



# the RAINBOW

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## RAINBOW EMPHASIZES PRINTER USES

This month's issue of the RAINBOW emphasizes printer functions and how your printer can interface with BBS' and CompuServe.

If you don't have a printer, we think there are some advantages to these articles, anyway. And, once you do get a printer (its the first piece of hardware most users obtain), you'll have these on hand to make use of them right away.

This issue also features another game program from JARB Software and a Gin-scoring program. There are other tidbits here and there, as well as a number of software reviews. We also hope you like our new typeface -- which we believe will make the RAINBOW a little easier to read.

Next month we will feature a takeout on GET/PUT, a way to download programs from BBS' and CompuServe and, if all goes well, a program to amaze your friends and keep instant statistics on basketball games.

Incidentally, future plans call for special issues on graphics, adventure games and on home and office business uses.

We are pleased to report that we're growing rapidly! In fact, the RAINBOW is now an international publication. We received our first subscription from Canada a week ago. While we're certainly not in the class of the big publications yet, we do offer much more information on the COLOR Computer than any of them (or all of them combined).

We're also proud of the acceptance by a number of computer stores which carry the RAINBOW on a single-issue basis. And, we're really pleased that so many of you have written in with comments, good wishes and programs.

We'll say what we said in our inaugural issue: We intend to be an independent publication that will be THE source of information about th COLOR Computer. We will tell you when review software is good, and we'll tell you when it is bad. And we'll always be open to suggestions, questions and to provide any assistance we can.

And now, to the RAINBOW...

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## SOFTWARE REVIEW...

**CONFLICT**

If you like Risk, you'll really appreciate "CONFLICT".

Available from SOFT SECTOR MARKETING (6250 Middlebelt Road, Garden City, Mich., 48135 for \$14.95), CONFLICT is basically a two-player game that lets you concentrate on keeping up with the strategy while the computer does all the hard work.

In case you have never played its sister game, CONFLICT takes place on a mythical planet in 2150. The two superpowers have both landed on the planet -- which has four continents -- and are vying for control. Whoever does get control will be able to use all the planet's resources to help his country back on earth. The winner will insure his side natural resources for the future. The loser, well . . .

There are a total of 20 colonies on the four continents and the computer will apportion 40 armies in eight of them for each side. Each side must try to conquer whole continents -- in other words, occupy every colony on each continent. Reinforcements are awarded based on the number of colonies and continents a side controls.

Battles are won and lost by the roll of the dice, which are graphically represented on the screen. There is no weight given to the number of armies attacking one another, except -- obviously -- if you have more armies to lose in a given battle, you have the advantage.

You cannot attack willy-nilly, either. Only adjacent colonies can attack one another. However, you can move your armies from one adjacent colony to another.

The computer keeps track of where all the armies are, how many reinforcements are due each side, whether one colony is adjacent to another, who wins the battles and

keeps score. Commands available are: (1) Distribute -- which allows reinforcements to be positioned; (2) Status -- which shows where everything is and who has what areas under his control; (3) Move -- which allows armies to be repositioned; (4) Attack -- which allows the fighting to take place; and (5) Finish -- To end a turn. SOFT SECTOR also adds a Resign move, in which either side can give up.

SOFT SECTOR has provided some strategic hints and a map of the planet. There are also some surprises -- not particularly good ones -- for the warriors.

Its an interesting and good game. The only complaint is the minor difficulty in reviewing a the last continent without running through all four. Since there are only four of them, this is a small problem in what is a very interesting and well done game.

**PROGRAM QUICKIE**

(Here we begin a new feature, somewhat patterned after "MAD" magazine's famous "various places around the magazine". We hope PROGRAM QUICKIES will provide some help with short little programs for small functions that you may not have thought about -- or may not have even needed -- until now!)

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One of the things it is always helpful to be able to find is the percent change (formally, the delta percent) of two numbers. here is a short little program that does just this:

```
10 INPUT "OLD NUMBER";X1
20 INPUT "NEW NUMBER";X2
30 DP=((X2-X1)/X1)*100
40 PRINTUSING "###.##";DP;:
   PRINT "% CHANGE"
```

## AND THEY SAID IT COULDN'T BE DONE!

We confess that we asked a lot of people about hard copy out of VIDEOTEX, all the BBS' and whatever other place good ideas and programs might reside.

Radio Shack Computer Center: "We've really asked. You can't do it. You know that both the printer and the modem come out of the same port, anyway, so I just guess its one of those things you can't do."

CompuServe: "We've asked. Frankly, a whole lot of people want to be able to get hard copy from their COLOR Computer. But Tandy says there's just no way."

Radio Shack Customer Service: "No, you can't do that with a COLOR Computer."

Jorge Mir of New Berlin, WS and Al Morgan of Pittsfield, MA both found a way. Since there are advantages to both programs, both are reproduced below as separate articles. And, by the way, next month we'll show you how to get the programs you see listed into memory -- without typing them in.

### VIDEOPRINTER BY MORGAN

We understand Al Morgan of Pittsfield, MA, has a LP VII for a left hand and an EPSON 80 F/T for a right. At any rate, he's been most interested in getting the most out of the interaction between a COLOR Computer and a printer.

Elsewhere in this issue of the RAINBOW is a print monitor from Al. This time he takes his hand to a VIDEOTEX screen dump.

Writes Al: "For downloading, Jorge Mir's VIDFIX is excellent, but I think his VIDPRINT seemed a little slow compared to what I came up with. Of course, it does have additional capabilities. Maybe the readers could decide."

OK readers. Here is VIDPRINT by Al Morgan. You decide which is best for YOUR application.  
The Listing:

(CONTINUED ON PAGE 6)

### VIDEOPRINTER BY MIR

Are you one of those people who have been frustrated by not being able to use your printer with the VIDEOTEX program?

Certainly, you can save pages, go offline, and copy everything down. At least that doesn't cost you any CompuServe time charge. But you still have to copy the whole thing by hand -- and sometimes the messages are long.

Jorge Mir contributes the following program which will allow you to print VIDEOTEX.

First, load VIDEOTEX and, before you EXEC it, type in POKE 2103,255 directly from the keyboard. ENTER that command.

Now, EXEC VIDEOTEX and run it in the normal way. When you are finished with VIDEOTEX and are offline, press the RESET button. This will return you to Basic.

(CONTINUED ON PAGE 10)

## BOC DISASSEMBLER

THE MICROWORKS has come out with an outstanding disassembler which offers a major bonus of giving a very well put-together rundown of many of the interesting memory locations in the COLOR Computer's RAM and Basic ROM.

Available for \$49.95 from THE MICROWORKS (P.O. Box 1110, Del Mar, CA, 92014) the BOC can be used from the first moment it is loaded by a rank amateur or can be sophisticated enough to perform all the intricate tasks the most experienced assembly language programmer might expect.

As we all know, it is violation of copyright law to provide ROM listings. But that does not prevent you from listing the ROM yourself in the COLOR Computer. You can do this, and much more with BOC.

All you need to do is load THE MICROWORKS' BOC with the CLOADM command and EXEC. The first prompt you get is for "Start address," which will tell the BOC where you wish to begin your disassembly. The second prompt asks where you wish the process to end.

You can default every prompt, and the BOC will simply disassemble the entire Basic ROM. If you choose to do this (or any other disassembly) the process will be accomplished in two passes -- first to build a symbol table and second to output code. Pass one takes about 45 seconds for the ENTIRE Basic ROM!

You can control the speed of the code output, you can control where the output goes (screen, printer or both) and you can control the output's format.

This last is particularly important. THE MICROWORKS lets you specify what it calls "area options" for the BOC. By listing a series of one-letter codes followed by address designations, the BOC will format its printout to either program area (or machine code); data (FCB mnemonics); addresses (FDB mnemonics); text strings (FCC mnemonics); variables (RMB mnemonics

ignored); or tables (alternating FDB and FCB).

By going through your code and studying the output, you should be able to distinguish which type of code is in which location. By specifying that code as something other than machine code, you will get a cleaner listing.

There are other commands, too, for relocating the symbol table and for an offset to which code can be found. These are not always necessary but can be useful.

You have an easy way to enter data in hexadecimal because BOC only reads the last four digits you enter. Also, you can use the regular backspace/erase key. And, if you want to enter addresses in decimal, you just precede them with a period.

The MICROWORKS designed its BOC for use with the COLOR Computer and that is nowhere more evident than in the output formats. The output fits easily into the 32-column screen and will also print out in 32-columns for use with narrow (read that Quick Printer II) printers. For the narrow version of the full format on the screen or printer, the listing is in two lines, but is easy to distinguish where one line begins and ends. For those with 80-column printers, the BOC lays the full format out on one line.

While the listing is being run, you can change listing modes to get different information. And when the listing is completed, the BOC prompts "RESTART WHERE?", so it is simple to go back to a specific area of code.

The BOC is a good disassembler and the manual is loaded with interesting information. It is obvious THE MICROWORKS has gone to a great deal of effort to make this a program for the COLOR Computer -- not just to adapt something else for it. It is also easy to get into disassembly quickly and easily, and that helps build confidence in dealing with this entire (and often confusing) area of assembly language.

## REALLY USING PRINT USING

PRINT USING is one of the better commands available to the programmer who is trying to format his output, to the screen or the printer. This command is available in Extended Color Basic.

Sometimes PRINT USING can be confusing! Its really a fairly simple thing but, in response to a number of questions we have received in the past several weeks, here's a takeout on some of its more intricate little goodies.

(By the way, you won't find a re-hash of anything that is in any of the COLOR COMPUTER manuals in the RAINBOW. Unlike some other publications, we believe you can read! When we do things of this sort, it will be in an effort to either clarify or to make you aware of things which may not have been fully covered in the "official" documentation.)

PRINT USING is what is sometimes called an "Image Statement" in that it creates an image for your output. The images are created by the pound-sign (#) for numbers and the space for strings. The most simple use of PRINTUSING is for lining up the decimal points in number columns. While you can do this lining-up with code, it is cumbersome. (Note to non-Extended users: William Barden Jr.'s excellent "Programming Techniques for Level II Basic" explains how you can do this.)

But, back to using PRINT USING. You build your "image" in one of two ways. First you can define a string with a statement like A\$="###.##" and stick it somewhere in your program before you actually use it. Then, every time you want a printout to come out with three digits to the left of the decimal and two to the right, you just write "PRINT USING A\$;<variable>" where the variable is the number you want printed out in that form.

The second form is simply to define the image when you ask the

variable to be printed out. In this case, you just write "PRINT USING "###.##";<variable>" and it will be done. Note the semicolon is always required in all PRINT USING statements.

The disadvantage to form two is that you have to redefine the image each time you want a variable printed out. With form one, you just use A\$ (or whatever) in each instance you want the variable(s) printed out in a certain way.

All this is pretty routine, but you can do a few other interesting things with PRINT USING as well.

For one thing, you can make your output labels part of the image as PRINT USING " TOTAL COST ###.##";A. This will indent the words "TOTAL COST" two spaces, print them out, skip two more spaces and then print out the variable in the three places to the left/two to the right format. Of course, you can vary any of this to your needs.

Better yet, you can combine image statements on a single line. For instance, if you want a line which reads " TOTAL COST ###.## NET COST ###.##", all you have to do is write the image statement that way and then list the two variables after the image format, like this: PRINT USING " TOTAL COST ###.## NET COST ###.##";A,B

You can keep this up as long as you have space to print out your variables and images.

But there is more. You could, if you wished, define these same image strings at the start of the program (or anywhere before they are used, although the start is best) and then apply them when needed. To take our original example, we could define A\$ as being equal to " TOTAL COST ###.##" and then simply use PRINT USING A\$;A to get the same result.

Yes...there is still more! You can concatenate the image strings, thereby custom tailoring each to suit your needs on any particular line of output without the need to write complicated code for each

line. Spaces in between each label in a line could be previously defined as well.

As an example of all of this, lets assume you define A\$=" TOTAL COST ###.##", B\$=" NET COST ###.##" and C\$=" ". To print this out with variables, merely use: PRINT USING A\$, C\$, B\$;A,B.

Or, if you want to concatenate, use: D\$=A\$+C\$+B\$:PRINT USINGD\$;A,B. You don't have to concatenate on the same line as you use PRINT USING. In fact, with a great deal of printout of this nature, you would probably want to set up your image segments first, then concatenate as necessary, and apply those concatenated strings as needed in your listing. It also makes your code look a little cleaner.

While this description has dealt mainly with numbers, you can apply the same principles to strings if you desire. Also, you should be aware of the other options available in PRINT USING (such as the dollar sign) which are explained in your manual.

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```

1 REM VIDPRINT
2 REM BY AL MORGAN
10 Y=1536:CLS
20 FOR X=2560 TO 16383
30 POKE X-Y,PEEK(X)
40 IF X-Y<>1535 THEN 90
50 Y=Y+512
60 I$=INKEY$:IF I$=""
    THEN 60
70 IF I$="P" GOSUB 100
80 CLS
90 NEXT X:END
100 L=0:FOR P=1024 TO 1535
110 A=PEEK(P)
120 IF A>90 THEN A=A-64
130 A$=A$+CHR$(A):L=L+1:
    IF L<>32 THEN 160
140 PRINT#-2,CHR$(16);
    "23";A$
150 L=0:A$=""
160 NEXT P
170 RETURN
    
```

\*\*\*\*\*

To make this work, you:

First, load VIDEOTEX, but do not EXEC.

Second, type in the command mode: FOR X=2102 TO 2110:POKE X,18:NEXT. This allows the reset key to be pushed to get you back to Basic.

Then, EXEC VIDEOTEX.

Log on, do whatever it is you want, and then go offline. Once your session has ended, press the RESET button on the back of the COLOR Computer. This returns you to Basic.

In command mode, type in **PCLEAR. POKE 25,6**

You can now use the up and down arrows to "scroll" through the pages in the normal way. When you find a page you wish to print out, press the "P" key. The page will be copied on the printer.

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## SCREEN MONITOR

Al Morgan of Pittsfield, MA, contributes this program which he characterizes as a screen printer and which we feel is really something more than that.

It is more like a screen monitor, because everything which appears on the screen will be dumped to the printer a line at a time as it is appearing on the screen. This makes it go pretty fast and, frankly, is an excellent utility. One of the reasons for the speed, of course, is that it is in machine language, which is poked into memory by the basic program listed below. Once its there, it will print everything out.

This program has a countless variety of uses. One which we have used a great deal is to debug -- so that results are listed on the printer. Also, changes you might wish to make in the program through the edit commands are easily discernable from the printout

(although Al's program does not print the editing commands themselves.

You have an added bonus in that with this screen monitor you can get a complete listing of the programs you have stored on tape! Just go to the command mode and instruct the COLOR Computer to SKIPF "X". The result will be a printout of all program names. Now that's handy.

### The Listing:

```
5 CLS
10 FOR X=1 TO 15
20 READ A
30 POKE 1007+X,A
40 NEXT
50 POKE 359,126
60 POKE 360,3
70 POKE 361,240
80 DATA 52,22,198,254,215,111
90 DATA 190,160,2,173,3,15
100 DATA 111,53,150
```

Oh, Al cautions that if you wish to list, it must be done prior to running this program.

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# HELICOPTER BATTLEGROUND FOR YOU

If you enjoyed fighting around the LASER STAR last month, JARB SOFTWARE offers another sample goodie for your joysticking pleasure this month as well.

This is HELO BATTLE, which pits you against a fortified castle that shoots anti-aircraft rounds at your helicopter.

To play, you have to fly your chopper to avoid the incoming fire while, at the same time, aiming and firing your gun.

The right joystick controls the copter's flight and the left the chopper's gun. Obviously, there is some eye-hand coordination necessary here! At the end of the game, your friendly COLOR Computer will let you know who won the encounter -- and will give you the option of playing again.

You can purchase HELO BATTLE on a tape with LASER STAR by sending \$14.95 to JARB SOFTWARE, 1169 Florida St., Imperial Beach, CA, 92032. Please add \$1 for postage and handling.

Oh...watch out for the sneaky little guy!

The Listing:

```

1 '* * * * *
2 '*      HELO-BATTLE      *
3 '*      BY                *
4 '*      JARB SOFTWARE    *
5 '* (C) JARB SOFTWARE 1981 *
6 '* * * * *
10 CLS:PRINT@192,TAB(10)"HELO BATTLE":PRINTTAB(15)"BY":PRINTTAB(9)"JARB SOFTWARE":FORI=1TO5:PLAY"0"+STR$(I)+"V30T1&L4EPBEPBEPBL1
APBEP2L4B6GEADEADDDP4":NEXTI
15 CLEAR200
20 DIMA(30,30)
25 ALLIES=ALLIES+0S:AXIS=AXIS+TS:0S=0:TS=0
30 IF ALLIES=200 THEN 225
35 IF AXIS=200 THEN 225
40 S$="V30T100L6401DD"
45 PMODE4,1:PCLS:SCREEN1,1:A=128:B=24:A1=128:B1=96
50 T1=RND(195)+30:T2=T1
55 A$="BU20L10D10L10E10B610G4D4F4R20BU22R2U2L2U4R2U2L60R122L60D2R2D4L2D2R10FBR60EBBD4H10BF10F10BH10G10BE10E10B610BU4R4D10L72612L
10BR5DSR20BL20L15U5BD5L20H5"
60 B$="BL25U20R5DSBD3D4R5U4L5BU3R5USR5D10R20U10R5D5BD3D4R5U4L5BU3R5USR5D20"
65 DRAW"SBM128,28"+A$
70 GET(102,16)-(158,39),A,G
75 PCLS
80 DRAW"S3;B$"+STR$(T1)+" ,191"+B$:PAINT(T1,191)
85 HEIGHT=RND(191)
90 PUT(A-26,B-14)-(A+30,B+7),A,PSET
95 IF HEIGHT<=19 THEN 85
100 IF HEIGHT>=170 THEN 85
105 DRIFT=RND(32)-16
110 ES=ES+1:SOUND1,1:FORI=1TO3:CIRCLE(T1,176),I,1:NEXTI:FORI=1TO3:CIRCLE(T1,176),I,0:NEXTI
115 FOR FLAK=176 TO HEIGHT STEP-10:T1=T1+DRIFT:A1=JOYSTK(2)*4:A=A+INT(JOYSTK(0)/6.3)-5:B=B+INT(JOYSTK(1)/6.3)-5:PSET(T1,FLAK,1)
120 IFFPOINT(T2,189)=0 THEN 205
125 IF A<=28 THEN A=28

```

(CONTINUED ON PAGE 15 )



SOFTWARE REVIEW...

## COLOR SPACE INVADERS

The word, of course, is that the one thing the Color Computer can do especially well is generate graphics on the screen. And, while most of us know that, there is hard proof of this by simply marveling at COLOR SPACE INVADERS from SPECTRAL ASSOCIATES.

This version of the ever-popular game (\$21.95 from SPECTRAL, 141 Harvard Ave., Tacoma, WA, 98466) is a machine language version that is even better than the arcade game!

In short, it has everything the arcade game does, plus a little extra. That really makes it well worth the cost.

We have a Video Arcade here, and the "official" Atari cartridge for Space Invaders. Frankly, that game does not compare to this offering from SPECTRAL.

COLOR SPACE INVADERS provides six rows of eight nasties each for your shooting fun. There is also the mystery mother ship at irregular intervals and the usual fortifications to hide behind. You get four bases per game and there is a very good on-screen scorekeeper.

What makes COLOR SPACE INVADERS so special is the additional things. First of all, you can shoot down the incoming bombs -- something not always available on other programs.

Then, in addition to on-screen scoring, the program keeps track of the four highest scorers per session. The scorekeeping function also notes the level of difficulty (and there are 16!) each player used.

But that's not all. In addition, there is a shield, which protects you against falling bombs. You can control the shield -- but it loses energy right after a bomb hits

FOR ITS . . .  
GIN, GIN, GIN

Yes, Virginia, there are computer widows everywhere. But Ronald R. Smith of Chicago says he thinks he's solved some of the problem in his house.

Mrs. Smith, it seems, is an avid gin player. And, while she can't stand the COLOR Computer Ron recently purchased, she'll play a hand or two of gin any time.

The version of gin played by most is "Hollywood," with three games going on at once. After each hand, the winner scores in all three games (assuming he has won at least three hands). At the end of the game, when all three hands have "gone out," each player gets so much for each point, so much for each "box" (or hand won -- sometimes multiplied by three, depending on the number of active games at the time) and so much for winning each of the three games. Usually, its a penny a point, quarter a box and a dollar a game.

Sometimes the scorekeeping can get fast and furious. Ron, however, has designed a scorekeeper for the COLOR Computer, with the listing below.

(CONTINUED ON PAGE 12)

it, and takes a little time to recharge. That can be helpful to your score -- but its something else to keep track of in a fast-paced game. Of course, you can also keep the shield out of the way and play without it.

A word should be said about SPECTRAL's graphics and sound effects. They are outstanding. In this game, as well as others in a SPECTRAL "Space Trilogy" of which COLOR SPACE INVADERS is a part, there is little a purchaser could ask for that is not included. Others are going to have to go some to do as well.

Now, type POKE 25,6 and ENTER it. This will cause Basic to be loaded at HEX location 0601 (and will give you 1.5K more memory if you are using Extended Color Basic). This also reserves a place to load Basic where none of the pages from VIDEOTEX are stored.

Load the Basic program listed below (VIDPRINT). Type RUN and the first page stored from the VIDEOTEX program will appear on the screen. Now you can:

Type P -- The program will ask for a page number. Type in any number between 6 and 31. A page of that number will appear on the screen.

Type X -- The page you are viewing will be printed on the printer.

Type <SPACE> -- The next page will be displayed.

Type B -- The program goes back to the previous page for display.

If there is "garbage" on the screen, that is the end of saved pages. Just go <B>ack to the previous page.

In order to go back to VIDEOTEX, you will have to reload the program.

#### PROGRAM LISTING

```

1  REM VIDPRINT
2  REM BY JORGE MIR
3  REM
10 PAGE=6:GOTO80
20 A$=INKEY$:IF A$="" THEN 20
30 IF A$=" " THEN PAGE=PAGE+1
40 IF A$="B" THEN PAGE=PAGE-1
50 IF A$="X" THEN 250
60 IF A$="P" THEN INPUT "PAGE";
   PAGE
70 IF PAGE>31 THEN PAGE=0:
   GOTO 20
80 FOR F=0 TO 1
90 FOR E=0 TO 1
100 FOR D=0 TO 1
110 FOR C=0 TO 1
120 FOR B=0 TO 1

```

## STICKY LABELS

Don't believe everything you read. You can find self-stick labels that will work with the Line Printer VII.

Avery makes one-up labels which work just fine, they are not too heavy for the line feed mechanism of the LP VII.

We've been using them for the RAINBOW for quite some time. They were purchased locally, and the price may vary depending on location. They come 5000 labels to the box on a tractor backing.

The box we've been using has the number "4013" in big black letters. Beneath is this: "TAB 5615SW". The labels measure 3.5" by 15/16".

```

-----
130 FOR A=0 TO 1
140 IF PAGE=A*32+B*16+C*8+D*4+E*2+F
   THEN 160
150 NEXT A,B,C,D,E,F
160 FOR X=65478 TO 65488 STEP 2
170 POKE X,200:NEXT X
180 IF F=1 THEN POKE 65479,100
190 IF E=1 THEN POKE 65481,100
200 IF D=1 THEN POKE 65483,100
210 IF C=1 THEN POKE 65485,100
220 IF B=1 THEN POKE 65487,100
230 IF A=1 THEN POKE 65489,100
240 GOTO 20
250 L=0:A$="":P=PAGE*512
260 FOR X=P TO P+511
270 A=PEEK(X)
280 IF A>90 A$=A$+CHR$(A):L=L+1:IF
   L<>32 THEN 320
300 PRINT#-2,A$
310 L=0:A$=""
320 NEXT X:GOTO20

```

If you have 32K, you can increase the number of pages you can store. Just POKE 2112,58. As Jorge says, "That's all there is to it!"

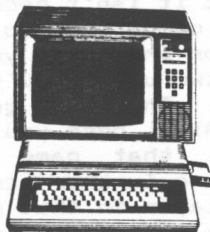
If you have both 32K and Extended Color Basic, you will be able to store 53 pages total; reenter VIDEOTEX at any time; and make extra copies of the new VIDEOTEX program.

# 6809 Color Computer

## EDITOR, ASSEMBLER AND MORE!

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### NEW!

## SOFTWARE DEVELOPMENT SYSTEM

The Micro Works Software Development System (SDS80C) is a complete 6809 editor, assembler and monitor package contained in one Color Computer program pack! Vastly superior to RAM-based assemblers/editors, the SDS80C is non-volatile, meaning that if your application program bombs, it can't destroy your editor/assembler. Plus it leaves almost all of 16K or 32K RAM free for your program. Since all three programs, editor, assembler and monitor are co-resident, we eliminate tedious program loading when going back and forth from editing to assembly and debugging!

The powerful screen-oriented Editor features finds, changes, moves, copies and much more. All keys have convenient auto repeat (typamatic), and since no line numbers are required, the full width of the screen may be used to generate well commented code.

The Assembler features *all* of the following: complete 6809 instruction set; complete 6800 set supported for cross-assembly; conditional assembly; local labels; assembly to cassette tape or to memory; listing to screen or printer; and mnemonic error codes instead of numbers.

The versatile ABUG monitor is a compact version of CBUG, tailored for debugging programs generated by the Assembler and Editor. It features examine/change of memory or registers, cassette load and save, breakpoints and more.

SDS80C Price: \$89.95

## CRACK THOSE ROMS!

**SOURCE GENERATOR:** This package is a disassembler which runs on the color computer and enables you to generate your own source listing of the BASIC interpreter ROM. Also included is a documentation package which gives useful ROM entry points, complete memory map, I/O hardware details and more. Disassembler features include cross-referencing of variables and labels; output code which can be reassembled; output to an 80-column printer, small printer or screen; and a data table area specification which defaults to the table boundaries in the interpreter ROM. A 16K system is required for the use of this cassette.

80C Disassembler Price: \$49.95

## LEARN 6809!

**6809 Assembly Language Programming**, by Lance Leventhal, contains the most comprehensive reference material available for programming your Color Computer.

Price: \$16.95

## PARALLEL O!

**USE A PARALLEL PRINTER** with your Color Computer! Adaptor box plugs into the serial port and allows use of Centronics/Radio Shack compatible printers with parallel interface. Assembled and tested.

PI80C Price: \$69.95

## CBUG IS HERE!

**MONITOR TAPE:** A cassette tape which allows you to:

- Examine or change memory using a formatted hex display
- Save areas of memory to cassette in binary (a "CSAVEM")
- Download/upload data or programs to a host system
- Move the video display page throughout RAM
- Send or receive RS-232 at up to 9600 baud
- Investigate and activate features of your computer, such as hi-res graphics or machine-language music
- Use your color computer as an intelligent peripheral for another computer, a color display or a 6809 program development tool

The monitor has 19 commands in all, and is relocatable and re-entrant.

CBUG Tape Price: \$29.95

**MONITOR ROM:** The same program as above, supplied in 2716 EPROM. This allows you to use the entire RAM space. And you don't need to re-load the monitor each time you use it. The EPROM plugs into the Extended Basic ROM Socket or a modified ROMPACK.

CBUG ROM Price: \$39.95

## 32K RAM!

**MEMORY UPGRADE KITS:** Consisting of 4116 200ns. integrated circuits, with instructions for installation. **4K-16K Kit Price: \$39.95. 16K-32K Kit (requires soldering experience) Price: \$39.95**

# THE MICRO WORKS

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"This program looks pretty easy, but it isn't because there is a lot of comparing to do," writes Ron. "For instance, you can't score in game two until you've scored in game one. The same goes for game three. Also, once you reach 150 in any game, that game is over and there is no further score allowed by either player in that game. It did take some doing to figure out and I'm pretty proud of it."

Best of all, as far as Ron is concerned, Mrs. Smith now sees the value of the computer. And, when he's not playing gin -- Ron usually gets to program without any hassle.

The program is pretty easy to run, just load, answer the questions and start dealing. You could tie this to a screen monitor to see the progress of the game as well.

By the way, the RAINBOW would be interested in any further success stories in demonstrating applications to the non-computerists who (generally) live with us. Let us know your story and send in your program.

(Rights to GIN listed below have been sold to FALSOFT.)

The Listing:

```

1 ' #####
2 ' $   GIN 2.0   $
3 ' $   (c) 1981   $
4 ' $   BY       $
5 ' $   FALSOFT  $
6 ' #####
10 INPUT "PLAYERS";A1$,A2$
200 PRINTTAB(4)A1$;TAB(19)A2$;PRINT"-----";PRINTW;E;R;L;K;J;INPUT "WINNER";W$:IF W$=A1$ THEN 300 ELSE 500
210 PRINT "-----"
300 INPUT "POINTS WON";Q:CLS
310 IF W=0 THEN 1000
320 IF E=0 THEN 1100
330 IF R=0 THEN 1200
340 IF W=>150 AND E=>150 AND R=>150 THEN 1300
350 IF W=>150 AND E=>150 THEN 1400
360 IF W=>150 THEN 1500
370 GOTO1600
500 INPUT "POINTS WON";G:CLS
510 IF L=0 THEN 2000
520 IF K=0 THEN 2100
530 IF J=0 THEN 2200
540 IF L=>150 AND K=>150 AND J=>150 THEN 2300
550 IF L=>150 AND K=>150 THEN 2400
560 IF L=>150 THEN 2500
570 GOTO2600
1000 IF L<150 THEN W=W+Q:BW=BW+1
1010 GOTO200
1100 IF K<150 THEN E=E+Q:BW=BW+1
1110 IF L<150 AND K<150 AND W<150 THEN W=W+Q:BW=BW+1
1120 GOTO200
1200 IF J<150 THEN R=R+Q:BW=BW+1
1210 IF J<150 AND K<150 AND E<150 THEN E=E+Q:BW=BW+1
1220 IF J<150 AND K<150 AND L<150 AND W<150 THEN W=W+Q:BW=BW+1
1230 GOTO200
1300 GOTO4000
1400 IF J<150 THEN R=R+Q:BW=BW+1
1410 GOTO200
1500 IF K<150 THEN E=E+Q:BW=BW+1
1510 IF J<150 THEN R=R+Q:BW=BW+1

```

(CONTINUED ON PAGE 13 )

```

1520 GOTO200
1600 IF L<150 THEN W=W+Q:BW=BW+1
1610 IF K<150 THEN E=E+Q:BW=BW+1
1620 IF J<150 THEN R=R+Q:BW=BW+1
1640 GOTO200
2000 IF W<150 THEN L=L+G:BL=BL+1
2010 GOTO200
2100 IF E<150 THEN K=K+G:BL=BL+1
2110 IF W<150 AND E<150 AND L<150 THEN L=L+G:BL=BL+1
2120 GOTO200
2200 IF R<150 THEN J=J+G:BL=BL+1
2210 IF R<150 AND E<150 AND K<150 THEN K=K+G:BL=BL+1
2220 IF R<150 AND E<150 AND W<150 AND L<150 THEN L=L+G:BL=BL+1
2230 GOTO200
2300 GOTO5000
2400 IF R<150 THEN J=J+G:BL=BL+1
2410 GOTO200
2500 IF E<150 THEN K=K+G:BL=BL+1
2510 IF R<150 THEN J=J+G:BL=BL+1
2520 GOTO200
2600 IF W<150 THEN L=L+G:BL=BL+1
2610 IF E<150 THEN K=K+G:BL=BL+1
2620 IF R<150 THEN J=J+G:BL=BL+1
2630 GOTO200
4000 AS=W+E+R:BS=L+K+J
4010 TP=AS-BS:MP=TP*.01
4020 TB=BW-BL:MB=TB*.25
4030 IF W)=150 THEN G1=1
4035 IF E)=150 THEN G2=1
4040 IF R)=150 THEN G3=1
4045 IF L)=150 THEN G4=1
4050 IF K)=150 THEN G5=1
4055 IF J)=150 THEN G6=1
4060 GP=G1+G2+G3
4070 ZZ=GP+MP+MB:PRINT A1$ " WINS $"ZZ
4080 GOTO6000
5000 AS=W+E+R:BS=L+K+J
5010 TP=BS-AS:MP=TP*.01
5020 TB=BL-BW:MB=TB*.25
5030 IF W)=150 THEN G1=1
5035 IF E)=150 THEN G2=1
5040 IF R)=150 THEN G3=1
5045 IF L)=150 THEN G4=1
5050 IF K)=150 THEN G5=1
5055 IF J)=150 THEN G6=1
5060 PG=G4+G5+G6
5070 ZZ=PG+MP+MB:PRINT A2$ " WINS $"ZZ
5080 GOTO6000
6000 PRINT:PRINT A1$:TAB(11)"HAS";TAB(22)A2$
6010 PRINT
6020 PRINT AS:TAB(10)"POINTS";TAB(22)BS
6030 PRINT BW:TAB(10)"BOXES";TAB(22)BL
6040 PRINT GP:TAB(10)"GAMES";TAB(22)PG
6050 END

```

This is done by running the program called VIDFIX below. First, load VIDEOTEX. Then load VIDFIX. Put a blank tape in the tape recorder and press both "play" and "record" buttons.

Type RUN. When the tape is done you will have five copies of the new program. If you want more or fewer copies, simply make the necessary change in line 70.

VIDFIX moves the VIDEOTEX program into high RAM. You can run VIDEOTEX, use the RESET to return to Basic, and then reenter VIDEOTEX by typing EXEC 3020B. That is the new VIDEOTEX address.

#### PROGRAM LISTING

```

1  REM VIDFIX
2  REM BY JORGE MIR
10 A=3020B
20 POKE 2103,255
30 POKE 2112,53
40 FOR X=1728 TO 3839
50 POKE A,PEEK(X)
55 PRINT CHR$(PEEK(X));
60 A=A+1:NEXT X
70 FOR X=1 TO 5
80 CSAVE"VIDEOTEX",30200,
   32319,3020B
90 MOTOR ON:FOR Z=1 TO:
   NEXT Z
100 MOTOR OFF:NEXT X:END

```

Later this year, FALSOFT will market an adventure game called "Vampire", the subject matter of which is probably obvious.

The player can decide whether he wishes to venture into a 60-some room house, discover what lurks there, and take appropriate action -- if necessary (and if he dares)! It is a good idea not to be in the house at sunset.

A preliminary version of VAMPIRE is available through the RAINBOW for \$10.95. It presently runs only in a 32K machine and, while bug-free, will have certain additional enhancements before it is publically sold for between \$14.95 and \$19.95.

Those interested in the preliminary version can order it through the RAINBOW. Persons who do will be able to purchase the final version when it becomes available by paying the difference in cost.

---

#### ROSEN'S COLOR CONNECTION

So far as COLOR Computer owners are concerned, Bob Rosen's THE COLOR CONNECTION BBS is one of the best around. There is always information on the COLOR Computer available.

Bob is just a phone call away. You can reach him with a call to (212) 441-3755 in Woodhaven, N. Y. While that's a long distance call for almost everyone, there is some good information that's yours for the asking.

And, incidentally, we will be happy to pass along the phone numbers and other information about any BBS's our readers have found that have more than a passing interest in the COLOR Computer.

Just drop the RAINBOW a line or leave a message in CompuServe Email

---

```

130 IF T1<=20 THEN 175
135 IF T1>=235 THEN 175
140 IF A>=225 THEN A=225
145 IF B<=24 THEN B=24
150 IF B>=171 THEN B=171
155 IF B=171 THEN 210
160 PUT(A-26,B-14)-(A+30,B+7),A,PSET:PLAYS*:IF PEEK(65280)=125 OR PEEK(65280)=255 GOTD195
165 PRESET(T1,FLAK)
170 NEXT FLAK
175 PLAY"D1V30T32L32BBB":FORI=1T010:CIRCLE(T1,FLAK),I,1:NEXTI
180 E1=PPPOINT(A-15,B):F1=PPPOINT(A-17,B):E2=PPPOINT(A+25,B):F2=PPPOINT(A+23,B):E3=PPPOINT(A,B-15):F3=PPPOINT(A,B-13):E4=PPPOINT(A,B+8):F4=PPPOINT(A,B+10)
185 IF E1<>0 AND F1<>0 OR E2<>0 AND F2<>0 OR E3<>0 AND F3<>0 OR E4<>0 AND F4<>0 THEN 200
190 FORI=1T010:CIRCLE(T1,FLAK),I,0:NEXTI:T1=T2:GOTO85
195 SF=SF+1:LINE(A,B-3)-(A1,191),PSET:CIRCLE(A1,191),2:PLAY"D1V30T100L64DP2DP2DP2DP2DP2D":LINE(A,B-3)-(A1,191),PRESET:FORI=1T02:CIRCLE(A1,189),I,0:NEXTI:GOTO165200 TS=10:FORI=1T040STEP2:Z1=RND(255):Z2=RND(191):LINE(A,B-7)-(Z1,Z2),PSET:CIRCLE(Z1,Z2),2:CIRCLE(A,B-7),I/2:PLAY"D1V30T100L100DDV10DD":NEXTI:GOTO25
205 OS=10:FORI=1T040:CIRCLE(T2,191),I,1,1.5,.5,0:PLAY"D1V30T100DV20DV10D":NEXTI:GOTO25
210 T3=RND(255):DRAW#54;BM*+STR#(T3)*",191E3F3BH3U4L1U1R2D1L1D2L3BR3R3":PLAY"D4T32V30L8AEP1DF6BP1AAEDCP1FP1FP1BP1BP1DP1DP1":FORI=1T0100:NEXTI:LINE(T3,185)-(A,B-7),PSET:PLAY"D1V30T100L64DP2DP2DP2DP2DP2DP2DP2DP2DP2D":LINE(T3,185)-(A,B-7),PRESET
215 SF=SF+1
220 GOTO200
225 SCREEN0,1:CLS:FORI=1T010:CLSRND(8):SOUNDI#10,I:NEXTI
230 CLS0:PRINT#64,STRING$(10,128);:PRINT" FINAL SCORES ";:PRINTSTRING$(8,128);
235 PRINT#192,TAB(10)"YOUR SCORE=";ALLIES#5:PRINTTAB(10)"TOTAL SHOTS=";SF
240 PRINTSTRING$(32,128);
245 PRINTTAB(10)"ENEMY SCORE=";AXIS#5:PRINTTAB(10)"TOTAL SHOTS=";ES
250 PRINTSTRING$(32,128);
255 IF ALLIES>AXIS THEN 275
260 IF ALLIES<AXIS THEN 280
265 IF ALLIES=AXIS THEN 285
270 GOTO235
275 PRINT" YOU HAVE WON THIS BATTLE":GOTO290
280 PRINT" THE ENEMY HAS WON THIS BATTLE":GOTO290
285 PRINT" THIS BATTLE IS DECLARED A TIE":GOTO290
290 PRINTSTRING$(32,128);:PRINT"DO YOU WISH TO PLAY AGAIN (Y/N)?";
295 PA$=INKEY$:IFPA$=""THEN295
300 IFPA$<>"Y"THENEND
305 GOTO15

```

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