February 1990 Vol 3. No.1

COCO LINK

The Color Computer Magazine

Featuring:

Coco 3 Hints and Tips

Winners Part 3

Bearings

BLAXLAND COMPUTERS

Yes, Tandy have indeed done the deed and stopped carrying the CoCo series of computers. A sad day for all, but not the end of the world. For as long as it remains a viable proposition, Blaxland Computers intends to continue to support the CoCo user by importing software and hardware from the U.S.A.

Naturally, we will not always have exactly what you want in stock, but if we can get it for you we most certainly will. Please do not hesitate to telephone us or to write a letter explaining your problem. If we can help, we will. If we cannot help, we will endeavour to locate someone who can.

To give you some idea of the type of programmes which we are carrying, the following is a list of some of the software currently in stock. Note that supplies of each are limited, but that most can be obtained on your behalf should stock be sold out before you enquire.

SOFTWARE

MAX 10	$160.00
COCO MAX III	$135.00
WORD POWER 3.2	$159.95
VIP LIBRARY II & III	$119.95
WARGAME DESIGNER	$59.95
SIDEWISE	$33.95
LEISURE SUIT LARRY IN THE LAND OF THE LOUNGE LIZARD	$79.95
IN QUEST OF THE STAR LORD	$69.95
HINT SHEET for IQOTSL	$9.95
GANTLET II	$59.95
FORTH09	$295.00
PINBALL FACTORY	$72.95
SCREEN DUMP (GEMINI & EPSON)	$39.95
FONT DISC FOR MAX 10 (SET OF 2)	$59.95
FONT DISC FOR COCOMAX3 (SET 4)	$99.95
TW80 - USE TELEWRITER 64 WITH THE COCO III	$39.95
THE NEWSPAPER DESIGN SYSTEM	$99.95
WIZ (OS9 TERMINAL PROGRAMME)	$160.00
PRESTO PARTNER (USE UNDER OS9)	$49.95
BASIC FREEDOM	$39.95
COCO CHECKER (DIAGNOSTICS)	$39.95
A-DOS 3	$69.95
SPEED RACER	$69.95
ROMMEL 3D	$69.95
KUNG-FU-DUDE	$49.95
FURY	$59.95
OUTHOUSE	$39.95

ALSO FULL RANGE OF COMPUTER HUT PROGRAMMES AVAILABLE.

SERIAL TO PARALLEL INTERFACE

INCLUDES SWITCH TO ENABLE SERIAL OR PARALLEL TO BE ACTIVE

Been considering using a parallel printer on the computer, but the parallel interface has been the problem? Then here is the solution. Plug in the serial/parallel interface and you are in business. The unit includes a switch and socket so that there is no need to unplug everything should you decide to use the modem or some other serial device. Flick the switch and your serial output is redirected to the proper device.

OUR PRICE - JUST 129.00

Where are we?

134 Great Western Highway, BLAXLAND

Write to us at:

P.O.Box 125 BLAXLAND 2774

Telephone us on:

047 393903 **'Fax' us, same number**

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COCO LINK

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Robbies Column

COCO-LINK ANNIVERSARY

This edition of COCO-LINK marks the start of our second year of publication. I feel a certain amount of pleasure at the success attained during our first year. We have improved the magazine to a point where we feel it is as near professional standard as can be expected. Garry and I have now worked out a sort of system whereby we get through the work of setting up the magazine without too much hassle.

I, of course, propound these words of praise from a position of extreme bias. I only hope that some of you out there agree with them.

Our success this first year has been due to more than just the actions of Garry and myself. There has been a fair amount of input from many of you in the form of programmes and articles as well as some constructive criticism and advice.

To continue to be successful in the future we depend on you to keep sending us any material you have that you feel would be of interest to other readers

Happy Birthday COCO-LINK!!!

****

SUBSCRIPTIONS

As you will all be aware we have had to increase the subscription rate from $12.00 PA to $14.00 PA. This is in part to help finance means of increasing our subscription numbers.

We have embarked on several projects for doing this. One is to canvas all Tandy stores by mail to try and get their co-operation in referring Coco enquiries to COCO-LINK. This will be an expensive and long campaign but hopefully will yield results.....Before anyone asks.....NO! Intertan Australia are not willing to assist us in any way to accomplish this project.

We will also be putting Classified advertisements in selected newspapers.

We hope, by these methods, to inform more Coco owners of our existence and the service we can provide for them. In this way we can slow down the rate of defections to Amiga and IBM compatibles caused by the rejection of the Color Computer by Intertan Australia.

All readers can help by passing the membership form in this magazine on to another Coco owner. You can also inform your local Tandy store manager of our existence.

The following is the transcript of the letter we will be sending out to Tandy store managers over the next few months. If you would like copies of this letter to distribute to your local Tandy stores, please let us know and we will be happy to provide them.

****

TANDY STORE LETTER

Dear sir or Madam,

Intertan Australia has discontinued the sale of the Color Computer in Australia. Although they will continue to support it to some degree, I am sure that you, as manager of a Tandy store, will find some difficulty in satisfying queries from Color Computer owners.

You can save yourself a lot of bother and at the same time do your customers a service by passing them on to COCO-LINK. COCO-LINK magazine is published in Australia exclusively for Color Computer owners and provides them with information and help with their Coco problems. We are, incidentally, the only publication in Australia solely devoted to a Tandy product.

Could you please display the accompanying flier in the Computer section of your store or, if that is not possible, keep it handy to show enquiring Color Computer owners

Thank you.

****

HOLIDAYS

This issue of COCO-LINK has been turned out during the traditional holiday period. I am sure that you will be able to pick up some overlooked mistakes but I hope that you will dismiss them under the circumstances. My wife insists that we must have COCO-LINKless holidays.

We will resume our normal immaculate format next issue.

I hope that you have had or will have a nice holiday period and if driving long distances do so in safety.

****

FUTURE ISSUES

I have been having some thoughts about things that COCO-LINK could promote during our second year of publication.

I would like to see some programmes, articles or suggestions relating to means to assist our more unfortunate friends, the blind and invalided people.

How about some graphics on road safety themes? Given a big enough response we could maybe turn them into a competition.

Other possibilities for the coming year are:

1) A Stock Market programme for Coco 3

2) A series of articles on Assembly for the Coco 3.
3) A series of articles on hardware fixes to make your Coco do some chores about the house.
So you can see that 1990 can be an exciting year for COCO-LINK readers.

****

NEWS ITEMS
People like to know what is happening in the world around them. This is particularly so of computer users. We may never aspire to some of the technological innovations or be able to afford to think of owning them but it is still good to know where the higher echelons of our computing hobby are headed. You never know, some of the marvelous ideas in software and hardware being produced today will possibly be used by hobbyists like you and me in the next few years. Such is progress!

****

WHAT WILL BANKS GET INTO NEXT!
I get all sorts of mail from my bank encouraging me to buy all sorts of items through them. These range from insurance to leather wallets and perfume. Not to mention encouraging me to take out more loans which I can't afford to repay. (You would think that they would have learned something from getting their fingers burned from the Skase's and Bond's).
Here is the latest in bank retailing. The National Australia Bank is now getting into the computer software business!
They market a programme called PAYPARTNERS designed for businesses with up to 100 employees. This is a payroll programme and calculates all the usual deductions. (I wonder if that includes bank interest rates?).
At $1100 plus $150 annual maintainance fee it is not cheap. Thank goodness it only works on IBM and compatibles.
Remember when banks were places that you deposited and withdrew money? I think we called that the 'good old days'.

****

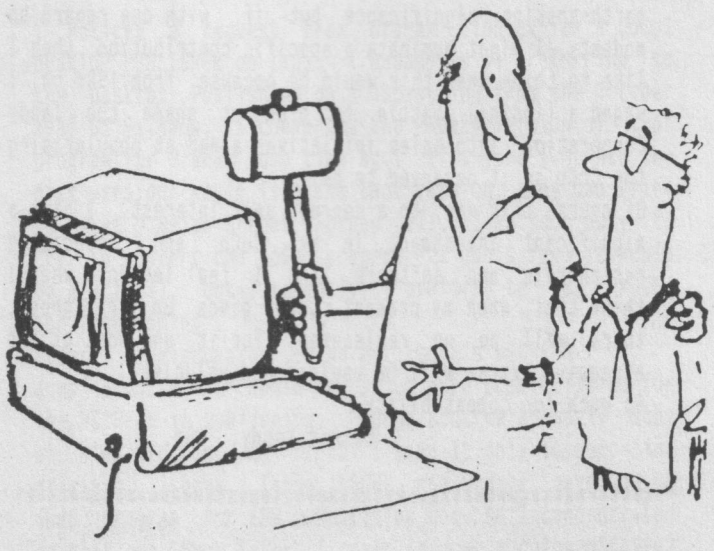
MEGABYTES OF KNOWLEDGE
They have now succeeded in putting the Encyclopedia Britannica on disk.....all 26 volumes of it!
It is on a new Compact Disk system which has more than 600 megabytes of memory.
This disk of of the complete Britannica includes 15000 illustrations and a 9 million word data base. It also has maps, charts, some animated. There is the music of the great composers, bird and animal calls and all kinds of woderful things.
The encyclopedia will become available in the US - to those with the CD-ROM Disk System - for about $US895.
Cheap at the price.

****

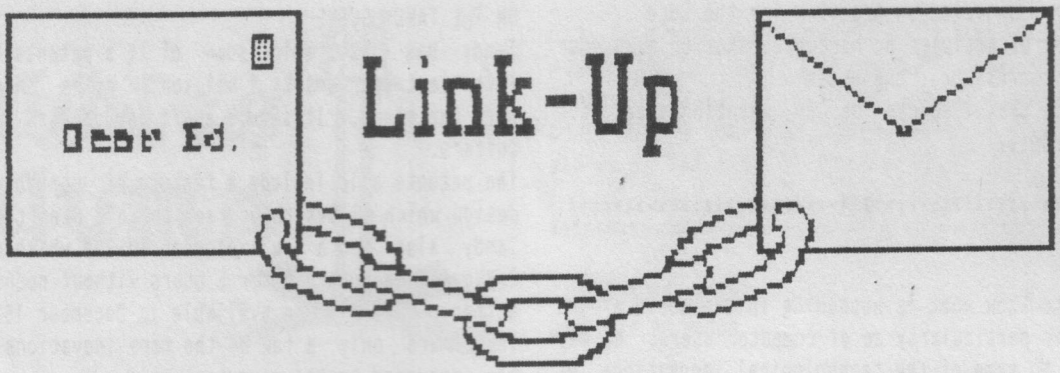
ON THE TANDY SCENE
Tandy has just sold some of it's patents to Toshiba. After last year's $US4.2 billion in sales they probably need the money. It should add a few dollars to the Tandy coffers.
The patents sold include a feature of portable computer design which allows the screen to fold over the keyboard. Tandy also has a new laptop at $US999 which only weighs 2.9Kg and can operate for 5 hours without recharging its battery. This will be available in December 1989.
These are only a few of the many inovations that Tandy has announced to the computer world.
It is just a pity that they also announced dropping the Coco in Australia during this period.

****

Keep Hacking
Robbie



And this is the "manual" reset key . . .



Dear Ed,
Are there any programmes that use the TRS80 Touch Pad?
How is the Public Domain software, and how can I get a list of what is available and its cost?
I was thinking of getting a 512K RAM, are they worthwhile and do you know how much they cost? The Tandy store up said they no longer stock them.

Stephen Quinn. NSW.

Dear Stephen,
I do not know of any programmes using the touch pad but maybe somebody out there will be able to help you.
A list of PD Software available from COCO-LINK can be found inside the back cover of this magazine. Lists of the individual programmes on each disk were described in previous issues. We will publish a full list in the April edition.
512K upgrades are available from APD. See advert December 1989 and latest catalogue.

****

Dear Ed,
My thanks and appreciation for your award for "meritorious service to the Color Computer Community of Australia".
I am sure this is not because I produced any programs of earth-shaking significance but if, with due regard to modesty, I might nominate a specific contribution, then I like to think that this would be because, from 1984 on, I waged a (losing) battle to prod or shame the Tandy Corporation into sales initiatives aimed at popularising the CoCo as it deserved to be.
Of course this was, to a degree, self interest. I have a significant investment in my CoCo and associated peripherals and software, and I feel let down when I think that, when my present CoCo gives up the ghost, there will be no replacement for it, and most of the expensive extras will be useless and valueless.
So much for compatibility.

Keiren Kenny. NSW.

****

Dear Ed,
I read with interest the letter from Keiren Kenny, regarding the problem with CoCo Max-3 and the Colour Cycling selections. Some of the lads in the Brisbane south-west Colour Computer User Group, have fixed this problem, and wrote a little programme to do it all for you; it is reproduced below.
The problem with the Hires interface has 'bugged' me too, and I found that changing the main filter capacitor usually fixed the problem; (try one with a higher capacitance).
Please note that the above mentioned group is still alive and well, and details can be had from me by ringing me on 07 3727816 (a.h.).

Regards. Bob Devries. QLD.

```
10 REM  1/24/88 BY BOB DEVRIES AND ANDREW SIMPSON, ANDREW
MCGEE AND PETE.
20 REM  FROM THE BRISBANE SOUTH-WEST COLOUR COMPUTER
USERS GROUP
30 OPEN "D", #1,"COCOMAX3.BIN",1
40 FIELD #1,1 AS A$
50 RSET A$=CHR$(&H56):'DELAY TO TOP OF COLOURS
60 PUT #1,5801
70 RSET A$=CHR$(15):'DELAY BETWEEN COLOURS
80 PUT #1,5916
90 PRINT "HEY, IT'S DONE, HAVE FUN."
100 CLOSE #1
```

****

Dear Ed,
As you can see I am still struggling to get a word processor; hope you don't mind, I don't usually write by hand.
I have obtained EDTASM+ and hope your mag can help me start to program in ML.
Here is a report on the CoCo Buy and sell register: I have received many enquiries, however I still need more people to let me know if they are willing to sell.
Data cassette, games, CoCo3, Y cartridge, cables and multi-paks are all being requested.
Up for sale items:- CoCo2, games, entire systems etc.
I am looking to swap Lazer Sergon for Coco3 for a Y-cable. Will a Y-cable work the same as a Multipak? I would like to run disk and Speech Pak.

Damien Rollond Adelaide.

Dear Damien, We have no immediate plans to run an Assembly Language tutorial but send us your problems and we will try to get you the answers. If someone out there is willing and able to write such a tutorial we would be glad to hear from them.

I hope everyone will get together to help your Buy and sell register. It is a good idea and should be supported. A Y-cable may work OK as you propose but is more likely to create problems. If you propose to run various programmes of this type in conjunction I would definitely advise that you try and get hold of a Multipak from somewhere.

****

Dear Ed,
I am writing to thank you for publishing my Graphics of "Elvis"in your December issue, but I am afraid the graphics of "Train" wasn't attributed to me. I copied it from a programme of ..... and added it to a programme i called "Railquiz" which I sent you. My sincere apologies to the author of that picture.
I do quite a few simple graphics using Tom Lehane's programme called "Line-Master" and I feel they are good for simple screen dumps. If anyone has any use for these graphics they could write to me:- Graham Elphick
26 Birch St.
St. Marys NSW 2760
and I will either LLIST them, or if they provide a tape, CSAVE them.
I read with interest a piece in your magazine about setting up a computer club in Adelaide, I think, for older people. A great idea! I nearly come into that category being nearly 50 years of age. I love typing in listings and getting them to work. A great stimulation, the Coco.
I also recieved with COCO-LINK a copy of the APD catalogue. I've bought a few programmes on tape from APD and I've been truly satisfied with them.
Graham Elphick NSW

Dear Graham, Thank you for writing and pointing out my error in attributing the train drawing to you. I took the drawing of the train from the programme you sent as I thought that it was a good representation. I asssumed that it had been done by you. Had I read the programme more carefully I would have realised that this was not so. You did give credit to the original author.
I would like to apologise to yourself and the original author, Mike D'Esterre for any inconvenience caused.
Robbie

****

Dear Editors,
Thank you for my award and the cheque. I am happy to help CoCo owners when I can, but it makes it easier to continue when I know the help is appreciated.
Thank you too for Richard's prize.
Thanks also goes to Nickolas Marentes for donating the programs. We think the music on RUPERT RYTHYM is great!
I would like to make one comment about the marketing - if Nickolas is going to copy-protect his programs, perhaps he could have a second copy on the other side of a flippy(?). I like to have at least two copies of everything in case of 'disk crashes'.

The December issue of CoCo-Link had reviews of Nickolas' programs. The author of the reviews was not named. Could we have the names of future reviewers, please?

The answer to Bill Killen's letter made me feel that even the editors of CoCo-Link don't read my articles..!
Let me summarise the section about double sided drives. If you have a Tandy FD 502 disk drive and a CoCo3 (Rom version 1.1), you can use side 2 if you POKE55455,65. If you have a CoCo2 (Rom version 1.1), you need to RUN a ROM to RAM program first. If you have version 1.0, use POKE55212,65. Tandy was selling second drives for $99.95 recently. As far as I know, these are FD 502 drives. To use the second side (drive 3), try POKE55456,66 or POKE55213,66. By the way, I could not find the FIND ADD program at the end of my article.
After I wrote the article, I discovered that you can BACKUP 2 TO 2, making it possible to copy side 0 of one disk to side 2 of another disk - with some juggling, and a blank disk.

I wonder if it would be feasible to periodically put the BASIC 'Graphics by..' on a public domain disk? I hope that in future, the people sending the graphics will be the authors. I was surprised to see that a picture drawn by Mike d'Esterre had someone else's name on it! I have seen the same thing happen to some of my programs. Once I received some programs by a Mr X. I knew Mr X did not write them, because I wrote them! In my article in December 1989 CoCo-Link, I gave credit to Jason Hall for a program in a 1987 CoCo magazine. After I had submitted my article, I saw the program in a 1985 Rainbow magazine. It was by Colin Stearman. I would like to appeal to the readers of CoCo-Link, not to put their names on programs which they have not written.

I noticed a request from Graham Elphick for a CoCo3 DESKTOP PUBLISHER on tape. I assume he is referring to the Desktop Publishing on a Shoestring from the October 1987 US Rainbow. I converted the PMODE4 version of that program for Graham some time ago. If anyone (who has the disk version) would like the tape version, they can write to me at 9 Belah Street, Forbes 2871. I am too busy to try to convert the CoCo3 program - I don't feel it would be practical. Until recently, I preferrd to use PMODE4 for 'publishing'.
After I re-discovered George McLintock's HSCREEN dump program, I could see a lot more possibilities for the HSCREEN in publishing. George sent me an early copy of his program. At first I used it only to dump line drawings. I have a Tandy 1000HX, and George gave me a dump program for IBM compatibles too, so I concentrated on that one. Much later, I tried to dump a color HSCREEN2 picture in various shades of grey. It works very well! If necessary, I will write a short article about it. George has written a beaut program, but if you get three double

Continued on page 26

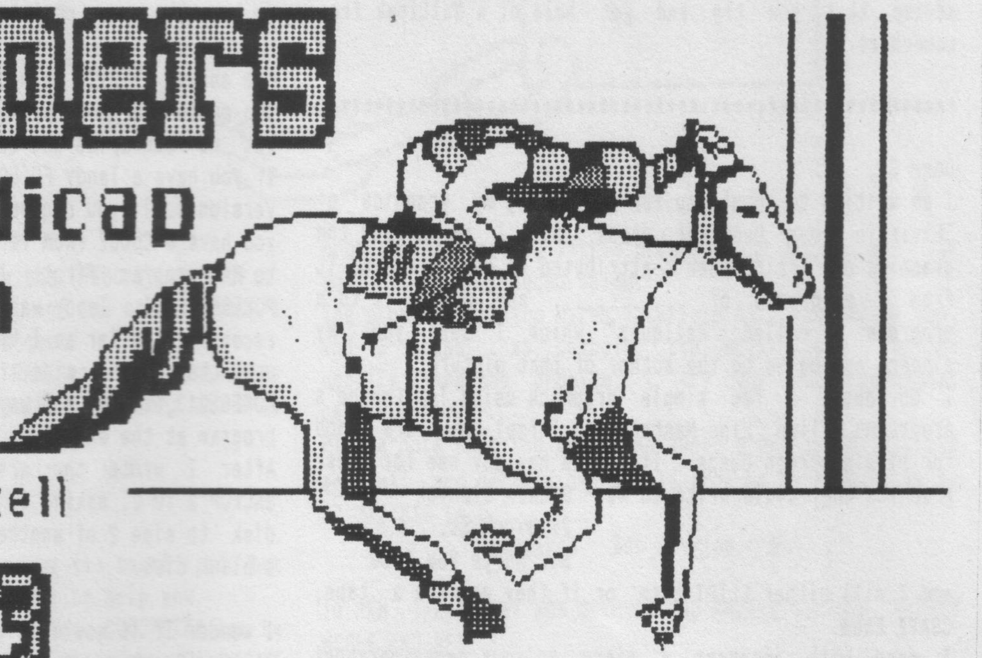
Winners

A Handicap System

By

Robbie Dalzell

Part 3



In this part we will deal with the two supplementary files which make WINNERS such a comprehensive programme. These are the HORSES and JOCKEY files.

HORSES (MOD 4)
****

Firstly let's deal with the HORSES file (Listing 1). This file gives you the full manipulative power needed to view, printout, delete and review the data saved through "YESTERDAY'S RACES" (MOD 2).

The main menu of this file includes:

- CREATE NEW FILE
- DISPLAY - PRINT A RECORD
- DELETE A RECORD
- LIST ALL HORSES
- RETURN TO MAIN MENU
- END

The file is fed its data automatically from Yesterdays Races (MOD 2). It is in turn used by Tomorrows Races (MOD 5). The programme in listing 1 gives you manual manipulation of the file.

CREATE A NEW FILE: This option is used when you wish to
****************** format a secondary disk to hold the new HORSES file. This is only necessary once for each file. It reserves space for the number of records you require on the secondary disk.

It is advisable to save space for approximately 25% more records than you expect to work with. This makes for speedier use of the Hash File, part of which is used in listing 1. (The Hash File was fully described in part 1 of this series.

DISPLAY - PRINT A RECORD: This allows you to look up any
************************ horse on file and see its ratings for up to its last 4 races on screen or 8 races if printout is requested. It also shows the month raced along with the month of it's previous race (Last raced) and the position it came in. A zero indicates that it was placed more than 10th. The information also shows the horses' best ever rating as well as its best performance so far in this spell.

This is quite important information when coming down to the final decision of where to lay your money.

The printout for a horse would look like Fig.1.

(Fig.1)

FILE NAME				PAST RATINGS				
1110 BELCUNDA					8 YEAR OLD			
Rating	66.5	61	50.5	62.69	63.5	65.19	54.5	57.69
Month	7	8	8	9	10	10	10	7
Last Raced	6	7	8	8	9	10	10	10
Position	1	4	0	3	5	3	9	2

BEST PERFORMANCE: 66.5   CURRENT BEST: 57.69

DELETE A RECORD: This allows you to delete any horse from ********** the file. It is straight forward. You enter the name of the horse you wish to be deleted and the programme does the rest after confirming that this is the record you wish to delete. The method of deletion was discussed in part 1.

LIST ALL HORSES: This section was added as an after-********** thought and is not the most efficient routine in the programme.

The routine starts by looking through the complete Horses file and picking out all the horses. On long files with a considerable number of horses this can take quite a while. When it has collated all the horses, it sorts them into alphabetical order. This is done by directing the programme to QSORT. This can be any sort programme you wish but a ML sort is obviously preferable for speed puposes. (The sort specified is very quick and is available from COCO-LINK for $8.00).

When sorted the list is sent to the printer where it prints in three columns as shown in Fig.2. The routine only prints out the names of the horses.

The other selections will either return you to the main menu or end the programme.

With this module you now have control of your HORSES file. You can continue to build up a file of ratings on a number of horses until Part 4 when I will describe the main module of the programme.....TOMORROWS RACES (MOD5).

(Fig.2)

PRINCE OF NIME	SHADY ASPECT	SUPREME REGAL
PRINCE TRAVOLTA	SHAKEL STAR	SURVEILLANCE
PRINCELY HEART	SHANNON BELLE	SWABIAN PRINCE
PRINCESS CALABRINA	SHIFTY'S SON	SWAGMAN'S GIRL
PRINCESS SEYMOUR	SHOOT THE LOT	SWEET CHARIOT
PRIX STAR	SILVER COSSACK	SWEET HOLLY

JOCKEY FILE

****

Next we take a close look at the JOCKEY FILE (MOD 3).

Why do we need a file on jockeys? Well, as a trade, jockeys cover a wide range of competance (or should I say incompetance) which is a vital factor in assessing a horses chances of winning a race.

The Jockey file is based on the Incompetance Factor of each jockey. That is to say, in a scale of 0 to 6 the jockey with a 0 rating would have the impossible perfect record. A jockey with a rating of 5 would be 5 times more incompetant and so on. We have put a limit of 6 on this figure as a jockey more incompetant than that would never win a race and therefore would be avoided.

The rating given a jockey is an arbitary figure which must be decided by the user. The file must be kept up to date so as to get the full benefit of the handicapping system. My suggestion is on at least a monthly basis. Any alterations in form should be noted as soon as possible. With experience one should be able to make a reasonable judgements of each jockey's ability.

To assist in the upkeep of this file I have included the system I have been using to simplify the upkeep of this file. That comes later.

The JOCKEY FILE is a complete filing system in its own right. The selection of the menu covers:

ADD NEW DATA
SORT DATA
ALTER DATA
LIST DATA
PRINTOUT
RETURN TO MAIN MENU
END

ADD NEW DATA: The information saved by the file is the ********** jockey's name (Surname and initial. eg. LETTS J), your rating, apprentice allowance if any and his normal riding weight.

The first three speak for themselves and are used directly in the handicapping system. The fourth, the jockeys' riding weight, is saved for information purposes only. It can be a valuable piece of information to have on hand.

When information has been entered the programme allows you to check before saving to disk.

When the required number of jockeys has been added enter ZZZ after "Jockey's Name" and you will be asked to "Continue/Return".

Always record the jockeys' name using the same system each time as the name will not be recognised if not spelt and arranged the same way as recorded.

SORT DATA: This sorts the records in alphabetical order ********** by name.

ALTER DATA: This first asks you if you know the file ********** number of the record you require. If not, you are directed back to Item 3 on the Menu (LIST DATA). When you have entered the file number and confirmed that this is the file you wish to alter, a menu at the bottom of the screen lets you pick the data to be altered. Where necessary, promps or cursors show what is required of the user. When the alteration is complete the new data is saved to disk.

Keen surveilance of the racing papers and results is needed to keep this section up to date. Information can also be gleaned from the Jockey Club Handbook for your state.

LIST DATA: This lists all jockeys to the screen giving ********** File number, Name, Rating and Riding weight.

PRINTOUT: A printout section has been provided so as the ********* user can keep his list of jockeys on hand for

(Fig. 2)

JOCKEYS 17/9/88

FILE	NAME	SKILL	ALLW.	WT	FILE	NAME	SKILL	ALLW.	WT
1	BAILLIE B	3.2	0	50	51	MATTHEWS A	3.1	0	49.5
2	BARONE R	3.2	0	51	52	MC EVOY D	3.2	1.5	56
3	BENNS G	3.5	3	48	53	MEEKINS S	5.5	3	47
4	BOLDEN M	5	0	47	54	MEMMLER G	4.2	0	48
5	BROMLEY C	4	0	51.5	55	MILLER S	4	0	47
6	BUHAGIAR S	5	0	50	56	MOON C	3.7	2.5	50

his own perusal. .Figure 2 shows the layout of the Printout.

The programme (listing 2) is very user friendly.
Both the YESTERDAYS RACES and TOMORROWS RACES modules call up the file automatically and use it as necessary.

JOCKEY RATING CALCULATOR
****

The following short programme (listing 3) called JOKCALC is the system I use to help in the upkeep of the Jockey file.

In one of the Daily Newspapers or in a racing paper you will normally find a "Top Jockeys List". This list usually comprises of the top 20 - 25 jockeys in the state by the amount of winners they have ridden. The list will also give the total number of rides the jockey has had to date for the season.

JOKCALC uses the information in this list to find the % of wins to rides and then works out a rating between 0 - 6. I check this rating against my Jockey list and change a rating up or down according to my assessment at that time.
Also keep in mind that apprentices allowances change as time goes by.
NOTE. I have not allowed for the fact that apprentices have different allowances at country meets as opposed to metropolitan races.

CONCLUSION
****

Make sure you save each module under the name given in brackets. These are the names used in the programmes.
You now have four of the major modules required to run the WINNERS Handicap System. These are the MAIN MENU (MOD1), YESTERDAYS RACES (MOD2), JOCKEYS (MOD3), and HORSES (MOD4).
You should also have the data files NSW, VIC, SA and MARGIN.

Use these to build up your list of horses and jockeys in preparation for the main event.....TOMORROWS RACES. We will be delving into the inticacies of this most important module next issue.

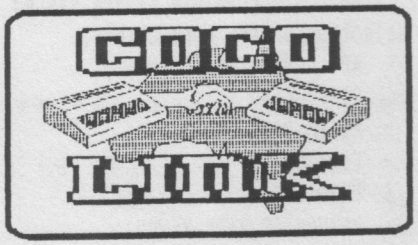
LISTING 3

JOKCALC

```
10 CLS:INPUT"RIDES ";R
20 INPUT"WINS  ";W
30 P=INT((W/R*100)*10)/10
40 PRINT"% =   ";P
50 GOSUB90
55 RR=INT(RT*10)/10
60 PRINT:PRINT"RATING ";RR
70 I$=INKEY$:IFI$=""THEN70ELSE10

90 IFP<2THENRT=6
95 IFP=>2 AND P=<3THENRT=6-(P-2)
+.1
100 IFP>3 AND P=<5THENRT=5-INT((
((P-3)*.5)+.05)*10)/10
110 IFP>5 AND P=<10THENRT=4-INT(
(((P-5)*.2)+.1)*10)/10
120 IFP>10 AND P=<15THENRT=3-INT
((((P-10)*.2)+.1)*10)/10
130 IFP>15 AND P=<20THENRT=2-INT
((((P-15)*.2)+.1)*10)/10
140 IFP>20 AND P=<24THENRT=1.5-(
(P-20)*.1)+.1
150 IFP>24 AND P<35THENRT=1
160 IFP=>35THENRT=.5
170 RETURN
```

CONTINUED OVER



LISTING 1 - HORSES - (MOD5)

```
0 '****************
1 '***  MOD 5  ***
2 '*** HORSES  ***
3 '****************
4 PCLEAR1
8 CLEAR13000:GOTO50
10 FORK=1TO8:LR(K)=INT(P(K)/1000
000)
11 M(K)=INT((P(K)-LR(K)*1000000)
/10000)
12 AG(K)=INT((P(K)-LR(K)*1000000
-M(K)*10000)/1000)
13 PS(K)=INT((P(K)-LR(K)*1000000
-M(K)*10000-AG(K)*1000)/100)
14 PP(K)=INT((P(K)-LR(K)*1000000
-M(K)*10000-AG(K)*1000-PS(K)*100
)*100)/100
15 NEXT:RETURN
16 CC=CP-INT(CP/100)*100:CC=INT(
CC*100)/100:BB=BP-INT(BP/100)*10
0:BB=INT(BB*100)/100
17 RETURN
20 ZJ=0:ZK=0:ZL=0:ZN=1
21 GOSUB34:CLS:ZP=INT((32-LEN(ZT
$))/2)
22 PRINT:PRINTTAB(ZP)ZT$:PRINTTA
B(ZP)STRING$(LEN(ZT$),CHR$(128))

23 IF INSTR(ZD$,"/")=0THENRETURN

24 GOSUB34:ZK=ZK+1
25 IFLEN(ZT$)>ZL THENZL=LEN(ZT$)

26 ZT$(ZK)=ZT$:IFZQ<>0THENZL=LEN
(ZT$)
27 ZM=INT((27-ZL)/2):ZG$=STRING$
(ZM," ")
28 IFZK<>ZY THEN24
29 FORZX=1TO(10-ZK)/2:PRINT:NEXT

30 FORZX=1TOZK:PRINTZG$;ZX"- ";Z
T$(ZX):NEXT
31 PRINT@419,"";:INPUT"CHOOSE SE
LECTION NUMBER";ZI
32 IFZI<1 OR ZI>ZK THENSOUND100,
2:GOTO31
33 PRINT@143,STRING$(15," ");:RE
TURN
34 ZQ=INSTR(MID$(ZD$,ZN),"/")
35 IFZQ=0THENZT$=MID$(ZD$,ZN):GO
TO37
36 ZT$=MID$(ZD$,ZN,ZQ-1):ZN=ZN+Z
Q
37 RETURN
50 ZD$="HORSES/CREATE NEW FILE/D
ISPLAY-PRINT A RECORD/DELETE A R
ECORD/LIST ALL HORSES/RETURN TO
MAIN MENU/END"
60 ZY=6:GOSUB20
70 ON ZI GOTO20000,200,210,230,8
0,100
80 RUN"MOD1"
100 CLOSE:CLS:END
200 GOSUB500:GOTO545
210 GOSUB500:GOSUB8000:GOTO50
230 CLS:GOSUB500:GOSUB3000:GOTO5
0
300 SB=1
310 SB=2*SB:IFSB<=A THEN310
320 SB=INT(SB/2):IFSB=0THENRETUR
N
330 FORSI=1TO A-SB:SC=SI
340 SD=SC+SB:IFH$(SC)<=H$(SD)THE
N360
350 HH$=H$(SC):H$(SC)=H$(SD):H$(
SD)=HH$:SC=SC-SB:IFSC>0THEN340
360 NEXT:GOTO320
500 OPEN"D",#1,"HORSES:2",80
510 FIELD#1,5 AS F$,5 AS PR$,20
AS H$,5 AS P$(1),5 AS P$(2),5 AS
 P$(3),5 AS P$(4),5 AS P$(5),5 A
S P$(6),5 AS P$(7),5 AS P$(8),5
AS CP$,5 AS BP$
541 RETURN
545 GOSUB7000:IFFL=1THENFL=0:GOT
O2520
550 GOTO50
581 BP=CVN(BP$):CP=CVN(CP$)
584 GOSUB16
590 FORX=1TO8:P(X)=CVN(P$(X)):NE
XT
593 GOSUB10
594 PRINT"DISPLAY RECORD NUMBER"
;RR:PRINT:PRINT
595 PRINTH$;TAB(20);AG(8);"YEAR
OLD":PRINT"RATINGS:BEST";BB;TAB(
16);"CURRENT";CC:PRINT
596 PRINTTAB(1);"R";TAB(5);PP(5)
;TAB(12);PP(6);TAB(19);PP(7);TAB
(26);PP(8)
597 PRINTTAB(1);"M";TAB(5);M(5);
TAB(12);M(6);TAB(19);M(7);TAB(26
);M(8):PRINTTAB(1);"LR";TAB(5);L
R(5);TAB(12);LR(6);TAB(19);LR(7)
;TAB(26);LR(8)
598 PRINTTAB(1);"P";TAB(5);PS(5)
;TAB(12);PS(6);TAB(19);PS(7);TAB
(26);PS(8)
599 IF Y=3THEN Y=0:GOTO610
600 PRINT@448,STRING$(32,"*");
601 IFAA=1THENRETURN
602 IFAB=1THEN RETURN
605 PRINT@486,"PRINTOUT REQUIRED
 (Y/N)";
610 I$=INKEY$
615 IFI$="Y"THEN2050
620 IFI$="N"THEN2520
630 IFI$=""THEN610
2050 IF II=1THEN II=0:GOTO2057
2052 PRINT#-2,TAB(40);"HORSES"
2053 PRINT#-2,TAB(40);STRING$(6,
"*")
2055 PRINT#-2,"FILE  NAME";TAB(5
0);"PAST RATINGS"
2057 PRINT#-2,STRING$(80,"*")
2070 PRINT@484,"PRINTING FILE NU
MBER"RR;
2510 PRINT#-2,RR;TAB(7);H$;TAB(5
5);AG(8);"YEAR OLD":PRINT#-2,TAB
(15);"Rating";TAB(22);PP(1);TAB(
29);PP(2);TAB(36);PP(3);TAB(43);
PP(4);TAB(50);PP(5);TAB(57);PP(6
);TAB(64);PP(7);TAB(71);PP(8)
2515 PRINT#-2,TAB(16);"Month";TA
B(22);M(1);TAB(29);M(2);TAB(36);
M(3);TAB(43);M(4);TAB(50);M(5);T
AB(57);M(6);TAB(64);M(7);TAB(71)
;M(8):PRINT#-2,TAB(11);"Last Rac
ed";TAB(22);LR(1);TAB(29);LR(2);
TAB(36);LR(3);TAB(43);LR(4);TAB(
50);LR(5);TAB(57);LR(6);
2516 PRINT#-2,TAB(64);LR(7);TAB(
71);LR(8):PRINT#-2,TAB(13);"Posi
tion";TAB(22);PS(1);TAB(29);PS(2
);TAB(36);PS(3);TAB(43);PS(4);TA
B(50);PS(5);TAB(57);PS(6);TAB(64
);PS(7);TAB(71);PS(8)
2518 PRINT#-2,TAB(29);"BEST PERF
ORMANCE:";BB;TAB(55);"CURRENT BE
ST:";CC
2520 SOUND100,2:PRINT@484,"   AN
OTHER RECORD (Y/N)   ";
2530 I$=INKEY$:IFI$="Y"THEN II=1
:GOTO545
2540 IFI$="N"THENCLOSE#1:GOTO50
2550 IFI$=""THEN2530
3000 SOUND150,4:PRINT@235,"getti
ng"
3005 AA=3584
3010 GET#1,1
3020 FS=CVN(F$)
3023 LIM=FS-1
3025 DIMS$(LIM),Z(4)
3030 FORK=2TO FS
3040 GET#1,K
3060 IF H$=CHR$(42)+STRING$(19,"
") OR H$=CHR$(94)+STRING$(19,"
") OR H$=STRING$(20," ") THEN308
0
3070 N=N+1:S$(N)=H$
3075 PRINT@300,N
3080 NEXT:CLOSE
3090 SOUND150,4:PRINT@235,"sorti
ng"
```

```
3092 LOADM"QSORT"
3095 KS=1:KL=20
3097 EXEC AA
3100 SOUND150,4:PRINT@235,"print
ing"
3110 C=54:D=1
3115 FORK=1TO6:PRINT#-2:NEXT
3120 FORK=D TO C
3130 PRINT#-2,TAB(2);S$(K);TAB(2
7);S$(K+54);TAB(52);S$(K+108)
3140 NEXT
3150 IFN>C+108THENFORKK=1TO12:PR
INT#-2:NEXT:D=D+162:C=D+53:GOTO3
120
3160 RETURN
6997 '*** s3 ***
6998 '*** retrieve a record ***
6999 'REQUIRES:- S8,S7,INKEY$
7000 IF II=1THEN7020
7010 GET#1,1
7015 FS=CVN(F$):PR=CVN(PR$)
7017 CP=CVN(CP$):BP=CVN(BP$)
7020 CLS:INPUT"HORSES NAME";H1$
7030 CLS:PRINT"RETRIEVING RECORD
"
7040 GOSUB17000:RR=HR
7060 GET#1,RR
7063 IFH$=CHR$(94)+STRING$(19,"
") THEN7080
7065 H1$=H1$+STRING$(20-LEN(H1$)
," ")
7070 IF H1$=H$ THENGOSUB581:GOTO
7130
7080 RR=RR+1
7090 IF RR>FS THENRR=1
7100 IF RR=HR OR H$=CHR$(42)+STR
ING$(19," ") THEN7120
7110 GOTO7060
7120 PRINT"RECORD NOT ON FILE":F
L=1:GOSUB15000
7130 RETURN
7997 '*** s4 ***
7998 '*** delete record ***
7999 'REQUIRES:- S3,S6
8000 AB=1:GOSUB7000
8010 IFFL=1THENFL=0:GOTO8110
8020 PRINT@484,"DELETE THIS RECO
RD? (Y/N)";
8030 I$=INKEY$:IFI$="N"THEN8110
8040 IFI$="Y"THEN8070ELSE8030
8070 H1$=CHR$(94)
8080 LSETH$=H1$
8100 GOSUB11100
8110 AB=0:CLOSE#1:RETURN
10998 '*** s6 ***
10999 '*** write record to disc
***
11000 LSETP$(1)=MKN$(P(1)):LSETP
$(2)=MKN$(P(2)):LSETP$(3)=MKN$(P
(3)):LSETP$(4)=MKN$(P(4)):LSETP$
(5)=MKN$(P(5)):LSETP$(6)=MKN$(P(
6)):LSETP$(7)=MKN$(P(7)):LSETP$(
8)=MKN$(P(8)):LSETCP$=MKN$(CP):L
SETBP$=MKN$(BP)
11100 PUT#1,RR
11110 RETURN
15000 PRINT@484,"PRESS ANY KEY";
:I$=INKEY$:IFI$=""THEN15000ELSER
ETURN
16998 '*** s8 ***
16999 '*** hash function ***
17000 H=0
17010 K=ASC(LEFT$(H1$,1))^2
17020 FORN=1TOLEN(H1$)
17030 H=H+ASC(MID$(H1$,N,1))*K
17040 NEXT
17050 K=INT(H/PR):HR=INT(H-K*PR)

17060 IFHR=0THENHR=1
17070 RETURN
17998 '*** s9 ***
17999 '*** calculate highest pri
me ***
18000 IFPR<=3THEN18070
18010 PR=PR-1
18020 DR=1
18030 DR=DR+1
18040 K=PR/DR
18050 IF K>INT(K) THEN18030
18060 IF DR<=K THEN18010
18070 RETURN
18997 '*** s10 ***
18998 '*** store record ***
19999 'CREATE FILE
20000 CLS
20010 INPUT"ENTER FILE SIZE";FS
20030 IF FS<1THEN20010
20031 PR=FS:CLS:PRINT@235,"pleas
e wait":GOSUB18000
20032 GOSUB500
20037 LSETF$=MKN$(FS):LSETPR$=MK
N$(PR)
20038 PUT#1,1
20040 FORX=1TO FS
20050 LSETH$=CHR$(42)
20060 PUT#1,X
20070 NEXT
20080 CLS:PRINT@235,"file create
d":FORK=1TO500:NEXT
20090 CLOSE:GOTO50
```

LISTING 2 - JOCKEYS - (MOD3)

```
0 '*****************
1 '***  MOD 3  ***
2 '**  JOCKEYS  **
3 '*****************
10 GOTO50
20 J=0:K=0:L=0:N=1
21 GOSUB34:CLS:P=INT((32-LEN(T$)
)/2)
22 PRINT:PRINTTAB(P)T$:PRINTTAB(
P)STRING$(LEN(T$),CHR$(128))
23 IF INSTR(D$,"/")=0THENRETURN
24 GOSUB34:K=K+1
25 IFLEN(T$)>L THENL=LEN(T$)
26 T$(K)=T$:IFQ<>0THENL=LEN(T$)
27 M=INT((27-L)/2):G$=STRING$(M,
" ")
28 IFK<>Y THEN24
29 FORX=1TO(10-K)/2:PRINT:NEXT
30 FORX=1TOK:PRINTG$;X"- ";T$(X)
:NEXT
31 PRINT@419,"";:INPUT"CHOOSE SE
LECTION NUMBER";I
32 IFI<1 OR I>K THENSOUND100,2:G
OTO31
33 PRINT@143,STRING$(15," ");:RE
TURN
34 Q=INSTR(MID$(D$,N),"/")
35 IFQ=0THENT$=MID$(D$,N):GOTO37

36 T$=MID$(D$,N,Q-1):N=N+Q
37 RETURN
40 OPEN"D",#2,"JOCKFILE:2",25
41 FIELD#2,5 AS K$
42 FIELD#2,15 AS J$,5 AS JN$
43 RETURN
44 GET#2,1
45 K=CVN(K$)
46 RETURN
47 CLS:PRINT"THERE ARE "K-1" JOC
KEYS ON FILE":PRINTSTRING$(32,"*
");
48 RETURN
50 D$="JOCKEYS/ADD NEW DATA/SORT
 DATA/ALTER DATA/LIST DATA/PRINT
OUT/RETURN TO MAIN MENU/END
60 Y=7:GOSUB20
70 ON I GOTO100,3500,1000,500,20
00,80,90
80 RUN"MOD1"
90 CLS:CLOSE:END
100 GOSUB40
```

```
130 IFLOF(2)=0THEN145
140 GOSUB44:GOTO150
145 K=1
147 LSETK$=MKN$(K)
148 PUT#2,1
150 GOSUB47
155 K=K+1
160 PRINT:INPUT"JOCKEY'S NAME  "
;J1$
170 IFJ1$="ZZZ"THENK=K-1:GOTO230

180 INPUT"RATING (1-6)   ";JJ
181 INPUT"APPRENT ALLOW. ";AA
182 INPUT"RIDING WEIGHT  ";O
183 PRINT@484,"IS THIS CORRECT (
Y/N)";
184 I$=INKEY$:IFI$="Y"THEN188
185 IFI$="N"THENK=K-1:GOTO150
187 IFI$=""THEN184
188 JN=JJ+(O*100)+(AA*100000)
190 LSETJ$=J1$
200 LSETJN$=MKN$(JN)
210 PUT#2,K
220 GOTO150
230 LSETK$=MKN$(K)
240 PUT#2,1
250 CLOSE#2
260 GOSUB800
270 I$=INKEY$:IFI$="C"THEN100
280 IFI$="R"THEN50ELSE270
300 END
499 'LIST DATA
500 GOSUB40:GOSUB44
545 X=1:Y=0
550 GOSUB47
555 PRINT" NO.     NAME        R
ATE  WT. ":PRINTSTRING$(32,"=");

560 X=X+1:Y=Y+1
565 IFX=K+1THENGOSUB800:GOTO610
570 GET#2,X
590 JN=CVN(JN$)
591 GOSUB3000
592 PRINTX-1;TAB(5);J$;TAB(19);J
J;TAB(25);O
595 IFY=10THENY=0:GOSUB800:GOTO6
10
600 GOTO560
610 I$=INKEY$:IFI$="C" AND X-1<K
 THEN550
620 IFI$<>"R"THEN610ELSECLOSE#2:
GOTO50
630 IFI$=""THEN610
700 CLOSE#2:GOTO50
800 PRINT@448,STRING$(32,"*");
810 PRINT@481,"       cONTINUE/r
ETURN       ";
820 RETURN
999 'ALTER DATA
1000 CLS7:PRINT@128," IF YOU DO
NOT KNOW THE NUMBER   OF THE FIL
E YOU WISH TO ALTER,  RETURN TO
THE MENU AND CHECK    THE NUMBER
 FROM THE DATA LIST.  (ITEM 3 ON
 MENU)"
1010 GOSUB800
1020 I$=INKEY$:IFI$="C"THEN1100
1030 IFI$="R"THEN50ELSE1020
1100 GOSUB40:GOSUB44:GOSUB47
1170 PRINT"ENTER FILE NUMBER YOU
 REQUIRE":PRINTSTRING$(32,"-");
1180 INPUT"INPUT NUMBER ";X
1190 GET#2,X+1
1200 JN=CVN(JN$)
1205 GOSUB3000
1210 PRINT:PRINT" FILE NO. ";X:P
RINT" NAME       ";J$:PRINT" RATE
     ";JJ:PRINT" ALLOWANCE";AA:P
RINT" WT.       ";O
1240 PRINT@448,STRING$(32,"*");:
PRINT@489,"THIS ONE? (Y/N)";
1250 I$=INKEY$:IFI$="N"THENGOSUB
47:GOTO1170
1260 IFI$<>"Y"THEN1250
1280 PRINT@482,"   nAME/rATE/aLL
OW/wT.      ";
1290 I$=INKEY$:IFI$="N"THEN1310
1300 IFI$="R"THEN1320
1305 IFI$="A"THEN1324
1306 IFI$="W"THEN1330ELSE1290
1310 PRINT@234," ";:LINEINPUTJ1$
:GOTO1500
1320 PRINT@266," ";:LINEINPUTJJ$
:JJ=VAL(JJ$)::GOTO1500
1324 PRINT@298," ";:LINEINPUT AA
$:AA=VAL(AA$):GOTO1500
1330 PRINT@330," ";:LINEINPUT O$
:O=VAL(O$):GOTO1500
1375 JN=JJ+O*100+AA*100000
1380 LSETJ$=J1$
1390 LSETJN$=MKN$(JN)
1400 PUT#2,X+1
1420 CLOSE#2:GOSUB800
1430 I$=INKEY$:IFI$="C"THENGOSUB
40:GOSUB47:GOTO1170
1440 IFI$="R"THEN50ELSE1430
1500 PRINT@482,"IS ALTERATION CO
MPLETE (Y/N)";
1510 I$=INKEY$:IFI$="Y"THEN1375
1520 IFI$="N"THEN1280
1530 IFI$=""THEN1510
1999 'PRINTOUT
2000 GOSUB40:GOSUB44:GOSUB47
2051 INPUT"ENTER DATE";DT$:PRINT

2052 PRINT#-2,TAB(14);"JOCKEYS
       ";DT$
2053 PRINT#-2,TAB(14);STRING$(25
,"*")
2055 PRINT#-2,"FILE  NAME
   SKILL  ALLW.   WT     FILE  N
AME          SKILL  ALLW.   WT
2057 PRINT#-2,STRING$(80,"*")
2060 PRINT"NOW PRINTING":PRINT
2070 PRINT:PRINT"PRINTING FILE N
UMBER "
2080 FORX=2TO K
2085 IFX>51THEN2170
2090 GET#2,X
2100 JN=CVN(JN$)
2110 GOSUB3000
2150 GOSUB2500
2152 IFXX>50THENXX=0:GOTO2160
2154 IFK=<50THEN2160
2156 XX=X+50:IFXX>K THENXX=0:GOT
O2530
2157 GET#2,XX:GOTO2100
2160 NEXT
2170 CLOSE#2
2180 GOTO50
2500 PRINT@245,X-1
2505 IFXX=0THEN2510ELSE2515
2510 PRINT#-2,X-1;TAB(5);J$;TAB(
21);JJ;TAB(27);AA;TAB(33);O;:GOT
O2520
2515 PRINT@245,XX:PRINT#-2,TAB(4
2);XX-1;TAB(46);J$;TAB(62);JJ;TA
B(68);AA;TAB(74);O
2520 RETURN
2530 PRINT#-2:GOTO2160
2999 'DISSASSEMBLE ROUTINE
3000 AA=INT(JN/10000)/10
3010 O=INT((JN-AA*100000)/10)/10

3020 JJ=INT((JN-AA*100000-O*100)
*10)/10
3025 J1$=J$
3030 RETURN
3499 '   GET FOR SORT
3500 CLEAR2000:CLS:PRINT@234,"pl
ease wait"
3505 DIMJ$(100),JN(100)
3510 GOSUB40:GOSUB44
3520 FORX=2TO K
3530 GET#2,X:JN(X-1)=CVN(JN$):J$
(X-1)=J$
3540 NEXT:CLOSE#2
3550 GOSUB4000
3560 GOSUB40
3570 LSETK$=MKN$(K+1)
3580 PUT#2,1
3590 FORX=1TO K+1
3600 LSETJ$=J$(X):LSETJN$=MKN$(J
N(X))
```

Continued on page 13

Better BASIC Part 8

By Johanna Yagg
and Val Stephen

The FILES command and PMODE screens.
By Johanna Vagg .

PEEK(186)*256 will give the start address of the PMODE screen. I had thought that this address was 1536 with tape, and 3584 with disk. I discovered something! The PMODE screen does not always begin at 3584 with disk. Once, in an effort to make a long BASIC program work with the disk drive attached, I put FILES0 at the beginning of a program. This gave me an extra 512 bytes of memory. The other night I read, in an old Rainbow magazine, that if you use FILES0, the PMODE screen begins 'somewhere else' - I've checked it. With FILES0, the PMODE screen begins at 3072, which is 3584 minus 512.

Each FILE takes 256 bytes of memory. The default is FILES2. Using FILES3, however, does not put the start of the PMODE screen at 3584 plus 256. It is at 4096. Each page - see my article in August 1989 CoCo-Link - in the CoCo's memory begins on a 512 byte boundary. FILES15 puts the start at 7680, which is a long way from 3584. This means that if you tried to SAVEM a graphics screen which was DRAWn while you were using something other than FILES2, you could not use 3584 as the start address.

I have had my disk drive for quite some time and using 3584 has not been a problem because I have not used the FILES command when I have SAVEMed any graphics. I HAVE had a problem with the end address of some PMODE4 files. I have seen PEEK(&HB7)*256 used to find the end address for a Machine Language save of the graphics. This will actually give the end address plus one. USING ONE BYTE PAST the end, as the end, will cause some programs to crash - eg when you load a PMODE4 file with end address 9728, into the DESKTOP on a Shoestring program from October 1987 US Rainbow.

LEARNING BASIC PROGRAMMING
By Val Stephen

There are a lot of us who just love playing with our Coco computers!
BASIC language, whilst it has a certain simplicity, still takes quite a bit of understanding and learning to make Coco do just what we want it to do! There are , however, some short cuts which make life easier. Learn from others "Basically" speaking, in more ways than one. We can do a bit of straight out thieving and purloining of other People's ideas.

Take a simple program, something like the one you wish to create. Then produce your own masterpiece from it. Print the original program out with your printer, LLIST it, in other words. Then take out your pen and think just what you want Coco to do for you. Two programmes which appeared in COCO Magazine and RAINBOW were produced that way by me.
I used and acknowledged the original from which I stole the Basics. This was MOTHERLODE. From it I produced TREASURE and THE DETECTIVE GAME. Both of these used the basic structure and principles yet none of the original program was left, only the skeleton or bare bones. Eventually neither program resembled the original. I stole the opening sequence and titling from another program called THE WALOONS, which was some acrobatic clowns, from a book I possess. I altered the wording of the title, of course.

By using the skeletons we can make up our own programs and learn the mechanism of making BASIC do just what we want it to do. Not easy when we first start but that is one way to learn. The next step is to think up programs of your own from scratch.

Jockeys Listing Continued

```
3605 PUT#2,X+1
3610 NEXT:CLOSE#2
3630 GOTO50
3999 '   SORT ROUTINE
4000 SB=1:K=K-1
4010 SB=2*SB:IFSB<=K THEN4010
4020 SB=INT(SB/2):IFSB=0THENRETU
RN
4030 FORSI=1TO K-SB:SC=SI
4040 SD=SC+SB:IFJ$(SC)<=J$(SD)TH
EN4060
4050 JJ$=J$(SC):J$(SC)=J$(SD):J$
(SD)=JJ$
4055 JJ=JN(SC):JN(SC)=JN$SD):JN(
SD)=JJ
4057 SC=SC-SB:IFSC>0THEN4040
4059 SOUND200,1
4060 NEXT:GOTO4020
```

End

Continued from page 12

When you program always keep saving, use SAVE1, SAVE2, etc. as you go. This is just in case you accidentally wipe out a whole program by a mis-type. Computers are funny bods like that!! There is nothing, BUT NOTHING, worse than losing a whole program for the sake of a few saves.

If you wish to have programs published in COCO-LINK or other magazines be very sure, if you have done what I suggested above, that you acknowledge your source. Always quote "Adapted from ******* by Joe Blow." In this way you are not accused of plagiarism.

There is an old saying that if you steal from one source it is plagiarism, and if you steal from a number of sources it is called research.

(N.B. Everyone has used the above method to produce programmes at some time or another but, always keep in mind, the programme you used originally is still the copyright of the writer unless it has been put on the public domain. Programmes produced in this manner should never be sold commercially.
Be very sure that you are not breaking someones copyright as this can be a criminal offence.....ED.)

End

HOW TO SUBMIT MATERIAL TO COCO-LINK

PROGRAMMES: On tape or disk.
At least two copies should be on the tape/disk one of which should be saved in ASCII format.
Where possible include a description of your prodgramme saved as below for articles.

ML PROGRAMMES:
These require Source code saved on a suitable word processor. Two copies should be made.
A working copy of the programme should be included for checking by COCO-LINK.

ARTICLES:
At least one copy saved in ASCII format plus one copy on a commercial word processor where possible. (VIP Writer etc.)

HINTS AND TIPS:
Hand written or typed is acceptable.

LETTERS TO THE EDITOR:
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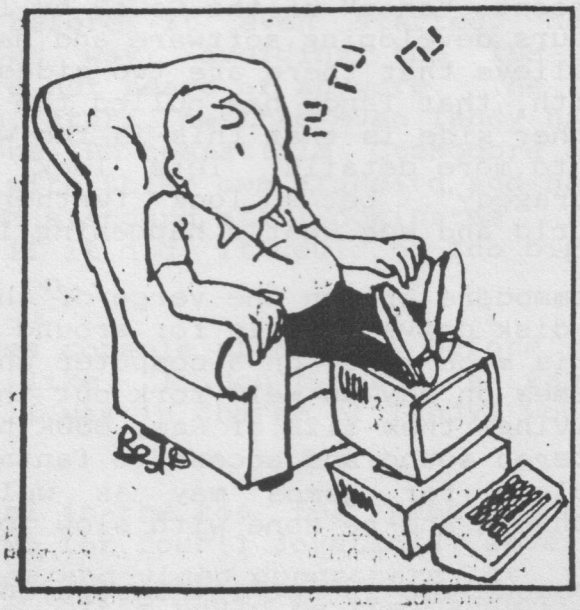

The future of the Coco

By Nickolas Marentes

THE FOLLOWING ARTICLE IS BASED ON MY OWN OBSERVATIONS OF THE COCO3 MARKET AND COMPUTER INDUSTRY WORLDWIDE. I HAVE NOT BEEN IN CONTACT WITH TANDY CORPORATION FOR ANY OF THE INFORMATION OUTLINED IN THIS ARTICLE. FEEDBACK TO THIS ARTICLE IS QUITE WELCOME AND SHOULD BE DIRECTED TO COCO-LINK MAGAZINE.

Anyone who owns a CoCo3 would surely be deeply dissapointed by the recent "chop" of the CoCo3 by InterTan. I, as one who has spent many hours developing software and hardware for it am more so. But I do believe that there are two sides to this. The side we are all familiar with, that Tandy has pulled the rug on its loyal CoCo3 customers. The other side is that this is the way the market is heading. Before going into more details, lets look at the CoCo3 market prior to the "tragedy". Let's look further than just our little confined CoCo3 world and see what's happening in the rest of the computer world.

Commodore are on the verge of chopping the C-64 and C-128. A C-64 with a disk drive retails for around the $600 mark. Anyone wanting to spend this much money on a computer which they will primarily be playing games on may as well fork out the extra $300 and get an Amiga 500 pack giving them 512K of Ram, 880K high speed drives, 4096 color graphics, stereo sound and access to fantastic software. Anyone buying a C-64 solely for games may as well spend only $200 for a Nintendo games console and be done with slow loading procedures.

Someone who is not interested in just playing games but wants to do some serious computing will generally spend a bit more to get a more powerfull computer.

What I am trying to highlight here is that the low end computer market is dividing into two distinct areas. The first is the very low end game playing market. The other is the upper-low end computer enthusiast (play-the-occasional-game) market. The very low end market is heading towards the games console area. If games is all they want, then games is all they need. No need to know about keyboard commands, loading procedures, programming languages etc., just slap a cartridge in and play. Games consoles are cheaper to produce and therefore cheaper to buy and to many, a low price is the right price.

The upper-low end user wants big power for lower bucks. Half a meg, one meg and eight meg of Ram. A fast 16 bit processor and fast hardrives if the money can reach that far. They want a large and varied software base. IBM compatabilty is a big thing because it brings many users together. Software developers love it because it means more customers, computer developers love it for the same reason.

The CoCo3 as many other computers of the era, fall mid way between these to areas. It plays games for a reasonably low cost but can be expanded to run powerful operating systems. Customer demands nowadays are more specific. For one who just wants a games unit, the CoCo is expensive and the variety of games is small. For one who wants a power system, the CoCo needs to be expanded. By the time a CoCo is equipped with a disk drive, 512K Ram, operating system and RGB monitor, it isn't too much cheaper than a PC, Amiga or Atari ST system. This is exactly the same problem that the C-64 and C-128 face (although the C-64 market has more momentum than the CoCo market and will stay around a little longer).

Well, we see that the CoCo3 is without a solid market area and in this light, we can understand why InterTan have given it the chop. Enough of the grim facts and let's look at what the future holds.

If Tandy were to do a CoCo4, what shape or form must it take to recapture a market position. From the last few paragraphs, we can conclude that it must either go upmarket by adding extra memory, built in drives, be faster and more professional and make OS-9 the standard operating system OR go down market and make it into a games console.

The upmarket approach would fail before it even started. Many companies have tried to go their own way, avoiding the IBM PC standard. Most of these companies are not heard of anymore. The IBM standard is a big standard. Commodore, Atari, Amstrad even Tandy have seen this. All these companies have gone IBM compatible. Commodore and Atari have continued their quest with thier own standard and have achieved reasonable success but the IBM standard still dominates. The CoCo would not have a chance and even if it did, it would be too big a risk for a comapany like Tandy to take on.

The future of the CoCo3 is in the games console area. Now before you start swearing and make statements like "I don't want a games computer!", let me explain how I (if I was in charge of Tandy) would go about a CoCo4.

Imagine a box which has a cartridge slot in the top for game packs, connectors in the side to take two (or four!) joysticks, several buttons for selecting and starting games and video connectors at the back for a standard TV and RGB monitor. This would be the Tandy CoCo game console unit. It would basically be a CoCo3 with no keyboard, no BASIC ROM, 128K RAM plus a 3 channel sound chip (as used in many games

consoles). This would be cheap to produce and low cost to buy. Now what if this box also had a duplicate cartridge connector as used in the CoCo3 but placed at the back of the unit. What if it also had a connector at the front of the unit marked "keyboard". Tandy could sell an add-on kit consisting of an Extended Color Basic Rom cartridge and separate detachable keyboard which when plugged into the "box" transforms it into a CoCo3! Bring out á new (or re-introduce the old) disk drive unit with Disk Extended Basic and plug it into the back connector and there you have a CoCo3 disk system!!

Now let's get really creative! How about also offering an OS-9 Level 2 ROM cartridge !!! Maybe even with Multi-Vue!!!!

I feel that this design would keep existing CoCo owners very happy and will bring together a lot more CoCo users. Users who first bought the system as a games console and later decided to upgrade it to a computer and enter the world of CoCo computing! The more I think about it the more great ideas I come up with!

Well, time to get off my soap box and return to the real world of gloom where the only thing that keeps us going is the hope that the CoCo4 become reality.

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Coco 3

Hints and Tips

These Hints and Tips have been gleaned from a variety of sources. Not all of them have been checked out to judge their veracity. Should you discover that any of the following do not work or are at fault in some particular way, please let us know for our and your future reference. Should you have any additional hints or tips we would be glad to know about them.

EDITOR.

BUGS
****

1) There is a bug when using NOT with the HPUT command.
POKE &HEF13,&HCC-8 Fixes it.

****

2) The HBUFF command has been found to throw up errors when using more than 2 buffers. These errors occur when using the GET and PUT commands.
The answer to this problem seems to be to add one (1) to each of the first buffers to coincide with the buffer numbers over 2.
EXAMPLE:

	OLD	NEW		
BUFFER No.1	65	+1	=	66
BUFFER No.2	60	+1	=	61
BUFFER No.3	179	+1	=	180
BUFFER No.4	82	82		

****

3) 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.

****

4) 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.

5) 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.

****

6) HDRAW does not work properly with relative motion in a negative direction that is greater than 255.
eg. HDRAW"BM-320". The distance is not calculated properly due to an error in the negative routine. To fix this bug use:

```
POKE &HF58D,&HBD      JSR $F4CC
POKE &HF58E,&HF4
POKE &HF58F,&HCC
```

****

7) HPUT will not work with the NOT action. The command is supposed to reverse the image in the HGET/HPUT buffer and place it on the screen.

Because of the bug, the command reverses the specified section of the screen and does nothing with the image.

To fix this bug use
POKE &HEF13,&HC4

****

SCREEN
******

8) POKE &H95AC,57:POKE &HFF22,PEEK(&HFF22) OR &H10
Gives true lowercase including decenders on a 32 column screen.

****

9) POKE &H95AC,57:POKE &HFF22,PEEK(&HFF22) OR &H20
Gives inverse video display in 32 column mode including lowercase with decenders. Some people find this easier on the eyes.

****

10) POKE &H95AC,52 will resore the above two POKEs to normal.

****

11) You can get true lower case letters in the 32 width mode in reverse video with:
POKE &H95C9,&H39: POKE &HFF22,&H34

****

12) If your TV does not give a good clear picture with the 80 column screen but you would like to have something better than a 32 or 40 column screen, the following will set up a 64 column text screen.

```
POKE &HE046,17:WIDTH80:POKE &HFE04,64:POKE &HF871,&H80:
POKE &HF875,&H2B:POKE &HF876,&H80:POKE &HFE06,&H2C
```

To restore to normal screen:-

```
POKE &HE046,21:WIDTH80:POKE &HFE04,80:POKE&HF871,&HA0:
POKE &HF875,&H2E:POKE &H876,&H60:POKE&HFE06,&H2F
```

****

13) These commands 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 MODE

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.

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

****

PROGRAMMING
****

14) In a Hi-res text screen you can CLS1 to 16 instead of CLS1 to 8 by first using:-

```
POKE &HF6BC,16
```

****

15) You can alter the blinking rate of characters on the screen with POKE &HFF94,x

Where x is a number between 0 and 100
POKE &HFF94,126 restores to normal

****

16) The HSCREEN command does the equivalent of PMODE, SCREEN and PCLS in a Coco2 and therefore makes it difficult to draw off screen. The following system overcomes this difficulty and is especially good for use in animation scenes from HBUFF saved pictures.

POKE &HE6B7,&H39:HSCREEN1:POKE &HE6B7,&H20
This will do the PMODE like and PCLS like tasks without displaying the graphics on screen.

When displaying the drawing,
POKE &HE6E4,&HE6:HSCREEN:POKE &HE6E4,&HE7
prevents the screen being cleared initially.

The POKEs following HSCREEN in both instances restore the HSCREEN to it's original state.

****

17) 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.

****

18) 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.

****

19) 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 apon when the BREAK key is pressed. This area of memory is wiped clean by the CLEAR statement.

****

20) 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.

****

21) If a programme returns to previos 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.

****

22) Problems such as complete loss of programme can be caused when Extended Basic and Super Extended Basic graphic commands are mixed. eg. The command:

HLINE-(192,639),PSET:LINE-(0,0),PSET

Will most likely cause you to lose the Basic programme.

Be very careful to include the "H" before Super Extended graphics commands.

****

GENERAL
****

23) Cold start from keyboard.....POKE113,0:EXEC &H8C1B

****

24) If you are running a demo programme which does not require keyboard input but you wish to prevent anyone (especially small kids) from inputting from the keyboard

POKE &HFF01,0 will disable the keyboard.
POKE &HFF01,4 will restore to normal.

****

25) To make sure a programme for Coco 3 will run on Coco 2 you can use POKE&H FFDE,0. This will disable all Coco 3 commands.
You can return to normal after use with POKE &H FFDF,0

****

26) The Hi-speed poke for Coco 3 is POKE &HFFD9,0
The normal speed poke is POKE &HFFD8,0

In decimal these are :-

Hi-speed POKE65497,0
Normal speed POKE65496,0

****

27) Coco 3 runs hot at the best of times but with the addition of the 512K upgrade it can attain temperatures which can make it crash.
There are two solutions to this problem. One is a fan. This is the easiest method but also the noisiest.

The second is to substitute a big thick aluminium plate for the very slight heat sink Tandy supplies on the regulator transistor. This should drastically cut down the heat quietly.

****

28) EDTASM+ can be used in the 80 column mode of Coco 3. All you have to do is set up your screen before entering RUN"DOS". However, it is even easier to boot EDTASM+ in

an 80 column mode. Just load the DOS programme from disk. You can then edit the BASIC programme as you please. Just add a line somewhere near the beginning that sets up the 80 column mode and whatever color selections you might want. When finished just resave the programme. Make sure you perform this procedure on a backup and not on your original EDTASM+ master.

You will still not be able to see what the DOS programme displays when you are in the 80 column mode so you will have to remember the keystrokes neccessary to execute EDTASM+. An easy way to do this is to rename the EDTASM+ programme to something like E. After running DOS wait for the drives to stop. Then press 2, which will cause DOS to execute the programme. The next time the drives stop just press E and ENTER.

****

29) 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.

****

30) 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.

****

31) 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

****

32) 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.

****

33) 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.

****

34) 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$:
   POKEX,VAL("&H"+A$):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.

****

35) 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
```

****

36) 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.

****

END

****

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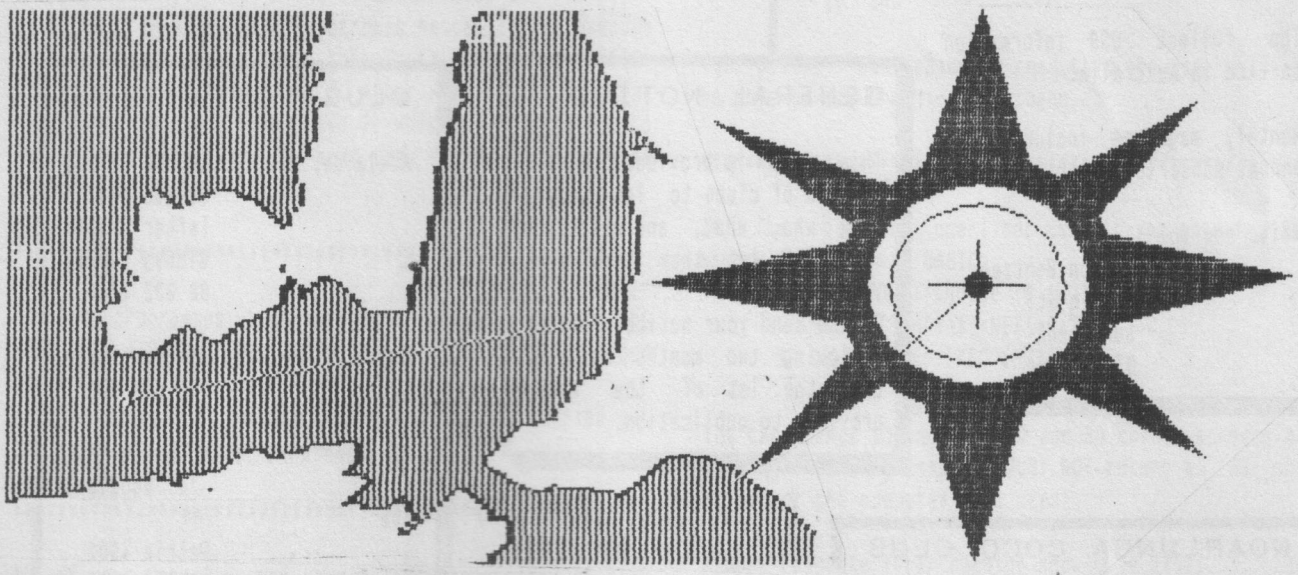


By Barry Holder

I spend time on 2-way radio watch for The Australian Volunteer Coast Guard in my area, this entails listening for MAYDAY calls and being able to pin-point the position of an emergency where latitude and longitude are given. I wrote this program as a means of getting more familiar with my area of operation.

The program shows a section of South Australia; mainly the Gulf St Vincent. When you enter the degrees and minutes of latitude and longitude for the requested area, a line is drawn from a place called O'Sullivans Beach (which is a protected boat launching area near where I live), to the position you have designated.
You can also use the joy stick to move a pixel, starting in the top left hand corner of the screen, to a fixed location; on pressing the fire button it will give the latitude and longitude of that pixel.

If not sure of any latitudes and longitudes to type in, the bearings of some places around the coastline and in the waters around are shown; copy them in to see how the program works.

Although the drawing is that of a section of South Australia's coastline, a chart of any coastline or inland area in the southern hemisphere could be used in its place. My map is 160 minutes across and 84 minutes down. If any chart substituted is kept to these dimensions the formulae should be easily made compatible. Using the lines of latitude and longitude in the manner shown, the degree numbers would be the only changes necessary.

To obtain the map of my area of operation I cut out a section from the chart of S.A. and placed it in front of the screen of my 34cm T.V. Then, using a drawing program I drew around the cut-out coastline. I filled in the colours and numbers later. I used a drawing program which writes the drawing in BASIC for the CoCo2. This was then saved to disk and MERGED later into the main program with the rest of the jargon.

The problem with this type of concept is that the number of pixels and the number of minutes of degrees are not equal to each other. So, the formulae needed to make them comparable is close to accurate, but not spot on. Therefore, I cannot say that the bearings drawn are on the exact latitude and longitude; but they are very close to it.

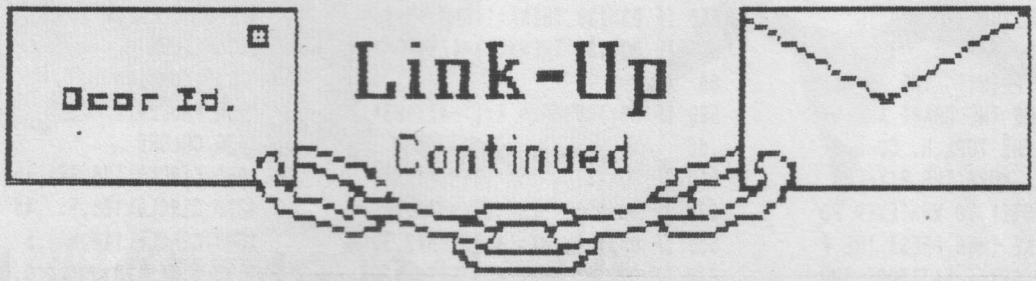
I am sure this program will be of interest to anyone interested in the emergency services. It would obviously lend itself to the more advanced hi-res graphics of a CoCo 3; maybe someone would like to attempt a conversion.

```
30 DIM EE(9,9),AA(9,9)
50 CLS0:PRINT@140,"what";:PRINT@
145,"is";
70 PRINT@237,"your";
90 PRINT@331,"bearing?";
110 GOTO1010
130 CLS7:PRINT@0," THIS PROGRAM
DEALS WITH LATTITUDES AND LONGIT
UDES OF PLACES IN OR AROUND GULF
 OF ST VINCENT, I HAVE MADE THE
STARTING POINT     O'SULLIVANS B
EACH AND HAVE PUT IN A FEW EXAMP
LES OF PLACES WITH THEIR DEGREES
 AND MINUTES OF";
150 PRINT"   LATITUDE AND LONGIT
UDE TO TRY."
155 PRINT
160 PRINT"THE LIMITATIONS OF THE
 CHART ARE 34 31'LAT TO 35 55' A
ND 136 30'LONGITUDE TO 139 10'"
170 GOSUB 4550
180 CLS:PRINT:PRINT"  THE JOYSTI
K SECTION SHOWS THE CHART AND HA
S A PIXEL IN THE TOPL.H. CORNER
OF THE SCREEN; MOVE THE PIXEL
 WITH THE JOYSTIK TO WHATEVER PO
SITION YOU LIKE THEN PRESS THE F
IRE BUTTON TO GET A LATITUDE AND
 LONGITUDE OF THAT  POINT
185 PRINT:PRINT"BECAUSE OF THE N
UMBER OF PIXELS ON THE SCREEN AN
D THE NUMBER OF MINUTES (60) IN
EACH DEGREE, THE READINGS WILL N
OT BE THE EXACT MINUTES; BUT VER
Y CLOSE TO IT."
190 GOSUB 4550
193 ' menu
195 CLS7:PRINT@134,"A - PUT IN C
O ORDINATES";:PRINT@294,"B - USE
 JOYSTIK";
200 I$=INKEY$ :IFI$="" THEN200
203 IFI$="A" THEN210 ELSEIFI$="B
" THENGOSUB470
205 GOSUB730
207 GOTO 1830
210 CLS3
220 'inputs
230 D=35:M=07:DO=138:MO=28
250 PRINT@3,"from o'sullivans be
ach to -";
270 PRINT@64,"ALTHORPES= LAT 35
23 LONG 136 51"
290 PRINT@96,"CAPE JERVIS= 35 37
 138 06"
310 PRINT@128,"KINGSCOTE = 35 39
  137 38"
330 PRINT@160,"ORONTES BANK =34
47  137 57"
350 PRINT@192,"PT VINCENT = 34 4
7  137 52"
370 PRINT@224,"STANSBURY = 34 55
  137 48"
390 PRINT@288,"DESTINATION  DEGR
EES LAT";:INPUTD2
410 INPUT"DESTINATION MINUTES LA
T";M2
430 INPUT"DESTINATION DEGREES LO
NG";D3
450 INPUT"DESTINATION MINUTES LO
NG";M3
460 GOSUB470:GOSUB730:GOSUB895:G
OTO1830
470 PRINT@489,"please wait";
480 ' calculations
490 IF D=35 THENY=93+M*1.75
510 IF D2=35 THENB=93+M2*1.75
530 IF DO=138 THENX=146+MO*1.66
550 IF D3=138 THENA=146+M3*1.66
570 IF DO=136 THENX=(1-47)+MO*1.
66
590 IF D3=136 THEN A=(1-47)+M3*1
.66
610 IF DO=137 THENX=50+MO*1.75
630 IF D3=137 THENA=50+M3*1.75
650 IF D=34 THENY=(1-79)+M*2.58
670 IF D2=34 THENB=(1-79)+M2*2.5
8
690 IF DO=139 THENX=240+MO*1.5
710 IF D3=139 THEN A=240+M3*1.5
720 RETURN
725 'chart
730 PMODE3,1:PCLS1
750 DRAW"BM254,191;C0;BM-0,-10;C
0H16L1H5L1H3L3H2L2H1L4H1L2G1L4G1
1L1G3H2L6H1L10H1G2L5H1L2H2L2H3L1
H1L1H3E1U1E3U1E6R1E2R3E1R2E1R2U1
E1U1E3U1E1U1E5R2E1R1U1E1U1E5U3E1
U3E1U14E3U1E1U20H1U3H2U4"
770 DRAW"BM192,59;BM+3,-0;C0U5E2
U1H2U1E1R2E1R1F6R1E1H11L2H1U4H4U
7H3U1H1U1H1U1H1U1H1U1H1U1H3U3H1U
3;BM-30,-0;C00;C0D1G4D4G1D1G1D1G
1D1G1D1G1F1D1F1D3F1D1F1D2F1G3D2G
1D1G1D3G3D5F1D1G3D7F1D7G2D2G1D4G
1D8G2D3G3D7G1L11H1L1H3R1H3L1H4L1
H1L2D1G6U4H3D4"
790 DRAW"BM76,98;BM+6,-6;C0;C2;B
M+5,-5;C0D2BD5D5G3L2G1L1G3L3G7L3
H1L1H1L1H3L1G10L3H1L2G1L5H2U1H1U
6H4E1R1E1R1E2R1U2E4R1U1E1R1H6E3U
3E1U1H1E2U1E1U6E6F6R2E3R2E1R1E1R
2E1R4F2R2F1R1F10R1E1U1E1U1E2U1E1
U3E1U2H2U6E3U3E2U6E1U4E1U1H3U2E3
U1H6E3U1E2U2E3U7"
810 DRAW"BM0,159;BM-0,-23;C0;C0;
BM-0,+34;C0;C0R2E2R15E2R4E2R8E2R
8E2F2R1F2R2E1U2H1R2F1E1R4E1R4E7R
2E1R3F3R4E2R3E1R2E2R7E1R4F2D5G5R
6F3G8E1R3F2R8E4D2R1D2F3G5F1R2E16
R1F9D2R1E1R1F3D6G4L2D4G8L3G4L2G3
L2G5"
850 PAINT(100,120),3,0
855 DRAW"C3 BM234,3 D6BR4R3U3NL3
U3NL3BR4ND3R3D3NL3D3"
860 DRAW"C1BM144,3 D7BR3R3U3NL2U
3NL3BR4U1D7R3U3NL3U4L3"
865 DRAW"C1BM40,3 D6BR4R3U3NL2U3
NL3BR4R3D6"
870 DRAW"C1BM2,81 R3D3NL3D3NL3BR
4R3U3L3U3R3"
875 SCREEN1,0
890 RETURN
895 'line
910 COLOR2
930 LINE(X,Y)-(A,B),PSET
950 CIRCLE(A,B),2
970 RETURN
1009 'compass
1010 PMODE4,1:PCLS5
1030 COLOR0
1050 CIRCLE(128,96),35
1070 CIRCLE(128,96),45
1090 CIRCLE(128,96),5
1110 LINE(128,0)-(110,63),PSET
1130 LINE(128,0)-(146,60),PSET
1150 LINE(200,30)-(152,65),PSET:
LINE(200,30)-(162,80),PSET
1170 LINE(230,96)-(170,110),PSET
:LINE(230,96)-(170,82),PSET
1190 LINE(212,151)-(165,114),PSE
T:LINE(212,151)-(154,129),PSET
1210 LINE(128,190)-(147,134),PSE
T:LINE(128,190)-(112,137),PSET
1230 LINE(30,100)-(88,82),PSET:L
INE(30,100)-(86,113),PSET
1250 LINE(60,159)-(108,130),PSET
:LINE(60,159)-(95,115),PSET
1270 LINE(56,37)-(100,60),PSET:L
INE(56,37)-(88,73),PSET
1290 COLOR5
1310 DRAW "C5BM126,51 R4BF30BU15
F5BD20BR4NR5BD30BL8NR8BG35BU20ND
8BH19BG8NG8BH25BR11NL8BU30BR4R8"

1330 PAINT(128,96),0,0
1350 PAINT(128,55),0,0
1370 COLOR0:CIRCLE(128,96),28
1390 DRAW"C0 BM128,96 NE32NU15NR
15ND15NL15"
1410 SCREEN2,1
1430 FOR X=1TO600:NEXT
1450 GOTO130
1830 'joystik
2000 H=JOYSTK(0):V=JOYSTK(1)
```

```
2010 IFH>40 THEN HO=HO+1
2020 IFH<20 THENHO=HO-1:IFHO<0 T
HENHO=0
2030 IF V>40 THENVI=VI+1:IFVI>19
0 THENVI=190
2040 IF V<20 THENVI=VI-1:IFVI<0
THENVI=0
2045 C=2:IF PPOINT(HO,VI)=1 THEN
C=1 ELSE C=3
2050 PSET(HO,VI,2):PRESET(HO,VI,
C):P=PEEK(65280):IFP=126 OR P=25
4 THEN2500
2060 GOTO1830
2500 CLS
2550 HA=HO+1:VA=VI+1
2600 PRINT"X,Y = "    HA","VA
2605 M1=-75:M2=50:M3=146:M4=240:
M5=-80:M6=81
2610 IF HA>49 AND HA<146 THEN261
5 ELSE IFHA>-1 AND HA<50 THEN270
0 ELSE IFHA>145 AND HA<240 THEN2
800 ELSE IFHA>239 AND HA<250 THE
N2900
2615 MO=INT((HA-M2)*.625):HB=137
:GOTO3950
2700 MO=INT((HA-M1)*0.48):HB=136
:GOTO3950
2800 MO=INT((HA-M3)*0.64):HB=138
:GOTO3950
2900 MO=INT((HA-M4)*0.64):HB=139
:GOTO3950
3950 PRINT"longitude";  HB;MO
3960 IFVA<-79 AND VA<93 THEN3970
 ELSE IFVA>92 AND VA<191 THEN398
0
3970 MA=INT((VA-M5)*0.375):VB=34
:IF MA>59 THEN 3975 ELSE3995
3975 VB=35:MA=MA-60:GOTO3995
3980 MA=INT((VA-M6)*0.53):VB=35:
GOTO3995
3995 PRINT:PRINT"latitude";VB;MA
:PRINT
4000 I$=INKEY$:IFI$="" THEN4000
4500 GOTO195
4550 PRINT@488,"press any key";
4560 I$=INKEY$:IF I$="" THEN4560

4570 RETURN
4600 '  WHAT'S YOUR BEARING
4610 ' BY  GARRY HOLDER.  1988
```



sided disks full of information from him, you might feel lost... I can help! I've been there, done that!

Johanna Vagg NSW

Dear Johanna,

I can assure you that all material submitted to COCO-LINK is read (and reread and reread) by the editors. This doesn't mean that we still don't make mistakes. In the case mentioned the problem lies more in that the various sections of the magazine are written and set up at different times. In this case, Bill's letter had already been answered before the aforesaid article was added to the magazine. We will endeavour to avoid this trap in future but, in the meantime, I am sure Bill will have read the article and got the message.

The names of reviewers are usually included with the reviews. Where this is not the case it is safe to assume that the review was written by Robbie. (He feels that maybe you see his name often enough without it being added to reviews). In future the name of reviewers will always be included.

We note your suggestion to put Graphics on PD Disks.

In regard to the graphics in Decembers issue, I would like to direct you to the letter from Graham Elphick and the answer to that letter. This was a mistake for which we apologise.

****

Dear Ed,

Just a few lines to inform you about our Users club and contacts.

The club is the Geelong Color Computer Club and we hold our meetings at the Newcombe Community Centre. We meet on the first Friday of each month except January. (Contacts can be found on the Club Noticeboard page).

Here is a short description of the club:

The Club has had its ups and downs during the years. We started in 1980/81 and were one of the first User Groups to be formed in Oz.

It had a good and enthusiastic membership of some highly skilled people some of whom have gone to bigger and (maybe not) better things. The main holding power of the club is it's library and although numbers are down to about 10 or 12, we can usually guarantee about 6 set ups in operation. We pride ourselves in offering advice to new members.

New subject:

I was very impressed with the OS9 patch to stop the screen scrolling, I have already upgraded most of my disks and I know of at least one of our members who will be using it, his TV vert.hold has insufficient control to to stop OS9 programs scrolling.

Allan Prosser NSW

****

****

THE OS9 "C" COMPILER
****
A review by Bob Devries

The C compiler programme I use to compile my programmes for Colour Computer OS9 is the one sold by Tandy. It's catalogue number is 26-3038, and it is sourced from Microware Systems. This is no longer available through Tandy outlets in Australia.....ED)

The C compiler comes on 2 X 35 track, single sided, 630 sector colour computer OS9 disks as is normal with all Tandy products. The package also includes a user manual. The two disks contain all the necessary programmes and data files to enable you to compile a programme from C source code to an OS9 6809 code object module. On the main disk, which is NOT bootable. there is only aCMDS directory which contains:-

CC1	C.PREP	C.PASS1	C.OPT	C.ASM
COPY	DEL	DIR	ECHO	LIST

The second disk contains three directories in the root directory:-

LIB DEFS SOURCES

The LIB directory contains the standard library clib.1 and the start code cstart.r. Both of these are required for compiling programmes.
The DEFS directory contains a number of header files which contain C definitions and other useful information.
The SOURCES directory contains sample source code files and another directory called SYS which contains some assembler source code files.

Having told you what's on the disks, I'll now tell you a bit about the programmes themselves. The compiler consists of several programmes which are used together, along with a small programme which interprets the command line arguments, to build a script file to do the actual work.
C.PREP is the pre-processor and is the first programme used. This programme looks through the source code and expands macros, adds the include files and sets up any definitions required.
C.PASS1 is the compiler pass one. This programme checks the syntax and structure of the source code.
C.PASS2 comes next. This does the actual changing of the C source code to assembler source code, setting up reserved memory requirements and setting up strings for the assembler etc. so that the assembler can correctly assemble the code.
C.OPT is a code optimiser which removes any unnecessary code and comments (if any), changes long branches to short branches where it can and generally tightens up the code.
C.ASM is really a disguised (early) version of the Relocatable Macro Assembler such as the one found on the "development System" disk. This section converts the assembler source code into object code, but leaves spaces for the addresses of all the subroutine calls to the standard library and other external modules such as 'cstart.r'.
C.LINK, the linker, now comes along and joins together all of the sections of code. It places 'cstart.r' at the beginning, then the body of the compiled programme, then checks through the code and adds any library calls to tne end of the module. Finally it outputs an OS9 runnable 6809 programme module.

All these operations are, however, completely automatic and the user has merely to call the compiler with the command line:-

CC1 myfile.c

This will result, if there are no errors, in a file called "myfile" to be placed in the execution directory along with the C compiler programmes.

There are a number of options available, such as a '-f=' option which will tell the linker to place the file module in whatever path is typed after the option.

eg. CC1 myfile.c -f=/r0/myfile

So you can see that this compiler is easy to use and, if you know how to write nice tidy C source code. It will give you programmes that work well and are not unreasonably long. The compiler is suitable for both Level one and Level two OS9.

When I compare this compiler with others I have used, I notice that it is nowhere near as fussy about syntax as, say, the Lattice C Compiler for the Amiga. With the Microware Compiler, for example, a pointer to a structure may be replaced with the name of the first element of that structure, something which is a definite no-no in Lattice C.
There are some other little peculiarities. For example, most C compilers require a cast to be used for the 'sizeof' function when using a structure, like this:-

```
size = sizeof(struct struct-name);
```

The Microware compiler, however, really mucks things up if you do it that way and only allows the structure name, like this:-

```
size = sizeof(struct-name);
```

Once you get to know these little funnies this compiler works well and outputs the expected code. When you combine this with a number of enhancements in the form of patches to several of the modules, especially the replacement of the 'CC1' with a (C) programme in the public domain called 'CC' which makes available several other options not normally available, the Micro ware Compiler is really worth having.

The Microware Compiler is the only compiler really produced for Colour Computer OS9 and is certainly streets ahead in the matter of price. The next available compiler is the Microware Level Two compiler for over $300. At the normal retail price of $179.95, this makes the Colour Computer version look very healthy, especially if you can pick it up for some of the very discounted prices I have seen lately.

When you add the extra libraries and header files from the 'Development System' disk and Public Domain Library, the C compiler really is worth having. Once you have mastered the C language, an art in itself, you can write all sorts of programmes, both small and large, and have them running in no time at all, and, because the result is machine code, they run fast. Seeing your own programmes running really gives you a boost and makes it a pleasure to write more.

END

(Reprinted with permission from the National OS9 User Group Newsletter. See Club Noticeboard for more details of this group.)

Awards

At the end of 1989 we presented the COCO-LINK Awards. We felt that the people presented with the awards were due them for the effort they have put in for Color Computer users in Australia.

Here at COCO-LINK we are happy to be doing our little bit to hold the Coco community together but we must admit that it does make us feel better when somebody tells us we are doing a good job.
Therefore it was with great delight that we recieved the following award in a neat little fold card. Believe me both Garry and Robbie appreciate it.

Johanna Vagg Award

this is to certify that

Robbie Dalzell and Garry Holder

are commended for unselfish service
to the
Color Computer Users of Australia

Presented by Johanna Vagg, FORBES
December 1989

Johanna Vagg

This is a small utility which copies all characters sent to the screen and sends them to the printer as well. It allows you to retain a hardcopy print of everything that is printed on the screen.
The utility works by intercepting all calls to the RAM vector at Hex 167 (Output a character to a device). It tests for device = screen (Hex 6F=0) and if it is not the screen, then control is passed to the normal CHROUT routine.
If the character is being sent to the screen, then the utility sends the character (contained in the A register) to the printer before passing control to CHROUT, where it is printed to the screen in the normal way.

The utility is complete within itself and contains its own routine to send a character directly to the printer through the RS-232 port. The baud used is the same as would apply for the ROM CHROUT routine.
The utility is 175 bytes long and can be located anywhere in memory (the code is relocatable). I find the cassette buffer a convenient place to keep it.

The utility is submitted as a Basic program with DATA statements to be poked into memory to set up the ML code. The value for M in line 10 specifies the starting address for the utility.
To set up the utility RUN "DIVERT" which will put the ML routine into memory at the selected address.
To use it, EXEC M will start sending all characters sent to the screen to the printer as well. Starting with the OK following the EXEC M.
To turn it off again, EXEC M+2, when the last characters printed to the printer will be the EXEC M+2.
If using the cassette buffer, setting M = &H200 is a convenient place to put it, and provides nice round values to remember. If you prefer decimal values rather than Hex, then you might prefer to use 500 instead.

If you want to retain the utility in its ML form, then after setting it up with the Basic program, you can (C)SAVEM "DIVERT",M,M+175,M.

The procedure used for changing the RAM vector will work with all CoCo's, including those without Extended Basic. The 3 bytes from Hex 167 are moved to create the 'return to Basic' command at NO1 in the source code. This ensures the correct branch.
The timing loop for the baud rate to send characters to the printer is effectively the same as the one used for the ROM routine. It is the same one I used in my XCOM routines, and it will send and receive characters correctly at 9600 bauds.

Following are the basic programme (Listing 1) and the Assembly code for those who wish to save the ML data.

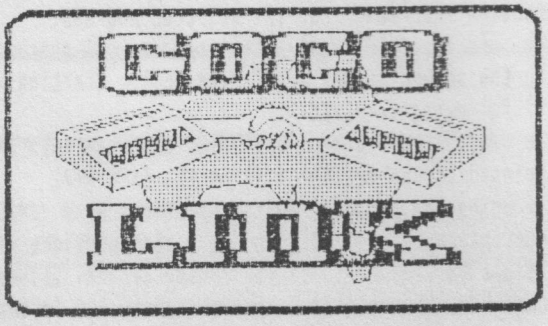
Listing 1

```
1 'CALLED DIVERT - SENDS CHARACT
ERS FOR SCREEN TO PRINTER AS WEL
L
2 ' BY GEORGE MCLINTOCK. 7 LOGAN
 ST. NARRABUNDAH. ACT 2604
10 M=&H200:LN=500:M1=M
20 FOR X=0 TO 117 STEP 25:IF X<9
9 THEN N=25 ELSE N=17
30 PRINT LN;:LN=LN+10:FOR Y=0 TO
 N-1:READ C$
40 A=VAL("&H"+C$):POKE M1,A:B=B+
A:M1=M1+1:NEXT Y:READ C$
50 IF B<>VAL("&H"+C$) THEN PRINT
 "ERROR IN LINE NUMBER";LN:STOP
60 B=0:NEXT X
70 PRINT:PRINT "DIVERT NOW IN ME
```

```
MORY":PRINT"FROM";M;"TO";M+175
80 PRINT"TO START. EXEC"M:PRINT
"TO END. EXEC";M+2
90 '
500 DATA 20,13,39,1,67,33,8C,56,
A6,C0,A7,80,EC,C4,ED,84,CC,8E,39
,20,1A,8E,1,67,33,A8D
510 DATA 8C,43,A6,84,A7,C4,EC,1,
ED,41,86,7E,A7,80,33,8C,C,EF,84,
CC,39,8E,A7,8C,E3,D91
520 DATA E7,8C,CD,39,34,3,D,6F,2
6,20,34,14,F6,FF,22,54,25,FA,8D,
1B,5F,8D,1A,C6,8,9C0
530 DATA 34,4,5F,44,59,58,8D,10,
35,4,5A,26,F3,8D,7,35,14,35,3,7E
,CB,4A,C6,2,F7,83C
540 DATA FF,20,8D,0,9E,95,8C,9E,
97,8C,9E,97,30,1F,26,FC,39,80B
```

Listing 2

```
00100 *CALLED DIVERT - SENDS SCREEN CHARACTERS TO PRINTER
00110 *BY GEORGE MCLINTOCK
00120 *7 LOGAN ST. NARRABUNDAH. ACT 2604
00130 *
00140        ORG    32000
00150 RIN    EQU    $FF22
00160 ROUT   EQU    $FF20
00170 *THESE EQU'S ARE TO FORCE 1 BYTE OFFSETS FOR ,PCR
00180 NO1    EQU    $7D5E
00190 INIT   EQU    $7D15
00200 UNDO   EQU    $7D02
00210 TST    EQU    $7D36
00220 START  BRA    INIT
00230 ZUNDO  FCB    $39        BECOMES LDX #$167
00240        FDB    $0167      WHEN INITIALISED
00250        LEAU   NO1,PCR
00260        LDA    ,U+
00270        STA    ,X+
00280        LDD    ,U
00290        STD    ,X
00300        LDD    #$8E39
00310        BRA    EXIT1
00320 ZINIT  LDX    #$167
00330        LEAU   NO1,PCR
00340        LDA    ,X
00350        STA    ,U
00360        LDD    1,X
00370        STD    1,U
00380        LDA    #$7E
00390        STA    ,X+
00400        LEAU   TST,PCR
00410        STU    ,X
00420        LDD    #$398E
00430 EXIT1  STA    INIT,PCR
00440        STB    UNDO,PCR
00450        RTS
00460 *
00470 ZTST   PSHS   CC,A      USED FOR TEST
00480        TST    <$6F
00490        BNE    NO
00500 *
00510 *
00520 *SEND CHARACTER TO PRINTER WITHOUT USING ROM
00530 *USES XCOM ROUTINE TO SEND
00540 *WITH CHANGES TO SUIT
00550 *
00560 CHXT   PSHS   B,X        USED FOR SEND
00570 SL0    LDB    RIN        TEST READY
00580        LSRB
00590        BLO    SL0
00600 *
00610        BSR    SETH       SEND SND STOP BIT
00620        CLRB              START BIT
00630        BSR    TIME       SEND IT
00640        LDB    #8         COUNTER
00650 SL1    PSHS   B          SAVE CNTR
00660        CLRB
00670        LSRA              MOVE NEXT BIT
00680        ROLB              TO SEND
00690        ASLB              POSITION
00700        BSR    TIME       SEND IT
00710        PULS   B          GET CNTR
00720        DECB
00730        BNE    SL1
00740        BSR    SETH       FIRST STOP BIT
00750        PULS   B,X        RESTORE AFTER SEND
00760 *
00770 NO     PULS   CC,A       RESTORE AFTER TEST
00780 ZNO1   FDB    0          RAM VECTOR CODE
00790        FCB    0          IS PUT HERE
00800 *
00810 *TIMING LOOP FOR SEND & RECEIVE ROUTINES
00820 *IS SAME TIMING AS ROM ROUTINE
00830 *
00840 SETH   LDB    #2         SET BIT ON
00850 TIME   STB    ROUT       SET AS REQ
00860 TIME1  BSR    F4SAME     TIMING
00870 F4SAME LDX    <$95
00880        CMPX   #$9E97     FOR SAME DELAY
00890        CMPX   #$9E97     AS ROM ROUTINE
00900 LP1    LEAX   -1,X
00910        BNE     LP1
00920        RTS
00930 *
00935 ZZEND  EQU     *
00940        END    START
```



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