


Subject: Library and Information Science

Production of Courseware

 -Content for Post Graduate Courses



Paper No: 05 ICT for Libraries

Module : 19 Library Automation: Cataloguing



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Library Automation: Cataloguing

I. Objectives

The objective of this module is to impart knowledge on the following aspects of automated cataloguing:

- Features and advantages of automated cataloguing;
- Use of various master databases and authority files for creating records;
- Process of computerised cataloguing;
- Copy cataloguing and data import/export in various formats;
- Use of bibliographical standards for creation of records;
- Various users services using cataloguing module;
- Concept of shared cataloguing and OPAC; and
- Management issues of computerized cataloguing in wider context of library automation.

II. Learning Outcomes

After completion of this lesson, learners would attain knowledge about automated cataloguing module, its objectives, advantages, features of computerized cataloguing. Learners would also attain knowledge on basic requirements, processes and basic jobs involved in cataloguing, importing and exporting data from different format based on standards.

III. Module Structure

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1. Introduction

Automated cataloguing systems are useful to manage the clerical and technical processes involved, and to promote the exchange and use of cataloguing data locally, regionally, nationally and globally. Over the past 20 years, databases and Online Public Access Cataloguing (OPAC) have gradually replaced card, sheaf and microform catalogues. The catalogue records have become the central bibliographic record for the exchange management system. A computerised catalogue record requires to be standardised for the interchange of cataloguing records. Standardisation and structuring of cataloguing records are based on content designators such as MARC 21 (Machine Readable Cataloguing), CCF (Common Communication Format), UNIMARC (Universal MARC) or other similar standards.

Catalogue modules offer advanced, comprehensive cataloguing and authority functions designed to ensure efficient and accurate maintenance of library's holdings. Complying with the communication format for both bibliographic and authority records, the catalogue module provides sophisticated options for adding, editing, and searching the library's records.

2. Objective of Cataloguing

(Basic objectives of catalogue as given below):

Charles Ammi Cutter, as early as 1876: has defined as;

- i. To enable a person to find a book of which either the author, the title or the subject is known;
- ii. To show what the library has by a given author, or a given subject or in a given kind of literature; and
- iii. To assist in the choice of a book as to its edition (bibliographically) or as to its character.

Even though, the objectives have been set a century ago, even today they are as valid, as ever before. To achieve them, the International Conference on Cataloguers formulated cataloguing principles, more popularly known as Paris Principles, which have, in turn, formed a basis for cataloguing standards such as AACR2, ISBD, etc.

The objectives for automation support to cataloguing are:

- a. To speed up the processing of materials into the collection;
- b. To reduce the clerical effort, stationary (such as work sheets, cards, etc.) and unit cost of cataloguing a work; and
- c. To act as a common means to library materials across libraries.

3. Advantages of Automated Cataloguing

There are several advantages of automated cataloguing. A well designed automated cataloguing system should have the following functions and advantages:

- Creation of a record for a document only once;
- No main or added entries of catalogue are necessary;
- Any field may be made searchable;
- Composite and interactive searches extend versatility;
- Outputs can be obtained in any desired format;
- Data input and retrieval is much faster;
- Repetitive work is eliminated;
- Import/export of bibliographic data is possible; and
- Interlinking with external databases is possible.

4. Features of Automated Cataloguing

Catalogue module is used for retrospective conversion of library resources. It also facilitates library staff to process the newly acquired library resources. The important features of catalogue module are:

- UNICODE-based multilingual support for Indian and foreign languages;
- Compliant to International Standards such as MARC21, AACR-2, MARCXML;
- Supports multi-platform for bibliographic database such as My SQL,MS-SQL or any other RDBMS;
- Supports cataloguing of electronic resources such as e-journals, e-books, virtually any type of material;
- Supports online copy cataloguing from MARC21 bibliographic database;
- Provides default templates for data entry of different type of documents. User can also customize their own data entry templates for different type of documents;
- Provides freedom to users for generating reports of their choice and format along with template and query parameters;
- Provides facility to send reports through e-mail, allows users to save the reports in various formats such as PDF, Excel, MARCXML, etc.;
- Highly versatile and user-friendly OPAC with simple and advanced search. OPAC users can export their search results into PDF, MS Excel, and MARCXML format;
- Supports authority files of personal name and corporate body ;
- Supports data exchange through ISO-2709 standard;
- Global Search and replace a word or a phrase;
- Different templates for leaders and fixed fields of MARC21;
- Allows user-generated customized reports;
- Facilitates authority database of person name, corporate body, subject headings and series name; and
- Supports copy cataloguing in MARC21 format by using ISO- 2709 standard.

5. Creation and Maintenance of Master Database/Authority File

Modern ILMSS are based on relational data model. Each module of these packages centers around a master database. Any number of additions, modifications and deletions are possible in the master database and these changes are automatically reflected in all the sub-modules of the catalogue. Cataloguing module also follows architecture, wherein records created in the master database are available to all the sub-modules. It reduces data entry work

and ensures standardization. Generally, master database is the database where entry is to be made once that gets reflected throughout its various sub modules.

Authority file is essential to index terms or headings, such as author headings, or subject index terms for better retrieval efficiency. Records in this file may be created locally or drawn from externally available files such as the name and subject authority files of the Library of Congress or other agencies. Alternatively, one or more suitable thesauri may be used to build up the authority file. Library automation packages provide a facility to create and maintain authority file in the catalogue module. This acts as a master database, where entry is to be made once. This gets reflected in various modules of the package. The master file containing authority entries can be consulted during cataloguing, possibly by display in a separate window and new headings are immediately added to the authority file with an opportunity to review subsequently. The following are the master databases:

5.1 Name: In this file, provides authoritative data for names of persons, organizations, events, places, and titles. Its purpose is the identification of these entities and, through the use of such controlled vocabulary, to provide uniform access to bibliographic resources. Names descriptions also provide access to a controlled form of name through references from unused forms. Names may also be used as subjects in bibliographic descriptions; it may be combined with controlled values from subject heading schemes, such as LCSH.

5.2 Publisher: This master file contains contact details of all local and foreign publishers who have publishing books and serials along with their corresponding codes. These codes are generally created locally.

5.3 Subject: These master files hold lists of subject descriptors and are available in various sub-modules for entering subject headings for books and serials. This master also includes class numbers, corresponding to subjects covered.

5.4 Country: This file contains names of countries and their corresponding codes for entering details of country of publication in sub-modules of cataloguing module. The Country code is generally based on ISO-3166 where each country is represented by two unique characters e.g. the code for India is as per ISO-3166 standards.

5.5 Language: This file contains entries for languages and their three digit codes as per the ISDS manual.

5.6 Physical Media Type: Library materials are available in different types of media which are defined in master file. These physical media can be selected for creation of bibliographic record. The physical media will help user to

navigate required title in different forms of resources. It may be textual document, CD-ROM, magnetic tape, online, DVD-ROM, etc. This file includes description and corresponding codes for different physical media.

5.7 Corporate Body: This master file contains contact details of corporate bodies who have publishing books and serials along with their corresponding codes.

5.8 Meeting: The master file contains name of the meeting, date, place where it has been taken. The most of the options are similar with corporate body.

5.9 Series: The master file contains name of the series under which various publication are brought out.

6. Basic Requirements for Catalogue Module

In view of the recent developments in ICT, ILMS should provide appropriate facilities in its catalogue module. The basic necessities of the module for machine-readable cataloguing are as follows:

6.1 Bibliographic Requirements: The ILMS must support the following important features and functionalities;

- Provide support for a variety of classification schemes and vocabulary control devices (e.g., subject headings lists or thesauri and electronic resource description formats);
- Supports standard bibliographic and authority record formats (e.g. MARC, CCF, etc.);
- Facilitates export or import of records from tape, disk or other devices;
- Facilitates retrieval of bibliographic record and its modification at any time, once it has been created;
- Facilitates coverage of items like monographs, serials, government documents or any other type of documents;
- Facilitates catalogue data to be added, validated, updated and removed online from the workstations; and
- Supports withdrawal of items, export and import of records from other services.

6.2 Authority Control Requirements: The ILMS should support the following features with regard to authority control;

- Facilitates incorporation of changes in the MARC authority format or other national/ international standard formats;
- Generation of various kinds of references from authority records;

- Accommodate personal, corporate and topical name headings in a name authority file, title, uniform title, and series entries in a title authority file and subject headings in a subject authority file.

6.3 OPAC Requirements: The ILMS should facilitate the following functionalities with record to OPAC/WebOPAC;

- Support both simple and expert searching;
- Support users to enter multiple words or phrases to be searched on one, more than one or all fields;
- Support Boolean Operators such as;
 - OR (either one or both terms must be in the record)
 - AND (both terms must be in the same record)
 - NOT (following term must not appear in any record)
- Support positional operators such as;
 - SAME (terms must be in the same field)
 - WITH (terms must be in the same sentence within a field)
 - NEAR (terms must be adjacent to one another, but in either order)
 - ADJ (terms must be immediately adjacent to one another)
- Support relational operators (less than, greater than, equal to, etc.);
- Support user self-service features such as reservation of items, cancellation of reserved items, etc.;
- Facilitate limit its searches by publication year, language, item type, item category, location, etc.;
- Support multilingual features; and
- Enable searchers to specify which fields are to be displayed and to indicate brief or full display retrieve records.

6.4 Downloading Requirements: The ILMS software should meet the following requirements with regard to their downloading;

Supports Z39.50 compliant cataloguing system [ANSI/INISO Z39.50 (1995) or ISO

239.50 (1998)];

Capturing of bibliographic and authority records from any Z39.50 server through Z39.50 client; and

Facilitate local manipulation of captured data.

6.5 Reports and Backup Requirements: The ILMS software should support the following reporting and backup requirements;

- Reflect count of all records added, edited by a specific operator or over a specified time period;

- Generate lists, statistics of items added or tabulated by call number, document
 - type, adjustment location, etc.;
- Produce a list of all citations with authority file violations; and
- Support backup of all cataloguing records in suitable media (magnetic, optical, etc.) and easy recovery of records if required.

7. Process of Computerised Catalogues

7.1 Titles in Process: The titles, which have been entered in the acquisition module, will appear under this option in the cataloguing module. It allows to feed the missing information accurately, correct the details like title/author, edition, publisher, place, year, subjected headings, keywords, physical description, etc. if required. Feed local holding information such as shelving location, collection type (Lending, Reference, Special), classification number, book number, accession number and other relevant information about the title from the physical book or from other sources.

7.2 Retrospective Conversion: There are a number of options for retro conversion as mentioned below;

- i. **Manual:** The majority of the libraries are creating bibliographical records in the database through manual keying by using various data sources such as data input sheets, accession register, catalogue cards. In the catalogue module the record is standardised by entering additional data elements and rendering of access points with the help of authority file.
- ii. **Existing library catalogue:** Development of library OPAC started long back in many libraries of the world and at that time Integrated Library Automation Packages were not available. As such, cataloguing data available in digital format can be merged into the catalogue database created using the newly installed ILMS.
- iii. **Union Catalogue:** Union database is unified Online Library Catalogues of books, theses and journals of the participating libraries. It contains bibliographic description, location and holdings information of the books, journals and theses, etc. It is a major source of bibliographic information that can be used for inter-library loan, collections development as well as for copy cataloguing and retro-conversion of bibliographic records.
- iv. **Commercially available files of MARC records:** Records from external databases may be downloaded directly from the relevant online databases such as OCLC or CD-ROM databases.

- v. **Other Sources:** Copy cataloguing denotes the process of downloading bibliographic records from cataloguing utilities or vendor online systems. This is the most popular method in many libraries. Creating complete, new bibliographic records from scratch is known as original cataloguing. Many libraries download bibliographic records directly to local online catalogues from bibliographic databases such as OCLC, INFLIBNET's IndCat, a commercial vendor database, or other library's online catalogues.

7.3 Import/Export

Data import/export facility is available in most of the ILMS software, which allows to:

- Import MARC records (data downloaded from various sites/files obtained from the Publishers, LOC, IndCat, etc.) to ILMS software;
- Export ILMS records into MARC21 format;
- Convert CCF (Common Communication Format) records into MARC format;
- Import MARCXML data into ILMS software; and
- Provision to add accession numbers to imported data.

8. Standards for Bibliographic Formats

8.1 MARC

Several options are available for libraries for automating cataloguing activities, the most widely used method is by using MARC format. It is to the credit of Library of Congress for having recognized the need for developing a record structure and format which would greatly facilitate the exchange of bibliographic information between libraries, group of libraries and computer systems. Early trials around 1966 worked with MARC I format, and superseded in 1967 by MARC II often referred as MARC. Presently, most of the ILMS software are using MACR21.

"MARC format" is a widely accepted structural coding scheme for a particular type of material, including monographs, serials, sound recordings, scores, manuscripts, maps, audio-visual materials, and machine readable data files. The data that can be included in a MARC format include almost all information represented on cataloguing cards such as author, title editor, physical description, series statement, notes, subject headings, added entries call number and various control numbers plus a great deal of other information which is helpful for categorization and processing by the computer.

8.2 CCF (Common Communication Format)

UNESCO's General Information Programme (PGI) recommended MARC format for libraries and UNSISIT Reference Manual for abstracting and indexing agencies. But, because it is common for developing countries to support only a single bibliographic agency, some countries have indicated that they find neither of these two formats entirely satisfactory. The direct result of this dissatisfaction has been the development of Common Communication Format (CCF). It was first published by UNESCO in 1984. It provides a standard for bibliographic records in machine readable form that will be useful for both library and non-library agencies. It follows the rules for bibliographic record formats laid down in ISO.

8.3 UNIMARC

MARC formats were also developed in other countries like Canada, Latin America, Spain, Denmark, Australia, Japan, Germany, France, Belgium, Switzerland, etc. The multiplicity of these formats made it difficult to exchange machine readable data on an international scale. The IFLA Working Group on Content Designators formed in 1973 under the joint auspices of the Committee on Cataloguing and Committee on Mechanization took steps to establish what is known as 'UNIMARC', which could facilitate translation of records and international exchange of data.

The basics of 'UNIMARC' are ISBD with full content designation provided for full data elements. The primary purpose of UNIMARC was to facilitate the international exchange of bibliographic data in machine-readable form between national bibliographic agencies. UNIMARC may also be used as a model for the development of new machine-readable bibliographic formats.

The scope of UNIMARC was to specify the content designators (tags, indicators Automation of Cataloguing and subfield codes) to be assigned to bibliographic records in machine-readable form and to specify the logical and physical format of the records. It covers monographs, serials, cartographic materials, music, sound recordings, graphics, projected and video materials, rare books and electronic resources.

UNIMARC was intended to be a carrier format for exchange purposes. It does not stipulate the form, content, or record structure of the data within individual systems. Records are usually structured in exchange tape format as the last stage in any conversion process after form, content, and content designators have been converted to the UNIMARC standard. Those organizations intending to use UNIMARC for data interchange will find it useful to co-ordinate their

internal format content designators and field and sub field definitions with those in UNIMARC to reduce the complexity of data conversion when the records are converted into the UNIMARC exchange tape structure.

8.4 ISBD

International Standard Bibliographic Description (ISBD) was developed out of a resolution of the International Meeting of Cataloguing Experts, organized by the IFLA Committee on Cataloguing in Copenhagen in 1969, which recommended that standardization of the form and content of bibliographic description be established. This ISBD contained provisions covering machine readable data files. However, when the ISBD (NBM) was being reviewed, together with the ISBD(CM), ISBD(M), and ISBD(S), by the ISBD Review Committee formed by IFLA in 1981, it was decided that special consideration should be given to the rapidly increasing need for a separate ISBD for computer files. With the development of programs and data files for smaller computers, the ISBD (CF) was published in 1988 as a result of developments like emergence of interactive multimedia, development of optical technology availability of remote electronic resources on the Internet and World Wide Web, and reproductions of electronic resources. These formats conform to AACR2 Rules and are also useful for exchange of bibliographic data.

8.5 Functional Requirements for Bibliographic Records (FRBR)

Functional Requirements for Bibliographic Records (FRBR) is a conceptual entity-relationship model developed by the International Federation of Library Associations and Institutions (IFLA) to describe entities, relationships, and attributes (i.e., metadata). User tasks of retrieval and access in online library catalogues and bibliographic databases from a user's perspective. It represents a more holistic approach to retrieval and access as the relationships between the entities provide links to navigate through the hierarchy of relationships. The model is significant because it is separate from specific cataloguing standards such as AACR2 or International Standard Bibliographic Description (ISBD).

The Functional Requirements for Bibliographic Records - the entities, relationships, and attributes from that model to describe how it is currently affecting work on the Anglo-American Cataloguing Rules and the extension of the model into the area of authority control.

8.6 Resource Description and Access (RDA)

Resource Description and Access (RDA) is a standard for cataloguing that provides instructions and guidelines on formulating bibliographic data. Intended

for use by libraries and other cultural organizations such as museums and archives, RDA is the successor to the Anglo-American Cataloguing Rules, Second Edition (AACR2), the current cataloging standard set for English language libraries. RDA was initially released in June 2010.

The primary distinction between RDA and AACR is structural. RDA is organised based on the Functional Requirements for Bibliographic Records (FRBR). These principles identify both the 'user tasks' which a library catalogue should make possible and a hierarchy of relationships in bibliographic data. Descriptions produced using the instructions of RDA are intended to be compatible with any coding schema, including the data environments used for existing records created under the AACR2 rules.

8.7 UNICODE

Unicode is a computing industry standard for the consistent encoding, representation and handling of text expressed in most of the world's writing systems. It supports more than 150 languages to create bibliographical records in multilingual formats. Developed in conjunction with the Universal Character Set Standard and published in book form as The Unicode Standard, the latest version of Unicode contains a repertoire of more than 1,10,000 characters covering 100 scripts and various symbols. The standard consists of a set of code charts for visual reference, an encoding method and set of standard character encodings, a set of reference data computer files, and a number of related items, such as character properties, rules for normalization, decomposition, collation, rendering and bidirectional display order (for the correct display of text containing both right-to-left scripts, such as Arabic and Hebrew, and left-to-right scripts).

Unicode can be implemented by different character encodings. The most commonly used encodings are UTF-8, UTF-16 and the now-obsolete UCS-2. UTF-8 uses one byte for any ASCII character, all of which have the same code values in both UTF-8 and ASCII encoding, and up to four bytes for other characters. UCS-2 uses a 16-bit code unit (two 8-bit bytes) for each character but cannot encode every character in the current Unicode standard. UTF-16 extends UCS-2, using one 16-bit unit for the characters that were representable in UCS-2 and two 16-bit units (4×8 bit) to handle each of the additional characters.

9. Users Services

The cataloguing/OPAC module of ILMs can provide the following services;

Current awareness/ bibliographical services: In principle, 'Current Awareness Service' and 'Bibliographic Service' are the same while CAS is generated periodically; bibliographic service is created 'On Demand'. One can

select appropriate options and provide filters if needed and generate the report. The report can also save in different formats (in .pdf format/Excel), print it and also send it by email to the users.

10. Online Public Access Catalogues

The OPAC has simple and advanced search facility with the minimum information for each item including author, title, corporate body, conference name, subject headings, keywords, class number, series name, accession number or combination of any of two or more information regarding the item. Major functions provided in the OPAC module are:

- Simple Search;
- Boolean Search;
- Advanced Boolean Search;
- Displaying and downloading of records in MS Excel, PDF or MARCXML; and
- Search support for the items that are in the acquisition process in the library.

11. Reports

Most of the ILMS provides basic and advanced level reports, facilities with standard filter options. User can create multiple template depending on requirement by selecting fields.

Basic Report: One can generate basic report with limited number of fields with standard filters by class number, titles, collection type, language, shelving location, accession number record ID, subject heading, recent titles, location, accession number (ranges), users name. One has to enter appropriate parameters and filters, as well as select the desired template and get the report.

Advance Report: Allows using Boolean operator by selecting requisite MARC fields, and sub fields too. There are good numbers of filters to limit the search based on user needs.

- Generate spine labels/ barcode labels and book cards; and
- Generate lists, statistics of items added or edited by operator over a specified time period.

12. Summary

The most important house-keeping activities associated with any modern library comprise of acquisition, cataloguing, circulation control and serials control. The success of a library depends to a large extent, on the efficient and effective organization of these house-keeping activities. In the past, these activities have been carried out manually. In today's context, these operations were being carried out with the help of computers.

The catalogue module describes the objectives, advantages, features of computerized cataloguing. Basic requirements, processes and basic job in cataloguing, importing and exporting data from different format based on standards is also covered. Module also highlights various master databases, standards, reports and user services. The module helps to acquire knowledge required to understand the use of computers in library house-keeping activities.

There are a number of software packages which could be used to accomplish these activities. The main objective is to indicate the factors which must be taken into consideration when studying automation of these routines and to examine how some of the software deals with this work.

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