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Development Team

Principal Investigator & Subject Coordinator	Dr. Jagdish Arora, Director INFLIBNET Centre, Gandhinagar
Paper Coordinator	Dr Usha Mujoo Munshi, Librarian, Indian Institute of Public Administration
Content Writer	Mr H G Hosamani, Scientist C, INFLIBNET Centre
Content Reviewer	Dr. Jagdish Arora, Director INFLIBNET Centre, Gandhinagar

Library Automation: Circulation

I. Objectives

The objectives of this module are to impart knowledge on the following aspects of automated circulation system:

- Objectives and advantages of automated circulation control;
- Circulation master databases;
- Functions of automated circulation control: creation of membership, transactions, reminders, overdue charges, etc.;
- Compliance with NCIP 2.0 and SIP2 for electronic surveillance and RFID based transaction;
- Maintenance status of the items on OPAC such as binding, lost, missing and withdrawal, etc.;
- Borrowing and lending through Inter Library Loan (ILL); and
- Stock verification and generation of reports.

II. Learning Outcomes

After completion of this lesson, learners would attain knowledge about the automated circulation system. They would learn about functions carried out in the automated circulation control, i.e. keeping track of creation of membership, renewal, transactions involving issue/return, reservation, recall, fine collection, member login, book transfer, etc.

III. Module Structure

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1. Introduction

Circulation is a central and highly visible function of a typical library. Circulation, which is often compared with inventory control, involves a great deal of record keeping and consumes considerable staff time. It is essential that the transaction records are accurate and updated for each transaction. Circulation being vital front-end function of a library, has provision for all possible automated functions handled in a typical academic library, i.e. membership, issues, returns, ILL, reminders, over dues, reservations, recall, etc.

It keeps track of members' registration, issue, renewal, return, and reservation of documents. A library member should be able to see his/her membership status, items borrowed, returned, renewed, requested, damaged, lost, or stolen using OPAC. Many libraries are using bar code technology for books and membership card for speedy transaction and stock verification, Smart card and RFID system are recent technology that are being used for circulation system that facilitate a fully automated circulation control with efficient check in/check out features in most of the ILMS.

2. Objectives of Automated Circulation Control

The objectives of an automated circulation control may be summarized as follows:

- To record and maintain the loan transaction data accurately;
- To record and maintain the membership data;
- To have efficient and effective control over dues, fines and records;
- To provide accurate information about status of a book and a member; and
- To provide necessary statistical and management reports.

3. Advantages of Computerised Circulation Subsystem

Computerised circulation subsystems, apart from performing all the basic activities related to circulation, offers extensive control of stock in the library. Some of the important advantages of computerized circulation system over manual circulation system are as follows:

- Identify and track reserved documents on their return from loan;
- Generate (in print and electronically) overdue and recall notices;
- Calculate fines and generate demand notes;
- Print checkout and check-in slips instantly;
- Reservations on documents in circulation can be made instantaneously;
- Automatic identification of over-borrowing and defaulters;
- Error-free data capturing through barcode, RFID and smart card technology;
- Define circulation parameters (limits in terms of books that can be borrowed and borrowing time period for various categories of members);
- Back-up provision to cover telecommunication or computer system failures;
- Collect and display issue statistics and other reports for management and users;

- Support multiple items renewals in one step;
- Alert members if an item is already issued to another user;
- Change status of an item automatically in the OPAC after it has been issued or returned; and
- Allow users to place reservation on an available or charged/issued item without library intervention.

4. Circulation Master Databases

Circulation Master allows library staff to define parameters needed to take care of circulation operations in the library. One should have defined parameters in the member type, categories, privileges, calendar, customized member card, Institute details, ILL details, etc. before you start with the other functions of the circulation module.

4.1 Member Category: Categories of various types of users are created and stored in this master with their borrowing/usage rights/ privileges, etc. Under this member category, one should feed in details like category code, membership duration, membership charges, membership dues allowed and deposit charged and member expiry date. The privileges should also be defined selecting each category like types of documents, no. of documents to be issued, loan period, and fine to be charged for each member category, etc. This will help in calculation of over due charges and duration of loan period in transaction module. Privileges can be defined based on type of material and collection type.

4.2 Member Types: This option is useful especially for book bank "Member Types" facilitate defining privileges based on type of members. This parameter is particularly applicable in circulation module for book bank. Here one can impose restrictions in terms of no. of books, cost of books, total income of borrower's parents, categories of borrower, i.e. SC/ST/OBC/General, etc. Type of members can be categorized as General, SC/ST, OBC, etc.

4.3 Customised Member Card: This option allows you to create new template or add/edit delete existing template meant for printing barcodes, membership identity cards with requisite membership information, etc. The template facilitates customization of size of various fields for membership card.

4.4 Calendar: Calendar is used for storing official public holidays declared for the library. The information stored here is used to shift the due date to the next working day. This also takes care of calculating overdue charges, where ever applicable.

4.5 Institute Detail: This module enables to create any number of institutions with their code, name and address. Under each institution, number of departments can be created along with courses available in the departments and designations of the users. This information is useful in creation of membership, wherein institute, department, course and designation of the user can be selected from the dropdown menu.

4.6 Inter Library Loan: One can add the external library/institutions that becomes member of the library to facilitate the lending and borrowing resources on Inter Library Loan. Based on type of material, details of the member library and associated privileges, i.e. maximum number of items to be issued, lending period, fine charges, etc, can be defined. The same template can be used to define privileges for the resources loaned out to departmental library, i.e. made available at another location.

4.7 Letter layout: This master file stores pre-defined contents of various letters used in circulation. Each letter may consist of elements like letter number, letter title, customizable content, signatory, copy to, enclosure heading, enclosure contents, etc.

The following letters are generally printed or sent to users by email:

• Reminders to members;
• Notices to reserve; and
• Document recall letter.

5. Functions of Automated Circulation Control

The automated circulation system should perform the following functions:

- Creation of membership;
- Search membership database by membership code or surname and search documents database by accession number, title, author, subject, etc.;
- Charging and discharging of books;
- Reserve, renew and recall function;
- Issue reminders for overdue books;
- Provide members statistics;
- Overdue charges and generate letters;
- Stock verification;
- ILL and maintenance activities;
- Member log list; and
- Other reports.

The processes described in this module are provisioned in most of the ILMS specially in SOUL 2.0 software.

5.1 Creation of database of Members

Circulation module allows library staff to create /delete/renew transaction records and to establish relationship between the user (taken from member's database) and resources (taken from document database). Activities involved in creation of database of members include:

5.1.1 New Membership Record Creation: Membership records include personal information viz., last name, first name and middle name, type of membership (selected from master database), membership status, category of member, name of department/division, institute and course (if applicable) and contact number, address, etc. for each enrolled member. Membership code may be generated automatically or entered manually into the database. This Member ID is printed as barcode on identity cards and is used for document transactions.

5.1.2 Modification of Membership Record: Membership records can be edited or updated using member's ID or code.

5.1.3 Deletion of Member's Records: This feature facilitates library staff to delete membership record either group wise or one at time at the end of membership period. Prerequisite for use of this step is clearance of all dues for each individual members of a group.

5.1.4 Renewal of Membership: This provision is required for renewing the expiry date of membership, when the validity of membership expires.

5.1.5 Copy Member: One may copy an existing membership record and use it with new membership code. This option is useful when a library member is changing his/her credentials by either shifting to another department or joining a new course.

5.1.6 Search Member: Membership records can be searched using various parameters. There are various filters to limit the search results such as code, name, department, designation, entry date, and category. The retrieved member list can be used to update the membership details or to issue no-due certificate. In addition to that, member status (privileges, item issued and reserved) can also be searched through OPAC by entering the member code/ID.

5.1.7 Delete Single Member/Group: There are two options for deleting membership record either delete single member or delete entire group of members.

5.1.8 Renewal: There are two options for renewal of membership record either renew single member or renew a given group of members.

5.1.9 No Due Certificate: No due certificate of members can be generated in bulk by selecting institute followed by department, category and course/designation within department.

5.2. Transaction

The transaction or loan database is the core to the circulation system. This database comprises of series of records, one for each transaction. Each record includes a brief dataset that specifies details of document (through document number), details of the user (through membership code) and transaction details (e.g., date of issue and date of return are extracted from the system date, and due date is calculated automatically). With integrated software, the bibliographical details (e.g., author, title edition, place and year of publication) of documents on loan are extracted from the catalogue database and the membership database is utilised for collecting user information. Accession numbers of documents are used as the key data elements in first case, whereas membership codes act as pointer to the membership database in the second instance.

All the transactions, i.e., charging/discharging, issued on premises, return on premises, renewal, reservation, cancel reservation, written-off, lost, missing, damaged, reminders, over due, etc. of documents are carried out and stored in defined files/database. The following transactions are performed in automated circulation system:

5.2.1 Charge/Issues: To issue a document presented by a borrower its accession number is to be entered in ILMS either manually or by using bar code scanner. Then the bibliographical information of the document along with its status (whether available for issue or reserved) is displayed on the screen. The next step is to enter member code of the borrower that results in display of details of the member along with category, number of documents issued against the member and overdue charges etc. The library staff can then issue the document by selecting appropriate option. The system after, checking various parameters, generates appropriate message along with date of issue and due date of return. This sub-module generally supports extension of due date, if required.

5.2.2 Discharge/Return: This facility is meant for receiving the documents back to the library and again is lent out to new users before it. Only the accession number is sufficient to return the document. The status of the document along with details of returning member will be displayed. The library staff may then mark return of the document by clicking necessary option. In case of late return (after due date) the system prompts for fine collection.

5.2.3 Issue and Return (On premises): "On premises" issue is a special transaction that facilitate for issue of items within library premises or in reading room, for photo copying or overnight issue. Just enter accession number and click on return button to take back the book issued "on premises".

5.2.4 Book Bank Issue/Return: This option facilitates library to issue/return material in bulk to any category/type of member (like backward class, SC/ST, OBC) provided that they are entitled to get them. There is provision to issue books up to certain cost and specified categories of member-such transactions are specifically applicable in book bank issues.

5.2.5 Renewal: This is meant to issue a document to the same member again by renewing the transaction record. Due date gets changed automatically in the process. The renewal process will be successful, if someone has not reserved the document.

5.2.6 Reservation and Cancellation: This function facilitates the library staff to reserve a document which is on loan. It is usual practice in libraries to maintain the "holds queue" on first-come first-serve basis. Even in this function, before actually recording the holds, the system has to govern the hold placement by material type, member type and other conditions as required by the library policy. There is a provision to cancel the reservation already made by a member.

5.2.7 Recall: It is not an unusual situation in libraries to recall the items borrowed by a member. An item is recalled if it is overdue and/or is reserved by some member. There may be other conditions for recall such as; item is required for stock verification or the item has to be sent for binding and so on.

5.2.8 Fines/Overdue Charges: An item is said to be overdue, if it is not returned to the library on or before due date specified at the time of charge or renewal or recall. The system should detect the overdue items and produce suitable overdue notices to the member. When required, the system should be able to provide listings of overdue items and member having overdue items. An efficient system allows suitably authorized staff for waiving of the fines and

levying of fines for documents mutilated by the member. Further, the system should take into account the holidays while calculating the fines.

5.2.9 Reminder Generation: Sending reminders to its members for overdue books are routine matter for any library. The circulation staff prints or sends reminders by email to the member using the reminder option. The generated reminders for overdue documents can be sent to a group of members, to individual members, for a particular due date to all defaulters. The format and text of reminder letter may be modified while generating reminders or by using master database.

5.2.10 Member Log List: In many libraries daily visits of the members need to be registered to keep track of the use of the library. A list of members who visited the library at a given time or between a given period with their logged-in and logged-out time can be generated.

5.2.11 Book Transfer: In big organizations having large collections in the library, transfer some of the collection to different departmental libraries of vice versa is possible option. To perform this operation, first select source library and the destination library, enter transfer date and accession number of all the items to be transferred and then opt for transfer.

Automatic Identification System

i) **Bar code:** The transactions are done using bar code on member card and bar code label pasted on book. The data required for issue/return of documents is taken from the catalogue and membership ID codes. These bar-coded data elements can be read through a portable light-scanning device (e.g., barcode reader).

ii) **RFID**: A recent trend of ILMSs is to incorporate self-checking or self-issue option in the circulation module using RFID technology. RFID (Radio Frequency Identification) technology is being used to manage self-service counters for issue and return of documents. An RFID system comprises of three components: a tag, a reader and an antenna. The tag contains paper-thin chip, which stores necessary bibliographic data. The tag is fixed on the inside cover of a document. RFID reader and antenna are often integrated into patron self checkout machines or inventory readers. The RFID reader powers the antenna to generate the field to decode information stored on the chip. RFID reader sends information to the central server, which, in turn, communicates with the library automation software. RFID, apart from self-issue/return facility, also supports stock verification, theft

detection using RFID technology, and identification of misplaced books and inventory counts.

iii) Smart Cards: A smart card is an embedded microchip that can be loaded with membership data that can be used for transaction of library materials.

5.3. Inter Library Loan (ILL)

Inter library loan simply means that documents available in a given library can be issued to other libraries. Most of the libraries depend on each other for meeting of the information requirement of their users. The circulation module in ILMS should also support ILL to help library staff smooth operations of ILL. This sub-module generally includes the following facilities:

5.3.1 Borrowing: It involves tasks to procure document (s) for a member of the library who has asked for document on ILL from some other library. The steps are:

- Receiving request and entering of relevant information into the database (Member code, item details, type of item, etc)
- Generation and printing of request letter addressed to the library from where the document is to be borrowed;
- Receiving of document(s) on ILL by selecting the received status and entering date of arrival in the module;
- Sending intimation about arrival of document(s) on ILL to the requester;
- Issuing document(s) to the member who has requested it;
- Returning the item(s) borrowed on ILL;
- Generating reminder letter in case of overdue document(s); and
- Sending ILL document back to the owner library.

5.3.2 Lending: It is meant for lending of library documents to member libraries on ILL through the use of ILL sub-module. The tasks to be performed for this service are:

- Issuing of item(s) to the member library through entering necessary details (accession number of document and name and code of the member library);
- Receiving back the item(s) issued on ILL;
- Sending reminder to the concerned library in case of delay in returning; and

- Generating list of documents which have been loaned to other libraries on ILL.

5.4. Maintenance

This sub-module is generally part of circulation module for recording information about lost documents, documents sent for binding, damaged documents, missing documents and documents withdrawn from a library. The functions of this sub-module include following groups of tasks:

5.4.1 Lost: Loss of a document is managed through two options: i) replacement of document, and II) recovery of amount. In the first case replacement is confirmed after entering code of the concerned member and accession number of the lost document. If amount is to be recovered from a member for the lost document, the 'amount recover' option is to be activated by entering member code and price recovered. Payment receipt may also be generated by selecting appropriate option. The status of the same should be reflected in OPAC.

5.4.2 Binding: The reasons for binding documents are two-fold i.e., their preservation for posterity and to keep them in a usable state for users. Binding facility of maintenance sub-module is a combination of the following five basic steps:

- Entering accession numbers of the documents to be sent for binding;
- Order generation for binding of selected documents through input of order number, expected date of delivery, price, and name of binder, budget head and binding type;
- Receiving of documents from binder and processing of invoice;
- Release of payment; and
- Reminder to binder.

5.4.3 Damaged: This option need to be exercised when some items of library collection are damaged and have to be withdrawn from OPAC/Circulation. To tag any item as damaged, go to "charged status" and first enter the accession number of that item and press the appropriate button. Option is provided to reintroduce the damaged item for circulation as repaired.

5.4.4 Missing: A document can be tagged as missing when it is reported as missing by staff or user or noticed during stock verification. If missing item is traced out, option is provided to change the status as "on shelf" in OPAC.

5.4.5 Withdraw: stock revision or weeding out of documents is essential in order to make enough space for the usable stock. The task of weeding out is performed by entering accession numbers of withdrawn documents in appropriate sub-module. Such a system has the provision to reintroduce an already weeded out document by simply checking or clicking the status button. The status of the document is also reflected in OPAC also.

5.5. Stock Verification

Stock verification variably called, stock taking, physical verification or checking, stock inspection, inventory taking essentially means physical check-up of library materials.
Libraries perform periodic stock verification in order to identify the missing, lost and misplaced books. Stock verification helps to replace those missing documents and take appropriate precautionary measures to minimize the theft. Besides this, the identification of damaged documents for repairing or binding, rearranging, cleaning and withdrawal of obsolete documents are also performed simultaneously. The stock verification can be verified by using shelving location of items or import file (in excel or cdf format) which contains list of accession number in order. Bar code technology or RFID can also be used for stock verification.

There are four type of report for verified stock:

Mismatch Accession: In this report, one can get list of items which are not available in the database.
Mismatch Status: In the report, one can get list of all those items for which status is deferred in database.
Mismatch Location: In this report, one can get list of items which are from different location.
Available Items: In this report, one can get list of items for which status is available "on-shelf" but they are not verified during verification.

6. Reports
One of the important advantages of automated systems is the provision of variety of reports. Some of the important reports are as follows:

Member ID Card: Member ID card with name of the member, membership code, department, institute, category, branch, year, photo and also barcode can be printed by utilising appropriate facility.

Reminder: Generation of reminder letters for overdue document(s) is a regular work of the circulation section. Reminders are produced and sent to a group of members or individual members or to all defaulters. Reminder letters for ILL over dues are also generated as output.

List of library members: The list of members of a library can be printed either by name or by member code. Member list can also be generated by department, category or for a particular time period (membership duration). The list can be sorted on any required sequence or order.

Member History: It generates or displays a list of documents that are issued and returned by a member during his/her membership period. The membership code of the user is required to be entered for generation of such a list.

Membership Expiry List: This facility generates a list of memberships expiring either on a particular date or between two dates.

Items Issued over a Period: This is a list of documents issued either on a particular date or between two dates.

Items Returned over a Period: This option generated a list of documents returned either on a particular date or between two dates.

Items Reserved over a Period: It produces a list of documents reserved either on a particular date or between the range of two dates.

Most Frequently Issued Items: This option facilitates generation of a list of most frequently issued documents by displaying their accession numbers, titles of the books and number of times they have been issued.

Most Frequent Members: It displays a list of most frequent users by showing member details and how many times each have used the library.

Item's Transaction History: Entering accession number or resource identification number of the desired document may generate the transaction history of any particular document displaying members who have got document issued since its acquisition.

Fiscal Report: It gives details of the fines collected by the library either on a particular date or between two range of dates i.e., during a particular period.

Library Usage: This report shows a graph displaying department/division/section of the organisation on the Y-axis and number of

documents used by them on X-axis. Similar reports to show usage by different category of library members may also be generated.

Apart from the above mentioned reports, report may also be generated for the following activities/functions:

- No dues certificate;
- ILL reports (arrival intimation, reminder, list of items on ILL, overdue charges and payment receipts);
- List of lost, missing or damaged documents;
- List of lost documents for which money was recovered;
- List of documents sent for binding;
- Order letter for binding;
- List of withdrawn documents;
- Fine summary;
- Statistics; and
- Book issue register.

7. Summary

This module gives thorough insight into the operations involved in automated circulation services. It defines the objectives and advantages of the services provided through automated circulation system. Parameters defined in circulation master database that should be taken care of in the circulation operations in the library have been explained. Also the module elaborates the functions carried out in the automated circulation control keeping track of creation of membership, renewal, transactions involving issue/return, reservation, recall, fine collection, member login, book transfer, etc. Inter library loan, borrowing and lending, maintenance of library material i.e. binding, damaged, missing, lost, and withdrawn and stock verification. It also discusses the generation of various important reports in the automated circulation system.

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