

ARTIFACTING MEETS THE COCO 3

When the Color Computer 3 was first introduced, many people believed the age of artifacting colors for graphics had come to an end. After all, the CoCo 3 supports 16 colors (selectable from a palette of 64) on a 320-by-192-pixel graphics screen. This goes way beyond the CoCo 1 and 2 with their two-color limit. Still, I say we can use artifacting to get even more.

In terms of working with the Color Computer, artifacting colors (creating the false impression of colors) relies on an inherent characteristic of color composite monitors and televisions. The PMODE4 graphics mode supports only two colors, and most programs use black and white. However, if you draw a single vertical line on the PMODE4 screen, it appears either blue or red (depending on the internal timing of the CoCo). If you erase that line and draw a similar vertical line, but one space to the right or left of the first, it appears in the other color — the false “primary” colors alternate vertically. If you put two vertical lines side-by-side, you get a line that appears in the selected foreground color (black or white). By setting different pixels in a defined grid, this “defect” can be used to create the appearance of many different hues. Now imagine the possibilities with 16 selectable colors rather than two.

Color 256 is a simple BASIC program that combines color artifacting with the



CoCo 3's 16-color graphics screen (HSCREEN2) to effectively produce 256 different colors on one screen. The program contains two sections, the first of which sets the palettes and draws the individual lines used for artifacting. *Color 256* works much like artifacting on the CoCo 1 and 2 where alternating, adjacent vertical lines are used to create the effect of more colors. It takes some time for the program to draw the lines, so be patient. The high-speed poke is used (Line 20) to speed up the process.

The second section of *Color 256* rapidly cycles the screen through the entire palette of 64 colors. This is accomplished using very simple palette switching. If you press BREAK before the program reaches this color cycling, you'll end up with an odd palette setting and the computer will still be in the high-speed mode (normal speed is

enabled in Line 220). Make sure you slow it down before performing any tape or disk I/O. The best way to set things right is with a full reset of the Color Computer (CTRL-ALT-Reset).

It is important to note that artifacting colors with the CoCo 3's HSCREENs is generally much more effective with a color composite monitor or television. RGB monitors more accurately display the correct information, and it is easy to distinguish between the vertical lines that make up the artifacted colors.

Feel free to study the techniques used by *Color 256* and introduce color artifacting into your BASIC programming efforts. Experienced programmers might consider using the interrupts to enable the full 64-color palette onscreen at one time (see “Color Chart for the CoCo 3” on Page 20 of the January 1987 issue of THE RAINBOW). Then it should be possible to produce 4096 colors at the same time . . .

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CoCo 3

The Listing: COLOR256

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1 *COLOR 256
2 *BY ADAM BREINDEL
3 *COPYRIGHT (C) 1992
4 *BY FALSOFT, INC.
5 *RAINBOW MAGAZINE
10 ON ERR GOTO 220
20 POKE 65497,0
70 *****
80 **WHEN THIS SECTION OF
  *PROGRAM IS DONE,THE DISPLAY
  *SEQUENCER SECTION RUNS.
90 **THIS CAN BE ACCESSED AT
  *LINE 220 IF PROGRAM IS
100 **STOPPED AFTER INITIAL
  *SCREEN IS DRAWN
110 **THIS PROGRAM USES 320*192
120 **16-COLOR GRAPHICS AND THE
  **2MHZ POKE AND RUNS ON A
  **128K COCO 3
130 *****
140 HSCREEN 2
150 FOR Y=0 TO 15:PALETTE Y,48+Y
:NEXT
160 FOR Z=0 TO 15:FOR Y=0 TO 15
170 GOSUB 190
180 NEXT Y,Z
190 FOR A=2*16 TO Z*16+15:IF A/2
  =INT(A/2) THEN HDRAM"C"+STR$(Y)
  ELSE HDRAM "C"+STR$(Z)
200 HLINE (A,12*Y)-(A,12*Y+11),P
SET
210 NEXT:RETURN
220 POKE65496,0
230 ON BRK GOTO 300
240 *****
250 **COLOR-256
260 **COLOR SEQUENCER
270 POKE&HE6E4,&HE6
280 HSCREEN 2
290 POKE&HE6E4,&HE7
300 FOR X=0 TO 63
310 FOR Y=X TO X+15:IF Y>63 THEN
  330
320 PALETTE Y-X,Y
330 NEXT Y
340 NEXT X
350 GOTO 300
360 PALETTE 13,63:PALETTE 12,0

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Product Review

VED/68000 for High-Performance Editing

One of the most important tools for any computer system is a powerful but easy-to-use text editor. *VED* (short for Visual Editor) is just such an offering from Bob van der Poel Software. *VED*'s origins lie with the CoCo and OS-9, and the program is now offered for OS-9/68000-based machines — the MM/1, TomCat and System IV. The software is supplied on a 3½-inch, high-density disk that contains five directories holding the program modules, documentation files, environment files, help files and source files.

Although the on-line documentation files fully describe the functions of the files on the distribution disk, setting up *VED* is quite easy. The *VED* executable module must be copied from the CMDS directory of the disk to the CMDS directory of your hard drive or any floppy disk. In addition, a help file and an environment file must be copied into the SYS directory. Supplied are a few different versions of the help file, including one with documentation for all the standard C library routines; this is extremely helpful for programmers. The environment file describes to *VED* the specific computer you are using; environment files are supplied for the MM/1, the System IV, VT100 terminals and the Color Computer.

Also included on the distribution disk is a program named VSPLIT, which allows you to break extremely large text files into smaller files that *VED* can more easily accept. Still, I tested *VED* with some large, unsplit text files (about 250K in length).

Even with this large amount of text, copying a large block of text is almost instantaneous. The source code for VSPLIT is also supplied and can be found in the SRC directory of the distribution disk.

VED's basic editing screen does not include any status bars or symbols, so you can use the entire screen for viewing and editing a file. Any carriage returns in the file are represented onscreen by the tilde (~) character, making it easy to see where paragraphs actually end. A special end-of-buffer character is visible at all times immediately to the right of the last character in the file.

VED features many movement, insertion, and deletion functions, each of which is mapped to a particular control-key combination. These key combinations can be modified through the environment file, and some commonly used functions are mapped to arrow and movement keys on the IBM-style keyboard most OS-9/68000 systems use. Two of the more unusual features are a Jump function (which lets you move to a position in the file by line number, percentage position, or test label) and Case Toggle (which cycles a word between all upper- or lowercase characters, and normal capitalization). In addition, *VED* sports an Undo function that operates on the line currently being edited as well as for word, line and block deletions.

The Search and Replace functions offer the usual search (in both directions) as well as Find Next and Find Last. You can use the wildcard character (?) when replacing text — a feature many programs do not offer. Block-editing commands are provided, giving you the ability to cut, copy and paste text. You can also save a block to disk, sort the lines within a block, print a block to the printer or a disk, and display word- and

line-count information about a block.

VED supports a full complement of macro capabilities; up to 26 user-defined macros may be defined and saved to disk at any time while you are editing a file. In addition, there are eight predefined macros, some of which allow you to list the current input and output files or extensions, automatically generate increasing numbers for auto-numbering applications. Two user-definable Time macros give you the ability to easily insert the current time/date string in the format you choose.

Printing is supported by *VED*, and the output can be sent to either a printer or a disk file. Options such as margin settings, new page, effect sequences (such as underline on/off) and headers may be defined using “dot” commands in the document. For more complex formatting needs, Bob van der Poel Software also offers *VPrint*, a separate product that can be used in conjunction with *VED*.

There are a few miscellaneous and very useful functions in *VED*. An OS-9 shell can be called at any time through a simple command sequence. Memory and file information can be displayed at any time, and commands can be easily repeated a number of times. Cursor blinking can be turned on and off, and the auto-numbering mode can be engaged at will to insert line numbers after each carriage return.

VED's on-line help is completely menu-driven and generally easy to use. The manual also describes the format of the help and environment files for those users who may be interested in modifying them for their own use. Getting help for any command requires only that you remember that ESCAPE-H is used to bring up the Help display.

VED appears to be a well-designed product that is surprisingly intuitive, setting it apart from other line editors, which often send users running for a sledge hammer. Movement commands are very easy to remember, especially since most are mapped to the and movement keys on the keyboard. Many of the commands are grouped into two-letter sequences. For example, to use one of the Options commands, press ESCAPE-O followed by the letter specifying the subcommand you want to use. If you hesitate after initiating the first command, *VED* automatically lists the available letters at the top of the screen.

Bob van der Poel's attention to speed is very noticeable from the performance of *VED*. For example, *VED* checks for any keystrokes entered while the screen is being updated and does not redraw the complete screen if the next update will fill the screen with new information. For this reason, using OS-9's key-repeat feature with Page Up and Page Down is extremely fast.

If you are looking for a quality editor for your OS-9/68000 system, *VED* is a sure winner. The price is reasonable, and *VED* may be the most often used piece of software on your system, especially for writers or programmers. With the addition of *VPrint*, you can count on the most advanced text tools for the OS-9/68000 system to deliver the performance you need. (Bob van der Poel Software, P.O. Box 57, Wynndel, BC V0B 2N0, Canada, 604-866-5772; or P.O. Box 355, Porthill, ID 83853-0355; \$39.95 plus \$3 S/H.)

— Jordan Tsvetkoff