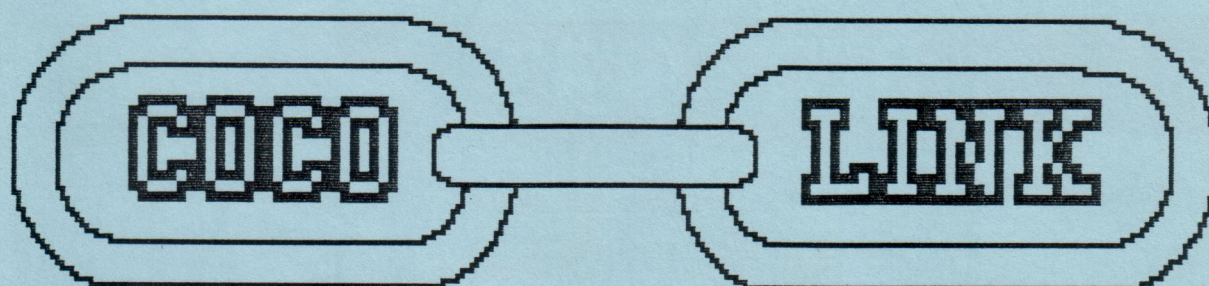
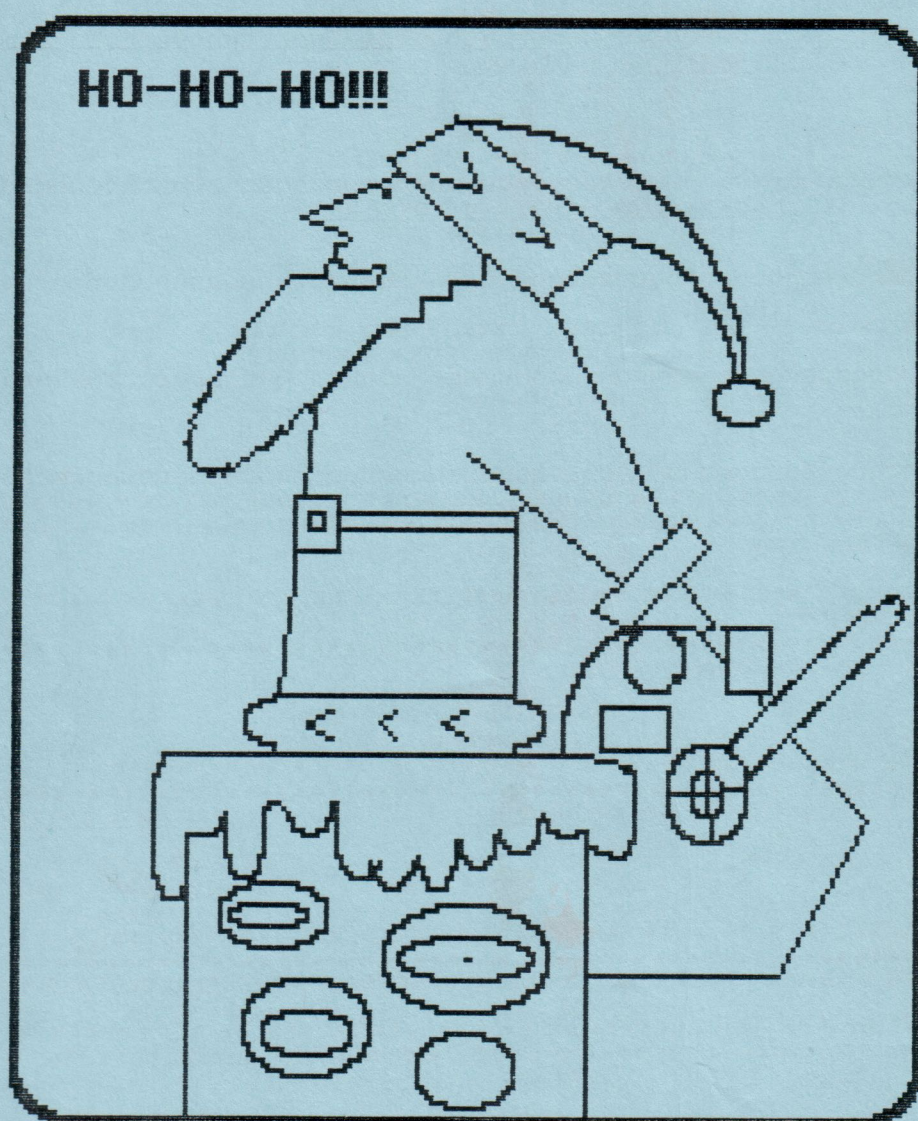


NOV/DEC 93

Vol 1. No. 6



The Colour Computer Magazine



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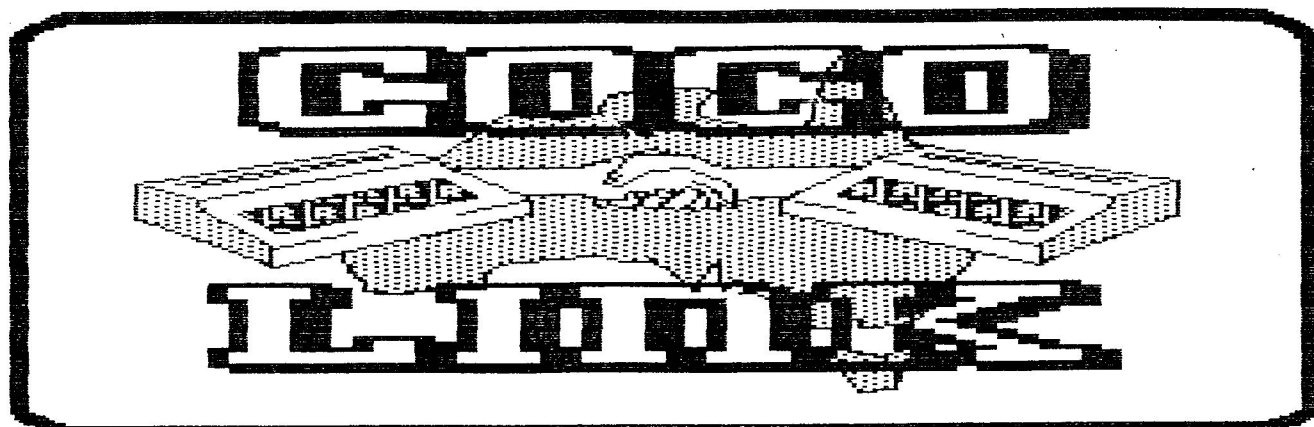
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EDITOR: Fred Remin

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Remin's Ramblings

Apologies

Firstly I must apologise for the late delivery of the last issue of CoCo-Link, the reason for this was that I was waiting for some information from the States and I thought a few days late would be better than another two months.

Putting Things In Perspective

I have found over the last few months that there is a bit of a misconception about the operation of CoCo-Link and REMCOMS. In particular there are some who are under the impression that the magazine and REMCOMS is a full time occupation for my wife and I.

Nothing could be further from the truth!!

CoCo-Link was continued by my wife and I on a part time basis using information supplied by you the CoCo users in order to maintain contact and interest within the CoCo community and with postal charges being the way they are at the moment and still going up, could not in anyway be construed as a profitable venture.

As I have said, the information contained in the magazine comes from you the users and from the '68 micro' magazine from the states, neither my wife nor I are experts when it comes to computing with the CoCo, we are both ENTHUSIASTS pure and simple, who have decided to continue the magazine for the benefit of all CoCoists. We both appreciate any constructive criticism about the magazine and it's content, we print what is given in good faith, remember that we are, like you, enthusiasts not experts. What does upset us is when we receive complaints about the magazine and subsequently find that the complainer does not even

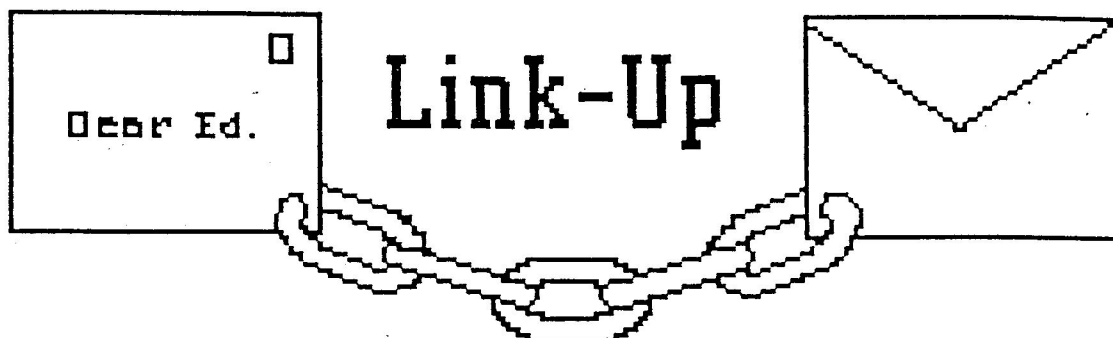
subscribe, obviously he or she has in their possession a pirated copy.

CoCo-Link is a subscriber only magazine, if you are obtaining a copy of this magazine for a nominal fee from a subscriber or user group, then you are pirating, the end result of which is the discontinuance of the magazine.

RECOMS is a home based company run by my wife with the occasional bit of help from me when I am not too busy with my job. Neither of us are accountants, technicians or experts in the field of business. REMCOMS was formed for the express purpose of ensuring a continued supply of support for CoCo users and I believe we have achieved this aim. Because we are not experts as stated above, we have and will make mistakes, if these are brought to our attention we will immediately ensure that they are corrected and of course learn from them. We will continue to support the CoCo community for as long as you support us.

This brings me to the distasteful subject of pirating, simply put, if it continues as it is now, all support will cease, we simply can not afford it.

A Happy Christmas and Prosperous New Year to you all, from Ros and Fred Remin.



Congrats on your mag and the good job you are doing but may I put it to you and other CoCo3 operators that there is still D/Heads like me who need KAPOOKA (Army Recruit Training) instructions on how to get going. More starting info on disk. You Fred No. 2 have done a good job on converting me to the computer age (age unknown). Now give me more info when you send me a disk. Dont expect us all to understand computer language. Make it simple and remember us D/Heads. I am trying.

Fred No. 1

Fred Senior (age unknown)
I can understand your frustration
Fred, you are not the only one in this predicament. I had good intentions to write a series of articles covering all the basics from start to finish. BUT my job up here simply has not allowed me the time to do so. Beginning in January '94 however, I hope to be able to address the problem. I will be in a new job with hopefully a bit more time to myself. Then again, is there anyone out there who has the expertise and the time to write such articles for the magazine.

ED

NEWS FLASH

REMCOMS HAS TAKEN
OVER COMPUTER HUT
SOFTWARE.

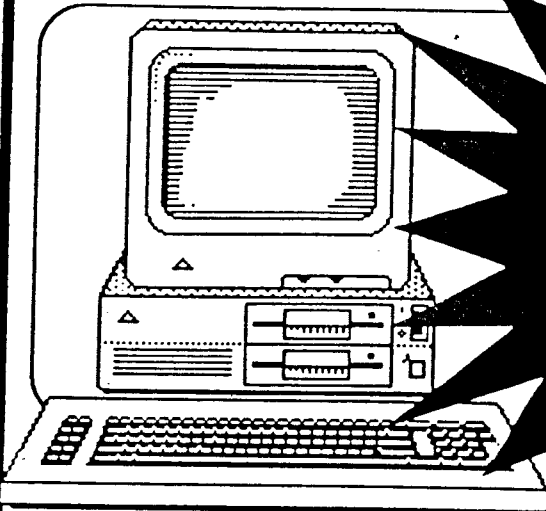
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PROGRAMMES, BOTH AVAILABLE
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EDUCATIONAL PROGRAMMES AND
UTILITIES GALORE (with still
more to come).

WHY NOT TAKE ADVANTAGE OF
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THE SAME TIME.

COCO FRIENDS DISK MAGAZINE

"The most exciting new product for the CoCo Since....?"



COCO FRIENDS DISK MAGAZINE (CFDM) is devoted exclusively to those who still enjoy running under RS Dos. The standard system needed to use CFDM is CoCo 3, RGB monitor, at least one disk drive, and the RS Dos which came with your CoCo 3.

CFDM is a monthly disk based publication which is produced on a "floppie" disk. When you "Run" the "magazine" side of CFDM, you'll be greeted with a beautiful cover picture by CoCo Friend James Gibbons. Pressing any key takes you to the magazine's colorful Main Menu. There you'll find 14 sections which are filled with entries. Sections included are: About CFDM; About this Issue; Active CoCo; Advertisements; CoCo Friends Art Gallery; Articles of the Month; Family Tree; Forum; From the Editor; Letters to the Editor; Potpourri; Programs of the Month; Reviews; and Question & Answers.

Next you will enter a Section and find a number of entries written by our CoCo Friends from all over the world. Each issue of CFDM contains from 60 to 80 entries. Some sections contain documentation about the many programs and graphics found on the "flip-side" of CFDM.

The "flip-side" or "program" side of CFDM is filled with contributions of wonderful programs and graphics from our many CoCo Friends! Each Issue has from 2 to 4 hi-res pics and from 8 to 15 never-before-seen programs.

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programs**

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RICK'S COMPUTER ENTERPRISE

Dear Fellow CoCoist,

Greetings from RICK'S COMPUTER ENTERPRISE. I hope you are still enjoying your Colour Computer from Radio Shack. In case you are not familiar with my company, let me tell you about RICK'S. We have been supporting the CoCo for over three years now. We offer quality software in the form of our UNBELIEVABLE OFFERS and support in the form of COCO FRIENDS DISK MAGAZINE.

The UNBELIEVABLE OFFERS contain great software at very low prices. Some of the former big name companies have been aquired by RICK'S. UNBELIEVABLE OFFER #1 and UNBELIEVABLE OFFER #3 are made up of useful and entertaining software by myself, Rick Cooper. UNBELIEVABLE OFFER #2 is the former SPORTSware software. UNBELIEVABLE OFFER #4 is the former COCOPRO! software. And most recently we aquired the SUNDOG SYSTEMS software (UNBELIEVABLE OFFER #5). Please see the enclosed order form for information on these offerings.

The major reason for this missive is to inform you of the SUNDOG SYSTEMS software. This is the highest quality software available for the CoCo. We offer it in a manner that allows you to choose the packages missing from your collection and at a very low price.

I hope you'll be interested in purchasing some or all of the packages.

With the passing of SUNDOG SYSTEMS, those of you who have previously purchased their programmes may feel that your investment is without support. Many of these packages are protected and you are unable to make backups. Here's a very good reason to purchase of at least one additional package from RICK'S: IF YOU PURCHASE AT LEAST ONE PACKAGE FROM RICK'S, YOU'LL BE ABLE TO "INSURE" YOUR FORMER PURCHASES WITH OUR WARRANTY! If any of your SUNDOG SYSTEMS software becomes defective, just send the master disk and \$5 (to cover postage) and REMCOMS will arrange for a replacement disk for you. (Please allow 21 days for postage from the states).

I would also like to invite you to join with our over 200 faithful CoCo Friends by becoming a subscriber to CoCo Friends Disk Magazine. See the order form for prices. Thanks and keep on CoCoing!

Rick Cooper



• *CoCo Tools* •

A Review by Desmond Rae

CoCo Tools requires either a 128k or 512k CoCo 3 with a disk drive installed.

Well, I waited very eagerly for the arrival of this piece of software wondering if it was going to be as good as the advertisement indicated.

(The advert I had seen for this was that it was similar to PC-Tools.)

Anyway after only a few days after sending REMCOMS the dollars for CoCo Tools, it arrived and I hastily tore the packaging to pieces.

I was greeted by a Single Double Sided Disk and a rather good looking manual 22 pages long."

Executing the program is very simple. Just load the disk in to drive Zero and type `LOADM"CCTOOLS"`.

After a few seconds the program loads in and you are greeted with an 80 Column screen with the following choices on it.

(A)rchive Files :- Lets you select files you wish to be archived in to a single file.

(C)opy Files. Self Explanitory.

(K)ill Files. Self Explanitory

(E)dit Files. Lets you select a file you wish to edit. The file is displayed in Hex and ASCII bytes at 1 sector a time.

(M)ove Files. Lets you select files you wish to copy from one disk to another. It then deletes the original files.

C(O)mpare Files. Self Explanitory.

(P)urge Files. Similar to Kill, but you can not retrieve files after you have purged them. It totally wipes them from the FAT, and GAT and disk.

(R)ename Files. Self Explanitory.

(S)alvage Files. Enables you to recover Killed files (no Purged files!) Can be done Manually or Automatically. (Extremely Handy to have)

(U)n-Archive Files. Lets you Unarc files from an Archive whether it be all or one of the files.

(B)ackup disk. Self Explanitory.

(D)irectory. Self Explanitory.

(G)ran Analysis. Shows where a file lies physically on the disk.

(F)ull Disk edit. Similar to (E)dit Files, but lets to edit the entire disk instead.

(I)nititalize disk. Same as format, but recommended for Ram Disks (providing you loaded a Ramdisk program before you loaded CoCo Tools).

Re-(J)uviniate Disk. Used on disks with intermittent errors. Basically it backs the disk up to its self to restore the magnetic properties and eliminate errors.

(V)erify Disk. Makes sure the disk has no errors. If so, it tells you.

Erase Disk. Writes the code "FF" to every sector. Identical to format.

Write/Sorted Directory. Reads the directory of a drive and writes the

sorted directory back. You select how you want it to be sorted. Once this function has been done, you can NOT retrieve any Killed files.

(Z)Disk Speed check. Shows a bargraph of drive speed. Allows you to increase/decrease speed of the drives.

(N)ew disk backup. Lets you place an unformatted disk in drive 1 and back up to it and the CoCo will format the disk first. (Indispensable Command)

(L)ocate Information. Lets you find a "String" on disk. Be it either Text or Numeral and you can edit it as well.

Verify Files. Lets you do just that!!

(T)est Archive. Shows you how much space you will save when you go to Archive files. This command will NOT write to any of the drives. (A extremely Handy feature)

Full disk compare. Just that. Just checks one disk to another to satisfy you that it has correctly backed up a disk.

E(X)tended Memory Edit. Lets you edit ANY of the RAM in your CoCo. (Can be also E(X)tremely Dangerous if you don't know what you are about!)

Print/Display Files. Lets you view only ASCII files.

(Q)uit. Self Explanatory.

There is also a few other functions you can do with this extremely powerful utility.

You also have the ability to set up your own options. They are as follows, and are located in the Options Menu.

Select Colours. Lets you select what Colours you wish to use for the Foreground, Background, and Highlight.

Drive Step Rate. You can select from 3ms to 20ms step rate. Or if you are not sure, you can insert a blank disk in to the drives and check their speed. But you must remember to check all drives and set the program to the SLOWEST speed rate. That way you can be sure you can write to all the drives error free.

Directory Sort Options. You have 3 choices here. You can sort by File id and Extension, or Extension then File Id, or no sort.

Printer Baud Rate. Supports 300 to 9600 Baud.

Communications Baud Rate. Sets baud rate to Modem. Supports 300 to 9600 Baud rate. (More on this later)

Printer Test. Lets you see if the printer works or not with CoCo Tools.

Write SetUp File. Writes the Options to disk.

Also while using CoCo Tools, you can talk to other CoCo's or a BBS. (Depending on what version of CoCo Tools you receive). In CoCo Tools Version 1.1 you can NOT talk to a BBS very effectively as it only supports Half Duplex

Transmission and has no buffer. But if you have Version 1.2 (that's the one I'm using) you have a 4k Buffer PLUS you can also use the Full Duplex Option. You can also send/receive a file using the Xmodem Protocol and change the baud rate as well without leaving the Communication mode.

Also in Version 1.2 you can also Un-Archive files created by a shareware program called TC31 by John Lauro. But you can not select what files you wish to have Un-Arched.

Plus when viewing ASCII files, CoCo Tools will automatically pause to stop text scrolling off the screen.

You also have the ability to print whatever screen you are on simply by pressing Shift F2.

Comments and Suggestions.

Although this program is extremely powerful as it stands I hope the Author does not stop with version 1.2

There are a few things I would like the program to be able to do. I mentioned above that the program will enable you to use a modem as well. But the comment I have is that it uses the Serial Port on the Back of the CoCo 3 with the printer. It would be nice to toggle it to the RS-232C Pack I have installed in my Multi-Pak Interface.

Another good idea I believe would be to enable the user to View ALL files instead of just ASCII files. To do this I use Disk Utility 2.1A (Also Available from REMCOMS) I like to be able to have a "look" inside programs and see if there is any interesting pieces of information are floating around. Sometimes there is some handy text left in M/L programs.

I encourage you to use a Ramdisk with the program they are extremely handy to have. But a word of warning. I used a Ramdisk by ColorVenture (Dr Prebble) and found it worked nicely under DOS in the 35 Track mode. But when I switched to 40 tracks I encountered problems. My first RamDisk was fine it said I had 78 Granuals free as I expected. BUT the second RamDisk had only 5 Granuals free. I believe it is to do with the actual program by ColorVenture. The first Ramdisk worked just fine with CoCo Tools but the second one did not and I do not blame CoCo Tools for this, I blame the RamDisk Program.

The only complaint I have about the program is that I can not keep a backup of the program in case it crashes, BUT the program is recorded on both sides of the disk as it is a floppy and for me that is good enough as it will stop pirating.

So if you are looking for a complete disk tool, then this is for you. For only \$95 you can not beat that. Compare that to PC-Tools, you will be amazed!

Happy CoCoing.

(CoCo Tools is available from REMCOMS)



TANDY'S LITTLE WONDER, • THE COLOUR COMPUTER 1980-1991 •

A Review by Desmond Rae

This book I believe is definately a must for all CoCo owners be it beginner or Experienced. The plethora of information contained within the pages of this book is incredible.

The book is 140 pages long double sided. It contains information on the CoCo One, Two, and Three.

It Starts Off with an Addendum for us good folk Down Under written by Fred Remin then its Straight in to the Table Of Contents.

The Main Topics Covered in the book are as follows.

Introduction, History, CoCo Hardware Prices: 1980-1991, CoCo Clones, Operating Environments & Programming Languages, Microwares OS9, Support.

Then its followed by a Technical Reference that covers Peripherals, Hardware Upgrades & Modifications, Repairs, Tid-bits.

Plus there is an Appendix, Schematics and Adertisers plus and Index.

The information in this book must be worth at least three times its selling price. I purchased a Service Manual for my CoCo 3 from Tandy for \$35 and that is how much this book is!

The book is an exceptional value for money. It explains everything about how all the CoCo's work and how Tandy went about producing it. But the book did not mention the fact that the CoCo 1 was origionally sold to Wheat farmers in the U.S.A back in 1981 before Tandy ever released it! (How many of you knew that??) (And I challenge someone out there to find witch OS9 book I got that from!) Any way back to the book.

If anybody can remember back to the October 1993 edition of CoCo Link I asked about CN3 and CN4 in my CoCo 2 were for.

This book told me that the connectors were for a planned memory upgrade witch was to be released from Tandy that had 64k on it. But they never did. (I suspected it might have been a prototype for the OS8 Microwave Technology that eliminated the need for a Modem. Who remembers that?) It also has some interesting stories on how to do software and hardware modifications from Double Siding your Disk Drives to Repairing your Multipak interface and everything in between.

This book is fantastic and for Value for Money you just can not go past this beaut book. I have read it from cover to cover and I thought it was great.

I'D like to finish off with this little question for you.

Who first coined the Word "CoCo" for our favourite computer??

You will find the answer to this question plus many others in this book so why not buy it!

This book is available from REMCOMS.

IN-OUT3 - by J. BROWN

When I purchased my CoCo 2, I knew nothing about computers and even less about programming. When I got my CoCo 3, I still hadn't learned anything much. The only advantage was that I had more memory to play with when compiling my FAMILY TREE's (all 4 of them)

One programme that came in the instruction book with the CoCo 2 was "IN-OUT" and was not updated in the CoCo 3 instruction book so I decided to "Give It a Go!" After a whole heap of mistakes and a lot of blue air surrounding me I managed to get a workable programme or two. If anyone is interested and doesn't mind a little typing, here they are.

First the original:

```
.5 PMODE 3,1
10 PCLS 3
15 SCREEN 1,0
20 FOR I=3 TO 7
25 FOR J=2 TO 6
30 FOR S=0 TO 3
35 FOR R=0 TO 3
40 COLOR R,S
45 A=0:B=255:C=0:D=191
50 LINE(A,C)-(B,D),PSET,B
55 A=A+J:B=B-J:C=C+I:D=D-I
60 IF A<255 AND C<191 THEN 50
65 NEXT R
70 NEXT S
75 NEXT J
80 NEXT I
85 GOTO 85
```

And another that works:

```
10 HSCREEN 2:PCLS:PALETTE
   CMP:HCLS 8
20 FOR I=7 TO 11
25 FOR J=3 TO 7
30 FOR S=0 TO 8 STEP 4
35 FOR R=0 TO 8
40 HCOLOR R,S
45 A=0:B=160:C=0:D=96
46 A1=160:B1=320:C1=0:D1=96
47 A2=0:B2=160:C2=96:D2=192
48 A3=160:B3=320:C3=96:D3=192
49 A4=33:B4=287:C4=0:D4=192
50 HLINE(A,C)-(B,D),PSET,B
51 HLINE(A1,C1)-(B1,D1),PSET,B
52 HLINE(A2,C2)-(B2,D2),PSET,B
53 HLINE(A3,C3)-(B3,D3),PSET,B
54 HLINE(A4,C4)-(B4,D4),PSET,B
55 A=A+J:B=B-J:C=C+I:D=D-I
56 A1=A1+J:B1=B1-
   J:C1=C1+I:D1=D1-I
57 A2=A2+J:B2=B2-
   J:C2=C2+I:D2=D2-I
58 A3=A3+J:B3=B3-
   J:C3=C3+I:D3=D3-I
59 A4=A4+J:B4=B4-
   J:C4=C4+I:D4=D4-I
60 IF A<160 AND C<96 THEN 50
61 IF A1<320 AND C1<96 THEN 51
62 IF A2<160 AND C2<192 THEN 52
63 IF A3<320 AND C3<192 THEN 53
64 IF A4<287 AND C4<192 THEN 54
65 SOUND RND(255),1
70 NEXT R: NEXT S
72 NEXT J:NEXT I
80 GOTO 80
```

I hope you like what you see after you type all of this!

By the way, my printer is a DMP200 and, for convenience printing graphics, I call it a DMP105/DMP106. This has some advantages. As a DMP200, it prints in black and white only but, as a DMP105, it prints black, white and two shades of grey.

WARNING !

This machine is subject to breakdowns
during periods of critical need.

A special circuit in the machine called a 'critical detector' senses the operators emotional state in terms of how desperate he or she is to use the machine. The 'critical detector' then creates a malfunction proportional to the desperation of the operator. Threatening the machine with violence only aggravates the situation. Likewise, attempts to use another machine may cause it to also malfunction. They belong to the same union. Keep cool and say nice things to the machine. Nothing else seems to work.

*Never let anything mechanical
know you are in a hurry.*

MINILOAD+

BY K. KENNY

*Minilod+

*by Keiran Kenny

I was gratified to read in CoCo-Link (May-June) that REMCOMS now has the franchise for COLORWARE/ALPHA products in Australia. CoCo Max 3 and Max 10 are great utilities that no CoCo 3 owner should be without. I was also pleasantly surprised to learn that Colorware still existed. I collect CM3 pictures and I had Colorware's own MINILOAD on each disk to load and view them. But I found MINILOAD somewhat slow especially as I had to go to the directory frequently to check on a file name and each time I ran the program I had to wait until the machine language code was poked into memory.

I therefore made MINILOAD+, a menu-driven loader for CM3 picture files. The program displays a two-column directory of any CM3 files on a disk. A pointer indicates the top file of column one. Use the up/down arrows for vertical movement. The right arrow accesses column two.

Press the spacebar to load a file. Press BREAK to clear the screen and load another or end the program.

I have tried to make the program execution as fast as I know how. The pokes in line 30 set a 6 ms step rate for DECB 1.1. In line 350, the high speed poke operates when the data is read. Line 340 ensures that it is read once only.

Further, I deleted all unessential code such as REM lines. My apologies to Dave Stampe for this, but the program is intended more for users than for hackers.

I hope you will agree that MINILOAD+ executes faster than MINILOAD and is easier to use.

```
0 'MINILOAD WITH A MENU
1 'COPYRIGHT (C) BY COLORWARE
2 'ORIGINAL BY DAVE STAMPE
3 'EXTRA CODE BY KEIRAN KENNY
10 CLEAR200,&H7000
20 WIDTH32
30 CLS:CLEAR5000:POKE&HD7C0,0
:POKE&HD816,20
40 FOR X=3TO11
50 DSKIS0,17,X,AS,BS
60 CS=AS+LEFT$(BS,127)
70 NAM$(0)=LEFT$(CS,8)
80 EXT$(0)=MID$(CS,9,3)
90 FOR N=1TO7
100 NAM$(N)=MID$(CS,N*32+1,8)
110 EXT$(N)=MID$(CS,9+N*32,3)
120 NEXT N
130 FOR N=0TO7
140 IF LEFT$(NAM$(N),1)=CHR$(255)THEN180ELSE IF
LEFT$(NAM$(N),1)=CHR$(0)OR
EXT$(N)<>"CM3"THEN160ELSE PRINT
NAM$(N)+"/"+EXT$(N),
150 C=C+1:IF C=CL THEN
C=0:PRINT
160 NEXTN
170 NEXTX
180 CLOSE#1
190 IF PEEK(1035)<>115THEN
PRINT@230,"NO CM3 FILES ON
DISK":END
200 PRINT@481,"ARROWS SELECT :
SPACEBAR LOADS";
210 PV=60:PY=PV+2:PP=1036:PX=PP
220 POKE PP,PV
230 K$=INKEY$:IF K$=""THEN230
240 IF K$=CHR$(32)THEN330
250 IF K$=CHR$(94)AND(PV=1036OR
PP=1039)THEN230ELSE IF
K$=CHR$(94)THEN310
260 IF K$=CHR$(8)THEN
POKE(PP),143:PP=PX:POKE PP,PV
270 IF K$=CHR$(10)AND(PEEK(PP)
=60AND PEEK(PP+28)<>111)OR(PEEK
(PP)=62AND PEEK(PP+41)<>111)
THEN230
280 IF K$=CHR$(10)THEN
PL=PEEK(PP):POKE
PP,143:PP=PP+32:POKE PP,PL
290 IF PK>26AND PK<32THEN
PK=PK+64
300 IF K$=CHR$(9)THEN POKE
PP,143:PP=PX+3:POKE PP,PY
310 IF K$=CHR$(94)THEN
PL=PEEK(PP):POKE PP,143:PP=PP-
32:POKE PP,PL
320 GOTO230
330 OG=&H7000
340 IF PEEK(OG+1)=86THEN360
```



```

350 POKE65497,0:FOR A=OG TO OG
+511:READ B:POKEA,B:NEXT:
POKE65496,0
360 IF PEEK(PP)=PV THEN ZZ=PP-
12ELSE IF PEEK(PP)=PY THEN
ZZ=PP+1
370 FOR T=ZZ TO ZZ+7:PK=PEEK(T)
380 IF PK>90THEN PK=PK-64
390 IF PK<27THEN PK=PK+96
400 IF PK>26AND PK<32THEN
PK=PK+64
410 N$=N$+CHR$(PK)
420 NEXT
430 OPEN"I",#1,N$+"/CM3"
440 HSCREEN2
450 EXEC OG
460 ON BRK GOTO 480
470 GOTO 470
480 CLOSE:EXEC OG+2
490 K$=INKEY$:WIDTH32:RGB:
PRINT@232,"ANOTHER? Y/N"
500 K$=INKEY$:IF K$<>"Y"AND
K$<>"N"THEN500
510 IF K$="Y"THEN CLS:GOTO30
520 IF K$="N"THEN CLS:END
530 DATA 32,86,32,74
540 DATA 48
550 DATA 7,7,0,26,195,255,3,0,
5,2,0
560 DATA 0,0,112,7,1,7,0,0,0,0
,0,0,0,0,0,183
570 DATA 255,216,134,60,23,0,
136,15,111,48,141,0,53,188,1,13
580 DATA 39,25,190,1,13,175,141
,0,116,48,141,0,37,191,1,13
590 DATA 48,140,196,175,140,204
,48,8,175,140,210,28,175,57,174,
141
600 DATA 0,91,39,3,191,1,13,57,
141,197,23,0,131,23,0,183
610 DATA 32,189,109,140,170,39,
29,106,140,170,38,24,166
140,150,167
620 DATA 140,162,182,255,190,
190,255,188,191,255,189,246,
255,187,247,255
630 DATA 188,183,255,187,109,
140,137,39,35,106,140,137,38,30,
166 ,141
640 DATA 255,116,167,140,128,
174,141,255,121,166,128,172,
141,255,126,37
650 DATA 4,48,141,255,98,183,
255,186,175,141,255,102,126,0,
0,142
660 DATA 255,164,167,128,76,
167,128,76,167,128,76,167,132,57
,52,18
670 DATA 26,80,134,60,141,233
,183,255,216,28,175,53,146,52,
18,26

```

```

680 DATA 80,166,141,255,47,141
,216,183,255,223,183,255,217
,53,146,57
690 DATA 198,1,215,111,23,0,178
,167,141,0,43,111,141,255,32,206
700 DATA 255,176,198,16,141,23
,51,141,255,11,198,12,141,15,109
,141
710 DATA 0,20,46,219,198,243,23
,0,144,90,38,250,57,23,0,137
720 DATA 167,192,90,38,248,57,
0,111,141,254,252,141,124,77,16,
39
730 DATA 0,118,129,200,35,2,
134,200,167,141,254,234,167,141,
254,225
740 DATA 142,128,0,134,128,167
,141,254,223,167,141,254,220,23,
0,109
750 DATA 23,0,95,51,141,0,131,
49,141,0,149,198,160,109,141,
254
760 DATA 201,43,52,104,196,52,
1,100,141,254,189,36,6,102,
141,254
770 DATA 183,51,65,53,1,37,6,
166,141,254,172,32,28,104,164
,52
780 DATA 1,100,141,254,164,36,
6,102,141,254,158,49,33,53,1,
37
790 DATA 6,166,137,255,96,32,2
,141,16,167,128,167,141,254,
136,90
800 DATA 38,187,106,141,254,128
,38,155,57,23,255,34,189,161
,118,22
810 DATA 255,43,51,141,0,58,230
,141,254,112,42,16,57,141,234
,51
820 DATA 141,0,23,167,141,254,
99,42,1,57,198,20,141,219,167
,192
830 DATA 17,131,127,255,34,3,90
,38,243,57,73,76,69,49,50,56
840 DATA 32,66,73,78,2,0,52,7
,95,0,0,0,0,0,0,0
850 DATA 0,0,0,0,0,0,0,0,0,0,73
,67,79,78,49,67,32
860 DATA 32,66,73,78,2,0,49,0
,139,0,0,0,0,0,0,0

```

GUNGADIN'S UTILITIES

The following programmes are submitted by Ted and Aaron Beamish. They are short ones so they will not take long for you to type in but they are at the same time a couple of handy little utilities. For all you beginners out there, have a go at enhancing these short ones, it is the best way to learn.

Keep em coming fellas they are appreciated by all

```

10 ' #
   #
15 ' # # # # # # # # # # # # # #
   # # # #
20 ' #
   #
25 ' #GOODS &SERVICE TAX
CALCULATOR#
30 ' #
   #
35 ' # -: GUNGADIN SOFTWARE (C)
:- #
40 ' #
   #
45 ' # FEBUARY 1993
   #
50 ' #
   #
55 ' # # # # # # # # # # # # # #
   # # # #
60 ' #
   #
65 '
70 '
80 ON ERR GOTO 100
85 GOTO500
100 WIDTH40:CLS2:RGB:PALETTE1,0
:CLS2
110 LOCATE5,0:ATTR3,3:PRINT" -:
GUNGADIN SOFTWARE (C) :-";:
:RETURN
500 GOSUB100:LOCATE4,2:ATTR3,2
510 PRINT" Goods & Service Tax
Calculator";
520 LOCATE2,4:ATTR1,1:PRINT
"ENTER G.S.T. PERCENTAGE RATE";
:ATTR7,1:INPUTT:LOCATE37,4
:PRINT"%";
530 LOCATE0,6:ATTR3,7
540 PRINT" Amount
ADD
DEDUCT";:LOCATE10,6:PRINT"GST="T"
%";:LOCATE0,7:FORV=7 TO
22:ATTR3,1
550 INPUTG:A=G*T/100:LOCATE11,V:

```

```

ATTR3,3:PRINTUSING"$S####.##";A;
560 LOCATE20,V:ATTR1,1:PRINT
USING"$S####.##";G+A;
570 LOCATE31,V:ATTR4,4:PRINT
USING"$S####.##";G-A;
580 NEXTV:LOCATE6,23:ATTR3,3
:PRINT" Tap <ENTER> to start
again";:INPUTQ:GOTO80

```

```

10 ' *
   *
15 ' * * * * * * * * * * * * * *
   * * * *
20 ' *
   *
25 ' * GUNGADIN SOFTWARE
(C) *
30 ' *
   *
35 ' * METRIC CONVERSIONS
   *
40 ' *
   *
45 ' * MILES = KILOMETRES
   *
50 ' *
   *
55 ' * COPYRIGHT JUNE 1983
   *
60 ' *
   *
65 ' * * * * * * * * * * * * * *
   * * * *
70 ' *
   *
75 '
77 ON ERR GOTO 650
80 GOTO650
100 WIDTH40:CLS2:RGB:PALETTE1,0:
CLS2
110 LOCATE5,0:ATTR3,3:PRINT" -:
GUNGADIN SOFTWARE (C) :-
";:RETURN
650 CLS:CLEAR:GOSUB100:LOCATE2,1
:ATTR1,1:PRINT"Tap <ENTER> for
Miles to Kilometres":LOCATE0,2:
ATTR3,2:PRINT" Kilometres
= Miles ";:FOR
V=3TO23:IF V=23THEN
LOCATE6,23: ATTR1,1:PRINT"Tap
<ENTER> to start again";:INPUT
X:GOTO80
660 ATTR3,1:INPUT K:LOCATE8,V:IF
K=0THEN670ELSE ATTR1,1:A=K*.6214
:PRINT USING".....
#####.##";A:NEXTV:GOTO660
670 CLS:CLEAR:GOSUB100:LOCATE2,1
:ATTR1,1:PRINT"Tap <ENTER> for

```

```

Kilometres to Miles":LOCATE0,2:
ATTR0,4:PRINT" Miles
= Kilometres ";:FOR
V=3TO23:IF V=23THEN LOCATE6,23
:ATTR1,1:PRINT"Tap <ENTER> to
start again";:INPUT X:GOTO80
680 ATTR3,1:INPUT M:LOCATE8,V:
IF M=0THEN650ELSE A=M*1.609344:
ATTR1,1:PRINT
USING".....####.#"; A:
NEXT V:GOTO680

```

```

10 ' *
*
15 '* * * * *
* * * *
20 ' *
*
25 ' * GUNGADIN SOFTWARE (C)
*
30 ' *
*
35 ' * METRIC CONVERSIONS
*
37 ' *
*
40 ' *
*
45 ' * FEET & INCHES = METRES
*
50 ' *
*
55 ' * COPYRIGHT JUNE 1983
*
60 ' *
*
65 '* * * * *
* * * *
70 ' *
*
75 '
77 ON ERR GOTO 600 ELSE 80
80 GOTO600
100 WIDTH40:CLS2:RGB:PALETTE1,0:
CLS2
110 LOCATE5,0:ATTR3,3:PRINT" -:
GUNGADIN SOFTWARE (C) :-
";:RETURN
600 CLS:CLEAR:GOSUB100:LOCATE0,1
:ATTR1,1:PRINT"Tap <ENTER> once
=Feet & Inches -
Metres":LOCATE0,2:ATTR2,5:PRINT"
Metres = Feet &
Inches ";:FOR V=3TO23:IF
V=23THEN LOCATE6,23:ATTR1,1:
PRINT" Tap <ENTER> to start
again";:INPUT X:GOTO80
610 ATTR3,1:INPUTM:ATTR7,1:

```

```

LOCATE10,V:IF M=0THEN
GOTO620ELSE I=M*39.375/12:
W=FIX(I):G=ABS(I)-ABS(W):
F=G*12:PRINT".....";W"";
:ATTR1,1:PRINTUSING"###.##";F;:PRI
NT CHR$(34):NEXT V:GOTO610
620 CLS:CLEAR:GOSUB100:
LOCATE0,1:ATTR1,1:PRINT"Tap
<ENTER> twice=Metres - Feet &
Inches":LOCATE0,2:ATTR0,7:PRINT"
Feet & Inches =
Metres ";:FOR V=3TO23:IF
V=23THEN LOCATE6,23:ATTR1,1:
PRINT" Tap <ENTER> to start
again";:INPUT X:GOTO80
630 ATTR3,1:INPUTA:LOCATE10,V:
ATTR7,1:INPUT B:IF A=0AND
B=0THEN GOTO600ELSE
ATTR1,1:C=A*.3048:D=B*.0254:M=C+D
:LOCATE15,V:PRINTUSING".....
####.####";M:NEXT V:GOTO630

```

```

10 ' *
*
15 '* * * * *
* * * *
20 ' *
*
25 ' * GUNGADIN SOFTWARE (C)
*
30 ' *
*
35 ' * Money Exchange Rates
*
40 ' *
*
45 ' * APRIL 1993
*
50 ' *
*
55 '* * * * *
* * * *
60 ' *
*
65 '
80 ON ERR GOTO 100
85 GOTO700
100 WIDTH40:CLS2:RGB:PALETTE1,0:
CLS2
110 LOCATE5,0:ATTR3,3:PRINT" -:
GUNGADIN SOFTWARE (C) :-
";:RETURN
700 GOSUB100:LOCATE7,2:ATTR3,2:
PRINT" GLOBAL MONEY CONVERSIONS
";
710 ATTR1,1:LOCATE1,3:ATTR3,1:
PRINT"International Currency
Exchange Rates

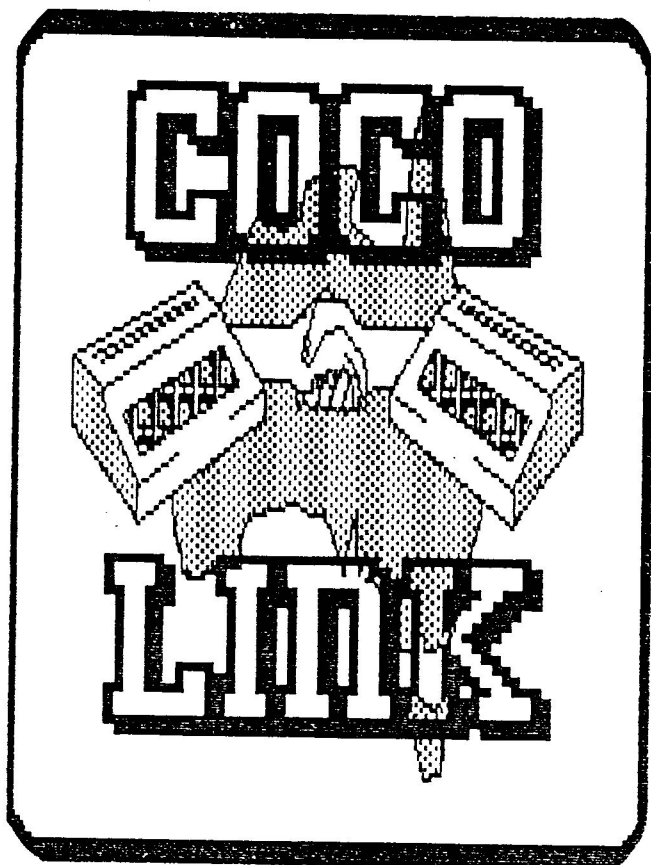
```



```

:PRINT:LOCATE14,4:PRINT"="";:ATTR
,1:INPUT X
20 IF X=0THEN80
30 LOCATE0,5:ATTR2,5:PRINT"
urrency      Buy
uy Back ";:ATTR1,1
40 FOR V=6 TO 23:IF V=23THEN
OCATE6,23:ATTR3,3:PRINT" Tap
ENTER> to start again";:INPUT
:GOTO80
50 INPUT D:ATTR3,1
60 C=D*X:LOCATE10,V:
RINTUSING"#####.#####";C;
70 ATTR7,1
80 E=D/X:LOCATE27,V:
RINTUSING"#####.#####";E;
90 ATTR1,1:NEXT V

```



What do you send to CoCo-Link and how?

Well anything to do with the CoCo or of interest to CoCo users is what we are after, from programs to articles to reviews on your favourite game, word processor or utility. How do you send it, well there are a number of ways.

1. Send it on disk with at least two saves and one of these being in ASCII format. Ensure that you also send a text file using any word processor giving some information about your program etc. If you do not have a word processor then a neatly hand written letter will do, but remember I am not a chemist so it must be legible.

2. Send it using the same system as for a disk but on a tape.

Some of the wordprocessors I have available to me include;
 Window Writer (OS9),
 Simply Better,
 VIP Writer,
 Word Power 3.3
 Max 10,
 Desk Mate 3, and
 Home Publisher.

If you are sending a program please ensure that you have tested it to make sure it works, I simply do not have time to debug your program. If you do NOT wish to have your creation submitted to the Public Domain Library then please let me know, otherwise I will send it on to Robbie for perusal.

ABOVE ALL REMEMBER that without your submissions, this magazine will fold, so help me to help you and send in your creations so that COCO LIVES!

BEGINNING WITH OS-9

BEGINNING WITH OS-9

Discovering what Tandy left out of the box.

Last month, we went on at length about the OS-9 System shipped by Tandy. Lots of dry reading, and the reader is no closer to using OS-9 than before! Well, it's going to happen one more time, while we cover the unofficial part of OS-9 - what Tandy doesn't sell you.

The first thing to check is your manual. There were at least two versions of the Level 2 manual put out by Tandy. They never told anyone, and there were no revision number changes to reflect the new manual. Look in the system commands section and see if the modpatch command has a page. If not, you have a very old level 2 manual, riddled with bugs and omissions. I will send a list of correction, including the missing text, on request.

In the years since Level 2 was released, 'hackers' have diligently attempted to improve every single byte of code in it. Tandy themselves contracted for a upgrade to Level 2, but cancelled the CoCo before it was finished. Due to certain legal problems relating to contracts with large multinational corporations, this upgrade is not yet available. However, work done before or outside the "Official" upgrade is fair game. Most of this work has been placed in the public domain, and is available from a variety of on-line services, bulletin boards, Internet sites, and so on. Those without use of a modem missed out on most of these neat patches previously, but no more!

For a small charge, every patch mentioned here can be obtained on a two disk set called "Patch Os-9". This set is available from either FARNA or CoNect. This set also has an auto-patch utility that will install the patches for you (if you have at least two double sided 40 track drives).

Some of the more common upgrades are listed below. There are many more available, this list merely reflects my personal likes. My main requirement is that everything be compatible, which eliminated some things that would otherwise be included. All of these are included on the "Patch Os-9" disk set. FARNA also has a "Quick Reference Guide" that has short explanations of the standard commands AND the new commands in the disk set. Other items such as system calls and error codes are also in the GRG. It doesn't replace the manuals, but is easier to keep on your desk for a quick refresher on less used commands.

cc3disk: Modifies cc3disk to use any disk type the drive can physically handle. Includes two new commands (PCDOS and RSDOS) to read/write IBM or DECB disks.

clock: The edition9 clocks from Eddie Kins clear up a nasty interrupt problem built into the CoCo3. Formerly, this was fixed with hardware. If you spend much time on your modem, install this!

gshell+: Kent Myers has done a lot of work on the Multi-View system. This package changes everything! There is a shell hot

key, a trash can to delete files or directories, you can double-click shell scripts to run them, enter parameters after double clicking a programme or when it's AIF has? as a parameter, list and print AIF files, and sort directories. The help system has it's own icon, so you can click for help. There are quite a few style changes to make Multi-View look better and all the bugs have been squashed.

grfdrv: known as the "Christmas grfdrv", Kevin Darling's work really speeds up graphic functions. Some screen draw twice as fast!

kernal: Guy Loucks and Bruce Isted teamed up for this one. Allows OS-9 Level 2 to recognise up to 2 megabytes of RAM and accept OSK filenames.

os9p2: There is a bug in OS-9's sleep call which can lock up the machine at times. This is the fix.

rammer: Mr. Darlings RAMdisk. It's size is not fixed, but can be set by the user up to 400K.

rammer.pat: John Wesson fixed rammer to go to 768K (that's 96 tracks!)

rbf: released by Kevin Darling, this is another bit of the infamous Level 2 upgrade. Main claim to fame is the addition of the undelete files on a disk that haven't actually been written over yet. There is also a watchdog system call which alerts a process when somebody else tries to write to a disk drive.

sac1a: advanced serial port driver by Bruce Isted. Hardware flow control, bug fixes. This is the definitive 'stock' serial port driver nowadays.

scf: Another Kevin Darling patch, this allows editing the command line almost as though word processor was connected to the OS-9: prompt. Real handy when doing multiple operations using the same pathlist or filename.

shell+: Ron Lammardo's shell+ fixes a lot of bugs...if that's all it did, it would still be a must have. But wait! You can put shell scripts in CMDS or RAM, so they are always available. Useful prompts include the window #, proc id, std out, working dir, date, or time in the shell prompt. Better runb parameter passing. Command logging can save everything you have typed in to a disk file. Shell variables can store common commands lines (or pieces of them). Wildcards are supported. Redirection can add to or overwrite and existing file if desired. Shells scripts can have logic - IF/THEN/ELSE/ENDIF/GOTO/ONERRGO TO allow some pretty potent shells scripts. Path- lets you name additional CMDS directories besides the main one. Security for multi-user systems is better. User startup files can be placed in any data directory. Some UNIX commands are recognised- cd cx ! all work as well as chd chx and !. There is more, but this is getting pretty long!

In addition to the system level patches described above, there are tons of utilities, far too many to list them all. Some of the more useful ones (all on the "Patch OS-9" disk set):

copy: This version from Mark Griffith is geared to Multi-Vue. Doesn't necessarily need a filename for between disk copies, or pathlists for copies to the same directory. If a file with the same name already exists, an Overwrite? window pops up.

dmode: Kevin Darling took a look at xmode and thought it would be real neat to change disk drive info the way you can change baud rates on the serial port...so he wrote this. Handy when one finds those weird 80 track, single sided drives, or just to use the last 5 tracks on a FD501. Rammer uses this utility to set the RAMdisk size.

free: gives sectors and bytes left. Who cares about blocks anyway?

kdutil: Kevin Darling wrote a collection of neat utilities, all packages together here, *proc* adds the i/o paths to the *procs* output. *DirM* is an OSK style module directory. *MMap* graphically displays free RAM blocks. *PMap* shows what process is using which RAM. *SMap* displays system state RAM used and free. Lastly, *DMem* dumps sections of RAM to a file.

save: Yet another from Kevin Darling. Saves a module in memory as a disk file.

sdump: Marie-Louis Marcoux's screen dump will print the currently visible text window when shift-alt-ctrl is pressed. Ranks right up there with sliced bread.

wmode: Fred Sawtelle figured windows needed their own "mode" command. You can change the window descriptors to default to anything with wmode, and forget about wcreate or display commands.

This is nowhere near a complete list - just stuff I use often. There are many other options out there, but be warned - there is no guarantee any given patch will be compatible with others.

All of the above can be installed at the same time, but be careful when expanding further. Sometimes the solution is to have more than one boot - for example,SCII owners will find that the non-CoCo disk patch and the SCII no-halt drivers conflict. Just make 2 boots - a no-halt OS-9 only version, and one that can write IBM disks.

Getting back to Tandy: Some things can be fixed without additional programmes. The normal way to do this is changing the Operation system in RAM, then using cobbler to make a new boot disk. Cobbler copies what is in RAM to disk, so it saves any changes that have been made. It's fast and easy, but not perfect. The next time a new boot is made from the ground up, all those cobbled changes are lost, and must be re-done. The best plan is to change the RAM, cobbler a new disk, then use save to copy the

modules just changed to the modules directory you make boot disks from. Now the modifications are REALLY permanent.

First, the printer baud rate and serial baud rate can be set using xmode. The most common baud rate codes are 3=1200, 4=2400, 5=4800, 6=9600, and 7=19,200. Use xmode /p baud-# for the serial port. Rename t2.dd and p.dd (in the modules dir) to xx.dd *tandy or something*, and save the modified p and t2 descriptors just made, using the original names. Any future boots will have these changes included.

Wmode and dmode can be used to adjust window and drive stuff in RAM. Some routines as xmode - cobbler to make a permanent change on the current boot, save the descriptors for future boots so it doesn't have to be done again.

The modpatch command also changes modules in memory. What you do is type in a text file listing the changes, then modpatch textfile top install them in RAM. Unless one of the above methods is used to save the changes, this has to be done everytime OS-9 is booted.

Where do you get the text files?
Here are some#

80 COLUMN TERM SCREEN

```

1 term
c 002c 28 50
c 0030 01 02
v
6MS DISK STEP RATE

1 d0
c 14 00 03
v
1 d1
c 14 00 03
v

```

6MS SPEED DURING BOOT

```

1 BOOT
c 00c0 03 00
c 017c 13 10
v
1 059p1
c 05b7 cc 4f
c 05b8 00 5f
c 05b9 02 39
v

```

No overview of patching OS-9 would be complete without mentioning perhaps the biggest patch of all - 6309 native mode! This does require installing a new CPU in your CoCo - an Hitachi 6309E. This CPU adds lots of neat new hardware goodies, like a 32 bit accumulator, additional registers, and some neat new opcodes. It's also a CMOS chip, so it runs cooler and uses less power. The catch is somebody has to desolder the old, and add a socket for the new. Usually, that someone is you. Some computer repair shops will do this although 'bench rates' can run pretty steep. CoNet can also install this chip, however you will be without a CoCo for a few weeks.

With the hardware part done, there are two variations of native mode available, Burke & Burke's Powerboost (\$24.95) and Gale Force's NitroS9 (\$34.50). Both companies also sell a 'kit' version, which includes CPU and socket for do it yourselfers.

Powerboost ads claim an average speedup of 40%, which seems about right when comparing my current boot with the old. Although I haven't seen NitroS9 in action, rumour is it's slightly faster - either one gives you the equivalent of a 3Mhz machine. And that's average! Some operations appear to be 2 to 3 times faster.

tuneport/p -s=116

OK, that's it for now on the Operating System itself. Next issue, we get to the command line, and start putting OS-9 to work. As always, feel free to send questions or comments to me care of this magazine, or by Delphi (RICKULAND), INTERNET (RICKULAND@DELPHI.COM), OR US MAIL (449 S. 90TH, MILWAUKEE, WI 53214

"The preceding article was
 extracted from 'the world of 68
 micros' Aug 93 and is reprinted
 with permission"

The National OS9 User Group is based in Brisbane and caters for those CoCo users who are well into OS9/OSK. They produce a monthly newsletter and have an extensive library for the use of members.

Subscriptions to the magazine are only \$18 per year, (the same as CoCo-Link) and at this price is well worth it if you wish to keep up to date in the world of OS9.

The National OS9 User Group can be contacted by phone or mail as follows:

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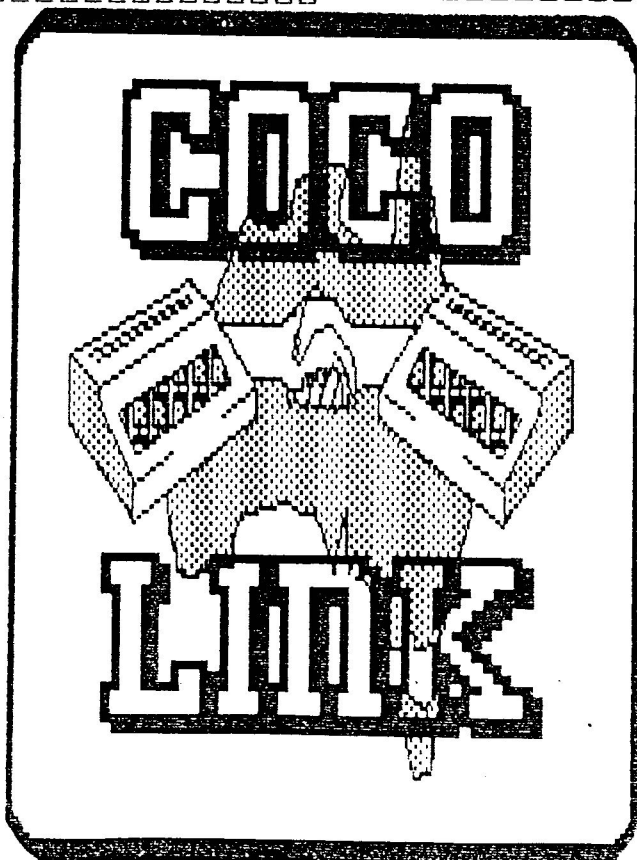
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KEYBOARD ADAPTER - MR PUPPO

KEYBOARD ADAPTER

Years ago, a young electronic tinkerer (Bob Puppo) decided his CoCo would be better off with an IBM style keyboard. The problem was that the CoCo used a ~~wired~~ matrix to communicate keyboard input to the CPU, while the IBM/PC used an intelligent keyboard with a simple serial connection. The serial signals delivered from the PC keyboard had to be decoded then sent to the appropriate connections in the CoCo. The simplest method to accomplish this was to use another microprocessor to do the work, since having the CoCo do all the work would slow it down and require extensive ROM changes.

Bob's first effort used an Intel 8051 microcontroller. This unit has the CPU and ROM all built into a single package. The result worked so well that he decided to market his amazing little device.

He first tried to interest Owl-Ware, who sat on it. When that failed, he decided to market it himself.

The first commercial model used to MC68701 microcontroller, similar to the 8051. After only a handful were sold, Bob's source for low cost MCU's dried up. The circuit was redesigned to use a 6802 CPU and separate 4K(2732) ROM. The majority of the units sold used this configuration.

The keyboard interface was rather expensive at \$100+. After a short while, the market simply dried up.

It has been several years since these interfaces were sold, yet there is an occasional quest to find one or one needs repair. Bob has graciously allowed "68' micros" to print the schematic so that readers can repair broken units or build their own. The ROM code is on this issue's "microdisk"

PARTS LIST:

U1 - MC6802 U2 - 2732/64 EPROM
U3 - 74HCT238 U4 - 4094
U5 - 4013 Q1 - 2N3904
D1 - 1N914 D2 - 1N100A germ x
C1 - 100uf 10V C2,C3 - 5-20pf 10V
C5-C8 - .1uf 10V R1 - 10K
R2 - 1K XTAL1-3.579MHZ
U6-U9 - MC142100
VR1 - 7805T with heat sink
J1 - Connector for CoCo keyboard
J2 - 5 pin DIN socket, IBM/PC keyboard
C4 - .001uf (use only if 4013=squared d)
X02 MUST be germanium!

A board could be wire-wrapped, but that would be quite a chore! A source for bare boards and possibly partial kits will be announced in the next issue. Have to give the supplier time to create a board from scratch and get a few produced first! These WILL NOT be copies of the original board. They will most likely be slightly larger.

Mr. Puppo gives permission to use the schematics for repair or personal building ONLY. Producing for resale is strictly forbidden and would result in infringement on Mr. Puppo's design copyright

"The preceding article was
 extracted from 'the world of 68
 micros' Aug 93 and is reprinted
 with permission"



REVIEW

COCO MAX III - REVIEW

Coco Max III is used to produce 90% of the graphics and titles in this magazine. I find it to be a very user friendly programme.

Unlike Coco Max II this programme is entirely on disk. This means that there is no need for multipak or Y cables. The programme is not protected and instructions are given for backing up your disk in the normal fashion. There is a configuration programme with the disk which allows you to configure the programme to suit your particular printer. Once this has been done it is incorporated into the backup disk which you will use for all your work.

Coco Max III comes with a hardware Hi-res attachment for joystick or mouse and is much better than the one supplied by TANDY. This one is a direct connection to the joystick port whereas the Tandy Hi-res unit uses both the joystick and cassette ports.

The documentation which comes with the programme is adequate but not really outstanding. It is written clearly and explains the various functions of the programme. I did feel that some sort of tutorial exercise would have helped to make it a bit easier to get into the more detailed functions of the programme.

Using the programme is a breeze. The main drawing area has icons for the different functions down the left hand side of the screen. Like all the functions in this programme these are all point and click affairs.

Along the top of the screen are pull down menus. These cover

file systems, editing, options, colours, fonts, font size and font type.

16 colours can be used in each picture. The 16 colour palette is shown across the bottom of the screen. These colours can be changed to suit your picture by using the colour pull down menu and selecting to change the palette.

Pictures are drawn full screen size but as you have all the icons etc. round the screen, part of it is hidden. You have to shift the picture around using the shift (hand) icon. Pictures can also be drawn double size. ie Twice screen size. You indicate this preference from the files menu. These pictures can be viewed in their entirety using the scroll or show page options from the options menu.

The usual drawing tools are there to make it simple to draw lines, squares, circles, boxes, cubes, arcs and all sorts of other things. I could not possibly go into all the various functions without using reams of paper. Suffice it to say that the operation of the various functions is very easy and the drawing capabilities of this programme are only limited by your imagination.

All pictures can be sent to the printer. Pictures are printed in 5 shades ranging from black through 3 shades of grey to white. This is where the colour selection on your palette strip is important. The 5 shades are distributed over the 16 palette colours. By using the change colour option in the Colour menu you can place the colours you wish to use in the positions which will give you the printout shades you require.

Pictures can be printed in normal size or double size. This works out to about full page width. There is also a

double strike option which gives you a nice dark, sharp picture.

With a bit of practice you will be able to turn out some masterpieces, save them to disk for later viewing and print them for wall hanging.

But hang on! That's not all you can do with this programme. It has colour changing properties which allow you to cycle chosen colours at various speeds. You can, for instance, draw a beautiful animated sunset or sunrise using this feature. The animation feature is an extension of the above and can be used to simulate moving pictures. I have not used this feature to date but I am sure that it will function as the book describes it.

When your picture is saved to disk, all these features are saved with it.

There are several utility routines supplied on the master disk which allow you to use your drawing in any programme you write. This can really soup up some of your graphic games. There is also a utility to change COCO MAX II pictures to COCO MAX III format.

I do not think that I need add that I am wrapped in this programme. It is equal to anything I have seen for other computers and not nearly as expensive.

For anyone interested in computer art or illustrating magazines etc., I do not think you can go past this programme. At \$....., believe me, it is money well spent. This programme is capable of giving you thousands of hours of enjoyment.

I wholeheartedly recommend it.

(COCO MAX III is available from REMCOMS, advertised in this magazine for \$55)

.....

PCCC

Peninsular Colour Computer Club

The PCCC is a user group which could argueably be the longest running CoCo user group in Australia. The club has been going strong for 11 years that I know of and is still a plethora of information on the CoCo.

They are based on the Mornington peninsula in Melbourne and can be contacted by phoning :

Greg MacKenzie (059)838 991

Bob Charleston (059)791 922

Barry Eling (059)711 338

Stan Blazejewski (03)580 4605

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RACECAR - by G. ELPHICK

```

1 PMODE4:PCLS1:COLOR2:
SCREEN1,1
2 FOR Z=1TO 85
3 READ A,B,C,D
4 LINE(A,B)-(C,D),PSET
5 NEXT
6
7 DATA 0, 140, 255, 140
8 DATA 95, 129, 95, 110
9 DATA 95, 110, 88, 103
10 DATA 88, 103, 67, 103
11 DATA 67, 103, 60, 110
12 DATA 60, 110, 60, 130
13 DATA 60, 130, 19, 88
14 DATA 94, 129, 170, 129
15 DATA 170, 129, 178, 121
16 DATA 178, 121, 184, 121
17 DATA 184, 121, 184, 111
18 DATA 184, 111, 192, 103
19 DATA 192, 103, 215, 103
20 DATA 215, 103, 222, 109
21 DATA 222, 109, 222, 127
22 DATA 222, 127, 238, 125
23 DATA 238, 125, 243, 120
24 DATA 243, 120, 243, 115
25 DATA 243, 115, 215, 87
26 DATA 215, 87, 199, 87
27 DATA 199, 87, 165, 93
28 DATA 165, 93, 124, 93
29 DATA 124, 93, 123, 77
30 DATA 123, 77, 97, 79
31 DATA 97, 79, 78, 84
32 DATA 78, 84, 19, 88
33 DATA 185, 110, 170, 110
34 DATA 170, 110, 162, 118
35 DATA 162, 118, 95, 118
36 DATA 102, 121, 130, 121
37 DATA 130, 121, 130, 126
38 DATA 130, 126, 102, 126
39 DATA 102, 126, 102, 121
40 DATA 99, 115, 99, 107
41 DATA 99, 107, 90, 98
42 DATA 90, 98, 66, 98
43 DATA 66, 98, 56, 109
44 DATA 56, 109, 56, 126
45 DATA 98, 115, 159, 115
46 DATA 159, 115, 167, 107
47 DATA 167, 107, 184, 107
48 DATA 184, 107, 191, 100
49 DATA 191, 100, 217, 100
50 DATA 217, 100, 226, 109
51 DATA 226, 109, 226, 126
52 DATA 226, 119, 236, 118
53 DATA 236, 118, 241, 113
54 DATA 226, 98, 221, 98
55 DATA 221, 98, 215, 92
56 DATA 215, 92, 217, 89
57 DATA 177, 91, 172, 70
58 DATA 172, 70, 169, 73
59 DATA 169, 73, 170, 93
60 DATA 166, 93, 160, 87
61 DATA 157, 87, 163, 94
62 DATA 155, 91, 163, 83
63 DATA 163, 83, 161, 81
64 DATA 161, 81, 152, 90
65 DATA 152, 90, 155, 92
66 DATA 125, 80, 150, 80
67 DATA 150, 80, 143, 77
68 DATA 135, 82, 139, 84
69 DATA 139, 87, 131, 87
70 DATA 137, 89, 141, 94
71 DATA 101, 92, 101, 83
72 DATA 101, 83, 104, 83
73 DATA 104, 83, 107, 85
74 DATA 107, 85, 104, 85
75 DATA 104, 85, 104, 91
76 DATA 104, 91, 104, 93
77 DATA 104, 93, 101, 93
78 DATA 110, 93, 110, 83
79 DATA 110, 83, 112, 83
80 DATA 112, 83, 114, 86
81 DATA 114, 86, 112, 86
82 DATA 112, 86, 112, 93
83 DATA 112, 93, 110, 93
84 DATA 172, 72, 169, 68
85 DATA 169, 68, 162, 68
86 DATA 162, 68, 162, 73
87 DATA 162, 73, 169, 73
88 DATA 59, 122, 62, 122
89 DATA 89, 122, 95, 122
90 DATA 177, 122, 188, 122
91 DATA 215, 122, 223, 122
93 CIRCLE( 202, 124), 15
94 CIRCLE( 203, 124), 8
95 CIRCLE( 76, 124), 15
96 CIRCLE( 76, 124), 7
97 CIRCLE( 134, 80), 10
98 CIRCLE( 108, 89), 12
99 CIRCLE( 203, 124), 2
100 CIRCLE( 76, 124), 1
101 PAINT( 197, 115),0,2
102 PAINT( 197, 101),0,2
103 PAINT( 69, 122),0,2
104 PAINT( 102, 90),0,2
105 PAINT( 112, 85),0,2
106 PAINT( 132, 77),0,2
107 PAINT( 144, 79),0,2
108 PAINT( 158, 86),0,2
109 PAINT( 155, 89),0,2
110 PAINT( 161, 89),0,2
111 GOTO 111

```

MOTORBIKE - by G. ELPHICK

```

1 PMODE4:PCLS1:COLOR2:
SCREEN1,1
2 FOR Z=1TO 105
3 READ A,B,C,D
4 LINE(A,B)-(C,D),PSET
5 NEXT
7 DATA 123, 191, 145, 142
8 DATA 145, 142, 143, 140
9 DATA 143, 140, 136, 139
10 DATA 136, 139, 134, 141
11 DATA 134, 141, 115, 185
12 DATA 114, 184, 117, 187
13 DATA 117, 187, 124, 191
14 DATA 115, 168, 138, 124
15 DATA 138, 124, 133, 121
16 DATA 133, 121, 110, 163
17 DATA 110, 163, 115, 168
18 DATA 137, 176, 157, 129
19 DATA 157, 129, 162, 132
20 DATA 162, 132, 142, 179
21 DATA 142, 179, 137, 174
22 DATA 159, 138, 155, 134
23 DATA 134, 131, 130, 128
24 DATA 134, 132, 139, 130
25 DATA 139, 130, 149, 135
26 DATA 149, 135, 152, 140
27 DATA 138, 124, 140, 125
28 DATA 140, 125, 145, 119
29 DATA 145, 119, 136, 115
30 DATA 136, 115, 132, 121
31 DATA 160, 123, 157, 129
32 DATA 160, 123, 168, 127
33 DATA 168, 127, 162, 132
34 DATA 142, 117, 148, 111
35 DATA 163, 118, 148, 111
36 DATA 162, 124, 162, 118
37 DATA 162, 119, 181, 126
38 DATA 148, 111, 126, 102
39 DATA 132, 102, 141, 105
40 DATA 141, 105, 141, 101
41 DATA 137, 101, 137, 104
42 DATA 132, 102, 132, 99
43 DATA 132, 99, 134, 97
44 DATA 134, 97, 142, 99
45 DATA 173, 119, 179, 122
46 DATA 179, 122, 179, 119
47 DATA 176, 119, 176, 121
48 DATA 172, 119, 172, 115
49 DATA 172, 115, 174, 113
50 DATA 174, 113, 179, 116
51 DATA 179, 116, 179, 120
52 DATA 173, 114, 169, 98
53 DATA 180, 116, 176, 93
54 DATA 176, 93, 174, 91
55 DATA 174, 91, 156, 85
56 DATA 156, 85, 135, 98
57 DATA 142, 99, 156, 94
59 DATA 126, 102, 128, 100
60 DATA 128, 100, 173, 118
61 DATA 179, 122, 183, 124
62 DATA 183, 124, 180, 126
63 DATA 165, 116, 171, 104
64 DATA 143, 109, 124, 121
65 DATA 124, 121, 112, 144
66 DATA 112, 144, 106, 146
67 DATA 106, 146, 103, 149
68 DATA 103, 149, 114, 153
69 DATA 170, 151, 164, 130
70 DATA 170, 151, 170, 165
71 DATA 170, 165, 171, 167
72 DATA 171, 167, 171, 172
73 DATA 171, 172, 159, 172
74 DATA 159, 172, 161, 168
75 DATA 161, 168, 162, 168
76 DATA 162, 168, 163, 153
77 DATA 163, 153, 159, 139
78 DATA 136, 163, 143, 166
79 DATA 140, 170, 135, 165
80 DATA 121, 159, 125, 161
81 DATA 127, 158, 122, 156
82 DATA 161, 87, 158, 80
83 DATA 158, 80, 161, 71
84 DATA 161, 71, 165, 67
85 DATA 165, 67, 177, 70
86 DATA 177, 70, 179, 75
87 DATA 179, 75, 174, 84
88 DATA 174, 84, 169, 89
89 DATA 166, 81, 164, 77
90 DATA 164, 77, 163, 76
91 DATA 163, 76, 166, 73
92 DATA 166, 73, 174, 76
93 DATA 174, 76, 172, 80
94 DATA 172, 80, 165, 81
95 DATA 163, 82, 170, 85
96 DATA 156, 111, 166, 92
97 DATA 114, 143, 119, 147
98 DATA 161, 168, 170, 165
99 DATA 148, 166, 153, 169
100 DATA 153, 169, 152, 172
101 DATA 152, 172, 146, 170
102 DATA 172, 122, 172, 126
103 DATA 172, 126, 179, 130
104 DATA 137, 107, 137, 110
105 DATA 137, 110, 126, 106
106 DATA 0, 191, 255, 191
107 DATA 255, 106, 179, 106
108 DATA 137, 106, 0, 106
109 DATA 0, 191, 0, 16
110 DATA 0, 16, 255, 16
111 DATA 255, 16, 255, 191
113 PAINT( 139, 151),0,2
114 PAINT( 113, 150),0,2
115 PAINT( 167, 168),0,2
116 GOTO 116

```

CoCo3 - HINTS & TIPS

COCO 3 HINTS AND TIPS

1) The PALETTE CMP default values occupy memory locations from \$E654 to \$E663. Default values for PALETTE RGB are in locations \$E664 to \$E673 and the present PALETTE values are in locations \$E678 to \$E687. You can customise two color sets by poking respective values in the PALETTE CMP and PALETTE RGB ranges and then switching between them with one command. You can then PEEK the present PALETTE values to find out what color is in what slot.

2) There is a problem with the CLEAR statement on the COCO 3. If you should CLEAR 17000 while in the Hi-res modes the programme will crash and lock up. A CLEAR statement below about 16300 seems to work alright.

This is caused principally by the fact that Super Extended Basic is a patch job and the 8K was patched into an area between \$0000 and \$7FFF.

The solution seems to be to PCLEAR space below 3FFF and place your Coco3 M/L in memory starting at \$600 for cassette or \$E00 for disk.

If you have a programme which uses a vast amount of string space it may be better to save the strings in a random access file. This may be a bit slow. It is said that none of these problems occur if you use OS9.

3) Some programmes which work on a 128K machine will not work on a 512K machine. Again this problem does not occur under OS9 but will under RS-DOS. This is a fault of the programmer who has not carried out the rules as laid down by TANDY.

4) If your Coco 3 causes your printer to stutter at high baud rates try increasing the line delay. The memory locations you should use are 151 and 152. just enter POKE151,x:POKE152,y where x and y are from the following table:

X	Y	LINE DELAY
64	0	.288 secs
128	0	.576 secs
255	255	1.15 secs

Other values should work as well.

5) Here are some addresses which may be of interest. These are the entry points of the indicated routines. You should be able to do a bit of experimenting with EDTASM+.

ADDRESS	FUNCTION
\$F636	WIDTH
\$E688	HSCREEN
\$E6CF	HCLS
\$E5F0	PALETTE
\$E545	LPOKE
\$E6F4	HCOLOR

6) This fix is said will work in most cases to interface COCOMAX with COCO 3. LOADM"COCOMAX/SYS":SAVEM"COCOMAX/SYS",&HE00,&H18F0,0

There may be a possible need for an upgrade to be done on your Controller or Multipak.

7) To make ADOS, BDOS or GDOS compatible with COCO 3 just make a small boot programme consisting of:

```
10 POKE &H13E,0:POKE &H143,0
20 END
```


Your DOS will automatically read this and you will then be able to use the Hi-res screens. I have been using this for a while and so far have not had any problems with my GDOS.

8) Here are a couple of commands to give you black and white (buff) text screens:

WIDTH 32 MODE

a) PALETTE 12,0:PALETTE 13,63:CLS

This gives black text on a white background with a black border.

b) PALETTE 12,63:PALETTE 13,0:CLS

White letters on an all black screen.

WIDTH 40/80 MODE0

c) PALETTE 0,0:PALETTE 8,63:CLS1

White letters on all black screen.

d) PALETTE 0,63:PALETTE 8,0:CLS5

black letters on all white screen.

9) The ON BRK GOTO (line number) statement on Coco 3 must occur later in the programme than the CLEAR statements. This is because BASIC, presumably, stores the line number indicated in the variable storage section of memory to be called back and acted upon when the BREAK key is pressed. This area of memory is wiped clean by the CLEAR statement.

10) The "B" choice on the ATTR command makes the text following flash. eg ATTR0,0,B -

Black text on green background, text flashing.
To stop any following text from flashing, this includes listing, you must insert a ATTR0,0.

11) The TAB(n) function on WIDTH80 is of an additive nature. eg Normal usage is:
PRINT
TAB(10);"A";TAB(20);"B" - this would print an "A" 10 columns in from the left and a "B" 20 columns in from the side on the same line.

Given the same line the Coco 3 would put an "A" 10 columns in from the left and a "B" an additional 20 columns after the "A". ie "B" would be 31 columns in from the left on the same line.

It is more tedious to use the LOCATE function on the Coco 3 but definitely safer.

12) There is a very interesting article called "COCO 3 REVEALED" on page 34 of the July edition of COCO magazine. This presents some very useful information and ideas.

13) If a programme returns to previous lines and reruns a HBUFF command, this will give an error as the programme sees it as an attempt to redimension the HBUFF.

Always put HBUFF and other dimensions at the beginning of your programme. Do not include them in returns to start of programme.

14) The following one-liner can

```

get you an extra 2K of memory
for use with BASIC.
10 WIDTH40:FOR X=&H03B6 TO
&H03BD:READ A$:
POKE X,VAL("&H"+A$):NEXT:DATA
CC,04,01,
1F,02,7E,96,A5:EXEC &H03B6:NEW

```

You can change to and from 40 and 80 column screens after running this programme but MUST NOT return to 32 column screen or the computer will crash.

MEMory response after running should be 31528.

```

*****
*****

```

15) You can change the colours of your 32 X 16 text screen by using the PALETTE command eg. PALETTE12,63:PALETTE13,0

This would give you a white script on a black background.

PALETTE12,n controls the color of the script.
PALETTE13,n controls the background color.

```

*****
*****

```

16) Programmes such as WORDSTAR are now becoming available in the US under OS9. Maybe they'll get here eventually.

```

*****
*****

```

17) This short programme will show you some POKES to give you different WIDTH 32 screens.

```

10 FORXX=0 TO 88 STEP 8
20 POKE359,57:POKE65314,XX
30 CLS:PRINT:PRINT"
POKE359,57:POKE65314,";XX
40 FORX=1 TO 2000
50 NEXT

```

```

*****
*****

```

18) The HSCREEN command automatically executes a HCLS. This means that your hi-res drawing has to be drawn each

time you wish it to appear on screen. One way to overcome this problem is to:

```

POKE &HE6C6,18:POKE &HE6C7,18

```

This bypasses the HCLS.

```

*****
*****

```

19) The ERLIN function will return a negative number if the line number in which the error occurred is greater than 32767. This is caused by the fact that the ERLIN function returns the line number as a two byte integer instead of a floating point number as it should.

```

*****
*****

```

20) Here is a handy fix for those who wish to use OS9 with the Coco 3:

```

10 CLEAR500
20 DSKI$0,34,1,A$,B$
30 V=VARPTR(A$)
40 P=PEEK(V+2)*256+PEEK(V+3)
50 POKE P+&H49,&HEF
60 POKE P+&H54,&HEF
70 DSKO$ 0,34,1,A$,B$

```

```

*****
*****

```

21) Any BASIC programme with DISK BASIC commands must be listed out with DISK BASIC installed. If you try to list the programme without it the computer will hang up.

ie. The programme will load a line like:

```

10 KILL"TEMP/DAT"

```

into the system that does not have DISK BASIC installed. The programme will even run it and return an ? SN ERROR IN LINE 10. However, when the line is listed the computer will hang up.

```

*****
*****

```

22) Problems such as complete loss of programme can be caused when Extended Basic and Super

BITBANG

BITBANG

Use the CoCo's built in serial port under OS-9!

The History of Bitbang

A long time ago in a galaxy far far away there was a college student who had a computer. Of course, it was a Tandy Colour Computer, a really nifty 64K D-board CoCo-1 which was black because he removed the ugly grey paint with paint thinner.

This college student was very excited! He had just gotten his first disk drive! The drive cost as much as the whole computer had. He also had a copy of OS-9 level 1 and was enthusiastically playing with it. "I know it is a multi-user system," he said, "but I can't prove this to anybody unless I can run a terminal off the serial port. Alas, if only I had enough money for a Multi-Pak and RS-232 pak; but I am just a poor college student, working part-time to feed myself...!

That's how it began. The first version of bitbang was for level 1; I had it working reliably at 9600 baud using an old Lear-Sigler ADM3A "dumb" terminal. It used a jumper in the serial cable to provide a FIRQ interrupt and when the driver got the interrupt it timed the rest of the serial data bits. It was also really only "half duplex" since it wouldn't detect incoming data if it was in the middle of transmitting data.

In 1985 there were no terminal programmes for OS-9 so I just toyed with the multi-user facet.

I easily impressed a friend who owned an Apple II (remember those?) by hooking it up as a data terminal to my CoCo1.

In 1987 I got a CoCo3 with 128K. The old Level 1 bitbang driver wouldn't work. Every time data came in, the screen exploded into a colourful lockup. What was wrong? Well, as it turned out OS-9 Level 2 didn't like the FIRQ very much; it was totally unsupported. I never really got it working. It would receive a few characters and then lock up; I had to give up temporarily and return to my studies.

I graduated in 1988 with a BSEE and an additional major in Computer Science. Since I was on a Naval ROTC scholarship I was commissioned as an Ensign, USN and sent off to Nuclear Power School in Orlando, FL.

Finally I completed my "nuke" training and was sent to Surface Warfare Officer's School in San Diego, CA. Compared to nuke school this was a six month vacation; I had plenty of time to start chasing the FIRQ bug.

What I found was that sometimes the FIRQ came through the PIA as a FIRQ, and at other times it was mapped by the GIME as an IRQ. Additionally, because page flipping and other things had to be done prior to jumping to the interrupt routine (because the system memory map is different from a given process's) I couldn't "cheat" and jump directly to the driver. I had to use OS-9's built in interrupt vectoring routines.

This would slow the interrupt and add in a large random factor on the response time, so operation above 1200 baud was not feasible.

I got around the FIRQ/IRQ problem by writing a patch to the kernel so that FIRQ's are treated as IRQ's (by stacking all the registers in the proper order). Since I didn't have a good disassembler at the time, I had the bitbang driver kludge some code onto the end of OS-9P1." This caused a weird bug that I didn't notice until a year later; sometimes every sixteenth character read by I\$read would be wrong, but I\$readln would work OK. Since I didn't know how to fix that bug and it took so many man-hours to get the driver working in the first place, I just put a caveat in the docs and left it at that.

The first BBS I called with bitbang was the Ocean Beach BBS in Ocean Beach, CA. I had some trouble downloading so I went back into bitbang. I expanded the receiver buffer to 2K and had it wait a few milliseconds after a byte was received to see if more was coming. That fixed the problem, so I uploaded the first version in October, 1989.

The weird bug and the kludge patch have always bothered me. I was at sea for most (75%) of 1990, 1991, and 1992 onboard the USS TRUXTUN (CGN-35). We were homeported in Bremerton, WA (a 1 hour ferry ride from Seattle). I had my computer set up in my stateroom but because I had no outside phone lines I didn't use bitbang, plus I was nearly as busy as when I was in nuke school. Work weeks run to 100 hours when

the ship is underway, plus you stand watch for 5 hours a day on a rotating basis. In port you stand 1 duty day every three and you're on the ship overnight on duty days.

I transferred off of TRUXTUN in February 1993 to my present duty station in Green Bay, WI where I train sailors at a nearby shipyard. This is shore duty so it's pretty laid back - 8 or 9 hours a day, weekends off, and occasionally half of Friday off. So once again I had the time to chase bugs on bitbang.

This time I disassembled all of OS-9P1 and found where to put the patch. After a little experimentation I got it right and uploaded it to Delphi. Somebody pointed out that there was also a patch to OS-9P1 that allowed OSK type file names, so I verified that my patch was compatible and re-wrote the docs.

So there it is, the complete history of the bitbang driver. Initially it was motivated by economics, then later by the desire to avoid having a multi-pak mess on my computer desk. It ain't pretty, but it does work.

Using Bitbang

BITBANG runs the CoCo3 bit-banger serial port at 1200 baud under OS-9 Level II. If you have a telecom programme, you can use XMODEM/YMODEM to download or upload files. It should even work with an external terminal (multi-user operations). Multi-tasking should be kept to a minimum while using bitbang, as the bit-banger port requires a good deal of processor overhead and will slow operations down considerably.

Installation

The distribution file should contain the following:

bitbang.doc - this file
bitbang.src - assembler source for bitbang
bitbang.dr - the assembled driver
newt1.src - assembler source for the new t1 device descriptor
newt1.dd - assembled newt1
newt2.src - assembler source for the newt2 device descriptor
newt2.dd - assembled newt2
maknewpl - programme to install patch on OS-9P1

Source files and assembled code is available on microdisk or from the author (see sidebar).

There is a patch to the kernel that must first be installed. This changes the interrupt handling routined in OS-9P1 to properly deal with FIRQ's (it re-maps them as IRQ's). Previously any FIRQ would cause a system crash. Even if you aren't going to use the bitbang driver this patch is a good thing to install for system stability purposes. The patch is installed "hot" - in memory while the system is running. This will not cause any problems as long as all disk access has ceased prior to installation; disk accesses cause NMIs which could cause OS-9P1 to be entered in the middle of the patch process.

There are two versions of OS-9P1 out there: the original and one that has been patched to recognise 68000 type file names. There indents are:

Original

Header for: OS-9P1
Module size: \$0ED9 #3801
Module CRC: \$969A94
(good)
Hdr parity: \$27
Edition: \$10 #16
Ty/La At/Rv: \$C0 \$88

System mod, Data, re-en, R/O

68000 type file name patch

Header for: OS-9P1
Module size: \$0ED9 #3801
Module CRC: \$C21516
(good)
Hdr parity: \$27
Edition: \$10 #16
Ty/La At/Rv: \$C0 \$88

System mod, Data, re-en, R/O

The patch can be installed on either. To install the patch, ensure the execution attributes are set on "maknewpl" (attr maknewpl epe). Copy maknewpl into your current commands directory and load it into memory. After it is loaded and the disk drive light is out, install the patch by typing "maknewpl". The patch is now installed; you can use "indent -m os9p1" to check the results.

Original + FIRQ patch

Header for: OS-9p1
Module size: \$0EDA #3802
Module CRC: \$BB8E84
(good)
Hdr parity: \$25
Edition: \$13 #19
Ty/La At/Rv: \$C0 \$89

System mod, Data, re-en, R/O

68000 filenames + FIRQ patch

Header for: OS-9p1
Module size: \$0EDA #3802
Module CRC: \$B4250D
(good)
Hdr parity: \$25
Edition: \$13 #19
Ty/La At/Rv: \$C0 \$89

System mod, Data, re-en, R/O

The new OS-9P1 can be placed on your boot disk using COBBLER.

The best way to install the driver so that you can use it is to make a new boot disk. Copy `bitbang.dr.newt1.dd` and `newt2.dd` into the modules directory of your config disk and run `config` and make a new boot disk. The kernel patch will automatically be placed on your new boot disk by `os9gen`.

If you do not wish to generate a new boot disk, use `cobbler` to add the patch to the current boot disk, merge `bitbang`, `newt1` & `newt2` together and load them in the startup file like this: `load foo;inizt1;inizt2`. The `t1` and `t2` descriptors are identical except for name. `T1` is the traditional name for the bitbang port, but some telecommunications software is coded to look for descriptor called `t2`, which is normally the `ACIAPAK`. Both are included so you can use the bitbanger port as either `t1` or `t2`. If you are using an RS-232 pak you should not use `newt2.dd`, as `t2` is normally the RS-232 pak. Use the `t2` descriptor designed for whatever RS-232 pak driver you've got.

A minor modification to the 4 pin DIN connector on the serial cable coming into the computer is required: open the connector, remove the wire going to pin 1, then put a jumper between pins 1 and 2. This provides a `FIRQ` interrupt for incoming serial data.

Programme Description

The source code files are well commented, but the methods may seem obscure. The whole thing is based on using software timing

loops to read the individual bits of serial data at the right times. The write routine checks for incoming data while writing. If it sees a start bit coming in, it branches to a "duplex" routine that continues to transmit the current byte AND read the incoming data. At other times, incoming data causes a `FIRQ`, which is converted into an `IRQ` by a small patch to the kernel. The `FIRQ` hand routine then reads the data bits, assembles them into a byte and stores them in a buffer. The buffer is 4K long. Immediately after reading a byte of incoming data, if at 1200 baud, a special "chain delay" routine is executed to look for another byte of data close on the heels of the previous byte. This condition occurs in `Xmodem`, `Ymodem`, and anytime system response time to `FIRQ` is too long to catch bytes too close together.

Using the Programme

For the most part operation is transparent. The user will notice (especially at 1200 baud) "jerky" screen response. Due to the large amount of CPU time spent in timing loops, the computer slows down A LOT when data is coming in. When the incoming data pauses for awhile, the terminal programme will read all of the data from the input buffer very quickly and the screen will suddenly display the data. The input buffer is 4K long - over two pages of text or 16 `Xmodem` blocks - so it shouldn't overflow.

If the buffer does fill up, incoming characters are ignored. If possible, the user should set the host system to prompt for an input after each page of data is displayed.

For downloading or uploading, best results are usually obtained using the old "Xmodem" method; Xmodem-1K, Ymodem & Zmodem will usually require disk access in the middle of a block, which will cause a non-maskable interrupt (NMI). This really screws up the timing loops in bitbang and will cause aborted or timed out downloads. If you have a hard disk, RAM disk or a no-halt floppy controller you maybe able to use XMODEM-1K or YMODEM since those devices don't cause the NMI. Experimentation will show the best method; old Xmodem always works (well almost...).

For programmers, the following is a list of getstt/setstt calls that are recognised by the driver.

```

getstt:
ss.ready - responds with not
           ready error if buffer
           empty #bytes in
           buffer (if < 256)
255 if > = 256 bytes in buffer
ss.eof - never returns eof
          condition
ss.scsiz - rows and columns
           from device
           descriptor
ss.comst - port status (baud,
           parity, etc)
setstt:
ss.comst - sets new bauds,
           parity etc
$29 - Re-initialise the port
       and buffer

```

oooooooooooooooooooooooooooo

"The preceding article was extracted from 'the world of 68 micros' Aug 93 and is reprinted with permission".

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COMPETITION

For all those programmers out there, don't forget the competition we are running. Closing date is 15 December 93.

For all those who have just started subscribing, the competition is divided into three (3) categories - graphics, applications and games. The winner in each category will get the opportunity to make a dollar from their creation, as the winning entry in each category will be marketed by REMCOMS both here and in the United States.

The rules for the competition are very simple;

1. entries in each category must be original and must not breach any laws of copyright,
2. by entering the competition authors give copyright to REMCOMS and CoCo-Link.
3. all entries must clearly state the minimum CoCo configuration requirement, i.e. CoCo3, 128K, and
4. the judges decision is final.

All entries should be sent to this magazine on either disk or tape in the following manner;

1. two copies on the tape/disk each of which execute without bugs,
2. all programmes should have two copies of the source code;
3. include a text file with a description of the programme in ASCII format, and
4. mark all entries "FOR COCO-LINK COMPETITION" and the category.

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Manuals

Introducing Your Colour Computer 2
Getting started with colour basic
Getting started with EXT colour basic
Colour computer disk system
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CoCo2 quick reference card
CoCo2 Ext Basic quick ref card
DMP 105 Operation manual

MAGAZINES

CoCo Link:

Dec86, Jun 90, Aug 90, Oct 90, Dec 90
Feb 91, Apr 91, Jun 91

Softgold:

Apr-Sept 87, Nov 87 - Jan 88, May88

Rainbow:

Sept/Oct 85, Dec 85 - Feb 86, Apr86
Sept - Dec 86, Feb 87

Aust CoCo:

Sept - Dec 85, Mar 86, May 86,
Nov 86, Feb - Sept 87, Nov87 -
Jul88, Jun/Jul 88, Sept 88

Programmes

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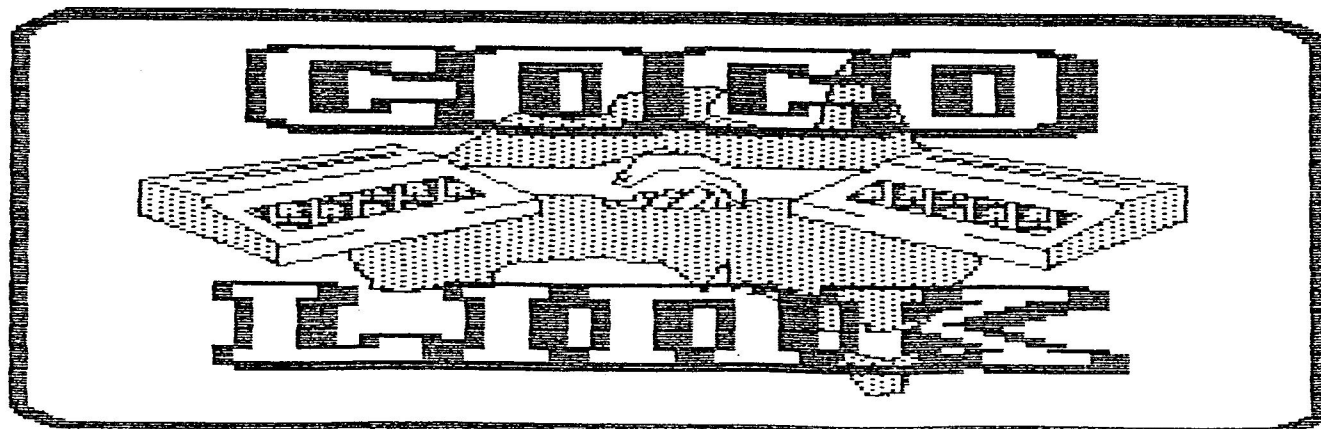
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=====

This issue sees the addition of 3 new disks to the library. These disks cover three entirely separate subjects. ie Business, Graphics and Games.

APPLICATIONS DISK 036 BUSINESS

=====

On this disk are gathered a compendium of programmes for the business orientated. They cover a wide range of areas from receipts and invoices to help in writing a personal resume. There are programmes to help the small builder or do-it-yourselfer calculate the cost and materials needed for small building projects such as room extensions. Bricks, mortar and beams etc. can be calculated.

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LABOUR	METCONV	RECEIPT
REPTGENR	RESUME	STOCKS
TIMES	WF-DOC	WORDSCAR

GAMES DISK 019 GAMES PACK 5

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This disk contains 18 Basic games. You will surely find something to amuse you from:

GRAPHICS DISK 049

=====

GFX CARTOON/CHARACTERS

=====

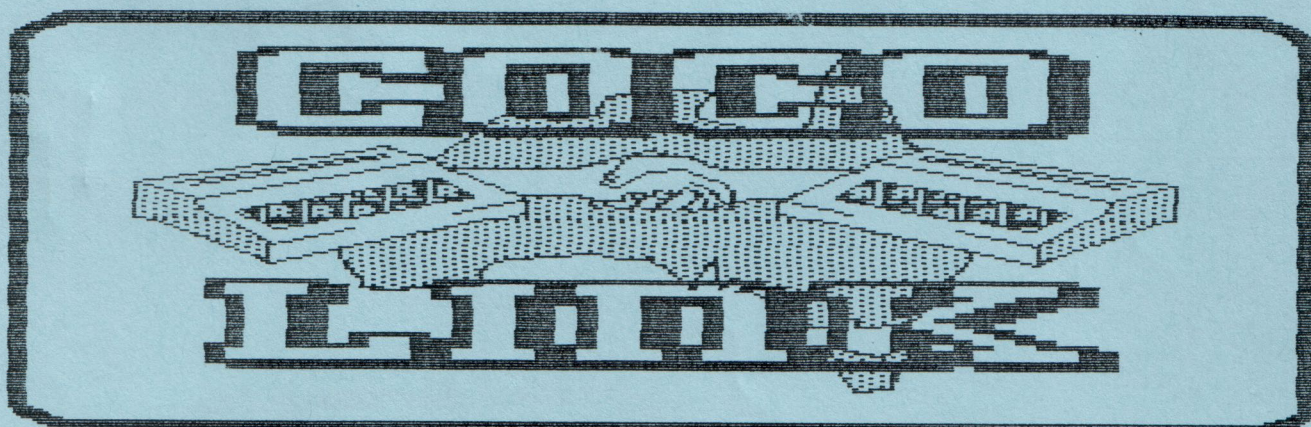
This is the second of our MAC graphic picture disks. Again there are two sides of pictures to view. These are:

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 inclusion.

Do you know of the existence of a user group in your area or are you considering
 starting one up again? Let me know the details including the contact names and
 phone numbers, meeting place, times etc, and I will print it in this magazine.

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