print records in regional languages.
Functionally it covers every conceivable operation of University library.
Available at affordable cost.
SOUL has been fully tested at a number of university libraries and critically evaluated by team of experts and practising librarians.
INFLIBNET responsible for update and documents at Modules

The SOUL has been divided into following six broad modules as shown in the Figure 7.5.1
- Acquisition
- Cataloguing
- Circulation
- Serial Control
- OPAC
- Administration

These modules have further been divided into sub-modules looking at the nature of functions handled by various functional divisions in University libraries. Brief description of the same along with first screens have been given below herewith.
1. Acquisition Module

This particular module provides facilities to handle work relating to acquisition of reading materials of all types except serials, starting from suggestion / recommendation by faculty till accessioning, invoice processing. Acquisition module comprises following six broad sub-modules as given in the Figure 7.5.2.

- Suggestion
- Order processing
- Receiving/Accessioning
- Payment
- Master Databases
- Reports

![Software for University Libraries (SOUL) version 1.0](image)

**Figure 7.5.2**

- Suggestion sub-module enables creation / updation of databases of new items suggested by a faculty member along with bibliographical details and also suggestor's details such as name, department, user code, budget code etc. Books received through placement of purchase orders as well as those received as gratis are handled from this module. Selecting items for approval, incorporating further details like approval date, budget head, approver's name, rejected items, its date and reasons for rejection are
also handled here. Number of required reports having combination of several fields can be easily generated.

- **Order Processing**: Selecting the items for ordering, vendor/publisher selection, assigning order and reference number, setting deadlines for supply and other details can be done under this sub-module. Facilities for sending reminders, cancelling orders, generating certain reports specific to these modules, are provided.

- **Receiving / Accessioning**: This function supports cross checking with order, receiving partial/ full supply of items listed in order, duplicate checking with an existing title, assigning accession numbers along with further necessary details required and merging the records with existing database, if items are already in the collections.

- **Payments**: Payments sub-module allows processing of the regular invoices, advance payments, and recording of every information pertaining to each invoice including conversion rates, handling charges discounts etc. Facility for generating reminders to supplier or publisher. Searching the status of payment and generation of reports are other strong features added in this sub-module.

- **Master Databases**: Publisher, vendor, Currency and budget codes (both source wise and department wise) are few major master databases that are frequently handled/created here. Updation, deletion of all this is possible from here.

- **Reports**: There are 13 major reports relating to acquisition that can be created with number of parameters. Acquisition module is capable of handling almost every function that is being carried out in acquisition division of university libraries.

2. **Cataloguing Module**

Catalogue module function begins with selecting the items that have already been accessioned in the previous module and furnishing rest of the information as per AACR-II rules. Providing user services such as recent addition services, CAS, creation and updation of authority files etc. are
other major functions supported by SOUL. A comprehensive worksheet covering almost every field facilitates data entry of all types of books, conference proceedings, theses etc. Facility to create database in the regional languages, using respective scripts is also provided. This module allows the library staff to conduct comprehensive searches for existing items before cataloguing new items and has provision of import and export of records and retrospective conversion. Functionally this module has been organised into following sub modules as given in Figure 7.5.3

- Cataloguing Process
- Catalogue search
- User services
- Authority file maintenance
- Retrospective
- Reports
- Conversion

\[ \text{Figure 7.5.3} \]

\[ \text{Catalogue Process function allows to pick-up the accessioned item, under process, for the cataloguing purpose. Here one can add remaining information as per specified standards, such as additional} \]
bibliographical information, subject headings, classification number etc. Editing of existing records for maintaining consistency can also be done here.

❖ Catalogue Search enables search of the existing items, its status, identifying duplication etc. for the purpose of day-to-day cataloguing. This is similar to OPAC.

❖ User Services sub module has three major functions viz., generating current awareness list (by date, subject etc), compiling of bibliographies with various combinations and alert services to individual users.

❖ Authority File Maintenance includes creation, updation and use of major authority files for names such as publisher, languages, corporate bodies, meetings, authors, physical media, types of material and also for subject descriptors. This is a unique feature added to this software taking into account the consistency that each library needs to maintain while creating records.

❖ Retrospective Conversion has two major functions viz. data entry of old collection with minimum information without going to first sub-module and import and export of data from and to external sources. By using this function libraries can download the matched records from INFLIBNET union catalogue or other sources and export the records for contributing to union catalogue etc. A versatile ISO2709 interface developed at INFLIBNET, which is built-in to this module, enables to carry out the job.

❖ Reports module allows generation of catalogue cards as per AACR-II, generation of recent editions reports subject and class number wise and other related reports.

The catalogue module basically supports all major functions relating to technical processing and has been designed as per the international standards.
for codes etc., searching the status of membership or an item, suspending the membership and generating related reports.

- Transactions handles all major functions such as issue, return, renewal, reservation, recall or reminder of an item etc. This module also handles cancellation of reserved books, lost/missing books, searching the member status and searching catalogue module etc. Transaction is based on Accession number and Member code. This module supports generating and reading of barcode labels. A unique facility in this module allows one to see simultaneously the details of members, items borrowed, dues etc. while the transaction process is on. This enables issue counter staff as well end-user to know the exact status of the members borrowing.

- Inter Library Loan allows lending of items to specified member library and also borrowing items from other libraries, issues, reminders etc. This sub-module has been developed comprehensively to take care of all the details of user libraries, individuals and items loaned.

- Over due charges facilitates collection of overdue charges in full or in part, providing receipts, keeping up-to-date accounting and tallying totals, etc. Using this function one can generate daily, weekly, monthly reports to find out as to how much overdue charges have been collected.

- Reminder module handles individual and group reminder generation for all overdue materials. Comprehensive listing of materials that are overdue can also be generated within a specific period giving from and to dates.

- Search status enables the library circulation desk staff to check the status of a member or items borrowed by a user and overdue items.

- Maintenance is yet another comprehensive sub-module, which covers binding, lost and cost recovery of books, damaged books, withdrawn books etc.
• Reports sub-module allows the generation of as many as 16 major reports and with many combinations. All possible reports that a large library expects are provided for.

Above all this module is capable of handling large transactions. If various functions built in this module are effectively used to use the library staff will save a lot of time and help to avoid repetitive jobs.

4. Serial Module

This module allows one to create an exclusive database for different serials. Handling serials is the most complicated job for the library staff. This module has been designed to deal with all these complicated jobs quite effectively. It helps in keeping track of every title received in the library. All functions starting from suggestions, master databases, subscriptions, checking, payment, reminder, binding title history export / import etc have been covered. For the convenience of users, these functions have been grouped under following logical sub-modules as given in Figure 7.5.5.

- Suggestions
- Master Databases
- Binding
- Export / Import
- Subscription
- Check-in
- Search Status
- Payment
- Reminder
- Title History
- Report Generation

Software for University Libraries (SOUL)

Serials Control

Soul developed by INLIBNET Centre, Navrangpura, Ahmedabad -380 009 , India

Figure 7.5.5

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❖ Suggestion Sub-module enables one to record and keep a track of all the suggestions received for subscribing to a serials. Selection of these titles for approval, preparing budget estimates and generation of related reports are covered under this sub-module.

❖ Subscriptions module takes care of ordering/renewal of serials, follow-up relating to the same, sending reminder, if invoices are not received, generating orders by supplier or publisher are included under this option.

❖ Payment function supports processing and recording of all details relating to each invoice, including supplementary invoice such as invoice processing, credit notes processing, reports generation etc.

❖ Master Databases option allows creation of large number of frequently used master databases viz. title entry, language, class number, publisher, binder, country, department, currency, frequency, budget heads, binding type, delivery modes, reports etc. Of these, title entry is main. It is here that the creation of database for each title with bibliographic information begins in the serial module.

❖ Check-in is crucial function to record the receipt of each issue of serial and its accompanying material. To enable one to record the issues, system has a facility to generate schedule in advance for each title by providing necessary inputs viz. Vol. no(s), Issue no(s), frequency, date of publication of first issue, mode of delivery, total number of issues etc.

❖ Sending reminders for non-receipt of issues or issues that are overdue etc for single or all titles by supplier, publisher etc can be done using this sub-module.

❖ Binding supports making sets, generating order, payments, accessioning bound volumes etc.

❖ Status search option facilitates one to find out the status of every thing starting from subscription to check-in of issues.
Title history is provided to keep record of ceased, suspended, discontinued titles and also title change, splits, mergers along with holdings information for each and every title in the database.

Export/Import of data in ISO2709 format is also provided to enable library to transfer the existing records in to SOUL and also contribute data to INFLIBNET union database.

Reports is a comprehensive function, which has more than 15 built-in reports of all types with different combinations. This adds to the strength of serial module.

Serial module is designed to handle large number of titles, with many options giving maximum flexibility to user libraries.

5. Online Public Access Catalogue Module (OPAC)

One of the major attractions of SOUL is that it has a powerful Online Public Access Catalogue as given in figure 7.5.6 with a choice of search options and variety of display formats. OPAC is a dynamic information desk that allows library staff to post library calendar, library rules and regulations, announcements, or any other information of user interest. SOUL increases the functionality of library's OPAC terminals by allowing the users to access the internal as well as external resources. This enables the users to access various databases developed at INFLIBNET. Library can keep entire collection available at users fingertips. This powerful, yet easy-to-use and user friendly searching tool allows user to quickly find the materials in the library. Some of the major features of OPAC are:

- SOUL includes Boolean operation when more than one search option is to be used.
- Search results can be sorted according to the preference of search item.
- User has option to select variety of display formats.
- Display of records according to AACR-II format.
- Easy and quick searches with options.
Status of each book starting from acquisition module is reflected.
Search key fields, such as, author, title, keywords, class number, accession number, etc.
Accessible through the GUI based web browsers like Netscape Communicator, Internet Explorer etc.
User can see the status of currently borrowed items by entering his/her borrower number.
Search results can be saved and printed.
Selection of databases can be made according to the choice of users.

Figure 7.5.6

6. Administration Module

Administration module as given in Figure 7.5.7 has been to authorize users i.e., the library staff to use various modules. Assigning login and password to use each module of the system is done by the system administrator. The security function, backups, recovery of data and other utility functions are some of the features added under this module. Users
have been categorized into three levels looking into nature of functions handled by the staff at different levels.

- Super User
- Acquisition
- Cataloguing
- Circulation
- Serial Control
- Reports
- OPAC

![User Administration Interface]

**Figure 7.5.7**

7.6 Comparision of LIBSYS and SOUL

(1) Acquisition:

<table>
<thead>
<tr>
<th>No.</th>
<th>Services</th>
<th>LIBSYS</th>
<th>SOUL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Assistance in selection and procurement</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>2.</td>
<td>Duplicate checking</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>3.</td>
<td>Order Processing</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4.</td>
<td>Modifications in ordering</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>5.</td>
<td>Standing order</td>
<td>Y</td>
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<tr>
<td>6.</td>
<td>Approval Order</td>
<td>Y</td>
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</tr>
<tr>
<td>7.</td>
<td>Free/Gift Order</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>8.</td>
<td>Future Order</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>9.</td>
<td>Receiving Document</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>10.</td>
<td>Invoice Processing</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>11.</td>
<td>Accessioning Document</td>
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<tr>
<th>No.</th>
<th>Services</th>
<th>LIBSYS</th>
<th>SOUL</th>
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<tbody>
<tr>
<td>12.</td>
<td>Payment Requests</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>13.</td>
<td>Budget and Expenditure analysis</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>14.</td>
<td>Vendors Directory</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>15.</td>
<td>Generation of reports</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>16.</td>
<td>On-line Enquiries</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>17.</td>
<td>Integration with cataloguing, OPAC and searching</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>18.</td>
<td>Reminders</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>19.</td>
<td>Accession Register</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>20.</td>
<td>Bill Register</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>21.</td>
<td>Updating of database when documents are weeded out, disposed of or shifted to new location</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>22.</td>
<td>Canceling orders</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>23.</td>
<td>Data Import</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>24.</td>
<td>System Set-Up</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>25.</td>
<td>Record Keeping/Master Database</td>
<td>Y</td>
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(2) Cataloguing

<table>
<thead>
<tr>
<th>No.</th>
<th>Services</th>
<th>LIBSYS</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pick-up the accessioned item, under process</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>2.</td>
<td>Update Bibliographical Information</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>3.</td>
<td>Update Holding</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4.</td>
<td>Remove title</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>5.</td>
<td>Change Accession Number</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>6.</td>
<td>Change Types of Documents</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>7.</td>
<td>Merge titles</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>8.</td>
<td>Retrospective Conversion</td>
<td>Y</td>
<td>Y</td>
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<td>9.</td>
<td>Authority files</td>
<td>Y</td>
<td>Y</td>
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<td>10.</td>
<td>Synonyms</td>
<td>Y</td>
<td>N</td>
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<td>11.</td>
<td>Thesaurus</td>
<td>Y</td>
<td>N</td>
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<td>12.</td>
<td>Multimedia</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>No.</td>
<td>Services</td>
<td>LIBSYS</td>
<td>SOUL</td>
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</tr>
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<td>1.</td>
<td>Membership records</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>2.</td>
<td>Collection Updates</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>3.</td>
<td>Check-out</td>
<td>Y</td>
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<td>4.</td>
<td>Check-in</td>
<td>Y</td>
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<td>5.</td>
<td>Renewal</td>
<td>Y</td>
<td>Y</td>
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<td>6.</td>
<td>Reservation</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>7.</td>
<td>Recall/Follow-up</td>
<td>Y</td>
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<td>8.</td>
<td>Inter Library Loan</td>
<td>Y</td>
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<td>9.</td>
<td>On-line Enquiries</td>
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<td>Y</td>
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<tr>
<td>10.</td>
<td>Reports Generation</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>11.</td>
<td>Serial Circulation</td>
<td>Y</td>
<td>N</td>
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<tr>
<td>12.</td>
<td>Self Circulation</td>
<td>N</td>
<td>N</td>
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<tr>
<td>13.</td>
<td>Fine Collection</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>14.</td>
<td>Member History</td>
<td>Y</td>
<td>Y</td>
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<td>15.</td>
<td>Management Reporting</td>
<td>Y</td>
<td>Y</td>
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<td>16.</td>
<td>Integration with cataloguing, OPAC and searching</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>17.</td>
<td>Maintenance like binding, lost and cost recovery of</td>
<td>Y</td>
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</table>

(3) Circulation
documents, damaged documents, withdrawn documents etc.

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>18. Using Bar-code Facility</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>19. System Set-Up</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>20. Record Keeping/Master Database</td>
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(4) Serial Control

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<tr>
<th>No.</th>
<th>Services</th>
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<tbody>
<tr>
<td>1.</td>
<td>Subscription records for each serial</td>
<td>Y</td>
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<tr>
<td>2.</td>
<td>Ordering/renewal of serials</td>
<td>Y</td>
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<tr>
<td>3.</td>
<td>Receipt of issues</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>4.</td>
<td>Invoice Processing</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>5.</td>
<td>Payment Requests</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>6.</td>
<td>Budget and Expenditure analysis</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>7.</td>
<td>Vendors Directory</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>8.</td>
<td>Generation of reports</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>9.</td>
<td>Reminders</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>10.</td>
<td>Invoice Register</td>
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<td>Y</td>
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<tr>
<td>11.</td>
<td>Binding Register</td>
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<td>12.</td>
<td>Binding order</td>
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<tr>
<td>13.</td>
<td>Binding payments</td>
<td>Y</td>
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<tr>
<td>14.</td>
<td>Entry of Back Volumes</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>15.</td>
<td>Accessioning bound volumes</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>16.</td>
<td>Export/Import</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>17.</td>
<td>Title history such as ceased, suspended,</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>discontinued titles, title change etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>System Set-Up</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>19.</td>
<td>Record Keeping/Master Database</td>
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</tbody>
</table>
### (5) Online Public Access Catalogue (OPAC)

<table>
<thead>
<tr>
<th>No.</th>
<th>Services</th>
<th>LIBSYS</th>
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<tbody>
<tr>
<td>1.</td>
<td>Simple and Advance Search (Boolean)</td>
<td>Y</td>
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<tr>
<td>2.</td>
<td>Search results can be sorted according to the performance of search item</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>3.</td>
<td>Variety of display formats</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>4.</td>
<td>Display of records according to standard format vis. AACR-II, CCF</td>
<td>Y</td>
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<td>5.</td>
<td>Easy and quick search</td>
<td>Y</td>
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<tr>
<td>6.</td>
<td>Status of Check out/Reserves</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>7.</td>
<td>Item status/Reserves</td>
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<tr>
<td>8.</td>
<td>Search results can be saved and printed</td>
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<td>9.</td>
<td>Search New Additions items</td>
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<tr>
<td>10.</td>
<td>Access to other databases</td>
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<tr>
<td>11.</td>
<td>Provision for Library Calendar</td>
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### (6) Others:

<table>
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<tr>
<th>No.</th>
<th>Services</th>
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<tbody>
<tr>
<td>1.</td>
<td>Administrative Facility</td>
<td>Y</td>
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<tr>
<td>2.</td>
<td>Supply of Software</td>
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<tr>
<td>3.</td>
<td>Training of users covering all aspects</td>
<td>Y</td>
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<tr>
<td>4.</td>
<td>User Manual provided</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>5.</td>
<td>Work in networked environment i.e. LAN, MAN, WAN</td>
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<td>6.</td>
<td>Suitable for all libraries</td>
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<td>7.</td>
<td>User friendly</td>
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<td>8.</td>
<td>Multi-user Software</td>
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<tr>
<td>9.</td>
<td>Provide facility in regional language</td>
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<td>Y</td>
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<tr>
<td>10.</td>
<td>Affordable cost</td>
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<td>11.</td>
<td>Back-Up facility</td>
<td>Y</td>
<td>Y</td>
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</tbody>
</table>
References:

10. Ibid, Block-2.
11. Ibid, Block-4.
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13. IGNOU, Basics and applications; computerized services, BLS-7, Block2.
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