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Sci-MateTM: A User-Friendly Information Storage and Retrieval System for Microcomputers

Eugene Garfield, Ph.D.

Institute for Scientific Information
3501 Market Street
University City Science Center
Philadelphia, Pennsylvania 19104
U.S.A.

ISI has developed a microcomputer software package for scientists and librarians, called Sci-Mate TM. Sci-Mate is the first software package designed to enable users to index personal reprint files. Users can format their records however they wish, and can update and search these records at any time. Sci-Mate also allows users to perform online searches, and to offload their hits into their offline files.

This Spring, the Institute for Scientific Information| introduced a microcomputer-based software package designed for use by scientists and librarians. Called Sci-Mate TM, this package includes a personal offline data base management system and a system for accessing numerous commercial online data bases. The online component, called the Sci-Mate Universal Online Searcher, makes it possible to search data bases using a user-friendly menu-driven language or the host system's native language. Offline, the Sci-Mate Personal Data Manager is a free-text searchable system that also operates in the menu-driven mode.

The Sci-Mate software is designed for use with the IBM Personal Computer, the Vector 3 or 4, the Apple II, the TRS Model II, or any CP/M-80 based system with standard eight inch disc drive. Users must have at least 64K of RAM, a Z80 or 8086 microprocessor, a printer, and an 80-column screen. ISI also recommends users have at least two disc devices, one of which could be a hard disk for maximum storage. Finally, librarians and scientists who purchase the online component will require a modem.

Although the Personal Data Manager and Universal Online Searcher are available as separate packages, users gain a number of benefits by using both as an integrated system. With both packages, bibliographic information retrieved with the Universal Online Searcher can be captured in a work file in the Personal Data Manager. In this file, *records* can be sorted and merged, and citations flagged for reprint requests. From there, the bibliographic information can be transferred into a file for permanent storage. In this paper, I will describe both components of the Sci-Mate system, and discuss some of the applications for which they have been designed.

The Sci-Mate Personal Data Manager was initially envisioned as an offline system for managing personal reprint collections.l, 2 However, in the process of developing it, we realized scientists and librarians required a personal data base capable of handling a much broader range of textual materials. The Personal Data Manager is ideally suited for storing bibliographic citations to reprints or other documents. But its flexible file layout can now accommodate several types of textual material. Lab notes, correspondence, and medical case reports can be entered into the Personal Data Manager. In principle, the entire text of fairly short articles can be entered. Scientists who use Sci-Mate to keep track of reprint files can also add notes, abstracts, and comments to their records to help them search and retrieve relevant material.

The Personal Data Manager actually consists of two interrelated files. Users can temporarily store and manipulate data retrieved online, captured from other users' files, or keyed themselves, in the work file. The user file is a free-text searchable system where information is permanently stored. Information entered into the user file can be entered as free text, or by using one of 50 user-defined templates. Each template includes 20 fields, to which the user can assign field names of up to eight characters. The maximum length of each separate record is 1900 characters.

The menu-driven system for formatting information into templates in the user file is essentially a succession of screens presenting users with a question, and a short list of options. A user wishing to create a template is presented with a sample format and asked to assign one name at a time to each field. Once all field names are assigned, the user can build records in the user file by entering information into one field at a time. When keying information, users can assign accession numbers or use the number the program automatically assigns to each record. As information is keyed, or as data is captured from the work file, it is displayed on a screen for visual verification. Every entry or change made to a file is immediately searchable.

Any character, word, or phrase that appears in a record can be used to search the user file. Truncation, or "wild card" symbols, can be used in any position of a word being searched. And searches can be refined or extended by using Boolean logic. Finally, records obtained in a search can be sorted by selected fields. The system automatically lists sorted items alphabetically by the field chosen, or, if the user wishes, by accession number.

Searching the Personal Data Manager also involves a question and answer process, with each new screen offering options for further refining the search. As shown in Figure I, after commanding the computer to search the user file, the searcher would be asked if he wanted to search by accession number or text. He would also have the option of having the hits displayed immediately or of being told the number of hits that satisfied each request before displaying them. Once the search parameters were defined, he would then be told the number of records satisfying the request. He would also be given the option of having hits displayed, sorted, or transmitted to the offline work file. At this point, he could also abandon the search to start a new one or return to the offline menu for more instruction.

FIGURE i: Sci-Mate Personal Data Base Manager. Screens for searching user file by textual terms, and having number of hits listed before hits are displayed.

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OFFLINE
.....................................................................

You may:
      i. Search the USER file
      2. Enter a new record
      3. Display/copy WORK file records

      4. Create and update templates
      5. Generate document request status report

      6. Return to the Sci-Mate menu

Select a number: 1


SEARCH
.....................................................................

Would you like to:

      i. Search by accession number
      2. Search text: find total hits before display
      3. Search text: display hits as retrieved

      4. Return to the OFFLINE menu

Select a number: 2
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Sci-Mate also includes a report generator for printing up lists of hits in columns. Information about specified fields is printed horizontally in column widths set by the user. For example, a biologist wishing to generate a report on experiments recorded in his user file might request such fields as organisms tested, compounds used, and LD 50 test results. Hits are automatically listed by. accession number. However, by using the sort facility, the hits can be presented alphabetically by any field. This report generator is useful for preparing reports on, for example, the status of projects in a file.

As I mentioned, the work file portion of the Personal Data Manager is designed for temporarily storing and manipulating records transferred from the online component of Sci-Mate or from the permanent user file. Data can also be copied from other Sci-Mate users' work files. In the work file, records can be reviewed and sorted. Information retrieved online from a variety of data bases can also be collated here, and duplicate records deleted. Finally, users can transfer selected hits or the entire work file into their user file for permanent storage.

Sci-Mate's online component, the Universal Online Searcher, is designed for the individual with no experience searching online data bases. Users can automatically dial up, and log on and off, a

variety of data bases. These include such ISI data bases as ISI/BIOMED| ISI/CompuMath| and ISI/GeoSciTech ™. DIALOG, BRS and MEDLINE are also searchable with Sci-Mate. Once logged on to these data bases, users search by using a menu-driven language that automatically translates their requests into the host system's language. Users familiar with the native language can also bypass the menu-driven option when searching any of the data bases available through ISI, BRS, SDC, DIALOG and the National Library of Medicine.

The menu-driven language for searching the Universal Online Searcher is similar to the multiple choice system used for searching Sci-Mate's offline file. For example, after asking to search in the online system, the user will be presented with a screen in which he could ask to search an ISI data base. The next screen will present him with a choice of ISI data bases, and the next will give him the option of searching in the native or menu-driven mode. As shown at the top of Figure 2, at this point he would be given the choice of browsing for alphabetically related words, performing a search, displaying or offloading records, or reviewing search parameters. He could also save a search strategy for future use, or set up parameters for a selective dissemination of information (SDI) search. Once ready to begin the actual search, a choice of bibliographic elements is offered (bottom of Figure 2).

At each step in this process, the user can return to an earlier step or enter a question mark for an explanation of search terms. After the user has refined the search and is ready to have hits displayed, he can specify if he wants to copy all hits, no hits, or selected hits into the work file. Again, all information retrieved online can be transferred into the offline work file. Users can save considerably on online search costs by directly offloading all records to the work file for evaluation. They can also flag hits as a reminder to order reprints.

Although searching data bases in the menu-driven language is substantially easier than using the host system's native language, all important search functions offered by the host are retained in the user-friendly mode. In addition to bibliographic search terms, Boolean operators can be used to combine sets or terms, and proximity operators can be used to specify how close words should be in a title. A truncation character, or the browse feature I mentioned earlier, can be used to obtain derivatives of words.

With Sci-Mate, search strategies can also be saved for use with other data bases. Users simply reply to the appropriate queries until their search strategy is displayed. They can either retain the entire strategy or just the portion that proved most useful. The saved strategy can then be used with any of the data bases available through Sci-Mate. Finally, Sci-Mate has a selective dissemination of information capacity. Users can periodically return to a data base and limit their search to that part of the data base that has been updated since their last search.

FIGURE 2: Sci-Mate Universal Online Searcher. Screens for refining search parameters.

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SCI-MATE SEARCH MENU
.....................................................................

Do you want to:

I. BROWSE the search term index
2. SEARCH and retrieve

3. DISPLAY and/or offload
4. LIST current sets and queries

5. Set current awareness parameters (SDI)
6. Use SAVE STRATEGY subsystem

7. Return to the online search menu

Select a number: 2

SEARCH  B=Browse  Display/Offload     L=List    F=Full Menu
.....................................................................

What do you want to SEARCH:

I. Set number                          7. Language
2. Title                               8. Document type
3. Author                              9. Research front specialty name
4. Cited author/Cited reference       i0. Publication year
5. Corporate source                   ii. Accession number
6. Journal                            12. OATS number
                                      13. Research front specialty name

Select a letter or number: 2

Enter title term: matrix#
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One of the Sci-Mate features ISI is most enthusiastic about is a system for tracking reprint requests and other correspondence. This system employs a series of flags users can assign to hits as they are retrieved online, or reviewed in the offline work or user files. These flags can be used to tag documents to be ordered through OATS| ISI's document delivery service, or through BRS's and DIALOG's fulfillment services. Flags also serve as reminders to send out reprint requests or order papers through interlibrary loan. Scientists and librarians can use the tracking system to periodically generate status reports on reprints ordered, or on overdue correspondence. A sfatus report contains all records that have been assigned the same flag, listed by accession number or date flagged. After documents arrive, flags can be removed or changed.

In addition to maintaining personal files, tracking and ordering reprints, and performing SDI searches, Sci-Mate has proved useful for preparing bibliographies. Users can retrieve relevant citations from their permanent user files, and quickly obtain missing items by

searching data bases through the online component. They can then sort the citations in the work file, and prepare the full bibliography on their printers.

Sci-Mate is an extremely efficient and novel system for managing information. It will be backed up by a highly detailed user's manual as well as a hot line people can call with questions and problems. Eventually, we hope to offer a version of Sci-Mate that can be used in minicomputer systems that serve a number of terminals. ISI is also planning a system for automatically reformatting citations into reference styles commonly used by journals. In any event, we believe that Sci-Mate will place ISI squarely in the forefront of microcomputer software development.

REFERENCES

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