


BASIC CROSS REFERENCE



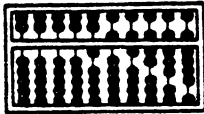
YOU CAN COUNT ON

Abacus  Software

XREF-64

BASIC CROSS REFERENCE LISTING

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**Abacus
Software**

P.O. Box 7211

Grand Rapids, MI 49510

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XREF-64

DESCRIPTION

The XREF-64 program creates a cross-reference printout for your BASIC programs written for the Commodore 64. The printout shows the line numbers where variables, line numbers and even BASIC keywords (FOR, PRINT, GOTO, =, etc) are used. This is useful in debugging programs since it allows you to find every place in the program where you use a specific variable. The cross-referencing of keywords is useful in debugging and making programs smaller and more efficient by allowing you to easily find all REMs, etc. In addition to the standard BASIC keyword list from Commodore BASIC are the extended keywords of ULTRABASIC-64 and SCREEN GRAPHICS-64. The keyword list may be modified to accommodate other BASIC enhancements such as VICTREE from Skyles Electric Works or Video Basic also from ABACUS Software. The program to be cross-referenced may be on disk or tape. A printer is required for output.

USING XREF-64

1. Save the program to be cross-referenced on tape or disk using the BASIC SAVE command [SAVE"program name",8].
2. Reset the '64 by turning the power off and then on again (or type SYS64738 and press <RETURN>).
3. Insert the XREF-64 diskette into the disk drive and type LOAD"*",8 or LOAD"XREF-64",8 and press <RETURN>.
4. When the first part of the program has finished loading and the screen displays the "READY." message, type RUN and press <RETURN>.
5. The '64 will run for a little while and then display the program title and copyright messages. In a short time the screen turns blue and the diskette drive.
6. The program title page is displayed and you are asked to enter the printer device number. The default device is 4. Either key a different number and press <RETURN> or just press <RETURN> to use the default device number. If you want the printout on the screen enter 3 for the device number.
7. Next you are asked to enter the secondary address number (0 is the default). The address you enter depends on your printer and the device used to connect it to the '64. Key the proper number and press <RETURN>.

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8. The list of keywords is stored in a data file on the diskette. The standard set of keywords (C-64 BASIC plus ULTRABASIC-64 and SCREEN GRAPHICS-64) is in the default file, named ZZ.KEYWORD. Simply press <RETURN> to use those keywords. See the section below MODIFYING THE BASIC KEYWORD LIST for steps needed to change the list. The diskette drive runs for a few seconds as the keyword list is read into memory.
- 9 XREF-64 asks you to enter the name of the program to be cross-referenced. Remove the XREF-64 diskette from the drive and insert the one containing your program.
10. Key the name of the program to be processed (the one you saved in step 1) and press <RETURN>. A short sample program is included on the diskette - key program name **SAMPLE** to process it.
11. Next you are asked to enter the device number where the program is to be found. Disk device #8 is the default. If so, press <RETURN>. If the program is on another disk drive or on tape, enter the device number (1 for tape) and press <RETURN>.
12. The next prompt asks if you want the cross-reference to include BASIC keywords. (Processing keywords takes additional time and memory. Programs with more references than will fit into memory at one time can be processed in two passes, first doing keywords only and the second pass doing all other references only.) Press Y to process keywords or N to bypass them.
13. The next prompt asks if you want to process the rest (all other references--line numbers, variables, functions, arrays and values). Press Y to process, N to bypass.
14. The program then prints the message "READING THE FILE" and the device should start reading. The screen displays the program line numbers as they are read from the program file.
15. The printer should be readied. When program reading is complete, the percent of memory used is displayed and the message "SORTING LABELS, ETC" is also displayed. This sort should only take a minute or two and then the message "PRINTING" will be shown and the printout of the "rest" should begin.
16. When printing of all references except keywords is finished, the message "SORTING KEYWORDS" appears if selected. This sort usually take less than a minute or two and then message "PRINTING KEYWORDS" appears and the printout of the keywords and their references begins.

17. When complete, the message "FINISHED" and "ANOTHER PROGRAM ?(Y/N) appears. Press Y to do another program or N to quit.

PRINTOUT (see sample)

The heading on each page shows the page number and the program name.

The leftmost column shows the item (line number, variable, function, value or keyword). The columns to the right show the line numbers where the item is referenced with two dots {..} separating each reference. If there are more than 9 references for an item, additional lines are printed.

The items are sorted into sequence, so numbers appear first, variables and functions second and keywords last.

Keywords are shown with an apostrophe ' as the first character. If a variable name exceeds 5 characters, only the first 5 are used (BE CAREFUL because BASIC uses only the first 2, so they are treated as the same variable by BASIC!). Array variables are indicated by a (*) following the variable name. User-defined functions (such as DEF FN A) are shown as FN A on the printout. All literals enclosed in quotes are ignored. However, strings in DATA statements not enclosed in quotes are picked up and included as items (truncated to 6 characters).

Numeric values in the program such as device numbers and constants are included as items (and truncated to 6 digits).

If a BASIC keyword token is encountered which is not included in the table in the XREF-64 BASIC program, it is printed as "@ennn" where nnn is the Ascii value of the token.

MODIFYING THE BASIC KEYWORD LIST

Load the BASIC program KEYGEN into memory by keying LOAD "KEYGEN",8 It includes a series of DATA statements starting with line 30000. These are the keywords in token sequence. The first keyword is ascii value 128 = "END". The second is value 129 = "FOR" and so on. (see VIC-20 Programmer's Reference Guide pg 279 - Unfortunately it's not included in the '64 Reference Guide). Line number 30999 contains the keyword "ZZZ" which signals the end of the table. Simply insert and/or modify the data statements to suit your needs. When you are satisfied that the keyword list in the DATA statements is correct, you must take the write protection tab off of the distribution diskette and insert it into disk

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drive #8. Then type RUN and press <RETURN>. Key the name of the keyword file and press <RETURN>. The diskette drive will run for a short time. Remove the distribution diskette and recover the write-protect notch. Load and RUN XREF-64 as before, only specify the new keyword file name.

ERRORS

There are only two possible error sources:

Disk operating system messages are displayed either using standard DOS message format or a short form which says **DISK ERR** followed by the message number. See the error message section of the disk manual for explanation.

Out of memory condition. If this occurs, restart the program (type **RUN** and press <RETURN>) and process keywords on one pass and the rest on another.

BACKUP COPIES

Two complete copies of the main programs are included on the diskette. If the program XREF-64 fails to load properly, type **LOAD "BREF-64",8** to load and run from the backup copies.

SAMPLE PRINTOUT

```

10 REM XREF-64 TEST/DEMO PROGRAM
20 N=10 : DIM A(N),A$(N),A%(N)
30 FOR I = 1 TO N
41 A$(I)=CHR$(64+I):REM LETTERS A+
42 A(I)=I:REM EQUAL TO I
43 A%(I)=I/2:REM WILL BE INT(I/2)
50 NEXT
60 FOR I = 1TON
70 PRINT"I=";I,"A$(I)=",A$(I),"A(I)=",A(I),"A%(I)=",A%(I)
80 NEXT
90 PRINT"FINISHED"

```

READY.

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PROGRAM NAME = SAMPLE

ITEM LINE NUMBERS WHERE USED

1	30	60				
2	43					
10	20					
64	41					
A\$(*)	20	41	70			
A%(*)	20	43	70			
A(*)	20	42	70			
I	30	41	41	42	42	43
	43	60	70	70	70	70
N	20	20	20	20	30	60
' +	41					
' /	43					
' =	20	30	41	42	43	60
' CHR\$	41					
' DIM	20					
' FOR	30	60				
' NEXT	50	80				
' PRINT	70	90				
' REM	10	41	42	43		
' TO	30	60				

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ULTRABASIC-64

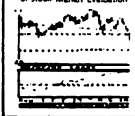
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XREF-64 BASIC CROSS-REFERENCE

This tool allows you to locate those hard-to-find variables in your programs. Cross-references all tokens (keywords), variables and constants in sorted order. You can even add your own tokens so that you can cross-reference tokens from other software such as ULTRABASIC or VICTREE. Listings to screen or all ASCII printers. DISK \$17.95

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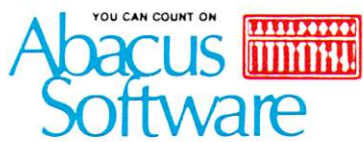
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