

RADIO SHACK COLOR COMPUTER MAGAZINE

MAR 1988
ISSUE #47

\$1.95

DUNN



NEWS

PROGRAMS

OS-9

FORTH

HAM RADIO

DYNAMIC COLOR NEWS is published monthly by DYNAMIC ELECTRONICS, INC., P.O. Box 896, Hartselle, AL 35640, phone (205) 773-2758. Bill Chapple, BA, BSE President; Dean Chapple, Sec. & Treas.; John Pearson, Ph. D. Consultant.

Entire Contents (c) by DYNAMIC ELECTRONICS INC., 1988. DYNAMIC COLOR NEWS is intended for the private use of our subscribers and purchasers. All rights reserved. Contents of this magazine may not be copied in whole or in part without written permission from DYNAMIC ELECTRONICS INC. Subscriptions are \$18/yr for U.S.A. \$20 Canada & Mexico, \$30 other foreign.

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.

```
*****
*
*   DYNAMIC COLOR NEWS
*
*       March 1988
*
*   Editor and Publisher
*       Bill Chapple W4GQC
*
*       Secretary
*       Dean Chapple
*
*****
```

CONTENTS

```
* Using Rom Routines . . . . . 4
* Taking Control . . . . . 12
  (Basic Programming Part 6)
# OS-9 & Basic 09 . . . . . 16
* Coast to Coast (Game) . . . . 20
* Editor's Comments . . . . . 26
* Logic (Educational Game) . . . 27
* Fourth . . . . . 29
  (New Instructional Series)
* ML Loader (Program) . . . . . 34
* Ham Radio & Computers . . . . 38
* WEFAX - Weather Program . . . 39
* Product Reviews . . . . . 44
* New Products . . . . . 46
* Questions & Answers . . . . . 46
  Advertiser's Index. . . . . 47
* Included in DCN on Disk or
  Tape.
# OS-9 Programs included in DCN
  on DISK.
```

USING ROM ROUTINES

by
John Galus

In the last part we examined some of Basic's ROM routines such as SET,CLS and SOUND. These routines are located in what is called normal Color Basic. Most Color Computers these days have Extended Basic. Extended Basic contains the routines that control the hi-resolution functions that make the Color computer one of the most powerful micro-computers on the market today. In this part of the series I will show you how to access many of these routines and use them in your Assembly language programs. These hi-resolution commands such as PMODE and PSET use an area of zero page "system" RAM that contains information needed for the current PMODE hi-resolution graphic screen in which we are to operate. Here is a list of these RAM addresses and their function:

ADDRESS	FUNCTION
\$B2	FOREGROUND COLOR
\$B3	BACKGROUND COLOR
\$B4	COLOR IN USE
\$B5	VIDEO COLOR BYTE
\$B6	PMODE NUMBER
\$B7+\$B8	END OF SCREEN
\$B9	# SCREEN BYTES
\$BA+\$BB	START OF SCREEN
\$BC	BASE ADDRESS
\$BD+\$BE	X START POS
\$BF+\$C0	Y START POS
\$C1	COLOR MASK
\$C2	PSET=1 RESET=0
\$C3+\$C4	END X POSITION
\$C5+\$C6	END Y POSITION
\$C7+\$C8	LAST USED X POS
\$C9+\$CA	LAST USED Y POS

\$CB+\$CC	CIRCLE X POS
\$CD+\$CE	CIRCLE Y POS
\$CF+\$D0	CIRCLE RADIUS
\$D1+\$D2	CIRCLE H/W
\$E8	DRAW ANGLE
\$E9	DRAW SCALE
\$112+\$113	TIMER VALUE

TABLE 1

We now must find the ROM addresses that we can use to access some of the Extended Basic's hi-resolution commands that setup a graphic screen PMODE,SCREEN and PCLS. PMODE is located at \$9621, SCREEN at \$9670 and PCLS at \$9532. We will use two methods to access these hi-resolution graphics. The first method is outlined in the Color Basic manual. Using this method we set the correct SAM and VDG registers to obtain the graphic screen we wish. Listing one shows you how to setup a PMODE4,1:SCREEN1,0:PCLS using this method. Another way to access these graphic screens is to use a technique to trick the system into expecting an Assembly language ASCII line as though we had entered a Basic statement. Using this method we don't have to worry about what type of computer we are using, Extended or Disk, since the system takes care of this for us. Be sure to remember to reserve room for a graphic screen using the MO directive using EDTASM+. After setting up a graphic screen it is easy to access the ROM routines PSET/PRESET and PPOINT as long as we know the address to enter these routines.

(\$=HEX)

PSET : \$9374
 PRESET : \$9365
 PPOINT : \$9339
 PMODE : \$9621
 SCREEN : \$9670
 PCLS : \$9532
 COLOR : \$9546
 LINE : \$94A1
 CIRCLE : \$9E9D
 PLAY : \$9A22
 DRAW : \$9CB6
 PCOPY : \$9723
 PAINT : \$98EC
 PCLEAR : \$968B

TABLE 2

From the Table 1 of the RAM memory map we can see that \$BD+\$BE contains the X coordinate and \$BF and \$C0 contains the Y coordinate. All we need do is place a value in both of these locations and then call the appropriate PSET/PRESET OR PPOINT routine. Since the X coordinates are always values of 0-255 and Y coordinates are always 0-191 we only need use the least significant byte of these address; \$BE for X and \$C0 for Y coordinates. Look at listing #2 to see how these screen plots are done. Press "R" to perform PRESET, "P" to perform PPOINT and any other key for PSET. The value returned in the PPOINT routine is left in the Floating Point Accumulator (FPAC) and is placed in the "D" register and printed on the screen in the example program. Notice that for the RESET routine we simply clear \$C2 (reset flag) and \$B5 that is used as the color byte (zero no color) and then call the PSET routine.

Another graphic command we can access is the LINE routine located at \$94A1 in Extended ROM. For the LINE command we place the starting X/Y position in \$BE and \$C0 and the ending X/Y position in \$C2 and \$C4 and then execute \$94A1 (see listing #3). Try experimenting with different

values to see what happens. Be sure to save these routines before doing this because a mistake can destroy the program.

We might also, like to make some music using the PLAY command located at \$9A22. We accomplish this by placing the song in FCC Assembly statements and tricking Basic into accepting them as a Basic statement then executing the PLAY command address (see listing 4). Be sure to end the music with a " and a zero for the command to terminate correctly. You could use this method to access the CIRCLE and DRAW command in a similar way (see listing 5).

Some of our programs require the TIMER. The Timer is easy to access since it is always running, except during I/O operations. In listing #6 we create a clock program showing hours, minutes and seconds. The current value of the timer is held in \$112 and \$113.

I leave it up to you to find uses for these routines. You might create your own language or drawing program that uses these routines.

If you found this material interesting let us know so that we can continue to offer more information to you our readers of Dynamic Color News.

SEND QUESTIONS OR COMMENTS TO:

JOHN GALUS
 55 WILKESBARRE AVENUE
 LACKAWANNA, NEW YORK 14218

PLEASE INCLUDE A S.A.S.E IF YOU REQUIRE A REPLY.

BACK ISSUES

Back issues of Dynamic Color News are available for \$1.95 each, 3 for \$5 or 12 for \$15 pp.

Foreigners other than Canada add \$2 for Air Mail postage.



"The WIZARD'S CASTLE" is a very special 'TANDY' 'Color Computer' magazine. We devote our entire magazine to the 'CoCo family'. Our articles include 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.

 * Please send me 12 POWER PACKED issues *
 * of: "The WIZARD'S CASTLE" magazine *
 * *
 USA & Canada for only \$10.00 per yr
 * *
 Overseas for only \$15.00 per yr

FOR *****
 * Please mail orders to: *
 RUSH! * *
 * "The WIZARD'S CASTLE" *
 ORDER * Dept. #18 *
 * 1737 Farmville Road *
 SEE * Shelby, NC 28150 *

Name:
 Address:
 City:St:Zip:
 Phone: .(.....).....-

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



Are you always running out of disks???? Do you dread paying \$1.50 or more per disk? Now, the answer to all of your disk problems can be answered here at the 'CASTLE'. We are offering only premium quality DSDD diskettes at under \$1.00 each. These are 'TOP QUALITY' guaranteed disks. If you ever get a bad one, just send it back for replacement. We will sell these disks in quantities of 10, 25, 50, or even 100 per pk. Prices each will be cheaper depending upon amount purchased. This brand of disks is one all of our members have used for over four years. We hardly ever find '1' bad disk for every purchase we make. If you are tired of paying top dollar for

disks then try just one order from us. You don't have anything to lose and only \$\$\$\$ to save.

 * Please send me: *
 * *
 10 DSDD Disks for only \$ 7.50 total
 * *
 25 DSDD Disks for only \$15.00 total
 * *
 50 DSDD Disks for only \$26.00 total
 * *
100 DSDD Disks for only \$45.00 total

SAVE! *****
 * \$\$\$\$ *
 ORDER * *
 * "The WIZARD'S CASTLE" *
 THE * Disks Dept. #18 *
 * 1737 Farmville Road *
 DISKS * Shelby, NC 28150 *
 * *
 TODAY!! *****

Name:
 Address:
 City:St:Zip:
 Phone: .(.....).....-

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

Dynamic Color News Mar 1988

ASSEMBLY ROUTINES

```

00010 *****
00020 *
00030 *
00040 * PMODE 4,1
00050 * ROUTINE
00060 *
00070 *
00080 * BY
00090 * JOHN GALUS
00100 *
00110 * FOR
00120 * DYNAMIC COLOR
00130 * NEWS
00140 *
00150 * LISTING #1
00160 *****
00170 *
00180 * SETUP GRAPHIC MODE
00190 *
00200 PMODE LDA #240 ;SET
00210 STA $FF22 ;SCREEN
00220 STA $FFC0 ;SET SAM
00230 STA $FFC3 ;FOR PMODE
00240 STA $FFC5
00250 *
00260 * SET AT PAGE 1
00270 *
00280 *GET START OF HI-RES PAGE
00290 *
00300 PAGE LDD $BA
00310 LDX #$FFC6 ;POINT TO SAM
00320 LSRA ;DIVIDE BY 2
00330 LDB #7 ;LOOP 7 TIMES
00340 LOOP LSRA
00350 BCC FIX ;IF BIT EVEN
00360 LEAX 1,X ;ODD BYTE
00370 STA ,X+ ;STORE IN SAM
00380 BRA NEXT
00390 FIX STA ,X++ ;SET EVEN
00400 NEXT DECB
00410 BNE LOOP ;DO ANOTHER
00420 *
00430 * PCLS ROUTINE
00440 *
00450 PCLS LDD $BA ;PAGE START
00460 ADDD #6144 ;ADD TO END
00470 STD $B7 ;SAVE AS END
00480 LDX $BA ;POINT TO START
00490 LDD #0 ;LOAD WITH ZERO
00500 CLS STD ,X++ ;DOUBLE TIME
00510 CMPX $B7 ;END OF SCREEN?
00520 BNE CLS
00530 LOOP2 JSR $A1C1 ;INKEY$
00540 BEQ LOOP2 ;NO KEY
00550 SWI ;RETURN TO ZBUG
00560 END PMODE

00570 *****
00580 *
00590 *
00600 * PSET/RESET
00610 * PPOINT ROUTINE
00620 *
00630 * BY JOHN GALUS
00640 *
00650 * FOR
00660 * DYNAMIC COLOR
00670 * NEWS MAGAZINE
00680 *
00690 * LISTING #2
00700 *
00710 *****
00720 PMODE EQU $9621 ;PMODE
00730 PPOINT EQU $933F ;PPOINT
00740 PSET EQU $9374
00750 XPOS EQU $BE
00760 YPOS EQU $C0
00770 SCREEN EQU $9670 ;SCREEN
00780 PCLS EQU $9532 ;PCLS ROUT
00790 POLCAT EQU $A1C1
00800 *
00810 * SET UP GRAPHICS
00820 * PMODE 4,1:SCREEN 1,0
00830 *
00840 START LDX #PM ;PMODE
00850 BSR PARSE ;TRICK BASIC
00860 JSR PMODE ;SETUP PMODE
00870 LDX #SCR ;SCREEN VALUES
00880 BSR PARSE ;PARSE BASIC
00890 JSR SCREEN ;SETUP SCREEN
00900 BSR CLS ;CLEAR SCREEN
00910 LDA #128 ;X POS
00920 STA XPOS
00930 LDA #96 ;Y POS
00940 STA YPOS
00950 BRA BEGIN ;START ROUTINE
00960 *
00970 * PCLS COMMAND
00980 *
00990 CLS CLRБ ;PCLS0
01000 JSR PCLS
01010 RTS
01020 PARSE LEAX -1,X ;BUMP ONE
01030 STX $A6 ;NEXT CHAR
01040 JSR $9F ;GET A CHARACTER
01050 RTS
01060 BEGIN JSR POLCAT
01070 BEQ BEGIN ;NO KEY
01080 CMPA #3 ;BREAK KEY?
01090 BEQ FIN
01100 CMPA #'R;RESET?
01110 BEQ RSET
01120 CMPA #'P PPOINT?
01130 BEQ POINT
01140 LDA #1
01150 STA $C2 ;PSET

```

```

01160 LDA #255 ;COLOR BYTE
01170 STA $B5
01180 JSR PSET
01190 BRA BEGIN
01200 *
01210 * PRESET ROUTINE
01220 *
01230 RSET CLR $C2 ;MAKE RESET
01240 CLR $B5 ;CLR COLOR BYTE
01250 JSR PSET
01260 BRA BEGIN
01270 *
01280 * PPOINT ROUTINE
01290 *
01300 POINT JSR PPOINT ;PPOINT
01310 CLR $6F
01320 JSR $A928 ;CLS
01330 JSR $B3ED ;GET # TO D
01340 JSR $BDCC ;PRINT IT
01350 LOOP JSR POLCAT
01360 BEQ LOOP ;LOOP IF NO KEY
01370 BRA START;RESET VIDEO
01380 FIN SWI ;RETURN
01390 PM FCC /4,1/ ;PMODE 4,1
01400 FCB 0 ;END WITH 0
01410 SCR FCC /1,0/ ;SCREEN 1,0
01420 FCB 0
01430 END
    
```

```

START
01440 *****
01450 *
01460 *
01470 * LINE ROUTINE
01480 *
01490 * BY JOHN GALUS
01500 *
01510 * FOR
01520 * DYNAMIC COLOR
01530 * NEWS MAGAZINE
01540 *
01550 * LISTING #3
01560 *****
01570 PMODE EQU $9621 ;PMODE
01580 LINE EQU $94A1 ;LINE ROUT
01590 XPOS EQU $BE
01600 YPOS EQU $C0
01610 EXPOS EQU $C4 ;END X POS
01620 EYPOS EQU $C6 ;END Y POS
01630 SCREEN EQU $9670 ;SCREEN
01640 PCLS EQU $9532 ;PCLS ROUT
01650 POLCAT EQU $A1C1
01660 *
01670 * SET UP GRAPHICS
01680 * PMODE 4,1:SCREEN 1,0
01690 *
01700 START LDX #PM ;PMODE
01710 BSR PARSE ;PARSE
01720 JSR PMODE ;SETUP PMODE
    
```

SPECIAL DEAL ON 500 PROGRAMS!

GET 50 DISKS OR 50 CASSETTE TAPES FULL OF OVER 500 PROGRAMS. HERE IS WHAT YOU'LL RECEIVE:

- * Over 250 Utility/Home Application Programs including a Word Processor, DataBase, Spreadsheet, Account Manager, 2 Basic Compilers, Terminal Programs, ROM Copies, Mail List, Machine Language Tutorials, Plus Much More!
- * Over 200 exciting games including Warlords, Star Trek, Super Vaders, Solar Conquest, Horse Races, Football, Baseball, Frog Jump, Invader, Plus Much More! (Many machine language games)
- * Over 30 adventures including The College Adventure, Dungeon Master, Space Lab, Ice World, Ship Wreck, Zigma Experiment. Plus 32K Graphic Adventures.

EACH INDIVIDUAL ISSUE SOLD FOR \$9.00 EACH OR \$450 FOR ALL 50 ISSUES. WE SLASHED THE PRICE TO ONLY 149⁹⁹.

REG. \$450

NOW

\$149⁹⁹

★★THIS MONTH ONLY★★

Buy this package of 500 programs and receive a free 6 month subscription. (A \$35 value)



Available on COCD 1, 2 and 3!
All Programs Include Documentation!



THE GREATEST SOFTWARE DEAL ON EARTH JUST GOT BETTER!

THAT'S RIGHT! THIS MONTH WE'VE DROPPED OUR YEARLY SUBSCRIPTION RATE AN UNBELIEVABLE *10.00 TO ENTICE YOU INTO SUBSCRIBING WITH US. GET 12 DISKS OR TAPES A YEAR CONTAINING OVER 120 QUALITY PROGRAMS. A SUBSCRIPTION TO T & D SOFTWARE CONSISTS OF 10 READY-TO-LOAD PROGRAMS DELIVERED BY FIRST CLASS MAIL EVERY MONTH.

NO WE ARE NOT THE SAME AS THE RAINBOW ON TAPE. IN FACT, MANY SUBSCRIBERS HAVE WRITTEN IN AND SAID THAT WE ARE MUCH BETTER THAN RAINBOW ON TAPE!



	TAPE	ORDISK	THIS MONTH ONLY
1 YEAR (12 Issues)	29.00		60.00
6 MO. (6 Issues)	14.00		35.00
1 ISSUE	1.00		6.00

Michigan Residents Add 4%
Overseas Add \$10 to Subscription Price
Personal Checks Welcome!

- * 16K-64K Color Computer
- * Over 4000 Satisfied Customers
- * Back Issues Available From
- * July '82 (Over 500 Programs)

OUR LATEST ISSUE CONTAINED

1. Accounts Receivable
2. Work Mate
3. Calendar
4. Invasion
5. Trip Adventure
6. Foot Race
7. Flippy the Seal
8. Screen Calculator
9. Able Builders
10. Super Error 2

T & D SUBSCRIPTION SOFTWARE, 2490 MILES STANDISH DR., HOLLAND, MI 49424 (616) 399-9648

Dynamic Color News Mar 1988

```

01730 LDX #SCR ;SCREEN VALUES
01740 BSR PARSE
01750 JSR SCREEN ;SETUP SCREEN
01760 BSR CLS ;CLEAR SCREEN
01770 LDA #0 ;X POS
01780 STA XPOS
01790 STA YPOS
01800 LDA #128 ;MIDDLE
01810 STA EXPOS ;OF SCREEN
01820 LDA #96
01830 STA EYPOS ;END Y POS
01840 BRA BEGIN ;START ROUTINE
01850 *
01860 * PCLS COMMAND
01870 *
01880 CLS CLRB ;PCLS0
01890 JSR PCLS
01900 RTS
01910 PARSE LEAX -1,X
01920 STX $A6
01930 JSR $9F
01940 RTS
01950 BEGIN JSR POLCAT
01960 BEQ BEGIN ;NO KEY
01970 CMPA #3 ;BREAK KEY?
01980 BEQ FIN
01990 LDA #1
02000 STA $C2 ;PSET
02010 LDA #255 ;SET COLOR BYTE
02020 STA $B5
02030 JSR LINE ;DRAW LINE
02040 BRA BEGIN ;LOOP BACK
02050 FIN SWI ;RETURN
02060 PM FCC /4,1/
02070 FCB 0
02080 SCR FCC /1,0/
02090 FCB 0
02100 END

```

START

```

02110 *****
02120 *
02130 *
02140 *   PLAY
02150 * ROM ROUTINES
02160 *
02170 *   BY
02180 * JOHN GALUS
02190 *
02200 * FOR DYNAMIC COLOR
02210 *
02220 * LISTING #4
02230 *
02240 *****
02250 *
02260 * PLAY ROUTINE
02270 *
02280 PLAY LDX #SONG ;TO SONG
02290 BSR PARSE ;FIX FOR BASIC
02300 JSR $9A22 ;EXEC PLAY
02310 SWI ;RETURN TO MONITER
02320 PARSE LEAX -1,X
02330 STX $A6

```

```

02340 JSR $9F
02350 RTS
02360 SONG FCC#"O2L4GGA#
02361 FCC #L8.F+L8GL4ABBO3CO2#
02362 FCC #L4.BL8AL4GAGF+L2G"#
02370 FCB 0 ;END WITH ZERO
02380 END PLAY
02390 *****
02400 *
02410 *
02420 * CIRCLE/DRAW
02430 * ROUTINES
02440 *
02450 * BY JOHN GALUS
02460 *
02470 *   FOR
02480 * DYNAMIC COLOR
02490 * NEWS MAGAZINE
02500 *
02510 * LISTING #5
02520 *
02530 *****
02540 PMODE EQU $9621 ;PMODE
02550 CIRCLE EQU $9E9D ;CIRCLE
02560 RAD EQU $D0 ;RADIUS
02570 SCREEN EQU $9670 ;SCREEN
02580 PCLS EQU $9532 ;PCLS
02590 DRAWIT EQU $9CB6 ;DRAW
02600 POLCAT EQU $A1C1
02610 *
02620 * SET UP GRAPHICS
02630 * PMODE 4,1:SCREEN 1,0
02640 *
02650 START LDX #PM ;TO PMODE
02660 BSR PARSE ;PARSE
02670 JSR PMODE ;SETUP PMODE
02680 LDX #SCR ;TO SCREEN
02690 BSR PARSE
02700 JSR SCREEN ;SETUP SCREEN
02710 BSR CLS ;CLEAR SCREEN
02720 BRA BEGIN ;START ROUTINE
02730 *
02740 * PCLS COMMAND
02750 *
02760 CLS CLRB ;PCLS0
02770 JSR PCLS
02780 RTS
02790 PARSE LEAX -1,X
02800 STX $A6
02810 JSR $9F
02820 RTS
02830 *
02840 * CIRCLE DRAWING ROUTINE
02850 *
02860 BEGIN JSR POLCAT
02870 BEQ BEGIN ;NO KEY
02880 CMPA #3 ;BREAK KEY?
02890 BEQ FIN
02900 CMPA #'D ;DRAW?

```



```

02910 BEQ DRAW
02920 LDX #CIR ;TO CIRCLE
02930 BSR PARSE ;FIX FOR BASIC
02940 JSR CIRCLE ;DRAW CIRCLE
02950 BRA BEGIN ;LOOP BACK
02960 DRAW LDX #DR ;TO DRAW
02970 BSR PARSE ;FIX FOR BASIC
02980 JSR DRAWIT ;DRAW IT
02990 BRA BEGIN
03000 FIN SWI ;RETURN - MONITOR
03010 PM FCC /4,1/
03020 FCB 0
03030 SCR FCC /1,0/
03040 FCB 0
03050 CIR FCC /(100,100),40/
03060 FCB 0
03070 DR FCC #"BM9,9;R6D6L6U6"#
03080 FCB 0
03090 END
    
```


```

03180 *
03190 *     FOR
03200 * DYNAMIC COLOR
03210 * NEWS MAGAZINE
03220 *
03230 * LISTING #6
03240 *
03250 *****
03260 *
03270 * SETUP TIMER
03280 *
03290 TIME LDD #0 ;START AT 0
03300 STD SEC ;CLEAR SEC MIN
03310 STA HOUR ;CLEAR HOUR
03320 BACK BSR ZERO ;ZERO TIMER
03330 JSR $A928 ;CLS
03340 LDX #MESS ;POINT TO MESS
03350 BSR PRT ;PRINT IT
03360 LDB HOUR ;GET HOURS
03370 JSR DPRT ;PRT NUMBER
03380 LDB MIN ;GET MINUTES
03390 BSR DPRT ;PRT NUMBER
03400 LDB SEC ;GET SECONDS
03410 BSR DPRT ;PRT NUMBER
03420 LOOP JSR $A1C1 ;POLCAT
03430 CMPA #3 ;BREAK KEY?
03440 BEQ FIN ;YES END TIME
03450 LDD $112 ;GET TIMER
03460 CMPD #60 ;1 SECOND?
03470 BNE LOOP
03480 INC SEC ;ADD ONE TO SEC
03490 LDA SEC ;GET VALUE
03500 CMPA #60 ;ONE MINUTE?
03510 BNE BACK ;DO SOME MORE
03520 INC MIN ;ADD ONE TO MIN
03530 CLR SEC ;CLEAR SECONDS
03540 LDA MIN
03550 CMPA #60 ;OME HOUR?
03560 BNE BACK ;NO DO MORE
03570 INC HOUR ;+1 TO HOUR
03580 CLR MIN ;CLEAR MINUTES
03590 BRA BACK
03600 FIN SWI ;FINISHED
03610 ZERO LDD #0
03620 STD $112 ;CLR TIME COUNT
03630 RTS
03640 PRT LDA ,X+ ;GET A CHAR
03650 BEQ PRT-1 ;RETURN
03660 JSR $A282 ;PRINT
03670 BRA PRT
03680 DPRT CLRA ;CLR MSB
03690 JSR $BDCC ;PRT # IN D
03700 LDX #SPA
03710 BSR PRT
03720 RTS
03730 SEC FCB 0 ;SECONDS
03740 MIN FCB 0 ;MINUTE
03750 HOUR FCB 0 ;HOURS
03760 MESS FCC /HOU: MIN: SEC:/
03770 FDB $0D00
03780 SPA FCC / /
03790 FCB 0
03800 END TIME
    
```

START

```

03100 *****
03110 *
03120 *
03130 *     TIMER
03140 *     ROUTINE
03150 *
03160 *     BY
03170 * JOHN GALUS
    
```



EZ FRIENDLY

Leonard's Pencil

For
Your
CoCo
1, 2, & 3

(Reviewed in Oct. 87 RAINBOW) Makes programming sensational-looking graphics as easy as moving a joystick! Converts precision drawings into "DRAW" commands which can be stand-alone BASIC programs or merged into other programs. Also includes "DEMO" and "PAINT" programs. Requires a spring-centered joystick or touch-pad. 32k ECB tape or disk \$14.95

? ENIGMA?

Transform your computer into an ultra-secret code machine capable of enciphering and deciphering in over 12 million virtually unbreakable codes! (not simple substitution codes). Print hard copy or store & retrieve coded data on tape or disk. Only the person who has the password can read it! 32k ECB tape or disk \$12.95

EZ Writer

Just answer the prompts & type your message; "EZ WRITER" will put it into perfect letter form and send it to your DMP or DWP. Professional-quality, single-page letters every time! Do one letter or multiple copies for "personalized" mailings. Saves letters and mailing lists. Even does labels. Menu-driven. Undoubtedly the EZ-est letter writing system available! Free sample on request! 32k ECB tape or disk \$19.95

EZ MATH PACKAGE

FOUR superior educational "games": "RACEWAY", "GO TO THE TOP" (multiplication tables drill), "WORD PROBLEMS", & "PYRAMID". Covers addition, subtraction, multiplication, & division. Different levels of difficulty. Exciting graphics & sounds. EZ and fun! 32k ECB tape or disk \$19.95

KEYBOARD COMMANDER

Probably the most exciting typing tutor available for your CoCo. You are the commander of a space ship & it's your job to shoot down alien letters & words as they speed toward you & attack your spaceship. Exciting Hi-Res action! 32k ECB tape or disk \$24.95

E.Z. FRIENDLY SOFTWARE

HUTTON & ORCHARD STS. • RHINECLIFF, NY 12574 • (914) 876-3935
(Add \$1.50 s/h to all orders. NY residents add state sales tax.)

CoCo Clipboard Magazine

TAKE IT
FROM

OUR READERS !



A Subscription to CoCo Clipboard Magazine

is worth more than gold. All meat articles - no fluff, no filler. Wayne Day on CompuServe! Kraig Brockschmidt, Randy Krippner, Bob van der Poel and Delmar Searles on programming! Jim DeStafeno and Rush Caley on Business and Mike Dooley on Ham Radio!

Dear Sirs:

Thank you so much for sending me the first issue of your magazine. It looks like it's going to be a great publication.

Mark Duval
Medina, N.Y.

Congratulations on a great first issue! I can honestly say I enjoyed each of the articles and look forward to seeing more of the same. Your anti-fluff attitude is well appreciated.

Robert J. Sullivan

HDIR (Bob van der Poels article in issue 1) is worth \$12.00 to me so I am sending in my subscription. We need a magazine like this..

Hugh M. Betz

Please sign me up to CoCo Clipboard Magazine. I have most of your free issue READ and REALLY ENJOYED IT. Please keep up the great work and please don't do like past CoCo magazines have done.

Keith H. March

Yes! I'm ready to join the adventure. Enclosed is my check or money order for \$12.00 for 6 issues (1 year) of CoCo Clipboard Magazine. Canadian subscriptions are also \$12.00 when paid in U.S. funds.

Name _____

Address _____

City _____

State or Province _____

ZIP or Postal Code _____

Mail to: **CoCo Clipboard
Magazine**

3742 U.S. 20 Box 3. • Fredonia, N.Y. 14063

TAKING CONTROL

(Basic Programming Part 6)



In this series we are showing how to write basic programs. A basic program contains lines of instruction. The computer processes the instructions in the order in which they appear. Line numbers are used to indicate the order for the computer to use. It starts at the lowest number and processes all commands on that line. It then goes to the next line and continues until all lines have been processed. The sequence can be broken by GO TO statements. If line 100 is being processed and GOTO 9000 appears then the computer will jump to line 9000 and continue. A GO SUB 9000 will cause the computer to go to line 9000 and execute the instructions at 9000 and the following lines until it reaches a RETURN command. It then returns to line 100 and processes the next command.

USING THE TRACE

Fortunately there is a command that allows us to see the steps that the computer is taking. This is called the trace and it displays on the screen the line numbers of the statements that are being processed. Sometimes it is advantageous to use the trace especially for long programs with a problem. For example suppose the computer hangs up and it is desirable to know where this occurs. With the trace on the line numbers are displayed. The problem lines can be listed and a search begun to find the problem since the problem lines were displayed by the trace.

TRON

The TRON command turns the trace on. Load a short basic program and then type TRON ENTER. Run the program and notice the numbers in brackets. These are the lines the computer is processing. This command is easy to remember. Think of TRON as being an abbreviation for TRace ON.

TROFF

This command turns the trace off. It can be easily remembered by thinking of TRace OFF. TRON and TROFF can be used in any part of a program where it is desirable to follow the progress of the computer or it can be used for the entire program.

EDITING STATEMENTS

Microsoft basic has a powerful editor. If a line contains an error then it can be changed eliminating retyping. Consider the following line:

```
100 X$=256*PEEK (25)+PEEK (26)
```

The \$ after the X needs to be deleted. To go to the edit mode enter:

```
EDIT 100
```

The line will be listed on the screen with the cursor on X. Press the space bar to move the cursor to the \$ sign. Then press the "D" key. This will delete one character each time

the key is pressed. Now press the "L" key. This will list the line with the \$ sign removed. If the line is correct then press the ENTER key and the edited line will replace the original line.

DELETING CHARACTERS

In the preceding example the \$ sign was deleted. If several consecutive characters are to be deleted, then press the "D" key for each character. There is another way to delete a specified number N of characters. Suppose it is desired to delete 8 characters. Then press "8D". Don't press the ENTER key until the editing is completed as this will replace what you have with the original line. Pressing the "D" key for each character to delete works fast and eliminates the need to count the number of characters. The left and right arrow keys move the cursor backwards and forwards respectively. The "L" key lists the edited line and places the cursor over the first character.

INSERTING CHARACTERS

To insert characters enter the edit mode and move the cursor to the location where additional characters are to be inserted. Then press the "I" key and start typing the character. This procedure ends with the shift up arrow key. Then type "L" to list the line to verify that the changes are correct.

Next month we will cover more material on editing. We suggest that you edit a few lines inserting and deleting characters.

ARRAYS

Arrays allow us to handle a lot of information with a minimum amount of programming instructions. Suppose you are a teacher and want to keep grades of 50 students. You will have 6 tests and want a program to contain the students names, grades, and figure the average for each. Each test could have a different

weight. Let's look at the problem of handling the data.

One way would be to list each student on a line and then skip columns for each grade reserving the final column on the right for the final grade. For 50 students there would be 50 names plus 300 entries for grades. It would be quite a chore to pick names for these variables if each one were to be separately labeled.

An array can be either one, two, or three dimensions. For our names we will need a one dimensional array since all names can be put in one column. We will need a two dimensional array for the grades. The parts of an array are called elements. Let's assign S(X)$ to be the names of the students. X will be from 0 to 49. So S(0)$ is the name of the first student and S(1)$ is the name of the second. For the grades let's define $G(X,Y)$ to be used to designate the student and the grade number. Y will be any number from 0 to 5 since there will be 6 grades. Looking at the first entry in the grade book we will have:

```
S$(0)  A B C D E F
where A=G(0,0)
       B=G(0,1)
       C=G(0,2)
       D=G(0,3)
       E=G(0,4)
       F=G(0,5)
```

Notice that X designates the student number from 0 to 49 and Y designates the grade number from 0 to 5. Also notice their location within the parentheses.

DIMENSION STATEMENT (DIM)

This statement is used to set up arrays. It should be one of the first statements in the program. There can only be one dimension statement in a program. For our application with 50 students the statement will be:

```
10 DIM S$(49), G(49,5)
```

To create an example program let's take 10 students and 4

COLOR COMPUTER 3 (Reduced)

512K MEMORY

Upgrade your Color Computer 3 to 512K. Our plug in board is easy to install and will give you the maximum addressable memory. With 512K you can have two ramdisks with the included ramdisk disk software. Complete assembly ME-30 \$89.95

Wired 512K board with ramdisk software. Just add memory chips. ME-30B reduced to \$29.95.

512K RAMDISK

A ramdisk operates from memory just like a disk drive except it is many times faster. The 512K ramdisk allows drive 2 and 3 to be ramdisks. You can backup a disk to either ramdisk or select either ramdisk for quickly loading programs. Also included is a memory test program. When the computer is reset, the ramdisk does not have to be rebooted. Reduced to \$15.95

MEMORY SAVER 2

For All Color Computers

Now you can save your computer's memory when power fails. Assembly consists of a small rechargeable battery that mounts under the keyboard and an enable switch. When power fails the electronic control circuit connects the battery to the memories saving all data or programs for about an hour depending upon current requirements and accessories. Easy installation with only one wire to solder.

MS-2 \$39.95

Checks, Visa, or MC
Add \$3 shipping

DYNAMIC ELECTRONICS INC.
P. O. Box 896
Bartselle, AL 35640

grades each. The names and data will be read from DATA statements. We also want the program to take the average of the grades and round them up or down giving us 2 digits for the average. The print using command does this for us and is in line 390. This is a powerful command and we will cover it later. The program can easily be modified for more students and grades.

ARRAY DEMO PROGRAM

```

10 CLS
20 'CONT-1
30 PRINT"ARRAY DEMO PROGRAM
40 PRINT"DYNAMIC COLOR NEWS
50 PRINT"MARCH 1988
60 DIM S$(9), G(9,5)
70 REM READ IN & PRINT NAMES
80 FOR X=0 TO 9
90 READ S$(X):PRINTX;S$(X)
100 NEXT X
110 REM READ THE GRADES
120 REM USE 2 FOR-NEXT LOOPS
130 INPUT"NUMBER OF TESTS";Y
140 Y=Y-1
150 FOR J=0 TO Y
160 FOR X=0 TO 9
170 READ G(X,J):NEXT J
180 NEXT J
190 REM
200 REM PRINT THE DATA
210 FOR X=0 TO 9
220 PRINT S$(X),
230 REM SET UP LOOP TO PRINT
240 REM EACH GRADE
250 S=0
260 FOR J=0 TO Y
270 S=S+G(X,J)
280 PRINT G(X,J);
290 NEXT J
300 PRINT
310 'CALCULATE AND PRINT
320 'THE AVERAGE
330 AV=S/(Y+1):PRINT"AVERAGE=";
340 'PRINT USING WILL
350 'ROUND THE AVERAGE
360 'UP OR DOWN AND
370 'PRINT THE RESULT
380 'USING 2 DIGITS
390 PRINTUSING"##";AV:PRINT
400 NEXT X
410 REM
420 REM NAMES FOLLOW
430 DATA JOHN SMITH, JIMMY JONES, KEVIN CL
ARK, BETTY LEWIS, TAMMY SMITH, ALI ABRA
MS, JULIE GARRETT, KEN DAVIS, LARRY SMI
TH, DEAN JONES
440 REM FIRST TEST
450 DATA 95,87,72,55,48,98,78,92,65,99
460 REM SECOND TEST
470 DATA 88,79,65,80,86,95,89,97,79,92
480 REM THIRD TEST
490 DATA 72,85,69,83,94,92,70,85,88,99
500 DATA 88,56,76,92,88,87,76,93,76,88

```

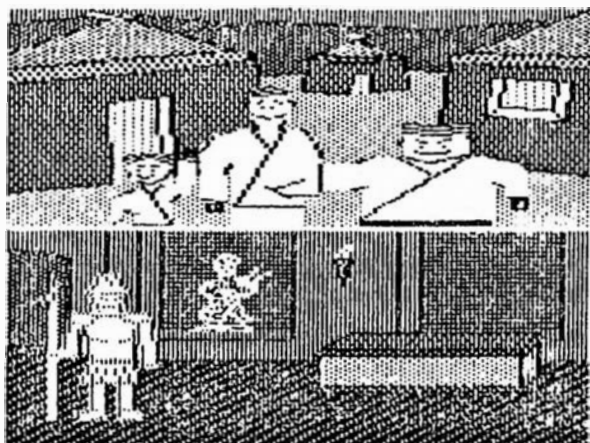


VALKYRIE

VALKYRIE Software, P.O.Box 2120, Monroe, NY 10950. (914) 783-0191

Tomb of T'ien

64K 100% ML Animated/Graphics Adventure Game
Requirements: 64K Color Computer 1,2 or 3
Tape OR Disk required



This is a game you're going to love to play! Picture this, a full color graphics adventure game that understands over 200 words, has realistic animation, a meaningful story plot, characters to talk to and who talk to you, monsters, puzzles and more. Enter the TOMB OF T' IEN and you will experience this excitement! Here's the background: your village has been burned and its sacred shrine stolen by the mythical dragon in the legend of Emperor T'ien. You have been chosen by lottery to retrieve the shrine and conquer the dragon so that your village may live in peace. But peace is not what you will find outside your village in your quest for the TOMB OF T' IEN.

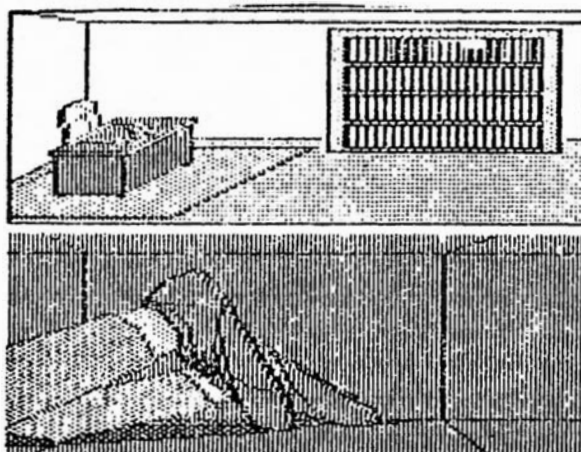
64K Color Computer \$19.95

Mr. Corey

64K 100% ML Animated/Graphics Adventure Game
Requirements: 64K Color Computer 1,2 or 3
Tape OR Disk required

Now this is a GREAT game! If you have played TOMB OF T' IEN, you probably thought it was the best, but now we have MR. COREY and you know it's going to be better! How does more animation, more vocabulary, more thrill, more adventure and the same amount of money sound to you! Here's the story: you are a secret agent for a government agency named ATHENA who sent you to spy on the most villainous man alive, Mr. Corey. Unfortunately, before you were able to find out anything about Corey's new scheme, you were discovered and locked up in a room with a nuclear time bomb. With only hours to spare, you must find Corey and put an end to his plot, but first you have to escape from the bomb! This game is so realistic and requires so much memory that it is in two parts. Solve the first and you're a pro, but the second will take you to your knees! (Both parts included.)

64K Color Computer \$19.95



All games come in their own color folders, with color disk or tape, and instructions. Programs are guaranteed to load for at least one year.

Send orders to: VALKYRIE Software, P.O.Box 2120, Monroe, NY 10950.

Or call: (914) 783-0191 to use VISA or MasterCard.

Please add \$2.00 for shipping and handling.

Out of COUNTRY orders add \$3.00 extra.

NY residents add 6.25% sales tax.

Thank you for your patronage.



OS-9 & BASIC09

Last month we introduced OS-9. If you are new to the color computer world, then you will wonder what is OS-9. The purpose of this series is to explain what OS-9 is and how to use it. OS-9 is the operating system for color computers. An operating system is supposed to make things easier. OS-9 is software that has to be loaded into the computer. Microsoft basic is the standard operating system for color computers. However basic is a limited operating system which can not be expanded because it is contained in read only memory. The OS-9 operating system can be tailored to the user's needs. It can be expanded to include special software or hardware such as a hard disk.

We will explain how to use the commands and how to write programs using Basic 09. Basic 09 is a powerful basic programming tool that allows programs to be written by using commands similar to those used by the color computer's basic. Basic 09 programs are recognized by OS-9. OS-9 can only create word or text files. Basic 09 allows calculating type programs to be created and recognized by OS-9. Machine language programs created by an assembler are always the fastest mode for any computer. They can be handled by OS-9 allowing very fast data manipulations.

There are terms that will have to be learned. If you have not worked with an operating system then OS-9 may seem difficult at first. However if proper procedures are followed then OS-9 works very well.

We will take a few commands and give examples for using

them. Also we will give instructions for writing programs or procedures using basic 09. We will mostly be using OS-9 level 2 and be covering the special commands for the color computer 3. If you do not have a color computer 3, the procedures and commands are the same so this should also be beneficial to you.

WINDOWS

The 32 character display on the color computer 3 is difficult to read. A window can be created using 40 or 80 character displays. A window consists of a box on a graphics screen. The characters appear within the box. To improve the display let's create a 40 character window. Enter the follow commands after the OS-9 system is booted up:

```
OS9: iniz w1
OS9: i=/w1&
```

These commands establish the window. To use it just press the CLEAR key. The characters are easy to see from the window. Several windows can be created by using the same procedure. To go from one window to the other press the CLEAR key until the desired window appears or the original display is returned. To eliminate a window, go to the window with the CLEAR key and type:

```
EX <ENTER>
```

MAKING A DIRECTORY

Let's make a directory to contain some practice files. We will name the directory "FILES".

Enter the following command to establish the directory:

MDIR FILES

To verify that the directory has been created type DIR <ENTER> and FILES should be displayed.

CREATING A FILE

Now let's create a file to place in our directory. Let's name it first. Enter the following:

OS9: build first/file

Notice we give the name of the file which is first and also we designate the directory in which we want the file. After this command a ? mark will appear. Now lines can be typed into the file. Whenever the <ENTER> key is pressed the line is entered and another ? mark appears. Additional lines can then be entered. To end the procedure press the <ENTER> key. The following is the file we entered:

This is the first line of our new file.

Of course the second line follows the first.

It is easy to build word files using OS-9.

This is the last line.
hello there.

The file can be listed by entering:

OS9: List files/first

Notice the order of the command. It is Command, then directory, and finally the file name. Now let's create a second file for our files directory. Enter the following:

OS9: build files/second

This is our second practice file.

It is easy to enter words into this file as all we have to do is type.

Are you beginning to like OS-9?

Notice that the files we

created are hidden within the <files> directory. To see the contents of the directory we have to enter:

OS9: dir file

After a file is created it can be listed, merged with another file, or edited. The editing is not hard and it is recommended that the edit section of your manual be studied. Enter the practice files and use the editor to edit them. To bring up the editor enter:

OS9: edit files/second

Notice the format is edit directory/file name. Using the proper format is a must with OS-9. This is also true of any other computer language.

BASIC 09

Let's look at BASIC09 and write a simple program. First let's load the program. We experienced a problem getting BASIC09 to load. Our computer work stations contain a printer and one disk drive. The instructions state that to bring up BASIC09 just type BASIC09 when the OS9: prompt appears. This would not work for us. We visited the local Radio Shack Computer center and as usual they did not know how to resolve the problem. To load BASIC09 we had to enter the following:

OS9: chx /d0/cmds

OS9: chd /d0

OS9: Basic09

After loading BASIC09, a heading appears followed by B: . Basic09 commands can then be entered. Basic 09 is compatible with OS9. To display the files, enter the DIR command preceded by a \$ sign. Like disk basic, programs can be loaded from a disk with Basic09.

SALES TAX PROGRAM

Let's write a simple program and save it on disk. This program will figure the sales tax on a purchase. Let's call the

program "tax". From the B:
prompt type:

B: e tax

Skip the first space in each line because this space is reserved for commands. Type in the following commands:

```
E: INPUT "AMOUNT OF SALE ";S
E: INPUT "TAX PERCENTAGE ";P
E: T=S*P/100
E: PRINT "TAX=";T
E: PRINT "TOTAL=";T+S
```

When all of the lines have been entered, place a "q" in the first position to quit and return to Basic 09. If there is a mistake type "-*" to move to the first line while still in the editor. Refer to the editing instructions for making corrections to the lines.

After leaving the editor the

program can be listed. It should appear as follows:

```
0000 INPUT "AMOUNT OF SALE
",S
0017 INPUT "TAX PERCENTAGE
",P
002E T=S*P/100
003E PRINT "TAX=";T
004A PRINT "TOTAL=";T+S
```

For those familiar with Micro-soft Basic, Basic 09 should not be hard to learn. Many of the commands are the same.

The two example text files and the "tax" program are included on our DCN on Disk or tape. Next month we will take additional material. As always we suggest that you study the material presented so that you will be ready for new material next month. Start using OS-9 and Basic09 if you have it. Write your own files and simple programs to gain experience.

➔ IT'S HERE!! ➔

Superb Software At Low, Low Prices!!!

PD Pak - \$59.95

Over 400 public domain programs. Features 5-voice music, graphics, utilities, games. Many are better than commercial programs!!! Increase your software library at less than 15 cents per file!! There's no other deal as good as this one, so don't pass it up!

MasterDisk Catalog - \$18.76

Catalog up to 14000 (no misprint!) disk files at once!! Features Add, Delete, 5-column print, and screen print. Excellent for *LARGE* libraries. Req. 16K CoCo, disk. CoCo 3 Compatible!

Digital Driver - \$1847

A very good BBS driver for any BBS. Features Host ON/OFF, Scroll protect, String mask, ON CARRIER CHANGE GOTO, and TONS more! 300 bps with serial port only. Req. 64K CoCo, disk, modem. CoCo 3 Compatible!!

The CoCo Can - \$4.99

A collection of over 300 POKES, PEEKs, and EXECs, some of which have never been published before! Covers CPU, Disk, Commands, Graphics, and MUCH, MUCH more. Was compiled from 30 programmers personal notes, so you know it's worth it!

Send check or money order to:

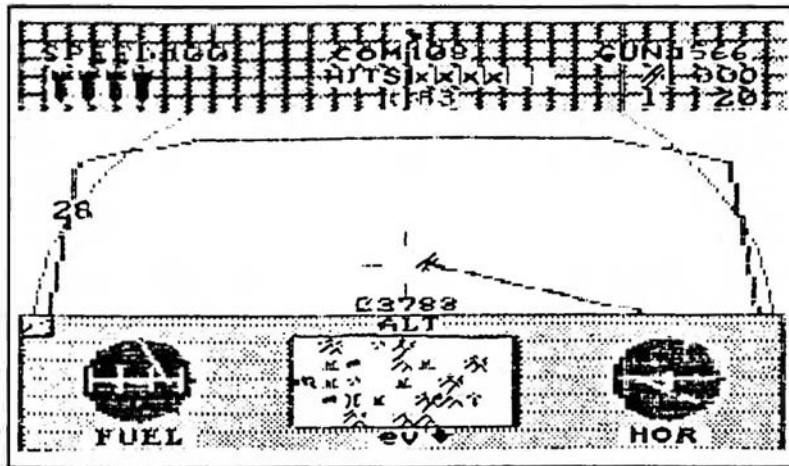
*10day
money back
guarantee

Digital Innovations
1859 East 8th Street
Mesa, AZ 85203-6649

QUALITY
is our business!

Please make payment payable to ANDREW BARTELS

MORE FROM ARK ROYAL!



ACE S is a high resolution, completely machine language game of aerial warfare in WWI. Player flies on many missions to bomb enemy targets including airfields, enemy headquarters, anti-aircraft batteries, bridges and factories, but not player's own air base. He must dodge mountains and dogfight with the enemy's best, including, if unlucky, members of the dreaded Flying Circus. After he shoots down five planes he becomes an ACE and receives special consideration; but the game is far from finished. **ACE S** averages about 82 targets and over 100 enemy aircraft per game.

ACE S plays in real time and displays flight simulated dash and controls. Operates from the keyboard. Included in the display is a high resolution mini-screen featuring terrain, targets, and player's relative ground position. There are 8 zones in each map which changes as player flies over it. Game Save. (It could take days to win!) In addition, **NEWMAP** is included to allow for the creation of a zillion new maps. **ACE S** was created in part with AGS, developed by Ken Schunk. For all CoCo's.

WAR AT SEA: Wooden Ships simulate ship to ship battles during the 18th Century. Player controls a number of sailing ships from different nations and must pit his seamanship against the computer or another player.

RED ALERT: a starship combat simulator. Object of the game is to defeat the computer controlled enemy vessel by using your ship's capacities, strategic maneuvers, and your own smarts.

NEW

A C E S: WWI Aerial Warfare (CC64K D HR ML)	\$29		
RED ALERT: Star Ship Warfare (CC64K D HR MLS J)	\$27		
WAR AT SEA: Wooden Ships (CC64K D HR MLS J)	\$25		
Pro Football: Strategy Gridiron game (CC3 128K HR B)	\$20	Luftflotte: Battle of Britain (CC32K SG MLS)	\$25
Okinawa: The Big Invasion (Screen Dump inc) (CC64K D HR ML)	\$27	Stalingrad: The turning point. (CC64K HR ML)	\$25
Blitzkrieg West: A Bigger Bulge (CC64K D HR ML)	\$27	Final Frontier: War in Space (CC32K D HR MLS)	\$25
Bataan: Historical & Hypothetical games in one (CC64K D HR ML)	\$29	Barbarossa: The War in Russia (CC64K HR ML)	\$22
Desert Fox: Rommel (CC64K D HR MLS)	\$27	RedStar: Nato vs Warsaw Pact (CC32K D HR ML)	\$22
Task Force: Modern Naval War in the Med (CC64K D HR MLS J)	\$27	DarkHorse: Redstar Sequel (CC64K D HR ML)	\$22
D DAY: The 6th of June (CC64K HR ML)	\$25	Midway: The Turning Point in the Pacific (CC32K HR MLS)	\$20
Battle Hymn: Battle of Gettysburg (CC64K D HR ML)	\$25	Escape From Denna: Dungeons! (CC32K SG MLS)	\$15
Company Commander: Squad Level Wargame (CC32K SG MLS)	\$25	Tunis: War in the Desert (CC32K SG B)	\$15
(House to House Module included in Company Commander)		Battle of the Bulge 1 or 2 player (CC32K SG B)	\$15
Additional Modules for Company Company 3.0		Phalanx: Alexander the Great (CC32K HR ML)	\$15
River Crossing	\$17	Rubicon II: Invasion game (CC32K SGB)	\$10
Gemini	\$17	Guadalcanal: America Strikes Back (CC32K SG MLS)	\$10
Cauldron	\$17	Waterloo: Napoleon (CC32K SG MLS)	\$10
Beach Head	\$17	Bomber Command: Strategic Bombing Mission (CC32K SG MLS)	\$10
Fire One! Submarine Simulation (CC3 D HR B)	\$25	Kamikaze: Naval War in the Pacific (CC32K HR B)	\$10
Fire & Steel: Waterloo Campaign (CC64K D HR MLS)	\$22	Starblazer: Strategy Star Trek (CC32K SG MLS)	\$10
		Mission Empire: Build an Empire in Space (CC32K SG B)	\$10
		Galactic Taipan: Economics in Space (CC32K SGB)	\$15
Keyboard General: Bi-monthly newsletter yearly sub			
Barbarossa, Luftflotte, Battle Hymn (256K) available Tandy 1000			
New for the Tandy 1000			
Gray Storm Rising: War in the North Atlantic			\$25

Codes: CC — Color Computer, all versions CC3 — CoCo 3 only
 D — Disk only (no D means program available tape or disk)
 HR — High Resolution SG — Semgraphics ML — Machine Language
 MLS — Machine Language Subroutines B — Basic J — Joystick

Write for free catalog!

Prices include shipping to USA and Canada. Others add \$3.00. COD's available in USA only, add \$3.50. Personal Checks accepted with no delays in USA Others must send M.O. or Bank Draft in U.S. funds. Programs shipped within 24 hours except on weekends. Sorry, no bankcards. Color Computer and Tandy 1000, TM Tandy Corp.

Florida residents add 6% sales tax.

Canadians may order direct from: **M & M Software**, Post Office Box 1945, Slave Lake, Alberta T06 2A0. Write M & M Software for information.

ARK ROYAL GAMES
 P.O. Box 14806
 Jacksonville, FL 32238
 (904) 786-8603



Day is THURSDAY	Time: 4 A.M.
Driver: REFRESHED	Fuel: 14 GAL.
Speed: 55 M.P.H.	Odometer: 1973
Cash \$ 261	Miles left: 1147
Road: CLEAR & DRY	Expense \$ 238



**Cruising on I-44 IN MISSOURI
How fast do you want to go?**

COAST TO COAST

Maybe you have never driven from Los Angeles to New York. Now you can take the trip on your computer. You have \$500 to start and must make sound decisions so that you do not give out of money before you reach your destination. Watch for speed traps because speeding tickets are expensive and don't give out of gas as this will cost you \$20 each time.

Your progress is drawn on a map of the United States. Your progress and status are upgraded continuously so you can know your options.

This program is provided as a courtesy of T & D Subscriptions Software (See their advertisement on page 8) and is used by permission.

```

3 DS$(6)="SUNDAY":DS$(0)="MONDAY":DS$(1)="
  TUESDAY":DS$(2)="WEDNESDAY":DS$(3)="TH
  URSDAY":DS$(4)="FRIDAY":DS$(5)="SATURDA
  Y":RESTORE:READNP,MT(RT):FORI=1TONP:REA
  DMP(RT,I),MP$(RT,I),MR$(RT,I),ZM(RT,I):
  NEXTI:WF=20:NP=1:SL=55:XC=17:TC=10:TS=1
  :GOSUB513
5 CLS:PRINT"YOUR TANK HOLDS 20 GALLONS. YO
  U START THE TRIP WITH $500. YOU ARE I
  N LOS ANGELES. YOUR GAS TANK IS FULL
  .COST IS $17. YOU NOTICE THAT 2 OF YO
  UR TIRES ARE STARTING TO SHOW SOME WEAR
  . DO YOU WANT REPLACEMENTS (Y/N)
9 IN$=INKEY$:IFIN$="Y"THEN11ELSEIFIN$="N"
  HEN25ELSE9
11 PRINT"NEW TIRES ARE $50-RETREADS ARE $
  20. WHICH TYPE DO YOU WANT (N/R)";:
  INPUTZ$:PRINT@300,"";:INPUT"HOW MANY";T
17 IFT<0 OR T>2THEN15ELSEIFT=0THEN25
21 IFZ$="R"THENTC=TC-3*T:XC=XC+20*T:GOTO25
23 IFZ$="N"THENTC=TC-4*T:XC=XC+50*T
25 PRINT:PRINT"CASH ON HAND IS $"500-XC".S
  PEND IT WISELY.IF YOU RUN OUT, YOU WON'
  TMAKE IT TO NEW YORK.....AND YOU KNOW W
  HAT THAT MEANS!!";
29 PMODE4,1:PCLS1:COLOR0,1:LINE(0,42)-(255
  ,157),PSET,B
31 DRAW"BM36,44D2L2F2D7M33,71M32,88M35,99R
  2D2L2M41,113M45,114M54,125D2R10M77,131R
  10UR5M97,136D3M103,141M104,139M109,140M
  116,149M124,152U6M126,142M129,146M130,1
  39R9M141,141R7M145,137M156,136M160,138M
  163,136M167,142D3M171,151D2
33 DRAW"M173,155M178,153U8M177,143
35 DRAW"M172,131M175,126M178,125M179,122M1
  91,109M189,99M193,101M194,99U3R3M200,89
  M198,88M199,85M197,83M207,80M212,77U2R2
  DM215,75U2L2UL2U6M220,64M221,59M218,58U
  8M215,51M210,49M207,59M204,60L12M181,67
  L3M174,71R2D2L2M163,78M168,67U3R2D2R2U2
  M169,58M159,56
  
```

```

0 'COAST TO COAST (C)1988 T&D SOFTWARE
  TRY TO MAKE IT FROM LOS
  ANGELES TO NEW YORK IN RECORD TIME WITH
  MONEY TO SPARE.
1 CLS:PRINT@233,"COAST TO COAST":DIM MT(2)
  ,MP(2,26),MP$(2,26),MR$(2,26),ZM(2,26),
  DS$(6),NT$(4),AS$(122):XC=0:MF=0:HL=2:HS=
  7:HR=0:MK$="FRL3DR3GLH":NT$(1)="first":
  NT$(2)="second":NT$(3)="third":NT$(4)="
  fourth"
  
```

```

37 DRAW"U7L4U2M147,46M142,49M126,44L90BM36
,58M39,59D2M48,60R9M57,44D24M55,60M58,7
1D6BM32,78R43BM49,78D18M65,111M67,114M6
4,117D10BM68,78D30L3D3BM62,44D8R2D8M67,
61M69,68R7NU2D16R21U40BM75,66R22BM76,84
R29BM84,84D47BM68,105R59
39 DRAW"BM105,84D21BM102,105D23M92,128D
41 DRAW"BM102,108R10D9M119,120R12M133,139B
M127,105D2R2D14BM119,44D6M121,53M118,61
NL21M121,64D14M118,77GM115,77L18BM121,7
7M123,80M122,86M125,90M127,93D12BM105,9
0R20BM143,49M136,56D2L2M134,64M137,75R1
1DR2BM121,72R14M137,89U13BM149,75M150,7
7M151,80D4
43 DRAW"M149,97M145,99M143,102BM137,89M145
,105D3L3U2L14BM142,108M137,121DL6BM137,
121M139,124M138,127M140,132R4M145,137BM
139,114R29BL19M148,136R4U4R8M158,114BM1
59,133R9UR4BM173,128M168,117DL2M169,113
R5DR6BM180,114M183,117
45 DRAW"BM144,107R4UR41BM158,114M160,111R3
M168,106BM149,97M150,98M153,96RM160,93U
15D13M161,93FM165,94M170,102R3M174,98M1
77,97M178,96M181,95M187,96M189,101BM163
,105M168,102BM136,55M140,54M144,58R2M14
8,64M151,62M149,68M148,75BM142,55M150,5
1M149,54
47 DRAW"M152,55M156,53M159,57M155,58M150,5
9M149,63BM159,60M155,61M153,67D4M150,77
M157,59M161,61D7R2U3M165,66M166,71BM15
0,78R19M176,74U3M183,68FBM172,76D16M191
,92M194,93D3BM189,92D3R6BM172,88M169,91
M164,94BM175,92D4R5
49 DRAW"BM175,75D4R13M193,82R4U9R2U12BM192
,82M191,87M193,88M191,92BM197,75R12M210
,78BM205,75D6BM199,70M207,71M210,68BM20
4,60M205,63M203,67D4BM209,56M208,59M209
,67RBM202,84M209,82M210,84M206,85M202,8
4BM126,89R11
51 DRAW"BM136,40U40BM35,43D5BM124,157U5BM5
4,127D2F3D3G2D4DF3D3F3DF3D2BM48,116"+MK
$:POKE178,2:PAINT(150,48),,0:PAINT(165,
60),,0:PAINT(150,68),,0:PAINT(170,76),,
0:PAINT(177,70),,0:PAINT(0,156),,0:PAIN
T(10,150),,0:POKE178,1:PAINT(110,150),,
0:POKE178,0
53 DRAW"BM221,60ERE3R3UE3UEUEREU2EU2":POKE
178,1:PAINT(180,50),,0:POKE178,2:PAINT(
250,60),,0:POKE178,0:SCREEN1,1
55 GOSUB195
57 RH=1:GOTO97
59 AF=SPR*CD*CR
61 IFAF>RND(0)*1E7 THEN355
63 AF=SQR(MF+100)*TC
65 IFAF>RH*25000*MRND(0)THENGOSUB263
67 IFSP>SL-RH+10THENGOSUB215
69 HR=HR+1:HL=HL+1
71 IFSL<40THENSL=55
73 T=ABS(55-SP):IFT>12THENT=12.5
75 T1=SP/(22-T)
77 WF=WF-T1:IFWF<0THENGOSUB245
79 MF=MF+SP
81 IF(500-XC)<0THEN509
83 IFMF>MT(RT)THEN371
85 GOSUB195:LINE(176,7)-(255,14),PRESET,BF
:DRAW"BM139,8":A$="Fuel:"+STR$(INT(WF))
+" GAL.":GOSUB413
87 LINE(46,15)-(135,23),PRESET,BF:DRAW"BM0
,16":A$="Speed: ":GOSUB 413:A$=Z$+" M.P
.H.":GOSUB413
89 LINE(206,15)-(255,22),PRESET,BF:DRAW"BM
139,16":A$="Odometer: "+STR$(INT(MF)):GO
SUB413:GOSUB537
91 LINE(43,24)-(135,31),PRESET,BF:DRAW"BM0
,25":A$="Cash $" +STR$(INT(500-XC)):GOSU
B413
93 LINE(206,24)-(255,31),PRESET,BF:DRAW"BM
139,25":A$="Miles left: "+STR$(INT(MT(RT
)-MF)):GOSUB413:GOSUB537
95 LINE(205,32)-(255,39),PRESET,BF:DRAW"BM
139,33":A$="Expense $" +STR$(INT(XC)):GO
SUB413
97 GOSUB441:IF MP(RT,NP)<=MF THEN 317 ELSE
A$="Cruising on "+MR$(RT,NP):DRAW"BM0,
172":GOSUB 413
99 GOSUB 307:A$=CD$:LINE(45,7)-(135,14),PR
ESET,BF:DRAW"BM0,8":A$="Driver: "+CD$:G
OSUB413
101 GOSUB281:LINE(41,32)-(135,40),PRESET,B
F:DRAW"BM0,33":A$="Road: "+CR$:GOSUB413
103 NS=NS+1:IFNS>3THENGOSUB115
105 GOSUB437:DRAW"BM0,182":A$="How fast do
you want to go? ":GOSUB 413:GOSUB415
107 Z$=B$:SP=VAL(B$):GOSUB437:IFSP<20THENA
$="Minimum speed is 20 m.p.h.":DRAW"BM0
,182":GOSUB413:FORX=1TO1000:NEXT:GOTO10
5
109 IFSP>INT(1.5*SL)THENSP=INT(1.5*SL)ELSE
113
111 GOSUB439:DRAW"BM1,182":A$="Top speed o
n this road is "+STR$(SP)+" m.p.h.":GOS
UB413
113 GOTO59
115 GOSUB443:A$="Rest stop ahead. Wanna st
op? (y/n)":DRAW"BM0,162":GOSUB413
117 IN$=INKEY$:IF IN$=""THEN 117
119 IFIN$="N"THEN NS=1:HL=HL+1:RETURN
121 IFIN$="Y"THEN123ELSE117
123 T=RND(135)
125 IFT<80THEN123
127 T=T/100
129 GOSUB441:A$="Gas costs $" +STR$(T)+" a
gallon":DRAW"BM0,162":GOSUB413
131 A$="How many gallons do you want? ":DR
AW"BM0,172":GOSUB413:GOSUB415
133 T1=VAL(B$)
135 IFT1>0THENDRAW"BM0,182":A$="Pay $" +STR
$(T*T1):GOSUB413:XC=XC+T*T1:WF=WF+T1
137 IFWF>21THENGOSUB441:A$="Your tank won'
t hold that much!":DRAW"BM2,162":GOSUB4
13:A$="You spilled quite a bit on the g
round":DRAW"BM2,172":GOSUB413:WF=20:FOR
X=1TO1000:NEXT
139 IFTS>0THEN161
141 T=50+INT(5*RND(0)):T1=20+INT(2*RND(0))
143 GOSUB441:A$="A new tire costs $" +STR$(
T):DRAW"BM0,162":GOSUB413
145 A$="A retread costs $" +STR$(T1):DRAW"B
M0,172":GOSUB413
147 DRAW"BM0,182":A$="Wanna buy a tire? (y
/n)":GOSUB413
149 IN$=INKEY$:IFIN$=""THEN149
151 IFIN$="N"THEN161
153 GOSUB441:A$="New or Retread? (n/r)":DR
AW"BM0,162":GOSUB413
155 IN$=INKEY$:IFIN$=""THEN155
157 IFIN$="N"THEN XC=XC+T:TS=2:GOTO161
159 IFIN$="R"THEN XC=XC+T1:TS=1:GOTO161ELS
E155
161 HR=HR+1:NS=0
163 GOSUB441:A$="Wanna get some sleep? (Y/
N)":DRAW"BM0,162":GOSUB413
165 IN$=INKEY$:IF IN$=""THEN165
167 IFIN$="N"THEN GOSUB195:GOTO191
169 IFIN$="Y"THEN171ELSE165
171 A$="How many hours? (1-9)":DRAW"BM0,17
2":GOSUB413

```

Dynamic Color News Mar 1988

```

173 IN$=INKEY$: IF IN$="" THEN 173
175 T=VAL(IN$): IFT<1 OR T>9 THEN 69 ELSE 177
177 DH=HR-24*INT(HR/24)
179 HR=HR+T: IFCT=1 THEN WF=WF-7*T
181 IFWF<0 THEN WF=0: GOSUB 197
183 IFDH<21 OR DH>12 THEN 187
185 T=INT(T/2+.6)
187 HS=HS+T
189 IFT>3 THEN HL=0 ELSE HL=HL/2
191 IFSL<55 THEN GOSUB 441: A$="Speed limit is
"+STR$(SL)+" m.p.h.": GOSUB 413
193 RETURN
195 DH=HR+8
197 DT=INT(DH/24): DH=DH-24*DT
199 IFDT>6 THEN DT=DT-7: GOTO 199
201 DM$=" A.M."
203 IFDH=12 THEN DM$=" NOON": GOTO 209
205 IFDH>12 THEN DH=DH-12: DM$=" P.M."
207 IFDH=0 THEN DH=12: DM$=" MIDNITE"
209 LINE(42,0)-(135,6), PRESET, BF: DRAW "BM0,
0C0": A$="Day is "+DS$(DT): GOSUB 413
211 LINE(176,0)-(255,6), PRESET, BF: DRAW "BM1
39,0": A$="Time:
213 A$=A$+STR$(INT(DH))+DM$: GOSUB 413: RETUR
N
215 IF(SP-SL-5)R<900*RND(0) THEN RETURN
217 GOSUB 441: DRAW "BM0,162": A$="Oh oh, the
cops! Pull over.": GOSUB 413
219 FORX=1 TO 5: PLAY "O4L66;1;2;3;4;5;6;7;8;9
;10;11;12;11;10;9;8;7;6;5;4;3;2": NEXT
221 NT=NT+1: A$="This is your "+NT$(NT)+" o
ffence": DRAW "BM0,172": GOSUB 413: HR=HR+NT
: HL=HL+NT
223 IFNT=1 THEN A$="Better pay attention. Ti
me is money!": DRAW "BM0,182": GOSUB 413
225 IFNT=2 THEN A$="Put an egg under that le
ad foot!": DRAW "BM0,182": GOSUB 413
227 IFNT=3 THEN A$="One more ticket and you'
re all done!": DRAW "BM0,182": GOSUB 413
229 IFNT>3 THEN 239
231 T=NT*RND(5): T1=5*RND(RT+NT*RND(4))
233 FORX=1 TO 1000: NEXT: GOSUB 441: DRAW "BM0,16
2": A$="Fine is $"+STR$(T1): GOSUB 413
235 DRAW "BM0,171": A$="Plus $"+STR$(T)+" fo
r each m.p.h. over limit": GOSUB 413
237 DRAW "BM0,181": A$="Pay $"+STR$(T1+T*(SP
-SL)): GOSUB 413: XC=XC+T1+T*(SP-SL): A$="
and wait "+STR$(NT)+" hours": GOSUB 413"
: Z$="82
238 FORX=1 TO 1500: NEXT: GOSUB 441: RETURN
239 PCLS1: A$="30 days in the slammer. GAME
OVER!": DRAW "BM10,100": GOSUB 413
241 A$="Wanna try again? (y/n)": DRAW "BM15,
130": GOSUB 413
243 IN$=INKEY$: IF IN$="Y" THEN RUN ELSE IF IN$="
N" THEN CLS: EN ELSE 243
245 T1=T1+WF: WF=0-SP=0
247 T=(4.5-0.2*T)*T1: MF=MF+T
249 GOSUB 441: A$="You ran out of gas!": DRAW
"BM0,162": GOSUB 413
251 A$="It costs $20 for delivery": DRAW "BM
0,172": GOSUB 413
253 WF=5: T1=RND(5): HR=HR+T1: XC=XC+20: HL=HL
+T1
255 A$="and wasted"+STR$(T1)+" hours by ca
rlessness": DRAW "BM0,182": GOSUB 413
257 IFCT=1 THEN CX=CX+RND(3)
259 FORI=1 TO 500: NEXT: RETURN
261 '
263 GOSUB 441: A$="You just blew a tire!": DR
AW "BM0,162": GOSUB 413
265 IFTS=0 THEN 271
267 TC=TC-2*TS: TS=0
269 GOSUB 441: A$="It took"+STR$(T)+" hours
to fix the tire": DRAW "BM0,172": GOSUB 413
: HR=HR+T: HL=HL+T+1: RETURN
271 '
273 GOSUB 441: A$="No spare-call for deliver
y!": DRAW "BM0,162": GOSUB 413
275 A$="Cost - $100... Time - 1 hour.": DRAW
"BM0,182": GOSUB 413
277 HR=HR+1: HL=HL+1: XC=XC+100: RETURN
279 '
281 AF=(3000+MF)*RND(0)
283 IFAF<4000 AND CR<>50 THEN 295
285 IFAF>5700 THEN 297
287 IFAF>5500 THEN 299
289 IFAF>4400 THEN 303
291 GOTO 305
293 '
295 CR=1: CR$="CLEAR & DRY": RETURN
297 CR=50: CR$="BLIZZARD": RETURN
299 CR=10: CR$="FOGGY": RETURN
301 CR=5: CR$="LIGHT SNOW": RETURN
303 CR=5: CR$="RAIN": RETURN
305 CR=3: CR$="WET ROAD": RETURN
307 IFHL>190 HR/HS>4 THEN CD=100: CD$="EXHAU
STED": RETURN
309 IFHL<3 AND CS(HR/HS)<2.3 THEN CD=1: CD$="R
EFRESHED": RETURN
310 IFHL<8 AND CS(HR/HS)<2.5 THEN CD=2: CD$="F
INE": RETURN
311 IFHL<12 AND HR/HS<=3 THEN CD=4: CD$="BORED
": RETURN
313 IFHL<16 AND HR/HS<=3 THEN CD=8: CD$="TIRE
D": RETURN
315 CD=25: CD$="VERY SLEEPY": RETURN
317 GOSUB 433: A$="You just passed "+MP$(RT,
NP): GOSUB 453: DRAW "BM0,162": GOSUB 413: FO
RX=1 TO 1000: NEXT
319 ZH=ZM(RT,NP): SL=55
321 ON INT(ZH) GOSUB 325,329,335,339,345,353
323 NP=NP+1: IF INT(ZH)=8 THEN 371 ELSE 97
325 GOSUB 441: A$="Time zone change. Add 1 h
our": DRAW "BM0,162": GOSUB 413
327 HR=HR+1: GOSUB 195: RETURN
329 T=10*(ZH-INT(ZH))
331 A$="Stop. Pay toll of $"+STR$(INT(T)):
DRAW "BM0,182": GOSUB 413
333 XC=XC+T: RETURN
335 IFRND(0)<ZH-INT(ZH) THEN RETURN
337 GOSUB 441: A$="Construction ahead": DRAW
"BM0,162": GOSUB 413: A$="SLOW DOWN... Speed
Limit is 35 m.p.h.": DRAW "BM0,172": GOSU
B 413: SL=35: RETURN
339 IFRND(0)<ZH-INT(ZH) THEN RETURN
341 T=SP+RND(5)-2: GOSUB 433: A$="Radar just
clocked you at"+STR$(T)+" m.p.h.": DRAW
"BM0,162": GOSUB 413
343 IFT>SL+3 GOSUB 217 ELSE GOSUB 435: A$="No ti
cket this time, but watch it": DRAW "BM0,
172": GOSUB 413: RETURN
345 T=RND(6): GOSUB 441: A$="5000 sheep wande
red on to the road": DRAW "BM0,162": GOSUB
413: A$="The farmer will clear them away
in": DRAW "BM0,172": GOSUB 413: A$=STR$(T)+
" hours. ": DRAW "BM0,182": GOSUB 413: FORX=
1 TO 1000: NEXT
347 HR=HR+T: IFT>1 THEN T1=INT(T/2+.5) ELSE T1=
0
349 IFT1>3 THEN HL=0 ELSE IFT1>0 THEN HL=HL/2
351 GOSUB 441: A$="You also got"+STR$(T1)+"
hrs./sleep": DRAW "BM0,162": GOSUB 413: GOSU
B 195: RETURN

```

```

353 FORX=1TO1000:NEXT:GOSUB441:AS="You ran
out of gas while waiting!":DRAW"BM0,16
2":GOSUB413:T=0:GOSUB251:RETURN
355 PCLS:DRAW"BM0,95S12":AS="CRASH":GOSUB4
13:DRAW"S4
357 IFCD=100 OR(CD=25 AND SP<65)THENAS="Yo
u fell asleep at the wheel":DRAW"BM10,1
20":GOSUB413:GOTO367
359 IFCR=50THENAS="You drove into a snow-f
illed ditch":DRAW"BM10,120":GOSUB413:GO
TO367
361 IFCR=10THENAS="You hit another car on
the road":DRAW"BM10,120":GOSUB413:GOTO3
67
363 IFSP>65THENAS="Speed kills":DRAW"BM50,
120":GOSUB413:GOTO367
365 IFCR>2THENAS="You skidded off the road
.":DRAW"BM10,120":GOSUB413:AS="You lose
!":DRAW"BM80,135":GOSUB413:AS="Play Aga
in (y/n)":DRAW"BM100,177":GOSUB413
367 AS="Play Again (y/n)":DRAW"BM100,177":
GOSUB413
369 IN$=INKEY$:IFIN$="Y"THENRUNELSEIFIN$="
N"THENCLS:ENDEELSE369
371 PCLS1:AS="WELCOME TO NEW YORK!":DRAW"B
M74,20":GOSUB413:DRAW"S4
373 GOSUB195
375 T=HR-INT(HR/24):IFT<10OR T>21THEN381
377 PCLS1:GOTO377
379 T=24-T:HR=HR+T:GOSUB195
381 T=INT(HR/24):T1=HR-24*T
383 AS="TRIP TIME:"+STR$(T)+" DAYS.":DRAW
"BM74,30":GOSUB413
385 IFT>1THENAS="&"+STR$(T1)+" HRS":GOSUB4
13
387 AS="EXPENSES TOTALED $"+DC$+STR$(XC):D
RAW"BM74,40":GOSUB413
389 AS="YOU HAVE $"+STR$(INT(1500-XC))+ " L
EFT":DRAW"BM74,50":GOSUB413
391 IFT1>0THENT=T+1
393 XC=XC+T1
395 ON CT GOTO397,401,403
397 T1=(T-4)*RND(3):IFT1>0THENCX=CX+T1
399 GOTO405
401 IFHR<90THEN405
403 CX=0:GOTO399
405 XT=XT-XC:XP=XP+XT:IFXT<0THEN411
407 AS="WANNA MAKE ANOTHER TRIP?":DRAW"BM8
6,90":GOSUB413
409 IN$=INKEY$:IFIN$="Y"THENRUNELSEIFIN$="
N"THENCLS:ENDEELSE409
411 GOTO411
413 FORZ=1TOLEN(AS):DRAWAS(ASC(MID$(AS,Z,1
))):NEXT:RETURN
415 C$="":B$="":B=0
417 C=PEEK(189)*256+PEEK(190):D=PEEK(191)*
256+PEEK(192):C=C+3:DRAW"BM=C; ,=D; "
419 D$=CHR$(13)+CHR$(8)+CHR$(32)
421 C$=INKEY$:IFC$=""THEN421ELSEIFINSTR(D$
,C$)THEN427
423 IFC$<" "ORC$>"Z"THEN421ELSEB$=B$+C$:B=
B+1:AS=C$:GOSUB413
425 IF LEN(B$)=2 THEN RETURN ELSE 421
427 IFC$=CHR$(13)THENRETURN
429 IFC$=CHR$(32)THENB$=B$+CHR$(32):B=B+1:
AS=C$:GOSUB413:GOTO421
431 IFB>0THENES=B$:B$=LEFT$(B$,LEN(B$)-1):
B=B-1:AS=E$:DRAW"C1BM=C; ,=D; ":GOSUB413:
DRAW"C0BM=C; ,=D; ":IFB$=""THEN421ELSEAS=
B$:GOSUB413:GOTO421
433 LINE(0,162)-(255,171),PRESET,BF:RETURN
435 LINE(0,171)-(255,181),PRESET,BF:RETURN
437 LINE(0,181)-(255,191),PRESET,BF:RETURN
439 LINE(0,171)-(255,191),PRESET,BF:RETURN
441 LINE(0,162)-(255,191),PRESET,BF:RETURN
443 LINE(0,162)-(255,181),PRESET,BF:RETURN
445 DATA6,3120,75,PALM SPRINGS,I-10 IN CA
LIFORNIA,0,225,the ARIZONA BORDER,I-10
IN CALIFORNIA,1,375,PHOENIX,I-10 IN ARI
ZONA,0,495,FLAGSTAFF,I-17 IN ARIZONA,7.
9,650,HOLBROOK,I-40 IN ARIZONA,5.75,795
,GALLUP,I-40 IN NEW MEXICO,1
447 DATA965,ALBUQUERQUE,I-40 IN NEW MEXICO
,1,1080,SANTA ROSA,I-40 IN NEW MEXICO,0
,1250,AMARILLO,I-40 IN TEXAS,3.80,1439,
ELK CITY,I-40 IN OKLAHOMA,0,1785,OKLAHO
MA CITY,I-40 IN OKLAHOMA,0,1965,TULSA,I
-44 IN OKLAHOMA,1,2100,JOPLIN,I-44 IN M
ISSOURI,4.25
449 DATA2160,SPRINGFIELD,I-44 IN MISSOURI,
0,2255,ST. LOUIS,I-44 IN MISSOURI,0,232
0,EFFINGHAM,I-70 IN ILLINOIS,5.75,2400,
TERRE HAUTE,I-70 IN INDIANA,5.70,2565,I
NDIANAPOLIS,I-70 IN INDIANA,3.80,2680,R
ICHMOND,I-70 IN INDIANA,7.85
451 DATA2775,DAYTON,I-85 IN OHIO,0,2880,CO
LUMBUS,I-71 IN OHIO,0,2920,WHEELING,I-7
0 IN WEST VIRGINIA,2.30,2990,HARRISBURG
,I-83 IN PENNSYLVANIA,2.25,3070,TRENTON
,I-206 IN NEW JERSEY,2.40,3122,NEWARK,I
-76 IN NEW JERSEY,3.35,999,NEW YORK,CIT
Y STREETS,0
453 PMS=MP$(RT,NP)
455 IFPMS="PALM SPRINGS"THENDRAW"BM49,116"
+MK$:DRAW"BM50,116"+MK$:DRAW"BM51,117"
+MK$:DRAW"BM52,117"+MK$:DRAW"BM53,118"
+MK$:DRAW"BM54,118"+MK$:DRAW"BM55,119"
+MK$:DRAW"BM56,119"+MK$:DRAW"BM57,119"
+MK$:DRAW"BM58,119"+MK$:DRAW"BM59,119"
+MK$:DRAW"BM60,119"+MK$:DRAW"BM61,119"
+MK$:DRAW"BM62,119"+MK$:DRAW"BM63,119"
+MK$:DRAW"BM64,119"+MK$:DRAW"BM65,119"
+MK$:DRAW"BM66,119"+MK$:DRAW"BM67,119"
+MK$:DRAW"BM68,119"+MK$:DRAW"BM69,120"
+MK$:DRAW"BM70,120"+MK$:DRAW"BM71,121"
+MK$:DRAW"BM72,122"+MK$:DRAW"BM73,123"
+MK$:DRAW"BM74,123"+MK$:DRAW"BM75,123"
+MK$:DRAW"BM76,123"+MK$:DRAW"BM77,123"
+MK$:DRAW"BM78,123"+MK$:DRAW"BM79,123"
+MK$:DRAW"BM80,123"+MK$:DRAW"BM81,123"
+MK$:DRAW"BM82,123"+MK$:DRAW"BM83,123"
+MK$:DRAW"BM84,123"+MK$:DRAW"BM85,123"
+MK$:DRAW"BM86,123"+MK$:DRAW"BM87,123"
+MK$:DRAW"BM88,123"+MK$:DRAW"BM89,123"
+MK$:DRAW"BM90,123"+MK$:DRAW"BM91,123"
+MK$:DRAW"BM92,123"+MK$:DRAW"BM93,123"
+MK$:DRAW"BM94,123"+MK$:DRAW"BM95,123"
+MK$:DRAW"BM96,123"+MK$:DRAW"BM97,123"
+MK$:DRAW"BM98,123"+MK$:DRAW"BM99,123"
+MK$:DRAW"BM100,123"+MK$:DRAW"BM101,123"
+MK$:DRAW"BM102,123"+MK$:DRAW"BM103,123"
+MK$:DRAW"BM104,123"+MK$:DRAW"BM105,123"
+MK$:DRAW"BM106,123"+MK$:DRAW"BM107,123"
+MK$:DRAW"BM108,123"+MK$:DRAW"BM109,123"
+MK$:DRAW"BM110,123"+MK$:DRAW"BM111,123"
+MK$:DRAW"BM112,123"+MK$:DRAW"BM113,123"
+MK$:DRAW"BM114,123"+MK$:DRAW"BM115,123"
+MK$:DRAW"BM116,123"+MK$:DRAW"BM117,123"
+MK$:DRAW"BM118,123"+MK$:DRAW"BM119,123"
+MK$:DRAW"BM120,123"+MK$:DRAW"BM121,123"
+MK$:DRAW"BM122,123"+MK$:DRAW"BM123,123"
+MK$:DRAW"BM124,123"+MK$:DRAW"BM125,123"
+MK$:DRAW"BM126,123"+MK$:DRAW"BM127,123"
+MK$:DRAW"BM128,123"+MK$:DRAW"BM129,123"
+MK$:DRAW"BM130,123"+MK$:DRAW"BM131,123"
+MK$:DRAW"BM132,123"+MK$:DRAW"BM133,123"
+MK$:DRAW"BM134,123"+MK$:DRAW"BM135,123"
+MK$:DRAW"BM136,123"+MK$:DRAW"BM137,123"
+MK$:DRAW"BM138,123"+MK$:DRAW"BM139,123"
+MK$:DRAW"BM140,123"+MK$:DRAW"BM141,123"
+MK$:DRAW"BM142,123"+MK$:DRAW"BM143,123"
+MK$:DRAW"BM144,123"+MK$:DRAW"BM145,123"
+MK$:DRAW"BM146,123"+MK$:DRAW"BM147,123"
+MK$:DRAW"BM148,123"+MK$:DRAW"BM149,123"
+MK$:DRAW"BM150,123"+MK$:DRAW"BM151,123"
+MK$:DRAW"BM152,123"+MK$:DRAW"BM153,123"
+MK$:DRAW"BM154,123"+MK$:DRAW"BM155,123"
+MK$:DRAW"BM156,123"+MK$:DRAW"BM157,123"
+MK$:DRAW"BM158,123"+MK$:DRAW"BM159,123"
+MK$:DRAW"BM160,123"+MK$:DRAW"BM161,123"
+MK$:DRAW"BM162,123"+MK$:DRAW"BM163,123"
+MK$:DRAW"BM164,123"+MK$:DRAW"BM165,123"
+MK$:DRAW"BM166,123"+MK$:DRAW"BM167,123"
+MK$:DRAW"BM168,123"+MK$:DRAW"BM169,123"
+MK$:DRAW"BM170,123"+MK$:DRAW"BM171,123"
+MK$:DRAW"BM172,123"+MK$:DRAW"BM173,123"
+MK$:DRAW"BM174,123"+MK$:DRAW"BM175,123"
+MK$:DRAW"BM176,123"+MK$:DRAW"BM177,123"
+MK$:DRAW"BM178,123"+MK$:DRAW"BM179,123"
+MK$:DRAW"BM180,123"+MK$:DRAW"BM181,123"
+MK$:DRAW"BM182,123"+MK$:DRAW"BM183,123"
+MK$:DRAW"BM184,123"+MK$:DRAW"BM185,123"
+MK$:DRAW"BM186,123"+MK$:DRAW"BM187,123"
+MK$:DRAW"BM188,123"+MK$:DRAW"BM189,123"
+MK$:DRAW"BM190,123"+MK$:DRAW"BM191,123"
+MK$:DRAW"BM192,123"+MK$:DRAW"BM193,123"
+MK$:DRAW"BM194,123"+MK$:DRAW"BM195,123"
+MK$:DRAW"BM196,123"+MK$:DRAW"BM197,123"
+MK$:DRAW"BM198,123"+MK$:DRAW"BM199,123"
+MK$:DRAW"BM200,123"+MK$:DRAW"BM201,123"
+MK$:DRAW"BM202,123"+MK$:DRAW"BM203,123"
+MK$:DRAW"BM204,123"+MK$:DRAW"BM205,123"
+MK$:DRAW"BM206,123"+MK$:DRAW"BM207,123"
+MK$:DRAW"BM208,123"+MK$:DRAW"BM209,123"
+MK$:DRAW"BM210,123"+MK$:DRAW"BM211,123"
+MK$:DRAW"BM212,123"+MK$:DRAW"BM213,123"
+MK$:DRAW"BM214,123"+MK$:DRAW"BM215,123"
+MK$:DRAW"BM216,123"+MK$:DRAW"BM217,123"
+MK$:DRAW"BM218,123"+MK$:DRAW"BM219,123"
+MK$:DRAW"BM220,123"+MK$:DRAW"BM221,123"
+MK$:DRAW"BM222,123"+MK$:DRAW"BM223,123"
+MK$:DRAW"BM224,123"+MK$:DRAW"BM225,123"
+MK$:DRAW"BM226,123"+MK$:DRAW"BM227,123"
+MK$:DRAW"BM228,123"+MK$:DRAW"BM229,123"
+MK$:DRAW"BM230,123"+MK$:DRAW"BM231,123"
+MK$:DRAW"BM232,123"+MK$:DRAW"BM233,123"
+MK$:DRAW"BM234,123"+MK$:DRAW"BM235,123"
+MK$:DRAW"BM236,123"+MK$:DRAW"BM237,123"
+MK$:DRAW"BM238,123"+MK$:DRAW"BM239,123"
+MK$:DRAW"BM240,123"+MK$:DRAW"BM241,123"
+MK$:DRAW"BM242,123"+MK$:DRAW"BM243,123"
+MK$:DRAW"BM244,123"+MK$:DRAW"BM245,123"
+MK$:DRAW"BM246,123"+MK$:DRAW"BM247,123"
+MK$:DRAW"BM248,123"+MK$:DRAW"BM249,123"
+MK$:DRAW"BM250,123"+MK$:DRAW"BM251,123"
+MK$:DRAW"BM252,123"+MK$:DRAW"BM253,123"
+MK$:DRAW"BM254,123"+MK$:DRAW"BM255,123"
+MK$:DRAW"BM256,123"+MK$:DRAW"BM257,123"
+MK$:DRAW"BM258,123"+MK$:DRAW"BM259,123"
+MK$:DRAW"BM260,123"+MK$:DRAW"BM261,123"
+MK$:DRAW"BM262,123"+MK$:DRAW"BM263,123"
+MK$:DRAW"BM264,123"+MK$:DRAW"BM265,123"
+MK$:DRAW"BM266,123"+MK$:DRAW"BM267,123"
+MK$:DRAW"BM268,123"+MK$:DRAW"BM269,123"
+MK$:DRAW"BM270,123"+MK$:DRAW"BM271,123"
+MK$:DRAW"BM272,123"+MK$:DRAW"BM273,123"
+MK$:DRAW"BM274,123"+MK$:DRAW"BM275,123"
+MK$:DRAW"BM276,123"+MK$:DRAW"BM277,123"
+MK$:DRAW"BM278,123"+MK$:DRAW"BM279,123"
+MK$:DRAW"BM280,123"+MK$:DRAW"BM281,123"
+MK$:DRAW"BM282,123"+MK$:DRAW"BM283,123"
+MK$:DRAW"BM284,123"+MK$:DRAW"BM285,123"
+MK$:DRAW"BM286,123"+MK$:DRAW"BM287,123"
+MK$:DRAW"BM288,123"+MK$:DRAW"BM289,123"
+MK$:DRAW"BM290,123"+MK$:DRAW"BM291,123"
+MK$:DRAW"BM292,123"+MK$:DRAW"BM293,123"
+MK$:DRAW"BM294,123"+MK$:DRAW"BM295,123"
+MK$:DRAW"BM296,123"+MK$:DRAW"BM297,123"
+MK$:DRAW"BM298,123"+MK$:DRAW"BM299,123"
+MK$:DRAW"BM300,123"+MK$:DRAW"BM301,123"
+MK$:DRAW"BM302,123"+MK$:DRAW"BM303,123"
+MK$:DRAW"BM304,123"+MK$:DRAW"BM305,123"
+MK$:DRAW"BM306,123"+MK$:DRAW"BM307,123"
+MK$:DRAW"BM308,123"+MK$:DRAW"BM309,123"
+MK$:DRAW"BM310,123"+MK$:DRAW"BM311,123"
+MK$:DRAW"BM312,123"+MK$:DRAW"BM313,123"
+MK$:DRAW"BM314,123"+MK$:DRAW"BM315,123"
+MK$:DRAW"BM316,123"+MK$:DRAW"BM317,123"
+MK$:DRAW"BM318,123"+MK$:DRAW"BM319,123"
+MK$:DRAW"BM320,123"+MK$:DRAW"BM321,123"
+MK$:DRAW"BM322,123"+MK$:DRAW"BM323,123"
+MK$:DRAW"BM324,123"+MK$:DRAW"BM325,123"
+MK$:DRAW"BM326,123"+MK$:DRAW"BM327,123"
+MK$:DRAW"BM328,123"+MK$:DRAW"BM329,123"
+MK$:DRAW"BM330,123"+MK$:DRAW"BM331,123"
+MK$:DRAW"BM332,123"+MK$:DRAW"BM333,123"
+MK$:DRAW"BM334,123"+MK$:DRAW"BM335,123"
+MK$:DRAW"BM336,123"+MK$:DRAW"BM337,123"
+MK$:DRAW"BM338,123"+MK$:DRAW"BM339,123"
+MK$:DRAW"BM340,123"+MK$:DRAW"BM341,123"
+MK$:DRAW"BM342,123"+MK$:DRAW"BM343,123"
+MK$:DRAW"BM344,123"+MK$:DRAW"BM345,123"
+MK$:DRAW"BM346,123"+MK$:DRAW"BM347,123"
+MK$:DRAW"BM348,123"+MK$:DRAW"BM349,123"
+MK$:DRAW"BM350,123"+MK$:DRAW"BM351,123"
+MK$:DRAW"BM352,123"+MK$:DRAW"BM353,123"
+MK$:DRAW"BM354,123"+MK$:DRAW"BM355,123"
+MK$:DRAW"BM356,123"+MK$:DRAW"BM357,123"
+MK$:DRAW"BM358,123"+MK$:DRAW"BM359,123"
+MK$:DRAW"BM360,123"+MK$:DRAW"BM361,123"
+MK$:DRAW"BM362,123"+MK$:DRAW"BM363,123"
+MK$:DRAW"BM364,123"+MK$:DRAW"BM365,123"
+MK$:DRAW"BM366,123"+MK$:DRAW"BM367,123"
+MK$:DRAW"BM368,123"+MK$:DRAW"BM369,123"
+MK$:DRAW"BM370,123"+MK$:DRAW"BM371,123"
+MK$:DRAW"BM372,123"+MK$:DRAW"BM373,123"
+MK$:DRAW"BM374,123"+MK$:DRAW"BM375,123"
+MK$:DRAW"BM376,123"+MK$:DRAW"BM377,123"
+MK$:DRAW"BM378,123"+MK$:DRAW"BM379,123"
+MK$:DRAW"BM380,123"+MK$:DRAW"BM381,123"
+MK$:DRAW"BM382,123"+MK$:DRAW"BM383,123"
+MK$:DRAW"BM384,123"+MK$:DRAW"BM385,123"
+MK$:DRAW"BM386,123"+MK$:DRAW"BM387,123"
+MK$:DRAW"BM388,123"+MK$:DRAW"BM389,123"
+MK$:DRAW"BM390,123"+MK$:DRAW"BM391,123"
+MK$:DRAW"BM392,123"+MK$:DRAW"BM393,123"
+MK$:DRAW"BM394,123"+MK$:DRAW"BM395,123"
+MK$:DRAW"BM396,123"+MK$:DRAW"BM397,123"
+MK$:DRAW"BM398,123"+MK$:DRAW"BM399,123"
+MK$:DRAW"BM400,123"+MK$:DRAW"BM401,123"
+MK$:DRAW"BM402,123"+MK$:DRAW"BM403,123"
+MK$:DRAW"BM404,123"+MK$:DRAW"BM405,123"
+MK$:DRAW"BM406,123"+MK$:DRAW"BM407,123"
+MK$:DRAW"BM408,123"+MK$:DRAW"BM409,123"
+MK$:DRAW"BM410,123"+MK$:DRAW"BM411,123"
+MK$:DRAW"BM412,123"+MK$:DRAW"BM413,123"
+MK$:DRAW"BM414,123"+MK$:DRAW"BM415,123"
+MK$:DRAW"BM416,123"+MK$:DRAW"BM417,123"
+MK$:DRAW"BM418,123"+MK$:DRAW"BM419,123"
+MK$:DRAW"BM420,123"+MK$:DRAW"BM421,123"
+MK$:DRAW"BM422,123"+MK$:DRAW"BM423,123"
+MK$:DRAW"BM424,123"+MK$:DRAW"BM425,123"
+MK$:DRAW"BM426,123"+MK$:DRAW"BM427,123"
+MK$:DRAW"BM428,123"+MK$:DRAW"BM429,123"
+MK$:DRAW"BM430,123"+MK$:DRAW"BM431,123"
+MK$:DRAW"BM432,123"+MK$:DRAW"BM433,123"
+MK$:DRAW"BM434,123"+MK$:DRAW"BM435,123"
+MK$:DRAW"BM436,123"+MK$:DRAW"BM437,123"
+MK$:DRAW"BM438,123"+MK$:DRAW"BM439,123"
+MK$:DRAW"BM440,123"+MK$:DRAW"BM441,123"
+MK$:DRAW"BM442,123"+MK$:DRAW"BM443,123"
+MK$:DRAW"BM444,123"+MK$:DRAW"BM445,123"
+MK$:DRAW"BM446,123"+MK$:DRAW"BM447,123"
+MK$:DRAW"BM448,123"+MK$:DRAW"BM449,123"
+MK$:DRAW"BM450,123"+MK$:DRAW"BM451,123"
+MK$:DRAW"BM452,123"+MK$:DRAW"BM453,123"
+MK$:DRAW"BM454,123"+MK$:DRAW"BM455,123"
+MK$:DRAW"BM456,123"+MK$:DRAW"BM457,123"
+MK$:DRAW"BM458,123"+MK$:DRAW"BM459,123"
+MK$:DRAW"BM460,123"+MK$:DRAW"BM461,123"
+MK$:DRAW"BM462,123"+MK$:DRAW"BM463,123"
+MK$:DRAW"BM464,123"+MK$:DRAW"BM465,123"
+MK$:DRAW"BM466,123"+MK$:DRAW"BM467,123"
+MK$:DRAW"BM468,123"+MK$:DRAW"BM469,123"
+MK$:DRAW"BM470,123"+MK$:DRAW"BM471,123"
+MK$:DRAW"BM472,123"+MK$:DRAW"BM473,123"
+MK$:DRAW"BM474,123"+MK$:DRAW"BM475,123"
+MK$:DRAW"BM476,123"+MK$:DRAW"BM477,123"
+MK$:DRAW"BM478,123"+MK$:DRAW"BM479,123"
+MK$:DRAW"BM480,123"+MK$:DRAW"BM481,123"
+MK$:DRAW"BM482,123"+MK$:DRAW"BM483,123"
+MK$:DRAW"BM484,123"+MK$:DRAW"BM485,123"
+MK$:DRAW"BM486,123"+MK$:DRAW"BM487,123"
+MK$:DRAW"BM488,123"+MK$:DRAW"BM489,123"
+MK$:DRAW"BM490,123"+MK$:DRAW"BM491,123"
+MK$:DRAW"BM492,123"+MK$:DRAW"BM493,123"
+MK$:DRAW"BM494,123"+MK$:DRAW"BM495,123"
+MK$:DRAW"BM496,123"+MK$:DRAW"BM497,123"
+MK$:DRAW"BM498,123"+MK$:DRAW"BM499,123"
+MK$:DRAW"BM500,123"+MK$:DRAW"BM501,123"
+MK$:DRAW"BM502,123"+MK$:DRAW"BM503,123"
+MK$:DRAW"BM504,123"+MK$:DRAW"BM505,123"
+MK$:DRAW"BM506,123"+MK$:DRAW"BM507,123"
+MK$:DRAW"BM508,123"+MK$:DRAW"BM509,123"
+MK$:DRAW"BM510,123"+MK$:DRAW"BM511,123"
+MK$:DRAW"BM512,123"+MK$:DRAW"BM513,123"
+MK$:DRAW"BM514,123"+MK$:DRAW"BM515,123"
+MK$:DRAW"BM516,123"+MK$:DRAW"BM517,123"
+MK$:DRAW"BM518,123"+MK$:DRAW"BM519,123"
+MK$:DRAW"BM520,123"+MK$:DRAW"BM521,123"
+MK$:DRAW"BM522,123"+MK$:DRAW"BM523,123"
+MK$:DRAW"BM524,123"+MK$:DRAW"BM525,123"
+MK$:DRAW"BM526,123"+MK$:DRAW"BM527,123"
+MK$:DRAW"BM528,123"+MK$:DRAW"BM529,123"
+MK$:DRAW"BM530,123"+MK$:DRAW"BM531,123"
+MK$:DRAW"BM532,123"+MK$:DRAW"BM533,123"
+MK$:DRAW"BM534,123"+MK$:DRAW"BM535,123"
+MK$:DRAW"BM536,123"+MK$:DRAW"BM537,123"
+MK$:DRAW"BM538,123"+MK$:DRAW"BM539,123"
+MK$:DRAW"BM540,123"+MK$:DRAW"BM541,123"
+MK$:DRAW"BM542,123"+MK$:DRAW"BM543,123"
+MK$:DRAW"BM544,123"+MK$:DRAW"BM545,123"
+MK$:DRAW"BM546,123"+MK$:DRAW"BM547,123"
+MK$:DRAW"BM548,123"+MK$:DRAW"BM549,123"
+MK$:DRAW"BM550,123"+MK$:DRAW"BM551,123"
+MK$:DRAW"BM552,123"+MK$:DRAW"BM553,123"
+MK$:DRAW"BM554,123"+MK$:DRAW"BM555,123"
+MK$:DRAW"BM556,123"+MK$:DRAW"BM557,123"
+MK$:DRAW"BM558,123"+MK$:DRAW"BM559,123"
+MK$:DRAW"BM560,123"+MK$:DRAW"BM561,123"
+MK$:DRAW"BM562,123"+MK$:DRAW"BM563,123"
+MK$:DRAW"BM564,123"+MK$:DRAW"BM565,123"
+MK$:DRAW"BM566,123"+MK$:DRAW"BM567,123"
+MK$:DRAW"BM568,123"+MK$:DRAW"BM569,123"
+MK$:DRAW"BM570,123"+MK$:DRAW"BM571,123"
+MK$:DRAW"BM572,123"+MK$:DRAW"BM573,123"
+MK$:DRAW"BM574,123"+MK$:DRAW"BM575,123"
+MK$:DRAW"BM576,123"+MK$:DRAW"BM577,123"
+MK$:DRAW"BM578,123"+MK$:DRAW"BM579,123"
+MK$:DRAW"BM580,123"+MK$:DRAW"BM581,123"
+MK$:DRAW"BM582,123"+MK$:DRAW"BM583,123"
+MK$:DRAW"BM584,123"+MK$:DRAW"BM585,123"
+MK$:DRAW"BM586,123"+MK$:DRAW"BM587,123"
+MK$:DRAW"BM588,123"+MK$:DRAW"BM589,123"
+MK$:DRAW"BM590,123"+MK$:DRAW"BM591,123"
+MK$:DRAW"BM592,123"+MK$:DRAW"BM593,123"
+MK$:DRAW"BM594,123"+MK$:DRAW"BM595,123"
+MK$:DRAW"BM596,123"+MK$:DRAW"BM597,123"
+MK$:DRAW"BM598,123"+MK$:DRAW"BM599,123"
+MK$:DRAW"BM600,123"+MK$:DRAW"BM601,123"
+MK$:DRAW"BM602,123"+MK$:DRAW"BM603,123"
+MK$:DRAW"BM604,123"+MK$:DRAW"BM605,123"
+MK$:DRAW"BM606,123"+MK$:DRAW"BM607,123"
+MK$:DRAW"BM608,123"+MK$:DRAW"BM609,123"
+MK$:DRAW"BM610,123"+MK$:DRAW"BM611,123"
+MK$:DRAW"BM612,123"+MK$:DRAW"BM613,123"
+MK$:DRAW"BM614,123"+MK$:DRAW"BM615,123"
+MK$:DRAW"BM616,123"+MK$:DRAW"BM617,123"
+MK$:DRAW"BM618,123"+MK$:DRAW"BM619,123"
+MK$:DRAW"BM620,123"+MK$:DRAW"BM621,123"
+MK$:DRAW"BM622,123"+MK$:DRAW"BM623,123"
+MK$:DRAW"BM624,123"+MK$:DRAW"BM625,123"
+MK$:DRAW"BM626,123"+MK$:DRAW"BM627,123"
+MK$:DRAW"BM628,123"+MK$:DRAW"BM629,123"
+MK$:DRAW"BM630,123"+MK$:DRAW"BM631,123"
+MK$:DRAW"BM632,123"+MK$:DRAW"BM633,123"
+MK$:DRAW"BM634,123"+MK$:DRAW"BM635,123"
+MK$:DRAW"BM636,123"+MK$:DRAW"BM637,123"
+MK$:DRAW"BM638,123"+MK$:DRAW"BM639,123"
+MK$:DRAW"BM640,123"+MK$:DRAW"BM641,123"
+MK$:DRAW"BM642,123"+MK$:DRAW"BM643,123"
+MK$:DRAW"BM644,123"+MK$:DRAW"BM645,123"
+MK$:DRAW"BM646,123"+MK$:DRAW"BM647,123"
+MK$:DRAW"BM648,123"+MK$:DRAW"BM649,123"
+MK$:DRAW"BM650,123"+MK$:DRAW"BM651,123"
+MK$:DRAW"BM652,123"+MK$:DRAW"BM653,123"
+MK$:DRAW"BM654,123"+MK$:DRAW"BM655,123"
+MK$:DRAW"BM656,123"+MK$:DRAW"BM657,123"
+MK$:DRAW"BM658,123"+MK$:DRAW"BM659,123"
+MK$:DRAW"BM660,123"+MK$:DRAW"BM661,123"
+MK$:DRAW"BM662,123"+MK$:DRAW"BM663,123"
+MK$:DRAW"BM664,123"+MK$:DRAW"BM665,123"
+MK$:DRAW"BM666,123"+MK$:DRAW"BM667,123"
+MK$:DRAW"BM668,123"+MK$:DRAW"BM669,123"
+MK$:DRAW"BM670,123"+MK$:DRAW"BM671,123"
+MK$:DRAW"BM672,123"+MK$:DRAW"BM673,123"
+MK$:DRAW"BM674,123"+MK$:DRAW"BM675,123"
+MK$:DRAW"BM676,123"+MK$:DRAW"BM677,123"
+MK$:DRAW"BM678,123"+MK$:DRAW"BM679,123"
+MK$:DRAW"BM680,123"+MK$:DRAW"BM681,123"
+MK$:DRAW"BM682,123"+MK$:DRAW"BM683,123"
+MK$:DRAW"BM684,123"+MK$:DRAW"BM685,123"
+MK$:DRAW"BM686,123"+MK$:DRAW"BM687,123"
+MK$:DRAW"BM688,123"+MK$:DRAW"BM689,123"
+MK$:DRAW"BM690,123"+MK$:DRAW"BM691,123"
+MK$:DRAW"BM692,123"+MK$:DRAW"BM693,123"
+MK$:DRAW"BM694,123"+MK$:DRAW"BM695,123"
+MK$:DRAW"BM696,123"+MK$:DRAW"BM697,123"
+MK$:DRAW"BM698,123"+MK$:DRAW"BM699,123"
+MK$:DRAW"BM700,123"+MK$:DRAW"BM701,123"
+MK$:DRAW"BM702,123"+MK$:DRAW"BM703,123"
+MK$:DRAW"BM704,123"+MK$:DRAW"BM705,123"
+MK$:DRAW"BM706,123"+MK$:DRAW"BM707,123"
+MK$:DRAW"BM708,123"+MK$:DRAW"BM709,123"
+MK$:DRAW"BM710,123"+MK$:DRAW"BM711,123"
+MK$:DRAW"BM712,123"+MK$:DRAW"BM713,123"
+MK$:DRAW"BM714,123"+MK$:DRAW"BM715,123"
+MK$:DRAW"BM716,123"+MK$:DRAW"BM717,123"
+MK$:DRAW"BM718,123"+MK$:DRAW"BM719,123"
+MK$:DRAW"BM720,123"+MK$:DRAW"BM721,123"
+MK$:DRAW"BM722,123"+MK$:DRAW"BM723,123"
+MK$:DRAW"BM724,123"+MK$:DRAW"BM725,123"
+MK$:DRAW"BM726,123"+MK$:DRAW"BM727,123"
+MK$:DRAW"BM728,123"+MK$:DRAW"BM729,123"
+MK$:DRAW"BM730,123"+MK$:DRAW"BM731,123"
+MK$:DRAW"BM732,123"+MK$:DRAW"BM733,123"
+MK$:DRAW"BM734,123"+MK$:DRAW"BM735,123"
+MK$:DRAW"BM736,123"+MK$:DRAW"BM737,123"
+MK$:DRAW"BM738,123"+MK$:DRAW"BM739,123"
+MK$:DRAW"BM740,123"+MK$:DRAW"BM741,123"
+MK$:DRAW"BM742,123"+MK$:DRAW"BM743,123"
+MK$:DRAW"BM744,123"+MK$:DRAW"BM745,123"
+MK$:DRAW"BM746,123"+MK$:DRAW"BM747,123"
+MK$:DRAW"BM748,123"+MK$:DRAW"BM749,123"
+MK$:DRAW"BM750,123"+MK$:DRAW"BM751,123"
+MK$:DRAW"BM752,123"+MK$:DRAW"BM753,123"
+MK$:DRAW"BM754,123"+MK$:DRAW"BM755,123"
+MK$:DRAW"BM756,123"+MK$:DRAW"BM757,123"
+MK$:DRAW"BM758,123"+MK$:DRAW"BM759,123"
+MK$:DRAW"BM760,123"+MK$:DRAW"BM761,123"
+MK$:DRAW"BM762,123"+MK$:DRAW"BM763,123"
+MK$:DRAW"BM764,123"+MK$:DRAW"BM765,123"
+MK$:DRAW"BM766,123"+MK$:DRAW"BM767,123"
+MK$:DRAW"BM768,123"+MK$:DRAW"BM769,123"
+MK$:DRAW"BM770,123"+MK$:DRAW"BM771,123"
+MK$:DRAW"BM772,123"+MK$:DRAW"BM773,123"
+MK$:DRAW"BM774,123"+MK$:DRAW"BM775,123"
+MK$:DRAW"BM776,123"+MK$:DRAW"BM777,123"
+MK$:DRAW"BM778,123"+MK$:DRAW"BM779,123"
+MK$:DRAW"BM780,123"+MK$:DRAW"BM781,123"
+MK$:DRAW"BM782,123"+MK$:DRAW"BM783,123"
+MK
```

DOES THIS NEWS JUST TICKLE YOUR EAR?

REMUSIC 1.0 is here!

REMUSIC is a versatile, programmable music synthesis software package requiring only a 16K disk-based CoCo(32K recommended). Enter musical data as BASIC program REM statements -- no graphic interface is used. Once loaded, REMUSIC keeps a low profile as you roll merrily along in BASIC. Here are a few of REMUSIC's powerful features:

- *Four independent voice tracks
- *Definable and dynamically assignable tone waves and amplitude envelopes, allowing such effects as decay, vibrato, and tremolo
- *Music plays through TV or monitor speaker
- *Nestable multiple music repeats with the option of different endings
- *Key signature and two different transposition modes
- *Ability to mathematically link repeat iterations with such functions as transposition, octave, tempo, waveform assignment and subordinate repeats and endings
- *Ability to convert music to independent machine-language programs for use in your own programs
- *Since music source files are actually BASIC programs, they can be edited and merged as other BASIC programs can.

Package includes program diskette, sample music files, and documentation.

Send check or money order for \$25.00* to:

CODIS ENTERPRISES
2301-C CENTRAL DR., STE. 684
BEDFORD, TX 76021



*Texas residents add \$1.75 sales tax.

Get a REMUSIC demo for \$2.00

Since the benefits of REMUSIC 1.0 must be heard to be appreciated, CODIS ENTERPRISES offers a diskette containing a sampling of the quality of music of which REMUSIC is capable. Best of all, it requires no additional hardware. To receive this audition, send \$2.00 to CODIS ENTERPRISES for the demo disk and a coupon entitling you to a two-dollar discount on REMUSIC 1.0.

Name _____ Mail to: _____

Address _____

City _____ State _____ Zip _____

CODIS ENTERPRISES
2301-C CENTRAL DR.
STE. 684
BEDFORD, TX 76021

Please send me the REMUSIC demo disk for \$2.00*.
 REMUSIC 1.0 for \$25.00*.

Enclosed is a check or money order for \$_____.

*Texas residents add 7% sales tax.

```

479 IFPM$="JOPLIN"THENDRAW"BM127,110"+MK$:
DRAW"BM128,109"+MK$:DRAW"BM129,108"+MK$
:DRAW"BM130,107"+MK$:DRAW"BM130,106"+MK
$
481 IFPM$="SPRINGFIELD"THENDRAW"BM131,106"
+MK$:DRAW"BM132,106"+MK$:DRAW"BM133,105
"+MK$:DRAW"BM134,104"+MK$
483 IFPM$="ST. LOUIS"THEN DRAW"BM135,103"+
MK$:DRAW"BM136,102"+MK$:DRAW"BM137,101"
+MK$:DRAW"BM138,100"+MK$:DRAW"BM139,99"
+MK$:DRAW"BM140,98"+MK$:DRAW"BM141,97"+
MK$
485 IFPM$="EFFINGHAM"THENDRAW"BM142,97"+MK
$:DRAW"BM143,96"+MK$:DRAW"BM144,95"+MK$
:DRAW"BM145,94"+MK$:DRAW"BM145,93"+MK$
487 IFPM$="TERRE HAUTE"THENDRAW"BM146,93"+
MK$:DRAW"BM147,92"+MK$:DRAW"BM148,92"+M
K$:DRAW"BM149,91"+MK$:DRAW"BM150,91"+MK
$:DRAW"BM151,90"+MK$
489 IFPM$="INDIANAPOLIS"THENDRAW"BM152,90"
+MK$:DRAW"BM153,89"+MK$:DRAW"BM154,89"+
MK$:DRAW"BM155,88"+MK$
491 IFPM$="RICHMOND"THENY=88:FORX=155TO161
:LINE(X,Y)-(X,Y+3),PSET:NEXT
493 IFPM$="DAYTON"THENY=88:FORX=161TO165:L
INE(X,Y)-(X,Y+3),PSET:NEXT
495 IFPM$="COLUMBUS"THENDRAW"BM166,88"+MK$
:DRAW"BM167,87"+MK$
497 IFPM$="WHEELING"THENY=87:FORX=167TO172
:LINE(X,Y)-(X,Y+3),PSET:NEXT
499 IFPM$="HARRISBURG"THENY=88:FORX=172TO1
83:LINE(X,Y)-(X,Y+3),PSET:NEXT
501 IFPM$="TRENTON"THENDRAW"BM184,89"+MK$:
DRAW"BM185,89"+MK$:DRAW"BM186,90"+MK$:D
RAW"BM187,90"+MK$:DRAW"BM188,90"+MK$:DR
AW"BM189,91"+MK$:DRAW"BM190,91"+MK$:DRA
W"BM191,91"+MK$
503 IFPM$="NEWARK"THENDRAW"BM192,90"+MK$:D
RAW"BM193,89"+MK$:DRAW"BM194,87"+MK$:DR
AW"BM195,85"+MK$
505 IFPM$="NEW YORK CITY"THENDRAW"BM196,85
"+MK$:DRAW"BM197,84"+MK$:DRAW"BM198,83"
+MK$
507 RETURN
509 PCLS1:A$="You ran out of money...No Un
cle Max":DRAW"BM0,20":GOSUB413:A$="No N
ew York...and no million bucks!":DRAW"BM
0,33":GOSUB413:A$="You blew it!!":DRAW
"BM0,46":GOSUB413
511 A$="GAME OVER - YOU LOSE":DRAW"BM60,17
9":GOSUB413:FORX=1TO1500:NEXT:CLS:END
513 A$(32)="BR6":A$(33)="D4BD2RBU2U4BR3":A
$(34)="D2RU2BR3D2RU2BR3":A$(35)="BRD2LB
D2RD2RU2BU2U2BR2D2BD2D2RU2NRBU2NRU2BR4"
:A$(36)="BD5R2DEH3RF2RH3EDR2BUBR3":A$(3
7)="FULDRBR3G4BR3DRULBU5BR4":A$(38)="BR
NR2D6HUBU2UER2ND3FDBD2LULF3NL4RH2REBU3B
R3
515 A$(39)="D2RU2BR3":A$(40)="BR2LD6NRHU4E
BR4":A$(41)="RD6NLEU4BUBR3":A$(42)="BR2
D6U3L2R4BU2G4BR4H4BUBR7":A$(43)="BD3R5L
3U2D4RU4BUBR5":A$(44)="BD7RU2RDBU6BR3":
A$(45)="BD3R4BU3BR3":A$(46)="BD5DRULBU5
BR4":A$(47)="BD6RNE6UE5BR4
517 A$(48)="BDD4FU6R3D6NL3EU4BUBR3":A$(49)
="BDED6RU6BR4":A$(50)="BDRUR2DRG4DNE4R4
BU6BR3":A$(51)="R5LD2NL3D4L3HBR5U2BU3BR
3":A$(52)="BR3G3DR6L2U4D6RU6BR3":A$(53)
="ND2R5L4D2R3D4L3HBR5U2BU3BR3":A$(54)
="BR4L2LDLGD3FNU4R3U3NL3FDBU5BR3
519 A$(55)="R5DRG4DNRE4U2BR3":A$(56)="BRNR
3D6HUBU2UF2R2D3NL3EUBU2UHND6BR4":A$(57)
="BRNR3D3HNUFR3U3D4G2LR2E2U3BUBR3":A$(5
8)="BDDBD2DRUBU2UBUBR3":A$(59)="DBD2D2B
GRU2BU2UBR3":A$(60)="BR3G3F3RH3E3NR3":A
$(61)="BD2R4BD2L4BU4BR7":A$(62)="F3G3RE
3H3BR6
521 A$(63)="BDER3DG2DE3DG2BD2LBU6BR6":A$(6
5)="BDD5RU6R3D4NL3D2RU5BUBR3":A$(66)="D
6RU6R3DRNDLD2NL3DRNDLD2L3BU6BR7":A$(67)
="BDD4RDU6R2FBD4GL2BU6BR6":A$(68)="D6RU
6R3D6ENU4GL3BU6BR7":A$(69)="D6RU6R3BD3B
LL2D3R3BU6BR3":A$(70)="D6RU6NR3D3R2BU3B
R4
523 A$(71)="BDD4FU6R3FBD2D3LNU3L3BU6BR7":A
$(72)="D6RU6D3R3U3D6RU6BR3":A$(73)="NLD
6NLRNRU6RBR3":A$(74)="BR4ND5LD6L2HBU5BR
7":A$(75)="D6RU6D3RF2DBU3BL2E2UBR3":A$(
76)="D6RNU6R2BU6BR3":A$(77)="ND6RD2ED2E
D2E3D5RU6BR3":A$(78)="ND6FD2ED2ED2FU6BR
3
525 A$(79)="BDD4FU6R3D6NL3EU4BUBR3":A$(80)
="D6RU6R3D3NL3EUBUBR3":A$(81)="BDD4FU6R
3D5GNL2EFH2R2U3BUBR3":A$(82)="D6RU6R3D3
L2F3RH3REUBUBR3":A$(83)="BDDFRF2NH3DL3U
LBR5UHDH3UR3DRUBUR3":A$(84)="R2D6RU6R2B
R3":A$(85)="D5FNU6R3U6RND5BR3
527 A$(86)="D6RNU6R2EU5RND4BR3":A$(87)="D6
RNU6R3U6RD6R2EU5RND4BR3":A$(88)="D2BD2D
2RU6D3R3U3D6RU2BU2U2BR3":A$(89)="D2FNU3
RD3RU3RU3RND2BR3":A$(90)="BRR4NG5DG5R5B
U6BR3":A$(91)="BD2ER3D5L3U3GDE2R3D3U4BU
2BR3":A$(92)="D6RU6DR3D5NL4EU3BU2BR3
529 A$(93)="BR4BD2HL2D5R2NEL2HU3BU2BR7":A$
(94)="BD2D3FU5R3UD6L3R4U6BR3":A$(95)
="BD2D3FR3NEL3U5R3D2NL3RUBU2BR3":A$(96)
="BR4L2D6LU4NR2LE2BR5":A$(97)="BD2D3FU
5R3D7L3HER4DU6BUBR3":A$(98)="D6RU6DR3D
5RU4BU2BR3":A$(99)="NRBD2D4RU4BU2BR3
531 A$(100)="BR2NRBD2D4LHBR3U3BU2BR3":A$(1
01)="D6E5LG3D2U6D2F4LH2BU4BR6":A$(102)
="D6RU6BR3":A$(103)="BDD5RU5R2D5RU5R2D5R
U4BU2BR3":A$(104)="BDD5RU5R3D5RU4BU2BR3
":A$(105)="BD2D3FNR3U5R3D5EU3BU2BR3":A$
(106)="BDD6RUNR3U5R3D5EU3BU2BR3
533 A$(107)="BD2D3FNR3U5R3D6RU6BUBR3":A$(1
08)="BDD5RU5FERBUBR3":A$(109)="BD5FR2UR
H3LNF3ER2FBU2BR3":A$(110)="BDR3L2UD5FNR
U6BR4":A$(111)="BDD4FNU5R3U5RND5BUBR3":
A$(112)="BDD5RNU5R2EU4RND3BUBR3":A$(113)
)="BDD5RNU5R2U5R2D5R2U5R2D5R2U5R2D5R2U5
R2U5R2U5R2U5R2U5R2U5R2U5R2U5R2U5R2U5R2
535 A$(120)="BDDBD2D2RU5D2R3U2D5RU2BU2UBU
R3":A$(121)="BDD3BD2FR3U2L3U4BR3D5RU5BU
BR3":A$(122)="BDR4G4DNR4E4BU2BR3":RETUR
N
537 XC=INT(XC*100)/100:XC$=STR$(XC):XC$=RI
GHT$(XC$,LEN(XC$)-1)
539 C4=INSTR(XC$,"."):IFC4=0THENRETURN
541 IFLEN(XC$)-C4<2THENXC$=XC$+"0":GOTO539
ELSERETURN

```

Dynamic Color News
is now available on
tape or disk for \$6.95
for 1 month, \$35 for
6 months, & \$60 for
12 months.

Editor's Comments

Dean and I took our third winter vacation in Florida during the President's holiday weekend. We have a variety of weather here in Alabama during the Winter and we had 10 inches of snow the first of January. This Winter the temperature fell to around 10 degrees several times. After the low temperatures, we then have a warming trend which raises the temperature into the fifties and sometimes the sixties. This melts all of the snow and causes rain. After the rain the temperature drops below freezing and the cycle repeats.

It is always a welcome relief to go to Florida in February to escape the cold. This year we went down to Key West as far South as it is possible to go and still be in the United States. Others had the same idea as there were people everywhere and the traffic was terrible. We were definitely in a different world as Spanish speaking stations dominated the AM radio broadcast band. The weather was 78 degrees and windy the day we drove down to Key West. We started from Palm Beach and returned to Palm Beach in one day. Accommodations were too expensive at Key West so we did not spend the night there.

We moved North to the Orlando area and spent one day at Cyprus Gardens. The flowers and trees were beautiful and the water shows were spectacular. I was really impressed by the model railroad displays that were one of the features of Cyprus Gardens. There were several displays with trains and many models of buildings, mountains, and cities. The trains were continuously moving and stopping. Although it was a very impressive display of control, all of the control operations for all of the trains could have been performed by one color computer. As a rule of thumb let's say that a color computer can execute 100,000 machine language instructions a second. If there were 1000 things to do or monitor in a second, then the computer would have ample reserve since only 10 percent of its capacity would be utilized.

Let's also suppose that low voltage relays, motors, and sensors were used which probably was the case. The question is how can we interface these devices to the computer? In our Interfacing Computer Series we showed in detail how to use the serial or ASCII port. However for these applications it is better to use the expansion port. This is the port on the side of the computer into which a cartridge or disk drive controller can be installed. All of the signals are present on this connector. A motor control board can be fabricated to interface with this expansion slot. I would recommend using a Radio Shack expander and plugging the expansion board into one of the slots. Plugging in and unplugging devices is not a good practice because the contacts can be worn out and the computer could be damaged if the device is not installed properly.

The 6821 and 6822 chips used in color computers are called peripheral interface adapters (PIA). Basically these allow data to be written to a register and each bit will control a logic output. Since a byte contains 8 bits, instructions to control 8 devices can be given with one byte. The bits can also be programmed to monitor logic levels. If programmed for inputting data to the computer, then the status of the bits is determined as the register is PEEKED. We will have more on this next month as there is much interest in this subject.

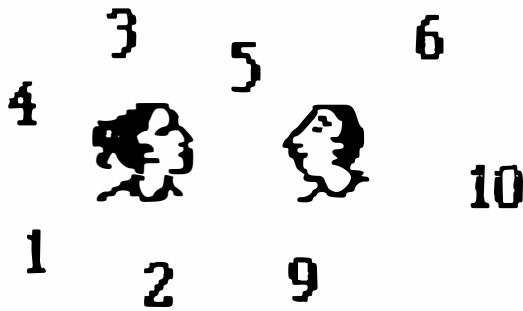
Our OS-9 series is coming along very well. This month we started Basic 09 and wrote an example program. OS-9 programs are included on the back side of our DCN on Disk. We started this series due to the many requests we had. If you would like for us to cover a subject let us know and we will try to work it into our schedule.

We have also had requests for instructions on using FORTH. In this issue we are starting a series on using FORTH by Tim Tilman. If you are interested in learning FORTH then you will want to read his editorials.

You may notice that our magazine is getting larger. We are constantly making changes so that we can do things more efficiently. We have plenty of computer capability and sometimes it is necessary to stop and do things differently in order to benefit from the computer's power. As an example we list our programs in our 32 or 42 column format. I wrote a utility that skips spaces if a basic statement number continues on more than one line. This makes the programs easy to read but took time to write the program. To do this by hand would take a considerable amount of time. Some of our titles are done with COCO MAX. We need a utility that will print the titles using the graphics print and then convert back to the normal near letter quality print for text. Now we do the titles separately and tape them in. A desk top publisher will do this task but it operates in the graphics mode which does not produce very good looking text.

We will be adding new sections starting next month. These will be PEN PALS, COMPUTER CLUBS, and BULLETIN BOARDS. We will keep these updated and require registration. If you are interested in any of these, fill out the colored sheet and mail it back to us. With the price of modems dropping and the large number of bulletin boards available, we feel that there should be ample interest for us to provide a current listing of bulletin boards. If you want to correspond to another COCO user then fill out the PEN PAL section. There are new computer clubs and some of the older ones have been dissolved. So our listing will be of currently active clubs.

We still need names of potential subscribers. If you are a member of a club and can pass out samples let us know and we will send them to you. Or send us the names of the members and we will mail them a sample. If you know of friends who might want a copy let us know. I want to thank those of you who have helped in this area.



LOGIC

This is an exciting logic game where you are given a sequence of numbers. The computer will display the number sequence and ask you for the next number. If you miss the number you will be given another chance. Use this game to improve your logic.

```

5 CLS
10 PRINT "HI, WHAT IS YOUR NAME?"
20 INPUT A$
30 PRINT "WELL, "; A$; ", I'LL GIVE YOU SEVERAL NUMBERS AND YOU WILL HAVE TO TELL ME WHAT NUMBER SHOULD COME NEXT."
40 PRINT "PRESS <ENTER> TO START"
   "
50 INPUT B$
60 CLS(4)
70 A=RND(20)+1
80 PRINT @ 160, "WHAT COMES NEXT?"
   "
90 PRINT @ 192, A; A*2; A*3; A*4;
100 INPUT B
110 IF B=A*5 THEN GOTO 150
120 PRINT "NO, TRY AGAIN, "A$
130 INPUT C
135 IF C=A*5 GOTO 150
140 PRINT "NO, "; A$; ", THE ANSWER IS"; A*5
145 INPUT "PRESS <ENTER> TO CONTINUE, "; C$
147 GOTO 160
150 PRINT "THAT'S CORRECT, "; A$; ", YOU'RE DOING WELL."
155 INPUT "PRESS <ENTER> TO CONTINUE. "; D$
160 CLS(4)
170 PRINT @192, A; A*2; (A*2)-4; ((A*2)-4)*2

```

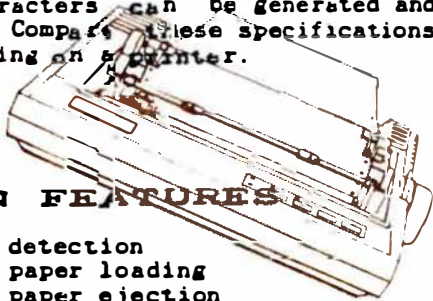
```

180 INPUT B
190 IF B=(((A*2)-4)*2)-4 GOTO 250
   0
200 PRINT "NOT QUITE, "; A$; ", TRY AGAIN."
210 INPUT C
215 IF C=(((A*2)-4)*2)-4 GOTO 250
   0
220 PRINT "NO, IT SHOULD BE"; (((A*2)-4)*2)-4
230 INPUT "PRESS <ENTER> TO CONTINUE. "; C$
240 GOTO 60
250 PRINT "RIGHT ON, "; A$; ", YOU'RE COOKING NOW."
255 INPUT "PRESS <ENTER> TO CONTINUE. "; D$
260 CLS(4)
270 PRINT @ 192, A; A-3; A-6; A-9;
280 INPUT B
290 IF B=A-12 GOTO 340
300 PRINT "SORRY, "; A$; ", TRY AGAIN"
   "
310 INPUT C
315 IF C=A-12 GOTO 340
320 PRINT A$; ", THE ANSWER IS "; A-12
330 INPUT "PRESS <ENTER> TO CONTINUE. "; B$
340 PRINT "RIGHT AGAIN, "; A$; ", NOW YOU'RE PERKING."
345 INPUT "PRESS <ENTER> TO CONTINUE. "; C$
350 CLS(4)
360 PRINT @ 192, A; A-4; A-8; A-12;
370 INPUT B
380 IF B=A-16 GOTO 430
390 PRINT "NOPE, TRY AGAIN, "; A$
400 INPUT C
405 IF C=A-16 GOTO 430
410 PRINT "SORRY, "; A$; ", IT SHOULD BE "; A-16

```

SP-1200AS PRINTERS

The superior SP-1200AS printer has features found in more expensive printers. They can operate at 9600 baud and the 10K buffer allows over two pages of storage within the printer freeing the computer while printing is being completed. It has 8 graphics modes and is compatible with COCO MAX and other graphics programs that have EPSON print drivers. It has near letter quality print and user defined characters can be generated and downloaded. Compare these specifications before deciding on a printer.



MAIN FEATURES

- * Paper-out detection
- * Automatic paper loading
- * Automatic paper ejection
- * Character pitch settings (via switches or commands)
- * Variety of character fonts including Near Letter Quality, Proportional, & Graphic printing.
- * Form feed function, provided by switch or command.
- * Self-Test printing
- * Automatic Printing
- * Double-Width Character mode
- * Bold Character mode
- * Double-Strike Character mode
- * Italic Character mode
- * Superscript/Subscript Character mode
- * Buzzer function
- * Internal Ram error detection
- * Input data hexadecimal dump
- * Download character function (user-defined character) A maximum of 128 download characters in Draft mode
- * Standard mode/IBM mode, selected by using a dip switch (Epson compatible in standard mode).
- * Optional Automatic Cut Sheet Feeder
- * 10.3K-byte communications buffer (8.7K-byte communications buffer when using download character)
- * Baud rates of 1200, 2400, 4800, and 9600
- * 185 Characters & Symbols
- * 49 International characters
- * Print Modes: Pica-10CPI, Elite-12 CPI, Condensed-17CPI, Condensed Elite-20CPI
- * 8 graphics modes consisting of 480, 576, 640, 720, & 960, 1920, 1152. & 8 or 9 dots vertical
- * Select print type with front panel switches
- * Cable for color computer is included
- * Includes DYPRINT software for printing banners or large graphics pictures

Order SP-1200AS and specify tape or disk software for DYPRINT. \$229 + \$5 S/H.

Checks VISA or MC Cards

DYNAMIC ELECTRONICS
BOX 898 (205) 773-2758
HARTSELLE, AL 35640

```

420 INPUT "PRESS <ENTER> TO CONTI
      NUE.";B$
425 GOTO 445
430 PRINT "TERRIFIC, ";A$; ", YOU'RE
      SURE CLEVER.";C$
440 INPUT "PRESS <ENTER> TO CONT
      INUE.";D$
445 CLS(4)
450 PRINT @ 192,A;A-2;A-4;A-6;
460 INPUT B
470 IF B=A-8 GOTO 500
480 PRINT "TRY AGAIN, ";A$
485 INPUT C
490 IF C=A-8 GOTO 500
495 PRINT "NO, ";A$; ", IT SHOULD BE
      ";A-8
498 GOTO 510
500 PRINT "YIPPEE!! RIGHT ON, ";A$

510 INPUT "PRESS <ENTER> TO CONT
      INUE.";C$
520 CLS(4)
530 PRINT @ 192,A;A+2;A+6;A+12;
540 INPUT B
550 IF B=A+20 GOTO 600
560 PRINT "SORRY, ";A$; ", TRY AGAIN
      "
570 INPUT C
580 IF C=A+20 GOTO 600
590 PRINT A$; ", IT IS "A+20
595 INPUT "PRESS <ENTER> TO CONT
      INUE.";B$
597 GOTO 620
600 PRINT "YOU SURE ARE SMART, ";A
      $
610 INPUT "PRESS <ENTER> TO CONT
      INUE.";C$
620 CLS(4)
630 PRINT @ 192,A;A-1;(A-1)*2;(((
      A-1)*2)-1;(((A-1)*2)-1)*2;
640 INPUT B
650 IF B=(((A-1)*2)-1)*2)-1 GOT
      O700
660 PRINT "NO SIR, ";A$; ", TRY AGAI
      N."
670 INPUT C
680 IF (((A-1)*2)-1)*2)-1 GOTO7
      00
690 PRINT "IT SHOULD BE ";(((A-1
      )*2)-1)*2)-1;A$
695 GOTO 710
700 PRINTA$; ", YOU ARE A MATH WIZ
      ARD."
710 INPUT "PRESS <ENTER> TO CONT
      INUE, ";A$
720 CLS(4)
730 PRINT @ 192,A;A-2;A+5;A+3;
740 INPUT B
750 IF B=A+10 GOTO 800
760 PRINT "NO, TRY AGAIN, ";A$
770 INPUT C
780 IF C=A+10 GOTO810
790 PRINT A$; ", THE ANSWER IS ";A
      +10
800 PRINT " YOU'RE A GENIUS, ";A$
810 INPUT "PRESS <ENTER> TO CONT
      INUE.";B$
820 GOTO60
    
```

1st 2nd 3rd

4th

By

Tim Tillman

FORTH is a high level language like BASIC, BASIC09, FORTRAN, COBOL, and many others. A high level language is a convenient interface between the programmer and the computer. The first computers were programmed by throwing a series of switches. The position of these switches, either on or off, ones or zeros defined the program. This was called machine code. Programming computers in this manner was extremely tedious, and only a few people were willing to learn. It was later discovered, that the computer could be programmed to except a more meaningful code. This led to what we know as assembly language. People could easier understand it, and the computer could convert the symbols into machine code. As programmers were using assembly code, they began to notice frequently used patterns. The computer was then programmed to allow commands that represent these patterns. This was the birth of high level languages. For example, the BASIC command "PRINT" more or less means: open a path to the printer, send the contents of memory to the printer, and then close the path. With this in mind, let's get on with this series on FORTH.

I do not presume to be a FORTH Wizard. In fact I have only just begun to study the language. So this series will be written from a beginner's viewpoint. I will be using the books 3Starting FORTH4 and 3Thinking FORTH4 by Leo Brodie

and published by Prentice Hall Inc. Further information is also available from the FORTH Interest Group (FIG) in San Jose, California. The model of FORTH, that I will be using, can be purchased from Dynamic Electronics' public domain library. Ask for PD-10 Color Computer FORTH. The cost is only \$6.00. It is very close to the standard, and it has I/O commands for the CoCo. There may be other versions of FORTH available. If you feel energetic, Mountain View Press sells 6809 source code for a version of FORTH. You'll need time and an editor assembler such as Radio Shack's EDTASM.

How do You Start FORTH on the Color Computer?

These instructions are for those of you who have purchased PD-10 from Dynamic Electronics. If you have any other version, you should refer to the instructions that came with your FORTH. With your backup tape or disk loaded, type (C)LOADM"NEWFORTH":EXEC. Note: There are two other versions of FORTH on PD-10, but I was unable to get them started. Also, there is a series of documentation files with extensions .TXT or .VIP. You should load them into a word processor program to get a print out. If all goes well, you will be greeted with the prompt > . Forth is now in control of your CoCo and is awaiting input from the keyboard. As in BASIC, you may now run programs, write pro-

grams, or execute commands in the immediate mode.

All of FORTH's basic command set, as well as new commands created by the programmer, are referred to as words. Each word is a combination of any characters available from the CoCo's keyboard except <ENTER> and <SPACEBAR>. <ENTER> is used by FORTH to terminate a line of input from the keyboard. The <SPACEBAR> is used when programming in FORTH to separate words within a definition. Throughout the series, I will capitalize all FORTH words containing letters; and words composed entirely of punctuation marks will be separated from the text by extra spaces. The pronunciation of each word will be found in parenthesis immediately following the first time it is used. As an example let's define a word FORTH style.

Suppose that we are programming a robot to grill a steak, we could call this routine or word GRILL-STEAK. In FORTH the definition of GRILL-STEAK might look like this:

```
: GRILL-STEAK CLEAN-GRILL
POUR-CHARCOAL LIGHT-CHARCOAL
?CHARCOAL-HOT
COOK-STEAK ?DONE REMOVE-STEAK ;
```

In the above definition we see our first real FORTH word, : (colon compiler). The word : is used in FORTH to indicate the beginning of a new definition. The end of a new definition is denoted by a ; . The semi-colon is not considered a FORTH word, so it has no pronunciation. The next word, GRILL-STEAK, is the name of our new definition. All of the other words must have been previously defined in a similar manner. These definitions eventually get down to the basic FORTH which we will be learning together. As you may be beginning to see, FORTH is a very modular language.

Here are five simple words that give an immediate response on your CoCo's screen:

```
3WORD4
3PRONUNCIATION4

CLS
Clear Screen

EMIT
Emit

CR
Carriage Return

SPACE
Space

SPACES
Spaces
```

Typing CLS from the > prompt or using CLS from within a definition has the same effect on the CoCo under FORTH as in BASIC. CLS clears the screen. However, unlike BASIC's CLS, CLS under FORTH does not accept a number to change the screen's color.

Unlike CLS, EMIT does require a number or argument. EMIT expects a number between 0 and 255 corresponding to the ASCII character codes. The ASCII codes can be divided into three groups: 0 - 31 are control codes, 32 - 127 are alphanumeric characters, and 128 - 255 are semi-graphic characters. To demonstrate try these two sample definitions:

```
: TREE 94 EMIT ;
: WOODS TREE TREE TREE TREE
TREE TREE TREE TREE ;
```

The last three words listed above are very easy to understand. CR will execute a carriage return and linefeed from the current cursor position. SPACE will cause a blank space to be printed at the cursor. The word SPACES, however, requires an argument, which represents the number of spaces to be printed. SPACES might be executed like this:

```
: 5SPC 5 SPACES ;
```

These five words give a good basic example of how FORTH combines words into definitions. But, to get a better understanding of FORTH, we need to learn about the parameter or arithmetic stack.

FORTH sets aside a continuous block of memory called the parameter stack, or simply the stack. The stack is where FORTH looks for numbers to operate on, and where FORTH returns the results. The version of FORTH that I am using allocates from \$4000 to \$4100 in the CoCo's RAM for the stack.

In a basic sense the stack can be visualized as a stack of bricks with each memory location being a brick. In FORTH the stack is filled by sending numbers one at a time to the stack. Each number pushing the previous one lower on the stack. This way only the top number is immediately accessible. Therefore, the stack can be described as last-in-first-out or LIFO.

In order to illustrate the stack, let's send it some numbers from the > prompt. Type the following:

```
1 2 3 4 5 <ENTER>
```

You have now placed the numbers 1 through 5 on the stack in that order. You will recall that the stack is LIFO, so the top number will be 5. Of course, the bottom number will be 1. Now we need a way to print the contents of the stack, and FORTH provides us with the word . (DOT). The word . takes the top number from the stack and prints it on the screen. Try using . by typing . followed by a <ENTER>. You should have seen a 5 printed on the screen. Now type:

```
. . . . . <ENTER>
```

Your CoCo should have answered by printing:

```
4 3 2 1 0 STACK EMPTY
```

(Sometimes FORTH will give a number other than 0.)

Stack empty is FORTH's way of

saying that there are no more numbers available on the stack. This error is also known as Stack Underflow. Therefore, it is important to keep up with the contents of the stack.

To help keep up with the condition of the stack FORTH programmers developed a system known as stack notation. Stack notation gives the programmer a descriptive way to denote the effects of a word on the stack. It gives a before and after view of the stack. Generically stack notation looks like this:

```
( BEFORE -- AFTER )
```

Here are the stack notations for some of the words that I have covered so far:

```
3WORD4
3STACK NOTATION4
```

```
CLS
( -- )
```

```
CR
( -- )
```

```
EMIT
( n -- )
```

```
SPACES
( n -- )
```

```
( n -- )
```

From their stack notations we can see that the words CLS and CR do not effect the stack in any way. However, EMIT, SPACES, and . expect to find a number on the stack. These words do not return a number to the stack. At this point there is only one other thing to keep in mind about stack notation. If the before and/or after portions of the notation contain more than one number, the right most number is on top of the stack. For example:

```
(n1 n2 n3 -- n2 n3 n1)
```

Before the word was executed, n3 was at the top and n1 at the bottom. After execution, n1 is at the top, n3 the middle, and n2 the bottom. We will see other examples of stack notation

in the basic arithmetic words, that we will look at next.

FORTH, like BASIC09, has several different kinds of numbers. This month, however, we will only concern ourselves with one type, integers or single length numbers. For now it is enough to know that these numbers fall between -32768 and +32767. And these numbers do not include decimals or fractions. There are six FORTH words which act upon integers. These words are listed below along with their stack notations and pronunciations.

3WORD4	3PRONUNCIATION4
3NOTATION4	
+	
PLUS	(n1 n2 -- sum)
-	
MINUS	(n1 n2 -- diff)
*	
STAR	(n1 n2 -- prod)
/	
SLASH	(n1 n2 -- quot)
/MOD	
SLASH-MOD	(n1 n2 -- rem quot)
MOD	
MOD	(n1 n2 -- rem)

The first four words listed above will at least be partially familiar to anyone who programs in BASIC or any other language. The last two, /MOD and MOD, are related to /. Since FORTH relies so heavily on the stack for arithmetic, each word will require some explanation.

The first word, + (PLUS), performs addition on the top two numbers of the stack. In the

beginning of our discussion of the stack, I mentioned the BASIC line: 10 PRINT 3 + 4. In FORTH we could define a word called SEVEN to do the same thing. The definition of SEVEN might look like this:

```
: SEVEN 3 4 + CR . ;
```

As I mentioned before, the first word : tells FORTH that a new word is being defined. FORTH then sees that the new word will be called SEVEN. Next, the number 3 is placed on the stack, and then the number 4 is placed on the stack, forcing the 3 to the second position. Our new word + takes the top two numbers and adds them together. Then + returns the sum to the stack. CR performs a carriage return and line feed, and . takes the sum from the top of the stack to your CoCo's screen. One other brief example may be useful to illustrate the word + . This word adds ten to the top number on the stack and prints the result.

```
: TEN-AGAIN 10 + CR . ;
```

To execute this word type a number followed by TEN-AGAIN and a <ENTER>. This definition is fairly easy to follow. So it should not require an explanation.

The next word - (MINUS) has a slight twist to it. In the stack definition of - we see: (n1 n2 -- diff). This is translated to mean that n2 is subtracted from n1. Using - is no more difficult than using

ALL PROGRAMS COCCO 1 OR 2

CHECKERBOARD FILESORT

32 OR 64K FILE PROGRAM...\$18.95 / Cassette — BOTH VERSIONS INCLUDE:
ML ROUTINES FOR DATA, EDIT, SORT, REVIEW, SEARCH, ERROR TRAPPING. MANY HARDCOPY OPTIONS.

13	80	54	17	21	75	18	36	63	9
62	Bakersfield KENO V1.2								41
3									33
72	49	11	29	44	38	55	27	16	1

32 OR 64K KENO SIMULATION
Cassette...\$12.95 Disk...\$13.95

GRPH200 GRPH200 GRPH200 GRPH200

ML GRAPHICS DUMP FOR DMP-200
16 / 32 / 64K Cassette...\$15.95 16 / 32 / 64K Disk...\$18.95

P.O. BOX 6464
BAKERSFIELD, CA 93386

ENJOY A STIMULATING GAME OF KENO. A GRAPHIC DELIGHT FILLED WITH REALISTIC, EXCITING ACTION. PICK 1 TO 15 SPOTS. COMPLETELY RANDOM WINNERS. PREPARE FOR AN EXTREMELY CHALLENGING GAME. CAN YOU BREAK THE HOUSE?

ML GRAPHICS DUMP FOR THE DMP-200. POSITION GRAPHIC PAGES 1-4, 5-8, OR 1-8 ANY PLACE ON PAPER. MENU PROMPTS: STANDARD, CONDENSED, OR COMPRESSED. PRINTOUTS IN NORMAL, ELONGATED, DOUBLE-, OR TRIPLE-SIZE.

SEND CHECK OR MONEY ORDER. CALIF. RESIDENTS ADD 6% SALES TAX
WE WILL MODIFY PROGRAMS TO WORK WITH YOUR PRINTER - NO EXTRA

+ if this fact is kept in mind. Here is one example of how the word - can be used in a definition:

```
: DROP-5 5 - CR . ;
```

The word DROP-5 is executed like TEN-AGAIN. Upon execution 5 is placed upon the stack. Then - subtracts five from the second number and returns the difference to the stack. CR and do the rest as before.

The word * (STAR) is used like + except that it indicates multiplication in FORTH. As its stack notation shows us, * takes the top two numbers from the stack. Then * multiplies them together and returns the product to the stack. Here's one example of * in a definition:

```
: AXB * CR . ;
```

To execute the word AXB type two numbers followed by the word AXB and a <ENTER>. You should be able to pick up on the definition without explanation by now.

Before the last three FORTH basic math words, we should review a few terms regarding division. Let's look at a simple problem:

$$20/3 = 6 \text{ remainder } 2 \text{ or } 6-2/3$$

In the above example: 20 is the divisor; 3 is the dividend; 6 is the quotient and 2 is the remainder. Keeping this in mind, we can now discuss the last three math words.

The first of these dividing words is / (slash), and the stack notation for / is (n1 n2 -- quotient). The word / divides the top number on the stack (n2) into the next number (n1). then, / returns only the quotient. Has an example, let's assume that you are returning from a trip to Mexico, where the exchange rate was 2250 pesos per dollar. How many dollars could you get back from 13,000 pesos. We could define a word to solve this problem like this:

```
: PESO>$
2250 / CR . ;
```

When we execute PESO>\$ by

typing 13000 followed by PESO>\$ and a <ENTER> we get the answer 5. The CoCo does not tell us that we still have 1750 pesos remaining as reminders of your trip to Mexico.

Now suppose that we also wanted to know how many pesos remained after our exchange. We could write a definition using /MOD (SLASH-MOD). From its stack notation, (n1 n2 -- rem quot), we can see that /MOD returns both the quotient and the remainder with the quotient on top of the stack.

We can now redefine PESO>\$ to read:

```
: PESO>$ 2250 /MOD . ."
DOLLARS AND" . ." PESOS" ;
```

We can now execute PESO>\$ as before, and execution proceeds as follows: First 2250 is placed over the number on the stack. Then /MOD divides 2250 into the second number on the stack leaving the remainder and quotient on the stack. next . reports the quotient and we see another new word, ." (DOT-QUOTE). The word ." prints the string within quotes. The remaining words in the definition are basically repetitions. It should be noted, that at this point, we do not have a word giving a decimal result to division.

The last word, MOD (MOD), yields only the remainder. This can be seen from its stack notation (n1 n2 -- remainder). A simple example, executed from the > prompt, would be to type in the following:

```
100 33 MOD CR . ; <ENTER>
```

Of course, your CoCo will report an answer of 1. This completes FORTH's basic math word set. It is important to remember that these words are intended to be used only with integer numbers in the range of -32768 to +32767. If you exceed this range you will get strange or unexpected results.

At this point, it might be useful to present a few simple problems to solve using the

words discussed in this article. Write definitions in FORTH to solve the following:

1. Use emit to decode the following 70 79 82 84 72 33.

2. DISTANCE = RATE * TIME. Write a word that will give the distance traveled given any rate and time.

3. Write a word to solve for rate as in the above problem to the nearest whole number.

4. Write a word that prints a triangle of *'s in the center of the screen.

5. Write a word that prints a square of *'s.

In this first article on FORTH I have presented several words. You should practice each one. Again, I recommend purchasing PD-10 from Dynamic Electronics; it is very inexpensive. You will also need a text book. There are several available, but I am using 3Starting FORTH4. It is an excellent beginners guide to FORTH. If you have any questions, you may call or write to me at my home address.

Tim Tillman
1479 31st Street NW
Winter Haven, Fl 33881
(813) 293-8619 After 5:00
Eastern

Please do not call after 10:00 PM my time, and enclose a self addressed stamped envelope if you want a reply from your letters. Also keep in mind that I am a beginner with FORTH. I welcome any comments, corrections, or criticisms that you may have. One final thought, if any readers are interested, I would like to work toward starting a group programming project. If you come up with any ideas, let me know. When we come up with a project, I will give interested people a portion of the project. Then we can combine the parts into a useful or entertaining program.

Next month, I will cover words that change the order of the stack, more math words, and the word IF. Until then, GOOD LUCK!



This is a basic program that allows machine language codes to be carried within data statements. The basic programs it creates are about 1/2 to 1/3 the size of others. It also obtains the start, end, and execution addresses from the disk. The program shows on the screen how much longer it will take to poke the codes into RAM and provides options for saving to disk, cassette, or executing. The conventional methods of carrying machine language codes in data statements require 4 bytes for decimal (,129) and 3 bytes for HEX (,F2). If data is contained within strings then only two bytes are required. See the MUSIC program in the November 1987 issue of Dynamic Color News. My program uses an average of 1.6 bytes for each ML byte.

The program to be operated on must be saved on a disk. Follow the instructions within the program to create a basic loader of your machine language program.

```

0 REM ***DESIGNED AND WRITTEN
      BY tio babich ***
2 REM cOPYRIGHT(c) 1988
3 REM dYNAMIC eLECTRONICS iNC.
4 CLEAR2000
5 ' IF YOUR ML FILE NEEDS A
      CLEAR ADRS, ADD IT HERE AND T
      O THE BEGINNING OF THE BASIC
      LOADER. (EXAMPLE CLEAR
      200,&HFFA
6 C=0:IF PEEK(33021)=50 THEN C=2
      'CHECK FOR WHICH HI SPEED POK
      E TO USE (65495 OR 65496).
10 REM
20 REM**CHECK POINT**
90 GOTO 200
100 OPEN"D",#1,L$,1
101 IF LOF(1)=0 THEN 116
102 FIELD #1,1 AS BY$
    
```

```

103 GET#1,4:MS$=BY$:MS=ASC(MS$)
104 GET#1,5:LS$=BY$:LS=ASC(LS$)
105 ST=MS*256+LS
106 GET#1,2:MS$=BY$:MS=ASC(MS$)
107 GET#1,3:LS$=BY$:LS=ASC(LS$)
108 EN=ST+(MS*256+LS)+1
109 GET#1,LOF(1)-1:MS$=BY$:MS=ASC(MS$)
110 GET#1,LOF(1):LS$=BY$:LS=ASC(LS$)
111 EX=MS*256+LS
112 PRINT:PRINT"START ADDRESS = ";ST
113 PRINT"END ADDRESS = ";EN:EN=EN+1
114 PRINT"EXEC ADDRESS = ";EX
115 CLOSE:RETURN
116 PRINT"THAT FILE EITHER DOES NOT EXIST OR HAS A FILE LENGTH OF ZERO... CONVERSION ABORTED...":END
200 CLS0:S$=STRING$(32,191):PRINTS$+"ML TO BASIC (IN AS COMPRESSED A FORMAT AS POSSIBLE FOR A BASIC LISTING).":PRINTS$
210 LINEINPUT"FILE TO READ (INCLUDE EXTENSION) ";L$:GOSUB 100:LOADM L$
220 LINEINPUT"FILE TO WRITE TO (/BAS ASSUMED) ? ";W$
230 OPEN"O",#1,W$+"/BAS"
231 PRINT#1,"10 PRINT"CHR$(34)"ONE MOMENT WHILE MACHINE LANGUAGE DATA IS READ IN..."CHR$(34)":SOUND100,5
232 PRINT#1,"20 ST="ST
233 P$=CHR$(34):PRINT#1,"30 READ A$:FORX=1TOLEN(A$):I$=MID$(A$,X,1):IFI$="P$"W"P$ THEN CH=3:NEXTX,QQ:ELSE IF I$="P$"X"P$" THEN CH=0:NEXTX,QQ:ELSE IF I$="P$"Z"P$" THEN CH=2:NEXTX,QQ:ELSE IF I$="P$"Y"P$" THEN CH=1:NEXTX,QQ:GOTO100"
234 PRINT#1,"40 POKE ST,A:ST=ST+1:NEXTX,QQ:GOTO100"
235 PRINT#1,"31 A=ASC(I$):IF CH=0 THEN A=A-35 ELSE IF CH=1 THEN A=A+46 ELSE IF CH=2 THEN A=A+126 ELSE IF CH=3 THEN A=A+206"
237 PRINT#1,"3 CLEAR2000"
238 PRINT#1,"4 CLS5:C=0:IF PEEK(33021)=50 THEN C=2"
239 PRINT#1,"5 POKE65495+C,0'DELETE THIS IF IT HANGS UP YOUR COCO..."
240 PRINT#1,"100 POKE 65494+C,0:PRINT"P$"MACHINE LANGUAGE DATA NOW IN MEMORY. SELECT: 1 . SAVE TO DISK 2. SAVE TO TAPE 3. EXECUTE ML"P$":EXEC44539:A$=INKEY$"
241 PRINT#1,"101 IF A$="P$"3"P$ THEN EXEC EX:END"
242 PRINT#1,"102 LINEINPUT"P$"FILENAME ?"P$";F$:IF A$="P$"1"P$" THEN SAVEMF$,SS,EN,EX:SOUND1,1:END":PRINT#1,"103 CSAVEMF$,SS,EN,EX"
243 PRINT#1,"6 SS="ST":EN="EN"
245 PRINT#1,"26 PRINT@96,ST,EN"
299 SOUND1,1
300 REM
500 G=1000:Y=0:QQ=1
510 :
511 'CHR$ CODES ARE AS FOLLOWS:
520 '35 - 119 ARE THE ML.
530 '120 , 121, 122 ARE SHFTR'S
570 FOR X=ST TO EN
580 A=PEEK(X)
590 IF A>80 AND A<161 AND CHECK<>1 THEN CHECK=1:F$=F$+"y" ELSE IF A>160 AND A<241 AND CHECK<>2 THEN CHECK=2:F$=F$+"z" ELSE IF A<81 AND CHECK>0 THEN CHECK=0:F$=F$+"x" ELSE IF A>240 AND CHECK<>3 THEN CHECK=3:F$=F$+"w"
600 IFCHECK=0 THEN A=A+35
610 IF CHECK=1 THEN A=A-46
620 IF CHECK=2 THEN A=A-126
630 IF CHECK=3 THEN A=A-206
640 F$=F$+CHR$(A)
650 IF LEN(F$)>200 THEN GOSUB 710
670 Y=Y+1
680 NEXT X
690 T=1
700 IF F$="" THEN POKE65494+C,0:QQ=QQ-1:GOTO 726
710 REM *** WRITE IT TO DISK ***
711 POKE65494+C,0
720 PRINT#0,G;"DATA"CHR$(34);F$;CHR$(34)
725 PRINT#1,G;"DATA"CHR$(34);F$;CHR$(34)
726 IF T=1 THEN PRINT#1,"25 EX="EX":FOR QQ=1 TO "QQ:CLOSE#1:CLS0:PRINT"FINISHED.":END
730 F$=""
733 POKE65495+C,0
735 G=G+10
736 QQ=QQ+1
740 RETURN

```

DYNAMIC ELECTRONICS INC.

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-15

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

PICTURES GCM 1 B 68

* 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

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

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-16

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

PICTURES GCM 1 B 68

* 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-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-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
LONIA BAS 0 A 3

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
CASLABL 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 BAK 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
DISKLABEL 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-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-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 RIN 2 B 3
SPEAK BIN 2 B 3
PCLEARFX BIN 2 B 1
MULTBACK BIN 2 B 1
MULTBACK DOC 1 A 1

PD-13

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

PICTURES GCM 1 B 68

* 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-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
MTERM BIN 2 B 6
MTERM+ BIN 2 B 6
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-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-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

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

PD-14

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

PICTURES GCM 1 B 68

* 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

PD-21 MUSIC

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

ORCH BIN 2 B 8
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
INVENT1 MUS 4 M 1
BATTSTAR MUS 4 M 2
BOND2 MUS 4 M 2
CLOENCT MUS 4 M 2
SCARBORO MUS 4 M 1
FUGUEINC 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 5
CIRCUS MUS 2 B 5
CLOWN MUS 2 B 2
CLOWNS MUS 2 B 4
HAYDEN MUS 2 B 8
JBGOD 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
CNFG40V2 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 8
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
TTHelp DAT 1 A 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 pic-
tures are loaded from
disk. A computer with
a disk drive is re-
quired 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 MGE 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

EDUCATIONAL 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.

SCF EDI 0 B 3
SMF EDI 0 B 4
SUL EDI 0 B 4
SMP EDI 0 B 2
64K BAS 0 B 1
STARTUP BAS 0 B 2
COTERM BIN 2 B 1
USER SYS 0 B 6
COBBS SYS 0 B 9
STARTI DOC 1 A 5
USER DOC 1 A 1
COBBSREV DOC 1 A 5
OPERAT DOC 1 A 7
SMH EDI 0 B 3
MENU DOC 1 A 11

PD 35

ADDRESS FILES AND
FINANCE PROGRAMS

PHONE BAS 0 B 1
LABELPRT BAS 0 B 1
LETTER BAS 0 B 3
MAILST 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
CHECKSTUB 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 9
EXTENDED BAS 0 B 2
GETPUT BAS 0 B 2
COMPSCI6 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
DHILL BAS 0 B 2
MLTP BAS 0 B 1
ROUND BAS 0 B 2
AREA BAS 0 B 5
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
MAILST BAS 0 B 1
WORDPROC BAS 0 B 3
MAILST 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
CHECKSTUB 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

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

1-4 \$4.95, 5-9 \$4.50, 10 - \$4.00

Add \$1 shipping. Specify Tape or Disk. Checks, VISA, or MC.

DYNAMIC ELECTRONICS
BOX 888 (205) 773-2758
HARTSELLE, AL 35640

ham radio & computers by bill chapple w4gqc

I want to thank each of you who have called and given suggestions or asked questions about using color computers for ham radio applications. The main interest seems to be with packet radio and I have done some work toward the objective of sending and receiving packet directly from the computer. There are those who are interested in an interfaceless Morse terminal that does not require an interface. I have talked with hams who are interested in WEFAX, and RTTY. We gave a RTTY program last November and have a WEFAX program this month. Also there are those who are interested in slow scan television. This can be done easily and I will have a program for it in a few months. There seems to be hams interested in just about every area of ham radio which gives us quite a variety of subjects to cover.

One major problem I am having with packet radio is the fact that packet signals come in bursts and are not continuous. I am trying to decode packet signals directly and have had some success but not enough to present a working program.

Last month I mentioned that I had written a packet tuning program. Someone called and said that he would like to have that program. So next month I will present a program that can be used to tune packet, RTTY, or CW. This will be more of an audio frequency spectrum analyzer than a tuning program. It will display on the screen the frequency being received as a bar graph or some sort. I will have markers to show proper

tuning for the various modes of operation.

Another thing that I am going to look at is the use of the joystick ports for processing the audio. If the audio can be digitized, then there are many operations that can be used on it to remove interference. One of the problems with using the cassette port is that there is no amplitude detection available. The cassette signals are either 0 or 1. However the frequency can be decoded which is what I did in the frequency meter program.

By using the joystick port, amplitude levels can be compared. For example for copying Morse Code (CW) we want the signal to be either on or off. If there is a high noise level then noise is heard even when there is no signal. If we have amplitude available then we can subtract a value equal to the noise and effectively subtract out the noise. The computer can analyze the audio and reconstruct a new signal which can be sent to the television or monitor. This procedure could be used also to reduce noise for voice communications which is not possible with the cassette port. Many different processing routines are available for digitized audio. Fourier transforms allow the frequency components of a signal to be determined by a computer. These components can be discarded or retained in the process of reconstructing a better signal. This is a study in itself and our powerful computers can perform many different types of transforms on the audio. An interface connecting a joystick port to the receiver is easy to build and I will have more on this next month.

Weather Facimile (WEFAX)



How is the weather?

This month I have a public domain weather facimile (WEFAX) program. It uses the same interface that is used in our RTTY program. See our November 1987 issue. The interface just takes the receiver's audio and puts it onto the cassette cable. There are no active electronic components required. All that is required to receive weather pictures is a short wave receiver.

Facimile is the ability to send and receive picture information. It has been used for many years by businesses and wire services. In recent years it has become very popular for sending weather information by short wave. This is very valuable for ships at sea and enables them to avoid bad weather. With the development of weather satellites, very accurate weather maps can be produced.

A 64K computer is required and the pictures can be saved on a disk with the program. If you do not have a disk drive, the program will work on with a cassette but you can not save the pictures. A joystick is required to scroll the picture. The pictures are large and require 54K of data. This program may not work on the color computer 3 due to the different configuration of memory. I did not try it on our color computer 3.

To start, load the program and type RUN. Instructions are printed on the screen and options can be selected with the joystick. The pictures can be printed on an Epson compatible printer and saved to a disk. It takes several minutes to receive a weather picture. If the picture seems distorted, move the

joystick until it is recognizable. You have a choice of 60, 90, or 120 lines per minute. I used 120 for the stations I copied. The following are a list of frequencies on which weather stations transmit:

East Coast NAM Norfolk, VA
3357, 4975, 8080, 10865,
16410, 20015

West Coast NMC Point Reyes, CA
4346, 8682, 12730, 17151

West Coast WWD La Jolla, CA
8646, 17411

All frequencies in Khz.

WEFAX PROGRAM

```

10 REM THIS PROGRAM IS PUBLIC DO
   MAIN
20 PCLEAR4
30 F1=651:REM 60 LPM ADJUST
40 F2=901:REM 90 LPM ADJUST
50 F3=1027:REM 120 LPM ADJUST
55 POKE150,1:REM PRINT=9600 BAUD
60 CLS
70 PRINT" WEATHER FACSIMILE RE
   CEIVER"
80 PRINTSTRING$(32,"-");
90 PRINT
100 PRINT"THIS PROGRAM WILL RECE
   IVE FM FAX";
110 PRINT"AT 60, 90 & 120 LINES/
   MINUTE."
120 PRINT"CONNECT THE CASSETTE E
   AR (BLACK)";
130 PRINT"PLUG TO THE RADIO'S EA
   R JACK OR"
140 PRINT"CONNECT IT ACROSS THE
   SPEAKER."
150 PRINT"CHECK THAT THE RADIO I
   S TUNED IN";
160 PRINT"AND THAT THE BFO IS TU
   RNED ON."

```

```

170 PRINT"AFter THE PROGRAM IS R
    EADY YOU"
180 PRINT"CAN USE THE TUNING MET
    ER TO"
190 PRINT"ADJUST THE RADIO."
200 PRINT
210 PRINT"PLEASE WAIT..."
220 AD=&H600:LI=900
230 READA$,CS
240 IF A$="X" THEN 320
250 FOR I=1 TO 64 STEP 2
260 A=VAL("&H"+MID$(A$,I,2))
270 POKE AD,A:CS=CS-A:AD=AD+1
280 NEXT
290 IF CS THEN PRINT"DATA ERROR
    IN LINE";LI:END
300 PRINT@462,944-LI
310 LI=LI+1:GOTO 230
320 A=INT(F1/256):POKE&H600,A:PO
    KE&H601,F1-256*A
330 A=INT(F2/256):POKE&H608,A:PO
    KE&H609,F2-256*A
340 A=INT(F3/256):POKE&H610,A:PO
    KE&H611,F3-256*A
360 PRINT"RECEIVE *60* *90* *120
    * LPM"
370 PRINT
380 PRINT" *PRINT TO EPSON PR
    INTER*"
390 PRINT
400 PRINT" *REVERSE VIDEO THE P
    ICTURE*"
410 PRINT
420 A$=CHR$(PEEK(&HC000))+CHR$(P
    EEK(&HC001))
430 IF A$<>"DK" THEN PRINT:PRINT
    :PRINT:GOTO470
440 PRINT"DISK *VIEW* #1 ***
    #2 ***"
450 PRINT"PICTURE *LOAD* ***
    ***"
460 PRINT"STORAGE *SAVE* ***
    ***"
470 PRINT
480 PRINT"TUNING I-----I"
490 PRINT"METER: 1500 2300"
500 PRINT
510 PRINT"JOYSTICK RESTART
    SCAN"
520 PRINT"USE WHEN PHASE HOL
    D PHASE"
530 PRINT"RECEIVING: <-- SCA
    N -->";
540 EXEC CS
900 DATA0285050A004D00E703820704
    0033009904000800002600720F718
    634B7FF030F,1740
901 DATA660F671700E3260EB7FFDEBE
    C0066F846F01AD9FC004B7FFDF7FF
    F407F098610,3846
902 DATA03D78E0400A6848A40A780
    8C060025F51703338D0220DE8D570
    80B0002840D,2661
903 DATA100002821216000281041B22
    048F021C440332090E660011090E7
    7001D090E88,1154
904 DATA001C80800000788D28139568
    03D61A9C6803D5808000006786022
    00286039761,2490
905 DATA8D0F131568034B1A1C68034A
    808000004E17027235109F628D2AD
    D648D773410,2244
906 DATA1700908D1F10936427073510
    17008420E71700EE8D4D27EBAEE43
    003EC84AD8B,3021
907 DATA3510206F8D18FC015A445454
    8D1B2607C1082302C60839C10423F
    BC60439B7FF,2850
908 DATADEAD9FA00AB7FFDF39B7FFDE
    BEC000B7FFDF8C444B39B6FF00840
    1398DF827FC,4792
909 DATA9766398DF19166270B8E222E
    301F26FC8DE49766399E628D6B916
    42204D16424,3391
910 DATA073005E6842AF0398D619165
    22F3D16525EF39CE04008D536D012
    A0496651F89,3174
911 DATA3402E0E45CE7E4C6203D33CB
    8D366D012A0496641F893406E6842
    A1033C6E6C4,3524
912 DATAA68D001FA7C4E78D00192014
    E6C6C840E7C64CA16123F533C820A
    6E46A6226EC,4040
913 DATA326339CFEC84841FC41F39A6
    0244444444E602C40F39B6FF205A2
    705B1FF2027,3274
914 DATAF839C6208DF02708C6408DEA
    27028DE654D16727158E05409667D
    767E686CA40,3880
915 DATAE7869667E686C4BFE7863986
    34B7FF03863CB7FF0186D6B7FF208
    680B4FF0027,4605
916 DATA053DAC842008DC52DD56DC50
    DD54862AB7FF208680B4FF0027043
    D12200ACC26,3373
917 DATA02DD56CC0E00DD548634B7FF
    019E4086D6B7FF208680B4FF00270
    38E0001862A,3555
918 DATAB7FF208680B4FF0026029E42
    301F26FCA69439DF483A3386DF4C8
    601A7844F5F,3616
919 DATADD4AB6FF205CC1262504A101
    2005B1FF2027F2D74E1DA18BD34AD
    D4A9348251B,3557
920 DATADD4AD64EF7FF02D14F698424
    0430012005CC0001E70112C606200
    F8601B4FF00,3018
921 DATA260617FE7716FD8EC6049C4C
    25B4DC48934A2F07A18B83000126F
    917FF2D399E,3332
922 DATA52DE448660208C5F9E50DE46
    862020838DF55F8DEA8DF0C6608DE
    48DEAC6C020,4425
923 DATADE5F2006C6082002C610308D
    FD123ACE00408608E680E7C04A26F
    98D49861197,3397

```

- 923 DATADE5F2006C6082002C610308D
FD123ACE00408608E680E7C04A26F
98D49861197, 3397
- 924 DATA4F8E26029F52CE0E00DF5033
C820DF54308901209F568DB8DE54D
F509E569F52, 3497
- 925 DATA8CFE0225E6397FFF22CEFFC6
A75AA75CA75E860444C6074424063
341A7C02002, 3602
- 926 DATAA7C15A26F23986F0B7FF22CE
FFC6A75AA75DA75F860E20DC8690F
6015BC13F26, 4381
- 927 DATA015C3D584958498E2602308B
B6015A813F26014C3086203800000
0000000000, 1695
- 928 DATA0000000000000008DBD8DCDFC
015A340617FD6BFC015A10A3E1270
28DBB17FD83, 2983
- 929 DATA27E9398DA18E260263808CFE
0225F939108E0E00C620A680A7A05
A26F9308840, 3427
- 930 DATA108C260025EE39108E0E00C6
20A6A0A7805A26F9308840108C260
025EE392602, 2740
- 931 DATA262226426E026E226E42B602
B622B642C6002002C611D760D661C
10326028D24, 2738
- 932 DATA17FF43318CD88609AEA13422
9661810326068D9C8D7620048D728
DAB0C603522, 3091
- 933 DATA4A26E539B7FFDEFEC006CC02
00EDC4CC1102ED428E0E00AF44AD9
FC004B7FFDF, 4263
- 934 DATAD660260FC600A6854C1026FB
E95CC11723F439C62BA6854C1026F
BDA5CC14323, 3644
- 935 DATAF439C6ED2002C6F7340417FE
D9D665C00686033DDB64EBE0D7608
60297618D0C, 4102
- 936 DATA7FFF407F098617FC8D26FB39
3476B7FFDEBEC006D661E7846F01C
C0E00ED04CE, 4147
- 937 DATAFFFF9660C6183D1083013325
03C30002334183001224F9C30013E
7031F30E702, 2785
- 938 DATA108E0018AD9FC0048D1F6C04
EC02108311012602CB025CC112230
3C6014CED02, 2497
- 939 DATA313F26E0B7FFDF35F617FC2A
260C7FFF407F098617FC2516FB3C3
917FE48B6FF, 3905
- 940 DATA228401263886FE976F8E2602
861B8D2386338D1F86178D1B8D248
61B8D158633, 2797
- 941 DATA8D1186018D0D8D1630890540
8CFE0225DB860DB7FFDEAD9FA002B
7FFDF398DA9, 3845
- 942 DATA860D8DEF861B8DEB864C8DE7
86008DE386038DDF8660341286019
75FA684108E, 3786
- 943 DATA0058C6084969A05A26FA3089
00C024EC8E0058C608A680438DB95
A26F8351230, 3277
- 944 DATA014A26D23900000000000000
000000000000000000000000000000
0000000000, 380
- 945 DATA, 1560

HAM RADIO PROGRAMS

MORSE - This program allows a key to be pressed and then sounds the Morse equivalent. It also will send random characters. This is an excellent tool for developing code speed for the Novice, Technician, or General class licenses.

DX - Consists of two parts. The first part allows notes to be typed onto the screen. The second part allows the countries for a letter or number prefix to be displayed.

ANTENNA - An antenna design program that calculates the dimensions for a wide spaced Yagi antenna of up to 4 elements.

Order HR-1 (3 programs) \$11.95

MORSE TERMINAL

When used with an interface this converts your color computer into a Morse Terminal. To transmit just type the Morse characters and the computer keys your transmitter. In the receive mode the computer decodes and displays the Morse characters on the screen. Instructions are included for building an interface with off the shelf parts. HR-2 \$12.95

STATION LOG

Keep a record of your contacts. Just enter the information as it is requested. Items that are the same such as date, frequency, and type of emission need only be entered once and changed as needed. Save and load records to tape or disk. Add to the log and quickly find stations. HR-3 \$9.95

THERMISTOR

Now your computer can give you the temperature in both Fahrenheit and Centigrade. Assembly plugs into a joystick port and consists of a thermistor on a 10' cable for the single unit and a second thermistor on a 20' flat cable for the dual unit. The dual unit can be used to measure inside and outside temperature. CC-THERM \$12.95, CC-THERM 2 \$19.95.

MEMORY SAVER 2

A battery backup for all color computers. Leave programs in your computer and the Memory Saver will preserve them in case of a power failure. A real time saver for cassette systems. \$39.95

HAM BATTY TERMINAL

Uses the cassette port. Requires simple interface to connect cassette audio into the Mic Jack and receiver audio into the cassette port. Interface instructions are included. 60 WPM Baudot. \$6.95.

All programs are color computer 3 compatible unless indicated and are on tape or disk. Please specify tape or disk software.

Checks, VISA or MC, Add \$3 shipping.

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

Software Bonanza Pak

A SPECIAL-PACK SOFTWARE BONANZA with the following 12 programs: **Coco Checker**, Multi-Pak Crak, Coco Spectrum DOS, Disk Utility 2.1, Spectrum Font Generator, Tape/Disk Utility, Parting II, 64K Disk Utility, Spectrum DOS, Basic, Coco Calendar. **CONSTRUCTOR** is \$99.95. **Price: \$29.95.**

Coco III Software Library

Create an instant library of Spectrum Projects. **TOP COCO III SOFTWARE**: Get ROM - ANAZA, ROM DISK #1, FKEYS III, C III UTILITIES, COCO III UTILITIES and **PHOTOPE II** is \$150. **Price: \$29.95.**

Coco III Utilities

Terrific utility programs for the Color Computer III that allow you to convert to COCO III Converter, 32K Hi-Res screen saver, 40/80 Column Word Processor, RAM Tester, DIXO Dual generator, SMOYIN Scrolling Editor. **Price: \$29.95.**

Coco III Secrets Revealed

An introduction to the Color Computer III that compares the differences between the COCO III and the IBM COMPTON. Includes: JUNE chip specs, COCO III to COCO III converter and a 128/512K RAM test. Offers some very good information to programmers. **Price: \$29.95.**

Coco III Screen Dump

This is the program for homebrew graphics for Radio Shack bit-image, dot-matrix printers (e.g. 105, DMP-110, etc.) and Epson compatibles (Star Electronics, Panasonic, etc.). Will print HSDUMP 1-4 and PDDO 0-4. 16 patterns can be generated for any color or dot-matrix printer. **Price: \$29.95.**

Fkeys III

A productivity enhancement that gives you the capability to add twenty (20) predefined functions to the COCO III by using the CTRL, F1 and F2 keys. **Price: \$24.95.** Get more from your keyboard with **FKEYS III** - **Revised** review 4/87

C III Graphics

A drawing program for the COCO III using the new REVISED graphic features: 300x192 graphics, 16 of any 64 colors, plus the ability to SAVE and LOAD 12K screens. Print pretty pictures on the COCO III. **Price: \$29.95.**

OS-9 Solution

Now, a program that creates a USER-FRIENDLY environment within OS-9. The OS-9 SOLUTION replaces 20 of the old USER HOSTILE commands with SINGLE KEYSTROKE menu-driven commands. No more typing in cryptic long patterns or remembering complicated syntax. **Price: \$29.95.**

Teletouch III

All the FEATURES of TELETOUCH plus the classically proportioned characters of the WIZARD with THREE lower-case Now COCO III compatible (Upgrade \$15 w/proof of purchase) \$29.95

Tape/Disk Utility

A powerful package that transfers tape to disk and disk to tape automatically. Does an automatic copy of an entire disk of programs to tape. Ideal for Rainbow Dr. Tape to disk. Also copies tape to tape. Original tape & disk directories. **TAPE/DISK \$24.95**

Multi-Pak Crak

Save ROMPACS on your 64K Disk System using the MS Multi-Pak Interface. Eliminate constant plugging in of ROMPACS by keeping all PAK software on disk. Includes ROMS for "PROBIE" ROMPACS & the NEW 10K PAKS (Demon Attack, Uranium's Lair, J. \$29.95 ROM COCO) compatible Upgrade \$15 w/proof of purchase

Disk Utility 2.1A

A multi-featured tool for USER FRIENDLY disk handling. Utilize a directory window to selectively sort, move, rename & KILL file entries. Lightning fast Disk I/O for format, copy & backup. Simple execution of both basic & HL programs. 64K DISK \$29.95. NOW also COCO III compatible Upgrade only \$15 w/proof of purchase

Spectrum DOS

Add 24 NEW disk commands with 2 Hi-Res screens! SUPPORTS 40 track & Double-sided drives, sms stepping, auto disk search, error trapping and "BREAKABLE" 64K DISK \$49.95 New LOW price! \$29.95

Mikoy Dial

When used with any Hayes compatible modem and Deluxe Spectrum Pak, adds to Mileytem 4.0 the ability to Autodial 22 numbers from a menu and load a set of 1 WORDS for each directory choice. Also EAST redial & changing of MODM settings by command menu. \$19.95 (see 12/86 Rainbow review)

Spectrum Font Generator

Write files using any COCO hard processor (7V-64, EliteWord, etc.) and convert them to HIGHLY detailed character sets! Some of the character sets supported are Italics, Old English, Futuristic & BLOOM. **DISK \$29.95** set either included & supports most dot-matrix printers! \$29.95

Schematic Drafting Processor

Save time and design **PRO** looking diagrams using a 480x320 pixel worksheet w/6 viewing windows. Over 70 electronic symbols w/10 definable symbols. (Even Logic gates & Multiplying chips!) Print hard copy & save to disk. 64K DISK \$29.95

Coco Checker

Something possibly wrong with your COCO? **Coco Checker** is the answer! Will test your ROMs, RAMs, Disk Drives & Controller, Printer, Keyboard, Cassette, JoySticks, Sound, Video, Internal Clock Speed, Multi-pak Interface and more! \$24.95

Ricketyterm 2.0

Supports 40/80 column mode, ASCII or XMODEM uploads & downloads. Deluxe R5272 PAK or Serial BITBANGER port, 300/7200 baud plus 5MINUTE (predefined sequences of text) can be read into the answer from DISK & transmitted by MNCV type ahead & auto-repeat are also supported. 128K COCO III DISK \$39.95 (see 9/87 Rainbow review)

64K Disk Utility Package

Take advantage of an expanded 64K machine. Make an additional 2K of ROM available by relocating the Ext Basic ROM from \$8000 to \$0800. Copy ROMPACS to disk (even "protected" PAKS) and create a 32K SPOOL buffer for printing. \$24.95

EZ Base

A truly friendly data base program at an affordable price! Keep inventoried, hobby, collections, receipts, card lists and much more! Hi-Res screen, up to 500 records with 15 fields, record or field search & a printing LABELS option. 32K DISK \$29.95

Blackjack Royale

A Hi-Res graphics casino blackjack simulation and card counting prog. Fully realistic play including: bomb, dem, split, surrender, insurance, 1-8 decks, burnt cards, shuffle frequency and more! This fine program is a must for the COCO Blackjack player. - **Revised** review \$24.95

Spectrum Adventure Generator

The Spectrum Adventure Generator creates adventure games that are 100% HL & very fast! Up to 85 rooms, 255 objects, 10 command words & 255 conditional flags can be used. 64K DISK \$29.95

Coco Calendar

Get organized for 365 days today with the COCO Calendar! Designed for recording the entire year's activities and daily appointments so you can plan ahead. You can date appointments of entire and our graphic calendar will show all **MEMOS** \$19.95

THE KITCHEN SINK ...

Everything but the KITCHEN SINK!!! Receive all twenty-three (23) colorful utilities from top to bottom, the **Software Bonanza Pak to COCO Calendar** (a \$500 plus value) for a **SPECIAL** price \$149.95!!!!

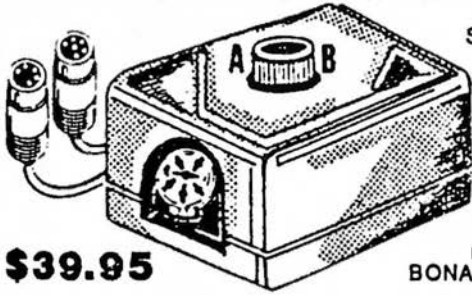


Turn sideways for more Colorful Utilities!
Graphics Designer - \$29.95
Spit 'N' Image - \$34.95
ADOS-3 - \$34.95
EliteWord 80/Spel - \$99.95

SPECTRUM PROJECTS
PO BOX 264
HOWARD BEACH NY 11414
 All orders plus \$3.00 shipping/handling
 (Foreign orders please add \$5.00)
 NYS Residents add sales tax.

GREAT COCO III STUFF

SUPER MAX III INTERFACE



\$39.95

Switch between
Color Max III
and ???

Use EXISTING
SOFTWARE*
or write your
own! Includes
(\$24.95)
HI-RES
JOYSTICK
utility software
BONANZA for FREE!

*Compatible with POPULAR CoCo III
graphics software programs that use
HARDWARE JOYSTICK interfaces! Bring
your CoCo III to the MAX!



THE NEWSPAPER

Compose your own "CoCo Newspaper"
with BANNER HEADLINES and six
articles using a SOPHISTICATED
graphics editor with importing of
PICTURES, FONTS & FILL patterns
from disk. 22 Fonts & 50 Pictures!
Over 140K of code! CoCo III DISK

\$49.95

COLORMAX DELUXE - BETTER THAN COCO MAX III!

It's here! The CoCoIII BREAKTHROUGH PRODUCT everyone was waiting for! 320x200 graphics, pull down menus, icons the choice of 16 colors from the CoCo III's 64 color palette plus RGB support!! fonts are included for hundreds of lettering styles and painting is a breeze with 16 colors and 32 editable patterns!!! Color Max Deluxe requires a 512K CoCo III and Hi-Res Joystick interface. (Specify printer!) \$69.95. Hi-Res Interface \$14.95. Color Max Deluxe Font Editor - create and modify fonts for use with Color Max Deluxe \$29.95. Font Disk#1 \$19.95

→ SPECIAL BONUS - BUY ABOVE 4 for only \$99.95 !!! (SAVE \$35) ←

TW-80 - 80 COLUMNS FOR TW-64 ON COCO III NEW LOW PRICES!!!

It's finally here! An 80 column version of Telewriter-64 for the CoCo III with TELEPATCH features plus much, much more! Includes PRINT SPOOLER & (2) ultra-fast RAM DISKS for 512K users, plus changeable CHARACTER FONTS & a setup CONFIG program. Req. TW-64 DISK & 128K CoCo III \$24.95 / SPECIAL BONUS COMBO - TW-64 & TW-80 \$79.95

SUPER TALK 512 - DIGITAL VOICE FOR COCO III

Turn your 512K CoCoIII into a Digital Voice Recorder! Not synthesized speech, but 100% reproduction of your own voice! Create BIG MESSAGES, up to 32 blocks of 16K each. Req. 512K CoCoIII DISK. From Dr. Preble \$39.95

512K UPGRADE (\$49.95*) LOWEST OS9 Lev.II Ramdisk Driver \$29.95

Easy installation with a superior design for a reliable upgrade. (*\$49.95 when purchased with our 512K RSD08 RAMDISK for \$24.95 and our OS9 Lev.II RAMDISK for \$29.95). Or \$79.95 with either RAMDISK program! Plus, FREE 512K RAM sticker with purchase! 512K upgrade without RAM chips \$29.95. Cheapest prices in Rainbow, period!!!

HI-RES JOYSTICK UTILITY SOFTWARE BONANZA!

New useful programs for the Tandy Hi-Res Joystick Interface! Get FULL 640X640 mouse & joystick resolution from BASIC or run CoCoMaxII on the CoCoIII w/o the CoCoMax cartridge \$24.95 w/Hi-Res Interface \$34.95

RGB PATCH - NO MORE BLACK & WHITE DOTS ...

Did you buy an expensive RGB monitor (CM-8) just so that you could see your Hi-Res artifacting CoCo 2 games in BLACK & WHITE ??? RGB PATCH converts most games to display in COLOR on an RGB monitor. 128K DISK \$29.95

WARP FIGHTER 3-D BY STEVE BJORK!

The BEST CoCo III game of 1988 has arrived! A CoCo III Space Fighter simulation with "3-D GLASSES" by the #1 CoCo programmer of all time - Mr. Steve Bjork!!! CoCo III Disk \$39.95

MAGNAVOX 8515 (\$299.95*) LOWEST PRICES Sharper & Brighter than Tandy CM-8!

DO NOT BE FOOLED! The CM-8 has a dot-pitch of .52mm & will not work with any other computer or VCR! The '8515' has a SHARP .42mm dot-pitch, will work with IBM PCs/Tandy 1000 and its COLOR COMPOSITE input displays P400EA artifact colors unlike the CM-8! *\$299.95 when purchased with a \$24.95 CoCoIII cable - Add \$14 shipping.

CoCo III 512K RAM sticker \$4.99
Level II Quick Ref Guide \$4.99
Level II BasicOS binder ..\$9.95

300 CoCoIII POKES\$19.95
CoCoIII MultiPak PAL chip . \$19.95
Guide to CoCoIII Graphics . \$21.95

Better CoCoIII Graphics \$24.95
CoCo III Unraveled\$29.95
CoCo III Service Manual \$39.95

PASIDPE 512 Format & Backup up to 4 single-/double-sided, 35/40 trk disks in 1 PASS! Even OS9 Lev.II! \$19.95
BIG BUFFER - 437,888 byte spooler for a 512K CoCoIII! Print up to 200 text pages while using your CoCo! \$19.95

OS-9 Level II Font Editor \$29.95

PRAMIX - Lowest price! \$18.95

All orders plus \$3 S/H (Foreign add \$5) - NYS Residents add Sales Tax

SPECTRUM PROJECTS

PO BOX 264 HOWARD BEACH NY 11414

See our other ads on pages 25 & 27

512K
Soft-
ware

Both
for
\$29.95

Product Reviews

This section is open to all producers and dealers of color computer products. We will review your product free of charge and write an editorial on the product. We do not use a rating system but will explain what the product does, and what can be expected from it. Any comments about the review from the firm submitting the product will be printed in a later issue.

VIP WRITER III

One of the most useful programs for computers is the word processor. VIP WRITER from SD Enterprises is a superior word processor for color computers. It supports both tape and disk systems. We received the disk version for the color computer 3. The package also includes a spelling checker program which we will review next month.

As with any disk program, a backup copy should be made and the original placed in a safe place. After making a backup copy load the word processor program by typing LOADM "WRITER" <ENTER>. The program is very user friendly. We used a composite monitor and the screen did not have a very good presentation after the program was loaded. The program comes up in the command mode and the mono option was selected since we were using a composite monitor. This cleared up the screen giving bright characters on a dark background. The 32, 40, 64, or 80 character modes are supported by the program. To change from one to another just type in the number of the character desired for the command.

To go to the editor press the BREAK key. Text can then be typed in. To return to the com-

mand mode press the clear key twice. If you need help press CLEAR ?<ENTER>. This brings up the HELP file which is a summary of the commands.

To go from the command mode to the editor just press the BREAK key. After completing the text, return to the command mode and the text can be saved to a disk or tape. Disk commands are very simple consisting of two letters. To display the directory enter DI. DL means to load from disk and DS means disk save. To load "FIRST/TXT" just enter DLFIRST/TXT while in the command mode.

The editor has all of the features found in good word processors. Characters, words, and lines can be deleted or inserted at any location. Blocks of text can be moved, copied, deleted or typed over.

For printing, the program allows embedding printer codes to change the type print to condensed, double wide, italics, double strike, or any other desired feature. It supports most printers and allows setting the baud rate, left margin, right justification, upper margin, bottom margin, text centering, underlining, and the number of characters per line. It has a 48K spooler which frees up the computer while printing is being completed. It also allows a document to be printed several times. Also nonprintable comments can be included within the text.

The documentation is very good and consists of 107 pages. The VIP Speller documentation is included as a separate section in the instruction manual. We will review this next month.

VIP Writer creates and loads ASCII text files. It can be used to write basic programs. These should be saved with the /BAS extension.

We found VIP Writer III to be a superior word processing program. It was easy to learn and performs as advertised. The cost of is \$79.95 including VIP Speller. SD Enterprises, P.O. Box 1233, Gresham, OR 97030.

REMUSIC 1.0

This is a programmable music synthesizer software package requiring at least a 16K computer and a disk drive. Music data is entered as basic program REM statements. It supports 4 independent voice tracks, amplitude envelopes, key signatures, nestable music repeats, and key transpositions. The music can be converted to an independent machine language program.

The source code is written in basic remark statements. A summary of directives follows:

- V(Voice)- V1, V2, V3, or V4
- L - Note length, 1=Whole, 2=1/2, 4=1/4, etc.
- A-G - Notes
- R - Rest
- O - Octave from 0 to 5
- KS - Key signature of major key.
- T - Tempo from 1-255 quarter notes a minute
- KL - Half notes added to pitch to form a transposition.
- > - Repeat header or start of a repeat passage.
- < - End of a repeated section.
- WD -Waveform definition. This defines the relationship of harmonics to the fundamental.
- WP - Periodic waveform assignment.
- WE - Envelope waveform assignment.

It is very easy to enter directives within REM statements. Refer to Figure 1 which appears in the manual. The following are the directives entered in state-

ment 10:



10 'V1O4L4A.A/AO5CEL8CEL2A

To show how this relates to the music let's remove each directive from statement 10.

- V1 - One voice.
- O4 - Fourth octave.
- L4 - Quarter note
- A.A - Play the note A for 1 and 1/2 beats.
- /A - Play A for 1/2 of allotted time or 1/8 beat.
- O5 - Fifth octave
- C - Play the note C
- E- Play the note E
- L8 - Eight notes
- C - Play the note C
- E - Play the note E
- L2 - Half note
- A - Play the note A

To load the program type "DOS". In a few seconds the copyright notice will appear on the screen and then the familiar OK. You can then load and run a program.

A simple program was written to the tune of Twinkle Twinkle Little Star. It was easy to change the program using basic's editor. After making the changes all that was necessary was to type "RUN" to hear how the modification sounded. Repeats were added to make the music play twice. We also added a command to transpose it to a lower key.

This is an excellent music program. The cost is \$25.

CODIS Enterprises
2301-C Central Dr., Ste. 684
Bedford, TX 76021.

New Products

This section is available free for producers and dealers of color computer products. These products have not been reviewed by us but are included for our reader's information.

MEMO CALENDAR

Sunrise Software has a new Memo Calendar program for Color Computers. It works on all versions and requires a disk drive and an optional printer. The program will display a calendar on your TV or monitor for any month from 1984 thru 1999. The user may store memos to be displayed, on request, when the applicable month is being displayed. Memos may be grouped in files such as appointments or birthdays. Memo files may be changed, deleted or merged with other files or printed to a printer. The cost is \$19.95 plus \$2 shipping. Florida residents add \$1.20 tax. Sunrise Software, 8901 NW 26 Street, Sunrise, FL 33322.

Questions & Answers

These are letters that have been written to us. If you have not written or if you have a question then we would like to hear from you. I can usually be reached in the evenings if you would like to call - Bill.

+++++

Dear Bill,

As a new comer to the world of Computers, I've learned a lot from "Dynamic Color News" for which I thank you.

Would you please help me out with a couple of problems, please.

1. I recently picked up a disk drive at the Miami Hamfest. It is the TRS 80 Color Computer Mini Disk model 26-3022. I do not have the necessary cabling to connect it to my CoCo-2. The local Radio Shack store (whose advice I have found inaccurate in the past) tells me I need a controller board and a cable which sells for well in excess of \$100. I have a hunch that the connection can be made for considerably less and am in hopes that you might have some suggestions for me.

2. I have several programs which I attempt to run (tapes) but each time I try them I get the ?SN Error message. Each of the program lines for which the ?SN comes up seems to have an ! in it which leads to believe that this must be an illegal command for my basic computer. Any suggestions on this for me? Keep up the good work and any suggestions you can give me will be appreciated.

Cordially, Harry Smart

ANSWER: Harry for once you got the right advice from Radio Shack. A disk drive requires a controller and cable for the computer with which it is to be used. This is also true for other computers. IBM disks work well on color computers and IBM computers. The controller configures the data to be compatible with the computer for which it is designed. A cable can be purchased from Spectrum Projects for \$19.95 + \$3 shipping (See their ad in this issue). A controller can be purchased from Howard Medical Computers, 1690 N. Elston, Chicago, IL 60622, (800) 443-1444. The cost of the DC-4 is \$65 with JDOS. Radio Shack DOS is \$25 more but you may be able to get it with Radio Shack DOS and without JDOS for less. This

controller has a switch to select two EPROMS and we have one with both JDOS and RS dos installed.

You can get the strange listing if you try to run a dedicated color computer 3 program on a color 2. This may be your problem otherwise I do not know. Thanks for your letter.

+++++

Dynamic Color News,

Thank you for the informative articles and reviews.

If the R.S. hi-res interface can be used by the CoCo 2, then please, publish a program that can utilize it.

By the way, I like the new "look".

Thank you,

Kimberly K Lindquist. 1300 Quaker #27 Eugene, OR 97402

ANSWER: Thank you for your letter. I do not have a program for the hi-res interface. If someone has one or would like to write one for us, I would like to see it. Thanks for the comments on our new look. We are working hard to improve the magazine's appearance and am glad you like it.

+++++

Bill do you know of a voice program that does not require a hardware interface?

Bruce Getter 213 Water St
Cardington, OH 43315

ANSWER: Bruce thanks for you call. As I told you on the phone, I have seen such a program so know it can be done. I have listed your name and maybe someone knows of a program and can get in touch with you.

+++++

We are adding more sections for PEN-PALS, Bulletin Boards, and Computer Clubs. These will be kept current so fill out the form included in this issue and return it to us as soon as possible for the free listing. Thanks for the questions. -Bill.

ADVERTISER'S INDEX

We would appreciate it if you would let these advertisers know that you saw their advertisement in Dynamic Color News

The Wizard's Castle	6
T & D Subscription Software .	8
Dynamic Electronics Inc.	2,14, 28,36,37,41
Z-Friendly	10
CoCo Clipboard Magazine	11
Valkyrie Software	15
Digital Innovations	18
Ark Royal Games	19
Codis Enterprises	24
Seibyte Software.	32
Spectrum Projects	42,43
COLORado Software .	Classified

DYNAMIC COLOR NEWS CUMULATIVE INDEX

Editor's Comments, Questions and Answers, and Operating Hints are included in all issues. Product reviews are in issues since #17. Numbers in parentheses indicate the part of a series.

#1 Feb 84
Basic Programming
Programming Theory
Multiprogram Manager
MPM Program Listing
Machine Lang. Prog.

#2 Mar 84
Basic Programming
Memory Expansion
Machine Lang. Prog.

#3 Apr 84
ASCII Part 1
Basic Programming
Machine Lang. Prog.

#4 May 84
ASCII Part 2
ML Programming-
Interrupts
Installing an
Interrupt switch
Utility Program

#5 June/July 84
Powerful Remarks
(Remarks for data)
ASCII Part 3
Uninterrupted Power
Machine Lang. Prog.

#6 Aug 84
Powerful Remarks (2)
Data in Remarks
Check Book Program
Word Processor
Machine Lang. Prog.

#7 Sept 84
Machine Lang. Prog.
Writing Position
Independent Code
Powerful Remarks (3)

#8 Oct 84
Basic Programming
(Data Handling Tech)
Machine Lang. Prog.
(Memory Searching)

#9 Nov 84
Computer Sound (1)
Basic Programming
(Sorting)
Ball Team Sort Pgm

#10 Dec 84
Random Numbers
Computer Sound (2)
Sound Learning Pgm
Sound Demo Program

#11 Jan 85
Random Numbers (2)
Card Shuffling
Computer Sounds (3)
Machine Language Subs
Sound Program
Discussion

#12 Feb 85
Large Memory Pgms (1)
Computer Graphics (1)
Video Reverser
(hardware)

#13 Mar 85
Large Memory Pgms (2)
Computer Graphics (2)
Writing Programs (1)

#14 Apr 85
Large Memory Pgms (3)
Computer Graphics (3)
Graphics Demo Program
Writing Programs (2)
Print Demo Pgm

#15 May 85
Writing Programs (3)
Gas Mileage Program
Large Memory Pgms (4)
Data Move Program
Computer Graphics (4)
Graphics Demo Program

#16 June 85
Writing Programs (4)
Grade Book Program
Computer Graphics (5)
Character Gen. Pgm
Large Memory Pgms (5)
Address File Program

#17 July 85
Large Memory Pgms (6)
64K RAM Program
Writing Programs (5)
Alarm Clock Program
Computer Graphics (6)
Character Gen. Pgm.
CoCo Heat Problem

#18 Aug 85
Writing Programs (6)
Address File Program
Large Memory Pgms (7)
Study Program
Computer Graphics (7)
Line Demo Program

#19 Sept 85
Writing Programs (7)
Fast Food Program
Computer Graphics (8)
Bar Graph Program
Vector Correction Pgm
Large Memory Pgms (8)

#20 Oct 85
Writing Programs (8)
Word Processor Pgm
Bar Graph with
Character Generator
Second Port
Page -1 for 32K + MEM
Large Memory Pgms (9)

#21 Nov/Dec 85
Writing Programs (9)
Check Book Program
Computer Graphics(10)
Circle Demo PGM
Recipe Program
RAM Disk Program
Electric Cost Program

#22 Jan 86
Writing Programs (10)
Inventory Program
Computer Graphics(11)
ARC & Circle Demo PGM
Large Memory Pgms(11)
Ship War (Game)

#23 Feb 86
Writing Programs (11)
File DEMO Program
Basic Basic (1)
Computer Graphics(12)
Draw Demo Program
Interfacing Comp. (1)
Bouncing Ball (Game)

#24 Mar 86
Interfacing Comp. (2)
Electronic Billboard
Writing Programs (12)
Basic Basic (2)
Computer Graphics(13)
Draw Program
(Scalling)
Large Memory Pgms(12)
Randisk Subroutines

#25 Apr 86
Interfacing Comp. (3)
Writing Programs (13)
Basic Basic (3)
Tanks (Game)
Large Memory Pgms(13)
Upper Memory Program
Computer Graphics(14)
Graphics Programmg
(GET & PUT)

#26 May 86
Writing Programs (14)
ML Programming (1)
Interfacing Comp. (3)
Roulette (Game)
Page -1 Pgm Dev.
Basic Program Restore
Large Memory Pgms (F)
Computer Graphics(14)
Graphics Draw Program

#27 June 86
ML Programming (2)
ML Program (Addition)
Page -1
Mem. Peek & Poke Pgm
Writing Programs (15)
Inventory Program
Interfacing Comp. (5)
Chords (Music Pgm)
Computer Graphics(16)
Graphics Draw Program

#28 July 86
ML Programming (3)
ML Add with Carry
Graphics Zoom Program
Writing Programs (16)
File Program
Interfacing Comp. (6)
ASCII Demo Program
Astro Dodge Game
Computer Graphics (F)

#29 Aug 86
ML Programming (4)
ML Subtract Program
Interfacing Comp. (7)
Organize VCR Tapes
Ham Radio & Comp. (1)
Horse Code Program
Disk Disassembler
Basic Prog. (17)

#30 Sept 86
ML Programming (5)
ML Data Move Program
Disk File Utility
Basic Programming
File Program
Ham Radio & Comp. (2)
Antenna Design Pgm
Interfacing Comp. (8)
ML Output Subroutines

#31 Oct 86
Money Chase (Game)
ML Programming (6)
Multiple Choice Test
Basic Programming
Address File Pgm (1)
Introduction to OS-9
Interfacing Comp. (9)
Ham Radio & Comp. (3)

#32 Nov 86
Star Constellations
ML Programming (7)
CoCo 3 (1)
Basic Programming
Address File (2)
Duelling Cannons
Ham Radio & Comp. (4)
DX Program (Ham)
Interfacing Comp.(10)
Hardware Interface

#33 Dec 86
ML Programming (8)
CoCo 3 (2)
OS-9
Lucky Money (Game)
Interfacing Comp.(11)
DYTERM Terminal Pgm
Basic Programming
(Sorting)
Ham Radio & Comp. (5)

#34 Jan 87
Cassette Control Sw.
ML Programming (9)
Jungle Adventure
Interfacing Comp.(12)
Ham Radio & Comp. (6)
Morse Code Keyer Pgm
CoCo 3 (3)
Basic Programming
Address File & Sort

#35 Feb 87
ML Programming (10)
Interfacing Computers
(Joystick Voltmeter)
Ham Radio & Comp. (7)
Scrolling Around
Basic Programming
Address File

#36 Mar 87
OWARE (Game)
Joystick Ohmmeter
EPROMS (1)
ML Programming (11)
CoCo 3 (Lowercase
Char & Rev.Video)
Ham Radio & Comp. (8)
Basic Programming
Invoice Program

#37 Apr 87
Diver (Game)
EPROMS (2)
ML Programming (12)
Using Joystick Port
for Measuring Temp.
Ham Radio & Comp. (9)
CoCo 3 (Error Trap)
Basic Programming

#38 May 87
Joystick Digital
Thermometer
Accounts Payable
(Business Pgm)
EPROMS (3)
ML Programming (13)
CoCo 3 Memory Manager
Ham Radio & Comp.(10)
Basic Programming
(Fast Sorting)

#39 June/July 87
Genealogy Program
ML Programming (14)
Measuring Light with
Joystick Ports
EPROMS (4)
CoCo 3 Graphics Demo
Ham Radio & Comp.(11)
Calendar Program

#40 Aug 87
Job Costing Program
ML Programming (15)
Basic Programming
Ham Radio & Comp.(12)
Compound Interest Pgm
CC-3 Hi-Res Graphics
Save Program
Dog Race Program

#41 Sep 87
Astro Dodge Game
ML Programming (16)
Reformatting Data (1)
Meteors Program
Computer Terminology
Ham Radio & Comp.(13)
Relay Interface
(Hardware Project)

#42 Oct 87
Taking Control (1)
(Basic Programming)
ML Programming (17)
Disk Cataloger Pgm
Reformatting Data (2)
Parachute (Game)
Ham Radio & comp.(14)
HAM RTTY Program

#43 Nov 87
Save the Maiden (G)
Taking Control (2)
ML Programming (18)
Reformatting Data (2)
Music Program
HAM Radio & Comp.(15)
(Packet Radio)

#44 Dec 87
Kingpede (Game)
Taking Control (3)
Printer Utilities
Ham Radio & Comp.(19)
Audio Generator Pgm
Reformatting Data (3)
Screen Dump Program

#45 Jan 88
Living Maze (Game)
ML Programming (20)
Ham Radio & Comp.(17)
Frequency Counter Pgm
Taking Control (4)
Reformatting Data (6)
FANTASY2 Music Pgm

#46 Feb 88
Using ROM Routines
Taking Control (5)
OS-9 (New Series)
BARRACAT (Card Game)
Ham Radio & Comp.(18)
Improved Ham Log Pgm

#47 Mar 88
Using ROM Rout. (2)
Taking Control (6)
OS-9 & Basic O9
Coast-Coast (Game)
Logic (Ed. Game)
Forth Prog. Lang.
ML Loader Pgm.
Ham Radio & Comp.(18)
WEFAX -Weather Pgm.

DYNAMIC COLOR NEWS ON Disk Or Tape

Now you can have all of our editorials and programs for your tape or disk library. Programs are ready to load and run. We have a variety of programs such as games, geneology, home management, business, and utility programs. The editorials are saved with a 32 column width as a word processor file so you can review them on your screen or print them on your printer. Software is included for viewing the editorials. Combine each part of a series to form a booklet on each subject.

If you are interested in programming then study the examples given in our programming series. Example programs are included on disk or tape. We are covering both basic and assembly (machine language) programming. Suppose you want to use the extra memory in a 64K color computer. Then review the editorials and examples on managing the extra memory and run the memory manager programs.

Do you want to learn to interface your computer using the joystick port? We had a series on this with example programs for making a voltmeter, thermometer, ohmmeter, and light meter.

If your interest is ham radio then we have articles each month since August 1986. We covered Morse code, Antenna design, DX stations, Morse Keyer, Morse Terminal, and Radio Teletype with support programs.

We support the color computer 3 and have given programs for using the memory manager, graphics and error trapping.

All programs are ready to run and complement the editorials in the magazine. We have covered many subjects and there is much more to come. All of our back issues are available on disk or tape. See our cumulative index for a list of subjects. We also have program collections of key programs from past issues. See our advertisement in this issue.

COST

USA & Can. Foreign
(Airt)

1 year	\$60.00	\$75.00
6 months	35.00	49.00
1 month	6.95	8.95

Back issues are at the same rate. See our Cumulative Index for subjects.

 * Please sign me up for one year for DYNAMIC COLOR NEWS. I want *
 * to receive instruction on programming, Computer Theory, Operating *
 * Techniques, Computer Expansion, plus information on New Products, *
 * Product Reviews, Programs and Answers to Questions. * * * * *
 * Magazine Subscription \$18 USA, \$20 Canada \$30 other foreign. * * * * *
 * Back issues \$1.95 each, 3 for \$5, 12 for \$18 including shipping. * * * * *
 * Disk or Tape Subscriptions are \$60 USA & Canada, (\$75) foreign. * * * * *
 * Single Copy \$6.95 (8.95), 6 for \$35 (49.00) , 12 for \$60 (75.00) * * * * *
 * Send back issues _____ * * * * *
 * 10% club discounts for 5 or more subscriptions. * * * * *
 * Name _____ Mail payment to * * * * *
 * Address _____ Dynamic Electronics Inc * * * * *
 * City _____ P. O. Box 896 * * * * *
 * State & Zip _____ Hartselle, AL 35640 * * * * *
 * Enclosed is a check _____ * * * * *
 * charge to VISA _____ MC _____ Number _____ Exp. _____ * * * * *

DYPRINT

Now you can print LARGE signs for special occasions 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 or other digitizer or make posters announcing sales or special events.

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

COLOR COMPUTER 2 KIT (SPECIAL PURCHASE)

Now you can build your own Color Computer 2. These kits were designed for a school and are complete with a step by step instruction manual plus the normal Radio Shack operating manuals. They use 4164 memory chips and sockets are included for all integrated circuits. If you have an older CC-1 or CC-2 then this is an excellent source for spare parts. Replacement parts would cost more than this kit. CC-2 Kit \$59.95.

SOFTWARE

Available on Tape or Disk

TERMINAL PROGRAM

DYTERM -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. \$9.95

DECIMAL HL 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. \$9.95.

Add \$3 S/H Checks, VISA, & MC.

Dynamic Electronics Inc., Box 896, Hartselle, AL 35640

COCOMAX II (Closeout)

The best graphics program for the Color Computer 2. Draw a picture, label it, rotate it, copy it, and shrink it. Then print it on a graphics printer. Needs a "Y" cable or multipack expander for disk version.

COCOMAX II disk version \$59.95
Y cable 24.95

DS-69B DIGITIZER

Capture pictures from your VCR or video camera. Display them on the COCO 3's high resolution screen. Label them with COCO MAX and print them on a graphics printer or save them 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-89B \$149.95.

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 (new)

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.

128K MEMORIES For D, E, F, 285, or CC-2
(Memory Manager Software Included)

ME-10A - Upgrade CoCo-2 Computers with two 4164 chips to 128K. Specify T or D Software. \$49.95.

ME-12 - Upgrade 8-chip 4164 type 64K computers to 128K. Specify T or D Software. \$49.95.

256K MEMORY UPGRADES

For D, E, F, 285, or CC-2

We are closing out these Banker RAMS by J & R Electronics. These upgrade the older D, E, F or 285 and earlier CoCo 2 computers with 4164 memory chips and a socketed SAM (6883) chip. Features include:

- * Fast 35/40 Track Ramdisk
- * 32K to 200K printer spooler
- * More than 30 PMODE 4 screens
- * OS-9 Ramdisk 35-40 track
- * Memory protected when reset
- * Toggle switch for 64K mode
- * Compatible with all software
- * Complete ready to install

ME-16 256K RAM \$99.95

VIDEO REVERSER for the CC-2

Reduces eye strain by producing bright characters on a dark background. Integrated circuit mounts on the 6847 chip. Minor soldering required. \$9.95.

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 II

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 rechargeable battery, control circuit, & miniature toggle switch. Will power a color computer for up to a couple of hours during a power failure. Price reduced. \$39.95

CLASSIFIED ADS

1. 10 cents a word, \$3 minimum.
2. Name, Address, & Telephone listed free.
3. Send payment with ad.
4. Closing date 1st of the preceeding month. Ex. Nov ad closing is Oct. 1.
5. No X-Rated ads.

PREMIUM QUALITY DISKS. You don't have to pay a lot for **QUALITY** disks. Our disks are boxed in tens complete with labels, sleeves, and write protect tabs and work on COCO's and MSDOS computers. These are double sided double density disks and will be replaced if defective. DSK-2 \$5.95 /box. Add \$1.00 S/H. Dynamic Electronics, Box 896, Hartselle, AL 35640. (205) 773-2758

NEED A PROGRAM for making a Software list? Here is **DISK FILER** a Machine Language program that will sort and print out lists in a convenient layout. Only \$15.00 + \$2.50 s/h Cash, Check, COD Send to: **COLO**rado Software PO Box 84, Chimney Rock, CO 81127. Questions? (303) 731-4208 (5pm-10pm MT)

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

RENEWAL TIME?

IF 3/88 is beside your name on your address label then your subscription has expired.

DISPLAY ADS

(Rate sheet 3 - March 1988)
Closing 1st of preceeding month.
Example: Ad for March issue should be received by Feb. 1.

Pages	1X	3X	6X	12X
1/4	20	18	16	15
1/2	30	27	25	23
1	40	37	35	33
2	70	65	60	55

We can do titles for your ad in Red, Blue, Green, or Brown. No all one color ads will be accepted. For color ads send artwork for each color and add 30% per color. Example: One page black and red for 3 times costs \$37 + 11.20 = \$48.20 each month for the three monthss.

Artwork must be camera ready and can be enlarged or reduced at no extra cost. Rates are per page or fraction thereof. We can set up your ad for a reasonable price. Enclose payment with ad copy. Contracts are available. Call or write for a contract form. No X-Rated ads.

BULKRATE
U.S. POSTAGE
PAID
HARTSELLE, AL
35640
PERMIT NO. 21