

Table I. GRAPH X Functions^a

name of function	no. of arguments	action
1 ARC	4	draws quarter of a circle with radius R at the position X, Y in a given quadrant
2 BLKFIL	4	draws solid rectangle at a specified position
3 CIRC	3	draws circle at the defined position
4 CLRSCR (2-5)	0	clears page buffer
CLRSCH (1)		
5 DISP	1	displays given buffer page (0 or 1)
6 DLINE	2	draws relative line to new position
TEXT (2, 5)	2	fills area of the convex polygon with the reverse color
8 GETPT	3	returns status of the addressed position
9 GMODE	0	puts HGC into graphics mode
10 GPAGE	1	defines buffer page to be written into
11 LEVEL	1	sets color value (black, bright, XOR)
12 MOVE (1, 2, 4, 5)	2	moves cursor to specified position
PUTPT (3)	2	
13 PLOT	2	performs LEVEL operation on specified position
14 HTEXT (1)	3	
TEXT (2, 5)	3	writes string of text beginning with specified position
TEXT B (3)	3	
TEXTF (4)	4	
15 TMODE	0	puts HGC into normal text mode
16 HARDCPY	1	generates output to printer from program

^aNumbers in parentheses mark the language (1, Turbo Pascal; 2, Pascal; 3, Basic and BASICA; 4, FORTRAN; 5, Assembler) in which the formation can be used. If no number is given, the function can be used in all five languages in the same format.

grammed in a number of steps using different graphics routines. Especially annoying is that passing values directly to graphics routines is not allowed. Turbo Pascal is an exception from this rule, but the users of Borland Turbo Pascal will probably continue to use a much more comfortable set of graphics routines provided in Borland's Turbo Graphix Toolbox. Typing numerous assignment statements to specify

each parameter for every employed graphics function is more than a majority of potential users are willing to accept.

Obviously, the package in its present form is intended for application programmers who will build their own routines to carry out more complex tasks, rather than for general users who would like to have a variety of different functions immediately at hand. The general user needs functions to draw arbitrary arcs and ellipses, pie charts, and rectangles; functions for saving, downloading, moving, and recalling windows; functions for zooming, scaling, rotation, and mirroring of chosen areas; the choice of different line types and widths (solid, dots, dashes, blank, etc.); the ability to write characters in different directions; but, above all, the graphics programmer needs good communication during the drawing.

A good manual should give more examples for different cases. There are always users not familiar with graphics but willing to try it. Nowhere in the manual is a description of how to implement a simple dialogue (asking a question, retrieving the answer, and continuing with the drawing on the same page) between the user and the program found. We tried a few standard ways, like switching the pages or the graphics mode off and on to catch the typed characters and display them back at the desired position, but unfortunately with no success.

All the shortcomings notwithstanding, I would like to welcome the GRAPH X, and I am looking forward to the announced new version. I hope that this package is (like Borland Turbo Graphix Toolbox) the beginning of a new concept in which all high languages (Pascal, FORTRAN, C, BASIC, etc.) employ standardized calls for graphics and screen manipulation routines and that the graphics hardware differences will be resolved with the installation of the specific compiler on the PC.

It is encouraging that Hercules Computer Technology, primarily a producer of hardware, recognized this trend before the majority of software houses have. Again, in order to implement good and informative input or display of intermediate or final results, the programmer must have at hand powerful and easy to use graphics because "a picture is worth more than a thousand words (or numbers)"!

WordStar Professional 4[†]

CHARLES F. HAMMER* and ROBERT DE LEVIE

Department of Chemistry, Georgetown University, Washington, D.C. 20057

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The new version 4 of WordStar, now called WordStar Professional (WS4), contains many improvements over its predecessor. Among the most useful of these are an "unerase" instruction that will undo the last deletion, a "shorthand" feature that can generate up to 36 user-defined words or instructions with just two keystrokes, 40 reprogrammable function keys, a thesaurus for help in finding synonyms, direct onscreen display of bold and underlined text, enhanced printer support including the ability to use two printers, better documentation, and higher speed. There is also the convenience of using DOS-style commands in specifying filenames as well as accessing DOS while in WordStar and support for mathematical operations. That is quite a lot, and the above list is far from complete. Also included in the package, as a separate

[†] MicroPro International Corp., 33 San Pablo Ave., San Rafael, CA 94903.

program that can be installed and used independently from WordStar, is a fast and efficient word-counting program, wc.

In general, the new version retains the old instructions with which WordStar users have learned to live. This makes it easy to move up to version 4, as one can slowly explore the newly added instructions and incorporate those that prove beneficial.

In doing so, a few problems with the new version show up. The most important of these, and in our opinion a quite annoying and serious one, is that the Professional version no longer has the ability of earlier versions to make a reasonable guess about the placement of soft hyphens. There are, actually, two changes here. In the first place, the soft hyphen now appears automatically at the location of the right-hand margin, even if this would place it in an absolutely ridiculous position, such as before the last letter of a word or between the last word

START-UP: Turn ON computer, place WS4 diskette in Drive A, and your data diskette in Drive B. If the Boot-up fails, hold down Ctrl and Alt, and depress Del to re-boot. It may be necessary to re-insert Disk A if boot fails. Now replace A with the Dictionary.

EDITING: type **WS4** **CR** which will initiate WordStar with the directory of the created virtual disk C displayed plus menus that are mostly self explanatory. Type L and then b: to display the directory of your data disk in Drive B. Press F1 (HELP) to change the HELP level to 3 so all menus are visible at first.

USEFUL WS4 COMMANDS: (Toggle means it must be used ON & OFF)

DELETIONS Del/NG deletes character above the cursor
Main Menu Bksp " " to left of cursor
"H/F6 " " word to right of cursor
"V/F5 " " entire line of cursor
"U/F2 undeletes previous word, line or block

OTHER COMMANDS "Z/V moves cursor up/down one line
Main Menu "I turns INSERT mode ON/OFF
"B reform text to margins (after INSERT)
"L repeat find-and-replace of "QA
"W/Z scrolls one line up/down
"R/C " " full screen up/down

New menus are displayed for the following Ctrl (C) characters:

"Q commands: L n "H/F5 sets left margin at column n
With Menu R n "H/F6 sets right margin at column n
X releases margins
I set tab (activated by "I from Main Menu)
N clear tab
S paragraph tab
"C/F8 indents ruler line in text (cf "RR)
"C/H2 center text
" specify line spacing: 1,2,3 etc.
V variable tabs = " in line at top
D toggles print ctrl characters ON/OFF
J toggles line justification ON/OFF
G toggles "soft" hyphenation ON/OFF

"P commands: B/F4 **BOLD**face = toggle: A compressed(132) pitch ON
With Menu S/F2 underline " N " " OFF
V normal subscript " Q small superscript ON
(emphasized T " " superscript " W small subscript ON
letters X strikethru " R "RW and "FQ OFF
are new C doublestrike " E one line expanded ON
commands) F Elite on G Elite off
Q printing pause RET overprint entire line
R overprint each character, eg Q "H/H/

NOTE: Bold(B=F4) also = emphasized mode on Epson printers

"K commands: B/F10 permanent save of a file
With Menu S/F9 temporary save while continuing
Y permanent save and exits WS to B>
"K commands Q quit without changing the disk file
continued G deleted a file while editing another
"V=Shift C/FEP marks start of block, shows as
block moves "H/F10 marks end of block, shows as <K>

C=V/F8 copies marked block at cursor location
V=V/F7 moves copied block to " "
W copies block to temporary file
R moves temp. file to cursor location
Y=V/F5 deletes block
H=V/F6 hides block markers and highlighting
N turns column mode ON/OFF
I turns column replace mode ON/OFF
F run a DOS command
M do a block math calculation

"Q commands: B go back to previous editing w/ "KS
F find text in file
A find and replace word or phrase
V last Find or Block used
G repeat previous operation
Y delete line to right of cursor
DEL " " " left " "

plus several self explanatory cursor movements

DOT COMMANDS (in column 1) observable from Main Menu with "Q

.PA new page
.QP n new page if less than n lines left
.OP omit page numbers when printed
.LS n sets line spacing: 1=default, 2=double, 3=triple etc.
.PN n set first page number to n
.PC n column to print page numbers (default =33)
.PO n page offset = extra indent
.HE text heading on each page until next .HE
.FO text footing on each page (replaces page #'s)
.RR ("QQ) indents ruler line in text (to change margins etc.)

Special characters in headings and footings

prints as current page number
^ do not read next character as special
use at\ "K for left and right page numbers (look it up)
top of: .PB n paper length, overrides WS default =66 lines
first: .PT n number of lines for top margin (default =3)
page: .PE n " " " " bottom " " " =9
only / .PR n " " " " from heading to text " =0
.PFT n " " " " text to footing " =2

For Incremental Printers Only (eg. EPSON RX-80 printer)

top also: .LH n line height in 1/48ths of inch (default =8)
.CW n character width in 1/12ths " (standard =11)
(compressed print = alternate =7)
.CR n 1/48/superscript cell in 1/48ths (default =6)
and ON/OFF for justification ON, and justification on even or column assignment, but not good for a table. Put .UJ OFF before a table and then .UJ ON after the table.

GOOD LUCK (C/F14 1 2 3 4 5 6 7 8 9)

Figure 2. Modified WordStar 4 edit commands summary (for Epson RX-80).

"Shorthand" command to generate the instruction sequence FF*,* and call it as, e.g., Esc F, or one can type L followed by the disk label containing one's data files. This illustrates the convenience of the new features of V.4.

Many of the defaults can also be changed with the auxiliary program WSCHANGE. Unfortunately, this very powerful customizing tool is rather poorly documented and could stand a manual of its own, with worked-out examples and, especially,

with an index. As it is now, one often wanders aimlessly among the various options before finding the proper parameter among almost 100 candidates. One of us has a nonstandard letter-quality printer that is not supported. Thus, another printer driver (CUSTOM) must be modified with WSCHANGE. This required several iterations even with the numerous "Help" explanations built into the program. One problem was encountered: one can no longer specify the carriage roll if the

printer in question has different commands to specify carriage roll up and carriage roll down.

A curious problem involves the graphics lines available in the Alt function keys for drawing boxes around text or lines in tables. They show nicely on the monitor of an IBM PC, but, so far, we have not been able to print them or even do a screen dump on a printer supporting the same characters, such as an Epson RX-80. A patch routine provided by MicroPro International also did not work, although it apparently does work on other Epson printers. Figure 1 illustrates this difficulty. On the other hand, small superscripts and subscripts can be defined with WSCHANGE as the user-defined print (^P) functions ^Q, ^W, ^E, and ^R. Consequently, chemical formulas ($C_{26}H_{21}N_2OBr$) and technical terms ($^4J_{H,F}$) are neatly printed with single-line spacing.

All in all, for those who do not mind losing the soft hyphenation wizardry of earlier versions, the Professional is much more versatile and a significant improvement, bringing WordStar to the level of its upstart competitor, WordPerfect. For those of us who are accustomed to WordStar and its awkward instruction designations, there is now no more reason to switch and learn a new set of codes. For the novice, learning WordStar has also been made easier in version 4 with extra "Help" explanations in the menus. We trust that the documentation problems will be corrected in later versions. And for those who liked the more realistic hyphenation, we suggest that they stick with their older version, until WordStar puts that considerable goody back in a subsequent update as well. For those who would like to try WS4, Figure 2 provides a brief summary of the WordStar commands for beginners.

SciMate Software System. Version 2.1[†]

RICHARD LOVE

American Chemical Society, 1155 16th Street NW, Washington, D.C. 20036

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The SciMate Software System from ISI (Institute for Scientific Information) is a multipurpose package for searching online text databases and managing the retrieved information. The system comes in three modules that can be purchased separately: the Searcher (\$150.00), the Manager (\$295.00), and the Editor (\$195.00). ISI also offers a 40% academic discount. The programs run on an IBM PC/XT/AT and compatibles with 256K minimum RAM and DOS version 2.0 or later. The Searcher module supports the following modems: manual, Ventel MD212-Plus, Cermetik 212A, and Hayes Smartmodem (300, 1200). The programs are not copy protected.

A primary function of the SciMate software is a "gateway" for searching online databases. Gateway software facilitates searching, downloading, and managing downloaded information. SciMate easily accomplishes this task. The documentation for learning how to use it is professionally produced, easy to read, logically organized, and accurate. It has a comprehensive index, table of contents, and tutorial lessons to introduce the user to the software's many capabilities. SciMate has a lot of features and, in this regard, may be difficult to learn because of this complexity. The documentation copes with this problem in three comprehensive volumes of information, one for each module, and the software itself addresses this issue with on-screen and in-context help messages. Also, the software is menu driven, which helps to refresh the user's memory if the program has not been used for some time.

A potential problem with gateway software in general is that it can age rapidly because vendors are continually adding new capabilities to their systems, a factor that makes the gateway software obsolete. For \$30.00, ISI will upgrade registered copies of Searcher with the current release.

SciMate Searcher. The Searcher module is a gateway program for accessing and searching online databases. Though the program is specifically tailored for searching BRS, Dialog, NLM, Orbit, and DARC Questel, it can access and download information from any online resource. It is designed to fa-

cilitate searching the ISI files such as SciSearch, Social SciSearch, Arts & Humanities Search, Computer and Math Search, and other specific files such as the Biosis, Chemical Abstracts, Medline, NTIS, Psycinfo, and World Patent Index files that are provided by the above vendors. One file not supported specifically by the software is ISI's Current Contents.

SciMate offers four search modes to choose from when searching an online database. All of these modes allow the user to download selected portions of the search results for later processing by the SciMate Manager module. Three of the modes require the database and database vendor to be one of those supported by the software. The SciMate Search mode prompts the user to enter a search query and automatically translates it into the appropriate search syntax specific for the database and vendor. The user interface in this mode is a series of menu options, a feature that is especially useful for novice users who may not know the different command language conventions of each file and vendor. The Native Search mode is designed for the more accomplished or expert searcher. In this mode, the user employs the specific search language of the vendor. This feature is a benefit to those searchers who are very familiar with the command syntax and who want to bypass the front-end search menus. Both of these modes, Search and Native Search, require that the user be online to conduct the search—the program conveniently displays "\$\$" to indicate that online connect charges are in effect. A third search mode is an especially powerful facility of the SciMate Searcher software. In this mode the user can submit up to 99 search queries as a single profile.

If the target vendor is not one of those supported by the SciMate software, then the user must employ the Passive Search mode and enter all of the appropriate commands for searching the system. By necessity, the user must be knowledgeable of the logon/logoff procedures and search and display conventions for the vendor and database in order to use this mode.

SciMate Searcher has very few shortcomings. One problem with the software is its favoritism to vendors that support the ISI databases. The software should allow the user to set up access procedures for any number of online database sources.

[†] Institute for Scientific Information, 3501 Market St., Philadelphia, PA 19104 (800-523-4092).