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Module : 22 Library Automation: Online Public Access Catalogue (OPAC)

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Library Automation: Online Public Access Catalogue (OPAC)

I. Objectives

The objectives of this module are to impart knowledge on the following aspects of Online Public Access Catalogues (OPAC):

- Definition, history, need and development of OPAC;
- Features and characteristics of OPAC and WebOPAC;
- Search fields and search techniques using advanced Boolean operators;
- Member's information status of items issued, reserved, renewed and privileges through OPAC; and
- Beyond the next generation OPAC's.

II. Learning Outcomes

After completion of this lesson, learners would developing - depth understanding on Online Public Access Catalogue (OPAC). They would learn about genesis of OPAC, definition, need, historical development of OPAC in various generation, features, characteristics of different type of OPACs.

III. Module Structure

1. Introduction
2. Definition
3. Objectives of OPAC
4. Need of OPAC
5. Historical Developments of OPAC
       5.1 First-generation OPACs
       5.2 Second-generation OPACs
       5.3 Third-generation OPAC
6. Features of OPAC/WebOPAC
7. Characteristics
8. Types of OPACs
9. Search Fields/Terms
10. Search Options
       10.1 Basic Search or Simple Search
       10.2 Advance Boolean or Expert Search
11. Summary
12. References

1. Introduction

Genesis of OPAC can be traced back to early 1960s.The first large-scale online catalogue was developed at Ohio State University in 1975 and the Dallas Public Library in 1978.In the year 1980, the number of online catalogues grew both in terms and number as well as features and functionalities. The OPACs of 1980s provided improved search mechanisms, for Example, Basic search, Boolean search using operators such as AND, OR and NOT as well as ancillary functions like circulations i.e. check-in and check-out, etc.

At the same time, libraries began to develop applications to automate after routines of the library including acquisition, cataloguing, and circulation of books and serials control. These applications, collectively known as Integrated Library management System (ILMS), included an online catalogue as the public interface to the library's inventory.

The information processing and retrieval has made vast changes in cataloguing. The library catalogue exists primarily to indicate the books available in a particular library. The objectives of the library catalogue, first set out by Cutter in 1967, were as follows:

> i. To enable a person to find a book about which one of the following is known
>
> - The author
> - The title
> - The subject
>
> ii. To show what the library has
>
> - by a given author
> - on a given subject
> - in a given kind of literature
>
> iii. Too assist in the choice of a book
>   - as to its edition

Majority of today's OPACs have successfully fulfilled Cutter's model in finding known items. In the traditional card-catalogue, bibliographic elements such as title, author, and subject are the leading search options in OPAC search. The OPAC in essence an electronic version of the card catalogue.

2. Definition

An online public access catalogue (often abbreviated as OPAC or simply library catalogue) is an online database of resources held by a library or group of libraries. Users search a library catalogue principally to locate books and other material available in a library (Wikipedia, 2014).

The OPAC's public interface and searching capabilities together function as a finding aid. It determines how successful a user is in retrieving information. The effectiveness of an OPAC's bibliographic display affects the user's understanding of the bibliographic description that is used by a user to identify, select and obtain library resources.

OPAC is the end-result of creating and maintaining the library database. This is the interface between the resources stocked in the library and the user. An efficient OPAC should fulfil all the information retrieval requirement of a user. It should be able to cater to all the needs of a 'novice' as well as an 'Expert' user. It should have options from simple search and advanced search that provides for use of Boolean operators between all the entry elements. Most of the ILMS has facility to approach the database with three different approaches:

- Simple Search (with fixed combinations of common fields)
- Boolean Search (Natural Language nomenclature along with AND, OR and NOT operators to join the fields) ; and
- Advanced Boolean (Combination of using Boolean operators between any of the field tags from MARC records)

3. Objectives of OPAC

An objective of Online Public Access (OPAC) is as follows:

- To act as a bridge between library resources and users ;

- To facilitate browse, search and retrieval of exact bibliographical information from library collection;

- To exposure to the collection of the library to the users; and

- To provide availability of documents in the library and its current status binding/repaired, missing and lost, etc.

4. Need of OPAC

The conversion of library holdings from "non-machine-readable" form to "machine-readable" form is a pre-requisite to implementation of an automated system. This machine readable database becomes the foundation for all other library activities including on-line public access catalogue (OPAC), circulation, catalogue maintenance, resource sharing, etc. Automation of library materials not only makes it easier to find books, but it also makes it easier to access journals and books available online from a home computer or elsewhere. The automation of library collections also allows the library to direct its human resources from routine work to service oriented functions of the library. Providing online access to library catalogue is often primary motive of library automation.

5. Historical Developments of OPAC

The historical developments of OPAC can be divided into three generations based on features and functionalities, development in ICT and users requirement

5.1 First-generation OPACs

The first-generation OPACs were derived from traditional catalogues or computerised circulation systems. They are also referred to as phrase indexed or pre-coordinated OPACs. The number of access keys were limited and they were similar to manual catalogues, i.e., author, title, class number and subject headings. First-generation OPACs had the benefit that usually something would be displayed as a result of a search. Thus, if there was no exact match, it may display those records which are nearest to the particular search key. For example, an incorrectly keyed author search entered as 'SMTH' may include in the response a display including items by **'SMYTH'.** A user may finally find the book by **'SMITH'** by browsing backwards and forwards through search result.

5.2 Second-generation OPACs

Second-generation OPACs originated from commercial bibliographic information retrieval systems of the 1970s and as such it had similarity to the search services provided by these systems. These OPACs were operated by command language, which was simplified for use by inexperienced users. These OPACs provided for keyword searching that was post-coordinate searching.

Thus, they offered the additional benefits of search flexibility. It gave greater opportunities for access to records by subject or keywords within the database than the first-generation OPACs, but this improved subject access is inhibited by the lack of detailed content representation within the records.

The searches in second-generation OPACs was basically of two type's i.e.

- Phrase searching on pre-coordinated subject headings; and
- Keyword searches on indexed data in the bibliographic records.

Second-generation OPACs suffer from the following two problems:

- It was very difficult to browse through the records; and
- Large size and wide subject coverage of many catalogues in comparison with other bibliographic databases probably have led to too many searches suffering from false drops and/or too many hits.

5.3 Third-generation OPAC

The third generation OPAC evolved with emergence of World Wide Web in 1991. The Online Public Access Catalogue (OPAC) is the integrated library system's window to the users. Using the World Wide Web protocol, OPACs are made accessible on the Internet twenty-four hours a day from anywhere in the world. A WebOPAC offers patrons a myriad of online resources to access from within library, from a home computer, or any remote Internet connection. As electronic publishing and digital collections grow, use of WebOPAC in library is being extended to provide access to hybrid collections of the library combining print and electronic or digital resources. A successful Web OPAC depends on two key elements: good interface and navigation design, and appropriate indexing and searching capabilities.

6. Features of OPAC/WebOPAC

One of the major attractions of ILMS is that it has a powerful Online Public Access Catalogue having various 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 **that may interest user**. ILMS increases the functionality of library's OPAC terminals by allowing the users to access internal as well as external resources. It enables the users to access various databases developed at their institutions. 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.

Important Features and Functionalities of OPAC/WebOPAC are as follows:

- Z39.50 is standard protocol to search information simultaneously across several databases from within an online catalogue. Libraries create Z39.50 database links that enable patrons to search other catalogue using their library OPAC search interface;
- Provides full support for the MARC21 formats for bibliographic, authority and holdings data;
- Display the search result in AACR-II, MARC 21 tag structure format and detailed format;

- OPAC are considered as web portal of the libraries, this can be used to deliver organised and structured information anywhere and anytime;

- The OPAC brings bibliographic records to life by providing hyperlinks to multimedia files including table of contents, accompanied information of CDs, etc.;

- It enables integration of electronic journals into the library collection of print titles and provides direct hyperlinks to journal home pages from within the catalogue record;

- Enables users to create and execute simple or complex searches, browse and select terms from heading lists, search related information by clicking on hypertext terms, view cross reference information, sort search results, export selected records to networked printer, files or email, links to library holdings information on one or more servers, execute previous searches from a search history;

- Provides flexibility in delivering customised records with desired fields/sub fields, for example, it is possible to select which options and icons appear on the WebOPAC, the amount of descriptive detail and the wording of accompanying text;

- Ability to link directly to Internet resources from within the catalogue record and also link to other databases and websites and other libraries to provide easy access to the resources of a networked world;

- "Patron request" feature makes it easy for users to communicate with library staff by providing custom electronic forms for the most common types of requests like order requests, suggestions, interlibrary loan requests, hold requests, change of address, etc;

- The" Information Desk" icon on the OPAC enables users to click and view important library information such as library news and hours of opening and some important community events, etc.;

- Ability to check locations and status of any item in the library;

- Most OPACs facilitates access to most self-service functions such as checkouts, holds, renewals, etc.;

- Most OPACs have sophisticated and powerful catalogue searching capabilities. This means the catalogue can be searched for any word or phrase appearing anywhere within the record;

- Besides ability to search library's OPACs, today's OPACs have capabilities to search external bibliographic and full-text databases, images, video and audio files and other resources on the Internet; and

- Facility to offer relevance feedback on the search output and also send results of searches by email.

7. Characteristics

Characteristics of Online Public Access (OPAC) are as follows:

- Z39.50 is an standard communications for searching and retrieving information from a database over a TCP/IP computer network. It enables users to retrieve data from the database in short time span and also it is widely used in ILMS that facilitates users to search and retrieve various databases;
- Supports MARC21 standards for data exchange/download through library OPAC. It helps to organize and present bibliographical information of the documents stored in the library to the users;
- It has a provision for integration of messaging protocols to transmit the required information to users as well as library staff through communication channels;
- It allows users to store searched bibliographical records in their system for future reference or use; and

- It has provision for integration of external links of various electronic resources and facilitates customization of the OPAC as per the library requirements.

8. Types of OPACs

Online Public Access Catalogue (OPAC) can be categorized based on technological developments;

i. Command based OPAC

During the mid 80's and 90's most of the data storage and retrieval software were having this kind of facilities to search required information by using various search commands to get the record from the databases.

ii. Window based OPAC

It is module based OPAC integrated with most ILMS to access the library collection through emulator and in most cases it is embedded with the ILMS. It requires application to execute the OPAC in client systems. It can be worked on client server architecture.

iii. Web based OPAC

Nowadays almost all the ILMS are having WebOPAC facility to access the various library collections through internet browsers. It is more flexible in terms of design and integration of external links with various electronic resources and customization as per the library requirements. It can be worked on client server architecture.

9. Search Fields/Terms

The following are access fields in most of the OPACs modules of Integrated Library Management Software (ILMS) or database management software. One can use this field for applying different search techniques and strategy such as simple search, phase search and exact search and advanced search using Boolean operators:

- Author (personal name/corporate name and meeting);
- Title/Sub Title;

- Keyword in Title;
- Subject Heading ;
- Keywords;
- Class Number ;
- ISBN/ISSN;
- Series;
- Publisher;
- Year of Publication;
- Note; and
- Accession number.

Most of the ILMS software also providing dictionary terms which are indexed in the databases i.e. name authority control file and subject authority control file.

10. Search Options

The search option facilitates search for the required document(s) in the library database, view and print the results. Search option is most powerful feature of most of the OPAC. The following options are normally available in a search option:

- Quick search or Basic search or Simple Search;

- Complex Search or Advance Search or Expert Search; and

- Member Search.

10.1 Basic Search or Simple Search

This is just a single search box that enables users to search the bibliographic information of documents. The default search box allows users to fire a query by inserting any keyword and selection of the field. By clicking on the search button it retrieves the results from the databases. In another words it is a simple keyword search which looks occurrence of search terms anywhere in a records with user defined search filtering options. It can be accessed only by a single access point and there is a limited option for searching.

10.2 Advance Boolean or Expert Search

Advance Boolean search option enable users to perform search through entire database using any of the MARC21 based tags. The operation is simple, first choose the tag to search and select the corresponding field or subfield (of that tag) enter the search term then apply the Boolean Operator to perform the search. One can use up to three search criteria and two Boolean operators. Rest of the functionalities are same as explained in 'Basic Search'.

Boolean search is an integral part of information retrieval, since it enables the user to construct logical relationships between search terms. Since, one search term does not describe the topic sufficiently; one should use several words and connect them with Boolean operators. The Boolean searches can be made on words from any of the bibliographic fields. The most common operators are AND, OR and NOT.

However, search statement may be single word or phrase or a complex statement where many terms are combined with Boolean operators.

Boolean operators are used to broaden or narrow your search. The usage of these operators is described below:

AND Operator: This operator is used in expert search to narrow the search. "AND" requires that both search terms be in the same record.

AND: (A AND B) e.g. Computers AND Library

The system retrieves only those records that contains both the terms i.e. computers and library terms. Records containing either computers or library are not retrieved.

OR Operator: The operator 'OR' is used to broaden the search by looking for more than one term at a time. The 'OR' operator is especially useful when there are several synonymous or related terms to represent a concept.

OR: (A OR B) e.g. "Atomic energy" OR "Nuclear energy"

Retrieves records would contain either atomic energy or nuclear energy, or both.

NOT Operator: This operator is used in expert search to limit the search by excluding records containing a particular term.

NOT: (A NOT B) e.g. Child NOT Care

Retrieve records would contain "Child" but excludes those records containing "care". NOT can be useful in eliminating false hits (occurrences of a term that do not satisfy the search concept). However, NOT should be used carefully since it can also eliminate relevant records e.g., "Child "NOT "Care" would eliminate relevant records containing documents on both child and care.

10.3. Member Search

This option is useful when a library member wants to see his/her own status or privileges, item issued/reserved, renewal and items issued on book bank can also be tracked. The member can also suggest/recommend useful new books to the library through OPAC. Some of the ILMS software provides feedback option to the member for improving the library services.

11. Summary

Online Public Access Catalogue (OPAC) is an indispensable information retrieval tool for library's resources throughout the globe. It is still the only gateway to library resources which every library users access for their required information from the library collection. The OPAC modules describe the genesis of OPAC, definition, needs, and historical development of OPAC in various generation, features, characteristics and different type of OPACs. The module highlights various search options like Basic Search, and Advanced Search using Boolean operator i.e AND OR and NOT.

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