AN ON-LINE

BIBLIOGRAPHICAL SEARCH AND RETRIEVAL

SYSTEM

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GRADUATE PROJECT

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ABSTRACT

This project was undertaken as partial fulfillment of the requirements for a Master of Science Degree in Computer Science at Corpus Christi State University.

This system is an on-line system for bibliographic search and retrieval for use on a microcomputer. The user can, via a microcomputer, directly interrogate a machine-readable data base of document representations. Bibliographical information for books, papers, magazines and interviews are stored in a data base for information retrieval on author, title, date, subject and combinations thereof. This system is implemented on an IBM PC microcomputer with 128K memory using dBASE II Assembly Language Relational Database Management System. It is intended for use by educators and authors as an indexing mechanism for their personal libraries and background materials.

The project was designed specifically for use by Dr. Richard T. Marcum and to meet his requirements and specifications to aid in the research of books he is currently writing for Corpus Christi State University.
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INTRODUCTION

Dr. Marcum is doing research for books he is writing for Corpus Christi State University. In addition to numerous historical books, a tremendous amount of the information he is using comes from personal interviews and old newspaper clippings. He needed to be able to store this information on a computer and then retrieve it via various topics, for instance, all documents concerning the Violet Church between 1890 and 1920. Prior to this project, he had entered some interviews and newspaper clippings on an Apple II-E using Applewriter. He then bought an IBM-PC and wanted to use Easywriter. He also wanted to retrieve information from historical books without having to enter the entire book in the computer.

Hence this project. For every interview, newspaper clipping, and book that Dr. Marcum is using, he will enter a bibliographic entry into the database. This bibliographical information will include title, author, publisher, place of publication, date of publication, the word processing file name with which he stored the document (if applicable), the name or number of the diskette on which the file is stored, and ten subject/content words. The ten subject/content words (hereafter called s/c words) will
be the key words -- names, places, events, dates, etc -- or a skeleton of the document concerned.

After entering the bibliographic entries, he will then be able to search on

- title
- author
- date
- s/c word
- author within s/c word
- title within s/c word
- dates within s/c word
- dates within author
- dates within title

The search will retrieve a listing of all documents relating to the search key and the location of each.
DISCUSSION

The On-line Bibliographical Search and Retrieval System is designed for persons with little or no knowledge of computers or computer processing. The system is a method of finding all bibliographic entries relating to a particular search key. The user will enter all bibliographic references of his library to the system. He will then have the capability to search all entries and retrieve those relating to the topic he has designated.

The system is entirely menu driven. The user will insert a program diskette in Drive A -- enter the date and time -- insert the file diskette in Drive B on prompt -- and the main menu will appear on the screen. From the main menu, the user may add entries, delete entries, modify entries, search via search key, list all files, create a new file diskette, or exit.

The system is user friendly. The user is guided through each menu, with error recovery loops when needed. The user will have no contact with or knowledge of dBase II. The On-line Bibliographical Search and Retrieval System Users Guide gives explicit instructions on each step from the time the computer is turned on.
The On-line Bibliographical Search and Retrieval System was developed on an IBM PC microcomputer using PC-DOS 2.0 and dBase II Assembly Language Relational Database Management System, Version 2.4. It requires 128k memory, dual diskette drives and a printer.

The nucleus of the system is a master data base file containing a complete bibliographical reference for each document of the users library. The system will support 400 bibliographical entries. These bibliographical entries will contain not only the normal bibliographical information of title, author, publisher, etc, but also information concerning the contents of the document. The user will enter into the ten subject/content word fields information as to what the document is about. This gives the user the ability to search for documents of like subject matter.

When the user receives the system, the program diskette creates a dummy record to establish the data base and 13 index files. The 13 index files - title, author, date, and 10 subject/content words - are files that contain the inverted indicies of the master data base. These are used to randomly search on key words. With each new entry to the master data base, each index is updated.

See Appendix A, On-line Bibliographical Search and Retrieval System Users Guide, for more intricate information on the
capabilities and operation of the system.
SUMMARY

The On-line Bibliographical Search and Retrieval System is intended for use by educators and authors as an indexing mechanism for their personal libraries and background materials.

This system brings to personal computers many of the capabilities of bibliographical search and retrieval previously found only on large main-frame data base and information storage and retrieval systems. This microcomputer bibliographic data base consists of document records containing a full bibliographic citation plus assigned terms and descriptors.

The system package, including a complete users guide, will allow the user to develop and search his bibliographic data base, make back-up copies the data base, and create new data bases when desired.
SELECTED BIBLIOGRAPHY


APPENDIX A

ON-LINE BIBLIOGRAPHICAL SEARCH AND RETRIEVAL SYSTEM

USERS GUIDE

KAREN W. MELLON

CORPUS CHRISTI STATE UNIVERSITY

1984
ON-LINE BIBLIOGRAPHICAL SEARCH AND RETRIEVAL SYSTEM

USERS GUIDE

KAREN W. MELLON
CORPUS CHRISTI STATE UNIVERSITY
1984
**ON-LINE BIBLIOGRAPHICAL SEARCH AND RETRIEVAL SYSTEM USERS GUIDE**

**USERS GUIDE**

WITH THIS ON-LINE BIBLIOGRAPHICAL SEARCH AND RETRIEVAL SYSTEM YOU GET THE FOLLOWING:

1 Program diskette
1 Users Guide

To use this system you need:

1 IBM Personal Computer with
   128K memory
   dual diskette drives
   a printer

2 5 1/4 inch formatted double sided double density diskettes (minimum)

System limitations:

400 bibliographical entries per file diskette
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Summary</td>
<td>2</td>
</tr>
<tr>
<td>How to Begin</td>
<td>3</td>
</tr>
<tr>
<td>Main Menu</td>
<td>5</td>
</tr>
<tr>
<td>AID Menu</td>
<td>7</td>
</tr>
<tr>
<td>Monitor Menu</td>
<td>9</td>
</tr>
<tr>
<td>Select Menu</td>
<td>12</td>
</tr>
<tr>
<td>Setup Files</td>
<td>14</td>
</tr>
<tr>
<td>Copy to Diskette</td>
<td>19</td>
</tr>
<tr>
<td>Load from Files</td>
<td>20</td>
</tr>
<tr>
<td>Create New File Diskette</td>
<td>21</td>
</tr>
<tr>
<td>Load New File Diskette</td>
<td>22</td>
</tr>
<tr>
<td>Read File</td>
<td>24</td>
</tr>
</tbody>
</table>
The On-line Bibliographical Storage and Retrieval System is a method of finding all bibliographic entries relating to a particular topic. The user will enter all bibliographic references of his library to the system. He will then have the capability to search all entries and retrieve those relating to the topic he has designated, for example, retrieve all works by the author T. S. Eliot.

The user will insert a program diskette in Drive A -- turn on the computer -- enter the date and time -- insert the file diskette in Drive B on prompt -- and the main menu will appear on the screen. From the main menu, the user may add entries, delete entries, modify entries, search via search keys, list all files, create a new file diskette, or exit. The user will turn off the computer only after exiting.
I. MAKE A COPY OF THE PROGRAM DISKETTE

1. Insert the DCP 2.0 operating system diskette in Drive A.
2. Turn the computer on.
3. At the prompts, enter the date, then the time.
4. Remove the operating system diskette.
5. Insert the system diskette marked "SYSTEM PROGRAM DISKETTE" in Drive A.
6. Insert a blank formatted diskette in Drive B.
7. Type "COPY A: * B:"
8. The computer will say "COPY COMPLETE" when the copy is completed. Remove the diskette from Drive B and label "PROGRAM DISKETTE".
9. Remove the system program diskette from Drive A and store in a safe place.

II. CREATING A FILES DISKETTE

Assuming you begin with your computer off:

1. Insert the program diskette in Drive A.
2. Turn the computer on.
3. At the prompts, enter the date, then the time.
4. At the next prompt, insert a FORMATTED diskette in Drive B.
5. The Bibliographical Search and Retrieval Main Menu will appear.
6. Type in a 7 at the prompt. Then FOLLOW THE INSTRUCTIONS IN THE SECTION ON CREATING A FILES DISKETTE. In summary, you will type in a 7 first, then a Y at the next prompt. This will bring you back to the main menu.
7. Take out the file diskette from Drive B and label.
III. USING THE SYSTEM

After you have initially made a copy of the system program diskette and created a file diskette, you will skip Step I and Step II.

Assuming you begin with your computer off:

1. Insert the program diskette in Drive A.
2. Turn the computer on.
3. At the prompts, enter the date, then the time.
4. At the next prompt, insert the files diskette in Drive B.
5. The Bibliographical Search and Retrieval Main Menu will appear.

You are now ready to use this system.
This is the main menu. Listed are the seven things you can do.

You will enter a number between 0 and 7. If you enter anything else, the computer will beep and a message -

YOU MUST ENTER A NUMBER BETWEEN 0 AND 7

will appear on the screen. You will then enter a number between 0 and 7.
If you hit

1. EXIT - A screen will appear telling you goodbye and to turn off the computer.

2. ADD NEW RECORDS - a screen will appear that will allow you to add bibliographical entries to the data base.

3. MODIFY EXISTING RECORDS - a screen will appear that will allow you to change record currently in the data base.

4. DELETE RECORDS - a screen will appear that will allow you to delete or eliminate any records you do not want.

5. LIST DATA BASE FILE - this will send to the printer a listing the master data base file.

6. LIST INDEX FILES - this will send to the printer a listing of all index files.

7. CREATE NEW FILE DISKETTE - in the event you want to develop another file diskette, this will lead you through its creation.
This screen allows you to add new bibliographical entries to the database.

1. **TITLE**
   - 40 spaces are allowed for title

2. **AUTHOR**
   - 20 spaces are allowed for author

   **** BE SURE TO ENTER LAST NAME, FIRST NAME ****

3. **PUBLISHER**
   - 20 spaces allowed

4. **PLACE OF PUBLICATION**
   - 20 spaces allowed

5. **YEAR OF PUBLICATION**
   - enter 4 numbers (the computer will not allow you to enter anything but numbers)
10. SUBJECT-CONTENT WORDS — 15 spaces are allowed for each word. The words may be left blank if desired.

16. FILE NAME — 10 spaces are allowed. In this field you enter the word processing file name with which you stored the document. Leave blank if not applicable.

17. DISKETTE NAME — 5 spaces are allowed. In this field you enter the name or number of the diskette on which the above file is stored.

SPECIAL NOTES:

1. TO EXIT, TYPE A ZERO IN THE TITLE FIELD. THEN HIT (ENTER) TO END OF SCREEN.

2. IF A FIELD IS NOT COMPLETELY FILLED, YOU MUST HIT THE (ENTER) KEY TO GET TO THE NEXT FIELD. IF THE FIELD IS FILLED, YOU WILL AUTOMATICALLY GO TO THE NEXT FIELD.

3. YOU CAN ENTER NUMBERS ONLY IN THE YEAR FIELD.

4. ENTER LAST NAME, FIRST NAME INITIALS IN THE AUTHOR FIELD.
ENTER THE AUTHOR OF RECORD YOU WISH TO MODIFY

AUTHOR NAME [ ]

This screen allows you to change records currently in the database. To find the record that you wish to modify, enter the name of the author of that record. BE SURE TO ENTER THE LAST NAME FIRST. You do not have to enter the entire name. For example, if you enter "SM", the system will retrieve all records whose author’s last name begins with SM -- Smith, Smythe, Smithson, etc.

After you type in the authors name, hit 'enter'. A new screen will appear.
MODIFY MENU

REG. NO.

The first field of the record will be the record number. If the record number is 34, 00034 will be the first field you see.

Subsequent records will appear with a blank line between each one.

ENTER RECORD NUMBER OF RECORD YOU WISH TO MODIFY

On this prompt, you will look at the list above and determine the record number of the record you wish to modify. You will then enter the record number, or, if you do not want to modify anything, you will hit <ENTER> to return to the main menu.

The number you enter must be between 1 and the last record in the data base. If you enter a letter or a number not in the correct range, the system will respond with

THE NUMBER YOU ENTER MUST BE BETWEEN 1 AND 9999

ENTER RECORD NUMBER OF RECORD YOU WISH TO MODIFY

You will then enter a number between 1 and the number shown at 9999. This screen will appear.
This screen will display the current content of the record you wish to modify. To change the contents of a field, simply type over what is shown there. The instructions for field values are the same as in the ADD MENU. Type over only what you want to change. The rest will remain the same. You may use the <ENTER> key and the cursor keys to move from field to field. When you finish making all your changes, hit the <ENTER> key to the bottom of the screen. The system will return to the main menu.
DELETE MENU

ENTER THE AUTHOR OF RECORD YOU WISH TO DELETE

AUTHOR NAME [ ]

This screen allows you to delete records currently in the database. To find the record that you wish to delete, enter the name of the author of that record. BE SURE TO ENTER THE LAST NAME FIRST. You do not have to enter the entire name. For example, if you enter SM, the system will retrieve all records whose author’s last name begins with SM -- Smith, Smythe, Smithson, etc.

After you type in the authors name, hit <enter>. A new screen will appear.
*** DELETE MENU ***

REC. NO.

* All applicable records will appear here.
* The first field of the record will be the record number. If the record number is 34,
* 00034 will be the first field you see.
* Subsequent records will appear with a blank line between each one.

ENTER RECORD NUMBER OF RECORD YOU WISH TO DELETE
HIT <ENTER> TO EXIT TO MAIN MENU:

* On this prompt, you will look at the list above and determine the record number of the record you wish to delete. You will then enter the record number, or, if you do not want to delete anything, you will hit <ENTER> to return to the main menu.
* The number you enter must be between 1 and the last record in the data base. If you enter a letter or a number not in the correct range, the system will respond with

THE NUMBER YOU ENTER MUST BE BETWEEN 1 AND ###

ENTER RECORD NUMBER OF RECORD YOU WISH TO DELETE
HIT <ENTER> TO EXIT TO MAIN MENU:

* You will then enter a number between 1 and the number shown at ###. The system will respond by displaying the record you in indicated. Then the prompt will appear

TYPE D TO DELETE RECORD, OR
HIT <ENTER> TO EXIT TO MAIN MENU AFTER THE WORD WAITING APPEARS

WAITING

* If you want to delete the record shown, type in a D after the word waiting.
* The system will respond with RECORD DELETED and return to the main menu.
* If you do not want to delete the record, hit the <ENTER> key to return to the main menu.
This screen allows you to search on the listed keys and retrieve records that meet the search criterion. You will enter a number 0 and 5. If you enter anything else, a message YOU MUST ENTER A NUMBER BETWEEN 0 AND 5 will appear on the screen. You will then enter a number between 0 and 5.

Options 1-4 will send a report of the retrieved entries to the printer.
If you hit

0. You will exit to the main menu.

1. You will search on the author's name you enter after the prompt ENTER AUTHOR.

2. You will search on the title you enter after the prompt ENTER TITLE.

3. Date search -- When the prompt FIRST SEARCH DATE appears, you will enter the beginning date of the search. When the prompt SECOND SEARCH DATE appears, you will enter the ending search date. If you wish to search on a single year, enter the same date for both prompts.

4. You will search on the subject/content word after the prompt ENTER WORD. The argument may be more than one word.

NOTE:
The search argument may be a partial argument. For example, the argument water will retrieve water shed, waterfall, etc.

5. The compound argument search will take you to new screen.
This screen allows you to do define a domain with one argument and search within that domain on another argument. Note that the first search argument defines the domain, while the second search argument searches within that domain. You will enter a number between 0 and 5. If you enter anything else, a message YOU MUST ENTER A NUMBER BETWEEN 0 AND 5 will appear on the screen. You will then enter a number between 0 and 5.
If you hit

0. EXIT TO MAIN MENU

1. AUTHOR WITHIN WORD  - at the prompt ENTER WORD you will enter the subject/content word. At the prompt ENTER AUTHOR you will enter the author.

2. TITLE WITHIN WORD  - at the prompt ENTER WORD you will enter the subject/content word. At the prompt ENTER TITLE you will enter the title.

3. DATES WITHIN WORD  - at the prompt ENTER WORD you will enter the subject/content word. At the prompt FIRST SEARCH DATE you will enter the beginning search date. At the prompt SECOND SEARCH DATE you will enter the ending search date.

4. DATES WITHIN AUTHOR  - at the prompt ENTER AUTHOR you will enter the author. At the prompt FIRST SEARCH DATE you will enter the beginning search date. At the prompt SECOND SEARCH DATE you will enter the ending search date.
5. DATES WITHIN TITLE – at the prompt ENTER TITLE you will enter the title. At the prompt FIRST SEARCH DATE you will enter the beginning search date. At the prompt SECOND SEARCH DATE you will enter the ending search date.

Each of these searches will send a report of the retrieved entries to the printer.
Option 5 of the main menu will send to the printer a listing of all records in the data base.

If the printer is not on, the message

"WRITE FAULT ERROR WRITING DEVICE PRN"
"ABORT, RETRY, IGNORE"

will appear. Should this happen, turn the printer on and type in
"an R". The program will continue.

If for some reason, the "A:" appears on the screen, reboot the system. Nothing is lost.
Option 6 of the main menu will send to the printer a listing of each of the index files. The index files are the search arguments—title, author, date, and the ten subject/content words -- in sorted order.

* If the printer is not on, the message
* WRITE FAULT ERROR WRITING DEVICE PRN
* ABORT, RETRY, IGNORE
* will appear. Should this happen, turn the printer on and type in an R. The program will continue.

If for some reason, the A> appears on the screen, reboot the system. Nothing is lost.
This is the option with which you start this system. If you enter a 7 in the main menu, a new screen will appear.

```
INSERT FORMATTED DISKETTE IN DRIVE B [ READY (Y/N) ]:
```

If you type in  N , you will return to the main menu. If you type in  Y , the message --

```
NEW FILE CREATED REMOVE DISKETTE AND LABEL
```

will appear after a short pause. The system will return to the main menu. After labelling the new diskette, reinsert it in Drive B and continue on following instructions on the main menu.
Your files diskette will hold up to 400 records. Should you exceed that limit you will have to create a new diskette and store additional records on the new diskette.

Another reason for creating a new files diskette might be a new research project. If your past project had been on oceanography and your new project is on bird watching, you would probably want to keep your new project on a different diskette.
You should regularly make a back-up copy of your files diskette.

Assuming you begin with your computer off:

1. Insert the DOS 2.0 operating system diskette in Drive A.
2. Turn the computer on.
3. At the prompts, enter the date, then the time.
4. Remove the operating system diskette.
5. Insert the CURRENT file diskette in Drive A.
6. Insert a blank FORMATTED diskette in Drive B.
7. Type COPY A:*.* B:
8. The computer will say "COPY COMPLETE" when the copy is completed. Remove the diskette from Drive B and label "BACK-UP OF FILE DISKETTE ## DATE XX/XX/XX"
9. Remove the diskette from Drive A.
10. Store the back-up in a safe place.
1. Read the Users Guide carefully before using the system.

2. You may leave any or all fields blank. However, you should always enter an author, as it used by the modify and delete routines.

3. Always enter the author in the form - last name, first name initial.

4. If the printer is not on, the message

WRITE FAULT ERROR WRITING DEVICE PRN
ABORT, RETRY, IGNORE

will appear. Should this happen, turn the printer on and type in an F. The program will continue.