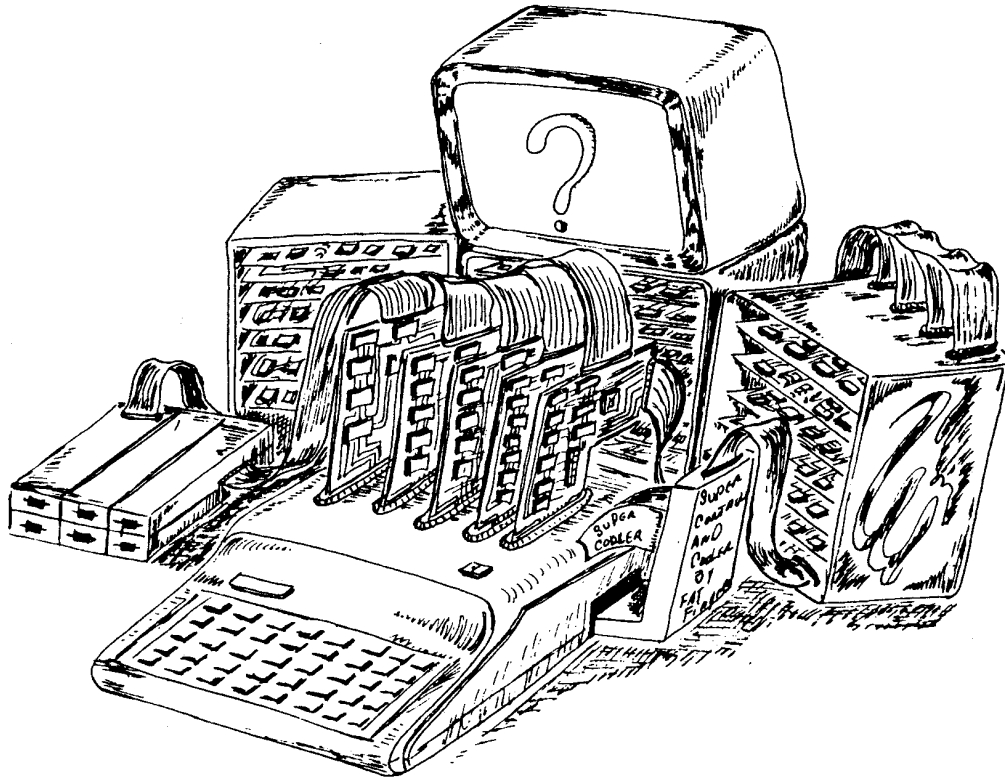
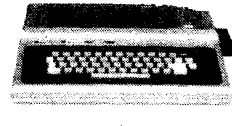


COCO-ADS



The Color Computer Users Magazine
Oct, 1986 \$1.00 Issue B11



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The Program of the Month
by
Eric G. Robichaud

This month I will be presenting another adventure program, and an explanation of the logic behind creating one, so if you've always wondered how it was done, then read on! First, I would like to start with a description of this particular adventure.

"Present" is the first of a multi-part series of adventures. Over the duration, I will eventually list the entire series, consisting of independent programs. All of the adventures are completely independent of one another, and therefore can be played as stand alone games, and are simply tied together by their theme.

In this series, you are "Scoop Johnson", a reporter for a local newspaper who is sent on a routine assignment to cover a press conference at a local military base. While at the military base, you stumble onto a major news story; there is a fully functional time machine in the base somewhere! As the adventure starts, you are in the military base at night after everyone has gone to bed save for a few guards. It is now up to you to find that time machine to get your scoop!

This, first, part is called "Present" because, obviously, it takes place in the present, with each successive adventure taking place in another period of time. As I mentioned, and I stress, each adventure is entirely independent of the others, therefore you can type in and play it immediately. This series is designed specially to develop one's skills at adventures. This one contains a lot of humor, and interesting "frills". For example, try 'LOOK'ing at just

about everything. Each adventure gets progressively harder and more involved.

Now that I've described this particular adventure, I'll discuss programming adventures in general. The first step is always to devise a theme for your adventure, such as the reporter looking for a time machine, then design a layout of the adventure. This is done by creating a map on one or more pieces of paper, labeling each room, and drawing connecting lines showing which directions lead to which new location (see figure 1). Label each room by number.

The next step is to make a chart, or matrix, stating which direction from a particular room will bring you to the next location (see figure 2). Put the number of the room you will enter under the column for that direction. A zero denotes that there is nowhere to go in that direction. Cross reference figures one and two for a better understanding. In our example, to go north from location one would bring the adventurer to location two, the house, so a "2" is placed under column "N" for room 1. Since

```
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there is no North, South, or West for room four, the cave, they are all marked with a zero.

Once your chart is complete, the next step is to develop text descriptions of each room. This is where one decides to use simple descriptions, or full paragraphs, which I use. Now is where the programmer finally sits down in front of the computer for some long, tedious work. Each room description must be typed in as a separate data statement. I personally like to start the text for room one at line one hundred and one and work in increments of one so that I can always find the text for any room (ie. line 115 contains text for room 15).

After the descriptions are typed in, enter all of the values in your chart as data. To use our example, we might have:

```
150 DATA 2,3,5,4,0,1,0,0,0,0,3,1...
```

With the data continuing in this manner until the entire chart has been entered.

After you've entered this data, you may set up the FOR/READ/NEXT loops to read in this data. At the beginning of your program, DIMension a string array such as A\$(x) where x is the number of rooms you have. Also DIMension a numeric array such as RM(x,4). The A\$ would correspond to the x amount of room descriptions you have with A\$(1) being the text for location one, etc. The RM(x,4) would hold the values of where you would end up by going in one of the four directions from room x. Again, in our example we might have:

```
200 FOR X=1 TO 5:READ A$(X):NEXT:FOR
  X=1 TO 5:FORY=1 TO 4:READ RM(X,Y):
  NEXT Y,X
```

All of the above up to this point can be seen at the beginning of my adventure, for reference.

The last section of data necessary before starting in on the actual programming is the list of items to be found in the game. Label, on your map, where each item can be found. Next, make a list of each item, and what room it is found in. At the end of the last data section (room values) type in three pieces of data for each item: the name of the item as it will appear in an inventory listing ("sword", for instance), a one-sentence description as it will appear in the text descriptions ("there is a sword here!"), and finally the room where it can be found. Now DIMension a string for the item name, one for the description, and a variable for the initial location. Finally, set up another loop to read in this information.

The variable containing the location of each item will hold either a positive number

denoting which room it is in, a negative one if the person is carrying it, or a zero if it is not available. When entering a room, the program will display the room text, then search all of the items to see if one of them is supposed to be listed with that room.

This explains how to enter all of the tedious data needed to set up an adventure. Truthfully, this is the most boring job I've found in programming so far, but once this has been accomplished the rest is interesting. In the future when I present the next installment of the adventure series, I will present part two, which is pretty challenging, and I will demonstrate how to put all of this data into action!

If you have any questions, comments or suggestions, feel free to write to me at 10 Stoneham Drive, Woonsocket, RI 02895. If there is any particular type of program you would like to see, write also, and I will reply. This month's program is available on tape and disk for \$5.00. See the ad from Paragon Software for additional information. As usual, I also have a map of the scenario available with orders upon request. This program requires 32K.

I have interesting plans for the future, so stay tuned...

```
10 *****
20 *      PT 1-PRESENT      *
30 * BY ERIC G. ROBICHAUD *
40 * COPYRIGHT (C) JAN 86 *
50 *  PARAGON SOFTWARE  *
60 *****
70 PMODE0:PCLEAR1
80 CLEAR
90 CLEAR500:DIM A$(64),RM(64,4),
  I$(9),IT$(9),IT(9),IL$(9)
100 GR=1:SG=1:TM=1:PI=1
110 DATA"THIS IS A SMALL, GREY B
  ATHROOM STALL WITH A TOILET AND
  SEVERAL ROLLS OF BATHROOM TISSU
  E. THERE IS SOME GRAFFITTI SCRIB
  BLED ON THE DOOR.THE MAIN BATHR
  OOM AREA IS TO THE WEST.
120 DATA"YOU ARE IN A LARGE BATH
  ROM WITH FIVE STALLS ALONG THE W
  EST WALL,AND SEVERAL SINKS ALONG
  THE NORTH ONE. THERE IS A H
  ALLWAY TOTHE SOUTH, AND AN EMPTY
  STALL TOTHE EAST.
130 DATA"YOU ARE IN A LARGE BRIE
  FING ROOM. THERE IS A PODIUM
  NEAR THENORTH WALL, AND THE RES
  T OF THE ROOM IS FILLED WITH TAB
  LES AND CHAIRS.THERE IS AN OFFI
  CE TO THEEAST,AND A HALLWAY TO T
  HE SOUTH.
```

140 DATA"THIS IS THE BRIEFING OF
FICER'S OFFICE. LINING THE NORT
H WALL, THERE IS A LARGE BOOKCA
SE FILLED WITH ENCYCLOPEDIAS AND
MYRIADS OF OTHER ASSORTED BOOKS
. THERE IS A LARGE DESK FACING THE
SINGLE EXIT WEST.

150 DATA"YOU ARE SITUATED AT THE
EASTERN END OF A LONG EAST/WEST
HALLWAY. THERE ARE ROOMS TO THE
NORTH, AND TO THE EAST, AND TH
E HALLWAY CONTINUES TO THE WEST.

160 DATA"YOU ARE IN A MAINTENANC
E ROOM. THIS ROOM CONTAINS FLOO
R BUFFING EQUIPMENT AND OTHER TY
PES OF CLEANING MATERIALS. THE
ONLY WAY OUT IS TO THE WEST.

170 DATA"YOU ARE IN THE MIDDLE O
F A LONG EAST/WEST HALLWAY. THE
RE IS A MEN'S ROOM TO THE NORTH
, AND A CORRIDOR TO THE SOUTH.

180 DATA"YOU ARE LOCATED IN A NO
RTH/SOUTH CORRIDOR. THERE IS A CO
RRIDOR TO THE WEST AND AN OFFICE
TO THE EAST.

190 DATA"YOU ARE AT THE WESTERN
END OF A LONG HALLWAY. THE HALLW
AY EXTENDS TO THE EAST. THE
RE IS A CAFETERIA TO THE WEST,
AND HALLWAYS TO THE NORTH AND S
OUTH.

200 DATA"THIS IS THE OFFICE OF T
HE SUPPLY SERGEANT. THERE ARE FIL
ING CABINETS ALONG THE NORT
HERN WALL AND A DESK IN THE CENTE
R OF THE ROOM. THERE IS A ROOM TO
THE EAST AND A HALLWAY TO THE WE
ST.

210 DATA"YOU ARE IN THE WEAPONS
SUPPLY ROOM. THERE ARE SEVERAL
CRATES OF FIRE-ARMS IN THE ROOM.
ONE OF THE CRATES IS OPEN. THE
RE ARE ROOMS TO THE NORTH, SOU
TH, AND WEST.

220 DATA"THIS IS ANOTHER STORAGE
ROOM FILLED WITH MISCELLANEO
US ITEMS. THE ONLY EXIT IS TO THE
SOUTH.

230 DATA"THIS IS A STORAGE ROOM
FILLED WITH SECRETARIAL SUPPLI
ES. THERE IS A SINGLE EXIT TO THE
NORTH.

240 DATA"YOU ARE SITUATED IN AN
EAST/WEST HALLWAY. THERE IS A CO
RRIDOR TO THE EAST, AND A HALLWAY
TO THE WEST.

250 DATA"THIS IS A NORTH/SOUTH H
ALLWAY. TO THE NORTH IS ANOTHER
HALLWAY, AND TO THE SOUTH THERE
IS ROOM.

260 DATA"THIS IS A FAIRLY SMALL
ROOM WITH A DESK TOWARDS THE SOUT
HERN WALL. ON THE DESK IS A
PAIR OF DARK SUNGLASSES. TO THE
NORTH IS A CORRIDOR, AND TO THE
SOUTH, A STAIR WELL. THERE IS A S
ECURITY GUARD HERE.

270 DATA"YOU ARE ON A LANDING OV
ERLOOKING A DOWNWARD STAIRCASE. TH
ERE IS AN EXIT TO THE NORTH.

280 DATA"YOU ARE LOCATED IN A SM
ALL SECRETARIAL OFFICE. THE
RE IS A DESK NEAR THE NORTHERN
WALL, AND SOME HEAVILY PADDED CHA
IRS TO YOUR RIGHT. THERE ARE E
XITS TO THE EAST AND WEST.

290 DATA"THIS IS GENERAL HOUZER'
S OFFICE. THERE ARE SOME DARTS ON
HIS DESK AND SOME PICTURES OF HI
S FAMILY POSTED ON THE WALLS. TH
ERE ARE SOME STRANGE HOLES IN T
HE PICTURES. THERE IS A SI
NGLE EXIT EAST.

300 DATA"THIS IS A NORTH/SOUTH H
ALLWAY WITH ROOMS TO THE NORTH
, EAST, AND WEST, AND ANOTHER H
ALLWAY TO THE SOUTH.

310 DATA"YOU ARE CURRENTLY LOCAT
ED IN THE BASE PHOTO LAB. THERE I
S A LONG TABLE COVERED WITH BOT
TLER DEVELOPING SOLUTIONS. S
TRUNG ACROSS THE ROOM, THERE
IS A LINE WITH MANY PICTURES HANG
ING FROM IT. THERE IS A SINGLE EX
IT WEST.

320 DATA"THIS IS THE LEVEL <1> S
ECURITY ROOM. THERE ARE SEVERAL
CAMERA MONITORS AND ELECTRONIC
SENSING DEVICES ALONG THE NORTH
WALL. AS YOU ENTER THE ROOM 3
GUARDS GRAB YOU AND CART YOU O
FF TO SOME UNKNOWN AND TREACH
EROUS PLACE! (HEE HEE)

330 DATA"THIS IS THE OFFICER'S L
OUNGE. THERE IS A TABLE AND SO
ME CHAIRS IN THE MIDDLE OF THE RO
OM, AND A VENDING MACHINE AGAINST
THE WEST WALL. THERE ARE EXITS TO
THE NORTH, AND TO THE SOUTH

340 DATA"THIS ROOM IS CURRENTLY
UNUSED. THERE IS A BOX HERE THA
T CONTAINS OBJECTS TO BE
USED BY THOSE WHO WILL OCCUPY T
HE ROOM AT A FUTURE DATE. THERE
IS A ROOM TO THE SOUTH.

350 DATA"THIS IS THE FIRST FLOOR
CAFE. IT IS A LARGE ROOM FILLED
WITH TABLES AND CHAIRS. THE
RE ARE SOME SWINGING DOORS TO

THE WEST, AND HALLS TO THE NORTH, SOUTH, AND EAST.

360 DATA"YOU ARE CURRENTLY LOCATED IN A LARGE, RECTANGULAR KITCHEN. A LONG TABLE STRETCHES ACROSS THE ROOM. THE NORTHERN WALL IS LINED WITH POTS, PANS, KENMORE DISH WASHERS, AND MICROWAVE OVENS. A SWINGING DOOR LEADS INTO A ROOM TO THE EAST.

370 DATA"THIS IS A NORTH/SOUTH HALLWAY. THERE ARE ROOMS TO THE NORTH, SOUTH, AND EAST, AND AN ELEVATOR TO THE WEST. THERE IS A COFFEE STAIN ON THE FLOOR. THE ROOM TO THE NORTH IS AN M.P. LOUNGE. (USUALLY THERE IS SOME ONE THERE)

380 DATA"YOU HAVE WANDERED INTO THE LEVEL<1> MAIL SORTING ROOM. THERE ARE LARGE BINS FILLED WITH LETTERS AND OFFICIAL-LOOKING DOCUMENTS. THERE IS A HALL TO THE WEST.

390 DATA"YOU ARE IN AN ELEVATOR. THERE ARE 12 BUTTONS, NUMBERS FROM 1-12, AND A BUTTON TO KEEP THE DOOR OPEN. THE ELEVATOR DOOR JUST CLOSED.

400 DATA"THIS IS THE M.P.'S LOUNGE. THERE IS A COUCH ALONG THE NORTHERN WALL, AND A TABLE AND A FEW CHAIRS HERE. THERE IS AN M.P. HERE, SLEEPING ON THE COUCH. A SINGLE EXIT HEADS SOUTH

410 DATA"THIS IS A LONG NORTH/SOUTH HALL. THERE ARE ROOMS TO THE NORTH, AND TO THE SOUTH.

420 DATA"THIS IS THE BREAK ROOM. ANY ONE MAY USE THIS ROOM ON HIS BREAK. THERE IS AN EXIT TO THE NORTH, NEXT TO THE LARGE VENDING MACHINE.

430 DATA"AS YOU ENTER THE STALL, YOU REALIZE THIS IS NO ORDINARY STALL.....IT'S THE time machine! THERE IS A DIAL ON THE NORTHERN WALL LABELED 1-2-3-4-5. THERE IS ALSO A LEVER HERE. THE BATHROOM IS TO THE SOUTH.

440 DATA"YOU ARE LOCATED IN THE 2ND LEVEL BATHROOM. SINKS LINE THE EAST WALL. THERE IS A LARGE MIRROR ON THE WEST WALL, AND A HOT AIR BLOWER NEXT TO THE MIRROR. THERE IS AN UNOCCUPIED STALL TO THE NORTH, AND A HALLWAY TO THE SOUTH.

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WOONSOCKET, RI 02895

450 DATA"THIS IS THE PRESS RELEASE ROOM. THERE IS A PODIUM HERE, AND MANY SEATS. THE ROOM IS OTHERWISE EMPTY. THERE IS AN EXIT TO THE SOUTH, AND ANOTHER ROOM TO THE EAST.

460 DATA"YOU ARE IN COLONEL RHYDEL'S OFFICE. (HE GIVES THE PRESS CONFERENCES) THERE IS A LARGE OAK DESK AT THE EAST SIDE OF THE ROOM. THERE IS A ROOM TO THE WEST

470 DATA"YOU ARE CURRENTLY LOCATED IN AN EAST/WEST HALLWAY. THERE IS A ROOM TO THE NORTH, AND ONE TO THE EAST. ANOTHER HALL EXTENDS TO THE WEST.

480 DATA"THIS IS THE MAINTENANCE STORE ROOM. THERE ARE FLOOR BUFFERS HERE, AND BOTTLES OF WAXES AND POLISHES. (GOOD FOR COFFEE STAINED FLOORS!) THERE IS A HALL TO THE WEST.

490 DATA"THIS IS AN EAST/WEST HALLWAY. THERE IS A ROOM TO THE NORTH, AND HALLS TO THE EAST, WEST, AND SOUTH.

500 DATA"YOU ARE LOCATED IN A NORTH/SOUTH CORRIDOR. THERE IS AN OFFICE TO THE EAST, AND HALLS TO THE NORTH AND WEST.

510 DATA"ANOTHER HALLWAY! YOU ARE IN AN EAST/WEST CORRIDOR. A WESTERN EXIT LEADS TO A ROOM, AND EXITS TO THE NORTH, SOUTH, AND EAST LEAD TO OTHER HALLWAYS.

520 DATA"THIS IS A SECRETARY'S OFFICE. THERE IS A DESK HERE, CLUTTERED WITH LETTERS, FORMS, AND OTHER PARAPHERNALIA. THERE IS A ROOM TO THE EAST, AND A HALLWAY TO THE WEST.

530 DATA"THIS IS GENERAL FARNUM'S OFFICE. THERE IS A LARGE OAK GLASS-TOPPED DESK IN THE CENTER OF THE ROOM, WITH A SWIVEL-TILT EXECUTIVE CHAIR BEHIND IT. THERE ARE ROOMS TO THE NORTH, SOUTH, AND WEST.

540 DATA"THIS IS THE COMPUTER ROOM. THERE ARE SEVERAL MAIN FRAME COMPUTERS IN THE ROOM, AND A COCO NEAR THE NORTH WALL. THERE IS A SINGLE EXIT SOUTH.

550 DATA"THIS ROOM HOLDS THE PERSONAL RECORDS FOR THE ENTIRE BASE. -THE RECORDS ARE ON 5 1/4 INCH VERBATIM MINI DISKS. THERE ARE SOME DISKS LYING ON A TABLE, IN THE CENTER OF THE ROOM.

AN EXIT LEADS NORTH.

560 DATA"THIS IS AN EAST/WEST CORRIDOR. THERE ARE HALLWAYS TO THE EAST AND TO THE WEST.

570 DATA"YOU ARE IN A NORTH/SOUTH HALLWAY. THERE ARE HALLWAYS TO THE NORTH, AND TO THE EAST. TO THE WEST AND THE SOUTH ARE ROOMS.

580 DATA"THIS IS THE BASE COAT ROOM. 4 LARGE RACKS RUN NORTH/SOUTH ALONG THE EASTERN AND WESTERN WALLS. THERE IS A CORRIDOR TO THE NORTH, AND A ROOM TO THE SOUTH.

590 DATA"YOU ARE AT A LANDING FOR A STAIRCASE. A STAIRWAY LEADS UP. THERE IS A ROOM TO THE NORTH.

600 DATA"THIS IS A SECRETARIAL OFFICE. THERE IS A DESK HERE WITH A FULL COMPLIMENT OF OFFICE MATERIALS ON TOP. THERE IS A ROOM TO THE WEST, AND A HALLWAY TO THE EAST.

610 DATA"THIS IS THE OFFICE OF THE BASE LAWYER. HIS DESK, ALONG THE WEST WALL, IS HEAPED WITH LETTERS AND FORMS. A BOOK CASE CANVAS THE ENTIRE NORTH WALL. THERE IS A SINGLE EXIT EAST.

620 DATA"YOU ARE IN A NORTH/SOUTH HALLWAY. THERE ARE ROOMS TO THE NORTH, EAST, AND WEST. THERE IS A CORRIDOR TO THE SOUTH

630 DATA"THIS IS THE OPERATOR'S ROOM. PHONES LINE THE NORTH WALL, AND A HUGE SWITCH BOARD FILLS THE EASTERN WALL. A SINGLE EXIT LEADS WEST.

640 DATA"THIS IS THE LEVEL <2> SECURITY ROOM. THERE ARE SEVERAL CAMERA MONITORS AND ELECTRONIC SENSING DEVICES ALONG THE NORTH WALL. THERE IS A SINGLE EXIT EAST."

650 DATA"YOU ARE IN A SECRETARY'S OFFICE. THERE IS A DESK HERE WITH AN INTERCOM ON TOP. THERE IS A ROOM TO THE NORTH, AND A HALLWAY TO THE SOUTH.

660 DATA"THIS IS GENERAL MACNAMARA'S OFFICE. THERE ARE BOXES ON THE FLOOR, SINCE HE HASN'T FINISHED MOVING IN YET. THERE IS A ROOM TO THE SOUTH.

670 DATA"THIS IS A LARGE ROOM WITH THREE DESKS IN IT. IT IS A SECRETARY'S ROOM. MULTI-LINED PHONES ARE FOUND ON TOP OF EACH DE

SK. THERE IS A DOOR TO THE WEST,
AND HALL-WAYS TO THE NORTH, SOUTH,
AND EAST.

680 DATA "THIS IS AN ELEGANT OFFICE
THAT IS RESERVED FOR THE PRESIDENT
OF THE U.S., FOR WHEN HE VISITS
THE BASE (OFTEN), OR IF THERE IS
A WAR. ON HIS DESK IS A NOTE THAT
SAYS: 'FOR T.M.-> 1) INSTRUCTIONS
2) SECURITY OFF.<2>' THERE IS
A SINGLE EXIT EAST.

690 DATA "THIS IS A NORTH/SOUTH
HALLWAY. THERE ARE ROOMS TO THE
NORTH, SOUTH, AND EAST. THERE
IS AN ELEVATOR TO THE WEST.

700 DATA "THIS IS THE LEVEL <2>
MAIL ROOM. THERE ARE SEVERAL
LARGE BINS CONTAINING THOUSANDS
OF LETTERS. THERE IS A SINGLE
EXIT WEST.

710 DATA "YOU ARE IN AN ELEVATOR.
THERE ARE 12 BUTTONS, NUMBERED
FROM 1-12, AND A BUTTON TO
KEEP THE DOOR OPEN. THE
ELEVATOR DOOR JUST CLOSED.

720 DATA "THIS IS A GENERAL
LOUNGE. THERE IS A TABLE IN
THE MIDDLE OF THE ROOM, AND
A COUCH NEAR THE EAST WALL.
THERE IS A SINGLE EXIT TO
THE SOUTH.

730 DATA "THIS IS A NORTH/SOUTH
HALLWAY. THERE ARE ROOMS TO
THE NORTH AND SOUTH.

740 DATA "THIS IS THE BASE
INFIRMARY. A WIERD-LOOKING
DOCTOR IS DOZING IN THE
SOUTH-EASTERN CORNER OF THE
ROOM. THERE ARE SOME GLASS
CABINETS FILLED WITH MEDICAL
SUPPLIES ALONG THE SOUTH
WALL. THE ONLY EXIT IS NORTH.

750 DATA 0,,2,,7,1,,5,4,,,,,3,3
,,6,7,,,,,5,2,8,5,9,7,,10,14,20,1
5,7,25,,,,,11,8,12,13,,10,,11,,11
,,,,,,8,15,9,16,14,18,15,17,,16
,,,,,,15,19,,18,,23,9,21,22,,,,
20,,20,,24,20,,,,,23,,27,31,9,2
6,,25,,30,25,28,29,,,,,27,,,,,2
7,,25,32,,31,,

760 DATA 0,34,,33,39,,,,,37,36,,
,,35,35,,38,39,,,,,37,34,40,37,41
,39,,42,46,52,47,39,57,,43,40,4
4,45,,42,,43,,43,,,,,40,47,41,
48,46,50,47,49,,48,,,,,47,51,,
,50,,55,41,53,54,,,,,52,,52,,56,
52,,,,,55,,59,63,41,-1,,57,,62,
57,60,61,,,,,59,,,,,59

770 DATA 0,,57,64,,63,,0
780 DATA THERE ARE SOME PAPERS
HERE. PAPERS, THEY ARE OPERATING
INSTRUCTIONS. 62, THERE IS A BOX
OF BULLETS HERE. BULLETS, "THEY AR

E .38 CALIBER, LEAD.", -2, THERE IS
A PISTOL HERE. PISTOL, IT IS A
.38 CALIBER PISTOL., -2

790 DATA YOU NOTICE THERE IS A
CAMERA HERE. CAMERA, A POWERFUL
FLASH IS ATTACHED TO IT., 21, YOU
SEE THAT THERE IS A KEY HERE, KEY,
"IT IS GOLD, AND HAS 'PRES.'

WRITTEN ON IT.", 30, "THERE IS
A DISKETTE HERE, ON THE FLOOR.",
DISKETTE

800 DATA IT IS A VERBATIM MINI
DISK. THERE IS SOMETHING WRITTEN
ON IT., 45, THERE IS A CONTAINER
OF TEAR GAS HERE. TEAR GAS, THERE IS

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```

SOMETHING WRITTEN ON IT,32,THERE
IS A ROLL OF COTTONELLE HERE.
,COTTONELLE,IT IS COTTONY SOFT.,
1,,COMPUTER,IT IS A COCO.,44
810 V$="N S E W U D
L LOOKFLUSREADLOADOPENGET TAKE
INSETHROPUSHLISTPULLUNLOINV QUIT
SCORDROPI "
820 W$="PAPEBULLPISTCAMEKEY DISK
TEARCOITTCOMPCRATBOX GRAFSEBGGUAR
BUTTMAILDOORPICTTOILPIN LEVE"
830 FORX=1TO64:READA$(X):NEXTX:F
ORX=1TO64:FORY=1TO4:READ RM(X,Y)
:NEXT Y,X:FORX=1TO9:READI$(X):RE
AD IT$(X):READIL$(X):READIT(X):N
EXTX
840 R=1
850 CLS3:PRINT:PRINTA$(R)
860 IF R=22 THEN END
870 IF PT=3 THEN PRINT:PRINT"THE
TEAR GAS STUNG YOUR EYES. ASYOU
STARTED SCREAMING, AN M.P. RAN
UP, AND TOOK YOU AWAY.":END
880 IF PI=-1 THEN PT=PT+1
890 IF R=58 THEN PS=1
900 IFR=30 AND SL=0 THEN 2140
910 IF R=54 AND IT(3)=-1 AND LG=
1 THEN PRINT:PRINT"THE M.P.'S IN
THE ROOM RAISE THEIR HANDS A
ND BEG FOR MERCY WHEN THEY SEE
YOUR LOADED GUN. THEY TELL YOU
TO GO TO THE PRESIDENT'S R
ESERVED OFFICE.":SS=1:GOTO940
920 FORX=1TO9:IF IT(X)=R THEN PR
INTI$(X)
930 NEXTX
940 T=T+1:VB$="":VC$="":GOSUB 21
60:V=0:W=0
950 IF VB$="" THEN V=0:GOTO990
960 V=INSTR(1,V$,VB$):V=(V+3)/4:
IFV<1 THEN V=0
970 IFVC$="" THEN W=0:GOTO990
980 W=INSTR(1,W$,VC$):W=(W+3)/4:
IFW<1 THEN W=0
990 IFV=0 THEN 2250
1000 IF V=2 AND R=16 AND GR<>-1
THEN PRINT:PRINT"THE GUARD WON'T
LET UNAUTHORIZEDPERSONS PASS.":
GOTO940
1010 IF V=4 AND R=57 AND RM(57,4
)=-1 THEN PRINT:PRINT"THE DOOR I
S LOCKED.":GOTO 940
1020 IF V=3 AND R=10 AND SG=1 TH
EN PRINT:PRINT"THE SERGEANT WON'
T LET YOU PASS WITHOUT A VALIDAT
ED REQUISITION SLIP.":GOTO940
1030 ON V GOTO 1050,1050,1050,10
50,1080,1100,850,1120,1360,1390,
1460,1500,1550,1590,1650,1700,18

```

```

10,1890,1910,2010,2030,2080,2090
,2100,2030
1040 GOTO 2250
1050 IF RM(R,V)>0 THEN R=RM(R,V)
:GOTO850
1060 IF RM(R,V)=0 THEN 2120
1070 IF RM(R,V)=-1 THEN 2130
1080 IF R=49 THEN R=17:GOTO 850
1090 GOTO 2120
1100 IF R=17 THEN R=49:GOTO 850
1110 GOTO 2120
1120 IF W<1 THEN 1300
1130 IF W>9 THEN 1160
1140 IF R=IT(W) OR IT(W)=-1 THEN
PRINT:PRINTIL$(W):GOTO940
1150 PRINT:PRINT"I DON'T SEE IT
HERE.":GOTO 940
1160 IFW=10 AND IT(2)=-2 AND R=1
1 THEN PRINT:PRINT"IT IS A WOODE
N CRATE WITH A BOX OF BULLETS IN
IT.":IT(2)=11:GOTO940
1170 IFW=10 AND R=11 THEN PRINT:
PRINT"IT IS AN EMPTY, WOODEN CRA
TE.":GOTO940
1180 IF W=11 AND R=24 AND IT(3)=
-2 THEN PRINT:PRINT"IT IS A CARD
BOARD BOX WITH A PISTOL IN IT
.":IT(3)=24:GOTO 940
1190 IF W=11 AND R=24 THEN PRINT
:PRINT"IT IS AN EMPTY CARDBOARD
BOX.":GOTO940
1200 IF W=12 AND R=1 THEN PRINT:
PRINT"IT IS SCRATCHED IN THE PAI
NT.":GOTO 940
1210 IF W=13 AND R=10 AND SG=1 T
HEN PRINT:PRINT"HE IS HUSKY-LOOK
ING INDIVIDUAL.-I ADVISE YOU DON
'T ANGER HIM!":GOTO940
1220 IF W=14 AND R=16 AND GR=-1
THEN PRINT:PRINT"THE POOR GUY IS
UNCONSCIOUS!":GOTO 940
1230 IF W=14 AND R=16 AND GR=1 T
HEN PRINT:PRINT"HE IS IN FULL CO
NTROL OF HIS FACULTIES.-DON'T
TOY WITH HIM.":GOTO940
1240 IF W=15 AND R=27 THEN PRINT
:PRINT"THE DOOR IS OPEN. IT IS E
MPTY.":GOTO940
1250 IF W=15 AND R=29 THEN PRINT
:PRINT"THERE IS A SLOT FOR A SEC
URITY CARD.":GOTO940
1260 IF W=15 AND R=28 THEN PRINT
:PRINT"THERE ARE THOUSANDS OF EN
VELOPS.":GOTO940
1270 IF W=15 AND R=60 THEN PRINT
:PRINT"WOW...EVERY ENVELOPE HAS
A STAMPON IT!":GOTO 940
1280 IF W=15 AND R=59 THEN PRINT
:PRINT"THE DOOR IS OPEN.":GOTO94
0

```

```

1290 IF W=15 AND R=61 THEN PRINT
:PRINT"THEY IS A SLOT FOR A SEC
URITY CARD.":GOTO940
1300 IF W=19 AND R=1 AND TM=1 THE
N PRINT:PRINT"HEY!....IT'S THE T
IDY BOWL MAN!":GOTO940
1310 IF W=19 AND R=1 AND TM=0 TH
EN PRINT:PRINT"THE WRECKAGE OF A
TINY BOAT IS FLOATING IN THE T
ANK.":GOTO940
1320 IF W=19 AND R=1 AND TM=-1 T
HEN PRINT:PRINT"THEY IS WATER I
N IT.":GOTO940
1330 IF W=16 AND R=28 THEN PRINT
:PRINT"WOW...EVERY LETTER HAS A
STAMP ON IT!":GOTO940
1340 IF W=16 AND R=60 THEN PRINT
:PRINT"WOW...THERE ARE TONS OF L
ETTERS HERE!":GOTO940
1350 PRINT:PRINT"I CAN'T DO THAT
.":GOTO940
1360 IF W=19 AND R=1 AND TM=1 TH
EN PRINT:PRINT"KPLOOSH.....AA
AAAAAGH!!! OOPS...THERE GOES
THE TIDY BOWL MAN!":TM=0:GOTO94
0
1370 IF W=19 AND R=1 THEN PRINT:
PRINT"KPLOOSH.....":TM=-1:GOT
O940
1380 PRINT:PRINT"I CAN'T DO THAT
.":GOTO940
1390 IF W=1 AND IT(1)=-1 THEN PR
INT:PRINT"IT SAYS: 1) ENTER TIME
MACHINE 2) PULL LEVER
":GOTO 940
1400 IF W=6 AND IT(6)=-1 THEN PR
INT:PRINT"IT SAYS: 'PROJECT GENE
SIS'":GOTO 940
1410 IF W=7 AND IT(7)=-1 THEN PR
INT:PRINT"IT SAYS: IF USING INDO
ORS, STAY OUT OF THE RO
OM...PULL THE PIN, THEN
THROW THE CANISTER
INTO THE ROOM.":GOTO94
0
1420 IF W=12 AND R=1 THEN PRINT:
PRINT"IT SAYS: GENERAL HOUSER IS
A SCHNOUZER.":GOTO 940
1430 IF W=16 AND R=28 THENPRINT:
PRINT"THAT'S AGAINST THE LAW!":G
OTO940
1440 IF W=16 AND R=60 THEN PRINT
:PRINT"NO...WOULD YOU WANT SOMED
NE READING your MAIL?":GOTO
940
1450 PRINT:PRINT"I CAN'T DO THAT
":GOTO 940
1460 IF W<>3 THEN PRINT:PRINT"I
CAN'T DO THAT.":GOTO940

```

```

1470 IF IT(3)<>-1 THEN PRINT:PRI
NT"YOU DON'T HAVE ONE.":GOTO940
1480 IF IT(2)<>-1 THEN PRINT:PRI
NT"YOU DON'T HAVE ANY BULLETS.":
GOTO 940
1490 PRINT:PRINT"OK. THE GUN IS
LOADED.(PLEASE BE CAREFUL)":LG
=1:IT(2)=0:IN=IN-1:IT$="PISTOL (
LOADED)":GOTO940
1500 IF W=16 AND R=28 THEN PRINT
:PRINT"AWFUL NOSEY, AREN'T YOU!":
GOTO940
1510 IF W=16 AND R=60 THEN PRINT
:PRINT"COME ON NOW!!!":GOTO940
1520 IF W=17 AND R=57 AND RM(57,
4)=0 THEN PRINT:PRINT"IT IS LOCK
ED.":GOTO940
1530 IF W=17 AND R=57 AND RM(57,
4)=58 THEN PRINT:PRINT"IT IS ALR
EADY OPEN.":GOTO940
1540 PRINT:PRINT"I CAN'T DO THAT
.":GOTO940
1550 IF W=0 OR W>8 THEN PRINT:PR
INT"I CAN'T DO THAT.":GOTO940
1560 IF IT(W)=-1 THEN PRINT:PRIN
T"YOU ALREADY HAVE IT.":GOTO940
1570 IF IT(W)<>R THEN PRINT:PRIN
T"I DON'T SEE IT HERE.":GOTO940
1580 IF IT(W)=R THEN PRINT:PRINT
"OK.":IT(W)=-1:IN=IN+1:GOTO940
1590 IF W<>18 THEN PRINT:PRINT"I
CAN'T DO THAT.":GOTO940
1600 IF IT(4)<>-1 THEN PRINT:PRI
NT"NO CAMERA!":GOTO940
1610 IF R=16 THEN PRINT:PRINT"TH
E GUARD LOOKS UP, SURPRISED, AS
YOU TAKE THE PICTURE. THE GU
ARD HAS BEEN HAVING PROBLEMS WI
TH HIS EYES--THEY HAVE BEEN VE
RY SENSITIVE TO LIGHT. THE FL
ASH TEMPORARILY BLINDED HIM. HE
FELL BACK, AND HIT HIS HEAD."
1620 IF R=16 THEN GR=-1:GOTO940

```

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1630 IF R=10 THEN PRINT:PRINT"THE
SERGEANT WON'T MAKE A GOOD PI
CTURE.":GOTO940
1640 PRINT:PRINT"NAH, THE SCENERY
IS TOO DRAB.":GOTO 940
1650 IF W<>5 THEN PRINT:PRINT"I
CAN'T DO THAT.":GOTO940
1660 IF R<>57 THEN PRINT:PRINT"THE
HERE ISN'T A LOCKED DOOR HERE.":
GOTO940
1670 IF IT(5)<>-1 THEN PRINT:PRI
NT"YOU DON'T HAVE A KEY":GOTO940

1680 IF RM(57,4)=58 THEN PRINT:P
RINT"THE DOOR HAS ALREADY BEEN
UNLOCKED & OPENED.":GOTO940

1690 PRINT:PRINT"OK. THE DOOR HA
S BEEN UNLOCKED AND OPENED.":RM
(57,4)=58:GOTO940
1700 IF W<1 OR W>8 THEN PRINT:PR
INT"I CAN'T DO THAT.":GOTO940
1710 IF W<>7 THEN 2100
1720 IF R=8 THEN 1740
1730 GOTO 2100
1740 PRINT:LINEINPUT"THROW IT IN
WHICH DIRECTION:":D$
1750 IF IT(7)=-1 AND LEFT$(D$,1)
="E" AND PI=-1 THEN PRINT:PRINT"
THE CANISTER OF TEAR GAS FLEW
INTO THE NEXT ROOM. THE SERGEANT
FLED PAST YOU, DOWN THE HALL.":S
G=-1:IT(7)=0:PI=-2:IN=IN-1:GOTO9
40
1760 IF LEFT$(D$,1)="E" AND PI=1
AND IT(7)=-1 THEN PRINT:PRINT"THE
CANISTER FLEW INTO THE NEXT R
OOM AND HIT THE FLOOR WITH A TH
UD.":IT(7)=10:IN=IN-1:GOTO 940
1770 IF IT(7)=-1 AND PI=1 THEN P
RINT:PRINT"THE CANISTER LANDED A
T THE OTHEREND OF THE HALL.":IT(
7)=8:IN=IN-1:GOTO940
1780 IF IT(7)=-1 AND PI=-1 THEN
PRINT:PRINT"THE CANISTER LANDED
AT THE OTHEREND OF THE HALLWAY.
THE GAS IS STINGING YOUR EYES.
SHORTLY AFTER YOU SCREAMED,
AN M.P. CAMEAND TOOK YOU AWAY. "
;CHR$(13);CHR$(13);"YOU TOOK ";T
;" TURNS.":END
1790 IF IT(7)<>-1 THEN PRINT:PRI
NT"YOU DON'T HAVE ANY TEAR GAS.":
GOTO940
1800 PRINT:PRINT"I CAN'T DO THAT
.":GOTO940
1810 IF W<>15 THEN PRINT:PRINT"I
CAN'T DO THAT.":GOTO940

```

```

1820 PRINT:LINEINPUT"WHICH BUTTO
N WOULD YOU LIKE TO PUSH: 1-12,
OR <D>OOR.=>":B$
1830 B=VAL(B$):IF B>12 OR B<>INT
(B) THEN 1820
1840 IF B=0 THEN B$="D" ELSE B$=
STR$(B)
1850 IF B$="D" THEN PRINT:PRINT"
OK. THE DOOR OPENED. IT JUST
CLOSED AGAIN.":GOTO940
1860 IF R=29 THEN PRINT:PRINT"TH
E DOOR OPENED ON FLOOR ";B$;".":
CHR$(13);"TWO M.P.'S WERE WAITIN
G TO BOARDTHE ELEVATOR. WITH NO
PLACE TO HIDE, YOU WERE ARRESTE
D BY THE GUARDS.->BETTER LUCK N
EXT TIME!":END
1870 IF R=61 AND B$="1" THEN R=2
7:PRINT:PRINT"OK. YOU WENT TO LE
VEL <1> AND GOT OFF THE ELEVAT
OR.":GOTO940
1880 R=29:GOTO 1860
1890 IF R=27 THEN PRINT:PRINT"TH
E COAST IS CLEAR. YOU HEAR AN M.
P. SLEEPING IN THE ROOM TO THEND
RTH, BUT HE WON'T WAKE UP.":SL=-
1:GOTO940
1900 PRINT:PRINT"THE BASE IS SIL
ENT.":GOTO940
1910 IFW<20 THEN2000
1920 IF W=21 THEN 1960
1930 IF IT(7)<>-1 THEN2000
1940 PRINT:PRINT"OK. THE PIN HAS
BEEN REMOVED FROM THE TEAR G
AS CANISTER.":PI=-1:PT=1:GOTO940

1950 IF PI<0 THEN PRINT:PRINT"TH
E PIN HAS ALREADY BEEN REMOVED":
GOTO940
1960 IFR<>33 THEN PRINT:PRINT"I
DON'T SEE A LEVER HERE.":GOTO940

1970 IF IT(1)<>-1 THENPRINT:PRIN
T"BUT I DON'T KNOW HOW TO OPERAT
E THIS GADGET.(TRY GETTING SOME
INSTRUCTIONS.":GOTO940
1980 IF PS=0 OR SS=0 THEN PRINT:
PRINT"YOU DON'T HAVE EVERYTHING
THAT YOU NEED.":GOTO940
1990 CLS3:PRINT:PRINT" YOU ARE I
N AWE AS YOU WATCH A SWIRL OF
COLORS ENVELOPE YOU, AND WISK
YOU AWAY, ACROSS THE GALAXY. Y
OU AWAKEN TO FIND THAT YOU
ARE SOMEWHERE ELSE.":PRINT:SCREE
NO,1:GOTO2150
2000 PRINT:PRINT"I CAN'T DO THAT
.":GOTO940
2010 IF W=17 THEN W=5:GOTO1650

```

```

2020 PRINT:PRINT"I CAN'T DO THAT
.":GOTO940
2030 PRINT:PRINT" YOU ARE CARRYI
NG ";IN;" OBJECTS:"
2040 FORX=1TO8:IF IT(X)=-1 THEN
PRINT " ";IT$(X)
2050 NEXT
2060 IF IN=0 THEN PRINT" NOTH
ING.":GOTO940
2070 GOTO940
2080 PRINT:PRINT"YOU TOOK ";T;"
TURNS.":PRINT:END
2090 PRINT:PRINT"SO FAR, IT HAS
TAKEN YOU ";T;CHR$(13);"TURNS.":
GOTO940
2100 IF IT(W)<>-1 THEN PRINT:PRI
NT"YOU DON'T HAVE IT TO DROP.":G
OTO940
2110 IT(W)=R:PRINT:PRINT"DROPPED
.":IN=IN-1:GOTO940
2120 PRINT:PRINT"THERE IS NO WHE
RE TO GO IN THAT DIRECTION!":GOT
O 940
2130 PRINT:PRINT"THE DOOR IS LOC
KED!":GOTO 940
2140 PRINT:PRINT"THE GUARD WOKE
UP AND FOUND YOU SNOOPING AROUND
THE ROOM. HE ARRESTED YOU, A
ND LOCKED YOU UP.":END
2150 GOTO 2150
2160 PRINT:LINEINPUT">";VE$:IFLE
N(VE$)<4 THEN FOR X=1 TO INT(4-L
EN(VE$)):VE$=VE$+" ":NEXT:VB$=VE
$:RETURN
2170 FORX=1TOLEN(VE$):IFMID$(VE$
,X,1)=" " THEN 2190 ELSE NEXT
2180 VB$=VE$:GOTO 2200
2190 VB$=LEFT$(VE$,X):VC$=MID$(V
E$,X+1,4)
2200 IF LEN(VB$)<4 THEN FORX=1 T
O INT(4-LEN(VB$)):VB$=VB$+" ":NE
XT
2210 VB$=LEFT$(VB$,4)
2220 IF LEN(VC$)<4 THEN FORX=1 T
O INT(4-LEN(VC$)):VC$=VC$+" ":NE
XT
2230 VC$=LEFT$(VC$,4)
2240 RETURN
2250 PRINT:PRINT"EXCUSE ME???:"G
OTO 940

```

What We Need for the CoCo III

If you are like me, you are very excited about the new Color Computer. Faster, better, and with true multi-tasking, we rub our hands together and squeak with enthusiasm. However,

for all the new CoCo's great features, it needs a great deal of new software, hardware, and services to fully use and exploit these features. Only when we start getting this additional support, will the CoCo III be fully realized.

This first thing we need is new, more powerful software to take advantage of the features now available. Programs like DynaCalc, The Last Word, CModem and other OS-9 programs should be relatively easier to convert. Just converting a few of these more powerful applications programs currently available will make the CoCo III an excellent home business type computer.

Utilities, too, need to be brought out, to both make the machine easier for programmers and end users to work with. What is most needed in the area of utilities are programs to take advantage of the high resolution modes not supported by Basic.(The 640*200 modes and the 640*225 modes). Also, a utility to convert IBM programs to a CoCo would be nice, since the display capabilities are now so similar.

Of course, computers are not all work and no play. With the graphics abilities now available, there is no reason why we can not have lots of games from firms like Telarium, Avalon Hill, Epyx, and others. I know I would gladly buy a CoCo III version of "Rendezvous with Rama", or "Ghostbusters". Graphics programs, like "CoCo Max", with the new system, would be outstanding.(Colorware, are you listening)?

With the CoCo's new, enhanced computing power, it is now time for someone to come out with some desktop publishing software. I know this at first might seem a little demanding and esoteric, but remember that the CoCo can use 512K, and the Mac is typically a 512K machine. Second, there is a need for this type of software. How many Color Computer newsletters are written and printed? Also, it is my experience that most active computer users are involved with other clubs and activities.(I discovered my local CoCo club through the astronomy club I was in). Thus, a desktop publishing program, reasonably priced, would probably sell well.

Hardware is another area in which we need to do a lot with. First of all, I think Tandy should do one of three things with its CoCo disk drive. 1) reduce its price from 299.95 to 199.95 on an everyday basis. 2) make it double-sided for the 299.95 price. 3) make it a two single sided drives for 299.95. Personally, I think 2 is the best, but that is just my preference. I can say this, however, my family owns a Shack dealership,

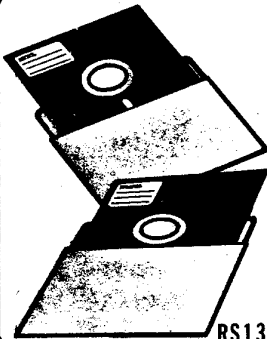
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and it annoys me that Tandy's everyday price on a single-sided drive is 299.95, that is just too high. Also, Tandy should come out with lower priced hard disk drives to use with the CoCo. With 20Meg cards available for the MS-Dos machines for 799.00, Tandy should at least bring out a 15Meg drive for the Color Computer for that price.

Of course, hard drives in general seem to be very confusing for the CoCo owner. It seems I never stop hearing how confused people get when trying to buy a hard drive from either Tandy or a third party vendor. Frankly, if these vendors want to sell hard drives in any large quantity, they are going to have to make them convenient to install, and they should have solid documentation. So far, I have yet to see any hard drive system that meets these requirements.

Among the other hardware items we need is a multi-pak interface with more than four slots, preferably six slots. Today, with things like hard drive interfaces, speech recognition, and four port RS-232 paks, among other items, one can fill up four slots very easily, and six slots could be used by a large number of users. Also, a two button mouse would be great, since we can use two buttons on a new CoCo. Other hardware options would also be useful, but right now, I think a large percentage of CoCo III users would take advantage of the above.

Finally, there is a need for documentation for the new computer. Somebody should (and will, I am sure) rip the thing open, and start giving us some very useful information on the GIME chip and other features. Articles, books, and tutorials are needed to tell us how to best take advantage of this new machine.

I honestly think that all the above things I have talked about reasonable to do, and should be done. As I said, the CoCo III is an excellent computer, but as a box, sitting alone, it can not do anything. Hook up a monitor, drive, multi-pak with a four serial port adapter with four modems, and you have a four user BBS!

If any of you reading this have any feelings on what we need for the CoCo III, you can write me at:

Michael Marcelletti
P.O. Box 265
Paw Paw, MI 49079

If I get enough response on some things, I will forward the results to whomever they apply too, such as Spinnaker, Tandy, PBJ, etc. In any case, I will write a follow-up article about it, hopefully using an 80 column OS-9 based word processor!

Quick & General CoCo Hard Disk Information By Kevin Darling

A hard disk system consists of:

- Power supply
- Hard drive(s)
- Hard drive controller
- HCA - Host Computer Adapter (Interface Pak)

POWER SUPPLY

Won't go into much detail here. Controller boards require 5 volts at around 3 amps max. Drives require 5 and 12 volts at varying amperage. Check their specs. One thing to note is that drives can take up to 20 seconds to get to speed. During the first part of this powerup, the 12 volt amperage needed can be quite high. Don't skimp.

Hard drives and controllers also generally require a fan, and in fact most manuals specify some sort of forced cooling system.

DRIVES

Most drives are either 5.25" full or 1/2 height, or 3.5" and are usually advertised as being ST506 or also ST412 compatible. The first (ST506) reference simply means the drive uses an industry standard signal interface, pioneered by Seagate Technology.

If the drive also has buffered seek capability, then it MAY instead get the ST412 reference in an ad. Buffered seek means the controller can send step commands as fast as possible to the drive, and the drive will move it's head at it's maximum speed to catch up. I have seen dramatic differences in access time between a buffered vs non-buffered drive. Some software drivers don't take advantage of it. Most new drives DO have buffered seek. Ask the dealer to be sure.

Hard drives rotate at 3600 rpm vs a floppy drive's 300 rpm. The heads actually "fly" at 18 millionths (or less) of an inch above the coated aluminum disks (platters), which are sealed in a containment cover. Do NOT move a hard disk while it's rotating, as you could cause the heads to gouge into the surface! Many drives have a safe landing zone on the innermost cylinders, thus some people use a "park" command to move the heads-assembly there before shutting off their drive.

Drives are specified by their capacity in megabytes, number of heads (or sometimes platters), and number of cylinders. Usually, when formatted, you will use 32 sectors on each cylinder for each head.

Example: a 10 meg drive might have 2 metal platters or disks, (or 4 heads because there is a head per platter side); and 306 cylinders. Note that therefore each cylinder has 4 'tracks' of 32 sectors each, or 4*32 = 128 sectors available without moving the heads to another cylinder.

For this example, (4 heads/cylinder * 32 sectors/head * 306 cylinders) = 39168 sectors * 256 bytes/sector = 10 Megabytes.

CONTROLLERS

Hard disk controllers are very intelligent devices, with a micro and RAM on board, along with the digital/analog circuitry needed to control a drive. The micro interprets a simple command like Read Sector, Write Sector, Seek or Restore from the host computer (CoCo), and then goes off on it's own to execute that command. The RAM is used to store one or more sectors of data read/written from/to the drive. Thus the CoCo is free to go do something else (and under OS9 it may) while the controller does the hard work.

Most controllers can handle at least two drives. Some may require that both drives be the same type. Ask the dealer.

There are two main flavors of controllers used by CoCo designers: SASI and non-SASI. The difference is in how a computer interfaces with that controller.

Either will hook up to a ST506-type drive. Controller to drive connections are a 34-pin control cable which is daisy-chained to all drives, and a 20-pin data cable which goes to each drive.

SASI (pronounced 'sassy') stands for Shugart Associates System Interface, and is a subset and the forerunner of SCSI (pronounced 'scuzzy') or Small Computer System Interface. Generally, either term may be used around the CoCo, as the extra features of SCSI aren't used. SASI/SCSI controllers include the Data Technology DTC-520A, Xebec 1410A, WD1002-SHD and Qmti 20L. They range in cost from \$120 to \$220.

The main advantage of a SCSI/SASI controller to the programmer is that it calculates the cylinder, head and sector numbers for you from a LSN (Logical Sector Number) passed to it. Thus that part of an OS9 driver can be much simpler, since OS9 uses LSN's to keep track of info on the disk.

Another advantage is that many computers (such as the Atari ST) support a form of SCSI, meaning that you could POSSIBLY use the same controller with a different host interface on another computer you've bought. For example, L&R Tech is rumored to working on an adapter for CoCo SCSI systems to go with the ST.

The main disadvantage of a SCSI controller is that for EACH byte transfer between the CoCo <---> controller's on-board RAM buffer, the computer and controller must go through a REQuest and ACKnowledge signal protocol. This means a slight (to you) delay on a sector transfer, due to the software overhead involved.

The most common non-SCSI controllers used are the Western Digital series. A

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favorite is the WD1002-05 (\$180-\$200), which will control up to 3 hard disks and 4 DSDD floppies. Because most people will continue to use their RS floppy disk controller to stay compatible, you could instead get the WD1002-HDO (hard disk only- \$140), which is a -05 without the floppy parts.

OS9 drivers must calculate the cylinder, head and sector from the LSN passed to it. A driver that handles all variations of drives can be half made up of these math routines, tho a driver for just drives with an even number of heads is easier.

On the other hand, the later (WD1002+) boards require no protocol or waiting between bytes when transferring data to/from the controller's on-board RAM. So, once the controller has accessed the hard disk, reading the RAM buffer is faster than a ramdisk.

In the end it all seems to balance out. One system is generally so close to another in action, it makes little difference.

HCA (INTERFACE PAK)

This is the computer-specific part of the hardware. Each computer, depending upon it's bus or ports, will use a different hardware method of interfacing to the hard disk controller. The RS CoCo Hard Disk Interface is one example. It interfaces to a WD1010 controller, tho I suspect it might be useable with the WD1002, since Western Digital tries to keep it's interfaces and software upgradeable.

The HCA side of a controller looks like a set of addressable R/W registers. So an interface generally consists of an address decoder to place the interface within a certain range of CPU addresses (\$FF70-77 is a favorite. RS uses the SCS line and flips MPI slots), a bidirectional byte-wide data buffer, and buffers for Select, Read, Write, and Register select address lines going to the controller.

In other words, the controller board is just like any other device that you might interface to your CoCo (like clock chips, PIA's, ACIA's, A/D converters <like CoCoMax's ADC0809>). The HCA or interface pak would be different for an Apple, for instance. But the controller and drives could stay the same.

Note that I am NOT necessarily saying that you could drag your hard setup from computer to new computer. You'd probably have to build an interface and write your own software. Another case in point is an IBM controller board: it also has the HCA built-in, so that the controller and interface are on the one board that you plug into your PC.

SOFTWARE DRIVERS, PARTITIONS

All the CoCo hard disks have OS9 drivers available. Many also have some sort of RSDOS compatibility. At least one also supports FLEX. To allow you to use your hard drive for several different operating systems, some companies allow the one physical drive to be partitioned into two or more logical drives.

Example: On my RGS Micro hard disk, the first X-number of cylinders (or sectors) are reserved for use as ten RSDOS fake 35-track disks. The remaining cylinders are used as my OS9 "/HO", though I could've also partitioned that into HO, H1, and so on.

PERSONAL NOTE

Let me interject an opinion here. While I enjoyed some aspects of having RSDOS partitioning at first, mainly because Hoyt Stearns' FORTH and COCOMAX would run off my own hard disk (Telewriter didn't, by the way), and perhaps a RSBASIC database would be quite slick running on it, I will soon reformat the disk and do away totally with all partitions, leaving it all OS9. It just doesn't seem sensible to use all that storage for games or basic programs. I'd rather keep 10 floppies nearby.

Besides, you're always trying to decide what to keep on it (that also runs). Others I know have already done away with the RSDOS sections. It's a nice idea, but only semi-practical.

On OS9 partitioning: again, the whole point is having the storage available on ONE device. Very very few people I have ever talked to have their hard disk set up as other than just /HO only.

Fewer still use two actual drives, tho some of the drivers support them.

One more thing. 5 megs is too little! Go for at least 10 megs. Me? I'll go at least 20 next time.

MINI-REVIEW (my opinion, so ask around!)

RGS Micro (Software Support) - I own one of the first 5 Megs. Plugs into slot 3 of MPI. Has own RSDOS Hard disk ROM. You must software select between the hard disk or floppies. SASI controller. Sometimes off-the-wall drives used, I hear. Does not seem to use buffered seek. Popular unit, partly because it was the very first CoCo hard disk around. Must boot OS9 from a floppy, tho I rigged up a custom OS9 for mine that can boot from the hard disk.

J&M - I've seen the 20 meg unit. Uses a 3.5" drive. Very nicely built. You must connect it to a J&M floppy controller that is set up for it. Uses a Konan controller, which is from Taiwan tho well-designed. J&M claims to use at one sector/cluster, you must

partition it into (I think) two 10meg or four 5-meg logical drives. Malarkey. I have a "fix". Best thing about it is that under JDOS, you can boot to OS9 straight from the hard disk. Plus it only uses one slot for both flop and hard. Does JDOS work on CoCo-3, though?

LR TECH (OwlWare) - Includes source for the OS9 drivers. Source code included for quite a few different kinds of controllers and drives. SCSI, I think. I met the designers at Princeton '85 and they are engineers that use OS9 daily. Very impressive people. People tell me it's a nice unit. Don't know many other details.

SCR DEVICES (?) - Built by Steve Odneal. I don't think he's still doing it, last I heard. He used the WD1002-05. Drivers included to boot off hard disk; runs RSDOS, FLEX and OS9.

TANDY RS - What can I say that you don't know? People who have them, like them. They should, at that price! Drivers for OS9 only. For the price of the interface, they should've added a RSDOS ROM, I think. Drives have WD1010 controller.

Roll Your Own - Not too hard. A WD1002-HDO can be had for as little as \$140. A WD1002-SHD (SASI) is about \$160. Surplus 30 Meg drives are as low as \$350. Add about \$100 for power supply, cables and several chips for an interface. A friend and I designed & built a CoCo 10 megger with the 1002-05, a buffered seek drive, and a 250 byte long OS9 driver. It is as darn near to instantaneous R/W as is possible without DMA. I hope to soon post a schematic (or two) and the OS9 drivers for same.

Check Byte and Computer Shopper for some of the best deals on drives and controllers. Owlware also sells just the LR TECH interface for \$100, which might seem high 'til you realize that you get tons of driver source code with it.

AUTO BOOT

THIS PROGRAM WILL WORK WITH DISK BASIC (EITHER 1.0 OR 1.1) IT WILL NOT WORK WITH ADOS OR OTHER AUGMENTED DOS', AS PARTS OF THEIR CODE WILL BE OVERWRITTEN.

1. SAVE THIS PROGRAM ON DISK WITH NAME "HELLO/BAS".

THERE MUST BE AT LEAST 9 GRANS OF FREE DISK SPACE.

18

2. RUN THE PROGRAM.

3. IF YOU HAVE A 64K SYSTEM, TEST BY PRESSING ENTER AT THE PROMPT. IF EVERYTHING WORKED PROPERLY, THE PROGRAM SHOULD RE-RUN. IF YOU DO NOT HAVE 64K, YOU CANNOT TEST.

4. YOU WILL FIND A FILE ON YOUR DISK CALLED "HELLODOS/BIN". IT HAS A LOAD ADDRESS OF &H4000TO &H5FFF

5. BURN THIS INTO AN EPROM. REPLACE THE ROM IN YOUR DISK CONTROLLER WITH THIS EPROM. TO USE, THERE MUST BE A BASIC PROGRAM ON THE DISK IN DRIVE 0 CALLED "HELLO/BAS". THIS CAN BE THE ACTUAL PROGRAM YOU WANT TO RUN, OR IT CAN LOOK LIKE THIS:

```
1      RUN"PROGRAM/BAS"      OR      1
LOADM"PROGRAM/BIN":EXEC ON POWERUP, THIS
PROGRAM WILL RUN. IF YOU DON'T HAVE A DISK
WITH "HELLO/BAS" ON IT, THE COMPUTER WILL
SHOW AN NE ERROR, AND EVERYTHING WILL BE
NORMAL.
```

TO BOOT OS9:

IF YOU HAVE COMPUTERWARE'S "LOOK AND LISTEN" UTILITIES, USE THE "MAKE.RS.BOOT" UTILITY AS DIRECTED TO MAKE A BOOTABLE DISK. THEN RENAME THE ONLY BASIC FILE ON THIS DISK FROM "DOS/BAS" TO "HELLO/BAS". WITH THIS DISK IN DRIVE 0, OS9 WILL BOOT ON POWERUP IF YOU DO NOT HAVE THIS UTILITY, EXPERIENCED PROGRAMMERS SHOULD BE ABLE TO EMULATE ITS ACTION.

1. FORMAT A DISK IN OS9.

2. PUT A BASIC PROGRAM ON THIS DISK NAMED "HELLO/BAS". IT SHOULD HAVE THE MACHINE CODE FROM THE RADIO SHACK OS9BOOT DISK APPENDED TO IT.

3. THE UNUSED PORTIONS OF THE FILE ALLOCATION TABLE SHOULD BE SET TO CHR\$(&HCD)

4. THE DISK ALLOCATION MAP ON LSN 1 SHOULD BE ADJUSTED TO EXCLUDE THE SECTORS USED BY THE BASIC PROGRAM AND ITS DIRECTORY ENTRY.

BASIC'S PROGRAM AREA IS STUFFED WITH A LINE WHICH SAYS:

```
1 RUN"HELLO" THEN THE PROGRAM JUMPS INTO THE
BASIC RUN LOOP, AND SINCE THIS LINE IS IN
MEMORY, IT RUNS. TRY TESTING WITH DRIVE DOOR
OPEN. AFTER I/O ERROR, "LIST" TO SEE PROGRAM
LINE.
```

```
10 'HELLO
```

```
15 'GENERATE A VERSION OF THE DO
S THAT WILL AUTOMATICALLY RUN A P
ROGRAM ON POWERUP.
```

```
20 GOSUB70
```

```
25 CLS:GOSUB60:PRINT"SAVING RS D
OS":PRINT:SAVEM"DOS",&HC000,&HDF
FF,0:PRINT"LOADING RS DOS AT 400
0H":PRINT:LOADM"DOS",&H8000:PRIN
T"POKING PATCH":PRINT:GOSUB45:PO
KEPK,&HDA:POKEPK+1,0
```

```

30 PRINT"SAVING HELLODOS 4000-5F
FFH":SAVEM"HELLODOS",&H4000,&H5F
FF,0:KILL"DOS/BIN":C LS:PRINT"d
one":PRINT:PRINT"PRESS BREAK TO
EXIT":PRINT:PRINT"PRESS ENTER TO
TEST"
35 A$=INKEY$:IFA$=""THEN35
40 GOSUB65:CLS:EXEC&H1000
45 AA$="8EFFFF301F8C000122F9308D
002B108E2600C615A684A7A43001312
15A26F5318D00278E0019C629A6A4A78
4312130015A26F57EAD9E7EA0E20 026
0E00018E2248454C4C4F220000000026
012610261726177F367FFE7FF F7FFE0
0010001000002EC07D0"
50 AD=&H5A00:BB$=AA$:GOSUB55:BB$
=AB$:GOSUB55:RETURN
55 FORN=1TOLEN(BB$)STEP2:POKEAD,
VAL("&H"+MID$(BB$,N,2)):AD=AD+1
:NEXT:RETURN'patch hellodos
60 DA$="34011A508E8000EC04B7FFDF
ED81B7FFDEBCE00025F1B7FFDFCC6F6
BFDABEE35B1":AD=&H0E00:FORN=1TOL
EN(DA$)STEP2:POKEAD,VAL("&H"+MI
D$(DA$,N,2)):AD=AD+1:NEXT:EXEC&H
E00:RETURN'boot to 64k
65 AD=&H1000:DA$="34011A508E4000
108EC000A684A7A4300131218C7F002
5F37EC000":AD=&H1000:FORN=1TOLEN
(DA$)STEP2:POKEAD,VAL("&H"+M ID$
(DA$,N,2)):AD=AD+1:NEXT:RETURN'm
ove code and exec
70 IFPEEK(&HC003)=4THENPK=&H40D2
:RETURN ELSEIFPEEK(&HC003)=BTHEN
PK=&H40E5:RETURN ELSE CLS:PRINT"
UNKNOWN ROM":END

```



COMPUTER ACRONYMS

By The Wit Bit

As the use of the computer is spreading faster than the itch of poison ivy, it stands to reason that new people are entering the COCO community all the time and may be a bit awed by our terminology such as spooler, VDG chip, CPU register, etc. But remember, the computer is just a tool without which some of the biggest blunders known to mankind would not have been possible. Even the dumbest bank teller would not credit your account with a million dollars with the deposit of a ten dollar check, but the computer has been known to do just that without so much as overloading a diode or memory bank.

To allow our readers to familiarize themselves with the computer, we have listed some of the most common terms and their meanings.

CHIP - a chip is a small piece. So a computer chip is obviously a small portion of the computer, unless it is made of chocolate, in which case it would be a cookie (chocolate chip).

CURSOR - Someone who uses profanity.

DISKETTE - A female disk, except in Brooklyn where it means this cat.

DOS - Programmers have been known to lock themselves into a room with a computer and forget about everything else, including wife and family. DOS is simply an acronym for Don't Overlook Sweetheart, as a reminder that a wife or loved one exists.

HARD COPY - Something that is difficult to copy, as opposed to easy copy.

MAIN FRAME - A frame that was produced in Maine.

MODEM - Originally was MODOM and was simply an exercise in finding palindromes (words reading the same forward and backwards). Later it was discovered that a computer's machine language mode (mode m) made it possible to make restaurant reservations over the phone. In order not to confuse "a la mode" with "mode m", an error often made, it was decided to call the computer's ability to talk to the maitre 'd a modem.

PIRATE - The price or rate that is charged for a pie.

RAM - When computer research was first performed in the field, it was found that in a flock of sheep the male, or RAM, showed a keener interest than the ewe. The term stuck and is often used to indicate ruggedness, as in the Ram-tough truck commercial that can be seen all too often on TV.

ROM - Computer whizzes are often notoriously bad spellers and ROM was actually meant to mean room.


```

440 PRINT@266,CHR$(143)+CHR$(143)
)"writing"+CHR$(143)+CHR$(143);:
PRINT@298," TRACK ";T;:PRINT@33
0," SECTOR";S;
450 NEXT S
460 NEXT T
470 GOSUB590:PRINT@199,"FREE GRA
NS:";:PRINTFREE(0);
480 FOR SD=1TO3:SOUND 170,1:NEXT

490 PRINT@293,"WRITE PATTERN COM
PLETE";
500 FORT=1TO2000:NEXT:GOTO130
510 '
520 ' test complete message
530 '
540 GOSUB590
550 PRINT@197,"*** TEST COMPLETE
D ***";
560 PRINT@289,"HIT ANY KEY TO e
rase DISKETTE";:PRINT@491,"e TO
EXIT";:SC$=INKEY$:IF SC$=""THEN5
60 ELSE IF SC$="E"THEN CLS:END
570 CLS:PRINT@1,"*** INITIALIZIN
G DISKETTE ***";
580 DSKINIO,40
590 CLS3
600 FORI=1024TO1087:READX:POKEI,
X:NEXT:RESTORE
610 DATA 96,68,73,83,75,69,84,84
,69,96,84,69,83,84,96,80,82,79,7
1,82, 65,77,96,115,116,96,96,84,
82,75,83,96,96,96,86,69,82,83
,7 3,79,78,96,114,110,113,96,96,
96,91,67,93,96,68,69,67,96,113,
121,120,116,96,96,96,96
620 RETURN

```

```

60 A$=INKEY$:IF A$="Y"THEN POKE1
6127,255ELSEIF A$="N" THEN POKE
16127,0:GOTO 100 ELSE 60
70 PRINT@192:LINEINPUT" WHAT'S T
HE TITLE OF YOUR TAPE? >> ";A$
80 PRINT#-2,CHR$(31)
90 PRINT#-2,A$:PRINT#-2
100 CLS:PRINT@231,"PRESS <&> TO
BEGIN":A$=INKEY$
110 A$=INKEY$:IF A$<>"&" THEN 11
0
120 CLS:DEFUSRO=16128
130 A=USRO(0)
140 END
150 DATA 189,169,40,142,1,218,15
9,126,173,159,160,4,173,159,160,
6,38,250,173,159,160,0,129,3,16,
39,0,121,150,124,129,255,39,99,1
29,0,38,230,134,52,183,255,33,15
,111,142,1,218,198,8,166,128,173
,159,160,2,90,38,247
160 DATA 134,13,173,159,160,2,14
2,1,218,16,142,4,13,198,8,166,12
8,189,63,118,167,160,90,38,246,1
82,62,255,129,255,38,173,134,254
,151,111,142,1,218,198,8,166,128
,173,159,160,2,90,38,247,134,13,
173,159,160,2,126,63,8,129,96,34
,5,129,64,37,4,57,128
170 DATA 96,57,139,64,57,134,96,
198,8,16,142,4,13,167,160,90,38,
251,126,63,8,134,52,183,255,33,5
7

```

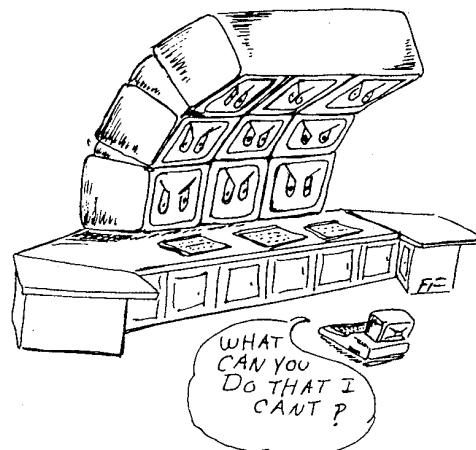
CASSETTE

This program will list the programs on tape to the screen or printer. Just load the cassette and press play and run the program. It will go through the entire tape and print out the programs on that tape.

```

5 CLEAR200,16127
10 CLS:PRINT@202,"TAPE CATALOG"
20 PRINT@271,"BY"
30 PRINT@329,"STEVE SULLIVAN"
40 FORX=0TO154:READA:POKEX+16128
,A:NEXT
50 CLS:PRINT@225,"DO YOU WANT A
PRINT OUT? (Y/N)":A$=INKEY$

```



HOME INVENTORY

This home management program is designed to help you keep lists of items in the common storage areas such as garages and attics. you can store the item name and its storage date or a brief comment. The data can be printed on the screen or printere. Cassette or disk can be used for storage of data.

```

1 REM COPYRIGHT (C) T&D SOFTWARE
  1986 * HOME INVENTORY *
10 PMODE0:GOTO60000
20 IFPEEK(116)=&H7F THENCLEAR400
0:ME=300 ELSECLEAR1000:ME=100
30 NE=0:DIM IT$(ME),D1$(ME),D2$(
ME)
40 CLS:PRINT:PRINT"          home
inventory"
42 PRINT" THIS HOME MANAGEMENT P
ROGRAM IS DESIGNED TO HELP YO
U KEEP LISTS OF ITEMS IN THE
COMMON STORAGE AREAS SUCH AS
GARAGES AND ATTICS. YOU CAN ST
ORE THE ITEM NAME AND ITS STOR
AGE DATE OR A BRIEF COMMENT."
44 PRINT" THIS PROGRAM CAN ALSO
HANDLE FREEZER STORAGE. IN AD
DITION TO THE ITEM AND STORAG
E DATE, YOU CAN ENTER AND STOR
E AN EXPIRATION DATE."
45 GOSUB9000:CLS:PRINT:PRINT:PRI
NT:PRINT:PRINT:PRINT
47 PRINT" THE DATA CAN BE PRINTE
D ON THE SCREEN OR PRINTER. CAS
SETTE TAPE OR DISK CAN BE US
ED FOR INPUT AND OUTPUT."
49 GOSUB9000
90 CLS:PRINT@231,"tape or disk?
t/d";
91 K$=INKEY$:IFK$="T" THENDN=-1
ELSEIFK$="D" THENDN=1 ELSE91
100 CLS:PRINT@139,"main menu"
110 PRINT:PRINT"          A. AT
TIC          G. GA
RAGE          F. FR
EEZER          Q. QU
IT"
120 PRINT:PRINT"          your c
hoice?"
130 K$=INKEY$:IFK$="A" THEN$="A
TTIC":C$="CLSEDPR" ELSEIFK$="G"
THEN$="GARAGE":C$="CLSEDPR" ELS
EIFK$="F" THEN$="FREEZER":C$="C
LSEDPR" ELSEIFK$="Q" THEN990 ELS
E130
150 CLS:PRINT:PRINT"
menu"
160 PRINT"          i/o device = "
;:IFDN=1 THENPRINT"disk" ELSEPRI
NT"tape"

```

22

```

170 PRINT"          storage area = "
;S$:PRINT
180 PRINT"          C. CHANGE I/O DE
VICE          L. LOAD DATA FIL
E          S. SAVE DATA FIL
E          E. ENTER AN ITEM
D. DISPLAY ITEMS
P. PRINT ITEMS"
200 PRINT"          R. RETURN TO MAI
N MENU
          your choice?"
210 K$=INKEY$:IFK$="" THEN210
220 P=INSTR(C$,K$):IFP=0 THEN210
ELSEON P GOTO250,260,300,350,45
0,600,950
230 GOTO210
250 IFDN=1 THENDN=-1:GOTO150 ELS
EDN=1:GOTO150
260 D$="load":GOSUB10000:OPEN"I"
,#DN,F$
270 INPUT#DN,S$
280 INPUT#DN,NE:FORI=1 TO NE
290 INPUT#DN,IT$(I):INPUT#DN,D1$
(I):INPUT#DN,D2$(I):NEXT:CLOSE#D
N:GOTO150
300 IFNE=0 THEN210 ELSED$="save"
:GOSUB10000:OPEN"D",#DN,F$
310 PRINT#DN,S$
320 PRINT#DN,NE:FORI=1 TO NE
330 PRINT#DN,IT$(I):PRINT#DN,D1$
(I):PRINT#DN,D2$(I):NEXT:CLOSE#D
N:GOTO150
350 IF NE=ME THEN210
360 CLS:PRINT:PRINT:PRINT:PRINT:
PRINT"          this is entry #";NE
+1:PRINT
370 LINEINPUT"          ITEM: ";IT$
375 IFIT$="" THEN150
380 LINEINPUT"          DATE/COMMENT:
";D1$
385 IFS$="FREEZER" THENLINEINPUT
"          EXPIRATION DATE: ";D2$ ELS
ED2$=""
390 PRINT:PRINT"          is the input
correct? y/n"
391 K$=INKEY$:IFK$="N" THEN360 E
LSEIFK$<>"Y" THEN391
400 NE=NE+1:IT$(NE)=IT$:D1$(NE)=
D1$:D2$(NE)=D2$
405 PRINT:PRINT"          enter ano
ther? y/n"
410 K$=INKEY$:IFK$="Y" THEN350 E
LSEIFK$="N" THEN150 ELSE410
420 GOTO150
450 PT=1:IFNE=0 THEN210
460 CLS:PRINT:PRINT:PRINT:PRINT"
entry #";PT:PRINT
470 PRINT"          item: ";IT$(PT)
480 PRINT"          date/comment: ";
D1$(PT)

```

```

490 IFS$="FREEZER" THENPRINT"
    expiration: ";D2$(PT)
500 PRINT@384,"          pres
s":PRINT
510 PRINT"    Up, Down, Menu, Re
move"
520 K$=INKEY$:IFK$="" THEN520
530 P1=INSTR("UDMR",K$):IFP1=0 T
HEN520 ELSEON P1 GOTO540,545,550
,555
540 IFPT=NE THEN520 ELSEPT=PT+1:
GOTO460
545 IFPT=1 THEN520 ELSEPT=PT-1:G
OTO460
550 GOTO150
555 IFNE=1 THENNE=0:GOTO150
560 IFPT=NE THENPT=PT-1:GOTO570
565 FORI= PT TO NE-1:IT$(I)=IT$(
I+1):D1$(I)=D1$(I+1):D2$(I)=D2$(
I+1):NEXT
570 NE=NE-1:GOTO460
600 IFNE=0 THEN210
610 PD=-2:PRINT#PD
620 PRINT#PD," #          ITEM
    DATE/COMMENT";:IFS$="FR
EEZER" THENPRINT#PD," EXPIRATIO
N" ELSEPRINT#PD
630 FORI=1 TO NE:PRINT#PD,USING"
    #### %          % %
        % %          %";I;IT$(I);D1
$(I);D2$(I):NEXT
640 PRINT#PD
699 GOTO150
950 CLS:PRINT@197,"are you sure
you want          the main menu
? y/n"
951 K$=INKEY$:IFK$="Y" THEN100 E
LSEIFK$="N" THEN150 ELSE951
990 CLS:PRINT@232,"ok to quit? y
/n"
991 K$=INKEY$:IFK$="N" THEN100 E
LSEIFK$<>"Y" THEN991
999 END
9000 PRINT@484,"press [enter] to
continue";
9001 IFINKEY$=CHR$(13) THENRETUR
N ELSE9001
10000 CLS:PRINT@226,D$+" file nam
e: ";:LINEINPUT F$:IFLEN(F$)>15
THEN10000 ELSERETURN
60000 PCLEAR1:GOTO20
*****

```

W A N T E D

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HOW TO WRITE AN ADVENTURE GAME ON YOUR COCO
Part II: Programming the Map, Objects,
Commands, and Initialization.

By: Michael E. Salsbury

The most important part of the adventure game is the map or maze on which it takes place. It is the background of the entire game, the setting, and sometimes the source of the problems. Inside the computer, exactly what IS the map?

The map, in its most basic sense, is a two-dimensional array we will, for the sake of argument, call L, for "location". L is originally defined to the computer in a DIM statement at the start of the listing. For the example given in the previous article, L's first dimension is 5 because there are 5 locations in the map.

The second dimension is the most important. It tells us the number (on the graph paper map) which connects to the room whose number was specified by the first dimension. L(x,1) might be the room connected to the north exit of x. Each different direction on the map (North, South, East, West, Up, Down, etc.) gets defined as a part of the L matrix/array. In our example, we only use north, south, east, and west, so we define L as an array with 5 x-elements and 4 y-elements. In each "cell" of L we put a room number, of that exit of that room connects to another location, or we put 0 if no room connects to that room in that direction. In our example, L would look like this:

```

L(1,1)=0 Since no room is north of room 1.
L(1,2)=3 Since room number 3 is south of 1.
L(1,3)=0 Since there is no room east of 1.
L(1,4)=0 Since there is no room west of 1.
L(2,1)=0, L(2,2)=0, L(2,3)=3, L(2,4)=0
L(3,1)=1, L(3,2)=5, L(3,3)=4, L(3,4)=2
L(4,1)=0, L(4,2)=0, L(4,3)=0, L(4,4)=3

```

To program this into the computer, I suggest using a FOR-NEXT loop and READ the numbers from DATA statements, or if you want to save internal memory, read them from a disk or tape file. This is how I would program the map for our example program into the CoCo:

```

10 DIM L(5,4)
20 FOR X=1 TO 5:FOR Y=1 TO 4:READ
L(X,Y):NEXT Y,X
30 PRINT"CHECK TO SEE THAT THESE ARE
CORRECT:"
40 FOR X=1 TO 5
50 PRINT"ROOM NUMBER:";X;"HAS EXITS FROM
THE"
60 IF L(X,1)>0 THEN PRINT"          NORTH
TO";L(X,1)

```

```

70 IF L(X,2)>0 THEN PRINT"      SOUTH
TO";L(X,2)
80 IF L(X,3)>0 THEN PRINT"      EAST
TO";L(X,3)
90 IF L(X,4)>0 THEN PRINT"      WEST
TO";L(X,4)
100 PRINT:NEXTX:EMD
110 DATA 0,3,0,0,0,0,3,0,1,5,4,2,0,0,3
120 DATA 3,0,0,0

```

If you use the above method to program your maps, you will be able to test them out after you type them in. This will cut down on your debugging later. If the information the above program prints on the screen is correct, you can erase all the stuff from lines 30 to 100. If you have hidden exits or locked doors, etc., you will want to put a 0 in the L array for that exit to begin with because this array is used to determine the line on the final output which says "VISIBLE EXITS:" and if your "hidden" exit is on the list, then it isn't hidden, is it?

Once your map is typed in and debugged, the next step is to enter the objects, commands, and room descriptions.

The room descriptions are listed in an array we will call, for the sake of argument, R\$, for room name. R\$(1) in our sample, might be "Standing beside the street with cars whizzing by constantly." since room number 1 is next to the street. By the same token, R\$(3) might say "Standing in the front yard, with a swing to the east and Jungle Gym to the west. A street is north." We would program them in with DATA statements and a FOR-NEXT loop, too. To add them to the above, we might program:

```

10 DIM L(5,4),R$(5)
30 FORX=1TOS:READ R$(X):NEXTX
40 FORX=1TOS:PRINT"ROOM NUMBER 1, I
AM:";R$(X);".";NEXT
50 END
130 DATA "STANDING ON THE SIDEWALK BESIDE
THE STREET. CARS WHIZ BY SO OFTEN AND SO FAST
THAT I COULD NOT GET ACROSS WITHOUT GETTING
HIT.", "CLIMBING AROUND ON THE JUNGLE GYM,
INCHES ABOVE THE RABID DOG."
140 DATA "STANDING IN THE FRONT YARD, JUST
EAST OF THE JUNGLE GYM AND WEST OF THE
SWINGS. THE STREET IS NORTH AND THE HOUSE
SOUTH.", "SWINGING ON A SWING.", "ON THE FRONT
PORCH."

```

Line 40 is there to help you check to see that your descriptions are correct. Once you are sure they are, you can delete it from memory by typing 40<enter>.

Next, we program in the objects. Objects require two separate arrays. One gives the name of the object, such as "DOG",

"BASEBALL", "DOOR", etc. The other tells you where the object is at. The door, window and cars, being immovable in our example game, will always stay at one location, but the others, like the dog and baseball, can be moved, and we need a way to keep track of them as they move about. That is what the second array is for. In a later article, we will discuss how to use multiple names for an object, like using BALL, BASEBALL, and SPHEROID to mean the same object, as well as having more than one item with the same name, like SIGN or POSTER, and so forth, but for now we will stick to the basics, only one name for each object.

Objects are kept track of in two arrays, which we will call O\$(x) and O(x) for the sake of convention. O\$(x) is the list of objects' names. O(x) is the list of the current location of each object. Later, in the course of the game, we break the window, O\$ for the window can be changed from "WINDOW" to "BROKEN WINDOW". When you are carrying the baseball, O(x) for the baseball changes from 4 to 99, meaning "in hand" as opposed to "by the swings". When you want a list of the objects in hand, you just go down the O(x) array and if an object's location is 99, then print the O\$(x) of the object. That is the guts of the famous INVENTORY command. Similar logic is used to print out the list of objects after the "I CAN SEE:" line. Is this simple, or what? The value of O\$(x) is a word or name, the value of O(x) is a room number, 99, or 0 if it's hidden or destroyed. I will leave the programming of objects and names in our sample game up to you. As for hints, look at how you programmed room names and exits. O\$(x) and O(x) are both one-dimensional arrays, programmed almost identically the same way, although I usually like my DATA lines for objects to read like this, for simplicity:

```

150 DATA "DOOR", 5, "DOG", 3, "BASEBALL", 4

```

After the objects comes the command list. If you play a lot of adventures, you have probably noticed that most games let you type in just the first 3-5 letters of a command or object and they will recognize it as the whole word. This is because it is not only easier on the player but also a little on the programmer. Take the list of commands you wrote for your adventure game and look at it. If there are only a handful (say less than 50) then a simple way to program them in that I have seen a lot of programmers use (which saves memory) is to make one big long string variable than contains the first three letters of a command. For our example, we might have a string that looks like:

60 C\$="N S E W GETDROLOOTHRINV"

(A later article will concern itself with how you will use this string. For now, if a command has less than 3 letters, insert spaces to fill it.)

The other way to program in the commands, which is the one I like to use, although it is the one that uses the most memory (but is clearest to follow) is to make another array of all the commands' first three letters in an array, C\$(x). It would be programmed about like the objects and room descriptions. Either way works, I don't know if either one is faster than the other as far as the operation of the program is concerned.

Now that you have the map, room names, objects, and commands in the computer, the next thing is to put in the initialization line. This line consists of the following:

75 L=5:T=0:W=0

What it does is set up some initial conditions. L will be our current room number. When we begin our example game, we want to be on the front porch. The front porch is room 5, so that is what we set L to at the start. T is the number of turns used so far. At the start, no turns have been used, so T is set to 0. W is the weight of the items currently being carried. Our hands are empty at the start, so there is no weight and W is equal to 0.

The next step in our programming is to have the program set up for each turn. At the start of each turn, we want our program to tell the player where he is, what he sees, where his exits are, and then ask for his command. That will be next month's beginning. See if you can think ahead and program that much of it. Remember at the start of each turn that we want to add one to the Turn and zero out two variables (which we will explain later) called C and O, and subtract 1 from another, called DS.

Until next month, I bid all you adventure programmers farewell. If you have any problems, write to me at this address:

Michael E. Salsbury
Room 729 Booth Hall
505 Comstock Avenue
Syracuse, NY 13210

I can't promise you that I will give you an immediate answer, as this fall at college is very busy and I will not have much free time. Include a self-addressed, stamped (22 cents or whatever you think it will take) and I will do my best. Thanks for being there!

TYPING

Help increase your typing speeds and test yourself with this typing program.

10 DATA 15,FAD,A,AS,DAD,AD,SAD,L
AD,FALL,ALFALFA,SASS,LASS,DADS,L
ADS,FALLS,FADS

20 DATA 16,HAD,HAS,GAS,SAG,HALL,
HALLS,LADS,SAGS,HAG,LAG,LABS,SLA
G,SHALL,SASH,DASH,FLASH

30 DATA 17,DEAF,DEED,SEED,FEED,H
EED,LIKE,KILL,FILL,FEEL,FEES,LIE
D,DIAL,SLIDE,FLIES,SLID,LIKE,GLI
DE

40 DATA 17,TAG,HAT,TALL,THY,DAY,
HAY,JAY,GAY,LAY,TAR,RAT,STAR,STA
FF,FAST,TRY,SAY,YARD

50 DATA 20,WISH,EXAM,EXACT,TEXT,
TWO,WON,SOW,WASH,WORSE,OWE,WORD,
LOOK,LOSE,SOD,WOW,TOW,TEXAS,OXEN
,MIX,WORLD

60 DATA 16,QUAKE,QUIZ,QUIP,ZAP,Q
UIT,PIQUE,PLAQUE,PUZZLE,PLAZA,SA
P,ZIPPER,PRIZE,QUICK,SQUEEZE,SEA
L,ZIP

70 DATA 18,CALM,CAN,MEN,NIMBLE,E
XACT,EXAM,MIX,NIX,BUZZ,ZOOM,NAVY
,CAB,BACK,BOMB,ZOMBIE,CAVE,VACAT
E,VARMIN

80 GOSUB 1110

90 DIM A\$(7,20)

100 RESTORE

110 FOR I=1 TO 7

120 READ N

130 FOR J=1 TO N

140 READ A\$(I,J)

150 NEXT J

160 NEXT I

170 GOSUB 550

180 GOSUB 740

190 S=0

200 T2=0

210 L2=0

220 FOR K=1 TO 10

230 J=RND(N)

240 IF A\$(I,J)=" " THEN 230

250 M=465-32*K

260 SOUND 159,3

270 PRINT @ M,A\$(I,J)

280 TIMER=0

290 INPUT B\$

300 NT=TIMER

310 IF B\$=A\$(I,J) THEN 340

320 SOUND 5,20

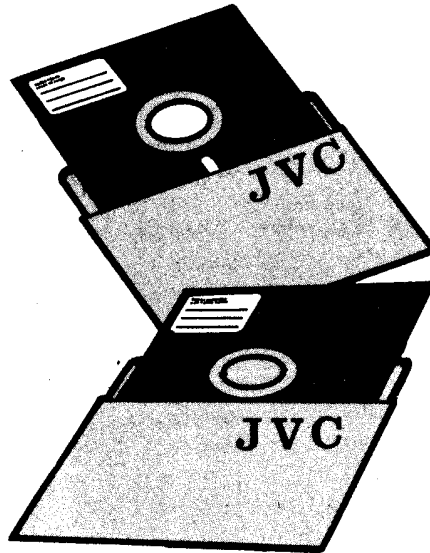
330 GOTO 360

340 PLAY "L16;C;D;E;F;G"

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```

350 S=S+1
360 T2=T2+NT
370 L2=L2+LEN(B$)
380 A$(I,J)=" "
390 PRINT @ M, " "
400 NEXT K
410 FOR X=1 TO 1000
420 NEXT X
430 CLS
440 PRINT @ 131,"YOUR SCORE IS"
450 PRINT @ 196,10*S;"PERCENT AC
CURACY"
460 WORDS=L2/5+2
470 WPM=INT(WORDS*3600/T2+.5)
480 PRINT @ 228,WPM;"WORDS PER M
INUTE"
490 PRINT @ 419,"PRESS C TO CONT
INUE"
500 C=2
510 GOSUB 1330
520 D$=INKEY$
530 IF D$<>"C" THEN 520
540 GOTO 100
550 CLS
560 PRINT @ 67,"CHOOSE ONE"
570 PRINT @ 131,"1 HOME KEYS"
580 PRINT @ 163,"2 HOME ROW"
590 PRINT @ 195,"3 TOP ROW, THIR
D FINGER"
600 PRINT @ 227,"4 TOP ROW, POIN
TER FINGER"
610 PRINT @ 259,"5 RING FINGER"
620 PRINT @ 291,"6 LITTLE FINGER
"

```

```

630 PRINT @ 323,"7 BOTTOM ROW"
640 PRINT @ 355,"8 END PROGRAM"
650 C=3
660 GOSUB 1330
670 C$=INKEY$
680 IF C$=" " THEN 670
690 IF ASC(C$)>56 THEN 670
700 IF ASC(C$)<49 THEN 670
710 IF VAL(C$)=8 THEN 1440
720 I=VAL(C$)
730 RETURN
740 CLS
750 SCREEN 0,0
760 PRINT @ 256,"TYPE & ENTER TH
E WORDS YOU SEE."
770 FOR X=1 TO 1000
780 NEXT X
790 CLS
800 C=4
810 Z=17
820 FOR X=34 TO 41
830 FOR Y=Z TO 31
840 SET (X,Y,C)
850 NEXT Y
860 Z=Z-1
870 NEXT X
880 Z=12
890 FOR X=42 TO 47
900 FOR Y=Z TO 31
910 SET (X,Y,C)
920 NEXT Y
930 Z=Z+1
940 NEXT X
950 FOR Y=26 TO 28
960 SET (33,Y,C)
970 SET (48,Y,C)

```

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```

980 SET (32,Y+1,C)
990 SET (49,Y+1,C)
1000 SET (31,Y+2,C)
1010 SET (50,Y+2,C)
1020 NEXT Y
1030 FOR Y=10 TO 0 STEP -2
1040 SET (41,Y,2)
1050 SET (40,Y,2)
1060 NEXT Y
1070 PRINT @ 18,"100%"
1080 FOR X=1 TO 600
1090 NEXT X
1100 RETURN
1110 CLS
1120 SCREEN 0,1
1130 PRINT @ 139,"T Y P I N G"
1140 PRINT @ 207,"FOR"
1150 PRINT @ 268,"ACCURACY"
1160 PRINT @ 363,"QWERTYUIOP"
1170 PRINT @ 395,"ASDFGHJKL;"
1180 PRINT @ 428,"ZXCVBNM,."
1190 FOR X=16 TO 46
1200 SET (X,20,3)
1210 SET (X,29,3)
1220 NEXT X
1230 FOR Y=21 TO 28
1240 SET (16,Y,3)
1250 SET (46,Y,3)
1260 NEXT Y
1270 C=4
1280 GOSUB 1330
1290 PLAY "LB;CCE;01;EGG;L4;E;LB
;F;03;FDD;01;BB;L4;G"
1300 PLAY "LB;C;02;CEE;GG;L4;E;LB
;C;03;C;F#;02;F#;L4;G;L2;G"
1310 SCREEN 0,0
1320 RETURN
1330 FOR X=0 TO 63
1340 SET (X,0,C)
1350 SET (X,31,C)
1360 NEXT X
1370 FOR Y=1 TO 30
1380 SET (1,Y,C)
1390 SET (0,Y,C)
1400 SET (63,Y,C)
1410 SET (62,Y,C)
1420 NEXT Y
1430 RETURN
1440 CLS
1450 END

```

LOLLIPOP

This program is a slot machine simulation, called Lollipop because of the shape of the handle you pull to set the tumblers in motion. Have fun with it. Win a million? Split it with us!

```

10 CLS
20 CLEAR 1500
30 PRINT "LOLLIPOP IS A SLOT MAC
HINE ,SO NAMED BECAUSE THERE ARE
USUALLY A LOT OF SUCKERS AROUND
."
40 PRINT "IT'S A QUARTER MACHINE
, AND YOU MAY HAVE UP TO $100 IN
QUARTERS , HOW MUCH DO YOU WANT
?"
50 PRINT
60 INPUT Q
70 IF Q>0 AND Q<101 AND Q=INT(Q
) THEN 110
80 IF Q<1 THEN PRINT "GET SERIOU
S":GOTO 60 ELSE IF Q>100 THEN PR
INT "I'LL GIVE YOU A HUNDRED BUC
KS": Q=100
90 IF Q<>INT(Q) THEN PRINT "AN E
VEN DOLLOR AMOUNT, PLEASE. HOW M
UCH.....AGAIN?":GOTO 60
100 PRINT "TAP <ENTER> TO CONTIN
UE":INPUT X:GOTO 110
110 CLS(0)
120 S$=STRING$(17,128)
130 W$=CHR$(134+112)
140 D$=STRING$(17,246)
150 S$=STRING$(5,207)
160 M$=STRING$(21,239)
170 R$=STRING$(3,191)
180 Y$=STRING$(3,159)
190 O$=STRING$(3,255)
200 B$=STRING$(3,175)
210 G$=STRING$(3,223)
220 J$=STRING$(3,"$")
230 E$=STRING$(3,207)
240 A$(1)=R$+B$+Y$+R$+O$+R$+B$+B
$+G$+R$+Y$+B$+O$+R$+R$+Y$+O$+R$+
J$+B$
250 A$(2)=O$+G$+R$+O$+O$+B$+J$+R
$+R$+O$+G$+J$+R$+O$+J$+G$+R$+O$+
R$+R$
260 A$(3)=B$+Y$+O$+Y$+B$+G$+O$+O
$+B$+Y$+B$+O$+G$+J$+O$+B$+O$+Y$+
+G$+O$
270 FOR A=11 TO 459 STEP 32
280 PRINT @ A,M$;
290 NEXT
300 GOSUB 1800
310 K$="25 CENTS"
320 A=1
330 FOR B=31 TO 255 STEP 32
340 PRINT @ B,MID$(K$,A,1);
350 A=A+1
360 NEXT
370 FOR A=45 TO 60 STEP 3
380 PRINT @ A,W$;
390 NEXT
400 FOR A=109 TO 237 STEP 32
410 PRINT @ A,S$;

```

```

420 PRINT @ A+6,S$;
430 PRINT @ A+12,S$;
440 NEXT
450 PRINT @ 0,"BET ";
460 PRINT @ 64,"PAYOUTS:";
470 PRINT @ 96,"R R - ";
480 PRINT @ 128,"R R G ";
490 PRINT @ 160,"R R Y ";
500 PRINT @ 192,"O O $ ";
510 PRINT @ 224,"O O O ";
520 PRINT @ 256,"B B $ ";
530 PRINT @ 288,"B B B ";
540 PRINT @ 320,"G G $ ";
550 PRINT @ 352,"G G G ";
560 PRINT @ 384,"$ $ $ ";
570 PRINT @ 448,"I - INSERT";
580 PRINT @ 480,"P - PLAY ";
590 GOSUB 1540
600 PRINT @ 0,"BET ";STRING$(7,1
28);
610 R=0
620 Z$=""
630 M=0
640 P(1)=3
650 P(2)=5
660 P(3)=5
670 P(4)=10
680 P(5)=10
690 P(6)=14
700 P(7)=14
710 P(8)=18
720 P(9)=18
730 P(10)=100
740 FOR A=1 TO 10
750 Q(A)=0
760 NEXT
770 Y=0
780 GOSUB 1670
790 N=N+1
800 IF N/2-INT(N/2) GOSUB 1860:
GOTO 820
810 Q$=INKEY$
820 IF Q$="P" AND Y=0 GOSUB 1770
:GOTO 810
830 IF Q$<>"I" AND Q$<>"P" THEN
810 ELSE IF Q$="I" GOSUB 1560 EL
SE IF Q$="P" THEN 850
840 GOTO 810
850 PLAY "T255"
860 X=RND(5)+5
870 Y=X+RND(8)
880 Z=Y+RND(10)
890 IF M=1 THEN X=0 ELSE IF M=2
THEN Y=0 ELSE IF M=3 THEN Z=0
900 A=RND(20)*3-2
910 B=RND(20)*3-2
920 C=RND(20)*3-2
930 X=X-1
940 Y=Y-1
950 Z=Z-1

```

```

960 IF X<1 THEN 1020
970 PLAY STR$(RND(12))
980 V$=MID$(A$(1),A,3)
990 PRINT @ 142,V$;
1000 PRINT @ 174,V$;
1010 PRINT @ 206,V$;
1020 IF Y<1 THEN 1080
1030 PLAY STR$(RND(12))
1040 V$=MID$(A$(2),B,3)
1050 PRINT @ 148,V$;
1060 PRINT @ 180,V$;
1070 PRINT @ 212,V$;
1080 IF Z<1 THEN 1150
1090 PLAY STR$(RND(12))
1100 V$=MID$(A$(3),C,3)
1110 PRINT @ 154,V$;
1120 PRINT @ 186,V$;
1130 PRINT @ 218,V$;
1140 GOTO 900
1150 IF X>1 OR Y>1 GOTO 900
1160 A=POINT(28,8)
1170 B=POINT(40,8)
1180 C=POINT(52,8)
1190 IF A<>B GOTO 600
1200 IF A=4 AND B=4 AND C<>6 AND
C<>2 THEN G=Q(1): GOTO 1310
1210 IF A=4 AND B=4 AND C=6 THEN
G=Q(2): GOTO 1310
1220 IF A=4 AND B=4 AND C=2 THEN
G=Q(3): GOTO 1310
1230 IF A=8 AND B=8 AND C=-1 THE
N G=Q(4): GOTO 1310
1240 IF A=8 AND B=8 AND C=8 THEN
G=Q(5): GOTO 1310
1250 IF A=3 AND B=3 AND C=-1 THE
N G=Q(6): GOTO 1310
1260 IF A=3 AND B=3 AND C=3 THEN
G=Q(7): GOTO 1310
1270 IF A=6 AND B=6 AND C=-1 THE
N G=Q(8): GOTO 1310
1280 IF A=6 AND B=6 AND C=6 THEN
G=Q(9): GOTO 1310
1290 IF A+B+C=-3 THEN G=Q(10) :
GOTO 1310
1300 GOTO 600
1310 FOR A=365 TO 429 STEP 32
1320 PRINT @A,SS$;
1330 NEXT
1340 T=42
1350 FOR A=1 TO 6
1360 FOR L=22 TO 27
1370 SET(T,L,5)
1380 IF G>14 GOTO 1410
1390 FOR B=1 TO 10
1400 NEXT B
1410 RESET(T,L)
1420 NEXT L
1430 SOUND 210+RND(20),1
1440 Q=Q+.25

```



```

1450 PRINT @ 491,STRING$(19,128)
;
1460 PRINT @ 491,"STAKE: $"Q;"
";
1470 NEXT A
1480 FOR T=1 TO 500
1490 NEXT T
1500 GOSUB 1800
1510 GOTO 600
1520 IF X>0 OR Y>0 OR Z>0 THEN 9
00
1530 PRINT @ 491,STRING$(19,128)
;
1540 PRINT @ 491,"STAKE: $"Q;"
";
1550 RETURN
1560 R=R+1
1570 IF R>5 THEN PRINT @491,"THE
LIMIT - PLAY";: PLAY "T4;C;E;G"
: RETURN
1580 IF Q=0 THEN PRINT @491,"OUT
OF MONEY - PLAY";: RETURN
1590 Y=Y+.25
1600 PRINT @ 0,STRING$(10,128);
1610 PRINT @ 0,"BET ";Y;" ";
1620 FOR A=1 TO 10
1630 Q(A)=Q(A)+P(A)
1640 NEXT
1650 Q=Q-.25
1660 GOSUB 1540
1670 BB=1
1680 FOR A=102 TO 390 STEP 32
1690 PRINT @ A,Q(BB);
1700 PLAY "T40"
1710 PLAY STR$(RND(12))
1720 BB=BB+1
1730 NEXT
1740 IF Q(10)=0 THEN PRINT @ 393
," ";CHR$(128);
1750 RETURN
1760 PRINT A$(1):B=RND(30)*3-1:P
RINT MID$(A$(1),B,12)
1770 PRINT @ 491,"NO PAY - NO PL
AY ";
1780 PLAY "T4;L5;8;L10;3;3;5;L5;
3;L5;P20;7;8"
1790 RETURN
1800 PRINT @ 333," ** LOLLIPOPS
** ";
1810 PRINT @ 397," PLAY UP TO 5
COINS ";
1820 FOR A=301 TO 461 STEP 64
1830 PRINT @ A,D$;
1840 NEXT
1850 RETURN
1860 PRINT @ 491,STRING$(19," ")
;
1870 PRINT @ 491,"SAVE?";
1880 Q$=INKEY$

```

```

1890 IF Q$="" THEN 1880 ELSE IF
Q$<>"1" AND Q$<>"2" AND Q$<>"3"
THEN M=0: RETURN
1900 M=VAL(Q$)
1910 RETURN
1920 END

```

SETUP

Set up your DMP130 printer for all types of print-outs.

```

0 .....
:          SETUP
:
:   BY CLAIR MATHABEL
: .....

```

```

2 ''FOR tandy DMP130 printer --
4 CLS3:X=0
5 PRINT@8,CHR$(255)+"printer"+CH
R$(128)+"setup"+CHR$(255);
6 X=X+3:PRINT@480+X,P;
10 PRINT@33,"1=10 CPI           11=
ITALIC START";
20 PRINT@65,"2=12 CPI           12=
ITALIC END ";
30 PRINT@97,"3=17 CPI           13=
BOLD START ";
40 PRINT@129,"4=PROPORTIONAL  14
=BOLD END ";
50 PRINT@161,"5=MICRO           15
=UNI DIR. ";
60 PRINT@193,"6=SUB START       16
=1/6 LINE FD ";
70 PRINT@225,"7=SUPER START    17
=1/8 LINE FD.";
80 PRINT@257,"8=END SUB/SUPER  18
=IBM CHAR.SET";
90 PRINT@289,"9=ENLONG START   19
=BAUD CHANGE
100 PRINT@320,"10=ENLONG END
20=TEST LINE???"
110 PRINT@396," 21=END ";
150 PRINT@448,"OPTIONS; ";:INPUT
P
160 IF P<1 OR P>21 THEN 150
170 ON P GOTO 1001,1002,1003,100
4,1005,1006,1007,1008,1009,1010,
1011,1012,1013,1014,1015,1016,10
17,1018,1019,1020,1030
1001 PRINT#-2,CHR$(27);CHR$(19);
:GOTO5 ''10 CPI STANDARD
1002 PRINT#-2,CHR$(27);CHR$(23);
:GOTO5 ''12 CPI COMPRESSED

```

C O C O P R O G R A M P A C K S

Here is a great way for you to increase your library of programs for your COCO. Each pack contains very useful programs for learning, application, and are ready to use. Each has the size of each program with a description. The codes are: F-FILE G-GAME B-BUSINESS U-UTILITY E-EDUCATION C-CASSETTE D-DISK P-PRINTER K-KEYBOARD J-JOYSTICK HF-HOME FINANCE PICTURE ART

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						

PROGRAM PACK # 5								
MLDISK	3070	D,U	SORT	794	U	TELETERM	5792	COMM
DSK EDIT	8165	D,U	HEALTH	18728	EDU	SOUND	58	EDU
TOF	3019	G	AIRPORT	12031	G	CUBE	5907	G
OBJECTS	4211	G	TANKS	8323	G	CIA	13777	ADV
TRIANGLE	4539	PIC	WORLDMAP	7435	EDU	GARFIELD	6154	PIC
HALLDEMO	1910	PIC	LINES	2263	ART	KALVOS	1259	G
CASTLE	21217	ADV						

PROGRAM PACK # 6								
SLITHER	2156	G	TUMBLERS	3979	G	ELIZA	7083	G
ICELAND	3472	G	EDUCATE	1511	G	DUNGEON	4362	ADV
PIXDUMP	2140	U,P	CONTOUR	1143	U	SLOSKROL	218	U
COPYDIR	1566	D,U	DIRLIST	1535	D,U	PILOT	4135	G
INVITE	1533	U	MATHPAL	6460	EDU	DUPER	2971	U
IN-OUT	226	ART	GOLDMINE	5646	G	HUSTLE	1239	G
HOBBIT	3634	G	CONNECT4	2647	G,K	OTHELLO	5800	G,K
BIOTYTHM	1787	G,P	SIMON	782	G,K	TICTACT	4269	G,K
3-D-T	4263	G,K	DARTBORD	4431	G,K	COPTER	3022	G

PROGRAM PACK # 7								
D-ADV	17651	ADV	SWORDS	9198	G	TROLL	11561	ADV
QUEST	8439	G	SURVIVE	9751	ADV	SPELWORD	2135	EDU
CUBIC	5331	G	DOTMAT	16651	G	FLIGHT	5435	G
GRID	3715	PIC	TIGER	6154	PIC	ZIGGY	6154	PIC
LABELPRT	420	U,C	PEEK	1799	U	ROMDUMP	421	U
DISASSY	7512	U	MLFINDER	440	U	COLORBAR	91	U
PATTERN	994	U	PORT	249	U	PAYMENT	340	U
PHONE	1629	F	LOAN	6038	BUS			

PROGRAM PACK # 8								
LOANAMOR	1633	FIN	MLTTD	840	U	BLACKJK	7520	G,K
SLITTER	2137	G,K	IDKIT	12911	G	SPACE	17397	PIC
FARMING	12878	G	TREK	10169	G,K	DSCOPY	1946	D,U
DSKSPEED	1470	D,U	EXREF	5524	U	ALARM	4150	U
CLOCK	1112	U	PHONEDIR	2393	F,C	TICKTAPE	5510	U
FINANCE	18343	FIN	BARTENDR	5710	REF	DSKLIBRY	5598	F,D
MESSAGE	828	U	FLIPPAGE	5734	U	DSKAID	8025	D,U

PROGRAM PACK # 9								
DECIDE	4795	G	BIBLE	3249	EDUC	BOMBER	2604	G,K
WEATHERX	4797	U	PROJEVAL	9107	B	FILES	8401	B,C
SUB	9473	ADV	DATAPRNT	413	U	DISKDIR	4979	D,U
BASEBALL	21936	PIC	AMORLN	3655	F	ASSMLBER	6211	U
GUITAR	10886	E,M	POKER	6924	G,K	TANK	4132	G,J
TRIANGLE	7007	PIC	SHIPS	3756	PIC	HANDBALL	3883	G,J
TRAIL	7938	G,K,J						

PROGRAM PACK # 10								
KINGDOM	11949	ADV	CHECKS	6453	F,D,C	BONGOCARD	1701	G,P
DKS2TP	2483	D,U	SLOTS	3984	G,K	DATAFILE	7239	F
MLADFND	2762	U	ICE	6060	G	ASSMBLER	12803	U
DISMON	13924	U	SIMSAS	636	G,K	DISKNAME	7820	D,U
SQUEEZE	3166	D,U	STATUS	7787	D,U	DISKLOOK	684	D,U
MAZE	7106	G,K	CROSROAD	2991	G,J	ANIMALS	6219	E,K
DSKLOCK	2795	D,U	SELFMAIL	985	U,P			

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	BOGSEL	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
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217 359 9577	CCSH BBS 1	IL	502 937 4594	COLORAMA	KY	817 767 5847	CONNNET 80	TX	
217 753 3167	LINK UP	IL	503 649 4497	BEE COLOR BBS	OR	817 789 2254	TY TRAVERS	TX	
217 893 0453	CCSH #1	IL	503 761 6345	BIT BUCKET SYS	OR	818 335 6554	COLOR AMERICA BBS	CA	
219 234 9717	SACCOM COCO LINE	IN	504 277 6926	CHALMETTE BBS	LA	818 787 0433	OFFICIAL COMP	CA	
301 344 9156	NASA GET AWAY SPEC	MD	504 876 1790	BAYOU BOARD	LA	818 886 6041	PLAIN RAP	CA	
301 599 1726	JOE SARTORI	MD	504 885 5619	STARBASE 6809	LA	818 996 1977	TRS 80 COUNTRY	CA	
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303 249 7866	CHUCK DAVID	CO	512 353 1508	COLORAMA	TX	902 683 2086	COLORAMA	NS	
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```

1003 PRINT#-2,CHR$(27);CHR$(20);
:GOTO5 ''''17 CPI CONDENSED
1004 PRINT#-2,CHR$(27);CHR$(17);
:GOTO5 ''''NLQ PROPORTIONAL
1005 PRINT#-2,CHR$(27);CHR$(77);
:GOTO5 ''''MICRO
1006 PRINT#-2,CHR$(27);CHR$(83);
CHR$(1);:GOTO5 ''''SUBSCRIPT
1007 PRINT#-2,CHR$(27);CHR$(83);
CHR$(0);:GOTO5 ''''SUPERSCRIP
1008 PRINT#-2,CHR$(27);CHR$(88);
:GOTO5 ''''END SUPER/SUB SCRIPT
1009 PRINT#-2,CHR$(27);CHR$(14);
:GOTO5 ''''START ENLONGATION
1010 PRINT#-2,CHR$(27);CHR$(15);
:GOTO5 ''''END ENLONGATION
1011 PRINT#-2,CHR$(27);CHR$(66);
CHR$(1);:GOTO5 ''''START ITALIC
1012 PRINT#-2,CHR$(27);CHR$(66);
CHR$(0);:GOTO5 ''''END ITALIC
1013 PRINT#-2,CHR$(27);CHR$(31);
:GOTO5 ''''START BOLD
1014 PRINT#-2,CHR$(27);CHR$(32);
:GOTO5 ''''END BOLD
1015 PRINT#-2,CHR$(27);CHR$(85);
CHR$(1);:GOTO5 ''''UNIDIRECTION
1016 PRINT#-2,CHR$(27);CHR$(54);
:GOTO5 ''''1/6" LINE FEED
1017 PRINT#-2,CHR$(27);CHR$(56);
:GOTO5 ''''1/8" LINE FEED

```

```

1018 PRINT#-2,CHR$(27);CHR$(58);
:GOTO5 '''' IBM CHAR SET
1019 GOSUB 10000:CLS:GOTO4 ''''B
AUD
1020 PRINT#-2,"Test Line-1234567
890/ABCDEFGHIJKLMnopqrstuvwxyz:"
:GOTO5
1030 SOUND40,1:SOUND50,1:CLS:NEW

```

```

9999 '''' baud rate menu ''''
10000 CLS:PRINT" PRINTER BAUD R
ATE SELECTION"
10010 B=PEEK(150)
10020 IF B=190 THEN B$="300 BAUD
"
10030 IF B=88 THEN B$="600 BAUD"
"
10040 IF B=41 THEN B$="1200 BAUD
"
10050 IF B=18 THEN B$="2400 BAUD
"
10060 PRINT:PRINT" CURRENT RAT
E = "B$;
10070 PRINT:PRINT
10080 PRINT" 1 = 300 BAUD"
10090 PRINT" 2 = 600 BAUD"
10100 PRINT" 3 = 1200 BAUD"
10110 PRINT" 4 = 2400 BAUD"
10120 PRINT:PRINT" PRESS ENTER
FOR NO CHANGE"
10130 PRINT:PRINT:INPUT" WHIC
H BAUD RATE ";B$
10140 POKE155,80
10150 IF B$="" THEN RETURN
10160 IF B$="1" THEN POKE150,190
"
10170 IF B$="2" THEN POKE 150,87
"
10180 IF B$="3" THEN POKE 150,41
"
10190 IF B$="4" THEN POKE 150,18
"
10200 CLS:RETURN

```

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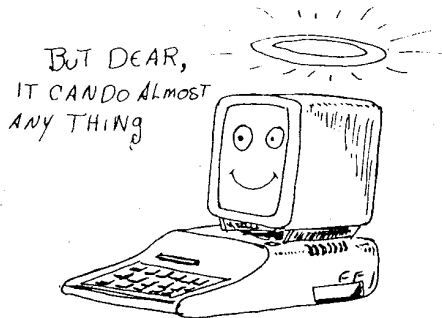
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Well the pressure is on again. Tandy has announced the release of the new Color Computer III, stating that to unlock the power of this new machine a new version of OS-9 is needed, OS-9 Level II. As a result some COCO enthusiasts are feeling this pressure and are concerned over the necessity of learning OS-9. Perhaps they have tried OS-9 level I and were turned off by its complexity and difficulty in understanding.

History repeats itself, as I can remember not too long ago when I was a proud owner of a new 32k Cocom with Extended Basic and a single disk drive. It was back then that Tandy announced that something called OS-9 was needed to unleash a full 64k of ram from my COCO. Without having the slightest idea of what OS-9 was I immediately went out and placed my order for this new marvel. After all the Commodore 64 had 64k and I didn't want to be outdone by the machine I almost bought.

After getting the first copy of OS-9 to hit my local Computer Center, I rushed home, reading the Docs as I drove, knowing that great things were in store for me when I got OS-9 up and running. As it was, I spent the next 2 or 3 weeks trying to figure out how to write programs in Extended Basic under OS-9.

I tried every thing I could think of to get them to run. I tried entering them with the line editor and the build command, but nothing seemed to work. I kept telling myself that I must not be writing them in Position Independent Code because the manuals kept saying that no program will run under OS-9 unless they are in Position Independent Code, whatever the hell that was. After these weeks of frustration I was about to give up on OS-9 and as you can tell I still had no idea what OS-9 was all about. There is only so much fun making backups of your system disk and doing a DIR to see the directory.

About this time someone clued me in that unless I could write assembly programs, I needed something called Basic09. With this I could write programs in basic, almost as Basic09 was supposed to be a cross between basic and pascal. Well Assembly was something we had back in High School, and I did sort of understand basic, so it was back to the Computer Center again to place an order for Basic09.

Somehow I managed again to sneak off with the first copy of Basic09 to come in. Those salesmen must have really thought I knew what I was doing by being first in line to get OS-9 and now Basic09. I must have thought so too, as I just knew things were going to get

better. Big surprise, I got home, booted up OS-9, unloaded my systems disk, put in my freshly backed up

Basic09 disk, and entered the comand "Basic09". The disk drive came to life, my anticipation built and guess what, ERROR 216 pathname file not found. OK under OS-9 there is more than one way to skin a cat so how about "Load Basic09" as a command. No dice, still a 216 ERROR. It was at this point that I almost became an OS-9 hacker, but my wife took the knife away from me.

I think I would have just given up on OS-9 at this point if it wasn't for Dale Puckett starting his KISSABLE OS-9 column in Rainbow and my discovery of the COCO and OS-9 SIG here on CompuServe where I also learned about the OS-9 Users Group.

Thank goodness Tandy will be packaging Basic09 with the new level II OS-9 for the Color Computer III. With Basic09 already installed on the system disk newcomers to OS-9 level II will have a language they are familiar with and won't have to worry about how to do something as simple as loading it into memory and running it.

Needless to say, I finally learned how to get Basic09 up and running, and became impressed with its power. Things still took awhile and I really didn't get cooking until the Basic09 Tour Guide and the Complete Rainbow Guide To OS-9 came out in print.

After struggling with OS-9 so long, these books really brought things into focus and I couldn't help asking myself where these books were when I was just getting started.

I guess that now that OS-9 has been out awhile, most people realize that OS-9 is just an operating system and it is not a requirement to learn OS-9 to enjoy the Color Computer. The same will be true with the new Color Computer III and OS-9 level II inspite of what the advertising and talk may have led you to believe. All the hype about needing OS-9 to get the most use and enjoyment out of the Color Computer is just that. You as a user can best determine whether or not you need or want to learn OS-9. While OS-9 can enhance the use of the Color Computer, the decision to learn this complex and powerful operating system is still yours. The same cannot be said for all those IBM PC and clone users. It's MS-DOS or nothing.

For those who are thinking that they might like to learn OS-9, I'd like to pass on a couple of things I learned about OS-9 in general. First, if you do decide to take the plunge be prepared to invest some time and effort into it. For me it was well worth all the frustration and effort I suffered through

getting a handle on what I consider to be the best operating system around. As operating systems go, OS-9 is the state of the art, having been designed for computers using the 6809 or 68XXX CPU. For 6809 based computers, OS-9 comes in 2 levels, level I and II.

Level I only supports a maximum of 64k, while level II requires computers with memory management hardware. For the 68XXX series computers there is currently only one level of OS-9. Memory management is not so much of a problem in the 16/32 bit computers as it is in the 8 bit 6809 but I understand that a level II is under development for the 68XXX.

The fact that OS-9 happens to run on the Color Computer stems from the fact that the COCO uses the 6809 CPU. Had the Color Computer used the Z-80 chip or the Intel 8088 chip, Tandy may have selected one of the other major operating systems for the Color Computer such as CP/M or MS-DOS. I personally think we are quite fortunate as OS-9 is much more powerful than CP/M or MS-DOS. The only downside as I see it is that CP/M and particularly MS-DOS (because of the IBM connection) has much more available application software. This is not to say that there isn't quality application software available for OS-9, just that there is room for much more. Maybe with the introduction of the new Color Computer III running OS-9 level II, and the development of new 68XXX machines running OS-9 that more and better application software will become available.

As an operating system, OS-9 has been criticized as being hard to learn and user unfriendly. While it definitely takes time and effort to learn OS-9, the simple truth is that OS-9 is no harder to learn or more user unfriendly than CP/M or MS-DOS. It certainly is easier to learn and more user friendly than UNIX (XENIX) on which OS-9 is based. In a sense I feel that OS-9 is being "bum rapped" simply because it was implemented on the Color Computer which was designed by Tandy as an entrance level game computer. Most Color Computer users, myself included, have had nothing to compare OS-9 with except Disk Basic, and don't have the foggiest notion of what a true operating system is all about. As a result the transition to OS-9 can be a little rough, as I can personally attest. On the other hand, those users familiar with CP/M or MS-DOS generally find the transition much easier.

After struggling and finally becoming semi-proficient in OS-9 on my own, I was finally introduced at work to both CP/M and MS-DOS. I was amazed to discover that neither of these operating systems were any more user

friendly than OS-9. If it wasn't for the fact that I was familiar with OS-9 I would have had just as hard of a time learning either of these Operating systems as I did in learning OS-9. Of the three operating systems I find CP/M the least user friendly and MS-DOS only slightly better. To me MS-DOS is just one small step closer to OS-9. Many a time I wished that my 640 K PC-Clone at work would do what my little 64 K COCO running OS-9 level I would do at home. Oh well, I get long coffee breaks waiting for my PC-Clone to finish one task so that I can start on another.

With regard to the implementation of OS-9 on the Color Computer, Frank Hogg said several years ago that the Color Computer needed three things to make it a 'real computer'. These were a better display, better keyboard, and more memory. Well Tandy must have been listening because improvements made in the Color Computer II and the soon to be released Color Computer III solve all these problems. There is one hardware problem in mating OS-9 to the Color Computer that still exists, with which the new or prospective user should be made aware.

This has to do with the disk drive Tandy sells for use with the COCO.

OS-9 is very disk intensive and the operating system takes up quite a bit of disk space. The single sided double density 35/40 track drive sold by Tandy is just barely adequate for the job.

In fact Basic09 nor any of the languages sold for use under OS-9 won't fit on the 35 trk OS-9 Level I system disk. Since most of the newcomers to OS-9 on the COCO only have a single 35 track drive, they almost immediately run into a disk space storage problem. To do anything worth while under OS-9 the newcomer has to solve this problem, which usually means making several modified system disks for different purposes ie., assembly programming, basic09 programming, word processing etc. This can be quite a hassle, particularly for the newcomer who has't done it before. The shame of it is that OS-9 supports 40 and 80 track double sided drives which don't cost much more than the 35 track single sided drive. Under COCO OS-9 level I, third party drivers are needed to use 40 and/or 80 track drives. The new COCO III using OS-9 level II will have drivers that support these higher capacity drives and the packaging of Basic09 with the System disk will help. Until Tandy offers a double sided drive as /D0, however, most newcomers to OS-9 will initially face this disk space

storage problem until they purchase additional floppy drives or step up to a hard drive.

If after reading this text, or inspite of it, you are considering making the transition to OS-9, I strongly suggest you purchase two books from your local Radio Shack store. These are The Official Basic09 Tour Guide and The Complete Rainbow Guide to OS-9. While these books have come under recent criticism of not being too helpful to newcomers, you will be much better off with them than without them. Rainbow magazine has its almost monthly Kissable OS-9 column, which more often as not has helpful hints for beginners. For additional help, membership in the OS-9 Users Group will get you a monthly rag called MOUD, which I look forward too as much as my subscription to Rainbow magazine. The User Group also has a vast software library. Of course the COCO and OS-9 SIGS are a great place to ask questions. Remember no question is too stupid or dumb to ask. What is dumb is trying to write Extended Basic programs under OS-9 for several weeks and not asking why it won't work.

S U B S

Another sub game to distroy the sub by using your joystick and drop the bombs.

```

1 PCLEAR2: CLEAR400
5 DIM CH(25,9),SU(30,7),SH(25,9)
,CL(30,7),SM(2,9),MI(9,9),CM(2,9)
,CI(9,9),U1(1,2),H1(1,2)
10 GOSUB25000:GOSUB5000:GOSUB200
0:B2=150
20 GET(XH,YH)-(XH+25,YH+9),SH:GE
T(XS,YS)-(XS+30,YS+7),SU
110 JR=INT(JOYSTK(0)/22)+1:JL=IN
T(JOYSTK(2)/22)*3+INT(JOYSTK(3)/
22)+1
115 ON JR GOTO 125,140,135
125 PUT(XH,YH)-(XH+25,YH+9),CH:I
F XH>20 THEN XH=XH-11:GOTO140 EL
SE XH=213:GOTO140
135 PUT(XH,YH)-(XH+25,YH+9),CH:I
F XH<213 THEN XH=XH+11 ELSE XH=2
0
140 PUT(XH,YH)-(XH+25,YH+9),SH
145 ON JL GOTO 150,155,160,165,1
90,170,175,180,185
150 IF XS>14 AND(YS>30)THEN PUT(
XS,YS)-(XS+30,YS+7),CL:XS=XS-8:Y
S=YS-8
151 GOTO190

```

```

155 IF XS>14 THEN PUT(XS,YS)-(XS
+30,YS+7),CL:XS=XS-8
156 GOTO190
160 IF XS>14 AND(YS<140)THEN PUT
(XS,YS)-(XS+30,YS+7),CL:XS=XS-8:
YS=YS+8
161 GOTO190
165 IF YS>30 THEN PUT(XS,YS)-(XS
+30,YS+7),CL:YS=YS-8
166 GOTO190
170 IF YS<140 THEN PUT(XS,YS)-(X
S+30,YS+7),CL:YS=YS+8
171 GOTO190
175 IF XS<212 AND(YS>30) THEN PU
T(XS,YS)-(XS+30,YS+7),CL:XS=XS+8
:YS=YS-8
176 GOTO190
180 IF XS<212 THEN PUT(XS,YS)-(X
S+30,YS+7),CL:XS=XS+8
181 GOTO190
185 IF XS<212 AND(YS<140)THEN PU
T(XS,YS)-(XS+30,YS+7),CL:XS=XS+8
:YS=YS+8
190 PUT(XS,YS)-(XS+30,YS+7),SU
195 ON(PEEK(65280)AND3)+1 GOTO20
0,210,220,230
200 B=1
210 IF TU=2 THEN TU=-1
211 TU=TU+1:IF U1(0,TU)<>0THEN P
UT(U1(0,TU),U1(1,TU))-(U1(0,TU)+
3,U1(1,TU)+10),CM
212 U1(0,TU)=XS+14:U1(1,TU)=YS-1
1:IF B=0THEN230
220 B=0:IF TH=2THEN TH=-1
221 TH=TH+1:IF H1(0,TH)<>0THEN P
UT(H1(0,TH),H1(1,TH))-(H1(0,TH)+
10,H1(1,TH)+10),CI
222 H1(0,TH)=XH+7:H1(1,TH)=YH+12
230 FOR I=0 TO 2:IF H1(1,I)=0 TH
EN245
231 IF(ABS((XS+11)-H1(0,I))<23)A
ND(YS-H1(1,I)<18) THEN FL=1:GOTO
3000
235 PUT(H1(0,I),H1(1,I))-(H1(0,I)
)+10,H1(1,I)+10),CI:IF H1(1,I)>1
30 THEN H1(0,I)=0:H1(1,I)=0:GOTO
245
240 H1(1,I)=H1(1,I)+20:PUT(H1(0,
I),H1(1,I))-(H1(0,I)+10,H1(1,I)+
10),MI
245 IF U1(1,I)=0 THEN 260
246 IF ABS(U1(0,I)-(XH+15))<19AN
D(U1(1,I)-YH<19) THEN FL=2:GOTO3
000
250 PUT(U1(0,I),U1(1,I))-(U1(0,I)
)+3,U1(1,I)+10),CM:IF U1(1,I)<35
THEN U1(0,I)=0:U1(1,I)=0:GOTO26
0

```

```

255 U1(1,I)=U1(1,I)-20:PUT(U1(0,
I),U1(1,I))-(U1(0,I)+3,U1(1,I)+1
0),SM
260 NEXTI:GOTO110
2000 DRAW"C2;BM122,15;R13D4R6G3L
19H3R6U4":PAINT(124,17),2,2
2005 DRAW"C3;BM50,140;R6D4R20G3L
27U3R4U4":PAINT(52,145),3,3
2010 GET(100,100)-(135,107),CL
2020 GET(9,15)-(34,23),CH:XH=115
:YH=15:XS=46:YS=140
2030 LO$="C3;BM10,162;":LO$=LO$+
S$+N$+U$+N$+B$:DRAW LO$:LO$="C1;
BM130,162;":LO$=LO$+S$+N$+H$+N$+
I$+N$+P$:DRAW LO$
2031 LO$="C3;BM80,162;":LO$=LO$+
NN$(0):DRAW LO$:LO$="C1;BM215,16
2;":LO$=LO$+NN$(0):DRAW LO$
2035 CIRCLE(15,70),4,2:FOR I=.1
TO .9STEP .2:CIRCLE(15,70),5,2,1
,I,I+.1:NEXTI:PAINT(15,70),4,2:D
RAW"C3;BM10,100;R3D10L3U10"
2040 GET(10,65)-(20,75),MI:GET(1
0,100)-(13,110),SM:DRAW"C3;BM7,4
0;R30D75L30U75":PAINT(20,60),3,3
:PAINT(20,60),1,1:GET(10,65)-(20
,75),CI:GET(10,100)-(13,110),CM:
RETURN
3000 J=0:ON FL GOTO 3020,3010
3010 PUT(XH,YH)-(XH+25,YH+9),CH:
LO$="C2;BM80,162;":LO$=LO$+NN$(S
B):DRAW LO$:SB=SB+1:LO$="C3;BM80
,162;":LO$=LO$+NN$(SB):DRAW LO$:
GOTO3030
3020 PUT(XS,YS)-(XS+30,YS+7),CL:
LO$="C2;BM215,162;":LO$=LO$+NN$(
SP):DRAW LO$:SP=SP+1:LO$="C1;BM2
15,162;":LO$=LO$+NN$(SP):DRAW LO
$
3030 IF J=5 THEN 3035 ELSE FOR I
=1 TO 7:SOUND 160/I,1:NEXTI:J=J+
1:GOTO3030
3035 FOR I=0 TO 2:IF H1(0,I)<>0
THENPUT(H1(0,I),H1(1,I))-(H1(0,I
)+10,H1(1,I)+10),CI
3040 IF U1(0,I)<>0 THEN PUT(U1(0
,I),U1(1,I))-(U1(0,I)+3,U1(1,I)+
10),CM
3045 U1(0,I)=0:U1(1,I)=0:H1(0,I)
=0:H1(1,I)=0:NEXTI
3050 IF SP<5 AND(SB<5)THEN110
3060 IF SP=5 THEN LO$="C2;BM215,
162;":LO$=LO$+NN$(5):DRAW LO$:GO
SUB4000:MID$(LO$,2,1)="1":DRAW L
O$:GOSUB4000:GOTO3060
3070 LO$="C2;BM80,162;":LO$=LO$+
NN$(5):DRAW LO$:GOSUB4000:MID$(L
O$,2,1)="3":DRAW LO$:GOSUB4000:G
OTO3070

```

```

4000 FOR I=1 TO 40:A$=INKEY$:IF
A$="R"THEN RUN ELSE IF A$="E"THE
N CLS:END ELSE NEXT I:RETURN
5000 S$="BD6BR12U4H2L8G2D6F2R8F2
D6G2L8H2U4BD6BR12":H$="D20U11R12
NU9D11":I$="BR4R6L3D20NL3R3BR1":
P$="ND20R10F2D6G2L10BD10BR12":U$
="D18F2R8E2NU18BD4":B$="BD9R10E2
U6H2L10D20R10E2U6H2BR2BD9":N$="B
R6BU20"
5005 RESTORE:FOR I=0 TO 5:READ N
N$(I):NEXT I:RETURN
5020 DATA R12D20L12U20R12D4NG12,
BR4BD3E3D20NL4R3BR2,ND3R12D5G12D
3R12,ND3R12D10NL8D10L12NU3BR12,D
12R12L3NU12D8,BR12L12D7R12D13L12
NU3R12
25000 PMODE 1,1:PCLS:SCREEN1,0:L
INE(2,20)-(253,20),PSET:LINE-(25
3,189),PSET:LINE-(2,189),PSET:LI
NE-(2,2),PSET:LINE-(253,2),PSET:
LINE-(253,99),PSET:LINE(2,158)-(
253,158),PSET:PAINT(4,4),3,4:PAI
NT(4,161),2,4:PAINT(0,0),4,4
25005 RETURN

```

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RS 10

CHICKEN

Cross the chicken across the busy street by using your joystick.

```

10 PCLEAR2: CLEAR4000
20 DIM A$(15), D$(15), X$(15)
30 CLS3: PLAY "L255"
40 PRINT @44, "CHICKEN";
50 PRINT @104, CHR$(128); "initial
ization"; CHR$(128);
60 PRINT @192, " WHAT LEVEL OF PL
AY (0-9) : "
70 A$=INKEY$: IF A$="" THEN 70
80 IF A$<>"0" AND VAL(A$)=0 THEN
PRINT @219, "?"; A$; "?": GOTO 70
90 M3=16-VAL(A$): PRINT @192: M=M3

```

```

100 X=16: Y=14: LX=X: LY=Y: CO=X+32*
Y: LC=CO: FS=0: SC=0: WF=2: WR=0
110 PRINT @193, "SMALL OR LARGE G
ATES (S/L)";
120 A$=INKEY$: IF A$="" THEN 120
130 IF A$="S" THEN TY=239: GOTO 1
60
140 IF A$="L" THEN TY=175: GOTO 1
60
150 PRINT @219, "?"; A$; "?": GOTO
120
160 PRINT @219, "OK!";
170 FOR L=1 TO 32: FG$=FG$+CHR$(1
75): G$=G$+CHR$(143): NEXT
180 PRINT @192, FG$;
190 PRINT @256, "play: USE THE J
OYSTICK TO PICK": PRINT "DIRECTION
. PRESS BUTTON TO MOVE 'CHICKEN'
WHICH LOOKS LIKE "; CHR$(159); "
' . ": PRINT: PRINT " P.S. DON'T G
ET RUN OVER"

```

```

200 FG$=CHR$(239)+LEFT$(FG$,30)+
CHR$(239)
210 FL$=CHR$(239): FOR L=1 TO 5: F
L$=FL$+CHR$(239)+CHR$(239)+CHR$(
175)+CHR$(TY)+CHR$(239)+CHR$(239
): NEXT: FL$=FL$+CHR$(239): FI$=FL$

```

```

220 A$=CHR$(140)+CHR$(141)+CHR$(
142)+CHR$(140)+LEFT$(G$,12)
230 B$=CHR$(143)+CHR$(143+112)+C
HR$(143+112)+LEFT$(G$,13)
240 C$=CHR$(131)+CHR$(135)+CHR$(
139)+CHR$(131)+LEFT$(G$,12)
250 P$=CHR$(143)+CHR$(143+48)+CH
R$(143+48)+CHR$(143)+LEFT$(G$,12
)

```

```

260 A$=LEFT$(A$,M): B$=LEFT$(B$,M
): C$=LEFT$(C$,M): P$=LEFT$(P$,M)
270 GOTO 510
280 SS=SS+1: PRINT @197, "WORKING
": SS; FOR L=0 TO M-1

```

```

290 PRINT @209, " ON #"; L;
300 IF L=0 THEN X$(L)=" " ELSE X$
(L)=RIGHT$(X$,L)
310 FOR L1=1 TO 1+INT(32/M): X$(L
1)=X$(L)+LEFT$(X$,M): NEXT L1
320 X$(L)=CHR$(239)+MID$(X$(L),2
,30)+CHR$(239): NEXT L: RETURN
330 QS=175: CO=0: DO=0: FOR L=1504
TO 1535: POKE L,239: NEXT
340 FOR L9=1 TO 2
350 CO=- (1+CO)*(CO<>M1-1): QO=M1-
CO-1
360 PRINT @0, FL$: A$(CO): A$(QO);
370 IF CO<224 THEN GOSUB 470: QS
=PEEK(CO+1024)
380 PRINT @CO, CHR$(159);
390 IF QS<>143 AND QS<>175 THEN G
OSUB 670: GOTO 420
400 NEXT L9
410 IF CO<32 THEN GOSUB 590
420 DO=- (1+DO)*(DO<>M2-1): SO=M2-
DO-1
430 PRINT @224, FG$: D$(SO): D$(DO)
; FG$;
440 IF CO>224 THEN GOSUB 470: QS=
PEEK(1024+CO): PRINT @CO, CHR$(159
); IF QS<>143 AND QS<>175 THEN G
OSUB 670: GOTO 420
450 GOTO 340
460 FOR W=1 TO 35: NEXT: RETURN
470 PLAY "A": IF (PEEK(65280) AND
3)<>2 THEN 460 ELSE X0=JOYSTK(0)
-32: Y0=JOYSTK(1)-32: DX=SGN(X0)*A
BS(ABS(X0)>=ABS(Y0)): DY=SGN(Y0)*
ABS(ABS(Y0)>ABS(X0))
480 X=X+DX: X=X+(X=0 OR X=31)*DX
490 Y=Y+DY: Y=Y+(Y<0 OR Y=15)*DY
500 CO=X+32*Y: RETURN
510 M=M3: X$=A$: GOSUB 280: M1=M
520 FOR L=0 TO M-1: A$(L)=X$(L): N
EXT
530 X$=P$: GOSUB 280: FOR L=0 TO M
-1: A$(L)=A$(L)+X$(L): NEXT
540 X$=C$: GOSUB 280: FOR L=0 TO M
-1: A$(L)=A$(L)+X$(L): NEXT
550 M=M3: X$=A$: GOSUB 280: FOR L=0
TO M-1: D$(L)=X$(L): NEXT: M2=M
560 X$=B$: GOSUB 280: FOR L=0 TO M
-1: D$(L)=D$(L)+X$(L): NEXT
570 X$=C$: GOSUB 280: FOR L=0 TO M
-1: D$(L)=D$(L)+X$(L): NEXT
580 GOTO 330
590 IF MID$(FL$,CO+1,1)<>CHR$(17
5) THEN 670
600 H=INT((CO+3)/6)
610 MID$(FL$,H*6-2,2)=CHR$(159)+
CHR$(159)
620 X=16: Y=14: CO=X+32*Y: LC=CO: LY
=Y
630 FS=FS+1: SC=SC+100

```

```

640 IF FS=5 THEN PRINT @0,FL$;:F
L$=FI$:FS=0:SC=SC+1000:FOR L=100
TO 190 STEP 10:SOUND L,1:NEXT
650 PRINT @497,"SCORE :";SC;:FOR
L=200 TO 250 STEP 10:SOUND L,1:
NEXT
660 RETURN
670 WF=WF+1:IF WF<3 THEN RETURN
680 WF=2:X=16:Y=14:CO=X+32*Y:LC=
CO:LY=Y:WR=WR+1:QS=175
690 PRINT @482,"WRECKS :";WR;
700 FOR Y6=1 TO 5
710 IF Y6/2=FIX(Y6/2) THEN SCREE
N 0,1 ELSE SCREEN 0,0
720 SOUND 50,4:SOUND 1,3
730 NEXT:IF WR<5 THEN RETURN
740 A$=INKEY$:CLS:PRINT @192,"YO
U HAVE BEEN RUN OVER 5 TIMES YO
UR SCORE IS :";SC:PRINT:PRINT "A
NOTHER GAME (Y/N) ?";
750 A$=INKEY$:IF A$="Y" THEN RUN

760 IF A$="N" THEN CLS:END
770 IF A$="" THEN PRINT @308 ELS
E PRINT @308,"(YES OR NO)?":FOR
W=1 TO 30:NEXT
780 GOTO 750
790 END ' OF PROGRAM

```

COLOR COMPUTER HINTS & TIPS

- 1) POKE 150,X --> Sets printer baud rate
600 Baud --- X=87 1200 Baud --- X=41
2400 Baud --- X=18 4800 Baud --- X=7
9600 Baud --- X=1
- 2) POKE 65495,0 --> Speed-up poke
POKE 65494,0 --> Return to normal speed
- 3) POKE 113,3:EXEC 40999 --> Cold Start
- 4) POKE 113,0 & press reset>Disk cold start
- 5) POKE 282,0 --> Turns on lower case
POKE 282,255 --> Upper case only
- 6) POKE 293,0 --> Disables all basic,
ext. basic, and disk functions
POKE 293,20 --> Enables all basic, ext.
basic, and disk functions
- 7) POKE &HFF40,60 -->Turns disk drive
motor on
POKE &HFF40,0 -->Turns disk drive motor off
- 8) EXEC 41175 --> Check ROM version
- 9) POKE 383,62 --> Disable LIST command
POKE 383,126 --> Re-enable LIST command
- 10) EXEC 49152 --> Display DISK turn-on
message
- 11) EXEC 52175 --> Displays disk directory
on screen 1,0
- 12) EXEC 52393 --> Displays disk directory
on screen 1,1
- 13) To free up more memory on a disk system
FILES1:POKE &H000,0:POKE 25,13:NEW

- 14) PRINT PEEK(116)*256+PEEK(117) --> Shows
max. sys. memory
- 15) PRINT PEEK(235) --> Returns drive
PRINT PEEK(236) --> Returns track
PRINT PEEK(237) --> Returns sector
- 16) EXEC44539 --> Waits for any key to be
pressed
- 17) POKE 383,158 --> Disable the DIR
command
POKE 383,126 --> Re-enable the DIR
command
- 18) To find machine language start, end, and
exec addresses:
PRINT PEEK (487)*256+PEEK (488)
PRINT PEEK (126)*256+PEEK (127)-1
PRINT PEEK (157)*256+PEEK (158)
- 19) POKE 359,0 --> Screen scroll protect
(disk)
POKE 359,16 --> Screen scroll protect
(tape)
- 20) To get most memory in a non-disk system:
POKE 27,0:CLEAR 0:RUN
- 21) POKE 65314,11 --> Screen enhance
(cannot be use by itself. Use at
beginning of prgm.
- 22) POKE 111,254:DIR --> Send disk
directory to printer

C A R - R A C E

Test your skills driving this computer car.
Use your joystick to steer around the course.

```

5 CLSO:PRINT@42,"INDY DRIVER";:P
RINT@98,"PLEASE WAIT ... INITILI
AZING"
7 GOTO 10000
10 PRINT@333,CHR$(159)" 0 "CHR$(
159);
20 PCLEAR 2:PMODE 1,1:PCLS
30 DIMS(36)
40 COLOR 3,1:FORX=0TO35:S(X)=60:
LINE(S(X),X*4)-(S(X)+8,X*4+8),PS
ET,BF:LINE(100+S(X),X*4)-(92+S(X
),X*4+8),PSET,BF:NEXT:COLOR 4,1
50 C1=0:C2=0:C3=0:X0=100
60 SCREEN 1,0
70 GOTO 5000
100 X=JOYSTK(0):X0=X0+(2*(X<5)+(
X<20)-(X>45)-2*(X>60))*2
110 C0=28160+X0+1
120 Y=INT((63-JOYSTK(1))/21+1)
130 IFY<>GR THEN GR=Y:ELSE200
150 LINE(20,160)-(30,174),PRESET
,BF
160 IFGR=5THENDRAW"BM28,160;SBL4
D2R3FD26L2H"

```

```

170 IFGR=4THENDRAW"BM26,160;SBND
663R4"
180 IFGR=3THENDRAW"BM20,162;SBER
2FDGNLFDGLLH"
190 IFGR=2THENDRAW"BM20,162;SBER
RFDGLGGDR4"
195 IFGR=1THENDRAW"BM22,162;SBED
6NRL"
200 IFLP<35THENS00:ELSEY1=Y1+1-G
R
210 IFY1<-15-RND(10)THENY1=34
220 IFY1<3THENC1=0:GOTO300
230 Y=INT(Y1)+SP
240 IFY>=35THENY=Y-35:GOTO240
250 C1=33856+S(Y)-Y1*512
260 IFABS(Y1-11)<4ANDABS(S(Y)-X0
+64)<16 THEN RETURN
300 Y2=Y2+2-GR
310 IFY2>=35THENY2=Y2-50-RND(10)
:GOTO310
315 IFY2<-15-RND(10)THENY2=34
320 IFY2<3THENC2=0:GOTO400
330 Y=INT(Y2)+SP
340 IFY>=35THENY=Y-35:GOTO340
350 C2=33832+S(Y)-Y2*512
360 IFABS(Y2-11)<3ANDABS(S(Y)+40
-X0)<16 THEN RETURN
400 Y3=Y3+3-GR
410 IFY3>=35THENY3=Y3-50-RND(10)

415 IFY3<-15-RND(10)THENY3=34
420 IFY3<3THENC3=0:GOTO500
430 Y=INT(Y3)+SP
440 IFY>=35THENY=Y-35:GOTO440
450 C3=33808+S(Y)-Y3*512
460 IFABS(Y3-11)<4ANDABS(S(Y)-X0
+16)<16 THEN RETURN
500 S0=SP+16:IFSO>35THENS0=S0-35

510 IFS(S0)+8>X0 OR S(S0)+74<X0
THEN RETURN
600 S2=S1:S1=SP:SP=SP+1:DS=SGN(S
(S1)-S(S2))*2:IFSP>35THENS0=0
610 IF DS=0 THEN R1=RND(3)*2-4 E
LSE R1=-DS*(RND(10)=1)
620 S(SP)=S(S1)+R1:IF(S(SP)>182)
OR(S(SP)<18)THENS(SP)=S(SP)-R1
630 LINE(S(SP),0)-(S(SP)+8,4),PS
ET,BF:LINE(100+S(SP),0)-(92+S(SP)
),4),PSET,BF
1000 Y=USRO(0)
1010 LP=LP+1:SC=SC+GR
1020 GOTO100
5000 '*****
5010 GOSUB100:GOSUB5100
5020 GOSUB100:GOSUB5100
5030 GOSUB100:GOSUB5100
5040 CLS:PRINT:PRINT"      INDY
DRIVER ":PRINT:PRINT:PRINT"YOU T
RAVELED "SC/10" MILES":PRINT:PRI

```

```

NTUSING"YOU AVERAGED GEAR #.#";S
C/LP:PRINT:PRINT"YOUR SCORE IS "
;INT(SC*SC/LP/10+.5)
5050 PRINT:PRINT:PRINT:PRINT"WIS
H TO PLAY AGAIN ? (Y/N)"
5060 A#=INKEY$:IF A#="Y"THENRUN20
:ELSEIFA#="N"THENCLS:END:ELSE506
0
5100 FORX=1TO10:SCREEN1,1:SCREEN
1,0:NEXT:X0=S(S0)+40:C1=0:C2=0:C
3=0:Y1=-RND(10):Y2=-RND(10):Y3=-
RND(10):RETURN
10000 TM=PEEK(116)*256+PEEK(117)

10010 IFTM>16383 THEN TM=32767 E
LSE TM=16383
10020 CLEAR 200, TM-286
10030 TM=PEEK(116)*256+PEEK(117)
:IFTM>16383 THEN TM=32767ELSETM=
16383
10040 FORX=-285 TO 0
10050 READ A:POKE TM+X,A
10055 IF -X/57=INT(-X/57) THENPR
INT@173+(5+X/57)*32,CHR$(191);-X
/57;CHR$(191);
10060 NEXT X
10070 DEFUSRO=TM-58
10080 GOTO 10
20000 DATA 1,69,84,69,5,69,84,69
,64,81,21,81,80,81,21,81,52,118,
198,8,61,49,140,232,51,171,236,1
40,77,31,1,134,32,61,211,186,30,
1,31,137,84,84,84,58,132,7,49,14
0,4,230,166,32,8,128,64,32,16,8,
4,2,1,134,8,50,126,52,6,134,255,
61,67,83,164,132,228,1
20010 DATA 237,98,55,2,230,140,2
5,61,166,97,61,168,98,232,99,237
,132,48,136,32,53,6,74,38,220,50
,98,53,118,57,0,0,0,67,51,158,27
,32,9,48,5,156,29,37,3,79,95,57,
236,129,16,163,140,235,38,239,19
8,5,16,142,0,79,166,128,167,160,
90,38,249,126,179,237
20020 DATA 231,140,213,79,23,255
,117,166,140,204,139,8,167,140,1
99,134,1,23,255,104,57,79,52,2,4
8,140,17,236,134,237,140,182,95,
141,221,53,2,139,2,129,6,35,235,
57,0,0,0,0,0,0,0,158,186,48,13
7,9,32,236,131,237,136,64,156,18
6,38,247,48,136,64,79
20030 DATA 95,237,131,156,186,38
,250,57,204,67,47,237,140,132,14
1,190,141,219,48,140,208,108,141
,255,122,52,16,23,255,118,53,16,
30,137,237,141,255,105,237,129,1
6,131,0,0,39,4,198,1,141,135,166
,141,255,93,129,51,37,219,57,0,0
,0,0,0,0,0,0

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