Home Librarian
A Computerized Library Card Catalog System

Robert Heller
Deepwoods Software
Wendell, MA, USA

April 15, 1995

Contents

List of Figures

List of Tables

Preface

The *Home Librarian* system maintains a database of "cards", which describe books, magazines, video and audio tapes, CDs, record albums, laser disks, and other simular items. The data is indexed by a unique ID for each "card", a title index, an author index, and a subject index. Each card contains fields for a title, an author, a publisher, a year, a volume number, a description, and an item type. The *Home Librarian* package has six programs: EditLibr for editing card catalog files, Librarian for searching card catalog files, PrintCards for make card catalog cards, PrintLabels for printing item labels, Libr2Ascii for dumping a card catalog file to a plain ASCII text format, and Ascii2Libr for building a card catalog file from an ASCII text file (as generated by Ascii2Libr).

I had two main goals in mind when I set out to write the *Home Librarian* package. First I wanted to learn `C++` by writing some "real" programs, not just the exercises in the book, and secondly, I wanted to write a package to help me deal with my growing library of science fiction books, video tapes, and audio cassettes, which I estimate at about 1,000 items. The first goal has pretty much been reached, in that I believe I have a good working feel for `C++`. My second goal is still in progress[1]. I also wanted to experiment with writing a shareware package, to see if it is a viable source of income and not too much hassle, that is, to see if the cost/benifit tradeoff is reasonable.

If you have *any* comments about this package, please let me know. My electronic mail addresses are listed on the back side of the title page. My postal address is listed in Appendix D. I would be very interested in any comments users of the *Home Librarian* package might

[1]As of this writing, I have not completed putting everything into the database.

Chapter 1

Introduction.

1.1 Basic Terminology

The *Home Librarian* package works over files that are "Card Catalog Data Bases" which contain a number of "cards".

1.1.1 What is a Card Catalog Data Base?

A Card Catalog Data Base file contains a collection of "cards" that describe items in your library, such as books, magizines, records, and tapes. These cards are indexed with four indices as shown in Table 1.1. Each index uses 35 character strings as keys. The keys are always compared in a case-insensitive fashion. That is, `"The Door Into Summer"` is the same as `"THE DOOR INTO SUMMER"`. Internally, the keys are converted to all uppercase letters. The `id` index indexes to the card records directly. The other three indices index to lists of `ids`, and thus index

Table 1.1: Indices in a "Card Catalog Data Base".

Name	Description
`id`	This index is by a unique identifier. Each card has its own unique identifier.
`title`	This index is the title cross-reference.
`author`	This index is the author cross-reference.
`subject`	This index is a subject index.

Table 1.3: Allowed types for a "card".

Name	Description
`Book`	For books.
`Magazine`	For magazines and periodicals.
`CD`	For compact disks.
`AudioCassette`	For audio cassettes.
`Album`	For record albums.
`LaserDisk`	For laser (video) disks.
`VHSVideo`	For VHS format video tape recordings.
`BetaVideo`	For Beta format video tape recordings.
`EightMM`	For 8mm video tape recordings.
`EightTrack`	For 8-track audio recordings.
`DAT`	For 4mm digital audio tapes.
`Other`	For anything else.

1.2 Common GUI Definitions.

1.2.1 Keyboard Defin1tions.

Both the `EditLibr` and `Librarian` programs use a terminal-based "Graphical User Interface" (GUI). This is a very simple interface that works on any video display terminal (VDT)[1]. The GUI routines use cursor positioning and reverse video or standout mode and do "raw" terminal input (single character input with normal operating system

Table 1.4: Common Key Bindings.

Special Key	Generic Key	Meaning
`Home`	`Esc`	Exit or quit
← (left arrow)	`Ctrl-B`	Move left
→ (right arrow)	`Ctrl-F`	Move right
↑ (up arrow)	`Ctrl-P`	Move up
↓ (down arrow)	`Ctrl-N`	Move down
	`Delete` or `Backspace`	Delete previous character
	`Return` or `Enter`	Accept input or selection

The PrintLabels program, which is described in chapter 5, can be used to print labels or generate any other sort of hard copy or any sort of text file output from a card catalog data base.

1.3.4 Moving Data Bases Across Systems.

Appendix A is describes a pair of programs to convert a data base file from its normal binary format to a readily transportable ASCII text file format.

1.3.5 Licensing and Registation.

Appendix B contains the licensing information for this package. Appendix C talks about Shareware Registation. Appendix D contains a Shareware Registation form for this package.

Chapter 2

Editing a Librarian Data Base.

A Card Catalog Data Base is created and edited with the `EditLibr` program. This program uses a simple menu-driven, terminal-based GUI[1].

2.1 Invoking `EditLibr`.

`EditLibr` is invoked from the command line, as follows, to edit an existing data base file:

```
EditLibr -editfile <filename>
```

or like this to create a new data base file:

```
EditLibr -editfile <filename> -minpages <pages>
```

where `<filename>` is the name of the file to be edited or created and `<pages>` is the number of index pages to pre-allocate when creating

[1] See section 1.2 for GUI definations.

2.2 Using `EditLibr`.

2.2.1 The Main Command Menu.

When `EditLibr` starts up, it displays its main menu, as shown in Figure 2.1.

The `Quit` Menu Item.

The `Quit` menu item causes `EditLibr` to close the data base file and exit.

The `Edit a Card` Menu Item.

The `Edit a Card` menu item is used to edit a specific card in the data base. You are prompted for a card id, and the card editor is invoked. The card editor is described in Section 2.2.2.

The `Delete a Card` Menu Item.

The `Delete a Card` menu item is used to delete a selected card by its id. You are prompted for the id of the card to delete.

The `Delete by Author` Menu Item.

The `Delete by Author` menu item is used to delete some or all cards for items written by a selected author. You are prompted for an author and then the card ids for that author are listed one by one and you are asked if you want to delete each card.

The `Delete by Title` Menu Item.

The `Delete by Title` menu item is used to delete some or all cards for items with a selected title. You are prompted for an title and then the card ids for that title are listed one by one and you are asked if you want to delete each card.

[2]These pages are cached using a simple "virtual memory" scheme, so disk access is minimized.

Figure 2.2: Edit Card Screen of `EditLibr`.

```
                Editing a Card

Id: <id>                                      Type: <type>
Title:<title>
Author:<author>
Publisher:<publisher>                         Year: <year>
City: <city>                                  Vol:<volume>
Description:<description>










Subjects: <subject list>
```

The `List Subjects` Menu Item.

The `List Subjects` menu item lists subjects with a common selected prefix string. You are prompted for a search prefix and those subjects with a matching prefix string are listed. You have the option of selecting one of the listed subjects[7], in which case the ids for the selected subject are listed (much as in the `List Cards` menu item)[8].

The `Spawn Shell` Menu Item.

The `Spawn Shell` menu item forks a sub-shell process.

Chapter 3

Searching a Data Base.

The `Librarian` program is used to search a data base file. It is meant as a eletronic replacement for a card catalog. It uses a GUI[1]

3.1 Invoking `Librarian`.

`Librarian` is invoked from the command line:

```
Librarian -infile <filename>
```

where `<filename>` is the name of the file to be searched.

3.2 Using `Librarian`.

When `Librarian` starts up, it displayes its main menu, as shown in Figure 3.1.

3.2.1 The `Quit` Menu Item.

The `Quit` menu item causes `Librarian` to close the data base file and exit.

[1]See section 1.2 for GUI definations.

3.2.2 The `List Cards` Menu Item.

The `List Cards` menu item lists cards with their titles which have a common selected prefix for their id strings. You are prompted for a search prefix and those cards with a matching prefix string in their id string are listed. You have the option of displaying a selected card.

3.2.3 The `List Titles` Menu Item.

The `List Titles` menu item lists titles with a common selected prefix string. You are prompted for a search prefix and those titles with a matching prefix string are listed. You have the option of selecting one of the listed titles[2], in which case the ids for the selected title are listed (much as in the `List Cards` menu item)[3].

3.2.4 The `List Authors` Menu Item.

The `List Authors` menu item lists authors with a common selected prefix string. You are prompted for a search prefix and those authors with a matching prefix string are listed. You have the option of selecting one of the listed authors[4], in which case the ids for the selected author are listed (much as in the `List Cards` menu item)[5].

3.2.5 The `List Subjects` Menu Item.

The `List Subjects` menu item lists subjects with a common selected prefix string. You are prompted for a search prefix and those subjects with a matching prefix string are listed. You have the option of selecting one of the listed subjects[6], in which case the ids for the selected subject are listed (much as in the `List Cards` menu item)[7].

---

[2] If only one title matches, it is automatically selected

[3] If the title only refers to a single card, that card is displayed directly

[4] If only one author matches, it is automatically selected

[5] If the author only refers to a single card, that card is displayed directly

[6] If only one subject matches, it is automatically selected

[7] If the subject only refers to a single card, that card is displayed directly

Chapter 4

Printing Cards.

The `PrintCards` program is used to generate either 3x5 or 5x8 cards. `PrintCards` can generate a shelf list, an author index, a title index, or a subject index. Partial listings can also be generated.

4.1 Invoking `PrintCards`.

`PrintCards` is invoked from the command line like this:

```
PrintCards -infile <filename> <options>
```

Where `<filename>` is the file to print cards from and `<options>` consist of zero or more of the options listed in Table 4.1.

The expression can contain the operators listed in Table 4.2[1]. Each relational expression needs to specify a field name and a value. The value must be of the correct type as shown in Table 4.3. Some example expressions:

```
author="Norton, Andre"&type=Book
```

```
year>1990&type=CD
```

[1] Because some of these operators might be interpreted by the command processor (shell), it may be necessary to escape or quote the expression string.

Table 4.3: Field types

Field	Type
`type`	Type name (see Table 1.3)
`author`	String constant
`title`	String constant
`publisher`	String constant
`city`	String constant
`volume`	Integer constant
`year`	Integer constant

```
type=CD|type=Album

publisher="Random House"&city="New York, NY"

type=CD&author="Guns and Roses"

type=EightTrack&author="Hank Williams, Jr."

type=EightMM

title="The Door Into Summer"
```

4.2 PrintCards Output.

The output of `PrintCards` is to the standard output stream. This can be redirected with the output redirection command line character (`>`) or piped with the pipe character (`!` under OSK or `|` under MS-DOS). The output is meant for continous pin-fed index cards.

Chapter 5

Printing Labels.

The `PrintLabels` program is meant primarily to generate labels for items in your library, but it can also be used to generate just about any formated textual output.

5.1 Invoking `PrintLabels`.

`PrintLabels` is invoked from the command line like this:

```
PrintLabels -infile <filename> -template <tfile> <options>
```

Table 5.1: `PrintLabels` options

Syntax	Description
`-by id|title|author|subject`	Selects the type of label to generate: shelf list labels (`id`), title labels (`title`), author labels (`author`), or subject labels (`subject`).
`-only <expression>`	Used to select a subset of labels to generate. `<expression>` is a relational expression comparing fields to selected values.

Appendix A

Converting to and from Text Files.

The `Libr2Ascii` program converts a data base file to a portable ASCII text file. The `Ascii2Libr` takes the ASCII text file generated by `Libr2Ascii` and re-creates the data base file. These programs are meant for converting the data base files to a form that can be readily transfered between different systems. The data base files themselves use internal (CPU dependent) representation of the data stored, to allow rapid accessing and processing of the data. Another thing these programs do is to "compress" data base files, by discarding deleted and inaccessable data.

A.1 Invoking `Libr2Ascii`.

`Libr2Ascii` is invoked from the command line like this:

```
Libr2Ascii -infile <filename>
```

Where `<filename>` is the name of the file to be converted. The output is sent to the standard output stream, where it can be redirected or piped to other processing. This output is a plain text file.

Appendix B

License and Warranty Information.

B.1 Copyright.

B.2 License.

B.2.1 License to use.

The software package known as the *Home Librarian* package is licensed to anyone to use at no charge or fee, on any number of machines, by any number of users.

B.2.2 License to copy.

The *Home Librarian* package may be freely copied, **SO LONG AS THE COMPLETE PACKAGE OF SIX EXECUTABLE PROGRAMS AND THE DOCUMENTATION FILES ARE COPIED TOGETHER AS A UNIT**. No charge or fee may be

BY YOU OR THIRD PARTIES OR A FAILURE OF THE PACKAGE TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Appendix C

Registration: Why bother?

C.1 What is Shareware?

Shareware is software that is distributed freely, but with a voluntary fee. Generally, this fee gets some extra benefits. In some cases, source code is provided. In others a nice manual and/or customer support is provided. Sometimes the freely distributed version has limited functionality and registration provides a fully functional version of the package or program.

C.2 What You Get When You Register.

The *Home Librarian* package is fully functional as distributed freely. You don't need to register it to make full use of the package. There are advantages to registering your copy of the *Home Librarian* package.

When you fill in the registration form (see Appendix D) and send in your registration fee you will get two things:

- A printed manual, complete with a 3-ring binder. This will be mailed to you using either UPS Ground or by special fourth class via the USPS. This manual will be printed with a high-resolution printer and the pages will be printed on both sides.
- Customer support. This means you can ask me questions and I will try to answer them and try to help you with whatever prob-

Appendix D

Registration Form.

This is the Shareware Registration Form for the *Home Librarian* package. Copy this form and mail it with $25.00[1] to:

Robert Heller
D/B/A Deepwoods Software
51 Locke Hill Road
Wendell, MA 01379-9728
USA

[1] Check or money order, in USA funds, made payable to "Robert Heller".

Index