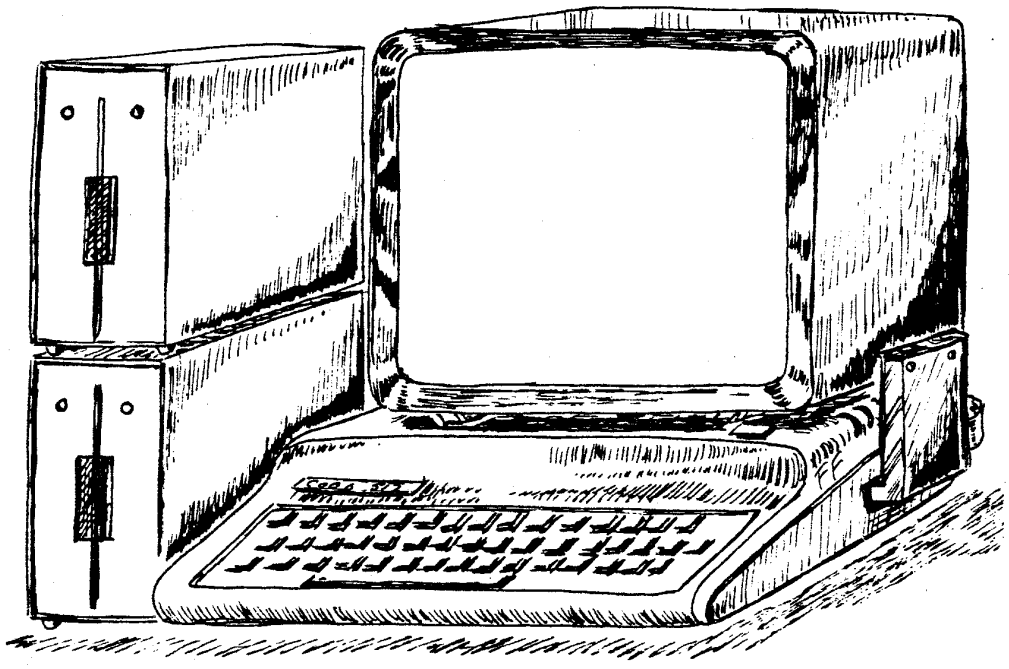
COCO-ADS

The Color Computers Users Magazine
Aug, 1986 $1.00 Issue B9



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M E M T E S T

A fast and simple way to check for bad memory.

```
10 CLS
20 PRINT" THIS IS A SIMPLE TEST"

30 PRINT" TO FIND ANY GROSS ERRO
RS"
40 PRINT" IN THE UNUSED MEMORY"
50 PRINT"   ARE YOU READY??"
60 A$=INKEY$:IF A$<>"Y" THEN 60
70 CLS 2
80 FOR A=&H400 TO &H2720
90 PRINT@104," ADDRESS ";HEX$(A)
;
100 IF A=&H600 THEN CLS 3
110 POKE A,0
120 E=PEEK(A)
130 IF E<>0 THEN GOSUB 380
140 NEXT
150 CLS 6
160 FOR A=&H400 TO &H2720
170 PRINT@104," ADDRESS ";HEX$(A
);
180 IF A=&H600 THEN CLS 4
190 POKE A,&HFF
200 E=PEEK(A)
210 IF E<>&HFF THEN GOSUB 400
220 NEXT
230 CLS8
240 FOR A = &H4000 TO &H7F00
250 PRINT@104," ADDRESS ";HEX$(A
);
260 POKE A,0
270 E=PEEK(A)
280 IF E<>0 THEN GOSUB 420
290 NEXT
300 CLS 7
310 FOR A= &H4000 TO &H7F00
320 PRINT@104," ADDRESS ";HEX$(A
);
330 POKE A,&HFF
340 E=PEEK(A)
350 IF E<> &HFF THEN GOSUB 440
360 NEXT
370 END
380 PRINT:PRINT"ERROR AT ";A: DA
TA READ ";E
390 NEXT
400 PRINT:PRINT"ERROR AT ";A;" D
ATA READ ";E
410 RETURN
420 PRINT:PRINT"ERROR AT ";A;" D
ATA READ ";E
430 RETURN
440 PRINT:PRINT"ERROR AT ";A;" D
ATA READ ";E
450 RETURN
```


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The Program of the Month
by Eric G. Robichaud

For those of you who like utilities, this month I am presenting not just one, but two utility programs! The reason for this is that I feel that each one is too short to run a full column on exclusively, and they also both use a certain technique which I will elaborate upon shortly.

The first program, called CONVERT, is a utility that will convert most Machine Language programs to BASIC. Before describing the first program any further I would like to preface it with an overview of the Machine, Assembly, and BASIC languages. BASIC is what is known as a high-level language which simply means that it's commands closely resemble the English language, and it uses basic algebraic notation. GOTO 100, for example, doesn't leave one guessing. High-level languages are referred to as compiled or interpreted, in that each command is translated by the computer into several ML(Machine Language) commands which the computer can understand and execute. For this reason, BASIC is considered slow.

Assembly language is a lower level language whose commands don't resemble English, but rather are used, basically speaking (pun intended), for a one-on-one relation with ML instructions. ML instructions do not have "commands", but instead consist of numeric data that controls the computer. Assembly language assigns commands, called mnemonics, to each numeric ML code so that the codes can be more easily remembered.

An Editor/Assembler program is used to "assemble" (translate) the program into ML code. This is the advantage of Assembly over BASIC, because Assembly programs are only interpreted once: when saved. From then on, the program is loaded and run as ML code, "speaking" in the computer's native language, whereas BASIC must constantly be translated by the built in interpreter, slowing execution.

As I've stated, Assembly language is just a representation of ML code, and therefore they are generally used interchangeably, although technically not the same. Now back to the program descriptions...

Since many people either do not own an Editor/Assembler or don't have enough experience to enter and successfully debug listings, Assembly programmers tend to like to complement their Assembly listings with a BASIC version consisting of DATA statements used to POKE the numeric code into the computer. Once the Assembly program is written, hand-assembling it into data can sometimes be more of a nightmare than writing the origional program!

To use CONVERT, CLOADM the ML program into memory (must be off cassette) then run CONVERT. CONVERT will automatically generate the entire BASIC program including the FOR/NEXT/READ loops, the PEEKS/POKES, and the DATA statements. The way it works is as follows. The Color Computer usually saves programs in a tokenized, "short-hand" format consisting of special symbols that represent the commands in the program. The computer has BASIC programs stored in memory in tokenized format to conserve space; when a LIST command is executed, for example, the computer "de-tokenizes" the code back into normal commands, then lists them on the screen. When specified to, though, the Color Computer will SAVE a program in ASCII code, where the program is stored exactly like the listing shows: letter for letter (like a block of text on a word processor).

CONVERT takes advantage of this feature, as does the second program, by putting the Assembly language program data into string variables, then PRINTing the strings to cassette or disk in the form of an ASCII program (marked by an "A" in a disk directory).

By simply using CONVERT, Assembly language programmers can now easily get a BASIC version of their program to complement the origional source code. This program should work with most ML programs you will run across, but please realize that "protected" programs, or those which reside in certain memory locations may not be convertable.

If the Assembly program is long, this means a lot of DATA for the end user to type in. This is where DATA ENTRY, the second program, comes in. DATA ENTRY, as the name suggests, allows the user to enter large amounts of numeric data as quickly and painlessly as possible. A good use for this program would be for entering the first part of CONQUEST, which I presented in June of this year. The first thing you must do is specify the maximum number of digits found in any number listed in the data, then specify what line number you would like to start with. The computer will automatically type the line number, the DATA command, then await

your entering the information. All you have to do is type the numbers; when you reach the maximum number of digits, the computer will add the comma itself, and enter the line when necessary, listing the new line number (in increments of one) and the DATA command. If you reach a number that has fewer digits than specified, just add the necessary number of leading zeros. If a mistake is made, simply make a note of it and go back and EDIT later. Hexidecimal numbers will work also. Pressing the up arrow will end the inputting of data.

DATA ENTRY works in the same manner as CONVERT, generating a program from string variables; each digit you enter is added to a string, and at the end of each line the string is saved as a program line. This program saves the time spent hitting the comma and entering lines.

Both of these programs are under 16K, and should work with (non-extended) Color BASIC.

I hope that you find these programs helpful and the explainations informative. If you would like a copy of both programs on tape or disk, send $5.00 post paid to Eric G. Robichaud 10 Stoneham Drive, Woonsocket, RI 02895. Past programs are available. Questions or comments referring to this or past articles are also welcome.

```
10 '****************************
20 '*    ML-BASIC CONVERTER     *
30 '*          UTILITY          *
40 '* COPYRIGHT (C) JUNE 1986  *
50 '*     ERIC G ROBICHAUD      *
60 '*     PARAGON SOFTWARE      *
70 '****************************
80 '
90 CLEAR500
100 '--get location of ml prog
110 SA=PEEK(487)*256+PEEK(488):E
A=PEEK(126)*256+PEEK(127)-1:XA=P
EEK(157)*256+PEEK(158)
120 IF SA=0 THEN CLS:PRINT@224,"
 THERE IS NO ML PROGRAM PRESENT"
:PRINT:END
130 IF SA<=PEEK(31)*256+PEEK(32)
 THEN CLS:PRINT@96," YOUR ML PRO
GRAM CONFLICTS WITH        YOUR
BASIC PROGRAM.":PRINT"  (OCCUPIE
S USED MEMORY SPACE)":END
140 CLS:PRINT:LINEINPUT" WHAT WO
ULD YOU LIKE TO NAME THE PROGRAM
:";N$:IF LEN(N$)>8THENPRINT:PRIN
T" NAME TOO LONG...":FORX=1TO100
0:NEXTX:GOTO140
150 '---tape or disk->open file
160 CLS:PRINT@104,"(T)APE OR (D)
ISK"
170 I$=INKEY$:IFI$=""THEN170
180 IFI$="T" THEN D=-1 ELSE IF I
$="D" THEN D=1:N$=N$+".BAS" ELSE
170
190 OPEN "O",#D,N$
200 PRINT#D,"1 '****************
**********"
210 PRINT#D,"2 '*  ML PROGRAM CO
NVERTED  *"
220 PRINT#D,"3 '*     TO BASIC D
ATA      *"
230 PRINT#D,"4 '****************
**********"
240 PRINT#D,"5 '"
250 '---convert to data and save
260 L$="10 FOR X="+STR$(SA)+" TO
 "+STR$(EA):PRINT#D,L$
270 PRINT #D,"20 READ D:POKEX,D:
NEXT":L$="30 EXEC"+STR$(XA):PRIN
T#D,L$
280 L=40:H$="":L$="40 DATA ":FOR
X=SA TO EA
290 H$=H$+STR$(PEEK(X))+","
300 IF LEN(H$)>100 THEN H$=LEFT$
(H$,LEN(H$)-1):L$=L$+H$:PRINT#D,
L$:L=L+10:L$=STR$(L)+" DATA ":H$
=""
310 NEXT
320 IFH$="" THEN 330 ELSEH$=LEFT
$(H$,LEN(H$)-1):L$=L$+H$:PRINT#D
,L$
330 '---close file->end program
340 CLOSE#W
350 CLS:PRINT@97," THE MACHINE L
ANGUAGE PROGRAM     HAS BEEN CON
VERTED TO BASIC             AND
SAVED."
360 PRINT:PRINT:END
```

```
10 '*************************
20 '*       DATA ENTRY      *
30 '*    ERIC G ROBICHAUD   *
40 '*    PARAGON SOFTWARE   *
50 '* COPYRIGHT(C) JUNE 1986 *
60 '*************************
70 '
80 CLEAR500
90 V=-1:'CHANGE TO 1 FOR DISK,
        OR LEAVE FOR CASSETTE
100 '-----get valid file name---
-
110 CLS:PRINT@196:INPUT" NAME OF
 PROGRAM";N$
120 IFLEN(N$)>8THEN SOUND30,1:GO
TO110
130 FOR X=1 TO LEN(N$):IF MID$(N
$,X,1)="/" OR MID$(N$,X,1)="."TH
EN SOUND 30,1:GOTO110 ELSE NEXT
140 IF LEN(N$)<2 THEN SOUND 30,1
:GOTO110
150 SOUND125,1
160 '---starting line number---
170 CLS:PRINT@196:INPUT" WHAT LI
NE NUMBER DO YOU WANT     THE DA
TA TO START AT";A
180 SOUND 125,1
190 '---max. number of digits---

200 CLS:PRINT@196:INPUT" HOW MAN
Y DIGITS MAX. (1-4)";M
210 IF M<1 OR M>4 OR M<>INT(M) T
HEN SOUND 30,1:GOTO200
220 SOUND 125,1
230 CLS:PRINT@192," AFTER STARTI
NG, HIT <^>, THE UP ARROW, TO EN
D ENTERING DATA.    HIT THE ARRO
W AS THE FIRST      DIGIT OF THE
 DATA ENTRY."
240 FORX=1TO3000:NEXT
250 SOUND 125,1
260 '--------input data---------

270 CLS:PRINT
280 L$=STR$(A)+" DATA "
290 OPEN "O",#V,N$
300 PRINT L$;
310 FORX=1 TO M
320 I$=INKEY$:IFI$=""THEN320
330 IFI$="^" THEN410
340 PRINTI$;:L$=L$+I$
350 NEXT
360 PRINT",";:L$=L$+","
370 IF LEN(L$)>120 THEN 390
380 GOTO310
390 L$=LEFT$(L$,LEN(L$)-1):PRINT
#V,L$:A=A+1:L$=STR$(A)+" DATA ":
PRINT:PRINT:PRINTL$;:GOTO310
400 '--------close file--------
410 L$=LEFT$(L$,LEN(L$)-1)
420 PRINT#V,L$:CLOSE
430 END
```

Titles

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PEEK POKE AND EXEC
BY J.DILL

A COMPILATION OF PEEK POKE AND EXEC COMMANDS FOR THE TRS-80 COLOR COMPUTER. COMPUTER LANGUAGES ARE FULL OF CUTE LITTLE WORDS LIKE PEEK, POKE & EXEC. BUT WHAT DOES IT MEAN? THE INFORMATION HAS BEEN AROUND FOR AS LONG AS THERE HAVE BEEN COMPUTERS, BUT THE KNOWLEDGE CONCERNING THESE THREE LITTLE WORDS HAS, IN THE PAST, BEEN THE 'PROPERTY' OF A FEW INSIDERS, WHO JEALOUSLY GUARDED THEIR SECRETS AND HAVE CONSIDERED THIS KNOWLEDGE TO BE VALUABLE AND CONFIDENTIAL. NOW, HOWEVER, THE TRUTH CAN BE TOLD, BECAUSE THE INFORMATION HAS BEEN FERRITED OUT OF THE DARK CORNERS AND CREVISES OF COMPUTER TALK AND IS HERE PRESENTED TO YOU IN A MANNER THAT EVEN I CAN UNDERSTAND. THIS INFORMATION HAS COME FROM MANY DIFFERENT SOURCES: MANUALS, PROGRAMS, MAGAZINES, FRIENDS, AND EXPERIMENTATION. ALL EFFORT HAS BEEN MADE TO PRESENT ONLY INFORMATION THAT HAS BEEN TRIED AND PROVEN. NONE OF THE COMMANDS HEREIN CONTAINED HAS CAUSED ANY HARM TO ANY COMPUTER SO FAR USED, BUT THE AUTHOR TAKES NO RESPONSIBILITY FOR MISUSE OF THE INFORMATION TO EITHER HARDWARE OR SOFTWARE:

PEEK, POKES AND EXECS WILL BE LISTED IN THAT ORDER, ONE TO A SCREEN, AND WILL GIVE THE FOLLOWING INFORMATION: THE COMMAND, THE RESULTS (WHAT IS SUPPOSED TO HAPPEN) AND QUALIFYING REMARKS THAT MIGHT APPLY. SO ENJOY YOURSELF, AND LEARN MORE ABOUT THAT MIGHTY BEAST, THE TRS-80C!

FIRST THE PEEKS

PEEK(182) PRESENT PMODE NUMBER
PEEK(275) TIMER VALUE
PEEK(135) ASCII CODE OF LAST KEY PRESSED IN PROGRAM
CHR$(PEEK(55))+CHR$(PEEK(56)) LAST VARIABLE USED IN PROGRAM
PEEK(487)*256+PEEK(488) START ADDRESS OF A ML PROGRAM
PEEK(126)*256+PEEK(127)-1 END ADDRESS OF A ML PROGRAM
PEEK(157)*256+PEEK(158) EXEC ADDRESS OF A ML PROGRAM
PEEK(25)*256+PEEK(26) START ADDRESS OF A BASIC PROGRAM
PEEK(31)*256+PEEK(32) END ADDRESS OF A BASIC PROGRAM
PEEK(116)*256+PEEK(117) MAXIMUM MEMORY IN SYSTEM
PEEK(39)*256+PEEK(40) SHOWS LOCATION OF PROTECTED MEMORY
PEEK(35313) AN EVEN NUMBER IN VERSION 1.0
PEEK(35314) AN EVEN NUMBER IN VERSION 1.1
PEEK(235) DISK DRIVE NUMBER
PEEK(236) TRACK NUMBER
PEEK(237) PRESENT SECTOR NUMBER
PEEK(240) DISK I/O ERROR CODES
PEEK(274)*256+PEEK(275) TIMER VALUE
A$='':FOR I=474 TO 481:A$=A$+CHR$ (PEEK(I)) :NEXT I:PRINTA$ = CASSETTE FILENAME LAST LOADED- EACH FILENAME CHARACTER IS STORED IN LOCATIONS 474-481
PEEK(485)*256+PEEK(486) EXEC ADDRESS OF CASSETTE LOADED ML PROGRAM
PEEK(104)*256+PEEK(105) CURRENT STATEMENT NUMBER
PEEK(49)*256+PEEK(50) CURRENT DATA LINE NUMBER
PEEK(222)+1 CURRENT OCTAVE
PEEK(225) CURRENT NOTE LENGTH
PEEK(226) CURRENT TEMPO
PEEK(106) CURRENT COMMA COLUMN WIDTH- CAN ONLY BE USED WITH ML CODE A$='': FOR I=446 TO 473:A$=A$+CHR$(PEEK(I)):NEXT I:PRINT A$ FILENAME REQUESTED
PEEK(188) A '14' IF DISK SYSTEM ELSE A '6'
PEEK(193) AN '8' WITH COLORSET 1 AND AN '0' WITH COLOR SET 0
PEEK(186)*256+PEEK(187) START OF CURRENT HI-RES SCREEN
PEEK(207)*256+PEEK(208) CIRCLE RADIUS IN PMODE 4
PEEK(232) DRAW ANGLE (0-3)
PEEK(233) DRAW SCALE NUMBER (1-62)
PEEK(41)*246+PEEK(42) THE STATEMENT NUMBER AT WHICH CONTINUATION IS TO BEGIN AFTER BREAK
PEEK(65280) READS FIRE BUTTON ON JOYSTICK
PEEK(65354) DISK SECTOR NUMBER
PEEK(65353) CONTAINS DISK TRACK NUMBER
PEEK(65352) DISK STATUS CONTAINS A '32' IF AN ?IO ERROR HAS OCCURED

NOW THE POKES
POKE383,158 DISABLES LIST COMMAND A LIST COMMAND WILL LIST ONLY GARBAGE
POKE 383,0 ENABLES LIST COMMAND AFTER POKE 383,158
POKE 175,79 TURNS ON TRACE FLAG SAME AS 'TRON' COMMAND
POKE 175,0 TURNS OFF TRACE FLAG. SAME AS 'TROFF' COMMAND
POKE 148,0 STOPS CURSOR FROM FLASHING CURSOR RESUMES FLASHING AFTER 3 secs.
POKE 282,0 TURNS ON LOWERCASE FLAG
POKE 282,255 TURNS OFF LOWERCASE FLAG
POKE 65495,0 SPEED UP COMMAND PROGRAMS WILL RUN AT 1.7 TIMES NORMAL RATE.
WARNING: THIS FASTER SPEED CAN CAUSE CHIPS TO OVERHEAT.

POKE 65494,0 CAUSES COMPUTER TO RUN AT NORMAL SPEED AFTER USING THE 65495,0 HIGH SPEED POKE

POKE 113,0 COMPUTER WILL COLDSTART WHEN RESET BUTTON IS PUSHED CAN BE PLACED IN A PROGRAM TO CAUSE A COLDSTART

POKE 359,60 SLOWS CHARACTER PRINTING RATE- DOES NOT WORK WITH DISK

POKE 359,60:SCREENO,1 GIVES AN ORANGE SCREEN WITHOUT SWITCHING BACK TO TEXT

POKE 359,0 RETURNS CHARACTER PRINTING RATE TO NORMAL

POKE 111,254:DIR PRINTS DISK DIRECTORY ON YOUR PRINTER

POKE 65314,54 DISABLES ROMPAK AUTOSTART FEATURE

POKE 65315,54 (INSERT ROMPAK) POKE 65495,0: EXEC 49512 INCREASES SPEED- DANGER- PLUGGING IN ROMPAKS WITH POWER ON COULD DAMAGE COMPUTER

POKE 65497,0 HI SPEED POKE TRIPLES EXECUTION OF ACTION BUT CAUSES LOSS OF SCREEN

POKE 65496,0 RETURNS COMPUTER TO NORMAL AFTER POKE65497,0

POKE 383,158 DISABLES 'DIR' COMMAND IN DISK TYPING 'DIR' WILL PRODUCE GARBAGE

POKE 135,0 RESETS INKEY$ VALUE TO NULL SAME AS 'INKEY$=""'

POKE 25,PEEK(188):NEW PCLEAR 0 FOR DISKTYPING 'NEW' MAY GIVE A ?SN ERROR, BUT A PCLEAR 0 WILL BE EFFECTED

POKE 65313,4 TURNS ON CASSETTE MOTOR

POKE 65313,52 TURNS OFF CASSETTE MOTOR

POKE25,14: POKE26,0:NEW PCLEAR 0 FOR DISK

POKE &H180,PEEK(114): POKE &H181,PEEK(115) DISABLES DIR AND LLIST COMMANDS WORKS ONLY WITH A DISK

POKE 25,6:NEW PCLEAR 0 FOR CASSETTE SYSTEMS

POKE25,PEEK(27):POKE26,PEEK(28)-2 (LOAD PROGRAM TO BE MERGED) POKE25,30:POKE 26,1 MERGES TWO PROGRAMS- DOES NOT WORK WITH DISK. WORKS ONLY IN DEFAULT PCLEAR 4

POKE 25,6:POKE27,6: POKE29,6:POKE31,6 PCLEAR 0 FOR DISK

POKE 111,0:DIR PRINTS DISK DIRECTORY ON SCREEN

POKE 359,255 DISABLES ALL KEYS. ANY CHARACTERS ENTERED FROM KEYBOARD WILL BE EXECUTED BUT NOT SHOWN ON SCREEN (SUCH AS A SOUND COMMAND) ALSO DISABLES 'DIR' AND 'LIST' COMMANDS

POKE 359,57 REVERTS YOU TO GRAPHICS SCREEN OR SCREEN 0,1 WITHOUT ALTERNATING BACK TO TEXT SCREEN

POKE 234,1 SETS DISK TO NO OPERATION CAN ONLY BE USED FROM ML CODE

POKE 235,DR SETS DRIVE NUMBER

POKE 236,TR SETS TRACK NUMBER (0-34)

POKE 237,SC SETS SECTOR NUMBER (1-18)

POKE 359,126 RECOVERS FROM POKE 359,57

POKE 239,126 REVERTS TO NORMAL AFTER POKE359, 255 IF YOU USE THIS POKE, YOU MUST BE IN POKE 359,255 MODE, AND THIS COMMAND WILL NOT APPEAR ON THE SCREEN

POKE 359,126 RETURNS SCREEN AND CHARACTER PRINTING RATE TO NORMAL AFTER POKE359, 60:SCREENO,1

POKE 25,6:NEW MAKES MAXIMUM MEMORY AVAILABLE FOR CASSETTE SYSTEMS THERE WILL BE NO GRAPHICS SCREENS AVAILABLE.

POKE 401,1:POKE403,255 SKIP ERROR ROUTINE WILL NOT SKIP ALL ERRORS, BUT WILL HANDLE ?IO ERRORS AND MANY OTHER ERRORS.

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POKE 65315,55 ENABLES ROMPAK AUTO-START AFTER A POKE 65315,54
POKE 401,X SETS SOUND PITCH
POKE 402,X SETS SOUND DURATION
POKE &HFF21,&H3C TURNS ON CASSETTE RELAY
POKE &HFF21,&H34 TURNS OFF CASSETTE RELAY
POKE&HFF21,&H3C:POKE&HFF21,&H34 MAKES COMPUTER CLICK RAPIDLY USE WITH A 'GOTO' STATEMENT TO REPEAT THE CLICKING, AND IT WILL SOUND LIKE A CRICKET.
POKE 65481,0 RETURNS TO NORMAL AFTER PAGE 0 POKE
POKE 274,X:POKE275,Y SETS USR STARTING POINT FOR COLOR BASIC SETS TIMER VALUE IN EXTENDED BASIC POKE &HABEE,&H2B: POKE &HABEF, &H2B CHANGE CURSOR PROMPT TO '++' YOU CAN USE ANY SYMBOL BY CHANGING THE VALUE OF &H2B. MUST BE IN 64K MODE
POKE (1536-3071),X POKES X CHARACTER INTO GRAPHICS PAGE 1
POKE (3072-4607),X POKES X CHARACTER INTO GRAPHICS PAGE 2
POKE (4608-6143),X POKES X CHARACTER INTO GRAPHICS PAGE 3
POKE (6144-7679),X POKES X CHARACTER INTO GRAPHICS PAGE 4
POKE (7680-9215),X POKES X CHARACTER INTO GRAPHICS PAGE 5
POKE (9216-10751),X POKES X CHARACTER INTO GRAPHICS PAGE 6
POKE (10752-12287),X POKES X CHARACTER INTO GRAPHICS PAGE 7
POKE (12288-13823),X POKES X CHARACTER INTO GRAPHICS PAGE 8

NOW THE EXEC

EXEC 44539 WAITS FOR A KEYBOARD INPUT
EXEC 41175 DISPLAYS SIGN-ON MESSAGE MAY BE USED TO DETERMINE IF YOU HAVE VERSION 1.0 OR 1.1(CB)
EXEC 40999 A COLD START
POKE113,0:EXEC 40999 WILL GIVE AN IMMEDIATE COLD START
EXEC 49152 WITH DISK, WILL GIVE THE SIGN-ON MESSAGE 49152 IS THE STARTING ADDRESS OF ROMPAKS
EXEC 43304 CLEARS SCREEN AND RETURNS CURSOR TO UPPER-LEFT OF SCREEN
EXEC 35337 RENUMBERS ANY BASIC PROGRAM IN MEMORY WITH INCREMENT OF 10
EXEC 34471 TURNS ON TRACE FLAGSAME AS 'TRON' COMMAND
EXEC 34472 TURNS OFF TRACE FLAG SAME AS 'TROFF'
EXEC 43350 GENERATES A SOUND DETERMINED BY PITCH AND DURATION PITCH AND DURATION ARE SET BY POKES 401 & 402
EXEC 42954 TURNS ON CASSETTE MOTOR
EXEC 42060 SAVES A BASIC PROGRAM THAT IS PRESENTLY IN MEMROY TO CASSETTE
EXEC 42136 LOADS A BASIC PROGRAM FROM CASSETTE
EXEC 41872 LINE INPUT DATA ENTERED IS NOT STORED IN ANY STRING VARIABLE
EXEC 44313 ERASES ANY BASIC PROGRAM IN MEMORY
EXEC 41393 DISPLAYS CURSOR AND WAITS FOR AN INPUT CHARACTER TO PUT IN REGISTER A.

M L T T D

Transfer machine language programs from tape to disk automatically. Just follow instructions in the program.

```
10 CLS
20 PRINT"LOAD TAPE WITH ML PROGR
AM AND   PUSH PLAY AND HAVE DISK
 READY   AND PRESS ENTER"
30 INPUT"";A
40 CLS
50 PRINT"LOADING TAPE FILE..."
60 CLOADM
70 PRINT:PRINT"FILENAME: ";
80 FORI=474TO481:F$=F$+CHR$(PEEK
(I)):NEXTI:PRINTF$
90 PRINT:PRINT"START ADDRESS=";
100 ST=(PEEK(487)*256)+PEEK(488)

110 PRINTST:PRINT"END ADDRESS=";

120 EN=(PEEK(126)*256)+PEEK(127)

130 PRINTEN:PRINT"XFER ADDRESS="
;
140 XF=(PEEK(157)*256)+PEEK(158)

150 PRINTXF:PRINT:PRINT"SAVING T
O DISK..."
160 F$=F$+".BIN"
170 SAVEMF$,ST,EN,XF
180 RUN
```

R P M

Check your disk drives for correct speed. You will need a disk in the drive you wish to check, however it will not erase it when it checks the speed.

JU4[

U6R3[

```
10 RESTORE:AD=&HE00:FORI=0 TO 87
:READ A:POKE AD+I,A:NEXTI
20 FOR I=1 TO 1000:NEXTI
30 AT=10
40 DEF USR1=&HE00
50 AV=0:LW=900:HI=0
60 GOSUB 310
70 POKE &HFF40,D
80 A=PEEK(&HFF03):A= A AND &HFC:
POKE &HFF03,A
90 FOR I=1 TO 900:NEXTI
100 FOR J=1 TO AT
110 Y=USR1(0)
120 H=PEEK(&HF00)*256
130 L=PEEK(&HF01)
140 TC=((H+L)*18)+(8*&H300)+2+3+
5
150 TT=TC/894886.25
160 SP=60/TT
170 PRINT " RPM = ";SP
180 AV=AV+SP
190 IF SP<LW THEN LW=SP
200 IF SP>HI THEN HI=SP
210 FOR I=1 TO 400:NEXTI
220 NEXTJ
230 PRINT "AVERAGE = ";AV/AT
240 PRINT "    LOW = ";LW
250 PRINT "   HIGH = ";HI
260 A=PEEK(&HFF03):A=A OR &H01:P
OKE &HFF03,A
270 POKE &HFF40,0
280 PRINT "HIT ANY KEY TO CONTIN
UE"
290 A$=INKEY$:IF A$="" THEN 290
300 GOTO 50
310 CLS
320 PRINT:PRINT "      DISK TIMI
NG PROGRAM "
330 PRINT:PRINT "IF YOU START TH
IS TEST WITHOUT"
340 PRINT "A DISK IN THE DRIVE T
HE COCO"
350 PRINT "WILL 'HANG UP'.  THE
ONLY WAY"
360 PRINT "TO RECOVER IS TO PUSH
 THE RESET"
370 PRINT "BUTTON."
380 PRINT:PRINT
390 INPUT "DRIVE NUMBER (0-2)";D

400 IF D>2 THEN 310
410 IF D=0 THEN D=&H79:RETURN
420 IF D=1 THEN D=&H7A:RETURN
430 IF D=2 THEN D=&H7C:RETURN
440 GOTO 310
450 DATA  134, 208, 183, 255, 72
, 182, 255, 72, 132, 2, 38
460 DATA  244, 182, 255, 72, 132
, 2, 39, 249, 142, 3, 0
470 DATA  48, 31, 38, 252, 134,
208, 142, 0, 0, 183, 255
480 DATA  72, 182, 255, 72, 132,
 2, 38, 4, 48, 1, 32
490 DATA  245, 191, 15, 0, 183,
15, 2, 57, 255, 100, 2
500 DATA  57, 255, 100, 2, 0, 57
, 255, 100, 251, 0, 109
510 DATA  255, 100, 255, 101, 25
5, 0, 100, 255, 101, 155, 8
520 DATA  0, 155, 8, 155, 8, 155
, 0, 8, 155, 0, 155
```


DEALERS

Dealers may submit programs or hardware for reviewd. Please send any material with all documentation supporting it.
Send to: P D SOFTWARE P O BOX 13256 HOUSTON, TX 77219

BANKER 256K RAM EXPANSION -- INITIAL NOTES

The important stuff:

I bought the assembled and tested version of the Banker, as described in the Sept. 85 issue of "HOT CoCo," and installed it in my 64K "E" board CoCo. It works as advertised (once I got it working -- see below). It comes with RAMdisk software that gives you a single-sided 35 or 40 track RAMdrive, which can be drive #0, 1,2, or 3. If the RAMdrive number duplicates a real drive number, the RAMdisk can be initialized from the real drive, and then the real drive is out of the system. There is also a full-disk backup (disk=>RAM=> other disks), memory test, a graphics utility (sets up 134 pages of graphics memory!), an OS9 boot patch (I don't have OS9, can't tell you anything about it), and demo programs. The different utilities can't be used at the same time. The disk is NOT copy-protected. J&R say they will provide most future software upgrades for free (i.e., a nominal handling charge).

The Banker and software are described as compatible with RSDOS, JDOS, ADOS, etc. I have JDOS 1.1 and it works fine. The RAMdisk also works with ADOS in RAM (it uses adresses $FD00 to $FEFF in high memory, so should be compatible with anything that doesn't conflict with these addresses), and with Platinum Software's 64K Worksaver. You should load the alternate DOS or other program into high memory first, then LOADM/EXEC the RAMdisk program so it will patch in correctly. Unfortunately, this means that programs like VIP Writer, which don't allow you to run other programs once they're running, can't use the RAMdisk. Also, the addresses conflict with my PBASIC program. If people express interest, I'll come up with a compatible PBASIC.

The gory details:

Installation is easy enough, but if you have no experience in plugging chips into and out of sockets, I would get a 16-pin socket and any 16-pin chip from Radio Shack, fasten the socket down, and practice first.

J&R do not provide the switch to allow full 64K emulation (some programs -- for example, MIKEYTERM and VIP Terminal -- won't work in 256K mode). Also, if you have a CoCo 1, you need a 40-pin socket to use as a spacer, which is not provided.

The circuit board I got has a jumper and a resistor tacked on to the bottom, par for the course for early version boards. The documentation shows some of the changes in a crude freehand drawing, but it is inaccurate and misleading (it shows the 74LS133 as an 18-pin chip, when it's a 16-pinner). There is no overall circuit diagram. The quality of construction was not up to NASA standards, but adequate. Testing and quality control, however...

My assembled and "tested" board came with a circuit board trace cut. This made the Banker non-functional, and gave me some hard-to-diagnose symptoms. When I finally found it (using a ten-power magnifying glass) and soldered a wire across the cut, it worked fine. There was no way this could have gotten past any test -- in fact, the memory test that came on the disk caught it.

Just to show there are no hard feelings, and that I feel the Banker is a worthwhile addition to the CoCo's repertoire, I include the following information:

J&R Electronics
P.O.Box 2572
Columbia, MD 21045

Software only -- $19.95
Bare PC board -- $29.95
Board and parts, less RAM chips -- $59.95
Assembled and tested (?), less RAM chips -- $69.95
Assembled and tested with RAM -- $99.95

Specify CoCo 1 or CoCo 2. Add $3.00 shipping and handling in the U.S., $7.00 foreign. Documentation and software (specify tape or disk) included. Unless you have a lot of the chips already on hand, the $99.95 model is the way to go; you'll have a hard time beating the cost by much. (Note: I have no connection with J&R Electronics.)

Robert L. Hawkins
70345,425

(Note added in proof: Your CoCo must have eight RAM sockets to install the Banker. The later CoCo 2's have only two.)

A L P H A

Alphabetize a list and print it to the screen or printer.

```
10 REM ALPHABETIZING PROGRAM FOR
 DISPLAY OR PRINTER!
20 DIM N$(100), AN$(100):CLEAR50
00
30 CLS: PRINT""
50 REM TO INPUT NAMES
60 PRINT"HOW MANY NAMES TO BE
        ALPHAABETIZED? ^2 50 NA
MES-";:INPUTX
65 FOR L=1TOX
70 INPUT "A NAME-->";N$(L)
80 NEXTL
90 SOUND 100,2
100 REM TO TEST & COMPARE
110 A=1
120 FOR P=1TOX
130 FOR L=1TOX
140 IF N$(L)<N$(A) THEN A=L
150 NEXTL
160 AN$(P)=N$(A)
170 N$(A)="ZZZZ"
180 NEXTP
200 CLS: PRINT "IF YOU WANT A PR
INTED COPY ON   THE PRINTER, TYP
E IN (PR)INTER!": INPUT A$
210 CLS:PRINT
220 PRINT"THE NAMES IN ALPHABETI
CAL ORDER ARE:"
240 FOR L=1TOX
250 PRINTL;"  ";AN$(L)
255 IF A$="PR" THEN 257 ELSE 260

257 PRINT#-2,AN$(L)
260 NEXTL
270 END
```

PRETTY PROGRAM LISTER

The program you wish to list should be save onto tape in ASCII format befor running this program.

```
10 'PRETTY LISTER PROGRAM
20 '    BY GLEN DEAS
30 '
40 ' TRS-80 COLOR COMPUTER
50 '
60 'THE PROGRAM YOU WISH TO
70 'LIST SHOULD BE SAVED ONTO
80 'TAPE IN THE ASCII FORMAT
90 'BEFORE RUNNING THIS PROGRAM.

100 '
110 '
120 CLEAR 500
130 CLS
140 PRINT:PRINT TAB(10)"PRETTY L
ISTER":PRINT
150 PRINT"IS YOUR PROGRAM SAVED"

160 PRINT"     IN ASCII FORMAT
?";
170 A$=INKEY$:IF A$="" THEN 170
180 PRINT
190 IF A$="N" THEN PRINT:PRINT"Y
OU MUST LOAD YOUR PROGRAM, SAVE
IT ON TAPE IN ASCII FORMAT, AND
RELOAD THIS PROGRAM": PRINT:PRIN
T STRING$(32,"."):PRINT:END
200 PRINT:PRINT"OUTPUT TO SCREEN
 OR PRINTER ?";
210 O$=INKEY$:IF O$="" THEN 210
220 IF LEFT$(O$,1)="P" THEN DV=-
2 ELSE DV=0
230 CLS:PRINT:INPUT"FILENAME";N$

240 IF N$="" THEN 230
250 PRINT:PRINT:PRINT#DV,N$:PRIN
T#DV," ":PRINT#DV," "
260 OPEN"I",-1,N$
270 IF EOF (-1) THEN 370
280 INPUT#-1,L$
290 L = LEN(L$)
300 FOR I=1 TO L
310 C$ = MID$(L$,I,1)
320 IF C$ = ":" THEN IF MID$(L$,
I+1,1)<>CHR$(34) THEN PRINT#DV,"
 ":PRINT#DV,TAB(6);
330 PRINT#DV,C$;
340 NEXT I
350 PRINT#DV," "
360 GO TO 270
370 CLOSE #-1
380 PRINT
390 PRINT"ANY OTHERS";:INPUTA$
400 IF LEFT$(A$,1) = "Y" THEN 15
0 ELSE END
```

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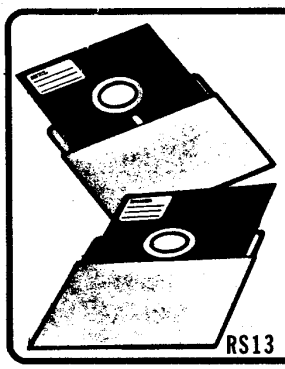

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THE ASSEMBLY LINE
PART 4.
INDEXING AND TABLES
BY JOHN GALUS

In this article or the series we will study what is called "Index Addressing" and see how it is used in tables and arrays. In a earlier part of this series you may remember that we used Index Addressing in a routine to clear the text screen. We can use three 16 bit registers the X,Y and U as index registers. We use these registers to point to a base address and a offset or displaced is added to this base address which is called the "effective address". This displacement can be either positive or negative.

EX.

```
LDA -3,X
LDA -2,X
LDA -1,X
LDA  0,X
LDA +1,X
LDA +2,X
LDA +3,X
```

Using these registers as pointers to a memory address we can use then to access and manipulate data such as in a table or array. Tables and arrays are basic data structures used as a simple way to solve a problem or organize data. We are familiar with arrays from Basic were the DIM READ and DATA statements are used to define and access data held in a table. Let's take a simple Basic routine involving a table and code it in Assembler.

```
EX.  10 DIM A(10)
     20 X=1
     30 IF X>10 THEN STOP
     40 A(X)=0
     50 X=X+1
     60 GOTO 30
```

What this simple Basic program does is store a zero in each element of the array A. This is how we could do the same thing in Assembler.

```
ARRAY RMB 10
START LDA #1
      LDX #ARRAY
LOOP  CLR ,X+
      INCA
      CMPA #10
      BNE LOOP
      SWI
      END
```

This routine performs the same operation that the Basic program did. Here is how it works. On the first line of the Assembly language program we used a new command the RMB (Reserve Memory Byte) which is a data directive that tells the Assembler to reserve a memory area, in this example of ten bytes. Next we load the A register with one and then load the X index register with the number of the address were the label ARRAY is located. Remember that the # symbol signals immediate addressing which means to load the register with the actual value which follows the # symbol. On the next line labeled LOOP we use the CLR or clear to zero commamd which stores a zero at the address pointed to by the X index register. Also notice the + symbol following the ,X in this line. This "+" symbol signals a special very useful index addressing mode known as Auto-incrementing. Using this mode the X register will be automatically incremented by one after this instruction has been executed. In our example the X index register was increased by one. It is also possible to auto-increment a index register by two. this is signified by two "+" symbols (ex. CLR ,X++). We next increment the A register an then compare the value in this register to 10. If it is not equal to 10 we branch back to loop and clear another memory spot pointed to by the X register.

(R) denotes register
(M) denotes menory address
(AR) denotes accumulators A+B
RMB: RESERVE MEMORY BYTE
CLR:(AR) or (M) CLEAR TO ZERO
Can only be used with the A and B registers or memory location.

We have seen how to use the auto-increment feature we can also auto-decrement a index register by one or two bytes. Take note that where in the auto-increment mode the index register was increased "AFTER" the execution of the instruction. Using the auto-decrement mode the index register is now decremented "BEFORE" the command is executed.

EX:

```
LDA ,X+  ;INC X ONE AFTER
         ;LOADING A REG
LDA ,X++ ;INC X TWO AFTER
LDA ,-X  ;DEC X ONE BEFORE
         ;LOADING A REG
LDA ,--X ;DEC X TWO BEFORE
```

Now we will see how to "access" a data element which is in a table. First we must create a table of data. This table can consist of numerical or text data. In our example we will use the letters A to E placed in a list using the FCC directive. We will write a table lookup routine to access the value we wish to find.

```
START LDX #TABLE
      LDB  LOOK
      ABX
      LDA ,X
      STA NUM
      SWI
LOOK  FCB 2
NUM   FCB 0
TABLE FCC /A/
      FCC /B/
      FCC /C/
      FCC /D/
      FCC /E/
      END
```

In the above the X register is pointed to our table and the number which is contained in the memory address which is labeled LOOK are added together ABX. Then the B register is loaded with the entry which X now points to as indexed by the "key" number in LOOK and it is stored in the memory located labeled NUM. In the above the letter in NUM would be C which is the corresponding entry in our table.

ABX: ADD B REGISTER TO X INDEX
REGEISTER. PLACE RESULT IN X.

FCC: FORM CONSTANT CHARACTER

EX. NAME FCC /CO CO ADS/

In the last example our table consisted of entries on only one byte (letter). We can also access tables which have multple byte entries. Here's a short example.

```
START LDX #TABLE
      LDB KEY
      ASLB
      LDY B,X
      SWI
KEY   FCB 2
TABLE FDB $0000
      FDB $0002
      FDB $0004
      FDB $0006
      END
```

As you can see this is handled in a somewhat different way. The first two lines are the same as the last example but, since the table entries are now two bytes long as before they were one we use the ASLB (Arithmetic Shift Left) instruction. Which in effect doubles the value in the B register . The correct two byte table entry is found by adding the value in the now doubled B register to the X register. This value is then loaded into the 16 bit Y register. In this case the Y register would be loaded with $0004.

ASL (AR) or (M)

Arithmetic Shift Left

We may also need to access an array of more then one dimension. In Basic we set up a two dimensional 5 by 5 array as follows.

DIM T(5,5)

In Assembler we use the multipy instruction to enable us to access arrays of more then one dimension. The formula is:

DIM T(X,Y)

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```
BASE ADR OF THE ARRAY + NUMBER OF COLUMNS (Y)
*  ROW + COLUMN WE NEED TO LOCATE
```

For a 5 by 5 two dimension array the routine would be as follows.

```
START LDX #ARRAY ;BASE ADDRESS
      LDB #5
      LDA ROW  ;ROW NUMBER
      MUL
      ADDD COL ;ADD COL NUMBER
      LEAX D,X ;ADD OFF TO BASE
      SWI
ROW   FCB 0
COL   FCB 0
ARRAY RMB 25   ;SAVE 5*5 BYTES
```

As you see we need to reserve 25 bytes (5*5) for our array. The RMB instruction does not clear out or place data in the memory area we wish to reserve and this array of course would contain numeric or text data we wished to work with.

In the next part we will examine the Rotate,Shift and other instruction. Send questions with a Self Addressed Stamped Envelope (S.A.S.E) to.

JOHN GALUS
55 WILKESBARRE AVENUE
LACKAWANNA, NEW YORK 14218

P I E C H A R T

Now you can create a pie chart on your COCO. These charts, one created, are displayed and even printed if desired. All the instructions are in this program.

This program is donated by T&D Software.. See their ad on page 30.

```
1 REM COPYRIGHT (C) T&D SOFTWARE
 1983
2 PCLEAR4
3 CLEAR500,16099
4 DIM PC(9),N$(9)
5 CLS:PRINTTAB(11)"PIE CHARTS":P
RINT
6 PRINT"   NOW YOU CAN CREATE PI
E CHARTSON YOUR COLOR COMPUTER.
THESE   CHARTS, ONCE CREATED, AR
E DIS-  PLAYED AND EVEN PRINTED
IF DE-  SIRED."
7 PRINT"   TO CREATE THE CHART,
YOU WILLNEED TO ENTER THE DATA R
EQUESTEDBY THE PROGRAM."
8 GOSUB88
9 CLS:PRINT"   WHEN THE PIE CHAR
T IS BEING  DISPLAYED, PRESSING
'P' WILL    CAUSE THE CHART TO B
E PRINTED   ON YOUR PRINTER. PRE
SSING THE   SPACE BAR WILL CONTI
NUE THE     MAIN PROGRAM."
10 PRINT"   THE ROUTINE WHICH DR
AWS AND  OPTIONALLY PRINTS THE P
IE CHART IS FULLY DOCUMENTED INS
IDE THE  PROGRAM IF YOU WISH TO
USE THIS ROUTINE IN YOUR OWN PRO
GRAMS."
11 FORI=16100 TO 16333:READD:POK
EI,D:NEXT:PR=16100
12 GOSUB88
13 CLS:INPUT"NUMBER OF SLICES (1
-9)";NP:IFNP<1 OR NP>9 OR NP<>IN
T(NP) THEN13
14 FORI=1 TO 9:PC(I)=0:NEXT
15 FORI=1 TO NP
16 CLS:PRINT"ENTER PERCENTAGE #"
;I:INPUT"(DECIMAL FORM) ";PC(I)
17 IF PC(I)>1 OR PC(I)<.01 THEN1
6
18 NEXT
19 T=0:FORI=1 TO NP:T=T+PC(I):NE
XT:IF INT(T)<>1 THEN PRINT"THE S
UM OF ALL PERCENTAGES MUST EQUAL
 100 %.":FORTD=1TO3000:NEXT:GOTO
14
20 CLS:PRINT"ENTER GRAPH NAME";
21 LINEINPUT" > "; GN$
22 IF GN$="" THEN20
23 FORI=1 TO NP
24 CLS:PRINT"ENTER SLICE #";I;"N
AME"
25 LINEINPUT N$(I):IFN$(I)="" TH
EN24
26 NEXT
27 GOTO34
28 CLS:PRINT"ANOTHER GRAPH ?  (Y
/N)"
29 K$=INKEY$
30 IFK$="Y" THEN 13
31 IF K$<>"N" THEN29
32 END
33 REM ********************
34 REM*    PIE  CHART    *
35 REM*     GRAPHICS     *
36 REM*     ROUTINE      *
37 REM********************
38 REM*                  *
39 REM*    VARIABLES     *
40 REM*    ---------     *
41 REM*                  *
42 REM* NP = NUMBER OF   *
43 REM*      PIE SLICES  *
44 REM* PC() = ARRAY OF  *
```

```
45 REM*          PERCENT- *
46 REM*          AGES     *
47 REM*  N$() = NAMES OF*
48 REM*           THE IN- *
49 REM*           DIVIDUAL*
50 REM*           SLICES  *
51 REM*  GN$ = GRAPH     *
52 REM*          NAME     *
53 REM*********************
54 REM*  ALL VALUES      *
55 REM* SHOULD BE ERROR-*
56 REM* CHECKED BEFORE  *
57 REM* SENT TO THIS     *
58 REM* ROUTINE.         *
59 REM*********************
60 PMODE4:SCREEN1,1
61 PCLS
62 H=128:K=84
63 SP=0:LINE(H,K)-(H+R,K),PSET:F
ORI=1 TO NP
64 CP=SP+PC(I)
65 R=80
66 CIRCLE(H,K),R,1,1,SP,CP
67 LINE(PEEK(196),PEEK(198))-(H,
K),PSET:DX=ABS((CP-SP)/3):CIRCLE
(H,K),60,0,1,SP+DX,(SP+CP)/2:PX=
PEEK(196):PY=PEEK(198):SP=CP
68 DRAW"BM=PX;,=PY;":ON I GOTO 6
9,70,71,72,73,74,75,76,77
```


Canyon County Devices
P.O. Box C
Saugus, Ca. 91350

24 Hrs.
(805)253-0221

Catalog#	Discription	Per Ribbon	Each in Box of 6	$50-$150 per order
101-1410	Centronics HR 15/25 (nylon)	$ 6.15	$ 5.60	$ 5.45
101-1505	C.Itoh Prowriter I & II	$ 5.06	$ 4.63	$ 4.47
101-1940	DEC LA 30/36/40 (nylon)	$ 4.75	$ 4.37	$ 4.24
101-2045	Diablo Hytype II (Multist.)	$ 4.75	$ 4.37	$ 4.24
101-2240	Epson LX80 Spectrum (nylon)	$ 5.95	$ 5.44	$ 5.27
101-2250	Epson MX/FX/RX 70/80(nylon)	$ 4.95	$ 4.58	$ 4.40
101-2270	Epson MX/FX/RX 100 (nylon)	$ 6.85	$ 6.27	$ 6.09
101-4315	NEC 5500/7700 Spinwriter	$ 7.40	$ 6.77	$ 6.56
101-4505	Okidata ML80/82/83/92/93	$ 2.15	$ 1.98	$ 1.92
101-4515	Okidata ML84 (nylon)	$ 4.85	$ 4.46	$ 4.32
101-4525	Okidata Microline 182/192	$ 8.90	$ 8.17	$ 7.92
101-4970	Radio Shack TRS-80 LP VII	$ 7.40	$ 6.77	$ 6.56

Ribbons for most printers available. If yours isn't listed, send PRINTER DISCRIPTION for CATALOG & QUOTE.
RED,YELLOW,GREEN,BLUE,and BROWN COLORS available for Imagewriter, C.Itoh, and Okidata printers. Add 70¢ per ribbon for colors.
Larger Quantity Discounts available. Write for Quote & catalog.

ALL ORDERS: Add $1.50 for shipping & handling.
C.O.D.s add $3.00 instead for COD.
Calif. orders add 6.5% Sales Tax.

5¼" DISKS

SSDD 68¢ ea.
DSDD 79¢ ea.
BULK in quantity of 100.
All disks come with jackets & tabs.

	BOX OF 10	3 BOXES OF 10	10 BOXES OF 10
SSDD	$ 7.95	$ 22.50	$ 69.50
DSDD	$ 8.95	$ 25.50	$ 81.50


```
69 DRAW"D8":GOTO78
70 DRAW"R4D4L4D4R4":GOTO78
71 DRAW"R4D4NL2D4L4":GOTO78
72 DRAW"D4R4NU2D4":GOTO78
73 DRAW"NR4D4R4D4L4":GOTO78
74 DRAW"NR4D8R4U4L4":GOTO78
75 DRAW"R4D8":GOTO78
76 DRAW"ND8R4D4NL4D4L4":GOTO78
77 DRAW"ND4R4D4NL4D4L4"
78 NEXT
79 K$=INKEY$:IFK$="" THEN79
80 IF K$=" " THEN 28
81 IFK$<>"P" THEN79
82 PRINT#-2
83 PRINT#-2,"GRAPH: ";GN$
84 EXEC PR
85 PRINT#-2,"LEGEND: "
86 FORI=1 TO NP:PRINT#-2," ";I;"
. ";N$(I):NEXT
87 GOTO28
88 PRINT@484,"PRESS [ENTER] TO C
ONTINUE";
89 IFINKEY$<>CHR$(13) THEN89
90 RETURN
91 DATA 150,0,183,63,232,150,1,1
83,63,233,150,2,183,63,234,182,0
,182,77,38
92 DATA 14,134,56,151,0,134,16,1
51,1,134,14,151,2,32,35,129,2,38
,14,134
93 DATA 56,151,0,134,16,151,1,13
4,27,151,2,32,17,129,4,39,1,57,1
34,112
94 DATA 151,0,134,32,151,1,134,2
7,151,2,141,16,182,63,232,151,0,
182,63,233
95 DATA 151,1,182,63,234,151,2,5
7,134,254,151,111,134,18,173,159
,160,2,79,183
96 DATA 63,218,79,183,63,219,134
,128,183,63,220,134,128,183,63,2
23,134,1,183,63
97 DATA 222,79,183,63,221,182,63
,218,72,214,0,61,253,63,224,79,2
46,63,219,253
98 DATA 63,226,182,63,221,214,1,
61,243,0,186,243,63,226,243,63,2
24,31,1,166
99 DATA 132,180,63,220,77,39,9,1
82,63,223,187,63,222,183,63,223,
120,63,222,182
100 DATA 63,221,76,129,7,38,191,
182,63,223,141,33,182,63,220,70,
36,166,182,63
101 DATA 219,76,145,1,38,153,134
,13,141,15,182,63,218,76,145,2,3
8,137,134,30
102 DATA 141,3,15,111,57,52,54,1
73,159,160,2,53,54,57
```

DISK TO TAPE BACKUP

Keep a tape backup of all your disks. Very easy to use. Then when you crash your disk, just copy it back from tape. Do disk crash?????? HEHEHEHE

```
10 GOTO840
20 CLEAR1000:DIMTR(34)
30 FORER=6TO1STEP-1:READER$(ER):
NEXT:DATA LOST DATA ERROR,CRC ER
ROR,SEEK OR RECORD NOT FOUND ERR
OR,WRITE FAULT ERROR,WRITE PROTE
CT ERROR,DRIVE NOT READY ERROR
40 CLS:PRINT@67," DISK TO CASSET
TE BACKUP"
50 ' find start of graphics area

60 GR=PEEK(186)*256+PEEK(187)
70 ' dskcon parameter address
80 DS=PEEK(&HC006)*256+PEEK(&HC0
07)
90 ' dskcon address
100 EX=PEEK(&HC004)*256+PEEK(&HC
005)
110 PRINT:PRINT"   sAVE DISK TO
TAPE                        OR
                    rESTORE DISK
FROM TAPE"
120 OP$=INKEY$:IFOP$=""THEN120EL
SEIFOP$<>"S"ANDOP$<>"R"THEN120
130 IFOP$="S"THENOP=2 ELSE OP=3:
GOTO310
140 ' save message
150 PRINT:PRINT"    SAVE DISK TO
 TAPE"
160 PRINT:PRINT"1> PLACE DISK TO
 SAVE IN DRIVE 02> PLACE TAPE IN
 CASSETTE       3> PRESS RECORD/
PLAY"
170 PRINT:INPUT"PRESS ENTER WHEN
 READY";I$
180 ' read file allocation table

190 DSKI$0,17,2,A$,B$
200 'which tracks are used?
210 A$=MID$(A$,1,68)
220 FORT=0TO33:IFMID$(A$,T+1,1)=
CHR$(255)THENTR(INT(T/2))=TR(INT
(T/2))+1
230 NEXT
240 FORT=34TO67:IFMID$(A$,T+1,1)
=CHR$(255)THENTR(1+INT(T/2))=TR(
1+INT(T/2))+1
250 NEXT
260 ' save tracks saved to tape
270 INPUT"NAME OF THIS DISK";F$:
IFF$=""THENF$="NO NAME"
280 OPEN"O",#-1,F$
290 PRINT#-1,F$:FORT=0TO34:PRINT
#-1,TR(T):NEXT:CLOSE
300 GOTO370
310 ' restore message
320 PRINT:PRINT"    RESTORE DISK
 FROM TAPE"
330 PRINT:PRINT"1> PLACE DISK TO
 RESTORE IN        DRIVE 0
                2> PLACE DATA TA
PE IN CASSETTE  3> PRESS PLAY"
340 PRINT:INPUT"PRESS ENTER WHEN
 READY";I$
350 OPEN"I",#-1,""
360 INPUT#-1,F$:FORT=0TO34:INPUT
#-1,TR(T):NEXT
370 ' set dskcon parameters
380 'set read/write
390 POKEDS,OP
400 'set drive #0
410 POKEDS+1,0
420 CLS:IFOP=2THENPRINT@40,"SAVI
NG "F$ ELSEPRINT@40,"RESTORING "
F$
430 'read tracks and
     skip ones not used
440 FORTR=0TO34
450 PRINT@170,"TRACK "TR
460 'skip is not used
470 IFTR(TR)=2THEN690
480 IFOP=3 THEN CLOADM
490 'track number
500 POKEDS+2,TR
510 'do sectors
520 FORSC=1TO18
530 PRINT@202,"SECTOR"SC
540 'sector #
550 POKEDS+3,SC
560 'address to store data
570 BP=GR+(SC-1)*256
580 'address to dskcon
590 POKEDS+4,INT(BP/256)
600 POKEDS+5,BP-INT(BP/256)*256
610 'call dskcon
620 EXEC EX
630 'error?
640 IFPEEK(DS+6)<>0THENGOTO700
650 NEXTSC
660 'turn off drive
670 POKE&HFF40,0
680 IFOP=2THEN:CSAVEM STR$(TR),G
R,GR+4608,380
690 NEXTTR
700 'disk error type
710 ER=PEEK(DS+6)
720 FORT=8TO1STEP-1
730 ER(T)=ER-INT(ER/2)*2
```

```
740 ER=INT(ER/2)
750 NEXTT
760 'print error message
770 PRINT@224:FORT=1TO7:IFER(T)=
1THENPRINTER$(T)
780 NEXT
790 PRINT:PRINT"  tRY AGAIN / cO
NTINUE / eND ?"
800 I$=INKEY$:IFI$=""THEN800
810 IFI$="E"ORI$="C"ORI$="T"THEN
PRINT@256,STRING$(254,32);ELSE80
0
820 IFI$="E"THENENDELSEIFI$="C"T
HEN650ELSEIFI$="T"THEN620
830 'reserve graphics area to
     use as buffer area for
     the data.
840 PMODE0:PCLEAR3:PMODE2:GOTO20
```

Cassette File Index

This program will allow you to create a directory for your program. The directory is then saved at the beginning of the tape. To later load the directory, use cloadm. The directory will then appear on the screen. All instructions are in the program.

```
5 'COPYRIGHT (C) T&D SOFTWARE 19
83
10 CLS:CLEAR2000
20 DIMF$(12)
30 PRINTTAB(6)"CASSETTE FILE IND
EX":PRINTTAB(6)STRING$(19,"-")
40 PRINT"   THIS PROGRAM WILL AL
LOW YOU  TO CREATE A DIRECTORY F
OR YOUR  PROGRAMS. THE DIRECTORY
 IS THEN SAVED AT THE BEGINNING
OF THE   TAPE. TO LATER LOAD THE
 DIRECT- ORY, USE CLOADM. THE DI
RECTORY  WILL THEN APPEAR ON THE
 SCREEN."
50 PRINT"   YOU MAY HAVE 12 FILE
S PER    DIRECTORY. THE FILENAME
S MAY BE UP TO 28 CHARACTERS LON
G TO AL- LOW OTHER INFORMATION S
UCH AS   COMMENTS, TAPE POSITION
, ETC. TOBE INCLUDED IN THE DIRE
CTORY.""
70 PRINT@484,"PRESS [ENTER] TO C
ONTINUE";
75 IFINKEY$<>CHR$(13)THEN75
77 CLS:PRINT"   A CASSETTE NAME
AND DATE OF  CREATION MAY ALSO B
E INCLUDED INTHE DIRECTORY."
78 PRINT@484,"PRESS [ENTER] TO C
ONTINUE";
79 IFINKEY$<>CHR$(13)THEN79
90 CLS
100 PRINTTAB(7)"HOW MANY FILES";
:INPUTNF:IFNF<1 OR NF>12 OR NF<>
INT(NF) THEN100
110 PRINTTAB(4)"CASSETTE NAME ?
";:LINEINPUTCN$:CN$=LEFT$(CN$,10
)
120 PRINT"CREATION DATE ? (M/D/Y
) ";:LINEINPUTCD$:CD$=LEFT$(CD$,
10)
130 FORI=1TONF
140 PRINT"ENTER FILENAME #";I;PR
INT"-> ";:LINEINPUTFS$:IFFS$=""T
HEN140
150 F$(I)=LEFT$(FS$,28)
160 NEXT
170 CLS:PRINT" READY CASSETTE -
PRESS [ENTER]"
180 IFINKEY$<>CHR$(13)THEN180
190 CLS
200 PRINT@480,"NAME:";CN$;
210 PRINT@496,"DATE:";CD$;
220 FORI=1TONF:PRINT@(I-1)*32+96
,RIGHT$(STR$(I),LEN(STR$(I))-1);
". ";F$(I);:NEXT
230 CSAVEM"TAPE DIR",1120,1535,3
3040
235 CLS:PRINTTAB(8)"DIRECTORY SA
VED."
240 END
```

RS5

INTERNATIONAL COLOR COMPUTER CLUB

The International Color Computer Club's library now has it's program library available to the public. There are 165 programs in it and are available for only $14.95 on tape or $24.95 on disks. All the programs are by club members and some are very good ones. Business, games, utilitys, adventures, educational, all types. If you are interested in joining the club, please send in your name and address and we will send you an application. Please send to:

P D Software C/O I.C.C.C PO Box 13124 Houston, Tx 77219

TANDY COLOR COMPUTER * DIRECT CONNECT MODEM PAK MODEL NO. 26-2228
PATCHES FOR VIDTEX VERSION 4.1 AT 300 BAUD ONLY

by Robert Pierce
(76257,143)

A friend of mine just today purchased one of the new direct connect modem paks. Looking at the specs in the back of the manual, the same old 6551 ACIA chip is used as in the RS-232 Pak. And, the registers are in the same "configuration", except they are moved up a couple of bytes in memory.

So, I first searched for the old addresses, using my search pgm in DL5. (if the string is not found, the program returns the start adr, not always 0!) After that, I patched the new modem paks addresses, and, found that I could run my Vidtex Version 4.1 with the modem pak! (300 baud ONLY)

The only trouble, is when I am off line, after most meta functions, you have to press the reset button on the back of your CoCo to use another one. However, once your on-line with CIS, all the functions work fine. (term ready line etc)

To patch Vidtex Ver. 4.1 for the new direct connect modem pak, do the following:

1. Cold start your CoCo. (the multi-pak is required, Vidtex uses disk, not cass)
2. Type in: CLEAR200,18430
3. Place your Vidtex VERSION 4.1 in your disk drive and LOADM "VIDTEX"
4. Type the following pokes, from basic command level:

```
POKE 24295,108:POKE 26559,108
POKE 24301,109:POKE 24309,109:POKE 26552,109
POKE 21185,110:POKE 21197,110:POKE 24160,110
POKE 21152,111:POKE 24154,111:POKE 27428,111:POKE 30886,111:POKE30889,111
```

5. After the above pokes, type:

```
SAVEM"VIDTEX.BIN",18432,31167,18432
```

You now have overwritten your old vidtex program, with one for the new modem pak!

==========

PORT LAVACA BBS
BAUD=300 W=8, STOP=1, PARITY=N
PRESS ENTER TWICE TO ACCESS
FREE BBS
512-552-6005 BBS on line 24hrs
Sat-Sun
ON LINE WEEKDAYS BY REQUEST
535 Travis, Port Lavaca, TX
77979
04/25/86 - 3 p.m.

==========

U G L Y W O R D
Word processor

A very user friendly simple word processor. You can store your data on disk or tape. Just follow the prompts on the screen and you will have no problem with this program. If you do have an article or review of a porgram you just got, you may use this word processor, save the data on disk or tape and send it in, and if it's good, we'll use it in COCO ADS. Send to:

P D Software
P O Box 13246
Houston, Tx 77219

```
0 PCLEAR1:CLEAR18000:DIM P$(750)

10 POKE 150,18
11 'CHANGE LINE 10 IF YOUR
12 'PRINTER IS NOT A DMP-105
13 'LINE 10 IS SET FOR 2400 BAUD

14 'NOW . KEITH W. SMITH
15 'THIS PROGRAM IS PUBLIC
DOMAIN
16 'IT MAY BE COPIED FREELY
17 'BUT LEAVE THE COPYRIGHT
18 'STATEMENT INTACT.KWS
20 GOSUB 60000
25 CLS:PRINT"TAPE OR DISK I/O":I
NPUT"DEFAULT IS DISK";L$:L$=LEFT
$(L$,1)
30 CLS:'START
40 B$=CHR$(128)
50 PRINT"          ugly"+B$+"wor
d"
60 PRINT"        word"+B$+"proce
ssor"
70 PRINT"(1) BEGIN LETTER"
80 PRINT"(2) ADD TO LETTER"
90 PRINT"(3) PRINT ON SCREEN"
100 IF L$="T" THEN PRINT"(4) SAV
E TO TAPE" ELSE PRINT"(4) SAVE T
O DISK"
110 IF L$="T" THEN PRINT"(5) LOA
D FORM TAPE" ELSE PRINT"(5) LOAD
 FROM DISK"
120 PRINT"(6) HARD COPY"
130 PRINT"(7) END PROGRAM"
140 IF L$="T" THEN 150 ELSEPRINT
"(8) KILL DATA FILE"
150 PRINT"(9) EDIT LETTER
160 PRINT"MAKE YOUR SELECTED FUN
CTION";
```

```
170 M$=INKEY$:M=VAL(M$)
180 IF L$="T" THEN PRINT@348,CHR
$(128) ELSEPRINT@ 380,CHR$(128)
190 IF L$="T" THEN PRINT@348,CHR
$(143) ELSE PRINT@380,CHR$(143)
200 IF M<1ORM>9THEN170
210 ON M GOSUB 230,230,320,390,4
80,600,680,690,770
220 GOTO 30
230 CLS:IF M=2 THEN POKE 282,0:G
OTO  250 ELSE PRINT@10,"BEGIN LE
TTER"
240 POKE 282,0:Y=1
250 IF M=2 THEN PRINT@8,"ADD TO
LETTER":POKE282,0: ELSE GOTO 260

260 PRINT@34,"PRESS <ENTER> WHEN
 FINISHED"
270 PRINT"SENTENCE-";Y
280 LINE INPUT P$(Y)
290 IF LEN(P$(Y))=>65 THEN PRINT
"LINE TOO LONG!":PRINT"64 CHARAC
TERS OR LESS":GOTO 270 ELSE 300
300 IF P$(Y)="" THEN POKE 282,1:
RETURN
310 Y=Y+1:GOTO 270
320 CLS:PRINT"          REVIEW LE
TTER ON SCREEN ":FOR X=1 TO Y-1
330 PRINTP$(X):
340 FOR P=0TO1400:NEXTP
370 NEXT X
380 RETURN
390 IF L$="T"THEN  GOSUB 1200:RE
TURN: ELSECLS: PRINT@11,"SAVE TO
 DISK"
400 VERIFY ON
410 PRINT@75,"FREE GRANULES";:PR
INTFREE(0)
420 PRINT@388,"NAME FOR FILE"
430 INPUT R$
440 R$=R$+"/DAT"
450 OPEN"O",#1,R$
460 FOR X=1 TO Y-1:CLS:PRINTP$(X
):WRITE#1,P$(X):NEXT X
470 CLOSE#1:RETURN
480 IF L$="T" THEN GOSUB 1300:RE
TURN: ELSE CLS:PRINT@10,"LOAD FR
OM DISK"
490 DIR
500 PRINT"LAST LOADED--"+R$
510 PRINT:PRINT"SELECT FILE":INP
UT R$
520 R$=R$+"/DAT"
530 OPEN"I",#1,R$
540 Y=1
550 IF EOF(1) THEN 590
560 INPUT#1,P$(Y)
570 CLS:PRINT Y:PRINT P$(Y):Y=Y+
1
580 GOTO 550
590 CLOSE#1:RETURN
600 CLS:PRINT@10,"PRINTER ROUTIN
E"
610 PRINT"PRESS<B> FOR BIG PRINT
":PRINT"PRESS<N> FOR NORMAL PRIN
T":PRINT"PRESS<D> FOR BOLD PRINT
"
620 Z$=INKEY$
630 IF Z$="B" THEN PRINT#-2,CHR$
(27);CHR$(14) ELSE IF Z$="N" THE
N PRINT#-2,CHR$(27);CHR$(19) ELS
E IF Z$="D" THEN PRINT#-2,CHR$(2
7);CHR$(31) ELSE GOTO 620
640 REM START PRINTER
650 FOR X=1 TO Y-1:PRINT P$(X):P
RINT#-2,"       "+P$(X):NEXT X:P
RINT#-2,CHR$(13)
660 IF Z$="B" THEN PRINT#-2,CHR$
(27);CHR$(15) ELSE IF Z$="D" THE
N PRINT#-2,CHR$(27)CHR$(32)
670 RETURN
680 POKE 113,0:EXEC 40999
690 CLS:PRINT@9,"KILL FILE(S)"
700 DIR
710 PRINT:PRINT:PRINT"WHICH FILE
 TO KILL":INPUT R$
720 R$=R$+"/DAT"
730 KILL R$
740 PRINT"ANOTHER(Y/N)"
750 K$=INKEY$
760 IF K$="" THEN 750 ELSE IF K$
="Y" THEN GOTO 690 ELSE RETURN
770 CLS:PRINT@12,"EDIT MODE"
780 PRINT"PRESS<e> FOR EDIT"
790 PRINT"PRESS <c> TO CONTINUE"

800 PRINT" PRESS <r> TO RETURN
810 POKE 282,0:K=1
830 PRINTP$(K)
840 Z$=INKEY$
850 IF Z$="e" THEN LINE INPUT P$
(K):GOTO 860 ELSE IF Z$="c" THEN
 GOTO 870 ELSEIF Z$="r" THEN 880
 ELSE 840
860 P$(Y)=P$(K)
870 K=K+1:IF K=>Y THEN GOTO 880
ELSE 830
880 POKE 282,1
881 RETURN
1000 PRINT#-2,CHR$(27)CHR$(31)
1010 RETURN
1200 CLS:PRINT@11,"SAVE TO TAPE"

1210 LINE INPUT"FILENAME FOR DAT
A";R$:IF R$="" THEN R$="UGLYDATA
"
1220 OPEN"O",#-1,R$
1230 FOR X=1 TO Y-1:CLS:PRINT P$
(X):PRINT#-1,P$(X):NEXT X
```

```
1240 CLOSE #-1:RETURN
1300 CLS:PRINT@10,"LOAD FROM TAP
E"
1310 LINEINPUT"FILENAME NEEDED";
R$:IF R$="" THEN R$="UGLYDATA"
1320 OPEN"I",#-1,R$
1330 Y=1
1340 IF EOF(-1) THEN
1350 INPUT#-1,P$(Y)
1360 CLS:PRINTY:PRINTP$(Y):Y=Y+1

1370 GOTO 1340
1380 CLOSE #-1:RETURN
2000 'THIS PROGRAM IS ON FILE
2001 'ON THE COLOR SIG IN
2002 'COMPUSERVE AND IN
2003 'THE RAINBOW COLOR SIG
2004 'IN THE DELPHI SYSTEM
60000 CLS:A$=STRING$(28,32):PRIN
T"RESTORERESTOREMOTORMOTOR^^SCRE
ENSCREENDRIVEDRIVEDSKI$DSKI$!!!R
ESTORERESTOREMOTORMOTOR^^SCREENS
CREENDRIVEDRIVEDSKI$DSKI$!!!!";
60005 FORI=1TO8:GOSUB60050:NEXT:
FORI=1TO6:GOSUB60050:NEXT
60010
  PRINT"MOTORMOTORRESTORERESTORE
!!!DSKI$DSKI$DRIVEDRIVESCREENSCR
EEN^^MOTORMOTORRESTORERESTORE!!!
DSKI$DSKI$DRIVEDRIVESCREENSCREEN
^";
60020 POKE1535,175:T$=" UGLYWORD
 VERSION 3.5 ":PRINT@112-LEN(T$)
/2,T$;:PRINT@169,"DISTRUBUTED BY
";:PRINT@196,"PERRY CO.COCO USER
S GROUP";:PRINT@263,"COPYRIGHT (
C) 1985";:PRINT@298,"KEITH W. SM
ITH";:PRINT@328,"HARDBURLY,KY.41
747";:
60025 PRINT@360,"(606) 439-4209"
;:SCREEN0,1
60030 A$="RUN!SUBELSE,NEXTEN
DFORTHENFORDIM/!9"
60040 V=VARPTR(A$):V=PEEK(V+2)*2
56+PEEK(V+3):I$=INKEY$:FORI=1TO9
00:FORJ=1TO30:NEXT:IFINKEY$=""TH
ENEXECV:NEXT:RETURNELSERETURN
60050 PRINTSTRING$(2,127+16*(9-I
))TAB(30)STRING$(2,127+16*I);:RE
TURN
```

****

W A N T E D

Your friends name and address that are COCO owners. We would like to send them a free sample of COCO ADS. Please send to-
P D SOFTWARE P.O.BOX 13124 HOUSTON,TX 77219

****

VOICE SYNTHESIZER

This program will allow you to enter voice data into the computer, and then have the computer speak.
Voice data may be entered 2 ways. Load actual voice from the cassette or load digital data from a cassette.
All instructions are in the program.

```
 10 PMODE0:PCLEAR1:CLEAR100
 20 CLS
 30 PRINT:PRINT:PRINTTAB(7)"VOICE
  SYNTHESIZER"
 40 PRINTTAB(7)"----- ----------
 "
 51 PRINT:PRINT"  DO YOU HAVE ANY
  DISK DRIVES ?":PRINTTAB(13)"(Y/
 N)";
 52 K$=INKEY$:IFK$<>"Y" AND K$<>"
 N" THEN 52
 53 IFK$="Y"THEN LL=8500
 54 IFK$="N"THEN LL=7000
 55 IF MEM>17000 THEN HL=31999 EL
 SE HL=15999
 59 PRINT:PRINTTAB(8)"INITIALIZIN
 G ..."
 60 FORI=HL+1 TO HL+98
 70 READD:POKEI,D
 80 NEXTI
 90 DEFUSR0=HL+1:DEFUSR1=HL+29
 100 LO=LL:HI=HL
 110 CLS
 115 PRINT:PRINT
 120 PRINTTAB(9)"INSTRUCTIONS"
 130 PRINT:PRINT"  THIS PROGRAM W
 ILL ALLOW YOU":PRINT"  TO ENTER
 VOICE DATA INTO THE":PRINT"  COM
 PUTER, AND THEN HAVE THE":PRINT"
   COMPUTER SPEAK."
 140 GOSUB 9000
 150 CLS
 155 PRINT:PRINT
 160 PRINT"VOICE DATA MAY BE ENTE
 RED 2 WAYS"
 170 PRINT"  1. LOAD ACTUAL VOICE
  FROM":PRINT"    CASSETTE"
 180 PRINT"  2. LOAD DIGITAL DATA
  FROM":PRINT"    CASSETTE"
 190 GOSUB9000
 200 CLS:PRINT:PRINT:PRINT" 1. LO
 AD ACTUAL VOICE :"
 210 PRINT"TO LOAD THE ACTUAL VOI
 CE, ONE":PRINT"MUST SIMPLY RECOR
 D THE VOICE ON":PRINT"A CASSETTE
 , AND THEN LOAD THE":PRINT"DATA.
 "
```

```
220 PRINT:PRINT" 2. LOAD DIGITAL
 DATA :"
230 PRINT"LOAD A PREVIOUSLY SAVE
D VOICE."
240 GOSUB9000
250 CLS
255 PRINT
260 PRINT"ONCE THE VOICE DATA IS
 LOADED,":PRINT"IT CAN BE REPLAY
ED (SPOKEN), OR":PRINT"SAVED DIG
ITALLY ON TAPE FOR":PRINT"LATER
USE."
270 PRINT
280 PRINT"NOTE THAT SINCE THE VO
ICE IS":PRINT"DIGITALLY SAVED IN
 MEMORY, WHEN":PRINT"PERFORMING
ANY OF THE FUNCTIONS,";:PRINT"YO
U WILL BE ASKED WHAT MEMORY IS";
:PRINT"TO BE USED."
290 PRINT:PRINT"THE MEMORY WHICH
 IS AVAILABLE":PRINT"TO YOU IS F
ROM";LL;"TO";HL;"."
300 GOSUB9000
310 CLS
315 PRINT
320 PRINTTAB(14)"MENU"
330 PRINTTAB(14)"----"
340 PRINT:PRINTTAB(7)"1. LOAD AC
TUAL VOICE"
350 PRINTTAB(7)"2. LOAD DIGITAL
VOICE"
360 PRINTTAB(7)"3. SAVE VOICE"
370 PRINTTAB(7)"4. PLAYBACK VOIC
E"
380 PRINTTAB(7)"5. END PROGRAM"
390 PRINT:PRINTTAB(9);:INPUT"CHO
ICE (1-5)";C
400 ON C GOTO1000,2000,3000,4000
,9990
410 CLS:PRINTC;"IS NOT ONE OF TH
E CHOICES."
420 GOTO320
1000 CLS:GOSUB9100:GOSUB9200:GOS
UB9300:MOTORON
1010 U=USR0(0)
1020 MOTOROFF:GOTO310
2000 CLS:GOSUB9100:INPUT"FILENAM
E:";F$:GOSUB9300
2010 OPEN"I",#-1,F$
2020 FORI=LO TO HI
2030 IFEOF(-1)THENI=HI+1:GOTO205
0
2040 INPUT#-1,D:POKEI,D
2050 NEXTI
2080 CLOSE#-1:GOTO310
3000 CLS:GOSUB9100:INPUT"FILENAM
E:";F$:GOSUB9400
3010 OPEN"O",#-1,F$
3020 FORI=LO TO HI
3030 D=PEEK(I):PRINT#-1,D
3040 NEXTI
3050 CLOSE#-1:GOTO310
4000 CLS:GOSUB9100:GOSUB9200
4010 U=USR1(0)
4020 GOTO310
9000 PRINT@484,"PRESS [ENTER] TO
 CONTINUE";
9010 IFINKEY$<>CHR$(13)GOTO9010
9020 RETURN
9100 CLS
9110 INPUT"LOW MEMORY ADDRESS";I
N
9120 IFIN>0 AND IN<LL THENPRINT"
INVALID INPUT":GOTO9110
9130 IFIN=0GOTO9150
9140 LO=IN
9150 INPUT"HIGH MEMORY ADDRESS";
IN
9160 IFIN>HL THENPRINT"INVALID I
NPUT":GOTO9150
9170 IFIN=0GOTO9190
9180 HI=IN
9190 IFLO>=HI THEN PRINT"LOW MEM
ORY ADDRESS MUST BE LESS":PRINT"
THAN HIGH MEMORY ADDRESS":GOTO91
10
9195 RETURN
9200 POKE277,INT(LO/256):POKE278
,LO-INT(LO/256)*256
9210 POKE279,INT(HI/256):POKE280
,HI-INT(HI/256)*256
9220 RETURN
9300 CLS:PRINT"READY CASSETTE"
9310 PRINT:PRINT"PRESS PLÁY"
9320 PRINT:PRINT"PRESS [ENTER] W
HEN READY"
9330 IFINKEY$<>CHR$(13)GOTO9330
9340 RETURN
9400 CLS:PRINT"READY CASSETTE"
9410 PRINT:PRINT"PRESS PLAY & RE
CORD"
9420 GOTO9320
9800 DATA190,1,21,16,142,0,8,246
,255,32,86,73,230,162,16,140,0,0
,38,243,167,128,188,1,23,38,232,
57
9810 DATA246,255,34,182,255,35,1
32,251,183,255,35,134,250,183,25
5,34,182,255,35,138,4,183,255,35
,247,255,34,190,1,21,166,128,16,
142,0,8,73,36,17,246,255,34,202,
2,247,255,34,18,246,255,34,196,2
53,247,255,34,230,162,16,140,0,0
,38,228,188
9820 DATA1,23,38,217,57
9990 CLS:PRINT"* END *"
9999 END
```

H A R D C O P Y
BY Lonnie Hortick

This month's program for review is from Dynamic Electronics, Inc. Actually, there are two programs for review: MM and RAMDISK. These programs are similar in that they both use the same subroutines which makes it easy to use them. MM or Memory Manager is a program which allows you to set up the memory of your 64k CoCo in several different ways.

Upon booting MM you are greeted with the logo screen. Pressing any key gets you to the main menu. This program allows you to run

Basic in both 32K banks of RAM, go to the all RAM mode, move data between the banks, return to basic, return to 2 bank operation (after using the all RAM mode) and it allows you the use of the upper 8k of RAM in the all RAM mode.

Since I already have a ROMRAM program I didn't think that this feature of MM would come in very handy. But it did. I can jump between all RAM mode and 2 32K banks at will. But the best feature of this program is the fact that when I am writing a program in basic (I'm not very god at ML yet!) I can copy the program into the second bank. Then if my bank 1 program crashed I can recover it from bank 2 and take care of that bug. It is a lot quicker than saving to disk and I have the advantage of being able to compare two files by switching between the two banks.

The only part of the program I didn't use was the section that allows you to access the upper 8K of the all RAM mode. I still haven't figured out what I would use it for!

The second program on the disk is similar to the one above. It is called RAMDISK and, as it's name implies, allows storage of several programs in memory at once. The main menu of this program allows you to display a directory of programs in memory, save a program, delete a program, clear all programs, return to last program and load a program. As you would imagine it only allows you to load and run those programs which do not use the full 64K of memory. You could run two fairly good sized basic or ML programs or several smaller ones.

It actually acts as a small disk drive with it's commands. After EXECing this program you may return to basic by returning to last program. You would load a file from disk and then type EXEC to return to RAMDISK. You would then "save" the file to memory.

You can run a program from RAMDISK or delete or clear all files - a sort of memory DSKINI.

This program is useful if you have several small programs that you access quite a bit. It saves wear and tear on the disk I/O and is much quicker.

What makes these two programs unique is their commoness of subroutines. These parts of the program are stored at locations 32000 to 32300. They are identical for both programs and can be accessed without EXECing either of the files. Since they are stored higher up in memory you can use the subroutines to transfer data between the two banks or set for all RAM mode.

The programs are useful to both the beginner and intermediate CoCo user. The cost is a bit higher than I would have expected for these two programs and for that reason I cannot recommend that you rush right out and buy them. However, if you have the need for programs such as these then I don't think that you could do much better than ordering these. On the Infamous Scale of 1 to 10 I would rate these programs a 6.5.

The product can be ordered from: Dynamic Electronics, Inc., P.O. Box 896, Hartselle, AL 35640. The cost is $27.95 for tape and $29.95 for disk plus $3 shipping.

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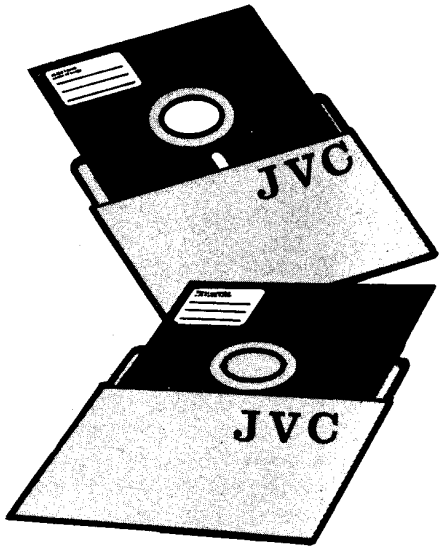

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ROM MAP	- A LOOK AT YOUR RAM
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Try to go thru the course with the least amount of time. If you can hit the red dot befor the timer reads 26, then you will advance ahead on the course. Joystick is required.

```
1 'LARRY CENTERS
   RT.2,JEFFERSONVILLE,KY.40337
2 CLS(3):FOR X=0TO63:SET(    X,1
0,4):SET(X,12,7):SET(X,18,6):SET
(X,20,8):NEXT X
3 FOR X= 224TO256 STEP 32:PRINT@
X,CHR$(143+16);:NEXT X :FOR X=25
5TO287 STEP32:PRINT@X,CHR$(143+1
6);:NEXT X
4 FOR X=225TO257 STEP32:PRINT@X,
CHR$(143+ 96);:NEXT X:FOR X=254T
O286 STEP 32:PRINT@X,CHR$(143+80
);:NEXT X
5 PRINT@235,"TIME RACE";
6 FOR X=258TO283:PRINT@X,"-->";:
FORI=1TO50:NEXTI:NEXTX
7 FOR X=1TO12:PLAY"  O3T250V30CB
AGV15FED"
8 FOR X=32TO63:PRINT@X,CHR$(249)
;:FOR I=1TO10:NEXTI:NEXTX
9 FORX=448TO479:PRINT@X,CHR$(233
);:FORI=1TO10:NEXTI:NEXTX
10 PLAY "V2502T6L4GABO+DCCEDDGF#
GDO-BGABO+CDEDCO-BABGF#GADF#AO+C
O-BABG"
11 CLS(8):PRINT@160,"TRY TO GO T
HRU THE COURSE WITH   THE LEAST
AMOUNT OF TIME       ";
12 PRINT@256,"IF YOU CAN HIT THE
 RED DOT BEFORTHE TIMER READS 26
,THEN YOU WILL ADVANCE AHEAD ON
THE COURSE    ";
13 PRINT@455,"PRESS<ENTER>TO PLA
Y";:IF INKEY$<>CHR$(13) THEN 13
14 GOTO 64
15 H=JOYSTK(0)
16 V=JOYSTK(1)
17 IF H<10 THEN XI=0:YI=-1:RETUR
N
18 IF H>52 THEN XI=0:YI=1:RETURN

19 IF V<10 THEN YI=0:XI=-1:RETUR
N
20 IF V>52 THEN YI=0:XI=1:RETURN

21 YI=0:XI=0:RETURN
22 CO=4:RO=0
23 SET (CO,RO,6)
24 FOR T=1 TO 2
25 FOR T=1 TO 2
26 NEXT T
27 IF L=1 THEN 54
28 PLAY "T250016"
29 RESET (CO,RO)
30 TI=TI+.3
31 ON J GOSUB 15
32 RO=RO+XI:CO=CO+YI
33 IF CO>63 THEN 40
34 IF RO<0 THEN RO=0
35 IF POINT (CO,RO)=3 THEN L=1
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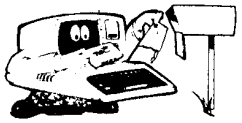

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```
36 PRINT@502, INT(TI);
37 IF POINT (CO,RO)=4 AND INT(TI
)<26 THEN CO=28:RO=8
38 PRINT@339,CHR$(143+48);
39 GOTO 23
40 CLS(6)
41 PLAY "T20003CDEFGABCDEFGABCDE
FGABCDEFGABCDEFG"
42 FOR T=1 TO 50
43 PRINT "YOU'VE DONE IT";
44 FOR D=1 TO 10
45 NEXT D
46 NEXT T
47 CLS
48 PRINT "YOUR SCORE IS:"INT (TI
)
49 IF INT(TI)<LS THEN LS=INT(TI)

50 PRINT
51 PRINT "THE LOW SCORE IS:"LS
52 PRINT:C=0
53 GOTO 60
54 CLS(4)
55 PLAY"L200;O2;B;A;G;F;E;D;C;01
;B;A;G;F;E;D;C"
56 PRINT@226, "YOU CRASHED INTO
THE WALL!!!";
57 C=C+1
58 IF C=3 THEN 59 ELSE GOSUB 87
59 PRINT@224,"THATS THREE TIMES
YOU HIT   THE WALL,YOU'D BETTER
LET SOMEONE   ELSE DRIVE";:C=0

60 PRINT@448,"PRESS FIRE BUTTON
 TO PLAY AGAIN";
61 IF PEEK(65280)=254 ORPEEK(652
80)=126 THEN GOSUB 87 ELSE 61
62 RESTORE
63 GOTO 69
64 CLS
65 J=1:GOTO 68
66 CLS
67 GOSUB 87
68 LS=200
69 CLS(0):L=0:YI=0:XI=0:TI=0
70 READ A,B
71 IF A=-1 THEN 76
72 FOR CO=A TO B
73 PRINT@CO,CHR$(143+32);
74 NEXT CO
75 GOTO 70
76 READ A,B
77 IF A=-1 THEN 82
78 FOR RO=A TO B STEP 32
79 PRINT@RO,CHR$(143+32);
80 NEXT RO
81 GOTO 76
82 FOR RO =68  TO 76
83 READ CH
84 PRINT@RO,CHR$(CH);
85 NEXT RO
86 GOTO 22
87  FOR X=1 TO  500:NEXT X:GOTO
62
88 RETURN
89 DATA 4,31,69,77,79,85,     10
1,109,114,127,56,57,91,93,63,63
90 DATA 164,164,166,168,170,189,
260,280,282,289,356,367,161,161,
153,153
91 DATA 368,371,480,510,426,430,
203,203,239,239,211,211,250,250,
248,248,467,475,405,412,-1,-1
92 DATA 0,480,12,77,127,479
93 DATA 260,236
94 DATA 368,430
95 DATA 289,371,164,292,388,421,
  36,166,200,200,165,165,283,410
,342,407,299,360,-1,-1
96 DATA 84,73,77,69,32,82,65,67,
69
```

D I R H E L P

This directory help program will print the directory in two columns and two pages. When the directory is displayed you man Run, Load, Rename, or Kill any of the programs listed.

```
10 'HELLO          BY DOUG HEYZA
20 CLEAR 2000
40 CLS
50 PRINT"PRINTED DISK DIRECTORY
IN TWO   (2) PAGES. TO SEE OTHER
 PAGES   PRESS <P> & <ENTER>"
120 DIM A$(69),N(69),T$(69),E$(6
9),P$(69),F(69)
130 'READ DIRECTORY
140 N=0:P=0:FOR X=3 TO 11
150 DSKI$ DN,17,X,A$(1),A$(2)
160 FOR Q=1 TO 2
170 FOR I=1 TO 128 STEP 32
180 N=N+1
190 T$(N)=MID$(A$(Q),I,8)
200 IF ASC(T$(N))=255 THEN N=N-1
:GOTO270
210 IF ASC(T$(N))=0 THEN N=N-1:G
OTO250
220 E$(N)=MID$(A$(Q),I+8,3)
230 P$(N)=T$(N)+"."+E$(N)
240 F(N)=ASC(MID$(A$(Q),I+11,1))
```

```
250 NEXT I,Q,X
260 'PRINT FILES
270 PG=INT(N/26+.97)
280 PL=INT(((N-(PG-1)*26)/2)+.5)

290 P=P+1
300 CLS
310 IF P=PG THEN ST=PL ELSE ST=1
3
320 FOR PN=1 TO ST
330 PRINT CHR$(PN+96);" ";P$(PN+
((P-1)*26)),
340 IF P$(PN+ST+((P-1)*26))="" T
HEN 360
350 PRINT CHR$(PN+ST+96);" ";P$(
PN+ST+((P-1)*26))
360 NEXT PN
370 'MAIN MENU
375 PRINT@ 428,FREE(0);"FREE"
380 SOUND 200,1:PRINT@448,"  rUN
  lOAD  REnAME  kILL  eND";
390 PRINT@480,"FUNCTION:    ";CH
R$(126);"RUN  pAGE";P;"OF";PG;
400 PRINT@490,CHR$(175);:I$=INKE
Y$:IF I$="" THEN PRINT CHR$(8);:
GOTO 400
410 IF I$="R" THEN 500
420 IF I$="L" THEN 580
430 IF I$="N" THEN 660
440 IF I$="K" THEN 820
450 IF I$="E" THEN END
460 IF I$="P" THEN 920
470 IF I$="^" THEN RUN
480 SOUND 20,5:GOTO 400
490 'RUN
500 PRINT@448,"RUN LETTER:
              ";
510 GOSUB 950
520 IF F(LP)=1 THEN PRINT@480,"C
AN'T LOAD DATA                ";:
SOUND 200,5:FOR EE=1 TO 500:NEXT
 EE:GOTO 500
530 PRINT@448,"RUNNING: ";P$(LP)
;
540 IF F(LP)=2 THEN LOADM P$(LP)
:EXEC
550 IF F(LP)=0 THEN LOAD P$(LP),
R
560 GOTO 380
570 'LOAD
580 PRINT@448,"LOAD LETTER:
              ";
590 GOSUB 950
600 IF F(LP)=1 THEN PRINT@480,"C
AN'T LOAD DATA                ";:
SOUND 20,5:FOR EE=1 TO 500:NEXT
EE:GOTO 500
610 PRINT@448,"LOADING: ";P$(LP)
;
620 IF F(LP)=2 THEN LOADM P$(LP)
:END
630 IF F(LP)=0 THEN LOAD P$(LP):
END
640 GOTO 380
650 'RENAME
660 PRINT@448,"RENAME LETTER:
              ";
670 GOSUB 950
680 PRINT@448,P$(LP);" TO ";STRI
NG$(8,175);".";STRING$(3,191);
690 PRINT@464,;:SOUND 200,1:LINE
 INPUT N$
700 IF LEN(N$)>8 THEN 680
710 PRINT@472,".";STRING$(3,191)
;
720 PRINT@473,;:SOUND 200,1:LINE
 INPUT E$
730 IF LEN(E$)>3 THEN 710
740 R$=N$+"."+E$
750 PRINT@480,STRING$(31," ");
760 PRINT@480,"CORRECT (yes/no)?
";
770 SOUND 200,1:LINE INPUT YN$
780 IF YN$<>"YES" THEN CLS:GOTO
300
790 RENAME P$(LP) TO R$
800 GOTO 140
810 'KILL
820 PRINT@448,"KILL LETTER:
              ";
830 GOSUB 950
840 PRINT@448,"KILL: ";P$(LP);
850 PRINT@480,STRING$(31," ");
860 PRINT@480,"CORRECT (yes/no)?
";
870 SOUND 200,1:LINE INPUT YN$
880 IF YN$<>"YES" THEN CLS:GOTO
300
890 KILL P$(LP)
900 GOTO 140
910 'PAGE
920 IF P=PG THEN P=0
930 GOTO 290
940 'INPUT LETTERS
950 SOUND 200,1:PRINT@480,"[clea
r] TO EXIT TO MENU        ";
960 PRINT@463,CHR$(255);:I$=INKE
Y$:IF I$="" THEN PRINT CHR$(8);:
GOTO 960
970 IF I$=CHR$(12) THEN 380
980 LP=(ASC(I$)-64)+((P-1)*26)
990 IF P$(LP)="" THEN SOUND 20,5
: GOTO 960
1000 PRINT@480,STRING$(31," ");
1010 RETURN
```

LETTERS TO THE EDITOR

Editor;

Thank you for the fine review of my book 'ASSEMBLY LANGUAGE PROGRAMMING FOR THE TRS-80 COLOR COMPUTER' in the July issue. However, I must advise you of omissions or inaccuracies in the review.

The reviewer misinterpreted an axample in the description of PC Relative addressing. The example; STA TABLE, PCR

LDX TABLE

Was used to show the differences between PC Relative and Extended Relative addressing when it is coded as LDX Table,PRC.

The following information was also not included in the review. The price is $16.00 (US) plus $1.50 shipping.

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LETTER TO THE EDITOR:
I AM MAD!!!!!

IT IS A WELL KNOWN FACT THAT ADVERTISING IS THE HEART OF ANY BUSINESS.

IT IS HOWEVER, BEYOND MY UNDERSTANDING WHY ANY COMPANY WOULD WASTE THEIR TIME AND MONEY ON ADVERTISING A PRODUCT IN WHICH THAY HAVE NO APPARENT INTEREST IN SELLING.

THREE MONTHS AGO I STARTED CALLING THREE DIFFRENT COMPANIES THAT WERE RUNNING ADS IN A MAJOR COCO MAGAZINE.

I WAS INTRESTED IN INFORMATION ON AND THE PROBABLE PURCHASE OF A HARD DISK AND OPERATING SYSTEM TO GO WITH IT.

I HAVE CALLED EACH COMPANY TWICE . I HAVE TALKED TO TECHNICIANS AND SALES PEOPLE, EACH TIME THEY HAVE PROMISED TO SEND ME GENERAL AND TECHNICAL LITERATURE.TO DATE I HAVE RECIVED NOTHING.

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PROGRAM PACK # 1

IN-OUT	263	DESIGN	ROMRAM	2083	U,84K	64KTEST	2029	U,64K
UPPER32K	529	U,64K	HEXTODEC	435	U	DEC<>HEX	1596	U
BASECONV	1332	U	DISKTEST	1402	U,D	SOUNDDEM	2090	DEMO
CONVERGE	783	E,B	TESTPATT	2314	U	COMPLAWS	4014	G,K
CHESS	9664	G,K	CHECKERS	3067	G,K	PATROL2	5876	G,J
ELECTMAZ	7125	G,J	ICE	3586	G,J	TANKS	3469	G,J
DODGE-EM	2839	U,D	SOISAYS	3950	G,K	DOORS	1087	G,K
FUELCOST	1170	HF	OHMSLAW	1895	B	LANDER	1984	G,K
WHERISIT	4497	G,K	HANGMAN	2592	G,K	OTHELLO	7267	G,K
GOLDMINE	5201	G,K	STATCAP	2462	EDUC	PINGPONG	1383	G,J
BIORYTHM	5107	G,K,P	CALENDAR	4532	U,P	MAILLIST	2958	F,P,C

PROGRAM PACK # 2

DISKLIST	2111	U,D,P	DIRLIST	2386	U,D,P	ML ADDR	1997	U,D,P
DISKDUMP	1181	U,D,P	PRINUTIL	2496	U,K	CALPRINT	4795	U,P
ALPHSONG	1036	E,M	PAINT	1102	DRAW	DOGPICT	3003	PICTURE
EVADER	1178	G.K	NUKATTC	3282	G,K	BASICMAP	6781	U,K
JOYPAINT	176	DRAW	PUNKIN	1018	PICT	HOMOYMS	1676	EDUC
ABBREV	7156	EDUC	CONVERT	5118	E,B	CASTLE	8172	ADV
CASSDIR	1012	U,P,C	CVERT	1776	U,E	FLASCARD	1985	EDUC
MESSAGE	312	U	RELOCAT	965	U	DISKLIST	1538	U,D
DSKTAPE	1667	U,D,C	BEAST	2227	G,K	DOGFIGHT	2145	G,J
PLANE	1066	G,J	DOGS	1547	G,K	CALENDAR	1830	U,P
COUNT	590	U						

PROGRAM PACK # 3

BOXLABLE	993	U,C	MONOL	15132	G,K	ATOMS	2803	G,K
FLIP	2700	G,K,J	POWER UP	249	U,P	DISKSORT	1883	U,D
READBIN	461	U,D	MACDATA	898	U,C	CUBES	2263	G,K
HEXLOAD	1812	U	HANGMAN	2509	G,K	OHMS	1234	U,E
SPEDMATH	6303	EDUC	SCRDUMP	133	U,P	DSKCLEAN	505	U,D
DIRGET	252	U,D	DIRSAVE	295	U,D	ML ADDR	262	U,D
WALLHIT	2112	G,K,J	TEMPCONV	571	U	CHKBOOK	2248	HF,C
DIS	4104	U,P	LOCFIND	669	U	MISSLETT	767	G,E
MEMORIE	2767	G,K	FISH	2088	G,K	CHIPER	770	G,K
CARCAL	1388	HF	BIGHILLG	2140	G,K	PROTECT	3095	G,K,J
STOCK	5227	G,K	JUMP	1999	G,K	FOOTBALL	7078	G,K
BOWLSUM	2491	FILE	HILOW	5709	G,K	MEMTEST	1889	U

PROGRAM PACK # 4

COMMAND	5154	G	PACMAN	16605	G	TYCOON	4317	G
DIALER	2324	U	DEXICON	1715	U	DISK FIX	893	D,U
DISKTIME	1170	D,U	DOS64A	6569	U	GDS	10055	G
PIXCMP	4490	PIC	ROMPACK	928	U	SOUND	58	U
SPOOLER	159	U	UT	3148	U	Z	8311	U
QUADDRAW	263	DRAW	B	2183	U	CLOCK	370	U
COPY DIR	1055	D,U	DDCOPY	3193	D,U	FDCTST	6277	G
FIND	622	G	ODIE	6154	PIC	PEANUTS	6154	PIC
SPACE	6154	PIC	ISLAND	13403	ADV	PATTERN	4572	ART
CHEKBOOK	7098	FIN						

MLDISK	3070	D,U
DSK EDIT	8165	D,U
TOF	3019	G
OBJECTS	4211	G
TRIANGLE	4539	PIC
HALLDEMO	1910	PIC
CASTLE	21217	ADV

PROGRAM PACK # 5

SORT	794	U
HEALTH	18728	EDU
AIRPORT	12031	G
TANKS	8323	G
WORLDMAP	7435	EDU
LINES	2263	ART
TELETERM	5792	COMM
SOUND	58	EDU
CUBE	5907	G
CIA	13777	ADV
GARFIELD	6154	PIC
KALVOS	1259	G

SLITHER	2156	G
ICELAND	3472	G
PIXDUMP	2140	U,P
COPYDIR	1566	D,U
INVITE	1533	U
IN-OUT	226	ART
HOBBIT	3634	G
BIOTYTHM	1787	G,P
3-D-T	4263	G,K

PROGRAM PACK # 6

TUMBLERS	3979	G
EDUCATE	1511	G
CONTOUR	1143	U
DIRLIST	1535	D,U
MATHPAL	6460	EDU
GOLDMINE	5646	G
CONNECT4	2647	G,K
SIMON	782	G,K
DARTBORD	4431	G,K
ELIZA	7083	G
DUNGEON	4362	ADV
SLOSKROL	218	U
PILOT	4135	G
DUPER	2971	U
HUSTLE	1239	G
OTHELLO	5800	G,K
TICTACT	4269	G,K
COPTER	3022	G

D-ADV	17651	ADV
QUEST	8439	G
CUBIC	5331	G
GRID	3715	PIC
LABELPRT	420	U,C
DISASSY	7512	U
PATTERN	994	U
PHONE	1629	F

PROGRAM PACK # 7

SWORDS	9198	G
SURVIVE	9751	ADV
DOTMAT	16651	G
TIGER	6154	PIC
PEEK	1799	U
MLFINDER	440	U
PORT	249	U
LOAN	6038	BUS
TROLL	11561	ADV
SPELWORD	2135	EDU
FLIGHT	5435	G
ZIGGY	6154	PIC
ROMDUMP	421	U
COLORBAR	91	U
PAYMENT	340	U

LOANAMOR	1633	FIN
SLITTER	2137	G,K
FARMING	12878	G
DSKSPEED	1470	D,U
CLOCK	1112	U
FINANCE	18343	FIN
MESSAGE	828	U

PROGRAM PACK # 8

MLTTD	840	U
IDKIT	12911	G
TREK	10169	G,K
EXREF	5524	U
PHONEDIR	2393	F,C
BARTENDR	5710	REF
FLIPPAGE	5734	U
BLACKJK	7520	G,K
SPACE	17397	PIC
DSCOPY	1946	D,U
ALARM	4150	U
TICKTAPE	5510	U
DSKLIBRY	5598	F,D
DSKAID	8025	D,U

DECIDE	4795	G
WEATHERX	4797	U
SUB	9473	ADV
BASEBALL	21936	PIC
GUITAR	10886	E,M
TRIANGLE	7007	PIC
TRAIL	7938	G,K,J

PROGRAM PACK # 9

BIBLE	3249	EDUC
PROJEVAL	9107	B
DATAPRNT	413	U
AMORLN	3655	F
POKER	6924	G,K
SHIPS	3756	PIC
BOMBER	2604	G,K
FILES	8401	B,C
DISKDIRE	4979	D,U
ASSMLBER	6211	U
TANK	4132	G,J
HANDBALL	3883	G,J

KINGDOM	11949	ADV
DKS2TP	2483	D,U
MLADFND	2762	U
DISMON	13924	U
SQUEEZE	3166	D,U
MAZE	7106	G,K
DSKLOCK	2795	D,U

PROGRAM PACK # 10

CHECKS	6453	F,D,C
SLOTS	3984	G,K
ICE	6060	G
SIMSAS	636	G,K
STATUS	7787	D,U
CROSROAD	2991	G,J
SELFMAIL	985	U,P
BONGOCARD	1701	G,P
DATAFILE	7239	F
ASSMBLER	12803	U
DISKNAME	7820	D,U
DISKLOOK	684	D,U
ANIMALS	6219	E,K

Continued on next page

PROGRAM PACK # 11

COMBAT	5862	G	MCONVERT	2895	U	FRACTION	7192	G,E
BALONS	4976	G,K,J	DATA3	6066	B,F	LIFE	7561	G
MUSCOMP	3441	G,E	BOGGEL	6013	G,K	OFFSET	2241	U
BATSHIP	7357	G,K	DUMPALL	5409	U	GEOGAME	8452	G,E
MAILLIST	4641	B	VALENCE	2414	G,E	GRAPHDZN	4942	PIC
WEREWAND	10443	ADV	POKER	5943	G,K	ASSMBLER	11338	U
MAZE3	6237	G	RUBCUBE	10321	G			

PROGRAM PACK # 12

CIPHER	772	G,K	COPYM	1929	U	SCRPRINT	3033	U,P
MOPLY	15219	G,K	SOUNDS	5276	U,E	DISTANCE	7454	U
DATES	3221	U	PHONWORD	1424	U	ROBOTS	5201	G,K
DIGGEM	5850	G,K	CONNT4	8002	G,K	ROLLON	4360	G,K
WILLSADV	10330	ADV	BASICMAP	6159	U	GRAPHICS	10794	U
RACEWAY	7335	G,K	TYPING	2803	E,G	CHECKS	6951	FIN
MONEYHLP	8074	FIN	WORDPRC	9387	B,C			

PROGRAM PACK # 13

CADIOH	9696	EDU	HAUNTHSE	12572	ADV	DISKHLP	8162	D,U
FINT-IT	4782	G,K	MISSLES	4154	G,K	PLANE	1066	G,J
FLASHCRD	4062	EDU	COMPTALK	3815	G	HOMEUTIL	12284	FIN
CHKBOOK	6601	FIN	SHAPES	6463	G,K	VIPERS	5169	G
POKING	7137	EDU	BUGS	13238	G	GEOSTUDY	7579	EDU
USASTUDY	7720	EDU	HEALTH	18697	EDU			

PROGRAM PACK # 14

DISKWASH	2150	D,U	AUTODIAL	2326	U	MASTMESS	5980	B
BIGPRINT	5751	U	TRIVIA	8053	G	D-TO-D	3539	D,U
SORT32	967	U	CHARACTR	3794	G	64KLOOK	16361	U
SCRIPT	5553	EDUC	LOADINTR	6184	B	FINDAWRD	3966	G
BUTR17	3543	U	BATTSHIP	4039	G,K	FLY	6252	G
64KMEMT	2798	U	OTHELLO	7144	G.K	FINANAD	12250	EDU
SPDSHEET	10430	BUS	METCONV	2238	U	CRACE	3630	G,J

PROGRAM PACK # 15

DKTODK	4764	D,U	ATTACKER	7439	G	BIORYTHM	2309	G,P
HANGMAN	2592	G,K	TREK	8730	G,K	3DTTT	7614	G,K
TYPEFACE	5280	U,P	STAT-LOG	4937	F	WORDSCAR	3863	G
DSKMSTER	9083	D,U	TYPING	4799	E,G	CHECKS	5675	FIN
200DD	8383	ART	FISHING	2091	G	MEMORY	2729	G
HORSERAC	5373	G	KRAKEN	10046	ADV	KINGS	13660	ADV
STOCKS	9603	B,U	CYRPTO	6252	G			

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P.O. BOX 87037 CANTON, MI
48187

Adirondack CoCo Club
(publicity)
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ATHENS, NY 12015

ILLINOIS COLOR COMPUTER CLUB
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NORTHERN ILLINOIS COLOR
COMPUTER
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WEST CHICAGO, IL 60185

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CLUB 2411 HIRSCH AVE
JACKSONVILLE, FL 32216

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SARASOTA, FL 33582

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TUCSON, AZ 85707

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LAKES, WI 53181

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REX RIVERS 264 9193

NEW ENGLAND COCONUTS
PO BOX 6604
PROVIDENCE, RI 02940 (SASE
INFO)

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STURGIS, MI 49091
CLAY HOWE

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IF YOU KNOW OF A CLUB THAT HAS
BROKEN UP, PLEASE LET US KNOW
AND WE WILL REMOVE IT FROM THE
LIST.

P D SOFTWARE (CLUBS)
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HOUSTON, TX 77219

COCO BULLITEN BOARD SYSTEMS

201 267 1207	THE ARMORY	NJ
201 376 4462	THE MORGUE	NJ
201 486 2956	CFONJ	NJ
201 526 6839	THE AIRPORT	NJ
201 564 6112	COCO NUTS	NJ
201 569 0162	NAME UNKNOWN	NJ
201 572 0617	COLORAMA COCO BBS	NJ
201 637 6286	B&J SOFTWARE ORDER	NJ
201 637 6644	B&J SOFTWARE 24HR	NJ
201 657 0611	COLOR CORNER	NJ
201 725 5028	CCIE #1	NJ
201 773 8265	MEADOWLANDS BBS	NJ
201 790 6795	PHOTO-80	NJ
201 827 7815	SUSSEX CO BBS	NJ
201 928 0949	COCO CREATIONS	NJ
201 928 9488	COCO CREATIONS	NJ
203 229 6481	COOL COCO OS9	CT
203 237 2668	DAVE SCHWARTZ	CT
203 334 5778	MISSION CONTROL	CT
205 649 2894	UNKNOWN	AL
206 255 5150	LIGHT HOUSE	WA
206 256 2321	NW COLOR CONN	WA
206 256 6624	DIAL YOUR MATCH	WA
206 425 2576	KWCBBS	WA
206 435 4803	COLORAMA	WA
206 692 8408	US ONLINE	WA
206 762 5141	MINI-BIN	WA
206 883 0403	JCTS	WA
207 596 0556	MAINE-FRAME	ME
209 223 3800	GOLD COUNTRY	CA
209 836 1074	KEN DENNY	CA
212 423 4623	ARNOLD SCHIFFMAN	NY
212 682 0681	GRAND CENTRAL TERMIN	NY
212 682 0681	STEVE SCHECHTER	NY
213 244 1100	FANTASY PLAZA	CA
213 258 0640	MASASHI COLOR 80	CA
213 388 5198	MAGNETIC FANTASIES	CA
213 690 4589	NEXT STEP	CA
213 773 3024	COBBS #8	CA
213 926 9553	DATA EXCHANGE	CA
214 579 1840	IRVING BBS	TX
214 686 4796	FLYING FORTRESS	TX
214 769 3036	MICROSERVE	TX
214 784 7883	NE TX BBS	TX
215 244 0864	THE CITADEL	PA
215 768 0699	COBBS	PA
215 857 3035	JOE BRACH	PA
215 866 1805	COLORAMA	PA
216 788 7910	COCO NUT TREE	OH
217 359 9577	CCSH BBS 1	IL
217 753 3167	LINK UP	IL
217 893 0453	CCSH #1	IL
219 234 9717	SAGCOM COCO LINE	IN
301 344 9156	NASA GET AWAY SPEC	MD
301 599 1726	JOE SARTORI	MD
301 736 9425	COLORAMA	MD
303 249 7866	CHUCK DAVID	CO
303 278 4244	UFONET	CO
303 297 9127	TRASH HEAP TBBS	CO
303 634 8342	COBBS	CO
303 690 4566	TBBS #1 H.Q.	CO
303 690 9423	CONTROLLER BOARD	CO
304 599 0760	MOUNTAINEER	WV
304 925 3338	BOB VAUGHZN	WV
305 274 3394	REMOTE OS9	FL
305 281 0325	INTELLIBOARD	FL
305 533 0333	BOB BOYCE	FL
305 681 8490	COCO CORNER 2	FL
305 683 6044	INFOEX-80	FL
305 686 4862	THE NOTEBOOK	FL
305 731 6097	COMTECH	FL
305 751 6809	COLOR INFO CENTER	FL
305 997 6830	JERRY WEISS SYSOP	FL
306 789 7883	PHOENIX BBS	AZ
308 665 1526	COLORAMA	NE
312 278 9513	HOWARD MED SYS	IL
312 359 9450	CO-OPERATIVE COMP	IL
312 397 8308	OS9 USERS GP	IL
312 597 8485	CREME DE COCO	IL
312 679 8111	ENCHANTED TOILET	IL
312 720 0796	COCO EXTRACORDINARIE	IL
312 879 6811	SPEECH SYSTEMS	IL
313 662 8303	BARTON DATA LINE	MI
313 981 5061	COCO CLUB	MI
314 428 2692	AS IS SOFTWARE	MO
315 437 4890	ANORIN MICROWAVE	NY
315 446 7793	COMPUTER STORE	NY
315 487 0503	COLOR 80	NY
315 986 4828	COLOR 80 #12	NY
316 663 3600	SALT CITY SWAPPER	KS
316 686 3813	COLOR 80	KS
317 873 5808	COCO HOTLINE	IN
319 277 0646	COMPUTER CELLAR	IA
319 277 0646	COMPUTER CELLAR	IA
319 396 8875	BLOOM COUNTY HERALD	IA
401 272 1138	SYSLINK HQ	RI
401 765 2890	COLORAMA	RI
403 474 0147	NORTERN ALBERTA COCO	
403 564 4118	WES-CAN BBS	
404 378 4410	COCO BOARD HQ	GA
404 924 1248	COCOSERVE	GA
404 997 6238	INDEX SYSTEM	GA
405 248 8433	SHAMBALA	OK
405 598 6113	HIDEAWAY	OK
405 728 7654	COCO INC	OK
408 629 2277	MICROBUR BBS	CA
408 646 1850	PEN-CO BBS	CA
408 733 6809	SHAWN JIPP	CA
408 984 7937	RAINBOW CONNECTION	CA
409 983 2383	COCO CLUB BBS	TX
412 479 3786	COLORAMA	PA
412 744 2335	COCONET	PA
413 532 9631	COCO NUT	MA
414 699 3214	COLOR 80	WI
414 793 4055	MIDWEST DATA	WI
415 364 2658	REDWOOD BOARD	CA
415 552 8268	KINKY KOMPUTER	CA
415 651 4147	AARDWOLF EXPRESS	CA
415 782 4402	EAST BAY BBS	CA
416 653 2248	COLOUR DRAGON 1	ON
416 689 7950	DAVES DATACOM	ON
416 743 6221	COCO NUT	ON
416 823 4521	COLOUR DRAGON 2	ON
501 857 3138	COBBS41	AR
502 365 7785	COLORAMA	KY
502 937 4594	COLORAMA	KY
503 649 4497	BEE COLOR BBS	OR
503 761 6345	BIT BUCKET SYS	OR
504 277 6926	CHALMETTE BBS	LA
504 876 1790	BAYOU BOARD	LA
504 885 5619	STARBASE 6809	LA
512 285 5028	COLORAMA	TX
512 353 1508	COLORAMA	TX
512 629 7670	COBBS	TX
512 674 0264	SA COLOR BOARD	TX
513 236 8307	DACCUG	OH
513 396 7467	CINSOFT	OH
513 399 1262	COLORAMA	OH
513 474 2985	CINTUG	OH
514 658 3087	COLOR 80 #7	QU
515 277 6510	COCO CLUB	IA
515 288 0304	EXCALIBER	IA
516 277 1285	COLORAMA	NY
516 331 3718	COLORAMA	NY
516 673 9452	UNKNOWN	NY
517 339 3367	COMPUNET	MI
517 793 1579	C/NET	MI
602 245 0488	COCO NET	AZ
602 245 0488	DENNIS CONNOLLY	AZ
602 298 0730	SUPER COCO BBS	AZ
602 344 8070	TBBS	AZ
602 899 1350	COCO PUB	AZ
707 437 6336	FALCON COLOR 80	CA
712 323 2943	MACCC	NE
713 280 8711	NASA	TX
713 354 3717	COBBS	TX
713 666 9076	NETHER WORLD	TX
713 847 9070	-= COCO ADS =-	TX
713 923 6809	COCO LOGO	TX
713 941 1542	GOLDEN COCO	TX
713 946 2825	DATA BASE	TX
714 350 2668	COLOR CORNER	CA
714 354 8004	KANDY SHACK	CA
714 359 1586	GROWTH NET BBS	CA
714 534 5174	ORANGE COCO	CA
716 473 2334	COLORAMA	NY
717 652 8659	COLORAMA	PA
718 499 1633	CALL BOARD	NY
718 499 1633	ELECT. CALL BOARD	NY
718 727 1781	TELE-NET	NY
718 837 2881	KING BYTE C.C.	NY
800 323 0905	MCI MAIL SERVICE	
803 279 5392	AUGUSTA TBBS	SC
803 288 0613	DLOAD OS9	SC
803 669 3275	PRO-COLOR	SC
803 791 7389	MIDLAND 80	SC
804 285 0041	SKELTON ISLAND	VA
804 862 4663	3 MUSKETEERS	VA
804 868 0922	PEN COLOR 80	VA
804 868 0922	PENINSULA COCO 80	VA
804 887 5302	GAMMA COLOR 80	VA
805 484 5491	COLORAMA	CA
805 656 3746	VENTURZ BBS	CA
805 687 9400	COCO CORNER 1	CA
806 374 9711	BURG BOARD	
812 476 9453	EVANSVILLE	IN
813 321 0397	COMPUNET BBS	FL
813 321 0397	EMERY MANDEL	FL
813 345 8100	6809 SIG	FL
813 474 0491	JIM KOCMOND	FL
813 677 9530	MICROWORLD	FL
813 733 2415	DUNEDIN TBBS	FL
813 879 1105	COCO BBS	FL
813 879 1105	ERIC BODLEY	FL
813 924 2626	COLOR 80 41	FL
815 458 6628	COLORAMA	IL
816 232 4932	DRANGONS LIAR	MO
816 436 2904	FRISKY COCO	MO
817 232 2087	FORT WORTH BBS	TX
817 641 0133	DRANGONFIRE BBS	TX
817 767 5847	COMMNET 80	TX
817 789 2254	TY TRAVERS	TX
818 335 6554	COLOR AMERICA BBS	CA
818 787 0433	OFFICIAL COMP	CA
818 886 6041	PLAIN RAP	CA
818 996 1977	TRS 80 COUNTRY	CA
902 434 5278	COLORAMA	NS
902 683 2086	COLORAMA	NS
902 857 9843	COLORAMA	NS
904 264 0335	WIZARD PENDLETON	FL
904 456 7195	GARY DUNSFORX	FL
904 728 4859	MICRO CONNECTION	FL
907 356 2626	KERRY CLABAUGH	AK
912 232 4582	UNDERSEA	NY
912 686 5917	NASHVILLE SHOP	GA
913 384 2196	ONLINE BETA	KS
913 432 5544	MOVIE GD	KS
914 362 1422	TELEMATION OS9	NY
914 738 6857	M&M BBS	NY
914 961 8049	WESTCHESTER BBS	NY
914 965 2355	WESTCHESTER BBS	NY
914 965 7600	COLORAMA	NY
916 381 8788	SACRAMENTO	CA
916 753 4066	UNIV OF COCO	CA
918 335 2852	COBBS40	OK
919 425 7139	COLOR 80 82	NC
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