Contributing to bibliographic systems

Introduction

Libraries have always aimed to respond to their clients’ need for information, and to organise their collections to achieve this aim. The extraordinary growth of new technologies in recent years has enabled libraries to provide much greater access to information, even for distant clients.

There is so much available that it is ever more important for libraries to assess client needs continuously, and to make sure that staff, as well as clients, can make the best use of the technology. This ranges from computer catalogues to electronic databases to the Internet.

When you have completed this section, you should be able to:

- assess client needs for information
- identify the structure, operation and problems of databases
- use databases effectively
- identify standards for bibliographic records
- identify components of bibliographic records
- keep up-to-date with new database developments.

Click on the Menu tab to select a topic.

The main topics in this section are:

1. Assessing client needs for information
2. Databases in libraries
3. Why we need a database
4. Rules of databases
5. Circulation
6. Problems of databases
7. Databases in the library
8. Bibliographic records
9. Problems in the catalogue

Assessing client needs for information

Libraries aim to meet clients’ information needs. Since client needs change, it is essential for staff to establish ways of assessing these needs continuously.
Surveys are one way of obtaining feedback. More generally, library staff must be alert to their clients’ use of existing resources, and the need to acquire new resources and offer innovative services as appropriate.

The subtopics in this section are:

1a. Client surveys
1b. Arrangement of information
1c. Current awareness services
1d. Library management system

**Client surveys**

Client surveys are an important way to identify client needs. Information service staff can solicit specific responses from clients by seeking this kind of feedback.

Staff also become aware of client needs in other ways. For example, if use of the Internet is so heavy that clients have to book a week ahead, and are frustrated by only having access for an hour at a time, it should be clear that more Internet access is needed.

If clients regularly complain that the library does not have enough material on a particular subject, their information needs are clearly not being met.

Staff who deal directly with clients are aware of these needs. It is an important part of their role to pass this feedback on to appropriate staff members, especially members of the management team.

**Arrangement of information**

In most libraries, material is kept on open access. That is, items are shelved so that clients can find them by using the catalogue, or by browsing.

Books are shelved according to a classification scheme that groups together items on the same and similar subjects. This enables clients to find information on a topic located together (collocated) on a shelf. Sometimes items (e.g., books, periodicals, non-book items) on a subject are collocated regardless of physical format.

In other collections, different physical formats are shelved in different sections. This may be determined by client usage - e.g., shelving videos separately makes it easier for a teacher to find a program to introduce a topic or stimulate a discussion.
Separating physical formats also makes most efficient use of shelf space, and may be done for this reason.

Works consulted often for reference enquiries are usually housed together, close to the information or circulation desk. This reflects the more frequent need of clients for the information contained in reference works, and enables clients and staff to find particular resources and/or information easily.

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**Current awareness services**

Many libraries cannot afford all the serials their clients want. The serials they subscribe to may not be well used, partly because busy clients do not have time to browse the latest issues.

Two types of service can help clients to keep abreast of recent literature in their fields of interest.

Some subscription agents who manage the delivery of serials into the library also provide an electronic copy of the contents pages for distribution to clients. The library emails the Table of Contents (TOCs) to all interested clients, who are encouraged to browse them at their desk, and request articles they want.

Another type of commercial service - e.g., the British Library’s inside web [http://www.bl.uk/online/inside/inwhatish.html] - provides electronic copy of contents pages of selected journals to which the library does not subscribe. Clients can request articles from the document delivery service at their desks, and the library makes effective use of the organisation’s computer network to supply the information they need.

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**Library management system**

The most frequently used resource in a library is the catalogue. It has always been an essential tool in the effective organisation of a library. Its primary purpose is to enable clients to locate known items and items on a particular topic.

With automation, the online public access catalogue (OPAC) can provide clients and staff with more information. In particular, linking the catalogue with the circulation system enables clients to discover the availability of items for loan and their own status regarding loans and fines, and to reserve items they wish to borrow.

These links rely on the integration of the catalogue and circulation systems, via an integrated library management system (ILMS).
Databases in libraries

An integrated library management system (ILMS) relates many library functions, including acquisitions, cataloguing, serials management, circulation, and client access to the catalogue. Sophisticated library management systems are based on relational databases, which enable records to be accessed for more than one purpose, and different types of records - e.g., catalogue and client records - to be linked in different ways.

The subtopics in this section are:

2a. Data
2b. Databases
2c. Sorting and retrieval
2d. Records and tables
2e. Fields and data types

Data

The word ‘data’ is used in different ways. It refers to specific facts, especially numerical facts; it is also increasingly used to mean information derived from the facts or figures.

Here is a definition from *The Macquarie Dictionary*.

**data** ...

1. plural of **datum**.
2. *(construed as singular or plural)* figures, etc., known or available; information

Databases

A database is a collection of data organised for retrieval. Since the widespread advent of automation, the term generally refers to machine-readable data, but a card catalogue or an ordered collection of index cards is also a database.

Here is a definition from *The Macquarie Dictionary*.

**database** ...

1. a large volume of information stored in a computer and organised in categories to facilitate retrieval.

Sorting and retrieval

Spreadsheets and boxes of file cards store data, and can be arranged for retrieval. Two ways of storing details of customers’ bank accounts are in a spreadsheet or on filing cards.
We can examine the records in our spreadsheet or card box and, for example, find out how much money Pat O'Reilly has, or how many customers we have with a credit rating of 2.

Some information is easier or harder to find, depending on how the data is organised. In a box of 5000 cards, finding the record for Pat O'Reilly is easy if the cards are structured (i.e., sorted) alphabetically by last name. It is much harder if they are sorted by credit rating.

A spreadsheet:

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone number</th>
<th>Balance</th>
<th>Credit rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fred Jennings</td>
<td>17 High St</td>
<td>62334212</td>
<td>12323.00CR</td>
<td>1</td>
</tr>
<tr>
<td>Pat O'Reilly</td>
<td>23 Jewel Cres</td>
<td>62112115</td>
<td>77689.50CR</td>
<td>2</td>
</tr>
</tbody>
</table>

A box of file cards:

- Jennings, Fred
  - 17 High St
  - 62334212
  - 12323.00CR
  - 1

**Records and tables**

**Data structure**

We store data in a database as records. Each record describes an object - e.g., a person or a bank account.

Every record that contains a person’s details has the same layout as all the others of that type – i.e., the other records containing details of a person. This feature – of identical record layout, or **data structure** – is central to a database. A database can have more than one type of record, as long as each record type has the same layout.

**Tables**

A database of bank accounts may have two types of records. One type describes a person (one object), and the other
describes an account (another object). Click on these to see examples.

Each collection of records of the same type is called a **table**. In this example we have two tables: persons and bank accounts.

**Person records**

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone number</th>
<th>Balance</th>
<th>Customer ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fred Jennings</td>
<td>17 High St</td>
<td>62334212</td>
<td>12323.00CR</td>
<td>22343</td>
</tr>
<tr>
<td>Pat O'Reilly</td>
<td>23 Jewel Cres</td>
<td>62112115</td>
<td>77689.50CR</td>
<td>12334</td>
</tr>
<tr>
<td>Jenny Owens</td>
<td>57 Low St</td>
<td></td>
<td>154.50DR</td>
<td>65345</td>
</tr>
</tbody>
</table>

**Account records**

<table>
<thead>
<tr>
<th>Customer ID</th>
<th>Balance</th>
<th>Account number</th>
</tr>
</thead>
<tbody>
<tr>
<td>22343</td>
<td>32670CR</td>
<td>32211</td>
</tr>
<tr>
<td>12334</td>
<td>12323.00CR</td>
<td>12115</td>
</tr>
<tr>
<td>12334</td>
<td>77689.50CR</td>
<td>23221</td>
</tr>
<tr>
<td>22343</td>
<td>154.50DR</td>
<td>12445</td>
</tr>
<tr>
<td>65345</td>
<td>127.50DR</td>
<td>42675</td>
</tr>
<tr>
<td>12334</td>
<td>504.75CR</td>
<td>55436</td>
</tr>
</tbody>
</table>

**Fields and data types**

Each piece of information about an object - its attributes - is stored in a field. A set of fields about a particular object makes up a record.

Each field contains a specified **data type**. This is the kind of information to be entered into that field - a number, text, a picture, a currency value, a date, and so on.

When a database is set up, the data type of each field is decided. This controls the type of information that can be entered - for example, you cannot put letters in a number field or a currency field, but you can put the special character $ in a currency field.

Specifying the data type allows the computer to manipulate the data - e.g., comparing yesterday’s date with today’s date, or adding up some numbers.
Why we need a database

Libraries have always needed to keep records.

We keep records of the books and other items in the library, so that clients can find out what the library has. We also need to know who borrows the library’s resources, and how to contact them.

The subtopics in this section are:

3a. Objects in a library
3b. Relationships
3c. Searching the database
3d. Complex searches

Objects in a library

For a database to keep library records, we need to identify the objects whose details we want to store.

We then look at what details we want - that is, the attributes of the objects that we need to record.

The information we store varies with the type of library.

Borrowers

An academic library may keep course information on its student borrowers. This may be for accounting purposes, or to determine how long they are eligible to borrow.

Public libraries may register some form of identification such as a driver’s licence number. A government department library, whose borrowers are all employees, may not require this.

Resources

Each library records its own holdings. However the attributes of each record - author, title, and so on - are uniform across libraries and based on international cataloguing standards.

Relationships

The functions of a library management system include:

- providing information about the library’s resources - locating resources with particular attributes (author, title, etc.) via keys, or indexes
- storing information about borrowers - their contact details, borrowing history, perhaps their areas of interest, and so on
• keeping track of loans - that is, the links between resources and borrowers.

So the system needs at least resource records and borrower records.

Then we describe the relationship between records of each type - i.e., between objects. This relationship can be implemented in various ways:

• It may be a simple relationship with a pointer or key in the resource table indicating who (if anyone) has the resource on loan.
• There may be another record describing a ‘borrowing’ as a new object. Although it is not an object we can see, it is an event, and provides a logical way of tying resources to borrowers.

### Relationships

#### A simple relationship

These records are related by a pointer or key in the resource table showing who (if anyone) has the resource on loan.

Our records might be represented by the illustration here.

There is no indication in the borrower record of what resources they have on loan; this is only known from the resource record, or catalogue entry.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Library ID</th>
<th>Author</th>
<th>Title</th>
<th>Subject</th>
<th>Publisher</th>
<th>Key</th>
<th>Due</th>
<th>Borrower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrower</td>
<td>Borrower ID</td>
<td>Name</td>
<td>Address</td>
<td>Phone</td>
<td>ID type</td>
<td>ID number</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Borrowing as an object

In this case, another record describes the ‘borrowing’ as an object.

Here, our resource and borrower records can be accessed either directly or via an intermediate loan record.

There is no indication in the borrower record of what resources they have on loan; and none in the resource record of who has it on loan. This is only known from the loan record.
Searching the database

When the data is stored in fields, and a set of fields make up a record, we have a powerful structure.

In our manual system, a file could only be sorted by one category. A database can be sorted on any of its fields.

Once sorted, answers can be provided quickly to virtually any question you might pose. You can retrieve records according to the values in any of the fields.

For example, to find records with a due date value that has passed (i.e., whose books are overdue), you ask for dates ‘less than’ today’s date.

If a file is sorted, retrieval of a particular record is much faster because the retrieval algorithms (the programs running inside your database system) know, as we do, how to find something in a sorted alphabetical or numeric list.

Searching the database

Indexes

Indexes are like permanent sorts.

You can build an index on a database field, and it keeps a sorted list of where the various records are in that field. It doesn’t keep a copy of each record - just a pointer to it.

Why is this necessary? To sort a large table is time-consuming. And it is only temporary, since the next question you ask might not want the table sorted the new way.

When an index is built for each of our common search fields, it is like having a permanent copy of the data sorted in the way we want.
When we use databases, we can ask questions that involve more than one field at a time.

We can ask, for example, for a list of books that are:

- overdue, and also
- about a particular subject.

Or we could ask for a list of books that are:

- written by a selected author, and also
- published before a particular date.

Database searches can be very specific. After the first search, a second search can be conducted on the subset of records found, and the results of that search can be searched again with different criteria. This is called iterative searching.

You have heard the saying 'garbage in, garbage out'.

That is, the information we find our library management system is only useful if the information we put into it is correct and relevant.

Databases have a number of rules and procedures that help keep the data correct and useful.

They include:

- data type
- validity
- unique primary keys
- keeping links valid ('referential integrity').

The subtopics in this section are:

4a. Data type
4b. Validity
4c. Index values
4d. Primary keys
4e. Lost and invalid links
We have mentioned data fields and their type. When we specify a particular data type, such as number or date, this restricts the values that we can enter into a field.

We do this:

- so that we can perform calculations on numeric and currency fields
- so that we can sort dates properly
- so that we can compare similar information in different fields
- so that we can find parts of a field.

For example, if we specify ‘number’ in a date, 2/03/2001 will be viewed as earlier than 27/05/1999. But if we specify ‘date’, the computer can sort the dates correctly.

Defining a field type limits what the user can type in. You can’t enter ‘apples’ in a numeric field. So ‘type’ errors cannot occur. The user will get a message that asks for a value of the correct type to be entered.

Validity

Validity of data means that the data has a value that is permitted for that field.

Database tables can be set up so that, as you are entering data, it can be examined and checked for validity in terms of its actual value.

For example, you might specify that a date field must be earlier than today’s date but later than 1/1/1950.

Or a state field must contain one of ‘Qld, NSW, Tas’ etc.

This ensures to some extent that the data is valid - although of course a valid, but wrong, state can be entered.

Index values

When you are searching for records, correct spelling of words - for example in a subject field - is critical.

Although some very sophisticated search programs can make guesses as to the correct spelling of index values it can’t match, most library management systems would not.

These values must be entered correctly when you are cataloguing a new resource. Otherwise the item may never be ‘seen’ again by a search using that index.
Primary keys

In general, records in a database are unique. They contain information that varies in some field, or combination of fields, from every other record of that type in the database.

When a database is being designed, one task is to identify a unique field (or combination of fields). This becomes the primary key of the record.

If there isn’t a field in our records where all the values are unique, another field can be created. It is usually a number - e.g., student ID number, tax file number, passport number. These are (hopefully!) unique numbers assigned to your details, so that the record that describes you can be identified unambiguously.

When you enter new records in a database, the program checks that you have not duplicated the primary key. Often the software keeps track of assigned numbers, and supplies the next one. This prevents typing errors in that field, which may miss or duplicate key values.

Lost and invalid links

Records in a database relate to the other records in that database. This is why it is called a relational database.

For example, a book record has a pointer to the borrower record of the person who has the book out on loan.

As we record loans, returns, new acquisitions, new borrowers, deleted resources and people who are no longer borrowers, the database checks that what we do is consistent with the data.

For example, we cannot:

• issue a loan to a borrower who does not exist in our database
• lend a book that is already out on loan
• delete a borrower who still has books out on loan, or owes fines.

Circulation

In this section we will deal with normal circulation procedures: recording loans and returns, processing new borrowers, helping with enquiries, and so on.

Then we will consider maintenance and backup of the library management system, and other general database
housekeeping. We will also look at what can go wrong with the procedures and the system, and what to do when this happens.

The screens are taken from Book+. All library management systems have similar functions, though their screens may look different.

The subtopics in this section are:
5a. Borrower records
5b. The library set-up
5c. Startup
5d. The main or ‘switchboard’ menu
5e. Circulation control
5f. Loans
5g. Manual data entry
5h. Returns

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**Borrower records • 5a**

The circulation system needs to record borrower details, and link borrower records with those of the items they borrow. It may also keep information about reserves clients place on items that are on loan, and the fines owed by ‘delinquent’ borrowers.

Borrower details are specific to each organisation, and are not shared by any other organisation or system. So each organisation can determine its own requirements, and store its own details. Most library systems provide for standard information - first name, last name, address, and so on - with options to include a class or work section as required.

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**The library setup • 5b**

Most libraries have several computer terminals available to access the system.

Some may be in restricted areas, such as behind the loans desk, and only for the use of staff members.

Others may be available for users, and situated in public areas.

Library procedures determine what information is available from particular computers. Generally only catalogue enquiries and reservations are permitted from the unrestricted terminals, and perhaps individual borrower renewals and enquiries.
The library management system may be the only application available from your computer, or one of several.

In either case, the procedure to start the system is likely to be selecting from a menu, or clicking on a shortcut or icon.

Once launched, the system displays a screen prompting you for identification details such as logon ID and password. These are allocated by the system administrator. They may be for your personal use, or they may be shared. If shared, remember to tell other users if you change the password. Some passwords expire after a certain length of time.

The screen might look something like this:

```
Sign On
System ........: FREDA
Subsystem .....: QINTER
Display ......: QPADEV0046

User ............
Password ..........
Program/procedure ....
Menu ............
Current library .......
```

System messages

During the day, the system issues and discharges loans, adds new borrowers, etc. That is, changes take place in the records whenever anything other that an enquiry is done.

To enable rebuilding of a database in the event of a software or hardware crash, backups of the database are taken regularly to retain any changes.

When you log into a database for the first time in the morning, you are likely to see system messages describing the housekeeping that was performed, identifying the backup files that were made, whether the backups were successful, etc. It is important to note any file identification details, and alert your supervisor to any warning or abnormal messages that appear.

Here is a message screen. This screen was displayed on 3 April. That is, the messages describe what happened on the previous day.
The main or ‘switchboard’ menu

Once the login process is complete (it may have more steps than this), you reach a main menu, sometimes called a switchboard.

From here you will have several options, depending on how your system has been set up.

The default option is probably set to something like Circulation Control. Other tasks such as Acquisitions, Reporting and Cataloguing are generally done away from the loans desk, say in the workroom. These options may not even be available from the loans desk.
Circulation control

The Circulation Control screen, or its equivalent, is the screen you move from and return to often. There will be links, probably by function keys, to various other screens such as Loans, Enquiries, Returns, Borrower Registration, and so on.

The main menu will look something like the one shown here.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>Borrower Processing</td>
</tr>
<tr>
<td>201</td>
<td>Loans - Maintenance Mode</td>
</tr>
<tr>
<td>211</td>
<td>Returns</td>
</tr>
<tr>
<td>212</td>
<td>Offline Circulation Update</td>
</tr>
<tr>
<td>225</td>
<td>Item Transfer/Status Update</td>
</tr>
<tr>
<td>230</td>
<td>Stocktake - Unauthorised Staff</td>
</tr>
<tr>
<td>231</td>
<td>Stocktake - Authorised Staff</td>
</tr>
<tr>
<td>232</td>
<td>Stocktake - Offline</td>
</tr>
<tr>
<td>240</td>
<td>Transaction Entry</td>
</tr>
<tr>
<td>250</td>
<td>Reservations/Catalogue Enquiry</td>
</tr>
<tr>
<td>260</td>
<td>Renewals/Borrower Enquiry</td>
</tr>
<tr>
<td>280</td>
<td>Circulation Item Maintenance</td>
</tr>
</tbody>
</table>

Option: _____

F3=First Menu F6=Messages F12=Previous Menu F19=Workstation Submitted Jobs

Loans

Most library systems use barcodes. Books, journals, and other library materials have barcode stickers, and borrowers’ card probably also have barcodes.

Lending an item is usually a matter of ‘wanding’ the barcode on the item, and then the barcode on the borrower’s card, with a hand-held or other scanner.

It is important to note any messages regarding the borrower (e.g., banned, suspended) or the book (e.g., reserved by someone else, reported missing).
Manual data entry

There are situations when you need to enter details manually: the barcode reader may not work, or a user might have forgotten their card.

You can read the barcode numbers and type them in. For borrowers, you can find the record using a different field - their surname, driver’s licence number, or another key field value.

If a book doesn’t have a barcode, or it is unreadable, you will need to put a memo in the record so that when it is returned, it can be rectified. If a barcode on a borrower’s card is unreadable, you will probably issue a new one immediately.

Here are the search results for a particular borrower name. The software gives records near the specified name – in this case ‘Sima’ – in case it was misspelled.

BKR200
3/04/01
10:52:18

Select an existing name from the list below
Options: 1=Select Name

Opt. Surname/Business Name Given Names Label
Lib/Loc Sima X6689734202 01/40
17 Mullins St, Reid 2612 Sima James Owen X6700563321 01/30
16 Elliot St Braddon 2612 Simak Dana Pamela X6700526142
4 Brooke Pl Wanniassa 2903 01/40
Simic Barry X670078332 01/30
17 James Place Lyneham 2600

More...

Returns

A return is the simplest procedure in a library. Simply read the barcode on the item with the wand. The records associated
with that item and its borrower will be updated to reflect the return.

It is important to note any messages or memos that show on the screen: the item may be reserved for someone and you need to notify them, or perhaps it has been noted as needing repair.

When you process returns and see that an item is damaged or incomplete, note this in the memo section of the record, and keep it aside for attention.

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**Problems of databases**

No computer system ever works perfectly. You may not be able to read a barcode because the reader is faulty or the barcode damaged. There may be a bar on a borrower, so that they are not permitted to borrow books. This can occur because of overdue books, fines or payment for a lost or damaged item still owing.

The computer system may be unavailable. In order to continue to process loans and returns, libraries need a manual system, probably involving a record of the book’s barcode number and the borrower’s barcode number. It is always advisable to check, if you are having a software problem, whether it is a problem just with your computer. Perhaps you can use a different machine.

The subtopics in this section are:

- 6a. System failure
- 6b. Documentation
- 6c. Backup and end-of-day procedures
- 6d. Bugs, or things that don’t work properly
- 6e. Annoyances, or procedures that you find frustrating

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**System failure**

If the system crashes while you are processing returns, loans, or any other update to the system, you may lose part or all of your changes. Or one or more of the records may be corrupt.

There will be crash recovery procedures to use in this case. But you should also check the last few transactions, and watch for any messages as the system comes back up.

In the event of a major crash, you may have to run special programs and procedures which use a backup of your database, and run the day’s transactions again against this
backup. You should not have to enter the transactions again - all transactions have a record which is copied to a log file.

The names of the programs, and the person(s) to notify, are part of the library’s procedures. Such a situation can take some time to recover from, and you will have to use manual procedures while the database is being rebuilt.

**Documentation** •6b

All the standard procedures to operate the library management system are documented in a procedures manual, which comes as part of the system. Related library practices may be recorded separately, but should be kept with the system manual(s).

It is vital that this documentation be kept up-to-date, and that all relevant staff are familiar with it. This may involve updating loose-leaf binders, as new information is provided by the system vendor. It may also include recording decisions about particular procedures taken by library management and staff.

**Backup and end-of-day procedures** •6c

To enable a system to be recovered after a crash, backups are taken regularly. The whole database may be backed up each day. Or the database may be backed up once a week, and the day’s transactions (record changes) backed up each day.

Depending on your library’s procedure, you may be required to load floppy disks or tapes when you close down the library management system at night.

As a general rule, all computers that use the system need to be disconnected; databases usually require exclusive use of the tables when they are backing up. This may involve you going around to the various computers in the library and disconnecting them from the database. This does not mean just turning them off, but closing down properly and logging out, as specified in your procedures manual.

**Bugs, or, things that don’t work properly** •6d

All software programs have bugs. The more complex the software, the more bugs it has.

As a user of a software system, you will occasionally find an error: a sequence of events that doesn’t work properly; or a particular type of transaction that fails if the user has more than 20 books out ... There is an almost infinite number of possibilities.
You need always to be alert to the messages and responses from the system. Wait until a process is finished before you leave the desk; watch the screen for any unusual or unexpected messages.

When you discover a bug, try to remember what you were doing and the order of events, and write it down. In particular, write down any error messages or error code numbers you see. If it is not potentially destructive (that is, if it didn't seem to cause record corruptions or lost data), try to duplicate the problem. Then report it to your software support section.

Annoyances, or procedures that you find frustrating

Unlike bugs, these are not errors in the software, but problems with the way the software is working for you.

There are often ways to ‘work around’ such problems. However, depending on the frequency with which it occurs and the disruption it causes you, you may want to report it to your supervisor or software support section as well.

Such problems may be things like having to put the date in a field in an American format - i.e., MMDDYY. You can work with it, but it is annoying. Or you may have to respond to meaningless or unimportant messages before a procedure will continue. Again, you will get used to it, but it can usually be fixed.

Remember that these systems are designed to make your work easier, and if they don’t they should be changed.

Databases in the library

The integrated library management system is the library’s central database. It is likely to have the following modules:

- Ordering/acquisitions
- Cataloguing
- Circulation
- Serials control.

In addition, a library may have an equipment booking system, and a collection of information about the library: opening hours, staff details, and so on.

Most collections contain electronic databases, both on CD-ROM and accessible via the Net. These are treated in Using networked services.

The subtopics in this section are:
7a. Workflow

7b. Ordering

7c. The catalogue

---

**Workflow**

Here is a standard workflow for acquiring information to meet clients’ needs.

<table>
<thead>
<tr>
<th>Selecting and ordering</th>
<th>Receiving the material</th>
<th>Cataloguing</th>
<th>End processing</th>
</tr>
</thead>
</table>

**Selecting and ordering**

To keep their collections up-to-date and able to meet clients’ information needs, libraries regularly buy new material. They order from publishers, distributors, and library suppliers. When an order is placed, details of the item are entered into the library management system. Bibliographic details need to be verified to ensure that the correct items are ordered.

Many libraries receive gifts and exchanges from individuals and/or other organisations. If they are accepted, they are treated in the same way as purchased items.

**Receiving the material**

When the material arrives, it is checked carefully to make sure that it is what was ordered, is in good condition, and costs (approximately) what was expected. Details of the receipt are added to the item’s record in the system, and changes are made if, for example, a newer edition is supplied than the one ordered.

The material is accessioned according to the library’s procedures - e.g., an accession number written on item, the library’s stamp added.

The invoice is processed for payment.

**Cataloguing**

The item is catalogued. Some of the details are already in the library system, including author, title, publishing details, ISBN, and price. Cataloguers need to edit the record to ensure that the details accord with the library’s standards for description - usually Anglo-American cataloguing rules. They add main and added entries, subject headings, and a call number, also using standard cataloguing tools - e.g., Library of Congress subject headings, Dewey decimal classification.
End processing

The item is now prepared for use by clients, either to borrow or to use in the library. A spine label and barcode are added, accession and/or call numbers recorded, security strip inserted, and perhaps a date due slip or other circulation stationery. Depending on the library and the anticipated use of the item, it may be strengthened, covered, placed in a magazine binder, or otherwise packaged appropriately.

Ordering •7b

When we order an item, the bibliographic details are verified by checking information from the publisher, a trade bibliography, or another standard source of bibliographic information. Standard bibliographic tools are treated in detail in Using reference works.

The more accurate the details we give the supplier, the less likelihood there is of receiving the wrong item. The more precisely we enter the details into the library system, the fewer corrections will need to be made when the item is received and catalogued.

Ordering details include:
• author
• title, and subtitle if known
• edition, if other than the first
• publisher and date of publication
• ISBN
• price.

The catalogue •7c

The catalogue records details of all the items held by the library. Although each library's holdings are different, many items are common to a number of libraries. This enables libraries to share records, saving time and effort in creating new ones. Clients also use more than one library, and value the consistency of bibliographic records in different libraries.

So catalogue records are standardised, in the item details they contain, and in the form in which they are recorded. This standardisation is achieved by using a number of internationally accepted cataloguing tools. Libraries all over the world use:
• Anglo-American Cataloguing Rules (AACR) - to describe the item and allot access points for people, organisations, titles, and series
• Library of Congress Subject Headings (LCSH) or another list of subject headings - to describe the item’s contents
• Library of Congress Classification (LCC) or Dewey Decimal Classification (DDC) - to assign a number by which the item is shelved
• a MARC format - to enable a computer to organise and interpret the information in the record.

Bibliographic records

A library catalogue consists of bibliographic records for the works which make up the collection.

The record contains a description of the work, and headings based on authors, titles, series and associated organisations, under which the work can be found in the catalogue. It includes subject headings and a call number.

The subtopics in this section are:
  8a. Part of the record
  8b. ISBD
  8c. AACR
  8d. Access points
  8e. Subject access
  8f. The MARC format
  8g. From MARC to OPAC

International Standard Bibliographic Description (ISBD)

The description of an item in the catalogue is based on the International Standard Bibliographic Description (ISBD). This provides a standardised format for describing the items.

The description used in the Anglo-American cataloguing rules second edition (AACR2) is based on ISBD(G).

Specific types of materials are described using ISBDs which are based on the ISBD(G).

The subtopics in this section are:
  Areas of description
  Order of elements
Areas of description

The ISBD consists of eight areas of description, separated by standard punctuation.

The areas are:
1. Title and statement of responsibility
2. Edition
3. Material (or type of publication) specific details
4. Publication, distribution etc
5. Physical description
6. Series
7. Note
8. Standard number and terms of availability.

Many items do not need all eight areas. Then the description includes only the appropriate areas.

Order of elements

This indicates the layout of an ISBD including most of the elements in the correct order.

Title [general material designation] = parallel title : other title information / first statement of responsibility; subsequent statement(s) of responsibility. - Edition / statement of responsibility relating to the edition. - Material (or type of publication) specific details. - Place : publisher, date. Extent of item : other physical details ; dimensions + accompanying material. - (Series) Notes. ISBN : terms of availability.

Punctuation

Punctuation is used in the ISBD:
- to show the beginning of each area
- to separate the elements within each area
- to identify particular elements by the punctuation which precede them.
Punctuation precedes, or comes before, each area or element within an area. Thus, if the size is preceded by a semicolon (;), this will be the punctuation, whatever else is in the physical description.

eg. xi, 309 p. : ill. ; 23 cm. 665p. ; 21 cm.

Full rules for punctuation are given in AACR2. Some but not all ISBD punctuation is used in records in automated catalogues.

---

**AACR**


AACR2R is the set of rules for descriptive cataloguing used in most English-speaking countries.

AACR was first published in 1967 in two editions - English and American. It was the first significant international attempt to standardise descriptive cataloguing rules, to facilitate sharing and exchange of catalogue records both nationally and internationally.

In 1978 the second edition of AACR was published. In 1988 AACR2 was revised, but not enough for the editors to call it a third edition. More minor additions were incorporated into the 1998 revision.

Its rules determine the description, as we have seen, and also main and added entries, and forms of headings for persons, places, corporate bodies, and series.

---

**Access points**

Access points are the headings by which a searcher finds a record in the catalogue. They include

- authors
- titles
- series
- associated persons and corporate bodies
- subjects.

Modern computer catalogues also allow users access by keywords, ISBNs and ISSNs - which do not require any special treatment by cataloguers.

AACR2 has rules for deciding which is the main entry and which are the added entries. This practice dates back to card catalogues, when one main entry was used to save the work of
duplicating all the information. For most purposes today, it is unimportant to distinguish between main and added entries.

**Subject access**

It is essential that catalogue users can find items by searching for subject headings, when they need to find information on a topic without knowing particular authors or titles.

Classification assigns a number to the main subject of the item. This allows subjects to be grouped together on library shelves, and in most online catalogues enables searching by classification number.

Authority work, including establishing preferred headings and making references from non-preferred headings, is another important aspect of subject cataloguing.

The subtopics in this section are:

- Subject headings
- LCSH
- LCSH subdivisions
- Authority control
- References
- Classification
- Dewey Decimal Classification
- Library of Congress Classification

**Subject headings**

Subject headings are created using a standard subject headings list, usually *Library of Congress subject headings*. Special libraries may use a more specialised list, and most school libraries use *SCIS subject headings*. Databases also use standardised subject headings lists, though they are more often called *thesauri*.

This use of *controlled vocabulary* is intended to assist users to find all the relevant material on their topic, and to assist cataloguers to assign headings clients can expect, and find helpful.

The use of keyword searching is increasing, and it is often a valuable search technique. However, the risks are that you will find an unmanageable number of items (think of the results of many Internet searches!); and that they do not gather together all the items on a subject.
Library of Congress Subject Headings (LCSH) •8e

This is an excerpt from LCSH.

**Mental illness** *(May Subd Geog)*
Here are entered popular works and works on regional or social aspects of mental disorders...
UF Diseases, Mental
  Madness
  Mental diseases
  Mental disorders
BT Diseases
  Psychiatry
RT Mental health
NT Genius and mental illness
  --Bibliography
  --Classification
  --Diagnosis
  --Treatment
  --Evaluation

Preferred headings are shown in bold.

The heading **Mental illness** may be used with a geographic subdivision - e.g., Mental illness--Australia.

**Mental illness** is used instead of the non-preferred headings Diseases, Mental Madness, Mental diseases and Mental disorders.

**Diseases** and **Psychiatry** are broader terms than **Mental illness**.

**Mental health** is a related term to **Mental illness**.

The heading **Genius and mental illness** is a narrower term than **Mental illness**.

The subdivisions **--Bibliography**, **--Classification**, **--Diagnosis**, and **--Treatment** can be used with the heading **Mental illness**.

**--Evaluation** is a subdivision of the subdivision **--Treatment** directly above.

**LCSH subdivisions** •8e

Subdivisions are used in LCSH to make the headings more specific, by combining a number of aspects of a topic. They also allow a large number of items under one heading to be grouped by more specific subheadings.

Subdivisions are:
• topical - to limit a subject to a subtopic, e.g., Parasites--Biological control
• form - to indicate the way in which the material is presented, e.g., Library science--Dictionaries
• geographical - to subdivide by place, e.g., Musicians--Cuba
• period - to specify a particular time period, e.g., 19th century

Authority control

Cataloguers aim to provide consistent headings, so that users can find all the relevant items the library holds on a particular topic, by a particular author, and so on. To maintain the same headings for the same name or subject, it is important to record the format of the headings used.

This is called authority control. It means that headings are created according to standard rules, checked in an authority file, and recorded in the library’s system. The main authority files are

• Library of Congress Subject Headings
• Library of Congress Name Authorities.

Kinetica maintains a listing of authority records used in the Kinetica system, which can be searched through KineticaWeb.

A record of references is also kept, to ensure that users are guided to the preferred headings.

References

A reference is a direction or signpost in the catalogue from one heading to another, so that catalogue users can find all related entries.

The cataloguer decides on the preferred heading(s), and users are referred to it from any other headings they may look up. Many library systems do this automatically, and users may be unaware that the terms they enter are not the preferred terms. Other systems show the correct headings, but users must select them to find the items they want.

A see reference directs the user from the form of a heading which is not used to a form of heading that is used.

A see also reference directs the catalogue user to a related entry or name. It is normally used when a person or corporate body is entered under two or more different names.
An explanatory reference provides more detailed guidance than is given in a see or see also reference. For example, it may outline the history of the name changes of a government department.

### Classification

Classification is used to indicate the subject, and sometimes also the form, of an item.

A classification number allows the item to be shelved with other items on the same or a similar topic. This enables clients to browse, as most books and other material on the same subject will be shelved in one place.

The two major classification schemes are:

- **Dewey Decimal Classification (DDC)** - used by most Australian libraries
- **Library of Congress Classification (LCC)** - used by a number of academic libraries.

#### Dewey Decimal Classification (DDC)

A Dewey Decimal Classification (DDC) number consists of at least three digits. These are normally followed by a decimal point and more digits, to express a more specific subject, or an additional aspect of the subject.

The DDC number represents the subject. Libraries usually add a book or author number to the classification number. This may be the first three or four letters of the author's surname or a running number. Some libraries use more complex Cutter-Sanborn numbers, consisting of a letter and some numbers, and designed to give every item a unique call number, and keep the books in alphabetical order of author.

Call numbers also show a location - e.g., a branch of the library; a special collection - e.g., reference; and a copy number if there is more than one copy in the library.

```
EAST  
786.3  
MOR

REF  
786.33  
D421

JAZZ  
786.333  
Copy 2
```

#### DDC first summary

DDC divides all human knowledge into ten main classes.
First Summary

000 Computers, information, & general reference
100 Philosophy & psychology
200 Religion
300 Social sciences
400 Language
500 Science
600 Technology
700 Arts & recreation
800 Literature
900 History & geography

Subjects are classified first according to their class (or discipline), and then more specific aspects of the topic.

Since most library collections are arranged according to this scheme, it is useful to become familiar with at least the ten main classes.

Library of Congress Classification (LCC) •8e

An LCC number consists of letters, numbers, and usually the date of publication.

There are over thirty volumes of LCC, which are maintained by different groups of subject specialists, rather than having the overall uniformity of DDC.

The main classes are:

A General works
B Philosophy and religion
C History: Auxilliary sciences
D History: General and Old World
E-F History: America
G Geography and anthropology
H Social sciences
J Political science
K Law
L Education
M Music
N Fine arts
LCC numbers form complete call numbers; they do not need an additional author or book number.

The MARC format

For libraries to store catalogue records in a database, they need a standard format. The MARC (MAchine Readable Cataloguing) format is a standard way of keeping the bibliographic elements of an item in a form which a computer system can read and manipulate, and from which the data can be retrieved.

The de facto international standard is MARC 21, the latest version of the format developed and promoted by the Library of Congress. You can find out more about MARC 21 by visiting the Library of Congress website [www.loc.gov/marc].

Fields

In a MARC record, the fields contain the bibliographic information which forms the record. These include the areas of description, access points, subject headings and classification numbers. There are also fields containing information required by the computer.

Tags

Each field has an identifying label. This label is called a tag and consists of three characters. For example, the title and statement of responsibility area - now called the title and statement of responsibility field - uses the tag 245.

The MARC format

Indicators

Two extra characters, called indicators, are used in some fields to provide the computer with extra information. Where indicators are not needed, they are left blank. In this field:
Subfields and subfield codes

The elements within a field are called subfields. Each subfield is introduced by a subfield code. In the title and statement of responsibility field:

245 14 $a The grocer :$ba dying race? /$cby Susan Salter.

$2a introduces the title proper
$b introduces the other title information
$c introduces the statement of responsibility.

From MARC to OPAC

Here is a MARC record and its equivalent OPAC record.

<table>
<thead>
<tr>
<th>Field</th>
<th>MARC</th>
<th>OPAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>97017698 /MN</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>DLC</td>
<td></td>
</tr>
<tr>
<td>005</td>
<td>19971014095015.3</td>
<td></td>
</tr>
<tr>
<td>008</td>
<td>970529s1997 nyuaf bkq 001 0beng</td>
<td></td>
</tr>
<tr>
<td>010</td>
<td>$a97017698 /MN</td>
<td></td>
</tr>
<tr>
<td>020</td>
<td>$a0525942467 (acid-free paper)</td>
<td></td>
</tr>
<tr>
<td>040</td>
<td>$aDLC$cDLC$dDLC</td>
<td></td>
</tr>
<tr>
<td>050 00</td>
<td>$aML420.P96$bB76 1997</td>
<td></td>
</tr>
<tr>
<td>082 00</td>
<td>$a782.42166/092$aB$221</td>
<td></td>
</tr>
<tr>
<td>100 1</td>
<td>$aBrown, Peter H.</td>
<td></td>
</tr>
<tr>
<td>245 10</td>
<td>$aDown at the end of lonely street :$bthe life and death of Elvis Presley /$cPeter Harry Brown and Pat H. Broeske.</td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>$aDiscography: p. [459]-464.</td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>$aFilmography: p. [447]-457.</td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>$aincludes bibliographical references (p. [487]-505) and index.</td>
<td></td>
</tr>
<tr>
<td>650 0</td>
<td>$aRock musicians$zUnited States$xBiography.</td>
<td></td>
</tr>
<tr>
<td>700 1</td>
<td>$aBroeske, Pat H.</td>
<td></td>
</tr>
</tbody>
</table>
Contributing to bibliographic systems

Problems in the catalogue

Although cataloguers create and maintain the catalogue, they do not necessarily help clients to use it effectively. There must be good communication between cataloguers and the reference staff who work with the clients.

There are a number of common problems in maintaining a catalogue, so that it provides complete and accurate information about the library’s holdings. They include records in the catalogue for items no longer in the collection; records that do not have the appropriate access points to enable clients to find them; duplicate records that mislead clients about the number of items available on a topic; and inconsistent headings that make it difficult to locate all the relevant material.

The subtopics in this section are:

9a. Records with no items
9b. Names with more than one heading
9c. Unfamiliar and ‘blind’ headings
Records with no items

All libraries lose items from their collections. They may be lost or stolen, or so badly damaged as to be not worth repairing.

It is very important that when material is missing or removed, the record in the catalogue is amended. Sometimes libraries annotate the record of a missing item for a while, in the hope that it will be found. This should be only temporary, as the item must be declared lost if it does not turn up again in a reasonable time.

Clients can lose confidence in the catalogue as an accurate record of what the library holds, so it is necessary to remove record of items that are no longer available to clients, whatever the reason.

Names with more than one heading

Many authors use more than one form of their name, and many corporate bodies change their names. For example, each time there is a change of government or even a Cabinet reshuffle, most government departments change their responsibilities, and therefore their name.

Cataloguers must ensure that there is consistency of names where possible, and adequate references to and from different forms of a name, and different names for the same body.

This authority work should be done when items are first catalogued. However if other staff become aware of problems with names as access points in the catalogue, it is their responsibility to alert technical services staff. As in all other activities in the library, the ability of clients to find all the relevant information efficiently is the main objective.

Unfamiliar and ‘blind’ headings

Sometimes subject headings are allocated that are not the most familiar or helpful to catalogue users.

Again it is the responsibility of reference staff to tell cataloguers.

When cataloguers create references to particular headings, sometimes there is no record in the catalogue under that heading. It is particularly frustrating to a catalogue searcher to follow a direction to see or see also xxxx, to find that there is nothing listed under the new heading. This is sometimes called a ‘blind’ reference.
Using the catalogue is an act of trust for many library clients. As for all other databases, remember the saying 'garbage in, garbage out'. Remember, too, that contributing to the bibliographic systems that service clients’ needs is a responsibility of the whole library staff.