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A User's Guide to SURF: Support of User Records and Files

By

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ABSTRACT

SURF is an EDP-based service for Support of User Records and Files. It is implemented through SDC's MADAM programming language and system for the IBM 1401. It provides printed indexes reflecting the contents of user files. Users of the service index their files, fill out and submit input coding sheets to the service, and regularly receive consolidated index listings. SURF is quite flexible and adaptable to the diverse and changing needs of individuals in organizing, maintaining, and finding what is in their personal or office files.

This document describes how to enter and use the service, provides illustrative examples of SURF indexes, and presents recommendations for indexing practice.

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ACKNOWLEDGMENT

William O. Crossley, the developer of the MADAM programming language and system, was responsible for writing the basic update programs for SURF. He also gave most valuable advice and was very helpful during checkout of various special purpose routines, and indeed throughout all phases of design and development of SURF.

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1. INTRODUCTION

This document describes how to use SURF: an EDP-based service in Support of User Records and Files. SURF provides printed indexes reflecting the contents of user files. Users of the service index their files, fill out and submit input coding sheets to the service, and regularly receive consolidated updates of their inputs. The service is quite flexible and adaptable to quite different needs for indexing support. SURF customers have applied it to various materials, including indexes to technical literature and correspondence, engineering data, trade catalog citations, grammar rules for syntactic analysis, and 35 mm slides.

SURF is implemented through SDC's MADAM programming language and system for the IBM 1401. The reader is referred to companion document TM-2912/000/00, SURF: Support of User Records and Files - DESCRIPTION AND OPERATION, for a description of SURF programs and operational requirements for furnishing the service. The following text is divided into a summary of the background and rationale for SURF development, instructions for entering and using the service, recommendations for good indexing practice, and examples of use.

A large proportion of scientific and technical workers in government, industrial and academic environments maintain large personal or office files. Many maintain indexes to their files. This has been true at SDC as elsewhere. Despite the existence of well-organized library and information center collections and services, the first recourse of our technical people when seeking information is to search their own collections and to confer with colleagues. No matter how centralized information services are improved and expanded in accessibility, scope and usefulness, there will continue to be a need for building, maintaining, and having good access to personal collections.

SURF was developed to furnish a service adaptable to the variable, changing, and highly idiosyncratic requirements of individuals in organizing and accessing personal records and files, and one, therefore, that would be responsive to individual viewpoints, vocabulary, and habits of work. Considerable emphasis has been placed on minimizing the effort required to enter and use the service. At the same time SURF provides means of sharing of user files through multiple copies of indexes and can supply feedback to library and other information services on user habits and needs.

2. HOW TO USE SURF

Having decided on what and how you wish to index, obtain a supply of SURF input coding sheets, enter the index information for your files, and mail to

the central point designated as a SURF service.* The coding sheet information will be keypunched, processed, and the resulting index listings delivered to you at prescribed intervals. Experience with SDC users indicates that monthly updates are adequate for most users. As you continue to use the service, new data supplied on coding sheets will be combined with previously processed inputs, providing consolidated indexes.

2.1 FILLING OUT THE CODING SHEET

Figures 1 and 2 illustrate an input coding sheet and the corresponding printed index. The coding sheet has been designed to minimize the user's concern with how the data is keypunched. The service assigns each user a unique identification code, i.e., ID code. The user chooses an output format code, either A1 or B1. These codes are entered once on each coding sheet. The format codes represent two alternative options for producing the index, described in Section 2.5.

For each item or "Entry" you wish to index, you assign an entry number of four digits and enter the first card number in the appropriate column, i.e., #1. The body of each item or entry indexed is entered on the sheet in the area labelled "Numbered Fields + Field Contents." As illustrated in Figure 1, this section of the coding sheet is freely formatted and may contain up to 621 characters, including spaces, for any single entry. Information elements within each entry are identified by numbered fields--a one-digit number followed by a parenthesis.

2.1.1 Indexing by Field Numbers

The purpose of numbered fields in SURF indexes is to identify those elements of information that are to provide an alphabetic key to the contents of the entries, and for labelling those that are not to be sorted and alphabetized. Odd-numbered fields--1) 3) 5) 7)--are sorted and listed alphabetically. SURF provides for up to four alphabets for a user's index through the use of these four odd-numbered fields. Even-numbered fields--2) 4) etc.--identify elements not to be used as an alphabetic key to the entries. Ordinarily only one such even number would be used to identify non-sorted elements unless you wished to dedicate particular numbers to given items of information against the possibility of needing a special processing run made on that item alone at some future time.

In the examples of Figures 1 and 2, field number 1) is assigned to subject keywords for a mechanical engineer's file, field number 3) to the source, and field number 6) to comment and description. The field numbers are placed in front of the elements assigned to them. Figure 1 shows the filled out input coding sheet and the resulting proof produced as a part of the index. Figure 2

*At present the service is conducted within SDC on a pilot basis. Contact Cynthia Hudson, Rm. 9935, Ext. 6518 for further information.

SURF Input Coding Sheet

Name: R. Watson Room 20026 Ext. 7586 Date: 6/24/66

ID Code 1-3	Output Format 4-5	Entry No. 6-9	Card No. 10	Numbered Fields + Field Contents 11-79
WR1	A1	0060	1	1) motors dc brushless 1) d.c. motors 5) machine design 66/03/03 ppl36 6) brushless dc. motors and controls
		0061	1	1) vibration-natural frequencies 1) natural frequencies 5) machine design 66/03/03 ppl43 6) finding fundamental natural frequencies for common beam configurations.
		0063	1	1) shaft speed 1) critical shaft speed 1) gear shaft speed 5) machine design 63/06/06 ppl82 6) graph for the retationship shaft diameter, support spacing, and critical speed of gear shafts

CODING SHEET PROOF FOR WR1 PAGE 1

```
ENTRY  0060                                          FORMAT  A1
1 1) MOTORS DC BRUSHLESS 1) D.C. MOTORS 5) MACHINE DESIGN 66/03/03 PP13
2 6 6) BRUSHLESS DC. MOTORS AND CONTROLS

ENTRY  0061                                          FORMAT  A1
1 1) VIBRATION-NATURAL FREQUENCIES 1) NATURAL FREQUENCIES 5) MACHINE DE
2 SIGN 66/03/03 PP 143 6) FINDING FUNDAMENTAL NATURAL FREQUENCIES FOR C
3 OMMON BEAM CONFIGURATIONS.

ENTRY  0063                                          FORMAT  A1
1 1) SHAFT SPEED 1) CRITICAL SHAFT SPEED 1) GEAR SHAFT SPEED 5) MACHINE
2  DESIGN 63/06/06 PP 182 6) GRAPH FOR THE RETATIONSHIP SHAFT DIAMETER,
3  SUPPORT SPACING , AND CRITICAL SPEED OF GEAR SHAFTS
```

Figure 1. Example of Input Coding Sheet and Proof

SURF INDEX

FIELD NO. 5 FOR WR1 ENTRY NO.

MACHINE DESIGN 63/06/06 PP 182 63
SHAFT SPEED. CRITICAL SHAFT SPEED GEAR SHAFT SPEED MACHINE DE
SIGN 63/06/06 PP 182 GRAPH FOR THE RETATIONSHIP SHAFT DIAMETER,
SUPPORT SPACING , AND CRITICAL SPEED OF GEAR SHAFTS
MACHINE DESIGN 66/03/03 PP 143 61
VIBRATION-NATURAL FREQUENCIES NATURAL FREQUENCIES MACHINE DESI
GN 66/03/03 PP 143 FINDING FUNDAMENTAL NATURAL FREQUENCIES FOR C
OMMON BEAM CONFIGURATIONS.
MACHINE DESIGN 66/03/03 PP136 60
MOTORS DC BRUSHLESS D.C. MOTORS MACHINE DESIGN 66/03/03 PP136
BRUSHLESS DC. MOTORS AND CONTROLS

SURF INDEX

FIELD NO. 1 FOR WR1 ENTRY NO.

CRITICAL SHAFT SPEED 63
SHAFT SPEED CRITICAL SHAFT SPEED GEAR SHAFT SPEED MACHINE DE
SIGN 63/06/06 PP 182 GRAPH FOR THE RETATIONSHIP SHAFT DIAMETER,
SUPPORT SPACING , AND CRITICAL SPEED OF GEAR SHAFTS
D.C. MOTORS 60
MOTORS DC BRUSHLESS D.C. MOTORS MACHINE DESIGN 66/03/03 PP136
BRUSHLESS DC. MOTORS AND CONTROLS
GEAR SHAFT SPEED 63
SHAFT SPEED CRITICAL SHAFT SPEED GEAR SHAFT SPEED MACHINE DE
SIGN 63/06/06 PP 182 GRAPH FOR THE RETATIONSHIP SHAFT DIAMETER,
SUPPORT SPACING , AND CRITICAL SPEED OF GEAR SHAFTS
MOTORS DC BRUSHLESS 60
MOTORS DC BRUSHLESS D.C. MOTORS MACHINE DESIGN 66/03/03 PP136
BRUSHLESS DC. MOTORS AND CONTROLS
NATURAL FREQUENCIES 61
VIBRATION-NATURAL FREQUENCIES NATURAL FREQUENCIES MACHINE DESI
GN 66/03/03 PP 143 FINDING FUNDAMENTAL NATURAL FREQUENCIES FOR C
OMMON BEAM CONFIGURATIONS.
SHAFT SPEED 63
SHAFT SPEED CRITICAL SHAFT SPEED GEAR SHAFT SPEED MACHINE DE
SIGN 63/06/06 PP 182 GRAPH FOR THE RETATIONSHIP SHAFT DIAMETER,
SUPPORT SPACING , AND CRITICAL SPEED OF GEAR SHAFTS
VIBRATION-NATURAL FREQUENCIES 61
VIBRATION-NATURAL FREQUENCIES NATURAL FREQUENCIES MACHINE DESI
GN 66/03/03 PP 143 FINDING FUNDAMENTAL NATURAL FREQUENCIES FOR C
OMMON BEAM CONFIGURATIONS.

Figure 2. Example of Index

shows the two parts of the index produced, in which the field numbers have been replaced by spaces and the leading zeros stripped from the entry numbers. Further examples of different kinds of indexes produced for SDC users are given in Section 4.

Every entry must begin with a field number. Each field number must be preceded and followed by a space. After any given field number you are free to enter up to 125 characters. It is recommended that no more than twenty fields be used in any single entry. Any number of information elements may be assigned to the same field number within the limit of twenty.

2.1.2 An Illustrative Exercise

As has been indicated earlier, SURF has been used for many different purposes and on many different kinds of materials--literature bibliography, engineering data, dictionary compilation, etc. Of these, the most prevalent use has been for bibliography. It will be useful, then, to "walk through" an example of indexing literature with a discussion of the choices that occur along the way.

Let us say that we have a collection of journals and technical reports in our possession, and that we want additionally to be able to get at like materials we see that belong to the library or to other individuals. What kind of description and access to this material do we need? At the least we need author, title, date, subject, source, and an indication of location--in our own files or someone else's.

The second thing we have to decide is the order in which we want to enter this material in the index--what do we want to see first in the index entry? Let's assume that we are most familiar with authors in our area of interest, and so will choose the following order: author, title, source, date, subject keywords and phrases, and location. Further we shall decide that we need access only by author and subject and will assign these to field numbers 1) and 3) respectively. If we need to get at the name of a company or agency, we shall add it to the author list. If we wanted a separate listing for such information we could assign it to field number 5), but will choose not to do so for this example. We'll use 2) for all elements in the indexed entries that are not to be alphabetized--source, date, location, and title words not considered useful subject keys.

Now we are ready to enter some of the items on a SURF Input Coding Sheet. The following three will provide a sufficient example:

> "Characteristics and Use of Personal Indexes Maintained by Scientists and Engineers in One University," by G. Jahoda, Ronald D. Hutchins, and Robert R. Galford. American Documentation vol. 17 no. 2 pp. 71-75. April 1966. (this item in the library)

"The MADAM System," by William O. Crossley.. SDC TM-2198/002/00. 2 December 1965. (in our collection)

"Rank Order Patterns of Common Words as Discriminators of Subject Content in Scientific and Technical Prose." By Everett M. Wallace. Proceedings of the Symposium on Statistical Association Methods for Mechanized Documentation, Washington, D. C. 1964. pp. 225-229. NBS Miscellaneous Pub. 269. December 15, 1965. (in a colleague's collection)

Figure 3 illustrates one way in which the above may be entered on the coding sheet together with the coding sheet proof provided by the service. Authors are entered surname first to provide an alphabetization by surname and initials used instead of first names as a key. Whenever a word or phrase thought useful was encountered in a title, a field number 3) was entered in front of it. Field number 2) is used for elements not to be alphabetized. Additional subject keys are added after the date. The final item indicates location--library, EW (our own collection), and Doyle, the colleague's surname. There would be little reason to indicate location in our own file, except that someone else might like to use the index, or be furnished a copy of it.

Several persons in an organization using this kind of practice could easily share each other's indexes, or, alternatively, consolidated indexes could be provided to a group of people with each person's holdings clearly indicated through the use of a common ID code.

2.2 PRINTOUT CONVENTIONS

Figure 4 presents the index produced from the input of Figure 3. Each author, subject key, or other element chosen for alphabetization by the use of field numbers 1) and 3) is printed above the entry to which it belongs up to a length of 49 characters, and the associated entry number printed at the end of the line. The entries are printed out in the order in which they are entered on the coding sheet, indented 9 spaces. The print lines are justified at a length of 74 characters, which sometimes causes an awkward break in the middle of a word. SDC users, however, have found this easy to adjust to and no real impediment to ease of scanning.

Each page of the index is provided with standard headings, as shown, identifying the user by ID code. These headings are easily changed by the service as required. You will notice, in Figure 3, that the entry numbers have been sorted into numerical order in the coding sheet proof. The entry numbers may be used for physically ordering materials in a user's file as well as for uniquely identifying index entries. An example of such practice is given in Figure 11 in Section 4.

SURF Input Coding Sheet

Name: Everett Wallace Room 9935 Ext. 6561 Date: 6/24/66

ID Code 1-3	Output Format 4-5	Entry No. 6-9	Card No. 10	Numbered Fields + Field Contents 11-79
WE1	B1	0101	1	1) Jahoda, G. 1) Hutchins, R. D. 1) Galford R. R. 2) characteristics and use of 3) personal indexes maintained by scientists and engineers 2) in one university. 2) American Documentation vol 17 no 2 p71-75 April 1966 1) Florida State U Faculty 2) library 1)
		0079	1	Crossley, w. o. 2) The madam system 2) SDC TM-2198/002/00 2) Dec 1965 3) madam programming language and system 3) ibm 1401 programs 2) EW
		0096	1	1) Wallace, E. M. 3) rank order patterns of common words as 3) discriminators of subject content 2) in scientific and technical prose 1) Symposium on Statistical Association Methods for 3) Mechanized Documentation 2) proceedings p225-229 NBS misc pub 269 Dec 1965 3) language processing 2) Doyle

CODING SHEET PROOF FOR WE1 PAGE 1

ENTRY 0079 FORMAT B1
1 1) CROSSLEY, W. O. 2) THE MADAM SYSTEM 2) SDC TM-2198/002/00 2) DEC 1
2 965 3) MADAM PROGRAMMING LANGUAGE AND SYSTEM 3) IBM 1401 PROGRAMS 2)
3 EW

ENTRY 0096 FORMAT B1
1 1) WALLACE, E. M. 3) RANK ORDER PATTERNS OF COMMON WORDS AS 3) DISCRI
2 MINATORS OF SUBJECT CONTENT 2) IN SCIENTIFIC AND TECHNICAL PROSE 1) S
3 YMPOSIUM ON STATISTICAL ASSOCIATION METHODS FOR 3) MECHANIZED DOCUMEN
4 TATION 2) PROCEEDINGS P225-229 NBS MISC PUB 269 DEC 1965 3) LANGUAGE
5 PROCESSING 2) DOYLE

ENTRY 0101 FORMAT B1
1 1) JAHODA, G. 1) HUTCHINS, R. D. 1) GALFORD R. R. 2) CHARACTERISTICS
2 AND USE OF 3) PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENGINEERS
3 2) IN ONE UNIVERSITY. 2) AMERICAN DOCUMENTATION VOL 17 NO 2 P71-75 A
4 PRIL 1966 1) FLORIDA STATE U FACULTY 2) LIBRARY

Figure 3. Input Coding Sheet and Proof for Three Illustrative Entries

SURF INDEX

FIELD NO. 1 FOR WEI ENTRY NO.

CROSSLEY, W. O. 79
CROSSLEY, W. O. THE MADAM SYSTEM SDC TM-2198/002/00 DEC 1965 MADAM PROGRAMMING LANGUAGE AND SYSTEM IBM 1401 PROGRAMS EW
FLORIDA STATE U FACULTY 101
JAHODA, G. HUTCHINS, R. D. GALFORD R. R. CHARACTERISTICS AND USE OF PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENGINEERS IN ONE UNIVERSITY. AMERICAN DOCUMENTATION VOL 17 NO 2 P71-75 APRIL 1966 FLORIDA STATE U FACULTY LIBRARY
GALFORD R. R. 101
JAHODA, G. HUTCHINS, R. D. GALFORD R. R. CHARACTERISTICS AND USE OF PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENGINEERS IN ONE UNIVERSITY. AMERICAN DOCUMENTATION VOL 17 NO 2 P71-75 APRIL 1966 FLORIDA STATE U FACULTY LIBRARY
HUTCHINS, R. D. 101
JAHODA, G. HUTCHINS, R. D. GALFORD R. R. CHARACTERISTICS AND USE OF PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENGINEERS IN ONE UNIVERSITY. AMERICAN DOCUMENTATION VOL 17 NO 2 P71-75 APRIL 1966 FLORIDA STATE U FACULTY LIBRARY
JAHODA, G. 101
JAHODA, G. HUTCHINS, R. D. GALFORD R. R. CHARACTERISTICS AND USE OF PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENGINEERS

SURF INDEX

FIELD NO. 3 FOR WEI ENTRY NO.

DISCRIMINATORS OF SUBJECT CONTENT 96
WALLACE, E. M. RANK ORDER PATTERNS OF COMMON WORDS AS DISCRIMINATORS OF SUBJECT CONTENT IN SCIENTIFIC AND TECHNICAL PROSE SYMPOSIUM ON STATISTICAL ASSOCIATION METHODS FOR MECHANIZED DOCUMENTATION PROCEEDINGS P225-229 NBS MISC PUB 269 DEC 1965 LANGUAGE PROCESSING DOYLE
IBM 1401 PROGRAMS 79
CROSSLEY, W. O. THE MADAM SYSTEM SDC TM-2198/002/00 DEC 1965 MADAM PROGRAMMING LANGUAGE AND SYSTEM IBM 1401 PROGRAMS EW
LANGUAGE PROCESSING 96
WALLACE, E. M. RANK ORDER PATTERNS OF COMMON WORDS AS DISCRIMINATORS OF SUBJECT CONTENT IN SCIENTIFIC AND TECHNICAL PROSE SYMPOSIUM ON STATISTICAL ASSOCIATION METHODS FOR MECHANIZED DOCUMENTATION PROCEEDINGS P225-229 NBS MISC PUB 269 DEC 1965 LANGUAGE PROCESSING DOYLE
MADAM PROGRAMMING LANGUAGE AND SYSTEM 79
CROSSLEY, W. O. THE MADAM SYSTEM SDC TM-2198/002/00 DEC 1965 MADAM PROGRAMMING LANGUAGE AND SYSTEM IBM 1401 PROGRAMS EW
MECHANIZED DOCUMENTATION 96
WALLACE, E. M. RANK ORDER PATTERNS OF COMMON WORDS AS DISCRIMINATORS OF SUBJECT CONTENT IN SCIENTIFIC AND TECHNICAL PROSE SYMPOSIUM ON STATISTICAL ASSOCIATION METHODS FOR MECHANIZED DOCUMENTATION PROCEEDINGS P225-229 NBS MISC PUB 269 DEC 1965 LANGUAGE PROCESSING DOYLE
PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENG 101
JAHODA, G. HUTCHINS, R. D. GALFORD R. R. CHARACTERISTICS AND USE OF PERSONAL INDEXES MAINTAINED BY SCIENTISTS AND ENGINEERS IN ONE UNIVERSITY. AMERICAN DOCUMENTATION VOL 17 NO 2 P71-75 APRIL 1966 FLORIDA STATE U FACULTY LIBRARY
RANK ORDER PATTERNS OF COMMON WORDS AS 96
WALLACE, E. M. RANK ORDER PATTERNS OF COMMON WORDS AS DISCRIMINATORS OF SUBJECT CONTENT IN SCIENTIFIC AND TECHNICAL PROSE SYMPOSIUM ON STATISTICAL ASSOCIATION METHODS FOR MECHANIZED DOCUMENTATION PROCEEDINGS P225-229 NBS MISC PUB 269 DEC 1965 LANGUAGE PROCESSING DOYLE

Figure 4. Index Produced from Input of Figure 3

2.3 ID CODE ASSIGNMENTS AND ENTRY NUMBERS

As has been mentioned, a SURF service will be responsible for assigning user ID codes. In SDC practice the user ID code has consisted normally of the user's initials inverted, followed by a single digit number identifying the number of that user's index. Thus a user may have several distinct indexes for different kinds of material.

The entry numbers that uniquely identify each indexed item are assigned by the users. Each entry number requires four digits and may be alphabetic, numeric or mixed. It is necessary that you do not use the same entry number in the same index for more than one item indexed. The coding sheet proofs provide an alphanumeric list that will alert you to the entry numbers used previously.

2.4 DELETIONS AND CORRECTIONS

To purge your index of unwanted or obsolete items, submit a separate coding sheet with the ID, Format and entry numbers concerned filled in, and, in place of the card number, the letter D. The rest of the coding space is left blank. Figure 5 illustrates the kind of input required.

Minor corrections may be indicated by submitting a coding sheet labelled at the top with the word Corrections, and the cards to be corrected indicated by entry and card number on the sheet. For major changes, it will be most efficient to delete the old entry and submit a new corrected entry on the coding sheet intended for the next update. Figure 6 illustrates the correction of a spelling error in the third entry of Figure 1.

2.5 FORMAT OPTIONS

SURF provides two options, A1 and B1. Under option A1, the contents of data assigned to field number 7 are not printed in the body of the entries, but appear only once as an alphabetic key as illustrated by Figure 7. In that figure the elements of information assigned to field number 7 are keys to the subject of the documents. The result of using the option is to shorten the indexes. Format option B1 does not delete any part of the entry records, and thus preserves complete information at every point in the index. An example of this use is given in Figure 8.

2.6 SPECIAL REQUESTS

Several types of special listings may be supplied routinely on request. These include extra copies of your index, selective printing of portions of the index, listings of the sorted elements only, and printing directly on mats to be used for multiple copy reproduction. For example you may wish to have a listing made of that portion of the index arranged by authors or subjects. Or again, you might wish to have a selective list of the subject names to use as a key to past practice in subject description for more effective nomenclature and consistency in current and future indexing.

Name: IPIC Room 2427 Ext. 6929 Date: 6/1/66

ID Code 1-3	Output Format 4-5	Entry No. 6-9	Card No. 10	Numbered Fields + Field Contents 11-79
IPC	A1	4414	D	
		5847	D	

Figure 5. Example of Input for Deletion

SUNY Input Coding Sheet

Name: R. Watson Room 20026 Ext. 7586 Date: 6/24/66

ID Code 1-3	Output Format 4-5	Entry No. 6-9	Card No. 10	Numbered Fields + Field Contents 11-79
[illegible]	A1	0063	2	design 63/06/06 pp 182 b) graph for the relationship shaft diameter,

3. SOME RECOMMENDATIONS FOR INDEXING PRACTICE

The following recommendations are intended to aid users in maximizing the utility and response of the indexes produced by the service. An investment in care and effort at the outset in determining real needs and the degree to which SURF may satisfy them will be repaid many times over.

3.1 ORDER OF ENTRY

As can be seen from the output examples, SURF does not in any way rearrange or permute the alphanumerica data of the entries, but retains the information in the same order as entered on the coding sheet. This permits position to be used as a further key to the contents of data entries, and leaves it to the user to decide what he wishes to see first, second, third, etc., under the sorted elements.

For example, if one wished to index journal articles, there are several choices that might be considered. One might choose a traditional form of entry--author, title, journal name, volume + no., date, pages, subject keys or descriptors. The author index, given this choice, would be arranged by author within author, as indicated by Figure 4. Some users would consider it more useful to have titles arranged alphabetically within author or by date. For a title-within-sorted-element the order of entering the coding sheet would be: title, author, journal name, volume + no., etc.. For a chronological arrangement the date must be coded by year-month-day, e.g., 65/03/01, and the order might be: date, author, title, journal...etc. The essential point here is that the user chooses how he wants his index arranged, and what he wants to see first under alphabetized lists.

3.2 CONSISTENCY IN DESCRIPTIVE VOCABULARY

It may seem overly obvious to belabor the advantages of naming the same things in the same way in an index, but in fact it is far easier to be inconsistent than consistent. This is particularly troublesome in the use of abbreviations or variant subject keywords. Rather than have to remember a particular set of abbreviations or a set of rules for forming them, most users will find it easiest not to abbreviate. This costs a bit more effort in spelling everything out in full, but requires no effort of memory and minimizes the effect of spelling errors through the additional context. Even so, a few standard rules for the most frequent abbreviations might be adopted: J. for journal, Assn. for Association, Soc. for Society, vol. for volume, p. for page, etc.

In a personal index, naming similar subjects in consistent ways is probably of lesser importance than providing a useful browsing tool. Such a tool is enhanced through providing context with keywords. In SURF you will obtain up to 49 characters for sorted data, and so can afford to have the words in a title following a useful keyword sorted along with it, i.e., rather than

only: IMPLICITLY PROGRAMMED SYSTEMS, one may choose to have: IMPLICITLY PROGRAMMED SYSTEMS WORKING GROUP. An example of this kind of practice may be found in the SURF index for SDC's INFORMATION PROCESSING INFORMATION CENTER (IPIC) illustrated in Figure 7, where title fragments are indexed, leaving in whole phrases as needed. IPIC's practice is based on the idea that, in the experience of its staff, very often all that one can remember is some word or phrase buried in a title. Sorting on useful keywords plus other words in context provides a good approach to this kind of search specification.

3.3 ECONOMY AND REVISION

The experience of several SURF users has been that their initial choices of indexing terms, order of entry, etc., were not ideal. Because SURF provides for multiple card input, great freedom in the choice and number of sortable elements, and few formatting restrictions, there is a temptation to take advantage of these capabilities beyond what is necessary or desirable. It is desirable for every user to keep his entries as short as is convenient and to use sortable keys only as necessary for later access and search. Long entries mean increased input coding labor; marginally useful keys add to the length of the index.

If, after building an index over a period of time, you find certain features and practices less useful than they might be, you will want to change your indexing. If the index is small there is no reason not to merge new practices with old. This will be more economical than attempting to redo the previously indexed file. If the index is large it will be best to ask for a new ID code from the SURF service and start a new index.

3.4 LEARNING BY DOING

Most users of SURF to date have found that they learned to build better indexes through having to use the products of their earlier indexing decisions, by which they could diagnose poor practices and improve their own grasp of what is required in nomenclature and perspective. At the same time, one of the chief virtues of the service is that it provides a user with a product that completely reflects his outlook and manner of construing and organizing information. Among several things that could be recommended at the outset is some care and consideration for terminology that is likely to occur again and again in a given kind of index. For example, terms such as computer, program, programming, and data processing, are not likely to be very useful keys in an index to data processing literature without additional modifiers or context--as illustrated in the discussion in Section 3.2. It is wise, then, to foresee the density of common terms that might be used, and to choose very specific rather than general terms as subject keys.

4. EXAMPLES OF SURF INDEXES

This section presents five examples that illustrate different kinds of SURF indexes in actual use. They were produced by selecting a few cards from each user's files and processing them especially for this display.

4.1 A BIBLIOGRAPHIC APPLICATION (Figure 7)

Figure 7 illustrates the kind of index produced for SDC's Information Processing Information Center (IPIC) under format option A1. The index represents technical documents contained in the Center's collection. For this application, field number 1 has been assigned to author(s), field number 2 and 8 to unsorted elements, field number 3 to keywords from the titles, and field number 7 to classification categories developed by the Center for cataloging its documents. As can be seen, the contents of field number 7 appear but once as an alphabetized key to the indexed entries.

4.2 AN EXAMPLE OF FORMAT OPTION B1 (Figure 8)

Figure 8 presents the results of processing the same input as shown in the coding sheet proof of Figure 7 under format option B1. That is, the classification categories assigned to field number 7 now appear as a part of every entry.

4.3 AN ENGINEER'S KEY TO TRADE CATALOG DATA (Figure 9)

Figure 9 shows an index to the contents of a mechanical engineer's trade catalog collection. Here the assignment of field numbers is 1 to manufacturer or dealer, 2 to various unsorted elements, 3 to subject keywords, and 4 to location in the engineer's vertical files.

4.4 A DICTIONARY OF GRAMMAR RULES (Figure 10)

Figure 10 presents part of a dictionary of context-free grammar rules for describing English grammar. The dictionary was used as a bookkeeping aid in the development of a query analysis program. Each entry on the coding sheet proof represents a separate syntax rule. The indexed elements provide access by syntax categories within rules, and by processing rules and labels associated with the syntax rules. The latter are assigned to field number 3 in the index. Field number 1 is assigned to the syntax categories identified here as QUERY, QWORD (question word), CLAUSE, VERBP (verb phrase), etc.

4.5 AN INDEX TO 35MM SLIDES (Figure 11)

This index was initiated by SDC's Corporate Communications to develop better access to the wealth of information contained in its large and varied collection of 35mm slides. Each slide was made for a single presentation, briefing or paper but contains information that would be very useful for similar purposes

at a later time. Index categories are assigned to authors and users, titles, and subject descriptors. The coding sheet proof has been omitted from the figure in order to show more of the index. The entry numbers, apart from those beginning with A, identify slide numbers.

CODING SHEET PROOF FOR IPC

```
ENTRY  0001                                          FORMAT  A1
1 1) ** AUTHOR INDEX 8) THIS INDEX INCLUDES PERSONS AND ORGANIZATIONS.

ENTRY  0002                                          FORMAT  A1
1 3) ** TITLE INDEX 8) THIS INDEX IS ARRANGED BY KEYWORDS AND PHRASES D
2 RAWN FROM THE TITLES OF THE DOCUMENTS.

ENTRY  0003                                          FORMAT  A1
1 7) ** IPIC CLASSIFICATION 8) THIS CLASSIFIED CATALOG REFLECTS THE SHE
2 LVING ORDER IN IPIC. 8) A SINGLE * FOLLOWING A CLASS DESIGNATION INDI
3 CATES THAT THE DOCUMENT IS SHELVED IN THAT CLASS.

ENTRY  2159                                          FORMAT  A1
1 1) HERRIOT, J.G. 2) SOME OBSERVATIONS ON 3) ALGOL 2) TO THE 3) BURROU
2 GHS 220. 1) STANFORD UNIV, 4) TECH.RPT. NO. 9, 2) 16 PAGES. 6) 1960 N
3 OV 7 7) 06.7 ALGOL PROGRAMMING LANGUAGE 7) 05.7 BURROUGHS 220 COMPUTE
4 R

ENTRY  2160                                          FORMAT  A1
1 1) SCHUMAN, A.D. 2) THE 3) TRANSLITERATION OF 3) ALGOL 2) TO THE 3) B
2 URROUGHS 3) ALGEBRAIC COMPILER LANGUAGE. 1) BURROUGHS CORP, 2) 29 PAG
3 ES. 6) 1960 MAR 29 7) 06.7 ALGOL PROGRAMMING LANGUAGE 7) 05.7 BURROUG
4 HS 220 COMPUTER
```

SURF INDEX

FIELD NO. 1 FOR IPC ENTRY NO.

```
** AUTHOR INDEX                                                    1
        ** AUTHOR INDEX   THIS INDEX INCLUDES PERSONS AND ORGANIZATIONS.
BURROUGHS CORP,                                                  2160
        SCHUMAN, A.D.   THE   TRANSLITERATION OF   ALGOL   TO THE   BURROU
        GHS   ALGEBRAIC COMPILER LANGUAGE.   BURROUGHS CORP,   29 PAGES.
         1960 MAR 29
HERRIOT, J.G.                                                    2159
        HERRIOT, J.G.   SOME OBSERVATIONS ON   ALGOL   TO THE   BURROUGHS
        220.   STANFORD UNIV,   TECH.RPT. NO. 9,   16 PAGES.   1960 NOV 7

SCHUMAN, A.D.                                                    2160
        SCHUMAN, A.D.   THE   TRANSLITERATION OF   ALGOL   TO THE   BURROU
        GHS   ALGEBRAIC COMPILER LANGUAGE.   BURROUGHS CORP,   29 PAGES.
         1960 MAR 29
STANFORD UNIV,                                                   2159
        HERRIOT, J.G.   SOME OBSERVATIONS ON   ALGOL   TO THE   BURROUGHS
        220.   STANFORD UNIV,   TECH.RPT. NO. 9,   16 PAGES.   1960 NOV 7
```

Figure 7. A Bibliographic Application (Sheet one)

SURF INDEX

FIELD NO. 3 FOR IPC ENTRY NO.

** TITLE INDEX 2
** TITLE INDEX THIS INDEX IS ARRANGED BY KEYWORDS AND PHRASES DR
AWN FROM THE TITLES OF THE DOCUMENTS.
ALGEBRAIC COMPILER LANGUAGE. 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29
ALGOL 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
220. STANFORD UNIV, TECH.RPT. NO. 9, 16 PAGES. 1960 NOV 7

ALGOL 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29
BURROUGHS 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29
BURROUGHS 220. 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
220. STANFORD UNIV, TECH.RPT. NO. 9, 16 PAGES. 1960 NOV 7

TRANSLITERATION OF 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29

SURF INDEX

FIELD NO. 7 FOR IPC ENTRY NO.

** IPIC CLASSIFICATION 3
THIS CLASSIFIED CATALOG REFLECTS THE SHELVING ORDER IN IPIC.

05.7 BURROUGHS 220 COMPUTER 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
220. STANFORD UNIV, TECH.RPT. NO. 9, 16 PAGES. 1960 NOV 7

05.7 BURROUGHS 220 COMPUTER 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29
06.7 ALGOL PROGRAMMING LANGUAGE 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
220. STANFORD UNIV, TECH.RPT. NO. 9, 16 PAGES. 1960 NOV 7

06.7 ALGOL PROGRAMMING LANGUAGE 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29

Figure 7. (Sheet two)

SURF INDEX

FIELD NO. 1 FOR IPC ENTRY NO.

** AUTHOR INDEX 1
** AUTHOR INDEX THIS INDEX INCLUDES PERSONS AND ORGANIZATIONS.
BURROUGHS CORP, 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29 06.7 ALGOL PROGRAMMING LANGUAGE 05.7 BURROUGHS 22
0 COMPUTER
HERRIOT, J.G. 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
220. STANFORD UNIV, TECH.RPT. NO. 9, 16 PAGES. 1960 NOV 7
06.7 ALGOL PROGRAMMING LANGUAGE 05.7 BURROUGHS 220 COMPUTER
SCHUMAN, A.D. 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
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** TITLE INDEX 2
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0 COMPUTER

SURF INDEX

FIELD NO. 7 FOR IPC ENTRY NO.

** IPIC CLASSIFICATION 3
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05.7 BURROUGHS 220 COMPUTER 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
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06.7 ALGOL PROGRAMMING LANGUAGE 05.7 BURROUGHS 220 COMPUTER
05.7 BURROUGHS 220 COMPUTER 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29 06.7 ALGOL PROGRAMMING LANGUAGE 05.7 BURROUGHS 22
0 COMPUTER
06.7 ALGOL PROGRAMMING LANGUAGE 2159
HERRIOT, J.G. SOME OBSERVATIONS ON ALGOL TO THE BURROUGHS
220. STANFORD UNIV, TECH.RPT. NO. 9, 16 PAGES. 1960 NOV 7
06.7 ALGOL PROGRAMMING LANGUAGE 05.7 BURROUGHS 220 COMPUTER
06.7 ALGOL PROGRAMMING LANGUAGE 2160
SCHUMAN, A.D. THE TRANSLITERATION OF ALGOL TO THE BURROU
GHS ALGEBRAIC COMPILER LANGUAGE. BURROUGHS CORP, 29 PAGES.
1960 MAR 29 06.7 ALGOL PROGRAMMING LANGUAGE 05.7 BURROUGHS 22
0 COMPUTER

Figure 8. An Example of Format Option B1

CODING SHEET PROOF FOR HE1

```
ENTRY  0001                                          FORMAT  A1
1 3) GEARS, 3) NYLON, 3) WORM 1) CREATIVE ENGINEERING CO. 4) FC

ENTRY  0002                                          FORMAT  A1
1 3) MOTORS, 2) SHADED POLE 1) BREVEL CO. 4) FB

ENTRY  0003                                          FORMAT  A1
1 3) CLUTCHES, 2) INDEXING, 2) OVERRUN, 2) BACKSTOP, 1) MORSE CO. 4) FC

ENTRY  0004                                          FORMAT  A1
1 3) FASTENERS, 2) SELF LOCKING, 1) BOOTS CO. 4) FB

ENTRY  0005                                          FORMAT  A1
1 3) CLUTCH, 2) MAGNETIC, 3) BRAKES, 1) VICKERS ELECTRIC 4) FV

ENTRY  0006                                          FORMAT  A1
1 3) SEALS, 3) LUBE DEVICES 1) GITS 4) FG
```

SURF INDEX

FIELD NO. 1 FOR HE1 ENTRY NO.

```
BOOTS CO.                                                          4
        FASTENERS,   SELF LOCKING,   BOOTS CO.   FB
BREVEL CO.                                                         2
        MOTORS,   SHADED POLE   BREVEL CO.   FB
CREATIVE ENGINEERING CO.                                           1
        GEARS,   NYLON,   WORM   CREATIVE ENGINEERING CO.   FC
GITS                                                               6
        SEALS,   LUBE DEVICES   GITS   FG
MORSE CO.                                                          3
        CLUTCHES,   INDEXING,   OVERRUN,   BACKSTOP,   MORSE CO.   FC
VICKERS ELECTRIC                                                   5
        CLUTCH,   MAGNETIC,   BRAKES,   VICKERS ELECTRIC   FV
```

SURF INDEX

FIELD NO. 3 FOR HE1 ENTRY NO.

```
BRAKES,                                                            5
        CLUTCH,   MAGNETIC,   BRAKES,   VICKERS ELECTRIC   FV
CLUTCH,                                                            5
        CLUTCH,   MAGNETIC,   BRAKES,   VICKERS ELECTRIC   FV
CLUTCHES,                                                          3
        CLUTCHES,   INDEXING,   OVERRUN,   BACKSTOP,   MORSE CO.   FC
FASTENERS,                                                         4
        FASTENERS,   SELF LOCKING,   BOOTS CO.   FB
GEARS,                                                             1
        GEARS,   NYLON,   WORM   CREATIVE ENGINEERING CO.   FC
LUBE DEVICES                                                       6
        SEALS,   LUBE DEVICES   GITS   FG
MOTORS,                                                            2
        MOTORS,   SHADED POLE   BREVEL CO.   FB
NYLON,                                                             1
        GEARS,   NYLON,   WORM   CREATIVE ENGINEERING CO.   FC
SEALS,                                                             6
        SEALS,   LUBE DEVICES   GITS   FG
WORM                                                               1
        GEARS,   NYLON,   WORM   CREATIVE ENGINEERING CO.   FC
```

Figure 9. An Engineer's Key to Trade Catalog Data

CODING SHEET PROOF FOR KEL

```
ENTRY  0001                                              FORMAT  A1
1 1) QUERY 1) QWORD 1) CLAUSE 3) P1/A

ENTRY  0002                                              FORMAT  A1
1 1) QUERY 1) QWORD 1) VERBP 3) P1/B

ENTRY  0003                                              FORMAT  A1
1 1) QUERY 1) VERBP 3) P1/C

ENTRY  0004                                              FORMAT  A1
1 1) CLAUSE 1) NOUNP 1) VERBP 3) P2

ENTRY  0005                                              FORMAT  A1
1 1) NOUNP 1) NAMEP
```

SURF INDEX FOR KEL

FIELD NO. 1					ENTRY NO.
CLAUSE					4
	CLAUSE	NOUNP	VERBP	P2	
CLAUSE					1
	QUERY	QWORD	CLAUSE	P1/A	
NAMEP					5
	NOUNP	NAMEP			
NOUNP					4
	CLAUSE	NOUNP	VERBP	P2	
NOUNP					5
	NOUNP	NAMEP			
QUERY					1
	QUERY	QWORD	CLAUSE	P1/A	
QUERY					2
	QUERY	QWORD	VERBP	P1/B	
QUERY					3
	QUERY	VERBP	P1/C		
QWORD					1
	QUERY	QWORD	CLAUSE	P1/A	
QWORD					2
	QUERY	QWORD	VERBP	P1/B	
VERBP					4
	CLAUSE	NOUNP	VERBP	P2	
VERBP					2
	QUERY	QWORD	VERBP	P1/B	
VERBP					3
	QUERY	VERBP	P1/C		

SURF INDEX FOR KEL

FIELD NO. 3					ENTRY NO.
P1/A					1
	QUERY	QWORD	CLAUSE	P1/A	
P1/B					2
	QUERY	QWORD	VERBP	P1/B	
P1/C					3
	QUERY	VERBP	P1/C		
P2					4
	CLAUSE	NOUNP	VERBP	P2	

Figure 10. A Dictionary of Grammar Rules

SURF INDEX

FIELD NO. 1 FOR NR1 ENTRY NO.

**AUTHOR/USER A001
**AUTHOR/USER THIS INDEX NAMES THE PERSON WHO WAS PRINCIPAL USER AND/OR THE PERSON RESPONSIBLE FOR GATHERING THE INFORMATION PRESENTED.
CANTER P003
MAR/65 CANTER LINTNER PERSONNEL LOCATION MAP UNITED STATES
CANTER P001
MAR/65 CANTER LINTNER MILITARY CONTRACT PIE-CHART, COLOR, B AND W.
CANTER P002
MAR/65 CANTER LINTNER REVIEW OF SDC CONTRACT PERFORMANCE CONTRACT PERFORMANCE OVERRUN UNDERRUN

SURF INDEX

FIELD NO. 3 FOR NR1 ENTRY NO.

**TITLE INDEX A002
**TITLE INDEX IF A SLIDE DOES NOT HAVE A TITLE, IT IS NOT LISTED HERE. SLIDE TITLES ARE VERY RICH IN INFORMATION AND PROVIDE GOOD ACCESS.
REVIEW OF SDC CONTRACT PERFORMANCE P002
MAR/65 CANTER LINTNER REVIEW OF SDC CONTRACT PERFORMANCE CONTRACT PERFORMANCE OVERRUN UNDERRUN

SURF INDEX

FIELD NO. 5 FOR NR1 ENTRY NO.

**DESCRIPTORS INDEX A003
**DESCRIPTORS INDEX WE HAVE ATTEMPTED TO ASSIGN DESCRIPTIVE TERMS TO THE MAJOR INFORMATION CHARACTERISTICS OF THE INDEXED SLIDES. THIS IS A COMPLETE INDEX. ALL SLIDES ARE DESCRIBED HEREIN.
CONTRACT P001
MAR/65 CANTER LINTNER MILITARY CONTRACT PIE-CHART, COLOR, B AND W.
CONTRACT PERFORMANCE P002
MAR/65 CANTER LINTNER REVIEW OF SDC CONTRACT PERFORMANCE CONTRACT PERFORMANCE OVERRUN UNDERRUN
MAP P003
MAR/65 CANTER LINTNER PERSONNEL LOCATION MAP UNITED STATES
MILITARY P001
MAR/65 CANTER LINTNER MILITARY CONTRACT PIE-CHART, COLOR, B AND W.
OVERRUN P002
MAR/65 CANTER LINTNER REVIEW OF SDC CONTRACT PERFORMANCE CONTRACT PERFORMANCE OVERRUN UNDERRUN
PERSONNEL LOCATION P003
MAR/65 CANTER LINTNER PERSONNEL LOCATION MAP UNITED STATES
UNDERRUN P002
MAR/65 CANTER LINTNER REVIEW OF SDC CONTRACT PERFORMANCE CONTRACT PERFORMANCE OVERRUN UNDERRUN
UNITED STATES P003
MAR/65 CANTER LINTNER PERSONNEL LOCATION MAP UNITED STATES

Figure 11. An Index to 35mm Slides

5. REFERENCES

1. Jahoda, G., Hutchins, Ronald D. and Galford, Robert R. "Characteristics and use of Personal Indexes Maintained by Scientists and Engineers in One University." American Documentation Vol. 17 no. 2. April 1966. pp.71-75.

2. Crossley, William O. "The MADAM System." SDC TM-2198/002/00. December 2, 1965.

3. Wallace, Everett M. "Experience with EDP Support of Individuals' File Maintenance." SDC SP-1646. July 7, 1964.

4. Wallace, Everett M. "SUFF: Support of User Records and Files-- DESCRIPTION AND OPERATION." SDC TM-2912/000/00.

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) System Development Corporation Santa Monica, California	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP

3. REPORT TITLE

A User's Guide to SURF: Support of User Records and Files

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

5. AUTHOR(S) (Last name, first name, initial)

Wallace, Everett M.

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
June 24, 1966	27	4

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
Independent Research b. PROJECT NO.	TM-2913/000/00
c. d.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

10. AVAILABILITY/LIMITATION NOTICES

Distribution of this document is unlimited

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY

13. ABSTRACT

SURF is an EDP-based service for support of User Records and Files. It is implemented through SDC's MADAM programming language and system for the IBM 1401. It provides printed indexes reflecting the contents of user files. Users of the service index their files, fill out and submit input coding sheets to the service, and regularly receive consolidated index listings. SURF is quite flexible and adaptable to the diverse and changing needs of individuals in organizing, maintaining, and finding what is in their personal or office files.

DD FORM 1 JAN 64 1473

Unclassified

Security Classification

Unclassified

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
SURF Support of User Records and File IBM - 1401 - Computer MADAM Programming Language File Indexes						

INSTRUCTIONS

1. ORIGINATING ACTIVITY: Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization *(corporate author)* issuing the report.

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4. DESCRIPTIVE NOTES: If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

5. AUTHOR(S): Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

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8b, 8c, & 8d. PROJECT NUMBER: Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

9a. ORIGINATOR'S REPORT NUMBER(S): Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.

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13. ABSTRACT: Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.

It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as *(TS)*. *(S)*. *(C)*. or *(U)*

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.