

THE Magazine for experienced TANDY Colour Computer Users!

COCO

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MAGAZINE



VOL4NO4JDEC87



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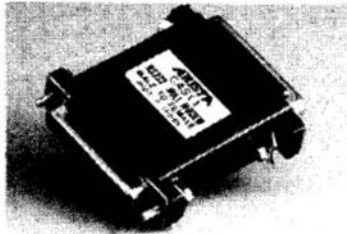
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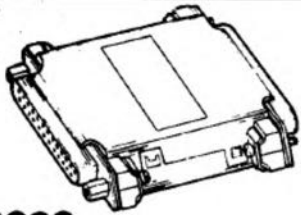
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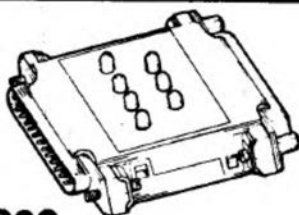
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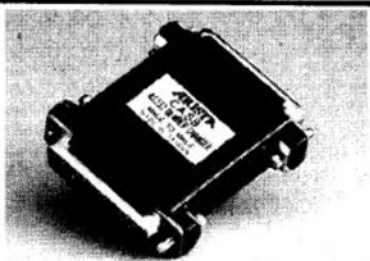
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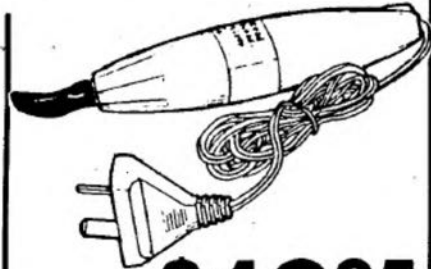
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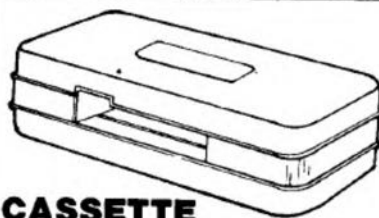


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Meredith



Deon



Karen

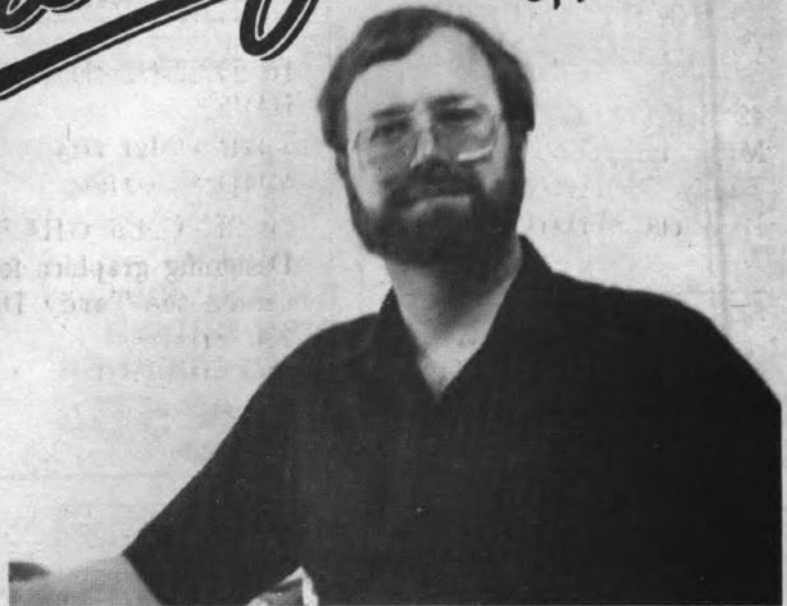


Sheryl Jim



Season's Greetings

Graham



Alex



From all of us, to you and your family, thank you for being a part of Goldsoft this year!
Happy programming and happy Christmas from us all!

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How good is your memory?

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DEADLINES:

7th of the preceding month.

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IN A NUT SHELL

G'day!

Welcome new readers! I'm Alex and I'm editor of this magazine!

My job is to see that CoCo Magazine is filled full of interesting articles and programs.

Australian CoCo Magazine is for those people who own a Tandy Colour computer 1, 2 or 3, and who would like to know more about their computer.

Every month we feature articles about a wide range of subjects and programs of interest to Tandy Colour Computer users.

We give you up-to-date information about the latest releases, the newest software, the latest developments, for the Colour Computer.

So read on! I'm sure there will be something for everyone in Australian CoCo Magazine.

Holidays

At last! We are going to have someone in the office over the Christmas break!!

Usually and unsurprisingly, we're all worn out by this time, but the boss has said "We WILL stay open, come hell or high water, to service our readers!"

Karen will be here all the time, and I will be here some of those two weeks. How about giving me a call - I'd love to hear from you!

The Reference Issue

January's magazine is always a reference issue. This January we will have lots of great information like:

* Printer conversion codes: a table to compare one printers' codes with another's, eg

```
PRINT#-2,CHR$(27)CHR$(13)
```

... prints everything in italics on a DMP130 while a ...

```
PRINT#-2,CHR$(27)CHR$(25)
```

... will do the same job on a DMP105.

* PEEKS & POKES: a list of PEEKS, POKES and EXECs for your CoCo 1, 2 and 3.

* Vocabulary: A list of CoCo commands available to your computer, including the ones for the CoCo 3.

* OS-9 Commands summary: This section we'll devote to the OS-9 beginner and just give a brief explanation of each OS-9 command. We'll be explaining the

commands in greater detail throughout the year.

* Errors: Errors and what each one means.

* Memory Map: A map of CoCo's memory for all CoCo's, including the CoCo 3!

* Calculator functions for ECB: Getting those trigonometry functions found on your calculator into your CoCo.

* Game POKES: Want to change the colours of your game? Or what about the number of men you can have?

* Schematics: CoCo 1/2 schematic diagrams.

* OS-9 Hints and Tips: A "How to go about ..." section.

You'll need this issue! This is the one we print for you to keep near your computer all year!

Games Issue

January CoCo Magazine is not only going to be a reference issue, but a gamers' issue as well.

We have some great games up our sleeve, so there's another reason to hot foot it down to your Tandy store for next month's magazine!

Good byes

Well, that's it for this month ... see you next year. May all of you have a Merry Christmas and a Happy New Year.

Alex



COM * STATION 642

GOLBLINK ViaOn 6429A21A
 #82 The Tandy Users Board
 MON 26 OCT 1987 21:46
 Member 785471278 Electronics



> Get my copy of Colormax today, and it's a really terrific program except that it's set for 60HZ and the screen rolls when you start it. My version is 1.1 and when you run the following on a backup copy, it will be fixed. (L=hash)
 18 OPEN"0",L1,"COLOURMAX/BIN",1
 28 FIELDL1 AS B9
 38 LSET B9-CHR\$(B9B8)
 48 PUTL1,B9B8:CLOSE

Jeff

3 Clubroom 5 Mhrs Msg 6 Vis Msg 28c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 6429B22A
 #82 The Tandy Users Board
 SUN 08 NOV 1987 12:48
 Visitor 766151268 Electronics



> HELP! IS THERE A POKE TO GET
 VIPWRITER TO WORK ON THE COCO3

NEV

NEV, VIP does not go on the 3 as far as we can tell - TV 64 was always better anyway - mind you, there are a number of new EXCELLENT VP packages for the 3 now available. G
 3 Clubroom 5 Mhrs Msg 6 Vis Msg 28c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 6429B23A
 #82 The Tandy Users Board
 MON 09 NOV 1987 16:28
 Visitor 378144498 Electronics



> hey nev
 I don't know about VIP writer as a single program working on a coco3, But if you have the VIP DESKTOP it work s fine on a coco3.

neel(vtc)

That's true - Aparently desktop works, but why bother? G

3 Clubroom 5 Mhrs Msg 6 Vis Msg 28c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 6429B31A
 #83 The OS9 Users Board
 SAT 24 OCT 1987 19:11
 Member 785471278
 Sponsored by Paris Radio



> Rob Unsworth's patches in the last Coco magazine were really nice, but those of us who were once rich and could afford a RGB monitor want Level 2 to start in 88 cols with default RGB colour s. Try patching Grdrv at \$8d1 from \$26 to \$27. This will start Level 2 with palettes set for RGB. If you use montype after this patch it will do the opposite

Jeff

3 Clubroom 5 Mhrs Msg 6 Vis Msg 38c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaTw 6429B32A
 #83 The OS9 Users Board
 SUN 25 OCT 1987 15:07
 Member 954811988
 Sponsored by Paris Radio



> HAVE CONFIG. BACKUP PROBLEM. DB IS A 48 TRACK DRIVE WHILE D1 IS AN OLDER 35 TRACK DRIVE. ONLY HAVE THIS WITH OS-9 LEVEL 2. LEVEL 1 AND ALL OTHER GEAR IS SPOT ON. DOES ANYONE ELSE HAVE THIS AND IS THERE ANY SUGGESTIONS.

3 Clubroom 5 Mhrs Msg 6 Vis Msg 38c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 6429B34A
 #83 The OS9 Users Board
 THU 05 NOV 1987 12:08
 Visitor 392343638
 Sponsored by Paris Radio



Hardy all - As an Amiga owner and contented user, I curious to know hte advantages of OS9, especially over Amiga-DOS. I understand that will be an Amiga version soon, and am considering it. Any comments or critiques?

LUCIFER

3 Clubroom 5 Mhrs Msg 6 Vis Msg 38c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 6429B35A
 #83 The OS9 Users Board
 SAT 07 NOV 1987 15:37
 Member 234491118
 Sponsored by Paris Radio



> JEFF, apparently the hires joystick interface is already supported under OS-9 L2, looking thru the manual there are references to mouse, as distinct from joystick, which is really a mouse read thru the hires interface.

--Rostol--

3 Clubroom 5 Mhrs Msg 6 Vis Msg 38c
 ((8 8 Menu 7 Your MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 64291185A
 #11 The Apple Board
 237159918 FRI 06 NOV 1987 28:38
 See Computerland for Apple Macintosh!

> OK IIGS OWNERS,
 I AM ABOUT TO BUY A MEMORY EXPANSION CARD, EITHER 1 OR 1.5 MEG, WITH SPACE FOR FURTHER CHIPS. THE APPLIED ENGINEERING GS RAM PLUS LOOKS GOOD, BUT EXPENSIVE. OCTORAN ALSO HAS APPEAL, AND THERE ARE A COUPLE OF OTHERS THAT FIT THE BILL. ANYONE HAD ANY EXPERIENCE WITH THESE? ANY TIPS? WHAT DO YOU RECOMMEND? I MUST HAVE DOS 3.3 COMPATABILITY SO I CAN USE THE RAM DISK WHEN BACKING UP SOFTWARE.

IAM

3 Clubroom 5 Mhrs Msg 6 Vis Msg 38c
 ((8 8 Menu 7 Check MB 9))

-----END OF FRAME-----

GOLBLINK ViaOn 64292887A
 #15 Atari Users' Board
 847872488 THU 08 OCT 1987 23:55
 Paris Radio for Atari Computer!

> ST Users,

Anyone use both VIP Professional & LOTUS 1-2-3 and has had success in transferring ".WKS" files between the two packages.

I have had no degree of success and would like to here from anyone who has done so.

Please MB me or leave message here.



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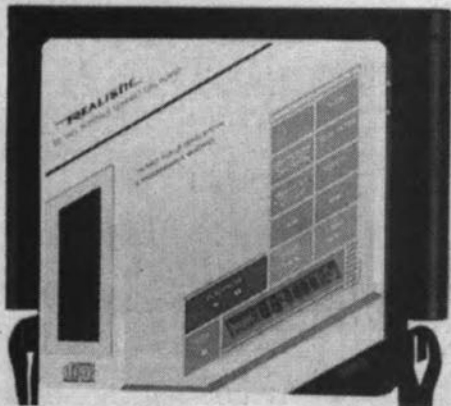
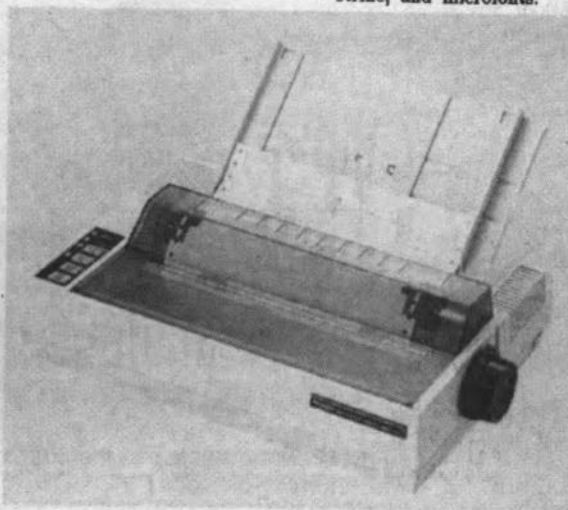
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The DMP 130 printer is IBM compatible, prints up to 120 CPS, and features word processing, data processing and dot addressable modes.

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Released in time for Christmas, the Tandy 1400LT is a full function IBM PC compatible computer which features a high quality Supertwist backlit LCD display, 7.16 MHz clock speed, and comes with 768K RAM and two 8.9cm built in disk drives.

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Other features include an 80 X 25 line resolution, a 76 key typewriter style keyboard, and a weight of less than 6.4 Kilos! **\$3299.00**



Dear Dr CoCo

My name is Nick and I own a CoCo 2. I would like to ask you a question.

In the May 1987 edition of CoCo, there is a program called "Gun Fight", by Craig Stewart on page 14.

I've checked the program several times and had found no errors. After running the program an ?OD ERROR in line 30 developed - now an ?OD ERROR in the colour basic manual is said that a READ statement was executed with insufficient DATA for it to read.

A DATA statement might have been left out of the program, but as I said I have checked the program.

Then I tried typing in PCLEAR1 and it worked!

Now my pardner seems to be winning - I keep pressing the spacebar and nothing happens.

Help!!

Nick Bogdanis
Melbourne, VIC

Nick,

Why not save the program as a machine language program first

on a separate tape and then re-load the game, after doing a cold-start?

How do you do that? Easy!

To save a machine language program, you need a start address, and end address and an execute address.

In the program, they are found on lines 20 and 40.

* Line 20 contains the start and end address (18688 = start address, 23701 = end address), while ...

* Line 40 contains the execute address (exec = 18688)

Knowing the above, you have to load the basic program (after typing PCLEAR1) first and take out (delete) line 40, so the program doesn't execute. Now RUN it ... after a few seconds the 'OK' prompt should appear.

Now type:

CSAVEM"GUNFIGHT",18688,23701,
18688

Next time you load it, you won't be bothered with ?OD ERRORS.

Tell me how you went.

Dear Dr CoCo,

I'm writing to ask if you could print some POKES that will change the baud rate to and from the cassette player. I especially need one to change the cassette port to 300 baud.

Also, could you list a graphics character generator that's easy to link to any program.

Gabe Adair
Earlwood, NSW

Gabe,

The cassette port, to my knowledge, cannot be changed. It stays at 1500 baud. But why don't you use the printer port?

You can change the baud rate quite easily with a simple POKE! Also, the printer port supports everything from 50 baud to 19200 baud, including 300 baud, the baud rate you want.

As for character generators, can anyone help?

⊕

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Pursuit
by Craig Stewart

For the 128K CoCo 3.

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ANIMATION

by Charles Bartlett

GRAPHICS

THIS PROGRAM USES the horizontal offset register to simulate movement. When RUN, a country scene is displayed, as the program is allowed to run day will slowly turn to night and the stars will come out.

During the night you will see a thunderstorm. After the storm has passed, daylight will gradually appear.

The cycle will then repeat ... suck on this one Martha !!!

The Listing:

```
0 GOTO10
3 SAVE"30:3":END'5
10 ANIMATION BY
Charles Bartlett (c) 19/06/87

20 WIDTH40: CLEAR5000: DIMX, K, A(81
,1): POKE65497, 0: GOSUB410: GOSUB37
0: HSCREEN2: R=RND(64)-1: FORX=0TO1
5: PALETTE, R: NEXT: POKE&HFF9A, R
30 ON BRK GOTO230
40 HCOLOR1: HLINE(0,180)-(320,191
), PSET, BF: HDRAW"BM250,20S8C13F10
LP20; BM249,20C14G10RG20; BM30,50S
4C15F10L2F10L2F20"
50 FOR S=1TO100: HSET(RND(320), RND
(100), 12): NEXT: HCOLOR2: HLINE(0,
140)-(320,179), PSET, BF: HCOLOR11:
FORX=2TO312STEP10: HLINE(X,159)-(
X+1,160), PSET, BF: NEXT: HCIRCLE(50
,50),50,10,.1,.05,.90
60 HCIRCLE(120,50),60,10,.2,.55,
.45: HPAINT(120,50),10,10: HCIRCLE
(260,20),40,10,.09: HPAINT(260,20
),10,10: HCOLOR3: HLINE(0,100)-(32
0,139), PSET, BF: HCOLOR4: HLINE(0,9
9)-(320,99), PSET
70 HCIRCLE(100,100),30,4,.2,.50,
.90: HCIRCLE(140,100),50,4,.3,.55
,.80: HCIRCLE(160,100),100,4,.3,.
55,.85: HCIRCLE(200,100),80,4,.3,
.60,.93: HCIRCLE(320,100),64,4,.3
,.50,.75: HCIRCLE(0,100),70,4,.3,
.70,0: POKE&HFF9A, 62
80 HPAINT(100,90),1,4: HPAINT(200
,90),5,4: HPAINT(320,90),4,4: HPAI
NT(0,90),4,4
90 TR$="HRE2REU16NR6HGLGH2LBU6BR
2F2NG2F2GHBU6D3F3NGF2D2BR2BU2U2H
2LH2BR5NE2D2GFDE2FR2L2HENHEU2EBD
2NGRBR2BDGFR2BFG2NR2G2L2NF3L2NE
4LGD15F2DF2L2H2GFGDNEHGLGLE2HGLG
```

```
L4U1"
100 HDRAW"BM220,130C6S8; XTR$:"H
PAINT(240,110),6,6: HCIRCLE(238,8
5),35,6,.5,.28,.25: HPAINT(238,85
),7,6: HCIRCLE(238,85),35,7,.5,.3
0,.20
110 CBS$="GLURNDEGUVLGL6LE2NE4": TP
S$="U28"+CBS$+"U2"+CBS$+"U2"+CBS$+"U
4NFEPGD2BD2D2BD2D2D32NHEU32BU
2U2BU2U2BU2U2": HDRAW"BM40,135S4C
6; XTP$; BM150,135; XTP$; BM180,185S
8; XTP$:"H: HPAINT(181,183),6,6: HPA
INT(183,183),8,6
120 HCOLOR9: HLINE(0,116)-(177,11
6), PSET: HLINE(184,116)-(320,116)
, PSET: HLINE(0,127)-(320,127), PSE
T: HLINE(0,119)-(320,119), PSET: HL
INE(0,106)-(320,106), PSET: HLINE(
0,119)-(320,119), PSET: HLINE(0,10
6)-(320,106), PSET: HLINE(0,95)-(1
78,95), PSET
130 HLINE(185,95)-(320,95), PSET:
GOSUB210
140 FORX=0TO127: GOSUB240: POKE&HF
F9F, X: NEXT: T=T+1
150 ON T GOTO160,140,170,140,140
,180,140,140,190,140,140,200,140
,140,200,140,140,190,140,140,180
,140,140,170
160 B=0: E=7: GOSUB380: GOTO140
170 B=8: E=16: GOSUB380: IFT=24THEN
T=0: GOTO140ELSEGOTO140
180 B=17: E=27: GOSUB380: GOTO140
190 B=28: E=41: GOSUB380: GOTO140
200 B=42: E=51: GOSUB380: GOTO140
210 B=52: E=67: GOSUB380: RETURN
220 FOR Q=180 TO 240 STEP20: POKE
140, Q: EXEC43345: NEXT: RETURN
230 PALETTERGB: POKE65496, 0: STOP
240 IFT>14 AND T<17 THEN250ELSE
POKE140, RND(5)*10: EXEC43345: RETU
RN
250 R=RND(30): ON R GOTO290,300,3
10,320,330,340,350,360,290,290,2
90,290,290,290,290,290,290,290,2
90,290
260 B=68: E=70: GOSUB380: GOSUB220:
RETURN
270 GOSUB220: B=71: E=72: GOSUB380:
RETURN
280 GOSUB220: B=73: E=74: GOSUB380:
RETURN
290 B=75: E=81: GOSUB380: RETURN
300 GOSUB260: RETURN
310 GOSUB270: RETURN
320 GOSUB260: GOSUB270: RETURN
330 GOSUB280: RETURN
340 GOSUB280: GOSUB260: RETURN
```

```
350 GOSUB280: GOSUB270: RETURN
360 GOSUB280: GOSUB270: GOSUB260: R
ETURN
370 FORK=0TO81: READ A(K,0), A(K,1
): NEXT: RETURN
380 FOR K=B TO E: PALETTEA(K,0), A
(K,1): NEXT: RETURN
390 DATA13,29,14,29,15,29,5,20,4
,18,2,56,0,29,10,63,5,17,4,16,3,
16,2,7,0,28,13,28,14,28,15,28,10
,59,7,17,5,5,4,3,3,17,2,4,1,2,0,
9,13,9,14,9,15,9,10,10,8,37,7,21
,6,4,5,1,4,4,3,2,2,0,1,4,0,1,13,
1,14,1,15,1,10,5,12,29
400 DATA8,1,7,2,6,0,3,0,0,0,13,0
,14,0,15,0,10,1,12,63,0,29,1,2,2
,56,3,16,4,18,5,20,6,4,7,17,8,37
,9,0,10,63,11,63,12,29,13,29,14,
29,15,29,13,63,7,18,6,34,14,63,5
,50,15,63,1,58,1,4,7,2,5,1,13,0,
14,0,15,0,6,0
410 PALETTE1,63: HSCREEN2: HCOLOR1
: HPRINT(10,0), "* ANIMATION
ON *": HPRINT(10,1), "Press Any
Key To Begin": PLAY"T201V1"
420 FORX=129TO134: POKE&HFF98, X: N
S$="T">V+N"+STR$(X-128): PLAYNS: NEX
T: FORX=134TO129STEP-1: POKE&HFF98
, X: NS$="T"<V-N"+STR$(X-128): PLAYNS
: NEXT
430 IS=INKEY$: IFIS$="" THEN420ELSE
RETURN
```

ADVENTURE UPDATE

by Anon.

The following is an update of the (very) short adventure program in CoCo, May 1987.

```
5 FOR I=1TO 4
:CLS
10 PRINT"YOU ARE LOST IN THE
DESERT."
20 PRINT"YOU ARE OUT OF WATER."
30 INPUT" N, S, V, E: ";DS
40 NEXT
:CLS
50 PRINT"YOU DIED OF THURST."
60 INPUT"(U)P OR (D)OWN";DS
70 INPUT"DO YOU WANT TO TRY
AGAIN?";TS
80 IF TS="Y" THEN 5
90 END
```

4 LETTER HANGMAN

GAME
32K ECB

by Nick Kostarelas

AND YET ANOTHER Hangman program is written ... but with a few differences. The words are simple and only four letters, so anyone can play.

I went through a whole dictionary and picked out most four letter words that we know.

A few complex words were left out. There are so many four letter words that not too many people know about, and I don't mean any rude ones either!

Up to eight players can play at the one time, and statistics are provided at the end of every round (if you want to look at them).

Once viewing the statistics, you can either continue or end. If you want to add any words to the list of DATA statements, then the variable NW must be changed in line 100, which currently stands at 1157.

The program may fit into a 16K machine, but you need to take out quite a few words, and reduce NW accordingly.

The Listing:

```
0 GOTO10
3 SAVE"53A:3":END'1
10 '*****
20 '*
30 '* FOUR LETTER HANGMAN *
40 '*
50 '* BY NICK KOSTARELAS *
60 '* 09/09/85 *
70 '*
80 '*****
90 X=RND(-TIMER):CLS:PMODE0,1:P
CLEAR1
100 CLEAR5000:Z=0:NV=1157:HS="##
## ## ## ## ## #:NG=0
110 DIMS(4),T(5),P(4),V(8),N
MS(8),NG(8),NC(8)
120 BLS=CHR$(128):PRINT@38,"four
"BL$"letter"BL$"hangman":PRINT@
232,"READING DATA...":PRINT@48
6,"NICK KOSTARELAS 1985":POKE65
495,0
130 FORI=1TONV:READV(1):NEXT:IF
RD THENRETURN
140 POKE65494,0:CLS:LINEINPUT"HO
W MANY PLAYERS (1-8) => ":AS:NP=
INT(VAL(AS)):IFNP<1ORNP>8THEN140
```

```
150 CLS:FORI=1TONP:PRINT"PLAYER
#"I"(NAME < 8 LETTERS) : "
160 LINEINPUT"=> ":NMS(1):IFLEN(
NMS(1))>8THENPRINT:PRINT"name to
o long. INPUT AGAIN.":GOTO160 RL
SEPRINT:NEXT:POKE65495,0
170 NG=NG+1:FORZZ=1TONP:CLSO
180 A=RND(NV)
190 FORF=1TO4
200 P$(F)="":T(F)=0
210 NEXT
220 AS=V$(A):V$(A)=V$(NV):NV=NV-
1:IFNV=0THENRESTORE:NV=1157:RD=1
:GOSUB130
230 FORB=1TO4
240 N$(B)=MIDS(AS,B,1)
250 NEXT
260 G$="OK. "+NMS(ZZ)+"":PRINT@
87-INT(LEN(G$)/2+.5),G$;
270 PRINT@112,"I HAVE A WORD. ";
280 PRINT@143,"GIVE ME A LETTER"
;
290 FORY=1TO10
300 IFY=1THEN320
310 PRINT@115,"NEXT LETTER":POK
E65494,0
320 X=RND(-TIMER):L$=INKEYS:IFL$
<"A"ORL$>"Z"THEN320
330 POKE65495,0:FORB=1TO4
340 IFL$=P$(B)THEN SOUND10,1:GOTO
310
350 NEXT
360 IFY=1THENLN=60:LN=100:GOSUB@
50
370 J=0:T(5)=0
380 PRINT@182,;
390 FORB=1TO4
400 IFL$=N$(B)THENPRINTS(B):;P$
(B)=N$(B):J=1:T(B)=1:SOUND170,1:
GOTO420
410 IFP$(B)<>"":THENPRINTP$(B);EL
SEPRINT"-";
420 NEXT
430 T(5)=T(1)+T(2)+T(3)+T(4)
440 IFT(5)=4THEN680
450 IFJ=1THEN310ELSE SOUND50,3
460 IFY=1THENFORH=0TO17:SET(H,31
,3):NEXT
470 IFY=2THENFORV=2TO31:SET(8,V,
3):SET(9,V,3):NEXT
480 IFY=3THENFORH=8TO22:SET(H,2,
3):NEXT
490 IFY=4THENFORV=2TO6:SET(22,V,
5):NEXT
500 IFY=5THENGOSUB@970
510 IFY=6THENFORV=12TO19:SET(22,
V,2):SET(23,V,2):NEXT
520 IFY=7THENFORH=14TO21:SET(H,1
3,1):NEXT
```

```
530 IFY=8THENFORH=24TO31:SET(H,1
3,1):NEXT
540 IFY=9THENH=21:FORV=20TO25:SE
T(H,V,8):H=H-1:NEXT
550 IFY=10THENH=24:FORV=20TO25:S
ET(H,V,8):H=H+1:NEXT
560 PRINT@245,"LETTERS";
570 PRINT@277,"GUESSED";
580 IFY=1THENFORV=1TO21STEP6:PRI
NT@339+(V-1)/6*32,;:FORH=0TO5:PR
INTCHR$(H+V+64)" ";:NEXTH:PRINTC
HR$(6)BL$;:NEXTV:PRINT@467,"Y Z"
;
590 LF=ASC(L$)-64:LG=INT((LF-1)/
6):LH=(LF-LG*6)*2:PRINT@337+LG*3
2+LH,CHR$(LF+96);
600 NEXTY
610 XC=0:GOSUB1800
620 GOSUB1070
630 PRINT@211,"YOUR MAN IS";
640 PRINT@241,"HUNG AS HE SAYS";
650 PRINT@275,"SO HIMSELF";
660 PRINT@338,"THE WORD WAS: ";
670 PRINT@374,AS;:FORI=200TO10ST
EP-10:SOUND1,1:NEXT:FORXC=1TO150
0:NEXT:GOTO760
680 XC=0:GOSUB1800
690 PRINT@211,"YOU GUESSED";
700 PRINT@244,"THE WORD";
710 PRINT@277,"BEFORE";
720 PRINT@308,"YOUR MAN";
730 PRINT@340,"GOT HUNG!";
740 FORI=10TO200STEP10:SOUND1,1:
NEXT
750 FORXC=1TO1500:NEXT:NC(ZZ)=NC
(ZZ)+1
760 XC=1:GOSUB1800
770 P=T(1)+T(2)+T(3)+T(4)
780 NG(ZZ)=NG(ZZ)+Y-1
790 PRINT@210,"YOU GOT P%OUT";
800 PRINT@242,"OF 4 LETTERS";
810 IFP=0THENPRINT@307,"BETTER L
UCK":PRINT@338,"NEXT TIME. 0%":
:GOTO870
820 IFP=1THENPRINT@306,"ONE IS B
ETTER":PRINT@338,"THAN NOTHING"
:PRINT@375,"25%":GOTO870
830 IFP=2THENPRINT@306,"HALF OF
THEM":PRINT@337,"RIGHT IS HALF"
:PRINT@369,"WAY THERE. 50%":GO
TO870
840 IFP=3THENPRINT@306,"YOU WERE
ONLY":PRINT@339,"ONE LETTER":
PRINT@372,"OFF. 75%":GOTO870
850 PRINT@306,"WHICH IS 100%";
860 PRINT@339,"WELL DONE!";
870 PRINT@433,"PRESS enter FOR";
880 ZX=ZZ+1:IFZX>NP THENZX=1
890 G$=NMS(ZX)+"'S TURN.":PRINT@
473-INT(LEN(G$)/2+.5),G$;
```

```

900 IFZZ=NP THENPRINT@498,"(S) F
OR STAT";:POKE1535,110
910 Y$=INKEYS:IFY$=""THEN910
920 IFY$=CHR$(13)THENNEXTZZ:GOTO
170
930 IFZZ=NP ANDY$=""S"THEN1330
940 GOTO910
950 PRINT@LN,STRING$(LM,BL$);
960 RETURN
970 FORH=21TO24
980 SET(H,6,4):SET(H,11,4)
990 NEXT
1000 SET(20,7,4):SET(20,10,4)
1010 SET(25,7,4):SET(25,10,4)
1020 SET(19,8,4):SET(19,9,4)
1030 SET(26,8,4):SET(26,9,4)
1040 SET(21,8,5):SET(24,8,5)
1050 SET(22,9,7):SET(23,9,7)
1060 RETURN
1070 H=32
1080 FORV=2TO6
1090 SET(H,V,5):H=H-1
1100 NEXT
1110 H=34
1120 FOR V=0TO3
1130 SET(H,V,5)
1140 NEXT
1150 IFH=43THEN1190
1160 IFH=39THENH=H+4:GOTO1120
1170 H=H+5
1180 GOTO1120
1190 SET(37,0,5):SET(36,1,5)
1200 SET(40,1,5):SET(42,1,5):SET
(41,2,5)
1210 FORH=42TO60STEP3
1220 FORV=5TO9
1230 SET(H,V,5)
1240 NEXTV,H
1250 SET(43,7,5):SET(44,7,5)
1260 SET(49,9,5):SET(50,9,5)
1270 SET(55,6,5):SET(56,7,5)
1280 FOR H=60TO63
1290 SET(H,5,5):SET(H,9,5)
1300 NEXT
1310 SET(63,8,5)
1320 RETURN
1330 CLS:PRINT@37,"name
right total":PRINT@74,"guessed
% inc avg"
1340 FORI=1TONP:P=96+I*32:PRINT@
P,"#":PRINTUSING"# ";I:PRINTNM
$(1)TAB(12):PRINTUSINGH$;NG;NC(
I):INT(NC(I)/NG*100+.5);NG(I):IN
T(NG(I)/NG+.5)
1350 PRINT@P+12,STRING$(5-LEN(ST
R$(NG)),48):PRINT@P+17,STRING$(
4-LEN(STR$(NC(I))),48):PRINT@P+
21,STRING$(4-LEN(STR$(INT(NC(I)/
NG*100+.5))),48):PRINT@P+25,STR
ING$(5-LEN(STR$(NG(I))),48):IFI
NT(NG(I)/NG+.5)<10THENPRINT@P+30
,"0";
1360 NEXTI:PRINT@453,"press: <E>
TO END":PRINTTAB(8)"or <C> TO
CONTINUE";
1370 A$=INKEYS:IFAS=""THEN1370
1380 IFAS="E"THENPOKE65494,0:CLS
:END ELSEIFAS="C"THEN170ELSB1370
1390 DATA ABLE,ACID,ACNE,ACRE,AF
AR,AHOY,AIDE,AIRY,AJAR,ALAS,ALLY
,ALSO,AMEN,AMID,ANEW,ANUS,APEX,A
RAB,ARCH,AREA,ARMY,ASHY,ATOM,AUN
T,AWAY,AXIS,AXLE

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```

1400 DATA BABE,BABY,BACK,BAIL,BA
KE,BALD,BALE,BALL,BAND,BANG,BANK
,BARB,BARE,BARK,BARN,BASE,BASH,B
ASS,BATH,BEAD,BEAM,BEAN,BEAR,BEA
T,BEAV,BEEP,BEER,BEET,BELL,BELT,
BEND,BENT,BERG,BEST,BIAS,BIKE,BI
LL,BIRD,BIRO,BLEV,BLOB,BLOW
,BLUE,BLUR,BOAR,BOAT
1410 DATA BODY,BOIL,BOLD,BOLT,BO
MB,BOND,BONE,BOWY,BOOK,BOOM,BOOT
,BORE,BORN,BOSS,BOTH,BOWL,BRAG,B
RAN,BRAT,BREW,BRIM,BROW,BUCK,BUF
F,BULB,BULK,BULL,BUMP,BUNK,BUOY,
BURN,BURY,BUSH,BUST,BUTT,BUZZ
1420 DATA CAGE,CALF,CALL,CALM,CA
ME,CAMP,CANE,CANT,CAPE,CARD,CARE
,CART,CASE,CASH,CASK,CAST,CAVE,C
ELL,CENT,CHAP,CHEF,CHAT,CHEV,CHI
C,CHIN,CHOP,CHOW,CITE,CITY,CLAP,
CLAW,CLAY,CLIP,CLOG,CLOP,CLOT,CL
UB,CLUB,COAL,COAT,COAX,COCK,CODE
,COIL,COIN,COKE,COLD
1430 DATA COMA,COMB,COME,CONE,CO
OK,COOL,COOP,COPE,COPY,CORE,CORK
,CORN,COST,COVE,CRAB,CRAM,CREW,C
RIB,CROP,CROW,CUBE,CUFF,CURB,CUR
D,CURE,CURL,CUTE,CYST
1440 DATA DAME,DANN,DARE,DARK,DA
RN,DART,DASH,DATA,DATE,DAWN,DAZE
,DEAD,DEAL,DEAN,DEBT,DECK,D
EED,DEEP,DEER,DEAR,DENT,DENY,DES
K,DIAL,DICE,DIET,DILL,DIME,DINE,
DINT,DIRT,DISC,DISK,DISH,DOCK,DO
DO,DOLE,DOLL,DOPE,DOSE,DOVE
,DOWN,DOPE,DOSE,DOVE
1450 DATA DOWN,DOZE,DRAG,DRAW,DR
EW,DRIP,DROP,DRUG,DRUM,DUAL,DUCK
,DUCT,DUEL,DUET,DUKE,DUMB,DUSK,D
UST,DUTY,DYKE
1460 DATA BACH,EARL,EASE,EAST,EA
SY,EAVE,ECHO,EDDY,EDGE,EDIT,EERY
,EMIT,ENVY,EPIC,ETCH,EVEN,EVER,B
VIL,EXIT
1470 DATA FACE,FACT,FADE,FAIL,FA
IR,FAKE,FALL,FANG,FARE,FARM,FAST
,FAUN,FAWN,FEAR,FEAT,FEED,FEEL,F
EET,FELL,FELT,FERN,FETE,FEUD,FIA
T,FILE,FILL,FILM,FIND,FINE,FIRE,
FIRM,FISH,FIST,FIVE,PIZZ,FLAG,FL
AP,FLAT,FLEA,FLEB,FLEW,FLEX,FLIP
,FLOG,FLOP,FLOW,FLUE
1480 DATA FOAL,FOGY,FOIL,FOLD,FO
OD,FOOL,FOOT,FORD,FORE,FORK,FORM
,FORT,FOUL,FOUR,FOWL,FOXY,FRAY,F
REE,FRET,FROG,FROM,FUEL,FULL,FUN
D,FUNK,FUSE,FUSS,FUZZ
1490 DATA GAIN,GALA,GALE,GALL,GA
ME,GANG,GAOL,GASH,GASP,GATE,GAVE
,GAZE,GEAR,GENE,GERM,GIFT,GILL,G
IRL,GIVE,GLAD,GLEW,GLOW,GLUE,GLU
M,GNAV,GOAL,GOAT,GOLD,GOLF,GONE,
GONG,GOOD,GORY,GOWN,GRAB,GRAM,GR
EW,GREY,GRID,GRIN,GRIT,GROG,GROW
,GRUB,GULF,GULL,GULP
1500 DATA GUSH,GUST
1510 DATA HACK,HAIL,HAIR,HALF,HA
LL,HALT,HAND,HANG,HANK,HARD,HARB
,HARK,HARM,HARP,HASH,HATE,HAUL,H
AVE,HAWK,HAZE,HAZY,HEAD,HEAL,HEA
P,HEAR,HEAT,HEEL,HEIR,HELL,HELM,
HELP,HEMP,HERB,HERD,HERE,HERO,HE
RS,HIDE,HIGH,HIKE,HILL,HIND,HINT
,HIRE,HISS,HIVE,HOAR

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1520 DATA HOAX,HOLD,HOLE,HOLY,HO
MR,HOOD,HOOF,HOCK,HOOPE,HOOT,HOP
E,HORN,HOSE,HOST,HOUR,HOWL,HUGE,H
ULK,HULL,HUMP,HUNG,HUNK,HUNT,HUR
L,HURT,HUSH,HUSK,HYMN
1530 DATA IDEA,IDLE,IDOL,INCH,IN
TO,IRIS,IRON,ISLE,ITCH,ITEM
1540 DATA JACK,JADE,JAIL,JAZZ,JE
EP,JELL,JERK,JEST,JOIN,JOKÉ,JOLT
,JULY,JUNE,JUNK,JURY,JUST
1550 DATA KART,KEEL,KEEN,KEEP,KE
PT,KERB,KICK,KILL,KILO,KILT,KIND
,KING,KINK,KISS,KITE,KIWI,KNEE,K
NIT,KNOB,KNOT,KNOW
1560 DATA LACE,LACK,LADY,LAID,LA
IR,LAKE,LAMB,LAME,LAMP,LAND,LANE
,LASH,LAST,LATE,LAVA,LAWN,LAZY,L
EAD,LEAF,LEAK,LEAN,LEAP,LEEK,LEF
T,LEND,LENS,LESS,LEST,LEVY,LIAR,
LICE,LICK,LIFE,LIEU,LIFT,LIKE,LI
LY,LIME,LIMP,LINE,LINK,LION
,LISP,LIST,LIVE,LOAD
1570 DATA LOAF,LOIN,LONE,LOOK,LO
OP,LONG,LOOT,LORD,LOSE,LOSS,LOST
,LOUD,LOVE,LUCK,LUMP,LUNG,LURK,L
USH,LUST,LYRE
1580 DATA MACH,MAID,MADE,MAIL,MA
IN,MAKE,MALE,MALT,MANE,MANY,MARE
,MARK,MARS,MASH,MASK,MASS,MAST,M
ATE,MEAL,MEAN,MEAT,MEEK,MAZE,MEE
T,MELT,MEMO,MENU,MERE,MESS,MICE,
MILD,MILE,MILK,MILL,MIME,MIND,MI
NE,MINK,MINT,MISS,MIST,MOAN,MOAT
,MOCK,MODE,MOLE,MONK
1590 DATA MOON,MOOD,MOPE,MORE,MO
SS,MOST,MOTH,MOVE,MUCH,MUCK,MUFF
,MULE,MUSH,MUSK,MUST,MUTE,MYTH
1600 DATA NAIL,NAME,NEAR,NEAT,NE
CK,NEED,NEON,NEST,NEWS,NEWT,NEXT
,NICE,NICK,NINE,NONE,NOON,NOSE,N
OTE,NUDE,NULL,NUMB
1610 DATA OATH,OBEY,OBOE,OGLE,OG
RE,OMEN,OMIT,ONCE,ONLY,OOZE,OPAL
,OPEN,ORAL,ORGY,OVAL,OVEN,OVER,O
VUM
1620 DATA PACE,PACK,PAGE,PAID,PA
IL,PAIN,PAIR,PALE,PALM,PANE,PAWT
,PAPA,PARK,PART,PASS,PAST,PATH,P
AVE,PAWN,PEAK,PEAL,PEAR,PBCK,PEE
K,PEEL,PEEP,PEER,PELT,PERK,PERM,
PEST,PICK,PIER,PILE,PILL,PINE,PI
NK,PINT,PITY,PLAN,PLAT,PLAY,PLOD
,PLUG,PLUS,POKE,POLE
1630 DATA POLL,POLO,POND,PONY,PO
OL,POOR,POPE,PORT,POSE,POSH,POST
,POSY,POUR,PRAX,PRAY,PREP,PREY,P
ROD,PROM,PROP,PUCK,PUFF,PUKE,PUL
L,PULP,PUMA,PUMP,PUNT,PUNY,PUPA,
PURE,PURR,PUSH,PUSS,PUTT
1640 DATA QUAD,QUAY,QUID,QUIT,QU
IZ
1650 DATA RACE,RACK,RACY,RAFT,RA
GE,RAID,RAIL,RAKE,RAMP,RANG,RANK
,RAPE,RARE,RASH,RASP,RATE,RAVE,R
EAD,REAL,REAP,REAR,REED,REEF,REE
L,REIN,RAIN,RELY,RENT,REST,RICE,
RICH,RICK,RIDE,RING,RINK,RIOT,RI
PE,RISE,RISK,ROAD,ROOM,ROAR,ROBE
,ROCK,RODE,ROLE,ROLL
1660 DATA ROMP,ROOF,ROOK,ROOM,RO
OT,ROSE,ROSY,ROVE,RUBY,RUCK,RUDE

```

continued p. 14

SPEED READER

by Charles Bartlett



APPLICATION

THIS PROGRAM WILL allow the user to enter text a page at a time. Use the arrow keys to move around the screen.

When the page has the desired appearance it can be saved and loaded at will for later editing. When the Speed Reading Mode is selected, these pages will be reloaded in numerical order.

The scan rate of the speed reader is controlled using the joystick.

Please note that on this months CoCoOz, there will be two files, called "PAGE1" and "PAGE2" that you can load to demonstrate this program -ed.

The Listing:

```
0 GOTO10
3 SAVE"30A:3":END'8
10 ' SPEED READER
    (C) CHARLES BARTLETT 5/6/87

20 POKE65497,0: CLEAR2000: WIDTH40
: HBUFF1,4000
30 PALETTE7,0: DIM ST$(21): ON BRK
GOTO430
40 ON ERR GOTO 410
50 GOTO220
60 HSCREEN2
70 POKE65496,0: FOR PN=1 TO 99: HC
LS7: F$="PAGE"+STR$(PN): OPEN"1",#
1,F$: FOR Y=0 TO 21: LINEINPUT#1,S
T$(Y): NEXT Y: CLOSE#1
80 HCOLOR8: Q=0: POKE65497,0
90 FOR I=0 TO 168 STEP 8
100 HPRINT(0,0),ST$(Q)
110 FOR Y=0 TO 8
120 HGET(0,Y)-(320,Y),1
130 HPUT(0,I+Y+17)-(320,I+Y+17),
1,AND
140 HPUT(0,I+Y+9)-(320,I+Y+9),1,
PRESET
150 SP=JOYSTK(0): FORD=1TO SP: NEX
TD
160 NEXT Y
170 HCOLOR7: HPRINT(0,0),ST$(Q): H
COLOR8: Q=Q+1
180 NEXT I
190 FOR Y=185 TO 191: HLINE(0,Y)-
(320,Y),PSET: NEXT Y
```

```
200 NEXT PN
210 GOTO210
220 HSCREEN0: CLS5: GOSUB390: XP=0:
YP=0: GOSUB320
230 I$=INKEY$: IF I$="" THEN 230 ELSE
I=ASC(I$)
240 IF I=12 THEN 60 ELSE IF I=214 THEN G
OSUB370 ELSE IF I=4 THEN GOSUB350 ELSE
IF I=13 THEN GOSUB260 ELSE IF I=94 THEN
GOSUB270 ELSE IF I=10 THEN GOSUB280 EL
SE IF I=8 THEN GOSUB290 ELSE IF I=9 THEN
GOSUB300 ELSE GOSUB340
250 GOTO230
260 YP=YP+1: XP=0: GOTO310
270 YP=YP-1: GOTO310
280 YP=YP+1: GOTO310
290 XP=XP-1: GOTO310
300 XP=XP+1
310 GOSUB320: RETURN
320 IF YP<0 THEN YP=0 ELSE IF YP>21 THE
N YP=21 ELSE IF XP<0 THEN XP=39: YP=YP-
1: GOTO320 ELSE IF XP>39 THEN XP=0: YP=
YP+1: GOTO320
330 LOCATE XP, YP: RETURN
340 LPOKE&H6C000+(XP*2)+(YP*80),
ASC(I$): XP=XP+1: GOSUB320: RETURN
350 GOSUB380: OPEN"0",#1,F$: FOR Y
=0 TO 21: ST$(Y)="" : FOR X=0 TO 39:
LOCATE X, Y: HSTAT S$, D, X, Y: ST$(Y)=
ST$(Y)+S$: NEXT X: ST$(Y)=ST$(Y)+CH
R$(13): PRINT#1,ST$(Y);: NEXT Y
360 CLOSE#1: POKE65497,0: GOSUB400
: RETURN
370 GOSUB380: CLS5: GOSUB390: OPEN"
1",#1,F$: FOR Y=0 TO 21: LOCATE0, Y:
LINEINPUT#1,ST$(Y): PRINTST$(Y);:
NEXT Y: GOTO360
380 POKE65496,0: LOCATE0,22: INPUT
"PAGE NUMBER ": PN: F$="PAGE"+STR$(
PN): IF PN<0 OR PN>99 THEN GOSUB
400: GOTO380 ELSE RETURN
390 LOCATE1,23: PRINT"F2=SAVE : S
HIFT F2=LOAD : CLEAR=READ": RETU
RN
400 LOCATE0,22: PRINT"
": RETURN
410 IF ERNO=26 AND ERLIN=70 THEN
CLOSE: Q=0: POKE65497,0: GOTO40
420 HSCREEN0: CLS1: PRINT"ERROR ":
ERNO;"IN LINE": ERLIN: PALETTE RGB
: POKE65496,0: END
430 PALETTE RGB: HSCREEN0: CLS1: PO
KE65496,0: PRINT"Terminated": END
ASSEMBLER
charles bartlett
#30b on disk 7
```

Four Letter Hangman
continued from p.13

```
, RUIN, RULE, RUMP, RUNG, RUNT, RUSH, R
UST
1670 DATA SACK, SAFE, SAGA, SAID, SA
IL, SAKE, SALE, SALT, SAME, SAND, SANB
, SANG, SANK, SASH, SAVE, SCAB, SCAN, S
CAR, SEAL, SEAT, SEED, SEEK, SEEM, SEE
N, SEEP, SELF, SELL, SEND, SENT, SHAG,
SHED, SHIN, SHIP, SHOE, SHOO, SHOP, SH
OT, SHOW, SHUT, SICK, SIDE, SIFT, SIGH
, SILK, SILL, SING, SINK
1680 DATA SIRE, SITE, SIZE, SKEW, SK
IN, SKIN, SKIP, SLAB, SLAG, SLAP, SLAY
, SLED, SLIN, SLIP, SLIT, SLOG, SLOP, S
LOT, SLOW, SLUG, SLUM, SLUT, SMOG, SMU
G, SMUT, SWAG, SWAP, SWIP, SNOW, SWUG,
SOAK, SOAP, SOAR, SOCK, SODA, SOFA, SO
FT, SOIL, SOLD, SOLE, SOLO, SOME, SONG
, SOOB, SOOT, SORE, SORT
1690 DATA SOUL, SOUP, SOUR, SPAN, SP
AT, SPED, SPIN, SPIT, SPOT, SPUN, SPUR
, STAB, STAG, STAR, STAY, STEM, STEP, S
TEW, STIR, STOP, STUD, STUN, SUCK, SUD
S, SUIT, SULK, SUNG, SUNK, SURE, SURF,
SWAB, SWAN, SWAT, SWAY, SWIN
1700 DATA TACK, TAIL, TAKE, TALC, TA
LE, TALK, TALL, TAME, TANG, TANK, TAPE
, TART, TASK, TAUT, TAXI, TEAK, TEAM, T
EAT, TELL, TEND, TENT, TERM, TEST, TEX
T, THAN, THAT, THAV, THEM, THEN, THEY,
THIN, THIS, THUG, THUS, TICK, TIDE, TI
DY, TILE, TILL, TILT, TIME, TINT, TINY
, TOIL, TOLL, TOMB, TONE
1710 DATA TOOK, TOOL, TOOT, TORE, TE
AR, TOSS, TOUR, TOWN, TRAM, TRAP, TRAY
, TREE, TREK, TRIM, TRIO, TRIP, TROT, T
RUE, TUBA, TUCK, TUNA, TUNE, TURF, TUR
N, TUSK, TWIG, TWIN, TWIT, TYPE, TYRE,
TYRO
1720 DATA UGLY, UNDO, UNIT, UPON, UR
GE, USER
1730 DATA VAIN, VANE, VARY, VAST, VA
SE, VEAL, VEIL, VEIN, VENT, VERB, VERY
, VEST, VICE, VIEW, VILE, VINE, VISA, V
OID, VOTE
1740 DATA WADE, WAGE, WAIL, WAIT, VA
KE, WALK, WALL, WAND, WANT, VARD, VARN
, VARN, WARP, WART, WASH, VASP, VATT, V
AVE, WAVY, WEAK, WEED, WEEK, WEEP, WEI
R, WELD, WELL, WENT, WERE, WHAT, WHEN,
WHET, WHIM, WHIP, WHIZ, WICK, WIDE, WI
PE, WILD, WILL, WIND, WINE, WING, WINK
, WIPE, WIRE, WISE, WISH
1750 DATA WITH, WOLF, WOKE, WOMB, WO
NT, WOOD, WOOL, WORD, WORE, WORK, WORN
, WORN, WRAP, WOVE
1760 DATA XRAY
1770 DATA YANK, YARD, YARN, YAWN, YE
AR, YELL, YELP, YETI, YOGA, YOLK, YOUR
1780 DATA ZANY, ZERO, ZINC, ZONE, ZO
ON
1790 DATA BAIT, CHIP, COSY, HEED, RO
PE, SEAM, TUBE, WARE
1800 LM=15: FOR LN=113 TO 465 STEP 32:
IFXC=1 AND LN<150 THEN NEXT ELSE GOSU
B950: NEXT: RETURN
65535 'NICK KOSTARELAS
```


CONNECT 4



by Charles Bartlett

GAME

WRITTEN FOR AND based on the kids game of CONNECT 4. For 1 or 2 players. If 1 player is selected, the computer will be your opponent.

Use the joysticks to move the arrow left or right. The arrow indicates the column a token will be placed in.

Press the fire button to place a token. The first player to get four in a row in any direction is the winner.

The Listing:

```
0 GOTO10
3 SAVE"30D:3":END"1
10 'CONNECT
(C) CHARLES BARTLETT 30/6/87

20 DIM BP(32,1),A(32):PALETTE5,2
0:PALETTE0,63:PALETTE8,28:POKE65
497,0:ON BRK GOTO 810
30 WIDTH40:CLS:PRINT"HOW MANY PL
AYERS (1 OR 2) ";
40 IS=INKEY$:IFIS=""THEN40ELSENP
=VAL(IS):IFNP=1 OR NP=2THEN50ELS
E40
50 HSCREEN2:JJ=1:J2=1:J1=1:PLAY"
V31T255L255"
60 AR$="R2D6R2G3H3R2U6"
70 HCOLOR8:X1=30:Y1=40:X2=290:Y2
=170:FORX=1TO70:HLINEX1,Y1)-(X2
,Y2),PSET,B:X1=X1+1:Y1=Y1+1:X2=X
2-1:Y2=Y2-1:NEXT
80 X1=1:Y1=1:HCOLOR0:FORX=65 TO
155 STEP 30:FORX=50 TO 270 STEP
30:BP(X1,1)=Y:HCIRCLE(X,Y),12:HP
AINT(X,Y),0,0:BP(X1,0)=X:X1=X1+1
:NEXTX,Y:TT=0
90 JJ=J:J=INT((JOYSTK(0)+1)/8)+1
:IFJ=9THENJJ=8
100 IF J<>JJ THEN HPAINT(BP(JJ,0
)+1,21),0,0:D$="BM"+STR$(BP(J,0
)+1)+20:C3S8A0"+AR$:HDRAW DS:H
PAINT(BP(J,0)+1,21),3,3:SOUND150
.1
110 IF BUTTON(0)=1 THENFOR Y=155
TO 65 STEP-30:IF HPOINT(BP(J,0
),Y)=0THEN HPAINT(BP(J,0),Y),3,8:
SOUND200,1:GOTO130ELSE NEXT:SOU
ND1,2:GOTO90
120 GOTO90
130 TT=TT+1:CC=6:GOSUB580:SOUND1
00,1
140 IFNP=1 THENGOSUB230:TT=TT+1:
```

```
CC=5:GOSUB580:SOUND100,1:GOTO90
150 JD=JOYSTK(0):J2=J1:J1=INT((J
OYSTK(2)+1)/8)+1:IFJ1=9THENJ1=8
160 IFJ1<>J2 THEN XX=J1:CC=2:GOS
UB220:SOUND150,1
170 IF BUTTON(2)=1 THENFOR Y=155T
O65STEP-30:IFHPOINT(BP(J1,0),Y)=
0THEN HPAINT(BP(J1,0),Y),2,8:SOU
ND200,1:GOTO190ELSE NEXT:SOUND1,
2:GOTO150
180 GOTO150
190 TT=TT+1:CC=5:GOSUB580:SOUND1
00,1:GOTO90
200 XX=X:GOSUB220:RETURN
210 XX=X-20:GOSUB220:RETURN
220 HPAINT(BP(OX,0),188),0,0:D$=
"BM"+STR$(BP(XX,0))+1)+190:C"+
STR$(CC)+"S8A2"+AR$:HDRAW DS:HPA
INT(BP(XX,0)-2,189),CC,CC:OX=XX:
RETURN
230 SC=0:TC=0:GOSUB240:HPAINT(SX
,SY),2,8:XX=((SX-50)/30)+1:GOSUB
220:RETURN
240 CC=2:SC=0:RC=0:BC=0:TC=0:Q=0
:FORX=1TO3:RC=0:FORX=1TO8:A=HPQI
NT(BP(X+Q,0),BP(X+Q,1)):IFA=3THE
NRC=RC+1ELSEIFA<>3 AND A<>2 THEN
TC=RC:RC=0
250 IFTC>0 AND HPOINT(BP(X+8+Q,0
),BP(X+8+Q,1))<>0 AND TC>SC THEN
SC=TC:SX=BP(X+Q,0):SY=BP(X+Q,1)
:R=7
260 GOSUB200
270 NEXTX:Q=Q+8:NEXTX
280 TC=0:Q=0:FORX=1TO3:RC=0:FORX
=8TO1STEP-1:A=HPOINT(BP(X+Q,0),B
P(X+Q,1)):IFA=3 AND A<>2 THENRC=
RC+1ELSEIFA<>3 AND A<>2 THENTC=R
C:RC=0
290 IFTC>0 AND HPOINT(BP(X+8+Q,0
),BP(X+8+Q,1))<>0 AND TC>SC THEN
SC=TC:SX=BP(X+Q,0):SY=BP(X+Q,1)
:R=6
300 GOSUB200
310 NEXTX:Q=Q+8:NEXTX
320 RC=0:TC=0:FORX=25TO32:A=HPOI
NT(BP(X,0),BP(X,1)):IFA=3 AND A<
>2 THENRC=RC+1ELSEIFA<>3THENTC=R
C:RC=0
330 IFTC>0 AND HPOINT(BP(X,0),BP
(X,1))=0 AND TC>SC THEN SC=TC:SX
=BP(X,0):SY=BP(X,1):R=5
340 GOSUB210
350 NEXTX
360 TC=0:RC=0:FORX=32TO25STEP-1:
A=HPOINT(BP(X,0),BP(X,1)):IFA=3
AND A<>2 THENRC=RC+1ELSEIFA<>3TH
ENTC=RC:RC=0
370 IFTC>0 AND HPOINT(BP(X,0),BP
```

```
(X,1))=0 AND TC>SC THEN SC=TC:SX
=BP(X,0):SY=BP(X,1):R=4
380 GOSUB210
390 NEXTX
400 TC=0:RC=0:Q=0:FORX=25TO32:FO
RY=1TO4:A=HPOINT(BP(X-Q,0),BP(X-
Q,1)):IFA=3THENRC=RC+1ELSEIFA<>3
AND A<>2 THENTC=RC:RC=0
410 GOSUB210
420 IFTC>0 AND HPOINT(BP(X-Q,0),
BP(X-Q,1))=0 AND TC>SC THEN SC=T
C:SY=BP(X-Q,0):SY=BP(X-Q,1):R=3
430 Q=Q+8:NEXTX:Q=0:RC=0:NEXTX
440 TC=0:RC=0:Q=0:FORX=25TO29:FO
RY=1TO4:A=HPOINT(BP(X-Q,0),BP(X-
Q,1)):IFA=3THENRC=RC+1ELSEIFA<>3
AND A<>2 THEN TC=RC:RC=0
450 GOSUB210
460 IFQ<>0THEN IFTC>0 AND HPOINT
(BP(X-Q,0),BP(X-Q,1))=0 AND HPOI
NT(BP(X-Q+8,0),BP(X-Q+8,1))<>0 A
ND TC>SC THEN SC=TC:SY=BP(X-Q,0)
:SY=BP(X-Q,1):R=2
470 Q=Q+7:NEXTX:RC=0:Q=0:NEXTX
480 TC=0:RC=0:Q=0:FORX=32TO28STB
P-1:FORX=1TO4:A=HPOINT(BP(X-Q,0)
,BP(X-Q,1)):IFA=3THENRC=RC+1BLSE
IFA<>3 AND A<>2 THENTC=RC:RC=0
490 IFQ<>0THEN IFTC>0 AND HPOINT
(BP(X-Q,0),BP(X-Q,1))=0 AND HPOI
NT(BP(X-Q+8,0),BP(X-Q+8,1))<>0 A
ND TC>SC THEN SC=TC:SY=BP(X-Q,0)
:SY=BP(X-Q,1):R=1
500 GOSUB210
510 Q=Q+9:NEXTX:RC=0:Q=0:NEXTX
520 TC=0:RC=0:Q=0:FORX=1TO5:FORX
=1TO4:A=HPOINT(BP(X+Q,0),BP(X+Q,
1)):IFA=3THENRC=RC+1ELSEIFA<>3 A
ND A<>2 THENTC=RC:RC=0
530 GOSUB200:IFY<4 THEN IFTC>0
AND HPOINT(BP(X+Q,0),BP(X+Q,1))=
0 AND HPOINT(BP(X+Q+8,0),BP(X+Q+
8,1))<>0 AND TC>SC THEN SC=TC:SX
=BP(X+Q,0):SY=BP(X+Q,1):R=8
540 Q=Q+9:NEXTX:Q=0:RC=0:NEXTX
550 TC=0:RC=0:Q=0:FORX=4TO8:FORX
=1TO4:A=HPOINT(BP(X+Q,0),BP(X+Q,
1)):IFA=3THENRC=RC+1ELSEIFA<>3 A
ND A<>2 THENTC=RC:RC=0
560 IFY<4 THEN IFTC>0 AND HPOIN
T(BP(X+Q,0),BP(X+Q,1))=0 AND HPO
INT(BP(X+Q+8,0),BP(X+Q+8,1))<>0
AND TC>SC THEN SC=TC:SY=BP(X+Q,0)
:SY=BP(X+Q,1):R=9
570 GOSUB200:Q=Q+7:NEXTX:RC=0:Q=
0:NEXTX:RETURN
580 IFTT<7THENRETURNELSET=1:Q=0:
```

continued p.35

EXTENDED COLOUR BASIC

by George Viera

UTILITY
32K ECB COCO (ONLY)

HERE ARE FOUR programs for those of you who have a 32k CoCo with Colour Basic. They are all very small programs, so if you write a program that needs only say a LINE command and a PMODE command, you need only load those two programs into your main program, instead of loading in everything and not using half of them.

These six programs are below, as well as a short description of each:

* PMODE: this sets up your graphics screen that you wish to use.

* PLAY: like the ECB command minus the volume function. In ECB, you can play music in note values, as opposed to Colour Basic decimal values which in no way correspond to the real note.

Thus, you can type in "T10;A;B;C;D;E;F;G" and this will play the scales with a tempo of 10.

Note lengths are also supported, ie "L1" plays a whole note length, while "L4" plays a quater note and "L8" plays an eighth of a note.

Note also that you have to type a semicolon ";" between each 'command', ie "A;B;F;D;A".

* DRAW: this lets you draw items on the screen. It uses simpler commands like 'u' for up, 'd' for down, etc.

```
      U
      I
h     I     e
      I
L-----R
      I
g     I     f
      I
      D
```

* CIRCLE: Like it says, you can draw circles on your graphics screen. Included in your circle are things like radius (pixels across the center), and stretch (a '1' will produce a normal circle).

Listing One:

```
0 CLS: CLEAR10,10239
1 GOTO5
2 '**** "PMODE"
3 SAVE"18:3":END'7
5 PRINT"FORT=1TO10:READ DT:POKE6
5470+DT,0:NEXTT
      DATA 2,5,7,8,10,13,14,17
,18,20
      ^THIS PROGRAM GIVES YOU
PMODE4 BUT IT NEEDS screen ???
      TYPE POKE65314,XXX AND I
T GIVES YOU SCREEN"
10 PRINT"XXX=255 FOR SCREEN1,1
      XXX=140 FOR EVERYTHING
WHITE   XXX=145 FOR GREEN SCRE
N       XXX=160 FOR PMODE3,1:SC
REEN1,1 XXX=170 FOR WHITE SCRE
N+COLOR XXX=135 FOR WIDE LINES
98 PRINT"PRESS ANY KEY TO GET SC
REEN + PMODE"
99 EXEC44539: INPUT"SCREEN";XXX
100 FORT=1TO10:READ DT:POKE65470
+DT,0:NEXTT
105 DATA 2,5,7,8,10,13,14,17,18,2
0
110 POKE65314,XXX
115 EXEC44539:RUN
```

Listing Two:

```
0 DIM P(32):CLS
1 PRINT"THERE IS ONLY NO VOLUME
IN PLAY.PRESS ANY KEY":EXEC44539
2 GOTO5
3 SAVE"18A:3":END'7
5 FORT=1TO32:READ P(T):NEXT
10 L=5:O=2:T=2:DATA5,32,58,78,89
,108,125,133,147,159,170,176,185
,193,197,204,210,216,218,223,227
,229,232,236,238,239,242,244,246
,248,250,252
11 O(1)=5:O(2)=12:O(3)=19:O(4)=2
6
15 CLS: INPUT"PLAY";Ps: IF RIGHT$(
Ps,1)<>" THEN Ps=Ps+";
20 FOR I=1 TO LEN(Ps)
25 IF MID$(Ps,I,1)<>" THEN AS=
AS+MID$(Ps,I,1):NEXT:GOTO15
30 N=-1:CS=LEFT$(AS,1)
35 NS=RIGHT$(AS,LEN(AS)-1)
40 IF CS="O" THEN O=O+(VAL(NS)):G
OTO100
45 IF CS="P" THEN FOR TM=1 TO 25
50 VAL(NS)*10:NEXT TM:GOTO100
50 IF CS="L" THEN L=256-VAL(NS):
GOTO100
55 IF CS="A" THEN N=5:GOTO95
```

```
60 IF CS="B" THEN N=6:GOTO95
65 IF CS="C" THEN N=0:GOTO95
70 IF CS="D" THEN N=1:GOTO95
75 IF CS="E" THEN N=2:GOTO95
80 IF CS="F" THEN N=3:GOTO95
85 IF CS="G" THEN N=4:GOTO95
90 IF N=-1 THEN PRINT"ERROR IN "
Ps:PRINTAs:END
95 SOUND P(O+N),L
100 AS="":NEXTI:GOTO15
```

Listing Three:

```
0 CLS: CLEAR10,10239: CLEAR800
1 GOTO10
2 '**** "DRAW"
3 SAVE"18B:3":END'7
10 PRINT"CLEANING GH SCREEN":FOR
T=10240TO16383:POKET,0:NEXTT
15 FORT=1TO10:READ DT:M(T)=DT+65
470:NEXT
16 DATA2,5,7,8,10,13,14,17,18,20
17 X=128:Y=96:N=1
18 FORT=OTO7:BIT(T)=N:N*2:NEXT
:BIT(0)=1:N=0
19 S=1
20 FORT=1TO10:READ DT:V(T)=DT+65
470:NEXT
21 DATA2,4,6,8,11,12,14,16,18,20
25 CLS: INPUT"DRAW";Ds
26 IF RIGHT$(Ds,1)<>" THEN Ds=
Ds+";
30 FORT=1TO10:POKE M(T),0:NEXT:
POKE65314,255
35 FORI=1 TO LEN(Ds):Ns=MID$(Ds,
I,1)
40 IF Ns<>" THEN Ss=Ss+Ns:NEXT
:GOTO25
50 Cs=LEFT$(Ss,1):Nn=VAL(RIGHT$(
Ss,LEN(Ss)-1))
51 Ts=LEFT$(Ss,2)
52 H=0:V=0
55 IF Cs="L" THEN H=-1:GOSUB100
56 IF Cs="R" THEN H=01:GOSUB100
57 IF Cs="U" THEN V=-1:GOSUB100
58 IF Cs="D" THEN V=01:GOSUB100
59 IF Cs="E" THEN V=-1:H=1:GOSUB
100
60 IF Cs="F" THEN V=1:H=1:GOSUB1
00
61 IF Cs="G" THEN V=1:H=-1:GOSUB
100
62 IF Cs="H" THEN V=-1:H=-1:GOSU
B100
```

continued p.28

FOGHORN



by Paul Stevenson

GRAPHICS

FOGHORN IS A golden oldie I wrote on the CoCo 2 a while back and have now put the CoCo 3 into action to make the old "Foghorn" look a little better.

The Listing:

```
1 ****FOGHORN 3****
2 GOTO10
3 SAVE"50:3":END'5
10 PALETTE1,0
20 HSCREEN2
30 HCLSS
40 HBUFF1,2186
50 HPRINT(28,19),"FOGHORN"
60 HPRINT(31,20),"by"
70 HPRINT(25,21),"Paul Stevenson"
80 HPRINT(28,22),"<C>1987"
90 HLINE(210,115)-(300,125),PSET
100 HLINE(210,115)-(215,122),PSE
T,BF
110 HLINE(300,125)-(295,132),PSE
T,BF
120 HLINE(300,125)-(300,45),PSET
130 HLINE(210,115)-(210,35),PSET
140 HLINE(210,35)-(300,45),PSET
150 HDRAW"BM210,35;E40"
160 HDRAW"BM300,45;H45"
170 HDRAW"BM300,45;E20"
180 HDRAW"BM300,125;E20"
190 HLINE(240,117)-(220,143),PSE
T
200 HLINE(265,122)-(245,148),PSE
T
210 HLINE(245,148)-(220,143),PSE
T
220 HLINE(240,117)-(240,70),PSET
230 HLINE(265,122)-(265,72),PSET
240 HLINE(265,72)-(240,70),PSET
250 HPAINT(260,80),8,1
260 HPAINT(270,80),7,1
270 HPAINT(310,80),7,1
280 HPAINT(310,20),7,1
290 HPAINT(240,20),7,1
300 HPAINT(240,130),7,1
310 FAS="H5U2E2R2F4E4R2D4E2R2F2G
4"
320 FBS="U1H4L3G2L1G2D3L1D6"
330 FCS="E2R2F1"
340 FDS="L3G1L2G1L5H4L2G8L1G1L1G
5D7F1D1F1R2U2"
350 FES="U2R1NF1L2G2"
360 FFS="F1D7G2R3E7U1E3U1E1U1E6U
1BL8BD4D3G1D1G1D1O5H1U4H1"
370 FGS="U5H1L1BD8BE1U3E1BD3BR3N
D1U5E1R2F1D6G2E1H1U2E1R1"
380 FHS="D2F1R2E4U2E1U4BE2NU1D2G
1ND3P2D7G1L3H1BL5G1D3R2D1F1R2E2F
1R1E1U3D2F3R3D1NG2U1E5E2E1R4"
390 FIS="D6F2R2E4BU7BL2H4L1D3NF3
D2G1H1U5E1R2F3BL7NE1G2D1F2NE1L2D
2L1D5F3BE16BU12H1L2G1"
400 FJS="D4H2D8G2D2G2D2G4F4D1F2R
1D4L3U2H2L1G1F1D4F2E1NU3BL2G2NF2
H2U5E1NR1BL2H1NE2F1L1G2D1BF3G2ND
2H6L2"
410 FKS="F3D2F1D8F2L4G2L4H2U10H2
BD13NR2L7U2D2F2"
420 FLS="E2U2H2R1E1U3D1F2L3D2F4L
4BL50BU8L2E2R1"
430 FMS="G6D4F4R6F2D2R3H2L1BU1BL
8BU1G2L2G2L4H2U14E7BDBD37BL29L2H
2U2NE2G4R4BU6BL1H1U2D1G2R2"
440 HDRAW"BM109,17"+FAS:HDRAW"BM
118,20"+FBS:HDRAW"BM115,17"+FCS:
HLINE(120,16)-(128,30),PSET:HDRA
W"BM126,28"+FDS:HLINE(96,48)-(10
8,42),PSET:HLINE(108,42)-(120,34
),PSET:HDRAW"BM120,34"+FES:HDRAW
"BM109,41"+FFS:HDRAW"BM108,26"+F
GS:HDRAW"BM110,52"+FHS
450 HDRAW"BM98,48F4R4"
460 HLINE(128,30)-(134,54),PSET:
HLINE(138,54)-(166,74),PSET:HLIN
E(109,55)-(92,62),PSET:HLINE(92,
62)-(88,62),PSET:HLINE(80,42)-(8
8,62),PSET:HLINE(88,62)-(90,70),
PSET:HLINE(72,40)-(68,56),PSET:H
LINE(68,56)-(70,72),PSET:HLINE(7
0,72)-(74,78),PSET
470 HLINE(74,78)-(84,80),PSET:HL
INE(84,80)-(100,78),PSET:HLINE(8
4,38)-(86,24),PSET:HLINE(86,24)-
(90,16),PSET:HLINE(81,27)-(86,16
),PSET:HDRAW"BM76,34"+FIS:HLINE(
102,66)-(100,80),PSET:HLINE(100,
80)-(102,88),PSET:HCIRCLE(145,11
2),50,1,1,.39,.60
480 HLINE(132,76)-(146,78),PSET:
HLINE(148,74)-(144,80),PSET:HLIN
E(144,80)-(142,100),PSET:HLINE(1
42,100)-(144,106),PSET:HDRAW"BM1
66,74"+FJS:HLINE(165,73)-(172,68
),PSET:HLINE(172,68)-(176,68),PS
ET:HLINE(176,68)-(184,80),PSET:H
LINE(184,80)-(188,92),PSET
490 HLINE(188,92)-(188,130),PSET
:HLINE(188,130)-(184,108),PSET:H
LINE(184,108)-(178,86),PSET:HLIN
E(178,86)-(172,86),PSET:HLINE(17
2,86)-(160,96),PSET:HLINE(160,96
)-(160,98),PSET:HLINE(160,98)-(1
70,94),PSET:HLINE(170,94)-(174,9
4),PSET
500 HLINE(174,94)-(180,108),PSET
510 HLINE(180,108)-(178,140),PSE
T:HLINE(178,140)-(176,134),PSET:
HLINE(163,103)-(169,101),PSET:HL
INE(169,101)-(173,104),PSET:HLIN
E(173,104)-(173,110),PSET:HLINE(
164,104)-(168,104),PSET:HLINE(16
8,104)-(174,112),PSET:HLINE(174,
112)-(176,134),PSET
520 HLINE(176,134)-(172,140),PSE
T:HLINE(172,140)-(172,124),PSET:
HLINE(172,124)-(170,122),PSET:HL
INE(163,107)-(168,116),PSET:HLIN
E(168,116)-(170,126),PSET:HLINE(
170,126)-(166,138),PSET:HLINE(16
6,138)-(156,150),PSET
530 HDRAW"BM158,148"+FKS:HLINE(1
42,170)-(156,172),PSET:HLINE(156
,172)-(172,174),PSET:HLINE(172,1
74)-(188,178),PSET:HLINE(164,164
)-(176,164),PSET:HLINE(176,164)-
(186,166),PSET:HLINE(186,166)-(1
90,168),PSET:HLINE(170,169)-(180
,170),PSET
540 HLINE(180,170)-(188,172),PSE
T:HDRAW"BM188,178"+FLS:HDRAW"BM1
14,150"+FMS:HLINE(120,169)-(104,
174),PSET:HLINE(104,174)-(76,184
),PSET:HLINE(100,166)-(88,168),P
SET:HLINE(88,168)-(72,174),PSET:
HLINE(92,172)-(84,174),PSET
550 HLINE(84,174)-(74,178),PSET:
HCIRCLE(134,120),37,1,1,.12,.45
560 HPAINT(100,100),4,1
570 HCIRCLE(157,108),4,4
580 HPAINT(157,108),4,4
590 HPAINT(85,20),4,1
600 HPAINT(90,177),7,1
610 HPAINT(105,160),7,1
620 HPAINT(155,160),7,1
630 HCIRCLE(145,169),5,1,1,.5,.8
640 HPAINT(150,170),7,1
650 HPAINT(170,100),3,1
660 HPAINT(168,110),3,1
670 HPAINT(185,100),3,1
680 HPAINT(116,12),3,1
690 HPAINT(100,40),7,1
700 HPAINT(115,50),3,1
710 HPAINT(120,50),3,1
720 HCIRCLE(108,52),2
730 HPAINT(108,46),7,1
740 HPAINT(115,43),7,1
750 HPAINT(125,55),4,1
760 HPAINT(120,23),4,1
770 HPAINT(113,23),5,1
780 HPAINT(114,58),3,1
790 LETA=64:LETB=5:LETC=85:LETD=
91
800 HGET(A,B)-(D,C),1
```

810 IC\$="R6L2U20G4R4"
 820 X2\$="U4R18D8G18R20"
 830 X3\$="B5R10F5D7G5F5D7G5L10H5"
 840 X4\$="U30G20R30"
 850 X5\$="L15D15E5R5F5D8G5L5H5"
 860 X6\$="H7L7G7D20F7R7E7U7H7L7G7"
 " "
 870 X7\$="R20G17"
 880 X8\$="E5U5H5L5G5D5F5R5E5U5H5L5G5L5H5"
 7H7U7E7"
 890 X9\$="U7H7L7G7D7F7R7E7U7H7L7G7L7H7"
 " "
 900 X10\$="U20BR20L7G7D7F7R7E7U7H7"
 7"
 910 HCIRCLE(20,175),10
 920 HDRAW"C5BM25,50"+XC\$
 930 HPUT((A-2),B)-(D-2),C),1,PS
 ET
 940 HPUT(A,B)-(D,C),1,PSET
 950 FORJ=1TO1000:NEXTJ
 960 HDRAW"C5BM25,50"+XC\$
 970 HCIRCLE(40,175),10,1
 980 HPAINT(40,175),1,1
 990 HDRAW"C1BM15,30"+X2\$
 1000 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1010 HPUT(A,B)-(D,C),1,PSET
 1020 FORJ=1TO1000:NEXTJ
 1030 HDRAW"C5BM15,30"+X2\$
 1040 HCIRCLE(10,155),10,1
 1050 HPAINT(10,155),3,1

1060 HDRAW"C1BM15,30"+X3\$
 1070 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1080 HPUT(A,B)-(D,C),1,PSET
 1090 FORJ=1TO1000:NEXTJ
 1100 HDRAW"C5BM15,30"+X3\$
 1110 HCIRCLE(30,155),10,1
 1120 HPAINT(30,155),4,1
 1130 HDRAW"C1BM25,50"+X4\$
 1140 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1150 HPUT(A,B)-(D,C),1,PSET
 1160 FORJ=1TO1000:NEXTJ
 1170 HDRAW"C5BM25,50"+X4\$
 1180 HCIRCLE(50,155),10,1
 1190 HPAINT(50,155),2,1
 1200 HDRAW"C1BM25,30"+X5\$
 1210 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1220 HPUT(A,B)-(D,C),1,PSET
 1230 FORJ=1TO1000:NEXTJ
 1240 HDRAW"C5BM25,30"+X5\$
 1250 HCIRCLE(10,135),10,1
 1260 HDRAW"C1BM35,40"+X6\$
 1270 HCIRCLE(10,135),10,1
 1280 HPAINT(10,135),6,1
 1290 HPUT(A,B)-(D,C),1,PSET
 1300 FORJ=1TO1000:NEXTJ
 1310 HDRAW"C5BM35,40"+X6\$
 1320 HCIRCLE(30,135),10,1
 1330 HPAINT(30,135),7,1

1340 HDRAW"C1BM15,40"+X7\$
 1350 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1360 HPUT(A,B)-(D,C),1,PSET
 1370 FORJ=1TO1000:NEXTJ
 1380 HDRAW"C5BM15,40"+X7\$
 1390 HCIRCLE(50,135),10,1
 1400 HPAINT(50,135),8,1
 1410 HDRAW"C1BM25,50"+X8\$
 1420 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1430 HPUT(A,B)-(D,C),1,PSET
 1440 FORJ=1TO1000:NEXTJ
 1450 HDRAW"C5BM25,50"+X8\$
 1460 HCIRCLE(20,115),10,1
 1470 HPAINT(20,115),0,1
 1480 HDRAW"C1BM25,40"+X9\$
 1490 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1500 HPUT(A,B)-(D,C),1,PSET
 1510 FORJ=1TO1000:NEXTJ
 1520 HDRAW"C5BM25,40"+X9\$
 1530 HCIRCLE(40,115),10,1
 1540 HDRAW"C1BM15,50"+X10\$
 1550 HPUT((A-2),B)-(D-2),C),1,P
 SET
 1560 HPUT(A,B)-(D,C),1,PSET
 1570 GOTO1550

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CHRISTMAS SPECIAL

Noarlunga CoCo Club

COCO 16K ECB 2/3

THE FOLLOWING PROGRAMS are those entered for the Noarlunga Colour Computer Club's Christmas Competition of 1986.

The first prize of a PROBE kindly donated by Goldsoft was won by Kevin Gowan for his use of sound in conjunction with CoCo 3 graphics.

Second prize of a software package donated by RDL SOFTWARE was won by Garry Holder for putting some fun into the program.

There were also two encouragement awards of \$10.00 donated by the club which went to Stuart Robb and Pauline Mc Evoy for their efforts in entering their very first written programs, namely "Words" and "Puzzle".

The programs go from rank beginner to fairly advanced. They cover all types of CoCo's and include three programs written on the CoCo 3.

The Listing:

```
0 CLS
1 GOTOS
2 '***** "WORDS"
3 SAVE"6:3":END'1
5 PRINT"*****"
*****
10 PRINT"*****UNJUMBLED CHRISTMAS
WORDS:
20 PRINT"*****BY STUART ROBB**
*****
30 PRINT"*****NOVEMBER 1986****
*****
35 PRINT"*****"
*****
40 FOR I = 1 TO 1000 : NEXT
50 PRINT" SRTA =
55 INPUT$
60 PRINT" SWATA =
65 INPUT$
70 PRINT" SLDE =
75 INPUT$
80 PRINT" RETE =
85 INPUT$
90 PRINT" RENDEIRE =
95 INPUT$
100 PRINT" CRAIDLA =
105 INPUT$
```

```
110 PRINT" CADWLA =
115 INPUT$
120 PRINT" PRENSTSE =
125 INPUT$
130 PRINT" LOYLH =
135 INPUT$
140 PRINT" MERRY CHRISTMAS AND A
HAPPY NEW YEAR.
```

The Listing:

```
0 CLS
1 GOTOS
2 '***** "PUZZLE"
3 SAVE"6A:3":END'5
5 PRINT"*****"
*****
10 PRINT"*****CHRISTMAS WORD
PUZZLE**
20 PRINT"*****BY STUART ROBB
*****
30 PRINT"*****NOVEMBER 1986*
*****
35 PRINT"*****"
*****
40 FOR I = 1 TO 1000 : NEXT
50 PRINT"CLUE:1 WHO WEARS A RED
SUIT AND BLACK BOOTS ?
55 PRINT"*****"
*****
60 PRINT"CLUE:2 WHAT'S THE NAME
OF THE FAMOUS REINDEER ?
65 PRINT"*****"
*****
70 PRINT"CLUE:3 WHAT DOES SANTA
RIDE IN ?
75 PRINT"*****"
*****
80 PRINT"CLUE:4 WERE DOES SANTA
LIVE ?
85 PRINT"*****"
*****
90 PRINT"CLUE:5 WHAT DAY AND DAT
E IS CHRISTMAS ?
95 PRINT"*****"
*****
100 PRINT1
105 INPUT$
110 PRINT2
115 INPUT$
120 PRINT3
125 INPUT$
130 PRINT4
135 INPUT$
140 PRINT5
145 INPUT$
150 PRINT" MERRY CHRISTMAS AND A
HAPPY NEW YEAR.
```

The Listing:

```
1 'SANTA CLAUS
2 'CHRISTMAS COMPETITION
3 'COCO3
4 'LEE & ALLAN BERRIMAN
5 POK65497,0
6 GOTO10
8 SAVE"6B:3":END'5
10 HSCREEN2
50 HCLSS
60 HCOLOR3,12
110 PALETTE1,63
160 PALETTE4,60
210 HCIRCLE(130,95),15,3,.4:'LEF
T EYE
260 HCIRCLE(190,95),15,3,.4:'RIG
HT EYE
310 HPAINT(130,95),1,3
360 HPAINT(190,95),1,3
410 HDRAW"BM123,92;D2;L1;D3;R1;D
2;R1":'BLUE EYE
460 HDRAW"BM137,92;D2;R1;D3;L1;D
2;L1":'BLUE EYE (LEFT)
510 HDRAW"BM183,92;D2;L1;D3;R1;D
2;R1":'RIGHT BLUE EYE
560 HDRAW"BM197,92;D2;R1;D3;L1;D
2;L1":'RIGHT BLUE EYE
610 HDRAW"BM150,90;R1;D1;R1;D2;R
1;D6;R1;D7;R1;D10":'LEFT NOSE
660 HDRAW"BM152,119;U1;L2;D1;L1;
D1;L1;D1;L1;D1;L1;D2;L1;D4;R1;D1
;R1;D1;R2":'BOTTOM LEFT NOSE
710 HDRAW"BM170,90;L1;D1;L1;D2;L
1;D6;L1;D7;L1;D10":'RIGHT NOSE
760 HDRAW"BM168,119;U1;R2;D1;R1;
D1;R1;D1;R1;D1;R1;D2;R1;D4;L1;D1
;L1;D1;L2":'BOTTOM RIGHT NOSE
810 HPAINT(132,93),5,3:'PAINT LE
FT BLUE EYE
860 HPAINT(193,94),5,3:'PAINT RI
GHT BLUE EYE
910 HCIRCLE(130,95),3,12:'CENTRE
LEFT EYE
960 HCIRCLE(190,95),3,12:'CENTRE
RIGHT EYE
1010 HCIRCLE(160,140),25,3,.3,.1
2,.4:'TOP LIP
1060 HPAINT(130,95),12,12:'PAINT
IRIS
1110 HPAINT(190,95),12,12:'PAINT
IRIS
1160 HCIRCLE(160,145),15,3,.6,0,
.5:'BOTTOM LIP
1210 HDRAW"BM94,100;D6;L1;D7;L1;
D8;L2;D4;L1;D4;L1;D3;L2;D6;L2;D3
;R1;D2;L2;D4;R3;D5;R3;D2;L3;D4;R
2;D6;R2;D2;R3;D4;R1;D2;R2;D4;R2;
D4;L3;D2;L1;D1;R3;D5;R2;D1;R3;D6
```

```

"; 'LEFT SIDE LOWER BEARD
1260 HDRAW"BM226, 100; D6; R1; D7; R1
; D8; R2; D4; R1; D4; R1; D3; R2; D6; R2; D
3; L1; D2; R2; D4; L3; D5; L3; D2; R3; D4;
L2; D6; L2; D2; L3; D4; L1; D2; L2; D4; L2
; D4; R3; D2; R1; D1; L3; D5; L2; D1; L3; D
6" : REM R-SIDE LOWER BEARD
1310 HDRAW"BM100, 95; R2; D1; R2; D2;
R1; D3; R1; D5; R1; D2; R2; D5; R1; D3; R2
; D5; R1; D2; R2; D2; R3; D2; R2; D1; R3; D
2; R4; D2; R3; D1; R4; D2; R3; U1; R4; U2;
R2; U1; R3; U1; R3; D1; R3; D1; R4; D1; R5
" : 'TOP LEFT BEARD
1360 HDRAW"BM220, 95; L2; D1; L2; D2;
L1; D3; L1; D5; L1; D2; L2; D5; L1; D3; L2
; D5; L1; D2; L2; D2; L3; D2; L2; D1; L3; D
2; L4; D2; L3; D1; L4; D2; L3; U1; L4; U2;
L2; U1; L3; U1; L3; D1; L3; D1; L4; D1; L5
" : 'TOP RIGHT BEARD
1410 HDRAW"BM226, 100; R1; U2; R1; U3
; L2; U4; L1; U3; R2; U4; L1; U5; L3; U1; L
2; U2; L3; U4; L6; D3; L1; D4; R1; D6; R1;
D4; R1; D4; R1; D5" : REM R/H S/BURN
1460 HDRAW"BM94, 100; L1; U2; L1; U3;
R2; U4; R1; U3; L2; U4; R1; U5; R3; U1; R2
; U2; R3; U1; R6; D1; R1; D4; L1; D6; L1; D
4; L1; D4; L1; D5" : REM L/H S/BURN
1510 HCIRCLE(144, 45), 160, 3, .2, .1
8, .3 : 'LOWER HAT BAND
1560 HCIRCLE(144, 23), 160, 3, .2, .1
8, .3 : 'UPPER HAT BAND
1610 HCIRCLE(124, 65), 30, 3, 1, .44,
.58 : 'L/H CAP BAND END
1660 HCIRCLE(193, 61), 30, 3, 1, .95,
.09 : 'R/H CAP BAND END
1710 HDRAW"BM212, 53; U3; L1; U2; L2;
U3; L1; U4; L2; U6; L1; U7; L1; U3; L2; U3
; L3; U4; L2; U2; L1; U2; L2; U3; L2; U4; L
3; U2; L1; U4; L1; U3" : 'RIGHT SIDE HA
T
1760 HDRAW"BM105, 53; U2; R1; U3; R1;
U6; R1; U3; R2; U4; R1; U3; L3; D1; L1; D1
; L1; D2; L2; D1; L2; D2; L2; D2; L2; D2; L
2; D2; L2; D2; L2; D2; L2; D2; L1; D2; L1;
D3; L1; D2; L1; D3; L1; D2; L1; D3; L1; D2
; L1; D3; L1; D2; L1; D3; L1; D2; L1; D5; L
1; D4" : 'HAT-POMPOM LINE
1810 HDRAW"BM78, 0; D3; L1; D2; L2; D4
; L3; D4; R1; D4; L1; D6; L1; D3; L1; D6; L
1; D4; R1; D5; L1; D45" : 'LEFT SIDE HA
T
1860 HDRAW"BM159, 87; U3; L1; U2; L2
; U3; L2; U2; L3; U1; L2" : HDRAW"BM159,
87; D2; L3; D1; L2; D2; L4; U2; L1; U3; L4
; U2; L5; U1; L3; U1; L6; U1; L7; D1; L3; D
1; L4; D1; L5; D1; L4" : REM L/E/BROW
1910 HDRAW"BM161, 87; U3; R1; U2; R2;
U3; R2; U2; R3; U1; R2" : HDRAW"BM161, 8
7; D2; R3; D1; R2; D2; R4; U2; R1; U3; R4;
U2; R5; U1; R3; U1; R6; U1; R7; D1; R3; D1
; R4; D1; R5; D1; R4" : REM R/E/BROW
1960 HCIRCLE(70, 110), 25 : 'POM POM
2010 HPAINT(160, 90), 4, 3 : 'PAINT F
ACE
2060 HPAINT(160, 185), 1, 3 : 'PAINT
BEARD
2110 HPAINT(160, 25), 3, 3 : 'PAINT H
AT
2160 HPAINT(162, 86), 1, 3 : 'PAINT R
/BROW
2210 HPAINT(158, 86), 1, 3 : 'PAINT L
/BROW

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2260 HPAINT(70, 110), 1, 3 : 'PAINT P
OMPOM
2310 HPAINT(160, 55), 1, 3 : 'PAINT H
AT BAND
2400 HPAINT(160, 152), 4, 3
2500 HDRAW"BM156, 149; R2; D1; R6; U1
; R2
3000 PLAY"L9; O4; GFEDCBGFEDCBGFED
CO3GFEDCGFEDCO4GFEDC
5000 HPRINT(3, 22), "MERRY" : HPRINT
(32, 22), "XMAS"
5050 POKE65496, 0
10000 GOTO10000

```



The Listing:

```

0 GOTO10
3 SAVE"6C:3" : END'5
10 'XMAS PROGRAM EXERCISE (COCOS
)
20 'BY KEVIN GOVAN
30 ON BRK GOTO390
40 WIDTH40
50 POKE65497, 0
60 PALETTE RGB
70 FORJ=0TO15 : PALETTE J, 9 : NEXT : C
LS3 : HSCREB2 : CLS3
80 CC=CC+1
90 FORJ=1TO25 : HCIRCLE(160, 80+J),
30+J, .5, .75, .95, .55 : HCIRCLE(163, 6
0+J), 30+J, .5, .75, .95, .55 : HCIRCLE(
157, 80+J), 30+J, .5, .75, .95, .55 : GOS
UB340 : NEXT
100 FORJ=1TO10 : HCIRCLE(135+J, 70+
J), 30, 1, .5, .2 - ((12-J)/100), .45 : H
CIRCLE(185-J, 70+J), 30, 1, .5, .05, .
3 + ((12-J)/100) : GOSUB340 : NEXT
110 FORJ=1TO3 : HCIRCLE(140, 60), 5+
J, 1, 1, .5, .9 : HCIRCLE(180, 60), 5+J,
1, 1, .6, .9 : GOSUB340 : NEXT
120 FORJ=1TO10 : HCIRCLE(160, 57-J)
, 35, 1, .5, .5, 1 : GOSUB340 : NEXT : GOSU
B340
130 HCIRCLE(160, 57), 35, 1, 1.9, .5,
.8 : HCIRCLE(215, 50), 25, 1, 1, .55, .8
: HCIRCLE(180, 40), 45, 1, 1, .7, .95 : F
ORJ=1TO7 : HCIRCLE(220, 30), J, 1 : NEX
T : HPAINT(200, 10), 3, 1

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```

140 HCIRCLE(160, 65), 38, 1, .8 : HPAI
NT(160, 65), 6, 1 : FORJ=1TO9 : HCIRCLE
(140, 75), J, 3, .5 : HCIRCLE(180, 75),
J, 3, .5 : NEXT : FORJ=1TO15 : HCIRCLE(1
60, 95), J, 3, .5, 0, .5 : NEXT : FORJ=1TO
2 : HCIRCLE(160, 95), 7+J, 1, .6, .15, .
35 : NEXT
150 FORJ=1TO4 : HCIRCLE(140, 62), J,
2 : HCIRCLE(180, 62), J, 2 : NEXT : HCIRC
LE(140, 63), 5, 2, .5, .5, 1 : HCIRCLE(1
80, 63), 5, 2, .5, .5, 1 : FORJ=2TO6 : HCI
RCLE(124, 65), J, 6, 1.5, .25, .75 : NEX
T : FORJ=2TO6 : HCIRCLE(196, 65), J, 6,
1.5, .75, .25 : NEXT
160 FORJ=1TO5 : HCIRCLE(160, 68), J,
3, 1, 25 : NEXT
170 HDRAW"BM80, 170C7U10F4E4D10BR
5NR8U5NR6U5R8BR5ND10R6F2DG2L6R3F
5BR5U10R6F2DG2L6R3F5BR6U6NH4E4BD
10BR10 R4NE2L4H2U6E2R4NF2BR7D5ND
5R8U5D10BR5U10R6F2DG2L6R3F5BR5R6
L3U10L3R6BR7R4NF2L4G2DF2R4F2DG2L
4NH2BU10BR11"
180 HDRAW"R8L4D10BR9U10F4E4D10BR
5U5NR8UR4F4D6BR7NH2R4E2UH2L4H2UR
2R4F2
190 HDRAW"BM92, 190U5NU5R8U5D10BR
5U5NR6UE4F4D6BR5U10R6F2DG2L6D5BR
13U10R6F2DG2L6U5BR13F4NE4D6BR12
U10DF8DU10BR5NR8D5NR6D5R8BR5U10
E4U2D2F4U10BR9F4NE4D6BR9NR6U5NR6
U5R8BR5BD10U5NR8UR4F4D6BR5U10R6F
2DG2L6R3F5"
200 PALETTE RGB
210 PALETTE0, 9
220 FORJ=1TO15 : PALETTE 7, (RND(6)
-1)*9+18 : GOSUB340 : FORK=1TO50 : NEX
T K, J : PALETTE7, 38 : GOSUB340
230 IF CC<2 THEN HCLS ELSE 330
240 HDRAW"BM30, 90C2U60R10N+10, +2
0N+10, +20R10D80L10U55M-10, +20M-1
0, -20D55L10 BR48U80R40D10L30D25F
24D10L24D25R30D10L40 BR48U80R20N
+4, +1N+6, +2F6DF2DF2D3F2D5G2D9G2D
G2D06N+20, +35L1N+20, -35L4D35L12
BM+12, +45U25R8N+4, +1F3D2FDFDF3G
DGDGD2G3M-4, +1L8"
250 HDRAW"BM+46, +45U80R20N+4, 1N+
6, +2F6DF2DF2D3F2D5G2D3G2DG2DG6N+
20, +38L14N-20, -35L4D35L12BM-12, -
45U25R8N+4, +1F3D2FDFDF3GDGDGD2G
3M-4, +1L8 +BM+32, -35R14N+15, +20M+
15, -20R14N-20, +35D45L12U45M-26, -
35
260 HDRAW"BM60, 110R14N+6, +30N+6,
-30R14N-10, +40N+10, +40L14N-6, -30
M-6, +30L14N+10, -40M-10, -40 BM+46
, +80U80R10N+10, +20N+10, -20R10D80
L10U55M-10, +20M-10, -20D55L10 BR4
8U40N+20, -40N+20, +40D40L10U25L20
D25L10BN+10, -35R20M-10, -18M-10, +
18"
270 HDRAW"BM+46, +35R24E8U30H8L14
H4U12E4R12F2E8H8L24G8D30F8R14F4D
14G4L12H2G8F8
280 HPAINT(65, 180), 2, 2 : HPAINT(11
0, 180), 2, 2 : HPAINT(158, 180), 2, 2 : H
PAINT(210, 150), 2, 2
290 HPAINT(33, 85), 2, 2 : HPAINT(81,
85), 2, 2 : HPAINT(132, 85), 2, 2 : HPAI
NT(188, 85), 2, 2 : HPAINT(255, 85), 2, 2
300 FORK=1TO10 : FORJ=1TO80 : NEXTJ :

```

PALETTE2, (RND(6)-1)*9+18:GOSUB34
0:FORJ=1TO60:NEXTJ:PALETTE2,9:GO
SUB340:NEXTK
310 IF CC=1THEN80
320 GOTO320
330 FORJ=18TO63STEP3:PALETTE7,J:
GOSUB340:NEXTJ:GOTO330
340 READ A\$:IF A\$="END"THEN REST
ORR:GOTO340
350 PLAY A\$
360 RETURN
370 DATAO2T4L4D,B,A,G,L2,D,L8D,D
,L4D,B,A,G,L2,E,L4E,E,O3C,O2B,A,
L1F#,O3L4D,D,C,O2A,L1B,L4D,B,A,G
,L2,D,L8D,D,L4D,B,A,G,L2,E,L4E,E
,O3C,O2B,A,O3D,D,D,D,E,D,C,O2A,L
2.GP4
380 DATA"END"
390 POK65496,0:PALETTE7B:CLS2:
RSCREEN0

The Listing:

0 GOTO5
3 SAVE"6D:3":END"5
5 DIMP(500)
20 PNODE3,1:SCREEN1,1:PCLS5
40 A\$="U4H1U4H1U4H1U4H1U4H1U3H20
E5F6R1F6R1F6R1F5R1R5D1G1D1G1D1F1
D1G1D2F2R3F1R3E1U1E1U2E1U2E1U6R1
U3H1U2H1U1L2H1L2H1L3G1D1G1D2G1D1
G1F4BR3R3G1L1D1R1BUBR1E1L4L1D1BR4
R1BR3BL3L2BL3G4BU10R12BD8R5;"
50 B\$="E20NF6E2U4R1D3B4F1NG3E1F1
EG4F1G4G2F1G6BF2G1D1G1D1G1D1G1
DAF1D5F1D4G1D6L3G4U3D7R3G6U4D30L1
D1G1D1D2F4D2LL4H6U18L2U4H1U3H1U3
H1U3H1U2H2U3G3D3G1D3O1D4G1D6G1D1
8G8L4U2E4U18H1U3H1U3H1U2T;"
60 C\$="H6ELMF2H1E1NF3E1NF3F1E1F4
U4R1D5F8;"
70 D\$="H3E1NF2E1NF2E1NF2E1F4U3R1
D4F5;"
90 F\$="F4R15NF4L3FU2L1O2NH6R10B
5L2G2L4NL7H3U1H1U1L2G1L1DAF1L2B
R9BD4U5D1R1D1U1R1BD4L12D1R12BU5R1
3BD7;"
99 G\$="E3H1U1H1NL11U2R8F1E1R2E4F
2H2D2G3R1D1L2BR1F6H4BU8U1NE3H3BF
1E2BD12BL2G1L4H1L3G3BU3R9U1L9U1R
9BR14BD7;"
100 H\$="BR7H3H1U1H1NL11U2R8F1E1R
2E4F2H2D2G3R1D1L2BR1F3NG3H1BU8U1
NE3H3BF1E2BD12BL2G1L4H1L3G3BU3R9
U1L9U1R9BR14BD7;"
300 DRAW"C8BN100,90XAs;XBs;"
305 PAINT(115,88),8,8
310 PAINT(115,100),8,8
312 PAINT(115,95),5,8
314 DRAW"C5BN115,88 R2U1L1BU6R2U
1L1BU6R2U1L1;"
320 DRAW"C8BN74,40 XCs;"
322 SOUND 1,5
325 DRAW"C5BN74,40 XCs;"
330 DRAW"C8BN74,40 IDs;"
333 SOUND3,2
336 DRAW"C5BN74,40 XDs;"
343. SOUNDS,1: DRAW"C5BN74,40 XCs;"
346. DRAW"C8BN74,40 XDs;"
348. SOUND1,1: DRAW"C5BN74,40 XDs;"

"
350 DRAW"C8BN74,40 XCs;"
352 SOUNDS,1: DRAW"C5BN74,40 XCs;"
"
354 DRAW"C8BN74,40 XDs;"
356 SOUNDS,1: DRAW"C5BN74,40 XDs;"
": DRAW"C8BN74,40 XCs;"
370 FORR=1TO9
380 COLOR6
390 CIRCLE(10,10),R
395 CIRCLE(244,10),R
400 NEXT R
420 DRAW"C8BN25,175 XFs;XGs;XHs;"
"
430 GET(22,160)-(99,180),F,G
440 FOR I=1 TO70
450 PUT (22+I,160)-(99+I,180),F,
PSET
460 NEXT I
495 REM FOR HE'S & JOLLY GOOD FR
LLOW
497 PLAY"TSVS;C3L4GL2L4HEDEL3FL
2EL4BL2DL4DDCDL3EL2CL4GL2EL4HEDE
L2FL4GL1AL4AGAGL2EL4DL1C"
500 PNODE4,1:SCREEN1,1:PCLS0
520 F\$="F4R15NF4L3FU2L1O2NH6R10
E5L2G2L4NL7H3U1H1U1L2G1L1D1F1L2B
R9BD4U5D1R1D1U1R1BD4L12D1R12BU5R
13BD7;"
530 G\$="BD2E3H1U1H1NL11U2R12E4F2
E2D1G3R1E2BG2D1L3BR2F6H4BU8U1NE3
H3BF1E2BD11BL2G1L4H1L3G3BU3R9U1L
9U1R9BR14BD7;"
540 H\$="BD2BR7H3H1U1H1NL11U2R12E
4F2H2D1G3R1E2BG2D1L3BR2F3NG3H1BU
8U1NE3H3BF1E2BD11BL2G1L4H1L3G3BU
3R9U1L9U1R9BR14BD7;"
550 DRAW"C5BN254,136 L150BG10G45
5BE55NF55BL3ND60U10L7ND66R10D66;"
560 DRAW"C5BN10,130 R3BH2D4BE25R
3BH2D4BR200R3BH2D4BU30R3BH2D4BH4
5R3BH2D4BH30R3BH2D4;"
570 DRAW"C5BN25,20 XFs;XGs;XHs;"
580 GET(22,2)-(99,25),F,G
590 FOR I=1 TO110 STEP2
600 PUT (22+I,2+I)-(99+I,25+I),F
,PSET
610 NEXT I
620 DRAW"COBN254,150;"
1000 SCREEN1,1
1050 I\$="U3H1U1E1R1NU2D1F1G2U1R2
E2U2L1G2L1D1R1U1"
1060 J\$="U3MF3H1U1E1R1NU2D1F1G2U
1R2E2U2L1G2L1D1R1U1"
1070 K\$="H3U1H1U1L2G1L1D1F1L2;"
1080 DRAW"C5BN254,136 L150BG10G4
5BE55NF55BL3ND60U5L7ND66R10D66;"
1090 DRAW"C5BN10,130 R3BH2D4BE25
R3BH2D4BR200R3BH2D4BU30R3BH2D4BH
45R3BH2D4BH30R3BH2D4;"
1110 DRAW"COBN147,128 XKs;"
1120 DRAW"C5BN135,134 XIs;": DRAW
"COBN135,134 XIs;"
1130 DRAW"C5BN134,134 XJs;": DRAW
"COBN134,134 XJs;"
1140 DRAW"C5BN128,134 XIs;": DRAW
"COBN128,134 XIs;"
1150 DRAW"C5BN120,134 XJs;": DRAW
"COBN120,134 XJs;"
1160 DRAW"C5BN115,134 XIs;": DRAW
"COBN115,134 XIs;"
1170 DRAW"C5BN110,134 XJs;": DRAW
"COBN110,134 XJs;"



1180 DRAW"C5BN106,134 XIs;": DRAW
"COBN106,134 XIs;"
1190 DRAW"C5BN103,129 XJs;": DRAW
"COBN103,129 XJs;"
1200 DRAW"C5BN100,133 XIs;": DRAW
"COBN100,133 XIs;"
1210 SOUND1,10
1220 DRAW"C5BN100,127 U5BR3D3NL3
D2EB6U5R3BD2NL3BD2NL3BE6NR3U5BR5
U5R3D2L3"
1500 FOR X=1TO1600:NEXT
1510 PNODE3,1:SCREEN1,1:PCLS7
1520 T\$="BR17U9R5D9NL5BR3U12R6D1
2L6BL25R13U16L13ND16R7U46R1U46W
F2NG3D2NF4NG5D2NF6NG7D3NF8NG9D3W
G11NF10D3NF12NG13D3NF14NG15D3NF1
6NG17D3NF18NG19D3NF20NG21D4NF22W
G23D4NF24NG25D4"
1530 U\$="U5OR8ND5OR2U2L8D2R2BR
25BD20ND30R30D30U3NL30U2L30U3NL
30R24U8L25U7R24U7NL25U5NL80U5NL8
0U5L80BD15R24BD7L24BD7R24BD6L24B
R12ND8BU8U7BU7BL4U5BU6U5BU5BR4D5
BD5D5BR5ND5BU5U5BR5U5BD5D5;"
1540 V\$="BR12D5BR12U5BR12D5BR12U
5BD12D7BD6D8BU35BL6U5BL12D5BL12U
5BL6U5BR12D4BR12U4BR12ND4BR6U4BL
12D4BL12U4BL12D4;"
1550 W\$="BU7BL6U15E4R4F4D15R3U2L
3BL11L3D2R3BR30U1R5H1L2E1U12R1ND
11R1L3E1U6L50BD12L8D10R8U10L8
;"
1560 COLOR5
1570 CIRCLE(46,126),5
1580 DRAW"C5BN6,191 XUs;XVs;XWs;"
"
1590 DRAW"C5BN 200,191 XTs;"
1600 DRAW"C5BN110,190L4D1L2U15H1
U6BD4D2R1BU22BL1U12E1U12E1U3H1U
3E2E1R3E1F1R1D2G2D4G1F3BU10F2L1D
1F1D1F3D2L1H2R1NF3BL1G1D2F2D3NH4
R9ND4R2D3L3D1L12NH7BR12BU4U5L10D
5BD4D4R10U4BL9D1F2D3G4D3G1D3G1D
10R2D1L2;"
1610 GET(97,130)-(130,191),F,G
1620 FOR I=1 TO60 STEP3
1630 PUT (97+I,130)-(130+I,191),F
,PSET
1640 NEXT I
1660 FORX=1TO1500:NEXTX
1800 PNODE4,1:SCREEN1,1:PCLS0
1810 F\$="F4R15NF4L3FU2L1O2NH6R1
0E5L2G2L4NL7H3U1H1U1L2G1L1D1F1L2
BR9BD4U5D1R1D1U1R1BD4L12D1R12BU5
R13BD7;"
1820 G\$="BD2E3H1U1H1NL11U2R12E4F
2H2D1G3R1E2BG2D1L3BR2F6H4BU8U1NE
3H3BF1E2BD11BL2G1L4H1L3G3BU3R9U1
L9U1R9BR14BD7;"
1830 H\$="BD2BR7H3H1U1H1NL11U2R12
E4F2H2D1G3R1E2BG2D1L3BR2F3NG3H1B
U8U1NE3H3BF1E2BD11BL2G1L4H1L3G3B
U3R9U1L9U1R9BR14BD7;"
1840 DRAW"C5BN254,136 L150BG10G4
5BE55NF55BL3ND60U10L7ND66R10D66;"

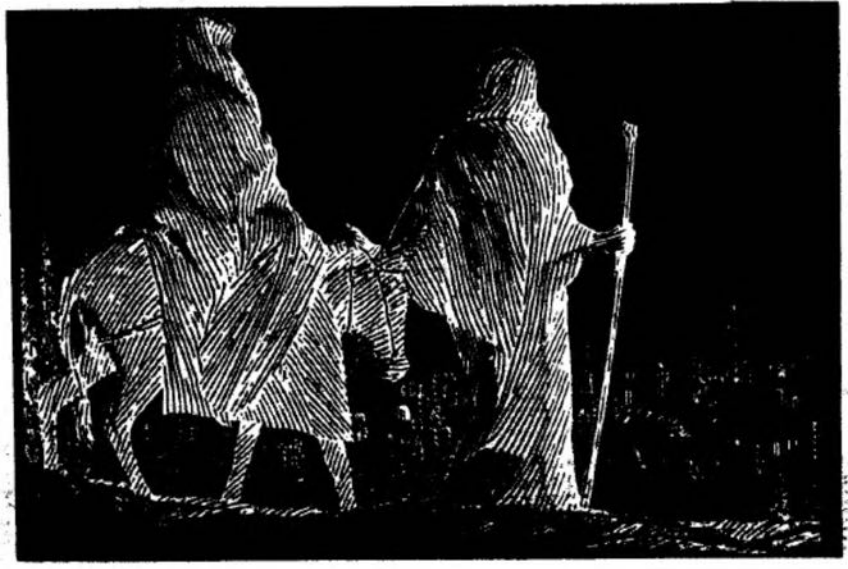
1850 DRAW"C5BM10,130 R3BH2D4BE25
R3BH2D4BR200R3BH2D4BU30R3BH2D4BH
45R3BH2D4BH30R3BH2D4;"
1860 DRAW"C5BM125,127 XF;XG;X
\$;"
1870 GET(122,102)-(199,134),F,G
1880 FOR I=-1T0-100 STEP-2
1890 PUT (122,102+I)-(199,134+I)
,F,PSET
1900 NEXT I
2000 PMODE3,1:SCREEN1,1:PCLSS
2010 DIML(500)
2020 Z\$="E4U16H1U7NR13BU2NR13BD2
U3H1U10H7NE4U1E2F3NU3F9U6L1U2R1U
2E1R1E1F2D1F1D2L1D5BU7L1BL1L1BD3
R1BG1D1R2G1BE3D4G2L1H3U1BR6E1R1E
7NF4E2WU3E3F2G5R1NE2BD2D1G7D1G1D
1G1D16G2D13F3D1L2H3G1U18H1L2G2D1
8L4;"
2030 CLS
2040 A\$="BR2R1H1U2F1U1NF3R1NF2R1
F2E2BL6U1E1NR5U1NR5H3U3R1U1R1U1N
R6BE1R4BR3R1G1D1L3D1L3G1D1E1R2D1
G1D1G1BR4R1NU5R1NU5D6F1NU6E2BD2B
R5;"2050 C\$="BR5R5E2D1E2BL3BD2L7
H1R3H1L2E1L2U1R2H1NU4L1U2E2U1E2B
D2D7E1U6E3D1R1BR2D1NL5G1L1BL1L1N
D9BL1L1ND6G1D6BD4BR13;"
2060 E\$="BR5R5E2BE1R1G2L8H1R3H1L
2E1NL2U1L2NU3E1U4R1U1E2BD2D7E1U6
E3F1L1G1ND10R6G1L3R1F1G2R3D1L5BD
7BR10;"
2070 H\$="BR1NR5E1R1NU10R1U11E1L5
D1E1U1R5E1BR1R2L1G3D1L1L1R1E1U11B
D4R1E3D1R1D7G3L1E3U6ED9BR6;"
2080 I\$="BR3U2R6G1L1H1U1NL2NU11R
1U1L3D1G1BR5BU2U1BR2R1G2ND11R1D
11BD2BR6;"
2090 M\$="NR3U1R1U10BD2G1D1BU5BR1
R1ND10E2D12G1BE2BU10U2R1D2E1D13H
1BU4U2G1BU6R3ND13R2D11G1U1E1R1BU
4U1L2D1BU5E2D2E1D2E1ND12R1E1BG1D
13E1BD1BR5;"
2100 R\$="R1E4R1NG3U9L1ND9G1U1NG2
BR2E1BR2R1G2D8G3R1E1R1G1D1F1U2R2
G1BR4E4BL1G2U2H1D3H1U3G1H1R1U1E3
U2H1D3H1U3H1D3H1U1BR12BD15;"
2110 S\$="BR1R4E1BL4L1U2R8BL1NG2D
1R3G1L1BH2U1NL5BR1R2U1L1BL4L1H1N
R7H1NR7H1R2BR2R1BL5U1R1U1BR1U3E1
NR7E1R3BR3R1G2L2F1G1BL4U1D2E1D1N
R7D1R8G1R2ND3G1D3G1BD3BR8;"
2120 T\$="BR6 R5BR1E3BL1G2L7H1R3H
1L2E1L2U1R2H1L1U1R1U2R1U1E1BL2L2
G1E2NR11BE1R6BR6R1G2L5D6G1U5BU1B
R3R1D6BD2BR9;"
2130 Y\$="BR2R4BR4R1E1U1NL5BE1R3B
L3BD1D1L6U2F1U2R1U1NR6E1U10L3G1B
R2R3ND9F1E1ND9E1R3F1L2F1R2D1L1F1
L4G1BR3R2D1L3NG2BF1R2D1L2D1R1G1L
1BD6BR8;"
2140 DRAW"C8BM50,30 XMs;XEs;XRs;
XRs;Ys;"
2150 DRAW"C8BM190,73 XZs;"
2160 PAINT(197,53),8,8:PAINT(197
,39),8,8
2170 DRAW"C8BM20,55 XCs;XNs;XRs;
XIs;Xss;Xts;Xns;Xas;Xss;"
2180 GET(15,1)-(254,80),L,G
2190 FOR I=1T090 STEP12
2200 PUT (15,1+I)-(254,80+I),L,P
SET

2210 NEXT I
2300 REM JINGLE BELLS
2310 PLAY"T4V10;O3L4EEEL4EEEL4G
CDL1EL4FFFFFEEL8EEL4EDDEDGL4EEEE
EEEGCDL1EL4FFFFFEEL8EEL4GGFDL1C"
2400 GOTO 2400
2410 ' BY GARRY HOLDER - 1986

120 HLINE(74,83)-(90,87),PSET:HL
INE(74,87)-(90,91),PSET
130 HDRAW"BM79,98;F4":HDRAW"BM70
,104;D3F4R6":HCIRCLE(116,100),8,
0
135 'GOTO1000
139 'SANTA'S LEGS
140 HCIRCLE(60,124),14,0,1,0,.62
:HDRAW"BM74,124;U12":HDRAW"BM50,
116;U8
150 HCIRCLE(60,120),20,0,1,.95,
12
160 HDRAW"BM71,132;R4BL1D10R1F3R
3":HDRAW"BM60,138;D6G2D6F2R6E2R4
F2R6
170 HCIRCLE(47,148),7,0,1,.8,.5:
HCIRCLE(41,136),7,0,1,.3,.7
180 HLINE(38,130)-(48,123),PSET:
HLINE(40,142)-(40,148),PSET:HLIN
E(50,141)-(54,133),PSET
185 'GOTO1000
199 'SANTA'S FACE
200 HCIRCLE(82,56),12,0,1,.3,.65
:HCIRCLE(80,71),5,0,1,.5,0:HCIRC
LE(95,65),13,0,1,0,.5:HCIRCLE(10
0,54),16,0,1,.87,.2
210 HCIRCLE(100,70),20,0,1,.67,
83:HCIRCLE(68,36),20,0,1,0,.15
220 HDRAW"BM88,38;R4E4R2D2G2R5E2
R4F2NE4D8F2D4G2":HLINE(80,50)-(8
9,53),PSET:HLINE(76,44)-(74,48),
PSET
230 HDRAW"BM96,58;R6D1L6":HDRAW"
BM92,46;R3":HDRAW"BM106,47;R3":H
DRAW"BM90,42;R6":HDRAW"BM104,43;
R6"
235 'GOTO1000
249 'CHIMNEY POT
250 HLINE(80,140)-(80,104),PSET:
HDRAW"BM80,104;F4E3D4E3R4D2F3E2R
2F4;ND6;R4F3U3F2E4R2F2E4R4E4E2":
HLINE(136,104)-(136,134),PSET
260 HDRAW"BM80,104;E4R5F1R2E3R4F
2R6":HDRAW"BM136,104;H4L5G2L2
265 'GOTO1000
270 HLINE(80,114)-(94,118),PSET:
HLINE(80,132)-(86,134),PSET
275 'GOTO1000
279 'SANTA'S SACK

The Listing:

0 GOTO5
3 SAVE"6E:3":END'5
5 PALETTERGB
10 HSCREEN2:HCLS8
15 PALETTE0,6:PALETTE9,4:PALETTE
10,32:PALETTE11,34:PALETTE2,1:PA
LETTE12,6
16 PALETTE13,62:PALETTE14,60:PAL
LETTE15,34:PALETTE5,58:PALETTE8,2
4
18 HCOLOR0,8
20 HLINE(0,135)-(34,135),PSET:HL
INE(138,135)-(165,135),PSET:HLIN
E(307,135)-(320,135),PSET
29 'SANTA'S HAT
30 HCIRCLE(50,47),7,0:HCIRCLE(88
,30),24,0,.6,.5,.9
40 HCIRCLE(90,40),20,0,1,.6,.8:H
CIRCLE(97,43),24,0,1,.5,.9:HCIRC
LE(98,47),20,0,1,.55,.9
50 HDRAW"BM64,31;D6G2D3G4":HDRAW
"BM74;31;G4D4G3D4G5L6":HDRAW"BM7
0,39;F4R4":HDRAW"BM116,30;D4L2"
69 'SANTA'S COAT
70 HCIRCLE(70,87),30,0,1,.23,.71
:HCIRCLE(70,85),24,0,1,.25,.7
80 HCIRCLE(97,80),40,0,1,.4,.65:
HCIRCLE(92,80),20,0,1,.35,.6
90 HLINE(62,97)-(76,90),PSET:HLI
NE(68,104)-(80,97),PSET:HDRAW"BM
102,90;F3
100 HCIRCLE(117,94),12,0,.6,.35,
.18:HCIRCLE(86,95),40,0,1,.87,.9
7
110 HDRAW"BM110,75;NH5D4G6D6L4ND
1U5NR4L10D6R10




```

280 HCIRCLE(120,130),18,0,1,.55,
.05:HCIRCLE(135,148),13,0,1,.75,
.3:HCIRCLE(112,183),30,0,1,.68,.
87:HCIRCLE(90,148),13,0,1,.13,.7
5
290 HDRAW"BM90,136;U4H5U2E4R4D4F
2R4E3R2"
300 HDRAW"BM120,130;R10F3D6L13U9
":HDRAW"BM90,140;E8F8G8H8"
315 'GOTO1000
319 'SLEIGH RUNNERS
320 HCIRCLE(195,116),35,0,1,.25,
.7:HCIRCLE(205,110),35,0,1,.25,.
65:HCIRCLE(185,88),6,0:HCIRCLE(2
05,106),30,0,1,.27,.6
330 HLINE(195,151)-(320,151),PSE
T:HLINE(205,145)-(320,145),PSET
335 'GOTO1000
349 'SLED SEAT
350 HCIRCLE(190,48),20,0:HCIRCLE
(160,100),55,0,1,.89,.15
360 HCIRCLE(280,120),20,0,1,.7,0
:HCIRCLE(205,95),40,0,1,.75,0:HC
IRCLE(263,85),20,0,1,.17,.5:HLINE
E(300,120)-(310,145),PSET
365 'GOTO1000
369 'MOON AND STARS
370 HCIRCLE(280,30),24,0,1,.67,.
25:HCIRCLE(268,35),24,0,1,.75,.1
7
395 'GOTO1000
399 'PAINT COAT
400 HPAINT(43,85),4,0:HPAINT(52,
85),10,0:HPAINT(63,85),3,0:HPAIN
T(85,80),10,0:HPAINT(70,97),4,0:

```

```

HPAINT(115,80),3,0
410 HPAINT(85,94),10,0:HPAINT(80
,87),1,0:HPAINT(102,89),1,0
420 HPAINT(77,125),9,0:HPAINT(57
,125),3,0:HPAINT(115,92),4,0:HPA
INT(115,102),12,0:HPAINT(72,104)
,12,0
430 HPAINT(47,148),9,0:HPAINT(72
,148),9,0
449 'PAINT FACE
450 HPAINT(90,65),13,0:HPAINT(90
,50),14,0
499 'PAINT SACK
500 HPAINT(100,130),15,0:HPAINT(
125,135),12,0:HPAINT(95,140),6,0
549 'PAINT MOON
550 HPAINT(298,35),1,0
599 'PAINT CARRIAGE
600 HPAINT(240,90),6,0
610 HPAINT(200,149),5,0:HPAINT(1
90,137),13,0:HPAINT(315,137),13,
0:HPAINT(185,88),13,0:HPAINT(190
,48),3,0
649 'PAINT CHIMNEY
650 HPAINT(94,115),7,0:HPAINT(13
2,110),9,0
699 'PAINT SKY
700 HPAINT(5,5),2,0
749 'PAINT HAT
750 HPAINT(50,47),4,0:HPAINT(88,
30),4,0:HPAINT(70,30),3,0:HPAINT
(76,30),10,0
800 FORK=1TO60
810 X=RWD(320):Y=RWD(130)
820 IFHPOINT(X,Y)=2THENHSET(X,Y,

```

```

4)
830 NEXT
900 HCOLOR9,8
910 HPRINT(3,21),"A Merry Xmas a
nd a Happy New Year !"
1000 GOTO1000

```

The Listing:

```

5 CLEAR200,32000
10 PCLEAR8:CLS
20 PMODE4,1:PCLS
30 LOADM"SC/MAX"
40 DATA142,26,31,166,132,16,142,
0,31,230,31,231,132,48,31,49,63,
38,246,167,132,48,136,63,140,32,
63,47,230,57
45 DATA142,32,64,166,132,16,142,
0,31,230,1,231,128,49,63,38,246,
167,128,140,34,160,47,235,57
50 FORN=32000TO32029:READC:POKEN
,C:NEXTM
55 FORN=32030TO32054:READC:POKEN
,C:NEXTM
60 SCREBN1,1
70 J=JOYSTK(0):K=JOYSTK(1)
75 FORL=1TO J*10:NEXTL
80 EXEC32000
85 EXEC32030
90 GOTO70

```



CHRISTMAS WORKSHOP



CHESS FOR TWO

by Nick Kostarelas

GAME
16K ECB

THIS GAME HAS BEEN played for a many number of years. I used to play chess when I was young, so I decided to program chess for two on my computer. The idea for the chess pieces came from a chess game on an Apple II.

The rules are straightforward and are explained within the program.

If at any stage you wish to quit playing, press <Q> before you enter a move.

When typing in the program, recheck lines 330 - 380, since these DRAW strings contain the chess pieces. If a mistake is made, the chess pieces will look funny.

The Listing:

```
0 GOTO10
3 SAVE"53:3":END'1
10 '*****
20 '* *
30 '* CHESS FOR TWO *
40 '* *
50 '* BY NICK KOSTARELAS *
60 '* 08/07/84 *
70 '* *
80 '*****
90 CLS:PNODE0,1:PCLEAR4
100 POKE65495,0:CLEAR1000
110 PNODE4,1:PCLS1
120 CLS:PRINT@41,"chess for two"
130 PRINT:PRINT" TWO PLAYERS MUST PLAY CHESS ON THE COMPUTER. THE PERSON WHO WANTS TO GO FIRST IS THE BLACK PIECES, AND THE OTHER PERSON IS THE WHITE PIECES ."
140 PRINT:PRINT" THIS GAME IS NO DIFFERENT TO ORDINARY CHESS, BUT INSTEAD OF MOVING PIECES, YOU TYPE IN","CURRENT POSITION AND DESTINATIONPOSITION."
150 PRINT@484,"PRESS enter TO CONTINUE";
160 IFINKEY$(<>CHR$(13))THEN160ELSECL
170 PRINT" IF YOU WANT TO MOVE A PAWN FROM <B2> TO <B4>, TYPE <B2-B4>,AND PRESS enter WHEN YOU ARE","SATISFIED WITH YOUR MOVE."
```

```
180 PRINT:PRINT" THE COMPUTER WILL REJECT AN ILLEGAL MOVE, AND YOU WILL HAVE TO TYPE THE MOVE CORRECTLY."
190 PRINT:PRINT" PRESS <L> WHEN YOU WANT TO SEE THE LETTERS ACROSS THE BOTTOM. ":PRINT" WATCH OUT FOR CHECKS AND", "CHECKMATES !!!"
200 PRINT@484,"PRESS enter TO CONTINUE";
210 IFINKEY$(<>CHR$(13))THEN210ELSECL
220 PRINT@228,"WAIT FOR BOARD SETUP...";
230 DIMA(4,3),P$(6),F(7,7),N$(8),L$(8)
240 L$(1)="U5ER2FD2NL3D3"
250 L$(2)="U6R3FDGL2FDGL2"
260 L$(3)="BUV4ER2FBD4GL2"
270 L$(4)="U6R3FD4GL2"
280 L$(5)="U6R4BD3BL3"
290 L$(6)="NR4U3NR3U3R4"
300 L$(7)="BUV4ER2FBD3D2L3"
310 L$(8)="U3N3R4U3D6"
320 C$="RDLBD2RDL"
330 P$(1)="DL2D3RFL2DL2DL2D2R3DR3D4L7D3R21U3L7U4R3UR3U2L2UL3HNLURU3L2UL6BD2BRNRDLDRDRDLDLNDR2D6NLURU4"
340 P$(2)="BL9BUD7RDRDR4D6L4DL2D2R25U2LULUL4U6R4URURU7L5D3LU3L5D3L3UR2UWL2UL7D3LU3L4BM+1,2D3RNRU3DR3DNL2D10NL3URUBM+4,1D6DRDRBM-2,-3U7RU2RU3D"
350 P$(3)="NRDL2DL2DL2DL2DL2DR5UR2URNR2D2L2DL2DL2DL2DL2D3R25U3L4URURU2ERU3LULU2L2UL2L3DL5BM+1,2DLBD3R3DR3U4LRDRD2BM+3,-2D4L2D3L2D2L2D3R4R2UR2U3R2UBM-8,3DL2DRDL2DL2DL2"
360 P$(4)="D4R2D2R2D2RNR2UL2U2L2U2L4DL2DRDRDRDL2DL2DL2D2R25U2L2UL2UL2UNL2UNLURURU5LULUL2UNRULUL5DEM+6,10DL2D3RDRDRBM-11,0RURUR2UNLURU2LNDUL2UNRUL2LUD2"
370 P$(5)="D3R2D2NDLUL6DL2DL2DL2DRDRDL2D3R25U3LNL2UNLURU5LU2LU2L6DLNDU2R2U3L2UL3DLBM-2,8L3DL2RDR3URU2LBM+4,0D5LU3DL2DL3BM+14,0L3ULULUBU2BRDR3URU2LUL3DL"
380 P$(6)="BLUL3DL2D5R3D4RND3U2L2ULU2NR2UL2NDL2DL2D3RDR2RUD2RDL2DL2DL2D3R25U3LULUL2LURU2NUR2URU3LUL4D3LDL2D2ND3R5RDR2NDNRU4LUL4D4L2DNRU4NR2NULHL2DL2D3R2RDNLU3BM+1,13U7L7DL2DL2BM+14,0L2ULULULU4"
390 N$(1)="BM+1,-5ED6LR2"
```

```
400 N$(3)="BM+0,-5ER2FDGLRFDGL2H"
410 N$(2)="BM+0,-5ER2FDG4R4"
420 N$(4)="BM+3,0U6G3DR4"
430 N$(5)="BM+4,-6L4D2R3FD2GL2H"
440 N$(6)="BM+0,-5D3ER2FDGL2HU4ER2F"
450 N$(7)="UE4UL4"
460 N$(8)="BM+1,0HUER2EVL2GDFR2FDGL2"
470 GET(1,1)-(28,22),A,G
480 FORI=0TO7:FORJ=0TO7
490 Y=I*22+1:X=J*28+1
500 IFI/2=INT(I/2)THENIFJ/2=INT(J/2)THENPUT(X,Y)-(X+27,Y+21),A,N
OT:GOTO520
510 IFI/2<>INT(I/2)ANDJ/2<>INT(J/2)THENPUT(X,Y)-(X+27,Y+21),A,NOT
520 NEXTJ,I
530 COLOR0:LINE(0,0)-(225,177),PSET,B
540 FORI=0TO7:READP(I,0):P(I,1)=-1:P(I,6)=1:P(I,7)=-P(I,0):NEXT
550 DATA-2,-3,-4,-5,-6,-4,-3,-2
560 FORY=2TO5:FORX=0TO7
570 P(X,Y)=0:NEXTX,Y
580 A=0:FORI=1TO2
590 FORY=A TOA+1:FORX=0TO7
600 XX=X*28+3:YY=Y*22+3
610 P=POINT(XX,YY)
620 IFP=0THENIFP(X,Y)>0THENGOSUB1170ELSEGOSUB1220
630 IFP=1ORP=5THENIFP(X,Y)>0THENGOSUB1220ELSEGOSUB1170
640 NEXTX,Y
650 A=6:NEXTI:P=0
660 X=1:FORY=16TO170STEP2
670 DRAW"COBK230","+STR$(Y)+";X$(X):"
680 X=X+1:NEXT
690 GOSUB1250:PL=1:NM=0:SCREEN1,1
700 PL=-PL
710 X$="":IFPL<0THENX=48ELSEX=160
720 XY=X+30: SOUND50,1
730 COLOR5:LINE(X,182)-(XY+15,188),PSET,BF
740 COLOR0:LINE(X,182)-(X+4,188),PSET,BF:POKE65494,0
750 A$=INKEY$:IFA$=""THEN750ELSEA=ASC(A$)
760 IFA=76ANDX=XY-30THENGOSUB1770ELSEIFA=81THEN1110ELSEIFA=95ANDNM=1THENNM=NM-1:NM=0:SOUND100,1
770 IFA=45ORA=13ORA=8THEN790
780 IFA<49ORA=56ANDA<65ORA=72THEN750
```

```

790 IFA=8THENGOSUB1300:GOTO740
800 IFX>Y THENIFA<>13THEN750
810 IFA=13THENIFLEN(XS)<>5THEN75
OHLSE870
820 X3=X3+A3:XI=A-48:IFXI>9THENY
=A-64ELSEY=0
830 COLOR5:LINE(X,182)-(X+4,188)
,PSET,BF:DRAW"C0"
840 IFA3="-"THENDRAW"BM"+STR$(X)
+","185R4":GOTO860
850 IFY=0THENDRAW"BM"+STR$(X)+","
188;X3(X);"ELSEDRAW"BM"+STR$(X)
)+","188;XL$(Y);"
860 X=X+7:GOTO740
870 POKB65495,0:IFMID$(X3,3,1)<>
"-"THEN710
880 COLOR5:LINE(X,182)-(X+4,188)
,PSET,BF
890 F3=LEFT$(X3,2):L3=RIGHT$(X3,
2)
900 A=ASC(F3)+ASC(RIGHT$(F3,1)):
B=ASC(L3)+ASC(RIGHT$(L3,1))
910 IFA(114ORA)>128ANDB(114ORB)>12
8THEN710
920 X=ASC(F3)-65:Y=ASC(RIGHT$(F3
,1))-49:IFSGN(P(X,Y))<>PL THEN71
0
930 XX=ASC(L3)-65:YY=ASC(RIGHT$(
L3,1))-49:ER=0:CH=0
940 ONABS(P(X,Y))GOSUB1330,1450,
1560,1600,1700,1750
950 IFER=1THEN710
960 ZX=X+28+1:ZY=Y+22+1
970 FORI=1TO8
980 PUT(ZX,ZY)-(ZX+28,ZY+22),A,N
OT
990 NEXT:IFL/2=INT(X/2)ANDY/2=IN
T(Y/2)ORX/2<>INT(X/2)ANDY/2<>INT
(Y/2)THENC=0ELSEC=5
1000 COLORC:LINE(ZX,ZY)-(ZX+27,Z
Y+21),PSET,BF:VV=P(X,Y):P(X,Y)=0
1010 P(X,Y)=VV:X=XX:Y=YY
1020 ZX=X+28+1:ZY=Y+22+1
1030 IFCH=1THENFORI=1TO2:PUT(ZX,
ZY)-(ZX+27,ZY+21),A,NOT:FORJ=1TO
500:NEXTJ,I:COLOR(PPOINT(ZX,ZY))
:LINE(ZX,ZY)-(ZX+27,ZY+21),PSET,
BF
1040 PP=PPOINT(ZX,ZY)
1050 IPPP=0THENIFP(X,Y)>0THENGOS
UB1170ELSEGOSUB1220
1060 IPPP=5THENIFP(X,Y)>0THENGOS
UB1220ELSEGOSUB1170
1070 FORI=1TO8
1080 PUT(ZX,ZY)-(ZX+27,ZY+21),A,
NOT
1090 NEXT:MM=MM+1:MM=1
1100 GOTO700
1110 CLS
1120 PRINT:A$="NUMBER OF MOVES :
"+STR$(MM)
1130 PRINTTAB(16-LEN(A$)/2)A$
1140 PRINT:PRINT:PRINTTAB(6)"ANOT
HER GAME (Y/N) ?"
1150 A$=INKEY$:IFA$="Y"THENRWEL
SEIFA$<>"N"THEN1150
1160 CLS:END
1170 IFP(X,Y)>0THENC=5HSEC=0
1180 XX=X+28+1:YY=Y+22+1
1190 DRAW"C"+STR$(C)+"BM"+STR$(X
X+10)+","+STR$(YY+2)+":XP$("+STR
$(ABS(P(X,Y)))+":":PUT(XX,YY)-(

```

```

XX+27,YY+21),A,NOT:C=ABS(C-5)
1200 COLORC:LINE(XY,YY)-(XX+27,Y
Y+21),PSET,B:PAINT(XX+1,YY+1),C,
C:PAINT(XX+26,YY+1),C,C:PAINT(XX
+1,YY+16),C,C:PAINT(XX+26,YY+16)
,C,C1210 RETURN
1220 IFP(X,Y)>0THENC=0ELSEC=5
1230 DRAW"C"+STR$(C)+"BM"+STR$(X
X+28+1)+","+STR$(YY+22+3)+":XP$("+
+STR$(ABS(P(X,Y)))+":":
1240 RETURN
1250 COLOR5:LINE(0,178)-(255,191
),PSET,BF
1260 COLOR0:LINE(2,180)-(44,190)
,PSET,BF:LINE(114,180)-(156,190)
,PSET,B
1270 DRAW"BM117,182D5FENUFU5BM1
24,188;XL$(8);BM+4,OR2LU6LR2BM+4
,OR4L2D6BN145,188;XL$(5);BM152,1
83;XC$;"
1280 DRAW"C5BM5,188;XL$(2);BM12,
182D6R4BR3;XL$(1);BM26,188;XL$(3
);BM33,182D3RNE3NF3LD3BM40,183;X
C$;"
1290 RETURN
1300 X=X-7:IFX<Y-30THENX=X+7:RE
TURN
1310 COLOR5:LINE(X+7,182)-(X+11,
188),PSET,BF
1320 X3=LEFT$(X3,LEN(X3)-1):RETU
RN
1330 M=-PL:IFX<>XX THEN1390
1340 IFABS(Y-YY)=2THEN1420
1350 IFABS(Y-YY)<>1THENER=1:RETU
RN
1360 IFP(XY,YY)<>0THENER=1:RETU
RN
1370 IFYY<>Y+M THENER=1:CH=0:RET
URN
1380 RETURN
1390 IFABS(X-XX)<>1ORABS(YY-Y)<>
1THENER=1:RETURN
1400 IFSGN(P(XY,YY))<>M THENER=1
:RETURN
1410 CH=1:GOTO1370
1420 IFPL=1ANDY<>6THENER=1:RETU
RN:ELSEIFPL=-1ANDY<>1THENER=1:RET
URN
1430 IFP(XY,YY)<>0ORP(XY,YY+PL)<
>0THENER=1:RETURN
1440 RETURN
1450 CX=0:CY=0:IFX<>XX ANDY<>YY
THENER=1:RETURN
1460 IFSGN(P(XY,YY))=PL THENER=1
:RETURN
1470 IFYY=Y THEN1510
1480 FORI=Y TOY STEP-SGN(Y-YY)
1490 IFI=Y THENNEXT
1500 IFP(X,I)<>0THENCY=1:GOTO154
OHLSENEXT:RETURN
1510 FORI=X TOX STEP-SGN(X-XX)
1520 IFI=X THENNEXT
1530 IFP(I,Y)<>0THENCX=1:GOTO154
OHLSENEXT:RETURN
1540 IFSGN(P(XY,YY))=-PL THENIFI
=X ANDCY=1 ORI=YY ANDCY=1 THENC
H=1:RETURN
1550 ER=1:RETURN
1560 CX=ABS(XX-X):CY=ABS(YY-Y)
1570 IFCX=2ANDCY=1ORCX=1ANDCY=2T
HEN1580ELSEER=1:RETURN
1580 IFP(XY,YY)<>0THENIFSGN(P(XY

```

```

,YY))=PL THENER=1:RETURNELSECH=1
:RETURN
1590 RETURN
1600 CX=ABS(XX-X):CY=ABS(YY-Y)
1610 IFCX<>CY THENER=1:RETURN
1620 CX=Y
1630 FORI=X TOX STEP-SGN(X-XX)
1640 IFI=X THEN1660
1650 IFP(I,CX)<>0THEN1680
1660 CX=CX-SGN(Y-YY)
1670 NEXTI:RETURN
1680 IFI=XX THENIFSGN(P(XY,YY))=
-PL THENCH=1:RETURN
1690 ER=1:RETURN
1700 CX=ABS(X-XX):CY=ABS(Y-YY)
1710 IFCX=1ANDCY=1ORCX=1ANDCY=00
RCX=0ANDCY=1THEN1720ELSEER=1:RET
URN
1720 IFSGN(P(XY,YY))=PL THENER=1
:RETURN
1730 IFP(XY,YY)<>0THENCH=1
1740 RETURN
1750 IFX=XX ORY=YY THEN1450
1760 GOTO1600
1770 POKB65495,0:COLOR5:LINE(0,1
78)-(255,191);PSET,BF
1780 J=1
1790 FORI=11TO230STEP28
1800 DRAW"COBM"+STR$(I)+","188;XL
$(J);"
1810 J=J+1:NEXT
1820 A$=INKEY$:IFA$="Y"THEN1820EL
SEA=ASC(A$):GOSUB1250:RETURN
65535 'WICK KOSTARELAS 1984

```

40 x 28
SCREEN^{gram}
by Charles Bartlett

JUST A SHORT demonstration program of a 40 column 28 line screen.

The Listing:

```

1 ON BRK GOTO 60
2 GOTO10
3 SAVE"30C:3":END?
4 ***** "40X28"
5 ***** CHARLES BARTLETT
10 WIDTH80:CLS:K=0:FORX=0TO12:LO
CATE0,X:PRINT"LINE";STR$(K);:LOC
ATE40,X:PRINT"LINE";STR$(K+1);:K
=K+2:NEXT:LOCATE0,13:PRINT"LINE
27";:LOCATE40,13:PRINT"LINE 28
Press BREAK to stop";
20 POKB&HFF99,101
30 POKB&HFF98,51
50 GOTO50
60 WIDTH40

```

3 KABOOM



by David Kemp

GRAPHICS

REMEMBER "KABOOM" A few years back? All in black on white? Here is "Kaboom", only for the CoCo 3 - in black on yellow!
Enjoy!

The Listing:

```
0 GOTO10
1 '**** "3KABOOM"
2 '**** DAVID KEMP IN '87
3 SAVE"65:3":END"5
10 PALETTE RGB
20 PALETTE 0,0
40 HSCREEN1
50 HCLS 1
55 HCOLOR 0,3
70 HDRAW"BM124,13;E2R3E3R11E1R3E
1R4E1R2E1R2U1R4U1R6F1R4D1R10E1R4
F2R4F2R2F3R3F2D9G1F1D8F1R2F1D2F1
D5G1D1G1D2L1G4L1G1D4G1L1G1D2G1D3
G3L5H2L1H1U3E1"
80 HDRAW"BM208,30;L3G1L7G1L9G1L6
G1L4G1L13H1L6H1L6H1L7H1L9H1L6U1H
1U2E1U2E2U3H1U3"
90 HDRAW"BM124,16;R7F1R6F1R5F1R3
8E1R3E1R1F1R3E1R5F1R6F1"
100 HDRAW"BM124,21;R2F1R3F1R3F1R
4F1R3F1R2E1R1E1R1E1R4E1R7E1R5F1R2"
110 HPAINT(164,29)
120 HDRAW"BM129,11;R11E1H2":H DRA
V"BM150,6;F2D2F1R10E1U1H1L1H5":H
DRAW"BM168,2;D1F2R2F3D1F2R6E1R4U
1H1L2H1L1H2":H DRAV"BM192,5;D1F3R
4E1U1":H PAINT(168,16)
130 HDRAW"BM208,27;R2E1R3F1G3L1G
2":H DRAV"BM210,33;E1R3E1R8F3G3L4
G1L3H1L1H1":H DRAV"BM208,32;L2G5D
1G1L2G2L1G2L2G1L1G1L1G1L2G1L2G2L
6H1L8H1L4G1L4G1L6H1L3H1L1H2L1H2L
1H2L2H3L2H3U3E2"
140 HDRAW"BM150,35;L2G3H2L1G1E1H
1L1":H DRAV"BM124,43;G1D3F1D2F2R1
E2R1E2U1H2L1H2L3":H DRAV"BM150,52
;R15D3G2L7H1L2H1L1H1U2"
150 HDRAW"BM122,35;G1D4G1D5G1D5F
4R1F1R3E1R1E1R1E6R2F3D2F2D1F4R2F
1R2F1R1F1R3F1R1E1R3E2R2E2R2E2R1E
1R1E8R1B6U1E3U1":H PAINT(145,52)
160 HDRAW"BM205,39;D2G1D2G6L1G1D
4G2L2G1D1F3U1E2L2U1E1R1F1E2U1E4U
1H2":H DRAV"BM165,78;D3G1D1":H DRA
V"BM136,86;R3F1R2F1E1R5"
170 HDRAW"BM130,55;G1D5G2D1G2D1G
1D3G1D3F1D1F3R8E1R1E1R1E1":H DRAV
"BM137,78;D1F1R3F1R4E1R3E1R2E1R1
E2R1E2R1E2D2F1E3U1L3G1H1L1H2":H D
```

```
RAW"BM127,65;R1E1":H DRAV"BM141,6
8;R3E1F1R2D3G1":H DRAV"BM141,73;F
1R1"
180 HDRAW"BM117,52;G2D1G2D2G1D13
F1D2F3D3F1D2F1D2F1D1F1D1F1D1F9R1
F2R6"
190 HDRAW"BM196,67;G1D3G1D1G1D3G
10L1G3L1G2L1G3L1G3L2G3L2G3L1G2L2
G1L3G1L10H1L3H1L2H1L1H2L1H6L1H2L
1H2L1H2L7":H DRAV"BM130,50;H2L1G1
D2":H DRAV"BM162,54;H1L2G2F1R3E1"
:H DRAV"BM129,46;D2":H PAINT(160,5
5);H DRAV"BM128,47;D2"
200 HDRAW"BM121,30;H1L2G2L1G1L1G
1L1G8D6G6D1G2L1G1L1G2D1G2D1G5D1G
4L1G2D1G1D2G1L1G1L1G2L7G1L1G1L1G
6D1G1D2":H DRAV"BM56,99;E2R1E1R1E
1R1E1R2F4G1D1G1D1"
210 HDRAW"BM54,89;RERERERER6FRFR
F5DF2DF4DF2D2DF2D3":H DRAV"BM109
,35;RF4RF2R":H DRAV"BM101,50;RF3R
F2RF4":H DRAV"BM117,51;R":H DRAV"B
M119,42;H":H PAINT(112,46)
220 HDRAW"BM111,67;D3GDGD4":H DRA
V"BM93,57;F2RF2RF2RF3RF2DF2":H DR
AV"BM104,91;UHUH4ULH6UH3LHL2H2":
H PAINT(96,68);H DRAV"BM104,90;GDG
2DG2DGDGD2FRFR10FR2FR2FRFRFR2F
R4FR2"
230 HDRAW"BM136,107;D4G4D2GDG4L3
GFR2FR3E6U2E2R3U5":H CIRCLE(139,
112),2:H PAINT(139,112):H CIRCLE(1
33,120),2:H DRAV"BM139,117;R3FR
FR2FR16":H PAINT(133,120)
240 HDRAW"BM154,106;R18FR3LGL24G
2D6F2R15":H DRAV"BM 152,110;DR2FD
G3DR2E4U3L5":H PAINT(156,111):H DR
AV"BM161,110;L2G2D4FR2E2UHLHER2D
UE2R4D2L2D2R2D2G2L2HUR3U2HRUL":H P
AINT(161,115):H PAINT(165,116)
250 HPAINT(161,111):H PAINT(166,1
10):H PAINT(166,114):H DRAV"BM213,
41;R4FR10F9DFDFD6FD2FD5GDGD2GD3G
2D2GD2GDGD2GD2D2GD2GDGD2GDGDGD3
DG2DGDGD2GD2GD2GD2G6L4R10FR2FR1
0E2R2E4U4E6U6E6U6E16E11E5UH"
260 HDRAW"BM239,86;G3L":H DRAV"BM
237,103;LGL2GLH":H PAINT(236,100)
:H DRAV"BM236,116;L3GL2HL2HL2":H
DRAW"BM235,129;L3GL7HL6":H PAINT(
228,124):H DRAV"BM206,142;UH2UH3U
H3LH3LH2L2LHLHL3L2H2LH4"
270 HDRAW"BM239,55;L3HL2HLHL2L5
GL3G2L2G2L2G2L2G4D2G6L2":H DRAV"BM
239,74;R6LHLHL6LGLGL4HLG3L2G3
L3D4G2DR5ERERER7F3R4FR2F7R2"
280 HDRAW"BM189,81;R5FDG3LGD3L1
2R15ERER9FR10FR3FR2FRFRFD3FD2
":H PAINT(232,56):H DRAV"BM188,92;
FDGD2G2L6R2ERRER2ER3FR2F5R10FRF
```

```
R3FRF5"
290 HDRAW"BM178,107;G3DR9FRAFRFR
FRFR2FR2FR3FRFRFR2FR2FD4F":H PAIN
T(200,108);H DRAV"BM175,110;DG4"
300 HDRAW"BM171,115;GLG5LGLGLGL4
DFR2F8DFDFD2D2DFDFD3FD3R1E2U4H3
UH2U2H3UHUHUH2L3H2LH3LH3":H DRA
V"BM186,153;R6ER3F3ER4E2R1E2ER2FE
R5E2UEU3":H PAINT(196,144)
310 HDRAW"BM75,79;FRFR4RF5RF6RF
2":H DRAV"BM172,153;G2L5GL3GL4GL5
GL2GL2GL3G4LGLGL2GLGL2GL2GL4G
L12HU15L05LGLGLGLGL3G3L5HL5HL2
HL8HL8UH2L2UR16FR12":H DRAV"BM8
1,145;DF2G2L"
320 HDRAW"BM157,157;U3HU2HU2HUHU
H2UH3UHUHUHUH3G2LGLGL3DF6D11F2
DFD5GD4":H DRAV"BM48,159;RF2FR2F
R16":H DRAV"BM59,163;DF2":H DRAV"B
M61,163;DF":H DRAV"BM63,163;DFR"
330 HDRAW"BM75,167;DFD":H DRAV"BM
81,156;G2D3G2":H DRAV"BM43,154;HL
H2U2ER4FR10ER3E3U":H DRAV"BM62,14
6;R13":H DRAV"BM40,148;URFRFG":H D
RAW"BM44,148;U3HU2E3RER2ER2ER2ER
8ER2ER3ER2ER9E5U6HL2HLHUE3RF4RF3
R2F3DF2D11R9D12GD3G2LGL2GL3"
340 HDRAW"BM104,172;E3UE2UEU2E2E
U2E2U3E4E1U2UHHL3GDGD3":H DRAV"B
M89,115;GDFR4":H DRAV"BM45,142;R3
F2D2GL4U5":H DRAV"BM100,120;R2FR3
FR2FR4R2FR2FR3GL9R10FD2F2D2FD2F
DF2D3DF7GD6G3DG3DG":H PAINT(116,1
16)
350 H CIRCLE(61,136),33,4,1,.23 :
HLINE(93,137)-(93,126),PRESET
360 HDRAW"BM53,105;UH3UHHLGLGLGL
GLGLDFDFD":H DRAV"BM44,115;GLGGG
GGGGD2GD6FD5FEU6E3E2U5E6H"
370 H CIRCLE(70,120),9,0,1:H PAINT
(46,124):H PAINT(46,104):H DRAV"BM
44,99;U5E4UE2E2U":
380 HDRAW"BM43,109L4GL2GLGLGLGL3
GL4GLG3DFRFR9E2G2R2":H DRAV"BM29,
127;GL2G3L2GL2D2FR6ER2":H DRAV"BM
29,144;G2LGD2FR4E":H DRAV"BM32,15
1;G2D2RFR2"
390 HLINE(43,85)-(39,91),PSET:HL
INE(41,83)-(34,86),PSET:HLINE(42
,80)-(34,77),PSET:HLINE(43,77)-(
39,71),PSET:HLINE(48,76)-(51,69)
,PSET
400 HLINE(50,77)-(57,72),PSET:HL
INE(52,81)-(61,80),PSET:HLINE(52
,83)-(55,87),PSET:HLINE(50,84)-(
51,87),PSET
410 HSET(41,65):HSET(37,66):HSET
(38,68):HSET(34,70):HSET(31,70):
HSET(32,72):HSET(25,74)
```

continued p.60

MASTERMIND

by Nick Kostarelas

GAME
16K ECB

THERE HAVE BEEN many programs written for "Mastermind". Here is another program, but instead of using coloured pegs, I have used the numbers from 0 - 9.

The rules still remain the same - the game tells you how many are in the right and wrong spots, and also carries a tally of all moves on the right hand side of the screen.

There are three versions that you can play. Simply, to guess a set of 3, 4, or 5 numbers.

You are allowed 15 guesses, and no number appears twice. This is a sufficient number of guesses for a set of 3 numbers, which you should try first.

Once you've mastered this, try a set of 4 or 5 numbers, which are more complex and require a pen and a piece of paper to work out all possible combinations and exceptions.

All I can say is, have fun !!

The Listing:

```
0 GOTO10
3 SAVE"53B:3":END'1
10 '*****
20 '*
30 '*          MASTERMIND          *
40 '*
50 '*          BY NICK KOSTARELAS    *
60 '*          22/11/83              *
70 '*
80 '*****
90 CLS:PMDRO,1:PCLRAR1
100 CLEAR400:DIMA(5),B(5)
110 BL$=CHR$(128):YES=CHR$(159)
120 OS=CHR$(245)
130 POKE65495,0
140 CLS
150 PRINT@43,"mastermind"
160 PRINT@130,"THERE ARE 3 DIFFE
RENT GAMES"
170 PRINT@171,"THEY ARE:"
180 PRINT@229,"(1) 3 NUMBERS TO
GUESS"
190 PRINT"      (2) 4 NUMBERS TO
GUESS"
200 PRINT"      (3) 5 NUMBERS TO
GUESS"
210 PRINT"      (4) END"
220 PRINT@394,"SELECT (1-4)"
230 PRINT@486,"NICK KOSTARELAS 1
983";
240 S$=INKEY$:IFS$=""THENX=RND(-
TIMER):GOTO240
250 P2=0
260 S=VAL(S$)
270 IFS=4THENPOKE65494,0:CLS:END
280 IFS<1ORS>3THENSOUND100,1:GOT
O240
290 CLSO
300 FORI=0TO31
310 SET(45,I,8)
320 NEXT
330 PRINT@23,"R V #";:FORI=1TOS
:PRINT"#";:NEXT
340 N=S+2
350 A(1)=RND(10)-1
360 FORI=2TO N
370 A(I)=RND(10)-1
380 FORJ=1TOI-1
390 IFA(I)=A(J)THENB370
400 NEXTJ,I
410 FORI=1TOS*10
420 SOUNDNRND(255),1
430 NEXT
440 K=0:NG=54
450 BN=0
460 PRINT@290,"OK. I HAVE THOUGH
T";
470 PRINT@325,"OF"#"NUMBERS";
480 PRINT@358,"GUESS THEM";
490 U=0:NG$=""
500 FORI=1TON
510 Z$=INKEY$:IFZ$=""THENB510
520 IFZ$<"O"ORZ$>"9"THENSOUND100
,1:GOTO510
530 IFDU=1THENDU=0:L=7:LN=0:LN=2
2:GOSUB2050
540 B(I)=VAL(Z$)
550 V=B(I)+1
560 ON V GOSUB1340,1430,1480,154
0,1600,1690,1750,1820,1880,1940
570 U=U+9
580 NG$=NG$+Z$
590 NEXT
600 L=3:LN=288:LN=310
610 GOSUB2050
620 P=0:Q=0:GOSUB1190
630 GOSUB2090
640 IFY$="Y"THENGOSUB2050:PRINT@
290,"OK. CHANGE NUMBERS";:GOTO13
10ELSEIFY$<"N"THENSOUND100,1:GO
TO630ELSEGOSUB2050
650 K=K+1
660 FORI=1TON
670 IFA(I)=B(I)THENP=P+1:GOSUB21
40
680 FORJ=1TON
690 IFJ=1 THENB710
700 IFB(J)=A(I)THENQ=Q+1
710 NEXTJ,I
720 IFP=0ANDQ=0THENB2180
730 SET(1,12,1)
740 V=13
750 FORJK=2TO6
760 FORTH=1TO100:NEXTTH
770 SET(JK,V,1)
780 V=V-1
790 NEXTJK
800 PRINT@195,P;
810 V=9
820 GH=1
830 FORH=13TO17
840 IFGH=0ANDH=15THENB870
850 FORTH=1TO100:NEXTTH
860 SET(H,V,4)
870 IFGH=1THENV=V+1ELSEV=V-1
880 NEXTH
890 IFGH=1THENGH=0:V=13:GOTO830
900 PRINT@202,Q;
910 P$=STR$(P):Q$=STR$(Q)
920 PRINT@NG,P$;:PRINT@NG+2,Q$;:
IFK=15ANDN=5THENPRINT@NG+4,"LE
FT$(NG$,4);:PRINT@NG,OS;:POKE153
5,ASC(MID$(NG$,5))+64ELSEPRINT@N
G+4,"":NG$;:PRINT@NG,OS;
930 NG=NG+32
940 IFK=15THENB2260ELSEPRINT@293,
"NEXT GUESSES";
950 DU=1
960 GOTO490
970 PRINT@289,"YOU GUESSED THEM
ALL";
980 PRINT@322,"RIGHT!!! AND IN"K
;
990 PRINT@360,"TRIES!";
1000 PRINT@418,"PRESS <ENTER> WH
EN";
1010 PRINT@456,"READY.";
1020 FORI=1TO17
1030 IFX=1ORX=5THENBSTORE
1040 READT,D:SOUNDT,D
1050 NEXT:NG$=OS+MID$(STR$(N),2)
+"":NG$
1060 Z$=INKEY$
1070 IFY=1THENB1130
1080 PRINT@NG,NG$;
1090 FORN=1TO150:NEXT
1100 PRINT@NG+1,STRING$(7,128);
1110 PRINTBL$;BL$;
1120 FORN=1TO150:NEXT
1130 IFZ$<CHR$(13)THENB1060
1140 Y=0
1150 GOTO140
1160 DATA89,1,133,2,159,1,133,2
1170 DATA89,1,133,2,147,1,159,1
1180 DATA147,1,133,1,125,2,133,1
```

```

,147,2
1190 FORI=1TO7
1200 FORJ=1TO7
1210 IFI=J THEN1230
1220 IFB(J)=B(I)THEN1250
1230 NEXTJ,I
1240 RETURN
1250 PRINT@289,"SOME OF YOUR NUM
BERS";
1260 PRINT@324,"ARE THE SAME.";
1270 PRINT@358,"TRY AGAIN.";
1280 FORB=1TO5
1290 SOUND@5,1:SOUND170,1
1300 NEXT
1310 L=4:LM=0:LN=22:GOSUB2050
1320 IFK=15THEN2260ELSE490
1330 'numbers
1340 '0
1350 FORH=U TOU+7
1360 SET(H,1,I):SET(H,7,I)
1370 NEXT
1380 FORV=1TO7
1390 SET(U,V,I):SET(U+1,V,I)
1400 SET(U+6,V,I):SET(U+7,V,I)
1410 NEXT
1420 RETURN
1430 '1
1440 FORV=1TO7
1450 SET(U+3,V,I):SET(U+4,V,I)
1460 NEXT
1470 RETURN
1480 '2
1490 GOSUB2010
1500 FORV=1TO7
1510 IFV<4THENSET(U+6,V,I):SET(U
+7,V,I)ELSESET(U,V,I):SET(U+1,V
,I)
1520 NEXT
1530 RETURN
1540 '3
1550 GOSUB2010
1560 FORV=1TO7
1570 SET(U+6,V,I):SET(U+7,V,I)
1580 NEXT
1590 RETURN
1600 '4
1610 GOSUB1560
1620 FORV=1TO3
1630 SET(U,V,I):SET(U+1,V,I)
1640 NEXT
1650 FORH=U TOU+7
1660 SET(H,4,I)
1670 NEXT
1680 RETURN
1690 '5
1700 GOSUB2010
1710 FORV=1TO7
1720 IFV>4THENSET(U+7,V,I):SET(U
+6,V,I)ELSESET(U,V,I):SET(U+1,V
,I)
1730 NEXT
1740 RETURN
1750 '6
1760 GOSUB2010
1770 FORV=1TO7
1780 SET(U,V,I):SET(U+1,V,I)
1790 IFV>4THENSET(U+6,V,I):SET(U
+7,V,I)
1800 NEXT
1810 RETURN
1820 '7
1830 FORH=U TOU+7
1840 SET(H,1,I)

```

```

1850 NEXT
1860 GOSUB1560
1870 RETURN
1880 '8
1890 GOSUB1340
1900 FORH=U TOU+7
1910 SET(H,4,I)
1920 NEXT
1930 RETURN
1940 '9
1950 GOSUB2010
1960 FORV=1TO7
1970 SET(U+7,V,I):SET(U+6,V,I)
1980 IFV<4THENSET(U,V,I):SET(U+1
,V,I)
1990 NEXT
2000 RETURN
2010 FORH=U TOU+7
2020 SET(H,1,I):SET(H,4,I):SET(H
,7,I)
2030 NEXT
2040 RETURN
2050 FORY=0TOL-1
2060 PRINT@Y*32+LN,STRING$(LN-LN
,128);
2070 NEXTY
2080 RETURN
2090 PRINT@292,"DO YOU WANT TO";
2100 PRINT@322,"CHANGE ANY NUMBE
RS";
2110 PRINT@360,"(Y/N)?";
2120 Y$=INKEY$:IFY$=""THEN2120
2130 RETURN

```

```

2140 IFP=N THEN2160
2150 RETURN
2160 IFP2=0THEN@70
2170 STOP
2180 PRINT@288,"NO NUMBERS. TRY
AGAIN.";
2190 FORB=100TOSSTEP-5
2200 SOUNDE,1
2210 NEXT
2220 PRINT@NG+1,"0 0:"NG$;
2230 NG=NG+32
2240 IFP2=0THEN1310
2250 IFK<15THEN@80
2260 PRINT@288,STRING$(22,128);:
PRINT@290,"YOU HAVE HAD YOUR";
2270 PRINT@326,"15 GUESSES";
2280 PRINT@356,"THESE WERE THE";
2290 PRINT@387,"REQUIRED NUMBERS
";
2300 L=7:LM=0:LN=22:GOSUB2050
2310 FORN=1TO2500:NEXT
2320 U=0
2330 FORI=1TO7
2340 A(I)=A(I)+1
2350 ON A(I) GOSUB1340,1430,1480
,1540,1600,1690,1750,1820,1880,1
940
2360 U=U+9
2370 NEXT
2380 Y=1
2390 GOTO1000
65535 'NICK KOSTARELAS 1983

```

Extended Colour Basic continued from p.16

```

63 IF I$="BM" THEN X=VAL(MID$(S$,
,3,3)):Y=VAL(MID$(S$,7,9)):GOTO7
0
64 IF ST=1 THEN X=Z1:Y=Z2:ST=0
65 IF C$="M" THEN Z1=X:Z2=Y:ST=1
66 IF C$="S" THEN S=NM
70 S$="":NEXTI:FORI=1TO10:POKE V
(T),0:NEXT:POKE65314,0:GOTO25
100 FORI=1 TO NM*S
105 X=X+H:Y=Y+V
110 GOSUB150
115 NEXTI:RETURN
150 X1=INT(X/8)
155 OF=X1+Y*32:BYTE=10240+OF
160 XMOD8=INT(X-X1*8)
860 BIT=7-XMOD8
870 VLU=BIT(BIT)
880 OLD=PREK(BYTE)
890 MASK=VLU OR OLD
900 POKE BYTE,MASK
905 RETURN

```

Listing Four:

```

0 CLS:CLEAR10,10239
1 GOTO5
2 '***** "CIRCLE"
3 SAVE"18C:3":END'7
5 IF PREK(10240)<>0 THEN PRINT"C
LEANING ON SCREEN":FORI=10240TO1
6383:POKEI,0:NEXTI

```

```

10 N=1:FORI=0TO7:BIT(T)=N:N=N*2:
NEXT
15 FORI=1TO10:READ DT:N(T)=65470
+DT:NEXT
20 DATA2,5,7,8,10,13,14,17,18,20
25 FORI=1TO10:READ DT:V(T)=65470
+DT:NEXT
30 DATA4,4,6,8,11,12,14,16,18,20
35 CLS:FORI=1TO10:POKEV(T),0:NEXT
T:POKE65314,5:INPUT"X:Y":CX,CY
40 INPUT"RADIUS":R:N=R*5:8
45 INPUT"STRETCH":ST:IF ST=1 THE
N OX=1:OY=1 ELSE IF ST<1 THEN OX
=1:OY=1-OY ELSE IF ST>1 THEN OX=
1-ST:OY=1
50 FORI=1TO10:POKE N(T),0:NEXT:P
OKE65314,255
55 A=2*(22/7)
60 C=A/N
65 FORI=0 TO A STEP C
70 X=R*SIN(I):X=INT(X*OX+CX+.499
)
75 Y=R*SIN((22/7)/2-I):Y=INT(Y*O
Y+CY+.499)
80 GOSUB100
85 NEXTI:SOUND200,1:SOUND250,1:S
OUND100,1:GOTO35
100 X1=INT(X/8)
105 OF=X1+Y*32:PKB=10240+OF
110 XMOD8=INT(X-X1*8)
115 BIT=7-XMOD8
120 VLU=BIT(BIT)
125 OLD=PREK(PKB)
130 MK=VLU OR OLD
135 POKE PKB,MK
140 RETURN

```

PRINTER GRAPICS

UTILITY
16K CB + DMP PRINTER

by Mal McLauchlan

PRINTER GRAPHICS

Ever since I purchased my DMP-200 printer I have been experimenting with various ways of getting the maximum use from my investment. For example, I've used it to print out notices and programs for various functions, to be photo-copied and handed out at the door.

To make such handouts look attractive, a few fancy borders work wonders. People tend to say "However did they do this?"

A few of my creations were printed in "Australian CoCo", June '86, but this time I'll give more detail on how to design such patterns. In the process you will learn a whole lot more about the capabilities of your dot matrix printer.

What I have to say applies directly to most of Tandy's DMP series, and in part to all dot matrix machines.

You will probably know that anything we print out is made up of tiny dots (you can see them clearly with a magnifying glass). The DMP-200 is capable of printing up to 7 dots in a vertical line (called a dot column), so that just the dots required can be specified in a program. A numbering system is used, as follows:-

If the printer is required to print just one dot, at the top of the row, the printer is told "PRINT #=2, CHR\$(129)". Confusing? Not really, if we remember that the dot number must be added to 128, so $128+1=129$.

We can't use CHR\$ numbers under 128, because we'd be specifying letters of the alphabet, e.g. CHR\$(65) is A.

So for printer graphics, CHR\$(128) to CHR\$(255) are used. O K?

O = 1
O = 2
O = 4
O = 8
O = 16
O = 32
O = 64

Now, one step further. If we want just the second from the top dot printed? Simple, we specify CHR\$(130) because $130=128+2$.

What if we want both the two top dots printed to make a tiny vertical bar? We add 1 and 2, then add 128 to make CHR\$(131). Now a giant leap - what if we want a full vertical bar of 7 dots? You're right. Add $1+2+4+8+16+32+64$.

This gives 127, which when added to 128 gives the magical number in computer graphics - 255.

Hence PRINT#-2, CHR\$(255) gives a vertical bar 7 dots long. What will CHR\$(128) give us? You've guessed it - as $128=128+0$ then we get nothing except a vertical space (good for putting spaces between patterns).

If you have understood the above, you will have no difficulty in making up patterns on squared paper and programming them into COCO (or your Telewriter64 output). Following is an example of one pattern I made recently:-

~~~~~  
This is what it looked like on squared paper:-

The first dot column is  $128+1+2+4+16+32+64$  i.e. CHR\$(247). If you work out each of the remaining columns you have the program line PRINT#-2, CHR\$(247); CHR\$(148); CHR\$(190); CHR\$(148); CHR\$(247); CHR\$(128);

But before we put it to printer we have a few more things to do. Firstly, the printer must be in the graphics mode and so the program includes CHR\$(18). I've also added the code for elongated print, for

clarity of reproduction in the magazine. Then, do we want just one pattern or a row of them across the page? I've used just enough to nicely fill a 64-character line.

Here is the program I came up with to print out 4 lines of patterns. You can 'invent' some more good patterns, I'm sure.

I also succeeded in alternating patterns (one single pattern from the second row followed by one from the third row) and this combination repeated the required number of times. Here it is:-

The combinations are almost infinite in number!

If the Editor gets enough feedback from printer users to say you want it, I will show you how to design patterns and simple pictures like stick figures, using not one but a number of passes of the print head across the paper.

This makes larger graphics for certain purposes. You may also like CoCo to add the 128 to each dot column count automatically, to save a boring job. Also, all the CHR\$ numbers can be put in to data lines so you don't have to type in CHR\$ over and over again.

When that stage is reached, we will all know a lot more about printer graphics than we do now. I learn something new every time I am on the computer - that's one of the joys of our hobby!

This distinctive type of graphics provides us with another great use for our dot matrix printer ...

~~~~~

The Listing:

```
0 GOTO10
3 SAVE"3:3":END'7
10 '***DMP FANCY BORDERS FOR NOS
T TANDY PRINTERS - CHANGE CODES
FOR SOME OTHER MACHINES*****
20 '*BY MAL MCLAUHLAN, 11 HUNTE
RST. BOONAH, QLD 4310 USING THE
```

continued p.56

GOLF

by Nick Kostarelas

GAME
32K ECB

THE IDEA OF this program came from a text based golf on another computer. I use the lo-res graphics on the Coco to simulate the 9 hole course.

Once you choose which course you want to play (start with the beginners) and the number of players (a maximum of 4), the rules are simple. You have to input a direction, and the number of club you want to use. Here is a list of all possible directions:

- ER = East
- SE = South East
- SS = South
- SV = South West
- VV = West
- NV = North West
- NN = North
- NE = North East

The number of club determines how hard you want to hit the ball. Here is a list of all possible clubs:

- (1) Wood, 170 yards, drive
- (2) Wood, 150 yards, drive
- (3) Wood, 130 yards, drive
- (4) Wood, 95 yards, onto green
- (5) Iron, 65 yards, onto green
- (6) Iron, 45 yards, chip shot
- (7) Iron, 25 yards, shrubs and sandtraps, or long putter
- (8) Iron, 12 yards, shrubs and sandtraps, or medium putter
- (9) Putter only, used on green

Shrubs, lakes, and sandtraps are placed randomly around the course in the normal and expert's courses.

The ball can 'bounce' off the edge of the course and reflect in the opposite direction (used to get around shrubs and sandtraps).

If the ball is unable to get to the green (ie: it cannot pass a lake), then type 'EX' when it asks you for direction, and the game will give a random number of strokes (usually high), and will pass on to the next player. Once you have decided your

direction, it will ask you for a club number.

Choose a club from the list by responding with a number from 1 - 9. Any other key will cancel your move and re-prompt for a direction.

This is used when you input an unwanted direction.

Once you have decided your direction, it will ask you for a club number.

Choose a club from the list by responding with a number from 1 - 9. Any other key will cancel your move and re-prompt for a direction.

This is used when you input an unwanted direction.

Once on the green, it will blow up to full size. You may then putt the ball into the hole.

If the ball goes off the green, the course will be redisplayed, and you have to try to get back on the green.

When the course is redrawn, the shrubs, lakes, and sandtraps will be randomly placed once again. If you are caught in shrub or a sandtrap that is adjacent to the green, you must NOT try to get out of the shrubs or sandtrap directly onto the green. First you must get back on the course, then you may get onto the green.

If you think this is just another game of golf, you are right. But at least the shrubs, lakes, and sandtraps are randomly placed each time you play.

The ball bouncing off the edge of the course should at least amuse you.

The Listing:

```

0 GOTO10
3 SAVE"53C:3":END'1
10 *****
20 *
30 * GOLF *
40 *

```

```

50 '* BY NICK KOSTARELAS *
60 '* 24/12/84 *
70 '* *
80 '*****
90 PMODE0,1:PCLEAR1
100 CLEAR1000:DIMA$(30):CLSO:POK
E65495,0:X=RND(-TIMER)
110 DATA WATER,SAND,SHRUB
120 FORI=1TO7:CO$(I)=CHR$(143+I*
16):NEXT
130 GR$(CHR$(143):BL$(CHR$(128)
140 GOSUB3500
150 L$(STRING$(16,223)
160 B1$(STRING$(26,BL$)
170 CLS
180 OT=0
190 PRINT@46,"golf"
200 PRINT@99,"THERE ARE 3 TYPES
OF GOLF"
210 PRINT@139,"THEY ARE:"
220 PRINT@197,"(1) BEGINNER'S CO
URSE"
230 PRINT@229,"(2) NORMAL COURSE
"
240 PRINT@261,"(3) EXPERT'S COUR
SE"
250 PRINT@330,"SELECT (1-3)"
260 PRINT@486,"NICK KOSTARELAS 1
984";
270 C$=INKEY$:IFC$=""THEN270
280 C=VAL(C$)
290 IFC(1ORC)3THEN270
300 CLS
310 PRINT@199,"HOW MANY PLAYERS?
"
320 PRINT@237,"(1-4)"
330 P$(INKEY$:IFP$=""THEN330
340 P=VAL(P$)
350 IFP(1ORP)4THEN330
360 GOSUB3930:GOSUB4110
370 HO=1:T=1
380 CLSO
390 S=0:PY=0
400 PRINT@235,"player" T;
410 FORI=1TO1000:NEXT
420 CLSO
430 PRINT@7,"hole"HO;:PRINT@16,"
course"C;
440 GOSUB4310
450 ONHO GOSUB1390,1700,1930,221
0,2460,2660,2910,3020,3150
460 IFPY=0THENPR=PR+(C-1):YD=YD+
20:PY=1
470 PRINT@391,"par"PR;BL$yards"
YD;
480 IFJ=1ANDLE>0THENJ=0:GOTO830
490 IFJ=1THEWRESET(Q,V):J=0
500 PRINT@425,"DIRECTION?";

```



```

510 D$=INKEY$: IFD$="" THEN 510
520 IFD$="N" OR D$="S" OR D$="E" OR D$="V" THEN TD$=D$: GOTO 540
530 GOTO 510
540 PRINT@436, TD$;
550 D$=INKEY$: IFD$="" THEN 550
560 IFD$="N" OR D$="S" OR D$="E" OR D$="V" THEN TD$=D$: GOTO 590
570 IFD$="I" AND TD$="E" THEN TD$=TD$+D$: GOTO 590
580 GOTO 550
590 PRINT@436, TD$;
600 IF TD$="EX" THEN GOSUB 3250: IFD$="E" THEN 500 ELSE S=S+10+RND(10): GOTO 1060
610 IF TD$="EV" OR TD$="VE" OR TD$="S" OR TD$="NS" THEN PRINT@436, BL$; BL$; GOTO 510
620 IF TD$="EW" OR TD$="ES" OR TD$="V" OR TD$="WS" THEN PRINT@436, BL$; BL$; GOTO 510
630 PRINT@459, "CLUB?";
640 CL$=INKEY$: IF CL$="" THEN 640
650 CL=VAL(CL$)
660 IF CL=0 THEN TD$="": GOSUB 4350: GOTO 500
670 IF CL<10 OR CL>9 THEN 640
680 PRINT@465, CL;
690 FORY=1 TO 750: NEXT
700 GOSUB 4350
710 S=S+1: IFS>24 THEN 1060
720 IF CL=1 THEN BLE=RND(7)+50
730 IF CL=2 THEN BLE=RND(9)+41
740 IF CL=3 THEN BLE=RND(11)+32
750 IF CL=4 THEN BLE=RND(12)+20
760 IF CL=5 THEN BLE=RND(8)+13
770 IF CL=6 THEN BLE=RND(8)+8
780 IF CL=7 THEN BLE=RND(4)+5
790 IF CL=8 THEN BLE=RND(3)+1
800 IF CL=9 AND GR=0 THEN PRINT@423, "PUTT ONLY ON green"; S=S-1: GOTO 630
810 IF CL=9 THEN BLE=RND(3)+2
820 IF GR=1 THEN RETURN
830 CO=1
840 FOR ST=1 TO LE
850 SET(Q, V, CO)
860 Q1=Q: V1=V
870 IF TD$="NW" THEN Q=Q-1: V=V-1
880 IF TD$="SW" THEN Q=Q-1: V=V+1
890 IF TD$="SE" THEN Q=Q+1: V=V+1
900 IF TD$="NE" THEN Q=Q+1: V=V-1
910 IF TD$="NW" THEN V=V-1
920 IF TD$="SW" THEN V=V+1
930 IF TD$="SE" THEN Q=Q+1
940 IF TD$="NE" THEN Q=Q-1
950 IF GR=1 THEN RETURN
960 IF POINT(Q, V)=0 OR V=10 OR V=22 THEN GOSUB 3360: Q=Q1: V=V1: GOTO 870
970 IF POINT(Q, V)=6 THEN GOSUB 4710
980 IF POINT(Q, V)=3 THEN 3660
990 IF POINT(Q, V)=5 THEN 3680
1000 IF POINT(Q, V)=7 THEN 3910
1010 RESET(Q, V)
1020 FOR Z=1 TO 10: NEXT
1030 NEXT ST
1040 GOTO 500
1050 S=1: CLS0: BL$=CHR$(128)
1060 IFS=1 THEN GOSUB 3290: GOTO 1150
1070 IFS=PR THEN PRINT@462, "par!"; GOTO 1140
1080 IFS=PR-1 THEN PRINT@460, "bird
le!"; GOTO 1140
1090 IFS=PR+1 THEN PRINT@461, "bog
le!"; GOTO 1140
1100 IFS=PR-2 THEN PRINT@460, "ea
le!"; GOTO 1140
1110 IFS=PR-3 THEN PRINT@457, "doub
le" BL$ "ea
le!"; GOTO 1140
1120 IFS=PR+2 THEN PRINT@457, "doub
le" BL$ "bog
le!"; GOTO 1140
1130 PRINT@458, "STROKES:" S;
1140 FORY=1 TO 2500: NEXT
1150 A(T)=A(T)+S
1160 GR=0
1170 T=T+1
1180 IFT<=P THEN 380
1190 T=1
1200 CLS0
1210 PRINT@41, "after" BL$ "hole" HO
";";
1220 V=135
1230 TP=TP+PR
1240 FOR I=1 TO P
1250 PRINT@V, "player" I: "A(I);
1260 DP=TP-A(I): DP=-DP
1270 DP$=STR$(DP)
1280 IF DP=0 THEN DP$="EVEN"
1290 PRINT@V+16, DP$;
1300 IF DP=0 THEN PRINT@V+16, "+";
1310 V=V+32: NEXT
1320 FOR I=1 TO 1500*P: NEXT
1330 HO=HO+1: IF HO<10 THEN 380
1340 PRINT@V+27, "ANOTHER GAME OF
GOLF (Y/N)?"
1350 TP=0
1360 A$=INKEY$: IF A$="Y" THEN 1380
1370 IF A$<>"N" THEN 1360 ELSE POKB65
494, 0: CLS: END
1380 FOR I=1 TO 4: A(I)=0: NEXT: GOTO 1
70
1390 FORH=34 TO 322 STEP 32
1400 PRINT@H, STRING$(28, GR$);
1410 NEXT
1420 H1=23: V1=160
1430 GOSUB 4650
1440 IFJ=1 THEN 1480
1450 Q=10: V=12
1460 RESET(Q, V)
1470 PR=3: YD=126
1480 IFC<2 THEN RETURN
1490 K=RND(3): K1=RND(3)
1500 K2=RND(24)+1: K3=RND(2)
1510 K=K+10-10
1520 FORY=1 TO 3
1530 PRINT@K2+K3*32, A$(RND(10)+K
);
1540 K2=K2+32
1550 NEXT
1560 K1=K1*10-10
1570 K2=RND(12)+5: K3=RND(4)+3
1580 FORY=1 TO 3
1590 PRINT@K2+K3*32, A$(RND(10)+K
1);
1600 K2=K2+32
1610 NEXT
1620 IFC<3 THEN RETURN
1630 GOSUB 5100: K2=RND(4)+21: K3=8
1640 GOSUB 5050
1650 GOSUB 5100: K2=RND(13)+1: K3=R
ND(2)+6
1660 GOSUB 5050
1670 GOSUB 5100: K2=RND(9)+8: K3=R
D(2)+2
1680 GOSUB 5050
1690 RETURN
1700 FORH=33 TO 321 STEP 32
1710 PRINT@H, STRING$(14, GR$);
1720 NEXT
1730 FORH=207 TO 337 STEP 32
1740 PRINT@H, STRING$(16, GR$);
1750 NEXT
1760 IFJ=1 THEN 1790
1770 H1=24: V1=224: Q=14: V=4: YD=12
1: PR=3
1780 RESET(Q, V)
1790 GOSUB 4650
1800 IFC<2 THEN RETURN
1810 GOSUB 5100: K2=RND(10): K3=RND
(2)+2
1820 GOSUB 5050
1830 GOSUB 5100: K2=RND(19): K3=8
1840 GOSUB 5050
1850 IFC<3 THEN RETURN
1860 GOSUB 5100: K2=RND(3)+7: K3=R
ND(4)
1870 GOSUB 5050
1880 GOSUB 5100: K2=RND(10): K3=RND
(2)+4
1890 GOSUB 5050
1900 GOSUB 5100: K2=RND(9)+10: K3=R
ND(2)+5
1910 GOSUB 5050
1920 RETURN
1930 H2=1: V2=32
1940 FOR I=1 TO 3
1950 FORH=H2+V2 TO H2+V2+96 STEP 32
1960 PRINT@H, STRING$(10, GR$);
1970 NEXTH
1980 H2=H2+10: V2=V2+96
1990 NEXTI
2000 PRINT@75, GR$; PRINT@107, GR$
; GR$; PRINT@169, GR$; GR$;
2010 PRINT@202, GR$; PRINT@181, GR
$; PRINT@213, GR$; GR$;
2020 PRINT@274, GR$; GR$; PRINT@30
7, GR$;
2030 FOR I=276 TO 340 STEP 32: PRINT@I
, GR$; NEXT: PRINT@212, STRING$(11,
GR$);
2040 IFJ=1 THEN 2080
2050 Q=6: V=5: H1=26: V1=224
2060 RESET(Q, V)
2070 YD=164: PR=5
2080 GOSUB 4650: IFC<2 THEN RETURN
2090 NT=3: MT=0: OT=0
2100 K1=(RND(MT)+MT)*10-10: K2=R
ND(2)+3: K3=RND(2)
2110 GOSUB 5050
2120 K1=(RND(MT)+MT)*10-10: K2=R
ND(4)+11: K3=RND(2)+3
2130 GOSUB 5050
2140 IFOT=1 THEN RETURN
2150 IFC<3 THEN RETURN
2160 NT=2: MT=1: OT=1
2170 GOSUB 2100
2180 GOSUB 5100: K2=21: K3=RND(2)+6
2190 GOSUB 5050
2200 RETURN
2210 FORH=33 TO 321 STEP 32
2220 PRINT@H, STRING$(30, GR$); N
B
IT
2230 FORH=43 TO 171 STEP 32
2240 PRINT@H, STRING$(10, 128);
2250 NEXT
2260 IFJ=1 THEN 2300

```

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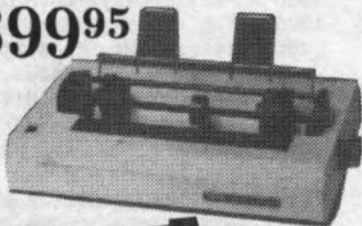
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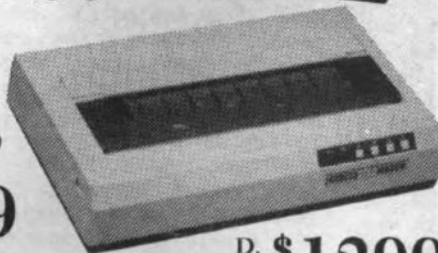
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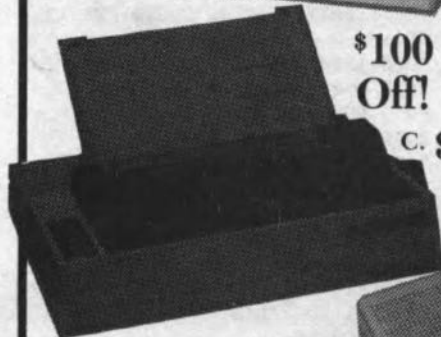
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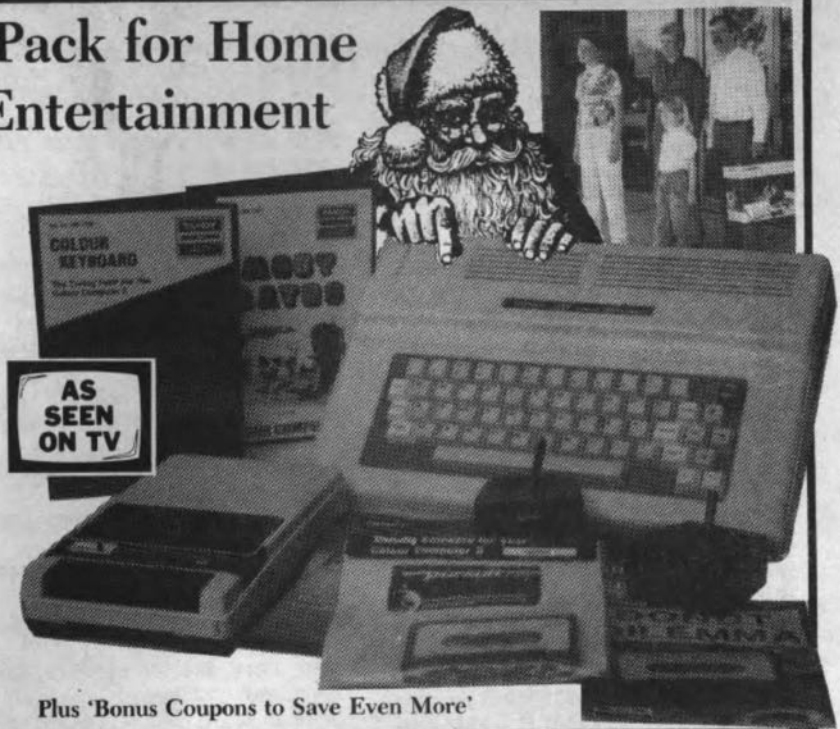
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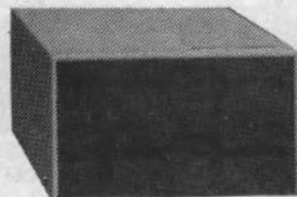
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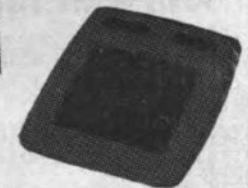


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```

2270 Q=11:V=5:H1=24:V1=64
2280 RESET(Q,V)
2290 YD=140:PR=4
2300 GOSUB4650
2310 IFC<2THENRETURN
2320 OT=0
2330 GOSUB5100:K2=RND(16)+10:K3=
8
2340 GOSUB5050
2350 GOSUB5100:K2=RND(6):K3=RND(
6)+2
2360 GOSUB5050
2370 IFOT=1THENRETURN
2380 IFC<3THENRETURN
2390 OT=1
2400 GOSUB2350
2410 OT=0
2420 GOSUB5100:K2=RND(6)+20:K3=R
ND(2)+4
2430 GOSUB5050
2440 GOSUB5100:K2=RND(12)+7:K3=R
ND(2)+5
2450 GOSUB5050:RETURN
2460 FORH=161TO321STEP32
2470 PRINT@H,STRING$(18,GR$);
2480 NEXT
2490 FORH=44TO204STEP32
2500 PRINT@H,STRING$(19,GR$);
2510 NEXT
2520 IFJ=1THEN2550
2530 Q=7:V=16:H1=25:V1=64
2540 RESET(Q,V):PR=4:YD=153
2550 GOSUB4650
2560 IFC<2THENRETURN
2570 GOSUB5100:K2=RND(10)+4:K3=R
ND(4)+4
2580 GOSUB5050
2590 GOSUB5100:K2=RND(8)+12:K3=R
ND(4)
2600 GOSUB5050
2610 IFOT=1THENRETURN
2620 IFC<3THENRETURN
2630 OT=1:GOSUB2570:OT=0
2640 GOSUB5100:K2=RND(2)+12:K3=R
ND(4)+2
2650 GOSUB5050:RETURN
2660 FORH=33TO193STEP32
2670 PRINT@H,STRING$(22,GR$);
2680 NEXT
2690 FORH=169TO329STEP32
2700 PRINT@H,STRING$(22,GR$);
2710 NEXT
2720 FORH=142TO238STEP32
2730 PRINT@H,STRING$(4,BL$);
2740 NEXT
2750 IFJ=1THEN2780
2760 Q=57:V=18:H1=4:V1=64
2770 RESET(Q,V):PR=4:YD=147
2780 GOSUB4650
2790 IFC<2THENRETURN
2800 GOSUB5100:K2=9:K3=RND(6)+2
2810 GOSUB5050
2820 GOSUB5100:K2=RND(6)+17:K3=R
ND(4)+4
2830 GOSUB5050
2840 IFOT=1THENRETURN
2850 IFC<3THENRETURN
2860 OT=1:GOSUB2820:OT=0
2870 GOSUB5100:K2=RND(11)+7:K3=1
2880 GOSUB5050
2890 GOSUB5100:K2=18:K3=RND(2)+2
2900 GOSUB5050:RETURN
2910 FORH=33TO97STEP32:PRINT@H,S
TRING$(11,GR$);:NEXT
2920 FORH=129TO161STEP32:PRINT@H
,STRING$(7,GR$);:NEXT
2930 FORH=193TO321STEP32:PRINT@H
,STRING$(30,GR$);:NEXT
2940 IFJ=1THEN2960
2950 Q=19:V=4:H1=25:V1=224:RESET
(Q,V):YD=156:PR=4
2960 GOSUB4650:IFC<2THENRETURN
2970 GOSUB5100:K2=RND(2):K3=RND(
5):GOSUB5050
2980 GOSUB5100:K2=RND(20):K3=RND
(3)+5:GOSUB5050
2990 IFOT=1ORC<3THENRETURN
3000 OT=1:GOSUB2980:GOSUB2980:OT
=0
3010 GOSUB5100:K2=3:K3=RND(2)+2:
GOSUB5050:RETURN
3020 FORH=193TO321STEP32:PRINT@H
,STRING$(9,GR$);:NEXT
3030 FORH=42TO330STEP32:PRINT@H,
STRING$(21,GR$);:NEXT
3040 FORV=128TO224STEP32:PRINT@V
+16,BL$;BL$;:NEXT
3050 PRINT@242,STRING$(5,BL$);
3060 IFJ=1THEN3080
3070 Q=6:V=17:H1=22:V1=64:RESET(
Q,V):YD=174:PR=4
3080 GOSUB4650:IFC<2THENRETURN
3090 GOSUB5100:K2=RND(7)+12:K3=8
:GOSUB5050
3100 GOSUB5100:K2=RND(8)+3:K3=RND
(3)+5:GOSUB5050
3110 IFOT=1ORC<3THENRETURN
3120 OT=1:GOSUB3100:OT=0
3130 GOSUB5100:K2=RND(4)+22:K3=R
ND(4)+4:GOSUB5050
3140 GOSUB5100:K2=RND(2)+9:K3=RND
(4):GOSUB5050:RETURN
3150 FORH=33TO321STEP32:PRINT@H,
STRING$(30,GR$);:NEXT
3160 PRINT@203,STRING$(20,BL$);
3170 IFJ=1THEN3190
3180 Q=55:V=18:H1=25:V1=64:RESET
(Q,V):PR=4:YD=222
3190 GOSUB4650:IFC<2THENRETURN
3200 GOSUB5100:K2=RND(13)+5:K3=R
ND(3):GOSUB5050
3210 GOSUB5100:K2=RND(15)+4:K3=R
ND(2)+6:GOSUB5050
3220 IFOT=1ORC<3THENRETURN
3230 OT=1:GOSUB3200:OT=0
3240 GOSUB5100:K2=RND(10):K3=RND
(8):GOSUB5050:RETURN
3250 PRINT@459,"exit?";
3260 D$=INKEY$:IFD$=""THEN3260
3270 IFD$<"Y"ANDD$<"N"THEN3260
3280 GOSUB4350:RETURN
3290 B$="YOU HAVE GOT A"
3300 Z$="hole IN one!!!"
3310 FORI=1TO11
3320 IFI/2=INT(I/2)THENGOSUB4350
ELSEPRINT@425,B$;:PRINT@457,Z$;
3330 FORZ=1TO300
3340 NEXTZ,I
3350 RETURN
3360 IFTD$="NW"THENIFPOINT(Q,V+1
)=1THEHTD$="SW":RETURNELSETD$="N
E":RETURN
3370 IFTD$="SW"THENIFPOINT(Q,V-1
)=1THEHTD$="NW":RETURNELSETD$="S
E":RETURN
3380 IFTD$="SE"THENIFPOINT(Q,V-1
)=1THEHTD$="NE":RETURNELSETD$="S
W":RETURN
3390 IFTD$="NE"THENIFPOINT(Q,V+1
)=1THEHTD$="SE":RETURNELSETD$="N
W":RETURN
3400 IFTD$="NW"THEHTD$="SS":RETU
RN
3410 IFTD$="SS"THEHTD$="NW":RETU
RN
3420 IFTD$="WV"THEHTD$="EE":RETU
RN
3430 TD$="VV":RETURN
3440 PRINT@457,"penalty: 1 STRO
KE";
3450 FORY=1TO3000:NEXT
3460 S=S+1
3470 GOSUB4350
3480 RESET(Q1,V1)
3490 Q=Q1:V=V1:GOTO500
3500 Z=1
3510 FORY=2TO6STEP2
3520 A$(Z)=COS(Y)+COS(Y)+COS(Y)+
COS(Y)+COS(Y):Z=Z+1
3530 A$(Z)=GR$+COS(Y)+COS(Y)+COS
(Y)+COS(Y):Z=Z+1
3540 A$(Z)=COS(Y)+COS(Y)+COS(Y)+
COS(Y):Z=Z+1
3550 A$(Z)=COS(Y)+COS(Y)+COS(Y)
3560 Z=Z+1
3570 A$(Z)=GR$+GR$+COS(Y)+COS(Y)
+COS(Y)
3580 Z=Z+1
3590 A$(Z)=GR$+COS(Y)+COS(Y)+COS
(Y):Z=Z+1
3600 A$(Z)=COS(Y)+COS(Y):Z=Z+1
3610 A$(Z)=GR$+COS(Y)+COS(Y):Z=Z
+1
3620 A$(Z)=GR$+GR$+COS(Y)+COS(Y)
:Z=Z+1
3630 A$(Z)=GR$+GR$+GR$+COS(Y)+CO
$(Y):Z=Z+1
3640 NEXT
3650 RETURN
3660 PRINT@428,"!!!SPLASH!!!";
3670 GOTO3440
3680 CO=5:LE=LE-ST:GR=1
3690 SH=0
3700 RESET(Q,V):FORY=1TO25:NEXT
3710 IFLE=0THEN3790ELSELE=RND(3)
+1
3720 FORST=1TOLE
3730 SET(Q,V,CO)
3740 GOSUB870
3750 IFPOINT(Q,V)=1THENGR=0:J=1:
CO=1:LE=LE-ST:RESET(Q,V):GOTO480
3760 RESET(Q,V)
3770 FORY=1TOST*50:NEXT
3780 NEXTST
3790 GOSUB500
3800 IFSH=1THEN3700
3810 FORI=1TO6
3820 IFI=CL THEN3860
3830 NEXT
3840 IFCL=9THEN3860
3850 LE=LE/2:IFRND(3)>1THEN3700
3860 PRINT@428,"!!!WHOOSH!!!";
3870 PRINT@461,"TRY AGAIN";
3880 FORI=1TO1610
3890 NEXT
3900 GOSUB4350:GOTO3790

```

```

3910 CO=7:SH=1:GR=1:GOTO3700
3920 REM CLUBS
3930 CLS
3940 PRINT@13,"clubs"
3950 PRINT:PRINT"no. club maxim
um use"
3960 PRINT"#1: WOOD 170 YARDS, D
RIVE"
3970 PRINT"#2: WOOD 150 YARDS, D
RIVE"
3980 PRINT"#3: WOOD 130 YARDS, D
RIVE"
3990 PRINT"#4: WOOD 95 YARDS, O
WTO GREEN"
4000 PRINT"#5: IRON 65 YARDS, O
WTO GREEN"
4010 PRINT"#6: IRON 45 YARDS, C
HIP SHOT"
4020 PRINT"#7: IRON 25 YARDS, S
HRUBS AND"
4030 PRINT SANDTRAPS or LONG
PUTTER"
4040 PRINT"#8: IRON 12 YARDS, S
HRUBS AND"
4050 PRINT SANDTRAPS or MEDI
UN PUTTER"
4060 PRINT"#9: PUTTER, ONLY USED
ON GREEN"
4070 PRINT@483,"PRESS SPACE BAR
WHEN READY";
4080 IFINKEYS<>" THEN4080
4090 RETURN
4100 REM LEGEND
4110 CLSO:RESTORE
4120 PRINT@13,"legend";
4130 H1=2:V1=64:GOSUB4650
4140 PRINT@103,"GREEN";
4150 PRINT@132,"";
4160 PRINT@162,"HOLE";
4170 CO=2:V1=32:V2=96
4180 FORV=1TO3
4190 FORH=V1+18TOV2+18STEP32
4200 PRINT@H,STRING$(12,CO$(CO))
;
4210 NEXT
4220 READ$(Y)
4230 PRINT@V2+54,L$(Y);
4240 V1=V1+160:V2=V2+160
4250 CO=CO+2
4260 NEXT
4270 PRINT@289,"PRESS SPACE BAR"
;
4280 PRINT@323,"WHEN READY";
4290 IFINKEYS<>" THEN4290
4300 RETURN
4310 PRINT@384,"NWNE";
4320 PRINT@417,"W E";
4330 PRINT@448,"SWSE";
4340 RETURN
4350 '
4360 FORZ=416TO448STEP32
4370 PRINT@Z+5,B1$;:NEXT
4380 RETURN
4390 IFCL<4THENIFRND(5)=5ORST>=S
1 THENZ=4:GOTO4420
4400 IFCL>3ANDCL<7THENIFRND(3)=3
ORST>=S1 THENZ=4:GOTO4420
4410 IFCL>6THENZ=4ELSEZ=2
4420 FORV=1TOZ
4430 IFQ+V=143THENPRINT@143,BL$;
:Q=Q+1:TD$="EE":GOTO4470
4440 IFQ+V=144THENPRINT@144,BL$;

```

```

:V=V+32:TD$="SS":GOTO4470
4450 IFQ+V=176THENPRINT@176,BL$;
:Q=Q-1:TD$="VV":GOTO4470
4460 PRINT@175,BL$;:TD$="EE":V=V
-32
4470 PRINT@Q+V,CO$(4);
4480 ST=ST+1
4490 FORX=1TOY*(Z-1)*25:NEXTX
4500 NEXTY
4510 IFZ=4THEN1060
4520 S1=S1-ST:J=1
4530 GOTO4680
4540 FORV=-1TO6
4550 IFV=Y*64THENV=V1/16+Y:GOTO4
570
4560 NEXT:V=V-32:GOTO4540
4570 FORV=-1TO8
4580 IFQ=Y*2+9THENQ=H1*2+Y:GOTO4
620
4590 NEXT
4600 IFQ=24THENQ=Q+1ELSEQ=Q-1
4610 GOTO4570
4620 LE=S1-ST:J=1
4630 GR=0
4640 GOTO420
4650 REM GREEN
4660 FORH=H1+V1 TOH1+V1+64STEP32
4670 PRINT@H,STRING$(4,CO$(5));
4680 NEXT
4690 RESET(H1*2+4,V1/16+2)
4700 RETURN
4710 REM LARGE GREEN
4720 CLSO:GR=1
4730 GOSUB4310
4740 PRINT@96,"hole"HO;
4750 PRINT@161,"green";:PRINT@39
1,"par"PR;BL$yards"YD;
4760 FORV=8TO36STEP32
4770 PRINT@V,L$;:NEXT
4780 PRINT@143,BL$;BL$;:PRINT@17
5,BL$;BL$;
4790 FORV=0TO5

```

```

4800 IFV1/16+Y=V THENV=Y*64:GOTO
4820
4810 NEXT
4820 FORV=0TO7
4830 IFH1*2+Y=Q THENQ=Y*2+8:GOTO
4850
4840 NEXT
4850 PRINT@V+Q,CO$(4);
4860 S1=LE-ST
4870 IFS1=0THEN5030
4880 FORST=1TO51
4890 IFJ=1THENJ=0:PRINT@Q+V,BL$;
:GOTO4910
4900 PRINT@Q+V,CO$(5);
4910 IFTD$="NV"THENQ=Q-1:V=V-32
4920 IFTD$="NE"THENQ=Q+1:V=V-32
4930 IFTD$="SE"THENQ=Q+1:V=V+32
4940 IFTD$="SW"THENQ=Q-1:V=V+32
4950 IFTD$="NW"THENV=V-32
4960 IFTD$="SS"THENV=V+32
4970 IFTD$="VV"THENQ=Q-1
4980 IFTD$="EE"THENQ=Q+1
4990 IFW=384ORV<0ORQ=7ORQ=24THEN
4540
5000 PRINT@V+Q,CO$(4);
5010 IFQ+V=143ORQ+V=144ORQ+V=175
ORQ+V=176THEN4390
5020 NEXT
5030 GOSUB500:S1=LE
5040 GOTO4680
5050 FORV=1TO3
5060 PRINT@K2+K3*32,AS(RND(10)+K
1);
5070 K2=K2+32
5080 NEXT
5090 RETURN
5100 K1=RND(3)*10-10
5110 RETURN
65535 'NICK KOSTARELAS 1984

```

Connect Four continued from p.15

```

FORV=1TO4:RC=0:BC=0:FORX=1TO8:A=
HPOINT(BP(X+Q,0),BP(X+Q,1)):IFA=
2THENRC=RC+1:BC=0:IFRC=4THEN790
590 GOSUB200
600 IFA=3THENBC=BC+1:RC=0:IFBC=4
THEN800
610 IFA=0THENRC=0:BC=0
620 NEXTX:Q=Q+8:NEXTY:RC=0:BC=0
630 T=2:Q=0:FORX=1TO8:RC=0:BC=0:
FORV=1TO4:A=HPOINT(BP(X+Q,0),BP(
X+Q,1)):IFA=2THENRC=RC+1:BC=0:IF
RC=4THEN790
640 GOSUB200
650 IFA=3THENBC=BC+1:RC=0:IFBC=4
THEN800
660 IFA=0THENRC=0:BC=0
670 Q=Q+8:NEXTY:Q=0:NEXTX:RC=0:B
C=0
680 T=3:Q=0:FORX=4TO8:RC=0:BC=0:
FORV=1TO4:A=HPOINT(BP(X+Q,0),BP(
X+Q,1)):IFA=2THENRC=RC+1:BC=0:IF
RC=4THEN790
690 GOSUB200
700 IFA=3THENBC=BC+1:RC=0:IFBC=4
THEN800
710 IFA=0THENRC=0:BC=0

```

```

720 Q=Q+7:NEXTY:Q=0:NEXTX:RC=0:B
C=0
730 T=4:Q=0:FORX=1TO8:RC=0:BC=0:
FORV=1TO4:A=HPOINT(BP(X+Q,0),BP(
X+Q,1)):IFA=2THENRC=RC+1:BC=0:IF
RC=4THEN790
740 GOSUB200
750 IFA=3THENBC=BC+1:RC=0:IFBC=4
THEN800
760 IFA=0THENRC=0:BC=0
770 Q=Q+9:NEXTY:Q=0:NEXTX:RC=0:B
C=0
780 RETURN
790 HCOLOR2:HPRINT(0,0),"BLUE WI
NS":GOTO820
800 HCOLOR3:HPRINT(0,0),"RED WIN
S":GOTO820
810 PALETTEGB:HSCREEN2:HCOLOR2
820 HPRINT(0,1),"PLAY AGAIN (Y/N
)"
830 IS=INKEYS:IFIS="" THEN830ELSE
IFIS="Y" THEN RUN ELSE IF IS="N" T
HEN POKB5496,0:PALETTEGB:HSCRE
EN0:CLS:PRINT"BYE":END ELSE830

```

'RIGHT' SAID FRED

by MAL McLauchlan

MUSIC
16K ECB + "MUSIC+" (OPTIONAL)

YOU'VE PROBABLY HEARD that amusing Cockney song of Fred and Charlie and their furniture removal efforts - "another cuppa tea" seemed to be the solution to each of their many problems.

This time it's set in the MUSIC+ format to get multi-part harmony.

Even if you don't have MUSIC+, you can (C)LOADR "FRED" from CoCoOr on tape, then EXEC and listen.

The Listing:

COL:	LEN	V1	V2	V3	V4
1:	4	A4	C4#	A2	0
2:	4	B4	0	0	0
3:	4	F4#	C4	D3	0
4:	4	0	0	0	0
5:	8	A4	C4#	A2	0
6:	16	G4#	C4#	A2	0
7:	8	A4	0	0	0
8:	16	B4	0	0	0
9:	4	F4#	C4	0	0
10:	8	A4	0	0	0
11:	8	0	0	0	0
12:	4	A4	C4#	A2	0
13:	4	B4	0	0	0
14:	4	F4#	C4	D3	0
15:	4	C4	0	0	0
16:	8	C4#	B3	A2	0
17:	16	B4	B3	A2	0
18:	8	C4#	0	0	0
19:	16	A3	0	0	0
20:	2	B3	D3	G2	0
21:	4	0	0	0	0
22:	4	C4#	B3	A2	0
23:	4	B4	0	0	0
24:	4	B3	F3#	D3	0
25:	4	A3	0	0	0
26:	8	C4#	B3	A2	0
27:	16	C4#	B3	A2	0
28:	8	B4	0	0	0
29:	16	B4	0	0	0
30:	4	B3	F3#	D3	0
31:	4	A3	F3#	D3	0
32:	4	C4#	B3	A2	0
33:	4	B4	0	0	0
34:	4	F4#	C4	D3	0
35:	4	A4	0	0	0
36:	4	C5#	B4	0	0
37:	4	C5#	B4	0	0
38:	4	C5#	G4	0	0
39:	4	B4	G4	0	0

40:	4	A4	F4#	0	0
41:	4	0	0	0	0
42:	4	B4	F4#	D4#	A3
43:	4	0	0	0	0
44:	8	B4	G3#	B3	0
45:	16	F4#	G3#	B3	0
46:	8	B4	G3#	B3	0
47:	16	D4	G3#	B3	0
48:	4	C4#	0	0	0
49:	4	B3	0	0	0
50:	4	A4	C4#	A2	0
51:	4	B4	0	0	0
52:	4	F4#	C4	D3	0
53:	4	0	0	0	0
54:	8	A4	C4#	A2	0
55:	16	G4#	C4#	A2	0
56:	8	A4	0	0	0
57:	16	B4	0	0	0
58:	4	F4#	C4	0	0
59:	8	A4	0	0	0
60:	8	0	0	0	0
61:	4	A4	C4#	A2	0
62:	4	B4	0	0	0
63:	4	F4#	C4	D3	0

COL:	LEN	V1	V2	V3	V4
64:	4	C4	0	0	0
65:	8	C4#	B3	A2	0
66:	16	B4	B3	A2	0
67:	8	C4#	0	0	0
68:	16	A3	0	0	0
69:	2	B3	D3	G2	0
70:	4	0	0	0	0
71:	4	C4#	B3	A2	0
72:	4	B4	0	0	0
73:	4	B3	F3#	D3	0
74:	4	A3	0	0	0
75:	8	C4#	B3	A2	0
76:	16	C4#	B3	A2	0
77:	8	B4	0	0	0
78:	16	B4	0	0	0
79:	4	B3	F3#	D3	0
80:	4	A3	F3#	D3	0
81:	4	C4#	B3	A2	0
82:	4	B4	0	0	0
83:	4	F4#	C4	D3	0
84:	4	A4	0	0	0
85:	4	C5#	B4	0	0
86:	4	C5#	B4	0	0
87:	4	C5#	G4	0	0
88:	4	B4	G4	0	0
89:	4	A4	F4#	0	0
90:	4	0	0	0	0
91:	4	B4	F4#	D4#	A3
92:	4	0	0	0	0
93:	8	B4	G3#	B3	0
94:	16	F4#	G3#	B3	0

95:	8	B4	G3#	B3	0
96:	16	D4	G3#	B3	0
97:	4	C4#	0	0	0
98:	4	B3	0	0	0
99:	8	A4	C4#	A2	0
100:	16	A4	C4#	A2	0
101:	8	A4	C4#	A2	0
102:	16	A4	C4#	A2	0
103:	4	G4	C4#	B3	0
104:	8	G4	C4#	A2	0
105:	16	G4	C4#	A2	0
106:	4	F4#	D4	D3	0
107:	4	F4#	D4	D3	0
108:	4	D4	F3#	0	0
109:	8	D4	F3#	0	0
110:	4	A4	C4#	A2	0
111:	4	A4	C4#	A2	0
112:	4	G4	C4#	B3	0
113:	8	G4	C4#	A2	0
114:	4	F4#	D3	0	0
115:	4	D4	D3	0	0
116:	4	D4	F3#	0	0
117:	8	A4	F3#	0	0
118:	16	A4#	F3#	0	0
119:	4	B4	F4#	D4#	B2
120:	4	B4	F4#	D4#	B2
121:	4	A4	F4#	D4#	F3
122:	8	A4	F4#	D4#	B2
123:	4	G4#	B3	0	0
124:	4	B4	B3	0	0
125:	4	B4	G3	0	0
126:	8	B4	G3#	0	0

COL:	LEN	V1	V2	V3	V4
127:	16	B4	G3#	0	0
128:	4	B4	B4	C4#	A3
129:	4	B4	B4	C4#	A3
130:	4	B4	F4#	D4#	A3
131:	8	B4	F4#	D4#	A3
132:	16	B4	F4#	D4#	A3
133:	8	B4	D4	A3	B2
134:	16	B4	D4	A3	B2
135:	8	B4	D4	A3	B2
136:	16	B4	D4	A3	B2
137:	4	B4	D4	G3#	B3
138:	4	B4	D4	G3#	B3
139:	4	A4	C4#	A2	0
140:	4	B4	0	0	0
141:	4	F4#	C4	D3	0
142:	4	0	0	0	0
143:	8	A4	C4#	A2	0
144:	16	G4#	C4#	A2	0
145:	8	A4	0	0	0
146:	16	B4	0	0	0
147:	4	F4#	C4	0	0

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LASER MIRROR MAZE

by Nick Kostarelos

GAME
16K ECB

THE INSTRUCTIONS to this game are in the program, but may be confusing the first time you read them and play the game. After you've played the game once or twice, you will understand how it works.

There is a high scoring routine which is cleared every time you run the program. The scores can be stored permanently on disk if you insert the following lines:

```
1675 OPEN "I", #1, "LASERHI": FOR I=1 TO 10: INPUT #1, HS(I), NS(I): NEXT I: CLOSE
```

```
1835 OPEN "O", #1, "LASERHI": FOR I=1 TO 10: WRITE #1, HS(I), NS(I): NEXT I: CLOSE
```

If you are running "LASER MIRROR MAZE" for the first time, save it first, then run the following little program to initialize the high scoring file:

```
10 OPEN "O", #1, "LASERHI": FOR I=1 TO 10: WRITE #1, ".....", 0: NEXT I: CLOSE
```

The Listing:

```
0 GOTO 10
3 SAVE "53B:3": END '1
10 '*****
20 '* *
30 '* * LASER MIRROR MAZE. *
40 '* *
50 '* * BY NICK KOSTARELOS *
60 '* * 23/11/83 *
70 '* *
80 '*****
90 CLS: PNODE0, 1: PCLEAR4
100 CLEAR 1200: PNODE4, 1: X=RND(-TI
NER)
110 DIM NS(9), X(40), HS(10), HS(10)
120 POKE 65495, 0
130 NS(1)="BM+1, -5; ED6LR2"
140 NS(2)="BM+0, -5; ER2FDG4R4"
150 NS(3)="BM+0, -5; ER2FDGLRFDGL2
H"
160 NS(4)="BM+0, -6; D3R4U3D6"
170 NS(5)="BM+4, -6; L4D2R3FD2GL2H
"
180 NS(6)="BM+0, -5; D3ER2FDGL2HU4
```

```
ER2F"
190 NS(7)="BM+0, -6R4D6"
200 NS(8)="BM+1, 0; HU4ER2FD4GL2"
210 NS(9)="BM+4, -6; A2IN(6); A0"
220 NS(0)="BM+1, 0; HU4ER2FD4GL2"
230 FROMS="BN68, 188; U3NR2U3R4BR2
ND6R4D3NL4BD3NE3BR2U6R4D6NL4BR2U
6R2ND6R2D6BN+6, 0"
240 CLS
250 PRINT TAB(7)"LASER MIRROR MAZ
E."
260 PRINT TAB(7)STRING$(18, 131)
270 PRINT: PRINT " DO YOU WANT
INSTRUCTIONS": PRINT TAB(12)"(Y/N)
?"
280 AS=INKEY$: IFA$="" THEN 290
290 IFA$="N" THEN 520
300 IFA$(">") THEN SOUND 100, 1: GOTO
280
310 CLS: PRINT TAB(10)"instructions"
320 PRINT: PRINT " THE OBJECT OF
THE GAME IS TO SEE IF YOU CAN G
UIDE LASERS FROM THEIR RESPECTIVE
NUMBERS TO THEIR DESTINATIO
N."
330 PRINT " FOR EXAMPLE, IF THE
COMPUTER ASKS : "
340 PRINT " FROM 12 TO ?"
350 PRINT " YOU ARE TO TRACE A SUP
POSEDLY LASER IN YOUR MIND THRO
UGH THE MAZE. ONCE YOU HAVE TH
E NUMBER, TYPE IT IN AND HIT <N
TER>. YOU"
360 PRINT " MUST HIT <ENTER> AFTER
EACH NO."
370 PRINT 484, "PRESS enter TO CO
NTINUE";
380 IF INKEY$(">") THEN 390
390 CLS
400 PRINT " THE COMPUTER WILL R
UN A LASER FROM THE NUMBER, REFLE
CTING OFF EACH MIRROR AT A 90 DE
GREE ANG."
410 PRINT " IF THE MIRROR IS FACIN
G / THEN THE LASER WILL GO UP O
R LEFT RESPECTIVELY. IF THE M
IRROR IS FACING \ THEN THE LASE
R WILL GO DOWN OR RIGHT RESPECTI
VELY."
420 PRINT " POINTS ARE AWARDED
FOR EACH NUMBER GUESSED CORRECT
. POINTS ARE CALCULATED BY ACCU
RACY, PRESENT AND DESTINATIO
N NUMBERS, AND THE TIME YOU MADE
TO GUESS THE DESTINATION NUMBE
R."
430 PRINT 484, "PRESS enter TO CO
```

```
NTINUE";
440 IF INKEY$(">") THEN 440
450 CLS
460 PRINT " IF YOU GUESS THE RE
QUIRED NUMBER WRONG, THEN NO
POINTS ARE AWARDED."
470 PRINT " BONUS OCCURS WHEN T
HE LASER IS REFLECTED OFF 15 MI
RRORS OR MORE."
480 PRINT " IF YOU EXCEED MORE
THAN 4000 POINTS EACH PATTERN, T
HEN YOU HAVE EXTENDED PLAY."
490 PRINT: PRINT " GOOD LUCK !
!"
500 PRINT 484, "PRESS enter TO CO
NTINUE";
510 IF INKEY$(">") THEN 510
520 SC=0: V=0: DD=0
530 PN=1
540 PCLS: SCREEN 1, 1
550 LINE (19, 15)-(236, 165), PSET, B
560 LINE (20, 16)-(235, 164), PSET, B
570 LINE (21, 17)-(234, 163), PSET, B
580 J=1: FOR I=28 TO 206 STEP 22
590 D$="BM"+STR$(I)+" , 10": DRAW D$
600 DRAW NS(J): J=J+1: NEXT I
610 DRAW "BM222, 10; XNS(1); BM+2, 0;
XNS(0);"
620 J=1: FOR I=30 TO 142 STEP 14
630 D$="BMO", "+STR$(I): DRAW XDS; X
NS(1); BM+2, 0; XNS(J);"
640 J=J+1: NEXT I
650 DRAW "BMO, 158; XNS(2); BM+2, 0; X
NS(0);"
660 J=1: FOR I=30 TO 142 STEP 14
670 D$="BM244, "+STR$(I): DRAW XDS
; XNS(2); BM+2, 0; XNS(J);"
680 J=J+1: NEXT I
690 DRAW "BM244, 158; XNS(3); BM+6, +
1; XNS(0);"
700 J=1: FOR I=22 TO 198 STEP 22
710 D$="BM"+STR$(I)+" , 176": DRAW
XDS; XNS(3); BM+6, +1; XNS(J);"
720 J=J+1: NEXT I
730 DRAW "BM222, 176; XNS(4); BM+2, 0
; XNS(0);"
740 FOR I=1 TO RND(20)+40
750 X=(RND(10)-1)*22+21: Y=(RND(10)-1)*14+21
760 IPOINT(X+1, Y+1)=50: RPOINT(X+11, Y)=5 THEN 750
770 IFRND(2)=2 THEN X=X+11: P=-11 EL
SEP=11
780 LINE (X, Y)-(X+P, Y+11), PSET
790 NEXT I
800 V=40: FOR I=1 TO V: XCI=I: NEXT I
810 RD=RND(V): P=X(RD): DRAW FROMS:
I=P
820 IFC(10) THEN DRAW "BM+6, 0": GOTO 8
```

```

50
830 H=INT(P/10):I=P-H*10
840 DRAW"X$(H);BM122,188"
850 DRAW"X$(I);BM134,182"
860 DRAW"R2NDGR2BR2D6R4U6NL4BR4R
4D2L2D2BD2RBR7"
870 G$="":TIMER=0:K=156
880 A$=INKEY$:IFAS="" THEN880
890 IFAS<>CHR$(8) THEN930ELSEM=N-
8:IFM<156 THENM=156
900 LINE(N,182)-(M+8,188),PRESET
,BF:IFG$<>" " THENG$=LEFT$(G$,LEN(
G$)-1)
910 DRAW"BM"+STR$(M)+"",188"
920 GOTO880
930 IFAS=CHR$(13) THEN980
940 IFAS<"O" ORAS>"9" THENSOUND100
,1:GOTO880
950 G$=G$+A$:DRAW$(VAL(A$))
960 M=M+8:D$="BM"+STR$(M)+"",188"
970 DRAW$:GOTO880
980 T=TIMER:G=VAL(G$):CO=0
990 LINE(0,180)-(255,190),PRESET
,BF
1000 IFG<10RG>40 THENDD=DD+1:FORI
=10TO1STEP-1: SOUNDI*10,1:NEXT:GO
TO810
1010 IFP<11 THENX=(P-1)*22+27:Y=1
7:XX=0:YY=1:GOTO1050
1020 IFP<21 THENX=21:Y=(P-11)*14+
26:XX=1:YY=0:GOTO1050
1030 IFP<31 THENX=234:Y=(P-21)*14
+26:XX=-1:YY=0:GOTO1050
1040 X=(P-31)*22+27:Y=163:XX=0:Y
Y=-1
1050 POKE65495,0
1060 X=X+XX:Y=Y+YY
1070 PSBT(X,Y)
1080 IFX<21ORX>233ORY<17ORY>162T
HEN1290
1090 IFPPPOINT(X+XX,Y+YY)=0 THEN10
60
1100 IFXX<>1 THEN1150
1110 IFPPPOINT(X+1,Y+1)=5 ANDPPPOIN
T(X+1,Y-1)=5 THEN1060
1120 SOUND200,1:CO=CO+1
1130 IFPPPOINT(X,Y+1)=5 THENX=X+XX
:Y=Y+YY:XX=0:YY=-1:GOTO1060
1140 X=X+XX:Y=Y+YY:YY=1:XX=0:GOT
O1060
1150 IFYY<>1 THEN1200
1160 IFPPPOINT(X+1,Y+1)=5 ANDPPPOIN
T(X-1,Y+1)=5 THEN1060
1170 SOUND200,1:CO=CO+1
1180 IFPPPOINT(X+1,Y)=5 THENX=X+XX
:Y=Y+YY:XX=-1:YY=0:GOTO1060
1190 X=X+XX:Y=Y+YY:YY=1:YY=0:GOT
O1060
1200 IFXX=0 THEN1250
1210 IFPPPOINT(X-1,Y+1)=5 ANDPPPOIN
T(X-1,Y-1)=5 THEN1060
1220 SOUND200,1:CO=CO+1
1230 IFPPPOINT(X,Y-1)=5 THENX=X+XX
:Y=Y+YY:YY=1:XX=0:GOTO1060
1240 X=X+XX:Y=Y+YY:YY=-1:XX=0:GO
TO1060
1250 IFPPPOINT(X-1,Y-1)=5 ANDPPPOIN
T(X+1,Y-1)=5 THEN1060
1260 SOUND200,1:CO=CO+1
1270 IFPPPOINT(X-1,Y)=5 THENX=X+XX
:Y=Y+YY:XX=1:YY=0:GOTO1060
1280 X=X+XX:Y=Y+YY:XX=-1:YY=0:GO
TO1060

```

```

1290 IFX<21ORX>233 THEN1330
1300 DE=INT((X-26)/21)+1
1310 IFY>140 THENDE=DE+30
1320 GOTO1350
1330 DE=INT((Y-26)/14)+11
1340 IFX>200 THENDE=DE+10
1350 IFG<DE THENSOUND100,5:DD=D
D+1:GOTO1420
1360 PT=T/60
1370 PT=1/PT
1380 IFCO>14 THENFORI=1TO5:FORJ=1
TO50STEP10: SOUNDJ,1:NEXTJ,I:PT=
PT*(CO/3)
1390 SC=INT(P*DE*PT)+SC
1400 FORI=100TO200STEP10
1410 SOUNDI,1:NEXT
1420 X(RD)=X(V):V=V-1
1430 FORI=1TOV
1440 IFX(I)=DE THENX(I)=X(V):GOT
O1470
1450 NEXT
1460 STOP
1470 V=V-1:IFV>0 THEN810
1480 FORI=1TO1000:NEXT
1490 CLS
1500 PRINTTAB(10)"final score"
1510 S$="SCORE =" +STR$(SC)
1520 PRINT:PRINTTAB(16-INT(LEN(S
$)/2))S$
1530 PRINT:PRINT" YOU HAVE MISS
ED"OR"OUT OR"PN*20
1540 IFSC<4000*PN THEN1620
1550 FORI=1TO5
1560 PRINT@197,"you have extende
d play"
1570 FORJ=1TO250:NEXT
1580 PRINT@192,"":FORJ=1TO200:NE
XTJ,I
1590 PN=PN+1
1600 PRINT" YOU ARE UP TO PAT
TERN"PN
1610 FORI=1TO2000:NEXT:GOTO540
1620 FORI=1TO2000:NEXT:GOSUB1670
1630 PRINT@486,"ANOTHER GAME (Y/
N) ?";
1640 A$=INKEY$:IFAS="" THEN1640

```

```

1650 IFAS="N" THENCLS:END
1660 IFAS<>"Y" THENSOUND100,1:GOT
O1640ELSE520
1670 CLS:PRINT@10,"high scores":
PRINT@69,"rank name score"
:HS$="## % % ####":POKE
65494,0
1680 FORZZ=1TO10:IFSC>HS(ZZ) THEN
1710
1690 NEXT:GOSUB1850
1700 POKE65495,0:RETURN
1710 IFZZ=10 THEN1740
1720 FORI=10TOZZ+1STEP-1
1730 HS$(I)=HS$(I-1):HS(I)=HS(I-
1):NEXT
1740 HS$(ZZ)=" ":HS(ZZ)
=SC:GOSUB1850
1750 X=ZZ*32+75:Y=X:HS$(ZZ)=" "
1760 PRINT@X,CHR$(175);
1770 FORI=1TO30:IS=INKEY$:IFIS="
" THENNEXT:PRINT@X," ":FORI=1TO3
0:IS=INKEY$:IFIS="" THENNEXT:GOTO
1760
1780 IFIS=CHR$(8) THENIFHS$(ZZ)="
" THEN1770ELSEHS$(ZZ)=LEFT$(HS$(Z
Z),LEN(HS$(ZZ))-1):PRINT@X," ":
X=X-1:GOTO1760
1790 IFIS=CHR$(13) THEN1830
1800 IFIS<"ORIS">"Z" THEN1770
1810 HS$(ZZ)=HS$(ZZ)+IS:PRINT@X,
IS;
1820 X=X+1:IFX<Y+8 THEN1760
1830 IFLEN(HS$(ZZ))<8 THENPRINT@
X,STRING$(8-LEN(HS$(ZZ)),32);
1840 GOTO1700
1850 J=102:FORI=1TO10:PRINT@J,US
INGHS$;I;HS$(I);HS(I):IFI<10 THEN
PRINT@J,"0";
1860 J=J+32:NEXT
1870 RETURN
65535 'NICK KOSTARELAS 1983

```

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CONVERT



by George McLintock

UTILITY

THE NEW GRAPHIC screen commands for the CoCo 3 high resolution graphic screen follow the same general structure as used for the old CoCo graphic screen. They are similar enough to make it worth while using another Basic program to do most of the source code conversion for you.

CONVERT is a Basic program to do this. It will automatically change most of a Basic program from the old graphic screen to run using the new high res screen of the CoCo 3. The program won't do it all for you, some additional changes have to be made manually.

But in general these are restricted to the initial set up of parameters for the program, and are straight forward.

Which leads to the question of why bother. If you have an existing program for the old CoCo, it will still run on the CoCo 3 without any modification. The main advantage of converting existing programs is that it provides a basis for using and experimenting with the extra graphic capabilities of the CoCo 3.

There are a lot of good Basic graphic programs around for the old CoCo. At the time they were written, they were limited to the graphic capabilities of that machine. 128 x 192 in 4 colors, or 256 x 192 in 2 colors.

Pictures drawn on these screens will convert directly to the new 320 x 192 structure, with similar proportions and appearance, and a 64 pixel right margin. The big difference of course is that you now have 16 colors available at this resolution.

So that if you do a direct conversion of an existing program that you like, you can then experiment with the new commands in a more meaningful way.

USING CONVERT.

The Basic program to be converted must first be saved in ASCII format, ie use (C)SAVE "Name",A. CONVERT will read these source statements as an input file, change the code as required, and write the modified statements out to a new output file in a similar format. This new file can then be (C)LOAD'ed back into Basic as a normal Basic program.

The program submitted is written for a disk system with both the input file and output file open at the same time. Each program line is input in sequence, modified if required, and written out again.

This is not possible with a cassette based system, so I have indicated alternative code required to read the whole program into memory at one time, change it, and write it out again. This will work with a cassette system, and there should be sufficient memory available for most programs.

OTHER CHANGES REQUIRED.

CONVERT will alter all program statements which are different between the screens, to the correct syntax for the CoCo 3 screen. Most other changes required to get the program to work are made at the logical start of the program which initialises parameters, eg the DIM, SCREEN, PMODE etc, which are set before the program actually starts to do anything.

All PMODE, PCLEAR, and PCOPY statements are removed.

All SCREEN statements are altered to HSCREEN ZQ, where ZQ is a variable to be set to 1-4 (depending on the screen required) before the first HSCREEN is executed.

If the program contains more than one SCREEN statement, use POKE &HE6C6,18: POKE &HE6C7,18 to prevent later HSCREEN commands clearing the screen.

The original program will have PCLS (converted to HCLS) commands as required to clear the screen.

If the program alternates between the graphic screen and text screen (as with some games and screen draw programs), then you will have to insert a HSCREEN 0 command before the program attempts to write to the text screen after displaying the graphic screen.

PSET and PRESET are altered only when required. The test used is that if they are preceded by a comma (eg as part of a LINE or PUT) then they are left unaltered. If not then the P is replaced with a H.

PCLS and PPOINT commands have the first P replaced with a H, and all other graphic commands have a H inserted in front of them.

GET and PUT are changed to HGET and HPUT. The array name used in the old program is left as a simple variable which should be set equal to the buffer number as defined by the equivalent HBUFF command.

The normal situation for the old program would be along the lines of ...

```
DIM A1(140)
GET (x,y)-(x1,y1),A1
PUT (x2,y2)-(x3,y3),A1
```

CONVERT will alter the GET and PUT statements. To make it work, you have to replace the DIM statement with ...

```
A1=1:HBUFF A1,140
```

(It won't be 140 though)

Under some circumstances GET requires a "G" after the buffer name. This is not allowed with HGET, and CONVERT will remove it if it's there.

I have also included an outline of an alternative way of calculating the buffer size required. It is most unlikely to be the same as the DIM value.

If the program happens to use A1 as a simple variable as well

as an array, then you will have to alter each HGET and HPUT command to insert a new variable as the buffer number.

The program performs other checks along the way to prevent changes being made where they should not be, eg inside strings, in DATA lines, and to exclude the PUT in INPUT. Comments and remarks are not protected, and will be changed in the same way as the rest of the program.

After making these changes, the program should work on the high res screen, and you can start changing some colors with HCOLOR and PALETTE.

REFERENCE TABLE.

When you start altering the program to vary the graphics, or simply to find some particular use of a command, it can be very helpful to have a reference to line numbers containing any particular command.

CONVERT produces a reference table of all line numbers containing a graphic command which is altered by it. It also produces a reference to DIM as this must be altered when GET's are used. As a further check, it also provides a reference for possible ML routines (DEFUSR and EXEC) and PEEK's and POKE's.

When the program has been converted, you get an option to print this table or not. The strings SE\$ and EE\$ (line 1160) are used to elongate part of the printout. These can be altered or set to null if they don't suit your printer.

The program also checks for very long lines. If the original source line is greater than 253 characters, then these are noted in the table. You may have lost something off the end of the original line.

The program will increase the length of some lines. If the new line would be longer than 255 bytes, the change is not made, and these line numbers are noted in the table.

CHANGES FOR A CASSETTE SYSTEM.

The basic change required for a cassette system is to read the whole program into an array before you start. The control logic is altered to modify each line from this array, and when finished, write the whole program out again.

You also have to delete the addition of "/BAS" in lines 20 and 30.

To do this ...

- * add an extra array, say P\$(500) to the DIM's in line 1100,

- * replace lines 40 to 60 with something like:

```
40 OPEN "I",#-1,NS:P=0
45 IF EOF(-1)THENCLOSE:GOTO60
50 P=P+1:LINEINPUT #-1,P$(P)
55 GOTO 45
60 FOR V=1TO P:A$=P$(V)
```

... and replace lines 620-630 with something like:

```
620 P$(V)=A$:NEXT V
622 INPUT "prompt for cassette ready";A$
624 OPEN "O",#-1,NIS
626 FOR X=1 TO P
628 PRINT #-1,P$(X)
630 NEXT X:CLOSE
632 GOTO 940
```

For programs too large to fit in memory as provided, you can

- * CLEAR more space
- * Increase the size of P\$ array
- * Eliminate the reference table, or make it smaller
- * Do the program in two parts and merge them together again.

SIZES FOR HBUFF

The manual provides a description of how to calculate the size of HBUFF required for a HGET command. I find it difficult to follow and use an alternative procedure derived from basic principles.

The HGET command moves whole bytes from the graphic screen to the buffer. It does not take individual bits as occurs with GET.

The buffer size required is specified as the number of bytes required to be held there, with the count starting from zero, eg to hold 160 bytes requires a HBUFF of 159 which is bytes 0 to 159 or a total of 160 bytes.

Following from this, some minimum sizes can be derived.

To hold a single pixel width line from the top of the screen to the bottom (eg for LINE (1,0)-(1,191)), requires a buffer of 192 bytes.

The graphic screen is held in memory addresses in much the same way as the normal text screen. With adjoining memory locations holding pixels running across the screen, so that to take a single pixel from the top line of the screen, you have to take one byte, rather than just the number of bits in the pixel.

With 192 lines required, you have to take 192 bytes.

Similarly, to hold a single pixel width line running right across the screen, eg LINE (0,1)-(319,1) or LINE (0,1)-(639,1), requires either 80 or 160 bytes depending on the HSCREEN used.

The number of bytes required is the number of pixels across the screen divided by the number of pixels per byte. The 16 color screen has 2 pixels per byte, the 4 color ones have 4 and the 2 color one has 8 pixels per byte. For this line you require the number of bytes used to display that many pixels.

Following from this, the number of bytes required to hold an area of the screen depends mainly on the number of bytes required to hold each line running across the screen. Once this is known, then the total number of bytes required is the number of bytes per line across the screen, multiplied by the number of lines deep for the area to be saved.

The number of bytes per line across the screen depends on the number of pixels per byte and how it aligns with byte boundaries.

If the area to be got is from a fixed position of the screen, you can often use one less byte per line than if you have to allow for getting the same area (number of pixels) from anywhere on the screen. This occurs when each line starts or ends on a byte boundary.

For example, with a 4 color screen, a buffer size of 192 (HBUFF 1,191) will hold an area of 4 pixels wide for the full depth of the screen if the lines across the screen start on a byte boundary. But the same area will require a buffer of 384 bytes if it starts anywhere else, ie you can HGET (0,0)-(3,191) into a buffer of 192 bytes, but you require 384 bytes to HGET (1,0)-(4,191). The difference occurs because you require 2 bytes to hold the pixels from 1 to 4 across the screen. The first byte for pixels 1 to 3, and the second byte for pixel no 4.

Hence the number of bytes per line is the number of pixels required, divided by the number of pixels per byte. If the answer is not a whole number, round up to the next highest number. If the line being got does not always start and end within this number of bytes, add one more to the number of bytes per line.

With the 16 color screen, you only ever have to add one once. If the number of pixels per line is odd, then it must always start or end on a byte boundary. So after dividing by 2 and rounding up, you can always get that number of pixels per line from anywhere on the screen, with that many bytes.

A similar situation can occur with the other screens, eg if you want 5 pixels per line with a 4 color screen, then you can always get them in 2 bytes. But if you want a line with 6 pixels from anywhere on the screen you have to allow three bytes per line, ie add the extra byte per line after rounding up.

If in doubt, go back to the basic principles and work it through for the particular requirement.

The Listing:

```

1 '** CONVERT
  BY GEORGE MCLINTOCK
  30/11/86
2 GOTO 10
3 SAVE"5:3":END'7
4 STOP
5 '
6 ' PROGRAM TO CONVERT SOURCE ST
  ATEMENTS FOR OLD COCO GRAPHIC SC
  REEN TO HIGH RES SCREEN FOR COCO
  3
7 '
10 CLS:PRINT"PROGRAM TO CONVERT
  A LOW RES SCREEN BASIC PROGRA
  M TO HIGH RESFOR THE COCO 3":PRI
  NT:PRINT"THE PROGRAM MUST BE SAV
  ED TO DISK IN ASCII FIRST":PR
  INT
20 PCLEAR 1: CLEAR 15000:GOSUB 10
90:PRINT "ENTER NAME OF EXISTING
  PROGRAM":INPUT N$:K=INSTR(N$,"/
  "):IF K=0 THEN N$=N$+"/BAS"
30 PRINT:PRINT"ENTER NAME FOR NE
  W PROGRAM":INPUT N1$:K=INSTR(N1$
  ,"/"):IF K=0 THEN N1$=N1$+"/BAS"
40 OPEN "I",#1,N$:OPEN "O",#2,N1
  $
50 IF EOF(1) THEN 940
60 LINE INPUT #1,A$
70 IF LEN(A$)=0 THEN 620 ELSE IF
  LEN(A$) > 253 THEN J=16:GOSUB 8
  10
80 K=INSTR(A$," "):LNS=LEFT$(A$,
  K):PRINT LNS:PRINTA$
90 IF MID$(A$,K,1)=" " THEN K=K+
  1:GOTO 90
100 IF MID$(A$,K,4)="DATA" THEN
  620
110 GOSUB 870
120 J=1:K=INSTR(A$,C$(J)):IF K<>
  0 THEN GOSUB 810 'DIM
130 J=2:FOR X=1 TO 3 'PMODE PCLE
  AR PCOPY

```

```

140 K=INSTR(A$,H$(X)):IF K=0 THE
  N 200
150 GOSUB 650:IF SW=1 THEN 140
160 K1=INSTR(K,A$,""):A1$=LEFT$(
  A$,K-1):GOSUB 810
170 IF K1=0 THEN A2$="" ELSE A2$
  =MID$(A$,K1)
180 IF INSTR(A1$,"")=0 AND INST
  R(A2$,"")=0 THEN A$=A1$+"REM"+A
  2$:GOTO 200
190 A$=A1$+A2$:GOTO 140
200 NEXT X
210 '
220 J=3:L=1 'SCREEN
230 K=INSTR(L,A$,C$(J)):IF K=0 T
  HEN 290
240 GOSUB 650:IF SW=1 THEN 230
250 K1=INSTR(K,A$,""):A1$=LEFT$(
  A$,K-1):L=K+LEN(C$(J)):GOSUB 81
  0
260 IF K1=0 THEN A2$="" ELSE A2$
  =MID$(A$,K1)
270 A$=A1$+"HSCREEN ZQ"+A2$:GOTO
  230
280 '
290 FOR J=4 TO 5:L=1 'PSET PRESE
  T
300 K=INSTR(L,A$,C$(J)):IF K=0 T
  HEN 360
310 GOSUB 650:IF SW=1 THEN 300
320 X=K-1:L=K+LEN(C$(J))
330 IF MID$(A$,X,1)=" " THEN X=X
  -1:GOTO 330
340 IF MID$(A$,X,1)="," THEN 300
350 GOSUB 810:MID$(A$,K)="H":GOT
  O 300
360 NEXT J
370 '
380 FOR J=6 TO 7:L=1 'PCLS PPOIN
  T
390 K=INSTR(L,A$,C$(J)):IF K=0 T
  HEN 420
400 GOSUB 650:IF SW=1 THEN 390
410 MID$(A$,K)="H":L=K+LEN(C$(J)
  ):GOSUB 810:GOTO 390
420 NEXT J
430 '
440 FOR J=8 TO 14:L=1 'ADD H TO
  THESE
450 IF LEN(A$) > 254 THEN J1=J:J
  =15:GOSUB 810:J=J1:GOTO 520
460 K=INSTR(L,A$,C$(J)):IF K=0 T
  HEN 520
470 GOSUB 650:IF SW=1 THEN 460
480 IF C$(J)="GET" THEN GOSUB 70
  0
490 IF C$(J) = "PUT" THEN IF MID
  $(A$,K-2,2) = "IN" THEN L=K+3:GO
  TO 460
500 A1$=LEFT$(A$,K-1):A2$=MID$(A
  $,K):L=K+LEN(C$(J))+1
510 A$=A1$+"H"+A2$:GOSUB 810:GOT
  O 450
520 NEXT J
530 '
540 J=17:FOR X=4 TO 5
550 K=INSTR(A$,H$(X)):IF K <> 0
  THEN GOSUB 810
560 NEXT X
570 '
580 J=18:FOR X=6 TO 7
590 K=INSTR(A$,H$(X)):IF K <> 0
  THEN GOSUB 810

```

```

600 NEXT X
610 '
620 PRINT #2,A$:PRINTA$
630 GOTO 50
640 'TEST FOR INSIDE QOTES
650 SW=0:IF Q=0 THEN RETURN
660 FOR T=1 TO Q
670 IF K>Q(T,0) AND K<Q(T,1) THE
  N SW=1: L=Q(T,1): T=Q+2
680 NEXT T:RETURN
690 '
700 K1=INSTR(K,A$,""):IF K1=0 T
  HEN GOSUB 770 ELSE K1=K1-1
710 IF MID$(A$,K1,1) = " " THEN
  K1=K1-1:GOTO 710
720 Y=K1-1
730 IF MID$(A$,Y,1)=" " THEN Y=Y
  -1:GOTO 730
740 IF MID$(A$,Y,1)="," AND MID$(
  A$,K1,1)="G" THEN 750 ELSE RETU
  RN
750 A1$=LEFT$(A$,Y-1):A2$=MID$(A
  $,K1+1):A$=A1$+A2$
760 RETURN
770 K1=INSTR(K,A$,""):IF K1=0 T
  HEN K1=LEN(A$) ELSE K1=K1-1
780 RETURN
790 '
800 'RECORD LINE NUMBERS
810 IF LEN(L$(M(J,1))) = 0 THEN
  L$(M(J,1))=LNS:RETURN
820 IF INSTR(L$(M(J,1)),LNS) <>
  0 THEN RETURN
830 IF LEN(L$(M(J,1)))+LEN(LNS)'
  > 255 THEN M(J,1)=M(J,1)+1:IF M(
  J,1) >= M(J+1,0) THEN PRINT:PRIN
  T "OUT OF SPACE FOR ";C$(J):PRIN
  T "ADJUST M ARRAY":CLOSE:STOP
840 L$(M(J,1)) = L$(M(J,1)) + LN
  $
850 RETURN
860 'SET UP QUOTE ARRAY
870 Q=0:L=1
880 K=INSTR(L,A$,CHR$(34)):IF K=
  0 THEN RETURN
890 Q=Q+1:Q(Q,0)=K:L=K+1
900 K=INSTR(L,A$,CHR$(34)):IF K=
  0 THEN K=LEN(A$)-1
910 Q(Q,1)=K:L=K+1:GOTO 880
920 '
930 ' PRINT REFERENCE TABLE
940 CLS:CLOSE:PRINT "ENTER P T
  O PRINT TABLE":INPUT "ELSE PRES
  ENTER":A$:IF A$="" THEN STOP
950 PRINT#-2,SE$,N$:BE$:PRINT#-2
  ,"LINE NUMBERS CONTAINING SELECT
  ED COMMANDS"
960 FOR J=1 TO 18
970 PRINT#-2,SE$,C$(J);EE$;" ";
980 IF LEN(L$(M(J,0))) = 0 THEN
  PRINT#-2,"NONE":GOTO 1060
990 IF LEN(L$(M(J,0))) <= 80 - L
  EN(C$(J))*2+2 THEN PRINT#-2,L$(M
  (J,0)):GOTO 1060 ELSE PRINT#-2
  1000 FOR X=M(J,0) TO M(J,1)
  1010 IF LEN(L$(X)) <= 80 THEN PR
  INT#-2,L$(X):GOTO 1050
  1020 Y=80
  1030 IF MID$(L$(X),Y,1) = " " TH
  EN PRINT#-2,LEFT$(L$(X),Y-1):L$(

```

continued p. 48

PINK FLOYD

by Robert Zambotti

MUSIC

32K + ORCHESTRA 90CC

FOR ALL YOU PINK FLOYD fans out there, have I something for you! "Shine on you Crazy Diamond", parts one to five, is a long piece, taking up around 5 minutes to play.

For best reproduction, I recommend playing this through your home stereo system, via the two ports found on the side of the Orchestra 90CC pak.

The Listing:

/ PINK FLOYD
/ WISH YOU WERE HERE
/ SHINE ON YOU CRAZY DIAMOND
/ (PART 1-5)
/ BY R WRIGHT, R WATERS, D GILMOUR
/ ENTERED BY ROBERT ZAMBOTTI
/ <<STEREO>>

JAS8E4804027/LEAD(VOCAL)
JESACE204024/SYNTHESIZER
JCSA86422025/LEAD SYNTHESIZER
JDSFC6004028/QUITAR
JES486540008/BASS
K2&
/SHINE ON PART ONE
P01
NQ=F0
V1YCV2YBV3YBV4YBV5YB
M
Z3*W4
V2W1
V3W-1
@V4WA
V5WA
M
*W4
V2W1
V3W-1
@V4WA
V5WA
M
*W4
V2W1
V3W-1
@V4WA
V5WA
M
*Q4I65Q41
V2W1
V3W-1
@V4WA
V5WA
M
*H. 01-1-4
V2W-1

@V4WA
V5WA
M
*W-3
@V4WA
V5WA
M
*W-3
@V4WA
V5WA
M
*H. 6Q5
V2W4
V3W1
@V4WA
V5WA
M
*H. 6Q5
V2W4
V3W1
@V4WA
V5WA
M
*W6
V2W4
V3W1
@V4WA
V5WA
M
*H. 7167
V2W4
V3W1
@V4WA
V5WA
M
*W8
V2W6
V3W4
@V4WA
V5WA
M
*W8
V2W6
V3W4
@V4WA
V5WA
M
*W8
V2W6
V3W4
@V4WA
V5WA
M
*H. 71A7
V2W6
V3W4
@V4WA
V5WA
M

*W8
V2W6
V3W4
@V4WA
V5WA
M
*H. 71A7
V2W6
V3W4
@V4WA
V5WA
M
*H. 8165
V2W6
V3W4
@V4WA
V5WA
M
*W4
V2W1
V3W-1
@V4WA
V5WA
M
*W4
V2W1
V3W-1
@V4WA
V5WA
M
*W8
V2W6
V3W4
@V4WA
V5WA
M
*H. 7Q8
V2W6
V3W4
@V4WA
V5WA
M
*I65H4173
V2W1
@V4WA
V5WA
M
*V1
V2W-1
V3W-3
@V4WA
V5WA
M
*I6541Q1-1
@V4WA
V5WA
M
*W4
V2W1

V3W-1
@V4WA
V5WA
M
*W4
V2W1
V3W-1
@V4WA
V5WA
/SHINE ON PART TWO
P02
V1YDV2YBV3YBV4YBV5YB
M
*H. BQA
V2W8
V3W6
@V4WA
V5WA
M
*WB
V2W8
V3W6
@V4WA
V5WA
M
*14' 6' 7' 8Q8' 7'
V2W1
@V4WA
V5WA
M
*W8
V2W6
V3W4
@V4WA
V5WA
M
*H8I\$S8' 7' 16' 7'
V2W6
V3W4
@V4WA
V5WA
M
*Q. 8' 17' H8
V2W5
V3W3
@V4WD
V5WD
M
*Q8' S5' 6' 5' 4' 15' 3' 3' 1'
V2Q5\$H\$
V3Q3\$H\$
@V4WD
V5WD
M
*H. 3' 14' 5'
V2W1
@V4WD
V5WD
M

*H6I:6'5'4' 13' 4'
V2W2
V3W0
@V4WE
V5WE
M
*W6'
V2W2
V3W0
@V4WE
V5WE
M
*H. 5' 13' 4'
V2W2
V3W0
@V4WE
V5WE
M
*H. 4' 18' A'
V2W2
V3W0
@V4WE
V5WE
M
*HB' IB' B' D' E'
V2W8
V3W6
@V4WA
V5WA
M
*HD' I\$1' Q3'
V2W8
V3W6
@V4WA
V5WA
M
*H4' 15' 6' Q6'
V2W1
V3W-1
@V4WA
V5WA
M
*13' 4H. 4
V2W1
V3W-1
@V4WA
V5WA
M
*H4' I\$S8' 7' 16' 7'
V2H1\$
V3H-1\$
@V4WA
V5WA
M
*H. 8' 18' A
V2W5
V3W3
@V4WD
V5WD

M
 *QA' IB' B' HB'
 V2V5
 V3V3
 @V4VD
 V5VD
 M
 *SB' A' 8' 8H8' S8' 7' 6' 7'
 V2V5
 V3V3
 @V4VD
 V5VD
 M
 *H. 7' 14' 6
 V2V4
 V3V2
 @V4VE
 V5VE
 M
 *H6' 18' 7' 6' 7'
 V2V4
 V3V2
 @V4VE
 V5VE
 M
 *H. 8' 18' A'
 V2V5
 V3V3
 @V4VD
 V5VD
 M
 *H. 8' 1B' B'
 V2V5
 V3V3
 @V4VD
 V5VD
 M
 *H. D' 18' D'
 V2VB
 V3V8
 @V4VA
 V5VA
 M
 *HF' 1E' D' C' A'
 V2VB
 V3V8
 @V4VA
 V5VA
 M
 *WB
 V2V8
 V3V6
 @V4VA
 V5VA
 M
 *WB
 V2V8
 V3V6
 @V4VA
 V5VA
 M
 *V2V1
 V3V-1
 @V4VA
 V5VA
 M
 @V4VA
 V5VA
 /SHINE ON PART THREE
 P03
 M
 *Q-1X' 3'-3'
 @V4H. A

V5H. A
 M
 *H. 2%
 V2H. 2%
 @V4H. A
 V5H. A
 M
 *H. 2%
 V2H. 2%
 @V4H. A
 V5H. A
 R03
 R03
 P04
 M
 *Q-1X' 3'-3'
 V2Q-1X3-3
 @V4H. A
 V5H. A
 P05
 NQ=84

V5Q. 7' 17' Q7'
 M
 *H. 9%
 V2H. 7
 V3H. 4
 @V4H. 7
 V5H. 7
 M
 *Q-1X' 3'-3'
 @V4H. 7
 V5H. 7
 M
 *H. 2%
 V2H. 0
 V3H. -3
 @V4H. 7'
 V5H. 7'
 M
 *H. 9%
 V2H. 7
 V3H. 4
 @V4Q. 7' 17' Q7'
 V5Q. 7' 17' Q7'
 M
 *Q\$1-2'-2'-2'-2'
 V2Q\$1-4'-4'-4'-4'

*H. 9%
 V2H. 6
 V3H. 4
 @V4Q. A' IA' QA'
 V5Q. A' IA' QA'
 M
 *H. 9%
 V2H. 6
 V3H. 4
 @V4H. A
 V5H. A
 M
 *Q6% A' 4'
 @V4H. A'
 V5H. A'
 M
 *H. 9'
 V2H. 6
 V3H. 4
 @V4H. C
 V5H. C
 M
 *H. 9
 V2H. 6
 V3H. 4
 @V4Q. C' IC' QC'
 V5Q. C' IC' QC'
 M
 *H. 9
 V2H. 6
 V3H. 4
 @V4H. C
 V5H. C
 M
 *H9' Q9'
 V2H6' Q6
 V3H4' Q4'
 @V4QC' C' C'
 V5QC' C' C'
 M
 *H. 8'
 V2H. 5
 V3H. 3#
 @V4H. D
 V5H. D
 M
 *H. 8
 V2H. 5
 V3H. 3#
 @V4Q. D' ID' QD'
 V5Q. D' ID' QD'
 M
 *Q8' 1-2'-2'-2'-2'
 V2Q51-4%'-4'-4'-4'
 V3Q3#H\$
 @V4QD' IB' B' B' B'
 V5QD' IB' B' B' B'
 M
 *1-2'-2'-2'-2'-2'-2'
 V21-4'-4'-4'-4'-4'-4'
 @V41B' B' B' B' B' B'
 V51B' B' B' B' B' B'
 M
 *1-2'-1H-1'
 V21-4'-3H-3'
 @V41B' AHA
 V51B' AHA
 M
 *H. A
 V2H. 6
 V3H. 4
 @V4Q. A' IA' QA'
 V5Q. A' IA' QA'
 M
 *H. A'
 V2H. 6
 V3H. 4
 @V4H. A
 V5H. A
 M
 *Q6% A' 4'
 @V4H. A'
 V5H. A'
 M
 *H. 9%
 V2H. 6
 V3H. 4
 @V4H. A
 V5H. A
 M



V1YDV2YBV3YBV4YBV5YB
 M
 *H. 2%
 V2H. -1
 V3H. -3
 @V41A' A' A' A' A' A'
 V51A' A' A' A' A' A'
 M
 *H. 2%
 V2H. -1
 V3H. -3
 @V41A' A' A' A' A' A'
 V51A' A' A' A' A' A'
 M
 *H. 2%
 V2H. -1
 V3H. -3
 @V41A' A' A' A' A' A'
 V51A' A' A' A' A' A'
 M
 *Q-1X' 3'-3'
 V2Q-3-1-3
 @V41A' A' A' A' QA'
 V51A' A' A' A' QA'
 M
 *H. 2%
 V2H. 0
 V3H. -3
 @V4H. 7
 V5H. 7
 M
 *H. 9%
 V2H. 7
 V3H. 4
 @V4Q. 7' 17' Q7'

@V4Q7' IB' B' B' B'
 V5Q7' IB' B' B' B'
 M
 *1-2'-2'-2'-2'-2'-2'
 V21-4'-4'-4'-4'-4'-4'
 @V41B' B' B' B' B' B'
 V51B' B' B' B' B' B'
 M
 *1-2'-1H-1'
 V21-4'-3H-3'
 @V41B' AHA
 V51B' AHA
 M
 *H. A
 V2H. 6
 V3H. 4
 @V4Q. A' IA' QA'
 V5Q. A' IA' QA'
 M
 *H. A'
 V2H. 6
 V3H. 4
 @V4H. A
 V5H. A
 M
 *Q6% A' 4'
 @V4H. A'
 V5H. A'
 M
 *H. 9%
 V2H. 6
 V3H. 4
 @V4H. A
 V5H. A
 M

K
 *H. A'
 V2H.6
 V3H.4
 @V4H. A
 V5H. A
 K
 *Q6Z' A' 4'
 @V4H. A'
 V5H. A'
 K
 *H. 9Z'
 V2H. 6
 V3H. 4
 @V4H. A
 V5H. A
 K
 *H. 9Z'
 V2H. 6
 V3H. 4
 @V4Q. A' IA' QA'
 V5Q. A' IA' QA'
 K
 *H. 9Z'
 V2H. 6
 V3H. 4
 @V4H. A'
 V5H. A'
 K
 *H. 9Z'
 V2H. 6
 V3H. 4
 @V4Q3' 4' 6'
 V5Q3' 4' 6'
 P06
 V1YDV2YBV3YBV4YBV5YE
 K
 26*17'8'H4
 V2H. 4
 V3H. 1
 V4H. -1
 @V5H. A
 K
 *H. 4
 V2H. 4
 V3H. 1
 V4H. -1
 @V5Q. A' IA' QA'
 K
 *Q. 4' 11' 4' 3'
 V2H. 4
 V3H. 1
 V4H. -1
 @V5H. A
 K
 *H1' 10' -1'
 V2Q6ZA4'
 @V5HA'
 K
 *10' -1' H-3
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5H. A
 K
 *H. -3
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5Q. A' IA' QA'
 K
 *V2H. 9Z
 V3H. 6

V4H. 4
 @V5H. A
 K
 *Q3\$I: D' B' 8'
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5HA' QD'
 K
 *H. D
 V2H. 4
 V3H. 1
 V4H. -1
 @V5H. A
 K
 *HD' QD'
 V2H. 4
 V3H. 1
 V4H. -1
 @V5Q. A' IA' QA'
 K
 *H. C
 V2H. 4
 V3H. 1
 V4H. -1
 @V5H. A
 K
 *HC' IA' 8'
 V2Q6ZA4'
 @V5H. A
 K
 *H. 9Z
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5H. A
 K
 *H9Z I: B' A' 8'
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5Q. A' IA' QA'
 K
 *H. A
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5H. A
 K
 *QA' I: D' B' 8' D' B' 8'
 V2Q6ZA4
 @V5H. A
 K
 *H. E
 V2H. 9
 V3H. 7
 V4H. 4
 @V5H. 7
 K
 *HE' I: B' D' B'
 V2H. 9
 V3H. 7
 V4H. 4
 @V5Q. 7' 17' Q7'
 K
 *ID' BHB
 V2H. 9
 V3H. 7
 V4H. 4
 @V5H. 7
 K
 *IB' 6' Q9Z' 8'
 V2Q6ZA4

@V5H. 7
 K
 *14' 6' H4
 V2H. 9
 V3H. 7
 V4H. 4
 @V5H. 7
 K
 *H. 4
 V2H. 9
 V3H. 7
 V4H. 4
 @V5Q. 7' 17' Q7'
 K
 *V2Q9; \$S
 V3Q7; \$S
 @V4Q+4; 0' 1'
 V5Q7; 0' 1'
 K
 @V4Q3' 7' 8'
 V5Q3' 7' 8'
 K
 *V2134H4
 V3111H1
 V41-1-1H-1
 @V5H. A
 K
 *Q\$I\$1' 6' 3'
 V2H. 4
 V3H. 1
 V4H. -1
 @V5Q. A' IA' QA'
 K
 *H. 4
 V2H. 4
 V3H. 1
 V4H. -1
 @V5H. A
 K
 *Q\$I\$6Z' A' 4'
 V2Q6ZA4
 @V5H. A'
 K
 *H. 9Z
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5H. A
 K
 *Q\$I\$5' 4' 3'
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5Q. A' IA' QA'
 K
 *H. 4'
 V2H. 9Z
 V3H. 6
 V4H. 4
 @V5H. A
 K
 *Q6Z' 18' 7' Q8'
 V2Q6Z9Z4
 @V5H. A'
 K
 *H. 9
 V2H. 9
 V3H. 6
 V4H. 4
 @V5H. C
 K
 *H. 9'
 V2H. 9

V3H. 6
 V4H. 4
 @V5Q. C' ID' C' D'
 K
 *H. 9
 V2H. 9
 V3H. 6
 V4H. 4
 @V5H. C
 K
 *Q9' H9
 V2H9' Q9
 V3H6' Q6
 V4H4' Q4
 @V5QC' C' C'
 K
 *V2H. 8
 V3H. 5
 V4H. 3#
 @V5H. D
 K
 *Q\$I: 3# 4' 3' 12Z' 3'
 V2H. 8
 V3H. 5
 V4H. 3#
 @V5HD' QD'
 K
 *H. 3#
 V2H. 8
 V3H. 5
 V4H. 3#
 @V5QD' 19' B' QD'
 K
 *Q\$IB' B'
 V2H. 8
 V3H. 5
 V4H. 3#
 @V5QD' 9' D'
 K
 *H. B
 V2H. 6
 V3H. 4
 V4H. 1
 @V5H. A
 K
 *Q\$B' B'
 V2H. 6
 V3H. 4
 V4H. 1
 @V5HA' QA'
 K
 *QC' D' C'
 V2H. 6
 V3H. 3#
 V4H. 1
 @V5H. B#
 K
 *HB' I: B' A# 8'
 V2H. 6
 V3H. 3#
 V4H. 1
 @V5HB# QB
 K
 *IA' Q. 8Q8
 V2H. 6
 V3H. 3
 V4H. 1
 @V5H. B
 K
 *H8' I: 8' 7' 6'
 V2H. 6
 V3H. 3
 V4H. 1

@V5H. B'
N
*H. 4
V2H. 6
V3H. 4
V4H. 1
@V5H. C#
N
*I4'4' Q6'7'
V2H. 6
V3H. 4
V4H. 1
@V5H. C#'
N
*H. 9
V2H. 6
V3H. 4
V4H. 2
@V5H. C
N
*Q9' I: 9'8'7' I6'7'
V2H. 6
V3H. 4
V4H. 2
@V5H. C'
N
*H. 8
V2H. 5
V3H. 3#
V4H. 1
@V5H. D
N
*Q8' 8' A#'
V2H. 5
V3H. 3#
V4H. 1
@V5H. D'
N
*H. 9
V2H. 5
V3H. 4#
V4H. 2
@V5H. C
N
*Q9 I#S8'7' I6'7'
V2H. 5
V3H. 4#
V4H. 2
@V5H. C
N
*H. 8
V2H. 5
V3H. 3#
V4H. 1
@V5H. D
N
*H. 8
V2H. 5
V3H. 3#
V4H. 1
@V5Q#H6
/SHINE ON (PART FOUR)
P07
V1YCV2YBV3YBV4YBV5YB
N
*H. 4
@V4H. A
V5H. A
N
*H. 4
V2H. 1
V3H. -1
@V4Q. A' IA' QA'

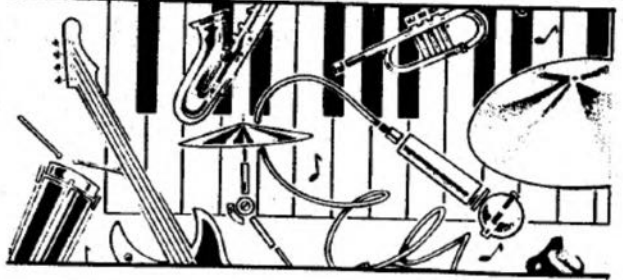
V5Q. A' IA' QA'
N
*H. 4
@V4H. A
V5H. A
N
*Q435
V2H. 1
V3H. -1
@V4H. A'
V5H. A
N
*H. 4
@V4H. A
V5H. A
N
*H. 4
V2H. 1
V3H. -1
@V4Q. A' IA' QA'
V5Q. A' IA' QA'
N
*H. 4
@V4H. A
V5H. A
N
*Q4#I#5
V2H. 1
V3H. -1
@V4H. A'
V5H. A'
N
*H. 6
@V4H. A
V5H. A
N
*H. 6
V2H. 4
V3H. 1
@V4Q. A' IA' QA'
V5Q. A' IA' QA'
N
*H. 6
@V4H. A
V5H. A
N
*Q7I5676
V2H. 4
V3H. 1
@V4H. A'
V5H. A'
N
*H. 6
@V4H. A
V5H. A
N
*H. 6
V2H. 4
V3H. 1
@V4Q. A' IA' QA'
V5Q. A' IA' QA'
N
*H. 6
@V4H. A
V5H. A
N
*Q6#
V2Q4#
V3Q1-11
@V4H. A'
V5H. A
N
*H. 9

V2H. 7
V3H. 4
@V4H. 7
V5H. 7
N
*Q. 9I8Q7
V2H. 7
V3H. 4
@V4Q. 7' I7' Q7'
V5Q. 7' I7' Q7'
N
*H. 4
V2H. 2
V3H. 0
@V4H. 7
V5H. 7
N
*Q4I56Q6
V2H. 2
V3H. 0
@V4Q. 7' I7' Q7'
V5Q. 7' I7' Q7'
N
*H. 9
V2H. 7
V3H. 4
@V4H. 7
V5H. 7
N
*Q9I8Q.7
V2H. 7
V3H. 4
@V4Q. 7' I7' Q7'
V5Q. 7' I7' Q7'
N
*H. 9
V2H. 7
V3H. 4
@V4H. 7
V5H. 7
N
*Q9I#987
V2H. 7
V3H. 4
@V4H. 7'
V5H. 7'
N
*H. 8
V2H. 6
V3H. 4
@V4H. A
V5H. A
N
*H8I56
V2H. 6
V3H. 4
@V4Q. A' IA' QA'
V5Q. A' IA' QA'
N
*H. 7
V2H. 4
V3H. 1
@V4H. A
V5H. A
N
*H7I34
V2H. 4
V3H. 1
@V4H. A'
V5H. A'
N
*I65H4
V2H. 1

@V4H. A
V5H. A
N
*H. 4
V2H. 1
V3H. -1
@V4Q. A' IA' QA'
V5Q. A' IA' QA'
N
*H. 4
V2H. 1
V3H. -1
@V4H. A'
V5H. A'
N
*H. 4
V2H. 1
V3H. -1
@V4I#9'6'7'7#6'
V5I#9'8'7'7#6'
N
*H. 6
V2H. 4
V3H. 2
@V4H. 5
V5H. 5
N
*H6I54
V2H. 4
V3H. 2
@V4H5'Q5'
V5H5'Q5'
N
*H. 3#
V2H. 1
V3H. -2
@V4H. 6
V5H. 6
N
*H. 3#
V2H. 1
V3H. -2
@V4Q. 6' I6' Q6'
V5Q. 6' I6' Q6'
N
*H. 6
V2H. 4
V3H. 2
@V4H. 5
V5H. 5
N
*H6I56
V2H. 4
V3H. 2
@V4Q5'5'5'
V5Q5'5'5'
N
*H. 7
V2H. 3#
V3H. 1
@V4H. 6
V5H. 6
N
*H. 7
V2H. 3#
V3H. 1
@V4Q6'6'6'
V5Q6'6'6'
N
*H. 8
V2H. 6
V3H. 4
@V4H. A

M
 *Q8I6545
 V2H.4
 V3H.1
 @V4HA'QA'
 V5HA'QA'
 M
 *H.2
 V2H.0
 V3H.-3
 @V4H.7
 V5H.7
 M
 *H2Q3
 V2H.0
 V3H.-3
 @V4H7'Q7'
 V5H7'Q7'
 M
 *H.4
 V2H.1
 V3H.-1
 @V4H.A
 V5H.A
 M
 *H.4
 V2H.1
 V3H.-1
 @V4H.A'
 V5H.A'
 M
 *H.3
 V2H.-2
 V3H.-4#
 @V4H.D
 V5H.D
 M
 *H.3
 V2H.-2
 V3H.-4#
 @V4H.D
 V5H.D
 P08
 V1YDV2YBV3YBV4YBV5YB
 M
 *I36'QB'
 M
 *HB'IB'D'
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *H.B'
 V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *Q8I31'4'3'
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A'
 M
 *H1'I:1'0'-1'
 V2H.4
 V3H.1
 V4H.-1
 @V5HA'QA'
 M
 *I0'-1'H-3
 V2H.4

V3H.1
 V4H.-1
 @V5H.A
 M
 *V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *I3S6'7'H8
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A'
 M
 *Q8S14'6'
 V2H.4
 V3H.1
 V4H.-1
 @V5HA'QA'
 M
 *Q4I4'6'Q8
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *Q8S1B'D'
 V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *H.B'
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A'
 M
 *V2H.4
 V3H.1
 V4H.-1
 @V5HA'QA'
 M
 *V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *Q8I31'6'5'
 V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *H.4'
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *Q6H8
 V2H.4
 V3H.1
 V4H.-1
 @V5QA'A'8'
 M
 *Q8I4'6'I:8'7'6'
 V2H.4
 V3H.2
 V4H.0
 @V5H.7
 M



*H7'17'6'
 V2H.4
 V3H.2
 V4H.0
 @V5Q.7'17'Q7'
 M
 *I7'7'7'6'Q8
 V2H.4
 V3H.2
 V4H.0
 @V5H.7
 M
 *H.8
 V2H.4
 V3H.2
 V4H.0
 @V5H7'Q7'
 M
 *Q8I4'3'1'0'
 V2H.4
 V3H.2
 V4H.0
 @V5H.7
 M
 *H0'I-1'-3'
 V2H.4
 V3H.2
 V4H.0
 @V5Q.7'17'Q7'
 M
 *H.-1'
 V2H.4
 V3H.2
 V4H.0
 @V5H7'Q7'
 M
 @H.6
 *V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 @Q8I36'1'4'
 *V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *H.-3'
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *H-3'I6'7'
 V2H.4

V3H.1
 V4H.-1
 @V5HA'QA'
 M
 *H.8
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *Q8S1B'B'
 V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *Q.B'I-3Q-3
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A'
 M
 *Q8IB'B'D'B'
 V2H.4
 V3H.1
 V4H.-1
 @V5IA'9'8'7'7#6'
 M
 *Q.B'I-3Q-3'
 V2H.6
 V3H.4
 V4H.2
 @V5H.5
 M
 *H8I:B'D'B'
 V2H.6
 V3H.4
 V4H.2
 @V5Q5'8'5'
 M
 *ID'Q.BQB'
 V2H.5
 V3H.3#
 V4H.1
 @V5H.6'
 M
 *I1'4'6'7'Q8'
 V2H.5
 V3H.3#
 V4H.1
 @V5I6'Q6'I6'Q6'
 M
 *H.9
 V2H.6
 V3H.4
 V4H.2
 @V5H.5
 M
 *Q9'H9'
 V2H.6
 V3H.4
 V4H.2

@V5Q5'8'5'
M
*H.3#'
V2H.5
V3H.3#
V4H.1
@V5H.6'
M
*I3#S4'3'12%3'4'3'
V2H.5
V3H.3#
V4H.1
@V5H.6'
M
*H.4
V2H.6
V3H.4
V4H.1
@V5H.A
M
*Q\$1\$1'4'3'
V2H.6
V3H.4
V4H.1
@V5QA'D'A'
M
*H.1
V2H.4
V3H.2
V4H.0
@V5H.E
M
*H1'I:1'0'-1'
V2H.4
V3H.2
V4H.0
@V5QE'E'E'
M
*I0'-1'Q-3'-1'
V2H.4
V3H.1
V4H.-1
@V5H.A
M
@Q3I:6'7'8'Q7'
*V2H.4
V3H.1
V4H.-1
@V5QA'A'A'
M
@H.6
*V2H.3%
V3H.-2
V4H.-4#
@V5H.D
M
@H.6
*V2H.3%
V3H.-2
V4H.-4#
@V5H.D
M
@T6789ABCDHD
*V2H.3%
V3H.-2
V4H.-4#
@V5H.D
M
@H.D
*V2H.3%
V3H.-2
V4H.-4#
@V5H.D

/SHINE ON (PART FIVE)
P09
V1YAV2YBV3YBV4YDV5YE
M
*Q\$1\$7'8'7'
V2H.4
V3H.1
V4H.-1
@V5H.A
M
*Q8'8'A'
V2H.4
V3H.1
V4H.-1
@V5Q.A'IA'QA'
P10
M
*Q8\$\$
V2H.4
V3Q.1\$
V4Q.-114'6'
@V5H.A
M
*V2H.4
V417'8'H7
@V5QA'D'A'
M
*Q\$1\$4\$'
V2H.4&
V3H.1&
V4H.-1
@V5H.A&
M
*Q4&'5&'5%'
V2H.4&
V3H.1&
V4H.-1
@V5Q.A&'IA'QA'
M
*Q6\$\$
V2H.3
V3H.1
V4H.-1
@V5H.8'
M
*V2(13'Q3')1
V3(11'Q1')1
V4(I-1'Q-1')1
@V5Q8'7'6'
M
*H.B'
V2H.4
V3H.2
V4H.-1
@V5H.5'
M
*HB'QA'
V2H.4
V3H.2
V4H.-1
@V5H.6'
M
*H.9
V2H.4
V3H.2
V4H.0
@V5H.7'
M
*H9'Q8'
V2H.4
V3H.-2
V4H.0
@V5H.8'

M
*IAS98Q7\$
V2H.3
V3H.0
V4H.-2
@V5H.B'
M
*V2Q0
V3Q-2
V4Q3'I0'1'Q0'
@V5H.B'
M
*V4H.-4'
@V5H.B'
M
*V2H.0
V3H.-2
V4Q-4H-4#
@V5QB'B#\$
M
*Q8'8'7'
V2H.4
V3H.1
V4H.-1
@V5H.A
M
*Q8'8'8'
V2H.4
V3H.1
V4H.-1
@V5Q.A'IA'QA'
M
*Q8\$\$
V2H.1
V3H.-1
V4Q\$13'4'Q3'
@V5H.A
M
*V2H.1
V4H.-1
@V5QA'D'A'
M
*Q\$4&'4'
V2H.1&
V3H.-1
V4H.-3&
@V5H.A&
M
*Q4&'15&'5%'Q6
V2H.1&
V3H.-1
V4H.-3&
@V5Q.A&'IA'QA'
M
*Q6\$\$
V2H.3
V3H.1
V4H.-1
@V5H.8'
M
*V2(13'Q3')1
V3(11'Q1')1
V4(I-1'Q-1')1
@V5Q8'7'6'
M
*H.B'
V2H.4
V3H.2
V4H.-1
@V5H.5'
M
*H9'Q8'
V2H.4
V3H.-2
V4H.0
@V5H.7'
M
*HB'QA'
V2H.4
V3H.-2
V4H.0
@V5H.8'

V3H.2
V4H.-1
@V5H.6'
M
*H.9
V2H.4
V3H.2
V4H.0
@V5H.7'
M
*H9'Q8'
V2H.4
V3H.2
V4H.0
@V5H.8'
M
*IAS98Q7\$
V2H3I5'5'
V3H0I7'7'
V4H-2IA'A'
@V5H.B
M
*V2Q5'3'13'8'
V3Q7'5'15'8'
V4QA'8'I7'8'
@V5QB'B'B'
M
*V2H.-2
V3H.0
V4H.3
@V5H.B
M
*Q\$A'A'
V2H.3
V3H.0
V4H.-2
@V5QB'B'B#'
M
*QB'B'A'
V2H.4
V3H.1
V4Q4'6'7'
@V5H.A
M
*QB'D'1\$B'
V2H.4
V3H.1
V417'8'H7'
@V5HA'QA'
M
*QA'A'A'
V2H.3#
V3H.1
V4Q3#6'7'
@V5H.B#
M
*QA#D\$
V2H.3#
V3H.1
V417'8'H7'
@V5HB#QB'
M
*QA'A'A'
V2H.3
V3H.1
V4Q3'6'7'
@V5H.B
M
*H.A'
V2H.3
V3H.1
V417'8H8
@V5H.B'

M
 *H.9%
 V2H.-3
 V3H.0#
 V4H.2%
 @V5H.E
 M
 *V2H.-3
 V3H0#10%'1'
 V4H.2%'
 @V5H.E'
 M
 *Q9'9'9'
 V2H.2
 V3H.-1
 V4H.-3
 @V5H.C
 M
 *Q9'9'1\$9'
 V2H.-1
 V3H.-3
 V4I2'3'H2'
 @V5QC'C'C'
 M
 *Q9%'9'9'
 V2H.2%
 V3H.0#
 V4H.-1
 @V5H.C%'
 M
 *Q9%'9\$
 V4Q2%'0#'-1'
 @V5QC%'E#'C'
 M
 *IA'Q.A'QA'
 V2H.3
 V3H.1
 V4H.-1
 @V5H.B
 M
 *QA'8'A'
 V2H.3
 V3H.1
 V4H.-1
 @V5HB'QB'
 M
 *QA'8'A'
 V2H.3
 V3H.1
 V4H.-2
 @V5QD'B'D'

M
 *QA#'8'A'
 V2H.3#
 V3H.1
 V4H.-2
 @V5HB#'QD'
 P11
 M
 *H.B
 V2H.4
 V3H.1
 V4H.8
 @V5H.A
 P12
 V1YDV2YBV3YBV4YBV5YE
 M
 *H8'I:8'7'6'
 V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 M
 *H.8
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *H.8'
 V2H.4
 V3H.1
 V4H.-1
 @V5QA'D'A'
 M
 *H.8&
 V2H.4&
 V3H.1&
 V4H.-1
 @V5H.A&
 M
 *Q6'7'8&
 V2H.4&
 V3H.1&
 V4H.-1
 @V5Q.A&'IA'QA'
 M
 *H.8'
 V2H.3
 V3H.1
 V4H.-1
 @V5H.8'

M
 *Q8'9'A'
 V2H.3
 V3H.1
 V4H.-1
 @V5Q8'7'6'
 M
 *H.C&
 V2H.4
 V3H.2
 V4H.-1
 @V5H.5'
 M
 *H.B'
 V2H.4
 V3H.2
 V4H.-1
 @V5H.6'
 M
 *H.9'
 V2H.4
 V3H.2
 V4H.0
 @V5H.7'
 M
 *H.8'
 V2H.4
 V3H.2
 V4H.0
 @V5H.8'
 M
 *IA'S9'8'H7
 V2H.3
 V3H.0
 V4H.-2
 @V5H.B
 M
 *H7'I-2'-3'
 V2H.3
 V3H.0
 V4H.-2
 @V5H.B'
 M
 *H.-4'
 V2H.3
 V3H.0
 V4H.-2
 @V5H.B'
 P13
 V1YDV2YBV3YBV4YDV5YE
 M

*Q\$S1\$7'
 V2Q3H3#
 V3H.0
 V4Q-4'-4#S
 @V5QB'B#'
 M
 *Q8'8'7'
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 M
 *Q8'8'187'
 V2H.4
 V3H.1
 V4H.-1
 @V5Q.A'IA'QA'
 R10
 P14
 M
 *H.B
 V2H.4
 V3H.1
 V4H.-1
 @V5H.A
 P15
 V1YCV2YCV3YBV4YBV5YE
 M
 *(S4686)2
 V2(S468)2
 V3H.4
 V4H.1
 @V5H.A
 R15
 R15
 R15
 R15
 R15
 P16
 M
 *H.4
 V2H.1
 V3H.-1
 V4H.-3
 @V5H.A
 R16

Convert continued
 from p. 41

X) = MID\$(L\$(X),Y+1):GOTO 1010
 1040 Y=Y-1:GOTO 1030
 1050 NEXT X
 1060 NEXT J
 1070 '
 1080 STOP
 1090 'SET PARAMS
 1100 DIM C\$(19),N(19,1),L\$(190),
 H\$(10),Q(50,1)
 1110 FOR J=1 TO 19:M(J,0)=(J-1)*
 10+1:M(J,1)=M(J,0):NEXT J
 1120 C\$(1)="DIM":C\$(2)="REMOVED"
 :C\$(3)="SCREEN":C\$(4)="PSET"
 1130 C\$(5)="PRESET":C\$(6)="PCLS"
 :C\$(7)="PPOINT":C\$(8)="PAINT"
 1140 C\$(9)="PUT":C\$(10)="COLOR":
 C\$(11)="CIRCLE":C\$(12)="LINE"

1150 C\$(13)="GET":C\$(14)="DRAW":
 C\$(15)="TOO LONG":C\$(16)="> 253"
 1160 SE\$=CHR\$(14):EE\$=CHR\$(15)
 1170 C\$(17)="POSS ML":C\$(18)="PE
 EK/POKE"
 1180 H\$(1)="PMODE":H\$(2)="PCOPY"
 :H\$(3)="PCLBAR":H\$(4)="DEFUSR"
 1190 H\$(5)="EXEC":H\$(6)="PEEK":H
 \$(7)="POKE"
 1200 RETURN

HINT.....

POKEs

New POKES for 6ms second step
 rate and double sided drive
 access for the CoCo 3.

POKE &HD7C0,0 6ms
 POKE &HD016,&H14 6ms
 POKE &HD09F,&H41 Double Sided
 POKE &HD0A0,&H42 Double Sided
 POKE &HD7C0,&H2 Tandy drive
 20ms Step rate

LIGHT MAGIC

by Marco Ferlaino

UTILITY
32K ECB, TAPE ONLY

LIGHT MAGIC IS a graphics screen manipulation utility - in layman terms, "something that makes pictures on the graphics screen".

It includes such commands as paint, clear screen, lift pen, drop pen, make circle, save screen, load screen, and so on.

The best idea is to try out the program, ie get used to it first before trying anything.

Ps, the picture below shows what is possible when using this program.

The Listing:

```
1 REM *****
2 REM * LIGHT MAGIC *
3 REM *
4 REM * BY MARCO FERLAINO *
5 REM * COPYRIGHT (C)1986 *
6 REM *****

7 PCLS=X:128:Y=92:TG=1:RF=2:B=1:
GOSUB62
8 H1$="1":H2$="2"
9 U$=CHR$(94):D$=CHR$(10):L$=CHR$(8):R$=CHR$(9)
10 NV$="T":NE$="Y":SV$="G":SE$="H"
11 A$=INKEY$
12 IF A$=U$ THEN MI=-1:FI=0:GOTO54
13 IF A$=D$ THEN MI=1:FI=0:GOTO54
14 IF A$=L$ THEN MI=-1:MI=0:GOTO54
15 IF A$=R$ THEN MI=1:MI=0:GOTO54
16 IF A$=NE$ THEN MI=1:MI=-1:GOTO54
17 IF A$=NV$ THEN MI=-1:MI=-1:GOTO54
18 IF A$=SE$ THEN MI=1:MI=1:GOTO54
19 IF A$=SV$ THEN MI=-1:MI=1:GOTO54
20 IF A$="C" THEN PSET(X,Y,2):PAINT(X,Y)
21 IF A$="E" THEN B6
22 IF A$="#" THEN H=0
23 IF A$="$" THEN H=1
24 IF A$="%" THEN H=2
25 IF A$="&" THEN H=3
26 IF A$=" " THEN H=4
27 IF A$="(" THEN H=5
28 IF A$=")" THEN H=6
29 IF A$="J" THEN H=99
30 IF A$="Z" THEN TG=2
31 IF A$="X" THEN TG=3
32 IF A$="N" THEN TG=1:KD=1:H=0:R=0:E=0:RF=2
33 IF A$="V" THEN H#KD=2
```

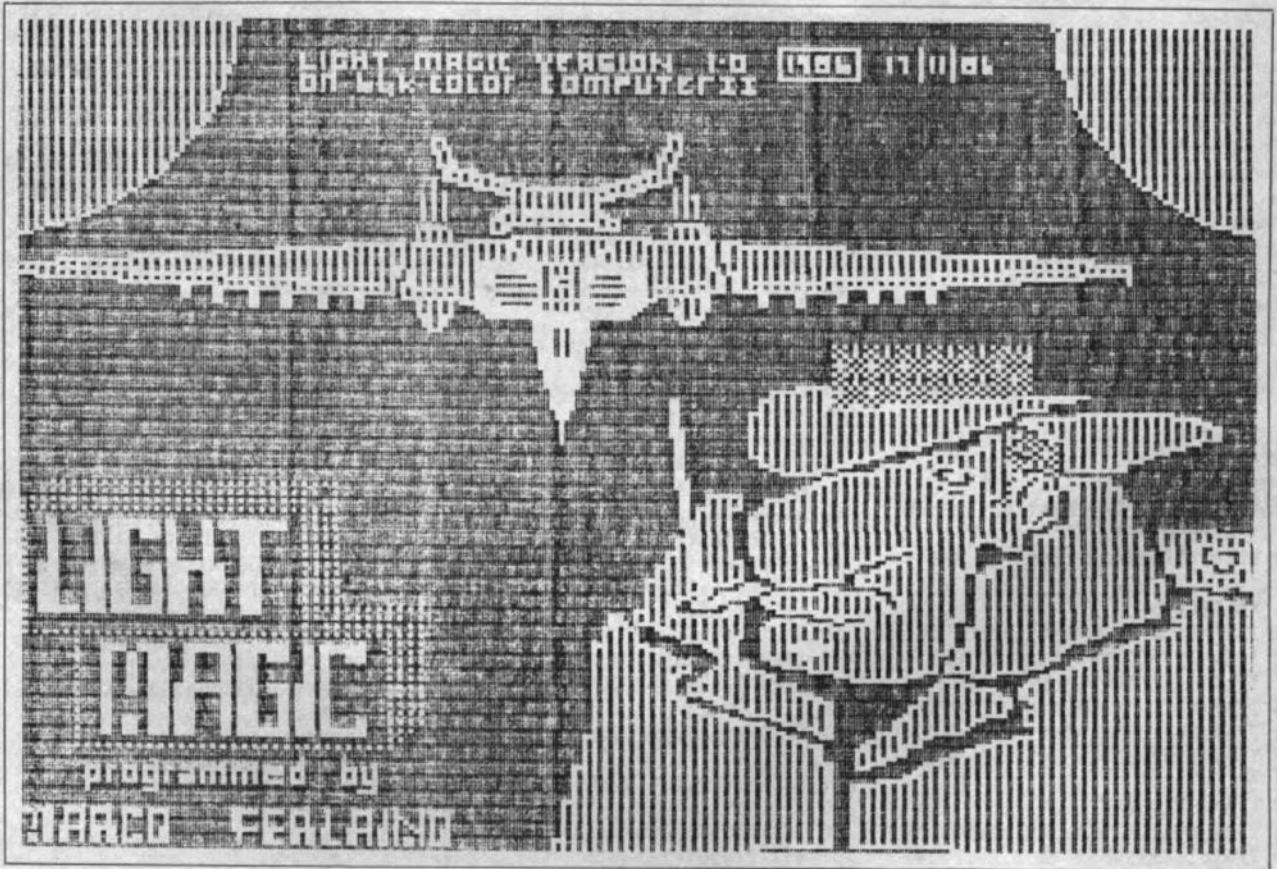
```
34 IF A$="B" THEN KD=3
35 IF A$="S" THEN CLS:PRINT@42,"circle draw";:PRINT:PRINT:"CIRCLE";:CI;";";VO;";";:WE:PRINT:PRINT:"ENTER LOCATION NUMBERS";:INPUT CI,VO:PRINT:PRINT:"ENTER SIZE";:INPUTWE:PRINT:PRINT" [DIRAW OR [E]RASE":GOTO133
36 IF A$="L" THEN CLS:PRINT@43,"line plot";:PRINT:PRINT:PRINT:PRINT:"LINE";:OO;";";PP;";";:QV;";";ER;";";PSET":PRINT:PRINT:INPUT:"ENTER 1ST COORDINATES";:OO,PP:PRINT:INPUT:"ENTER 2ND COORDINATE S";:QV,ER:PRINT:PRINT" [J]OIN OR [E]RASE":GOTO131
37 IF A$="3" THEN E=0:R=0
38 IF A$="4" THEN E=1:R=1
39 IF A$="5" THEN E=2:R=2
40 IF A$="6" THEN E=3:R=3
41 IF A$="7" THEN E=4:R=4
42 IF A$="8" THEN E=5:R=5
43 IF A$="9" THEN E=6:R=6
44 IF A$="U" THEN PAINT(X,Y),0
45 IF A$="," THEN RF=1
46 IF A$="." THEN RF=2
47 IF A$="P" THEN CLS:PRINT@38,"pattern color fill";:PRINT:PRINT:"ENTER PATTERN NUMBER";:INPUTP:PMODE4,1:SCREEN1,1:PSET(X,Y,2):POKE178,P:PAINT(X,Y),5:POKE178,3
48 IF A$=CHR$(12) THEN G62
49 IF H1$=<A$ AND A$=<H2$ THEN B=ASC(A$)-48:GOTO54
50 IFRF=1 AND A$=" " THEN FI=0:MI=0
51 IFRF=2 AND A$=">" THEN FI=0:MI=0
52 IF KD=3 THEN CIRCLE(X,Y),3:PAINT(X,Y)
53 IF KD=2 THEN CIRCLE(X,Y),2:PAINT(X,Y)
54 X=X+FI*TG:Y=Y+MI*TG
55 IF X<0 THEN X=255
56 IF X>255 THEN X=0
57 IF Y<0 THEN Y=191
58 IF Y>191 THEN Y=0
59 IF B=2 THEN COLOR2:LINE(X+H,Y)-(X+E,Y+R),PSET,BF
60 IF B=1 THEN COLOR2:LINE(X+H,Y)-(X+E,Y+R),PSET,BF:COLOR1:LINE(X+H,Y)-(X+E,Y+R),PSET,BF
61 GOTO11
62 POKE65495,0:CLS3:PRINT@43,"light magic";
63 POKE1078,32:POKE1072,32:POKE1066,32
64 FORTT=1128TO1296STEP32:POKETT,159:NEXTTT:FORTT=1320TO1336:POKETT,159:NEXTTT
65 FORTT=1128TO1144:POKETT,159:N
```

```
EXTTT
66 FORTT=1144TO1304STEP32:POKETT,159:NEXTTT
67 PRINT@137,"(1)LOAD PICTURE";
68 PRINT@169,"(2)SAVE PICTURE";
69 PRINT@201,"(3)NEW PICTURE ";
70 PRINT@233,"(4)MOVE MARKER ";
71 PRINT@265,"(5)EDIT PICTURE";
72 POKE1424,32:FORT=1TO100:NEXTT:POKE1424,255:FORT=1TO100:NEXTT:B$=INKEY$:IF B$<"1" OR B$>"5" THEN 72
73 J=VAL(B$):ON J GOSUB 110,113,116,119,122
74 POKE65494,0:AUDIOON:CLS:PRINT@42,"load picture";
75 PRINT:PRINT:PRINT:"ENTER FILE NAME";:LINEINPUTH$:PRINT:PRINT:"LOADING ";H$:CLOADM H$:AUDIOOFF:POKE65495,0:GOTO62
76 POKE65494,0:CLS:PRINT@42,"save picture";
77 PRINT:PRINT:PRINT:"ENTER FILE NAME";:LINEINPUTH$:PRINT:PRINT:"SAVING ";H$:CSAVEM H$,1535,7680,0:POKE65495,0:GOTO62
78 PRINT@352,"PICTURE IN MEMORY WILL BE ERASED";:PRINT@423,"ARE YOU SURE (Y/N)";:A$=INKEY$:79 IF A$="Y" THEN PCLS:X=128:Y=92:GOTO62
80 IF A$="N" THEN GOTO62ELSE78
81 CLS:PRINT@42,"move marker";:PRINT:PRINT:PRINT:"CURRENT POSITION";:X;";";Y;:PRINT
82 PRINT:PRINT:PRINT:"ENTER x COORDINATE";:INPUTX
83 PRINT:PRINT:PRINT:"ENTER y COORDINATE";:INPUTY
84 LETX=X:LETY=Y
85 PMODE4,1:SCREEN1,1:GOTO8
86 CLS(0):KL=15:A=31:GOSUB135
87 A$=INKEY$
88 IF A$=" " THEN B6
89 IF A$=CHR$(94) THEN KL=KL-1:Y=Y-1:IF KL<0 THEN KL=0
90 IF A$=CHR$(10) THEN KL=KL+1:Y=Y+1:IF KL>31 THEN KL=31
91 IF A$=CHR$(8) THEN A=A-1:X=X-1:IFA<0 THEN A=0
92 IF A$=CHR$(9) THEN A=A+1:X=X+1:IFA>63 THEN A=63
93 SET(A,KL,1):RESET(A,KL):SET(A,KL,1):RESET(A,KL):SET(A,KL,1):RESET(A,KL)
94 IF A$=" " THEN B6
95 IF A$="2" THEN GOSUB98
96 SET(A,KL,1):PSET(X,Y)
97 GOTO87
98 RESET(A,KL):PSET(X,Y):GOTO8
```

```

7
99 AS=INKEY$
100 LINE(X+H,Y)-(X+E,Y+R),PSET,B
F
101 X=X+INT(JOYSTK(0)/31)-1:Y=Y+
INT(JOYSTK(1)/31)-1
102 IFX<0THENX=255
103 IFX>255THENX=0
104 IFY<0THENY=191
105 IFY>191THENY=0
106 AS=INKEY$:IFAS="K"THEN8
107 IFAS="2"THENCOLOR2:LINE(X+H,
Y)-(X+E,Y+R),PSET,BF:COLOR1:LINE
(X+H,Y)-(X+E,Y+R),PSET,BF:COLOR2
:LINE(X+H,Y)-(X+E,Y+R),PSET,BF
108 IFAS="1"THENCOLOR1:LINE(X+H,
Y)-(X+E,Y+R),PSET,BF:COLOR2:LINE
(X+H,Y)-(X+E,Y+R),PSET,BF:COLOR1
:LINE(X+H,Y)-(X+E,Y+R),PSET,BF
109 GOTO99
110 PRINT@140,"load picture";
111 GOSUB125
112 GOTO74
113 PRINT@172,"save picture";
114 GOSUB125
115 GOTO76
116 PRINT@204,"new picture";
117 GOSUB125
118 GOTO78
119 PRINT@236,"move marker";
120 GOSUB125
121 GOTO81
122 PRINT@268,"edit picture";
123 GOSUB125
124 GOTO85
125 AS=INKEY$:IFAS=CHR$(13)THENR
ETURNELSEIFAS=CHR$(32)THEN67ELSE
125
126 D$=INKEY$:IFD$="Y"THENGOTO12
8ELSEIFD$="N"THENGOSUB127ELSE126
127 PRINT@458,"
";GOTO67
128 PRINT@458,"
";RETURN
129 LINE(OO,PP)-(QV,ER),PRESET:G
OTO85
130 LINE(OO,PP)-(QV,ER),PSET:GOT
O85
131 AS=INKEY$:IFAS="E"THEN129ELS
EIFAS="J"THEN130ELSE131
132 CIRCLE(CI,VO),WE:PMODE4,1:SC
REEN1,1:GOTO11
133 AS=INKEY$:IFAS="D"THENGOTO13
2ELSEIFAS="E"THEN134ELSE133
134 COLOR2:CIRCLE(CI,VO),WE:PMOD
E4,1:SCREEN1,1:GOTO11
135 PRINT@0,STRING$(32,255);:PRI
NT@480,STRING$(31,255);:POKE1535
,255:FORI=31TO479STEP32:PRINT@I,
STRING$(2,255);:NEXTI:RETURN
136 END
137 SAVE"19:3":END'7

```



MERRY CHRISTMAS from all of us here at Goldsoft. Thanks for all your support during '87. We look forward to another year of receiving all those terrific submissions and hopefully getting to meet a few more of you face to face!!! See you in the New Year!!!

Regards - The Crew

BRAIN BUSTER



by Charles Bartlett

GAME

NINE SQUARES ARE displayed numbered from 1 to 9. The numbers are in a random order. The object of the game is to get three tokens in a row - the trouble is that at the end of each turn, the tokens will move to the next numeric position ... 1 moves to 2, 2 moves to 3 and so on until 9 moves to 1.

So a win by you or your opponent is possible not only on where your tokens are NOW, but where they WILL be.

The game is for one or two players. If 1 player is selected, the computer will be your opponent and don't expect an easy game as the computer plans its moves up to three moves ahead.

To select a square simply type the number in the square.

The Listing:

```
0 GOTO10
3 SAVE 308:3":END'1
10 ' BRAIN BUSTER
(C) CHARLES BARTLETT 1/7/87

20 CLEAR1000:ONBRKGOTO550
30 POK65497,0:PALETTE4,45:PALET
TE5,20:PALETTE0,62:HSCREEN2:POKE
&HFF9A,62:DIMBP(12,1),P(9,2),PS(
9,2),PP(1,2):FORX=7TO15:PALETTE
X,62:NEXT
40 B1$=""RUGR3FDGHL3FDGHL3R3U6R3F
DGLWL2F2DR2U5ER2FD2NL4D3R3U6LWR
D6R3U6D1F4NDU5":B2$=""RUGR3FDGHL3
FDGHL3R4HU5D5FR2ENU5R2FR2EUHL2HU
ER2FER2ND6R2FUR4L4GD2WR3D3R6U6R3
FDGLWL2F3"
50 FORX=1TO9
60 R=RND(9):FORK=1TO9:IFP(X,0)=R
THEN60ELSENEXT
70 P(X,0)=R:NEXTX
80 Z=1:HCOLOR2:FORX=0TO192STEP64
:HLIN(X,0)-(X+9,180),PSET,BF:NE
XT
90 Z=1:FORY=0TO180STEP60:HLIN(0
,Y)-(201,Y+9),PSET,BF:BP(Z,1)=Y+
35:NEXT
100 Z=1:FORX=36TO164STEP64:BP(Z,
0)=X:BP(Z+3,0)=X:BP(Z+6,0)=X:Z=Z
+1:NEXT:Z=1:FORY=35TO155STEP60:B
P(Z,1)=Y:BP(Z+1,1)=Y:BP(Z+2,1)=Y
:Z=Z+3:NEXT
110 GOSUB410:T=1:CC=7:FORX=1TO9:
HCOLORCC:HCIRCLE(BP(X,0),BP(X,1)
),24:HCIRCLE(BP(X,0),BP(X,1)),18
:HPAINT(BP(X,0)-20,BP(X,1)),CC,C
C:CC=CC+1:NEXT:GOSUB120:SOUND200
,1:GOTO140
120 HCOLOR3
130 V=1:FORJ=3TO19STEP8:HPRINT(J
,4),P(V,0):HPRINT(J,11),P(V+3,0)
:HPRINT(J,19),P(V+6,0):V=V+1:NEX
T:RETURN
140 PLAY"01T255L255V31":HCOLOR5:
HPRINT(26,10),"1 OR 2":HPRINT(26
,11),"PLAYERS"
150 GOSUB290:IF I>2 THEN150ELSE
PN=1:HCOLOR0:HPRINT(26,10),"1 OR
2":HPRINT(26,11),"PLAYERS"
160 HCOLOR0:GOSUB280:HCOLOR4:GOS
UB270
170 GOSUB290:GOSUB230:IF NOT OK
THEN 170 ELSE GOSUB250:GOSUB430:
SOUND200,1:T=T+1
180 IFT>9 THENHCOLOR0:GOSUB270:G
OTO510
190 HCOLOR0:GOSUB270:HCOLOR5:GOS
UB280
200 IPPN=1 THEN GOSUB560 ELSE GO
SUB290
210 GOSUB240:IF NOT OK THEN 210
ELSE GOSUB250:GOSUB430:SOUND200,
1:T=T+1
220 GOSUB300:GOSUB120:GOSUB250:G
OSUB430:GOTO160
230 OK=-1:GOSUB420:IFP(X,1)=0 AN
D P(X,2)=0 THENP(X,1)=1:RETURNEL
SE SOUND10,1:OK=0:RETURN
240 OK=-1:GOSUB420:IFP(X,1)=0 AN
D P(X,2)=0 THEN P(X,2)=1:RETURN
ELSE SOUND10,1:OK=0:RETURN
250 FORX=1TO9:IFP(X,1)=1 THEN PA
LETTE X+6,45 ELSE IFP(X,2)=1 THE
N PALETTE X+6,20 ELSE PALETTE X+
6,62
260 NEXTX:RETURN
270 HPRINT(26,10),"PLAYER 1":RET
URN
280 HPRINT(26,10),"PLAYER 2":RET
URN
290 I$=INKEYS:PALETTE6,RND(60):I
F I$=""THEN290ELSEI=VAL(I$):IFI=0
THEN290ELSE RETURN
300 HCOLOR0:GOSUB130
310 FORB=1TO9:IFP(B,0)=2THEN320E
LSENEXTB
320 FORX=1TO9:IFP(X,0)=1 THEN FO
RE=0TO2:PP(1,E)=P(X,E):NEXTB:GOT
O330ELSE NEXTX
330 FORG=1TO9:IFP(G,0)=9 THEN 34
0ELSE NEXTG
340 FORH=0TO2:P(X,H)=P(G,H):NEXT
350 N1=9:N2=8
360 FORU=1TO9:IFP(U,0)=N1 AND U<
>X THEN GOSUB400:FORV=0TO2:P(U,V
)=P(K,W):NEXTV:N1=N1-1:N2=N2-1:I
F N1=2 THEN380
370 NEXTU:GOTO360
380 FORM=1TO9:IFP(M,0)=2 AND M=B
THEN 390ELSE NEXTM
390 FORO=0TO2:P(M,O)=PP(1,O):NEX
TO:RETURN
400 FORK=1TO9:IFP(K,0)=N2 THEN R
ETURN ELSE NEXT K:RETURN
410 HDRAW"BM204,30;C6S16;XB1$;BM
205,30;XB1$;BM290,40;A1;XB2$;BM2
90,41;XB2$":RETURN
420 FORX=1TO9:IFP(X,0)=I THEN RE
TURN ELSE NEXT
430 LC=0:TV=0:FORL=1TO2:FORY=1TO
9STEP3:IFP(Y,L)=1 AND P(Y+1,L)=1
AND P(Y+2,L)=1 THEN TV=TV+1:GOS
UB810:GOTO470 ELSE NEXTY
440 FORY=1TO3:IFP(Y,L)=1 AND P(Y
+3,L)=1 AND P(Y+6,L)=1 THEN TV=T
V+1:GOSUB810:GOTO470 ELSE NEXTY
450 IF P(1,L)=1 AND P(5,L)=1 AND
P(9,L)=1 THEN TV=TV+1:GOSUB810:
GOTO470
460 IFP(7,L)=1 AND P(5,L)=1 AND
P(3,L)=1 THEN TV=TV+1:GOSUB810:G
OTO470
470 IF LC=1 AND TV=1 THEN Q=1 EL
SE IF LC=2 AND TV=1 THEN Q=2 EL
SE IF LC=2 AND TV=2 THEN Q=3
480 NEXTL:IF TV=0 THENRETURN
490 HCOLOR0:GOSUB270:GOSUB280:IF
Q=1 THEN HCOLOR4:HPRINT(26,10),"
PLAYER 1":HPRINT(26,11),"WINS":G
OTO520
500 IFQ=2 THEN HCOLOR5:HPRINT(26
,10),"PLAYER 2":HPRINT(26,11),"W
INS":GOTO520
510 HCOLOR6:HPRINT(26,10),"A DRA
W"
520 FORX=1TO10:SOUND150,1:SOUND2
00,1:NEXTX:HPRINT(26,12),"PLAY":
HPRINT(26,13),"AGAIN Y/N"
530 I$=INKEYS:IFI$=""THEN530
540 IFI$="Y" THEN RUN ELSE IFI$=
"N" THEN 550 ELSE 530
550 POK65496,0:PALETTE6:CLS1:
END
560 C=2:GOSUB640:IF WIN THEN RET
URN
570 FOR X=1TO9:FORY=0TO2:PS(X,Y)
=P(X,Y):NEXTY,X:GOSUB310:GOSUB64
0:IF WIN THEN GOSUB790:RETURN
580 C=1:GOSUB640:IF WIN THEN GOS
UB790:RETURN
```

continued p.60

MATCHING PAIRS

by Frank Woodward

GAME

32K ECB

MATCHING PAIRS IS a game for 1 - 6 players. In each turn you select 2 of the boxes and look at the pictures inside. This is done by pressing the keys "A" - "E" and "1" - "8", pressing "A" - "E" first. If the pictures match then a point is entered under your player number and you get another turn - if they don't match, then play goes to the next player. The player with the highest score wins.

Press break at the end of the game.

The Listing:

```
0 GOTO10
1 ***** "MATCHPRS"
2 ***** FRANK WOODWARD
3 SAVE"32:3":END'1
10 '
15 CLEAR 500
17 CLS2
20 G$=CHR$(230)
40 PRINT@128,STRING$(32,G$);
50 PRINT@200,"MATCHING PAIRS";
60 PRINT@263,"BY FRANK WOODWARD"
;
70 PRINT@320,STRING$(32,G$);
80 PRINT@390,"INSTRUCTIONS Y/N";
: INPUT";AS
90 CLS1
100 IF AS="Y" GOTO 110 ELSE 130
110 PRINT@9,"MATCHING PAIRS"
112 PRINT@37,"A GAME FOR 1-6 PLAYERS"
114 PRINT@98,"INSTRUCTIONS"
116 PRINT"IN EACH TURN YOU SELECT 2 OF THE BOXES AND LOOK AT THE PICTURE INSIDE, THIS IS DONE BY PRESSING THE KEYS<A-E> AND <1-8>,PRESSING <A-E> FIRST."
118 PRINT"IF THE PICTURES MATCH THEN A POINT IS ENTERED UNDER YOUR PLAYER NUMBER AND YOU GET ANOTHER TURN. IF THEY DO NOT MATCH THEN PLAY GOES TO THE NEXT PLAYER"
120 INPUT"PRESS <ENTER>";AS
122 CLS
126 PRINT@64,"THOUGH THE POSITION OF THE PICTURES IS RANDOM FROM GAME TO GAME,THEY REMAIN IN ONE PLACE DURING PLAY."
127 PRINT@224,"PRESS <BREAK> AT THE END OF THE GAME"
128 PRINT@393,"";: INPUT"PRESS <ENTER>";AS
129 CLS
130 PRINT@225,"ENTER NUMBER OF PLAYERS 1-6";: INPUT";AS
135 IF AS<"1" OR AS>"6" GOTO130
137 NP=VAL(AS)
140 CLS:PRINT@232,"ONE MOMENT PLEASE";:GOSUB 800
150 PMODE3,1:PCLS2:PALETTE10,11:SCREEN1,0
155 DIM V(8,8)
160 FOR A=18TO228 STEP30
170 B=A+22
180 LINE(A,38)-(B,16),PSET,B
190 LINE(A,64)-(B,42),PSET,B
200 LINE(A,90)-(B,68),PSET,B
210 LINE(A,116)-(B,94),PSET,B
220 LINE(A,142)-(B,120),PSET,B
240 NEXT A
330 LINE(0,154)-(256,154),PSET
340 LINE(0,169)-(256,169),PSET
350 LINE(0,0)-(256,192),PSET,B
356 PAINT(2,170),2,0
360 DRAW"BM29,2;R1D12L3R6"
370 DRAW"BM56,2;R8D7L8D5R8"
380 DRAW"BM84,2;R8D6L8R8D6L8"
390 DRAW"BM112,2;D7R6U5D10U5R6"
400 DRAW"BM154,2;L10D6R10D6L10"
410 DRAW"BM174,2;D12R10U6L5"
420 DRAW"BM201,2;R9D12"
430 DRAW"BM234,2;R10D6L10U6D12R10U6"
450 DRAW"BM5,33;U14R10D14U7L10"
460 DRAW"BM5,45;D14R10U7L10"
470 DRAW"BM15,85;L10U13R10"
480 DRAW"BM15,98;D14L10U7R10"
490 DRAW"BM5,138;R8L8U7R8L8U7R8"
500 LINE(43,154)-(43,192),PSET
510 LINE(85,154)-(85,192),PSET
520 LINE(129,154)-(129,192),PSET
530 LINE(171,154)-(171,192),PSET
540 LINE(215,154)-(215,192),PSET
550 AS="C3;BM+35,0;U8R4D4L4D4BR12L4U8"
555 DRAW"C3;BM4,166;U8R4D4L4D4BR12L4U8"
560 DRAW"BM11,166;XAS;"
570 DRAW"BM+0,+8;XAS;"
580 DRAW"BM+0,+8;XAS;"
590 DRAW"BM+0,+8;XAS;"
600 DRAW"BM+0,+8;XAS;"
610 N0$="U8R4D8L4"
620 N1$="U8D8"
630 N2$="R4L4U4R4U4L4D1BD7"
640 N3$="R4U4L4R4U4L4BD8"
650 N4$="BU8D6R4D2U4D2R2L6BD2"
660 N5$="R4U4L4U4R4L4BD8"
670 N6$="U8D8R4U4L2BL2D4"
680 N7$="BU8R4D8BL4"
690 N8$="U8R4D8L4U4R4L4D4"
700 N9$="BR4U8L4D4R4D4BL4"
710 DRAW"BM21,166;XN1$;"
720 DRAW"BM62,166;XN2$;"
730 DRAW"BM105,166;XN3$;"
740 DRAW"BM148,166;XN4$;"
750 DRAW"BM190,166;XN5$;"
760 DRAW"BM234,166;XN6$;"
770 LINE(30,165)-(36,159),PSET,B
F
775 GOTO1030
800 DIM A(20),B(20),T$(20),D$(20),P$(20),Q$(20),Q(20)
805 QT=QT+1:Z=0:Y=0
810 DATA "C3U15R14D15L14BR4BU3U8R7D8L7C4L1U9R9D9L9U1D2R10U11L10","C1BR2U4E2U3H2U4R10D4G2D3F2D4L1OUI1C4R8U1L8U1R8U1L8","C4U14R14D14L14BR4BU2U10R9D10L9R9U2L5U6R5","BU7C4E7F7G7H7B5BR2U10R10D10L10BR3BU3C3U4R4D4L4"
820 DATA "C3BU1U14F14U14G14U2BR2C1U10P5G5BR10U10G5F5","C4BU1U14F14U14G14U2C3BR3U10BR9D10","C3BU2U12R13D12L13R6H6E6F6G6BU5C4U2","C3E7F7L14BE2C4R10BH2C1L6BE2C3R2BH2C4L2U3R4D3L2","BR5C4R4U1L4U1R4U1L4C3L5E5U4E2F2D4F5L10"
830 DATA "BU2C4U5R4U4R10D9L2C3D2L2U2C4R2L6C3D2L2U2C4R2L4U5R4C1R4U4","C3E7F7H7C4L7U9R14D9L7BU1U3C1L3R6L1U1L4R1U1R2L1U1","C3R14L2BU1C4L10R6U6H6R12G6BU8BR6C1L12BD3BR3R7","C3R14L3BU2C4L8U12R8D12U4R3U4L3BL2C1U3L6D10R6U9"
840 DATA "C3R15L2BU1C4E2L14F2R10BU2L6U4BU6U2D1BL3C1F6D4H6U4","BR7C4U5R1D5U5C1R6L12U2R10U2L8U2R6U2L4U2R2","C4U6R14D6L14U2BR4C3R2BR1R1BR1R1BU2L1BL1L1BU3C4R5U7L10D7R9C1U1L7U1R7U1L7U1R7U1L7U1R7"
850 DATA "C3R14H14R14C4G14BU16R14","C1BR6BU2U4L5U4R5U4R4D4R4D4L4D4L4BL1C3U3L5U6R4U3","C3BR4H4R14G4L7H3R13G2L10H3R7C1U8R3D8L1U8C4U3","C3R15U1L15R4U14R7D14U5C4R3U8BL5BD2L3D3R3U3"
860 FOR X=1TO20
870 T$(X)=STR$(X)
880 READ T$(X)
890 NEXT X
900 FOR X=1TO20
910 C=RND(20)
```

```

920 IF T3(C)=STR3(0) THEN 910
930 D3(X)=T3(C)
940 B=C
950 T3(C)=STR3(0)
960 A3=D3(X)
970 Z=Z+1
985 IF QT=1 GOTO 1022
990 P3(Z)=A3
995 A(Z)=B
1000 P(Z)=B
1010 NEXT X
1020 RETURN
1022 Q3(Z)=A3
1024 B(Z)=B
1025 Q(Z)=B
1027 NEXT X
1029 RESTORE:GOTO 805
1030 AA=0:BB=0
1035 IF QQ=20 GOTO 3000
1040 L3=INKEYS
1050 IFL3=""GOTO1040
1060 IFL3="A"ORL3="B"ORL3="C"ORL
3="D"ORL3="E"GOTO1080ELSE1070
1070 SOUND100,2:GOTO1040
1080 N3=INKEYS
1090 IFN3=""GOTO1080
1100 IFN3("1"ORN3)"8"GOTO110ELS
E1120
1110 SOUND 100,2:GOTO 1080
1120 L=0
1130 IF L3="A"THEN YA=0ELSE IFL3
="B"THEN YA=8 ELSE IFL3="C"THEN
YA=16 ELSE IFL3="D"THEN YA=24 EL
SE IFL3="E"THEN YA=32
1140 A=VAL(N3):H=A+YA
1150 ON H GOSUB 1440,1460,1480,1
500,1520,1540,1560,1580,1600,162
0,1640,1660,1680,1700,1720,1740,
1760,1780,1800,1820,1840,1860,18
80,1900,1920,1940,1960,1980,2000
,2020,2040,2060,2080,2100,2120,2
140,2160,2180,2200,2220
1160 IF L=1 GOTO 1040
1170 GC=GC+1:IF GC=1GOTO1180 ELS
E1190
1180 GA=DA:GB=DB
1190 IF GC=2 GOTO1200 ELSE 1040
1200 PL=PL+1:IFPL>NP THEN PL=1
1205 TT=TT+1
1210 IF AA=BB THEN 2240
1220 PLAY "T101L7F+L5D-"
1230 FOR T=1TO8000:NEXT
1240 LINE(DA,DB+1)-(DA+17,DB-19)
,PRESSET,B
1250 LINE(GA,GB+1)-(GA+17,GB-19)
,PRESSET,B
1260 FOR X=2TO5
1270 PAINT(DA+1,DB-1),X,1
1290 PAINT(GA+1,GB-1),X,1
1300 NEXT X
1305 PAINT(DA+1,DB-1),3,4
1310 PAINT(GA+1,GB-1),3,4
1320 IF GD<>1GOTO1330 ELSE RETUR
N
1330 PAINT(DA,DB),2,4
1340 PAINT(GA,GB),2,4
1350 GC=0
1360 IF PL=1 THEN X=30 ELSE IF P
L=2 THEN X=73 ELSE IF PL=3 THEN
X=116 ELSE IF PL=4 THEN X=159 EL
SE IF PL=5 THEN X=202 ELSE IF PL
=6 THEN X=245
1370 IF NP=1 GOTO1430

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1380 GET(X,159)-(X+6,165),V,G
1390 Y=X:IF PL=NP THEN X=-13
1400 PUT(X+43,159)-(X+49,165),V,
PSET
1410 IF PL=NP THEN X=Y
1420 PUT(X,159)-(X+6,165),V,PRES
ET
1422 IF FL<>1 GOTO 1430
1425 DRAW"BM36,165;C2U6"
1430 GOTO 1030
1440 IF A(1)<>P(1) GOTO2790
1450 DRAW"BM22,35;XP3(1);":AA=P(
1):DA=21:DB=36:RETURN
1460 IF B(1)<>Q(1) GOTO2790
1470 DRAW"BM52,35;XQ3(1);":BB=Q(
1):DA=51:DB=36:RETURN
1480 IF A(2)<>P(2) GOTO2790
1490 DRAW"BM32,35;XP3(2);":AA=P(
2):DA=81:DB=36:RETURN
1500 IF B(2)<>Q(2) GOTO2790
1510 DRAW"BM112,35;XQ3(2);":BB=Q
(2):DA=111:DB=36:RETURN
1520 IF A(3)<>P(3) GOTO2790
1530 DRAW"BM142,35;XP3(3);":AA=P
(3):DA=141:DB=36:RETURN
1540 IF B(3)<>Q(3) GOTO2790
1550 DRAW"BM172,35;XQ3(3);":BB=Q
(3):DA=171:DB=36:RETURN
1560 IF A(4)<>P(4) GOTO2790
1570 DRAW"BM202,35;XP3(4);":AA=P
(4):DA=201:DB=36:RETURN
1580 IF B(4)<>Q(4) GOTO2790
1590 DRAW"BM232,35;XQ3(4);":BB=Q
(4):DA=231:DB=36:RETURN
1600 IFA(5)<>P(5) GOTO2790
1610 DRAW"BM22,61;XP3(5);":AA=P(
5):DA=21:DB=62:RETURN
1620 IF B(5)<>Q(5) GOTO2790
1630 DRAW"BM52,61;XQ3(5);":BB=Q(
5):DA=51:DB=62:RETURN
1640 IF B(6)<>Q(6) GOTO2790
1650 DRAW"BM82,61;XQ3(6);":BB=Q(
6):DA=81:DB=62:RETURN
1660 IF A(6)<>P(6) GOTO2790
1670 DRAW"BM112,61;XP3(6);":AA=P
(6):DA=111:DB=62:RETURN
1680 IF A(7)<>P(7) GOTO2790
1690 DRAW"BM142,61;XP3(7);":AA=P
(7):DA=141:DB=62:RETURN
1700 IF B(7)<>Q(7) GOTO2790
1710 DRAW"BM172,61;XQ3(7);":BB=Q
(7):DA=171:DB=62:RETURN
1720 IF A(8)<>P(8) GOTO2790
1730 DRAW"BM202,61;XP3(8);":AA=P
(8):DA=201:DB=62:RETURN
1740 IF B(8)<>Q(8) GOTO2790
1750 DRAW"BM232,61;XQ3(8);":BB=Q
(8):DA=231:DB=62:RETURN
1760 IF A(9)<>P(9) GOTO2790
1770 DRAW"BM22,87;XP3(9);":AA=P(
9):DA=21:DB=88:RETURN
1780 IF A(10)<>P(10) GOTO2790
1790 DRAW"BM52,87;XP3(10);":AA=P
(10):DA=51:DB=88:RETURN
1800 IF B(9)<>Q(9) GOTO2790
1810 DRAW"BM82,87;XQ3(9);":BB=Q(
9):DA=81:DB=88:RETURN
1820 IF A(11)<>P(11) GOTO2790
1830 DRAW"BM112,87;XP3(11);":AA=
P(11):DA=111:DB=88:RETURN
1840 IF B(10)<>Q(10) GOTO2790
1850 DRAW"BM142,87;XQ3(10);":BB=

```

```

Q(10):DA=141:DB=88:RETURN
1860 IF A(12)<>P(12) GOTO2790
1870 DRAW"BM172,87;XP3(12);":AA=
P(12):DA=171:DB=88:RETURN
1880 IF B(11)<>Q(11) GOTO2790
1890 DRAW"BM202,87;XQ3(11);":BB=
Q(11):DA=201:DB=88:RETURN
1900 IF B(12)<>Q(12) GOTO2790
1910 DRAW"BM232,87;XQ3(12);":BB=
Q(12):DA=231:DB=88:RETURN
1920 IF A(13)<>P(13) GOTO2790
1930 DRAW"BM22,113;XP3(13);":AA=
P(13):DA=21:DB=114:RETURN
1940 IF B(13)<>Q(13) GOTO2790
1950 DRAW"BM52,113;XQ3(13);":BB=
Q(13):DA=51:DB=114:RETURN
1960 IF A(14)<>P(14) GOTO2790
1970 DRAW"BM82,113;XP3(14);":AA=
P(14):DA=81:DB=114:RETURN
1980 IF A(15)<>P(15) GOTO2790
1990 DRAW"BM112,113;XP3(15);":AA
=P(15):DA=111:DB=114:RETURN
2000 IF B(14)<>Q(14) GOTO2790
2010 DRAW"BM142,113;XQ3(14);":BB
=Q(14):DA=141:DB=114:RETURN
2020 IF B(15)<>Q(15) GOTO2790
2030 DRAW"BM172,113;XQ3(15);":BB
=Q(15):DA=171:DB=114:RETURN
2040 IF A(16)<>P(16) GOTO2790
2050 DRAW"BM202,113;XP3(16);":AA
=P(16):DA=201:DB=114:RETURN
2060 IF B(16)<>Q(16) GOTO2790
2070 DRAW"BM232,113;XQ3(16);":BB
=Q(16):DA=231:DB=114:RETURN
2080 IF A(17)<>P(17) GOTO2790
2090 DRAW"BM22,139;XP3(17);":AA=
P(17):DA=21:DB=140:RETURN
2100 IF B(17)<>Q(17) GOTO2790
2110 DRAW"BM52,139;XQ3(17);":BB=
Q(17):DA=51:DB=140:RETURN
2120 IF B(18)<>Q(18) GOTO2790
2130 DRAW"BM82,139;XQ3(18);":BB=
Q(18):DA=81:DB=140:RETURN
2140 IF A(18)<>P(18) GOTO2790
2150 DRAW"BM112,139;XP3(18);":AA
=P(18):DA=111:DB=140:RETURN
2160 IF A(19)<>P(19) GOTO2790
2170 DRAW"BM142,139;XP3(19);":AA
=P(19):DA=141:DB=140:RETURN
2180 IF B(19)<>Q(19) GOTO2790
2190 DRAW"BM172,139;XQ3(19);":BB
=Q(19):DA=171:DB=140:RETURN
2200 IF B(20)<>Q(20) GOTO 2790
2210 DRAW"BM202,139;XQ3(20);":BB
=Q(20):DA=201:DB=140:RETURN
2220 IF A(20)<>P(20) GOTO2790
2230 DRAW"BM232,139;XP3(20);":AA
=P(20):DA=231:DB=140:RETURN
2240 IF AA=0 OR BB=0 GOTO 1040
2250 PLAY"T2L6404CDEFGACAGFEDCCD
EFGABAGFEDCFEFGABC"
2260 GD=1
2270 GOSUB1230
2280 PAINT(DA,DB),1,4
2290 PAINT(GA,GB),1,4
2300 GC=0:GD=0:JZ=(AA+BB)/2
2303 FOR X=1TO20
2307 IF A(X)=JZ THEN A(X)=-1
2308 IF B(X)=JZ THEN B(X)=-1
2310 NEXT X
2320 QQ=QQ+1
2340 ON PL GOTO 2350,2410,2470,2
530,2590,2650

```

```

2350 PA=PA+1:PX=PA:GOSUB 2710
2360 PAINT(4,190),3,4
2370 PAINT(4,190),2,4
2380 DRAW"BM15,186;C3;XNAS;BR10;
XNB$;"
2390 PL=PL-1
2400 GOTO 1030
2410 PB=PB+1:PX=PB:GOSUB 2710
2420 PAINT(50,189),3,4
2430 PAINT(50,189),2,4
2440 DRAW"BM57,186;C3;XNAS;BR10;
XNB$;"
2450 PL=PL-1
2460 GOTO 1030
2470 PC=PC+1:PX=PC:GOSUB 2710
2480 PAINT(110,189),3,4
2490 PAINT(110,189),2,4
2500 DRAW"BM100,186;C3;XNAS;BR10;
;XNB$;"
2510 PL=PL-1
2520 GOTO 1030
2530 PD=PD+1:PX=PD:GOSUB 2710
2540 PAINT(150,189),3,4
2550 PAINT(150,189),2,4
2560 DRAW"BM143,186;C3;XNAS;BR10;
;XNB$;"
2570 PL=PL-1
2580 GOTO 1030
2590 PE=PE+1:PX=PE:GOSUB2710
2600 PAINT(185,189),3,4
2610 PAINT(185,189),2,4
2620 DRAW"BM187,186;C3;XNAS;BR10;
;XNB$;"
2630 PL=PL-1
2640 GOTO 1030
2650 PF=PF+1:PX=PF:GOSUB2710

2660 PAINT(230,189),3,4
2670 PAINT(230,189),2,4
2680 DRAW"BM228,186;C3;XNAS;BR10;
;XNB$;"
2690 PL=PL-1
2700 GOTO 1030
2710 IF PX<10 THEN PY=0 ELSE IF
PX>=10 THEN PY=10
2720 IF PX>19 THEN PY=20
2730 PX=PX-PY
2740 IF PX=0 AND PY=0 THEN PX=1
2750 IF PY=0 THEN NAS=N0$ ELSE I
F PY=10 THEN NAS=N1$ ELSE IF PY=
20 THEN NAS=N2$
2760 IF PX=0 THEN NBS=N0$ ELSE I
F PX=1 THEN NBS=N1$ ELSE IF PX=2
THEN NBS=N2$ ELSE IF PX=3 THEN
NBS=N3$ ELSE IF PX=4 THEN NBS=N4
$ ELSE IF PX=5 THEN NBS=N5$ ELSE
IF PX=6 THEN GOTO 2770
2770 IF PX=6 THEN NBS=N6$ ELSE I
F PX=7 THEN NBS=N7$ ELSE IF PX=8
THEN NBS=N8$ ELSE IF PX=9 THEN
NBS=N9$
2780 RETURN
2790 SOUND 100,2
2800 L=1:RETURN
3000 QQ=21
3005 QQ=QQ-1
3010 IF PA=QQ THEN UA=1
3020 IF PB=QQ THEN UB=1
3030 IF PC=QQ THEN UC=1
3040 IF PD=QQ THEN UD=1
3050 IF PE=QQ THEN UE=1
3060 IF PF=QQ THEN UF=1
3070 UG=UA+UB+UC+UD+UE+UF

3080 IF UG=0 GOTO 3005
3090 IF UA=1 THEN UA=2
3100 IF UB=1 THEN UB=45
3110 IF UC=1 THEN UC=87
3120 IF UD=1 THEN UD=131
3130 IF UE=1 THEN UE=174
3140 IF UF=1 THEN UF=217
3145 ON BRK GOTO 3250
3146 DRAW"BM36,165;C2U6":DRAW"BM
79,165;C2U6":DRAW"BM122,166;C2U6
"
3147 DRAW"BM165,165;C2U6":DRAW"B
M208,165;C2U6":DRAW"BM251,165;C2
U6"
3150 FOR X=1TO3
3160 PAINT(UA,168),X,4
3170 PAINT(UB,168),X,4
3180 PAINT(UC,168),X,4
3190 PAINT(UD,168),X,4
3200 PAINT(UE,168),X,4
3210 PAINT(UF,168),X,4
3212 FOR Y=1TO100:NEXT Y
3220 NEXT X
3230 GOTO 3150
3250 CLS2
3255 PRINT@128,STRING$(32,G$);
3260 PRINT@231,"YOU TOOK "TT" MO
VES";
3270 PRINT@299,"BYE FOR NOW";
3280 PRINT@384,STRING$(32,G$);
3290 REM MATCHING PAIRS BY FRANK
WOODWARD.7-87 BRISBANE 07-2007
139

```

BOTH SIDES

by Jason Hall

UTILITY

64K ECB

DSDD IS A utility designed for those of you who have a double sided drive but only have a Tandy controller and can't access side 2.

This short program WILL allow you to access the other side. All you have to do is run this program and will allow you to access drives 0, 1, 2 and 3.

The Listing:

```

0 GOTO10
3 SAVE"74.3":END?7
10 *****
20 '* DOUBLE SIDED DISK *
30 '* DRIVE V1.1 *
40 '* COPYRIGHT. (C) 1987 BY *

```

```

50 '* JASON A. HALL.. *
60 '* FOR DOUBLE SIDED DRIVE *
70 *****
80 CLEAR200,32511
90 'RAN RELOCATION PROGRAM
100 DATA 26,80,142,128,0,166,132
,183,255,223,167,128,140,224,0,3
9,5,183,255,222,32,239,28,175,57
110 FOR A=32512 TO 32536
120 READ CODE: POKE A,CODE
130 NEXT A
140 'PUT COCO INTO ALL RAN MODE
IF NECESSARY ??????????????
150 A=PEEK(&H000):POKE&H000,55
:IF PEEK(&H000)<>55 THEN EXEC32
3512
160 POKE&H000,0
170 VBR$=CHR$(PEEK(&HC140))+CHR$
(PEEK(&HC141))+CHR$(PEEK(&HC142))

```

```

)
180 IF VER$="1.0"THEN V=0:OOT021
0
190 VER$=CHR$(PEEK(&HC153))+CHR$
(PEEK(&HC154))+CHR$(PEEK(&HC155))
)
200 IF VER$<>"1.1"THENPRINT"SORR
Y, DON'T RECOGNIZE YOUR DOS":STO
PELSE V=1
210 POKE 55210+V*243,01
220 POKE 55211+V*243,02
230 POKE 55212+V*243,65
240 POKE 55213+V*243,66
250 CLS:PRINT"DISK EXTENDED COLO
UR BASIC 1.1 COPYRIGHT (C) 1987
BY TANDY UNDER LICENCE FROM
MICROSOFT":PRINT
260 NEW

```


BASIC TECHNIQUES

pt 1

by Christopher Dent

TUTORIAL

THIS IS THE FIRST part of a series of articles to show you how to get the most out of your programs by using simple routines.

Although this article is called BASIC Programming techniques and all the examples are written in BASIC they can be easily be used in other languages (Although if you are advanced enough to know two or more languages you probably know everything I am going to mention).

This first article will cover a very simple routine called the bubble sort. It is used simply to sort an array into numeric or alphabetic order.

A very common use of the bubble sort used in games to sort the top 10 scores (a very small array) into ascending order. It can also be used to sort data files such as a mailing list, but because of the size of data files a more complex but faster sort routine is usually used called a "Shell Sort" (which I will describe in a later article).

The basic theory behind the bubble sort is comparing the value of array(n) (where n is a valid integer in the range defined by the DIM statement) and the value of array(n+1) and swapping the values of array(n) and array(n+1) if the value of array(n) is greater than the value of array(n+1). The value of n is incremented by one and the values of array(n) and array(n+1) are compared again and swapped if necessary. The process of comparing values and incrementing n continues until n equals the limit of the array-1.

After n equals then limit of the array-1 it has completed pass 1. The process is then repeated until the number of passes equal the number of elements in the array-1.

If you do not understand the above explanation I shall now give you a listing (with full comments) of the bubble sort

routine and a sample run (with a step by step description of each process).

```
10 DIM AR(10)
20 PRINT "Unsorted Array"
30 FOR AR=1 TO 10 40
   :AR(AR)=RND(10)
50 PRINT AR(AR);
60 NEXT
70 PRINT
80 REM Load array AR with data
   and display the data
90 REM AR - Array 10 elements
   long
100 REM Number of elements must
   be known
110 FOR PA=1 TO 9
120 REM PA - Number of passes
   needed
130 FOR EL=1 TO 9
140 REM EL - Number of elements
   to sort
150 IF AR(EL)>AR(EL+1)
   THEN 160 ELSE 220
160 REM Swap AR(EL) with
   AR(EL+1)
170 TE=AR(EL)
180 REM TE - Temporary storage
   (Must be used when swapping
   elements)
190 AR(EL)=AR(EL+1)
200 AR(EL+1)=TE
210 REM The elements have now
   been swapped
220 NEXT EL
230 REM Finished pass PA
240 PRINT "Pass";PA
250 FOR EL=1 TO 10
260 PRINT AR(EL);
270 NEXT EL
280 REM Display Pass Number and
   the current status of the
   array
290 NEXT PA
300 REM All the elements are
   now sorted
310 END
```

A run of the above program produces something similar to the following ...

```
Unsorted Array
10 7 2 6 9 8 4 6 2 5

Pass 1
7 2 6 9 8 4 6 2 5 10
```

```
Pass 2
2 6 7 8 4 6 2 5 9 10
```

```
Pass 3
2 6 7 4 6 2 5 8 9 10
```

```
Pass 4
2 6 4 6 2 5 7 8 9 10
```

```
Pass 5
2 4 6 2 5 6 7 8 9 10
```

```
Pass 6
2 4 2 5 6 6 7 8 9 10
```

```
Pass 7
2 2 4 5 6 6 7 8 9 10
```

```
Pass 8
2 2 4 5 6 6 7 8 9 10
```

```
Pass 9
2 2 4 5 6 6 7 8 9 10
```

By studying the output of the program we notice that at pass 1 the highest number is in the last element of the array. At pass 2 the second highest number is in the second to last position and the highest is in the last position and so on, ie the number of unsorted elements = then total number of elements-the pass number.

Using the above logic at pass 6 there are only 4 unsorted items, but the code will still sort all 10 elements. The solution is very simple -- tell the computer after each pass to sort 1 less element.

The following listing is the new bubble sort routine which decrements the number of sorts needed by one before each new pass therefore increasing the efficiency.

```
10 DIM AR(10)
20 PRINT "Unsorted Array"
30 FOR AR=1 TO 10
40 AR(AR)=RND(10)
50 PRINT AR(AR);
60 NEXT
70 PRINT
80 NS=10
90 FOR PA=1 TO 9
100 NS=NS-1
```

```

110 FOR EL=1 TO NS
120 IF AR(EL)>AR(EL+1) THEN 130
    ELSE 160
130 TE=AR(EL)
140 AR(EL)=AR(EL+1)
150 AR(EL+1)=TE
160 NEXT EL
170 PRINT "Pass";PA
180 FOR EL=1 TO 10
190 PRINT AR(EL);
200 NEXT EL
210 PRINT
220 NEXT PA
230 END

```

The only changes from the first listing (apart from the removal of the REMs and the renumbering) are

1. The inserting of line 80 which tells the computer NS (Number of Sorts) = 10. (The Number of Sorts = The Number of Elements)

2. The inserting of line 100 which tell the computer to decrement the number of sorts needed by one before each new pass.

3. The Change in line 110 (formerly line 130) which limits the number of sorts to NS instead of 10.

With the new code which decrements the number of sorts by one before each new pass the time taken for each completed sort should be just over half the original time. It does not seem that fast because a lot of the time is spent printing out the array after each pass.

To see the increase in speed make the following changes to listing number two.

```

75 TIMER=0
225 PRINT TIMER
DEL 170-210

```

The program is now running with the number of sorts decrementing after each pass and the array is not displayed after each pass. The program now also shows the timer value after each run.

After running the program several times the average value for the timer was 50 or 1 second.

Now change the program so it does not decrement the number of sorts after each pass. To do that the additional changes need to be made:

```

DEL 80
DEL 100
110 FOR EL=1 TO 9

```

Running the program several times produces an average timer

value of 72 or 1.44 seconds. That means a decrease of .44 seconds. That does not sound very impressive until you change the number of elements to a larger number like 100.

After changing the number of elements to 100 (which is done by simply changing every occurrence of 10 to 100 and 9 to 99 in the program), the program when run produces a timer value of 7915 or 158.3 seconds without decrementing the number of sorts. By decrementing the number of sort the timer value is reduced to 4944 or 98.88 seconds. A saving of 59.42 seconds.

Now that I have shown you one way that will definitely increase the speed of the routine - I will now show you how to possibly increase its speed further depending on certain circumstances.

If you look at the sample output you will notice that at pass 7 the array is already sorted but it still does another 2 sorts.

The solution is to have a flag which is set every time that a swap occurs. At the end of every pass the flag is checked to see if a swap was performed. If no swap is performed the array is in order and no more passes are needed, ie you force the loop to end prematurely.

To make the program check if another swap is needed the following changes need to be made to listing two.

```

95 SW=0
155 SW=1
215 IF SW=1 THEN PA=PA+NS

```

Why I said that it would increase its speed in certain circumstances is that each time a swap happens (which is fairly frequent) a flag has to be set which chews up a lot of CPU time and at the end of each pass the flag has to be checked (more CPU time wasted).

Take the sample run as an example. With the new added code the routine would have not executed the last two passes and therefore saved only 3 swaps but set the same flag 30 times and checked the flag 7 times.

Therefore in this case checking and setting the swap flag is a waste of time and memory.

However sorting an array of 100 elements which is fully sorted after only 5 passes (which can be broken down to 485

comparisons, a maximum of 485 swaps and a the flag set a maximum of 485 times), saves 94 passes (which can be broken down to 4465 comparisons and almost that many swaps) which in this case in a big saving in time (approximately one tenth of the time taken to sort 100 elements in which the loop does not drop out).

So the choice is yours - you can either tell the computer to check if a swap has occurred and then force the computer to end the loop prematurely or not worry about the extra passes (and the setting of the flags).

I personally do not worry about checking the flag and forcing the loop to end prematurely because it requires the extra code and the chances that the loop will be fully sorted after only a few passes are fairly low.

Printer Graphics continued from p. 29

```

PRINCIPLES MENTIONED IN THE DM
P-200 MANUAL*****
30 PRINT#-2,CHR$(18);CHR$(27);CH
R$(19);
40 FOR RPT=1 TO 80:PRINT#-2,CHR$
(213);CHR$(170);CHR$(213);CHR$(1
70);CHR$(213);CHR$(170);:NEXT RP
T:GOSUB 100
50 FOR RPT=1 TO 80:PRINT#-2,CHR$
(247);CHR$(148);CHR$(190);CHR$(1
48);CHR$(247);CHR$(128);:NEXT RP
T:GOSUB 100
60 FOR RPT=1 TO 60:PRINT#-2,CHR$
(136);CHR$(148);CHR$(162);CHR$(2
21);CHR$(221);CHR$(162);CHR$(148
);CHR$(136);:NEXT RPT:GOSUB 100
70 FOR RPT=1 TO 60:PRINT#-2,CHR$
(201);CHR$(213);CHR$(227);CHR$(2
21);CHR$(221);CHR$(227);CHR$(213
);CHR$(201);:NEXT RPT:GOSUB 100
80 END
90 **GOSUB TO PUT SPACE BETWEEN
EACH LINE OF GRAPHICS FOLLOWS:-
*****
100 FOR RPT=1 TO 6:PRINT#-2:NEXT
RPT:RETURN

```

BOOK LABELLER

by Wim De Puit

BUSINESS
16K ECB; GEMINI PRINTER

BOOK LABELLER is a little program which was written to print lots of sticky address labels to be used as names for my children's school books.

Of course it can also be used to print just about anything you want on a standard address label.

I have written it for a Gemini printer running at 4800 baud, but that can all be changed quite easily.

The printer codes are in the first few lines:

- * line 20 sets the baud rate,
- * DW\$ is for double width,
- * RE\$ resets the printer,
- * PI\$ is for pica,
- * EL\$ elite and
- * CO\$ is compressed type code.

Put the codes for your printer in, and you're away!

The first line of the label is always printed as bold as possible, with the remaining lines fitted in without going to double width.

Long lines are changed to a smaller font to make them fit. You can print any line centred, flush left or flush right as you choose.

A sample label is included to help set up the labels in the printer - I never get it right first up!

My kids reckon they're the bee's knees with printed labels on their books! I hope you can get some use out of it too.

The Listing:

```
0 GCTO10
1 '**** "BOOKLABL"
2 '**** WIM DE PUIT
3 SAVE"13:3":END'3
10 CLEAR 500
20 ' PRINT NAME LABELS
30 CLS:PRINT@108,"BOOK"
40 PRINT@172,"LABEL"
50 PRINT@235,"PRINTER"
60 PRINT@325,"BY WIM DE PUIT":RE
M PO BOX 112 KINGSTON TAS
70 FOR I=1 TO 1000:NEXT I
80 POKE150,7:REM 4800 BAUD
90 DIM L(5),S$(5),SP(5),PR$(5)
100 DW$=CHR$(14):EM$=CHR$(27)+"E
"
```

```
110 RE$=CHR$(27)+CHR$(64)
120 PI$=CHR$(18):DS$=CHR$(27)+CH
R$(71)
130 EL$=CHR$(27)+CHR$(66)+CHR$(2
)
140 CO$=CHR$(27)+CHR$(66)+CHR$(3
)
150 CLS:PRINT"YOU HAVE 5 LINES O
N THE LABEL. THE FIRST LINE WIL
L BE PRINTED IN DOUBLE WIDTH IF
POSSIBLE. OTHER LINES WILL B
E PRINTED IN NORMAL OR SMALLER
PRINT AS NECESSARY TO FIT T
HE WORDS IN.":PRINT
160 PRINT:PRINT"DO YOU WANT TO:"
:PRINT" 1. PRINT A SAMPLE L
ABEL (TO LINE UP PRINT
R) 2. PRINT YOUR OWN L
ABELS. 3. END.":PRINT:PRIN
T
170 PRINT"WHICH (1-3)"
180 Z$=INKEY$:IF Z$<"1" AND Z$<
>"2" AND Z$<"3" THEN 180
190 CLS:Z=VAL(Z$)
200 ON Z GOTO 740,220,210
210 END
220 FOR L=1 TO 5
230 PRINT"LINE":L:INPUT S$(L)
240 L(L)=LEN(S$(L)):IF L(L)>59 T
HENPRINT"SORRY, TOO LONG.":PRINT
:GOTO 230
250 PRINT:PRINT"DO YOU WANT THE
LINE :":PRINT:PRINT" 1. F
LUSH LEFT 2. C
ENTRED 3. F
LUSH RIGHT"
260 PRINT:PRINT"WHICH (1-3)"
270 W$=INKEY$:IF W$<"1" AND W$<
>"2" AND W$<"3" THEN 270
280 W=VAL(W$)
290 PRINT
300 IF L(L)>41 THEN PR$(L)=CO$ E
LSE 350
310 IF W=1 THEN SP(L)=0
320 IF W=2 THEN SP(L)=FIX((60-L(
L))/2)
330 IF W=3 THEN SP(L)=60-L(L)
340 GOTO 590
350 IF L(L)>34 THEN PR$(L)=EL$ E
LSE 400
360 IF W=1 THEN SP(L)=0
370 IF W=2 THEN SP(L)=FIX((42-L(
L))/2)
380 IF W=3 THEN SP(L)=42-L(L)
390 GOTO 590
400 IF L(L)>30 OR L>1 THEN PR$(L
)=PI$ ELSE 450
410 IF W=1 THEN SP(L)=0
420 IF W=2 THEN SP(L)=FIX((35-L(
L))/2)
```

```
430 IF W=3 THEN SP(L)=35-L(L)
440 GOTO 590
450 IF L(L)>20 THEN PR$(L)=DW$+C
O$ ELSE 500
460 IF W=1 THEN SP(L)=0
470 IF W=2 THEN SP(L)=FIX((30-L(
L))/2)
480 IF W=3 THEN SP(L)=30-L(L)
490 GOTO 590
500 IF L(L)>17 THEN PR$(L)=DW$+E
L$ ELSE 550
510 IF W=1 THEN SP(L)=0
520 IF W=2 THEN SP(L)=FIX((21-L(
L))/2)
530 IF W=3 THEN SP(L)=21-L(L)
540 GOTO 590
550 PR$(L)=DW$+PI$
560 IF W=1 THEN SP(L)=0
570 IF W=2 THEN SP(L)=FIX((17-L(
L))/2)
580 IF W=3 THEN SP(L)=17-L(L)
590 NEXT L
600 GOSUB 620
610 GOTO 160
620 INPUT"HOW MANY LABELS DO YOU
WANT":N
630 CLS:PRINT"POSITION LABELS (1
-WIDE) IN PRINTER. HIT ANY
KEY WHEN READY"
640 Q$=INKEY$:IF Q$="" THEN 640
650 FOR J=1 TO N
660 FOR L=1 TO 5
670 PR$(L)=EM$+DS$+PR$(L)
680 PRINT#-2,RE$;
690 PRINT#-2,PR$(L)+STRING$(SP(L
),")"+S$(L)
700 NEXT L
710 PRINT#-2
720 NEXT J
730 RETURN
740 RESTORE:FOR L=1 TO 5
750 READ Q1,Q2,Q3,Q4,Q5,SP(L),S$
(L)
760 PR$(L)=CHR$(Q1)+CHR$(Q2)+CHR
$(Q3)+CHR$(Q4)+CHR$(Q5)
770 NEXT L
780 GOSUB 630
790 GOTO 160
800 DATA 14,27,69,27,71,1,Marcus
de Puit
810 DATA 18,,,,,14,Grade 2
820 DATA ,,,,,,6,Calvin Christian
School
830 DATA ,,,,,,
840 DATA 27,66,3,,,1,20 Sophia S
treet Kingston Tasmania 7150
Phone 294950
```

COCO ADDRESS BOOK

by Wayne Kelly

BUSINESS
16K ECB

THE FOLLOWING PROGRAM is a tape utility that simulates a computerised address book. The features this program allows for are:

1. Create new files
2. Review files
3. Send files to printer
4. Review names & phone number
5. Exit address book

The information you must include in the files are as following:

1. Name
2. Address
3. City
4. Postcode
5. Phone number
6. Sex
7. Birthdate

I hope these are adequate for your files. If not, with a little alterations to the program, it will be.

Also I have written in a password routine that allows the user to input the correct password to gain access to the main program.

To change the password in the program just change what P\$ equals in line 160. When you input the password the computer changes the normal characters to graphic character strings, eg CHRS(128)

The Listing:

```
0 GOTO10
1 '***** "FILER:2"
2 '***** WAYNE KELY
3 SAVE"7:3":END'3
10 '*****
20 '*****
30 '** COCO ADDRESS BOOK **
40 '** BY **
50 '** WAYNE KELY **
60 '** CREATED 18 AUGUST **
70 '** 1985 **
80 '*****
90 '*****
130 POKE 383,158
```

```
140 FOR X=1 TO 3:POKE 359,57:SCR
EEN 0,1
150 CLS:PRINT:PRINT:PRINT"ENTER
PASSWORD":POKE 359,255:POKE 359,
128:INPUT P$
160 IF P$="PASSWORD" THEN POKE 3
59,126:GOTO 220
170 POKE 359,126:NEXT:POKE 359,1
26
180 PRINT:PRINT:PRINT"YOUR ACCE
SS PASSWORD IS NOT VALID"
190 PRINT:PRINT"PROGRAM IS NOW
TERMINATED";
200 FOR T=1 TO 2000:NEXT
210 GOTO 1220
220 POKE 359,57:SCREEN 0,1:CLS:P
RINT@7,"COCO ADDRESS BOOK"
230 PRINT:PRINT" M E N U O
P T I O N S"
240 PRINT:PRINT" (1) CREATE NE
W RECORDS"
250 PRINT:PRINT" (2) READ RECO
RDS FROM TAPE"
260 PRINT:PRINT" (3) SEND FILE
S TO PRINTER"
270 PRINT:PRINT" (4) LIST NAME
AND PHONE NO.
280 PRINT:PRINT" (5) EXIT ADDR
ESS BOOK"
290 PRINT:PRINT" CHOOSE OPTION"
:INPUT O
300 ON O GOTO 330,550,810,980,11
90
310 GOTO 220
320 '*** CREATING NEW FILES ***
330 CLS:PRINT"PRESS PLAY & RECOR
D THEN ANY KEY":EXEC 44539
340 OPEN"O",#-1,"ADDRESS"
350 CLS:PRINT"INPUT PERSONAL DAT
A"
360 INPUT"NAME";N$
370 INPUT"ADDRESS";AD$
380 INPUT"CITY";A1$
390 INPUT"POSTCODE";A2$
400 INPUT"PHONE NO.";PH$
410 INPUT"SEX";MF$
420 INPUT"BIRTH DATE";B1$
430 INPUT"IS THE ABOVE CORRECT";
CO$
440 IF CO$="N" THEN 350
450 PRINT #-1,N$,AD$,A1$,A2$,PH$
,MF$,B1$
460 INPUT"DO YOU WANT TO QUIT CR
EATING FILES(Y/N)";Q$
470 IF Q$="Y" THEN 500
480 IF Q$="N" THEN 350
490 CLS:GOTO460
500 INPUT"ARE YOU SURE (Y/N)";E$
510 IF E$="N" THEN 350
```

```
520 IF E$="Y" THEN CLOSE #-1:GOT
O 220
530 CLS:GOTO 500
540 '** LOAD FILES FROM TAPE **
550 CLS:PRINT:PRINT" PREPARE TA
PE AND PRESS PLAY"
560 PRINT" PRESS ANY KEY
"
570 EXEC 44539
580 OPEN"1",#-1,"ADDRESS"
590 INPUT #-1,N$,AD$,A1$,A2$,PH$
,MF$,B1$
600 CLS
610 PRINT"NAME: ";N$ .
620 PRINT"ADDRESS: ";AD$
630 PRINT"CITY: ";A1$
640 PRINT"POSTCODE: ";A2$
650 PRINT"PHONE NO. ";PH$
660 PRINT"SEX: ";MF$
670 PRINT"BIRTH DATE: ";B1$
680 IF BOP(-1) THEN 770
690 PRINT:PRINT:PRINT"READ MORE
FILES (Y/N)"
700 INPUT YN$
710 IF YN$="N" THEN 740
720 IF YN$="Y" THEN 590
730 GOTO 700
740 INPUT"ARE YOU SURE";SU$
750 IF SU$="N" THEN 590
760 GOTO 220
770 PRINT:PRINT:PRINT:PRINT"THIS
IS THE LAST RECORD ON THE CURR
ENT FILE."
780 EXEC 44539
790 GOTO 20
800 '***** PRINTER OPTION *****
810 CLS:PRINT@40,"PRINTER OPTION
"
820 PRINT:PRINT"SET PRINTER UP A
ND THEN PRESS ANY KEY"
830 EXEC 44539
840 PRINT:PRINT"PREPARE CASSETTE
AND PRESS PLAY"
850 EXEC 44539:PRINT:PRINT"
.....PRINTING....."
860 OPEN"1",#-1,"ADDRESS"
870 INPUT #-1,N$,AD$,PH$,MF$,B1$
880 PRINT #-2,"NAME: ";N$
890 PRINT #-2,"ADDRESS: ";AD$
900 PRINT #-2,"PHONE NO. ";PH$
910 PRINT #-2,"SEX: ";MF$
920 PRINT #-2,"BIRTH DATE: ";B1$
930 IF BOP(-1) THEN 950
940 GOTO 870
950 PRINT:PRINT" PRINTING HA
S FINISHED"
960 CLOSE #-1
```

continued p.60

3D GRAPHICS

by George Viera

GRAPHICS

32K ECB

THREE-DIMENSIONAL graphics are fairly hard to come across, but when they do, they look fairly impressive and above all, complex.

Anyway, this is one of these graphics programs and takes about 3-5 minutes to make (even faster on the CoCo 3 with the speed-up POKE - ed!).

The Listing:

```
0 CLS
1 GOTO5
2 '***** "3DGRAF"
3 SAVE"18D:3":END*5
5 CLS:PRINT@38,"3-DIMENSION GRAP
HICS          FOR THE TRS-8
0          16ECB-64ECB COC
OS."
10.PRINT@231,"[BY GEORGE VIEIRA]
"
15 PRINT@453,"PRESS ANY KEY TO S
TART":EXEC44539:PNODE4,1:SCREEN1
,1:PCLS
```

```
20 H=225
25 V=191
30 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
35 FOR X=0 TO X1
40 X4=X*X:M=-Y1
45 A=SQR(X2-X4)
50 FOR I=-A TO A STEP V/20
55 R=SQR(X4+I*I)/X1
60 F=COS(15*R)*(1-R)
65 Y=I/5+F*Y2

70 IF Y<=M THEN 85
75 M=Y:Y=Y1-Y
80 PSET(X1-X,Y,5):PSET(X1+X,Y,5)
85 NEXTI:NEXTX
90 SOUND250,5:EXEC44539
95 PCLS
100 H=255
105 V=191
110 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/
4
115 FORX=0 TO X1
120 X4=X*X:M=-Y1
125 A=SQR(X2-X4)
130 FORI=-A TO A STEP V/15
135 R=SQR(X4+I*I)/X1
140 F=1-R
145 Y=I/5+F*Y2

150 IF Y<=M THEN 165
155 M=Y:Y=Y1-Y
160 PSET(X1-X,Y,5):PSET(X1+X,Y,5
)
165 NEXTI,X
170 SOUND200,5:EXEC44539
175 PCLS
180 H=255
185 V=191
190 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/
4
195 FORX=0 TO X1
200 X4=X*X:M=-Y
205 A=SQR(X2-X4)
210 FORI=-A TO A STEP V/20
215 R=SQR(X4+I*I)/X1
220 F=COS(20*R)+(1-R)
225 Y=I/5+F*Y2
230 PORT=1TO10000:NEXT
235 M=Y:Y=Y1-Y
240 PSET(X1-X,Y,5):PSET(X1+X,Y,5
)
245 NEXTI,X
250 SOUND250,5:EXEC44539
255 SCREEN0
260 END
```

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Brain Buster continued

```

from p. 51
590 GOSUB310:C=1:GOSUB640:IF WIN
THEN GOSUB790:RETURN
600 C=2:GOSUB640:IF WIN THEN GOS
UB790:RETURN
610 GOSUB790
620 FORX=1TO9:IFP(X,1)=0 AND P(X
,2)=0 THEN I=P(X,0):RETURN
630 NEXTX:RETURN
640 WIN=-1:FORX=1TO9STEP3:IFP(X
,C)=1 AND P(X+1,C)=1 AND P(X+2,1)
=0 AND P(X+2,2)=0 THEN I=P(X+2,0
):RETURN
650 IFP(X,1)=0 AND P(X,2)=0 AND
P(X+1,C)=1 AND P(X+2,C)=1 THEN I
=P(X,0):RETURN
660 IFP(X,C)=1 AND P(X+2,C)=1 AN
D P(X+1,1)=0 AND P(X+1,2)=0 THEN
I=P(X+1,0):RETURN
670 GOSUB800:NEXTX
680 FORX=1TO3:IFP(X,C)=1 AND P(X
+3,C)=1 AND P(X+6,1)=0 AND P(X+6
,2)=0 THEN I=P(X+6,0):RETURN
690 IFP(X,1)=0 AND P(X,2)=0 AND
P(X+3,C)=1 AND P(X+6,C)=1 THEN I
=P(X,0):RETURN
700 IFP(X,C)=1 AND P(X+6,C)=1 AN
D P(X+3,1)=0 AND P(X+3,2)=0 THEN
I=P(X+3,0):RETURN
710 GOSUB800:NEXTX
720 IFP(1,C)=1 AND P(9,C)=1 AND
P(5,1)=0 AND P(5,2)=0 THEN I=P(5
,0):RETURN
730 IFP(3,C)=1 AND P(7,C)=1 AND
P(5,1)=0 AND P(5,2)=0 THEN I=P(5
,0):RETURN
740 IFP(1,1)=0 AND P(1,2)=0 AND
P(5,C)=1 AND P(9,C)=1 THEN I=P(1
,0):RETURN
750 IFP(1,C)=1 AND P(5,C)=1 AND
P(9,1)=0 AND P(9,2)=0 THEN I=P(9
,0):RETURN
760 IFP(7,C)=1 AND P(5,C)=1 AND
P(3,1)=0 AND P(3,2)=0 THEN I=P(3
,0):RETURN
770 IFP(3,C)=1 AND P(5,C)=1 AND
P(7,1)=0 AND P(7,2)=0 THEN I=P(7
,0):RETURN
780 WIN=0:RETURN
790 FORX=1TO9:FORY=0TO2:P(X,Y)=P
S(X,Y):NEXTY,X:RETURN
800 Ps="W"+STR$(X):PLAY Ps:RETUR
N
810 IFL=1THEN LC=L:RETURN
820 LC=L:RETURN

```

HINT:

Colorpede (Intracolour)

If you think for one moment that you have mastered 'Colorpede', then try this:

1. type: (C)LOAD"CPEDE"
2. type: POKE7690,88
3. type: EXEC

*

3Kaboom continued from p. 26

```

420 HSET(65,70):HSET(63,73):HSET
(60,74):HSET(61,76):HSET(59,77)
430 HDRAW"BM38,160:L10D29R10U9F7
DFDR19E2UE2R9FDFDFR8"
:HRAW"BM38,160:D8E2RE2":HLI
NE(56,189)-(45,174),PSET:HLINE-(
54,165),PSET
440 HLINE(56,188)-(64,169),PSET:
HLINE(89,189)-(81,169),PSET:HDRA
W"BM71,178;R5U2HV2HG2DGD2"
450 HPAINT(108,163):HDRAW"BM89,1
65;D25R20E2RE3UEU4H2UE2U":HDRAW"
BM100,179;D4R3E2UH2L3":HDRAW"BM9
4,162;R4"
460 HCIRCLE(132,175),17,0,1,.85,
.5:HCIRCLE(132,175),8:HCIRCLE(
164,175),17:HCIRCLE(164,175),8
470 HLINE(179,189)-(184,160),PSE
T:HLINE-(193,160),PSET:HLINE-(19
9,172),PSET:HLINE-(205,160),PSET
:HLINE-(214,160),PSET:HLINE-(221
,189),PSET:HLINE-(213,189),PSET:
HLINE-(208,171),PSET:HLINE-(201,
189),PSET:HLINE-(196,189),PSET:H
LINE-(191,175),PSET
475 HLINE-(187,189),PSET
480 HLINE-(179,189),PSET:HDRAW"B
M222,160;D18R9U18L9":HCIRCLE(227
,184),5
1000 FOR DLA=1 TO 1000:NEXT DLA
1010 GOTO 1010

```

CoCo Address Book continued from p. 56

```

970 FOR DLY=1 TO 460*3:NEXT:GOTO
220
980 **LIST NAME & PHONE NO.**
990 CLS:PRINT:PRINT" PREPARE TA
PE AND PRESS PLAY"
1000 PRINT" PRESS ANY KEY
"
1010 EXEC 44539
1020 OPEN"1",#-1,"ADDRESS"
1030 INPUT #-1,N$,PH$
1040 CLS
1050 PRINT"NAME: ";N$
1060 PRINT"PHONE NO.: ";PH$
1070 IF EOF(-1) THEN 1150
1080 PRINT:PRINT:PRINT"READ MORE
FILES (Y/N)"
1090 INPUT YNS
1100 IF YNS="Y" THEN 1030 ELSE G
OTO 1110
1110 PRINT:INPUT"ARE YOU SURE (Y
/N)";YNS
1120 IF YNS="Y" THEN 220
1130 IF YNS="N" THEN 1030
1140 GOTO 1110
1150 PRINT:PRINT"THIS IS THE LAS
T RECORD ON FILE":PRINT" PRESS
ANY KEY TO GO TO MENU"
1160 EXEC44539
1170 GOTO 220
1180 *** EXIT ADDRESS BOOK ***
1190 CLS:PRINT"EXIT OPTION"
1200 PRINT:PRINT:PRINT"ARE YOU S
URE (Y/N)":INPUT YNS:IF YNS="Y" T
HEN GOTO 1220
1210 IF YNS="N" THEN GOTO 220
1220 POKE 113,0:EXEC 40999

```

"Right" said Fred continued from p. 36

```

148: 8. ,A4 ,0 ,0 ,0
149: 16 ,A4 ,0 ,0 ,0
150: 4 ,A4 ,C4# ,A2 ,0
151: 4 ,E4 ,0 ,0 ,0
152: 4 ,F4# ,C4 ,D3 ,0
153: 4 ,C4 ,0 ,0 ,0
154: 8. ,C4# ,E3 ,A2 ,0
155: 16 ,E4 ,E3 ,A2 ,0
156: 8. ,C4# ,0 ,0 ,0
157: 16 ,A3 ,0 ,0 ,0
158: 2 ,E3 ,D3 ,G2# ,0
159: 4 ,0 ,0 ,0 ,0
160: 4 ,C4# ,E3 ,A2 ,0
161: 4 ,E4 ,0 ,0 ,0
162: 4 ,E3 ,F3# ,D3 ,0
163: 4 ,A3 ,0 ,0 ,0
164: 8. ,C4# ,E3 ,A2 ,0
165: 16 ,C4# ,E3 ,A2 ,0
166: 8. ,E4 ,0 ,0 ,0
167: 16 ,E4 ,0 ,0 ,0
168: 4 ,E3 ,F3# ,D3 ,0
169: 4 ,A3 ,0 ,0 ,0

```

```

170: 4 ,C4# ,E3 ,A2 ,0
171: 4 ,E4 ,0 ,0 ,0
172: 4 ,F4# ,C4 ,D3 ,0
173: 4 ,A4 ,0 ,0 ,0
174: 4 ,C5# ,E4 ,A2 ,0
175: 2 ,C5# ,0 ,0 ,0
176: 4 ,B4 ,0 ,0 ,0
177: 1 ,C5# ,0 ,0 ,0
178: 4 ,0 ,0 ,0 ,0
179: 4 ,C5# ,F2# ,0 ,0
180: 4 ,D5 ,F4# ,E2 ,0
181: 4 ,C5# ,0 ,0 ,0
182: 4 ,B4 ,G4# ,E3 ,0
183: 8 ,A4 ,0 ,0 ,0
184: 8 ,B4 ,0 ,0 ,0
185: 8 ,C5# ,F4# ,G2# ,0
186: 8 ,A4 ,F4# ,G2# ,0
187: 8 ,B4 ,F4 ,C3# ,0
188: 8 ,G4# ,F4 ,C3# ,0
189: 4 ,A4 ,C4# ,F3# ,0

```

```

COL: LEN ,V1 ,V2 ,V3 ,V4
190: 4 ,B4 ,F4# ,D4 ,D3
191: 4 ,E4 ,D4 ,A3 ,E2
192: 2 ,E4 ,0 ,0 ,0
193: 4 ,B4 ,G3# ,E3 ,0
194: 4 ,A4 ,C4# ,A2 ,0
195: 4 ,A2 ,A2 ,A2 ,A2

```

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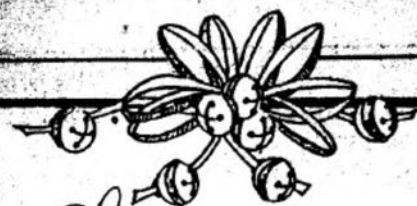
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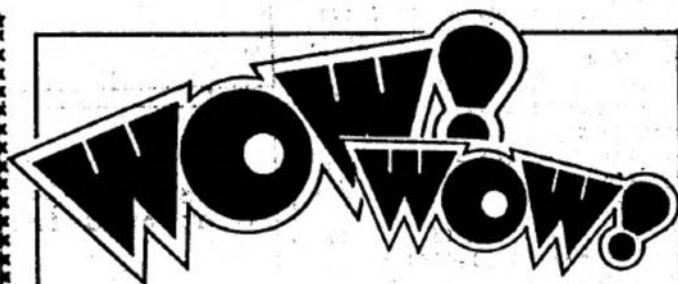
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COMPETITIONS



As a result of the success of the Tandy programming contest this year, Tandy have agreed to rerun it in 1987-88!

So - get your thinking caps on! Perhaps YOU will be the one receiving that cheque from Tandy next year!



And speaking of cheques, the best ML Game for the CoCo 3 with a BiCentennial theme submitted by 7th February, 1988 will win a \$300 prize WITH royalties for every program sold from Goldsoft.

The next minor competition - the annual Graphics Competition begins now and ends on 7th November, 1987.

All computer created pictures are eligible, and the competition is divided into a section for Basic pictures, one for CoCoMax & ColourMax pictures, and one for pictures created in some other way.

As with the last Graphics Competition, the judges are looking for animated pictures.

First prize in each category will be 5 boxes of disks or tapes.

(Stop between numbers = h.h. else
a.h.; but, hyphen between = both)

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