Dynamic Color News

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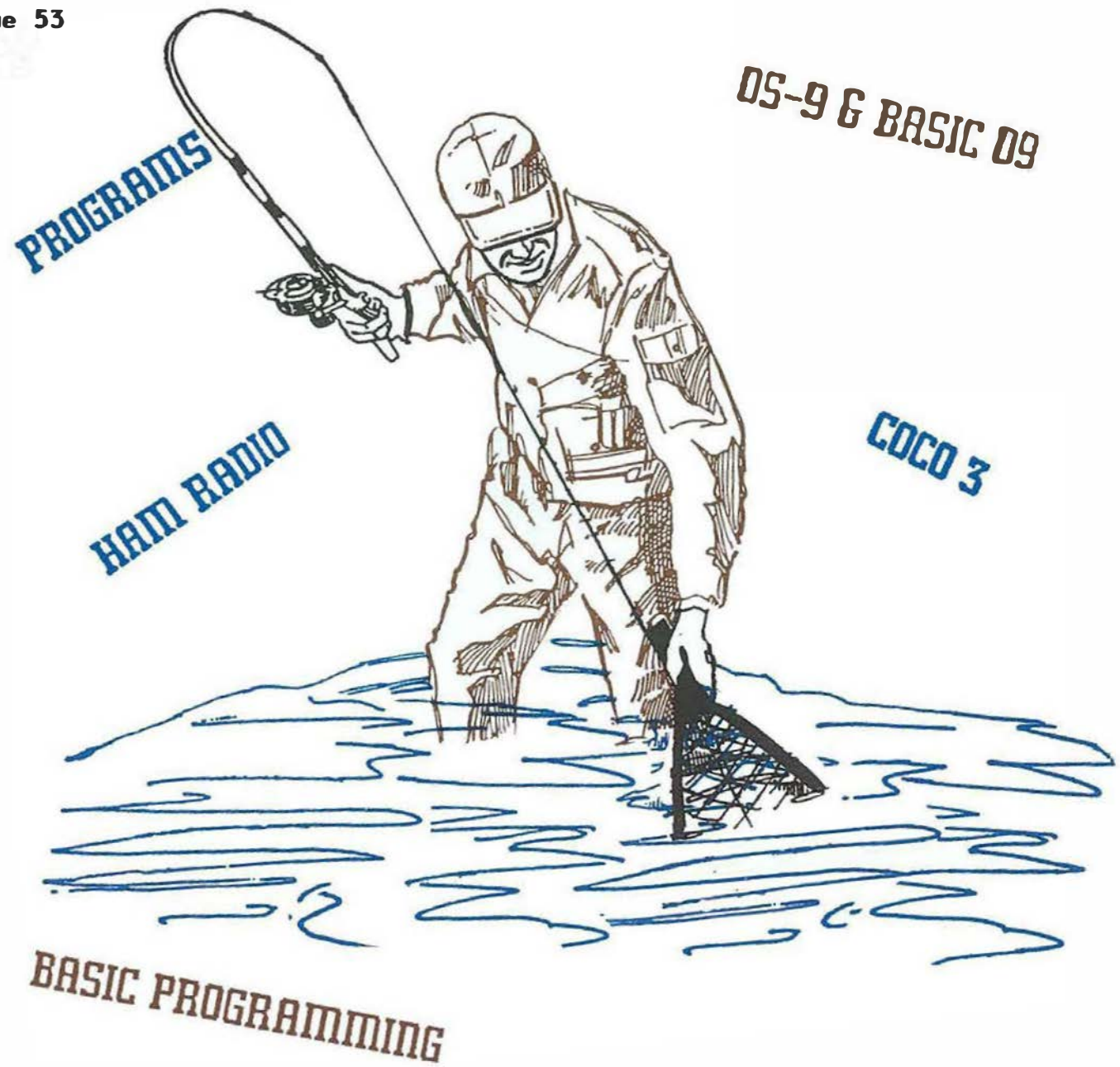

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The purpose of this magazine is to provide instruction on Basic & Machine Language programming, Computer theory, operating techniques, computer expansion, plus provide answers to questions from our subscribers.

The submission of questions, operating hints, and solutions to problems to be published in this magazine are encouraged. All submissions become the property of Dynamic Electronics if the material is used. We reserve the right to edit all material used and not to use material which we determine is unsuited for publication.

We encourage the submission of Basic and Machine Language Programs as well as articles. All Programs must be well documented so the readers can understand how the program works. We will pay for programs and articles based upon their value to the magazine. Material sent will not be returned unless return postage is included. Basic & ML programs should be sent on a tape or disk & comments should be sent as a DAT or TXT file.

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* Included on Disk or Tape.
# OS-9 Programs are included on DCN on DISK.

This month we will look at a handful of commands that will add to our flexiblity while using OS-9. For the most part they will allow us to check on some of the parameters of our system. A few of them will allow us to check on some areas of OS-9 of which you might not have been aware.

When you first boot up OS-9, the OS9Boot module loads a number of other modules into memory for you. Among these are the DIR, COPY, DISPLAY, RENAME, and ECHO commands. This makes life a little easier on us. If we change disks during a session we don't have to worry about these modules being in a CMDS file on the new disk. They are in memory and that is the first place that OS-9 will look for a module when it is called by the system. This saves some wear and tear on the old disk drives.

If we would like a full list of these modules we can use the OS-9 MDIR command. Simply type MDIR at the OS-9 prompt and the computer will print a copy of the commands in memory on the screen. The list of in-memory commands is greater on the level two system than on the level one system. In fact none of the commands I listed in the second paragraph are in memory in the level one system. If all the commands won't fit on your screen at one time and the top half just goes scrolling by, you can use the TMODE PAUSE command at the OS-9 prompt. This will stop the scroll after a page of information has been put on the screen. Press any key to get the scroll to continue for another page.

As we stated before the modules loaded into the memory are put there by the boot file. What if we wish to include a module that isn't already included? That is what the LOAD command is for. If we want to format a group of new disks and we only had one drive it would be annoying to have to slip the system disk into the drive between each new disk formatted. Without the FORMAT command residing in memory that is what we would have to do. We can type in the following command LOAD FORMAT at the OS-9 prompt and FORMAT will be in memory. Now we can use the FORMAT command without needing the module on the disk every time we use it.

After we load the FORMAT module, we can use the MDIR command and confirm that it is indeed in memory. There is one other command that might prove interesting at this point. That is the MFREE command. It will show the amount of memory available in your computer. It will do so in blocks with the kilobyte count in the far right column. If we do an MFREE before we load a module, such as FORMAT, and after we load it we will see that it takes up a lot more memory than we would really like to spare (with the exception of possibly a 512K system). In level two each module you load will soak up another 8k of memory.

As we can see from the for-

matting example it is sometimes desirable to load a module in memory. How do we remove it when it is no longer needed? Certainly we could reboot the system but that would be inconvenient. We can use the UNLINK command. It will unlink the unwanted module from memory. The following command would get rid of our format example, UNLINK FORMAT. This would return our memory to the system.

Now before you try to unlink modules already in the MDIR, the system won't let you. Also in that regard, the modules in MDIR do not take up as much memory as one you load from the disk. The OS9Boot packs them together so that they only take up a block of memory combined.

We know how to check the amount of free space in memory, how about the open spaces on a disk? For that we have the FREE command. To check the amount of free space on you disk in drive 0 we would use the command FREE /D0. The amount is reported back in terms of free sectors. You'll get the number of sectors on the disk, the total number of free sectors on the disk, and the single largest block of free sectors.

These commands should give you a little more flexibilty and a way to keep track of your system while you are running it. It is time to once again leave the level one users behind and take a look at a few commands unique to level two and windows.

By now we should be fairly proficient at creating windows. What would happen if we wished to change some of the parameters once we have a window up and running. Let's attempt to change the border color of the window we are operating in at the moment. If you are on the VDG screen, go to a window.

To change the border foreground or background color we use the DISPLAY command. For the border we use DISPLAY 1B 34 2. This will make the border black. To get another color substitue the correct color code for the 2 at the end of the command. If we wish to change the foreground color we will use the command DISPLAY 1B 32 4, which will make the foreground red. Again it is the last number that determines the new color. Finally to make the transition complete, we will change the background color. Type DISPLAY 1B 33 5. This leaves us with a yellow background.

Next month we'll look at some more commands everyone can use and a few more level two specific commands. Until then keep practicing.

BASIC 09

This month we will look at some of the ways BASIC09 handles numbers. More precisely we will observe how real numbers are converted into integers and how much information can be salvaged during the process. We will use two proceedures to demonstrate the different types of truncating.

Our first program generates algebraic equations, for testing, using the random number generator. To accomplish this the program generates two random numbers. The first will have a value between 1 and 9. This will be the value of X in the equation. In otherwords it is the solution to the problem. The other randomly generated number is the right hand side of the equation, or the number to the right hand side of the equal sign.

Before we plow any deeper into the program let's make note of the DIM statements. The first one locks all of our numeric variables in as integers. This is something that we have seen before. The second one is a little more interesting. As you can see

I have assigned the variable ANS to be a string. In Color BASIC, in order to designate a variable as a string, you needed to follow that variable with a $ symbol. The same holds true in BASIC09, unless you declare a variable as a string with the DIM statement. By doing this you can drop the $ symbol from the variable name if you want to. Of course if you wish to retain it to make a variable type more easily reconized in a long listing you still have that option.

The next new command to hit us is the MOD command. You'll see it on the line where we determine a value for C. What MOD does is give us the modulus or remainder of a division problem. In this case it is the value following the + symbol in our printed equation. We now know how much over an integer value a particular divison is.

We follow that with an INT command for finding the value of D. By using this command we find the largest integer that our first random number will be able to divide the second random number by. This number times the first random number plus the remainder will equal the second random number.

From that point on the program is composed of familiar commands and should be easy to sort out. Let's take a look at our second listing. Before I took this column over there was a program written to calculate sales tax (Check the March 88 issue). The next command will give this program the ability to calculate the tax, and figure in the fraction of a cent.

This little bit of magic will be accomplished with the FIX command. The INT command we used above truncates a real number at the last whole integer. For example, if we feed it a number such as 7.999 it will return the number 7 to us. It doesn't matter that the number was almost 8. In the case of the equation generator in listing 1, that is exactly what we want. However if you tell the government agency collecting taxes that the computer says its all right to round off numbers that way, you could find yourself in jail.

With the FIX command, if you feed it 7.999 it will return 8 to you. But if you give it 7.499 it will return a 7 to you. It rounds to the nearest whole integer with .500.... being the cutoff point. One thing to note, when asking for the percentage the program wants it as you would write it with a percentage sign following it. That means if the sales tax is 5% it wants you to enter 5 and not .05. As you can see from the listing the FIX command is used before we divide by 100 to compensate for the way the percent was entered. To use it following this step would have meant the loss of the cents portion of the total.

Next month, hopefully, we will try some graphics.

```
     * LISTING 1.

PROCEDURE algebra
DIM A,B,C,D,X:INTEGER
DIM ANS:STRING
REPEAT
SHELL "DISPLAY C"
A=RND(9)
B=RND(100)
C=MOD(B,A)
D=INT(B/A)
PRINT
PRINT
PRINT TAB(10); D; "X+"; C; "="
   ; B
PRINT
INPUT "WHAT IS THE VALUE OF X?"
   ,X
IF X=A THEN
PRINT
PRINT "THE VALUE OF X WAS INDEE
   D "; A
ELSE
PRINT
PRINT "YOUR SOLUTION OF "; X; "
```

```
   IS INCORRECT."
PRINT "THE CORRECT VALUE OF X I
   S "; A
ENDIF
PRINT "WOULD YOU LIKE TO TRY
   AGAIN?"
INPUT "ENTER Y FOR YES OR N FOR
   NO.",ANS
UNTIL ANS="N"
END

    * LISTING 2.

PROCEDURE TAX
DIM ANS:STRING
DIM T,S,P,R,F:REAL
REPEAT
SHELL "DISPLAY C"
PRINT
INPUT "AMOUNT OF THE SALE? $",S
INPUT "TAX PERCENTAGE? ",P
T=S*P
R=FIX(T)
F=R/100
PRINT
PRINT "TAX=$"; F
PRINT "TOTAL=$"; F+S
PRINT
INPUT "ANOTHER TRANSACTION Y OR
   N? ",ANS
UNTIL ANS="N"
END
```

* These procedures are included on our DCN on disk.

COCO III

Part 2

By
John Golus

In this part of the series we will examine how the COCO III handles its memory. A standard COCO III comes equipped with 128K of RAM and can be expanded to a total of 512K quite easily. The micro-processor that our Color Computer uses is the 6809 series manufactured by Motorola. This chip has 16 address lines and 8 data lines, which means that the computer can access up to 64K of memory at any one time. To handle the extra memory the computer uses a device known as a Memory Management Unit or MMU. This MMU handles the memory in 8K blocks that can be switch in and out of the system. Although, the COCO III can have 512K of memory it can only use 128K of it at any one time. Before I explain this let's look at how this intresting computer sees its memory in general.

In the older Color Computers memory was divided into up to 64K of Random Access Memory (RAM) and 32K of Read Only Memory (ROM). RAM contained the data and programs while ROM contained the Basic interpreter that controlled the system when it was first turned on. RAM memory was thought of as one long continuous length of memory. With the new COCO III computer, memory is divided into 8K blocks of memory that can be switched in and out as needed. Memory can either be Virtual or Physical. Physical memory is the total amount of memory available to the system, up to 512K, while Virtual memory is the memory currently being used by the system which can be RAM or ROM and is restricted to 64K.

A Color computer III with 512K is divided into 64, 8K pages numbered from 0-$3F. A 128K standard computer uses the top 16 pages from $30 to $3F. During the startup of the computer, system pages of memory are mapped into the MMU for use in the system. The MMU which is a hardware device within the GIME chip is controlled by two sets of eight page registers. These two sets can be assigned up to 64K of Physical memory. We will call these two sets the PRIMARY SET and the SECONDARY SET. The Primary set contains the virtual memory page addresses that will be used by Basic for programs and data, while the Secondary set is normally used for the high-resolution screens and a buffer for HGET command among other things. Here is a table of these registers:

	PRIMARY SET	SECONDARY SET
0	$FFA0	$FFA8
1	$FFA1	$FFA9
2	$FFA2	$FFAA
3	$FFA3	$FFAB
4	$FFA4	$FFAC
5	$FFA5	$FFAD
6	$FFA6	$FFAE
7	$FFA7	$FFAF

To map a physical memory page into a virtual memory pages all you need do is write the physical pages number into the correct register. For example, to place physical page $39 into Secondary set register number one we would store $39 into address $FFA9. This "switching" is transparent to the system and it doesn't care which Physical page is mapped into a register, although as we shall see later

certain pages are reserved for use in Basic. As you can see from this table although the Color Computer can have 512K of memory only 128K of it is available at one time.

If we look at the memory map on page 311 of the manual that comes with the COCO III we notice that normal memory from $0 to $FFFF is called virtual memory $70000 to $7FFFF and the other 64K of memory is from $60000 to $6FFFF. Since there can be a total of eight 64K banks of memory, the MMU unit converts the address to the correct virtual address. We can use the LPEEK and LPOKE command to access any of this memory. The Color Computer III is designed to always control the Primary set memory registers for its own use and can switch between the two register sets by setting or clearing Bit 0 of $FF91.

CLEAR BIT 0 $FF91 TO OBTAIN THE PRIMARY REGISTER SET.

SET BIT 0 OF $FF91 TO OBTAIN THE SECONDARY REGISTER SET.

You can examine how Basic does this by looking at $E119 in Super Extended ROM. This subroutine activates the Secondary memory set at $E0FF and returns control back to the Primary memory set. Notice how it turns off the interrupts (ORCC #$50) and places the Stack at $DFFF.

Normally, when the computer is first turned on certain pages of memory are mapped into the Primary and Secondary memory register sets. Here is the normal startup configuation for a 128K color computer.

PRIMARY SET CONTAINS:

120,121,122,123,124,125,126,127

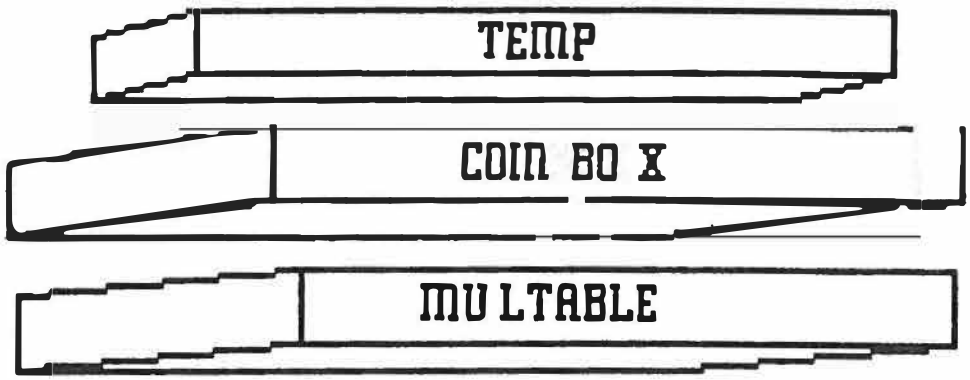
SECONDARY SET:

120,112,113,114,115,125,117,127

Notice that some of the memory pages are the same in the two sets. This is necessary because when the computer switchs from the primary to secondary register to access that extra memory, some instructions have to be the same. Also notice that the numbers are not for $30 to $3F but, correspond to the virtual page address. For example, 127 equals $7F and 112 equals $60 the prefix of that page's virtual memory address. What Basic does when it wants to use the Secondary 64K of memory is first to fetch a command, then jump to the routine in Super Extended Basic from the table in part one. If the extra memory is going to be used, it first places the parameters in page zero, and then turns off the interrupt switchs to the Secondary memory set. Next it does its work, such as drawing on the screen, switches back to the Primary set and gets the next instruction. Pages 112 to 114 are the normal working area for the high-resolution screens, which could take 30K of memory.

The system expects to find certain information in these "shared" memory pages, for the interrupt servicing and a secondary stack for example. If this were not the case the computer could crash. This leaves three 8K pages of memory unused. When the computer is turned on it runs through a startup sequence that places itself in a all RAM mode. It then copies the ROM's to RAM and patchs Basic so that it will recognize the new commands.

Memory can be mapped two different ways, all RAM and part RAM/ROM. The all RAM mode is obtained in the usual way by setting $FFDF. The ROM/RAM mode is obtained by setting $FFDE. In this mode the pages $3C to $3F are ROM. This is how we can get the COCO III to emulate the older model Color Computers. The new commands are not directly available in this mode but can be accessed through Assembly language. Experiment with this new memory system. If your computer hangs up while poking around just turn it off wait a few seconds and try again. Good luck!



EDUCATIONAL TRIO

Now that Summer has ended, it is time for childen to sharpen their minds. This program is actually three programs in one which are designed for teaching small children. The first program, Temperature Tutor, involves guessing the temperature of the graphic thermometer. The second program, Coinbox, involves adding change. The third program, Multiplication Tables, involves drilling the operator on multiplication tables. The score is displayed along with a grade for the score.

This program is provided by T & D Subscription Software (See their advertisement on page 8) and is used by permission.

```
1 'EDUCATION TRIO (C) 1988
      FROM T&D SOFTWARE

            TRIO INCLUDES "TEMP"
   ,           "COINBOX" AND "MU
   LTABLE"        ALL WRITTEN BY
    BILL BERNICO
2 CLEAR 2000
3 DIM N$(100)
4 CLS:PRINT"  EDUCATIONAL TRIO O
   F PROGRAMS":FORX=1024TO1055:P
   OKEX,PEEK(X)-64:NEXT:PRINT@10
   0,"1). TEMPERATURE TUTOR":PRI
   NT@164,"2.) COINBOX ADDITION"
   :PRINT@228,"3.) MULTIPLICATIO
   N TABLES":PRINT@292,"4.) EXIT
    TO BASIC":PRINT@360,"(SELECT
    1, 2, 3 OR 4)
5 S$=INKEY$:IFS$=""THEN5
6 S=VAL(S$):ON S GOTO 8,97,237,3
   77
7 GOTO 5
8 PA=0:CA=0
9 SP$="BR6
10 A$="U4E2F2D2NL4D2BR3
11 B$="U6R3FD1GNL3FDGL3BR7
12 C$="BRHU4ER2FBD4GL2BR6
13 D$="U6R3FD4GL3BR7
14 E$="NR4U3NR2U3R4BR3BD6
15 G$="BRHU4ER2FBD2NLD2GL2BR6
16 H$="U3NU3R4NU3D3BR3
17 I$="BRRNRU6NLRBR4BD6
18 L$="NU6R4BR3
19 M$="U6F2E2D6BR3
20 N$="U6FDF2DFNU6BR3
21 O$="BRHU4ER2FD4GL2BR6
22 P$="U6R3FDGL3BR7BD3
23 R$="U6R3FDGL2NLF3BR3
24 S$="BUFR2EUHL2HUER2FBR3BD5
25 T$="BR2U6NL2R2BR3BD6
26 U$="BUNU5FR2ENU5BR3BD
27 W$="NU6E2NUF2U6BR3BD6
28 Y$="BU6D2F2ND2E2U2BR3BD6
29 N$(0)="BRHU4ER2FD4GL3BR6
30 N$(1)="BRRNRU6GBR6BD5
31 N$(2)="NR4UERE2UHL2GBR7BD5
32 N$(3)="BUFR2EH2E2HL3BR7BD6
33 N$(4)="BR3U2NRL3UE3D4BR4BD2
34 N$(5)="BUFR2EU2HL3U2R4BR3BD6
35 N$(6)="BR4BU5HL2GD4FR2EUHL3BR
   7BD3
36 N$(7)="UE4UL4BR7BD6
37 N$(8)="BRHUEHUER2FDGNL2FDGL2B
   R6
38 N$(9)="BRBUFR2EU4HL2GDFR2BR4B
   D3
39 N$(10)=N$(1)+N$(0)
40 PD$="BR2NUBR5
41 QM$="BR2BU6ER2FDG2BD2DBR5
42 PMODE4,1:PCLS:SCREEN1,0
43 DRAW"BM196,30S8"+T$+E$+M$+P$
44 DRAW"BM210,50S4"+N$(1)+N$(9)+
   N$(8)+N$(8)
45 DRAW"BM217,75"+B$+Y$
```

```
46 DRAW"BM210,85"+B$+I$+L$+L$
47 DRAW"BM200,95"+B$+E$+R$+N$+I$
   +C$+O$
48 DRAW"BM212,115"+A$+N$+D$
49 DRAW"BM203,135"+A$+N$+D$+R$+E
   $+W$
50 DRAW"BM200,145"+B$+A$+R$+T$+E
   $+L$+S$
51 LINE(184,191)-(191,0),PSET,BF
52 DRAW"BM115,70NL7D120R30U120NR
   7
53 FORX=1TO11:DRAW"D5NR2D5NR7":N
   EXT:DRAW"D5NR2D5
54 DRAW"L30":DRAW"U5NL2U5":FORX=
   1TO11:DRAW"NL7U5NL2U5":NEXT
55 CIRCLE(130,45),30,1,1,.35,.16
56 DRAW"BM160,191"+O$
57 DRAW"BM160,173"+N$(2)+O$
58 DRAW"BM160,153"+N$(4)+O$
59 DRAW"BM160,133"+N$(6)+O$
60 DRAW"BM160,113"+N$(8)+O$
61 DRAW"BM160,93"+N$(1)+O$+O$
62 DRAW"BM160,73"+N$(1)+N$(2)+O$
63 DRAW"BM86,183"+N$(1)+O$
64 DRAW"BM86,163"+N$(3)+O$
65 DRAW"BM86,143"+N$(5)+O$
66 DRAW"BM86,123"+N$(7)+O$
67 DRAW"BM86,103"+N$(9)+O$
68 DRAW"BM80,83"+N$(1)+N$(1)+O$
69 DRAW"BM7,9"+W$+H$+A$+T$+SP$+I
   $+S$+SP$+T$+H$+E$:DRAW SP$+T$
   +E$+M$+P$+E$+R$+A$+T$+U$+R$+E
   $:DRAWSP$+QM$
70 T=RND(24):IF T>24 THEN T=24
71 DRAW"BM115,190C1":FORX=1TO T:
   DRAW"R29UL29UR29UL29UNR29U":S
   OUNDX+100,1:NEXT
72 XX=10:YY=60:X=12:Y=55:AZ$=""
73 IK$=INKEY$
74 LINE(XX,YY)-(XX+15,YY+1),PSET
   ,BF
75 LINE(XX,YY)-(XX+15,YY+1),PRES
   ET,BF
76 FOR Q=1TO30:NEXT
77 IFIK$=""THEN73
78 I=ASC(IK$):IF I>47 ANDI<58 TH
   ENAZ$=AZ$+IK$:GOSUB88:XX=XX+1
   5:GOTO73
79 IF I=13 THEN82 ELSE IF I=8 AN
   D LEN(AZ$)>1 THENZ=LEN(AZ$)-1
   :AZ$=MID$(AZ$,1,Z):XX=XX-15:L
   INE(12,55)-(58,30),PRESET,BF:
   GOSUB88:GOTO73
80 IF I=8 AND LEN(AZ$)>0 THEN AZ
   $="":XX=XX-15:LINE(12,55)-(58
   ,30),PRESET,BF:GOTO73
81 GOTO 73
82 Q=VAL(AZ$):IF Q=(T*5) THEN 83
    ELSE 84
83 SOUND1,2:SOUND200,1:DRAW"BM4,
   120"+C$+O$+R$+R$+E$+C$+T$:CA=
   CA+1:PA=PA+1:LINE(4,189)-(70,
   180),PRESET,BF:DRAW"BM5,188"+
   N$(CA)++SP$+R$+I$+G$+H$+T$:FO
   RX=1TO1000:NEXTX:LINE(0,170)-
   (30,155),PRESET,BF:GOTO86
84 SOUND22,2:SOUND1,2:DRAW"BM4,1
   20"+W$+R$+O$+N$+G$:WA=WA+1:TW
   =TW+1:LINE(4,179)-(70,170),PR
   ESET,BF:DRAW"BM5,178"+N$(WA)+
   SP$+W$+R$+O$+N$+G$:FORX=1TO10
   00:NEXTX:LINE(0,170)-(30,155)
   ,PRESET,BF
85 IF WA=10THENCLS:PRINT"TOO MAN
   Y WRONG. YOU LOSE":GOTO92
86 IF PA=10THENCLS:PRINT"YOU WIN
   ":GOTO92
87 LINE(116,70)-(144,190),PRESET
   ,BF:LINE(7,42)-(65,65),PRESET
   ,BF:LINE(3,120)-(55,110),PRES
   ET,BF:GOTO 70
88 IF LEN(AZ$)>3 THEN AZ$=MID$(A
   Z$,1,LEN(AZ$)-1):XX=XX-15:RET
   URN
89 DRAW"BM=X;,=Y;C3S8"
90 FORN=1TOLEN(AZ$):Z$=MID$(AZ$,
   N,1):Z=VAL(Z$):DRAW N$(Z):NEX
   T:DRAW"S4":RETURN
91 LINE(0,150)-(40,191),PRESET,B
   F:DRAW"BM5,188"+N$(CA)+SP$+R$
   +I$+G$+H$+T$
92 PRINT"DO YOU WANT TO TRY THIS
    PROGRAM ONE MORE TIME? (Y/N)
93 IK$=INKEY$:IFIK$=""THEN93
94 IF IK$="Y"THEN RUN
95 IF IK$="N"THEN 4
96 GOTO 93
97 C=0:T=0:'C0INBOX
98 RESTORE
99 READI$:IF I$<>"LETTERS"THEN99
100 READ LE$:READDR$:IF LE$<>"EN
   D"THENN$(ASC(LE$))=DR$:GOTO10
   0
101 DATA LETTERS
102 DATA0,"BR3BRHU4ERFD4GNLBR2
103 DATA1,"BR3R2U6NGD6R2
104 DATA2,"BR3BU5ER2FDGL2GD2R4
105 DATA3,"BR3BU5ER2FDGNLFDGL2NH
   BR3
106 DATA4,"BR3BR3U6G3R4BD3
107 DATA5,"BR3BUFR2EU2HL3U2R4BD6
108 DATA6,"BR3BU3R3FDGL2HU4ER2BD
   6BR
109 DATA7,"BR3BU6R4DG3D2BR3
```

```
110 DATA8,"BR3BRHUER2EUHL2GDFR2F
    DGNL2BR
111 DATA9,"BR3BRR2EU4HL2GDFR3BD3
112 DATA$,"BR7BU2GL2HU3ER2NFLNU2
    D7
113 DATA*,"BR4BUUBU3UBD6
114 DATAA,"BR3U5ER2FD2NL4D3
115 DATAB,"BR3RU6NLR2FDGNL2FDGNL
    3BR
116 DATAC,"BR3BR4BU5HL2GD4FR2EBD
117 DATAD,"BR3RU6NLR2FD4GNL2BR
118 DATAE,"BR3U6NR4D3NR3D3R4
119 DATAF,"BR3U3NR3U3R4BD6
120 DATAG,"BR3BUU4ER3BD4NLD2L3NH
    R3
121 DATAH,"BR3U3NU3R4NU3D3
122 DATAI,"BR3R2U6NL2NR2D6R2
123 DATAJ,"BR3F1R1E1U5NL1R1BD6
124 DATAK,"BR3U3NU3RNE3F3
125 DATAL,"BR3NU6R4
126 DATAN,"BR3U6F4NU4D2
127 DATAO,"BR3BRHU4ER2FD4GNL2BR
128 DATAR,"BR3U6R3FDGL3RF3
129 DATAS,"BR3BUFR2EUHL2HUER2FBD
    5
130 DATAT,"BR3BU6R4L2D6BR2
131 DATAU,"BR3BUNU5FR2ENU5BD
132 DATAW,"BR3NU6E2UDF2NU6
133 DATAX,"BR3UE4NUG2H2NUF4D
134 DATAY,"BR3BU6DF2E2NUG2D3BR2
135 DATA END,END
136 PMODE4,1:PCLS:SCREEN1,0
137 CLS:PRINT"       COINBOX ADDI
    TION":PRINT:PRINT:PRINT:INPUT
    "WHAT IS YOUR NAME";WN$
138 CLS:PRINT"WELL, ";WN$
139 PRINT"HOW MANY PROBLEMS DO Y
    OU WANT   TO TRY";:INPUT HM
140 IF HM<1 THEN 138
141 PMODE4,1:PCLS1:SCREEN1,0:COL
    OR0,1
142 DRAW"BM38,43ND150R40ND150R43
    ND150R44ND150R45ND150R55ND150
    L217D25NR217D28NR217D26NR217D
    35NR217D34R217
143 DRAW"BM29,35NU4NR4ND4L4
144 CIRCLE(27,55),9:EXEC43345
145 DRAW"BM22,58":A$="1":GOSUB22
    1
146 CIRCLE(26,82),10:EXEC43345
147 DRAW"BM24,79NR5D3R4FD3GL3HU
148 CIRCLE(28,110),8:EXEC43345
149 DRAW"BM25,107NGD6NRL2BR6HU4E
    R2FD4GL2
150 CIRCLE(23,140),13:EXEC43345
151 DRAW"BM17,135NGR3FD3G4D2R5BR
    8BU10L5D4R4FD4GL3HU2
152 CIRCLE(20,175),16:EXEC43345
153 DRAW"BM11,169NR6D5R5FD5GL4HU
    2BR10BD2U10ER4FD10GL4HU2
154 CIRCLE(55,33),9:EXEC43345
155 DRAW"BM50,36":A$="1":GOSUB22
    1
156 CIRCLE(98,32),10:EXEC43345
157 DRAW"BM96,29NR5D3R4FD3GL3HU
158 CIRCLE(142,34),8:EXEC43345
159 DRAW"BM139,31NGD6NRL2BR6HU4E
    R2FD4GL2
160 CIRCLE(185,29),13:EXEC43345
161 DRAW"BM179,24NGR3FD3G4D2R5BR
    8BU10L5D4R4FD4GL3HU2
162 CIRCLE(232,26),16:EXEC43345
163 DRAW"BM224,20NR6D5R5FD5GL4HU
    2BR10BD2U10ER4FD10GL4HU2
164 FOR L=1TO26:ON L GOSUB 196,1
    97,198,199,200,201,202,203,20
    4,205,206,207,208,209,210,211
    ,212,213,214,215,216,217,218,
    219,220
165 B$="BM=H;,=V;":A$=STR$(AM)+"
    $":GOSUB 221:NEXT
166 DRAW"BM48,8":A$="SECONDS TO
    STUDY CHART":GOSUB221
167 GOSUB 195
```

```
168 FOR CD=10 TO 0 STEP-1
169 DRAW"BM22,8C0":A$=STR$(CD):G
   OSUB221:GOSUB195:DRAW"BM22,8C
   1":A$=STR$(CD):GOSUB221
170 NEXT CD
171 FOR X=1 TO 1300:NEXT X
172 LINE(2,8)-(220,2),PRESET,BF
173 LINE(38,43)-(255,191),PRESET
   ,BF
174 DRAW"BM38,43C0ND150R40ND150R
   43ND150R44ND150R45ND150R45ND1
   50L217D25NR217D28NR217D26NR21
   7D35NR217D34R217
175 DRAW"BM7,8":A$="ENTER THE CO
   RRECT ANSWER":GOSUB221
176 FOR XX=1 TO HM
177 RD=RND(25)
178 ON RD GOSUB196,197,198,199,2
   00,201,202,203,204,205,206,20
   7,208,209,210,211,212,213,214
   ,215,216,217,218,219,220
179 C$="":H=H+16
180 A$="$":B$="BM=H;,=V;":GOSUB2
   21:H=H-16:IFRD=25 THEN H=H-3
181 B$="BM=H;,=V;":GOSUB221
182 A$=INKEY$:IFA$=""THEN182ELSE
   IFA$=CHR$(8)THEN GOSUB189:GOT
   O178ELSE IF A$=CHR$(13) THEN
   GOTO 185ELSE IF A$<"0"OR A$>"
   9" THEN 182
183 C$=C$+A$:IFRD=25 ANDLEN(C$)>
   3THEN185ELSE IF RD<>25 ANDLEN
   (C$)>2 THEN 185
184 GOSUB221:GOTO182
185 T=T+1:IFVAL(C$)=AM THEN A$="
   CORRECT":C=C+1ELSEA$="WRONG"
186 A$=A$+"* YOUR SCORE"+STR$(IN
   T(C*100/T)):B$="BM10,20":GOSU
   B 221
187 FOR X=1 TO 500:NEXT X
188 GOSUB 189:DRAW"C0":NEXT XX:G
   OTO 193
189 IF RD=25 THEN LINE(H-4,V+2)-
   (H+35,V-10),PRESET,BF:DRAW"C0
   ":GOTO 191
190 LINE(H-2,V+2)-(H+25,V-10),PR
   ESET,BF
191 LINE(8,11)-(170,22),PRESET,B
   F
192 RETURN
193 GOTO 226
194 EXEC 43345:FOR X=1 TO 50:NEX
   T X:RETURN
195 FOR X=1 TO 535:NEXT X:RETURN
196 H=47:V=57:AM=2:RETURN
197 H=86:V=57:AM=6:RETURN
198 H=47:V=84:AM=6:RETURN
199 H=125:V=57:AM=11:RETURN
200 H=84:V=84:AM=10:RETURN
201 H=41:V=111:AM=11:RETURN
202 H=170:V=57:AM=26:RETURN
203 H=125:V=84:AM=15:RETURN
204 H=84:V=111:AM=15:RETURN
205 H=42:V=142:AM=26:RETURN
206 H=215:V=57:AM=51:RETURN
207 H=170:V=84:AM=30:RETURN
208 H=125:V=111:AM=20:RETURN
209 H=84:V=142:AM=30:RETURN
210 H=41:V=176:AM=51:RETURN
211 H=215:V=84:AM=55:RETURN
212 H=170:V=111:AM=35:RETURN
213 H=125:V=142:AM=35:RETURN
214 H=84:V=176:AM=55:RETURN
215 H=215:V=111:AM=60:RETURN
216 H=170:V=142:AM=50:RETURN
217 H=125:V=176:AM=60:RETURN
218 H=215:V=142:AM=75:RETURN
219 H=170:V=176:AM=75:RETURN
220 H=218:V=177:AM=100:RETURN
221 DRAW B$:FOR J=1 TO LEN(A$)
222 X$=(MID$(A$,J,1))
223 IF X$=>"$" AND X$<="Z"THENDR
   AW N$(ASC(X$))
224 IF X$=" "THENDRAW"BM+7,0"
225 NEXT J:EXEC43345:A$="":B$=""
   :RETURN
226 CLS:PRINT"NOT BAD, "WN$;"...
227 PRINT"OUT OF ";HM;"PROBLEMS,
228 PRINT"YOU GOT";C;"RIGHT
229 PRINT"FOR A SCORE OF";INT((C
   *100)/T):C=0:T=0
230 PRINT@263,"WOULD YOU LIKE TO
   :
231 PRINT:PRINTTAB(9)"1.) TRY AG
   AIN
232 PRINTTAB(9)"2.) QUIT
233 IK$=INKEY$:IF IK$=""THEN233
234 IF IK$="1"THEN 137
235 IF IK$="2"THEN 4
236 GOTO 233
237 'MULTIPLICATION TABLES
238 CLS:PRINT@6,"multiplication"
   :POKE1044,32:PRINT@21,"tables
   ";:PRINT@66,"HOW MANY SECONDS
    DO YOU WANT     TO STUDY THE
    CHART BEFORE          BEGINNI
   NG THE PROGRAM?          CHOOS
   E A NUMBEG  (10-60)
239 SOUND191,1:PRINT@264,"";:INP
   UT S:SOUND191,1
240 IF S<10 OR S>60THEN PRINT@26
   6,"":GOTO 239
241 PRINT@322,"HOW MANY PROBLEMS
    DO YOU        WISH TO TRY (1
   -100)";:INPUT TP
242 GOSUB 375
```

"The WIZARD'S CASTLE" is a very special 'TANDY' 'Color Computer' magazine. We devote our entire magazine to the 'CoCo family'. Our articles incl-de columns like: "Wizard's Corner", "Letters to the Editor", "Questions for the Wizard", "Pencil-Pals","Wizard's Castle Scoreboard","Word Search", "Post-It-Notes", "Programmers Corner", "Software Reviews", "Hardware Reviews", "Doctor CoCo", "Hardware Modifications", "Adventure Hints", and "BBS UpDates". If you have been looking for a smaller more 'PERSONAL' version of a CoCo 'MAG' then we're 'EXACTLY' what you've been looking for. Remember we're exclusively for owners of any of Tandy's Color Computers. We support CoCo's 1, 2, and 3.

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NOTICE!

```
####################################
# We now have a 'BBS' devoted to   #
# 'Uploading' articles into our    #
# offices.  You can place orders   #
# here also.  BBS# (704)434-2629   #
####################################
```

```
243 PRINT@36,"4  6  8 10 12 14 1
   6 18  20";
244 PRINT@68,"6  9 12 15 18 21 2
   4 27  30";
245 PRINT@100,"8 12 16 20 24 28
   32 36  40";
246 PRINT@131,"10 15 20 25 30 35
    40 45  50";
247 PRINT@163,"12 18 24 30 36 42
    48 54  60";
248 PRINT@195,"14 21 28 35 42 49
    56 63  70";
249 PRINT@227,"16 24 32 40 48 56
    64 72  80";
250 PRINT@259,"18 27 36 45 54 63
    72 81  90";
251 PRINT@291,"20 30 40 50 60 70
    80 90 100";
252 FORX=1344TO1442:POKEX,32:NEX
   TX
253 FORX=1469TO1535:POKEX,32:NEX
   TX
254 FORST=S TO 1STEP-1:PRINT@419
   ,ST"SECONDS TO START TIME ";:
   EXEC43345:FORU=1TO700:NEXTU,S
   T
255 GOSUB375
256 PRINT@387,"RIGHT:";RA;:PRINT
   @419,"WRONG:";WA;
257 Q=WA+RA
258 IF Q=0 THEN 260
259 E=INT((RA/Q)*100)
260 PRINT@433,E;"% RIGHT";:PRINT
   @401,TP;"PROBLEMS";
261 IF E=0 THEN A$="":GOTO 276
262 IF E<50 THEN A$="F-":GOTO276
263 IF E<60 THEN A$="F":GOTO276
264 IF E<65 THEN A$="D-":GOTO276
265 IF E<70 THEN A$="D":GOTO276
266 IF E<74 THEN A$="D+":GOTO276
267 IF E<77 THEN A$="C-":GOTO276
268 IF E<80 THEN A$="C":GOTO276
269 IF E<83 THEN A$="C+":GOTO276
270 IF E<86 THEN A$="B-":GOTO276
271 IF E<90 THEN A$="B":GOTO276
272 IF E<93 THEN A$="B+":GOTO276
273 IF E<96 THEN A$="A-":GOTO276
274 IF E<98 THEN A$="A":GOTO276
275 IF E<101THEN A$="A+"
276 PRINT@451,"TOTAL:"Q;:PRINT@4
   66,"GRADE: "A$
277 FORH=1376TO1504STEP32:POKEH,
   32:NEXTH:FORY=1377TO1505STEP3
   2:POKEY,32:NEXTY:FORG=1407TO1
   535STEP32:POKEG,32:NEXTG
278 PRINT@327,"WHAT IS THE ANSWE
   R":FORX=1344TO1375:POKEX,PEEK
   (X)-64:NEXT
279 PP=RND(2):IF PP=1 THEN 326 E
   LSE IF PP=2 THEN 280
280 P=RND(45):ON P GOTO 281,282,
   283,284,285,286,287,288,289,2
   90,291,292,293,294,295,296,29
   7,298,299,300,301,302,303,304
   ,305,306,307,308,309,310,311,
   312,313,314,315,316,317,318,3
   19,320,321,322,323,324,325
281 SP=36:N=4:GOTO369
282 SP=39:N=6:GOTO369
283 SP=42:N=8:GOTO369
284 SP=45:N=10:GOTO369
285 SP=48:N=12:GOTO369
286 SP=51:N=14:GOTO369
287 SP=54:N=16:GOTO369
288 SP=57:N=18:GOTO369
289 SP=60:N=20:GOTO369
290 SP=68:N=6:GOTO369
291 SP=71:N=9:GOTO369
292 SP=74:N=12:GOTO369
293 SP=77:N=15:GOTO369
294 SP=80:N=18:GOTO369
295 SP=83:N=21:GOTO369
296 SP=86:N=24:GOTO369
297 SP=89:N=27:GOTO369
298 SP=92:N=30:GOTO369
299 SP=100:N=8:GOTO369
300 SP=103:N=12:GOTO369
301 SP=106:N=16:GOTO369
302 SP=109:N=20:GOTO369
303 SP=112:N=24:GOTO369
304 SP=115:N=28:GOTO369
305 SP=118:N=32:GOTO369
306 SP=121:N=36:GOTO369
307 SP=124:N=40:GOTO369
308 SP=132:N=10:GOTO369
309 SP=135:N=15:GOTO369
310 SP=138:N=20:GOTO369
311 SP=141:N=25:GOTO369
312 SP=144:N=30:GOTO369
313 SP=147:N=35:GOTO369
314 SP=150:N=40:GOTO369
315 SP=153:N=45:GOTO369
316 SP=156:N=50:GOTO369
317 SP=164:N=12:GOTO369
318 SP=167:N=18:GOTO369
319 SP=170:N=24:GOTO369
320 SP=173:N=30:GOTO369
321 SP=176:N=36:GOTO369
322 SP=179:N=42:GOTO369
323 SP=182:N=48:GOTO369
324 SP=185:N=54:GOTO369
325 SP=188:N=60:GOTO369
326 P=RND(36):ON P GOTO327,328,3
   29,330,331,332,333,334,335,33
   6,337,338,339,340,341,342,343
   ,344,345,346,347,348,349,350,
```

```
   351,352,353,354,355,356,357,3
   58,359,360,361,362
327 SP=196:N=14:GOTO369
328 SP=199:N=21:GOTO369
329 SP=202:N=28:GOTO369
330 SP=205:N=35:GOTO369
331 SP=208:N=42:GOTO369
332 SP=211:N=49:GOTO369
333 SP=214:N=56:GOTO369
334 SP=217:N=63:GOTO369
335 SP=220:N=70:GOTO369
336 SP=228:N=16:GOTO369
337 SP=231:N=24:GOTO369
338 SP=234:N=32:GOTO369
339 SP=237:N=40:GOTO369
340 SP=240:N=48:GOTO369
341 SP=243:N=56:GOTO369
342 SP=246:N=64:GOTO369
343 SP=249:N=72:GOTO369
344 SP=252:N=80:GOTO369
345 SP=260:N=18:GOTO369
346 SP=263:N=27:GOTO369
347 SP=266:N=36:GOTO369
348 SP=269:N=45:GOTO369
349 SP=272:N=54:GOTO369
350 SP=275:N=63:GOTO369
351 SP=278:N=72:GOTO369
352 SP=281:N=81:GOTO369
353 SP=284:N=90:GOTO369
354 SP=292:N=20:GOTO369
355 SP=295:N=30:GOTO369
356 SP=298:N=40:GOTO369
357 SP=301:N=50:GOTO369
358 SP=304:N=60:GOTO369
359 SP=307:N=70:GOTO369
360 SP=310:N=80:GOTO369
361 SP=313:N=90:GOTO369
362 SP=316:N=100:GOTO369
363 PLAY"T50CDEFGAB04CDEFGAB"
364 PRINT@104,"do you want to:";
365 PRINT@168,"1.) TRY AGAIN";
366 PRINT@200,"2.) GIVE UP";
367 PRINT@264,"ENTER (1 OR 2)";
368 IN$=INKEY$:IF IN$=""THEN368E
   LSEIF IN$="1"THEN RUN ELSE IF
    IN$<>"1"THEN 4
369 TA=WA+RA:IF TA=TP THEN 363PR
   INT@SP,"";:LINEINPUTA$
370 PRINT@SP,"";:LINEINPUTA$
371 A=VAL(A$)
372 IF A=N THEN RA=RA+1:SOUND100
   ,1:SOUND150,1:SOUND200,1:FORC
   =1TO2000:NEXTC:GOTO255
373 IF A<>N THEN WA=WA+1:SOUND10
   0,1:SOUND60,1:SOUND20,1:FORC=
   1TO2000:NEXTC:GOTO255
374 GOTO 369
375 CLS:PRINT@0,"1   2  3  4  5
    6  7  8  9  10":FORX=1024TO1
   055:POKEX,PEEK(X)-64:NEXT:PRI
   NT@32,"2";:PRINT@64,"3";:PRIN
   T@96,"4";:PRINT@128,"5";:PRIN
   T@160,"6";:PRINT@192,"7";:PRI
   NT@224,"8";:PRINT@256,"9";:PR
   INT@288,"10";
376 FORX=1056TO1312STEP32:POKEX,
   PEEK(X)-64:NEXT:FORX=1057TO13
   13STEP32:POKEX,PEEK(X)-64:NEX
   T:RETURN
377 CLS:END
```

by
Bill Bernico

Last month we presented a program by Bill Bernico that gave information about any state in the United States. This month he has supplied us with a program that gives information about neighboring states. You can move from one state to another by pressing E for East, W for West, N for North and S for South.

```
1 'U.S. MOVE by Bill Bernico
     (C) 1988 BILL BERNICO SOFTW
  ARE
2 CLS:PRINT"TO OPERATE THIS NON-
  GRAPHICS   GEOGRAPHY PROGRAM
  , SIMPLY HIT N,S,E, OR W TO T
  RAVEL NORTH, SOUTHEAST OR WES
  T. YOU WILL BE PRE-  VENTED F
  ROM CROSSING ANY BORDERS",,,,
  ,,"HIT ANY KEY TO BEGIN":EXEC
  44539
3 CLS:PRINT@237,"ALABAMA";:GOSUB
  195
4 GOSUB205
5 IFI$="N"THEN159ELSEIFI$="S"THE
  NGOSUB196ELSEIFI$="E"THEN35EL
  SEIFI$="W"THEN87
6 GOTO4
7 CLS:PRINT@237,"ARIZONA";:GOSUB
  195
8 GOSUB205
9 IFI$="N"THEN167ELSEIFI$="S"THE
  NGOSUB203ELSEIFI$="E"THEN115E
  LSEIFI$="W"THEN15
10 GOTO 8
11 CLS:PRINT@237,"ARKANSAS";:GOS
   UB195
12 GOSUB205
13 IFI$="N"THEN91ELSEIFI$="S"THE
   N63ELSEIFI$="E"THEN87ELSEIFI$
   ="W"THEN135
14 GOTO12
15 CLS:PRINT@236,"CALIFORNIA";:G
   OSUB195
16 GOSUB205
17 IFI$="N"THEN139ELSEIFI$="S"TH
   ENGOSUB203ELSEIFI$="E"THEN103
   ELSEIFI$="W"THENGOSUB204
18 GOTO16
19 CLS:PRINT@237,"COLORADO";:GOS
   UB195
20 GOSUB205
21 IFI$="N"THEN191ELSEIFI$="S"TH
   EN115ELSEIFI$="E"THEN55ELSEIF
   I$="W"THEN167
22 GOTO20
23 CLS:PRINT@235,"CONNECTICUT";:
   GOSUB195
24 GOSUB205
25 IFI$="N"THEN75ELSEIFI$="S"THE
   N119ELSEIFI$="E"THEN147ELSEIF
   I$="W"THEN119
26 GOTO24
27 CLS:PRINT@237,"DELAWARE";:GOS
   UB195
28 GOSUB205
29 IFI$="N"THEN111ELSEIFI$="S"TH
   EN71ELSEIFI$="E"THEN111ELSEIF
   I$="W"THEN71
30 GOTO28
31 CLS:PRINT@237,"FLORIDA";:GOSU
```

```
   B195
32 GOSUB205
33 IFI$="N"THEN35ELSEIFI$="S"THE
   NGOSUB196ELSEIFI$="E"THENGOSU
   B198ELSEIFI$="W"THENGOSUB197
34 GOTO32
35 CLS:PRINT@237,"GEORGIA";:GOSU
   B195
36 GOSUB205
37 IFI$="N"THEN151ELSEIFI$="S"TH
   EN31ELSEIFI$="E"THEN151ELSEIF
   I$="W"THEN3
38 GOTO36
39 CLS:PRINT@238,"IDAHO";:GOSUB1
   95
40 GOSUB205
41 IFI$="N"THEN95ELSEIFI$="S"THE
   N103ELSEIFI$="E"THEN191ELSEIF
   I$="W"THEN139
42 GOTO40
43 CLS:PRINT@237,"ILLINOIS";:GOS
   UB195
44 GOSUB205
45 IFI$="N"THEN187ELSEIFI$="S"TH
   EN59ELSEIFI$="E"THEN47ELSEIFI
   $="W"THEN91
46 GOTO44
47 CLS:PRINT@237,"INDIANA";:GOSU
   B195
48 GOSUB205
49 IFI$="N"THEN79ELSEIFI$="S"THE
   N59ELSEIFI$="E"THEN131ELSEIFI
   $="W"THEN43
50 GOTO48
51 CLS:PRINT@238,"IOWA";:GOSUB19
   5
52 GOSUB205
53 IFI$="N"THEN83ELSEIFI$="S"THE
   N91ELSEIFI$="E"THEN43ELSEIFI$
   ="W"THEN99
54 GOTO52
55 CLS:PRINT@237,"KANSAS";:GOSUB
   195
56 GOSUB205
57 IFI$="N"THEN99ELSEIFI$="S"THE
   N135ELSEIFI$="E"THEN91ELSEIFI
   $="W"THEN19
58 GOTO56
59 CLS:PRINT@237,"KENTUCKY";:GOS
   UB195
60 GOSUB205
61 IFI$="N"THEN47ELSEIFI$="S"THE
   N159ELSEIFI$="E"THEN175ELSEIF
   I$="W"THEN91
62 GOTO60
63 CLS:PRINT@236,"LOUISIANA";:GO
   SUB195
64 GOSUB205
65 IFI$="N"THEN11ELSEIFI$="S"THE
   NGOSUB196ELSEIFI$="E"THEN87EL
   SEIFI$="W"THEN163
66 GOTO64
67 CLS:PRINT@238,"MAINE";:GOSUB1
   95
68 GOSUB205
69 IFI$="N"THENGOSUB201ELSEIFI$=
   "S"THENGOSUB200ELSEIFI$="E"TH
   ENGOSUB199ELSEIFI$="W"THEN107

70 GOTO68
71 CLS:PRINT@237,"MARYLAND";:GOS
   UB195
72 GOSUB205
73 IFI$="N"THEN143ELSEIFI$="S"TH
   EN175ELSEIFI$="E"THEN27ELSEIF
   I$="W"THEN183
74 GOTO72
75 CLS:PRINT@235,"MASSACHUSETTS"
   ;:GOSUB195
76 GOSUB205
77 IFI$="N"THEN107ELSEIFI$="S"TH
   EN23ELSEIFI$="E"THENGOSUB198E
   LSEIFI$="W"THEN119
78 GOTO 76
79 CLS:PRINT@236,"MICHIGAN";:GOS
   UB195
80 GOSUB205
81 IFI$="N"THENGOSUB201ELSEIFI$=
   "S"THEN47ELSEIFI$="E"THENGOSU
   B199ELSEIFI$="W"THEN187
82 GOTO80
83 CLS:PRINT@236,"MINNESOTA";:GO
   SUB195
84 GOSUB205
85 IFI$="N"THENGOSUB201ELSEIFI$=
   "S"THEN51ELSEIFI$="E"THEN187E
   LSEIFI$="W"THEN127
86 GOTO84
87 CLS:PRINT@236,"MISSISSIPPI";:
   GOSUB195
88 GOSUB205
89 IFI$="N"THEN159ELSEIFI$="S"TH
   ENGOSUB196ELSEIFI$="E"THEN3EL
   SEIFI$="W"THEN63
90 GOTO88
91 CLS:PRINT@237,"MISSOURI";:GOS
   UB195
92 GOSUB205
93 IFI$="N"THEN51ELSEIFI$="S"THE
   N11ELSEIFI$="E"THEN43ELSEIFI$
   ="W"THEN55
94 GOTO92
95 CLS:PRINT@237,"MONTANA";:GOSU
   B195
96 GOSUB205
97 IFI$="N"THENGOSUB201ELSEIFI$=
```

```
   "S"THEN191ELSEIFI$="E"THEN127
   ELSEIFI$="W"THEN39
98 GOTO96
99 CLS:PRINT@237,"NEBRASKA";:GOS
   UB195
100 GOSUB205
101 IFI$="N"THEN155ELSEIFI$="S"T
   HEN55ELSEIFI$="E"THEN51ELSEIF
   I$="W"THEN191
102 GOTO100
103 CLS:PRINT@237,"NEVADA";:GOSU
   B195
104 GOSUB205
105 IFI$="N"THEN39ELSEIFI$="S"TH
   EN15ELSEIFI$="E"THEN167ELSEIF
   I$="W"THEN15
106 GOTO104
107 CLS:PRINT@235,"NEW HAMPSHIRE
   ";:GOSUB195
108 GOSUB205
109 IFI$="N"THENGOSUB201ELSEIFI$
   ="S"THEN75ELSEIFI$="E"THEN67E
   LSEIFI$="W"THEN171
110 GOTO108
111 CLS:PRINT@236,"NEW JERSEY";:
   GOSUB195
112 GOSUB205
113 IFI$="N"THEN119ELSEIFI$="S"T
   HEN27ELSEIFI$="E"THENGOSUB198
   ELSEIFI$="W"THEN143
114 GOTO112
115 CLS:PRINT@236,"NEW MEXICO";:
   GOSUB195
116 GOSUB205
117 IFI$="N"THEN19ELSEIFI$="S"TH
   ENGOSUB203ELSEIFI$="E"THEN163
   ELSEIFI$="W"THEN7
118 GOTO116
119 CLS:PRINT@237,"NEW YORK";:GO
   SUB195
120 GOSUB205
121 IFI$="N"THENGOSUB201ELSEIFI$
   ="S"THEN143ELSEIFI$="E"THEN17
   1ELSEIFI$="W"THENGOSUB202
122 GOTO 120
123 CLS:PRINT@235,"NORTH CAROLIN
   A";:GOSUB195
124 GOSUB205
125 IFI$="N"THEN175ELSEIFI$="S"T
   HEN151ELSEIFI$="E"THENGOSUB19
   8ELSEIFI$="W"THEN159
126 GOTO 124
127 CLS:PRINT@235,"NORTH DAKOTA"
   ;:GOSUB195
128 GOSUB205
129 IFI$="N"THENGOSUB201ELSEIFI$
   ="S"THEN155ELSEIFI$="E"THEN83
   ELSEIFI$="W"THEN95
```

```
130 GOTO128
131 CLS:PRINT@238,"OHIO";:GOSUB1
   95
132 GOSUB205
133 IFI$="N"THENGOSUB201ELSEIFI$
   ="S"THEN183ELSEIFI$="E"THEN14
   3ELSEIFI$="W"THEN47
134 GOTO 132
135 CLS:PRINT@237,"OKLAHOMA";:GO
   SUB195
136 GOSUB205
137 IFI$="N"THEN55ELSEIFI$="S"TH
   EN163ELSEIFI$="E"THEN11ELSEIF
   I$="W"THEN163
138 GOTO136
139 CLS:PRINT@238,"OREGON";:GOSU
   B195
140 GOSUB205
141 IFI$="N"THEN179ELSEIFI$="S"T
   HEN15ELSEIFI$="E"THEN39ELSEIF
   I$="W"THENGOSUB204
142 GOTO 140
143 CLS:PRINT@236,"PENNSYLVANIA"
   ;:GOSUB195
144 GOSUB205
145 IFI$="N"THEN119ELSEIFI$="S"T
   HEN71ELSEIFI$="E"THEN111ELSEI
   FI$="W"THEN131
146 GOTO144
147 CLS:PRINT@236,"RHODE ISLAND"
   ;:GOSUB195
148 GOSUB205
149 IFI$="N"THEN75ELSEIFI$="S"TH
   ENGOSUB200ELSEIFI$="E"THEN75E
   LSEIFI$="W"THEN23
150 GOTO148
151 CLS:PRINT@235,"SOUTH CAROLIN
   A";:GOSUB195
152 GOSUB205
153 IFI$="N"THEN123ELSEIFI$="S"T
   HEN35ELSEIFI$="E"THENGOSUB198
   ELSEIFI$="W"THEN35
154 GOTO152
155 CLS:PRINT@235,"SOUTH DAKOTA"
   ;:GOSUB195
156 GOSUB205
157 IFI$="N"THEN127ELSEIFI$="S"T
   HEN51ELSEIFI$="E"THEN83ELSEIF
   I$="W"THEN95
158 GOTO156
159 CLS:PRINT@236,"TENNESSEE";:G
   OSUB195
160 GOSUB205
161 IFI$="N"THEN59ELSEIFI$="S"TH
   EN3ELSEIFI$="E"THEN123ELSEIFI
   $="W"THEN11
162 GOTO160
163 CLS:PRINT@238,"TEXAS";:GOSUB
   195
164 GOSUB205
165 IFI$="N"THEN135ELSEIFI$="S"T
   HENGOSUB203ELSEIFI$="E"THEN63
   ELSEIFI$="W"THEN115
166 GOTO164
167 CLS:PRINT@238,"UTAH";:GOSUB1
   95
168 GOSUB205
169 IFI$="N"THEN39ELSEIFI$="S"TH
   EN7ELSEIFI$="E"THEN19ELSEIFI$
   ="W"THEN103
170 GOTO168
171 CLS:PRINT@237,"VERMONT";:GOS
   UB195
172 GOSUB205
173 IFI$="N"THENGOSUB201ELSEIFI$
   ="S"THEN75ELSEIFI$="E"THEN107
   ELSEIFI$="W"THEN119
174 GOTO172
175 CLS:PRINT@237,"VIRGINIA";:GO
   SUB195
176 GOSUB205
177 IFI$="N"THEN71ELSEIFI$="S"TH
   EN123ELSEIFI$="E"THENGOSUB198
   ELSEIFI$="W"THEN183
178 GOTO176
179 CLS:PRINT@236,"WASHINGTON";:
   GOSUB195
180 GOSUB205
181 IFI$="N"THENGOSUB201ELSEIFI$
   ="S"THEN139ELSEIFI$="E"THEN39
   ELSEIFI$="W"THENGOSUB204
182 GOTO180
183 CLS:PRINT@235,"WEST VIRGINIA
   ";:GOSUB195
184 GOSUB205
185 IFI$="N"THEN131ELSEIFI$="S"T
   HEN175ELSEIFI$="E"THEN175ELSE
   IFI$="W"THEN59
186 GOTO184
187 CLS:PRINT@236,"WISCONSIN";:G
   OSUB195
188 GOSUB205
189 IFI$="N"THEN79ELSEIFI$="S"TH
   EN43ELSEIFI$="E"THEN79ELSEIFI
   $="W"THEN83
190 GOTO188
191 CLS:PRINT@237,"WYOMING";:GOS
   UB195
192 GOSUB205
193 IFI$="N"THEN95ELSEIFI$="S"TH
   EN19ELSEIFI$="E"THEN155ELSEIF
   I$="W"THEN39
194 GOTO192
195 PRINT@14,"north";:PRINT@494,
   "south";:PRINT@160,"w";:PRINT
   @191,"e";:PRINT@192,"e";:PRIN
```

```
   T@223,"a";:PRINT@224,"e";:PRI
   NT@255,"s";:PRINT@256,"t";:PR
   INT@287,"t";:RETURN
196 PRINT@423,"** GULF OF MEXICO
    **";:PRINT@391,STRING$(20,17
   5);:RETURN
197 PRINT@34,"G";:PRINT@66,"U";:
   PRINT@98,"L";:PRINT@130,"F";:
   PRINT@194,"O";:PRINT@226,"F";
   :PRINT@290,"M";:PRINT@322,"E"
   ;:PRINT@354,"X";:PRINT@386,"I
   ";:PRINT@418,"C";:PRINT@450,"
   O";:FORX=35TO451STEP32:PRINT@
   X,CHR$(175);:NEXTX:RETURN
198 PRINT@61,"*";:PRINT@93,"*";:
   PRINT@157,"A";:PRINT@189,"T";
   :PRINT@221,"L";:PRINT@253,"A"
   ;:PRINT@285,"N";:PRINT@317,"T
   ";:PRINT@349,"I";:PRINT@381,"
   C";:PRINT@445,"*";:PRINT@477,
   "*";:FORX=60TO476STEP32:PRINT
   @X,CHR$(175);:NEXTX:RETURN
199 PRINT@93,"*";:PRINT@125,"*";
   :PRINT@189,"C";:PRINT@221,"A"
   ;:PRINT@253,"N";:PRINT@285,"A
   ";:PRINT@317,"D";:PRINT@349,"
   A";:PRINT@413,"*";:PRINT@445,
   "*";:FORX=92TO444STEP32:PRINT
   @X,CHR$(255);:NEXTX:RETURN
200 PRINT@425,"** ATLANTIC **";:
   PRINT@393,STRING$(14,175);:RE
   TURN
201 PRINT@74,"** CANADA **":PRIN
   T@106,STRING$(12,255);:RETURN

202 PRINT@66,"*";:PRINT@98,"*";:
   PRINT@162,"C";:PRINT@194,"A";
   :PRINT@226,"N";:PRINT@258,"A"
   ;:PRINT@290,"D";:PRINT@322,"A
   ";:PRINT@386,"*";:PRINT@418,"
   *";:FORX=67TO419STEP32:PRINT@
   X,CHR$(255);:NEXTX:RETURN
203 PRINT@426,"** MEXICO **":PRI
   NT@394,STRING$(12,207);:RETUR
   N
204 PRINT@34,"*";:PRINT@66,"*";:
   PRINT@130,"P";:PRINT@162,"A";
   :PRINT@194,"C";:PRINT@226,"I"
   ;:PRINT@258,"F";:PRINT@290,"I
   ";:PRINT@322,"C";:PRINT@386,"
   *";:PRINT@418,"*";:FORX=35TO4
   19STEP32:PRINT@X,CHR$(175);:N
   EXTX:RETURN
205 I$=INKEY$:IFI$=""THEN205ELSE
   RETURN
```

BASIC PROGRAMMING

DIRECT ACCESS FILES

This is a series on basic programming. Each month we cover new material and give example programs that show how to use the material covered plus previous material. Basic is a very powerful programming language.

We have written basic programs that make printing this magazine much easier. One program reformats basic program listings to indent line continuations 3 spaces. This makes the lines easier to read. It has the disadvantage of distorting the original format of the line. However it is easy to see the starting of each program line.

A second basic program that we have written allows the printer to print any number of columns in one pass. We have one wide carriage printer and the rest are standard 80 character printers. With the 80 character printers we can print 2 columns of 32 characters each and leave 5 spaces between the columns plus a left margin. This is our normal print format. Sometimes we like to use 42 characters a column. We can use the wide carriage printer and large paper for this. We have a copy machine that will reduce or enlarge in 1% increments so we can reduce the copy to the size required.

Basic is very powerful for organizing a program. The only problem we have found is speed. BASIC 09 is faster than Microsoft Basic but requires OS-9. The concepts we are presenting here can be used if you desire to learn BASIC 09.

For the past couple of months we have been looking at cassette and disk sequential files. Before continuing with files, let us review the methods we have for getting information into the computer.

The first method is to define a variable within the program. We can use statements like the following to do this:

```
 10 X$="COLOR COMPUTER"
 20 X=195.23
```

The disadvantage of this method is that a lot of typing is required if there are a number of variables. This method is used for defining things within a program but is not advisable for large amounts of data.

The next method is the READ-DATA technique. This can allow large amounts of data to be read into an array with just a few

programming instructions. The data is contained in DATA statements and must be perfectly ordered. By this we mean that the first data must correspond to the first variable to be read. Consider the following example:

```
10 READ X$,X,Y,P$
20 DATA MEMORY, 25.36, 98.15,
COMPUTER
```

You can run this program and the computer will recognize the following variables:

```
X$="MEMORY"
X= 25.36
Y= 98.15
P$= "COMPUTER"
```

If the last two data elements had been switched, the computer would have given an error when it tried to read Y because it would see a string variable and not a numerical variable.

A very powerful tool is to combine variables into a large string variable. We have covered this and will be using this in our program for this month. The advantage is that all the information for a particular item can be contained within one variable. For example suppose we want an address file program for 100 names with addresses. If we could set up an array consisting of 100 string elements, then each element could contain all of the information for one address. An array will allow us to access any address without having to go through the list in order. It will also allow the addresses to be placed in alphabetical order or in order of zip codes.

DIRECT ACCESS FILE

These can only be accessed with a disk drive. A cassette can only read information as the tape moves by the head. Only expensive tape drives such as are used in mainframe computers allow direct access. The problem with a tape is that it has to be run forward or backwards until the information is found.

Fortunately with a disk drive, the disk is circular and spins. Information can be removed from any track and sector. Disk software automatically does this for us. What will direct access do for us? Suppose we have an organization that has 150 members. We would like to keep a record for each member. In our previous sequential files it was necessary to go through each file until we found the one we wanted. With a direct access file we can go to the record we want without accessing any of the other files.

There is usually something undesireable that comes with each good feature. This is the case with direct access files. A record in the file will occupy 256 bytes of space on the disk. Records can be combined in a file to save space, and this will be discussed next month. Information can also be combined with basic and put into one large string.

OPENING A DIRECT ACCESS FILE

The procedure is similar to a sequential file. The format is:

```
10 OPEN "D",#1,"NAME/EXT"
```

Notice that "D" is used to indicate a direct access file. The #1 is the file number and the NAME/EXT is the name of the file with its extension. We use the PUT command to write a variable to the file. Consider the following example.

```
 5 ?"CONT-1
10 OPEN "D", #1, "FIRST"
20 'READ DATA
30 FOR J=1 TO 10
40 ?J;:INPUT"ENTER DATA";X$
50 WRITE #1,X$
60 PUT #1,J
70 NEXT J
80 CLOSE #1
90 ?"DATA IS IN FIRST"
```

The PUT command puts a record number after the data. Notice we write the data to the disk and then put a record number after it.

READING DATA FROM A DA FILE

The file is opened the same way for writing or reading data. The GET command is used to designate the record we desire. Let's write the rest of the program so that we can access any data we have put into the 10 records for file #1.

```
105 OPEN "D", #1, "FIRST
110 INPUT"RECORD NUMBER";N
120 IF N>10 THEN 210
130 GET #1,N
140 INPUT #1, X$ 'GET DATA
150 PRINT N;X$
160 INPUT "CHANGE Y OR N";C$
170 IF C$="Y" THEN INPUT X$
180 WRITE #1,X$
190 PUT #1,N
200 GOTO 110
210 INPUT"ENTER Q TO QUIT";Q$
220 IF Q$="Q" THEN 300
230 GO TO 110
300 CLOSE
310 PRINT"FILE IS CLOSED"
```

Notice line 130. This indicates which record we are looking at in file #1. In line 140 we input the variable X$ from file #1. Line 150 prints the record number and the variable. We can write a new variable into the record number with lines 180 and 190. Line 300 closes all open files.

Next month we will continue with direct access files. The following example program will allow 10 variables to be written to the disk file named "FIRST". As the record number is selected you can notice the disk drive come on and then the data for that record number will be printed on the screen. It can be changed and the new data will be stored on the disk. Remember that each record takes up 256 bytes on the disk. We will show methods of conserving space and combining variables for one record.

DIRECT ACCESS FILE DEMO PROGRAM

```
5 PRINT"DA FILE DEMO PROGRAM
10 OPEN "D", #1, "FIRST"
20 'READ DATA
30 FOR J=1 TO 10
40 PRINTJ;:INPUT"ENTER DATA";X$
50 WRITE #1,X$
60 PUT #1,J
70 NEXT J
80 CLOSE #1
90 PRINT"DATA IS IN FIRST"
100 INPUT"PRESS ENTER";Z
105 OPEN "D", #1, "FIRST
110 INPUT"RECORD NUMBER";N
120 IF N>10 THEN 210
130 GET #1,N
140 INPUT #1, X$ 'GET DATA
150 PRINT N;X$
160 INPUT "CHANGE Y OR N";C$
170 IF C$="Y" THEN INPUT X$
180 WRITE #1,X$
190 PUT #1,N
200 GOTO 110
210 INPUT"ENTER Q TO QUIT";Q$
220 IF Q$="Q" THEN 300
230 GO TO 110
300 CLOSE
310 PRINT"FILE IS CLOSED"
```

COCO 3 GAME

by
Andrew Bartels

Earth is being invaded by aliens. You, as chief protector of the nations have been unanimously chosen to fight against the aliens and keep them from taking over the planet. One thing puzzles you, though. The aliens don't appear to be armed. They seem to be trying to attack by landing in sheer numbers instead of firing on you!

Such is the scenario of this CoCo 3 game called ALIENS. Type in the listing, save it, and RUN. You will be prompted for the level you want to start at. Level 1 is the easiest. The higher the level, the faster the aliens descend. Should they descend down on you, the game is over. Use the right and left arrow keys to move your land fighter, and the F1 key to fire at the invaders.

When you clear out all the aliens in one round, you are awarded a bonus based on the level of play and the number of shots you used in shooting all the invaders. You go to the next level upon completing one. The higher the level, the more points you get for shooting each alien, and the more bonus points you get for completing a level.

```
0 'ALIEN INVASION
1 'COPYRIGHT (C) 1988
2 'BY ANDREW B. BARTELS
3 'FROM DIGITAL INNOVATIONS
            1859 E. 8TH STREET
               MESA, AZ 85203-664
   9
4 IFPEEK(&HE000)*256+PEEK(&HE001
   ) <>230 THEN 40
5 CLEAR1000:DIMA$(6):POKE&H95C9,
   &H7F:POKE&HFF22,&H36:CLS:FORX
   =&HE00 TO &HE27:READA$:POKEX,
   VAL("&H"+A$):NEXT:POKE65497,0
   :ON BRK GOTO39:EXEC&HE00
6 CLS:PRINT"LEVEL (1-5)":GOSUB38
   :IFI$<"1" OR I$>"5" THEN6 ELS
   EQ1=VAL(I$):LE=(6-Q1)*5
7 GOSUB37
8 U=496:W1=32:BT=256:G1=6:SC=0:S
   H=0
9 PRINT@0,"SCORE:";SC:FORLV=1 TO
    LE
10 FORP=W1 TO W1+6:GOSUB28
11 GOSUB29
12 IFG1=0THEN21
13 GOSUB31
14 NEXT
15 FORP=W1+6 TO W1 STEP-1:GOSUB2
   8
16 GOSUB29
17 IFG1=0THEN21
18 GOSUB31
19 NEXT
20 IFW1>=BT THEN21 ELSENEXT:PRIN
```

```
   T@W1,STRING$(32,32);:W1=W1+32
   :GOTO9
21 IFG1<>0 THEN 25
22 Q1=6-(LE/5):BN=INT(1000*72/SH
   *Q1):PRINT@263,"Your bonus is
   :";BN:FOR R1=SC TO SC+BN STEP
   25:PRINT@0,"SCORE:";R1:PLAY"V
   30T255L255CG":NEXT:SC=SC+BN:F
   ORR1=1TO1000:NEXT:SH=0:BT=256
   :G1=6:GOSUB37:W1=32:PRINT@6,S
   C
23 IF LE<>5 THENLE=LE-5
24 CLS:GOTO9
25 CLS4:PRINT@0,"SCORE:";SC::PRI
   NT@267,"You Lose!!";:PRINT@32
   7,"Play Again (Y/N) ?";
26 GOSUB38:IFI$="Y" ORI$="y" THE
   N6 ELSEIFI$<>"n" AND I$<>"N"
   THEN26
27 GOTO39
28 Q1=P:FORW=1 TO G1:PRINT@Q1,A$
   (W);:Q1=Q1+32:NEXT:RETURN
29 I$=INKEY$:IFI$=""THENRETURN E
   LSEIFI$=CHR$(8) AND U>480 THE
   N U=U-1:RETURN ELSEIFI$=CHR$(
   9) AND U<506 THEN U=U+1:RETUR
   N ELSEIFI$<>"g" THENRETURN
30 IFM<>0 THENRETURN ELSEMP=U-30
   :M=1:SH=SH+1:SOUND200,1:RETUR
   N
31 IF A$(G1)="
          " THEN G1=G1-1:BT=BT+3
   2
32 PRINT@U," /*\ ";:IFM=0 THENPR
   INT@U-31," A ";:RETURN ELSEPR
   INT@U-31,"   ":PRINT@MP," ";:
   MP=MP-32:IF MP-32<0 THENM=0:R
   ETURN
33 HT=PEEK(1024+MP):IF HT=96 THE
   NPRINT@MP,"A";:RETURN
34 PRINT@MP-1,"› ‹";:PLAY"T255L2
   55V30A":L1=INT((MP-P)/32)+1:P
   LAY"T255L255V25A":L2=P+32*(L1
   -1):PLAY"T255L255V20A":L3=MP-
   L2+1:PLAY"T255L255V15A":MID$(
   A$(L1),L3,1)=" ":PLAY"T255L25
   5V10A":M=0:PLAY"T255L255V5A":
   PRINT@MP-1,"  ";
35 Q1=6-(LE/5):SC=SC+INSTR("omwl
   vx",CHR$(HT+96))*Q1:PRINT@6,S
   C:RETURN
36 DATA BE,1,D,BF,E,26,8E,E,14,B
   F,1,D,39,BE,E,26,BF,1,D,39,34
   ,12,8E,1,52,CC,FF,FF,ED,81,8C
   ,1,5A,26,F9,35,12,7E,0,0
37 A$(1)=" x x x x x x x x x x
    x ":A$(2)=" v v v v v v v v
   v v v v ":A$(3)=" l l l l l l
    l l l l l l ":A$(4)=" w w w
   w w w w w w w w ":A$(5)=" m
    m m m m m m m m m m ":A$(6
   )=" o o o o o o o o o o o o "
   :RETURN
38 I$=INKEY$:IFI$=""THEN38 ELSER
   ETURN
39 POKE65496,0:CLS:EXEC&HE0D:POK
   E&H95C9,7:END
40 CLS:PRINT"SORRY, THIS PRORAM
   IS ONLY FOR  THE COCO3...":EN
   D
```

Editor's Comments

The weather is still hot here in North Alabama but the temperature has dropped into the low 90s. I can feel Fall approaching which is a very pleasant time of the year here. The leaves begin to color on the trees and it is not too hot or too cold. Soon it will be time to think about winter and replace the anti-freeze in our cars. We have to adjust to the seasons. The Fall is a good time to work in the yard.

There are still many misunderstandings about computers and computer terms. Many people do not realize that an old computer is not worth much. For example a friend of mine bought a Radio Shack Model 2. The Model 2 is a discontinued Radio Shack business computer that uses 8 inch disk drives. There is not much demand for this computer today. Another friend of mine has a Model 1 with 4 disk drives. The disk drives will work on a COCO, but his computer is almost considered an antique.

There is nothing wrong with having an old computer. The problem is that software may not be available for it at a reasonable price. As far as calculations and running programs are concerned, most older computers will do a good job. Within the past few years public domain and shareware software have become very popular. This is an inexpensive way to increase your computer's capability. However if you have a model 1 or model 2 this source of programs is not available.

What about the earlier color computers? There is concern by these owners that they will be obsoleted by the color computer 3. There is more and more software being written for the color computer 3. Since Radio Shack has discontinued the color computer 2, it is understandable that all new color computer software from Radio Shack is for the color computer 3. So in one respect we can say that the color computer 3 will obsolute the earlier color computers. However we will continue to support all models of the color computer. Almost all of our public domain programs will work on all color computers.

Will Radio Shack continue with the Color Computer 3? A few years back a very popular computer was the Sinclair. It is no longer being manufactured and there are still a few user's groups that support the Sinclair computers. I think that Radio Shack will continue with the color computer 3 as long as it is making a profit for them. This week I received the Radio Shack catalog for 1989 and there were program packs and software for the color computer 3.

The interest in IBM compatible computers called MSDOS computers is having an impact on all other computers. In the past two sales flyers from Radio Shack, there were no color computer specials but the Tandy 1000 computers were advertised. I believe that this trend will continue. We sell MSDOS computers and it is hard to be competitive because prices are continually changing.

However the color computers are here to stay and we will continue to support them. There is more interest in OS-9 and Basic 09 programs. If you can program in basic then Basic 09 will be easy to learn. OS-9 can be a pain, but once you get the hang of it, it is an excellent operating system. Norm Matice is doing a good job of explaining how to use OS-9.

John Galus is continuing with his series on the color computer 3. This computer has some very good features and John is showing how to use them.

Our Product Review section is going well now. This month we reviewed several programs from Radio Shack and a program from Elec-Soft. Our purpose in reviewing products is to explain to our readers what the product does. The Product Review and New Product Sections are free and are open to all producers of color computer products.

ham radio & computers
by
bill chapple w4gqc

A computer can be used for many communications tasks. We are familar with its power for performing calculations, and most people are aware of a computer's ability to handle information.

For record keeping tasks such as log books and addresses the computer is a real time saver. I have presented log programs and a DX lookup program which are record keeping programs.

For calculations, programs such as ANTENNA DESIGN and HAM MATH were preesented. For learning or improving code speed I presented a Morse Code Practice Program.

The next group of programs are what I call performance programs. Examples of these are the Morse Terminal, WEFAX, RTTY, Audio Generator, RTTY and PACKET Tuning and Frequency Meter programs. These programs perform tasks that would normally require additional hardware. This is where money can be saved. The best examples of these are the RTTY and WEFAX programs. They interface directly to a transceiver through the cassette port.

On August 20 Dean and I attended the Hunstville Ham Fest. We rented two tables and set up a display in the flea market area at the Von .Braun Civic Center. There did not seem to be much interest in Color Computers. It seemed that most of the hams were interested in either the Commodore or IBM compatabile computers. Several people said that they had disconnected their color computer because they had purchased an IBM compatible. These computers are referred to as Microsoft Disk Operating System or simply MSDOS computers or clones.

I am getting more and more involved with these computers. There are thousands of public domain programs availabe at a reasonable cost for these clones. Generally they are slower than a color computer and they take a while to boot up when power is turned on. However they have become accepted as a standard for ham radio use. If you will look through the ham magazines, you can verify that most software is available for the clones and Commodore computers.

TWO COMPUTERS

I am seriously considering expanding my ham setup to include two computers. One is needed for performing conversion tasks and the other could be used for operations or information handling. For example the HAM LOG program could be on one computer while the other is used for RTTY.

If you were to purchase one of the ham data interfaces such as the MFJ multi-data controller, then essentially you have purchased a dedicated computer. The price of this data controller is $250.

AEA makes a similar unit called the PK-232 which sells for around $300. These units will operate on most digital modes. Software is required which is usally available for the Commodore and IBM compatible computers.

These interfaces use the computer's serial port which is the printer port on the color computers. They convert your ASCII information into whatever operating format you select.

ASCII characters are sent to your computer to be displayed for received information.

In the programs I have presented the computer does the conversion tasks as well as displaying the information. This is where the use of two computers would be an advantage. If the computer has to do more than one task, then timing can be a problem. The first computer could be doing the desired conversions and the second could be printing the result to the screen. Most problems are with receiving. This is where timing is the most critical.

PACKET RADIO

This is a digital communications system. There is a lot of interest in PACKET and I am still looking at it. I am mainly a high frequency (HF) operator but do have two meter capabilities. Most HF packet is on 14100-14115 KHZ. There seems to be a lot of stations on these frequencies and I have heard that interference is bad unless you have a good directional antenna and a lot of power. I have also heard that packet works very well on HF. So I guess it depends upon whom you talk to as to what opinion you will hear.

SLOW SCAN TV

I am going to be putting effort into developing software for this mode of operation. It can be used with the color computer without an interface. I remember seeing the expensive slow scan generators advertised in ham radio magazines over the years. These are not necessary with a color computer as it can generate the tones directly.

Next month I will continue and perhaps have a program or simple hardware project for ham radio use with the color computer.

Questions & Answers

These are questions from our readers with our answers. If you have a question or would like to provide information to our readers, then I would like for you to write. - Bill.

Dear Sir,

I ordered & received you RTTY tape for ham radio use. The only problem is there is no directions for commands. It loads fine and then I'm stuck. HELP! If you could send me some instructions.

David Mayo

Dave the instructions are printed on the screen as you run the program. The only thing extra you might need is to know that the clear key switches from send to receive and vice versa. The break key returns to the menu. To select different functions on the menu go up and down with the arrow keys and hit enter to activate the function you select.

*****

Dear Sir,

I have a couple of questions.

When using "POKE111,254:DIR", Is there a short easy way for one file name to be printed, then stop, so comments can be typed after the file name, hit "ENTER", then it prints one more file name, etc, etc?

Is there any way of looking at a DIR list and tell if two or three files go together? If one is a BAS and the next one is BIN or DAT or something, it is then suspected. But sometimes when programs are tranfered from one disk to another, unknowingly one of the following files may not get transfered. Also when a listing is alphabetized, the following files get seperated.

Best Wishes

ANSWER: There is a disk command that allows a track and sector to be read from a disk in two strings. The strings can be broken down into substrings which can contain the name and extension of the disk file. Refer to your disk command and look at the DSKI$ and DSKO$ commands. We will show how to use this in our programming section after we finish using files. The directory starts on track 17 sector 3.

As far as looking at a directory and determining what files go with a program, this would depend upon the names used by the program for the files. In other words it is not possible without knowing the names of the files.

****

Dear Sir,

Being a new subscriber, I would like to ask a few questions of you that I am having a hard time finding answers for.

I own and operate a BBS Authored by Steve Roberson. It runs in OS9 Level II. I have a lot of commodore users in my system and I have purchased a 70 Disk set of CP/M P/D Software that I would like to transfer to OS9 format and place in my download directory. Is there or will there ever be or can there be a transfer program that will copy from commodore to OS9 and I know that commodore has a program for transferring PC-DOS to their format, so it would seem that they could be set to copy each others?

ANSWER: I transfer ASCII files

from my model 100, COCO, and MSDOS computers by using the ASCII port on each computer and terminal software. There are also disk utilities that will read ASCII files from a number of computers but I don't have one. If you could borry a commodore computer with a terminal program, you can transfer the files to your COCO 3 using the terminal program that comes with OS-9 Level 2.

Also I hear that the multi-pak interface as purchased from Radio Shack has to be upgraded to run on CoCo 3 without damaging them. I own the multi-pak and my BBS is running with it installed and not upgraded. What kind of damage can I expect and what all does it entail to get it upgraded and where do I get the parts. I don't patronize Radio Shack unless FORCED to.

ANSWER: The multi-pak interfaces that are being sold now are probably compatible with the CoCo 3. I would suggest having Radio Shack upgrade your old multi-pak. I think this costs around $30.

My systems include 2 CoCo 2's, DS 5 1/4 Disk drive, 30 meg FHL Harddrive, CM8 monitor mult-pak, DCM-7 intellegent mode amber monitor from Howard Medical. DM 105 cassette recorder and OS9 Level's 1 & 2.

I would like to thank you for any help you can give me and keep up the GOOD WORK!

Carl Johnson

Carl it looks like you have a very good set up. I hope my comments were of help to you. Thanks for your letter.

****

Dear Sir,

I am a new subscriber to your magazine and I want to tell you that I enjoy it a lot. In your July issue you say there will be a lot more for the CoCo 3. PLEASE don't fill the whole magazine with articles and programs just for the coco 3. Rainbow has gotten to the point where coco 2 users are lucky to find one or two articles that are of interest. I have almost decided not to renew my Rainbow subscription until I get a coco 3 so I can use more of what is in the magazine.

I admire your courage in starting up this new magazine, and hope that the coco community supports you and makes you very successful.

I have a network of coco penpals and wonder if you could send sample issues to some to them. That is how I found out about your Magazine and I am sure that these people would subscribe as I did.

Thank you again for publishing such a good magazine and best of luck to you.

If it wasn't for people like you with your magazine, and penpals, coco would just be a dust collector on the shelf again, as it was for 2 years. We certainly don't get any support from Tandy.

Carla E. Sheridan

ANSWER: Carla thanks for your letter, for expressing yourself and for the nice comments about our magazine. We try to provide information and programs that are usable for everyone. The special interest groups which are only interested in subjects such as OS-9 and Ham Radio do not get enough. If you had just purchased a CoCo 3 then you would not like to see articles for the CoCo 2. And in your case, you want more for the CoCo 2. So somewhere we have to strike a happy medium.

The series on programming is

applicable for all computers as was our previous series on machine language programming. In our OS-9 section, Norm Matice also covers information that pertains to the earlier versions of OS-9.

Almost all of our public domain programs are for the CoCo 2 and will also work on the CoCo 3. All of our ham radio programs will work on the CoCo 2 and the CoCo 3. John Galus' series is on the CoCo3. We have some of everything and have to support the new as well as the old. In fact we have covered much material on the CoCo 1 and CoCo2 over the past 4 1/2 years. Fortunately the CoCo 3 will run most CoCo 2 programs.

Again thanks for your nice letter and the list of names. They will be sent a sample copy of the magazine. I hope this explains our position.

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Bill Chapple,

Is the "Address File Program" on DCN-2 the same as your previous address file program in the Feb 87 #35 issue? If so how/where are the codes to print the labels. Also in the Jan 87 # 34 the program indicates it can be used for 200 names. What modifications to which lines will do this? Love your DCN!!

John Holtz

ANSWER: John thanks for your letter. The address file in the Jan 87 is an improvement over the one in our DCN-2 package. Sort was added. The Jan 87 program will handle 200 names without any modifications. This should serve your needs.

****

Dear Bill,

I am an amateur operator and have great interest in starting a Packet Radio Bulletin Board System. After experimenting with the COCO 2 and an AEA PK-87 TNC, I found that I could use other stations to extend range of transmitting, known as a Digipeater. I connected with some local BBS's through a Digi and enjoyed the operation.

After enjoying those stations I typed in a Basic program made for use as a telephone BBS. Is it possible to adapt this program to function with a terminal Node Controller or would it be necessary to seek software designed for Packet Radio use? Your help and information would be greatly appreciated. Keep up the good work!

Todd Cecilio

ANSWER: Todd thanks for your letter. Since you are communicating with other stations your packet software is good. I would think that any good BBS software should serve your purpose. Your basic BBS program may possibly be used. I would suggest you try it and if it doesn't work then try something else. You may have to time share the BBS program and your packet software which might not be an easy task. Thanks for the encouraging comments.

****

Dear Bill

Sending another letter to again say how much I enjoy the magazine. The instructional help with the COCO 11 is great. My favorite is still the ham radio associated programs. The one I use most is a program for sending CW. I use it much more than I use my electronic keyer.

One question I have about this program from your January 1987 issue page 26 is how can I add some message sending bluffers, such as calling CQ or my QTH or other types of auto sent messages. I've been toying with using a memory keyer and think

this would be a simpler and less costly way to auto send messages.

I've tried to add a CQ to the program but it runs together and sounds too bad to transmit.

I'm also sending a copy of another program from a ham magazine . This program is designed for the TRS 80 1&2 but won't run on the COCO 11 because of the lines 2000, 2002, 3000 and 3005. They have the "out" command and this is a syntax error for the COCO 11. A message buffer of this type is what I would like to add to your CW transmit program-- Any help with this would solve my latest delima. Enclosing a SASE for any info. Many thanks.

Doug

ANSWER: Letters like this help us decide on subjects for future articles. I will give a modified version of the keyer program soon for storing messages. Thanks for your letter Doug and interest in Dynamic Color News.

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If you have a problem or a solution to a problem I would like to hear from you. Many thanks to each of you who have written. - Bill.

BULLETIN BOARDS COMPUTER CLUBS

If you want a free listing send us the information. These listings will be kept current.

PRODUCT REVIEWS

This section is open to all producers of color computer products. We will review your products free of charge.

DESKMATE 3

by
Norm Matice

For the Color Computer 3

In reviewing Deskmate 3, Tandy's 6-in-1 software package for the Color Computer 3, I was struck with the problem of whether to write six reviews for one program or one review for six programs. By buying Deskmate 3 you have the following six programs in one tidy package: a spreadsheet, a text editor, a drawing program, a telecomunications program, a database program, and a calendar program.

The spreadsheet program in Deskmate 3 is labeled Ledger. Ledger has all the standard spreadsheet features. It is a 99 column by 99 row spreadsheet. You can fill the cells with labels, numerical data or mathematical formulas. It even supports some of the higher math functions such as sumation, which make the addition of a column of numbers simple.

The text editor is called Text. It will allow you to get a feel for word processing. It can be configured to work in either a 40 or 80 column mode. If you have an RGB or black and white monitor the 80 column mode is very readable. The text editor allows for such things as insertion and block movement of text.

The drawing program goes under the name of Paint. It has features for freehand drawing or the use of geometric shapes such as circles and rectangles. It also will allow the use of 16 colors with which to paint and your choice of starting background colors. With some time and a little bit of talent some rather interesting results can be obtained.

The telecomunications program is dubbed Telecom. This program allows your computer to communicate with other computers, through a modem, over the phone lines, or through a direct connection. It has a set of selectable features, such as baud rate and parity, that let you configure the system to your needs.

The database program has the alias of Filer. It allows you to custom design the forms for the data you'll be inputting. Like all good database programs Filer lets you search your records by whichever piece of data you so desire. The graphic representation on the screen for Filer is drawn to remind you of a box of index cards. This is essentially what the Filer program simulates elctronically for you.

The last of the six programs is the Calendar program. When you first start up the Deskmate 3 package you enter the time and date. When you call up Calendar it shows the current calendar month with the day's date shown on a sheet to the lower left hand side of the screen. You may write yourself memos for each day of the month by simply selecting the day in which you want the memo. The calendar will note your entry by inserting a triangle in the day's date. This program would also work well if you wanted to keep an electronic diary of you daily activities.

In addition to these six pro-

grams, Deskmate allows you to choose the type of cursor control you want (keyboard, joystick or mouse), the color scheme of your display, use of an on screen calculator, set the time, set up folders or use the printer.

Deskmate 3 is one of the best ways to try out some of the more popular types of software available for the color computer 3. While each of the programs may not be the best of its class they are all quite representative of what is available, and if you need more computing power you could purchase a seperate program for any of the programs. Besides the two Deskmate 3 disks you get a manual with step by step tutorials in each of Deskmate 3's features and a small reference card you can keep with the computer after you've mastered the program.

All things considered I'd say Radio Shack has done a nice job in the crafting of Deskmate 3. It is available at Radio shack stores for $99.95.

THE INTERBANK INCIDENT

by
Norm Matice

The Interbank Incident is a graphic adventure game from Tandy. It requires as a minimum, a 64k Color Computer, disk drive and a mouse or joystick. As an option it will drive a Speech/Sound Cartridge. The game itself is on three diskettes. The game can be played on a 1 or 2 drive system or a hard drive system.

The game was originally written for an OS-9 level 1 system and made to run on the original CoCo or a CoCo 2. The version of OS-9 used must have been 2.00.00 though, because it will load just as well on a CoCo 3. The game uses artifacted colors, so if your CoCo 3 has an RGB monitor expect the game to be in black and white.

To load the game just use DOS and press enter. If your version of disk BASIC is too old to understand that command don't worry, Tandy, as usual, has included the BASIC listing to help you get around that problem.

The adventure uses a joystick or mouse to input all of its commands. There are icons for the different types of commands that can be issued. If you hate to type, this is the adventure for you. You simply point to the icon or icons that are needed to carry out your wishes and click the button.

If you have a Speech/Sound Cartridge all of the messages that appear on screen will be spoken as well. As usual though the Speech/Sound Cartridge will mispronounce some of the words.

The scenario of the adventure is a robbery of the Interbank Corporation. You as the adventurer have been hired to investigate and solve the mystery. You have one of seven characters to choose from that will be your computer persona. Each of these characters have different attributes, but we are assured that each, if handled properly, can solve the mystery. The adventure can be saved and reloaded. If you want to take a break from an episode be sure to do this, because each time the game is restarted all the parameters will change. The only way to get back to the game you were working on is to reload it.

Each new scene has to be loaded from the disk. You therefore have to wait each time you go from one scene to another, for the picture to load.

If you like adventure games, this is one you can play more than once. Solving it means you've only figured out that particular plot and a new one will be conjured up the next time you start the game.

The Interbank Incident is available at Radio Shack for $29.95.

SYSTEM 5

by
Bill Chapple

For the Color Computer 3

SYSTEM 5 is a graphics generator for the 512K color computer 3. A disk drive, joystick or mouse, and a high resolution interface are also required. A copy of the original disk should be made and the original placed in a safe place. A system program can be loaded and a new system disk made for the monitor and printer used. The program supports Radio Shack printers models DMP 105, DMP 106, and DMP 130.

To run the program type RUN "SYSTEM5" and press the ENTER key. It takes about a minute and a half for the program to come up. A menu appears with a blinking cursor. The cursor is moved by the mouse or joystick. The menu is composed of squares with an indicated function.

There are 4 important keys. The spacebar indicates the end of a function. F1 gets the UNDO menu and F2 is used to get the colors menu. CTRL is used to get the special effects for each function.

To select a function, move the cursor with the joystick until it is inside the desired square. For example select the pencil to freehand draw. Then press the fire button. The menu screen will disappear and the working screen will appear. To draw hold down the fire button and move the joystick. Release the fire button to stop drawing. To go back to the menu for another tool press the space bar. The drawing will disappear and the tool menu will be displayed. A different tool can be selected by moving the cursor to the appropriate square.

Suppose a box is needed. After selecting the box, the drawing will again appear. Move the cursor to one corner of the location for the box and press the fire button. While holding the button, move the joystick and the box will increase in size as the stick is moved. When the correct size is obtained, the fire button can be released. The last part that was drawn can be erased with the UNDO function. This menu is accessed by pressing the F1 key.

An eraser is included for erasing mistakes. After selecting the eraser move it to the part of the picture to be erased and press the fire button. If too much is accidently erased then the UNDO command can restore it. For erasing large areas the block erase function can be selected.

Suppose you want to work out fine details of part of the drawing. The big pixels function allows a portion of the work to be blown up. This is selected by moving the square to the desired area and then pressing the fire button. An actual size picture is presented in the upper left hand corner of the screen. Press the fire button to change a pixel from foreground to background color or from background to foreground.

Other features include loading and saving a picture to a disk, drawing circles, drawing lines, writing text, changing foreground and background colors, copying parts of the picture to other areas, and printing the picture on a DMP105, DMP106, or DMP130.

I was very impressed with the program and found it easy to use. Since a seperate picture is given for the tools, this leaves a full screen for the picture. The most impressive part is the price which is only $12.95. The program is produced by Elec-Soft and is marketed by Sun Products; 5455 Hansel Ave. Bldg L, Suite 7; Edgewood, FL 32809-3405.

* PD-41
Picture files

STAMPS	MAX	2	B	3
STARTREK	MAX	2	B	3
ST-TREK2	MAX	2	B	3
SCHOOL	MAX	2	B	3
SATURN	MAX	2	B	3
ESCHER	MAX	2	B	3
LABOR	MAX	2	B	3
MASK	MAX	2	B	3
BUG BOX	MAX	2	B	3
SPACE	MAX	2	B	3
EASTER	MAX	2	B	3
SPACE 2	MAX	2	B	3
POPEYE	MAX	2	B	3
GARFIELD	MAX	2	B	3
BEETLE B	MAX	2	B	3
POLO	MAX	2	B	3
HAGAR	MAX	2	B	3
X-PAD	MAX	2	B	3
CASTLE	MAX	2	B	3
MUSIC TV	MAX	2	B	3
COCO	MAX	2	B	3

* PD-42
Picture files

TITLES	MAX	2	B	3
PIXFILES	BAS	0	B	3
THOLIAN	MAX	2	B	3
3001AD	MAX	2	B	3
F15	MAX	2	B	3
QUEEN	MAX	2	B	3
BRONCOS	MAX	2	B	3
STARTREK	MAX	2	B	3
ROOM	MAX	2	B	3
RAMBO	MAX	2	B	3
OWL	MAX	2	B	3
ENTERPR	MAX	2	B	3
STAR-T3	MAX	2	B	3
NCC-1701	MAX	2	B	3
SAT-2	MAX	2	B	3
ATMOSP	MAX	2	B	3
STARWARS	MAX	2	B	3
ORIENTAL	MAX	2	B	3

* PD-43
Picture files

STAMP	MAX	2	B	3
STRIPE	MAX	2	B	3
WOMAN	MAX	2	B	3
BLUEJAY	MAX	2	B	3
LUCY	MAX	2	B	3
OLD ENG	MAX	2	B	3
MENU1	MAX	2	B	3
OWL	MAX	2	B	3
VAN GOG	MAX	2	B	3
WOMAN1	MAX	2	B	3
PSH	MAX	2	B	3
DUCKPOND	MAX	2	B	3
RANGER	MAX	2	B	3
PLANET	MAX	2	B	3
CHRSTMAS	MAX	2	B	3
PEACE	MAX	2	B	3
WOMAN3	MAX	2	B	3
HAWK	MAX	2	B	3
PHASER	MAX	2	B	3
PIXFILES	BAS	0	B	3

PD-44
Terminal program with documentation. This will work with the CoCo-3. Instructions are included.

MTRM43	BIN	2	B	8
CONFIG43	BAS	0	B	4
MTSTART	BAS	0	B	4
MTERM1	DOC	1	A	11
MTERM2	DOC	1	A	8
MTERM3	DOC	1	A	7
DOS BOOT	DAT	1	A	1
*	*	0	B	1
**	*	1	A	1
READDOC	BAS	0	B	1

* PD-45
Picture Files

DRAGON	MAX	2	B	3
HOT LIPS	MAX	2	B	3
ANIMALS	MAX	2	B	3
CLOWN F	MAX	2	B	3
FISH	MAX	2	B	3
3 MEN	MAX	2	B	3
S MAP	MAX	2	B	3
BUGS	MAX	2	B	3
CFISH	MAX	2	B	3
HERO	MAX	2	B	3
WMAP	MAX	2	B	3
GSCOTT	MAX	2	B	3
STATES	MAX	2	B	3
HORSE	MAX	2	B	3
CROSS	MAX	2	B	3
FOODW	MAX	2	B	3
RSTONE	MAX	2	B	3
COCO	MAX	2	B	3
ALIEN	MAX	2	B	3
PIXFILES	BAS	0	B	3

* PD-46
Talk and Music Files (C)LOADM "FILE" then EXEC.

TALK	BIN	2	B	11
TALK2	BIN	2	B	11
WILLTELL	BIN	2	B	9
MUSICBOX	BIN	2	B	1
BEATLES	BIN	2	B	4
JUMP	BIN	2	B	5
GRELN	BIN	2	B	5
GHOST	BIN	2	B	4
JINGLE	BIN	2	B	3
WORLD	BIN	2	B	5
CTRYROAD	BIN	2	B	2

* PD-47

Miscellaneous Pgms

T	BAS	0	B	2
SANTEE2	BAS	0	B	1
MILEAGE	BAS	0	B	1
M	BAS	0	B	1
DIGITS	BAS	0	B	1
NUMBLIST	BAS	0	B	1
COUNT	BAS	0	B	1
SC	BAS	0	B	1
DRAWTEXT	BAS	0	B	1
SAMPLE	BAS	D	B	1
GRSCRWRT	BAS	D	B	2
HRTEXT2	BAS	0	B	3
DRAW	BAS	0	B	2
WRITER	BAS	0	B	1
TYPEBET	BAS	0	B	2
WRITEBET	BAS	0	B	2
TEXT2	BAS	D	B	2
SANTEE	BAS	0	B	2
SHUTTLE	BAS	0	B	1
AJOCK	BAS	0	B	1
PLATFORM	BAS	0	B	1
MAZE	BAS	0	B	4
DISKZAPR	BAS	0	B	2
ZAP	BAS	0	B	3
DETHSHIP	BAS	0	B	3
BACKUP35	BAS	D	B	1
BOOT	BAS	0	B	1
SCRNLIST	BAS	0	B	1
DOSSTART	BAS	0	B	1
LABEL	BAS	0	B	2
DSKDSABL	BAS	0	B	1
NOFREEQ	BAS	0	B	1
FORMATER	BAS	0	B	1
ROMRAM	BIN	2	B	1
SUPDUP	BIN	2	B	1
TESTTEXT	BAS	0	B	1

* PD-48

Miscellaneous Pgms

EXTBAS	BAS	0	B	3
DISAPEAR	BAS	0	B	1
PAINT	BAS	0	B	1
DATA	BIN	2	B	1
DATA2	BIN	2	B	1
SCRDATA	BIN	2	B	1
FILL2	BIN	2	B	2
QUADDRAW	BAS	0	B	1
CELTIC	BAS	0	B	2
ALL RAM	BAS	0	B	1
CHARGEN	BIN	2	B	1
ROMRAM	BIN	2	B	1
OBSTACLE	BAS	0	B	1
64K RAM	BAS	0	B	1
COLORSEL	BAS	0	B	1
TRIG	BAS	0	B	4
ALGEBRA	BAS	0	B	4
PLAY	BAS	0	B	1
STATECAP	BAS	0	B	2
MLSOUNDS	BAS	0	B	1
ROTATION	BAS	0	B	2
PARABOLA	BAS	0	B	2
INSTAPIC	BAS	0	B	1
CLOVER	BAS	0	B	1
HAT-PLOT	BAS	0	B	1
WHEEL 1	BAS	0	B	1
LETTER-R	PAR	1	A	1
3-LINES	ROT	1	A	1
TRAPZOID	ROT	1	A	2
PYRAMID	ROT	1	A	2
CUBE	ROT	1	A	3
51X24	BAS	0	B	2
WINDOW	BAS	0	B	5
GGPRTSU	BAS	0	B	1
KALEIDO	BAS	0	B	1
OKBJAPRT	BAS	0	B	1
NUMCNVTR	BAS	0	B	1
ADVATN	BAS	0	B	1

*PD-4 9

Miscellaneous Pgms.

BC	BIN	2	B	10
PEDRO	BIN	2	B	11
BLOCKADE	BAS	0	B	3
REPEAT	BAS	0	B	1
AIRPLANE	BAS	0	B	1
BUSTOUT	BAS	0	B	1
GOLF	BAS	0	B	7
CITY	BAS	0	B	2
AIR-RAID	BAS	0	B	2
MAZE	BAS	0	B	4
DUALDUP	BIN	2	B	2
DIRMAP	BAS	0	B	3
CHESS	BAS	0	B	5
WHATZIT	BAS	0	B	4
BATLSHIP	BAS	0	B	3
SP*ROCKS	BAS	0	B	1

* PD-50
Miscellaneous PGMS

GOBBLER	BAS	0	B	2
PYTHON	BAS	0	B	2
LUNAR	BAS	0	B	2
LUNALANA	BAS	0	B	1
AMAZING	BAS	0	B	2
BALLOON	BAS	0	B	1
VAPORWRM	BAS	0	B	2
ABM	BAS	0	B	3
BULLSEYE	BAS	0	B	1
CRASH	BAS	0	B	1
DOTS	BAS	0	B	3
E-16	BAS	0	B	3
KRYPTON	ART	2	B	3
KRYPTON	BAS	0	B	1
KRYPTON	GAM	0	B	1
NUKEATTK	BAS	0	B	2
ASTEROID	BAS	0	B	1
PRIX	BAS	0	B	2
ONE	BIN	2	B	3
TWO	BIN	2	B	3
THREE	BIN	2	B	3
FOUR	BIN	2	B	3
TEMPEST	BAS	0	B	2
SNAKE	BAS	0	B	2
SCORE	DAT	1	A	1
OTHELLO	BAS	0	B	4
ROCKS	BAS	0	B	3
LANDER	BAS	0	B	2

* PD-51
Games & Programs

DRAGRACE	BAS	0	B	1
WORMER	BAS	0	B	2
SIMON	BAS	0	B	2
RIDER	BAS	0	B	2
MISSILE	BAS	0	B	3
LETSHOOT	BAS	0	B	7
SHOOTGAL	BAS	0	B	2
MISSILE2	BAS	0	B	3
FENCE	BAS	0	B	3
BANDIT	BAS	0	B	1
CHICKEN	BAS	0	B	2
MAXIMUM	BAS	0	B	3
FLIGHT	BAS	0	B	2
COVERUP	BAS	0	B	2
WORLDMAP	BAS	0	B	4
POUNCE	BAS	0	B	1
MARTIANS	BAS	0	B	2
FINDIT	BAS	0	B	3
SCRAMBLE	BAS	0	B	5
BOUNBABY	BAS	0	B	2
CHICK	BAS	0	B	3
BOBO	BAS	0	B	3
RUBIC	BAS	0	B	4
MCJUMP	BAS	0	B	3

* PD-52
Picture files

COCO	MAX	2	B	6
COL COCO	MAX	2	B	6
MOOSHEAD	MAX	2	B	6
COKE	MAX	2	B	6
CUBS	MAX	2	B	6
REDS	MAX	2	B	6
BREAKERS	MAX	2	B	6
USFL	MAX	2	B	6
SPACE	BIN	2	B	3
GIZMO	MAX	2	B	3
DINASOUR	MAX	2	B	3

* PD 53
Picture Files

INDIAN	MAX	2	B	6
HOMECOME	MAX	2	B	6
GRIN	BIN	2	B	3
TARD	BIN	2	B	3
STUD	BIN	2	B	3
COMET	BIN	2	B	3
DESERT	BIN	2	B	3
FOOD	BIN	2	B	3
SHIRK	BIN	2	B	3
PLAYA	BIN	2	B	3
HELLO	BIN	2	B	3
GROVER	BIN	2	B	3
DRIVE IN	BIN	2	B	3
TIME	BIN	2	B	3
KOALA	BIN	2	B	3
PATTERN	BIN	2	B	3
HAGAR	BIN	2	B	3
CHIPS	BIN	2	B	3

* PD 54
Picture Files

PENTAGON	PIC	2	B	3
GRID 2	PIC	2	B	3
SNOWFLAK	PIC	2	B	3
CONETUNL	PIC	2	B	3
4-POINT	PIC	2	B	3
BALTSTR	MAX	2	B	3
CARTOON	MAX	2	B	3
HUELEWIS	MAX	2	B	3
STARTREK	MAX	2	B	3
HOUSE1	MAX	2	B	6
HOUSE2	MAX	2	B	6
LIFECYCL	MAX	2	B	6
COCOMAG	MAX	2	B	3
MASCASTL	MAX	2	B	3
COLUMBIA	MAX	2	B	3
POLO	MAX	2	B	3
ET	BAS	0	B	7
WHEEL 1	PIC	2	B	3

* PD-55
Picture Files

PARKERPT	MAX	2	B	3
TOWER	PIC	2	B	3
TOWER2	PIC	2	B	3
SCREEN	PIC	2	B	3
BOMB	PIC	2	B	3
ANDRON	PIC	2	B	3
SALE	PIC	2	B	3
CHIPS	PIC	2	B	3
TUNLROAD	BIN	2	B	3
LONEROAD	BIN	2	B	3
CITYROAD	BIN	2	B	3
LAKEROAD	BIN	2	B	3
CROSROAD	BIN	2	B	3
BLACK	BIN	2	B	3
CAL1	BIN	2	B	3
CAL2	BIN	2	B	3
CAL3	BIN	2	B	3
3-LEAF	PIC	2	B	3
5-STARS	PIC	2	B	3
SPHERE	PIC	2	B	3
15-LEAF	PIC	2	B	3

PD-56

Glossary, Memory Maps, Programs

COCO	VIP	1	A	4
VIP ON 3	VIP	1	A	1
BEEP	VIP	1	A	1
MCTRM3	VIP	1	A	1
GLOSSARY	VIP	1	A	7
POKEPEEK	VIP	1	A	17
WIDTH	VIP	1	A	1
COCO 3	VIP	1	A	17
MISSLES	BAS	0	B	2
CLOCK	BAS	0	B	1
JET	BAS	0	B	4

* PD-57
Picture Files

VAMPIRE	PIC	2	B	3
ATLANTA	BAS	0	B	3
NOGHOST	PIC	2	B	3
AIRPORT	BAS	0	B	4
S EASTON	BAS	0	B	4
1SMLSTEP	BAS	0	B	4
HAGAR	PIC	2	B	3
SUNSET	BAS	0	B	3
S NICKS	BAS	0	B	4
SNOOPY1	BAS	0	B	3
MICKEY	BIN	1	B	8
DONALD	BIN	2	B	8
SNOOPY2	BAS	0	B	4
SNOOPY3	BAS	0	B	4
SNOOPY4	BAS	0	B	4

* PD-58
Miscellaneous Pgms.

DISKLIST	BAS	0	B	1
DIRLIST	BAS	0	B	2
ML ADDR	BAS	0	B	1
DISKDUMP	BAS	0	B	1
PRINUTIL	BAS	0	B	2
CALPRINT	BAS	0	B	3
ALPHSONG	BAS	0	B	1
PAINT	BAS	0	B	1
DOGPICT	BAS	0	B	2
EVADER	BAS	0	B	1
NUKATTC	BAS	0	B	2
BASICMAP	BAS	0	B	3
JOYPAINT	BAS	0	B	1
PUMPKIN	BAS	0	B	1
HOMOYMS	BAS	0	B	1
ABBREV	BAS	0	B	4
CONVERT	BAS	0	B	3
CASSDIR	BAS	0	B	1
CVERT	BAS	0	B	1
FLASCARD	BAS	0	B	1
MESSAGE	BAS	0	B	1
RELOCAT	BAS	0	B	1
COUNT	BAS	0	B	1
CALENDAR	BAS	0	B	1
DOGS	BAS	0	B	1
DOGFIGHR	BAS	0	B	1
BEAST	BAS	0	B	1

* PD-59
GAMES, UTILITIES

64X64F	BAS	0	B	1
RND#'S	BAS	0	B	1
SCROLLER	BAS	0	B	1
COCOBUG	BAS	0	B	2
DRWBOARD	BAS	0	B	1
SPACE	BAS	0	B	1
DIR-ADDR	BAS	0	B	1
BACKGAMN	BIN	2	B	2
CHESS	BIN	2	B	3
BATTLE	BIN	2	B	2
GERM	BIN	2	B	1
BLEEP	BAS	0	B	2
TICKER	BAS	0	B	3
LEAKYTAP	BAS	0	B	3
UTOPIAN	BAS	0	B	4
COLORDOT	BAS	0	B	3
STAYALIV	BAS	0	B	2
TIMEFLT	BAS	0	B	3
NAVYGUNS	BAS	0	B	2
ATACMAN	BAS	0	B	3
CALENDAR	BAS	0	B	1
POKER2S	BAS	0	B	1
VIEWERS	BAS	0	B	1
STUFF	BAS	0	B	1

PD-21 MUSIC

PLAY MUSIC THROUGH YOUR TV OR MONITOR. COMPOSE & EDIT MUSIC

ORCH	BIN	2	B	0
ORCH	DOC	1	A	3
OCNVRT	BIN	2	B	2
GHOSBUST	MUS	4	M	3
STELMO	MUS	4	M	2
MASH	MUS	4	M	2
BOND1	MUS	4	M	2
2001	MUS	4	M	2
ARIA	MUS	4	M	2
INVENTI	MUS	4	M	1
BATTSTAR	MUS	4	M	2
BOND2	MUS	4	M	2
CLOSENCT	MUS	4	M	2
SCARBORO	MUS	4	M	1
FUGUEIHC	MUS	4	M	1
MINUET	MUS	4	M	1
LONGTIME	MUS	4	M	2
MESSIAH	MUS	4	M	3

* PD-22 MUSIC-1

LOADM "NAME/MUS" EXEC TO PLAY MUSIC THROUGH TV OR MON.

ADDPLAY	BAS	0	B	1
DEPLAY	BAS	0	B	1
MSQUEZ	BAS	0	B	2
ALSOSPAK	MUS	2	B	5
BOOGIE	MUS	2	B	6
CIRCUS	MUS	2	B	5
CLOWN	MUS	2	B	2
CLOWNS	MUS	2	B	4
HAYDEN	MUS	2	B	8
JBGOOD	MUS	2	B	4
PEACE	MUS	2	B	2
PEACH	MUS	2	B	5
PUFF	MUS	2	B	6
GOODDIEY	MUS	2	B	4

* PD-23 MUSIC-2

LOADM "NAME/MUS" EXEC TO PLAY MUSIC THROUGH TV OR MON.

ADDPLAY	BAS	0	B	1
DEPLAY	BAS	0	B	1
MSQUEZ	BAS	0	B	2
RAIN	MUS	2	B	2
SONATA3	MUS	2	B	3
STRAV	MUS	2	B	4
FOGGY	MUS	2	B	4
FUNERAL	MUS	2	B	3
HARDDAY	MUS	2	B	2
INVENT	MUS	2	B	2
INVENT11	MUS	2	B	3
INVENT15	MUS	2	B	3
INVENT7	MUS	2	B	3
INVENT8	MUS	2	B	2
JOPLIN	MUS	2	B	4
KHAN	MUS	2	B	6

* PD-24 MUSIC-3

LOADM "NAME/MUS" EXEC TO PLAY MUSIC THROUGH TV OR MON.

ADDPLAY	BAS	0	B	1
DEPLAY	BAS	0	B	1
MSQUEZ	BAS	0	B	2
PEANUTS	MUS	2	B	3
ROCK	MUS	2	B	5
ROXANNE	MUS	2	B	5
SCHERZO	MUS	2	B	2
TEACH	MUS	2	B	2
PIANOMAN	MUS	2	B	5
STRANGER	MUS	2	B	5
CAMELOT	MUS	2	B	4
CHACONNE	MUS	2	B	6
DIAMOND	MUS	2	B	3
DOWNROAD	MUS	2	B	4
FANTASY1	MUS	2	B	2

* PD-25 MUSIC-4

LOADM "NAME/MUS" EXEC TO PLAY MUSIC THROUGH TV OR MON.

FANTASY2	MUS	2	B	3
GRENGRAS	MUS	2	B	4
HUMOR	MUS	2	B	4
INCROW	MUS	2	B	3
STARWARS	MUS	2	B	2
SUITEGM	MUS	2	B	6
SUPERMAN	MUS	2	B	2
WHENIM64	MUS	2	B	4
ROOTBEER	MUS	2	B	7
WAYUARE	MUS	2	B	3
AXELF	MUS	2	B	2
TOCATTA	MUS	2	B	3

* PD-26 LAST WILL

LOAN	BAS	0	B	1
LASTWILL	BAS	0	B	6
IMEGA	BAS	0	B	3
AWARI	BAS	0	B	1
BACARAT	BAS	0	B	2
BAGELS	BAS	0	B	1
BLACKJAC	BAS	0	B	1
CHUCK	BAS	0	B	1
CONCENTR	BAS	0	B	1
CUBES	BAS	0	B	2

* PD-27 GAMES

DEFUZE	BAS	0	B	1
DR ZEE	BAS	0	B	1
FLIPFLOP	BAS	0	B	1
GO-FISH	BAS	0	B	2
HANGMAN	BAS	0	B	2
HIGHLOW	BAS	0	B	1
JACKPOT	BAS	0	B	1
KEYS	BAS	0	B	1
L E M	BAS	0	B	3
LUNARLD	BAS	0	B	2
NUMBERS	BAS	0	B	1
OBSTACLE	BAS	0	B	1
POOLGAME	BAS	0	B	4
RETURN	BAS	0	B	1
REVERSI	BAS	0	B	2
STARTREK	BAS	0	B	2
TTREK	BAS	0	B	3

PD-28 COMM. CC-TALK, BBS, TERM

BBS'S	DAT	1	A	1
CCT	IO	2	B	1
CCTALK	BAS	0	B	1
CNFG40V1	BAS	0	A	5
CNFG40 V2	BAS	0	A	4
CTLKEY	BAS	1	A	1
MTERM1	DOC	1	A	11
MTERM2	DOC	1	A	8
MTERM40	BIN	2	B	8
REDIAL	BAS	0	A	1
PACREDIA	BAS	0	A	1

PD-29 COMM, WORD PRO, GAMES

GOSTSHIP	BAS	0	B	8
INT RATE	BAS	0	B	2
INVSTANL	PC	0	B	4
MENU	BAS	0	B	4
MOTOJUMP	BAS	0	B	3
SCREEN	MAX	2	B	6
SCREEN1	BIN	2	B	3
SCREEN2	BIN	2	B	3
SCREEN2	MAX	2	B	6
STRINGTU	BAS	0	B	4
TTERM	DSK	2	B	4
USING	BAS	0	B	3
WF-DOC	JP	0	B	2
WORDFILE	JP	0	B	4
PARM1	DAT	1	A	1

PD-30 CHECK BOOK, UTILITIES

CHECKBOK	BAS	0	B	4
CHECKBOK	DOC	1	A	9
DIRR	CMD	2	B	1
DVIEW	BAS	0	B	1
FILEMAID	BAS	0	B	2
LISTER	BAS	0	B	1
PAINTPOT	BAS	0	B	4
SCREEN	MAX	2	B	6
SCREEN1	BIN	2	B	3
SCREEN2	BIN	2	B	3
SCREEN2	MAX	2	B	6
SPECZAP	BAS	0	B	5
TAPETYPE	BIN	2	B	1
TTERM	DSK	2	B	4
DVIEW	DSK	0	B	1
MENU	BAS	0	B	4

PD-31

PIRATES TREASURE - As you explore the cave looking for the treasure, a picture appears on the screen as you go from room to room. These pictures are loaded from disk. A computer with a disk drive is required and a ramdisk is preferred.

PD-32

Color Computer 3 moving pictures. Consists of a beautiful waterfall and a colorful bouncing ball.

WATRFALL	BAS	0	B	1
WATRFALL	BIN	2	B	1
WATRFALL	MOE	1	B	
BALL	BAS	0	B	1
BALL2	BAS	0	B	1
BOUNCE	BIN	2	B	1
BALL2	HR1	2	B	4
BALL2	HR2	2	B	4
BALL2	HR3	2	B	4
BALL2	HR4	2	B	4

PD-33

EDUCTIONAL PROGRAMS

ABBREV	BAS	0	B	4
ABCPOP	BAS	0	B	3
ALPHAAL	BAS	0	B	1
EDUCATE	BAS	0	B	1
HANGP	BAS	0	B	1
HOMONYM	BAS	0	B	1
SPELWORD	BAS	0	B	1
MATH	BAS	0	B	2
DRILL	BAS	0	B	2
MLTP	BAS	0	B	1
ROUND	BAS	0	B	2
AREA	BAS	0	B	6
METCONV	BAS	0	B	3
NUMBERS	BAS	0	B	2
SIEVE	BAS	0	B	1

PD 34

!! BULLETIN BOARD!! With this software you can run your own bulletin board at 300 or 1200 baud. Instructions are included.

SC	EDI	0	B	3
[illegible]	EDI	0	B	4
SC	EDI	0	B	4
SMP	EDI	0	B	2
64K	BAS	0	B	1
STARTU	[illegible]	0	B	2
COTERM	[illegible]	2	B	1
USER	[illegible]	0	B	6
COBBS	SYS	[illegible]		9
START1	DOC	[illegible]		
USER	DOC	1	[illegible]	4
COBBSREV	DOC	1	A	5
OPERAT	DOC	1	A	7
SMH	EDI	0	B	3
MENU	DOC	1	A	11

DISCONTINUED

PD 35

ADDRESS FILES AND FINANCE PROGRAMS

PHONE	BAS	0	B	1
LABELPRT	BAS	0	B	1
LETTER	BAS	0	B	3
MAILLST	BAS	0	B	2
PHONLST	BAS	0	B	1
MINIWORD	BAS	0	B	2
LNWIDTH	BAS	0	B	1
CHKWRITE	BAS	0	B	2
CHKANAL	BAS	0	B	4
PRNTCHK	BAS	0	A	1
CHECKS	BAS	0	B	4
CHCKSTUB	BAS	0	B	1
TOTALS	DAT	1	A	1
CHECKS	DAT	1	A	1
GRAPH	BAS	0	B	4
LOAN	BAS	0	B	3
CALC	BAS	0	B	1
PAYMENT	BAS	0	B	1
CASHJNL	BAS	0	B	3
AMORT	BAS	0	B	3

PD 36

COMP. SCIENCE PGMS 1: These programs are tutorials on basic programming.

COMPSC1	BAS	0	B	8
COMPSC2	BAS	0	B	3
COMPSC3	BAS	0	B	9
COMPSC4	BAS	0	B	5
COMPSC5	BAS	0	B	9
COMPSC6	BAS	0	B	5
GETPUT	BAS	0	B	2

PD 37

COMP. SCIENCE PGMS 2:

These programs are tutorials on basic programming.

IFTHEN	BAS	0	B	0
EXTENDED	BAS	0	B	2
GETPUT	BAS	0	B	2
COMPSCI8	BAS	0	B	8
COMPSCI9	BAS	0	B	5
COMPSCI7	BAS	0	B	7
EXTDEMO	BAS	0	B	3

* PD 38

EDUCATIONAL PROGRAMS These programs are excellent learning tools for school children.

ABBREV	BAS	0	B	4
ABCPOP	BAS	0	B	3
ALPHAAL	BAS	0	B	1
EDUCATE	BAS	0	B	1
HANGP	BAS	0	B	1
HOMONYM	BAS	0	B	1
SPELWORD	BAS	0	B	2
MATH	BAS	0	B	2
DRILL	BAS	0	B	2
MLTP	BAS	0	B	1
ROUND	BAS	0	B	2
AREA	BAS	0	B	6
METCONV	BAS	0	B	3
NUMBERS	BAS	0	B	2

PD 39

ADDRESS FILES AND FINANCE PROGRAMS

PHONE	BAS	0	B	1
LABELPRT	BAS	0	B	1
LETTER	BAS	0	B	3
MAILIST	BAS	0	B	1
WORDPROC	BAS	0	B	3
MAILLST	BAS	0	B	2
PHONLST	BAS	0	B	1
MINIWORD	BAS	0	B	2
LNWIDTH	BAS	0	B	1
CHKWRITE	BAS	0	B	2
CHKANAL	BAS	0	B	4
PRNTCHK	BAS	0	A	1
CHECKS	BAS	0	B	4
CHCKSTUB	BAS	0	B	1
TOTALS	DAT	1	A	1
CHECKS	DAT	1	A	1
GRAPH	BAS	0	B	4
LOAN	BAS	0	B	3
CALC	BAS	0	B	1
PAYMENT	BAS	0	B	1
CASHJNL	BAS	0	B	3
AMORT	BAS	0	B	3

*PD-40

TAPE-DSK & DSK-TAPE With these programs you can copy a disk to tape or a tape to disk.

T2D	BIN	2	B	2
DTCOPY	BIN	2	B	1
DSK-TP	BAS	0	B	1
DISKLIST	BAS	0	B	1
DIRLIST	BAS	0	B	2
DISKDUMP	BAS	0	B	1
CASSDIR	BAS	0	B	1

Pictures can be loaded with CoCo MAX or our PIXFILES/BAS program They can be printed on a graphics printer. See Dynamic Color News issue #44 for a graphics screen dump program. Our DYPRINT package allows large blown up pictures to be printed using standard print.

All program collections are available on disk. Collections with a * are also available on tape.

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PUBLIC DOMAIN SOFTWARE

This large collection of programs will allow you to quickly expand your library. All programs are on disk and programs with a * can be supplied on tape. Some programs require a joystick Instructions are included in some collections as DAT or TXT files

* PD-1 GAMES

MENU	BAS	0	B	1
BEAST	BAS	0	B	1
BEAST	DAT	1	A	1
BOBO	BAS	0	B	3
GUNNER	BAS	0	B	2
HOW	BAS	0	B	3
LANDER	BAS	0	B	3
LIFE	BAS	0	B	3
MAX	BAS	0	B	3
POKER	BAS	0	B	2
BIORITHM	BAS	0	B	3
BLACKBOX	BAS	0	B	2
BLOCKADE	BAS	0	B	1
BUSJUMP	BAS	0	B	1
CHUTE	BAS	0	B	2
GO	BAS	0	B	3
HANGMAN	BAS	0	B	2
OTHELLO	BAS	0	B	2
TARTUS	BAS	0	B	1
TARTUS2	BAS	0	B	1

* PD-2 GAMES

MENU	BAS	0	B	1
RUBIC	BAS	0	B	5
FRACTAL	BAS	0	B	1
KALSCOPE	BAS	0	B	2
TARTUS	BAS	0	B	1
TARTUS2	BAS	0	B	1
WORLD3D	BAS	0	B	4
LIFE	BAS	0	B	2
ADVENT	BAS	0	B	4
ADVENT	DOC	1	A	2
HURKLE	BAS	0	B	2
REVERSE	BAS	0	B	2
GUESSFR	BAS	0	B	2
SCRAMBLE	BAS	0	B	3
PIZZA	BAS	0	B	2
CINQUAIN	BAS	0	B	2

* PD-3 GAMES

MENU	BAS	0	B	1
AANDAN	BAS	0	B	2
STARTREK	BAS	0	B	9
TREKINST	BAS	0	B	3
SEQUENCE	BAS	0	B	2
ALPHABET	BAS	0	B	3
GEOGRAPH	BAS	0	B	4
FLASH	BAS	0	B	4
BAGELS	BAS	0	B	3
OREGON	BAS	0	B	9
MULTIPLY	BAS	0	B	2

* PD-4 ML GAMES

MENU	BAS	0	B	1
PONG	BIN	2	B	1
SQUASH	BIN	2	B	2
BLOCKADE	BIN	2	B	2
GERM	BIN	2	B	1
WIGWORM	BIN	2	B	2
GRID	BIN	2	B	2
ZEROG	BIN	2	B	2
3DTICTAC	BIN	2	B	7
HOPBOP	BIN	2	B	5
ICEWAR	BAS	0	B	6
CIVILWAR	BAS	0	B	4
TICTACTO	BIN	2	B	7

* PD-5 GAMES

MENU	BAS	0	B	1
CAVE	BAS	0	B	4
WARGAME	BAS	0	B	2
WARGAME	BIN	2	B	1
WARGAME2	BAS	0	B	5
WARROOM	BIN	2	B	3
NORAD	BAS	0	B	3
ANDREA	BAS	0	B	5
CURSE	BAS	0	B	4
GARGOYLE	BAS	0	B	6
KINGTUT	BAS	0	B	7
TAIPAN	BAS	0	B	6

DSK-6

SPELL & FIX- FIND SPELLING ERRORS IN TXT DISK FILES

MENU	BAS	0	B	1
MANUAL	TXT	1	A	12
SPELLFX2	BAS	0	B	1
SPELLFX2	BIN	2	B	6
SPELLFIX	BAS	0	B	1
DICT	TXT	1	A	33
COREDICT	TXT	1	A	1
SAMPLE	TXT	1	A	1
BUILD	BAS	0	B	1
LIST	BAS	0	B	1
RESET	BAS	0	B	1
APPEND	BAS	0	B	1
ADDWORDS	BIN	2	B	3

PD-7 DISK UTILITIES

MENU	BAS	0	B	1
BASIC64	BIN	2	B	1
BSEARCH	BIN	2	B	1
DISKCOMP	BIN	2	B	1
DISKTEST	BIN	2	B	3
DISKWASH	BAS	0	B	1
DOS64K	BAS	0	B	2
DSDBOOT	BIN	2	B	1
LIST	BIN	2	B	2
PRINT	BIN	2	B	3
PRINTDIR	BAS	0	B	1
RECOVER	BIN	2	B	1
ROMBACK	BAS	0	B	1
ROMFIX	BIN	2	B	1

PD-8 DISK UTILITIES

SCRN51	BAS	0	B	1
SCRN51	BIN	2	B	1
SCRNDEMO	BAS	0	B	2
SDC	BIN	2	B	1
SQUEEZE	BIN	2	B	1
SSDBOOT	BIN	2	B	1
TAPE2DSK	BAS	0	B	1
TIMER	BIN	2	B	2
UNLOCK	BIN	2	B	1
BACKUP	BIN	2	B	1
BACKUP1	BIN	2	B	1
MORE	BIN	2	B	3
SPEAK	BIN	2	B	3
PCLEARFX	BIN	2	B	1
MULTBACK	BIN	2	B	1
MULTBACK	DOC	1	A	1

PD-9

TERMINAL PROGRAMS

MENU	BAS	0	B	1
TELETERM	BIN	2	B	3
TELETERM	CAS	2	B	3
TTHELP	DAT	1	A	4
MTERM	BIN	2	B	6
MTERM	VIP	1	A	19
MTCONFIG	BAS	0	B	3
MTERM+	BIN	2	B	6
DATATRDE	BIN	2	B	3
KERMIT	BAS	1	A	1
KERMIT	BIN	2	B	2
HAYESAE	BIN	2	B	4
HAYESAE	DOC	1	A	6

PD-10

COLOR COMP. FORTH

MENU	BAS	0	B	1
FORTHMAN	UL1	2	B	7
FORTHMAN	UL2	2	B	7
FORTHMAN	UL3	2	B	1
FORTH	BIN	2	B	3
EDIT	DAT	1	A	3
FRTHDOC1	TXT	1	A	7
FRTHDOC2	TXT	1	A	7
FRTHDOC3	TXT	1	A	1
FRTHDOC4	TXT	1	A	7
32KFORTH	BIN	2	B	4
NEWFORTH	BIN	2	B	3
WE	BAS	0	B	1

PD-11 MCPAINT

A COMPLETE GRAPHICS DEVELOPMENT PROGRAM WITH INSTRUCTIONS

RUN-ME	BAS	0	B	1
MCPAINT	BIN	2	B	11
ICONS	SYS	2	B	3
MCDOC	DOC	1	A	11
PRINTDOC	BAS	1	A	1
GLASDEMO	BIN	2	B	6
STARS	BIN	2	B	2
1940S	SET	2	B	1
BLOON	SET	2	B	1
BOLD	SET	2	B	1
FANCY	SET	2	B	1
GREEK	SET	2	B	1
GREEKU	SET	2	B	1
HEBREW	SET	2	B	1
OLDENG	SET	2	B	1
TYPING	SET	2	B	1
EPSON	DRV	2	B	1
EPSON2	DRV	2	B	1
ANIMATE	BAS	0	B	1
ANIMAT	BIN	2	B	1
BANNER	BAS	0	B	2
MCUTIL	BIN	2	B	1

* PD-12

PHODE 4 PICTURES

CHURCH, ROSES, HOUSE
RUN "PIXFILES"
JOYSTICK IS REQUIRED

XIXCMP	BAS	0	A	3
OUTPOST	BAS	0	A	3
OUTPOST	BIN	2	B	3
SFIELD	BAS	0	A	2
SFIELD	BIN	2	B	3
PIXFILES	BAS	0	B	3
TRUCK	BIN	2	B	3
MODEM	BIN	2	B	3
HORSE	BIN	2	B	3
MISSION	BIN	2	B	3
CLOISTER	BIN	2	B	3
RAIN	BIN	2	B	3
EAGLE	BIN	2	B	3
ROSES	BIN	2	B	3
CHURCH	BIN	2	B	3
GARDEN	BIN	2	B	3
PRES	BIN	2	B	3
LONI4	BAS	0	A	3

PD-13

GRAPHICON PICTURE DISK-1. REQUIRES PIXFILES/BAS FROM PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-14

GRAPHICON PICTURE DISK-2. REQUIRES PIXFILES/BAS FROM PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-15

GRAPHICON PICTURE DISK-3 REQUIRES PIXFILES/BAS FROM PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-16

GRAPHICON PICTURE DISK-4 REQUIRES PIXFILES/BAS FROM PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-17 DISK UTILITIES

64KBHW	BAS	0	A	1
AUTOSTRT	BAS	0	B	1
BAKDIR	BAS	0	A	3
BIN>BAS	BAS	0	A	1
CASSLABL	BAS	0	B	1
CURSOR	BAS	0	B	1
CUSTOM	BAS	0	B	3
CUSTOMIZ	BAS	0	B	1
DIR	BIN	2	B	1
DIR32	BAS	0	A	2
DIR32C	DOC	1	A	3
DIRLISTR	BAS	0	B	1
DIRLISTR	BAS	0	B	1

PD-18 TAPE TO DISK DISK UTILITIES

DIRSORT	BAS	0	A	1
DISK-DIR	BAS	0	A	1
DISKLABL	BAS	0	A	1
LOADSOLU	BAS	0	B	1
MENU	BAS	0	B	1
PDIR	BAS	0	A	1
SORT	BAS	0	B	1
SORTPRT	BAS	0	B	1
SORTSAVE	BAS	0	A	1
SOULTION	BIN	2	B	1
SUPERBAC	BIN	2	B	1
T2D	BIN	2	B	2
TIMER	BAS	0	B	1
TPTODSK	BIN	2	B	1

* PD-19 GAMES

3DMAZE	BAS	0	A	2
BOXES	BAS	0	B	1
CLOSE EN	BAS	0	B	2
CRITICAL	BAS	0	B	1
GAMMON	BAS	0	B	3
GOLDMINE	BAS	0	A	3
HOCKEY	BAS	0	A	1
HOGJOWL	BAS	0	A	8
HORSERAC	BAS	0	A	3
JUMPING	BAS	0	B	1
KALIDESC	BAS	0	B	1
MASTMIND	BAS	0	B	1
MEMORY	BAS	0	B	1
MOONBASE	BAS	0	B	2
NAMES	BAS	0	B	4
OTHELLO	BAS	0	B	4

* PD-20 GAMES

PEG	BAS	0	B	3
RABBIT	BAS	0	B	1
SAFE	BAS	0	B	2
SAUACER	BAS	0	B	1
SHOOTEM	BAS	0	B	2
SIMMON	BAS	0	A	1
SLITHER	BAS	0	A	2
SPACE WA	BAS	0	B	4
STAR TRE	BAS	0	B	1
SUBCHASE	BAS	0	B	2
SUBDESTR	BAS	0	B	2
SUNDANCE	BAS	0	B	2
TANKS	BAS	0	B	2
TOWER	BAS	0	B	2
UNDROVER	BAS	0	B	1

PROGRAMS! PROGRAMS! and even more PROGRAMS!
from
Bill Bernico Software

Response from my Rainbow ad (May '88 - Page 56) was so great that I'm extending my offer. I'm selling ALL 7 of my "Pack" disks at half price. That's right, you'll get COCOPACK, FUNPACK, VALUPACK, SUBPACK, UTILPACK and 3-PACK (Volumns 1 & 2). These 'Pack' disk originally sold for $6 EACH! Now they can be yours for the low low price of just $21.00. That's HALF PRICE! I'll even pay shipping and handling. $21 is all you pay. You'll get games, graphics, utilities, tutorials, educational, home help, disk management, font styles, printer, music, graphic lettering and input programs and many more useful, helpful and entertaining programs for your CoCo 1, 2 AND 3 . Over 230 programs in all, and over 50 of those are for the new CoCo 3. The graphics are terrific.

Here's what you'll find on each disk:

COCOPACK - Over 60 programs, featuring selections from all catagories. Many graphic screen fonts.

FUNPACK - This disk includes additional and expanded fonts as well as 'CoCoSize', the exercise program for the Color Computer. (See the Rainbow review April '87 page 143 for details)

VALUPACK - This disk could have been called CoCoPack II because it contains dozens more programs in lots of catagories.

SUBPACK - Attention programmers! Here's a disk crammed with dozens of handy subroutines for you to use in your own programs. Throw dice, deal cards, display text on the graphics screen (CoCo 1&2) and much more!

UTILPACK - Find ML addresses, format your printer, figure business and finance deals, or calculate camera settings. These are just SOME of the many Utilities you'll find.

3-PACKs - Volumns 1 and 2 of contain many many programs just for the Color Computer 3. The graphics capabilities of this marvelous machine make it a natural for exciting games, graphics, and all the other catagories as well. A must for your growing collection of CoCo 3 programs!

Just to see if you're paying attention, for anyone who orders this collection of my goodies, I'll throw in disk number 8...it's called 3-PACK (Volumn III) and it's loaded with many more goodies just for the Color Computer 3. Remember, $21 will get you 8, not 7 disks. U.S. funds only. Send cash, check or money order only to:

Bill Bernico Software
708 Michigan Avenue
Sheboygan, WI 53081

RAMDISK
for the 512K COCO 3

A **ramdisk** operates similar to a disk drive except it is many times faster. The **512K ramdisk** allows drives 2 and 3 to be ramdisks. You can backup a disk to either **ramdisk** or select either one for quick program or data loading. **OS-9** is not required. A memory test program is also included. **$15**

DYPRINT

Now you can print **LARGE** signs for special occassions such as birthdays, parties, or yard sales. Even make your own **FOR SALE** signs when you need to sell that old car or lawnmower. **BANNER** uses standard print characters and is compatible with any printer. The characters are formed by a **21 x 27** dot pattern and are printed sideways across the paper. The basic character can be expanded up to 4 times for making large characters up to a full page.

MAXPRINT allows graphics to be blown up and printed on a standard printer. Any PMODE 4 picture can be printed. The program supports all 8 graphics pages for a total of 12288 bytes. **MAXPRINT** prints 8 characters per byte for a total of 98304 characters. Blow up pictures of friends and family generated by the DS-69B digitizer or make posters announcing sales or special events.

The **DYPRINT** package contains both **BANNER** and **MAXPRINT**. The cost is only **$19.95**

NEW TERMINAL PROGRAM

DYTERM 2 - Allows a Color Computer to interface with **Modems, Terminals**, or other Computers using the ASCII port. 300-2400 baud, 1 or 2 Stop bits, 7 or 8 bit words, variable parity. Download programs from bulletin boards or other computers or upload your ASCII programs. Supports **CoCo 2 and CoCo 3 Disk or Tape computers.** Basic program with machine language subroutines is easily modified.

Tape or Disk $19.95.

DECIMAL ML ASSEMBLER

DISASM is a 6809 **Assembler-Disassembler** that allows machine codes to be assembled using English mnemonics & decimal arithmetic. It supports all 6809 codes and is especially useful for beginners. Learn Assembly programming without using hex. Disassemble machine language programs and print them to a printer. **$9.95**

COCOMAX 2
(For COCO 2 Disk Systems)

Requires a "Y" cable or **multipack** expander. **$59.95 , "Y" Cable $24.95.**

DS-69B DIGITIZER

Capture pictures from your VCR or video camera. Then print them on your graphics printer. Have your friends over for an evening of fun and digitize and print their pictures. Supports all color computers. The picture can be displayed on the COCO 3's high resolution screen. Pictures can be Labeled with **COCO MAX** and printed on a graphics printer or saved on disk. 256 x 256 resolution, 64 levels of grey, & 8 images per second. Plug in ROM pack requires a multipack expander. Works with all color computer disk systems.

DS-69B $149.95 including shipping.

CC-THERM 2

CC-THERM 2 is a **dual digital thermometer** for Radio Shack Color Computers. It consists of two thermistors wired to the end of 10' and 20' flat cables for measuring **inside and outside temperatures.** The other end of the cable is wired to a joystick plug. The thermistors can be mounted on a wall, inside equipment, or outside for temperature measurements. **Basic** software on tape or disk continuously prints the temperature in both Fahrenheit and Centigrade. T or D software. **$19.95**

CC-LT

Now you can measure both **temperature and light**. The joystick assembly includes a light and temperature sensor at the end of a 20' flat cable. Uses one joystick plug. T or D Software **19.95.**

MEMORY MANAGER
(for the Color Computer 2)

Did you know that the 64K Color Computer 2 and earlier computers have an extra 32K that is generally not used? Our **Memory Manager** allows basic or machine language programs to be run in either **32K bank.** Banks are exchanged with an EXEC command. Also the **second bank** can be used as a **ramdisk** to store programs. This makes cassette operation faster than a disk. A third option configures the computer for the all ram mode allowing data or programs to be stored in the upper memory. The **Memory Manager** software is available on either cassette or disk. **$19.95.**

MEMORY SAVER 2

Have you ever had a **power failure** or **brownout** to wipe out your program? The **Memory Saver II** is a **battery** backup assembly that prevents loss of programs due to power failures. It mounts under the keyboard and works with all color computers. Consists of gel recharageable battery, control circuit, & miniature toggle switch. Will **power** a color computer for up to a **couple** of hours during a power failure.

Special sale price. $29.95.

Add $3 S/H. Specify Tape or Disk Software. Checks, VISA, & MC.

DYNAMIC ELECTRONICS INC. Box 896; Hartselle, AL 35640 (205) 773-2758