THE Magazine for experienced TANDY Colour Computer Users!

AUSTRALIAN

# COCO

MAGAZINE

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DEADLINES:
7th of the preceding month.

# IN A NUT SHELL


Welcome to the new year!

Actually, this month's Nutshell is being written in early December to be put in next year's issue, or rather this year's issue ... confusing? Good.

If you are going on holiday, do take care on the roads.

## Content

Last year's content was amazing! On the average, each magazine had 20 programs (as opposed to only 8 per month when the magazine first started!) ... that means over 500 programs and articles went into the pages of both Australian CoCo Magazine and Softgold Magazine.

500! And what's more, they're all Australian-orientated! And what is better, they were of all a high standard!

Very impressive!

Congratulations to all those authors who worked very hard and sacrificed many late nights to contribute to the well-being of everybody else!

This year (for starters) we'll be bringing a lot more on OS-9; machine-language subroutines; games; adventures; and utilities.

## Conf '88

This year's Conference is going to be held at Koonjewarre Camp Grounds, with the emphasis on family computing.

Koonjewarre Camp Grounds is located about 40km west of the Gold Coast - that's where we are (the Gold Coast, that is)!

The grounds are quite nice - there are bush walks, scenic spots, things to do, places to see!

Like last year's Conference, which was at Bundeena, south of Sydney.

## User Groups

In February I will be visiting a few User Groups 'down south' ... one of these User Groups will be the Coffs Harbour User Group. My expected visit will be early February.

I understand the organisers there have planned for me to do a talk on Basic, along with a few other things ... so if you live in the area, get in contact with Bob Kenny on (066) 51-2205 and he'll tell you the exact time of the meeting!

## OS9 Level 2

In late November/early December, the Developer's Package was released for OS9 level 2.

What is the "Developer's Package?"

This is a package that lets you develop your own software to run under OS9.

Before OS-9 level 2 was released, both packages were as one in OS9 Level 1. You paid $179.00 to get the whole thing.

When Tandy released OS-9 level 2, they took out all the software to make your own software, and have released it as a separate package.

If you are interested or want to buy it, then you can get it at Paris Radio. Their number is (02) 344 9111.

## The January Issue

Well, this is the much-talked about January issue ... something that we recommend you should have handy beside your computer at all times!

In this issue you will find everything that you ever wanted in a manual ... and more!

So read it through, you might be surprised at what you learn!

## Submitting Programs

The art of submitting programs has changed!

Please read this month's article on the subject though. We hope this article simplifies the job for you!

## Welcome New CoCo Owners

This refers directly to those who have bought (or have received from Santa) their new Colour Computer. We hope that you get many hours of enjoyment out of your new computer.

Australian CoCo Magazine and Softgold Magazine are the thing for you, whether you're learning or an advanced user - remember, there's something for everyone in Australian CoCo and Softgold magazines.

If you have any questions about your computer, then drop us a line, either by telephone (dial 075-39-6177) or through the mail (via Goldsoft, PO BOX 1742, Southport, Q. 4215) or through Viatel (look for us on node *64213#.

Alex

# DR COCO

Dear Dr CoCo
I have just a small query - does the inverse switch work for the CoCo 3 ?

Peter Huber
Selby, VIC

Peter,
As no-one has tried this yet, and because the CoCo 3 can have an inverse screen via POKE's, there is no purpose for an inverse switch on a CoCo 3.
The POKE's for such a screen is:

POKE359,57:POKE65314,32

... or, if you like lowercase, try ...

POKE359,57:POKE65314,48

*

Dear Dr CoCo
I'm writing as I have a problem.
Firstly I have a copy of Deskmate and I want to run my printer at 240 baud - Deskmate only offers the choice between 600 and 1200 baud. So how can I edit Deskmate to support 2400 baud?
Secondly, I'm having trouble getting CoCoMax to run on my CoCo 3 ... I've resaved the binary program with an offset, so that I get the main screen, and can draw etc, but as soon as I go to pick up an option from the top margin, everything freezes.
I hope someone can help me out on these two problems.
Phillip Mellifont
Toowoomba, QLD

Dear Phillip,
Sorry, but I can't help you very much on the first problem - maybe someone out there can help? By the sound of it, you need to disassemble it and then alter one or two bytes in the program - where these one or two bytes reside, I have no idea.

Regarding CoCoMax - I used to get such symptoms from my own CoCo. Usually the problem was fixed when I ran CoCoMax under a true RS-DOS. Maybe that will help?

*

Dear Dr CoCo
Some time ago, a young boy rang me see if a program named "Goldgrabber" would work on tape. I myself have been too busy to look at it - could you give some information?
Bob Kenny
Coffs Harbour, NSW

Dear Bob,
There would be really only one problem with that - it would take "oodles of hours" to load in one screen! Nonetheless, it can be done!
Make the following changes to the main program:

60 CLOADM A$

... and these changes to the next program:

123 ... THEN 125ELSE CLOADM LD$
257 ... INPUT X$:CSAVEM X$+"", 1536,7679,1536

To load the demonstration screen, type the following:

CLOADM"<name of picture>",3584-1536+65536

Because graphics pictures are saved from 3584 to 9727 as opposed to 1536 to 7679 (for the Disk RAM scratch pad), you need to load the picture lower into memory than before. To do this, you take the old address from the new address and add 65536.

*

Dear Dr CoCo
Concerning the program "Fastback"; I am still unable to get it to backup. When I load the disk back into the computer and type "EXEC", the computer says to insert the source disk and press enter - but when I do this, nothing happens; it doesn't load the souce disk into the computer and consequentially nothing happens.

I also have another problem with "Find the Treasure" by Bob Horne - there is an error in lines 760-770. I rang Alex and he told me to put in an EXEC (with a number) to slow the screen down - but I forgot the number!
Could you please tell me what that number is?
Also, if I installed a modem for my computer, do I have to pay Telecom to use it and if so, how much, and do I have to use any more equipment to operate it?
Keith K. Martin
Nth Booval, Qld

Dear Keith,
Hmmm ... sounds like a small dilemma to me ... our best bet would be to VERY carefully re-check each data line in the basic program. I have asked people, "Does this program work bla bla bla" and they confirm this ...
The way it works is this:

1. After the program is in ML format (ie, saved as a machine language program on disk) the disk that you want a backup copy of is selected.
2. Type LOADM"FASTBACK" (or however you may have saved the file)
3. Type EXEC ... the program will be working.

Regarding your second problem;

There are two programs here, and in both programs lines 760-770 are different.
I will attempt to give a solution to both programs:
Program one:
In this case the most obvious problem would be the so-called 'outside variables', ie those variables which are defined outside line 760 (in this case). These outside variables are C$ and CH$(F).
The best solution would be to go back to see where these two variables are defined and consequentially worked on.
Program two:
There are no outside variables here, and the only way one would get any errors here is via the simple typing error - ie, instead of 'ATTR3,2', you might find that it reads 'ATTR30,2' or some such error.

*

# R G B

## Demonstration

by
Christopher Dent

UTILITY

THIS PROGRAM WILL demonstrate how the value of colours in the palette are calculated.

I will not describe how the program works as it is fully documented in the program itself in the REM statements, but I will show you the logic for calculating the values.

It is fairly straight forward. The value is determined like this:

| BIT | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|
| COLOUR | R1 | G1 | B1 | R0 | G0 | B0 |
| VALUE | 32 | 16 | 8 | 4 | 2 | 1 |

R1, G1 and B1 are the red, green and blue values with an intensity of 2. R0, G0 and B0 are the red, green and blue values with an intensity of 1.

Adding R1 and R0 results in a red of intensity 3. The same applies with the green and blue.

For example, if you wish to set colour 1 to the brightest red available you simply turn bits 5 and 2 on. To do this simply type:

```
PALETTE 1,36
```

If you did not notice, 36 is the sum of 32 (or bit 5 or R1) and 4 (or bit 2 or R0), ie you simply add the value of the bits you want to set together.

So now you know how to get red, green and blue in all 4 different intensities (yes, I said 4 intensities -- setting no bits results in a red, green or blue of intensity 0 (or black) the 4th intensity), I shall now explain how to mix different colours.

Remember back in Physics when you were shown that red light and green light made yellow, red light and blue light made magenta, green light and blue light made cyan and red light, green light and blue light made white?

Well the same principle also applies here. The program will draw those 3 familar overlapping circles of red, green and blue and display the value of the red, green and blue areas and the overlapping areas.

After typing **RUN** wait about two seconds and then press <SHIFT> and 0 to go into lower case.

Then Press the R, G or B keys to increment the red, green or blue values respectively, or press <SHIFT> with R, G or B to decrease the red, green or blue respectively.

I hope the program will be of some help to people logically calculating the palette values instead of guessing or even in the class room demonstrating the principles of physics.

## The Listing:

```
0 GOTO10
3 SAVE"70A:3":END'7
10 ' RGB DEMONSTRATION
20 ' BY CHRIS DENT 23/5/87
30 POKE65497,0:ONBRKGOTO730
40 ' CLEAR THE PALETTE
50 FORA=0TO7:PALETTEA,0:NEXT:PAL
ETTE1,63
60 ' SET UP THE SCREEN
70 HSCREEN2:HCOLOR1:FORA=1TO7:RE
ADA$:HPRINT(2,A),A$:NEXT:FORA=1T
O3:READX,Y:HCIRCLE(X,Y),64:NEXT:
GOSUB660
80 FORA=2TO8:READX,Y:HPAINT(X,Y)
,A,1:NEXT
90 ' DEFINE THE RGB VALUES
100 ' COLOR PALETTE REGISTERS
110 ' BITS  5  4  3  2  1  0
120 '       R1 G1 B1 R0 G0 B0
130 R(0)=0:R(1)=4:R(2)=32:R(3)=3
6:G(0)=0:G(1)=2:G(2)=16:G(3)=18:
B(0)=0:B(1)=1:B(2)=8:B(3)=9
140 ' MODIFY RGB FROM KEYBOARD
150 ' R, G OR B   INCREMENT RED,
160 ' GREEN OR BLUE RESPECTIVELY
170 ' <SHIFT> R, G OR B -
180 ' DECREMENT RED, GREEN OR
190 ' BLUE RESPECTIVELY
200 X$=INKEY$
210 IFX$=""THEN200
220 IFX$="r"THEN300
230 IFX$="R"THEN320
240 IFX$="g"THEN400
250 IFX$="G"THEN420
260 IFX$="b"THEN500
270 IFX$="B"THEN520
280 GOTO200
290 ' INCREMENT RED VALUE
300 R=R+1:GOSUB360:GOSUB660:GOTO
200
310 ' DECREMENT RED VALUE
320 R=R-1:GOSUB360:GOSUB660:GOTO
200
330 ' CHECK TO SEE IF VALUES ARE
340 ' STILL VALID AND IF NOT
350 ' AMEND THEM
360 IFR<0THENR=0
370 IFR>3THENR=3
380 PALETTE2,R(R):GOSUB630:RETUR
N
390 ' INCREMENT GREEN VALUE
400 G=G+1:GOSUB460:GOSUB660:GOTO
200
410 ' DECREMENT GREEN VALUE
420 G=G-1:GOSUB460:GOSUB660:GOTO
200
430 ' CHECK TO SEE IF VALUES ARE
440 ' STILL VALID AND IF NOT
450 ' AMEND THEM
460 IFG<0THENG=0
470 IFG>3THENG=3
480 PALETTE3,G(G):GOSUB630:RETURN
490 ' INCREMENT BLUE VALUE
500 B=B+1:GOSUB560:GOSUB660:GOTO
200
510 ' DECREMENT BLUE VALUE
520 B=B-1:GOSUB560:GOSUB660:GOTO
200
530 ' CHECK TO SEE IF VALUES ARE
540 ' STILL VALID AND IF NOT
550 ' AMEND THEM
560 IFB<0THENB=0
570 IFB>3THENB=3
580 PALETTE4,B(B):GOSUB630:RETUR
N
590 ' LOGIC TO CALCULATE THE NEW
600 ' VALUE OF THE OVERLAPPING
610 ' COLOURS AND ADJUST THE
620 ' THE PALETTE ACCORDINGLY
630 C(1)=R(R)ORG(G):PALETTE5,C(1
):C(2)=R(R)ORB(B):PALETTE6,C(2):
C(3)=G(G)ORB(B):PALETTE7,C(3):C(
4)=R(R)ORG(G)ORB(B):PALETTE8,C(4
):RETURN
640 ' DISPLAY THE VALUE FOR EACH
650 ' OF THE COLOURS
660 HLINE(81,8)-(93,64),PRESET,B
F:HPRINT(9,1),R(R):HPRINT(9,2),G
(G):HPRINT(9,3),B(B):FORA=1TO4:H
PRINT(9,3+A),C(A):NEXT:RETURN
670 ' DATA FOR THE HEADINGS
680 DATARed ...,Green .,Blue ...
R/G ...,R/B ...,B/G ...,R/G/B .
690 ' DATA FOR CIRCLE LOCATIONS
700 DATA160,64,128,128,192,128
710 ' DATA FOR PAINT LOCATIONS
720 DATA160,64,120,128,200,128,1
00,80,220,80,160,160,160,100
730 POKE65496,0:CMP:END
```

6429821A

882
The Tandy Users Board
SUN 22 NOV 1987 08:58
Member 331482428

) HELLO HENRY. SOME OF THE GROUP MEMBER S ARE LOOKING INTO YOURE QUESTIONS I WIL L GET BACK TO YOU SOON .
IAN SUNSHINE

Good on yer son!! How are you? You're up late! G

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

6429822A

882
The Tandy Users Board
SUN 22 NOV 1987 21:33
Visitor 835489518

) From Richard Schmidt, from Torrensvil le in South Australia. Does anyone know of a 14" (or smaller) colour TV with an analog RGB input on the back? I know I'm fussy, but if I have to lash out $500+ for an RGB monitor, I expect to be able to use it as a TV as well! I'm currently using an NEC 14" TV with composite vide o input, but it's no beter resolution th an a normal TV. Also, on the VIP writer debate, I think I remember seeing in a " Rainbow" sometime, a fix for the CoCo3 f or the stand-alone version of VIP writer Richard I believe there is a Thompson TV that does that but I have no sourceG

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

6429824A

882
The Tandy Users Board
SUN 29 NOV 1987 17:56
Visitor 826521158

) THANKS TO UFO AND G. FOR ADVICE.PROBL EM SOLVED WITH PURCHASE OF COCO 3 AND DI SPOSAL OF COCO 1 TO A CHARITY.JOHN.Q . USE A B/W TV WITH COCO 3 AND HAVE LOUSY PICTURE. COULD IT BE IMPROVED WITH AN FM FILTER OR SHOULD I DICE IT AND GET A C OLOUR SET.

Its the old story! The more money you spend, the better it gets - as the actress said to the bishop! G

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

GOLDLINK ViaTw 6429825A

882
The Tandy Users Board
THU 03 DEC 1987 13:46
Visitor 549375848

) Hi Graham and Jeoff! And doon if he still lurks round! IU am back again.
I am thinking of buying either an amiga or a coco 3 are there many coco3 users and programs using its capabilities?
What are you using JEoff!.

The Oiler

Like all new computers, the CoCo 3 has a small number of progs at present (relatively speaking), but it is gaining ground very quickly. The new progs this Cmas are very powerful. G

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

6429826A

882
The Tandy Users Board
SAT 26 SEP 1987 20:37
Member 867881238

) We need more scores for the Player one section of Softgold.
What games have you been playing?
What are your latest scores?
Let us know - we'll put them in Softgold!
G

5 Members Messages 6 Visitors Msg 28c
<<8 8 Menu 7 Your MB 9>>

End of Frame

6429827A

882
The Tandy Users Board
SAT 14 NOV 1987 22:04
Member 262289488

) We all know Grahams feelings toward VIP Writer, however in answer to Mav, if you were one of the lucky ones to have purchased VIP Desktop, then you will not only have VIP Writer up and running on a CoCo 3, (As I use),you will also be able to have VIP Database,Terminal and Zap. However I do agree that there are better Word Processors around, like Screen-Star and Stylograph. I still say yuk to T.W.
ART.

er.... G

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

6429828A

882
The Tandy Users Board
SUN 15 NOV 1987 08:48
Member 262289488

) A.B.U.S. 3 FOR THE COCO 3.
( ONE OF THE BEST USABLE DOS'S THAT IS AVAILABLE. ESPECIALLY WHEN IT IS BURNED IN YOUR EPROM CHIP.
NOW WITH THE CONTROL KEY AND ONE OF THE OTHER KEYS, YOU HAVE INSTANT COMMANDS AT YOUR FINGERTIPS.
e.g.CNTRL 1 = FAST (THE TRIPLE SPEED)
CNTRL 2 = SLOW (RETURN TO NORMAL)
CNTRL 7 = PRINT(HASH)-2, etc, etc.
You are able to configure your own set of Commands, and Colors as well!!
Ta Art - appreciate that! G

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

6429829A

882
The Tandy Users Board
MON 16 NOV 1987 21:10
Visitor 826521158

) CAN ANYONE TELL ME IF CHIPS FROM COCO 2 16K ECB CAN BE TRANSPLANTED INTO MODEL 1 16K TO ACCESS 16K EXTENDED IN THE OLDE R MODEL - REPLIES APPRECIATED - JOHN.Q.

Yes they can, check if they are 4116's if they are you can use them - if there are 8 of them! Some late white cases only had 2 chips - don't use those. (With thanks to UFO...) G.

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

64298212A

882
The Tandy Users Board
FRI 28 NOV 1987 18:57
Visitor 788843398

) HELLO,MY NAME IS BILL CAMERON OF ST.L UCIA,BRISBANE.I HAVE A COCO 3,DMP 105.DI SK DRIVEFO 500 AND MODEM. I AM NEW TO TH IS SO I DONT KNOW WHAT I CAN REALLY SAY FOR NOW. IF ANYONE HAS ANY INFO TO PASS ON, PLEASE DO.
Hi Bill - welcome to the Tandy Board! We're usually here in force after about 8.30 your time! G

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<< 8 8 Menu 7 Your MB 9 >>

End of Frame

64298214A

88 Tandy Users' Board Member
Goldlink's Top 20 Tandy Stores

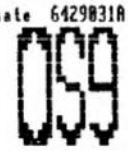
| | | |
|---|---|---|
| 1. | Blaxland. NSW | Bruce Sullivan |
| 2. | Parramatta. NSW | Russell Coward |
| 3. | Redbank. Qld | Andrew Simpson |
| 4. | Seven Hills. NSW | Barry Tomkinson |
| 5. | Hornsby. NSW | Ed Croese |
| 6. | Dandenong. Vic | Mike Coleman |
| 7. | Adelaide. SA | David Isles |

B. Launceston. Tas  Rick Hampson

3 Clubroom 5 Mbrs Msg 6 Vis Msg 28c
<<8 8 Menu 7 Your MB 9>>

End of Framemsg

GOLDLINK  Viate 6429831A
#83
The OS9 Users Board
MON 23 NOV 1987 18:17
Member 234491118
Sponsored by Paris Radio



> Also note that Paris Radio have both book and disk of Guide to Level II. Disk is $41.94 plus $3 postage.

--Rosko!--

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

GOLDLINK  ViaTw 6429832A
#83
The OS9 Users Board
TUE 24 NOV 1987 22:13
Member 726288698
Sponsored by Paris Radio

> Richard 207 is an out of memory error. It sounds like your problem is having too many windows open. If you are trying to run basic09 in both windows you will certainly run out of memory. You really need to have 512k to run multiple windows.
U F O

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

GOLDLINK  ViaTw 6429835A
#83
The OS9 Users Board
TUE 1 DEC 1987 17:47

Sponsored by Paris Radio

> NEW from Paris Radio:
Style III
Uses 80 columns. Use concurrently with other programs..... $284.00

OS9 Level II Development System
Drivers, device descriptors,etc
$192.00

512K Upgrades
With RAM disk & Memory Self Test
$199.95

The Complete Rainbow Guide to OS9
$ 39.95

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

GOLDLINK  Viate 6429836A
#83
The OS9 Users Board
THU 03 DEC 1987 09:56
Member 234491118
Sponsored by Paris Radio

> BIRTS, If you have a word processor (e.g. VIP-Writer), load up any files with extension ".BOC" and they will explain how to use the ".BIN" files. Briefly tho, to get the RAMdisc going, LOADM "RAMDSK" and type DRIVE2A:DSKINI2 and DRIVE3B:DSKINI3 to get 2 RAMdiscs.

--Rosko!--

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

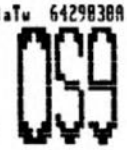
GOLDLINK  ViaTw 6429837A
#83
The OS9 Users Board
THU 03 DEC 1987 22:45
Member 254327788
Sponsored by Paris Radio

> Thanks --ROSKO--. As it was I decided to try and write a program to read them and it works second go! Quite amazing for me. It only took 6 lines of basic.
BIRTS

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

GOLDLINK  ViaTw 6429838A
#83
The OS9 Users Board
FRI 30 OCT 1987 23:16
Member 785471278
Sponsored by Paris Radio



> Ole, you really need Tandy's RS232 pack, then you can use driver T1, which comes on your Deskmate 3 disk.

Jeff

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

GOLDLINK  ViaOn 6429839A
#83
The OS9 Users Board
SUN 22 NOV 1987 21:47
Visitor 835489518
Sponsored by Paris Radio

> Hi, I'm Richard Schmidt, from Torrensville, in S.A. I'm new to OS9, so maybe this will sound silly, but has anyone managed to get BASIC09 running on a 128K coco with both a 40 and an 80 column screen? I keep getting an "error number 207". Also, is it possible to have OS9 boot up like a DOS upon power-up, without having to touch the keyboard, and still retain some flexibility of systems?

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<< 8 8 Menu 7 Your MB 9 >>

End of Framemsg

GOLDLINK  Viate 64291402A
#14 Tandy 1000 Board Member
755188158 SAT 17 OCT 1987 01:18

> Hint: Screen Mode 1 has 2 palettes of 4 colors. Only one palette is available at any one time.

They are:

| Number | | |
|---|---|---|
| 1 | Green | Cyan |
| 2 | Red | Magenta |
| 3 | Yellow | White |

Beon

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<<8 8 Menu 7 Check MB 9>>

End of Framemsg

GOLDLINK  ViaOn 64291403A
#14 SUN 22 NOV 1987 01:38

Member
753517758

> HINT:
Make use of the CONFIG.SYS file on your MS-DOS disk. If its not there you'll have to make it! Put in a statement Like BUFFERS=20 FILES=20 and there is little chance of you having disk errors

To make it type: COPY COM CONFIG.SYS (th is means COPY everything from the COMmo le to the file called CONFIG.SYS)
when ou have put the statements in press CTRL Z on a new ine then (ENTER).
Beon

3 Clubroom 5 Mbrs Msg 6 Vis Msg 38c
<<8 8 Menu 7 Check MB 9>>

End of Framemsg

# Bulletin Board Systems Information

## Key to System Status.

Mem = Financial membership required for full access.
Reg = Free membership requiring name, phone No. etc.
VA = Visitor access to some/most functions.
LVA = VERY limited visitor access.
Public = Access free to anyone.

==========

NEW SOUTH WALES

| System Name & Phone No. | Op Times & Status |
|---|---|
| ABCOM-IBBS0047 RIBM<br>Phone: (074) 36 4165<br>Sysop: Ben Sharif | 24 Hours<br>Public |
| Andomeda<br>Phone: (02) 746 3598 | 24 Hours<br>Public |
| AUGUR BBS<br>Phone: (02) 661 4739<br>Sysop: Mark James | 24 Hours<br>Reg/VA |
| AUSBOARD (OSBOURNE) RCPM<br>Phone: (02) 439 7072<br>Sysop: Daniel Moran | 24 Hours<br>Public |
| BERT BBS<br>Phone: (02) 211 0855 | 24 Hours<br>[1200/75] |
| Bounty C-64 BBS<br>Phone: (02) 918 3256 | 24 Hours<br>Mem/VA |
| Bresike Omen<br>Phone: (02) 457 8281<br>Sysop: Geoff Arthur | 24 Hours<br>Public |
| CCUA C-64 BBS<br>Phone: (02) 599 7342<br>Sysop: Unknown | 24 Hours<br>Public |
| Club 80 (SYDTRUG) RTRS<br>Phone: (02) 332 2494<br>Sysop: Michael Cooper | 24 Hours<br>Mem/VA |
| COMMBOARD<br>Phone: (02) 664 2334<br>Sysop: Graham Lee | 24 Hours<br>Mem/VA |
| Contact RCPM<br>Phone: (02) 550 1004<br>Sysop: Steven Williams | 24 Hours<br>Mem/VA |
| C S A C E (ATARI)<br>Phone: (02) 529 8249<br>Sysop: Larry O'Keefe | 24 Hours<br>Reg/VA |
| Dick Smith RIBM<br>Phone: (02) 887 2276 | 24 Hours<br>Public |
| Frontier Systems RIBM<br>Phone: (02) 875 2606<br>Sysop: John Stanton | 24 Hours<br>Public |
| Galaxy (Apple) BBS<br>Phone: (02) 875 3943<br>Sysop: Chris Nelligan | 24 Hours<br>Public |
| Goblin Sound RMAC<br>Balmain RCPM<br>Phone: (02) 660 8182<br>Sysop: Ned Whitford | 24 Hours<br>Reg/LVA |
| Illawarra BBS<br>Phone: (042) 84 4354<br>Sysop: John Simon | 24 Hours<br>Reg/VA |
| InfoCentre BBS<br>Phone: (02) 344 9511<br>Sysop: Paris Radio | 24 Hours<br>Mem/VA |
| Keeboard TBBS<br>Phone: (02) 629 2230<br>Sysop: Phillip Keegan | 24 Hours<br>Public |
| Mi Computer Club<br>Phone: (02) 662 2686<br>Sysop: Your Computer Mag | 24 Hours<br>Mem/VA |
| Micro Design Lab RCPM<br>Phone: (02) 663 0151<br>Sysop: Steven Jolly | 24 Hours<br>Public |
| Palantir C-64 BBS<br>Phone: (02) 451 6576<br>Sysop: Steve Sharp | 24 Hours<br>Public |
| Prophet TBBS<br>Phone: (02) 628 7030<br>Sysop: Larry Lewis | 24 Hours<br>Public |
| Pursuit BBS<br>Phone: (02) 522 9507<br>Sysop: Warren Hillsdon | 24 Hours<br>Reg/VA |

RCOM C-64 BBS — 24 Hours
Phone: (02)667 1930
Sysop: Simon Finch — Reg/VA

RUNX Unix System — 24 Hours
Phone: (02) 48 3831 [1200/1200]
Phone: (02) 487 3677 [1200/1200]
Phone: (02) 487 1860 [1200/75]
Phone: (02) 487 2533 [300 Baud]
Phone: (02) 487 1299 [Voice]
Sysop: Mark Webster

Scorpio C-64 BBS — 24 Hours
Phone: (02) 621 7487
Sysop: Russ Morrison — Reg/VA

SYDNEY APPLE USER GROUP — 24 Hours
Phone: (02) 451 6575
Sysop: Andrew Riley & Matthew Barnes — Mem/VA

SYDNEY PC USERS RIBM — 24 Hours
Phone: (02) 238 9034 V1
Phone: (02) 221 5520 V2
Sysop: Geoff May

TANDY AUSTRALIA RIBM — 24 Hours
Phone: (02) 625 8071 — Mem/VA

Tesseract RCPM+ — 24 Hours
Phone: (02) 651 1404 — CP/M & MS DOS
Sysop: John Hastwell-Batten — Reg/VA

Zeta Remote TRS 80 System — 24 Hours
Phone: (02) 627 4177
Sysop: Nick Andrew — Mem/LVA

## AUSTRALIAN CAPITAL TERRITORY

CANBERRA IBBS — 24 Hours
Phone: (062) 58 1406

CANBERRA RBBS — 24 Hours
Phone: (062) 88 8318;

## QUEENSLAND

ACEA COMMODORE BBS (ACEA-BBS) — 24 Hours
Phone: (07) 341 0285

Brisbane Experimental RCPM II (BEX2-RCPM) — 24 Hours
Phone: (07) 395 1809

Brisbane Microbee User Group GROUP RCPM (BMUG-RCPM) — 24 Hours
Phone: (07) 34 833

HI-TECH CBBS (HTC-BBS) — 24 Hours
Phone: (07) 38 6872

Tomorrow Land Direct (BRIS-TLD) — 24 Hours
Phone: (07) 394 2300

## VICTORIA

AM-NET BBS (AMNET-BBS) — 24 Hours
Phone: (03) 336 7055

Computers Galore BBS — 24 Hours
Phone: (03) 561 8479

Down Under Software — 24 Hours
Phone: (03) 429 4679 — RIBM

Gippsland RCPM — 24 Hours
Phone: (051) 34 1563

HISOFT BBS — 24 Hours
Phone: (03) 799 2001

HI-TECH BBS — 24 Hours
Phone: (03) 397 1165

Mail Bus — 24 Hours
Phone: (051) 27 7245

MELBOURNE MICROBEE USER'S GROUP RCPM (MMUG-RCPM) — 24 Hours
Phone: (03) 873 5734

MELBOURNE MICRO COMPUTER CLUB CBBS — 24 Hours
Phone: (03) 762 5088

MICROPRO COMPUTERS RCPM (MICROP-RCPM) — 24 Hours
Phone: (03) 568 8180

Millionaire BBS — 24 Hours
Phone (03) 222 2939

OMEN IV RTRS — 24 Hours
Phone: (03) 846 4034

Public Resources #1 BBS — 24 Hours
Phone: (03)878 2918

SCORCERER COMPUTER USER'S ASSOC. CBBS — 24 Hours
Phone: (03) 434 3529

VTX 4000 Videotext Service — 24 Hours
Phone: (03) 329 2936

## TASMANIA

Ian Campbell TBBS — 24 Hours
Phone: (003) 26 4248

Launceston BBS — 24 Hours
Phone: (003) 34 0911

MS-RBBS RTRS — 24 Hours
Phone: (003) 34 0911
Sysop: Mike Scott

## SOUTH AUSTRALIA

Computer Ventures BBS — 24 Hours
Phone: (08) 255 9146

Electronic Oracle IBBS (EO-IBBS) — 24 Hours
Phone: (08) 260 6686

Multiple BBS (MULTI-BBS) — 24 Hours
Phone: (08) 255 5116

NEXUS Education Dept BBS 24 Hours
(NEXUS-BBS)
Phone: (08) 243 2477

NORTHERN TERRITORY

Outback RCPM 24 Hours
Phone: (089) 27 7111

OMEN II RTRS 24 Hours
Phone: (089) 27 4454

RED CENTRE RCPM 24 Hours
(REDC-RCPM)
Phone: (075) 32 6340

WESTERN AUSTRALIA

Applecross 24 Hours
Phone: (09) 364 9924

OMEN III RTRS 24 Hours
Phone: (09) 279 8555

NEW ZEALAND: NORTH ISLAND

Attache RBBS 24 Hours
Phone: 64 9 76 2309+
Note: Type 'HELP' to log on.

INTERNATIONAL

Some of the following are RING-BACK systems. You ring once and then hang up after the first ring. When you ring the second time, the computer will answer. If you let the phone ring more than twice on the first time, you will get voice contact with the Sysop.
Please Note: You Must dial the ISD prefix (eg. 00144 = UK) and then the STD number WITHOUT THE LEADING ZERO OF THE STD PREFIX.
So Southern BBs would become 00144 243 511007.

300/300 FULL DUPLEX BULLETIN BOARDS - UK

SOUTHERN BBSs 24 Hours
Phone: 0243 511007

COMPUTER ANSWERS MAGAZINE 24 Hours
Phone: 01 631 3076

BASUG (Ringback) 24 Hours
Phone: 0742 667983

MICRO USER (MICROWEB) 24 Hours
Phone: 061 456 4157

CBBS Surrey 24 Hours
Phone: 04862 25174

MAILBOX 80 LIVERPOOL 24 Hours
Phone: 051 428 8924

STOKE ITEC REMOTE CP/M 24 Hours
Phone: 0782 265070

# What's on the CoCo3 Disks and Tapes

**Available from Goldsoft & Tandy for $16.00 each!**

**Please Note:**
**CoCo 3 Part 1 now discontinued.**

CoCo3 Part 2
---

3SAVSCRN - G.McLintock A utility to save and restore hi-res graphics screens.

3BLQUIZ - Richard Cubbit This is an educative game where "Elliot Goblet" teaches you your multiplication tables.

3TEMPCHAR - Harry Hoffman
An application program to record the temperature for the period of a year. The program data saves itself as an independent run-able program.

3RAINCHAR - Harry Hoffman
Application program basically doing the above, except that it records the rainfall.

3XMASLEE - Noarlunga User Group
An entry to the Noarlunga user group Christmas competition.

3XMASKEV - Noarlunga User Group
Another entry of the Noarlunga user group Christmas competition.

3XMASROB - Noarlunga User Group
And yet another entry of the Noarlunga user group Christmas competition.

3GRAPHICS - Glen Skiller
See rotating cubes, interesting spheres and colourful metal bars.

3BUGS - Charles Bartlett
Interesting animation, using flapping-like bugs ...

3C-DATUM - Clive Winsall
A business tape filing system

3TURTLE - Sean Murdoch
A graphics utility introducing turtle graphics for the CoCo 3.

3SHARES - Nigel Barling
A simulation of the stock market - buy and sell stocks.

3BANDIT - Don Berrie
Can you beat this one-armed bandit?

3LOTTO - David McKeand
Application to create lotto sheets and print them out.

3FOOTY - Joy Wallace
Graphics program showing the Victorian football club insignias.

38*8COL - Colin North
Get a glimpse of the colours available for the CoCo 3, on the high-resolution screens.

3H2SAVE - Colin North
A graphics utility to saves hi-res screens to disk.

3H2VIEW - Colin North
Graphics utility to retrieve hi-res screens from disk to the screen.

CoCo3 Part 3
---

ARTIST - Craig Stewart
Create your own colourful pictures in 16 colours. Once run, press 'H' to get a full menu. Supplied with this program are two picture files, "sunset" & "cubes", for your perusal.

3AL - Charles Bartlett
Al & his boys don't like no visitors see, especially feds wid rods. Dey ain't no dummies deese boys, so yus better be good or yus ul be ded!

3HOW? - Charles Bartlett
This game has two questions - "how" you should play it and "how" the devil you can win! Charge around the screen eating as many dots as possible!

3SNAKES - Charles Bartlett
Play the traditional game of "snakes and ladders" in colour on your CoCo!

3ONO - Charles Bartlett
Play UNO - with your CoCo. This particular version of UNO is the latest one out from Charles. It is smarter and faster than the one previously released.

3YAHTZEE - Kevin Gowan
Kevin previously released this version of yahtzee, only for the CoCo 1 & 2 quite a few years ago. Now he re-releases it, only more colourful and more challenging!

3MISSION - Niel Evans
The first graphics adventure in full colour with "windows". Your mission is to blow up a gun shooting down other spaceships.

CoCo3 Part4
---

The first ten programs - 3ENTER, 3SHAPES, 3SNURF, 3LINES, 3BOXES, 3WIDTH32, 3SCREENS, 3ARROW, 3WEIGHTS and 3KANGA - by Johanna Vagg all deal with a variety of subjects, such as graphics, pictures and demonstration programs.

So you want the complimentary Porsche ... Robert Davies has it for you - but you can't drive it!

So you love to drive fast cars around a racing circuit, and you have up to 6 players, and you like plenty of turns and straights? Well, do I have something for you!! (3MADMILE, Steve Youngberry)

You have something to say? Then say it! In a B-I-G way, using this program! (3BIGTEXT, Gordon Thurston)

Aaahh! Darn it, we've crashed on this planet, no thanks to that particle beam accelerater! Now we've got to find those crystals to get back home again. Alternatively, we could always go through that maze ... (3CRYSTAL, Colin North)

Are card games up your alley? Do you usually have no-one to play card games with? I bet you like UNO! If you said 'yes' to all of the above, then you'll love us for this! (3ONO31, Charles Bartlett)

Infiltration and destruction up your alley? Are you an adventure player? Do you like colours & pictures in your adventures? 3INFILTRATOR should be for you!!

3LISSA is a demonstration program of the CoCo 3's high-resolution and speed. It draws boxes in Lissajoule-type pattern and is drawn in 14 different colours with both colour and box moving at the same time!

Gee! That was a good one! You've just killed the wrong file off your disk! You think you can't get it back? Well, you're wrong! This one will restore killed programs, no sweat! (3CZAP, Anon & Co)

The last four programs - 3FONTCH, 3VORTEX, 3POKESYN, 3FONTCON - work nearly as one program, but you'll need the magazine for the complete instructions! (July CoCo, pp34 by Darren Reed)

# Machine Language Search Routine

by George McLintock

UTILITY 32K ECB

A COMMON REQUIREMENT associated with large Basic arrays is a need to search an array to find a particular value.

The utility, called ASEARCH, is a ML routine designed to satisify a range of array search requirements.

I have also submitted another ML routine for sorting arrays, called ASORT (CoCo November, pp12), and this search utility follows a similar general logic for use as the sort routine, ie the calling sequence and use of the two routines are similar, and they are designed so that they can be used together in the same Basic program.

The various features common to both are described in more detail with ASORT, and only a brief outline of them is included here.

The search routine provides the ability to ...

* search either string or numeric arrays,
* search for a value at any position in string elements,
* search the whole string for a match,
* search any dimension of a multi-dimensioned array,
  - eg to search the 'y' elements only in A$(X,Y,Z)
* find groups of elements with the same value,
  - used for searching arrays which have been sorted with a multi level sort.

The search itself is a simple sequential search.

## CALLING SEQUENCE

A separate parameter array is used to pass parameters from the Basic program to the ML routine, eg an array P(9) is set up with a DIM P(9) command, and the search routine entered with a call like ...

```
X=USR(VARPTR(P(0))).
```

The parameter array can be defined as DIM P(10), in which case the same parameter array can be used for ASORT as well, if both routines are used together in the same program.

## PARAMETERS USED

The use of each element in the parameter array is as follows. The purpose of each parameter is described in more detail later.

P(0) = VARPTR of the start of the array to be searched;
P(1) = element number in the array to start searching;
P(2) = element number in the array to stop searching;
P(3) = VARPTR of search key;
P(4) = start position in each string to search for a match;
= if P(4) = 0 then the routine does a numeric search.
P(5) = controls the nature of a string search;
= if P(5) = 0 then it will search for a match at the position specified in P(4) only.
= if P(5) <> 0 then it will search each string from the position in P(4) to the position in P(5) for a match;
P(6) = 'gap' between elements to be searched;
= used for searching low order elements in a multi- dimensioned array.
= if P(6) = 0 then adjoining elements are searched.

The parameters P(7), P(8) and P(9) are used to return the results of the search to the Basic program.

P(7) = subscript value of the first element found;
P(8) = subscript value of the last element in the group found;
P(9) = number of elements found;
= if P(9) = 0 then no match was found.

## ENTRY POINTS

The entry points to the routine are defined with respect to the start position of the routine. The examples used assume a start address of 32000, but this will vary according to how it is used.

For use with a single call, the entry point is at 32084, ie set DEFUSR0 = 32084 and call with ...

```
X=USR(VARPTR(P(0)))
```

## ALTERNATIVE ENTRY POINTS

Calls to the routine can also be separated into a single USR call to initialise some parameters, with subsequent calls by a simple EXEC 'address' command.

If used in this way, the entry points are ...

```
DEFUSR0 = 32076
X=USR(VARPTR(P(0)))
```

... to initialise it with subsequent calls to do a search by ...

```
EXEC 32088
```

The parameters set by the initialise only routine are the ones contained in P(4),P(5), and P(6), together with the address of the parameter array itself.

Once the routine is initialised, these parameters can also be changed by POKE's to specified memory locations, described in the section on using the routine.

The parameter values in P(0) to P(3) are picked up each time the routine is entered by EXEC.

## CODING RESTRICTIONS ASSOCIATED WITH THE PARAMETER ARRAY.

The parameter at P(0) is the VARPTR of the array to be searched, which is the address in memory where the array is located.

Whenever Basic defines a new

simple variable for the program, the actual location of all arrays in memory are altered.

Hence the Basic program that uses these routines must NOT define any new simple variables between the time that the parameter values are set, and a call is made to the routine.

This restriction would still apply even if the values were POKE'd into memory instead of being passed by the parameter array.

If you use the alternative entry points for the routine, then no new simple variables can be defined between the time that the routine is initialised, and any subsequent calls to the routine, without re-initialising it. This is because the address of the start of the parameter array itself is set by the initialise routine.

The easy way to ensure that no new simple variables are defined when they should not be, is to include all simple variables used in that part of the program associated with the search, in the DIM statement which sets up the arrays at the start of the program, eg

```
DIM A$(100),B(100),P(9),X,Y,
P,Q

... etc.
```

SAMPLE CODE

As an example of the calling sequences required to use these routines, I have included an outline of Basic programs which could be used for the different functions.

I have also included sample Basic code to perform the same functions as the ML routines to demonstrate exactly what the ML routines will do.

SIMPLE SEARCH OF SINGLE DIMENSIONED ARRAY.

Assume a single array of 100 elements to be searched eg A$(1) to A$(100), with the search key in A$,

```
DIM A$(100),P(9),A$,X,Y,P,Q
DEFUSR0 = 32084
P(0)=100
 'entry for single call
P(0) = VARPTR(A$(0))
 'start of array to be searched
P(1) = 1
 'element number to start
  search
P(2) = 100
 'element number to stop search
P(3) = VARPTR(A$)
 'search key
P(4) = 1
 'start position in string &
  string search
INPUT "ENTER KEY";A$
 'get search key
X=USR(VARPTR(P(0)))
 'do search '
IF P(9) =  THEN PRINT "NOT
FOUND":STOP PRINT A$(P(7))
 'IS FIRST ELEMENT FOUND
```

The actual search performed by this call is the equivalent of ...

```
P=LEN(A$)
FOR X = 1 TO 100
IF LEFT$(A$(X),P) = A$ THEN 200
NEXT X
P(9) = 0
 'none found
P(7)=100:P(8)=100
 'as set by ML
STOP
 ' ... line 200 follows ...

P(9) = 1
 'set count to start
P(7) = X
 'set subscript value
 found
P(8) = X
 'set to start counting
IF X = 100 THEN STOP
'
FOR Y = X+1 TO 100
IF LEFT$(A$(Y),P) <> A$ THEN
STOP
P(9) = P(9) + 1
 'inc number found
P(8) = P(8) + 1
 'inc end subscript
NEXT Y
STOP
```

When the program stops, the parameter values for P(7) to P(9) will be the same as they would be set by the ML routine.

Note that the search for this option is in fact based on the Basic comparison of ...

```
IF A$=LEFT$(A$(X),LEN(A$))

... which is NOT the same as...

IF A$ = A$(X)
```

If the search key is "ABC", then it will find and accept the string "ABCDEF" as a match.

This results from using the same general logic for this search as is applied for the more general searches described later.

If you actually want the search to be on the basis of IF A$=A$(X), then you should perform a separate test in Basic following the return from the ML routine, eg ...

```
IF A$=A$(P(7)) etc
```

**A separate parameter array is used to pass parameters from the Basic program to the ML routine.....**

FEATURES COMMON TO ALL SEARCHES

The value of the parameters returned to Basic are calculated as shown in the Basic code above, ie

P(7) contains the subscript value of the first element found,

P(8) contains the subscript value of the last element found in the group with the same value,

P(9) contains the number of elements found in the group.

If no elements are found to match the key, then P(9)=0 and P(7) & P(8) contain the value of the last element searched.

The parameters at P(1) and P(2) operate as subscript values when P(0) is set to the first element in the array, ie P(0) is set to VARPTR(A$(0)).

In effect, the value in P(1) is used as an offset from the address in P(0) to find the VARPTR of the first element to be checked. While the value in P(2) is used as an offset from the address in P(0) to find the last element to be checked.

The values returned in P(7) and P(8) are also effectively offsets from the address in P(0).

Hence, if P(0) is set to the VARPTR of A$(0), then the values in P(1),P(2),P(7) and P(8) will be the normal Basic subscript values. However, if some other value is used in P(0), then these other parameters will be offsets from that value.

If the list being searched is not ordered (ie it has not been sorted on the field being searched), then subsequent values can be searched for by setting P(1) = P(7) + 1, and calling the routine again, eg using the same set up as before, the following code will find subsequent occurrences of the same value.

```
INPUT "ENTER KEY"; A$
 'search key
PRINT "MATCH FOUND AT"

... line 100 follows ...

X=USR(VARPTR(P(0)))
 'perform search
IF P(9)=0 THEN PRINT "NO
MORE":STOP
PRINT P(7);
P(1)=P(7)+1
 'set to continue
GOTO 100
```

DETAILS OF SEARCH OPTIONS

The parameters at P(4) and P(5) determine the way in which the actual search is performed.

If P(4) = 0 then the search is a numeric search on the actual values in the array;

If P(4) is not equal to zero, then the search is a string search, where P(4) specifies the starting position in the string for comparison, eg if P(4)=6 then the comparison starts from position 6.

If coded in Basic, the comparison is equivalent to IF A$=MID$(A$(X),6,LEN(A$)) THEN etc ...

If P(5) = 0 then the comparison for the search is as described above for P(4).

If P(5) is not equal to zero, then a search is made of the full string between the positions contained in P(4) and P(5), eg if P(4)=2 and P(5)=35, then the comparison is equivalent to the following Basic code:

```
P=LEN(A$)
FOR Y = 2 TO 35-P+1
IF A$=MID$(A$(X),Y,P) THEN
 'match found'
NEXT Y
 'match not found in string
  A$(X)
```

... ie the search string is compared with all characters between position 2 and position 35 in each string.

The ML routine will automatically adjust for the actual length of the string to be searched being less than the length of the search key, and being less than the value specified in both P(4) & P(5).

It will also find a null string in the array if the search key is null.

**Where the search is to be done on the highest dimension, then routine is entered normally.....**

SEARCHING MULTI-LEVEL SORTED ARRAYS.

This applies to arrays which have been sorted with a multi-level sort, ie if B$(N) has been sorted into sequence within A$(N), eg a list of records where A$(N) contains the artist and B$(N) contains the song, and the arrays have been sorted into sequence.

If you then wish to search both arrays to find a particular song (in B$), by an artist (in A$), then the following code shows how this could be done.

Note that the alternative calling sequence is used in this example.

```
DIM A$(100),B$(100),P(9),A$,B$
,X,Y,P,Q
DEFUSR0 = 32076
 'initialise only entry
A1 = 32088
 'EXEC address for search
P(0) = VARPTR(A$(0))
 'start first array to search
P(1) = 0
 'element number to start
  search
P(2) = 100
 'element number to stop search
P(3) = VARPTR(A$)
 'first search key
P(4) = 1
 'start position in string
X=USR(VARPTR(P(0)))
 'initialise routine '
INPUT "ENTER KEYS"; A$,B$
EXEC A1
 'search A$(N) array IF P(9)=0
THEN PRINT "NOT FOUND":STOP '
P(0) = VARPTR(B$(0))
 'second array to search P(1) =
  P(7)
 'first element containing key
  in A$
P(2) = P(8)
 'last element containing key
  in A$
P(3) = VARPTR(B$)
 'second search key '
EXEC A1
 'search B$(N)
IF P(9) = 0 THEN PRINT "NOT
FOUND":STOP
```

If P(9) = 1 then a single match is found at A$(P(7)) and B$(P(7)).

If P(9) > 1 then there is more than one record in the lists with the same values, eg if the multi-level sort extends beyond two levels.

Further levels of searching can then be obtained by applying the same procedure to the lower levels as was used for B$(N).

SEARCHING LOW ORDER DIMENSIONS IN A MULTI DIMENSIONED ARRAY

Multi dimensioned arrays are stored in memory with the high order elements in adjoining memory locations, eg with DIM A$(X,Y,Z) as A$(20,2,1), the VARPTR's are stored in memory from the start as A$(0,0,0) ...

```
A$(20,0,0),    A$(0,1,0)     ...
A$(20,1,0),    A$(0,2,0)     ...
A$(20,2,0),    A$(0,0,1)     ...
A$(20,0,1),    A$(0,1,1)     ...
A$(20,1,1),    A$(0,2,1)     ...
A$(20,2,1) ...
```

Where the search is to be done on the highest dimension (ie the 'x' dimension), then the routine is entered normally, eg to search from A$(0,1,0) to A$(20,1,0), simply set P(0) = VARPTR(A$(0,1,0)) and call normally.

However, a search of lower order dimensions requires the use of the parameter at P(6), to specify a 'gap' between the VARPTR's in memory for each comparison.

From the description of how multi dimensioned arrays are stored in memory, you can work out the gap between each of the lower order dimensions.

There is a gap of 21 elements between each of the 'y' elements in the array (eg between A$(0,0,0) and A$(0,1,0), and 21*3 elements between each of the 'z' elements (eg between A$(0,0,0) and A$(0,0,1).

Hence if the array to be searched is dimensioned as A$(20,20) and you want to search the low order elements only, then P(6) should be set to 21, while P(0) should be set to the VARPTR of A$(X,0), where 'X' is the high order element required.

A sample program to search any of the low order dimensions, where the high order dimension is entered with the search key, is as follows:

```
DIM A$(20,20),P(9),A$,X,Y,P,Q
DEFUSR0 = 32076
 'initialise only entry
A1 = 32088
 'EXEC for search
P(1)=0
 'element number to start
  search
P(2)=20
 'element number to stop search
P(3)=VARPTR(A$)
 'search key
P(6)=21
 'gap between low order
  elements
X=USR(VARPTR(P(0)))
 'initialise
INPUT "ENTER HIGH ORDER VALUE,
& KEY";Y,A$ '
P(0)=VARPTR(A$(Y,0))
 'first element this dimension
EXEC A1
 'do search
PRINT A$(Y,P(7))
 'is string required
```

For more complex searches, the value of the high order element 'y', could itself be the result of an earlier search.

Note that with this search, the values in P(1), P(2), P(7) and P(8) still equate to the normal Basic subscript values for the low order elements in the array. The size of the gap in P(6) operates independently and does not require any different values to be used in these parameters.

OTHER ASPECTS

A number of other aspects associated with the search routine are the same as for the sort routine, which has also been submitted, ie contents of VARPTR's, converting floating point values to integers etc, and these are described with ASORT.

The conversion of integers back to floating point values is the reverse of the conversion from floating point to integer, eg for non-zero values, the exponent is first set to 144. It is then reduced by one for each time the two byte integer is shifted to the left without turning the carry bit on.

When the carry bit is turned on, the routine does a 16 bit logical shift right to produce the correct structure for a

# The OS9 Serial Port

by Ken Wagnitz

OS9 ARTICLE

THE TERMINAL PROGRAM I use is a public domain one. Unfortunately it doesn't work with the built in serial port and supplied software for it ('/T1') under OS9 level 1 or level 2. (Nor does Deskmate work with it!)

I have my own home-made serial cartridge which works fine. But it would be nice if others who are moving to OS9 could use a terminal program with their existing hardware, just as they did under RSDOS.

Since I had the source code for the terminal program, it seemed reasonable to try to find where it is incompatible with '/T1', and fix one or the other.

I disassembled the serial drive 'sio' to see what it does and does not do.

Well the terminal program calls 'sio' with a GetStat SS.Opt, which asks for a copy of the options table from the Path Descriptor. This stores things like baud rate, number of bits, parity, etc.

The response from 'sio' is an 'Unknown Service Code Error' message.

So I wrote in a do-nothing SS.Opt handler in 'sio', reassembled it, rewrote the name of the original 'sio' in memory and loaded my new 'sio'. (This is my standard quick and dirty method of loading replacement modules for those in the boot file, since modules loaded from the boot file cannot be unlinked or replaced by later revisions of a module.)

It didn't work. The serial driver breaks the rules by not installing itself in the interrupt table on initialization (with an F$IRQ system call). Obviously some dirty pool is played somewhere in OS9 system stuff.

I am still fiddling with a Basic09 program to examine the whole of memory to see what is going on! That program threatens to get converted to C code any time now (see my liturgy on C elsewhere).

perhaps I should just wait for the Level 2 Programmer's Package to arrive (Level 1 DEBUG doesn't do the whole of RAM)!

HINT

To set the base for disk commands disables for Disk Basic 1.0.

type

```
A=PEEK(116)*256+PEEK(117)
-196:X=INT(A/256):Y=A-(X*
256):B=A:FOR I=&HC17F TO
&HC1DB:POKE B,PEEK(I):B=B
+1:NEXT I:POKE309,X:POKE
310,Y:CLEAR 200,A
```

HINT
for Colour Basic Computer Users!

To restart your Basic Program

type

```
A=PEEK(116)*256+PEEK(117)-12X
=INT(A/256):Y=A-(X*256):POKE
113,85:POKE114,X:POKE115,Y:
DATA18,189,173,33,189,172,239,
126,173,158
```

To restart Basic Program just press reset button.

positive mantissa value, which is stored as the first two bytes of the mantissa in the floating point value to be returned.

## USING THE ROUTINE

This utility is relocatable and can be loaded into any convenient area of memory for execution, eg for incidental use, it can be loaded into protected memory above 32000 and executed from there (or at 31600 if used in association with ASORT).

However, for normal use by any particular program, I consider that the most appropriate place to put it is at the end of the Basic program itself. Again see the description with ASORT for more information about this procedure.

The utility is submitted as a Basic program containing data statements which are POKE'd into memory to set up the ML code.

This program is set up to incorporate the ML routine at the end of another Basic program, and then to delete itself from that program.

The line numbers for the program start from 57000 to allow it to be merged at the end of some other program. After merging the program, RUN 57000 to set up the ML routines.

Within the Basic program that uses this utility, the starting point for the routine is obtained by

```
M1=PEEK(27)*256+PEEK(28)-389
```

Entry points are then calculated with reference to the value of 'M1', eg

* single entry search at M1 + 84
* initialise only at M1 + 76
* EXEC search at M1 + 88

If you want to use the routine at some other fixed area of memory, say 32000, then delete lines 57110-57150 and replace with

```
CLEAR 200,32000
A = 32000
```

.. then continue as is.

The ML routines will then be POKE'd into memory from A to A+386.

## USING ASEARCH WITH ASORT.

If using both ASEARCH and ASORT together in the same Basic program, then both can still be installed at the end of the Basic program that calls them.

When installing these programs, you have to be careful with the placement of the DATA statements. Particularly if the program which they are being added to has its own DATA statements as well.

Both routines are set up to expect their own DATA statements to be the first ones in the program, and if they are not, then you either have to make them so, or add code to read past the other DATA statements in the program.

If the other program has its own DATA statements, then I suggest you RENUM these programs to go from say 10 to 100, and RENUM the other program to start from 200.

You can then merge these utilities at the start of the program and run them from there. You can of course merge one and install it, and then merge the next one and install it etc.

With the BASIC line numbers applied here, if you merge them both together at the end of the program, then you have to install ASORT first and then ASEARCH, eg

```
RUN 55000
RUN 57000
```

This sequence is required to have the DATA statements operate correctly.

The only change required when using both together, is to the procedure used to find the start address of ASORT (the first utility installed in the way).

The start address for ASEARCH (the last utility installed in the way), is still ...

```
M=PEEK(27)*256)+PEEK(28)-389
```

However, the start address for ASORT will now be

```
M=M1-583
```

... ie, the start address for the utility installed after it replaces the value obtained from locations 27 and 28.

Any number of utilities together in protected memory, I suggest, starting ASEARCH at 31600 and ASORT at 32000. They can be packed tighter than this, but these values provide convenient round numbers without too much wastage.

## WORKING STORAGE

This utility requires 26 bytes for working storage and to hold the parameter values passed to it. The direct page register is used to point to this working storage area.

As set up, the routine uses the cassette buffer for working storage (from Hex 200). This can be altered if desired by POKE'ing a different value into location M1 + 72 (ie 32072) within the ML code.

The actual working storage used starts at an offset of 50 bytes from the direct page register so that the search routine can use the same value in the DP register as ASORT, but this is not necessary.

If you use the alternative calling sequence, then a number of parameters which are set by the initialise only call, can be altered directly by POKE's to the appropriate memory locations.

If DP is set equal to the start of working storage, ie to the value obtained by PEEK(M1+72)*256, then the POKE addresses for these parameters are:

```
DP+50
 = value in the P(4) parameter
 = ie zero for a numeric search
 = or start position in string
    for search

DP+51
 = value in the P(5) parameter
 = ie zero to search at start
    position only
 = or end position in string for
    search

 DP+52 and 53
  = address of start of the
parameter array

 DP+54 and 55
  = gap between elements to be
     searched
  = is a 2 byte integer value
  = and represents the number of
     bytes between elements
  = if P(6)=0 then this value
     will equal 5
```

Other values in working storage after the search are:

```
 DP+58 and 59
  = subscript value of first
     match found

 DP+60 and 61
  = subscript value of last
     match in group

 DP+62 and 63
  = number of matches found in
     group
```

Note that all values returned are held in working storage as two byte integers.

## The Listing:

```
1 '**  ASEARCH (ML SEARCH)
       BY GEORGE MCLINTOCK
       SEPT 87
2 GOTO 57000
3 SAVE"54A:3":END'7
4 'A GENERAL PURPOSE ML SEARCH F
OR BASIC ARRAYS
5 'SET UP TO ADD ML AT END OF AN
OTHER BASIC PROGRAM - TO USE  ME
RGE AT END ANOTHER PROGRAM AND
RUN 57000
6 ' ENTRY POINTS - M1=PEEK(27)*2
56+PEEK(28)-389
7 'SINGLE CALL M1+84 INITIAISE O
NLY M1+76 EXEC SEARCH M1+88
8 'TO PUT IN FIXED AREA OF MEMOR
Y - DELETE LINES 57110-57150  -
REPACE WITH CLEAR 200,32000:A=32
000
9 '
57000 LN=58000:FOR X=0 TO 386 ST
EP 25:IF X<374 THEN N=25 ELSE N=
11
57010 GOSUB 57030:NEXT X
57020 RESTORE:GOTO 57110
57030 PRINT LN;:A=0:FOR Y=0 TO N
-1
57040 READ C$:B=VAL("&H"+C$):A=A
+B
57050 NEXT Y:READ C$:IF A<> VAL(
"&H"+C$) THEN PRINT "ERROR IN LI
NE NO";LN:STOP
57060 LN=LN+10:RETURN
57070 '
57080 FOR Y= 0 TO N-1:READ C$:PO
KE A,VAL("&H"+C$)
57090 A=A+1:NEXT Y:READ C$:RETUR
N
57100 '
57110 M$="9E1B308901826F806F806F
809F1B39":Y=&H01DA
57120 B=0:FOR X=1 TO 30 STEP 2:N
=VAL("&H"+MID$(M$,X,2)):B=B+N:PO
KE Y,N:Y=Y+1:NEXT X
57130 IF B <> &H5B5 THEN PRINT "
ERROR IN LINE NO 55110":STOP
57140 EXEC &H1DA:CLEAR
57150 A=PEEK(27)*256+PEEK(28)-38
9:LN=58000
57160 FOR X=0 TO 386 STEP 25:IF
X<374 THEN N=25 ELSE N=11
57170 GOSUB 57080:NEXT X
57180 '
57190 PRINT "ASEARCH ML NOW ADDE
D TO END OF  BASIC PROGRAM": PRI
NT "AND EXTRA BASIC CODE DELETED
"
57200 '
58000 DATA 8D,29,DD,34,1F,1,30,8
8,14,8D,20,D7,32,30,5,8D,1A,D7,3
3,30,5,6D,84,27,D,7A9
58010 DATA 8D,10,DD,36,58,49,58,
49,D3,36,DD,36,39,4F,C6,5,20,F8,
6D,84,27,15,86,90,A0,A5C
58020 DATA 84,97,4A,EC,1,8A,80,D
,4A,27,6,44,56,A,4A,26,FA,39,4F,
5F,39,86,2,1F,8B,840
58030 DATA 39,8D,F9,8D,B0,4F,1F,
8B,39,8D,F1,8D,A8,8D,ED,9E,34,8D
,CD,DD,48,30,5,8D,C7,D35
58040 DATA DD,3A,DD,3C,F,3E,F,3F
,30,5,8D,BB,DD,38,30,5,8D,B5,DD,
43,1F,3,A6,C4,97,A17
58050 DATA 40,EC,42,DD,41,DC,36,
DE,48,9E,38,27,6,33,CB,30,1F,26,
FA,DF,38,DE,48,9E,3A,B49
58060 DATA 27,6,33,CB,30,1F,26,F
A,DF,48,A6,C4,97,45,EC,42,DD,46,
1F,31,8D,7A,D,4B,26,A2D
58070 DATA 30,8D,19,8D,6,9C,38,2
3,F2,20,38,9E,48,DC,36,30,8B,9F,
48,A6,84,97,45,EC,2,A38
58080 DATA DD,46,39,DE,3A,33,41,
DF,3A,DE,3C,33,41,DF,3C,39,DE,3E
,33,41,DF,3E,20,F1,C,AAD
58090 DATA 3F,8D,D6,9C,38,22,A,8
D,3C,D,4B,27,4,8D,E8,20,F0,1F,B8
,C6,3A,1F,3,9E,34,93E
58100 DATA 30,88,23,8D,8,8D,6,8D
,4,4F,1F,8B,39,86,90,A7,80,EC,C1
,27,10,58,49,25,4,8B1
58110 DATA 6A,1F,20,F8,44,56,ED,
81,4F,5F,20,4,A7,1F,ED,81,ED,81,
39,F,4B,D,32,26,F,924
58120 DATA C6,5,DE,43,A6,80,A1,C
0,26,4B,5A,26,F7,20,44,F,4A,A6,8
4,27,3A,91,32,25,3C,9C7
58130 DATA 90,32,4C,91,40,25,35,
D,33,27,4,90,40,97,4A,C,4A,4F,D6
,32,5A,E3,2,DD,46,864
58140 DATA 9E,46,D6,40,DE,41,A6,
80,A1,C0,26,5,5A,26,F7,20,10,A,4
A,27,E,9E,46,30,1,910
58150 DATA 9F,46,20,E5,D,40,26,2
,C,4B,39,2EF
58160 DEL 57000-58160
```

## Machine Language Listing

```
                    00100 * CALLED ASEARCH - TO SEARCH BASIC ARRAYS
                    00110 *CALLING SEQUENCE
                    00120 * X=USR(VARPTR(P(0))
                    00130 *PARAMETERS ARE
                    00140 *P(0)=VARPTR OF START OF ARRAY
                    00150 *P(1)=ELEMENT NO TO START
                    00160 *P(2)=ELEMENT NO TO STOP
                    00170 *P(3)=VARPTR OF SEARCH KEY
                    00180 *P(4)=START POSITION IN STRING
                    00190 *     = IF ZERO DOES NUMERIC SEARCH
                    00200 *P(5)=0 WIL SEARCH POSITION IN P(4) ONLY
                    00210 *     <>0 WILL SEARCH FROM P(4) TO P(5)
                    00220 *P(6)=GAP BETWEEN ELEMENTSSEARCHED
                    00230 *  EG FOR LOW ORDER ELEMENTS IN ARRAYS
                    00240 *P(7)=SUBSCRIP VALUE FIRST ELEMENT FOUND
                    00250 *P(8)=SUBSCRIP VALUE OF LAST ELEMENT IN GROUP
                    00260 *P(9)=NUMBER ELEMENTS IN GROUP
                    00270 *
7D00                00280          ORG     32000
                    00290 *WORKING STORAGE SHARED WITH ASORT
```

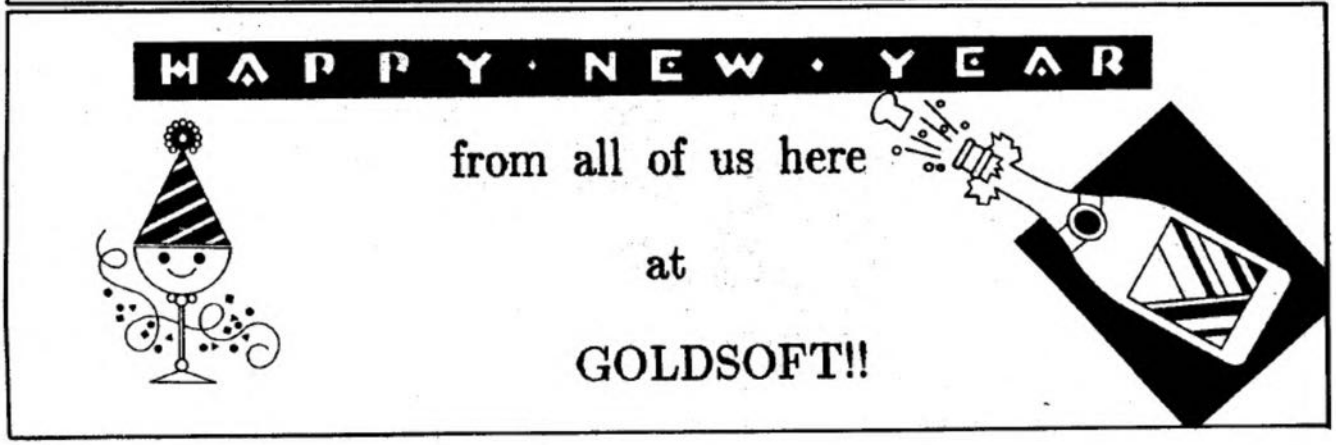
```
          0032      00300 SP       EQU     50       START POS & NUMSW
          0033      00310 EP       EQU     51       END POS & ONE ONLY SW
          0034      00320 PARAMS   EQU     52       START PARAM ARRAY
          0036      00330 GAP      EQU     54       GAP BETWEEN ELEMENTS
          0038      00340 END      EQU     56       ADDR TO END SEARCH
          003A      00350 F        EQU     58       FIRST FOUND
          003C      00360 L        EQU     60       LAST FOUND
          003E      00370 N        EQU     62       NUMBER FOUND
          0040      00380 IL       EQU     64       LEN SEARCH KEY
          0041      00390 IA       EQU     65       ADDR SEARCH KEY
          0043      00400 I        EQU     67       VARPTR KEY
          0045      00410 JL       EQU     69       LEN THIS ELEMENT
          0046      00420 JA       EQU     70       ADDR THIS ONE
          0048      00430 J        EQU     72       VARPTR THIS ONE
          004A      00440 CNT      EQU     74       COUNTER
          004B      00450 SW       EQU     75       SWITCH
                    00460 *
                    00470 *INITIALISE ROUTINE
                    00480 *
7D00 8D   29        00490 INIT     BSR     CONVT
7D02 DD   34        00500          STD     <PARAMS
7D04 1F   01        00510          TFR     D,X      TO GET PARAMS
7D06 30   88 14     00520          LEAX    20,X     TO PARAM 4
7D09 8D   20        00530          BSR     CONVT
7D0B D7   32        00540          STB     <SP      START POS & NUM SW
7D0D 30   05        00550          LEAX    5,X
7D0F 8D   1A        00560          BSR     CONVT
7D11 D7   33        00570          STB     <EP      END POS & SW
7D13 30   05        00580          LEAX    5,X
7D15 6D   84        00590          TST     ,X
7D17 27   0D        00600          BEQ     ZROGAP
7D19 8D   10        00610          BSR     CONVT
7D1B DD   36        00620          STD     <GAP     MUL
7D1D 58             00630          LSLB             BY 5
7D1E 49             00640          ROLA
7D1F 58             00650          LSLB
7D20 49             00660          ROLA
7D21 D3   36        00670          ADDD    <GAP
7D23 DD   36        00680 EXINIT   STD     <GAP
7D25 39             00690          RTS
7D26 4F             00700 ZROGAP   CLRA
7D27 C6   05        00710          LDB     #5
7D29 20   F8        00720          BRA     EXINIT
                    00730 *
                    00740 *CONVERT FP NUMBER POINTED TO BY X
                    00750 *INTO 2 BYTE INTEGER IN D
                    00760 *
7D2B 6D   84        00770 CONVT    TST     ,X
7D2D 27   15        00780          BEQ     ZERO
7D2F 86   90        00790          LDA     #144     MAX VALID VALUE
7D31 A0   84        00800          SUBA    ,X       EXPONENT
7D33 97   4A        00810          STA     <CNT
7D35 EC   01        00820          LDD     1,X      MANTISSA
7D37 8A   80        00830          ORA     #$80     ASSUME POSITIVE
7D39 0D   4A        00840          TST     <CNT
7D3B 27   06        00850          BEQ     EXCONV   NO MOVE REQUIRED
7D3D 44             00860 CONVT1   LSRA             MOVE TO INTEGER
7D3E 56             00870          RORB             POS IN D
```

```
7D3F 0A   4A       00880          DEC     <CNT
7D41 26   FA       00890          BNE     CONVT1
7D43 39            00900 EXCONV   RTS
7D44 4F            00910 ZERO     CLRA
7D45 5F            00920          CLRB
7D46 39            00930          RTS
                   00940 *
                   00950 *SET DIRECT PAGE
                   00960 *
7D47 86   02       00970 SETDP    LDA     #2
7D49 1F   8B       00980          TFR     A,DP
7D4B 39            00990          RTS
                   01000 *
                   01010 *INITIALISE ONLY
                   01020 *
7D4C 8D   F9       01030 INONLY   BSR     SETDP
7D4E 8D   B0       01040          BSR     INIT
7D50 4F            01050          CLRA
7D51 1F   8B       01060          TFR     A,DP
7D53 39            01070          RTS
                   01080 *
                   01090 *INITIALISE & SEARCH
                   01100 *
7D54 8D   F1       01110 START    BSR     SETDP
7D56 8D   A8       01120          BSR     INIT
7D58 8D   ED       01130 EXECS    BSR     SETDP   EXEC ENTRY
7D5A 9E   34       01140          LDX     <PARAMS
7D5C 8D   CD       01150          BSR     CONVT
7D5E DD   48       01160          STD     <J      START ARRAY ADDR
7D60 30   05       01170          LEAX    5,X
7D62 8D   C7       01180          BSR     CONVT
7D64 DD   3A       01190          STD     <F      FIRST SUBSCRIPT
7D66 DD   3C       01200          STD     <L      TO START
7D68 0F   3E       01210          CLR     <N      ZERO COUNT
7D6A 0F   3F       01220          CLR     <N+1    FOUND
7D6C 30   05       01230          LEAX    5,X
7D6E 8D   BB       01240          BSR     CONVT
7D70 DD   38       01250          STD     <END    AS SUBSCRIP VALUE
7D72 30   05       01260          LEAX    5,X
7D74 8D   B5       01270          BSR     CONVT
7D76 DD   43       01280          STD     <I      VARPTR OF KEY
7D78 1F   03       01290          TFR     D,U
7D7A A6   C4       01300          LDA     ,U      SET IF STRING
7D7C 97   40       01310          STA     <IL     LEN KEY
7D7E EC   42       01320          LDD     2,U
7D80 DD   41       01330          STD     <IA     ADDR KEY
                   01340 *CONVERT VALUES TO BYTES USING GAP
                   01350 *
7D82 DC   36       01360          LDD     <GAP
7D84 DE   48       01370          LDU     <J      START ADDR
7D86 9E   38       01380          LDX     <END
7D88 27   06       01390          BEQ     ZLE2
7D8A 33   CB       01400 SETUP3   LEAU    D,U
7D8C 30   1F       01410          LEAX    -1,X
7D8E 26   FA       01420          BNE     SETUP3
7D90 DF   38       01430 ZLE2     STU     <END    END ADDRESS
                   01440 *
```

```
7D92 DE   48      01450          LDU     <J       START ARRAY
7D94 9E   3A      01460          LDX     <F       START SUBSCRIPT
7D96 27   06      01470          BEQ     ZLE1
7D98 33   CB      01480 SETUP2   LEAU    D,U
7D9A 30   1F      01490          LEAX    -1,X
7D9C 26   FA      01500          BNE     SETUP2
7D9E DF   48      01510 ZLE1     STU     <J       START VARPTR
7DA0 A6   C4      01520          LDA     ,U
7DA2 97   45      01530          STA     <JL      LEN THIS ONE
7DA4 EC   42      01540          LDD     2,U
7DA6 DD   46      01550          STD     <JA      START STRING
7DA8 1F   31      01560          TFR     U,X      FOR SEARCH
                  01570 *
                  01580 *DO SEARCH
                  01590 *
7DAA 8D   7A      01600 SS1      BSR     SEARCH
7DAC 0D   4B      01610          TST     <SW
7DAE 26   30      01620          BNE     GOTONE
7DB0 8D   19      01630          BSR     INC1
7DB2 8D   06      01640          BSR     INCPTR
7DB4 9C   38      01650          CMPX    <END
7DB6 23   F2      01660          BLS     SS1      CONTINUE
7DB8 20   38      01670          BRA     FIN      NOT FOUND ANY
                  01680 *
                  01690 *INCREASE POINTERS AND COUNTS FOR SEARCH
                  01700 *
7DBA 9E   48      01710 INCPTR   LDX     <J       THIS ONE
7DBC DC   36      01720          LDD     <GAP     TO NEXT
7DBE 30   8B      01730          LEAX    D,X
7DC0 9F   48      01740          STX     <J       NEW ONE
7DC2 A6   84      01750          LDA     ,X       FOR STRINGS
7DC4 97   45      01760          STA     <JL
7DC6 EC   02      01770          LDD     2,X
7DC8 DD   46      01780          STD     <JA
7DCA 39           01790          RTS
                  01800 *
7DCB DE   3A      01810 INC1     LDU     <F
7DCD 33   41      01820          LEAU    1,U
7DCF DF   3A      01830          STU     <F
7DD1 DE   3C      01840 INCL     LDU     <L
7DD3 33   41      01850          LEAU    1,U
7DD5 DF   3C      01860          STU     <L
7DD7 39           01870          RTS
                  01880 *
7DD8 DE   3E      01890 INC2     LDU     <N
7DDA 33   41      01900          LEAU    1,U
7DDC DF   3E      01910          STU     <N
7DDE 20   F1      01920          BRA     INCL
                  01930 *
                  01940 *FOUND MATCH - NOW FIND END THIS GROUP
                  01950 *
7DE0 0C   3F      01960 GOTONE   INC     <N+1     INCREASE COUNT ONLY
7DE2 8D   D6      01970 G1       BSR     INCPTR
7DE4 9C   38      01980          CMPX    <END
7DE6 22   0A      01990          BHI     FIN      END OF SEARCH
7DE8 8D   3C      02000          BSR     SEARCH
7DEA 0D   4B      02010          TST     <SW
7DEC 27   04      02020          BEQ     FIN      THIS ONE NOT EQUAL
```

```
7DEE 8D   E8       02030          BSR     INC2
7DF0 20   F0       02040          BRA     G1        CONTINUE
                   02050 *
                   02060 *FINISHED SEARCH
                   02070 *INTEGERS F,L&N ARE CORRECT VALUES
                   02080 *CONVERT TO FP AND PUT BACK IN PARAM ARRAY
                   02090 *
7DF2 1F   B8       02100 FIN      TFR     DP,A      GET WS TO U
7DF4 C6   3A       02110          LDB     #F
7DF6 1F   03       02120          TFR     D,U
7DF8 9E   34       02130          LDX     <PARAMS
7DFA 30   88 23    02140          LEAX    35,X      TO PARAM 7
7DFD 8D   08       02150          BSR     TOFP
7DFF 8D   06       02160          BSR     TOFP
7E01 8D   04       02170          BSR     TOFP
7E03 4F            02180          CLRA
7E04 1F   8B       02190          TFR     A,DP
7E06 39            02200          RTS               TO BASIC
                   02210 *
                   02220 *CONVERT INTEGER (U) TO FP NUMBER (X)
                   02230 *
7E07 86   90       02240 TOFP     LDA     #144
7E09 A7   80       02250          STA     ,X+
7E0B EC   C1       02260          LDD     ,U++
7E0D 27   10       02270          BEQ     ZFP
7E0F 58            02280 TOFP1    ASLB
7E10 49            02290          ROLA
7E11 25   04       02300          BCS     DONE
7E13 6A   1F       02310          DEC     -1,X
7E15 20   F8       02320          BRA     TOFP1
7E17 44            02330 DONE     LSRA              HIGH BIT OFF
7E18 56            02340          RORB
7E19 ED   81       02350          STD     ,X++      MANTISSA
7E1B 4F            02360          CLRA
7E1C 5F            02370          CLRB
7E1D 20   04       02380          BRA     ZFP1
                   02390 *SET FP NUMBER TO ZERO
7E1F A7   1F       02400 ZFP      STA     -1,X      EXPONENT
7E21 ED   81       02410          STD     ,X++      MANTISSA
7E23 ED   81       02420 ZFP1     STD     ,X++
7E25 39            02430          RTS
                   02440 *
                   02450 *SEARCH THIS ELEMENT FOR A MATCH
                   02460 *
7E26 0F   4B       02470 SEARCH   CLR     <SW       SWITCH
7E28 0D   32       02480          TST     <SP
7E2A 26   0F       02490          BNE     STRSCH    DO STRING SEARCH
                   02500 *DO NUMERIC SEARCH
7E2C C6   05       02510          LDB     #5
7E2E DE   43       02520          LDU     <I
7E30 A6   80       02530 NS1      LDA     ,X+
7E32 A1   C0       02540          CMPA    ,U+
7E34 26   4B       02550          BNE     NO
7E36 5A            02560          DECB
7E37 26   F7       02570          BNE     NS1
7E39 20   44       02580          BRA     YES
                   02590 *DO STRING SEARCH
7E3B 0F   4A       02600 STRSCH   CLR     <CNT      USED LATER
```

```
7E3D A6   84      02610          LDA     ,X      LEN THIS
7E3F 27   3A      02620          BEQ     MAYBE
7E41 91   32      02630          CMPA    <SP     START POS IN STRING
7E43 25   3C      02640          BLO     NO      SP > LEN STR
7E45 90   32      02650          SUBA    <SP     START POS
7E47 4C           02660          INCA            ADJUST
7E48 91   40      02670          CMPA    <IL     LEN TO SEARCH
7E4A 25   35      02680          BLO     NO      THIS < KEY
7E4C 0D   33      02690          TST     EP      SWITCH
7E4E 27   04      02700          BEQ     ONE     THIS POSITION ONLY
7E50 90   40      02710          SUBA    <IL     LEN KEY
7E52 97   4A      02720          STA     <CNT    NO OF LOOPS
7E54 0C   4A      02730 ONE      INC     <CNT    ADJ FOR COUNT
                  02740 *
7E56 4F           02750          CLRA            CALC ADDRESS TO START
7E57 D6   32      02760          LDB     <SP     SEARCH IN STR
7E59 5A           02770          DECB            ADJUST
7E5A E3   02      02780          ADDD    2,X
7E5C DD   46      02790          STD     <JA
7E5E 9E   46      02800          LDX     <JA     TO X
7E60 D6   40      02810 T0       LDB     <IL     COUNTER FOR SEARCH
7E62 DE   41      02820          LDU     <IA     KEY
7E64 A6   80      02830 T1       LDA     ,X+     COMPARE ELEMENTS
7E66 A1   C0      02840          CMPA    ,U+
7E68 26   05      02850          BNE     NOTYET
7E6A 5A           02860          DECB
7E6B 26   F7      02870          BNE     T1      DO ALL KEY
7E6D 20   10      02880          BRA     YES     FOUND IT
7E6F 0A   4A      02890 NOTYET   DEC     <CNT
7E71 27   0E      02900          BEQ     NO
7E73 9E   46      02910          LDX     <JA     TRY NEXT
7E75 30   01      02920          LEAX    1,X     POSITION
7E77 9F   46      02930          STX     <JA
7E79 20   E5      02940          BRA     T0
                  02950 *
7E7B 0D   40      02960 MAYBE    TST     <IL
7E7D 26   02      02970          BNE     NO
7E7F 0C   4B      02980 YES      INC     <SW
7E81 39           02990 NO       RTS
                  03000 *
          7E82    03010 ZZEND    EQU     *
          7D54    03020          END     START
00000 TOTAL ERRORS
```



# Glossary Of Computer Terms

This is a glossary of the terms that most people use when working with or discussing computers.

* ACCESS: The method by which information is read from, or written to, a disk or a tape.
* ADDRESS - A location in memory, usually specified by either a poke or an exec command.
* ASCII - Stands for American Standard Code for Information Interchange. This is a code that assigns special bit-patterns to specific characters or letters.

* BACKUP - Usually a spare copy of a program. Also a disk basic command.
* BASIC - Beginners' All purpose Symbolic Instruction Code. The programming language used by most home computers. It is worded very close to English.
* BAUD RATE - This is the rate at which the computer sends or recieves bits of information through the I/O port. An approximation of the number of bytes per second is the baud rate divided by ten.
* BINARY - The number system using base two. That is, only the digits 0 and 1 can be used.
* BIT - A binary digit. That being either 0 or 1.
* BUG - An error in a program. Syntax or Illegal Function etc.
* BUFFER - A part of memory that is set aside to take in and hold information at any speed and then let the information out at a certain rate.
* BUS - A connection or interface.
* BYTE - A set of 8 bits that can stand for a character or symbol. Capable of representing 256 different combinations, eg 10110011

* CB - Colour Basic. The standard language of the CoCo.
* CHARACTER - A character or number or symbol that appears on the screen.
* COLD START - This is enacted by turning the computer off and turning it on again. To begin from power off is to perform a cold start.
* CRT - Cathode Ray Tube, usually a monitor or TV.
* CPU - The Central Processing Unit. The "brain" of the computer where the "thinking" takes place. The CoCo 1 & 2 use a 6809 processor whereas the CoCo 3 uses a 68B09E processor.

* DATA - Lines in a program that are set aside to be READ by the computer. DATA is a way of storing information in a program.
* DEBUG - To remove the errors or BUGs from a program.
* DEFAULT - Default has many uses. It can be used in some cases as a command that changes the BAUD RATE or to define which disk drive that you want to use.
* DISKETTE - There are two basic types of disk. The floppy disk and the hard disk. The floppy disk is used on a personal or domestic scale and holds enough information for such uses. The hard disk is used in large situations where very large amounts of information have to be ACCESSed quickly.
* DISK DRIVE - The device used to read from and write onto a disk. Again two types. Hard disk and floppy disk. Hard disk is used for progressive work. The floppy for incidental work.
* DOS - Disk Operating System. These vary with different companies with different features. You can usually find one to meet personal needs. Some DOS's include Rainbow Bits, Tandy DOS, BDOS and many more.
* DUMB TERMINAL - This is simply a remote screen used to display information, eg at airports or bus terminals.
* DUPLEX - This is a method of communication between two terminals. Half DUPLEX is where the typed character is sent and is printed only on the receiver's screen. Full DUPLEX is when the character is sent, printed on the receiver's screen and then sent back and printed on the sender's screen. Full DUPLEX is the most widely used system today.

* ECB - EXTENDED COLOR BASIC. The extended language for the CoCo. ECB gives access to hi-res graphics and some other commands such as EDIT.

* ESCAPE CHARACTER - This tells the computer that the following data is of a different set to the previous set.

* FILE - This is an organised set of related data.
* FLEX - An advanced DOS used by 6809 CPU computers.

* FORMAT - Used to organize the disk's magnetic medium into tracks and sectors.

* GRANULE - A unit of storage space on a disk representing 2304 bytes of space.

* HANDSHAKE - A communictions interface preceeding transmission of information, eg a printer is told to print. The printer aknowledges the request and signals to pass on the information. Transmission then commences.
* HARD COPY - A printed copy of data or a file or listing etc.
* HARDWARE - Physical parts of a computer setup, eg computer, printer, modem etc.
* HEX - Short for hexidecimal. Base 16. Uses 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F. CoCo use of a HEX number is preceded by "&H", eg &HE00

* INPUT - Transferral of data into RAM using keyboard, tape, disk etc.
* INTELLIGENT TERMINAL - The main terminal. The one that does the thinking.
* I/O - An abbreviation of Input/Output.

* LINE FEED - A printer command which moves the paper down a line.
* LOAD (CLOAD) - Command enabling files or ASCII data to be read from a tape or disk. "LOAD" is for disk. "CLOAD" is for tape
* LOADM (CLOADM) - The same as load and cload except this command is for MACHINE LANGUAGE programs.

* MACHINE LANGUAGE - A language that lets you access ROM.
* MAINFRAME - Large Computer that can store millions of records in memory.
* MICRO COMPUTER - A term used to describe computers such as the CoCo.



* MODEM - Converts electrical impulses into audio signals and back again. Can be used over long distances using phone lines. Lets computers communicate between themselves.

* OS-9 - An advanced DOS for 6809 CPU computers.

* PARAMETER - A variable is given a value. This value is used to control certain factors of a program. This value is a parameter.
* PARITY BIT - Calculates the value of a certain byte and determines odd or even. Sometimes used for error trapping in modems.
* PERIPHERAL - Any device that can be used under the control of the computer, eg tape recorder, disk drive, printer etc.
* PORT - Socket on the computer used for certain jobs, eg joystick port, I/O port etc.
* PROMPT - A signal made by the computer telling the user that the computer is ready to accept the next command.

* RAM - Random Access Memory. This is the memory set aside for the operator to use for programming or data analysis. RAM is usually measured in K or KiloBYTES, 4K, 16K, 32K, 64K, 128K, 512K etc.
* ROM - Read Only Memory. The memory set aside for the computer to gain information on how to run itself. This is where all the computer's internal commands are stored. It cannot be rewritten as can RAM.
* RS232 - The SERIAL port used by the CoCo.

* SECTOR - One eighteenth of a TRACK on a DISK containing 256 BYTES of storage.
* SERIAL - A form of transmission. One BIT after another. One BIT is sent and used before the next is sent.
* SIMPLEX - Name for half DUPLEX.
* SMART TERMINAL - A terminal capable of displaying and accepting data but cannot run without a main terminal.
* SOFTWARE - Programs or other data that is used by the computer.
* STOP BIT - Indicates the end of a SERIAL transmission.

* TRACK - 18 SECTORs forming concentric circles on the disk medium. There are three main forms of disks, 35 tracks, 40 tracks or 80 tracks.

* UTILITY - A program that serves a specific purpose in conjunction with the computer's running, eg a self check program for the computer is a UTILITY.

* WORD PROCESSOR - Lets you type files and edit them before printing and usually lets you save the file. This glossary was done with a word processor called "Telewriter 64".
* WORD WRAP - A feature of good word processors is that you set the number of characters per line and if, near the end of a line, a word goes over this mark, the computer will take the word and put it at the start of the next line.
* WRITE PROTECT - You do this to your disk to prevent your disk from being overwritten by covering the write protect notch with tape or a write protect tab. The notch serves the same purpose as the tab in the top of a cassette.

# Printer Codes

## Here's a general purpose chart to guide you when using your printer.

| Print Function | DMP-200 | DMP-130 | DMP-120 | DMP-100 | DMP-105 | Sakata | Epson | Gemini | Amust | Brother | Riteman | Super 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Backspace | 8 | ◇,n‡12 | | | 8 | | | | | 8 | 8 | 8 |
| Bold, End | 27,32 | 27,32 | | 30 | 27,32 | 27,14 | 27,87,0 | 27,87,0 | 27,70 | | 27,70 | 27,70 |
| Bold, Start | 27,31 | 27,31 | | 31 | 27,31 | 27,14 | 27,81,1 | 27,87,1 | 27,69 | | 27,69 | 27,69 |
| Compressed, 12cpi | 27,23 | 27,23 | | | 27,23 | | | | | 27,77 | 27,77 | 27,77 |
| Condensed, 17cpi | 27,20 | 27,20 | 27,20 | | 27,20 | 27,15 | 27,15 | 27,15 | 15 | 15 | 27,15 | |
| Correspon. Compress | | 27,29 | | | | | | | | | | 27,110 |
| Correspon. Normal | 27,18 | 27,18 | | | | | | | | | | |
| CR | | 27,22 | | 26 | | | | | | 13 | | |
| CR + LF | 13 | 13 | 13/141 | 10/13 | 13 | 27,13 | 27,13 | 27,13 | 27,13 | 14 | 13 | 13 |
| Elongation, End | 27,15 | 27,15 | 27,15 | | 27,15 | | | | 27,87,0 | 27,87,0 | 27,72 | 27,87,0 |
| Elongation, Start | 27,14 | 27,14 | 27,14 | 31 | 27,14 | | | | 27,87,1 | 27,87,1 | 27,71 | 27,87,1 |
| Form Feed | 27,52,n | | | | 12 | 27,12 | 27,12 | 27,12 | 27,12 | 12 | 12 | 12 |
| Graphics, End | | 30 | 30 | | | | | | | | | |
| Graphics, Start | | 18 | 18 | 18 | 18 | | | | | | | |
| Italics, End | | 27,66,0 | | | | 27,116 | 27,53 | 27,53 | 27,82,10 | | 27,53 | 27,53 |
| Italics, Start | | 27,66,1 | | | | 27,115 | 27,52 | 27,52 | 27,82,19 | | 27,52 | 27,52 |
| Justify, Right | | 27,17 | | | | | | | | | 27,81 | |
| LF, full forward | 27,54 | 27,54 | 27,54 | | 27,54 | | 27,10 | 27,10 | 27,10 | 10 | | |
| LF, full reverse | 27,10 | 27,10 | | | | | ,106,14 | | | | | |
| LF, half forward | 27,28 | 27,28 | 27,28 | | 28,28 | | | | | | | |
| LF, half reverse | 27,30 | 27,30 | | | | | | | | | | |
| LF, n/24 forward | | 27,64,n | | | | | | | | | | |
| LF, 1/12 forward | 27,50 | 27,50 | 27,50 | | | | | | | | | |
| LF, 1/24 forward | | 27,57 | | | | | | | | | | |
| LF, 1/36 forward | | 27,51 | | | | | | | | | | |
| LF, 1/6 forward | | | | | | 27,50 | 27,2 | 27,50 | 27,51 | 27,50 | 27,50 | |
| LF, 1/8 forward | | 27,26 | | | | 27,48 | 27,1 | 27,48 | 27,48 | 27,48 | 27,48 | |
| LF, 3/4 forward | 27,56 | 27,56 | 27,56 | | 27,56 | | | | | | | |
| Microfont | | 27,77 | | | | | | | | | | |
| Normal, 10cpi | 27,19 | 27,19 | 27,19 | | 27,19 | 27,77 | 27,77 | 27,53 | | | 27,80 | 27,80 |
| Page Length | | | | | | | | | | 27,67,n | 27,67,n | |
| Prop. Spaced | 27,17 | 27,17 | | | | 27,112, | 127,112, | | 27,112,1 | | 27,112 | |
| Sel. International | | | | | | | | | | 27,82,n | 27,82 | |
| Skip perforation | | | | | | | | | | 27,78,n | | |
| Subscript, End | | 27,88 | | | | | | | | 27,84 | 27,84 | |
| Subscript, Start | | 27,83,1 | | | | 27,83,1 | 27,83,0 | 27,83,1 | 27,83,1 | 27,83,1 | 27,83 | |
| Superscript, End | | 27,89 | | | | | | | | 27,84 | 27,84 | |
| Superscript, Start | | 27,83,0 | | | | 27,83,0 | 27,83,0 | 27,83,0 | 27,83,0 | 27,83,0 | 27,83 | |
| Underline, End | 14 | 14 | 14 | 14 | | | 27,45,0 | 27,45,6 | 27,45,0 | 27,45,0 | 27,45 | 27,45,0 |
| Underline, Start | 15 | 15 | 15 | 15 | | | 27,45,1 | 27,45,1 | 27,45,1 | 27,45,1 | 27,45 | 27,45,1 |
| Unidirect., End | | | | | 27,85,0 | | | | | 27,85,0 | 27,85 | |
| Unidirect., Start | | | | | 27,85,1 | | | | | 27,85,1 | 27,85 | |

As you may notice, there are a lot of holes above. As some printers use the same code, maybe one can swap one code for another. Then again, you can fill in the holes.

# What's on the 'Best of...' Series

## Codes used in these instructions.

16k cb=16k colour basic
16k ecb=16k extended colour basic
16k decb=16k disk ex. colour basic
32k cb=32k colour basic
32k ecb=32k extended colour basic
32k decb=32k disk ex. colour basic

Best of CoCoOz #1 - Education

ROADQUIZ: 16k ecb
Roadquiz is a street sign quiz. It will show you a traffic sign. Your job is to then figure out what this sign means.

MARKET: 32k ecb
Market is a simulation of a stock market. You can buy or sell stock, with the ultimate goal of making a million dollars!

HANGMAN: 32k ecb
In hangman, you are given a mystery word. Your job is to guess that mystery word in a certain number of moves or be hung by the hangman.

AUSTQUIZ: 32k ecb
How well do you know Australia and it's towns? This is your chance to find out!
Before you is the name of a town, or so it seems. But there is a problem - the letters have been jumbled! Can you unscramble them?

ALPHABETA: 32k ecb
Learn your lowercase Greek alphabet today, with alphabeta. Requires joystick, patience ...

SPELL: 32k ecb
Give your child spelling practice. He/she could use this program before the next spelling test.
Choose from either typing in your own words or use the demonstration words from the tape/disk. Easy to follow instructions are in the program.

TANK ADDITION: 32k ecb
Help!! the enemy is advancing! The only way to stop them is to add up their values and enter that value into your computer.
Press the space bar to shoot - did it work?? yes! uh-oh ... What's this? Oh no ... aaaahhhh! Overrun!
Maybe you can do better!

FRACTUT: 32k ecb
Fractut is designed to teach your child the art of dividing, subtracting, multiplying or adding fractions.
It also shows how to reduce the fraction down to it's lowest terms!

TABLES: 16k cb
Having a maths test? Got your times tables to learn? Well, let this program help you! Pick your table and let the computer teach you!

ICOSA: 32k ecb
An Icosa is an 18-sided object - now for a bit of 3-d animation, watch it spin on its axis!

KIDSTUFF: 32k ecb
Something for the littlies - just sit them in front of the TV set and CoCo will keep them entertained for hours with their favorite nursery rhythms.

TAXMAN: 16k cb
The object of this game is to beat the taxman. You choose a number and the taxman will get all those numbers which are factors of the number you choose.
More instructions in the game.

FLAGQUIZ: 32k ecb
Test your knowledge of the world's flags. Can you identify them all? Try it and see ...

Best of CoCoOz # 2.1 - Games 16K

PYTHON: 16k cb
In "python", you take the part of a python (as the name suggests). The aim here is to eat as many mice as you can without the mice overrunning you. (Eat the mice in order to keep population control.)
Features six levels of play.

MASTERMIND: 16 ecb
Here it is at last! Mastermind on your CoCo, featuring 4 levels of difficulty.
Further instructions are in the program.

POKER-MACHINE: 16k ecb
Get some practice at playing the poker machines by using this program before losing your hard-earned money on the real poker machines!

OIL SLICK: 16k ecb
Catch the droplets of oil that leak from the pipe above you, and empty them into a moving barrel.
Full graphics - very challenging!

CC-METEOR: 16k ecb
Can you save earth from the invading meteors? All the meteors are directed towards major bunkers/cities on earth, and there's only one person who can save them all - you!!

BATTLESHIP: 16k ecb
Now you can play battle ship with your CoCo - no more playing battle ship on paper or card or whatever!
Get a friend together and see if you can outwit the computer!
Four different play modes available.

BATTLE ATTACK: 16k ecb
" ... This is tower one! Hello? Can anyone hear me? Come in! The aliens are coming! The aliens are coming! We're under attack, and we can't .... "
We just lost radio contact. there's only one person that can get rid of the aliens -

==> you! <==

SKIING: 16k ecb
Can you ski down the ski slopes without hitting the poles? Try it and see.
Three levels of difficulty.

PROB-DICE: 16k ecb
" ... what is the probability of 'x' dice with 'y' faces equalling a total of 'z'? ... "
Run this program to find out!

RALLY: 16k ecb
Aim of the game: you are a blue car in a maze. The objective is to get the flag in the maze and avoid the red car chasing you.

Sound easy? Sure, but there's a twist as the game progresses...

CHECKERS: 16k ecb
Play checkers on your CoCo -in high-resolution graphics.
Challenging, educational, and fun.

FOURDRAW: 16k cb
Draw your masterpieces using the keyboard in eight different coloure.
Not your everyday drawing board ...

CHECKERS: 16k ecb
Play checkers on your CoCo -in high-resolution graphics.
Challenging, educational, and fun.

Best of CoCoOz #2.2 - Games 32K

TREASURE: 32 cb
A warlock has died and has left a fortune in treasures inside his cave.
The aim is to find these treasures and get rich. But you'll have to find clues, and also, where to apply these clues.

SHOOT: 32k ecb
A shooting gallery! Shoot fake ducks, bears, the works - just like in the fun fair.

COLOUR MASTERMIND: 32k cb
Play colour mastermind against the computer.
Challenging and hours of fun!

GARDEN OF EDEN: 32k ecb
Play PM for a year - can you create 'bliss' by allocating a number of blessings to the 'addreseable components'?
Uses strategy and thought - not for the timid!

ANAESTHESIA: 32k cb
Help Dr Fred perform surgery on his patients - the catch is that you operate while Dr Fred sits back and tells you what to do.

YAHTZEE: 32k ecb
Play the famous five-dice game on your computer. Simple to play and very enjoyable.

OREGON TRAIL: 32k cb
You have decided to take you and your family of 5 and travel the oregon trail.
The trip will take 3 to 6 months using covered wagon - if you make it.

BATTLESHIP: 32k ecb
The old but good game of battleship. Full instructions in the program.
With all the appropriate sound effects you'd find in the electronic version!

ADV: 32k cb
Get inside a nuclear reactor and shut it down before it goes up!

ANDROMIDA: 32k ecb
There are three stages in this game, all of which are of varying difficulty. Basically, the aim is to get the andromida, but be careful, 'cause he's smart!

LAND ATTACK: 32k ecb
Shoot 'em down (the UFO's) before they get you!

Best of CoCoOz #4 - Business

HI: 32k decb
'Hi' is the program you run when you first access your disk. It has an auto-run/ kill/ save/ rename/ etc, function built-in, so you can clean out the 'junk' in your disks. Next time you access it.

PERSMAN: 32k ecb
Use this program to figure out your expenses and income (if you have several banks) for you. Also keeps track of your withdrawals and expenditures.
Finally works out a financial budget for one week.

BANKSTAT: 32k cb
Bankstat will print out your bank statement for you, eg it will print out debits, credits, etc finally to end up with a balance.

CC5: 32k cb
This program allows you to enter customers, stock and invoices to provide a small business with an inexpensive way to start.

INSURE: 32k ecb
'Insure' can be used to assess the worth of the household when filling in a house contents form.

COCOFILE: 32k ecb
Want to file something? Then this is what you want for your filing system.

DPMS: 32k decb
Disk program management system - the art of managing and keeping an up-to-date record of your disk-based programs.

DATABASE: 32k ecb
Keep an up-to-date record system of your customers for your small business with another very inexpensive program.

RESTACC: 32k ecb
Managing a restaurant? Need a database that will take the extra work-load away from you? Then the "restaurant accountant" can help you out!

SPDSHEET: 32k decb
Want to keep track of your subscribers? Then this program is for you. It keeps track of your customers financial situation (with the company) as well as what the customer bought.

PRSPDSHT: 32k decb
Prints out a spreadsheet, for the last program.

ACS3: 32k decb
Works in conjunction with the two previous programs.

Best of CoCoOz #5 - Adventure


ADV: 32K ECB
You've got to restore a berserk nuclear power plant to working order, or else face a meltdown!
Can you do it?

ORBQUEST: 32k ecb
Destroy the orb and the evil magician which rules over your land and people so your people can live in freedom once again.

LABYRINTH: 32k ecb
Complex (but not really) graphics maze. The aim is to get out of this maze.
Quite a challenge for those of you who like mazes.

ADVENTURE+: 32k ecb
Wander around your uncle's house to find the treasures that he left you in his will.

QUEST: 32k ecb
There are three crystals that the great computer of tark needs to run with.

Finding these three crystals will be a challenge, as you will have to overcome quite a few obstacles.
But we're sure that you can do this, without any problems!
(ha-ha)

PRISON: 32k ecb
"You gotta get outa prison, see..."

OPALTON: 32k ecb
Get the basic idea of the rigors and pitfalls of opal mining, by using this program.

WIZARDS SOCIETY: 32k ecb
Find your way out of this crazy world before time runs out.

TREASURE: 32k cb
Get incredibly wealthy by going through the cave of a dead warlock.
If it seems easy ... it isn't

LOST: 16k cb
Your aim is to get out of the desert before you either die of thurst or get eaten by cannibals.
(What a way to go!)

Best of CoCoOz #6 - Preschool

PRESCHOOL ALPHABET: 16k ecb
Orientated especially towards the young ones, this program is designed to get the young ones to recognize the letters of the alphabet.

MEXICAN HATDANCE: 16k ecb
See and hear the Mexican Hatdance by Johanna.

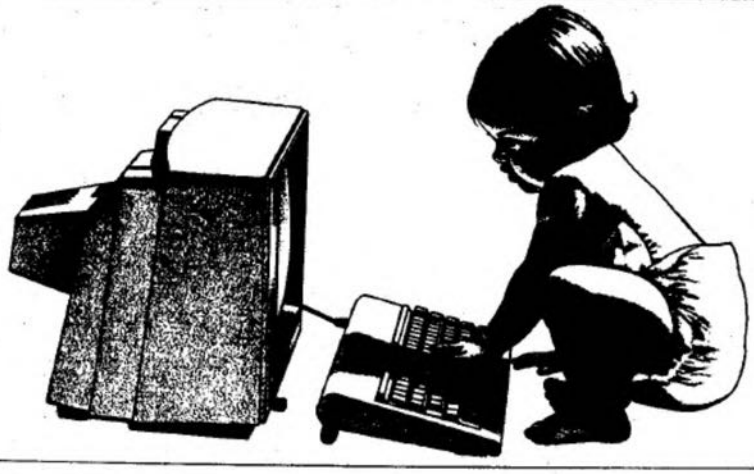
AUSTRALIAN SONGS: 32k ecb
Hear all of the popular Australian songs, in four chord harmony! Songs include Advance Australia Fair, Waltzing Matilda, and more!

KIDS STUFF: 32k ecb
This program is for kids only! See/hear about Humpty Dumpty, Twinkle Twinkle Little Star, and the Three Blind Mice.

MATCHER: 16k cb
This is a game of shape and colour matching. The child is taught to recognize shapes and colours and later match one to the other.

LETTERS: 32k ecb
Teaches your child to recognize letters by the object presented.

SPELLING: 16k ecb
Teaches spelling of words by either spelling the individual words in sequence, display the word, or flash the word.
It is then asked to re-type this word.



BABYSIT: 32k ecb
Now you don't need to hire a baby sitter anymore! Get this program instead.
Sit the little one on front of his/her CoCo and he/she will be delighted with this program!

SPEEDTABLES: 32k ecb
Teaches mathematics in the art of addition, subtraction, multiplication and division, and takes either one of these subjects and puts it in a game situation.

10 FACES: 16k ecb
Pick your colour, your graphics resolution and a number - presto, a face appears. Now try a different number ...

FOGHORN: 16k, ecb
Let foghorn leghorn (the one out of the loony tunes cartoon) teach your child to count.

Best of CoCoOz #7 - Graphics

The following programs are all graphics-orientated, so no real explanation of each program is necessary.
The majority of these programs are all 16k with extended colour basic, with two programs for the 32k CoCo.
Enjoy!

Best of CoCoOz #8 - Games 16K

ALIEN: 16k ecb
Shoot the aliens before they invade you! A bomber will occasionally drops bombs.
You control your ship with the arrow keys and fire with the space bar.

QWERL: tape only, 16k ecb
The aim is to catch -dotz by surrounding them by moving your snake - like creature with the right joystick.
At times an 'F' will appear and by surrounding this you can get more energy. If your energy drops to zero, you die.

SHOOTOUT, 16k ecb
Two players - one at top, the other at the bottom with one objective: shoot each other! Get hit 10 times and you die!
Hitting an orange square will absorb the bullet while hitting the purple square will reflect your bullet. Hit the green mass and you will lose 3 lives.

NOTE:
CLEAR200,14000:(C)LOADM before loading.

SHUTTLE: 16k ecb
It is your job to collect 8 fuel canisters which are stored under 8 platforms on the lunar surface and return them to your mother ship. You have a limited amount of fuel to do this job.
Use the right joystick to control your ship and press the fire button to go up.

FROGMASTER: 16k ecb
You control a frog with the right joystick. Your goal is to eat all the plants ('Y') before time runs out and not get caught by the frog chomper ('O'). Bonus is given when all the plants have been eaten.

FROGRACE: 16k cb
In frograce, the aim is to get your frog over the line before your partner does. Your partner can be a friend or the computer.
To move, the computer will spin a dice. Pressing a key determines how far you can move ahead. May the best frog win!

KIMMAT: 16k cb
Kimmat is a card game for one person. CoCo will deal three cards, two of them showing their face value while the third is not. You place a bet ($5 - $10000) that the card is lower then the other two. The ace card is the high card with all other cards their normal value.

GRANDPRI: tape only, 16k ecb
Race against your opponent using your joysticks. Pressing the fire button will change lanes.

At times you will have to get to the pit stop for re-fuelling, so watch your fuel. Getting into the pit stop is an art, not just another button press!
GOOD LUCK!
NOTE: type 'PMODE0:PCLEAR1' before running!

WATERWARS: 16k cb
You control a boat with your right joystick while attempting to blow up, with your 15 depth charges, the submarines below you. The upper subs are 4 points while the lower subs are worth 6 points.
Happy shooting!

CATERPIL: 16k ecb
Your aim is to maneuver the caterpillar to the green patch of grass without getting into the mushrooms. Running into the mushrooms or back tracking will lose one of your men. Lets see who's the best crawler...

DETECT: 16k ecb
You are the detective - you have been called to a dead body of a woman in her 30's. You are in charge!

BREAKOUT: 16k ecb
Breakout is much like the game you played many years ago whereby you knock out bricks to break out. Use the arrow keys to move the paddle up or down. You get five chances.

Best of CoCoOz #9 - Games 32K

TRIOMINO: 32k ecb
Dominoes are a fun pastime for young and old. They don't require much thinking nor concentration. Triminoes are, however far more demanding in the way of thought and skill. One must use one's wits well and full instructions are in the program.

MATCHEM: 32k ecb
This is the hi-res version of the game, concentration. The aim of it is to find matching patterns in the concealed boxes. Choosing your box requires the use of your joystick and, by pressing the fire button, will reveal the contents. They will be shown for a short while and then disappear!

GO: 32k ecb
Go is a game of skill and logic, but unfortunately we don't have the instructions. For those who know the instructions to GO, here is yet another game from the delbourgo team.

NARZOD: tape only, 32k ecb
All intruders who dare enter my domain will be destroyed! If you stop, my spiders will get you! I close my doors with steel gates. I can track you down with radar. Some doors you can pass through, and some you can't! So get in your ship and test the fury of narzod.
PCLEAR 8 before running!

CHOMPER: tape only, 32k ecb
Use your right joystick to catch the chomper! If you think you have caught him, press the fire button. If chomper eats all the apples, you lose. You can also eat one of the apples so chomper doesn't eat any. BEWARE! Chomper will dive for cover...
Before running: PCLEAR 8

POPBALL: tape only, 32k ecb
The aim of popball is to catch falling balls using a joystick. To catch the ball successfully, press the fire button. The bounty is then dumped on a table and you go out to catch more. You eventually win by getting a perfect score of 20.
Before running: PCLEAR 8

LUDO: 32k ecb
Ludo is much like the board game and is for 1 to 4 players, the only difference is that you can't double up on your own tokens. Full instructions in the program.

SABRE: 32k ecb
Sabre was the program that won the 1985 games competition! All instructions are in the program, and the only thing about it is that no-one has beaten it yet!

MOVEBOUT: 32k ecb
Movebout is based on the game where one has to sort 15 numbers on a board that can hold 16. The aim being to sort the 15 numbers in numeric order. Well, here is that game on the CoCo!

LABYRINT: 32k ecb
This is a 3d-maze. The object being to get out without meeting any of the inhabitants.
There is only one way out! Can you do it???

JIGSAW: disk only, 32k ecb
If you like jigsaws, then you will like the never-ending jigsaw. Unlike other jigsaws, you can use any graphics pictures from any source, including commercial games.
Included is a picture called "Eagle". All pictures must have extension of "/JIG".

TANK: tape only, 32k ecb
Tank battle is a game for two players. Each player has a highly - maneuverable tank and your battle can be set in various landscapes, from army barracks to the city center. The game can be modified to how many shots one can have to the speed of the tank, etc.

Best of CoCoOz #10 - Education

METEOR MATHS: 32k ecb
If you can't come up with the solution, your ship will be hit by a meteor. Use your mathematical knowledge to save yourself and your crew!

DRIVING TEST: 32k cb
This program will help you if you can't find anyone to help you with learning for your driving test. It asks you the questions and all you have to do is answer correctly.

SALE OF THE CENTURY: 32k cb
This is a two player game based on the TV show. It is played using the joysticks.
There are three rounds of ten questions each, with a pick of the board every 10 questions.

TABLES: 16k ecb
This program shows you the tables of your choice up to your number times twelve.

OPALTON: 32k ecb
Opalton is an adventure game of prospecting for opals on the opal fields. Buy a license, equipment, permit and away you go. But then try to sell them for the best price.

CAPITAL LETTERS: 32k ecb
This program is meant to teach children to use capital letters correctly in sentences.
It tells how and where a capital letter is to be used in a sentence.

TESTMATCH: 16k ecb
After entering your teams' name, the sum is bowled at you at varying speeds (depending on the difficulty you have chosen), and while you are thinking about the answer, the number of runs that you can score will run down.

SENTENCE ENDINGS: 32k ecb
This language program teaches children how to use proper punctuation, and makes it fun. Fire the punctuation mark toward the end of the sentence!

ESCAPE: 16k ecb
This is a maths game that teaches you how to use a combination of numbers and mathematical symbols to achieve a certain result.

RAILMATHS: 32k ecb
Use your mathematical knowledge to build a bridge so that the train can get over the ravine.

COUNTDOWN: 32k ecb
Solve the maths questions and beat the clock to win!

WHATZIT: 32k ecb
Unscramble the words to get points and beat the clock.

HOMOPHONES: 32k ecb
Homphones are words that sound the same but are spelt differently! That's what this is all about!

COMPOUND WORDS: 32k ecb
Connect the right two words and form a larger compound word to launch your rockets.

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# Fricker's Follies

by Jack Fricker

## OS9 REFERENCE INFORMATION!!!

This month is the annual reference issue, so I thought it would be a good time to recap on the basic command set of OS-9.

The best place to start should be the beginning of the alphabet with ASM.

### ASM

This is the assembler. This only comes with L1 OS9 but will also work under L2.

The syntax for this is:

```
ASM filename options #numK
```

... where:

* ASM is the actual assembler,
* filename is the source file - this will also be the default name for the final product (program),
* options are the possible options, and
* #numK is the amount of memory you are giving to the assembler, expressed in Kilobytes.

You can use the ">" redirection to send the file to the printer or a disk file.

### Attr

This determines the attributes of the file. That is who can execute, delete, or even look at a file. It also states if the file is a directory.

The syntax is:

```
attr filename options
```

... where the options are:

* d(directory),
* s(shareable),
* r(read owner),
* w(write owner),
* e(execute owner),
* pr, pw, pe, where p stands for public access instead of owner(creator) access.

The directory attribute (changing a dir to a file or vice versa) can only be changed when empty.

### Backup

This creates a mirror image of the disk. If just BACKUP is typed, the computer will assume that you wish to copy /d0 to /d1. If for instance you have only 1 drive you MUST use the S option which tells that you have only drive /d0.

The C option will abort the copy if any errors are found on the source disk.

The - V option will not verify the copy.

As usual you can specify more memory if you wish with '#numK'.

### Binex/Exbin

Binex converts a binary file to S-Record and Exbin changes it back again.

S-Record is a text file representation of the binary file, useful for ASCII transmission of the file.

### Build

This is useful for building short text files such as procedural files.

The syntax is

```
build filename
```

Then you will see the ? prompt. When you have finished typing just press return.

### Chd/Chx

These commands are used to set the current data and execution directory respectively. This is where any programs will look for data and other programs, eg

chx/d0/cmds;
chd /d0/spreadsheets.

### Cmp

This is used to compare 2 similar files and report any differences to the screen or some other device, eg

```
cmp file1 file2
```

### Cobbler

This is used to create a bootable (from disk basic) disk. This will take the os9boot files that were loaded into memory and write those files to the disk you are working on. These files are the ones that are currently in memory.

If they have been changed then those changes are also saved to the disk. They must have been verified first.

Syntax:

```
cobbler /drive
```

This should be used on a freshly formatted disk.

### Copy

Pretty obvious, but here goes. Copy creates copies of the first file. The first file(source) must exist and the second (destination) must NOT exist. For those of you who have one drive or mixed 40 & 80 track drives there is the - s(single drive) option.

Syntax:

```
copy file1 file2 #numK
```

... or

```
copy file1 -s
```

### Date

This displays the date and if the 't' option is used the time as well will be displayed.

### Dcheck

This will check the directory structure of the specified drive and reports any discrepancies between what is there and what should be there.

### Del

This used to delete files and programs only - it cannot delete directories. For that you must use deldir.

There is an option to delete from the execution directory(-x). You must have permission for access to the file (see attr).

## Deldir

This as you may expect deletes directories. You must have permission for every file in the directory and sub-directories in that directory.

Syntax:

```
deldir /drive/directory
```

There are prompts to take you through the procedure.

## Dir

This gives a list of files in the current data directory. There are 3 options:

* 'x' gives a directory of the current execution directory,
* 'e' will list the last time the file was altered, size and attributes.

The last option is the '..' option which will display the parent of the current data directory.

## Display

This will display one or more hex numbers to a device (the screen by default).

For instance I often use 'display 0c >/p' to send a formfeed to my printer.

## Dsave

This creates a list of file titles in a procedure file which can then be edited or just executed to copy all the files on a disk or just one level of directories.

The options are

* -b: make system disk,
* -i: indent directories,
* -l: stop at this directory level,
* -m: no makedirs,
* - snum: set copy parameter to num).

Syntax:

```
dsave /d0 >/d1/copylist
```

## Dump

Creates a formatted hex listing of the specified filename.

The options for this are:

* -h: do not print header,
* -l: 80 column format

Ascii characters are displayed and non ascii characaters are shown as periods - ".".

## Echo

Echos the given text to the specified device. The default device is /term (your screen). Typical uses are in startup procedures or to provide headlines for printer listings (echo >/p listing of myfile).

## Format

Formats new disks, all disks must be formatted before they can be used - even backup requires a formatted disks (common mistake).

## Free

Displays the number of free sectors on the disk. Each sector is 1/4k or 256 bytes. The default is the disk which has the current data directory.

Also shown is the size of the largest continuous block. Some files require continuous blocks (eg os9boot).

The name of the disk given when the disk was formatted is also given.

## Ident

This is used to check modules either in memory or on a disk. The module crc is checked to see if it is OK.

The options for this are:

* -m: check in memory,
* -v: do not check CRC),
* -x: execution directory,
* -s: display single line format.

## Kill

This is used to stop a process if you change your mind and no longer wish it to continue. The procs command will give a list of the processes currently going on. The list will give a process number and the priority and owner.

This number is the parameter that you will pass to the kill command.

You must have permission for the process, and the process cannot be waiting for input from a device as it cannot be killed while it is active.

## Load/Link

These 2 commands are related in that link can only be used on a memory module that has been previously 'loaded' into memory. What link does is increment the link count for that module.

To get rid of a module you must use Unlink sometimes repeatedly. When an object is loaded into memory it is linked once.

## List

This lists a text file to the screen or can be redirected.

## Login

This is used as part of the multi-user aspect of OS-9. Login is used to prevent data from one user being accessed by another unless the owner gives permission with the 'attr' command.

This is automatically called by 'tsmon' when more than one person has access to the system. Login will ask for a password which is then checked with a table in /d0/sys/password for the access number and priority of the user.

If tsmon or login are not enabled a user is automatically given access to all information on the disk.

## Makdir

This makes a new directory. If a full path name is not specified the directory will be created in the current data directory.

## Mdir

This command will give a list of all the modules in memory at the present time.

If the 'e' option is given the entire list will be given which has among other things the address in memory and the size of the module as well as how many people are using it.

## Merge

This will join two or more smaller files into a larger file.

Syntax:

```
merge small1 small2 small3 >large1
```

It can also be tee'd of to the printer by adding '>/p'.

## Mfree

This command will list all the free 256 byte blocks of memory and the size and address of them.

## Os9gen

This is probably to important to just give a summary of, but briefly it is used when new modules have been added or should be added to the boot file. Please read the manual on this one to get the full use of it.

## Printerr

This will give an expanded message instead of just a number when an error is generated.

This means that instead of the normal error number like 207 the system will also tell that an 'out of memory' error has occurred.

Once typed this command cannot be disabled without re-booting the system. The messages are stored in /d0/sys/errmsg, so that must be on the disk for the command to work.

### Procs

This tells of the number of processes in memory.

The 'e' option gives an expanded list.

### Pwd/Pxd

These two commands are used to print on the screen the current data and executíon directories respectively.

### Rename

Used to rename files or commands. Not to be used for directories.

Syntax:

```
rename oldname newname
```

### Save

This is used to save modules from memory onto the disk. This does not come with level 2. More than 1 module can be saved into 1 file, eg

```
save /d0/combined.file source1 source2 source3
```

### Setime

This sets the time on the system clock. This is normally only used in the startup file then discarded, because once set the clock does not normally need to be reset.

### Setpr

This is used to change the priority of a process. That is, the number of other processes done before the CPU returns to it. The higher the number the more chances it gets at the CPU.

### Sleep

This sends the current process to sleep for a length of time. This is useful when you have another process running and want to give it more time to itself.

On a level 1 machine each tick is 16.66 milliseconds. If a count of 0 is given the process will sleep forever.

### Tee

This copies the standard output to other processes, link another terminal and printer or a file.

Syntax:

```
echo hello ! tee /t1 /t2
```

This example prints hello on 2 other terminals - it could have also gone to a file.

### Tmode

This is used to control the characteristics of /term (your screen) to:

* upc: upper case only,
* bsb: back space erase,
* bsl: backspace for line,
* echo: show what you type,
* lf: give line feed at end of line,
* pause: stop display every screen,
* null=num: only for terminals,
* pag=num: number of lines on the screen, used for pause,
* bsp=num: backspace character,
* bse=num: backspace echo char,
* del=num(line delete char,
* bell=num: bell char,
* eor=num: end of record,
* eof=num: end of file,
* type=num: acia setup value, not used for term,
* reprint=num: reprint line,
* dup=num: duplicate last line,
* psc=num: pause char,
* abort=num: normally 2,
* quit=num: normally 4,
* Baud=num: 1=300, 2=600 ... 6=9600.

For the options not assigning a numeric value the option '-' placed in front of the option reverses it, eg '- pause' turns off the pause feature.

More than one option can be used on 1 line.

### Tsmon

This is the time sharing monitor (supervisor). This is the command that initiates the adding of other terminals and checks other users who use the other terminal. This automatically calles the login command.

Tsmon waits for a <cr> on the other terminal before it logs them in. See login.

Syntax.

```
tsmon /t1 &
```

### Unlink (unload)

This command reduces the link count of a memory module. It may have to be used a number of times to actually get rid of a module.

Modules loaded in the bootstrap cannot ever be unlinked.

### Verify

This is used to calculate the CRC for a module. This must be done before a module can be loaded into memory. This includes any program or procedure.

The only option is 'u' for update (recalculate CRC). Input and output re-direction MUST be used or the system will lock up and a re-boot will be necessary.

Syntax:

```
verify u <infile >outfile'.
```

### Xmode

The options for this are the same as for 'tmode'.

Where tmode only worked on /term, xmode will work on /t1 or /p or /m or any other similar device.

Another diference is that it will change the device descriptor so that once the change has been made and cobbler is used the changes can be made permanent.

Like tmode, if no options are given, all possible options will be displayed.

### HINT!!!!!

## BACKING UP YOUR OS9 DISKS

**For single drive users:**

**type**

**FORMAT /D0**
**BACKUP /D0 /D0 #20K**

**for multiple drive users:**

**type**

**FORMAT /D1**
**BACKUP #20K**

# Peeks, Pokes 'n' Exec's

There are many more PEEKS, POKES and EXEC's **available.** If we were to print them all out, the whole magazine would be devoted to this one subject alone!

**** Printer Pokes**

```
50 baud rate ..... POKE149,4:POKE150,88
75 baud rate ..... POKE149,2:POKE150,227
110 baud rate ..... POKE149,1:POKE150,246
150 baud rate ..... POKE149,1:POKE150,110
300 baud rate ..... POKE149,0:POKE150,180
600 baud rate ..... POKE149,0:POKE150,87
1200 baud rate ..... POKE149,0:POKE150,41
1800 baud rate ..... POKE149,0:POKE150,25
2000 baud rate ..... POKE149,0:POKE150,23
2400 baud rate ..... POKE149,0:POKE150,18
3600 baud rate ..... POKE149,0:POKE150,10
4800 baud rate ..... POKE149,0:POKE150,7
7200 baud rate ..... POKE149,0:POKE150,3
9600 baud rate ..... POKE149,0:POKE150,1

Printer online? yes if result even .. PEEK(65314)

All text to printer ..... POKE360,162:POKE361,191
Restores above in ECB ..... POKE360,115
Restores above in DECB ... POKE360,203:POKE361,74
```

**** Disk Pokes**

```
Hardcopy of directory ..... POKE111,254:DIR
Verify on ..... POKE2439,255
Verify off ..... POKE2439,0
Turn off drive numbers ..... POKE65344,0
Turn of DECB commands ..... POKE298,0:POKE303,0
Restores above ..... POKE298,25:POKE303,14
Returns drive number last accessed .... PEEK(235)
Returns track number last accessed .... PEEK(236)
Returns sector number last accessed ... PEEK(237)
Disk system atached? yes if = 68 .... PEEK(49152)
Warmstart DECB 1.0 ..... EXEC49364
Warmstart DECB 1.1 ..... EXEC49383
Same as DIR in DECB 1.0 ..... EXEC52175
Same as DIR in DECB 1.1 ..... EXEC52393
COPY with fewer swaps ..... POKE113,0:EXEC44539
```

```
Test to see if A$ exists on disk:
 A$="filename/ext":EXEC51338 a$:EXEC&HC65F
 A=PEEK(&H973)
Variable "A" returns '0' if file not present.

Verifys disk and lists all bad track/sectors:
 POKE234,2:POKE238,6:POKE239,0:FOR1=0TO34:
 FORJ=1TO18:POKE236,I:POKE237,J:EXEC
 PEEK(&HC004)*256+PEEK(&HC005):IF PEEK(240)<>0
 THEN?"TRACK"I"SECTOR"J":NEXTJ,IELSENEXTJ,I
```

**** Extra Memory ("PCLEAR0")**

```
For Disk Systems
 No graphics .. POKE25,14:POKE26,1:POKE3584,0:NEW
 PCLEAR 1 ..... POKE25,20:POKE26,1:POKE5120,0:NEW
 PCLEAR 2 ..... POKE25,26:POKE26,1:POKE6656,0:NEW
 PCLEAR 3 ..... POKE25,32:POKE26,1:POKE8192,0:NEW
 PCLEAR 4 ..... POKE25,38:POKE26,1:POKE9728,0:NEW
For Tape Systems
 No Graphics ..... POKE25,6:POKE3584,0:NEW
 Lose no program ..... POKE 25,6:POKE31,6
```

**** Speed Pokes**

```
Slow script for ECB ..... POKE359,60
Slow script for DECB ..... POKE359,60:POKE361,37
Even slower! ... POKE359,19:POKE360,19:POKE361,57
Double speed ..... POKE65495,0
Normal speed fr above ..... POKE65494,0
Triple speed (CoCo 3) ..... POKE65497,0
Normal for above ..... POKE65496,0
```

**** Cold Start**

```
Cold start ..... POKE113,0:EXEC40999
Cold start ... EXEC113 [Press <reset>]
```

**** Different Style Screens**

```
 Note: to use following, type POKE359,57 first.
 To get out of this mode, type POKE359,126.
Orange Screen ..... SCREEN0,1
Green Screen ..... SCREEN0,0
Look at graphics screen ..... SCREEN1,1
 For CoCo 3:
Black on orange ..... POKE65314,8
Black on green, lowercase ..... POKE65314,16
Black on orange, lowercase ..... POKE65314,24
Inversed green script ..... POKE65314,32
Inversed orange script ..... POKE65314,40
Inversed green lowercase script .... POKE65314,48
Inversed orange lowercase script ... POKE65314,56
Inversed green script, no border .. POKE65314,64
Inversed orange script, no border .. POKE65314,72
Invrsd grn scrpt, lrcase, no brder . POKE65314,80
Invrsd ogn scrpt, lrcase, no brder . POKE65314,88
```

**** Keyboard/Screen**

```
Uppercase mode ..... POKE282,255
Lowercase mode ..... POKE282,0
Change screen ASCII ..... POKE359,74:POKE360,57
More colours in graphics ..... POKE179,n
```

**** ML Utilities**

```
Disable LIST command ..... POKE383,57
Restores above ..... POKE383,126
```

Disable the BREAK key (INKEY$ only):

```
10 POKE248,50:POKE249,98:POKE250,28:POKE251,175
20 POKE252,126:POKE253,173:POKE254,165
30 POKE410,126:POKE411,0:POKE412,248
```

Disable the RESET button (auto runs program):

```
10 CLEAR200,31000:FORX=32742TO32767
20 READ:POKEX,I:NEXT:EXEC32762
30 DATA58,142,58,18,16,222,33,48,140,246,159,
   166,28,175,127,255,64,126,173,192,48,140,
   236,159,114,57
```

Start, End and Execute addresses
This will tell you the start, end and execute addresses for an ML program, after loading it FROM TAPE:

```
Start address: PRINT PEEK(487)*256+PEEK(488)
End address: PRINT PEEK(126)*256+PEEK(127)-1
Exec address: PRINT PEEK(157)*256+PEEK(158)
```

Then save the program like this:

```
(C)SAVEM"FILENAME",Start add,End add,Exec add
```

Loading ML into a different place in memory
To move up in memory, take off the old address from the new address.
To move down in memory, take off the old address from the new address and add 65536.

Merging two BASIC programs from tape

1) RENUMber both programs so they don't overlap each other.
2) CLOAD the lower number program.
3) POKE25,PEEK(27):POKE26,PEEK(28)-2
4) CLOAD the second program.
5) POKE25,30:POKE26,1

Slow down that BASIC listing (scrolling)
Use this program to slow down the scrolling of your BASIC program. 'x' can be any figure between 0 (normal speed) to 255 (veeeerrry slow!)

```
10 FORX=1000TO1010:READ A:POKE X,A:NEXT
20 POKE383,126:POKE384,3:POKE385,232
30 POKE422,126:POKE423,3:POKE424,232
40 DATA 52,16,142,0,1,189,167,211,53,16,57
50 POKE 1003,X 'speed value in here
60 NEW
```

```
Start of BASIC program .... PEEK(25)*256+PEEK(26)
End of BASIC program ..... PEEK(27)*256+PEEK(28)
```

** Various Inkey$

```
Wait for keypress ..................... EXEC44539
 Same as ... 10 A$=INKEY$:IF A$=""THEN10
Like above, with cursor ............... EXEC41393
LIST one line at a time
  10 POKE383,126:POKE384,161:POKE385,177
```

** Tape Help

The following allows you to read in a file from tape irrespective of wheather CoCo is in high speed or not.

```
Normal speed ..... POKE143,8:POKE144,24:POKE145,4
High speed ..... POKE143,13:POKE144,24:POKE145,6
```

```
I/O errors? 1=bad tape, 2=OM error .... PEEK(129)
```

** Various Other Trivia

```
Memory size of CoCo ..... PEEK(116)*256+PEEK(117)
Returns TIMER value ..... PEEK(274)*256+PEEK(275)
Last DATA line done . PRINT PEEK(49)*256+PEEK(50)
Last radius in PMODE 4 .. PEEK(207)*256+PEEK(208)
Complete random ..... POKE280,PEEK(275)
TRON command ..... EXEC34471
TROFF command ..... EXEC34472
Last executed line number . PEEK(43)*256+PEEK(44)
Current data line number .. PEEK(49)*256+PEEK(50)
Last number var ... CHR$(PEEK(55))+CHR$(PEEK(56))
```

** CoCo 3 stuff

Extra 2K
To utilize this, you must NOT go into the 32 column mode. Doing so will result in the loss of your program, as welll as crashing the computer. You can alternate between the 40 and 80 column modes.

```
10 WIDTH40:FOR X=&H03B6 TO &H03BD:READ A$
20 POKE X,VAL("&H"+A$):NEXT
30 DATACC,04,01,1F,02,7E,96,A5
40 EXEC &H03B6:NEW
```

Changing screen colour

```
32 column mode:
 PALETTE 12,(0-63):PALETTE13,(0-63)
40/80 column mode
 PALETTE0,0:CLS0:PALETTE8,(1-63)
```

CoCo 2 or CoCo 3 computer?
PEEK(65456) will return a value of 126 if the software is running under a CoCo 3.

64 column screen.
RUN the following program to get a 64 column screen - having a TV in this case will be a bonus for you. Mind you, you will lose the 80 column screen for this!

```
10 POKE57414,17:POKE 63052,64:POKE63105,64
20 POKE63112,44:POKE63113,0:POKE63601,128
30 POKE63605,43:POKE63606,128:WIDTH64
```

** Handy Information

Joysticks
This table shows the values given when the fire button is pressed.

```
    Both = 124/252        Left = 125/253
   Right = 126/254     Neither = 127/255
```

Pmodes
When altering a games' PMODE, keep in mind these values. They correspond to the PMODE and SCREEN you might want.

```
PMODE4:SCREEN1,1 = 248   PMODE4:SCREEN1,0 = 240
PMODE3:SCREEN1,1 = 232   PMODE3:SCREEN1,0 = 224
PMODE2:SCREEN1,1 = 216   PMODE2:SCREEN1,0 = 208
PMODE1:SCREEN1,1 = 136   PMODE1:SCREEN1,0 = 128
```

DIM Statements & GET/PUT
These DIMension statements take up too much memory! Why not whittle that figure (lets say it was DIM A(20,10)) to something a little smaller, like 6?

```
Dimensioning DIM A(20,10)
  Size = (x*y)/numb
  numb = 37, when in PMODE 3 & 4
       = 76, when in PMODE 1 & 2
       = 150, when in PMODE 0
 Value = (x*y)/numb
       = (20*10)/37   (PMODE 4 value)
       = 5.4
       = 6
Result? ... DIM A(6)
```

# The Colour Computer Memory Map

The following "Memory Map" shows where the various functions of the CoCo are located in memory. Use them to speed up your Basic programs.

```
**************************************************
Memory:    Whats what:
**************************************************
                    OVERVIEW
0000-03FF RAM used by BASIC interpreter
0400-05FF Video Display (may be moved)
0600-0FFF RAM for user memory
1000-3FFF Additional RAM for 16K users
4000-7FFF Additional RAM for 32K users
8000-9FFF Extended Basic ROM
A000-BFFF Basic interpreter ROM
C000-FEFF Cartridge ROM
FF00-FFFF I/O and control
**************************************************

                EXTENDED OVERVIEW

**************************************************
Dept. 1: 0000-03FF: Ram used by BASIC interpreter
**************************************************
0003       General Counter
0006       String Flag
0007       Flag if garbage collected
0019       Start of User RAM
0019-001A BASIC program begin
001B-001C Pointer: top of program/begin variables
001D-001E Pointer: top of variables/arrays start
001F-0020 Pointer: end of arrays/start of memory.
0021-0022 Top of stack/start of string pool
0023-0024 Start of used area of string pool
0025-0026 Pointer: BASIC memory limit
0027-0028 End of string pool/Start of User space
0033-0034 Pointer: current data read position
0037-0038 Current variable name
0041       4 bytes used by tokenise
0041-0048 Start & end address of block move
0041       Highest add. to move to
0043       Highest add. to move
0045       Lowest add. moved to
0047       Lowest add. to move
004B       Address of descriptor of highest string
             found
004F-0054 Floating point accumilator #1 (6 bytes)
0056       String length
005C-0061 Floating point accumilator #2 (6 bytes)
0062       Sign comparison
0063       Extended precision byte
0068-0069 Current program line
006C       Current column position
006F       Device number for output character;
             0: Screen
           1-16: Disk BASIC file #
            $FE: Printer
            $FF: Tape
0070       EOF on tape file flag
0071       Reset flag; $55 for warmstart
0072-0073 Reset pointer (contains $80C0 BASIC
            warmstart)
0074-0075 Pointer: end of memory
0078       File mode;
             0=None, 1=Input, 2=output
0079       Tape working buffer length
007A-007B Tape working buffer pointer
007C       Tape file block type;
             1: data, $FF: EOF
007D       No. of data bytes in cassette I/O block
007E-007F Program end address 1 after a CLOADM
0080       Checksum
0081       Cassette error no.
0082       General counter
0083       Pulse width count
0084       Rise/Fall flag
0085       Last sine value
0087       Last key entered
0088-0089 Pointer: current cursor position
008A-008B Serial read no. of tries
008C       Sound frequency
008D-008E Duration of sound
008F       Start of area downloaded from ROM
0092       Controls length of unmodulated carrier
             preceeding cassette I/O
0094       Cursor Color
0095-0096 High and low bytes of baud rate code
             (usually $0057)
0097-0098 Carraige return delay (usually $0001)
0099       Comma field width (usually $10)
009A       Last comma field (usually $70)
009B       Printer line width (usually $84)
009C       Affects positions of vars. line-printed
             in comma fields ($00)
009D-009E Transfer address after CLOADM
009F       Start of get next character subroutine
00A5       Start of get same character subroutine
00A6       Next character pointer
00A8-00AA Jump vector to print "OK"
00AB-00AE Extended product area
00AF       Trace flag
00B5       Current color
00B6       Current PMODE
00B7-00B8 End of screen1
00B9       Number of bytes per line
00BA-00BB Address of graphics page
00BC       $E: Disk system, $6: No disk
00BD       X1
00BF       Y1
00C1       Color set 1: (= 8)
00C3       X2
00C5       Y2
```

00D7 Temp
00DB Change flag
00E6 DLOAD baud rate
00E7 Input timeout constant
00EA Operation code
00EB Drive number
00EC Track
00ED Sector
00EE Buffer address
00F0 Status returned
0100-0102 Software interrupt 3 called by vector at $FFF2
0103-0104 Software interrupt 2 called by vector at $FFF4
0105-0108 Software interrupt 1 called by vector at $FFFA
0109-010B Non-maskable interrupt called by vector at $FFFC set to $D7AE by disk
010C-010E Interrupt request called by vector at $FFF8 set to $A9B3/Set to $894C by extended/Set to $D7BC by disk
010F-0111 Fast interrupt vector called by vector at $FFF6/Set to $A0F6
0112-0113 High and low bytes of TIMER
0116-0117 Seed for RND function
011A Shift lock flag
011C Keyboard delay constant
011D-011F Jump vector to $8489 - print "OK"
0120-013C Token table directory;
Byte 1 = no. of keywords
Byte 2&3 = Address of table
Byte 4&5 = Address of subroutine
0120-0124 BASIC commands
0125-0129 BASIC functions
012A-012E Extended BASIC commands
012F-0133 Extended BASIC functions
0134-0138 Disk BASIC commands
0139-013C Disk BASIC functions
013E-013F Address for USR0
0140-0141 Address for USR1
0142-0143 Address for USR2
0144-0145 Address for USR3
0146-0147 Address for USR4
0148-0149 Address for USR5
014A-014B Address for USR6
014C-014D Address for USR7
014E-014F Address for USR8
0150-0151 Address for USR9
0152-0159 Keyboard rollover table
015A-015D Joystick readings
015A Left joystick up/down
015B Left joystick left/right
015C Right joystick up/down
015D Right joystick left/right
015E-0160 Open device hook called at $A5F6/Set to $C426 by disk
0161-0163 Device number check called at $a5B9/Set to $C838 by disk
0164-0166 Return device parameters called at $A35F/Set to $C843 by disk
0167-0169 Character output called at $A282/Set to $8273 by extended/Set to $CB4A by disk
016A-016C Character input called at $A176/Set to $BCF1 by extended/Set to $C58F by disk
016D-016F Check file OPEN for input called at $A3ED/Set to $C818 by disk
0173-0175 Close all open files called at $A426/Set to $CA3B by disk
0176-0178 Close one file called at $A42D/Set to $8286 by extended/Set to $CA4B by disk
0179-017B Print using called at $B918/Set to $8E90 by extended
017C-017E File itme scanner called at $B061/Set to $CC5B by disk
017F-0181 Break key check called at $A549/Set to $C859 by disk
0182-0184 Get line from keyboard called at $A390/Set to JMP RTS by disk
0185-0187 Finish loading ASCII file called at $A4BF/Set to $CA36 by disk
0188-018A Check end of file called at $A5CE/Set to $C860 by disk
018B-018D Evaluate operan d called at $b223/Set to $8846 be extended/Set to $CDF6 by disk
018E-0190 User error called at $AC46/Set to JMP RTS by disk
0191-0193 Error called at $AC49/Set to $88F0 by extended/Set to $C24D by disk
0194-0196 Run called at $AE75/Set to $829C by extended/Set to $C990 by disk
0197-0199 Hex & octal called at $BD22/Set to $87E5 by extended
019A-019C Execute line called at $AD9E/Set to$82B9 by extended
019D-019F Graphic address called at $A8C4
01A0-01A2 CLS, GET, PUT, etc called at $A910,$975C,$8AFA,$8162 Set to $C29A by disk
01A3-01A5 Tokenized called at $B821/Set to $8304 by extended
8000-9FFF Extended BASIC ROM
01D1 Tape file length
01D2-01D9 Tape file name
01DA-02D8 Cassette buffer
01DA-01E1 CLOADM file name
01E5-01E6 EXEC address from tape
01E7-01E8 Load address from tape
02DC Contains token for first keyword in BASIC statement
02DD-03DC Console I/O buffer

**********
Dept. 2: 0400-05FF: Video display
**********
0400-05FF Lo-res screen

**********
Dept. 3: 0600-7FFF: RAM for user program
**********
0600-35FF Possible graphics screen
0600 Bottom of program area/No disk
0600-06FF Disk buffer
0700-07FF Disk buffer II
0800-0927 Drive table
097E Table of current tracks
0982 NMI in use flag
0983 NMI JMP
0985 Motor shutoff counter
0986 Current latch data
0C00 Program start/disk system
0FFF Top of memory for 4K
3FFF Top of memory for 16K
7FFF Top of memory for 32K

**********
Dept 4: 8000-9FFF: Extended BASIC ROM
**********
8000-9FFF Extended BASIC ROM
807F Cold start to BASIC without size search and workspace initilization. Resets pointers to start of BASIC program
80C0 Warmstart to BASIC. Does not reset pointers to start of BASIC prog.
8183-81EF Extended command token table
81F0-821D Subroutine entry addresses

821E-8256 Extended function token table
8257-8272 Subroutine entry addresses
82B9 Break or stop routine
82BB Extended interpret loop
8378 COSine
8381 TANgent
83B0 ArcTaNgent
8446 LOG
8480 SQuare Root
84F2 EXPonential
8524 FIX
8533 EDIT
86A7 TRace ON
868A TRace OFF
86AC POSition
86BE VARiable PoinTeR
874E STRING$
877E INSTRing
8871 DEFine
8968 TIMER
8970 DELete
8A09 RENUMber
8BDD HEX$
8C18 DownLOAD
8DBC Input serial character
8E06 Output serial character
928F Find byte/bit routine
92A6 Byte/bit; PMODES0,2,4
92C2 Byte/bit; PMODES 1,3
92DD Bit tables
9339 PPOINT
9361 PSET
9365 PRESET
93BB LINE
9444 Draw horizontal line
946C Draw verticle line
9481 Draw line
94E2 The draw line loop
9506 Move up, down, left, right routines
9532 PCLS
9546 COLOR
9621 PMODE
9670 PCLEAR
9710 Compare two points
9723 PCOPY
9755 GET
9758 PUT
98EC PAINT
9A22 PLAY
9CB6 DRAW
9E9D CIRCLE

**********
Dept 5: A000-BFFF: BASIC interpreter ROM
**********
A000-BFFF BASIC ROM
A000-A001 Address of check keyboard
A002-A003 Address of character out
A004-A005 Address of cassette read on
A006-A007 Address of block in
A008-A00B Address of joystick in
A00C-A00D Address of header out
A00E Secondary reset
A027 Primary reset
A06E Hardstrart (after reset)
A0A6 Check for disk ROM
A0CB Check for extended ROM
A0D7 Print version
A0E8 Softstart (after reset)
A0F6 FIRQ entry (ROMpak check)
A01D Start of area downloaded to RAM at $8F
A129 Start of area downloaded to RAM at $10C
A171 Input character, bit 7 clear
A176 Input character
A199 Blink cursor routine
A1B1 Wait for keypress and read keyboard; char. returned in A register
A1C1 Check keyboard and get key if pressed; Z=1, A=0 if no key pressed, or Z=0, A=key, B and X preserved
A26E Table of codes for non-alpha keys
A282 Output character to device specified by $6F, all but CC preserved
A2BF Output character in A to printer (RS232)
A30A Output character in A to screen
A390 Input line from keyboard into buffer ar $02DD; return X$02DC; zero byte at end of buffer
A416 CLOSE
A44C CSAVE
A46C Perform CSAVEM function; requires start of memory block in $19-A0 and in $01E7-8, transfer address in $01E5-6, and file name in $01D2-9. Enter with A=2 and X=0
A498 CLOAD
A4FE CLOADM
A53E EXEC
A564 INKEY$
A59A Transfer block
A5CE EOF
A5EC SKIPF
A5F6 OPEN
A629 Open tape file
A681 Find filename
A6FE Blink screen corner
A701 READ a block from tape
A07B Read a block from cassette; must be On and in bit sync.
$7C contains file block type:
0= file header, 1= data, $FF= EOF
$7D contains number of data bytes in file:
Z=1, A=0 if no errors,
Z=0, A=1 if checksum error,
Z=0, A=2 if memory error
X= buffer start block length if no error
X points to beyond bad address if error
U and Y are preserved
A77C Start cassette and get bit sync for reading. U and Y preserved, FIRQ and IRQ masked
A7BD MOTOR
A7D8 Turn cassette on and write leader
A7E5 Write tape file
A7E9 Turn motor off
A7F4 Write block to cassette; Tape to speed and leader written;
$7E= buffer address,
$7C= block type
$7D= Number of data bytes
X= buffer address data bytes
All registers modified
A85C Sine table for cassette out
A880 SET
A8B1 RESET
A8F5 POINT
A910 CLS
A928 Clear screen and home cursor
A937 Print copyright ( CLS9=>255 )
A94B SOUND
A956 Generate sound
A992 AUDIO
A9B3 Interrupt processor (60Hz counter)

```
A9C6    JOYSTICK
A9DE    Read and store joystick values;
         $15A= Left joystick up/down
         $15B Left joystick left/right
         $15C Right joystick up/down
         $15D Right joystick left/right
         Y is preserved
AA29    Function address table
AA51    Operation table for +,-,*,/, ,AND,OR
         (3 bytes each-addresses and precedence
         values)
AA66    Command name table
AB1A    Function name table
AB67    Command address table
ABAF    Error code table
ABE1    Text strings
ABF9    Search stack for GOSUB or FOR
AC1E    Open up space in memory
AC20    Move block of memory starting at top;
         $41-2 is destination top,
         $43-4 is sorce top
         $45-6 is destination bottom
         $47-8 is source bottom
AC46    Error handler
AC73    Idle loop
AD17    NEW (clear memory)
AD19    Execute NEW
AD47    Interpret loop
AD9E    Interpret loop
ADC6    Execute line
ADE4    RESTORE
ADEB    Check for break or pause
AE02    END
AE09    STOP
AE30    CONTinue
AE41    CLEAR
AE75    RUN
AE86    GO
AE92    GOSUB
AEA4    RETURN
AEE0    DATA
AEE3    REM or '
AEE8    ELSE
AF14    IF
AF42    ON
AF67    Get unsigned integer
AF89    LET
AFF5    INPUT
B046    READ
B0F8    NEXT
B156    Get expression
B1C1    Another entry in operation table
B223    Get operand
B290    Execute functions
B2D4    AND/OR operations
B2F4    Relational operations
B34E    DIMension
B38F    Variable creation
B3E4    Evaluate integer expression
B3ED    Convert number in FPAC into 16-bit
         two's complement integer left in D
         register; overflow, return to BASIC
         if >+32767 or <-32768
B4EE    MEM
B4FD    STR$
B518    Get string
B56D    Allocate string routine
B591    Garbage collection
B5D8    Process one descriptor
B5EF    Compact one string
B681    LEN
B68C    CHR$
B6A0    ASC
B6AB    LEFT$
B6C8    RIGHT$
B6CF    MID$
B716    VAL
B750    PEEK
B757    POKE
B75E    LLIST command
B764    LIST command
B7C2    Untokenize
B7E6    Untokenise one token
B821    Tokenize
B892    Tokenise one word
B8F7    PRINT
B97E    TAB
B99C    Print text screen
B9AC    Print a space
B9B4    Start of floating point routines -
         rounding
B9B9    Subtract from FPAC1
B9C2    Add to FPAC1
BA79    Two's complement FPAC1
BAC5    Constant 1.0
BACA    Multiply
BB2F    MOVE [X] to FPAC2
BB7D    Constant 10.0
BB91    Divide
BC4A    Move FPAC2 to FPAC1
BC5F    Move FPAC1 to FPAC2
BC6D    Test FPAC1 for zero and sign
BC7A    SIGN
BC93    ABSolute value
BCEE    INTeger
BD12    Convert string to floating point
         constants 99999999.9, 999999999, 1E09
BDCC    Display the decimal value in D register
BDD9    Convert FPAC1 to ASCII
BEC0    Constant 0.5
BEC5    Series of 4 byte constants
BF1F    RaNDom
BF78    SINe
BFBD    Constants 2 pi, 0.25
BFC8    Series of 5 byte constants
BFF2    Interrupt and reset vectors
BBF2-BBF3 SWI3
BBF4-BBF5 SWI2
BBF6-BBF7 FIRQ
BBF8-BBF9 IRQ
BBFA-BBFB SWI1
BBFC-BBFD NMI
BBFE-BBFF RESET

**************************************************
Dept 6: C000-D7FF: Disk BASIC ROM
**************************************************
C004    Address of DSKCON
C0D4    Warm start to disk BASIC
C17F-C1DA Disk command token table
C1DB-C200 Disk subroutine addresses
C6C2    KILL
C932    SAVE
C98B    MERGE
C99A    LOAD
CBCF    DIRectory
CD1A    CVN
CD28    MKN$
CD36    LOC
CD5B    LOF
CDC0    FREE
CDE9    DRIVE
CF3F    RENAME
CF8A    WRITE
CFE0    FIELD
D025    RSET
```

```
D026        LSET
D080        FILES
D146        UNLOAD
D175        BACKUP
D2CC        COPY
D3FF        DSKI$
D474        DSKO$
D4AB        DSKINI
D65B        VERIFY
D66C        DSKCON
D6C5        Restore
D6FD        Get status
D6FD        Delay 78 msec
D705        Read/Write sector
D7A2        Command address table
D7AA        Bit table for drives
D7AE        NMI handler
D7BC        IRQ handler

*****************************************************
Dept 7: FF00-FFFF: I/O and control
*****************************************************

FF00-FF03 PIA U8
FF00        Bit 0: Keyboard row 1, right joystick
            Bit 1: Keyboard row 2, left joystick
            Bit 2: Keyboard row 3
            Bit 3: Keyboard row 4
            Bit 4: Keyboard row 5
            Bit 5: Keyboard row 6
            Bit 6: Keyboard row 7
            Bit 7: Joystick comparison input
FF01        Bit 0: Control of the horizontal sync
                   clock (63.5 micro secs)
            Bit 1: Interrupt input
            Bit 2: Nomally 1 (0 changes FF00 to
                   data direction register)
            Bit 3: SEL 1 (LSB of the two analog MUX
                   select lines)
            Bit 4: Always 1
            Bit 5: Always 1
            Bit 6: Not used
            Bit 7: Horizontal sync interrupt flag
FF02        Bit 0: Keyboard column 1
            Bit 1: Keyboard column 2
            Bit 2: Keyboard column 3
            Bit 3: Keyboard column 4
            Bit 4: Keyboard column 5
            Bit 5: Keyboard column 6
            Bit 6: Keyboard column 7
            Bit 7: Keyboard column 8
FF03        Bit 0: Control of the field; sync clock
                   at 16.667 msecs
            Bit 1: Interrupt input
            Bit 2: Normally 1 (0 changes FF02 to
                   data direction register)
            Bit 3: SEL 2 (MSB of the two analog MUX
                   select lines)
            Bit 4: Always 1
            Bit 5: Always 1
            Bit 6: Not used
            Bit 7: Felf sync interrupt flag
FF20-FF23 PIA U4
FF20        Bit 0: Cassette data input
            Bit 1: RS232 data output
            Bit 2: 6 bit D/A LSB
            Bit 3: 6 bit D/A
            Bit 4: 6 bit D/A
            Bit 5: 6 bit D/A
            Bit 6: 6 bit D/A
            Bit 7: 6 bit D/A MSB
FF21        Bit 0: Control of the CD;
                   ;RS232 status input
            Bit 1: ;
                   ;
            Bit 2: Normally 1
            Bit 3: Cassette motor control;
                   0 = off, 1 = on
            Bit 4: Always 1
            Bit 5: Always 1
            Bit 6: Not used
            Bit 7: CD interrupt flag
FF22        Bit 0: RS232 data input
            Bit 1: Single bit sound output
            Bit 2: RAM size output
            Bit 3: VDG control output
            Bit 4: VDG control output
            Bit 5: VDG control output
            Bit 6: VDG control output
            Bit 7: VDG control output
FF23        Bit 0: ;Control of the
                   ;Cartrdge interrupt
            Bit 1: ;input
                   ;
            Bit 2: Normally 1 (0 changes FF22 to
                   data direction register)
            Bit 3: Six bit sound enable
            Bit 4: Always 1
            Bit 5: Always 1
            Bit 6: Not used
            Bit 7: Cartridge interrupt flag
FF40        Output latch
            Bit 0: Drive select 0
            Bit 1: Drive select 1
            Bit 2: Drive select 2
            Bit 3: Motor on
            Bit 4: Precomp
            Bit 5: Double density
            Bit 6: Drive select 3
            Bit 7: Halt enable
FF48        Disk status
FF49        Disk Track number
FF4A        Disk sector number
FF4B        Disk data
FFE0-FFF1 Not used
FFF2-FFF3 SWI3 vector
FFF4-FFF5 SWI2 vector
FFF6-FFF7 FIRQ vector
FFF8-FFF9 IRQ vector
FFFA-FFFB SWI1 vector
FFFC-FFFD NMI vector
FFFE-FFFF Reset vector
```

**HINT**

**To disable the auto execute from ROMPAK,**

**POKE 65315,54**

**but remember, turn off the power before plugging ROMPAK, otherwise, Ka-put!!**

# Error Messages


## Assistance with understanding those annoying error messages on your CoCo!

The following error messages have a certain format:

[Message] [Error Number] - [Error Name] [(System)]
Description

[(System)] - 3 = CoCo 3 Error
D = Disk Error
E = Extended Basic Error
C = Color Basic

/0 10 - "Divide by Zero" (C)
You can't divide anything by zero.

AE 33 - "Already Exisits" (D)
When you COPY a file from one disk to another, it may be that that particular filename already exists on your destination disk.

AO 18 - "file Already Open". (D)(C)
This happens when creating a data file. For example, when you say, OPEN"I",#1,"filename" on one line and later on have the same line again, you'll get this error.

BR 27 - "Bad Record". (D)
You have used an impossible record number in your GET or PUT line. Either it is too low (less than one) or too high (higher than the maximum number of records the Computer can fit on the disk). Use a different record number in the PUT or GET line, or assign a smaller record length in the OPEN line.

BS 8 - "Bad Subscript". (C)
In BASIC, you can have up to 10 arrays, ie A$(10). Anymore and you need to DIM your array. For example, if you have 20 items to read, you need to DIM A$(20) otherwise you'll get an error.

CN 16 - "Can't coNtinue". (C)
You have to re-RUN your program.

DD 9 - "Double-Dimensioned array" (C)
When you DIM A$(20) in line 20 and DIM A$(20) again in line 40. (Line numbers are an example.)

DN 19 - "Drive / Device Number error". (D)(C)
If you were in the command mode (the mode you're in when you tell the computer to do something, like RUN or NEW) and you were, say, trying to DSKINI or DIR or BACKUP a drive higher than 3 or less than 0 will you get this error.
If you were in the programming mode, it is possible you are using more files than you have specified earlier in the program, for example: when you FILES 2,200 and you type in OPEN"I",#3, "filename", you need to FILES 3,200.

DS 24 - "Direct Statement" (C)
This error you can only get when you load an ASCII file that isn't a BASIC program (ie you didn't (C)SAVE"filename",A).

DF 28 - "Disk Full" (D)
Your program is too long to fit on the disk or there isn't anymore free room on your disk.

ER 37 - "Write / Input past end of file" (D)(C)
You are trying to PUT more data in the record than it can hold or INPUT more data than it contains.

FC 4 - "Illegal Function Call" (E)(C)
You are doing something that is out of the computers ability to do. For example, a PMODE 4 screen has a range 256 x 192. If you PSET(260,100) you will get an FC error. If the length of A$ is 10 and you try to get MID$(A$,13,5) you will get this error also.

FD 17 - "bad File Data" (D)(C)
When you try to PRINT something to an OPEN"O",#1,"filename" or INPUT a variable when really it's a string.

FM 21 - "bad File Mode" (D)(C)
When you something other than an "I", "O" or "D" in an OPEN"I",#1,"filename".

FN 31 - "bad FileName" (D)(C)
The name you chose to save your file with is inappropriate (usually the name you gave your filename was longer than eight characters.)

FO 34 - "Field Overflow" (D)
The FIELD length is longer than the record length. Add the various lengths of your FIELDs together and place this figure at the end of the OPEN statement.

FS 32 - "bad File Structure" (D)
Either one of the files you saved has gone bad or the whole disk is ka-put. To avoid this happening to you, BACKUP your disks regularly.

HP 39 - "Hi-res Print error" (3)
Printing a hi-res message on a low-res screen = no no!

HR 38 - "Hi-Res graphix error" (3)
Set up the hi-res screen first, eg HSCREEN 2.

ID 11 - "Illegal Direct" (C)
If you were using an INPUT statement, you can't use it on the command level, only in a BASIC program.

IE 23 - "Input past End of file" (D)(C)
You are INPUTting more data than the datafile can hold.

IO 20 "Input/Output error" (D)(C)
Program was corrupted when you saved it or you kept the tape/disk near a magnetic field and as a result the program is now corrupted or the power supply isn't connected. As a consequence you

should keep your tapes/disks away from any magnetic fields.

LS 14 - "Long String error" (C)

The string you are working with is longer than 255 characters long. You could try to shorten the string or disperse the string amongst other strings.

NE 26 - "Non-Existant error" (D)(E)

The file you are trying to work with doesn't exist on that tape. Either (a) check your spelling of the filename or (b) it may be on another disk.

A DLOAD error!

NF 0 - "NEXT without a FOR" (C)

There is no appropriate NEXT after the leading FOR statement. There could be that there isn't a FOR statement in the above lines or you simply got the nested loops mixed.

NO 22 - "file Not Open" (D)(C)

If you OPEN your file first before you INPUT#1 or PRINT#1 you shouldn't get this error.

OB 29 - "Out of Buffer space" (D)

Use the FILES command to reserve more space.

OD 3 - "Out of Data" (C)

There is too little data to be read. Add more data to the end of the DATA line.

OM 6 - "Out of Memory" (C)

Not enough memory is left for the computer to execute the next command.

OS 13 - "Out of String" (C)

Not enough string space for the computer to work with. Use the CLEAR statement to clear more string space.

OV 5 - "OVerflow" (C)

The number the computer was working with was too big or too small.

RG 2 - "Return without a Gosub" (C)

You have a RETURN in the program without a preceeding GOSUB.

SE 35 - "SEt to non-fielded string" (D)

The field you are trying to LSET or RSET hasn't been FIELDed. Check the field line.

SN 1 - "SyNtax Error" (C)

You've typed in something the computer doesn't understand. In most cases, the command was misspelt.

ST 15 - "STring too complex" (C)

The strings you were working with were too complex to work with. Try breaking up the strings to a simpler working procedure.

TM 12 - "Type Mismatch" (C)

You were trying to assign a string to a number eg A="I LIKE EATING" and vice versa, eg A$=68.

UF 25 - "Undefined Function" (E)

You'll have to define your function first before you can use it.

UL 7 - "Undefined Line" (C)

You have a GOTO or a GOSUB that doesn't exist, eg GOTO 50 where line 50 doesn't exist.

VF 36 - "Verification Fault" (D)

The computer is telling you that one of the sectors it wrote to is faulty. Our recommendation is to rename the filename as "ERROR/XXX" and resave the file.

WP 30 - "Write Protected" (D)

You can't write to the disk because you have a write-protect notch pasted on the side of the disk.

# What's on CoCoOz

A complete list of what is on every CoCoOz Tape/Disk since March 1983. All CoCoOz listed here are available from Goldsoft and Tandy for $16.00 ea.

Categorys are ...
ADV=Adventure
GAM=Game
BUS=Business,
UTL=Utility
APP=Application
MUS=Music,
DBE=Database
GRF=Graphics
EDU=Education
HEL=Program for Help section
SIM=Simulation
DEM=Demo Program

Format is as follows:
NAME (CATAGORY): AUTHOR
DESCRIPTION OF PROGRAM

CoCoOz #1: Mar '83

*Roadquiz (EDU)
Tests your knowlege of road signs via the hi-res screens.
*Print32 (UTL)
M/L utility which adjusts widths of printouts to your choice.
*Market (SIM)
Game simulation of a stockmarket. Buy and sell without risk.
*Dodgem (GAM)
Guide spaceship through asteroid belt with joystick.
*Cricket (APP)
User-friendly prompt generates cricket scoreboard.
*Personal (BUS)
Records and manages your domestic finances.
*Anaes (SIM)
Adventure to guide through anathestic routines.
*Protector (GAM)
Arcade game combining features of defender and invasion.
*Wiz-kid (EDU)
Fantastic hi-res teaches littlies to count!

CoCoOz #2: Apr '83

*Zap (GAM)
Explode great variety of alien craft using laser sights.
*Erazor (GAM)
Machine language. Clean out the valley of boulders by blasting them with your laser cannon!
*Hangman (GAM)
Graphics & spelling game with hidden words to discover.
*Townquiz (EDU)
Unscramble the Australian towns, then see where they are located on a map of Australia.
*Sort (UTL)
M/L superfast sort routine using latest programming techniques.
*Diary (APP)
Manage your time by planning it - edit and store dates, events and so on!
*Menu (UTL)
Auto-loads the program you have selected from a menu.
*Pakdump (UTL)
Dump ROMPAKs to be stored on tape or disk.
*Printdat (BUS)
Tabular printout using Rainbow's 'unidatfile'.

CoCoOz #3: May '83

*Austgeog (EDU)
Hi-res drill in names and spelling of towns and rivers.
*Garden of Eden (SIM)
Allocate resources for a happy and productive society.
*Alfabet (EDU)
Fine graphics teach and drill you in the Greek alphabet.
*Centrit (GAM)
Joystick board game to clear adjacent disks until none are left.
*CCMeteor (GAM)
Arcade game using lasers to target attackers and trails.
*CoCoFile (DBE)
Full-blown database with all those must-have features.
*Scuba (APP)
For divers, it has the safety calculations built-in.
*RBasic (UTL)
Dump BASIC into 64K to change it or use your computer with 48K left.
*Use 64K (UTL)
Page switching each of 32K banks give access to 96K.

CoCoOz#4: Jun '83

*Rally (GAM)
M/L arcade car driving in three lanes to dodge CoCo's.
*Timekeep (APP)
Computerized time and scorekeeping for Aussie rules.
*Autoline (UTL)
Adds the missing automatic line numbering feature.
*Spell (EDU)
Flashcard method of drilling in weekly wordlists.
*KT/moves
Move chess knight to land on each square once.
*Screenprint (UTL)
Copies all PMODEs from screen to Tandy DMP100 printers.
*Alphabet (EDU)
Large graphic lowercase letters teach youngsters.
*Punter (GAM)
Bet on the horses in this graphic race game.

CoCoOz#5: Jul '83

*Flagquiz (EDU)
Full graphics to learn and test flags of 48 nations.
*Tutor (EDU)
Learn all about the draw command and how to use it.
*Fraction tutor (EDU)
Not only tests fractions but shows how to.
*CoCoMind (GAM)
Mastermind game hones reasoning and logic.
*Oilslick (GAM)
Fast reflexes to catch drops and deposit in moving pot.
*Line Control (UTL)
Choose from 22 speeds of scrolling during listing.
*Ramtest (UTL)
Speedily finds how much RAM and checks every bit of it.

CoCoOz#6: Aug '83

*Calendar (APP)
Provides a month's calendar for any day chosen.
*Tips (EDU)
Easy to follow step through the hard basic parts.
*Shoot Gallery (GAM)
Shoot the toy animals weaving to and fro before you win.
*Printsort (UTL)
Gives printout after sorting up to 200 names/ titles.
*BIO (APP)
Bio-feedback of stress with minimum of hardware.
*Tables (EDU)
Drills kids in their timestables the easy way.
*Galactic (GAM)
Arcade space game that's a real puzzler!
*Find (UTL)
M/L utility lets you search for a string in a listing.
*Poker m/c (GAM)
Pokie simulation with all the features.

CoCoOz#7: Sep '83

*Beauty (UTL)
M/L utlity to save M/L or Basic programs to tape.
*Datagen (UTL)
Converts M/L routines to Data to be embedded in Basic.
*Pcopy (UTL)
Smooth prompted copy disk utility beats backup!
*Concert (MUS)
6 classics in multi-voice gives undreamed of sound.
*ICOSA (GRF)
Graphic reproduction of slow turning muliti-faceted 3D.
*Tables (EDU)
Mulitple Inkey of controlled speed tables drill.
*Wordlist (EDU)
Flashcard for speech, word recognition most used words.
*Bomb Attack (GAM)
An arcade space-invaders with an added wrinkle.
*Invaders (GAM)
A truely professional space-invaders using keys.

CoCoOz#8: Oct '83

*Speedtables (EDU)
273 choices to drill math, including graphic game.
*Tymestable (EDU)
Dual speed drills in multiplication tables.
*Tables (EDU)
Pretty graphics and sweet sounds to make learning fun.
*Everest 1.6 (SIM)
Simulated Everest climb deploying men and materials.
*Buggle (GAM)
3 direction speed word game using 16 letters.
*Monitor+ (UTL)
Do anything you want over the full 64K.
*Fasttest (UTL)
M/L utility to mix graphics with text characters.
*F25/2 (BUS)
Controls 200 sales of 100 items to 80 customers.
*Mozart (MUS)
Bright and gay horn concerto with ill-wind lyrics.

CoCoOz#9: Nov '83

*Skiing (GAM)
Reverse-video arcade to guide skier between flags.
*ADV 32K (ADV)
Adventure to restore a nuclear plant to working order.
*Rally (GAM)
Car chase with you, the target. Hit or be hit.
*Spool64K (UTL)
Uses upper memory as buffer for your printer.
*Screen Echo (UTL)
Redirects output to the screen via the printer.
*Creattitle (UTL)
Editor to create screens for auto-load and Auto-exec.
*Probability (APP)
Dice plots graphs on chances of rolling dice.
*Morse Code (EDU)
Trains and drills you in morse code for licence speed.
*Math Comp (EDU)
Mathematic exerciser and scorer for up to 10 students.

CoCoOz#10: Dec '83

*Yahtzee (GAM
Polished dice game with complex scoring done by CoCo.
*Bank Statement (BUS)
Saves and prints seven column listings of one or two accounts.
*Adds (DBE)
Automatic database system with seven modes already.
*Copycreature (GAM)
Logical thinking and classification of skills for 4 to 8 year-olds.
*Supermind (GAM)
Mastermind puzzle using 8 colors for code.
*Oregon (SIM)
On trail simulation with you, the wagon master.
*Battleship (GAM)
Throw away paper for this 2-player graphic game
*Autosave (APP)
Saves your building program with least hassle.
*dpms (DBE)
Disk program management system says it all.

CoCoOz#11: Jan '84

*DiskFile (UTL)
The best disk garbage cleaner you could ask for.
*Bigremarks (UTL)
M/L utility makes those remarks all worth while.
*DIR (UTL)
Controls the speed of disk directory listing.
*CCS (BUS)
Tape based generator of monthly statements to debitors.
*Label MK1 (UTL)
Utility for printing out variety of label sizes.
*EZ-Tutor (EDU)
Comprehensive learning program with demo German data.
*Atlantis (ADV)
Large adventure program escaping from a lost city.
*Morse (UTL)
Practice and drill for your dots and dashes.
*Meanies (GAM)
Supurb imaginative space creatures from all angles.

CoCoOz#12: Feb '84

*Binary (EDU)
Tutorial on binary and drill or decimal conversion.
*Checkers. (GAM)
Sharpen your skills with this old graphics board game.
*INVMK1.1 (BUS)
Prints quote or invoice for the small businessman.
*Fastdraw (utl)
Makes drawing from curciuts to pictures as easy as can be.
*Mastermind (GAM)
Cipher decoding the fun way.
*Delta (GAM)
DogFight your craft against CoCo's with missles.
*Scatter (app)
Ranks the scores of up to 44 students or any such sort.
*Hexprinter (UTL)
Dumps M/L in memory as decimal and Hexadecimal.
*Ramlist (UTL)
Functions of a scratchpad, RAM address functions.

CoCoOz#13: Mar '84

*Konekt4 (GAM)
Game of skill and concentration.
*Classics (MUS)
Plays selection of classic pieces.
*Fuel rate (APP)
Tests the economy of your car.
*Studs (APP)
Students tests unified development system.
*Santa (GRF)
Hard to pop gifts through chimneys.

*Statement (BUS)
Spits out invoices for businessmen.
*Disklabel (UTL)
Prints neat labels for disks.
*Sums (EDU)
Test subtraction and addition.
*Python (GAM)
Eat mice but watch for water.

CoCoOz#14: Apr '84

*Shoplist (APP)
Creates comprehensive shopping list.
*Labeller (UTL)
Print index labels for cassette boxes.
*Wordtutor (EDU)
Foreign language instruction.
*Diamond (ADV)
Adventure hunt - scary!
*Author (APP)
CoCo becomes hi-res scoring board.
*Diskcert (UTL)
Certifies every sector and track.
*CoCoMath (EDU)
Helps children improve their maths.
*Flackone (GAM)
Get back to base to repair ship.
*Hatdance/Willtell (MUS)
Two tunes on CoCo.

CoCoOz#15: May '84

*Speller (EDU)
Checks spelling on disk files.

*Superman (MUS)
See the man and hear his theme.
*Cricket (GRF)
Wonderful hi-res sports graphics.
*Mastermind (GAM)
One of the best masterminds around.
*Letterpro (EDU)
Learn about text editing.
*Insure (BUS)
Standard value or own of every item.
*Sorcerer (ADV)
Complex adventure (2 years in making!).
*SPESPL (EDU)
Teach spelling from spoken word.
*Run2BC (UTL)
Load 2 X 32K programs & run together.

CoCoOz#16

*Russian: EDU
Learn the Russian alphabet
*CoCoZap: UTL
Disk sector/data editor utility.
*Loananal: BUS
Explore money-borrowing options.
*Andromid: GAM
Trap her to stop radiation contamination.
*CoCotutor: EDU
Structured learning from file.
*Willand: UTL
Copies tapes + descenders + forces
*Pie Chart: BUS
Displays data as sections of a pie.
*Treasure: ADV/EDU
Search for 2 million units in caves.
*Capitals: EDU
Learn the capitals of 66 different countries.

CoCoOz#17

*Assault: GAM
Battle with missles in space.
*Ascot: GAM
Win or lose at the Gee-Gee's.
*Virus: GAM
Destroy it in an arcade quality game.
*Monarchs- EDU
List and learn every British monarch.
*Spelling: EDU
For younger kids.
*Easy: UTL
Menu simplifies disk operations.
*CoCoCalc: BUS
26 X 26 spreadsheet program.
*CoCo/Acc: BUS
Keeps accounts for small businesses.
*Wizlist: BUS
Maintains mail list and prints labels.

CoCoOz#18

*Little G: UTL
Screen edit utility.
*Orbquest: ADV
Good 32K adventure.
*Scribbler: APP
Scratch pad.
*Tic-tac: GAM
Tic tac toe.
*Primemin: EDU
Australian Prime Ministers quiz.
*Phiraes: EDU
Earquiz.
*Meindump: UTL
Utility to inspect mem printer/screen.
*Forthog: UTL
Forth compiler.
*Vidlabel: APP
Video cassette label.

CoCoOz#19

*Ohms: APP
Caculator of electrical formulae.
*Amazing: GRF
Produces a different maze everytime with a guaranteed single path through.
*Easytape: UTL
Save from disk to tape.
*40K: UTL
Switches 64K grey case CoCo so it can address 40K from Basic, also includes screen editor.
*DBase: DBE
Tape-based database. Uses 40K
*Starwars: GRF
Graphics.

*Cowboy: GAM
The fastest to the draw leaps.
*Notes: MUS/UTL
Music program. Input a note, see it on a music stave and hear it play.
*Garfield: APP
Print-out Garfield on a C-Itoh printer.

CoCoOz#20

*Drawings: UTL
Drawing utility to help in creating draw strings.
*Keysurp: EDU
Educational program for kids to learn alphabet.
*Taxation: BUS
Calculates tax.
*Fox/Geese: GAM
Game of strategy for two players.
*Tracsec: UTL
Copies tracks and sectors to other disks.
*Vswr: APP
Calculates voltage for ham radio operators.
*Colours: UTL
Get more colours on PMODE 3.
*Austsong: MUS
Plays 4 chord Australian songs.

CoCoOz#21

*OS8 - The system for experimenters! Access just under 128K on any system!
*Maze: GAM
Draws a maze on the graphics screen.

*Kalscope: APP
Watch pretty patterns appear on your screen.
*Conjverb: EDU
A French conjunction teacher.
*Drawings: GRF
Get your favorite cartoon character onto screen.
*Lottochk: APP
Check your lotto with this utility program.
*Timecalc: APP
Calculates time in almost any part of the world.
*DIR: UTL
A utility designed to load a particular program.
*Three: GAM
A brain teaser from the "Delbourgos".
*Karbar: SIM
A 32K ECB adventure where you control a small country.

CoCoOz#22

*OS8: UTL
A 64K enable module.
*4draw: APP
A drawing pad with a joystick.
*Faces: GRF
Draws a face.
*Skyline: GRF
Draws a city skyline.
*Counter: EDU
Counts by two, three, or whatever.
*Joystick: UTL
Makes the text screen a graphics screen.
*Story: APP
Make your own life story.
*Scrba32: UTL
A screen-print utility.
*Scrnbasm: DEM
Example of 'Scrba32'.
*Baswad: UTL
Hand assembler.
*Tax: BUS
Calculates the amount of tax due.
*Acc: BUS
Your CoCo becomes an accountant.
*Willacc: BUS
Another great accounting program.
*Gunfight: GAM
A shoot-out game.
*Tic-Tac 3D: GAME
Play tic-tac-toe, in 3D.
*Hangman: GAM
Play the old favorite game of Hangman.
*CoCoSafe: GAM
Can you Crack the safe?
*Lost: ADV
Get out of the desert alive before the cannibals get you?

CoCoOz#23

*C-Change: GAM
Strategy game in getting the board all one color.
*Kidstuff: APP
Something for the kids to enjoy and sing along with.
*Language: EDU
A quiz to test you on the language of other countries.
*Add: EDU
A simple test to add two sets of time.
*Prime: EDU
A program to teach what a prime number is.
*Taxman: BUS
Can you beat the taxman?
*Beeperoo2: EDU
An adding program for kids.
*Beeperoo3: EDU
Similar to Beeperoo2.
*Supply: GAM
Can you land your ship in the cavern without blowing up?
*Speller: EDU
Teach kids to spell in a fun way.
*Black: APP
A new version blackboard for the CoCo.
*Area/Prime: EDU
Calculate the area and perimeter of objects.
*Firefox: GAM
Defend your city against invaders.
*Lagoon: GAM
Can you cross the crocodile infested lagoon?
*Pixel: GRF
The new Pixel Logo by the "Thurbons".

CoCoOz#24

*Kaboom: GRF
Graphics program.
*One arm: GAM
Can you beat the poker machine?
*Planet: EDU
Find out about the solar system we live in.

*Matcher: GAM
The child's educational matching quiz.
*MazeRace: DEM
Watch the mouse trying to get out of the maze.
*Maze: GAM
Can you get out of the maze without crashing?
*Destiny: APP
What is your destiny?
*Testype: EDU
A typing tutor and game rolled into one.
*Tank battle: GAM
Blast each other's tanks in the field!

CoCoOz#25
PLEASE note: this is APRIL's tape!

*OS8 Getting OS8 into your system (but can you get it out again!).
*HI: UTL
A disk utility to load your files.
*CoCo/Mico: utl
Converts CoCo progs to MiCo progs.
*Lil' CoCo: GRF
A picture of little CoCo.
*Interest: BUS
Calculates the interest
*Tune: GAM
The CoCo version of Simon says.
*Extras: UTL
10 extra colours to use on your CoCo.
*Beamhead: UTL
A circle calculator for ham operators.
*Sea Bat: GAM
A naval war game.
*Cat&Mice: GAM
Can you get to your hole before the cat gets you?
*World 64K: DEM
The world in 56 graphic pages.
*Pages64K: UTL
Access to 56g.p.
*Magnet 64K: DEM
Depicts vibration of a dipole in uniform magnetic fields.
*Engine 64K: DEM
Simulation of a diesel engine.
*Roo Hunt: GAM
How many roos can you shoot?
*Ephem: APP
Find the geographical situation of the sun, stars, and planets.
*Mexican2: MUS
The new mexican hat dance.
*Showtime: APP
Kaleidoscope and streets by day and night.
*Streuth: APP
A goodbye message.

CoCoOz#26

*Escher: UTL
The art of drawing pictures with numbers.
*Memotest: APP
Can you remember the numbers that the computer gives you?
*Catalog: BUS
A security system for filing things away.

*Mapping: DEM
Shows the roads and weather of Tassie.
*Banctrac: BUS
The home banking utility.
*Lotto: APP
Prints out a graph showing the number of times a number has been drawn.
*5 card stud: GAM
Pit your wits against the computer.
*Comparisons: APP
Complete comparisons.
*Antonyms: EDU
Type the antonym of the word displayed.
*Plane/ep: GAM
Save Indiana Jones before the plane crashes into the mountain.
*Track: GAM
Can you get down the ski slope with out crashing into the poles?
*KeyBeep: UTL
When you press a key, CoCo beeps!

CoCoOz#27

*Memories: MUS
Song memories recreated.
*Flashword: EDU
A 16K adventure for children to test their recognition skills at a flashing word.
*Pythagorus: UTL
Works out all the formulae for pythagorus' theory.
*MLDatgen: UTL
Converts M/L data to Basic.
*Logbook: APP
For the ham operators.
*Inv.2000: GAM
The inversed space invaders on screen.
*Labelprint: APP
Make neat and tidy labels for all purposes.
*Wizsoc: ADV
An adventure - get free before time runs out!
*Xrefind: DBE
A Database for tapes.
*Tangle: GAM
An M/L arcade game for two players.
*Times : EDU
Assists with multiplication.

CoCoOz#28

*Wrdpulz: GAM
Create word puzzles using this program.
*Qwerl: GAM
Arcade game with joystick controls a snake-like line on the screen.
*Alien: GAM
Space invaders-type game.
*Sabre: GAM
Space Game. Winner of 1984/5 competition.
*Moveabout: GAM
Top graphics program. Requires intelligence.
*Labyrint: ADV
Graphics adventure game (64K).
*Advent+: ADV
Graphics adventure game for younger members of the family.
*Shuttle : GAM
Arcade game. Land your shuttle to live.(16K)
*Quest: ADV
16K adventure.
*Nakshlas: GAM
16K ECB snakes & ladders game. Great!
*Knitwit: APP
This program helps you design a jumper then prints out the pattern for you to knit.

CoCoOz#29

*The Room: GRF
Quick on the draw entry.
*Suhup: GRF
Quick on the draw entry.
*Symshape: APP
Trigonometry from Super Les.
*UFO: GAM
64K text screen arcade game.
*Torque: APP
Calculations for your car by Super Les.
*Volume: APP
More caluculations by Super Les.
*PhoneDir: BUS
32K/16K ECB database for your phone directory.
*Eureka: GRF
Michael's version of the flag.
*Benars: GAM
16K Lo-res Towers of Benars game.
*Letters: GAM
32K ECB excellent game for 3-5 year olds.
*CoCoAgro: GAM
16K ECB game to text your patience.
*Graphics: UTL
16K ECB program to help you draw on CoCo's screen.
*Landattk: GAM
32K ECB arcade game.
*Clublist: DBE
The classic database for CoCo.

CoCoOz#30
The Delbourgo Issue

*Gbusters: GAM
64K ECB. "I ain't afraid of no ghosts!"
*Giftword: GAM
A gift with words. IQ testing.
*Mosiacs: APP
Colorful; pretty patterns.
*Classic: APP
To help with trigonometry.
*Tessel: APP
Archemedian tesselations. (16KECB)
*Go: GAM
A game of skill and logic for 2 players.
*Shift: GAM
A card game of skill and strategy.
*Numscrab: GAM
A numeric game of scrabble.
*Heraldry: APP
Build your family crest on the screen.
*Lissajos: APP
Contains all relevant instructions.
*Draw: UTL
Getting the DRAW command on a standard CoCo.
*Shoot: GAM
Target shooting.
*StripJak: GAM
An amusing game of stripjack.
*Babysit: APP
10 nursery rhythms with graphic illustrations.

CoCoOz#31

*Horse: GRF
Quick on the draw competition entry.
*Australia: GRF
Quick on the draw competition entry.
*Backstreets: GRF
Quick on the draw competition entry.
*Impossible: GRF
Hires graphics. Find the hidden triangle.
*Hangman: GAM
Another hangman game.
*Narzod:GAM
A fantastic graphics game that needs a joystick.
*Frog Race: GAM
A race to the finish line. Good graphics.
*Kimmat: GAM
A great card game (you vs. CoCo).
*Mastermind: GAM
Has two levels.
*Index Dir: UTL
A 16K disk utility.
*Horse Race: GAM
A day at the races and bet your money on the horses.
*Connect4: GAM
Self explanatory.
*Timesave: UTL
Automatic edit on error,and also some single key commands.
*Dodge: GAM
Climb the ladder, dodge the falling objects, and dash to the door.

CoCoOz#32

*PageLook: UTL
A page flip routine.
*World32K: APP
54 pages and watch the world spin.
*Grandpri: GAM
A great car racing game.
*Locomotn: GRF
Quick on the draw competition entry.
*CoCoArt: GRF
Quick on the draw competition entry.
*Kanga: GRF
Quick on the draw competition entry.
*Waterwars: GAM
Needs joystick, blow up submarines below you.
*TapeJack: UTL
A 16K disk based utility for cassette labels.
*Caterpil: GAM
Moneuver with your joystick to a patch of green grass.
*NumRun: GAM
A dice game.
*Cadding about: APP
Computer aided designs a verticle antennae less than a quarter wave length long.
*Illusion: GRF
Optical illusions.
*Invert: GRF
Illustrates what happens when you reverse all the colours of every pixel on a particular graphics page.
*Sleepy: APP
Hypnotize yourself.
*Certific: APP
Write your own certificates of award.
*Wazzdere: GAM
Chase little orange dots over the screen.
*GSM: UTL
64K ECB. Graphics Screen Manipulator.

CoCoOz#33

*Prison: ADV
"You gotta get out! see"
*Pulsar: GAM
You are in control of a space cruiser, and the enemy is in your sights.... so pulsar blast.
*Christmas Card: APP
Make and send your own christmas cards.
*Chomper: GAM
Use your right joystick to chase the dreaded creature.
*Cocktail
An amateur bartenders dream!
*ToteBet: GAM
A wacky horse race that's lots of fun!
*The Boat: GRF
Quick on the Draw Competition.

*The Car: GRF
Quick on the Draw Competition.
*Space Shuttle: GRF
Quick on the Draw Competition.
*Pattern Maker: EDU
A program for beginners trying to come to grips with BASIC.
*Black and White: EDU
Variables are co-ordinated for a series of boxes.
*Square Circles: APP
A variation between circles.
*Max: UTL
Use your CoCoMAX creation in your programs.
*Grafix Saver: GRF
Saving graphics screens on tape!
*Christmas Parade: GRF
A collection of brilliant christmas graphics from the Noarlunga Users Group.
*Basic Goodies: EDU
Demonstrates the DATA & changeing line statements.
*Lotto: APP
A program to help you choose your lotto numbers.

CoCoOz #34: January 86

* Lord Thulsa Doom (ADV):
Nick Cooper
You must enter the castle of doom where the Dark Lord dwells, kill him and escape.
* Topple (GAM):
Steve Youngberry
Topple is a game in which you have to balance a stick on a table. Not as easy as it sounds.
* Cyclone (APP):
Errol Mattingly
This is an adaption of "Hurrican Tracker", which appeared in Australian Rainbow, March 1985
* Disk (UTL):
Alex Hartmann
Disk is utility designed to alter the sectors of your disk. Like a 'Disk Zap' program.
* A Disk Zapper (UTL):
Ian Clarke
This one does the same job the above does.
* NilToDo (APP):
Clive Winsall
What to do when you've got Nil to do.
* Recovery (UTL):
John Carmichael
Recovery allows you to CLOAD a program with an IO error in it, and recover it up to the point of the error.
* CoCoDex (DBE):
Clive Winsall
A database which provides an overview of our past issues of CoCoOz. Alas, we still don't have the data file for it!
* Joypen (GRF/APP):
Robbie Dalzell
Allows you to draw on the PMODE4 screen with an Atari-type joystick.

CoCoOz #35: February

* Blackjack (GAM):
Tom Lehane
The object of this is to win a hand by scoring more than the other player (CoCo) without going bust - 21.
* Bankrupt (GAM):
Richard Cubbit
To play this one requires that you place a bet and choosing between heads or tails.
* Devil's Dice (GAM):
Jeff Sheen
You are given four dice, each placed end to end. Your job will be to get one colour, the same colour, on each of the four sides.
* Craps (GAM):
Tom Lehane
Craps is a dice gambling game; easy to learn.
* Chuck-a-luck (GAM):
Tom Lehane
This game has also been known as Sweat Cloth, Chuckerluck and more recently Birdcage. It involves three dice.
* Dice 21 (GAM):
Tom Lehane
This game is equilivant to the game of BlackJack.
* Oz Rock '86 (GRF):
Michael Hartmann
See the latest rock groups' logo, like AC/DC, Midnight Oil, INXS & The Angels.
* Music (MUS):
Bruce Mattingley
Play any one of five classical musical pieces.
* Accounts (DBE):
Graham Morphett
Our own accounts program we use in the office.

* Quick on the draw competition entries:
  1. Sad CoCo: F. Bolle
  2. Crystal Brook: Paul Savage
  3. QLD logo: Steve Youngberry
  4. Tower: C.A.Syms
  5. A Windy Day: Sarah Law
  6. Coat of Arms: Paul Hope
  7. Advance: Steve Youngberry
  8. Bicycle: Patricia Foley
  9. Cooch: A. Van Der Zypp
  10. Sailing: Steve Youngberry
  11. Slow Car and Truck: KKG
  12. Outhouse: Steve Youngberry

* Countdown (EDU):
Dean Hodgson
Countdown is a simple math drill program.

* Rail Bridge Math (EDU):
Bob Horne
Build the railway bridge by getting the math questions right!

* Escape (EDU):
Dean Hodgeson
This is a number sentence problem solving game.

* Sentence Endings (EDU):
Bob Horne
Learn all about the sentence endings that are found on the ends of sentences.

* Math Test Match (EDU):
Jeff Sheen
Here we have a Basic game to drill one to ten players on math problems.

CoCoOz #36: March, 1986

* Word Puzzle (EDU):
Leath Muller
Everyone enjoys word puzzles... here's one more!

* Quick on the draw graphics competition winners
  1. CoCoLoco: Max Bettridge
  2. Smurf: Johanna Vagg
  3. Sunshine: Steve Youngberry
  4. Planes: Sean Lowe
  5. Helicopter: Andrew White
  6. Martha: Andrew White
  7. Bad Moon: Steve Youngberry
  8. MCC: Joy Wallace
  9. Eagle: Peter Coleman

* Canon (APP):
Graham Pollock
A great program for getting the intuitive feeling for chucking things in the air.

* Dos Plus (UTL):
Charles Bartlett
This basic program is designed to enhance your computer's DOS with another 3 commands.

* Timer (UTL):
David Martin
Accurately record your camera's shutter speed using your CoCo.

* Day Planner (APP):
Leonie Duggan
Plan your or someone else's day using this program.

* Take Off (GAM):
Steve Youngberry
In this one, you'll need good reflexes as well as a good memory.

* Learning Tree (EDU):
Francis Bolle
An improvement on a program from "The Advanced Home Computer Course".

* Character (APP):
Barry Hattam
Prints out a character and prints it on the printer.

* Capital Letters (EDU):
Bob Horne
Learn about capital letters using your CoCo.

* Opalton (ADV):
Ian Clarke
Adventure about opal mining; dig up as much opal as you can, get the money for it and get out of town!

* The Car (EDU):
Johanna Vagg
Draw a car using POKES from her article.

* Tables (EDU):
Pat Kermode
The program is another block graphics program for computers without ECB and developed from here.

CoCoOz #37: April

* Word Pro+ (UTL):
Tom Lehane
WordPro+ is a word processor and a basic program generator built into one program.

* Delvene, Where are you (GAM):
Justin Lipton
This program is based on the television show, "Sale of the Century", and is played with two players.

* Fuel Check (APP):
Mal McLauchlan
Do mum or dad want to do an economy check on the car's petrol usage and don't know how to do it?

* Brain Blaster (GRF):
Paul Yould
Another graphics competition entry. It is NEATO!

* Masters (GRF):
Martin Holt
Masters of the Universe is another graphics competition entry.

* Testing-Testing (APP):
Ando
Tests you on the Queensland Road Rules in readiness for your written test.

* Lo Rez Graphics (GRF):
The Delbourgos
Something to get the old grey matter moving and fun to watch.

* Menu (UTL):
John Carmichael
Make your next program menu look like the commercial ones.

* CoCo Crooning (MUS):
Mal McLauchlan
Two songs from the old colony days of Australia.

* CoCo (GRF):
Lauchlan Wishart
Another graphics entry.

* More Life (APP):
Bernard Besasparis
An attempt at writing machine language.

* Bridge (GAM):
Oz Wiz
Play bridge against the computer.

CoCoOz #38: May

* 10 Faces (GRF):
Johanna Vagg
Makes 10 different faces out of a few different facial features.

* Pix Save (UTL):
Tom Lehane
Dump a graphics picture onto a printer.

* What Day is this? (UTL):
?
A calender program.

* Cunning Stunts (GRF):
Dave Bentley et al
Started off as an exercise in drawing a compass rose. It is now a fascinating demonstration of graphics symmetry.

* Catalog:Rec/find/label (BUS):
Tony Soar
Catalog produces a data file on tape with a set format; Recfind searches through catalog to find a record or records; and Reclabel produces a series of number tags from catalog.

* Superannuation (BUS):
Nick Starrenburg
Works out your supperannuation, plus more!

* Handicap (APP):
John Wallace
Based on Addendum "F" on the AYF 1985-1989 yacht racing manual.

* Graflook (GRF):
Michael Horn
Utility program for looking at your picture files. You can also enlarge your picture, rearrange your picture and dump your picture to the printer.

* Zener (UTL):
Charels Syms
Used to calculate the component values for zener diode shunt voltage regulator curcuits.

* To Spreadsheet? (DBE):
Graham Morphett.
More on our database.
* Fog Horn (GRF/EDU):
Paul Stevenson
A counting program for littlies.
* Add Dice (EDU):
Tom Lehane
Another counting program for the little ones.
* Math Worksheets (EDU):
Dean Hodgeson
Prints math worksheets on a DMP110 printer.
* Story (EDU):
Bob Horne + 5 White
The story written by 22 children and Bob.

CoCoOz #39: June

* Snow (HEL):
John Williams
Snow here, snow there!
* Prime (HEL):
Bob Ddelbourgo
Nifty little program to print up prime numbers.
* Linemaster (UTL/GRF):
Tom Lehane
A help in drawing graphics programs.
* Underworld (GAM):
Kendall Bein
You have fallen in a hole and you have arrived in ... UNDERWORLD. Now, can you get out?
* Ludo (GAM):
Steve Youngberry
CoCoLudo is much like the board game and is for 1 to 4 players.
* DUMP+115 (UTL):
Brian Bere-Streeter et al
A graphics dump utility to dump graphics pictures onto a CGP-115.
* Climategraph (UTL):
D Voutsis
This is an exercise in rainfall statistics. It creates a graph for any part of the world and compares it with Babinda, Australias wettest spot.
* Breakout (GAM):
Steve Youngberry
It's .. the game that never was ... !
* Dungeon of Danger (ADV):
Sean Hannon
Get out of the dungeon by attacking or avoiding the ones who live there.
* Detective (GAM):
Val Stephen
You are the detective! - you have been called to a dead body of a woman in her 30's. You are in charge!
* Card Generator (UTL/BUS/APP):
Jack Finnen
This is designed to print a set of library cards using data.
* Long division (EDU):
Bob Horne
A program designed to help grade 5 & 6 mathematics students with their studies.
* Chatwin Manor (GAM/EDU):
Bob Horne
This is a detective game that sets you the problem: Who has stolen the golden statue? Is it the maid? Is it the sister? It's up to you to find out who!
* Spelling (EDU):
John Carmichael
A program to test your spelling prowess. How good are you???

CocoOz #40: July

* Popball (GAM):
Max Bettridge
A hi-res game for those with a good eye. Catch all the balls falling from the ceiling.
* Frog 16K (GAM):
Justin Lipton
This is the 16K version of the popular arcade game Frogger. Dodge the cars and find homes for all the frogs.
* Llist (UTL):
John Carmichael
This program allows you to list programs with a space in between each line for you to make notes.
* Talk Hang (GAM):
?
A program that talks!! As the name suggests, it is a version of Hangman altered for the speech/sound pak.
* Bomber Squad (GAM):
Richard Cubitt
Your mission is bomb five houses that are posing a threat to the government. You've got five shots. Good luck!!
* Point Setter (UTL):
Justin Lipton
This program gives you the opportunity to draw intricate pictures on the screen with the joystick.
* Stock Market (SIM):
?
This is a simulation of the stock market but with only 4 companies. You have the option of buying, selling, or passing. The game is over when the chosen number turns are up.


* Cluedo (GAM):
Richard Cubbit
Cluedo is a game of deduction. There are five suspects, five rooms and five murder weapons. Whodunnit???
* Hidden Treasure (ADV):
Val Stephen
This adventure game gives you a number of choices for each situation. You make a choice by choosing A or B or C etc. Your task? To find the treasure.
* Sound Maker (UTL):
Ian G. Clarke
This utility lets you examine the sound making capabilities of the Coco and save the results.
* Remove & Compress (UTL):
George McLintock
This program takes the spaces out of basic programs where they are not needed and generally streamlines the program.
* Tape to Disk (UTL):
Justin Lipton
This Utility lets you save programs, either ML or Basic, from tape to disk.
* Cass. Catalogue (UTL):
Dave Bently
CCS. A program that enables you to get catalogues of your tapes.
* Art Liner (UTL):
George McLintock
This is a graphics editor that works with a 480 x 570 screen and lets you save and retrieve screens from tape.
* Talk Screen (UTL):
John Wallace
A utility that is able to let you "talk" on the screen via the joystick.
* Welcome To Maths (EDU):
Leon Anderson
A little program that tests your maths knowledge and tells you when you are wrong.

* Triominoes (GAM):
Bob Delbourgo
This is an adaptation of the table top game using triangular domino pieces.
* Flash Reading (EDU):
Dean Hodgson
This is a spelling helper using the flash card method, showing one card at a time.
* Typing Teacher (UTL):
Grahame Pollock
Using this program is meant to let you type better. You are given words, one by one and asked to type them. At the end you are given a words-per-minute rating.

CoCoOz#41: August

* Artpad (HEL):
Maurice Phillips
The idea is to use the hi-res screen as an art pad using your joystick.
* Johanna Vagg (HEL):
1. Xylophone:
Music by numbers & colours.
2. Tables:
Be tested on the times table
3. Graphics:
Fun with graphics
4. Quota:
A spelling program
5. Playing:
Playing with music
* Sword Quest (ADV):
Andrew Hart
Sword quest is a text adventure that may or may not take about 10-15 minutes to get through.
* Peace (GRF):
D. Voutsis
The first entry to the International Year of Peace competition.
* Big Money (GAM):
Mal McLaughlan
An appealing story-line that combines colourful graphics, musical effects and a nifty maths routine.
* Slide (UTL/DEM):
Charles Bartlett
A number slide game using a different approach.
* Bandit (UTL/DEM):
Charles Bartlett
Play the Pokies using a different approach.
* Busted (UTL/DEM):
Charles Bartlett
Your TV is busted ...
* Take your best shot (GAM):
Aldo Debernadis
Golf, anyone?
* Lotto (UTL):
G. Lewis
The nitty gritty of choosing your pool numbers.
* Old & Future Print (UTL):
David Law
An adaption of "Bigprint" from January 1984's Rainbow. Will print in 'futuristic' and in 'old english' style writing.
* Matchem (GAM):
Charles Bartlett
The hi-res version of "Concentration".
* Flippin' Heck (GAM):
Charles Bartlett
Based on the game of "Othello".
* Quest (ADV):
Andrew McLintock
This is a D&D type adventure game where you destroy the evil magician.
* Jigsaw (GAM):
Charles Bartlett
If you like jigsaw puzzles, then this is for you! The NeverEnding Jigsaw will keep you happy.
* Taboo (GAM):
Tom Lehane
The once popular word game of taboo is here again!
* Hot (UTL):
G. Adamczewski
The downloadable character set for the Star Gemini 10X.
* TapeSort (UTL):
Ray Hendry
Your own tape directory program.
* Word Usage (EDU):
Dean Hodgeson
A simple word usage exercise program.
* Tables 2&3 (EDU):
Bob Horne
Run off your own tables sheets and have an inter-class maths tables competition.

CoCoOz#42: September

* Tank Battle (GAM):
Craig Stewart
Have a tank battle with your opponent in this hi-res screens. Added feature: you can customize your game, ie number of bullets, scenery, etc.
* Intruder (GAM):
Stuart Sanders
A space invaders-type game.
* Gopher (GAM):
Steve Youngberry
Gopher is all about jumping on gophers - there are ten of them who appear one at a time. Can you get them?
* U-Boat (SIM):
Andrew McLintock
A simulation based on the German U-boats of WW2. Sink as much allied shipping as possible.
* Colour Draw (UTL):
Craig Stewart
Get 16 colours in PMODE 3 without a CoCo 3!
* Not One (GAM):
Tom Lehane
Not One is a fast-paced dice game that is played by one or two persons. Your opponent? CoCo, on a hi-res screen.
* Flora & Fauna (UTL):
Stuart Sanders
In Fauna, find out what you killed on the table. In Flora, find out what plant the one in the corner is.
* Hexadecimal Monitor (UTL):
Jim Jacobs
Change the contents of your computers RAM with this program.
* Cockathree (UTL):
Colin Bartlett
Adds some of the CoCo 3's abilities to the CoCo2.
* Startrek (GAM):
Andrew Voutsis
Rid the galaxy of the Klingons.
* Shootout (GAM):
Craig Stewart
Winner of the games competition! 100 % machine language.
* Chase (GAM):
Stuart Sanders
Avoid the '#' with your joystick or get eaten!

CoCoOz #43: October

* Solgans Escape (ADV):
Craig Springett
Your goal here is to rescue Solgan from the dungeon and save your people from an inter-tribal war!
* Rockfall (GAM):
T.J.Davies
Avoid the falling rocks. Fast graphics!
* True Love (APP):
Martha Gritwhistle
Find your true love using this program.
* Donkey (GAM/UTL):
Stuart Sanders
Save high scores in your game of Donkey King.
* Drovers Dream (MUS):
Steve Youngberry
The tune of the "Drovers Dream".
* Shoots (GAM):
Emiliano Molina
Get the baddies in the police station in the year 2000.
* Peace (GRF):
Fred Remin
An entry to the "International Year of Peace" competition.
* Cat & Mouse (GRF):
Michael Bell
Two graphics quickies showing a cat & a mouse.

* Frog Mater (GAM):
Darren Ottery
You are a frog with only one amibition in life. Eating all the 'Y's without meeting the 'O'.

* TV Trivia (GAM):
Barry Sidebottom
The game of 'Trivial Pursuit', only all questions to it relate to TV shows.

* Navigation Plot (UTL):
Keith Wray
Gives the navigational positions of major towns graphically.

* Townatak (GAM):
Sean Hannan
Land your plane safely by bombing the city below.

* Frequency Counter (UTL):
Gordon Thurston
This should appeal to the ham and electrical enthusiast.

* Lines (GRF):
Ando
Stunning effects using just LINE statements.

* Gryphon (GAM):
James Redmond
This uses 'Sprite Graphics' & clever applications of the PLAY statement to make this game sound & look good!

* Inventory (APP/UTL):
Steve Issanchon
Take inventory of your house when you move.

* Numerology (APP):
Tom Lehane
The art of numerology on the CoCo.

* Tape Catalog (UTL):
Craig Stewart
A tape cataloging program for all you tape users out there.

* Calendar (UTL/APP):
David Law
Print out your very own calendar for 1987! Or 1988! Or 1989! Or ...

* Mad Editor (EDU/GAM):
Tom Lehane
Our editor has done it again! Maybe you can do a better job editing his text!

* Questions (EDU):
Leon Anderson
Some question from the educational workbook.

CoCoOz#44: November

* Viabasic (UTL):
Richard Rogers
A basic telecommunications program to access Viatel with.

* Graphics (GRF):
Ando
A demonstration in graphics.

* Retire (UTL):
Brain Grey
"How much would I have to save each year so I could retire with a million dollars?"

* Letterhead (UTL):
Johanna Vagg
Use different letterheads when you write your next letter!

* Grafplot (APP):
Michael Hartmann
Used to design anything from sheds to tennis courts!

* Labelmaker (UTL):
Michael Hartmann
Prints out index cards for cassette. (Very simple to operate!)

* DMP-110 (UTL):
Brian Bere-Streeter
Choose one from 27 different fonts for the DMP-110 and then run your selected program.

* Oyez! (APP)
Mal McLaughlan
A simple, eye-catching way to show instructions, title pages, etc

* Printex 4 (UTL):
Keith Echberg
Don't worry abput going over the edge when printing with your DMP-110 anymore.

* Bin-Bas (UTL):
D.W.Thurbon
This is useful for saving chunks of memory out to the disk as a numbered basic program.

* File Display (UTL):
K.Paterson
Allows you to KILL, RUN & Display your disk files.

* Micro Files (DBE):
Graham Pollock
A database program for the CoCo & the MiCo.

* Log-Math (UTL):
D.W.Thurbon
Will give you the logorithm of any number given.

* Form Fill (APP):
D. Bourne
An exercise in filling out forms (job applications, etc).

* Bird Register (APP/UTL):
Ron Simpkin
Keeps a record of your birds.

* CoCo 3 (DEM):
D.Moreton
Our first program for the CoCo 3.

* CoCoMusic (MUS):
David Sitsky
Allows you to play music using the entire keyboard.

* Quadsolve (APP/UTL/EDU):
Mal McLauchlan
Check your work after you complete that quadratic equasion.

* Spelling Quota (EDU):
Johanna Vagg
A spelling program set in hi-res graphics.

* Music for Orchestra-90 CC:
Michael Monck
1. Axel F
2. Popcorn
3. If I were a Richman
4. Fleur d'Elise

CoCoOz #45: December

* Hi Dice (GAM):
Tom Lehane
Fast-paced dice game

* Operation Babarossa (SIM):
Victor Koss
Reinacts Hitlers attack on the Soviet Union in WW II.

* Biorhythm (APP):
?
Program for the CoCo 3 that reads your biorhythms for any time, any day.

* Light Cycles (GAM):
Jamie Cameron
Try to corner your opponent in this graphics game.

* File (DAT):
D.R.Messer
A simple database program to create a sequential file and then save it to tape.

* Drawsave (UTL/GRF):
Mal McLauchlan
A utility to make "Fourdraw" patterns in brilliant lo-res colours.

* Animation (UTL/GRF):
Johanna Vagg
Animation on a low-res screen.

* Samuri (GRF):
Tom Lehane
A picture of a Japanaese Samuri Warrior.

* Zard (GAM):
Scott Binning
You have been sent to the planet of Doom where the evil Zard has taken over.

* Devilsh Tricks (GAM):
Bob Debourgo
A modified version of the game "Bridge".

* 23 (GAM):
George & Eileen Aftermonow
The CoCo version of the game '23 Matches'.

* Tatslotto Checker (APP):
Barry Sidebottom
Program to check your lotto coupon.

* Crystal (ADV):
Colin North
A graphics adventure with your aim being in getting out & home.

CoCoOz #46: January

* TIMEDIFF (APP):
Graham Morphett
Calculates the difference between two sets of times.

* JOYDISK (UTL):
Justin Lipton
Lets you look through your disk using your joystick.
* DIR+ (UTL)
D.W. Thurbon
Utility to dump directory onto printer or screen.

* CALENDAR (APP)
L.W. Thurbon
Make a calendar between the years 1601 to 10099.
* DMP100 (UTL)
Allan Thompson
Tests the DMP100 serial/parallel ports.
* LOAN (BUS)
Brian Grey
How much do you payback if you take out a loan?
* CONVTABS (UTL)
L.W.Thurbon
Lists the metric against the imperial.

* QUIZZER (APP)
Justin Lipton
Tests you on your forthcoming test.
* SUPERDAG (ADV)
Martin Eade
Find your costume and report to headquarters.
* UFOMAZE (GAM)
Justin Lipton
Get out of the cavern with your ship! Good Luck!
* SHOPLIST (APP)
Graham Pollock
Create a shopping list before going to the supermarket.
* FUELECON (APP)
Allan Thompson
Measure the economy of your car!
* NIBS&BITS (GAM)
George Aftamonow
Test your memory on 1's and 0's.
* BIRTHDAY (APP)
Michael Hartmann
On the appropriate day, give someone a birthday wish with your CoCo.
* PRINTGRAF (UTL)
Mal McLauchlan
Make notices, programs, etc more outstanding with borders and such, with this program!
* FILES (DBE)
T.J.Davies
A very simple database that can be easily expandable.
* KIDSONGS (MUS)
Mal McLauchlan
Nine singable tunes are presented in vivid colours for the littlies.
* TAPECAT (UTL)
Barry Sidebottom
Take a catalogue of your tapes and save it to tape.
* LOTCHEK8 (APP)
Keith Etchburg
Check your lotto results.
* SCRSAVE (UTL)
George McLintock
Load/Save your hi-res (CoCo 3) pictures to disk.
* ELQUIZ (GAM)
Richard Cubbit
Let Elliot Goblet teach you the ropes in mathematics.


CoCoOz #47: February

* LOTTO (HEL)
Tom Lehane
For the 'Help' section of the magazine.
* FACTORIAL (APP)
L.W.Thurbon
Gives factorials of very high numbers.
* TEMPCHART (APP)
Harry Hoffmann
Designed to record daily temperature changes.
* DRDENTAL (GAM)
Andrew Voutsis
Get the bugs before they attack your teeth.
* RAINCHRT (APP)
Harry Hoffmann
Draws a rainfall chart for the month of your choosing.
* DRAUGHTS (GAM)
John Neale
Play against another human while CoCo acts as referee.
* VOYAGER (GRF)
Wayne Kely
Watch the Voyager spacecraft move across your CoCo's screen.
* HOMEBUDG (BUS)
Dean Hodgson
Plan your household expenses six months ahead!
* TEXTSCRN (EDU)
Tom Lehane
Primary objective: test the student with a choice of subjects.
* SLOTMACH (GAM)
Sean Lowe
It's like a slot machine in your own home.
* STANDARD (BUS)
Ron Barnes
Print the class marks onto a DMP100 printer.
* SHOPLIST (EDU)
Dean Hodgson
Generates a shopping list.
* GENBATT (GAM)
Andrew McLintock
The date is the 7th June, 1944, the morning after the D-Day landings.
* ADDBOOK (APP)
Wayne Kely
Simulates a computerized address book.
* BUSHBALL (MUS)
Mal McLauchlan
Features ten Aussie bush ballads.
* HYMNS (MUS)
Mal McLauchlan
Collection of old and new church hymns.
* NATAMPS (MUS)
Mal McLauchlan
Has 12 of the worlds national anthems.

CoCoOz #48: March
* SCRNDUMP (UTL)
Craig Stewart
PMODE4 screen dumping for the TANDY DMP130.
* DISASSEM (UTL)
Charles Bartlett
Learning to understand, write aand adapt assembly machine code programs.
* DONKEY (UTL)
Charles Bartlett
Changes a PMODE4 graphics picture into a HSCREEN2 picture.
* SECTBLAS (UTL)
Alex Hartmann
Checks your disks for faulty sectors.
* HIDE (UTL)
George McLintock
Hides your basic program until being called upon.
* TURTLE (GRF)
Sean Murdoch
Use complex angles and distances to draw scale drawings or pictures.
* UTILITYS (UTL)
Fred Bisseling
Disk utility program.
* SUPINT (UTL)
Jeff Larson
Will dump any one or two graphics pictures to an ANUST80 printer.
* MEMLOOK (UTL)
Gregory Beaucroft
Lets you look at any part of the memory.

* BASEGEN (APP)
Justin Lipton
Converting one base numbers to another base numbers.
* DRAWMACH (UTL)
Andrew McLintock
CoCo 3 drawing made easy
* DISKFIX (UTL)
Fred Bisseling
Setting up double-sided drives on your standard RS-DOS.
* JOYMEM (UTL)
Juston Lipton
Looking through memory using a joystick.
* LOWRCASE (UTL)
Graham Pollock
Get true lowercase on your CoCo 3 without any hardware modifications.
* MUSIC+ (MUS)
D. Voutsis
Four pieces of music from the Voutsis'.
* ARTIST (GRF)
Craig Stewart
A complex drawing machine for the Coco 3.
* COL+ (GRF)
Brian Ferguson
Putting CoCo 3's PALETTE command into work!
* PAST+PRES (GRF)
Leigh Dawes
Shows differences between the CoCo 2 and the CoCo 3.
* TANKII (GAM)
Craig Stewart
A new version of TANK.
* OBSTACLE (GAM)
Craig Stewart
Avoid the cars coming the other way!
* COLDATUM (BUS)
Clive Winsall
A database program.
* DATABASE (DBE)
William Boardman
Data storage is what it's all about here.
* CASHBOOK (OS9)
Ian Lobley
A cashbook program for you OS-9 people out there.
* LIFE (APP)
Craig Stewart
Some interesting patterns.

CoCoOz #49: April

* BOOKLABL (BUS)
Vim de-Puit
Written to print lots of sticky address labels.
* DOGFIGHT (GAM)
Craig Stewart
ML program; fight to the death with your bi-plane.
* STARS (GRF)
Craig Stewart
ML program; watch 200 stars move on four different perspective plains.
* SPEKENCL (UTL)
Les Thurbon
Calculates specifications for drivers, closed box speakers and vented box speakers.
* HALEYAH (MUS)
Harvey Smith
The Haleluyah Chorus palyable on the Orchestra-90CC.
* TOADHOLD (GAM)
John Day
The aim? Get your frog in the hole before the other person does.
* COLDUMP (UTL)
George McLintock
Dumps colour pictures to colour plotter/printers.
* CHEKSUM (UTL)
George McLintock
A real help for those who type in programs from magazines.
* AL'SHOUSE (GAM)
Charles Bartlett
Al don't like no feds, shee ... so yad better git lost!
* HOW? (GAM)
Charles Bartlett
HOW do you play it and HOW do you win?
* COCORUN (GAM)
Max Bettridge
Run through cities, forests, seasides and so on, avoiding all the obstacles thrown in front of you.
* ARTIFACT (UTL)
Justin Lipton
Displays the artifacted colours, using the POKE178' command.
* ISLANDS (APP)
Craig Stewart
ML program; shows a plane crossing great amounts of water and islands.
* JOYSIM (UTL)
John Carmichael
Simulates a joystick, via the keyboard.
* COCOSCAN (UTL)
Gordon Thurston
Program recieves B&W pictures from ham radio transmissions.
* OSCILLOSCOPE (UTL)
Gordon Thurston
Turn your CoCo into an oscilloscope!
* DETATCH (UTL)
D.W.Thurbon
Detach your Disk ROM without detaching it!
* TAPECHKR (UTL)
Allan Thompson
Verifys wheather or not the programs have been saved properly or not.
* COPYROM (UTL)
D.W.Thurbon
Copies ROM into high RAM.
* VARILIST (UTL)
Russ Nelson
Lists the variables used in a program.
* STARDUST (MUS)
Harvey Smith
A MUSICA entry to the music competition.
* DATABASE (DBE)
Micheal J. Hartmann
For those who need one!
* ANOTHPIE (UTL)
Jim Jacobs
Computer pie to 10,000 places.
* SNAKES (GAM)
Charles Bartlett
Snakes and ladders, in colour.
* CASHBOOK (OS9)
Ian Lobley
Second part in the series.
* PEEKPOKE (APP)
Greg Dennis
List of peeks and pokes.
* PROGFIX (UTL)
D.W.Thurbon
Relocates ML programs so that thay can be used with disk systems.

CoCoOz #50: May '87

* PORSCHE (GRF)
Robert Davies
Converted from a coCo 2 to a more colourful Coco 3.
* MOTORBIKE (GRF)
Erin Kerstin
Shows the two things you'll see on a very fast motorbike - the front view and the back view.
* WORDPRO (BUS)
Neville McDonald
A very easy-to-use word processor.
* GUNFIGHT (GAM)
Craig Stewart
ML program; beat the gunslinger.
* PICTURES (UTL)
Charles Syms & Damien Clarke
A screen dump with a few added features.
* COL3 (DEM)
Brian Bere-Streeter
Elaborates on the commands of the CoCo 3.
* MISSNINF (ADV)
Scott Harvey
Stop the KGB agents and blow up the base.
* COCOMERG (UTL)
John Nicolettos
Helps in merging two or more basic programs together.
* COCOLIST (UTL)
John Nicolettos
Control the speed of your listing with your joystick.
* PICOS (UTL)
John Day
"... the next best thing to a disk drive".
* PYRAMINX
Bob Delbourgo
Like "Rubiks Cube", only in the shape of a pyramid!
* CONVERT (UTL)
George McLintock
Converts CoCo 2 programs to take advantage of the coCo 3's capabilities.

* PETERGUNN (MUS)
Michael Monck
More Orchestra 90CC music.
* RECOVER (UTL)
Grahame Pollock
Continues to load a program off tape after an IO error.
* PRETTY (APP)
Bob Delbourgo
Designed to make your own printer borders.
* SOLOSCRAB (GAM)
Bob Delbourgo
Play scrabble with yourself.
* BILLS (BUS)
Glenn Blomfield
Does everything except make coffee and pay the bills!
* COCOLOGO (GRF)
Val Stephen
The Melbourne omputer Clubs Logo.
* HAMSAT (UTL)
Dr Thomas Clarke & M. Garth
An orbital prediction program.
* PENTOMINOS (GAM)
Bob Delbourgo
Pentominoes are squares with four common edges. Block the other from making a pattern.
* MUSICFAIR (MUS)
Steve Youngberry
With three songs for the MUSIC+ program; All my Loving, When I'm 64, If I Fell
* ECHOSONG (MUS)
Craig Stewart
Experiment in reverbing the ordinary PLAY statement.
* TAPZAP (UTL)
Justin Lipton
Load an ML program into memory and the alter it.
* SUBBAT (GAM)
Justin Lipton
Get the submarines with your depth charges.

CoCoOz #51: June '87

* MINIMON (UTL)
Charles Bartlett
A mini-monitor for your CoCo.
* DIR/MEMOPAD (UTL)
Robert Seaburn
A graphics program; lets you run a series of programs from disk.
* STOKLIST (BUS)
James Grech
Takes care of your stock.
* MISSNDEST (ADV)
Niel Evans
Features "windows" in an adventure with full colours.
* ONO (GAM)
Charles Bartlett
Based on the game "Uno".
* COCOWORD (BUS)
Brett Hooker
Used when you need a one page report of something.
* MADMILE (GAM)
Steve Youngberry
Beat the others in this fast-actioned race.
* POLAR (GRF)
Mal McLauchlan
Polar diagrams is a drawing program of interest to everyone.
* MEMSHIFT (UTL)
Sean Murdoch
Moves blocks of memory to your place of choosing.
* WHERE? (UTL)
Ron Simpkin
Modifications required for a program that appeared in January 1987.
* AUTOLOAD/PROTECT (UTL)
Bill Snow
Gives true password protection.
* SHOOTOUT (GAM)
Justin Lipton
Shoot the bad guys within a certain amount of time.
* BIGTEXT (UTL)
Gordon Thurston
Prints various-sized letters to the hi-res screen for the CoCo 3.
* MUSIC (MUS)
Charles Toth
A command performance for MUSIC+.
* 8*8COL (APP)
Colin North
Shows all 64 colours of the CoCo 3.
* PRINTER2 (UTL)
Frank Rees
Turn a teleprinter to suit your CoCo/Mico.
* YAHTZEE (GAM)
Kevin Gowan
It's the real thing!
* DRIFTING (GAM)
Daniel & Tino Delbourgo
An exercise in momentum conservation.
* DISKDIR (UTL)
J.D.Cladingboel
Prints out a directory as well as the number granules free on your printer.
* SHORTHAND (UTL)
Bernard Besasparis
Employs all the keys on the keyboard to a specific BASIC command.
* GET&PUT (UTL)
George Viera
Expanding your Colour Basic machine.
* ARTIST (GRF)
Nigel Fredericks
Presents the 64 colours in a different way.
* DISH (GRF)
Craig Stewart
Produces 3-D images of folded dish-shaped objects.
* TESTVDG (UTL)
Bernard Besasparis
Tap extra features not known before on your CoCo 2!
* TESTSENS (APP)
Bob Delbourgo
Test your senses to detect faults.

CoCoOz #52: July '87

* EXPERIMENT (UTL)
George McLintock
Experiments taken place to test the CoCo 3's colour capabilities.
* AUTO30K (UTL)
George McLintock
Your own DOS!
* CZAP3 (UTL)
Seven Hills CoCo Club
Recovers those crashed programs.
* LISSABOX (GRF)
Peter Harry
Draws squares in a lissajous-type pattern.
* COCO3REV
Darren Reed
CoCo 3's secrets revealed.
* WORDPROII (BUS)
Harry Hoffmann
A modification on "Wordpro".
* Chatwin Manor (EDU)
Bob Horne
A re-print from July '86.
* INFIL (ADV)
Charles Bartlett
A program modified for the CoCo 3!
* CRYSTAL (ADV)
Colin North
Find your way out of the maze and find the crystals to get off the plnet.
* LINE (UTL)
George Viera
More on expanding your Colour Basic Computer.
* ONO1.3 (GAM)
Charles Bartlett
The real smart version.

CoCoOz #53: August '87

* LABELS (UTL)
Michael Shoobridge
Prints labels of your choosing.
* NINJA (ADV)
Dennis Mellican
Steal the secret scroll of immortaility.
* TREASURE (ADV)
Reagan Blundell
The object? Escape from the building.
* GENESIS (UTL)
Charles Bartlett
Your own CoCo 3 in your grey case CoCo 1.
* WORKSHEET (UTL)
Harry Hoffmann
Produces two worksheets: a 32x16 worksheet or a 40x24 worksheet.
* MLUTILITIES (UTL)
George McLintock
Using many ML programs at the same time.
* FUNKY TOWN (MUS)
Michael Monck
Pseudo Echo's version of Funkey Town" for the Orchestra-90 CC.

* MILL (GRF)
Joy Wallace
Depicts an old mill by the water in full colour.
* TERMINATOR (GRF)
Dennis Mellican
The terminators gunna get you ... so you'd better get ready!
* BREAKSHOW (GRF)
Dennis Mellican
Just like a real rap-dancer!
* DRAGLORD (GRF)
Dennis Mellican
Ka-ra-te on your Co-Co.
* PREDICTION (APP)
Paul Savage
Like the questionnaire found in the doctors room.
* DRAWINGS (GRF)
Paul Savage
Graphics entry.
* SUPERDRAW (UTL)
John Baker
Drawing utility with the option of the computer telling you how to go about working the program.
* LOTCHEK8 (APP)
Keith Etchburg
Checks lotto results.
* SUMMER (GRF)
Joy Wallace
See a hot day in the middle of Australia!
* XYPLOTTER (UTL)
Mark Bevelander
Helps you implement cheap and easy input/output control.
* PRN2COCO (UTL)
Frank Rees
Convert your Teleprinter to a normal printer.
* HILITE (UTL)
George McLintock
Highlites comments when LLISTing it to a DMP105.
* H2SAVE/H2VIEW (GRF)
Save/Loads HSCREEN2 pictures on your CoCo 3.
* MINIHUS (MUS)
Mal McLauchlan
"The Mini-Husband" on the CoCo!

CoCoOz #54: September '87

* NUTHACK (ADV)
Peter Fouche'
Save Tandy's prototype CoCo 20 from mutating even more!
* TAPEUTIL (UTL)
Bill Holt
Utilizes what most disk systems take for granted.
* FASTBACKUP (UTL)
Gordon Thurston
Backups a disk in two goes!
* LLIST32 (UTL)
Graham Pollock
LLIST's programs in 32 columns on your printer.
* COMCHANG (UTL)
Martin Eade
Change any command into what you like!
* DISKDUMP (UTL)
Brendon Pudney
Used to alter the data stored on the disk.
* HELP (DEM)
Tom Lehane
Help for the program "Rockfall" by T.J. Davies.
* QUIZMACH (GAM)
Nathan Gibson
Game/Hardware modification using three fire buttons.
* GOLDGRAB (GAM)
Andrew & Chris Voutsis
The BASIC version of GOLDGRABBER.
* DMDATGEN (UTL)
Alan Bridges
A Dot-Matrix Data Generator.
* DIRSQR (UTL)
Jim Jacobs
Finds the square roots of floating point numbers on the CoCo.
* WORKSHEET80 (APP)
Harry Hoffmann
Produces an 80x24 column screen.
* ADVII+
Sean Lowe
An enhancement on the first ADV (printed mid'85).
* CURSOR (OS9)
Jeff Larson
Do what you like with the Wordpak cursor.

CoCoOz #55: October '87

* FOLKMUS (MUS)
Mal McLauchlan
A music file for MUSICA II.
* MACDANCE (MUS)
Mal McLauchlan
A wee scottish folk song.
* WETHREP (UTL)
Harry Hoffmann
Part one of ten programs dealing with the weather.
* GRAFDATA (UTL)
Tom Lehane
Converts a graphics picture to data statements.
* TAPEREAD (UTL)
Malcolm Patrick
A tape catalogue system.
* DISKLOCK (UTL)
Harry Smith
Prevents unauthorized access at any information stored on a disk.
* AUTOEXEC/PASSWORD
John Baker
A utility to auto-execute basic programs and supply password protection.
* CONVERS (GAM)
Martin Eade
Have a sitdown and talk to your CoCo.
* ILLUSION (EDU)
Nicholas Fuller
Demonstrates common optical illusions.
* YAHTZEE (GAM)
Frank Woodward
Ah - the original!
* SCRNDRIVER (UTL)
Russel Lucas
Lets you display up to 12 programs at once.
* COLSCRNDUMPS (UTL)
George McLintock
A colourdump program for the CGP200 for the CoCo 3.
* CONTENTS (UTL)
Nicholas Fuller
Lets you make a tape directory program.

CoCoOz #56: November '87

* ASSEMBLER (UTL)
Charles Bartlett
Takes an assembly data file and turns it into a running program.
* MLSORT (UTL)
George McLintock
a machine language sort.
* HEADINGS (BUS)
Michael Shoobridge
Makes pretty patterns for headings.
* CLOCK (OS9)
Ken Wagnitz
Make a fully fledge clock, so you don't need to enter the time whenever you enter OS9.
* 3BUFF (UTL)
Colin North
Converts DIM statements to HBUFF statements.
* 35MM (UTL)
Colin Gawn
Simulates a small 35mm camera.
* ROTATE/EDITOR (UTL)
Colin Gawn
Edit/Create picture files to be then used as a slide show (animation).
* DATATRAN (UTL)
Gunnar Adamzewski
Transfers ASCII files to either disks or tapes.
* ZOOMER (UTL)
Dennis Mellican
Enables you to zoom into a graphics picture.
* COPYROM (UTL)
David Thurbon
A revised version of the earlier COPYROM.
* 3BOUNCE (UTL)
Colin North
"See the ball bounce."
* PARTY (APP)
Paul Stevenson
Suitable for party tricks.
* MENUMAKR (UTL)
Brian Bere-Streeter.
Menu selection program using the 80-column screen.
* TAPLABLR (UTL)
Wayne Kely
Makes cassette labels.

# Ramdisk? What's That?

by
Ken Wagnitz

OS9
ARTICLE

ON MY COCO 3 running OS9, I use a public domain ramdisk. What this consists of is a device descriptor and a device descriptor (both software). It is only applicable to a 512K CoCo and is adjustable in size.

A size of 128K seems about right for me. This still allows me to load lots of program modules as well.

The ramdisk is called '/r0', and is used exactly as if it were a floppy disk, except that the 'disk' cannot be removed, is much faster and doesn't wear out any parts.

Before it can be used, the ramdisk is formatted in the same way as a floppy. If the memory it is using is needed, it can be DEINIZ'ed after it is emptied, which de-comissions it and recovers the memory.

### A ramdisk as temporary storage

The ramdisk is a useful intermediate storage when moving files between disks. Just copy from floppy to ramdisk, change floppy, then copy from ramdisk to floppy. Even with three floppy drives I still sometimes do that. Generally drive 0 is my system and cmds disk and doesn't get swapped for another.

Being an 80-track double-sided drive, it holds all my commands, library files, help files, etc.

As I have said before, a person could get by with one less floppy drive than he/she otherwise could by using a ramdisk.

### Faster Compiling and Assembling

My data disk is normally drive 1. IT has C, basic, assembly, text and spreadsheet subdirectories on it. Often though, it is faster and more convenient to use the ramdisk as my data disk. When compiling a C program, a few intermediate files get written, read, and deleted on the data disk. This happens much faster and with far less wear and tear when the data disk is a ramdisk. The same goes for assembly source files which get edited, assembled, edited, assembled, and so on, until the source assemblies without errors, or works.

### Faster BASIC09

I have found that the BASIC09 editor is somewhat frustrating, after using a screen editor. My grasp of a program is better the more I can see on the screen. Moving around the program in the BASIC09 editor is harder and more fragmented than with a screen editor.

So what I have been doing is running two windows, both 80 column, both with the ramdisk as their data directory. In one window I run BASIC09. I initally load the program from floppy disk, then save it (or all its component parts) to the default directory (which is the ramdisk) and stay in the editor.

In the other window I run my scren editor. I load the program (from ramdisk) into the editor modify it and then save it to the ramdisk.

Swapping to the BASIC09 window, I reload the edited program. The new version simply overwrites the existing one in RAM. Then I run the program, to test it. This process continues until I have it right or I have to go to bed or whatever, at which point I copy the final product back onto floppy drive.

This all sounds complicated, but it works well and is simple in practice.

### Putting a ramdisk to work

To use this device, you need two files; 'ramdisk' and 'dmode'.

First load 'ramdisk' into memory by typing LOAD RAMDISK. Then type:

```
INIZ /r0
FORMAT /r0
```

Then the ramdisk is ready for use.

**Ed's Note — We are grateful to the Adelaide Users' Group and to Ken especially for the following information, which is a reprint from their club magazine.**

**Alex.**

# SUBMITTING Your PROGRAM

A-ha! So that program (or article) you have been writing is finally finished!

And you say, "Gee, I'd really like to submit that program to Australian CoCo Magazine/Softgold Magazine, but I don't know how to go about it!".

### How to submit your work

Programs can only be submitted on tape or disk. Please try to include instructions on what the program does/is.

Supplying a hardcopy of the program(s) (ie, a printer copy) is not neccessary anymore.

If you are writing a program and you think it needs plenty of instructions, then p.l.e.a.s.e. write in one of the following wordprocessors:

* Telewriter
* Telepatch
* Ultra Telepatch
* VIP Writer
* Scriptsit
* Stylograph (or an OS-9 data file, any format - we read 'em all!)

If you don't have a wordprocessor and writing suitable instructions are needed, then revert to this small basic program - it will do the job.

```
10 'M=-1 FOR TAPE
20 'M=1 FOR DISK
30 CLEAR5000
40 M=1 ' SET UP FOR DISK
50 OPEN"O",#M,"INSTRUCT"
60 POKE282,0:PRINT"TYPE 'EOF'
    WHEN FINISHED."
70 LINEINPUT"> ";A$
80 IF A$="eof"THEN110
90 PRINT#M,A$
100 GOTO60
110 CLOSE#M
120 POKE282,255
```

### What are 'Suitable Instructions'?

Suitable instructions are those instructions that the user needs to get by with. For example, if it is a game, tell us what key to fire, 'L' what key to go left, what key to right, etc. If it is a utility, state the pre-requisites, ie things you need to do first to use the program.

In general, make sure you tell us how to use the program!

These type of instructions are very handy for the user - it would be a great pity if you sent in a super-duper gee-whizz it-even-makes-coffee program and nobody knew how to use it!

### How to save your program

If you are saving to tape, then you need to do the following:

1. Save each program at least three times with the last program being saved in ASCII.

(How do you do that? Easy! Type CSAVE"filename",A) and exchange 'filename' for the name of your program.

2. After each three-time program save, save your ASCII data file twice (remember? - that's the instruction file).

3. Your tape (from the beginning) should have on it the following programs (as an example, we're going to save 'HORSE' three times):

```
HORSE (Normal save)
HORSE (Normal save)
HORSE (ASCII save)
HORSE (Instructions)
HORSE (Instructions)
```

If you are saving to disk, then do the following:

1. Save each program three times with the last file being saved in ASCII (by typing SAVE"<filename>",A, and exchanging <filename> for the name of your program) with each program having a different extension.

2. Like in number #2 above, save your instructions after each third save.

3. Your disk, if you do a DIR, could look like this:

```
HORSE   BAS 0 B 1
HORSE   BA1 0 B 1
HORSE   BA2 0 A 1
HORSE   DAT 1 A 1
```

With your tape or disk submission, write on a piece of paper the following information:

1) The name of each submission,
2) The category of each submission. There are 9 basic types of categories for submissions. They are:

```
Cat. 1: Games programs,
Cat. 2: Educational programs,
Cat. 3: Business programs,
Cat. 4: Articles,
Cat. 5: Graphics programs,
Cat. 6: Adventure & Music
        programs,
Cat. 7: Utility programs,
Cat. 8: Application programs,
        and ...
Cat. 9: OS-9 programs/articles.
```

For example; you want to submit the following programs to the magazine. Your piece of paper would look like this:

| Name: | Type: |
|---|---|
| 3ONO | Game |
| ASORT | Utility |
| OVENTEMP | Application |
| BASTEXT1 | Article |
| ILLUSION | Graphics |

This information will be very helpful!

"Why all the fuss?"

Well, we have found, through trial and error (and lots of it), that the first copy usually has an I/O error in it and it's usually the second or the third copy that comes through.

"Why not have multiple copies of the instruction file?"

If you save to tape, twice is good enough.

If you save to disk, and it crashes, we can always re-create the file (it's saved in ASCII, and so makes it easy to recognize)!

"Okay, the submission was sent ... now what?"

After a few days, you'll get a letter of confirmation (which says that we have received your submission). Three months after ALL your programs have appeared in either magazine, your submission is sent back, along with an additional tape (if you sent a tape) or an additional disk (if you sent a disk).

The month your program appears in the magazine, your magazine subscription with us (if you have one) will be increased by one month. If you don't have a subscription, you get that month's magazine sent to you, no charge.

Note: this applies only to programs and/or articles that are over 15-20 lines in length.

"Why send in anything, anyway?"

That can be easily answered. Australian CoCo Magazine and Softgold Magazine are hobbyist magazines. They are there to teach and broaden your computing horizons.

Remember the first time when you were learning on the computer, and when you ran into a problem?

How did you solve it? The best way is to see how the 'other user' did it. Therefore you most likely went to CoCo/Softgold Magazine, saw a program or an article and said, "A-ha! The penny has dropped! That's how he/she did it!"

In that way you learn something.

Now let's say you write a program using your newfound information. You submit it. Your work appears in the pages of the magazine.

Along comes another beginner, who has a computing problem. He reads your program and says, "A-ha! The penny has dropped! That's how he/she did it!".

More or less, that's how it works. One user learns from another. We're just the catalyst! That's why submitting programs and articles to Australian CoCo and Softgold magazines can help you.

"Great - where do I send it?"

Anything to be submitted to the magazines (programs and articles only) can be sent to the following address:

Submissions Editor
Freepost 5
PO Box 1742
Southport, Q. 4215

Remember, you need not pay for postage on this address. So pop your work into a postbag, close it and stick it in the mailbox!

# user contacts

ACT:
CANBERRA NTH — JOHN BURGER 062 58 3924
CANBERRA STH — LES THURBON 062 88 9226

NSW:
SYDNEY:
BANKSTOWN — PAT DORSETT 02 646 3619
BLACKTOWN — KEITH GALLAGHER 02-627-4627
CARLINGFORD — ROSCO MCKAY 02 624 3353
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KENTHURST — TOM STUART 02 654 2178
LEICHHARDT — STEVEN CHICOS 02 560 6207
or — GORGE ECHEGARAY 02 560 9665
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CAMDEN — SEAN MURDOCH 047 74 8291
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COOTAMUNDRA — CHERYLE VILLIS 069 42 2264
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LITHGOW — DAVID BERGER 063 52 2282
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NARROMINE — GRAEME CLARKE 068 89 6549
NEWCASTLE — LYN DAVSON 049 49 8144
NOWRA — ROY LOPEZ 044 46

NT:
DARWIN — BRENTON PRIOR 089.81.7766

QLD:
BRISBANE:
BIRKDALE — COLIN NORTH 07 824 2128
CARBON HILL — ROSEMARY LITZOW 07 395 0663
CLAYFIELD — JACK FRICKER 07 262 8869
COLL'WOOD PK — ANDREW SIMPSON 07 268 5206
IPSWICH — NICK MURPHY 07 271 1777
PINE RIVERS — BARRY CLARKE 07 204 2806
SOUTH — JOHN FOXON 07 208 7820
SOUTH WEST — BOB DEVRIES 07 372 7816
SCARBOROUGH — PETER MAY 07 203 6723
AIRLIE BEACH — GLEN EVANS 079 46 1264

BIGGENDEN — ALAN HENHAM 071 27 1272
BOWEN — TERRY COTTON C/O 077 86 2220
BUNDABERG — ROB SINKLIN 071 71 5301
CAIRNS — JEFF LARSEN 070 54 7127
DALBY — MERRICK TANSKY 074.62.3228
GLADSTONE — CAROL CATHCART 079 76 3594
GOLD COAST — GRAHAM NORTHEIT 075 51 0577
GYMPIE — BERT LLOYD 071 8219100
HERVEY BAY — LESLEY HORWOOD 071 22 4989
MACKAY — LEN MALONEY 079511333x782
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1/88

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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 February, 1988

All computer created pictures are elligible, 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.

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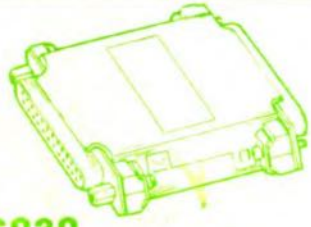

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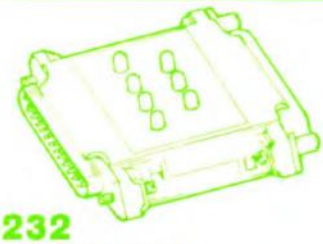

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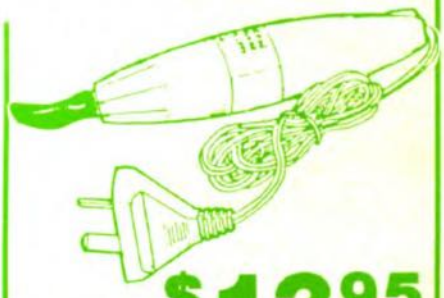

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