
A Technique for Computer-Assisted Literature Searches

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Abstract

A technique is presented for the perfusionist who does not have the time nor the facilities to do literature searches for research projects or for basic education, but who has access to a microcomputer. The software program PROFILE^a was presented and reviewed as a possible solution to that problem. After developing the working program and entering a database of 300 article titles, it is concluded that PROFILE and a microcomputer can fill the need for the perfusionist who does not have access to other literature searches.

Introduction

During the last several years, there has been an increase in the number of articles dealing with cardiac surgery and perfusion. This has made it increasingly difficult to stay current with the literature and to do literature searches when the perfusionist is trying to research a particular topic. While many hospitals have access to the computer based MEDLINE search system, the small community hospital either can not or will not subscribe to this system.

During the same time period, there has been a dramatic increase in the number and availability of microcomputers for use in the home or office. A number of perfusionists have developed programs and databases for use clinically^{1,2}. There has also been an increase in the amount of software available for the user that is versatile and easy to use.

In an attempt to use the computer as a solution to the problem of developing a database measure-

ment system that was similar to MEDLINE, a search was undertaken to find available software which would fill this need. A program was found and customized to mimic the MEDLINE search system and to provide a computer based literature search system for the perfusionist in the office or at home.

Material and Methods

A 48K Model III microcomputer^a with two double-density disk drives was utilized for the purpose of this project. The double-density drives allow for about 368K of data storage on disks. An 80 column printer was used for the hard-copy printouts of data^a.

The software selected for this project was PROFILE^a. PROFILE is a database management system which will allow the user to design and set up a data entry screen to his own specifications. The user can also set up the printing format for data retrieval. The program allows for the sorting of information in the data base as well as allowing for easy editing of that information.³

Once the data entry screen was designed, the data was entered into the data base and stored on floppy diskettes. This information included: the journal, the volume, number, year, the title of the article, the primary author, and the page number. It also included a key word in order to allow for easy retrieval of the article, based on the subject matter of the article.

In order to fairly evaluate the system, a large database of reprints and journal articles had to be assembled. Since I had an accumulation of seven

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years of reprints, these served as the starting point for data entry. I also used recent journal indexes as well as the "Articles of Interest" section in the AMSECT newsletter.

Results

When the data entry screen was designed, an attempt was made to utilize standard abbreviations in order to conserve disk storage space and to allow as many articles as possible to be stored. On the two disk system, with the entry screen designed, there was room for about 2436 article titles. At the present time, about 300 articles have been entered into the system and these articles will comprise the basis for the evaluation (Figure 1).

The amount of time to set up the entry screen was about 20 minutes (Figure 2). The amount of time to enter the primary data base of 300 articles was about 10 hours. Monthly updates of the articles takes about one to two hours depending on the number of articles which pertain to the interest of the perfusionist.

Designing the printing format took about 15 minutes and can be changed at any time to allow for versatility in the kinds of information needed from the database.

The speed and ease with which the retrieval of data can be accomplished is dependent on the size of the database. For instance, in a search of articles, on cardioplegia, it takes about one minute to review 300 articles to find the key for cardioplegia and print those articles requested (Figures 3 & 4).

Editing of mistakes and deletion of articles can be accomplished with equal speed. Again, depend-

****Profile—Data Management System—Ver 3.0****

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Records used: 300
Records left:2136

<A>dd data
<S>ort data
<D>isplay/edit
<P>rint data
@ Exit to DOS

Enter Selection

```

FIGURE 1. Table of Contents for Reprint Filing System.

****Profile Data Form****

```

Journal :.....
Volume :...
Number :...
Year   :....
Page   :.....
Title  :.....
Author :.....
Key    :.....

```

FIGURE 2. Data Entry Screen for Reprint Filing System.

ing on the size of the database, once the article is found, editing is extremely fast and the new information is stored. The program gives the user a list of commands to assist with the editing (Figure 5).

Discussion

There are several advantages in utilizing this system on an individual basis for those who own or have access to a microcomputer. The data entry is very easy and is customized to the way you want the data entry screen designed. Very little time is needed to update the files on a monthly basis. The retrieval of the files is simple in that you can use any key you wish in order to get a listing. For instance, if you need to find out how many articles you have on file from THE JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY, you only need to indicate that to the program. The most common form of data retrieval will be by using the key word concept. The files can be sorted in any manner you wish. This can be by any of the field headings. For instance, the user may wish to keep the records in alphabetical order according to the key words.

There are several disadvantages to this particular program and the hardware. When the data entry screen is designed, the user has to take into account his printer column width. Occasionally, the user is not able to get an entire listing on one line as is required by the software. To circumvent this problem, only the journal, volume number, year, page, and author were printed. (Figure 4) A librarian should still be able to pull the requested article using that information. The other way to solve the problem is to make a second listing with the title of the article and then manually combine the two listings. (Figure 3)

PELLEY'S REPRINT FILING SYSTEM

<u>TITLE</u>	<u>JOURNAL</u>	<u>VOL</u>
CARDIOPLEGIC INFUSION: SAFE LIMITS OF PRESSURE	J THORAC & CV SURG	83
EFFECT OF MULTIDOSE CARDIOPLEGIA AND CP SOLUTION	J THORAC & CV SURG	83
ADVANTAGES OF POTASSIUM CARDIOPLEGIA & PERFUSION	ANN OF THORAC SURG	24
INTRACORONARY PERFUSATES FOR MYOCARDIAL PROTECTION	ANN OF THORAC SURG	24
MYOCARDIAL PRESERVATION DURING CPB	J THORAC AND CV SURG	70
CORONARY REVASCULARIZATION IN HIGH VS LOW RISK PATI	ARCH OF SURG	18
MYOCARDIAL PRESERVATION	J THORAC AND CV SURG	70
PRESERVATION OF ATP, ULTRASTRUCTURE AND VENTRICULA	J THORAC AND CV SURGE	78
CLINICAL EXPERIENCE WITH COLD BLOOD AS THE VEHICLE	ANN THORAC SURG	29
SUPERIORITY OF BLOOD CARDIOPLEGIA IN MYOCARDIAL	CIRC	62
MYOCARDIAL ENERGY REPLENISHMENT & REVERSAL OF ISCH	J THORAC AND CV SURG	80
ADVANTAGES OF BLOOD CARDIOPLEGIA OVER CONTINUOUS	J THORAC AND CV SURG	76
MYOCARDIAL PRESERVATION SYMPOSIUM	J THORAC AND CV SURG	82
REVERSAL OF ISCHEMIC DAMAGE WITH SECONDARY BLOOD	J THORAC AND CV SURG	78
INDEPENDENT PROTECTION PROVIDED BY RED BLOOD CELLS	CIRC	66
COMPARISON OF MYOCARDIAL PRESERVATION WITH HYPOTHE	CIRC	66
FAILURE OF BLOOD CARDIOPLEGIA TO PROTECT MYOCARDIU	CIRC	66
EFFECT OF THE PH OF CARDIOPLEGIS SOLUTION ON POST	CIRC	66
FLUOSOL CARDIOPLEGIA A METHOD OF OPTIMIZING AEROBI	CIRC	66

FIGURE 3. Hardcopy printout of Titles using the Key word "cardioplegia".

The sorting of the files is another problem which could be frustrating. In order to sort an alphabetical listing of the keys for 300 records, the program takes about 25 minutes. With full capacity of 2436 articles, the sorting process would be prohibitive as far as time is concerned. However, there may be no need for sorting with this particular

database. Also, multiple entry of the same article is required if a second "key word" is desired for the article.

The last major problem is the data entry screen. Once it is designed, it can not be enhanced. If the user is not careful in designing the screen, he will either waste storage space or not allocate enough.

PELLEY'S REPRINT FILING SYSTEM

<u>JOURNAL</u>	<u>VOL</u>	<u>YEAR</u>	<u>AUTHOR</u>	<u>PAGE</u>
J THORAC & CV SURG	83	1982	JOHNSON, R. E.	813
J THORAC & CV SURG	83	1982	TAIT, G. A.	824
ANN OF THORAC SURG	24	1977	ELLIS, R. J.	299
ANN OF THORAC SURG	24	1977	LEVITSKY, S.	297
J THORAC AND CV SURG	70	1975	MALONEY, J. V.	1040
ARCH OF SURG	182	1975	OLINGER, G. N.	293
J THORAC AND CV SURG	70	1975	OPEN DISCUSSION	1025
J THORAC AND CV SURGE	78	1979	CUNNINGHAM, J N	708
ANN THORAC SURG	29	1980	BARNER, H B	224
CIRC	62	1980	ENGLEMAN R M	I-62
J THORAC AND CV SURG	80	1980	LAZAR, H L	350
J THORAC AND CV SURG	76	1978	FOLLETTE D M	604
J THORAC AND CV SURG	82	1981	STILES, Q R	870
J THORAC AND CV SURG	78	1979	LAZUR, H L	688
CIRC	66	1982	BING, O H L	I-81
CIRC	66	1982	JOHNSON, R G	I-68
CIRC	66	1982	MACGOVERN G J	I-55
CIRC	66	1982	NUGENT W C	I-60
CIRC	66	1982	ROUSOU J H	I-50

FIGURE 4. Hardcopy printout of search using the Key word "cardioplegia".

****Profile Data Form****

Journal :.....
Volume :...
Number :...
Year :....
Page :.....
Title :.....
Author :.....
Key :.....

<F>ind	<N>ext	<H>ardcopy	<BREAK>	to exit
<E>dit	<P>revious	<D>elete	<up>	<down>

FIGURE 5. Editing Screen for Correction of Mistakes.

For instance, only 50 spaces were allocated for the title. About one third of the titles in the data base were longer than that and had to be cut off before the end of the title.

PROFILE^a is a versatile software program that has a multitude of uses. PROFILE^a was selected for this project because it was being employed to generate other files. These files include inventories, perfusion record data, and mailing lists. PROFILE^a is also being employed to maintain personal case listings for the American Board which are required for certification.

PROFILE^a has allowed literature searches and listing of articles which can then be pulled from the journal for research. While the data base is not very large now, it is a start for a database which will continue to grow.

References

1. Riley, J. B.: A technique for computer assisted monitoring in the management of total heart-lung bypass, *J.E.C.T.* 13(1):171, 1981.
2. Hankins, T.: Computer assisted bypass management, *J.E.C.T.* 12(4):95, 1980.
3. Radio Shack: Profile (owner's manual). 1980.

^a Tandy Corp., Fort Worth, Texas 76102