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Vol.1 No.6 February, 1985

AUSTRALIAN

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To To A O V R S E P T

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Jim Bentick

All Programs in this issue of  
 Australian CoCo and MiCo  
 are available on CoCoOz  
 and MiCoOz

**SEE CENTRE PAGE  
 FOR DETAILS**

**DEADLINES**

Mar 7th Feb '85  
 April 7th Mar '85  
 May 7th April '85  
 June 7th May '85  
 July 7th June '85

**OS-9**

Kevin Holmes is the contact  
 for OS-9 information. He  
 also has access to OS-9  
 Software from the U.S.

His address is:—  
 39 PEARSON ST.,  
 NARARA, N.S.W. 2250

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# SCREEN DUMP

Here is the News.

1. IF YOU HAVE BEEN GETTING GOCO TURN TO PAGE 58. GOCO PAGE 58. GOCO PAGE 58. GOCO PAGE 58. GOCO PAGE 58. GOCO PAGE 58. GOCO PAGE 58.

2. This is our bumper Back to School, EDUCATION issue - it's very cramped inside!

3. We've changed the print size too - you get an additional page for every two over past magazines.

4. We announce a GAMES COMPETITION. Winner to be announced at CoCoConf - send your game. Prize to be announced next issue, (it'll be good!). Programs back to August last year eligible too.

5. SPELLING CONTEST. To encourage our contributors and staff to make a greater effort with spelling, for each of the next six months, the person who notes the greatest number of spelling errors in Australian CoCo / MiCo / softgold, will get 6 months FREE sub to Australian CoCo. Entries on paper only, with Page No, Line No, Column No, word and correct spelling.

6. Next issue back to 56 pages, April to be 64, May 56, etc - can't have 60 page magazine you see, it's gotta be in multiples of eight!

7. Needless to say I am very pleased with this issue and the way the crew has put it together, (14 progs for CoCo alone!). Thanks to the contributors, and special thanks to Alex Hartman, and Michael Horne who spent their school holidays voluntarily working on the magazine.



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# LETTERS

Graham,

Could you please put a few more helpful hints and does anyone know of a way of accessing the RND function from an assembly language program. Also could you tell me a little more about the new flight simulator "Worlds of Flight" from Tom Mix and any other such simulator. Anyway, keep up the good (oops, great) work.

Ian Jordan

Ian,

"Worlds of Flight" was reviewed in AUST COCO last month. The hints, well, we have to get 'em to give 'em!

Graham.

Dear Graham,

Having recently purchased the new CoCo 2 I thought it would look real keen if I put on a monochrome monitor. I have tried taking the video signal from the input to the RF modulator but I keep getting no indication on the monitor.

Have you any information on the subject? - if so, it would be greatly appreciated if you could send it to me.

Parts List:

Vid Amp b/w up to 20mhz  
Miz on 75  
0.5 - 2.0 V composite video input  
Make: Ritron

Peter Carter.  
Castlemaine, VIC.

Peter,

Check out Peter Miller's article this issue, if that isn't the total answer, then a phone conversation or visit with Peter should just about wrap it, I would think.

Graham.

Dear Graham,

I am contemplating getting the OS-9 and a modem. I would appreciate your advice whether the Tandy modem is good enough for CoCoLink. Thank you very much and I would like to wish you a prosperous and Happy New Year.

Kelvin C.K. Wu  
Anbarvale. NSW

Dear Kelvin,

I understand that the Tandy Acoustic Coupler works well and that using it, you can communicate with CoCoLink.

The greater problem is ensuring that you obtain a terminal program which is compatible with Australian standards.

Software agents such as Blaxland or Software Spectrum are able to advise on the compatibility of several programs that they each stock and the patches, where necessary, to fix the problem.

Alternatively, you might like to consider the Rainbow Bits Modem/Terminal, which is Australian designed for Australian CoCos and has the advantage / disadvantage of having it's own Terminal program in ROM.

Graham.

PAGE 4

Dear Graham,

I trust that you managed to make it to the beach and dig some of those holes. If you are still in the process of excavation, please feel free to delay work on this letter until after the holiday season (but please don't lose it!).

Firstly, let me thank you and your helpers for the work that you have all put into keeping the Rainbow alive and for getting Australian CoCo off the launching pad. I find the magazine both enjoyable and informative to read.

Next, I had a need to have CoCo 'Shift 0'. The necessary poke is not obvious (maybe not even included) in the latest 'Getting Started with Extended Color Basic' and took me a while to find. You may like to publish the information:-

1. POKE 282,0 - 'Shift 0' upper & lower case
2. POKE 282,255 - 'shift 0' normal, upper case

Once again, thank you for all your work for our hobby and my best wishes to you, your family and helpers for 1985.

Tony Soar,  
Brahama Lodge, S.A.

Tony,

Thank's very much for the POKE. We like to get at least one a week.

You'll may be interested to know that Katie and I were responsible for several holes recently that were so deep, we had to get passports to continue digging!

Graham.

Dear Graham,

Hi, I'm Andrew Woodward and am a new CoCo owner. The reason I invested in a CoCo is that I work for Tandy and I wanted to increase my product knowledge, play a few games, and also learn the basic language. I think your magazine is fantastic and I'm sure that it will be a great aid in the future.

I am also a Shortwave radio enthusiast and read in awe the article on RTTY decoding in the December issues of CoCo. I own an ICOM ICR-70 communications receiver and I would like to hook this up to my CoCo to decode RTTY and CW but unfortunately I am only a novice programmer and project kit builder and I would be willing to pay anyone who can write the necessary program and build the required interface. You can write to me at my address or phone me at home on (02) 913-2332 or at Tandy Dee Why on (02) 98-4896. I hope to hear from some good samaritan soon as this will open up a whole new horizon of SW listening and computing for me.

Keep up the good work and I look forward to hearing from one of you soon.

My address is:

72 Sydney Road  
Warriewood Beach,  
NSW. 2102.  
Andrew Woodward  
Warriewood Beach. NSW.

P.S. With the RTTY I only want to receive, not transmit.

Andrew,

I'm sure someone will come to your rescue soon!

Graham.

AUSTRALIAN CoCo

Dear Graham,

I am particularly interested in obtaining a program suitable for the keeping of accounts connected with property rentals. If possible please forward a list of all programs available - accounting, filing, games, etc.

Yours faithfully,  
Roslyn Blackband

Roslyn,

I know of no program for CoCo that does this job, but hopefully someone may well have written one by now.

How about it, anyone have one?

Graham.

Dear Graham,

I'm now allowed to use the telephone for the User Group Contacts so could you change the address on the list to include my phone number. I would be able to be contacted after 4:00pm each day.

On the scoreboard you have made a mistake by saying "Wildcatting" is made by Image Producers but it is made by Tandy because the game is a Program-Pak.

Chris Nagle.  
Leeton, NSW.

P.S. What is the phone number of CoCoLink?

Chris,

But who wrote the program?

The number of CoCoLink is 075-32-6370, and it can be found on your label each month along with your subscription number and the renewal dates of the various publications of ours to which you subscribe.

Graham.

Dear Graham,

I would also like to commend you on the magazine but I think it would be a good idea if you put in an adventure column and adventure helpline, for people like me who can not get out of the maze in "Pyramid". The people who could write it could be people like J.Gans who has got through "Pyramid", "Raakatu", "Sea Quest", "Shenanigans" and "Calixto".

Chris Nagle,  
Leeton, NSW.

Dear Graham,

I don't know if you handle these matters but if you do could you please give me advice.

My problem is when typing up programs designed for 16K (which our computer is), we always seem to run out of memory about 3/4 way through all programs.

Would you know the reason for this? I hope it's not too much to ask.

T. Evans

Dear T,

I will ask Dr CoCo to give you a fuller explanation, however what is probably happening is that you are trying to type in non graphics

February, 1985

programs. CoCo has an area of memory set aside for graphics routines, and unless you tell CoCo that you won't be needing the memory, it automatically holds about 8K in reserve for your graphics commands.

Your next contact should know about this, so ask him, and in the meantime Dr CoCo can work up some finer details.

Graham.

Dear Graham,

This is a little program for a timer. So could you be able to put this into the Australian CoCo?

```
10 CLS 0
20 FOR H=0 TO 23:FOR M=0 TO 59:FOR S=0 TO 59
30 PRINT @11, " THE TIMER ";
40 PRINT @96, "HOURS";PRINT @118,"MINUTES";
PRINT @120,"SECONDS";
50 PRINT @162, H;PRINT @176, M;PRINT@188, S;
60 SOUND 18,1:FOR DELAY=1 TO 445:NEXT DELAY
70 NEXT S,M,H:GOTO 20
```

If you want to put in an alarm then:

```
55 IF H=anytime AND/OR M=anytime AND/OR S=any-
time THEN SOUND anything you like,1
```

Could you please put it in the Magazine?

Yours Friendly,  
Chris Nagel,  
Leeton, NSW

Dear Graham,

Glenn has started up a Users Club at the Tandy Store, Brighton Road, Brighton 5048 - meetings to be held on the first Wednesday of each month at 7:30pm. He would appreciate you mentioning this in "Rainbow" - telephone enquiries 296-7477 - if possible. Thank you.

Hope things go smoothly for you from now on.

Mary Dawn,  
Seacombe Heights, SA

Dear Graham,

This is the new trade name that we (L.W. & D.W. Thurbon) will be using for all software written by us for the Color Computer. We will still be using L.W.T and D.W.T. software for any software written by us for the MC-10.

Dear Graham,

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Please make this notification public in your magazines and include the Basic program of our tradename so that people can type it in and run it to have a look at it.

Pixel software is a registered trademark of L.W. Thurbon and D.W. Thurbon.

The graphics created by the Basic program provided is a registered trademark of L.W. Thurbon and D.W. Thurbon and both are copyright (C) 1985.

Yours sincerely,  
D.W. Thurbon  
L.W. Thurbon

As usual, you guys have come up with a nice February, 1985

product, and the design looks good.

Readers of both magazines have a lot to thank you both for, as your efforts continue to educate and entertain.

Graham.



Dear Graham,

Merry Christmas and a happy New Year to you and the "Team". As much as I like Rainbow I prefer CoCo for several reasons:

- 1) More Australian. (not because I'm patriotic but because I think Aussie programmers are as good as any other.)
- 2) Not so deep. (I am not really into electronics, even if I like to Peek and Poke and try to understand some of the things that go on in there.)
- 3) More small programs including some of the Mico programs in the back of the magazine.
- 4) I have only a 16K CoCo (original) at the moment - I have been "hinting" for a 64K CoCo II for Christmas.

Please keep up the good work and keep those magazines rolling out (especially CoCo!).

George Blandford  
Moe. VIC.

Dear George,

I am a little biased towards CoCo myself at present, but I am sure also that RAINBOW will become recognised soon as THE technical journal for CoCo. It's not just the American programs and articles, but also the growing quantity of quality technical material emanating from Aussies that is going to force that delineation between the magazines.

Graham.

Dear Graham,

As a technician (getting on in years) I have tried to keep up with the latest developments throughout my life. Because computers are being introduced into our daily lives, I decided to buy a Tandy 16K Extended Color Computer to teach myself some knowledge of what is going on around me.

I thought that I would be a lost soul stumbling around in the dark, until I picked up one of your magazines in the bookshop recently.

I have realised that there are people with similar aims as myself.

E.J. Watson  
Balmoral. QLD.

The more we stick together, the stronger we grow.  
Graham.

Dear Graham,

I look forward to seeing an article by the author of the "Forth" program as I am experiencing a few problems with the mathematical operations (eg Hex answers to decimal operations). Keep up the good work!!

I would also like to register my votes in the Greg Wilson Award as follows:

AUSTRALIAN CoCo

1) The Delbourgo Family, (who could pick only one?)

2) Brian Dougan

3) Graham Morphet

If preferential voting isn't allowed, then I nominate the Delbourgo family for all the good work and effort they have put in to establishing the fact that we, in Australia, have programmers equal to and better than the Americans.

Finally, a heartfelt thanks to yourself and all there for keeping Greg's ideals alive and thriving.

Iain MacLeod,  
President  
Perth Color Computer  
Users' Group.

Dear Iain,

As you know, I support your nomination of the Delbourgos. They have been of immense importance to the CoCo community.

Thank you for the nice thoughts, and in return I once again want to underline the fact that I am aware of the importance of your group to our little CoCo world. Perth group in many ways, has had to forge ahead and find answers to problems alone. In so doing, often they arrived there either ahead of the rest of us, or at least providing a fresh approach.

In addition to the really nice people there, you are fortunate to have some very talented folk as well.

We look forward to seeing what you come up with this year.

Graham.

Dear Graham,

I subscribe to the American Rainbow and as the Australian edition is a copy I end up with two, whereas the Australian CoCo has a lot of interesting programs written by Australian authors.

Only one little gripe which is undoubtedly caused by the move, Brisbane dominates! Please give us more from the other centers with the emphasis on new blood.

Once again, a fine effort. Thanking you all in advance I remain...

Yours Sincerely,  
Graeme Nichols.  
FORESTVILLE. NSW.

Dear Graeme,

And I thought Queenslanders were parochial!

Seriously, we have had a lot of content from QLD, and I guess that reflects the fact that they are nearer to us than most of the rest of the country! Also, the clubs in Brisbane tend to phone near publication time and ask what holes they can fill. Being nearer it is feasible to ask them for immediate articles.

None the less, we get solid input from all over the country, and we are not aware of any discrimination on our part, it is really just a case of printing what comes in. If we get a program from QLD, we print it, if it comes from WA, it gets printed too!

We have decided to have a games competition, and programs sent here since August, 1984, will be included in the competition. Details will be found in Screen Dump this month. May be this is your opportunity to get together with a couple of friends, and show us what you can do. But don't forget, entries have to be original!

Graham.

OS8 is not the easiest operating system to master, and those of you who have stuck with us so far are due for a reward.

Your reward will be the OS8 communications system module, which will be available to all readers who send a stamped addressed envelope to me and include 5000 shares in BHP. The address to write to will be published in OS8 User's Magazine in the near future.

The communications module, as I promised you, is an exciting development. It uses the principle of satellite technology and does not require a modem in the conventional sense. It will require a satellite receiving and transmitting dish in your backyard. This should be no problem, as these units are available in Wee Wong for the modest sum of \$1000. The transmissions from the satellite will enable you to communicate with your CoCo cousins from here to Kurdistan and back.

For those who are seriously interested, please contact Dr CoCo after 11.30 p.m. on Wednesday night for full details.....

We are grateful to Jim Rodgers who has supplied the first OS8 program to come from our readers. We felt that the program had much to recommend it, particularly from the educational stand point.

Notice how Jim has skillfully written it so that you can also see it work in Basic. You don't even need OS8 to run it!

#### THE LISTING:

```

1  /  ****TIC TAC TOE***FOR OS8***
*   ****ORIGINAL CREATED FOR****
*   ****COCO BY G. MORPHETT*****
*   ****OS8 VERSION*****BY*****
*   ********* JIM ROGERS *****
*
10 CLSO
20 FORX=1TO9:S(X)=0:NEXT
30 FORH=15TO48
40 SET(H,7,5)
50 SET(H,17,5)
60 NEXT
70 FORV=3TO23
80 SET(23,V,5)
90 SET(40,V,5)
100 NEXT
110 PRINT@71,"1";:PRINT@80,"2";:
PRINT@88,"3";:PRINT@231,"4";:PRI
NT@240,"5";:PRINT@248,"6";:PRINT
@391,"7";:PRINT@400,"8";
120 PRINT@408,"9";
130 R=RND(2):IF R=1THENC$="0":PR
INT@452,"I'LL GO FIRST THIS TIME
!!":GOTO260

```

```

140 GOTO180
150 C$=INKEY$:PRINT@452,"DO YOU
WANT 'X'OR'0'?"::IFC$=""THEN150
160 IF C$="X"THEN810
170 IFC$(">")0"THEN30
180 Q$="X"
190 G=-1:Z=1:IFS(5)(">")0THEN210
200 S(5)=-1:GOTO730
210 IFS(5)(">")1THEN240
220 IFS(5)(">")0THEN280
230 S(1)=-1:GOTO730
240 IFS(2)=1AND S(1)=0THEN680
250 IFS(4)=1AND S(1)=0THEN680
260 IFS(6)=1AND S(9)=0THEN720
270 IFS(8)=1AND S(9)=0THEN720
280 IF G=1THEN300
290 GOTO350
300 J=3*INT((M-1)/3)+1
310 IF3*INT((M-1)/3)+1=M THEN K=
1
320 IF3*INT((M-1)/3)+2=M THEN K=
2
330 IF3*INT((M-1)/3)+3=M THEN K=
3
340 GOTO360
350 FORJ=1TO7STEP3:FORK=1TO3
360 IF S(J)(">")G THEN400
370 IF S(J+2)(">")G THEN440
380 IF S(J+1)(">")0THEN470
390 S(J+1)=-1:GOTO730
400 IF S(J)=2 THEN470
410 IF S(J+2)(">")G THEN470
420 IF S(J+1)(">")G THEN470
430 S(J)=-1:GOTO730
440 IF S(J+2)(">")0THEN470
450 IF S(J+1)(">")G THEN470
460 S(J+2)=-1:GOTO730
470 IF S(K)(">")G THEN510
480 IF S(K+6)(">")G THEN550
490 IF S(K+3)(">")0THEN580
500 S(K+3)=-1:GOTO730
510 IF S(K)=2 THEN580
520 IF S(K+6)(">")G THEN580
530 IF S(K+3)(">")G THEN580
540 S(K)=-1:GOTO730
550 IF S(K+6)(">")0THEN580
560 IF S(K+3)(">")G THEN580
570 S(K+6)=-1:GOTO730
580 GOTO760
590 IF S(3)=G AND S(7)=0THEN710
600 IF S(9)=G AND S(1)=0THEN680
610 IF S(7)=G AND S(3)=0THEN700
620 IF S(9)=0AND S(1)=G THEN720
630 IF G=-1THEN G=1:Z=-1:GOTO280
640 IF S(9)=-1AND S(3)=0THEN690

```



```

650 FORI=2T09:IF S(I)<>0THEN670
660 S(I)=-1:GOTO730
670 NEXTI
680 S(1)=-1:GOTO730
690 IF S(1)=-1THEN650
700 S(3)=-1:GOTO730
710 S(7)=-1:GOTO730
720 S(9)=-1
730 PRINT@452,"I'LL MOVE TO...";
740 GOSUB910
750 GOTO820
760 IF G=1THEN790
770 IF J=7AND K=3THEN790
780 NEXTK,J
790 IF S(5)=G THEN590
800 GOTO630
810 Q$="0"
820 D$=INKEY$:PRINT@452,"WHERE D
O YOU MOVE";:IFD$=""THEN820
830 M=VAL(D$):GOTO840
840 IF M=0THENPRINT@452,"
THANKS FOR THE GAME";:PRINT@488,
;:INPUT"RUN AGAIN Y/N";SS$:IF SS
$="Y"THEN30
850 IF M>9THEN870
860 IF S(M)=0THEN880
870 PRINT@452,"THAT SQUARE IS OC
UPIED";:FORT=1T08:NEXT:GOTO820
880 G=1:S(M)=1
890 GOSUB910
900 GOTO190
910 FORI=1T09:IFS(I)<>-1THEN950
920 GOSUB1250:IF Q$="0"GOSUB1230
930 GOSUB1240:GOTO940
940 GOTO990
950 IF S(I)<>0THEN970
960 GOTO990
970 GOSUB1250:IF C$="X"GOSUB1240
980 GOSUB1230:GOTO990
990 NEXT
1000 FORI=1T07STEP3
1010 IF S(I)<>S(I+1)THEN1060
1020 IF S(I)<>S(I+2)THEN1060
1030 A=I:B=I+1:C=I+2
1040 IF S(I)=-1THEN1180
1050 IF S(I)=1THEN1170
1060 NEXT:FORI=1T03:IF S(I)<>S(I
+3)THEN1110
1070 IF S(I)<>S(I+6)THEN1110
1080 A=I:B=I+3:C=I+6
1090 IF S(I)=-1THEN1180
1100 IF S(I)=1THEN1170
1110 NEXT:FORI=1T09:IF S(I)=0THE
N1130
1120 NEXT:GOTO1190
1130 IF S(5)<>G THEN1150
1140 IF S(1)=G AND S(9)=G THEN A

```

```

=1:B=5:C=7:GOTO1160
1150 RETURN
1160 IF G=-1THEN1180
1170 F$=C$:GOSUB1350:PRINT@452,"
YOU BEAT ME!!GOOD GAME":U=U+1:GO
TO1200
1180 F$=Q$:GOSUB1350:PRINT@452,"
I WIN AGAIN!!!":V=V+1:GOTO1200
1190 PRINT@452," IT'S A DRAW!!":
W=W+1
1200 SS$=INKEY$:PRINT@490,"RUN A
GAIN Y/N";:IFSS$=""THEN1200
1210 IF SS$="Y"THEN30ELSEGOTO123
0
1220 GOTO1430:GOTO1230
1230 PRINT@K,P$P$P$P$;:PRINT@K+3
2,P$;CHR$(143)P$;:PRINT@K+64,P$P
$P$;:RETURN
1240 PRINT@K,P$CHR$(143)P$;:PRIN
T@K+32,CHR$(143)P$CHR$(143);:PRI
NT@K+64,P$CHR$(143)P$;:RETURN
1250 IF I=1THEN K=39
1260 IF I=2THEN K=48
1270 IF I=3THEN K=56
1280 IF I=4THEN K=199
1290 IF I=5THEN K=208
1300 IF I=6THEN K=215
1310 IF I=7THEN K=359
1320 IF I=8THEN K=367
1330 IF I=9THEN K=375
1340 RETURN
1350 FOR T=1T03:P$=CHR$(191):IF
A=0THEN1370
1360 I=A:A=0:GOSUB1400:GOTO1370
1370 IF B=0THEN1390
1380 I=B:B=0:GOSUB1400:GOTO1390
1390 I=C:C=0
1400 GOSUB1250:IF F$="X"GOSUB124
0
1410 GOSUB1230:NEXT
1420 RETURN
1430 CLS0:PRINT@43,"TIC TAC TOE"
;:PRINT@139,"YOU WON"U;:PRINT@20
4,"I WON"V;:PRINT@267,"WE DREW"W
;
1440 D$=INKEY$:PRINT@485,"PRESS
ENTER TO RETURN";:IF D$=""THEN14
40

```

## CLASSIFIEDS

FOR SALE:

MC-10	WITH	16K EXT
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Good condition and with all books,  
this one owner computer has only been used  
on Sundays to drive my wife to church.  
Unfortunately I feel that it would prefer  
the faster life of the city, where bad  
language such as SN ERROR and OM ERROR  
are more acceptable.

WITH 12 PROGRAMS	\$160 ONO
Charlie TOTH	C/o Mico Magazine.

# REVIEWS

SOFTWARE

NEUTROID 2

Fun Division,  
61 Cremin Street,  
Upper Mt. Gravatt,  
4122, QLD

After receiving my copy of Neutroid 2 from Fun Division in the mail, I proceeded to read the detailed and well set out instruction leaflet. The documentation states that a professor has discovered a new sub-atomic particle (a neutroid) and that using this particle in a newly designed power generator, all of man's energy problems shall be solved. In order to create this energy, a number of lead/titanium boxes called Particle Vaults must be energized. This is done by controlling your Neutroid Particle into a collision with orbiting Protroid Particles and at the same time avoiding the deadly Antitroid Particles which are magnetically attracted to your Neutroid. Other hazards include voltage surges from Grid Charges and deadly Radiation Walls.

The entire game runs at a hectic pace, just right for the real arcade freak and the sound effects and visuals are fantastic! Not just beep and buzz sounds but full blown explosion effects! The graphics are in full color (all 8!) on a black background and very professionally put together including a great title page effect and a separate high score page.

The only thing I found a little annoying at first was that my reflexes were too slow! The game is a little hard at first (progressively harder with each grid) and I couldn't complete a grid before a meltdown (great sound here!) occurred but after awhile, I got used to it and now have mastered the first few grids.

Neutroid 2 is available on cassette for any 16K CoCo and joysticks are not needed. It sells for a very reasonable price of \$19.95 (compared to \$30.00 plus for most good games) and what I thought was the most exciting thing about Neutroid 2 is that it is....

MADE IN AUSTRALIA! I can't wait for their next game!

Reviewed by Greg Kaloutsis



16K GAME  
JOYSTICK

\$34.95.

SPIDERCIDE is one of the newer ROMPAK games from Tandy.

It's fast, with nine levels of difficulty, has good graphics, as we've come to expect and really gives you a good time.

After turning on and hitting the fire button the types of spiders are displayed and the points allotted to each.

Each spider, trailing its own particular type of web tries to trap your spacecraft.

If you collide your ship is destroyed. To retaliate, you shoot them down with missiles, if your aim is straight, spider and web disappear.

A feature of SPIDERCIDE is the guided missile mode which allows the joystick to control the missile after firing.

Three ships are allotted, if your score is 1000 you get an extra ship and the webs disappear.

When the game is over and you are ready for more hit the fire button and off you go again.

The only quibble I have is the S-L-O-W response from my joysticks (the 'old' type) but that's my problem not Tandy's.

Reviewed by D'arcy OToole

**BEST  
OF  
COCOOL  
#1**

★ A selection of  
13 wide-ranging  
EDUCATIONAL programs  
for the CoCo  
★ GREAT FOR THE FAMILY LIBRARY

13 Aussie programs for just

**\$10**

## *In Review*

The manager of the St Kilda branch of Tandy is known to his customers simply as Barry.

He has been around. Before St Kilda he spent quite a bit of time at both Chadstone and Elsternwick stores.

He is not one to muck around. When he moves into a store, he knows what he wants, he makes the changes, and the results happen.

The thing that sets him apart from a lot of managers is that he is interested in his customers, and goes out of his way to help if he can.

There is always a good stock of Color Computer Soft and Hardware, even when the other stores don't seem to have any.

For experienced and knowledgeable advice, I can't think of a better place to shop.

Jeff Sheen

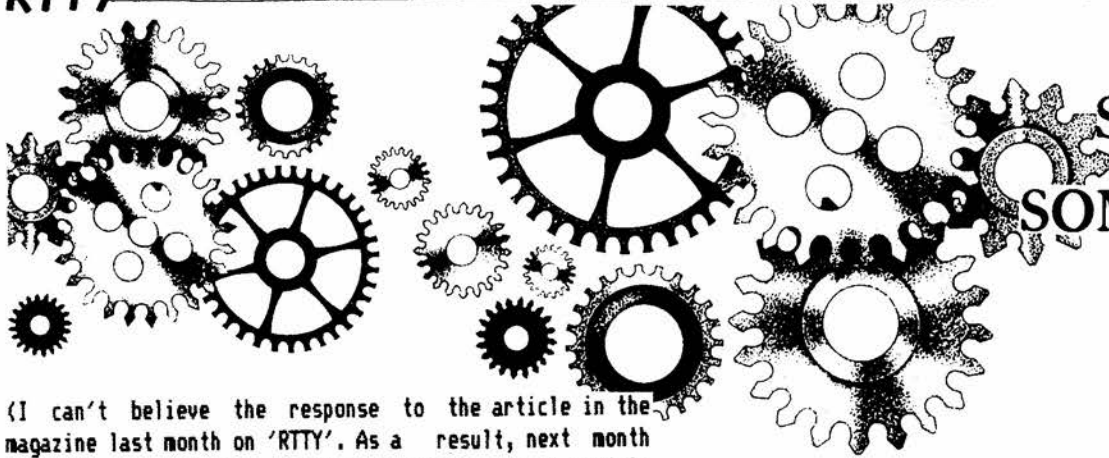
---

(Our thanks go to Jeff Sheen, Caulfield contact in Melbourne, for this review and for the photos.

I have never met Jeff, but have come to value his level headed advice. G.)

---





WE'VE  
STARTED  
SOMETHING  
NOW

Peter Williamson.  
VK4AMP.

(I can't believe the response to the article in the magazine last month on 'RTTY'. As a result, next month we will present two further programs, and an article which discusses CoCo to satellite communication. All in Basic - not even OSB! G.)

The recent article in CoCo on RTTY catalised a few thoughts of my own, regarding software for CoCo and RTTY. In particular the "Hanshack" CW program that is "floating" around in Australian circles seems to have some problems in that it sends at the incorrect speed and does not appear to work in the receive mode at all! - has anyone cured these problems? (Apparently so, 'cause that's one of the progs next month! G.) Also, the "New RTTYCW" program from Clay Abrahams suffers from similar problems. Whilst the program works fine when recorded on a cassette and then played back and decoded, it in fact runs at around 54 Baud when 45 Baud (60Wpm) is selected. (This is only a rough measure of baud rate - the elements are 18ms long measured on a Tek 465b CRO). A tape received an error from play on 10/12/84 marked "(50 Hz)", still had the above problems. Has anybody a fix for this, otherwise excellent program??

The "73" magazine program "Colorful RTTY" seems to be the nearest yet although it has trouble deciding whether the last (5th) Baudot element should be a "/" or "0" ie, it sometimes prints the letter "H" instead of a character space.

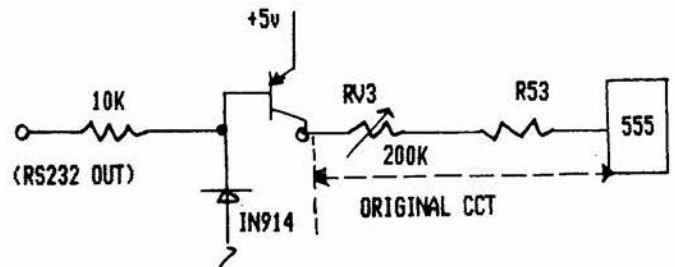
Having experienced all the above problems I took the bull by the horns and ordered a program from the U.K. and it works flawlessly. The programs are available as a tape or a ROM pack. All the fancy features mentioned as being derivable in Roy's article are available including a No-Modem option. In this mode, the tones are demodulated and filtered in software and works fine on reasonably clean signal. Input is direct to the cassette port from the receiver extension speaker socket.

Unfortunately the UK uses different standard tones for RTTY - around 1400 Hz and the program will not work direct with 2200 Hz tones. This however is no problem on SSB but doesn't work on VHF & FM. Naturally a modem connected to the RS-232 port gets over all those problems.

An alternative modem has been constructed by a few amateurs at my work based on the VZ200 (the what?) modem featured

in the last issue of E.T.I. magazine. All that is required is to invert the TX data. The mods are as follows:

- 1) Remove IC7, 4066 I.C. - return to junkbox!
- 2) Wire inverter (BC 177 or equivalent)



A C.W. interface is being developed at the moment. However, I haven't had time to lay out a P.C.B for it. The ultimate speed capability is not known but has tested to 30WPM and requires a 800Hz(+ 15Hz) input greater than 10 Mv. When finalised I will send on the details to Australian CoCo.

The address for the software is:-

Grosvenor Software (G4Bnk)  
22 Grosvenor Rd, Seaford  
E Sussex Bn25 2BS  
England

RTTY/ASCII	Prog (Tape)	12.00 Pounds
CW	Prog (Tape)	10.75 Pounds
P&P	(Air)	2.00 Pounds

Give approximately 10 days ('Nov 84)

Once again may I congratulate Roy Lopez on writing his article RTTY - let's see some more Amateur Applications for the Coco and I would like to take this opportunity to encourage anyone interested in this subject to contact me.

# VAGG 5

## COLOUR CHANGE

Sjef Vleeskens and Johanna Vagg

The idea for colour change came from that older and much simpler 2 dimensional version of RUBIKS CUBE.

The board consists of a four by four grid made up of a random pattern of two colours. By moving your cursor around the board the colour of the square changes to the opposite colour. The object of the game is to move your cursor around the board to set the entire board to only one colour.

You will be rewarded for a low total number of moves and while the concept of the game is very simple the challenge to better your low score is habit forming to say the least.

The Listing:

```
2 CLS
5 PRINT@233,"colour change";
6 PRINT@320,"BY SJEF VLEESKENS A
ND JOH
ANNA VAGG"
7 SCREEN 0,1
8 FOR T=1 TO1000:NEXT
9 CLSRND(8)
10 INPUT"INSTRUCTIONS (Y/N)";A$
11 IF A$="Y" THEN GOSUB500
15 CLS
20 C=0
30 R$=STRING$(5,191)
40 Y$=STRING$(5,159)
50 FOR X=1 TO 4:FOR Y=1 TO 4
60 IF RND(2)=1 THEN P$=R$ ELSE P
$=Y$
70 A=X:B=Y:GOSUB 330
80 NEXTY:NEXTX
90 X=4:Y=4
100 GOSUB310
110 A$=INKEY$
120 IF A$="" THEN 110
130 IF A$="Q" THEN 390
140 X1=X:Y1=Y
150 IF A$=CHR$(94) THEN Y=Y+1:GO
TO200
160 IF A$=CHR$(10) THEN Y=Y-1:GO
TO200
170 IF A$=CHR$(8) THEN X=X-1:GOT
O200
180 IF A$=CHR$(9) THEN X=X+1:GOT
O200
```

```
190 X=X1:Y=Y1:GOTO110
200 IF X>4 OR X<1 OR Y>4 OR Y<1
THEN SOUND 4,1:FOR T=1 TO 30:NEX
T:SOUND 4,1:PRINT@116,"IMPOSSIBL
E";:FOR T=1 TO200:NEXT:PRINT@116
,"";GOTO190
210 IF X=X2 AND Y=Y2 THEN SOUND
4,2:PRINT@116,"ILLEGAL";:FOR T=1
TO 200:NEXT:PRINT@116,"";
;GOTO190
220 X2=X1:Y2=Y1
230 A=X1:B=Y1:GOSUB330
240 GOSUB310
250 IF POINT((X-1)*10,(4-Y)*8)=4
THEN P$=Y$ ELSE P$=R$
260 A=X:B=Y:GOSUB330
270 GOSUB 310
280 C=C+1:PRINT@52,"MOVES=";C;
290 V=0:FOR I=1TO4: FOR J=1TO4:V
=V+POINT((I-1)*10,(4-J)*8):NEXT:
NEXT:IF V=32 OR V=64 THEN 380
300 GOTO 110
310 SET(((X-1)*10)+4,((4-Y)*8)+4
,3)
320 RETURN
330 FOR I=(4-B)*128 TO (5-B)*128
-32 STEP 32
340 PRINT@I+(A-1)*5,P$;
350 NEXT
360 SOUND200,1
370 RETURN
380 X2=1:Y2=1:FOR M=1TO9:SOUND15
0,1:SOUND200,1:CLSRND(8):NEXT:PR
INT@228,"YOU MADE IT IN";C;"MOVE
S";
382 IF C<30 THEN PRINT"
terrific!!!"
385 PRINT:PRINT:INPUT"ANOTHER GA
ME (Y/N)";B$
387 IF B$="Y" THEN GOTO 15
388 END
390 X2=1:Y2=1:SOUND 8,6:CLS0:PRI
NT@228,"YOU QUIT AFTER";C;"MOVES
";:GOTO385
500 CLS
505 PRINT@68,"STARTING AT THE TO
P RIGHT HAND SQUARE,";
510 PRINT@164,"MOVE ONE SQUARE A
T A TIME USING THE ARROWS.
";
515 PRINT@260,"YOU CAN'T BACKTRA
CK.";
520 PRINT@324,"THE OBJECT IS TO
MAKE ALL THE SQUARES THE S
AME COLOUR.";
525 PRINT@420,"YOU MAY PRESS Q T
O QUIT.";
530 SCREEN 0,1:FOR T=1 TO 4000:N
EXT
535 RETURN
```

# Kidz stuff

you  
LEV  
BEANS  
MIRAZ  
HEINZ

Johanna Vagg

Three of the most popular childrens' nursery rhymes are HUMPTY DUMPTY, TWINKLE TWINKLE LITTLE STAR and THREE BLIND MICE. CoCo can also enjoy the fun of teaching the kids these rhymes by providing colourful pictures for the kids to watch and enjoy as they sing along to the music, also played by CoCo.

## THE LISTING:

```

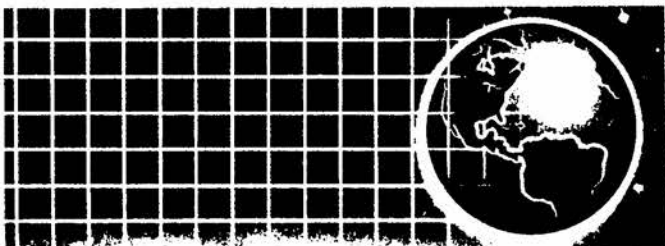
10 'KIDSTUFF
20 CLEAR 2500
30 SP$="BR9"
40 PMODE 4,1:SCREEN1,1:PCLS1
50 COLOR 2,1:POKE65494,0
60 A$="BD1D6U4NR5U2E1R3F1D6BR2B
U7"
70 B$="ND7R4F1D1G1NL4F1D2G1NL4B
R1BR2BU7"
80 C$="BD1D5F1R3E1U1BU3U1H1L3G1
BD6BR5BR2BU7"
90 D$="D7R4E1U5H1L4BD7BR5BR2BU7
"
100 E$="NR5D3NR4D4R5BR2BU7"
110 F$="NR5D3NR4D4BR5BR2BU7"
120 G$="BD1D5F1R3E1U2NL2BU2U1H1
L3G1BD6BR5BR2BU7"
130 H$="D7U4R5NU3D4BR2BU7"
140 I$="R4L2D7L2R4BR1BR2BU7"
150 J$="BD5D1F1R3E1U6BD7BR2BU7"
160 K$="D7U4R3E2NU1G2F2D2BR2BU7
"
170 L$="D7R5BR2BU7"
180 M$="ND7R1F1ND2E1R1D7BR1BR2B
U7"
190 N$="D1ND6F5D1NU7BR2BU7"
200 O$="BD1D5F1R3E1U5H1L3G1BD6B
R5BR2BU7"
210 P$="ND7R4F1D2G1L4BD3BR5BR2B
U7"
220 Q$="BD1D5F1R3E1U5H1L3G1D4BR
3F2BR2BU7"
230 R$="ND7R4F1D1G1NL4F1D3BR2BU
7"
240 S$="BD1D1F1R3F1D2G1L3H1BU5E
1R3F1BD6BR2BU7"
250 T$="R4L2D7BR3BR2BU7"
260 U$="D6F1R3E1U6BD7BR2BU7"
270 V$="D5F2E2U5BD7BR1BR1BU7"
280 W$="D6F1R1NU2R1E1NU6BD1BR2B
U7"
290 X$="D1F5D1BL5U1E5U1BD7BR2BU
7"
300 Y$="D2F2ND3E2U2BD7BR1BR2BU7
"
310 Z$="R5D1G5D1R5BR2BU7"
311 DRAW"BM20,10;S16;XK$;XI$;XD$
;XS$;XT$;XU$;XF$;XF$;"
312 DRAW"BM45,50;S4;XA$;XSP$;XP$
;XR$;XO$;XG$;XR$;XA$;XM$;XSP$;XF
$;XO$;XR$;XSP$;XC$;XH$;XI$;XL$;X
D$;XR$;XE$;XN$;"
313 DRAW"BM72,65;XB$;XY$;XSP$;XJ
$;XO$;XH$;XA$;XN$;XN$;XA$;XSP$;X
U$;XA$;XG$;XG$;"
314 DRAW"BM10,80;XW$;XH$;XO$;XSP
$;XH$;XA$;XD$;XSP$;XH$;XE$;XL$;X
P$;XSP$;XF$;XR$;XO$;XM$;XSP$;XH$
;XE$;XR$;XSP$;XC$;XH$;XI$;XL$;XD
$;XR$;XE$;XN$;"
315 DRAW"BM10,100;S8;XM$;XI$;XC$
;XH$;XE$;XL$;XL$;XE$;"
316 DRAW"BM60,120;XM$;XO$;XN$;XI
$;XC$;XA$;"
317 DRAW"BM20,140;XR$;XI$;XC$;XH
$;XA$;XR$;XD$;XSP$;XA$;XN$;XD$;"
318 DRAW"BM80,160;XP$;XE$;XT$;XE
$;XR$;"
319 FOR B=1 TO 2000:NEXT:PCLS1
320 PMODE3,1
330 PCLS2
340 COLOR4,2
350 SCREEN 1,0
360 CIRCLE(128,70),30,,1.8
370 CIRCLE(128,90),15,,.7,.1,.42
380 DRAW"BM128,70;G3E3F3"
390 CIRCLE(115,55),3
400 CIRCLE(141,55),3
410 LINE(9,123)-(246,183),PSET,B
F
420 LINE(9,143)-(246,143),PRESET
430 LINE(9,163)-(246,163),PRESET
440 LINE(40,123)-(40,143),PRESET
450 LINE(200,143)-(200,163),PRES
ET
460 LINE(150,123)-(150,143),PRES
ET
470 LINE(90,143)-(90,163),PRESET
480 COLOR2,4
490 DRAW"BM25,168;S8;XH$;XU$;XM$
;XP$;XT$;XY$;"
500 DRAW"BM145,168;XD$;XU$;XM$;X
P$;XT$;XY$;"
510 HD$="T3L403DL8FL4E-L8GFGAL4.
B-P8L4DL8FL4E-L8GFD02B-L4.03C"
520 GF$="P8L8DDFE-E-GFGAL4.B-04L
8DD03B-04E-E-DC03B-AL4.B-"
530 PLAY HD$+GF$
540 FOR M=1 TO 200:NEXT

```

```

550 PLAYHD$
560 CIRCLE(128,90),15,,.7,.1,.42
570 CIRCLE(128,95),8,4
580 FOR B=1 TO 500:NEXT
590 CIRCLE(128,70),30,,1.8
600 CIRCLE(115,55),3
610 CIRCLE(141,55),3
620 DRAW"BM128,70;C2G5E5F5"
630 CIRCLE(128,95),8
640 PLAY"T25501EFGBCAEDAGFCEDCBG
EADDABCGEADGCAEFEBCEDEGAEDBCDEDEB
CEDC"
650 PLAY"T303":PLAYGF$
660 FOR B=1 TO 500:NEXT
670 PCLS
680 PMODE0,1
690 PCLS
700 SCREEN1,1
710 DRAW"BM20,90;S12;XT$;XW$;XI$
;XN$;XK$;XL$;XE$;"
720 DRAW"BM50,130;XT$;XW$;XI$;XN
$;XK$;XL$;XE$;"
730 FOR D=1 TO 1000:NEXT
740 POKE65495,0
750 PMODE 4,1:SCREEN1,1
760 GOSUB 920
770 PLAY "T3L402CCGGAAL2G"
780 GOSUB920
790 PLAY"L4FFEEDDL2C"
800 GOSUB920
810 PLAY"L4GGFFEEL2D"
820 GOSUB920
830 PLAY"L4GGFFEEL2D"
840 GOSUB920
850 PLAY"L4CCGGAAL2G"
860 GOSUB920
870 PLAY"L4FFEEDDL2C"
880 GOSUB920
890 FOR V=1 TO 8:GOSUB920:NEXT
900 FOR X=1 TO 1500:NEXT
910 POKE 65494,0:GOTO1000
920 PCLS
930 FOR S=1 TO 7
940 X=RND(250)
950 Y=RND(180)
960 CIRCLE(X,Y),2
970 NEXT S
980 RETURN
1000 PMODE3,1:SCREEN1,1:COLOR6,5
1005 PCLS
1010 FOR S=1 TO 1000:NEXT
1015 DIM V(60,15)
1020 FOR C=1 TO 2
1025 CIRCLE(25,150),10,,.7
1030 PAINT(25,150),6,6
1035 LINE(31,145)-(43,150),PSET
1040 LINE(31,155)-(43,150),PSET
1045 CIRCLE(45,150),2
1050 LINE(15,150)-(1,150),PSET
1055 LINE(15,151)-(1,151),PSET
1060 GET(0,145)-(60,160),V,G
1065 DRAW"BM10,20;C8;S8;XT$;XH$;
XR$;XE$;XE$;XSP$;XB$;XL$;XI$;XN$
;XD$;XSP$;XM$;XI$;XC$;XE$;"
1070 COLOR6,5
1075 PLAY"T303L4E"
1080 PUT(10,120)-(70,135),V,PSET
1085 PLAY "D"
1090 PUT(5,95)-(65,110),V,PSET
1095 PLAY "C"
1100 PCLS
1105 NEXT C
1110 SE$="T303L4GL8FFL4E"
1115 Y=RND(40)+40
1120 FOR A=0 TO 180 STEP20
1125 PUT(A,Y)-(60+A,Y+15),V,PSET
1130 PCLS
1135 NEXTA
1140 PLAYSE$
1145 Y=RND(50)+100
1150 FOR A=0 TO 180 STEP20
1155 PUT(A,Y)-(60+A,Y+15),V,PSET
1160 PCLS
1165 NEXT A
1170 PLAYSE$
1175 Y=RND(50)+40
1180 FOR A=0 TO 180 STEP 20
1185 PUT(A,Y)-(60+A,Y+15),V,PSET
1190 PCLS
1195 NEXTA
1200 FW$="T303L8G04L4CL8C03BABL4
04C03L8GG"
1205 PLAYFW$
1210 PUT(15,140)-(75,155),V,PSET
1215 PUT(100,90)-(160,105),V,PSE
T
1220 PUT(50,40)-(110,55),V,PSET
1225 PLAYFW$
1230 PCLS
1235 CIRCLE(51,120),10,,.7
1240 PAINT(51,120),6,6
1245 LINE(57,115)-(69,120),PSET
1250 LINE(57,125)-(69,120),PSET
1255 CIRCLE(71,120),2
1260 LINE(36,120)-(24,125),PSET
1265 GET(30,113)-(90,128),V,G
1270 PUT(120,150)-(180,165),V,PS
ET
1275 PUT(90,40)-(150,55),V,PSET
1280 PLAY FW$
1285 PLAY "P8L8FL3EDL3C"
1290 PLAY "P8L8FL3EDL3C"
1295 FOR B=1 TO 1000:NEXT
1300 PMODE3,1
1305 PCLS3
1310 SCREEN1,0
1315 COLOR2,3
1320 DRAW"BM50,90;S12;XT$;XH$;XE
$;XSP$;XE$;XN$;XD$;"
1325 GOTO1325

```



# COUNTRIES / LANGUAGES

Countries and Languages is a simple quiz program used to drill the student on the native language of a multitude of countries.

Adding more countries is easily achieved by extending the DATA table after line 2060. It will also be necessary to redimension A\$ and B\$ in line 200 and to change line 205 to accommodate the extra countries by adding the number of extra countries to the 40 in the READ loop.

Alternatively you may completely change the DATA statements to test for any other subject, eg. dates of historical events.

## THE LISTING:

```

10 CLS
15 Y=153
20 FOR X=0 TO 31
30 POKE 1024+X,Y
40 NEXT X
50 FOR X=63 TO 511 STEP 32
60 POKE 1024+X,Y
70 NEXT X
80 FOR X=510 TO 479 STEP -1
90 POKE 1024+X,Y
100 NEXT X
110 FOR X=448 TO 32 STEP -32
120 POKE 1024+X,Y
130 NEXT X
150 SCREEN 0,1:POKE 359,13
160 PRINT@196,"countries and lan
guages";
170 PRINT@434,"JOHANNA VAGG";
180 FOR K=1 TO 800:NEXT
200 DIM A$(40),B$(40)
205 FOR I=1 TO 40
210 READ A$(I),B$(I):NEXT I
220 CLS
230 PRINT:PRINT:PRINT"WOULD YOU
LIKE TO SEE A LIST          OR T
RY A QUIZ?"
240 PRINT:PRINT:PRINT"PRESS (L)
FOR LIST          OR          (Q)
FOR QUIZ"
250 L$=INKEY$:IF L$="" THEN 250
260 IF L$="L" THEN 500
270 IF L$="Q" THEN 1000
280 PRINT:PRINT:PRINT"LET'S LOOK
AT THE LIST ANYWAY"
290 FOR K=1 TO 800:NEXT:GOTO 500
500 CLS

```

```

505 PRINT:PRINT" country"," la
nguage"
510 FOR I=1 TO 6:GOSUB 600:NEXT I
515 FOR K=1 TO 800:NEXT:CLS
520 FOR I=7 TO 13:GOSUB 600:NEXT I
525 FOR K=1 TO 800:NEXT:CLS
530 FOR I=14 TO 20:GOSUB 600:NEXT
I
535 FOR K=1 TO 800:NEXT:CLS
540 FOR I=21 TO 27:GOSUB 600:NEXT
I
545 FOR K=1 TO 800:NEXT:CLS
550 FOR I=28 TO 34:GOSUB 600:NEX
T I
555 FOR K=1 TO 800:NEXT:CLS
560 FOR I=35 TO 40:GOSUB 600:NEX
T I
565 FOR K=1 TO 800:NEXT:CLS
570 PRINT:PRINT:PRINT"NOW LET'S
TRY THE QUIZ"
580 FOR K=1 TO 400:NEXT:GOTO 1000
600 PRINT:PRINT" A$(I),"--"B$(I
)
610 SOUND 200,1
615 FOR K=1 TO 600:NEXT
620 RETURN
1000 N=0:C=0:W=0:X=0
1010 CLS
1015 N=N+1:IF N>10 THEN 1300
1020 I=RND(40)
1030 IF X=I THEN GOTO 1020
1040 X=I
1045 Q=0
1050 PRINT@228,"WHICH LANGUAGE I
S SPOKEN IN "A$(I);:INPUT J$
1060 IF J$=B$(I) THEN 1100
1070 PRINT" THAT'S NOT IT..
.TRY AGAIN";
1080 W=W+1:SOUND 20,4:FOR K=1 TO
600:NEXT:CLS
1085 Q=Q+1:IF Q=1 THEN 1250 ELSE
1200
1100 PRINT" THAT'S IT";
:SOUND 150,1:SOUND 200,1:FOR K=1
TO 100:NEXT
1110 C=C+1:GOTO 1010
1200 PRINT@228,"THE LANGUAGE SPO
KEN IN "A$(I)" IS "B$(I);
1205 FOR K=1 TO 1600:NEXT
1210 GOTO 1010
1250 PRINT@228,"WHICH LANGUAGE I
S SPOKEN IN "A$(I);:INPUT J$
1260 IF J$=B$(I) THEN 1100
1270 SOUND 4,2:PRINT@164,"NO, LET
'S HAVE A LOOK";:GOTO 1200
1300 CLS:PRINT@34,"THAT'S";C;"R
IGHT";" OUT OF";C+W;
1310 PRINT:PRINT:PRINT"WOULD YOU
LIKE TO KEEP GOING OR LOOK
AT THE LIST";
1320 PRINT:PRINT:PRINT" L FOR

```



```

LIST AND Q FOR QUIZ";
1330 J$=INKEY$:IF J$=""THEN1330
1340 IF J$="L"THEN 500
1350 IF J$="Q"THEN 1000
1360 FOR L=1 TO 6
1365 CLSRND(8):SOUND150,1:SOUND2
00,1:NEXT
1370 PRINT@234,"bye for now";
1380 FOR K=1 TO 1000:NEXT
2000 DATA AUSTRALIA,ENGLISH,AUST
RIA,GERMAN,BENIN,FRENCH,BRAZIL,P
ORTUGUESE,BURMA,BURMESE,CHINA,CH
INESE
2010 DATA COSTA RICA,SPANISH,CUB
A,SPANISH,DENMARK,DANISH,EGYPT,A
RABIC,FINLAND,FINNISH,FRANCE,FRE
NCH
2020 DATA GERMANY,GERMAN,GREECE,
GREEK,HUNGARY,HUNGARIAN,INDIA,HI
NDI,IRAQ,ARABIC
2030 DATA ITALY,ITALIAN,JAPAN,JA
PANESE,KAMPUCHEA,KHMER,LEBANON,A
RABIC,LIECHTENSTEIN,GERMAN,MALTA
,MALTESE,MEXICO,SPANISH
2040 DATA MONACO,FRENCH,NETHERLA
NDS,DUTCH,NEW ZEALAND,ENGLISH,NO
RWAY,NORWEGIAN,PAKISTAN,URDU,PHI
LIPPINES,PILIPINO
2050 DATA POLAND,POLISH,PORTUGAL
,PORTUGUESE,SPAIN,SPANISH,SWEDEN
,SWEDISH,TAIWAN,CHINESE,THAILAND
,THAI
2060 DATA USSR,RUSSIAN,UNITED KI
NGDOM,ENGLISH,USA,ENGLISH,VIETNA
M,VIETNAMESE

```

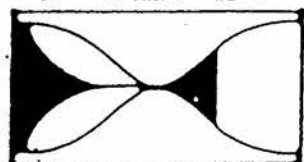
The Listing:

```

10 / *****
20 / *****
30 / **          ADD TIME          **
40 / **
50 / **          BY                **
60 / **          SAM ROBINSON      **
70 / **          4, FARR ST,       **
80 / **          EAST IPSWICH,     **
90 / **          QUEENSLAND,       **
100 / **          4305.            **
110 / *****
120 / *****
130 / THIS PROGRAM ADDS TIME....
140 CLS
150 PRINT" TO ADD TIME - FOLLOW
THE "
160 PRINT" SIMPLE INSTRUCTIONS..
....."
170 PRINT:PRINT
180 PRINT"ENTER FIRST TIME IN -"
190 PRINT"          HOURS <ENTER>
          MINUTES <ENTER>
          SECONDS <ENTER>"
200 PRINT
210 INPUT "HOURS";HH:INPUT"MINUT
ES";MM:INPUT"SECONDS";SS
220 GOTO 290
230 PRINT:PRINT
240 CLS:PRINT"ENTER NEXT TIME IN
-"
250 PRINT"HOURS, MINUTES, SECON
D S"
260 PRINT
270 INPUT "HOURS";YY:INPUT"MINUT
ES";FF:INPUT"SECONDS";II
280 FOR DLY=1 TO 200:NEXT DLY
290 CLS
300 H=HH+YY:M=MM+FF:S=SS+II
310 IF S>59 THEN S=(S/60-(INT(S/
60)))*60 :M=M+INT((SS+II)/60)
320 IF M>59 THEN M=(M/60-(INT(M/
60)))*60 :H=H+INT((FF+MM)/60)
330 PRINT:PRINT:PRINT:PRINT:PRIN
T
340 PRINT" ";:PRINT USING"####"
;H;:PRINT" HRS ";:PRINT USING"#
##";M;:PRINT" MINS ";:PRINT USI
NG"####";S;:PRINT" SECS"
350 PRINT:PRINT:PRINT:PRINT:PRIN
T
360 HH=H:MM=M:SS=S
370 PRINT" PRESS ENTER TO CONTIN
UE ADDING"
380 D$=INKEY$
390 IF D$=CHR$(13) THEN 240 ELSE
380
400 END

```

## ADD



Sam Robinson

As a novice to computing I am most keen to learn the operation of the CoCo, and I spend quite some time pottering around with simple programs of my own.

Some time back I had the need to add together quite a list of times (eg. 4hours 25 mins 35seconds to be added to 2hours 36mins 53seconds and then the total added to another 8 times). Being someone who always looks for the easiest way of doing things, I naturally turned to my trusty CoCo, and so I set to work to devise a simple program that would relieve me of all that mental toil.

The listing below is my humble attempt. Maybe someone else will find it to be useful in their own programming. I hope so.

February, 1985

AUSTRALIAN CoCo

PAGE 15

# PRIME

# TAXMAN

16K Extended Basic

Tony Parfitt

Educational software abounds for the CoCo. There are heaps and heaps of educational programs floating about the system. The trouble is, the majority of them just seem to be repetitions of previous programs. The large majority of them are mostly arithmetic programs or spelling programs for the "littlies". When you look at it the software seems to thin out to almost non-existent for the teenage population.

I am normally a games programmer; hardly ever get into the applications side of things. But one day the local Tandy dealer, Ian Loble (who by the way runs a good store), suggested that I try writing some educational software. My reply was "Are you kidding!"

Now, our users group has the habit of running a programming competition once in a while. As if by magic, the next competition was to design a prime numbers program. The prize - a free computer game. Now I couldn't pass up a chance like that so I went straight to it. The results? PRIME NUMBERS was born and "BLACK SANCTUM" is now mine.

PRIME NUMBER has a number of functions. Its core consists of a small routine that, when given a number X, will tell you if it is prime or not. The way it does it is by a

method called "sieving" - and a process of testing if the numbers are divisible by factors other than itself and one. This routine, located in lines 20 - 80, tries dividing the number contained in X by prime numbers up to the value of the square root of one thousand. If one of the numbers divides into X without a remainder (i.e. it divides exactly), then the number X is composite. If it is not divisible by any of these numbers, then X is prime. Anyway, I won't go into it in any detail as it would take pages.

The program contains its own instructions so I need not bother filling this page with repetition. Just let it be said that this program teaches and examines your knowledge of prime numbers. It is aimed more at the 9 and up children as it does not go into the the very basics of prime numbers, but tries to re-inforce already learned knowledge and increase your ability to recognize prime numbers more easily.

Listing 2, TAXMAN is a follow on to PRIME NUMBERS and is more accented on the challenge of the a game rather than with basic drill. This program was not written solely by me but is merely an appropriate adaption of an Apple program I once played. The good thing about this program is that it drills you in your knowledge of your factors without you being aware of it.

The game play is deceptively easy. You have a list of numbers from 1 to 50 (you choose the length) and the object is for you to end up with more than the TAXMAN. Each time it is your turn the computer asks you what number you want to take. When you take this number it is added to your total. Now comes the annoying part: the Taxman gets all the factors of the number you have chosen and he adds these on to his total. You've got to try to get a bigger total than him so choose your numbers wisely. But be warned, when the only numbers left in the list have no factors left in the list, the taxman collects the rest! Sure is something more and more like the real taxman, isn't it? When the list is small the taxman can be beaten quite easily, but when the list is long (eg. 50) it is a real challenge to come out on top.

#### LISTING 1:

```

10 GOT085
20 Q=1:FORC=1T011
30 IFDN(C)=X THEN50
40 IFINT(X/DN(C))=X/DN(C)THEN70
50 NEXT
60 P$="PRIME":RETURN
70 W=X/DN(C):P$="COMPOSITE":IF X
=2THENP$="PRIME"
80 RETURN
85 X=RND(-TIMER):CLSRND(9)-1:V$=
"*****":PRINT@169,V$:;P
RINT@201,V$:;PRINT@233,V$:;PRINT
@202,"prime";;PRINT@208,"number"
;PRINT@488,"BY";;PRINT@491,"TON
Y";;PRINT@496,"PARFITT";;DIMCN(3

```

```

0),DN(11),N(4)
90 POKE65495,0:GOSUB1130:FORT=1T
030:X=RND(999)+1:GOSUB20:IFP$="P
RIME"THENT=T-1:NEXTELSECN(T)=X:N
EXT
95 A$=INKEY$
110 CLS:PRINT"  WHAT IS A PRIME
NUMBER?":PRINT" A PRIME NUMBER
IS A NUMBER THAT IS ONLY ABLE TO
BE DIVIDED BY ITSELF AND ONE.
FOR EXAMPLE THE NUMBER 19 CAN O
NLY BE DIVIDED BY TWO NUMBERS: 1
AND 19"
120 PRINT" A PRIME NUMBER IS ALW
AYS AN ODDNUMBER BUT NOT ALL ODD
NUMBERS ARE PRIME. E.G. 9=3*3"
:PRINT" THIS PROGRAM CAN TEST YO
U ON YOUR KNOWLEDGE OF PRIME N
UMBERS FROM ONE TO ONE THOUSAND.
":PRINT@484,"press any key to co
ntinue";
130 PRINT@384," A NUMBER WHICH I
SN'T PRIME IS CALLED A COMPOSIT
E NUMBER."
140 IF INKEY$=""THEN140
150 CLS:PRINT" THE NUMBER ONE IS
A SPECIAL CASE AND IS NOT RE
GARDED AS A PRIME NUMBER. HOWE
VER,THE NUMBERTWO IS BECAUSE IT
IS ONLY ABLE TO BE DIVIDED BY I
TSELF AND ONE.IT IS SOMETIMES HA
RD TO TELL A COMPOSITE NUMBER F
ROM A PRIME ";
160 PRINT" NUMBER BUT AFTER A LI
TTLE PRACTICE, I AM SURE W
E WILL ALL BECOME BUDDING PRIME
NUMBER EXPERTS."
170 PRINT@484,"press any key to
continue";
180 IF INKEY$=""THEN180
190 CLS:PRINT@77,"MENU"
200 PRINT:PRINT" 1) SHORT TE
ST 2) LIST FRO
M 1 TO 1000 3) HINTS ON
PRIME NUMBERS 4) PRIME OR
COMPOSITE?"
210 PRINT:PRINT" ENTER YOU
R CHOICE"
220 A$=INKEY$:IFA$=""THEN220
230 ONVAL(A$)GOTO250,730,840,950
240 GOTO220
250 CLS:PRINT@64," WHAT LEVEL
OF DIFFICULTY"
260 PRINT@128," 1)EASY
2-100 2)MEDIUM
2-500 3)HARD 2
-1000"
270 A$=INKEY$:IF A$=""THEN270
280 IF A$="1"THEN LL=98:GOTO300:
ELSEIF A$="2"THEN LL=498:GOTO300

```

```

ELSEIFA$="3"THENLL=998:GOTO300
290 GOTO270
300 CLS:NR=0:WW=0:PRINT"IN THIS
SECTION I AM GOING TO GIVE YOU
A NUMBER AND YOU TYPE <P> IF Y
OU THINK IT'S PRIME OR <C> IF Y
OU THINK IT'S COMPOSITE."
310 PRINT" HOW MANY QUESTIONS";:
INPUT QQ
320 FORTT=1TOQQ
330 CLS0:A$=CHR$(128):X=RND(LL)+
1:PRINT@230,"the";A$;"number";A$
;"is";X;:PRINT@243,A$;
340 R$=STR$(X):PRINT@243+LEN(R$)
,A$;
350 PRINT@261,"prime";A$;"or";A$
;"composite";
360 Z$=INKEY$:IF Z$=""THEN360
370 IF Z$<>"P"ANDZ$<>"C"THEN360
380 GOSUB20
390 IF LEFT$(P$,1)=Z$THEN440
400 CLS:PRINT@236,"WRONG";:FORBB
=100TO5STEP-5:SOUNDBB,1:NEXT
410 PRINT@259,"THE NUMBER";X;"IS
";P$;
420 IF P$="COMPOSITE"THENPRINT@2
91,"WITH FACTORS OF";W;"AND";DN(
C);
430 GOTO460
440 CLS:PRINT@236,"RIGHT!";:SOUN
D200,2:SOUND200,2:PRINT@259,"THE
NUMBER";X;"IS ";P$;
450 NR=NR+1
460 PRINT@484,"press any key to
continue";
470 IF INKEY$=""THEN470ELSENEXT
480 WW=QQ
490 CLS:PRINT" NOW I AM GOING TO
GIVE YOU A MULTIPLE CHOICE TE
ST. JUST TYPE THE APPROPRIATE NU
MBER FOR THE ONLY PRIME NUMBER
IN THE GROUP."
500 PRINT"HOW MANY QUESTIONS (MA
X.10)";:INPUTQQ
510 IF QQ>10ORQQ<0THEN500
520 FORP=1TOQQ
530 CLS
540 X=RND(999)+1:GOSUB20:IFP$<>"
PRIME"THEN540
550 OO=RND(4)
560 FORV=1TO4:PRINT@V*32+73,V;CH
R$(8);")...";
570 IF V=00 THENPRINTX ELSENC=RN
D(30):PRINTCN(CN):N(V)=CN(CN)
580 NEXT
590 PRINT@295,"TYPE YOUR CHOICE"
600 A$=INKEY$:IF A$<"1"ORA$>"4"
HEN600
610 A=VAL(A$)
620 CLS:IF A=00 THENPRINT@236,"R

```

```

IGHT!":SOUND200,2:SOUND200,2:PRI
NT:PRINT"    THE NUMBER";X;"IS P
RIME":NR=NR+1
630 IF A<>00 THENPRINT@236,"WRON
G":FOR EE=80TO5STEP-5:SOUNDEE,1:
NEXT:PRINT:X=N(A):GOSUB20:PRINT"
    THE NUMBER";X;"IS COMPOSITE":P
RINT"    WITH FACTORS OF";W;"AND";
DN(C)
640 PRINT@484,"press any key to
continue";
650 IF INKEY$=""THEN650
660 NEXT
670 WW=WW+QQ:CLS:PC=INT((NR/WW)*
100)
680 PRINT@228,"    YOU SCORED";NR;"
OUT OF";WW
690 PRINT"    THAT'S";PC;"PER
CENT"
694 C=PC:PRINT
695 IFC<50THENPRINT"YOU REALLY D
O NEED SOME MORE    PRACTICE."EL
SEIFC>49ANDC<70THENPRINT"NOT BAD
    BUT THERE'S ROOM FOR    IMPROVE
MENT"ELSEIFC>69ANDC<90THENPRINT"
GOOD! IT SEEMS YOU KNOW YOUR
PRIME NUMBERS WELL."ELSEPRINT"
    HEY! THAT'S FANTASTIC!"
700 PRINT@484,"press any key to
continue";
710 IF INKEY$=""THEN710
720 GOTO190
730 CLS:PRINT"DO YOU WANT A LIST
    OF ALL PRIME NUMBERS FROM ONE T
O A THOUSAND?":GOSUB1200:IFLEFT$
(S$,1)="N"THEN810ELSECLS:PRINT"
    ***LIST OF PRIME NUMBERS***"
740 PRINT"    2 ,";
750 YY=0:Q=1
760 FOR X=3TO1000
770 GOSUB20:IFP$="PRIME"THENPRIN
TX;",";YY=YY+Q
780 NEXT
785 PRINTCHR$(8);
790 PRINT:PRINT"THESE ARE THE PR
IME NUMBERS FROMONE TO ONE THOUS
AND TOTALLING    168 PRIME NUMBER
S,821 COMPOSITE"
800 GOTO820
810 CLS:PRINT"THE ARE A TOTAL O
F 168 PRIME    NUMBERS AND 821 CO
MPOSITE    NUMBERS FROM ONE T
O ONE THOUSAND"
820 PRINT@484,"press any key to
continue";
830 IF INKEY$=""THEN830ELSE190
840 CLS
850 PRINT@8,"HINTS AND TIPS"
860 PRINT"    A GOOD GUIDE TO WHETH
ER A    NUMBER IS PRIME OR NOT

```

```

IS    A)IF THE LAST DIGIT IN
THE    NUMBER IS NOT DIVISIBL
E BY 2.    I.E. THE NUMBER IS ODD
.:PRINT"B)IF THE SUM OF THE DIG
ITS IN    THE NUMBER IS NOT DIVIS
IBLE BY 3";
870 PRINT"C)IF THE LAST DIGIT IN
THE    NUMBER IS NOT 5 OR 0"
880 PRINT"ALL OF THESE FACTORS,I
F TRUE,    POINT TO THE NUMBER BE
ING PRIME.HOWEVER,IT IS ONLY A R
OUGH GUIDE"
890 PRINT@484,"press any key to
continue";
900 IF INKEY$=""THEN900
910 CLS:PRINT"    FOR EXAMPLE, THE
NUMBER 13":PRINT:PRINT"IT IS ODD
    , IT'S DIGITS DON'T    ADD UP TO
A NUMBER DIVISIBLE BY THREE AND
ITS LAST DIGIT IS NOT ZERO OR F
IVE.":PRINT"IN THIS CASE,THE NUM
BER IS PRIME"
920 PRINT"    BUT SOMETIMES A NUMBER
MAY FIT    ALL OF THESE TESTS AND
YET STILLBE COMPOSITE OR NOT PR
IME. EG 49"
930 PRINT@484,"press any key to
continue";
940 IF INKEY$=""THEN940ELSE190
950 CLS:PRINT"    THIS SECTION WILL
TEST A NUMBERFROM ONE TO ONE TH
OUSAND TO SEE IF IT IS PRIME OR
COMPOSITE"
960 PRINT"    JUST ENTER THE NUMBER
AND THE    COMPUTER WILL TELL YOU
IF IT IS PRIME OR COMPOSITE AND
IT WILL    GIVE YOU TWO FACTORS T
HAT    MULTIPLY TO GIVE THE N
UMBER YOU HAVE TYPED."
970 PRINT"    WHEN YOU HAVE FINISHE
D,JUST    TYPE xx WHEN THE COMPU
TER ASKS    YOU FOR A NUMBER":PRIN
T@484,"press any key to continue
";
980 IF INKEY$=""THEN980
990 CLS:PRINT@230,"TYPE YOUR NUM
BER";:INPUT X$
1000 IF X$="XX"THEN190
1010 X=VAL(X$)
1020 IF X<1 OR X>1000 THEN990
1030 IF X=1 THENCLS:PRINT@224,"
THE NUMBER 1 IS NEITHER PRIME
    OR COMPOSITE.":GOTO1090
1040 IF X=2 THENCLS:PRINT@224,"
    THE NUMBER 2 IS PRIME
    WITH FACTORS OF 2 AND 1":GOTO1
090
1050 GOSUB20
1060 CLS:PRINT@226,"    THE NUMBER"
;X;"IS ";P$

```

```

1070 IF P$="COMPOSITE"THENPRINT@
259," WITH FACTORS OF";W;"AND";D
N(C)
1080 IF P$="PRIME"THENPRINT@258,
"WITH FACTORS OF";X;"AND 1"
1090 PRINT@484,"press any key to
continue";
1100 IF INKEY$=""THEN1100ELSE990
1110 GOTO1110
1120 DATA2,3,5,7,11,13,17,19,23,
29,31
1130 FORCC=1TO11:READDN(CC):NEXT
:RETURN
1200 S$=INKEY$:IFS$(">")Y"ANDS$(">")
N"THEN1200ELSERETURN

```

LISTING 2:

```

10 POKE65495,0:Y=RND(-TIMER):CLS
RND(9)-1:POKE359,13:SCREEN0,1:PR
INT@202,"THE TAXMAN";:PRINT@234,
"====="::PRINT@487,"BY TONY
PARFITT";:DIMX$(50):FORX=1TO100
0:NEXT:U=1:GOTO2000
20 P=0:Q2=T/2:IFT=1THEN190ELSEFO
RX=1TOQ2:IFX$(X)(">")"THENNEXT
25 IFT/X=INT(T/X)THENP=1:X$(X)="
#"
27 IF X>Q2 THEN190
30 NEXT:GOTO190
40 Q2=INT(N/2):X=1
43 IFX$(X)="*"THEN60
45 Y=1
47 IFX$(Y)="*"THEN60
50 IFX/Y=INT(X/Y)THEN170
60 Y=Y+U:IF Y<=Q2 THEN47
65 X=X+U:IFX<N THEN43
80 PRINT"THESE ARE NO MORE FACTO
RS OF ANYNUMBER IN THE LIST LEFT
!... THE TAX MAN GETS THE RE
ST.":PRINT"THE TOTALS ARE...":PR
INT"you"YT;" the taxman";:FORX=
1TON:IFX$(X)="*"THENTT=TT+X
81 NEXT:PRINTTT
90 IFTT=YT THENPRINT"IT'S A DRAW
!":GOTO1000
91 IFTT>YT THENPRINT"THE TAXMAN
WINS !":GOTO1000
92 IFTT<YT THENPRINT"YOU WIN !":
GOTO1000
100 TT=0:YT=0:P=0:Z=0
110 FORX=1TO50:X$(X)="":NEXT
120 CLS:INPUT"HOW MANY NUMBERS (<
10-50) ";N
125 IFN<10ORN>50THEN120
126 NN=N+1
130 CLS:FORX=1TON:IFX$(X)="*"THE
NPRINT " ";ELSEPRINTUSING"###";
X;
140 IFX/10=INT(X/10)THENPRINT"
";

```

```

150 NEXT
160 IFN/10(<)INT(N/10)THENPRINT
162 GOTO40
165 P=0
170 INPUT"WHICH NUMBER DO YOU TA
KE ";T
172 IFT(<)INT(T)THEN170
173 IFT<1THENPRINT"THE LIST DOES
N'T GO THAT LOW .":GOTO170
174 IF T>N THENPRINT"THE LIST DO
ESN'T GO THAT HIGH .":GOTO170
175 IFX$(T)="*"THENPRINT"THAT ON
E HAS ALREADY GONE !":GOTO170
180 GOTO20
190 IFP=0THENPRINT"ARE YOU TRYIN
G TO CHEAT THE TAX MAN ?! ? THERE
ARE NO FACTORS OF";T;"LEFT IN T
HE LIST !":GOTO170
200 PRINT:PRINT"YOU GET";T:YT=YT
+T:X$(T)="*":Z=Z+1:PRINT"THE TAX
MAN GETS";
210 FORX=1TOT:IFX$(X)="*"THENPRI
NTX;" , ";TT=TT+X:X$(X)="*":Z=Z+1
220 NEXT:PRINTCHR$(8)
230 PRINT"TOTALS...":PRINT"you";
YT;" the taxman";TT
240 PRINT@486,"[ENTER] TO CONTIN
UE";
241 IFINKEY$(">")CHR$(13)THEN241
250 GOTO130
1000 PRINT"DO YOU WANT ANOTHER G
AME ?"
1010 A$=INKEY$:IFA$(">")Y"THEN1010
ELSE100
2000 CLS:PRINT" ***INSTRUCTIONS
FOR TAXMAN***"
2010 PRINT" THE OBJECT OF THIS G
AME IS TO BEAT THE TAXMAN. IN A
LIST OF NUMBERS FROM 10 TO 50
(YOU CHOOSE EXACTLY HOW MA
NY) YOU MUST PICK ANY NUMBER
LEFT IN THE LIST AND THEN THE
TAXMAN WILL TAKE ALL THE FAC
TORS OF THAT NUMBER."
2020 PRINT" YOU MUST CHOOSE A NU
MBER THAT HAS FACTORS IN THE LI
ST OR YOU ARE CHEATING THE TAXM
AN. WHEN THERE ARE NO FACTORS
LEFT IN THE LIST, THE TAXMAN
GETS THE REST. HIGHEST TOTAL W
INS.":PRINT@484,"press any key t
o continue";
2030 IFINKEY$=""THEN2030ELSE100

```

(I asked Michael Hayes if he would write me a TAXMAN program, and a week later, this turned up from the inimitable Mr Parfitt. So Michael's program, which is very good too, will wait and we'll put it in a future edition of Aust CoCo. Michael's approach was different, so it will be interesting to compare the methodology of the two authors. G.)

# BEEPEROO2

Bob Horne

Here are a few notes on the changes I made to the program BEEPEROO from Australian Rainbow, July, 1982.

The boys in my class liked this program as it gave them not only the problem but auditory and visual representation of the problem. Their main criticism was that the examples were too simple - there was no challenge as most had the answer worked out before the screen display was completed.

As I saw it there were two ways to make the program more challenging - make the addends larger or add an extra addend to each problem. This has given me three programs with three different levels - quite handy to have in any class.

If you are using these programs in class then change line 560 to read:

```
560 IFV$="Y" OR V$="YES" THEN RUN
```

## LISTING 1:

```
10 'BEEPROO2 BY S.BLYNN 1981
20 'AUST RAINBOW JULY 1982
30 'ADAPTED BY R.HORNE, IPSWICH,
   Q'LD.
40 CLS
50 PRINT@12,"beeperoo";
60 FORX=0T063 STEP4:SET(X,4,7):S
   ET(X,5,7):SOUNDRND(150),1:NEXTX
70 FORX=1T063 STEP4:SET(X,26,7):
   SET(X,27,7):SOUNDRND(150),1:NEXT
   X
80 PRINT@130,"A PROGRAM FOR ADDI
   NG NUMBERS";
90 PRINT@224,"WHAT IS YOUR NAME"
   ;:INPUTN$
95 IF LEN(N$)>10 THENPRINT:PRINT
   "SORRY, THAT NAME IS TOO LONG -
   DO AGAIN."FORX=1T01000:NEXTX:RU
   N
96 IF LEN(N$)=0THENRUN
100 PRINT@320," COUNT THE BEEPS
   OR PICTURES TO HELP GET THE
   CORRECT ANSWER."
110 FORT=1T0500:NEXTT
120 PRINT@485,"PRESS ENTER TO BE
   GIN";
130 Q$=INKEY$:IFQ$=CHR$(13) THEN
170 ELSE130
160 '***U=CORRECT,D=WRONG,P=COUN
   TER***
170 D=0:U=0:P=1
180 IF P>10THEN440
```

```
185 CLS
190 Z=RND(9):X=RND(9):R=RND(9):X
   1=RND(9)
195 IF Z<3 OR X>3 OR X1<3 THEN19
   0
200 PRINT@0+INT(16-(16+LEN(N$))/
   2),N$'S EXAMPLE #";P
210 P=P+1
220 PRINTSTRING$(32,191);
230 A$=STR$(X)+" "+STR$(Z)+" "+
   +STR$(R)+" "+STR$(X1)+" ="
235 PRINTTAB(9)A$
240 PRINTSTRING$(32,191);
250 PRINT
260 FORT=1T0500:NEXTT
270 FORQ=1TOX:PRINTCHR$(166)+CHR
   $(169);" ";:SOUND175,4:NEXTQ:PRI
   NNTAB(28)X
280 FORT=1T0100:NEXT
290 PRINT:FORQ=1TOZ:PRINTCHR$(24
   6)+CHR$(249);" ";:SOUND50,4:NEXT
   Q:PRINTTAB(28)Z
300 FORT=1T0100:NEXTT
310 PRINT:FORQ=1TOR:PRINTCHR$(19
   8)+CHR$(201);" ";:SOUND125,4:NEX
   TQ:PRINTTAB(28)R
320 PRINT
325 FORQ=1TO X1:PRINTCHR$(214)+C
   HR$(217);" ";:SOUND75,4:NEXTQ:PR
   INTTAB(28)X1:PRINT
   --"
330 '***CHECK FOR SINGLE OR
   DOUBLE DIGIT ANSWER***
340 FF=416
350 PRINT@FF,;:LINEINPUT" PUT
   YOUR ANSWER HERE -->";W$:W=VAL(
   W$)
370 '***CHECK FOR TOO LARGE
   ANSWER***
380 IF W>99THENPRINT@410," "
   ;:SOUND20,1:GOTO360
390 PRINT@89,W
400 IF W=Z+X+R+X1 THEN U=U+1:FOR
   T=1T0250STEP20:SOUNDT,1:NEXTT:FO
   RT=387T0451STEP32:PRINT@T,STRING
   $(25,175);:NEXTT:GOTO401ELSE410
401 QQ=RND(6).74 QQ GOTO402,403,
   404,405,406,407
402 PRINT@421,"YAY!!! CORRECT AN
   SWER.":GOTO420
403 PRINT@421,"GREAT GOING "N$;:
   GOTO420
404 PRINT@426,"TERRIFIC!!!":GOT
   O420
405 PRINT@424,"***TOP EFFORT***"
   ;:GOTO420
406 PRINT@421,"*GOOD WORK*"N$;:
   GOTO420
407 PRINT@425,"*****WOW*****":G
   OT0420
```

```

410 IF W<>Z+X+R+X1 THENPRINT289,
Z+X+R+X1;:PRINT2416,"SORRY, THE
CORRECT ANSWER IS";Z+X+R+X1;:D=D
+1:FORT=1T03:SOUND50,3:NEXTT
420 PRINT2484,"PRESS ENTER TO GO
ON";
425 PR$=INKEY$:IF PR$(<)CHR$(13)T
HEN425
430 GOT0180
440 FORT=1T0300:NEXT
450 CLS4
460 FORX=100T0250STEP5:SOUNDX,1:
NEXT
470 PRINT234,"REPORT CARD FOR ";
N$;
480 FORX=250T0100STEP-5:SOUNDX,1
:NEXT
490 FORX=0T063:SET(X,7,6):SET(X,
9,6):NEXT
500 FORX=0T063:SET(X,26,5):SET(X
,27,6):NEXT
510 PRINT2198,"NUMBER CORRECT ";
U;
520 PRINT2262,"NUMBER WRONG ";
D;
530 PRINT2324," YOUR SCORE WAS
"U*10"%";
540 FORT=1T03000:NEXT
550 PRINT2480,"WANT TO PLAY AGAI
N (Y OR N)";:INPUTV$
560 IFV$="Y"ORV$="YES"THEN170
570 CLS:PRINT"BYE FOR NOW ";N$".
":END

```



OZY O9

by  
Bob Thomson

Well here we are again. Since last time I have had people asking about changing diskettes after bootup and changing the startup procedure. So I will try to explain it in an understandable manner?? First 'yes' you can bootup and then replace that diskette or any other drives' diskette with another of your choice. However, there are a couple of procedures to follow, or it might not work!

If the diskette you are replacing is not being used by the Data or Execution directory then all is well, else read on.

When OS9 is 'bootedup' (not the kind you do after the first two hours of having it!), it searches out the location of the Data and Execution directories and stores that information for later reference. Now if you come along and rip out that diskette and replace it with another, it will go looking for your directories at the original locations, where they may or may not be! This is because OS9 doesn't store the

# SCOREBOARD

SCOREBOARD: Feb 1985	FIRECOPTER (Adventure Intl.) R Boxall 69152	LUNAR ROVER PATROL (Spectral) C Boxall 64400	POOYAN (Datasoft) R Boxall 100050	SPACE ASSULT (Tandy) Neil Prince Forbes LI/4980 Nick Cooper 16940
ASTRO BLAST (Mark Data) David Coleman Yeronga 52000	FLYBY (Chromasette) David Coleman Yeronga 32000	MEGARUG (Tandy) Lori Lehane Penrith 19540	POPCORN (Tandy) Chris Nagle Leeton 71640 Chris Nagle Leeton 1/58120 Allan Rae Mt Isa 56770	SPACE SHUTTLE (Tom Mix) C Boxall 192
ASTRO LANDER (CoCo Software) R Boxall 4250	GALACTIC ATTACK (Tandy) Ian Choat Woodridge 35070	MICROBES (Tandy) Steven Marks Yanco LB/35410 Jack Rae Mt Isa 1/10700 R Boxall 63100 R Boxall & D Kemp 59600	PYRAMID (Tandy) J Gans Bris 200	TIME BANDIT (Michtron) Daryn Wedd 87200 J Dougan Bris 35000
ATOM (Tandy) David Thurbon (round.1) xe	GALAX ATTACK (Spectral) David Coleman Yeronga 27950	MONSTER MAZE (Tandy) Neil Prince Forbes 8410	RAAKATU (Tandy) J Gans Bris 40	TRAPPFALL (Spectral) David Thurbon Canberra 47918
BEAM RIDER (Spectral) David Thurbon Canberra 83530	GHOST GOBBLER (Spectral) Stuart Sanders 118510 Steven Marks Yanco LB/68250 Chris Nagle Leeton 64510 Chris Nagle Leeton LI0/58860	MOON SHUTTLE (Data Sft) David Thurbon Canberra 27700	ROBOT BATTLE (Spectral) R Boxall LO/4850	TUT (Andvark) Keith Savage 99430
CALIXTO (Mark Data) J Gans Bris 162	KATAPILLAR ATTACK (Tom Mix) Todd Michell Robinvale 7779 Steven Marks Yanco 9412	PLANET INVASION (Spectral) David Coleman Yeronga 48500	SEA QUEST (Mark Data) J Dougan & J GansBris 165	WHIRLYBIRD RUN (Spectral) R Boxall 42375
CANYON CLIMBER (Tandy) Steve Lemke Bribie7/101800 Chris Nagle 66600	LANCER (Spectral) M. Bloomfield Sydney 148650	POLARIS (Tandy) Chris Nagel Leeton 31306 Chris Nagel Leeton 27563 Neil Prince Forbes 13040	SHENANIGANS (Mark Data) J Gans Bris 112	WILDCATTING (Image Producers) R Boxall 34692 Chris Nagle Leeton 22848
DEVIOUS (Spectral) R Boxall 28820	LASERMORN (Rainbow) Glynn Catherall Gold Co 30366 Nick Cooper 58745	POLTERGEIST (Tandy) Steven Marks Yanco 4455	SHOOTING GALLERY (Tandy) Chris Lemke Bribiels 22420	ZACKON (Tandy) Jason Cook StClair 104600
DONKEY KING (Tom Mix) Daron Simpson 105400 R Boxall 59300 Daryn Wedd 107500		SKIING (Tandy) Jack Rae Mt Isa 0:36.00	ZAKSUND (Elite) Nick Cooper 136050	

directories in the same place all the time, unlike RSDOS, on track 17. We have a simple solution to this problem, by telling the system we have changed diskettes.

1. Remove diskette and insert another
2. Type :CHD /D0;CHX /D0/CMDS
3. Finished

Easy, isn't it? If there was only a Data directory on the diskette that was changed, then you would type:

```
CHD /d0
```

Failing to do this could give you a new operating system.

#### STARTUP

This is a file located on the root directory (the main one that is, top of the tree etc.). It can be altered and modified to your pleasure.

When it comes to you from Tandy it will read

```
SETTIME </TERM
```

Now if you're like me and want Opack running, the Error message on and the Printer set at 1200 baud, then you will have to change things a little.

```
First go to the root directory :CHD /D0
```

```
Secondly go to the edit mode :EDIT
```

```
STARTUP
```

You can now add in the items you wish I will show you mine and you can take it from there.

This is the new startup file I use.

```
LOAD ECHO (loads the echo command to
memory, faster)
ECHO SETTING PRINTER BAUD 1200 (prints
what's happening on screen).
XMODE /P BAUD=3 (sets baud to 1200)
TMODE .1 -UPC (turns on upper and
lower case mode)
ECHO PRINTERR IS ON
PRINTERR (turns on error message
display)
ECHO GOING TO HIRES HEATH (hires heath
is a display mode)
HIRES HEATH (if you have OPACK)
ECHO OS9 DRV0=40TDS DRV1=80TDS HEATH
SETIME </TERM
UNLINK ECHO (remove echo from memory)
```

(notes inside brackets are only to explain what each line is doing. Don't type into Startup file) What you put in the startup file will be acted upon when you bootup.

# SUPPLY SHIP



I can't give you too many details of just who Jason Foss is.

None the less, he created a bit of a stir here when he sent this program recently.

Both Alex and Michael were wrapt, and after seeing the program work, I decided not to show Jim until after the magazine was at the printer!

You have to land your ship safely 5 times in each landing bay. When you do this, you are rewarded by getting any men you've lost along the way.

Landing is made difficult by a laser cannon on the top of the mountain in the middle of the screen. It fires randomly around the upper part of the screen, and there is no way to avoid it! This part of the game is pure luck. Another difficulty is the rock walls around the landing bays. They are radioactive. If you get too close to them, you will explode. Be especially wary near the red markers. Landing is not impossible, it just takes practice.

When you start the game, press the fire button. The playing screen will come up in a few seconds, and you will have to press the fire button again to get the ship moving. When you start the ship up, it is wise to keep your finger on the button, otherwise your ship will fall to the rocks below and explode.

The controls are:

- \* The Joystick controls left/right movement,
- \* The Fire button makes the ship rise. Button off and the ship falls.

#### THE LISTING:

```
1 '*****
2 '** SUPPLY SHIP **
3 '** BY JASON FOSS DEC 1984 **
4 '** 69 FOREST RD MIRANDA **
5 '** SYDNEY NSW 2228 **
6 '*****
10 CLEAR1000
20 '
30 'DRAW TITLE PAGE
40 PMODE4,1:PCLS:SCREEN1,1
50 DRAW"BM20,60;S8;R10E10L10E10R
10BR5G20R10E20BR5R10G10L10E10G20
BR15E20R10G10L10R10BR5E10G20R10B
R10E10L5E10G10R10E10
```



```

60 DRAW"BM50,120;R10E10L10E10R10
BR5G20E10R10E10G20BR5R10L5E20L5R
10BR5R10G10L10E10G20
70 DRAW"BM100,160;S4E10G10R10E20
BR10R10L10G10R10L10G10BR15BE10R1
0G10L10E10R10BR5R10L10G5R10G5L10
R10BR5R10E5L10E5R10
80 U=PEEK(65280)
90 IF U=1270R U=255THEN80
100 '
110 'SET STRINGS AND ARRAY FOR
SHIP
120 DIM SHP(26,16):NHS$=""
130 MEN=3:SC=0:R=0:L=0:SC$="" :NH
S$="" :CS$=""
140 S$="R8U8L8D8E8D8BR6":S1$="R8
L4U8L4R4D8R4BR6":S2$="U4R8H4L4R4
F4L8D4R8BR6":S3$="R8H4E4L8BF8BR6
":S4$="BR4U8G4R8BF4BR2":S5$="R4E
4L8U4R8BD8BR6":S6$="R8U4L8D4U4E4
R4BD8BR6":S7$="E8L8BF8BR6":S8$="
R8U2H2E2U2L8D2F2R4L4G2D2R8BR6":S
9$="R4E4U4L8D4R8BD4BR6
150 '
160 'DRAW BACKGROUND
170 IF MEN=0THEN1680
180 PMODE3,1:PCLS:SCREEN1,0
190 COLOR2,1
200 LINE(0,0)-(32,24),PSET:LINE-
(42,50),PSET
210 LINE-(54,52),PSET:LINE-(20,1
40),PSET
220 LINE-(68,140),PSET:LINE-(76,
116),PSET
230 LINE-(74,102),PSET:LINE-(84,
72),PSET
240 LINE-(92,62),PSET:LINE-(110,
58),PSET
250 LINE-(132,74),PSET:LINE-(178
,80),PSET
260 LINE-(185,108),PSET:LINE-(17
2,140),PSET
270 LINE-(210,140),PSET:LINE-(21
5,132),PSET
280 LINE-(214,80),PSET:LINE-(202
,48),PSET
290 LINE-(208,30),PSET:LINE-(255
,30),PSET
300 PAINT(132,0),2,2
310 DRAW"BM124,68C4U4R6U4R2D4R6D
10
320 DRAW"BM176,80C4U5L2D5
330 DRAW"BM50,52;C4U5L2D5
340 DRAW"BM0,156C3R255
350 PAINT(100,191),3,3
360 DRAW"BM8,160C2R8L8D4R8D4L8R8
BR4R8L8U8R8BR4R8D8L8U8R8BR4R8D4L
8U4D8BE4F4BR4R8L8U4R8L8U4R8
370 PSET(69,162):PSET(69,165)
380 DRAW"BM8,176D8U4R8U4D8BR4R8L

```

```

4U8L4R8BR4R8L8D8R8U4L4R4BR4U4D8U
4R8U4D8
390 PSET(58,178):PSET(58,181)
400 DRAW"BM156,160D8U8F4E4D8BR4R
8L8U4R8L8U4R8BR4D8U8F8U8
410 PSET(192,162):PSET(192,165)
420 GOSUB1250
430 '
440 'DRAW SHIP AND READ JOYSTK
450 DRAW"BM222,24C3E2H2U8R20D8G2
F2H2L16BU2BR4U4R4D4L4
460 PAINT(238,20),1,3
470 GET(220,10)-(246,26),SHP,G
480 U=PEEK(65280)
490 IF U=1270R U=255THEN480
500 FORS=1TO200STEP10:SOUNDS,1:N
EXT
510 X=220:Y=10
520 A=JOYSTK(0)
530 U=PEEK(65280)
540 IF A<10THEN X=X-2
550 IF A>50THEN X=X+2
560 IF U=1270R U=255THEN Y=Y+2
570 IF U=1260R U=254THEN Y=Y-2
580 SOUND1,1
590 GOSUB670
600 GOSUB980
610 IF Y<2THEN Y=2
620 PUT(X,Y)-(X+26,Y+16),SHP,PSE
T
630 GOSUB910
640 GOT0520
650 '
660 'FIRE LASER
670 FIRE=RND(20)
680 IF FIRE<>10THENRETURN
690 FX=RND(255)
700 FY=Y+10
710 COLOR4,2
720 IF FY>61THEN FY=5
730 LINE(130,58)-(FX,FY),PSET
740 PLAY"T100;L100;03;ABGABG
750 LINE(130,58)-(FX,FY),PRESET
760 IF FX>X AND FX<X+24THEN780
770 RETURN
780 IF FY=Y+10THEN810ELSERETURN
790 '
800 'EXPLODE SHIP
810 FOR RA=2TO25STEP2
820 CIRCLE(X+15,Y+10),RA,4
830 CIRCLE(X+15,Y+10),RA-2,2
840 SOUNDNRND(50),1
850 NEXT
860 MEN=MEN-1
870 IF MEN=0THEN1790
880 GOT0170
890 '
900 'SET BOUNDARIES FOR HITTING
WALLS
910 IF PPOINT(X,Y-1)=1THEN810

```

```

920 IF PPOINT(X-1,Y+17)=1THEN810
930 IF PPOINT(X+26,Y+16)=1THEN810
940 IF PPOINT(X+26,Y+1)=1THEN810
950 RETURN
960 '
970 'CHECK IF SHIP HAS LANDED
    AND GIVE POINTS.
980 IF Y+26=150THEN1000
990 RETURN
1000 IF X<132THEN1060
1010 R=R+1
1020 SC=SC+50
1030 IF R>4THEN1110
1040 PLAY"03V30T15L2GAG;L1BBAAP1
6L4AL1GG
1050 GOTO170
1060 L=L+1
1070 SC=SC+50
1080 IF L>4THEN1110
1090 PLAY"V30;03;T15;L2;GAG;L1;B
BAA;P16;L4;A;L1;GG
1100 GOTO70
1110 IF R=5AND L=5THEN1200
1120 IF R=5OR L=5THEN1780
1130 SOUND100,5
1140 SC=SC-50
1150 IF R>5THEN R=5
1160 IF L>5THEN L=5
1170 GOTO170
1180 '
1190 'BONUS FOR LANDING FIVE
    TIMES IN EACH BAY
1200 FOR ABC=1TO2:PLAY"V3003T15L
2GAGL1BBAAP16L4AL1GGP4L2GAGL1BBA
AP16L4GL104DDP4"
1210 NEXT
1220 MEN=3
1230 L=0:R=0
1240 GOTO170
1250 '
1260 'DRAW MEN, SCORE, HIGH, &
    AMOUNT OF TIMES LANDED.
1270 IF MEN=3THENDRAW"BM200,168"
+S3$
1280 IF MEN=2THENDRAW"BM200,168"
+S2$
1290 IF MEN=1THENDRAW"BM200,168"
+S1$
1300 IF MEN=0THENDRAW"BM200,168"
+S$:GOTO1680
1310 SC$=STR$(SC)
1320 IFLEN(SC$)=0THENSC$="00000"
1330 IFLEN(SC$)=2THENSC$="00"+S
C$
1335 IFLEN(SC$)=3THENSC$="000"+S
C$
1340 IFLEN(SC$)=4THENSC$="0"+SC$
1360 FORP=1TO5
1370 TIME$=""

```

```

1380 TIME$=MID$(SC$,P,1)
1390 IFTIME$="0"THEN CS$=CS$+S$
1400 IFTIME$="1"THEN CS$=CS$+S1$
1410 IFTIME$="2"THEN CS$=CS$+S2$
1420 IFTIME$="3"THEN CS$=CS$+S3$
1430 IFTIME$="4"THEN CS$=CS$+S4$
1440 IFTIME$="5"THEN CS$=CS$+S5$
1450 IFTIME$="6"THEN CS$=CS$+S6$
1470 IFTIME$="7"THEN CS$=CS$+S7$
1480 IFTIME$="8"THEN CS$=CS$+S8$
1490 IFTIME$="9"THEN CS$=CS$+S9$
1495 NEXT
1500 DRAW"BM76,168C2"+CS$
1510 IF L=1THENDRAW"BM8,140C3"+S
1$
1520 IF L=2THENDRAW"BM8,140C3"+S
2$
1530 IF L=3THENDRAW"BM8,140C3"+S
3$
1540 IF L=4THENDRAW"BM8,140C3"+S
4$
1550 IF L=5THENDRAW"BM8,140C3"+S
5$
1560 IF L=0THENDRAW"BM8,140C3"+S
$
1570 IF R=1THENDRAW"BM224,140C3"
+S1$
1580 IF R=2THENDRAW"BM224,140C3"
+S2$
1590 IF R=3THENDRAW"BM224,140C3"
+S3$
1600 IF R=4THENDRAW"BM224,140C3"
+S4$
1610 IF R=5THENDRAW"BM224,140C3"
+S5$
1620 IF R=0THENDRAW"BM224,140C3"
+S$
1630 NHS$=CS$
1640 CS$=""
1650 IF SC>=HSC THENDRAW"BM64,18
4C2"+NHS$:HSC=SC
1660 IF SC<HSC THENDRAW"BM64,184
C2"+HSC$
1670 RETURN
1680 SCREEN0,0:CLS0:PRINT@235,"g
ame";:PRINT@243,"over";
1690 PLAY"V3001T6L1GGGL3G#L2GGE#
EL1F
1700 CLS
1710 IF SC<HSC THEN1730
1720 HSC$=NHS$
1730 PRINT@193,"SCORE:"SC
1740 PRINT@225,"HIGH:"HSC
1750 PRINT"ANOTHER GAME (Y/N)"
1760 I$=INKEY$:IFI$=""THEN1760EL
SEIF I$="Y"THEN130
1770 END
1780 PLAY"V3003T15L2GAGL1BBAAP16
L4AL1GG
1790 GOTO170

```

# The Other LOPEZZZZZZZZ

Elizabeth Lopez

The following two short programs were sent by Elizabeth Lopez, and are written for the younger person.

The first program, "Blackboard", was written a couple of years ago for her nephew, then aged 3, and her main aim was to keep it simple enough to be used by a pre-literate child without adult assistance. It allows the child to draw on the screen using the following keys:

- Arrow keys        Move the 'chalk' over the 'board'
- Space Bar        Moves it into, and out of, the draw mode.
- Cls                Wipes the board clean
- Number Keys (1-8) Change the color of the chalk Pressing any of the other keys (except the red one) will be ignored.

The second program, which she hasn't named, was written for the same nephew, but more recently. It can be used to teach the alphabet to a pre-schooler or to teach words and spelling to the slightly older child.

The program selects a word at random from data and prints the first letter in the centre of the screen. The child must then match the letter by moving a cursor (using left and right arrow keys) until it is positioned over the same letter in an alphabet printed at the top of the screen; then press the space bar. The program will then move on to the next letter, repeating this until the whole word has been spelled out (and printed at the bottom of the screen). Then press any key to start over with a new word.

Since the program is intended for small children, nothing very terrible happens if the space bar is pressed while the cursor is over the wrong letter; it simply doesn't respond until the child finds the right letter. If the child is not yet able to read, an adult should be on hand to read out the words as they are formed. She has included only a few words of data and suggests the the parent add any other words that the child may be familiar with (or that the parent would like the child to become familiar with). Including the child's name and the names of his friends is a good idea. The value of N in line 1 should be changed to the number of words in the data line's.

These are the type of programs which we really love to see.

February, 1985

Listing 1:

```

1  '***** SPELLER *****
*  ***** ELIZABETH LOPEZ *****
*  *****FOR AUST COCO FEB 85 ***
*
10 X=RND(-TIMER):N=10:FORI=1TO10
0:R=RND(10):NEXT
20 RESTORE:FORX=1TO R:READ W$:NE
XT:CLS:PRINT" ";:FORX=65TO90:P
RINTCHR$(X);:NEXT:FORL=1TOLEN(W$
):P=2:PRINT@79,MID$(W$,L,1)
30 I$=INKEY$:IFI$(">)"THEN50
40 PRINT@P," ";:FORX=1TO50:NEXT:
PRINT@P,CHR$(63+P);:FORX=1TO50:N
EXT:GOTO30
50 IFI$=CHR$(8)AND P>2THENP=P-1E
LSEIFI$=CHR$(9)AND P<27 THEN P=P
+1ELSEIFI$=CHR$(13)ANDCHR$(63+P)
=MID$(W$,L,1)THEN70
60 GOTO30
70 PLAY"04L6C":PRINT@463-INT(LEN
(W$)/2)+L,MID$(W$,L,1):NEXT:PLAY
"04L16DEFGP8CF
80 IFINKEY$=""THEN80ELSE10
90 DATADOG,CAT,APPLE,ORANGE,BOY,
GIRL,RUN,WALK,BLUE,RED
    
```

Listing 2:

```

1  '*****BLACKBOARD*****
*  *****ELIZABETH LOPEZ*****
*  *****FOR COCO FEB 84*****
10 CLS:C=5
20 I$=INKEY$:I=VAL(I$):IFI$(">)"T
HEN50
30 SET(H,V,C):IF N=0THEN20
40 FORX=1TO1000:NEXT:RESET(H,V):
FORX=1TO1000:NEXT:GOTO20
50 IFI$=CHR$(8)AND H>0THEN H=H-1
ELSEIFI$=CHR$(9)AND H<63THEN H=H
+1ELSEIFI$=CHR$(94)AND V>0THEN V
=V-1ELSEIFI$=CHR$(10)AND V<31THE
N V=V+1ELSEIFI$=CHR$(12)THENCLS0
ELSEIFI$=CHR$(32)AND N=0THEN N=1
ELSEIFI$=CHR$(32)AND N=1THEN N=0
ELSEIF I>0AND I<9THENC=I
60 GOTO20
    
```

# SOUND FOR YOUR GREEN MACHINE

(Peter Millar was known as the nice guy of Maryborough; he recently moved to Melbourne and has set up a Software agency there.)

I came up with this simple but effective way to get sound from a Coco that has a monitor driver without sound output.

You need the following for this project:

- \* About six to twelve inches of mini coax wire  
(Depends if it goes to amp. or to the monitor you have)  
Tandy Cat. Num. 278-752
- \* 1/8 Male Phono Plug  
Tandy Cat. Num. 274-286
- \* Two mini insulated clips  
Tandy Cat. Num. 270-378
- \* Mini audio amp.  
Tandy Cat. Num. 277-1008

If your monitor has sound input you will not need the amplifier for this project.

Lets get to work. Take the wire and trim about two inches of the insulation off one end, separate the shielding from the middle conductor wire. Now trim an inch from the middle wires' insulation. Move to the other end and trim one inch from it in the same procedure as the other end with half an inch from the middle wire.

Now twist the shielding wire and presolder it. Do the same at the other end so it's ready for the next step, do the same for the center wire also.

On the end you trimmed one inch, you will place the Phono plug; so first slip the plastic sleeve over the wire (the one that came with the plug). Now clamp the shielding wire onto the outside pole of the plug; this is the ground plug.

Get your soldering iron hot and solder it on. Now solder the center wire to the center pole on the plug. Trim any excess and then screw the sleeve onto the plug. Get the other end of the wire and the black clip to the ground wire.

Thats it for the wire, so put away your soldering iron and grab your Coco. (Please see footnote, first!!) Then turn it upside down and remove the screws. Turn it on its feet and take off the lid.

Now look inside for the ASTEC RF Modulator (It's the silver box at the back). It has four wires out one end of it.

You must put the red clip onto the wire that is third from the left (looking directly at the four wires). Now put the black clip onto the ground (see picture) on the PC board. Finally, run the wire out your Coco through the TV output hole. Close up your computer and if you don't have sound input on your monitor, you will have to get a

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## Peter Miller

mini amplifier (Tandy has one for \$19.95 and it will do a great job!).

Plug the phono plug into the input on the monitor or amp. Turn it on, and your Coco and type in SOUND 150,10 and press <ENTER>....

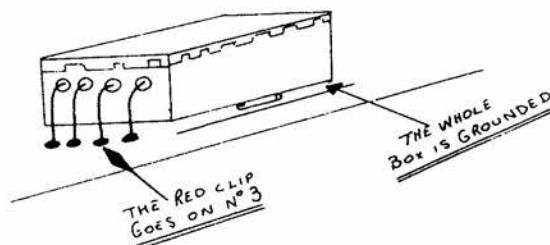
And there you have it - sound!

If you want I can make up the wire for you at cost price plus postage and that will save buying a whole roll of wire and a pack of clips (they come in a pack of ten) etc.

Just send your name and address and money order for \$3.50 to me,

Peter Miller,  
P.O. Box 314,  
Carnegie Vic  
3163

NOTE: I have the older version Coco so I don't know if Tandy has changed their RF Modulator in the Coco II (the latest smaller model). Also I must warn you that opening the Coco's case will void any warranty....



## CoCoConection.

The CoCoConection has finally arrived. If you would like your CoCo to control robots, models (CoCoConection was designed specially for Model Railways), experiments, or a host of other items external to CoCo, then CoCoConection is for you.

The Mark I has 8 inputs (sensors), and 8 outputs. It costs \$180.

The Mark II, to be released later in the year, has the ability to accept ADDA Paks to a total of 255 input / outputs.

CoCoConection is available from ourselves at Rainbow, or from our agents.

AUSTRALIAN CoCo

February, 1985

# FORTH

## Part 2. Starting Comparisons and Control

John Redmond

Did you have trouble at the end of last month's article? Don't worry, I was only trying to tickle your fancy. From here on in, we will build progressively - and in a more disciplined way.

Look back at the BDUMP definition. Lots of unexplained new words. Notice the colon and the semicolon. They are both Forth words and they delimit (enclose) the components of a new definition (in this case, the BDUMP word). Notice the DO...LOOP. That is the Forth equivalent of the FOR...NEXT loop in Basic.

BDUMP is equivalent to the following Basic code:

```
10000 END = START + LENTH - 1
10010 FOR INDEX = START TO END
10020 PRINT HEX$(PEEK(INDEX))
10030 NEXT INDEX
10040 RETURN
```

Use of this subroutine requires that two (global) variables, START and LENTH, be assigned values before the GOSUB, e.g.,

```
570 START = &H200
580 LENTH = &H30
590 GOSUB 10000
```

In other words, names and memory space have been reserved for the two, very transient, variables. Forth, in common with other structured languages like Pascal and C, allows parameters to be passed in temporary memory space - on the stack. We could easily write a Pascal procedure or a C function which is invoked as bdump (\$200, \$30); and which is entirely equivalent to HEX 200 300 BDUMP.

Of course it is often good practice to use named variables and assign to them values which you might want to access or alter from time to time. No problem.

VARIABLE #CUSTOMERS defines a variable which might be used to keep track of the number of customers in a shop. When the word #CUSTOMERS is subsequently used, an ADDRESS is put on top of the stack. Want to know the current customer count? Then input #CUSTOMERS @. and you get your answer. Puzzled? Look at it like this: the address on the stack after invoking the variable name is a POINTER to the value of the variable. The @ word is then the appropriate way of obtaining its value.

Conversely, if you want to assign a value to #CUSTOMERS, you input, e.g., 16 #CUSTOMERS ! Look back at last month's article and you will see that you are peeking and poking a memory location.

Assume another defined variable VARIABLE #ADULTS If we  
February, 1985

want to assign to #CUSTOMERS the current value of #ADULTS,

#ADULTS @ #CUSTOMERS ! will do it. Reread this section and practise defining and using variables. If you want to use a little less memory, you can define 1 byte (character) variables, such as:

CVARIABLE MAXIMUM-AGE

In such an event, you will use C@ and C! to access and assign variables. Remember, though, that the maximum value in such a case will be 255 decimal.

Forth also permits definition of constants.

DECIMAL 13 CONSTANT CRET identifies CRET with the value of 13. Each time CRET is used, the value of 13 is put on the stack. Notice that a constant is a VALUE, while a variable is an ADDRESS. Sensible use of constants makes programs more intelligible. In this case, it is much more meaningful to use CRET, if you are referring to a carriage return, rather than a cryptic 13.

Lets do some more assignments.

#CUSTOMERS @ #ADULTS @- #CHILDREN !

This sequence has calculated the number of children and assigned the result to the appropriate variable (it is assumed that you have already defined #CHILDREN as a variable!).

Now that you have started to enter definitions, we had better clarify the naming constraints. Names are distinguished on the basis of

1. the first three characters &
2. the length of the name.

It is good policy to, as far as possible, make the first three characters distinctive. You will occasionally slip up. I do - as an example when I was recently writing an editor program, I defined a word called -TEST. When I subsequently defined words using -TEXT (a standard Forth word), -TEST was used in the compilation. The result was spectacular chaos. You see, the first three characters are the same AND the lengths are the same. On the other hand, as we will see below, it is acceptable to define words such as GREET and GREETINGS because these have different lengths.

Now let's look at how Forth makes decisions (backwards, of course!). The simplest decision of words are = and <. The sequence 4 3 > asks whether 4 is greater than 3 and returns the appropriate true/false flag on the stack. True is 1 (it's -1 in the 1983 proposed standard, but don't worry about that) and false is 0. Such flags can be used to control subsequent actions.

An important associated word is NOT. This changes true to false and vice versa. Try

1 NOT.

and 0 will be printed. The combination

> NOT

is equivalent to Basic's  $\langle = \rangle$ . You can work out what  $\langle \text{NOT} \rangle$  and  $\langle = \text{NOT} \rangle$  are equivalent to.

The simplest decision is IF, which expects a flag on the stack and will act, or not act, on the basis of the state of the flag. IF is one of a number of structured control words which do clever internal things and which must be used INSIDE a colon definition (Remember the colon and semicolon in the definition of BDUMP). Type in

```
: DECIDE > IF ."GREATER" ELSE ."NOT GREATER"  
THEN CR ;
```

Watch the spaces; this definition can be typed in one continuous line without pretty formatting.) Try different pairs of numbers, e.g.,

```
4 3 DECIDE and see what you get. Try negative numbers  
and redefine DECIDE using other comparison words and  
appropriate changes to the text output.
```

Notice that DECIDE is yet another word that you have compiled using the colon compiler (colon and semicolon).

If you later type in

```
FORGET DECIDE
```

you will remove DECIDE and ALL SUBSEQUENT words, variables and constants from the Forth dictionary. On the other hand, any of these entries which you have already defined can be used in any subsequent definition. Try

```
: GREET ."GOOD MORNING" CR ;: GREETINGS 0 DO GREET  
LOOP ;
```

If you then type

```
8 GREETINGS you will get just that. (CR, which we  
have just used a couple of times, is another Forth word  
(and you guessed it, it outputs a carriage return.) ." is  
a useful word which prints a string of characters up to  
the next double quote (").
```

To round off this month, let's try to get some of those words working together. Ever wanted to search through memory, looking for occurrences of a particular 16-bit value? Easy in Forth.

```
VARIABLE SOUGHT: WSEARCH SWAP DO I @ SOUGHT @ =  
IF I . THEN LOOP ;: FWORD SOUGHT ! WSEARCH ;
```

To use FWORD, you need to have three values ready in the correct order on the stack: starting address for search, final address +1, word sought. Try

```
HEX A000 C000 A1C1 FWORD
```

(A1C1 is the address of the character input routine and you are searching through the Basic ROM for the points at which it is accessed via a JSR.) This sort of operation can be carried out much more efficiently and cleanly, but that will do for now. To encourage proper respect, though, I suggest that you time the operation of FWORD, then write an equivalent routine in Basic and time it!

Next month, we will start to look at how to make more complicated decisions, some of the elements of structured control and how to use the most common of the stack manipulation words. Between now and then, if you have access to a Forth system, PLAY with it. No language is greater fun.

## AREA and PERIMETER

Bob Horne

AREA AND PERIMETER allows the user to practise the calculation of areas and perimeters of either squares or rectangles. You may choose to practise either perimeters or areas or both together.

If a wrong answer is given, the user is shown how to work out the correct answer, the correct rule is given and the problem is presented again. Although a square is a special example of a rectangle, line 1060 ensures that no squares are presented when practising rectangles. The same problem may appear more than once, but line 1080 ensures that this does not happen consecutively.

DN GOTO is used throughout the program and this does lead to a certain amount of "skipping". The main variables used in the program are:

```
CH$( ) draw strings for the characters  
M$ the characters to be drawn  
RS=1 squares  
RS=2 rectangles  
AN=1 perimeter of squares  
AN=2 area of squares  
AN=3 perimeter of rectangles  
AN=4 area of rectangles
```

A,B,C,D decide the size of the shape to be drawn

Examples can be made harder by altering the formula in lines 1040 and 1050 (change the 10 to a 5); change the "5" in lines 1120 and 1130 to "2.5".

Lines 1020 and 1030 could also be changed to fit in with the above changes. E.g. Change 1020 to read:

```
1020 C=18:D=48+5*RND(16):A=50:B=A+D-C:GOTO1040
```

Also change line 1030 to read:

```
1030 C=18:D=48+5*RND(16):A=50:B=90+5*RND(28)
```

These changes have been tested.

The Listing:

```
10 REM***AREA AND PERIMETER BY  
BOB HORNE, IPSWICH, QUEENSLAND**  
20 CLEAR500  
30 POKE410,126:POKE411,0:POKE412  
,248:POKE248,50:POKE249,98:POKE2  
50,28:POKE251,175:POKE252,126:PO  
KE253,173:POKE254,165  
40 DIMCH$(51),HT(10):FORZ=1TO51:  
READCH$(Z):NEXTZ  
50 P$="V30T4L8004CEGCEGCEGCEG":L  
M$="BU4FND3EFND3EFD3BR2"  
60 REM***OPENING SCREEN***  
70 PMODE3,1:PCLS:SCREEN1,1  
80 COLOR3:FORTM=5TO10:LINE(TM,TM  
)-(250-TM,160-TM),PSET,B:NEXTTM  
90 DRAW"S8BM100,50":M$="AREA":GO  
SUB2010  
100 DRAW"BM106,70":M$="AND":GOSU  
B2010  
110 DRAW"BM75,90":M$="PERIMETER."  
":GOSUB2010
```

```

120 DRAW"BM70,145":M$="BY R HORN
E.":GOSUB2010
130 DRAW"BM50,170":M$="PRESS ANY
KEY.":GOSUB2010:PLAYP$
140 EN$=INKEY$:IF EN$="" THEN140
200 REM***SQUARES OR RECTANGLES*
**
210 PMODE3,1:SCREEN1,1:PCLS:DRAW
"BM20,20":M$="WHICH DO YOU WISH"
:GOSUB2010:DRAW"BM50,40":M$="TO
PRACTISE?":GOSUB2010:DRAW"BM30,8
0":M$="1 - SQUARES.":GOSUB2010
220 DRAW"BM30,100":M$="2 - RECTA
NGLES.":GOSUB2010:DRAW"BM50,170"
:M$="TYPE A NUMBER.":GOSUB2010:P
LAYP$
230 EN$=INKEY$
240 EN$=INKEY$:IF EN$="" THEN240
250 RS=VAL(EN$):IF RS<1 OR RS>2
THEN240
300 REM***PERIMETERS OR AREAS***
310 REM***OR COMPUTER'S CHOICE**
320 PCLS:CA=0:DRAW"BM1,20":M$="W
HICH WOULD YOU LIKE?":GOSUB2010
330 DRAW"BM20,50":M$="1 - PERIME
TERS.":GOSUB2010
340 DRAW"BM20,70":M$="2 - AREAS.
":GOSUB2010
350 DRAW"BM20,90":M$="3 - COMPUT
ER CHOICE.":GOSUB2010
360 DRAW"BM20,170":M$="CHOOSE A
NUMBER.":GOSUB2010:PLAYP$
370 EN$=INKEY$
380 EN$=INKEY$:IF EN$="" THEN380
390 EN=VAL(EN$):IF EN<1 OR EN>3
THEN380
400 PCLS:ON EN GOTO510,620,730
500 REM***PERIMETERS***
510 DRAW"BM0,20":M$="TO FIND THE
PERIMETER":GOSUB2010
520 ON RS GOTO530,550
530 DRAW"BM60,40":M$="OF A SQUAR
E,":GOSUB2010:DRAW"BM10,60":M$="
MULTIPLY THE LENGTH":GOSUB2010
540 DRAW"BM30,80":M$="OF THE SID
E BY 4":GOSUB2010:DRAW"BM35,132"
:M$="PERIM.=SIDE*4":GOSUB2010:AN
=1:GOTO570
550 DRAW"BM15,40":M$="OF A RECTA
NGLE, ADD":GOSUB2010:DRAW"BM20,6
0":M$="LENGTH AND BREADTH":GOSUB
2010:DRAW"BM30,80":M$="AND MULTI
PLY BY 2":GOSUB2010
560 DRAW"BM15,135":M$="PERIM.=(L
+B)*2":GOSUB2010:AN=3
570 DRAW"BM50,185":M$="PRESS ANY
KEY.":GOSUB2010:PLAYP$
580 EN$=INKEY$
590 EN$=INKEY$:IF EN$="" THENA=R
ND(-TIMER):GOTO590 ELSEGOSUB910

```

```

600 FORA1=1TO10:GOSUB1010:GOSUB1
200:GOSUB1310:GOSUB1500:NEXTA1:G
OTO2530
610 REM***AREAS***
620 DRAW"BM30,20":M$="TO FIND TH
E AREA":GOSUB2010
630 ON RS GOTO640,660
640 DRAW"BM60,40":M$="OF A SQUAR
E,":GOSUB2010:DRAW"BM28,60":M$="
MULTIPLY THE SIDE":GOSUB2010:DRA
W"BM76,80"
650 M$="BY ITSELF.":GOSUB2010:DR
AW"BM35,135":M$="AREA=SIDE*SIDE"
:GOSUB2010:AN=2:GOTO680
660 DRAW"BM45,40":M$="OF A RECTA
NGLE,":GOSUB2010:DRAW"BM15,60":M
$="MULTIPLY THE LENGTH":GOSUB201
0
670 DRAW"BM40,80":M$="BY THE BRE
ADTH.":GOSUB2010:DRAW"BM65,135":
M$="AREA=L*B":GOSUB2010:AN=4
680 DRAW"BM50,185":M$="PRESS ANY
KEY.":GOSUB2010:PLAYP$
690 EN$=INKEY$
700 EN$=INKEY$:IF EN$="" THEN700
ELSE GOSUB910
710 FORA1=1TO10:GOSUB1010:GOSUB1
200:GOSUB1310:GOSUB1500:NEXTA1:G
OTO2530
720 REM***COMPUTER CHOICE***
730 ON RS GOTO740,790
740 DRAW"BM10,20":M$="REMEMBER T
HESE RULES":GOSUB2010:DRAW"BM35,
60":M$="PERIM.=SIDE*4":GOSUB2010
750 DRAW"BM35,100":M$="AREA=SIDE
*SIDE":GOSUB2010:DRAW"BM50,185":
M$="PRESS ANY KEY.":GOSUB2010:PL
AYP$
760 EN$=INKEY$
770 EN$=INKEY$:IF EN$="" THEN770
ELSEGOSUB910
780 FORA1=1TO10:GOSUB1010:AN=RND
(2):GOSUB1200:GOSUB1310:GOSUB150
0:NEXTA1:GOTO2530
790 DRAW"BM10,20":M$="REMEMBER T
HESE RULES":GOSUB2010:DRAW"BM20,
60":M$="PERIM.=(L+B)*2":GOSUB201
0:DRAW"BM65,100":M$="AREA=L*B":G
OSUB2010
800 DRAW"BM50,185":M$="PRESS ANY
KEY.":GOSUB2010:PLAYP$
810 EN$=INKEY$
820 EN$=INKEY$:IF EN$="" THEN820
ELSE GOSUB910
830 FORA1=1TO10:GOSUB1010:AN=RND
(2)+2:GOSUB1200:GOSUB1310:GOSUB1
500:NEXTA1:GOTO2530
900 REM***INSTRUCTIONS***
910 PCLS:DRAW"BM10,20":M$="*REME

```

continued on page 35

# MODEMS ACROSS AUSTRALIA

## BBS SYSTEMS - MARK ROTHWELL

When I purchased my CoCo in December 1982, I didn't realise what I was letting myself into. Over the last two years my CoCo has grown from a 16K Extended Color Basic Taped based system, to 64K Disk Extended Color Basic, four Teac Disk Drives, a PBJ 80 column card, Green Screen Monitor and a Avtec Multi Modem.

Soon after purchasing the modem I found that I needed numbers of other systems to call up. These were not easy to find, so I decided to compile my own listing of systems across Australia and New Zealand.

### DATA FORMATS

The normal Data Formats for connection on Australia and New Zealand Systems are:

- 8 data bits
- 1 stop bit
- no parity
- 300 bps
- full duplex
- CCITT V.21 modem standard
- ORIGINATE mode

The first five are set by your Terminal Program, the CCITT V.21 Modem Standard is the Standard for Australian Modems, ORIGINATE mode is the mode in which your modem will have to be set to communicate with the system you have called, it will be set to ANSWER mode.

### AUSTPAC

Telecom has recently introduced a "Packet Switching Network" called Austpac. It is designed for the purpose of fast data transfer throughout Australia. If the system has a number and you wish to use it, the following information should be remembered

1. Phone numbers. There are three numbers that can be called depending on the modem baud rate. They are 01921 - 300 baud, 01922 - 1200 baud, 01923 - 1200/75 baud. These numbers can be rung from anywhere in Australia for the same charge. ie, 0800-1800 weekdays \$4.95 per hour, all other times \$3.95 per hour.
2. When ringing 01921 (300 baud), you must wait 5 seconds, then type a capital (H) followed by a carriage return.
3. When the "Austpac" prompt appears, enter the Network ID (the Austpac number) including the question mark. After this number is entered you will be transferred to the system you are calling.

### SYSTEM TYPES

RTRS = Remote TRS-80	CBBS = Community BBS
RCPM = Remote CP/M	BBS = BBS
RMPM = Remote MP/M	TBBS = Bread board sys.
RIBM = Remote IBM PC	ABBS = Apple BBS

RBBS = Remote BBS

System Name	Telephone Number	System Name	Telephone Number
Apple Users Group ABBS 24 Hours Est.	(02) 451-6575	Newcastle Mcc RCPM Weekdays : 1700-0830 Est. Weekends : 24 Hours	(049) 68-5385
Ausborne (Osborne) RCPM 24 Hours Est. **1	(02) 95-5377	Pc Connection BBS Weekdays : 2100-1800 Est. Weekends : 1600-1000 Est.	(03) 528-3750
Club-80 (Sydfrug) RTRS 24 Hours Est.	(02) 332-2494	Onen IV RTRS 24 Hours Est.	(03) 846-4034
CocoLink (Tandy Computers) 24 Hours Est. **10	(075) 32-6370	Melbourne Micro Computers CBBS 24 Hours Est.	(03) 762-5088
Date BBS (Computer Dating) Mon & Wed : 1800-2300 Est. Sat : 1200-1700 Est.	(02) 516-3805	Sorcerer Computer Users CBBS 24 Hours Est.	(03) 836-4616
Dick Smith RIBM 24 Hours Est.	(02) 887-2276	Tardis RCPM Weekdays : 1800-0900 Est. Weekends : 24 Hours	(03) 67-7740
Info-Center (Paris Radio) 24 Hours Est. **2	(02) 344-9511	Gippsland RCPM 24 Hours Est.	(03) 34-1563
Keyboard TBBS Weekdays : 1730-0830 Est. Weekends : 24 Hours Est.	(02) 631-3282	The Australian Beginning 24 Hours Est. **8	(03) 813-3522
Mi Computer Club RCPM 24 Hours Est.	(02) 662-1686	Telebraille 24 Hours Est.	(03) 755-1341
Micro Design Lab. RCPM 24 Hours Est. **3	(02) 663-0151	P.R. System BBS Mon - Sun : 2200-0700	(03) 842-6857
Onen RTRS Mon - Thurs : 1630-0900 Est. Fri - Mon : 24 hours Est.	(02) 498-2495	Software Tools RCPM 24 Hours Est.	(07) 378-9530
Oracle TBBS Mon - Fri : 0000-1800 Est. Weekends : 24 Hours Est.	(02) 960-3641	Adelaide Micro Users BBS Weekends and Public Holidays Only : 1000-2200 Central Time **8	(08) 271-2043
Prophet TBBS 24 Hours Est.	(02) 628-7830	Computer Ventures BBS 24 Hours Central Time	(08) 255-9146
Runix Unix System 24 Hours Est. **5	(02) 48-3831	Outback RCPM 24 Hours Central Time	(089) 27-7111
Sorcerer RCPM Weekdays : 1800-0800 (Ring back) Weekends : 24 Hours Est.	(02) 387-4439	Onen II RTRS 24 Hours Central Time	(089) 27-4454
Sydney Public Access RCPM 24 Hours Est. **6	(02) 808-3536	Onen II RTRS 24 Hours Western Standard Time	(09) 279-8555
Texas Instruments (TISHUG) Mon - Fri : 1900-0700 Est. Weekends : 24 Hours Est.	(02) 560-0926	Perth CPM 1800-2100 Western Standard Time	(09) 367-6068
North Shore Coco 1800 - 2400 Est. (Voice Line) **7	(02) 411-3336	Perth PMP/M 1800-2100 Western Standard Time	(09) 381-6070
Coco Os9 Bulletin Board 2100 - 0900 Est.	(074) 30-2468	The Fountain Texas Instruments 1800-2100 Western Standard Time **9	(09) 272-5931

### SO WHAT DO THE STARS MEAN?

- \*\*1 : To gain access type OSBORNE, to read BBS type MINIRBBS
- \*\*2 : To logon (ENTER) infocenter, (ENTER) visitor to Phone No. prompt
- \*\*3 : To enter system, (ENTER) DDT
- \*\*4 : To enter system, (ENTER) TRSDOS
- \*\*5 : (02) 48-3831 - Status line  
(02)487-2533 - System line
- \*\*6 : (ENTER) 100 for USER No. Only one visitor admitted to system per hour, therefore call just after hour to gain access.
- \*\*7 : Call by voice first to gain access to system
- \*\*8 : (ENTER) VISITOR for username & password
- \*\*9 : (ENTER) COMPAUST for username.
- \*\*10: Visitors, press (ENTER)



075 - 326370

We have been unofficially running CoCoLink for about one month, trying to get a feel for the problem areas and defects in the system. To this end, it is necessary that users leave as many details as possible regarding their call, and any problems encountered, (usually a system error message), what you were doing or attempting to do at the time of the error, and the details of your own system, (eg, CoCo, VIP Terminal, Cicada Modem, etc).

We have encountered a problem with loss of data when communicating with an external terminal. The most likely cause of this is that the external terminal is a CoCo using an American Terminal program, (eg, VIP, which seems to be the most notorious). These programs are designed for a CoCo running at the US clock speed of 1.0 MHZ, not the Australian 0.897 MHZ. Consequently the Baud rates are all haywire. I don't know any solution other than Perth Users' Group's modification of CoCo to run at 1.0 MHZ, or Rainbow Bit's purpose built software. If anyone has a solution, we'd love to be able to tell the world!

Please note that messages regarding subscriptions, and all personal messages to Graham or the other Rainbow staff should be directed to RAINBOW (User #1); system enquiries and comments re the system go to KEVIN M (User #0).

There is a little information starting to filter onto CoCoLink now.

The CLUB section has messages from a number of clubs, NOTE has a few there - mainly system questions and replies, and the MAIL system seems to be getting used.

We are about to introduce the MC-10 section, (system command - MC10), and the Model 100 section, (system command - M100), both of which will have program and article space.

Following that a new section for Educational use will be commissioned.

If the folk who are interested in RTTY want to have some space, that can be arranged, and there will also be space for Train Freaks, like me, to leave data.

A book list was to go on today. This list, compiled by Brian Bere-Streeter, reveals just how well CoCo is documented. The list is quite long, almost 50 books long, all on CoCo!

The list opposite, of the other BBS's is also on the board, and will be updated as further information comes to hand.

Initially, there is room for only 100 subscribers. Reserve your place before someone else gets it!

CoCoLink will be open to all for another month, after that, visitors will only be able to access a small area of the Board.

# Dear Doctor CoCo



Q. I own a 64k ECB COCO, but the extra RAM and ECB ROM were both home installed. On the execution of the high speed poke (65495,0), the computer resets to Color Basic 1.0, and hangs up. I have to find and delete this from every basic game I buy, and this makes many tediously slow. Is there a cure for this.

Andrew Robinson.  
Bilgola Plateau, N.S.W.

A. There are two main possibilities. Either you are running RAM chips with a speed slower than 250 n.s. or there is a fault with the ECB ROM. Extract the ROM and reseal it. Sometimes, the ROM just isn't sitting properly. If this doesn't help, the ROM may be faulty. Check it out by trying it on a friend's machine. If the same fault occurs, you have your answer, and the ROM needs replacing. Some of the earlier American machines did not work with the high speed poke, I hope you haven't got one of these as the cure involves a lot more trouble than it is worth. Anyway, try the test on the ROM as described, and check the speed of those RAM chips. Also, when you did the 64k upgrade, did you set all the 64k jumpers correctly?

Q. Do you know how a modem connects to the computer, and also do you need Tandy's Videotext to work a modem or can you use a dumb terminal made by a software company. Secondly, what type of installation does it take to change the old keyboard for the new type, and would it be possible for anyone to do it?

James Kelly,  
Banyo, Qld.

A. Modems are connected to a computer by means of an interface card in the computer's expansion port. The good ones incorporate the modem and interface card as one compact unit, which is then connected to a suitable telephone outlet by a special cable. You do not need the Tandy program to run a modem as any of the locally sold communications packages will do the job quite efficiently. The ideal of course is to have the terminal program in a ROM chip with the modem itself. Just such a modem with all hardware and software combined in the one unit is now available locally, and is the one being used for the Australian Rainbow Bulletin Board. This is an excellent product and is the one that we heartily recommend. It carries the Australian Rainbow Gold

Seal of Approval and is available from RAINBOW BITS, 17 PENLEY ST., THE GAP, BRISBANE. You may telephone on (07)302072 after hours and Brian will cheerfully give you full details of this excellent piece of hardware.

As to your question of new keyboards, you will have very little trouble replacing your old chicklet type with the new Tandy type. The job can be done in a few minutes by ANYBODY. It is a simple matter of opening the case, pulling out the tail connected to the keyboard from its socket on the main board, and following the reverse procedure to install the new one. If you have a new white CoCo or a gray one without a RAM ID button, the keyboard will plug straight in. If you have an older CoCo, the keyboard will require a modification and should not be attempted. Tandy supply a kit with the new keyboard that is not required on Australian models. Just put these chips aside as they are not needed. If you have an older model computer, contact John Brothers at Software Spectrum in Adelaide, or Paris Radio Electronics in Sydney, who can supply you with a HJL keyboard that will fit the your computer.

# Dear Doctor CoCo



Q. Robin Henry is having trouble with Telewriter 64. "I use a 64K CoCo with serial interface and a Line Printer 8 and while I can send direct codes to the printer from the Telewriter Format menu, I have been unable to get defined embedded codes such as underline to work. The procedures I have used adhere completely with those detailed in the Manual and Reference Book provided with the tape."

A. I have a DMP-200 myself and have not experienced any of the problems you mention. Perhaps a reader with a Line Printer 8 who has experienced a similar situation can help. If you can, please drop a line to Doctor CoCo and I will pass the information on to Mr. Henry.

Q. Does the computer upset a T.V. Our computer hasn't been used much lately (could've fooled me. D.C.), but the other day we turned it on and there was no colour on Channel 0. Later I checked Channel 1 in case the computer caused the colour on the T.V. to disappear, as Channel 1 is our A.B.C. Please advise.

Johanna Vagg,  
Forbes. N.S.W.

A. Nothing the computer can do will change the reception on your T.V. The only thing that can do that is you retuning the thing to get a better picture for your CoCo. If you have no colour on Channel 0, simply redo the fine tuning and it will come back.

Q.

I recently purchased a 16K CoCo with ECB 1.1 1982, and was quite happy until I wrote a program that used the Inkey command. The program uses to right arrow to move a dot to the right with a user programmed line delay for testing reaction time. The inkey only registered 50% of the time but when I tried it on an older model CoCo, it worked all the time. Is there some problem with the inkey command losing information and how can I correct it?

Michael Green,  
Hobart. Tas.

A. The problem has been experienced by a number of people with the new model. The gremlin is in the new Color Basic 1.2 ROM. This ROM does not

have enough significant improvements (in our opinion) to outweigh some of its disadvantages. The fix that we recommend is to replace the 1.2 ROM with a 1.1 version ROM. This will definitely cure your problem and also give you compatibility with a lot more established commercial software. It is also a hard exercise as the ROM is soldered in. Another solution would be to use peeks to scan the keyboard instead of inkey, but the hardware replacement is the best solution in the long run.

Q. Is there such a thing as a screen dump to cassette instead of to a printer. I don't have a printer and need to save the information on the screen, somehow other than writing it down.

Stan Cascar.  
Mt. Colah. N.S.W.

A. This would be a bit hard to do as a straight screen dump except for the graphic screen. The best way is to write a routine to PRINT #1, the information you want saved. You will need a line to OPEN the cassette to output, the a routine to PRINT the information to cassette instead of the screen or printer and finally a line to CLOSE the file. To read the information back you would need to OPEN the cassette for input to the computer and use a similar routine in reverse. This method works great for information storage but if you want to keep track of your move in an adventure game or similar, would become an extremely messy way to do things. There is no viable substitute for a printer for this type of application. Read the ads in the magazine. You can get a printer now for a very reasonable price, and they are a very worthwhile peripheral.

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```

MBER WHEN YOU":GOSUB2010:DRAW"BM
60,40":M$="ARE FINISHED":GOSUB20
10
920 DRAW"BM20,60":M$="TYPING YOU
R ANSWER":GOSUB2010:DRAW"BM42,80
":M$="*PRESS ENTER*":GOSUB2010
930 FORT=1T01000:NEXTT:DRAW"BM50
,110":M$="IF YOU MAKE A":GOSUB20
10:DRAW"BM25,130":M$="MISTAKE PR
ESS THE":GOSUB2010:DRAW"BM20,150
":M$="*LEFT ARROW KEY*":GOSUB201
0
940 FORT=1T01000:NEXTT:DRAW"BM50
,185":M$="PRESS ANY KEY":GOSUB20
10:PLAYP$
950 EN$=INKEY$
960 EN$=INKEY$:IF EN$="" THEN960
ELSE PCLS:RETURN
1000 REM***CALCULATE SIZE***
1010 ON RS GOTO1020,1030
1020 C=18:D=48+10*RND(8):A=50:B=
A+D-C:GOTO1040
1030 C=18:D=48+10*RND(8):A=50:B=
90+10*RND(14)
1040 HT=INT((D-C)/10)
1050 RT=INT((B-A)/10)
1060 IF RS=2 THEN IF HT=RT THEN1
010
1070 HT(A1)=HT
1080 IFA1=>2 THEN IF HT(A1)=HT(A
1-1) THEN1010
1090 COLOR3:LINE(A,C)-(B,D),PSET
,BF
1110 HT$=STR$(HT):RT$=STR$(RT)
1120 D1=INT(24+HT*5)
1130 IF RT<10 THEN L1=INT(25+RT*
5) ELSE L1=INT(15+RT*5)
1140 DRAW"C3S8BM0,"+STR$(D1):M$=
HT$:GOSUB2010:DRAWLM$
1150 DRAW"BM"+STR$(L1)+",15":M$=
RT$:GOSUB2010:DRAWLM$
1160 RETURN
1200 ON AN GOTO1210,1220,1210,12
20
1210 DRAW"BM15,160":M$="PERIMETE
R =":GOSUB2010:PA=2*(HT+RT):GOTO
1230
1220 DRAW"BM65,160":M$="AREA =":
GOSUB2010:PA=HT*RT
1230 COLOR4:LINE(172,145)-(235,1
62),PSET,B
1240 IF AN=1 OR AN=3 THENDRAW"BM
237,160"+LM$:RETURN ELSE DRAW"BM
237,160"+LM$:DRAW"S4BM251,150":M
$="2":GOSUB2010:DRAW"S8":RETURN
1300 REM***ACCEPT UP TO 4 NUMERA
LS FOR ANSWER***
1310 DRAW"BM174,160"
1320 EN$=INKEY$:FORJ=1T04:IN$(J)

```

```

="":NEXTJ
1330 FORJ=1T04
1340 SOUND200,1
1350 IN$(J)=INKEY$:IFIN$(J)="" T
HEN1350
1360 IF IN$(J)=CHR$(8) THEN FORJ
J=1T04:IN$(JJ)="" :NEXTJJ:COLOR1:
LINE(174,147)-(233,160),PSET,BF:
J=0:GOTO1310
1370 IF IN$(J)=CHR$(13) THEN1410
1380 IFASC(IN$(J))<48 OR ASC(IN$
(J))>57 THEN1350
1390 M$=STR$(VAL(IN$(J))):GOSUB2
010:DRAW"BL6"
1400 NEXTJ
1410 IN$="" :FORJ=1T04:IN$=IN$+IN
$(J):NEXTJ
1420 RETURN
1500 IF VAL(IN$)=PA THEN1810
1510 REM***WRONG ANSWER***
1520 DRAW"BM0,180":M$="SORRY."+S
TR$(PA):GOSUB2010:DRAWLM$:IF AN=
1 OR AN=3 THENM$=" IS RIGHT.":GO
SUB2010ELSEDRAW"S4BM+2,-10":M$="
2":GOSUB2010:DRAW"BM+2,+10":S8":M
$=" IS RIGHT.":GOSUB2010
1530 PLAY"L10002V5FFGGEEFFDDV20E
CCDBBCAAB01V31GGFEEDFFECDBBCDDC
BAADGABBAV6AACBCDEFAACBC":FORT=1
T0500:NEXTT
1540 PCLS:WA=1:ON AN GOTO1550,15
50,1600,1600
1550 DRAW"BM53,15":M$="THE LENGT
H OF":GOSUB2010:DRAW"BM34,35":M$
="EACH SIDE IS"+STR$(HT):GOSUB20
10:DRAWLM$
1560 ON AN GOTO1570,1580
1570 DRAW"BM40,70":M$=STR$(HT):G
OSUB2010:DRAWLM$:M$=" * 4 =" +STR
$(PA):GOSUB2010:DRAWLM$:COLOR2:L
INE(30,105)-(225,128),PSET,B:DRA
W"BM39,123":M$="PERIM.=SIDE*4":G
OSUB2010:GOTO1670
1580 DRAW"BM10,70":M$=STR$(HT):G
OSUB2010:DRAWLM$:M$=" "+STR$(HT
):GOSUB2010:DRAWLM$:M$=" =" +STR$
(PA):GOSUB2010:DRAWLM$+"S4BM+2,-
10":M$="2":GOSUB2010:DRAW"S8"
1590 COLOR2:LINE(30,105)-(225,12
8),PSET,B:DRAW"BM35,123":M$="ARE
A=SIDE*SIDE":GOSUB2010:GOTO1670
1600 DRAW"BM23,15":M$="THE LENGT
H IS"+STR$(RT):GOSUB2010:DRAWLM$
:DRAW"BM19,35":M$="THE BREADTH I
S"+STR$(HT):GOSUB2010:DRAWLM$
1610 ON AN-2 GOTO1620,1650
1620 DRAW"BM10,55":M$=STR$(RT):G
OSUB2010:DRAWLM$:M$=" "+STR$(HT
):GOSUB2010:DRAWLM$:M$=" =" +STR$
(RT+HT):GOSUB2010:DRAWLM$

```

```

1630 DRAW"BM20,75":M$=STR$(RT+HT
):GOSUB2010:DRAWLM$:M$=" * 2 =" +
STR$(PA):GOSUB2010:DRAWLM$
1640 COLOR2:LINE(15,107)-(235,12
5),PSET,B:DRAW"BM20,123":M$="PER
IM.=(L+B)*2":GOSUB2010:GOTO1670
1650 DRAW"BM0,80":M$=STR$(RT):GO
SUB2010:DRAWLM$:M$=" * "+STR$(HT)
:GOSUB2010:DRAWLM$:M$=" =" +STR$(
PA):GOSUB2010:DRAWLM$+"S4BM+2,-1
0":M$="2":GOSUB2010:DRAW"S8"
1660 DRAW"C2":LINE(55,105)-(190,
128),PSET,B:DRAW"BM65,123":M$="A
REA=L*B":GOSUB2010
1670 FORT=1T01500:NEXTT:DRAW"BM5
0,185":M$="PRESS ANY KEY.":GOSUB
2010:P_L+YP$
1680 EN$=INKEY$
1690 EN$=INKEY$:IF EN$="" THEN16
90
1700 REM***TRY AGAIN***
1710 PCLS:GOSUB1090:GOSUB1200:GO
SUB1310:GOSUB1500:PCLS:RETURN
1800 REM***CORRECT ANSWER***
1810 IF WA=1 THEN FORT=1T05:PLAY
"V30T4L7003CEGCEG04CEGCEG":NEXTT
:DRAW"BM50,180":M$="RIGHT THIS T
IME.":GOSUB2010:WA=0:FORT=1T0500
:NEXTT:RETURN
1820 R1=RND(6):ON R1 GOTO1830,18
40,1850,1860,1870,1880
1830 M$="CORRECT.":GOTO1890
1840 M$="GREAT.":GOTO1890
1850 M$="BONZA.":GOTO1890
1860 M$="EXCELLENT.":GOTO1890
1870 M$="TERRIFIC.":GOTO1890
1880 M$="O.K."
1890 DRAW"C2BM99,180":GOSUB2030:
DRAW"C4BM100,181":GOSUB2030
1900 CA=CA+1
1910 PLAY"V20T128L104;12;11;10;9
;8;7;6;5;4;3;2;1;02;12;11;10;9;8
;7;6;5;4;3;2;1;04;12;8;4;12;8;4;
12;8;4;12;8;4;12;8;4;12;8;4;12;8
;4"
1920 FORT=1T0500:NEXTT:FORT=1T05
:PLAYP$:PCLSRND(3)+1:NEXTT:PCLS:
RETURN
2000 REM***DRAW THE STRINGS***
2010 L=LEN(M$):FORZ=1TOL:C1=RND(
3)+1:M=ASC(MID$(M$,Z,1))-39:IFM=
-7THENDRAW"BR4"ELSEDRAW"C"+STR$(
C1)+CH$(M)
2020 DRAW"BR2":NEXTZ:RETURN
2030 L=LEN(M$):FORZ=1TOL:M=ASC(
MID$(M$,Z,1))-39:IF M=-7 THEN DR
AW"BR4" ELSEDRAWCH$(M)
2040 DRAW"BR2":NEXTZ:RETURN
2100 REM***DATA FOR DRAW STRINGS
***
2110 DATABR2H2U2E2BD6BR4
2120 DATABR4E2U2H2BD6BR4
2130 DATABR4U6BD3NE3NF3NG3NH3BD3
BR4
2140 DATABR2BUU4D2L2R4BD3BR4
2150 DATABR2RDG1BU2BR4, BR2BU3R3B
D3BR2, BR3UBDBR3, BR6BU6DG4DBR7
2160 DATABRHU4ERFD4GNLBR2
2170 DATAR2U6NGD6R2
2180 DATABU5ER2FDGL2GD2R4
2190 DATABU5ER2FDGNLFDGL2NHBR3
2200 DATABR3U6G3R4BD3
2210 DATABUFR2EU2HL3U2R4BD6
2220 DATABU3R3FDGL2HU4ER2BD6BR
2230 DATABU6R4DG3D2BR3
2240 DATABRHUER2EUHL2GDFR2FDGNL2
BR
2250 DATABRR2EU4HL2GDFR3BD3
2260 DATABR4, BR4, BR4, BR3BU2R3BU2
L3BD4BR6, BR4, BR4UBUUEU1HL1GBD6BR
6, BR4
2270 DATAU5ER2FD2NL4D3
2280 DATARU6NLR2FDGNL2FDGNL3BR
2290 DATABR4BU5HL2GD4FR2EBD
2300 DATARU6NLR2FD4GNL2BR
2310 DATAU6NR4D3NR3D3R4
2320 DATAU3NR3U3R4BD6
2330 DATABUU4ER3BD4NLD2L3NHR3
2340 DATAU3NU3R4NU3D3
2350 DATAR2U6NL2NR2D6R2
2360 DATABUNUFR2ENU5BD
2370 DATAU3NU3RNE3F3
2380 DATANU6R4
2390 DATAU6F2DUE2D6
2400 DATAU6F4NU4D2
2410 DATABRHU4ER2FD4GNL2BR
2420 DATAU6R3FDGL3D3BR4
2430 DATABRHU4ER2FD4GNL2BUHF2
2440 DATAU6R3FDGL3RF3
2450 DATABUFR2EUHL2HUER2FBD5
2460 DATABU6R4L2D6BR2
2470 DATABUNU5FR2ENU5BD
2480 DATABU6D4F2E2U4BD6
2490 DATANU6E2UDF2NU6
2500 DATAUE4NUG2H2NUF4D
2510 DATABU6DF2E2NUG2D3BR2
2520 DATABU6R4DG4DR4
2530 CLSRND(7)+1
2540 PRINT299,"THERE WERE"A1-1"Q
UESTIONS.";
2550 PRINT2167,"YOU HAD"CA"RIGHT
.";
2560 IF CA=0 THEN2580
2570 CA=INT(CA*100/(A1-1)+.5)
2580 PRINT232,"OR"CA"PERCENT.";
2590 PRINT2355,"PRESS <P> TO PLA
Y AGAIN.";
2600 EN$=INKEY$:IF EN$="" THEN26
00
2610 IF EN$="P" THEN210 ELSE2600

```

# FIREFOX

Max Bettridge



Who saw the movie? I did, and I loved it. But really, shouldn't a magnificent craft such as FIREFOX earn its living as a destroyer of alien marauders rather than simply escaping from the Russians?

FIREFOX came into being as a result of my trying to get a 3D effect but this was not really achieved. The game is self explanatory and requires a cold start before being loaded. By the way, as an alternative to powering down your CoCo you can type:

```
POKE113,0:EXEC40999
```

to achieve a cold start.

Some CoCo2 programmers will notice that I have adapted some of the program ideas used in the programs they have devised. For that I can only say that I thank them for reducing the time it takes to develop my own ideas.

The Listing:

```
1 IFPEEK(277)>0THENPOKE277,0:CLS
  :PRINT"PLEASE ENTER PCLEAR8:RUN
  ":POKE65495,0:END
2 CLS0:PMODE4,5:PCLS5:PMODE4:PCL
  S:GOTO34
3 COLOR0,1:A=120:B=95:W$="GAME 0
  VER":GOSUB49
4 A=100:B=110:W$="ANOTHER GAME?
  Y/N":GOSUB49
5 A$=INKEY$:IFA$="Y"THENPCLS5:FI
  =0:AL=0:GOTO120
6 IFA$="N"THENCLS:PRINT@100,"OK"
  :END
7 GOTO5
8 PUT(X,Y)-(X+20,Y+20),G,PSET:PL
  AY*T100;A:PUT(X,Y)-(X+20,Y+20),
  G1,PSET:RETURN
9 IFST>4THEN151
10 IFLA=9THENST=ST+1:AL=0:POKE65
  314,240:GOTO121
11 GOSUB8:AL=0:LINE(175+TV,12+TD
  )-(185+TV,22+TD),PSET,BF:TV=TV
  +15:LA=LA+1:IFTV>60THENTD=15:TV=
  0
12 RETURN
13 F=PEEK(65280)
14 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+16,B+18)-(A+5,B+4),
  PSET:LINE(A+5,B+4)-(A+30,B+12),P
  SET:PCOPY5T04:PC=1:IFPPOINT(A+5,
  B-1)=0THENGOSUB9
```

```
15 RETURN
16 F=PEEK(65280)
17 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+6,B+4)-(A+16,B+18),
  PSET:LINE(A+6,B+4)-(A+30,B+12),P
  SET:PCOPY5T04:PC=1:IFPPOINT(A+6,
  B-1)=0THENGOSUB9
18 RETURN
19 F=PEEK(65280)
20 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+14,B+4)-(A+16,B+15)
  ,PSET:LINE(A+14,B+4)-(A+30,B+15)
  ,PSET:PCOPY5T04:PC=1:IFPPOINT(A+
  14,B-1)=0THENGOSUB9
21 RETURN
22 F=PEEK(65280)
23 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+25,B+4)-(A+18,B+14)
  ,PSET:LINE(A+25,B+4)-(A+29,B+16)
  ,PSET:PCOPY5T04:PC=1:IFPPOINT(A+
  25,B-1)=0THENGOSUB9
24 RETURN
25 F=PEEK(65280)
26 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+35,B+4)-(A+20,B+10)
  ,PSET:LINE(A+35,B+4)-(A+30,B+16)
  ,PSET:PCOPY5T04:PC=1:IFPPOINT(A+
  35,B-1)=0THENGOSUB9
27 RETURN
28 F=PEEK(65280)
29 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+40,B+4)-(A+20,B+10)
  ,PSET:LINE(A+40,B+4)-(A+30,B+18)
  ,PSET:PCOPY5T04:PC=1:IFPPOINT(A+
  40,B-1)=0THENGOSUB9
30 RETURN
31 F=PEEK(65280)
32 IFF=126ORF=254THENPOKE178,RND
  (255):LINE(A+41,B+4)-(A+20,B+10)
  ,PSET:LINE(A+41,B+4)-(A+30,B+18)
  ,PSET:PCOPY5T04:PC=1:IFPPOINT(A+
  46,B-1)=0THENGOSUB9
33 RETURN
34 DIMR(41),P(41),T(9),S(9),S0(3
  7),S1(37),S2(37),S3(37),S4(37),S
  5(37),S6(37),A(3),A1(3),A2(3),A3
  (3),B(3),B1(3),B2(3),B3(3),C(3),
  C1(3),C2(3),C3(3),D(3),D1(3),D2(
  3),D3(3),E(5),E1(5),E2(10),E3(10
  ),F(5),F1(5),F2(10),F3(10),G(11)
  ,G1(11)
35 T(0)=.71:T(1)=.87:T(2)=.966:T
  (3)=1:T(4)=.966:T(5)=.87:T(6)=.7
  1:T(7)=.5:T(8)=.26:T(9)=0:S(0)=-
  .71:S(1)=-.5:S(2)=-.26:S(3)=0:S(
  4)=.26:S(5)=.5:S(6)=.71:S(7)=.86
  6:S(8)=.966:S(9)=1:X=100:Y=30
36 DATA0,0,0,0,4,-4,-6,-1,-20,2,
  -20,3,-7,3,7,3,20,3,20,2,6,-1,5,
  -4,0,-4,-4,-2,4,-2,0,0,-4,2,4,2,
```

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-10,4,0,4,10,4
37 FORT=0T041:READP(T):PRINT@272
,CHR$(RND(100)+150);:NEXT:FORI=1
T07:FORJ=0T041STEP2:R(J)=INT(P(J
)*T(I)-P(J+1)*S(I)+X):R(J+1)=INT
(P(J+1)*T(I)+P(J)*S(I)+Y):NEXTJ:
FORJ=0T025STEP2:LINE(R(J),R(J+1)
)-(R(J+2),R(J+3)),PSET:NEXT
38 CIRCLE(X,Y),3:FORT=36T041STEP
2:CIRCLE(R(T),R(T+1)),4:NEXT:FOR
T=36T041STEP2:CIRCLE(R(T),R(T+1)
),2,5:NEXT:LINE(67,10)-(130,50),
PSET,B:PAINT(78,16),5,5:LINE(100
,30)-(94+V,25),PRESET:LINE(99,30
)-(93+V,25),PRESET:LINE(102,30)-
(94+V,27),PRESET:V=V+2
39 PRINT@272,CHR$(RND(100)+150);
:PRINT@75,"STAND BY";
40 ON I GOTO41,42,43,44,45,46,47
41 GET(77,15)-(123,46),S0,G:GET(
0,100)-(24,116),G,G:GOTO48
42 GET(77,15)-(123,46),S1,G:GOTO
48
43 GET(77,15)-(123,46),S2,G:GOTO
48
44 GET(77,15)-(123,46),S3,G:GOTO
48
45 GET(77,15)-(123,46),S4,G:GOTO
48
46 GET(77,15)-(123,46),S5,G:GOTO
48
47 GET(77,15)-(123,46),S6,G:GOTO
48
48 PRINT@272,CHR$(RND(100)+150);
:PCLS:NEXT:GOTO63
49 FOR L=1TO LEN(W$):P$=MID$(W$,
L,1):IF P$=" "THEN51
50 DRAW"BM"+STR$(A)+", "+STR$(B)+
";S4":DRAW L$(ASC(P$)-33)
51 A=A+7:NEXT L:RETURN
52 FOR J=0T030:READ R$:L$(J)=R$:
NEXT J
53 DATA BR2ND1BU2U4,BR1BU4U1BR2D
1,BR1U2L1BU2R1U2BR2D2R1BD2L1D2,B
U1R2ND1R1E1H1L2H1E1R1NU1R2,U1E4U
1BL4D1BF4D1,BR4H1U1H3E1F1G2D2F1R
1E2U1,BR2BU4U2,BR2H1U4E1,BR2E1U4
H1
54 DATA BU2E2NH2NU2NE2NF2D2,BR2B
U1U2NL2NU2R2,BR2NU1G1,BU3R4,BR2U
1,U1E4U1,BU1NE4U4E1R2F1D4G1L2H1,
R2NR2U6L1G1,NR4E4U1H1L2G1,BU1F1R
2E1U1H1NL2E1U1H1L2G1,BR3U6G3R4
55 DATA BU1F1R2E1U2H1L2G1U3R4,BU
3E1R2F1D2G1L2H1U4E1R3,E4U2L4D1,B
U1U1E1NR2H1U1E1R2F1D1G1F1D1G1L2H
1,BR1R2E1U4H1L2G1D2F1R2E1,BR2U1B
U2U1,BR1BD1E1U1BU2U1,BU3NE3F3
56 DATA BU1R4BU2L4,BR1E3H3,BU5E1
R2F1D1G1L1D1BD2D1

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57 FOR J=32T057:READ R$:L$(J)=R$
:NEXT J
58 DATA U4E2F2D2NL4D2,R3E1U1H1E1
U1H1L3R1D3NR2D3,BE4BU1H1L2G1D4F1
R2E1,R3E1U4H1L2NL1D6,R4U1BU4U1L3
NL1D3NR2D3,R1NR1U3NR2U3NL1R3D1,B
E2R1NR1D1ND1G1L1H1U4E1R2D1,U3NU3
R4NU3D3,BR1R1NR1U6NL1R1,BU1NU1F1
R1E1U5NL1R1
59 DATA R1U6NL1BD3R1E2U1BD5ND1H2
,R4U1BG1BL2U6NL1R1,U6F2E2D6,U6F4
NU4D2,BU1U4E1R2F1D4G1L2H1,R1NR1U
6NL1R2F1D1GL2,BU1U4E1R2F1D4G1D1R
1BH1L2H1,U6R3F1D1G1L1NL2F2D1,BU1
F1R2E1U1H1L2H1U1E1R2F1,BR2U6NL2R
2
60 DATA BU1NU5F1R1E1R1ND1U5,BU3N
U3F1D1F1E1U1E1U3,NU6E2F2U6,U1E4U
1BL4D1F4D1,BR1R1NR1U3H2U1BR4D1G2
,BU5U1R4D1G4D1R4U1
61 DATA 48,58,50,66,46,70,50,76,
48,78,46,80,46,86,50,86,46,90,50
,90,46,96,50,96,48,98,46,100,50,
100,46,106,48,106,50,106,46,110,
48,110,50,110
62 RETURN
63 DIML$(57):GOSUB52
64 A=50:B=90:W$="INSTRUCTIONS ?
Y/N":GOSUB49:SCREEN1,1
65 A$=INKEY$:IFA$="Y"THEN194
66 IFA$="N"THEN67ELSE65
67 LINE(40,80)-(200,100),PRESET,
BF
68 A=10:B=20:W$=" * FIRE FOX *":
SCREEN1,1
69 FOR L=1TO LEN(W$):P$=MID$(W$,
L,1):IF P$=" "THEN71
70 DRAW"BM"+STR$(A)+", "+STR$(B)+
";S12":DRAW L$(ASC(P$)-33)
71 A=A+17:NEXT L
72 A=122:B=115:W$="BY":GOSUB49
73 A=38:B=134:W$="MAX BETTRIDGE
048-839203":GOSUB49:A=119:B=150
:W$="FOR":GOSUB49
74 A=35:B=160:W$="(32K EXTENDED
COLOR BASIC)":GOSUB49:GOTO76
75 LINE(0,30)-(256,42),PRESET,BF
:W=0:A=49:B=40:W$="HIT FIRE BUTT
ON TO START":GOSUB49:GOTO83
76 A=100:B=60:LINE(100,60)-(146,
90),PSET,BF
77 CIRCLE(A+10,B+10),C,0:PAINT(A
+10,B+10),0,0:CIRCLE(A+35,B+10),
C,5:CIRCLE(A+35,B+10),C+1,0:C=C+
1:ON C GOTO78,79,80,81
78 GET(A+5,B+5)-(A+15,B+15),A,G:
GET(A+30,B+5)-(A+40,B+15),B,G:GO
T077
79 GET(A+5,B+5)-(A+15,B+15),A1,G
:GET(A+30,B+5)-(A+40,B+15),B1,G:

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GOTO77
80 GET(A+5,B+5)-(A+15,B+15),A2,G
:GET(A+30,B+5)-(A+40,B+15),B2,G:
GOTO77
81 GET(A+5,B+5)-(A+15,B+15),A3,G
:GET(A+30,B+5)-(A+40,B+15),B3,G
82 PMODE4,5:GET(0,0)-(20,20),G1,
G:DRAW"BM10,10;CONU10ND10NL10NR1
ONE10NF10NG10NH10":GET(0,0)-(20,
20),G,G:PMODE4
83 Z=RND(6):A=100:B=60
84 ON Z GOTO85,86,87,88,89,90,91
85 PUT(A,B)-(A+46,B+30),S0,PSET:
GOTO93
86 PUT(A,B)-(A+46,B+30),S1,PSET:
GOTO93
87 PUT(A,B)-(A+46,B+30),S2,PSET:
GOTO93
88 PUT(A,B)-(A+46,B+30),S3,PSET:
GOTO93
89 PUT(A,B)-(A+46,B+30),S4,PSET:
GOTO93
90 PUT(A,B)-(A+46,B+30),S5,PSET:
GOTO93
91 PUT(A,B)-(A+46,B+30),S6,PSET:
GOTO93
92 W=W+1:IFW>20THEN75ELSEReturn
93 GOSUB92:IFPEEK(65280)=126ORPE
EK(65280)=254THEN100ELSE83
94 A=1:T=0
95 PMODE4,5:CIRCLE(6,55),A,,.6:C
IRCLE(30,55),A+1:IFT>4THEN106ELS
ECIRCLE(6,55),A,0,.6:CIRCLE(30,5
5),A+1,0:A=A+1:T=T+1:ON T GOTO96
,97,98,99
96 GET(0,50)-(10,60),C,G:GET(25,
50)-(35,60),D,G:GOTO95
97 GET(0,50)-(10,60),C1,G:GET(25
,50)-(35,60),D1,G:GOTO95
98 GET(0,50)-(10,60),C2,G:GET(25
,50)-(35,60),D2,G:GOTO95
99 GET(0,50)-(10,60),C3,G:GET(25
,50)-(35,60),D3,G:GOTO106
100 IFL1<96THENLINE(0,96+L1)-(25
6,96+L1),PSET
101 IFL1<123THENLINE(0,171-L1)-(
256,171-L1),PSET
102 IFL1<48THENLINE(0,96-L1)-(25
6,96-L1),PSET
103 IFL1<73THENLINE(0,48+L1)-(25
6,48+L1),PSET
104 IFL1>123THENB=B+20:X=170:Y=1
70:GOTO94
105 L1=L1+2:GOTO100
106 PMODE4:FORT=0T0256STEPRND(8)
+9:M=RND(20):LINE(T,170-M)-(T+M,
170),PRESET,BF:F=RND(256):LINE(F
,166)-(F+2,168),PSET,B:LINE(F+10
,155)-(F+7,157),PSET,B:NEXT:PCOP
Y4T05:PCOPY4T08:GOTO109
107 IFL=4THENPCOPY4T05
108 LINE(0,30)-(256,42),PRESET,B
F:RETURN
109 L=4:FORJ=1T02:FORT=0T0256STE
PL:LINE(128,170)-(T,196),PRESET:
NEXT:FORT=170T0196STEPPL:LINE(0,T
)-(128,170),PRESET:LINE(256,T)-(
128,170),PRESET:NEXT:GOSUB107:L=
3:NEXT:PCOPY4T08:A=1:T=0
110 PMODE4,5:A$="NR2D2R2U2F2NR2D
2R2U2E2R2D2L2U2":FORS=2T08STEP2:
DRAW"C5":B$="S"+STR$(S):LINE(90,
80)-(130,100),PSET,BF:DRAW"C0;BM
100,90;XB$;XA$;":CIRCLE(110,90),
2,0:CIRCLE(110,95),2:CIRCLE(116,
92),2:CIRCLE(104,92),2:T=T+1:ON
T GOTO111,112,113,114
111 GET(99,88)-(105,93),E,G:NEXT
112 GET(98,86)-(112,98),E1,G:NEX
T
113 GET(101,84)-(125,100),E2,G:N
EXT
114 GET(98,84)-(122,100),E3,G:T=
0
115 A$="BRDRUF2NR2D2RU4EHGFD4RU2
E2RDLU":FORS=2T08STEP2:DRAW"C5":
B$="S"+STR$(S):LINE(90,80)-(130,
100),PSET,BF:DRAW"C0;BM100,90;XB
$;XA$;":T=T+1:ON T GOTO116,117,1
18,119
116 GET(99,88)-(105,93),F,G:NEXT
117 GET(98,86)-(112,98),F1,G:NEX
T
118 GET(96,84)-(120,100),F2,G:NE
XT
119 GET(98,84)-(122,100),F3,G:PM
ODE4
120 XK=0:F1=10:ST=1:PMODE4,5:LIN
E(0,96)-(256,140),PRESET,BF:A=10
:B=104:W$="FIRE FOX":GOSUB49:A=1
00:B=104:W$="US":GOSUB49:A=200:B
=104:W$="THEM":GOSUB49:PMODE4:PC
OPY7T01:PCOPY8T04
121 LA=0:T=0:TV=0:TD=0:OP=0
122 IFST=1THENPUT(1+T,12)-(47+T,
42),S6,PSET:T=T+30:IFT<150THEN12
2
123 IFOP<2THENPUT(175+TV,12+TD)-
(185+TV,22+TD),C3,PSET:TV=TV+15:
IFTV+167<240THEN123ELSETV=0
124 IFOP<2THENTD=15:OP=OP+1:GOTO
123
125 TV=0:TD=0:X=125:Y=96
126 POKE65314,255:COLOR0,1:ON ST
GOTO127,128,129,130,193
127 A=100:B=90:W$="STAGE ONE":GO
SUB49:COLOR1,0:GOTO131
128 A=100:B=90:W$="STAGE TWO":GO
SUB49:GOTO131
129 A=100:B=90:W$="STAGE THREE":

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GOSUB49:GOTO131
130 A=100:B=90:W$="STAGE FOUR":G
OSUB49
131 COLOR1,0:FORT=1T01000:NEXT:L
INE(0,49)-(256,144),PSET,BF:POKE
65314,255
132 H=JOYSTK(0)
133 DRAW"C0"
134 IFPEEK(65314)<255THENPOKE653
14,255
135 IFH>32THENHR=HR+.3:IFHR>7THE
NHR=7
136 IFH<32THENHR=HR-.3:IFHR<1THE
NHR=1
137 IFH<20THENA=A-5:IFA<0THENA=0
138 IFH>50THENA=A+5:IFA>209THENA
=209
139 V=JOYSTK(1)
140 IFV>40THENB=B+3:IFB>114THENB
=114
141 IFV<20THENB=B-3:IFB<49THENB=
49
142 IFPC=1THENPCOPY8T04:PC=0
143 ON HR GOTO144,145,146,147,14
8,149,150
144 PUT(A,B)-(A+46,B+30),S0,PSET
:GOSUB13:GOTO151
145 PUT(A,B)-(A+46,B+30),S1,PSET
:GOSUB16:GOTO151
146 PUT(A,B)-(A+46,B+30),S2,PSET
:GOSUB19:GOTO151
147 PUT(A,B)-(A+46,B+30),S3,PSET
:GOSUB22:GOTO151
148 PUT(A,B)-(A+46,B+30),S4,PSET
:GOSUB25:GOTO151
149 PUT(A,B)-(A+46,B+30),S5,PSET
:GOSUB28:GOTO151
150 PUT(A,B)-(A+46,B+30),S6,PSET
:GOSUB31:GOTO151
151 ON ST GOTO152,165,175,185,19
3
152 IFAL=0THENX=RND(236)+10:Y=RN
D(20)+48
153 Y=Y+1:AL=AL+.1:ON AL GOTO154
,156,158,160,162
154 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),A,PSET:XK=1:GOTO132
155 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),B,PSET:XK=0:GOTO132
156 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),A1,PSET:XK=1:GOTO132
157 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),B1,PSET:XK=0:GOTO132
158 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),A2,PSET:XK=1:GOTO132
159 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),B2,PSET:XK=0:GOTO132
160 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),A3,PSET:XK=1:GOTO132
161 IFXK=1THENPUT(X,Y)-(X+10,Y+1

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0),B3,PSET:XK=0:GOTO132
162 LINE(X+5,Y+5)-(A+10,B+10),PR
ESET:COLOR0,1:PUT(A+5,B+5)-(A+25
,B+25),G,PSET:LINE(0,49)-(256,14
4),PRESET,BF:COLOR1,0:POKE65314,
240:IFFI<135THENLINE(FI,12)-(FI+
25,44),PRESET,BF:FI=FI+30:AL=0:G
OTO132
163 IFFI>135THENPCLS5:AL=0:GOTO3
164 GOTO132
165 IFAL=0THENX=RND(236)+10:Y=RN
D(20)+48
166 Y=Y+1:AL=AL+.1:ON AL GOTO167
,169,171,173,162
167 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),C,PSET:XK=1:GOTO132
168 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),D,PSET:XK=0:GOTO132
169 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),C1,PSET:XK=1:GOTO132
170 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),D1,PSET:XK=0:GOTO132
171 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),C2,PSET:XK=1:GOTO132
172 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),D2,PSET:XK=0:GOTO132
173 IFXK=0THENPUT(X,Y)-(X+10,Y+1
0),C3,PSET:XK=1:GOTO132
174 IFXK=1THENPUT(X,Y)-(X+10,Y+1
0),D3,PSET:XK=0:GOTO132
175 IFAL=0THENX=RND(236)+10:Y=RN
D(20)+48
176 Y=Y+2:AL=AL+.2:ON AL GOTO177
,179,181,183,162
177 IFXK=0THENPUT(X,Y)-(X+6,Y+5)
,E,PSET:XK=1:GOTO132
178 IFXK=1THENPUT(X,Y)-(X+6,Y+5)
,F,PSET:XK=0:GOTO132
179 IFXK=0THENPUT(X,Y)-(X+14,Y+1
2),E1,PSET:XK=1:GOTO132
180 IFXK=1THENPUT(X,Y)-(X+14,Y+1
2),F1,PSET:XK=0:GOTO132
181 IFXK=0THENPUT(X,Y)-(X+24,Y+1
6),E2,PSET:XK=1:GOTO132
182 IFXK=1THENPUT(X,Y)-(X+24,Y+1
6),F2,PSET:XK=0:GOTO132
183 IFXK=0THENPUT(X,Y)-(X+24,Y+1
6),E3,PSET:XK=1:GOTO132
184 IFXK=1THENPUT(X,Y)-(X+24,Y+1
6),F3,PSET:XK=0:GOTO132
185 IFAL=0THENXK=RND(32)+3102:KX
=RND(32)+3102:AL=1
186 POKEKX,RND(255):POKEKX-96,25
5:XK=XK+32
187 POKEKX,RND(255):POKEKX-64,25
5:KX=KX+32
188 IFKX>6500THEN191
189 IFKX<6500THEN191
190 GOTO132
191 FORT=1T090:POKE65314,RND(200

```

```

)+50:NEXT:POKE65314,255
192 PCLS5:A=10:B=50:W$="YOUR CIT
Y IS DESTROYED !":GOSUB49:FORT=1
TO1000:NEXT:GOTO3
193 PCLS5:A=10:B=60:W$="YOU HAVE
REPELLED THE INVADERS":GOSUB49:
GOTO4
194 PCLS:A=5:B=10:W$="FIRE FOX I
S DEFENDER OF BASE CITY.":GOSUB4
9:A=5:B=20:W$="INTRUDERS APPEAR
IN THE DISTANCE AND":GOSUB49:A=5
:B=30:W$="ENLARGE AS THEY NEAR T
HE BASE.":GOSUB49:A=5:B=40:W$="Y
OUR TASK IS TO DESROY THEM BEFOR
E":GOSUB49
195 A=5:B=50:W$="THEY GET WITHIN
RANGE OF FIRE FOX.":GOSUB49:A=5
:B=60:W$="STAGES 1 & 2 ARE PROBE
S OF THE":GOSUB49:A=5:B=70:W$="M
OTHER SHIPS WHO APPEAR IN STAGE

```

```

3.":GOSUB49:A=5:B=80:W$="IF YOU
DESTROY ALL SHIPS STAGE 4":GOSUB
49
196 A=5:B=90:W$="RELEASES HOMEIN
G ENERGY MISSILES":GOSUB49:A=5:B
=100:W$="WHICH ARE DIFICULT TO H
IT. IF YOU":GOSUB49:A=5:B=110:W$
="LET ONE THROUGH YOUR CITY IS L
OST":GOSUB49:A=5:B=130:W$="REMEM
BER WHEN FIRING YOU ARE AIMING":
GOSUB49
197 A=5:B=140:W$="AHEAD AND FORW
ARD OF FIRE FOX":GOSUB49:A=5:B=1
50:W$="WHEN INTRUDER IS WITHIN R
ANGE YOU":GOSUB49:A=5:B=160:W$="
SHOTS WILL HIT TARGET. IS DIFFIC
ULT":GOSUB49:A=5:B=170:W$="PRESS
SPACE BAR TO GO..GOOD LUCK":GOS
UB49
198 EXEC44539:PCLS:GOTO68

```

## CROCODILE DANGER

Wayne Kely

I have written the following program for Australian CoCo and I hope it will be used.

The program uses the RND function to pick a certain number of crocodiles in the lagoon. The computer waits for your answer and then checks it to see if it's correct or not. The program picks a number between one and fifteen.

This program is for a 4K CoCo.

The listing:

```

10 REM ***** CROCODILE DANGER *****
20 REM * BY WAYNE KELY *
30 CLS
40 PRINT "HOW MANY CROCODILES IN THE LAGOON?"
50 PRINT "YOU HAVE FIVE CHANCES"
60 A= RND(15)
70 FOR N=1 TO 5
80 INPUT R
90 IF R=A THEN N=5:GOTO 180
100 PRINT "WRONG!!"
110 NEXT N
120 PRINT "!!!! SNAP !!!!!"
130 PRINT "YOU HAVE BEEN EATEN UP !! "
140 PRINT "DO YOU WANT ANOTHER GO (Y/N)"
150 INPUT Q$
160 IF Q$="Y" THEN 30 ELSE IF Q$="N" THEN 230
170 GOTO140
180 PRINT "RIGHT !! NOW PADDLE AWAY FAST !!!"
190 PRINT "DO YOU WANT ANOTHER GO (Y/N)"
200 INPUT Q$
210 IF Q$="Y" THEN 30 ELSE IF Q$="N" THEN 230
220 GOTO190
230 CLS:END

```

February, 1985

from page 5

```

1 '*****PIXEL LOGO*****
*****BY THE AMAZING*****
*THURBON FATHER AND SON TEAM*
**FROM THE TOWN OF THE LONG**
*****WHITE BUREAUCRAT*****
10 PMODE4,1:PCLS:SCREEN1,1
20 FORX=0TO191STEP2:LINE(X,P)-(2
55-X,191-P),PSET,B:P=P+2:NEXT:LI
NE(0,96)-(255,96),PRESET:PAINT(1
28,96),5,5:DRAW"COBM20,86ND20R17
F3D4G3L17BD10BR50NR5R3U20NL2R3BR
100NR20D10NR15D10R20BR40NU20R20
30 DRAW"BM106,180NR4D2R4D2NL4BR2
U4R4D4NL4BR2U4NR4D2R3BR3BU2R4L2D
4BR4NU4R2NU3R2NU4BR2U4R4D2NL4D2B
R2U4R4D2L4R2F2BR2U4NR4D2NR3D2R4
40 DRAW"BM106,190U4R4D2NL4BR2BU2
ND4R4D2NL4L2F2BR2NR4U2NR3U2R4BR2
NR4D2R4D2NL4BR2NR4U2NR3U2R4BR2ND
4F4U4BR2R4L2D4BR4R4U2L4U2R4
50 DRAW"BM128,96NE17NF17NG17NH17
60 GOTO60

```

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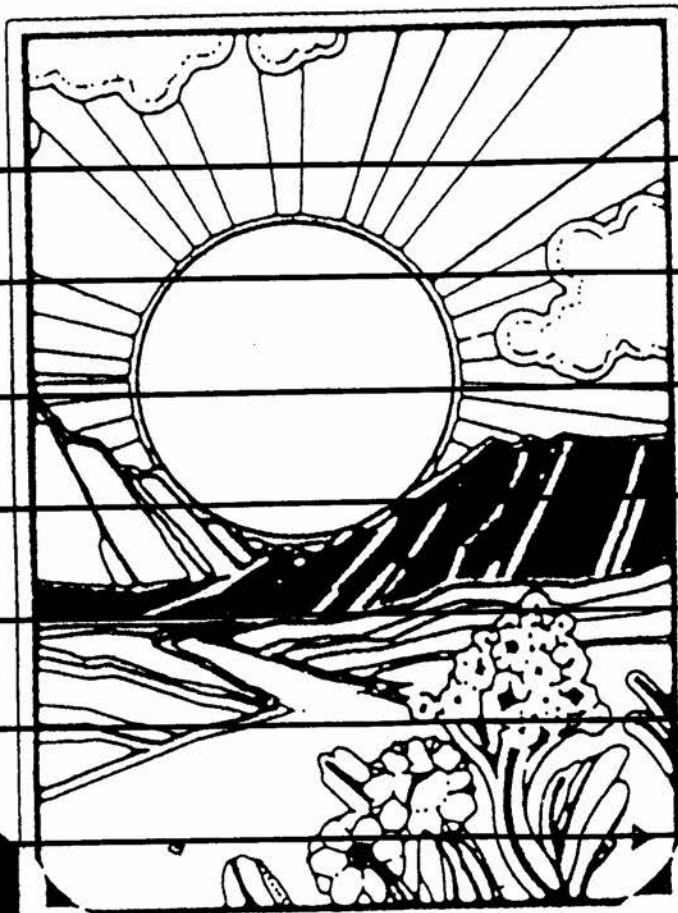
WITH

COCO

DOWN

MEMORY

LANE



Roy Lopez

For those whose knowledge of the inner workings of COCO is limited, and who would like to delve into COCO's memory, this program may help to stimulate curiosity.

First a brief recapitulation on COCO's memory lane. With 65535 addresses (00-FFFF hex), (and that's only one side of the lane), it's a long lane indeed. If you have a 32/64K COCO, and access to Warren Warne's excellent RUN2BC program, renamed for my own use, 'SWTCH32K', with apologies to Warren, then a further 32K (00-7FFF hex), of free RAM memory may be addressed on the other side of memory lane, switchable using the left Joystick fire button. RUN2BC is a program from the MAY 84 issue - COCOOZ #15.

As will become clear, not all of the RAM area is available to the programmer. Of the 65535 available memory addresses, only 32K, 0 to 32767 (00-7FFF hex), is for RAM use, while 32768 to 65535 (8000-FFFF hex) is exclusive to the ROM. The amount of available RAM is set initially by the type of RAM integrated circuits (IC's), installed in COCO. These may be 4164's, in which case 32/64K is available, or IC's which allow the addressing of 4 or 16K of RAM only. In any case the free RAM is further reduced, since the bottom area is used by the ROM. There are programs which allow access to as much as 40K of RAM, obtained by juggling the ROM/RAM areas, and of course 'RUN2BC' allows use of a full 64K of RAM in two 32K parallel stacks.

The MEMORY area is apportioned, roughly as follows:-

Hex 0000-03FF - scratch RAM area.

- \* 0400-05FF - video screen display.
- \* 0600-7FFF - program area.
- \* 8000-9FFF - ECB ROM.
- \* A000-BFFF - BASIC ROM.
- \* C000-FE0F - CARTRIDGE ROM.
- \* FF00-FFFF - INPUT/OUTPUT.

The basic ROM controls the whole range of COCO's activities, including the initial loading of data into the scratch RAM and the setting up of PIAs and SAM chip.

During this initialisation, data relative to keyword tables, for basic, ECB, and disk, in addition to other pertinent data, is stored in the scratch RAM area from where COCO keeps an accurate check of all basic programming activities.

COCO is able to store one binary byte of information, 00000000-11111111 (ie. from all bits switched off, to all bits on in binary, 0-255 decimal, or 00 - FF hex), in each address. Two addresses are required however, in order to store another address. To obtain the byte stored in an address, whether ROM or RAM, a PEEK is used. To store a byte in a RAM address a POKE is used. Normally, it is not possible to POKE a ROM address.

A 'PEEK' will return information from an address, as follows:-

'PEEK' = decimal return.

'HEX\$(PEEK)' = hexadecimal return.

'CHR\$(PEEK)' = ASCII return.

eg. Dec-48 = 30-hex = '0' - ASCII;

Dec-90 = 5A-hex = 'Z'- ASCII.

Keywords, such as 'FOR', 'GOTO', 'PRINT' etc, are stored as tokens using one or two bytes,

eg, 128 (80-hex) is 'FOR',

129 (81-hex) is 'GO' and so on.

While a fully commented disassembly of the ROM is a desirable requisite, before an examination of that portion of memory is undertaken, nevertheless, memory dumping is a useful, and simple to achieve alternative.

?HEX\$(PEEK(25)\*256+PEEK(26)) will return the hexadecimal start address information for a basic program. To take a PEEK at the whole, or at any portion of memory, the following LITTLE GEM will do the job quite nicely:-

```
FORI=0 TO65535:PRINTI" "HEX$(I)
```

```
" "PEEK(I)" "HEX$(PEEK(I))"
```

```
"CHR$(PEEK(I)):NEXT
```

The 'LITTLE GEM' displays memory in columns.

Col.1 is dec.addr.

Col.2 is hex. addr.

Col.3 is dec.PEEK.

Col.4 is hex. PEEK, while

Col.5 is ASCII PEEK.

For a horizontal display, instead of columns, insert a semi-colon before ':NEXT'. ie, ;:NEXT. This program may also be used to recover an apparently 'crashed' program, or the result of an 'IO ERROR', during cassette loading.

Basic loads programs at a start address, normally \$1E01 using an ECB COCO. This address, returned by a HEX PEEK at addr.25/26, varies according to the following:-

POKE25,6:NEW=\$0601

PCLEAR1- \$0C01 PCLEAR2- \$1201

PCLEAR3- \$1801 PCLEAR4- \$1E01

PCLEAR5- \$2401 PCLEAR6- \$2A01

PCLEAR7- \$3001 PCLEAR8- \$3601

The following bigger LITTLE GEM program will load at Hex addr.7001.

CLOAD and RUN PROG.1, which sets pointers for PROG.2. CLOAD and RUN PROG.2 which may then be used to load and inspect the memory area of other basic programs:-

PROG.1:-

```
10 POKE&H6FFE,0:POKE&H6FFF,0:POK
```

```
E&H7000,0
```

```
20 POKE25,&H70:POKE26,1:NEW
```

PROG.2:-

```
10 CLS:PRINT:INPUT"MEMORY PEEK,  
OR POKE (m/p)*";MP$:IFMP$="P"THE  
N25
```

```
12 PRINT:INPUT"START ADDRESS*";  
S:PRINT:INPUT"END ADDRESS*";E
```

```
20 POKE359,60:FORI=S TOE:PRINTI"
```

```
"HEX$(I)" "PEEK(I)" "HEX$(
```

```
(PEEK(I))" "CHR$(PEEK(I)):NEXT
```

```
22 INPUT"PRESS ENTER*";A$:POKE3
```

```
59,126:GOTO10
```

```
25 PRINT:INPUT"HEX START ADDR.M
```

```
SB*";S1:INPUT"HEX START ADDR.LS
```

```
B*";S2
```

```
28 S=S1*256+S2:POKES-3,0:POKES-2
```

,0:POKES-1,0

30 POKE25,S1:POKE26,S2:NEW

To make full use of PROG.2, hit 'P' and then enter &H1E for hex start addr MSB, and 1 for hex start addr LSB, or any RAM address to suit requirements. This will set start and end address pointers ready to receive another basic program. Return to PROG.2 is achieved by 'POKE 25,&H70: POKE26,1'. From PROG.2, to PEEK at any section of memory, enter 'M', followed by the start and end address required, (use &H for hex). Scrolling may be stopped by pressing 'SHIFT' & '@' together, or speeded up by removing 'POKE359,60' from line 20. Before altering PROG.2, reset program end pointers by 'POKE27,&H71:POKE28,&H44'.

When data is 'keyed in' it is initially stored in a 255 byte buffer-addr.733-988 (2DD-3DC hex), in the scratch RAM area. After the (ENTER) key has been pressed, (a carriage return), two procedures have to take place.

ONE - the keywords have to be tokenised, and,

TWO - a search made at the start of the entry, for a program line number. If no line number is found, the data is immediately executed. If a line number is found, then the entry is placed in the RAM program area using the next available addresses. Use the LITTLE GEM to PEEK at the abovementioned buffer and also take a PEEK at the keyword list index, addr.288-327 (120-147 hex), mentioned earlier.

Here is a MEM-DUMP, using LITTLE GEM, of the keyword list index:-

ADDRESS	PEEK	
DEC	HEX	DEC
288	120	53
		35-No.of KEYWORDS
289	121	170
290	122	102
		AA)addr.basic comds.
		66)KEYWORD list.
291	123	171
292	124	103
		AB)addr.basic EXEC/
		67)vector table.
293	125	20
		14-No.of KEYWORDS
294	126	171
295	127	26
		AB)addr.basic FUNCT-
		1A)IONS KEY'WD list.
296	128	170
297	129	41
		AA)addr.B/FUNCTIONS
		29)EX/vector table.
298	12A	25
		19-No.of keywords
299	12B	129
300	12C	131
		81)addr.ECB comds.
		83)KEYWORD list.
301	12D	129
302	12E	60
		81)addr.ECB comds.
		3C)EX/vector table.
303	12F	14
		E-No.of KEYWORDS
304	130	130
305	131	30
		82)addr.ECB/FUNCT.
		1E)KEYWORD list.

306 132 129 81)addr.ECB/FUNCT.  
 307 133 104 68)EX/vector table.

In my 32/64K ECB COCO, no disk, the two groups, 308 - 312, and 313-317, (134 - 138 and 139 - 13D hex), (disk keyword lists), point to hex B277, the address of the SN ERROR ROM routine, while the last two groups, 318-322, and 323-327, (13E-142 and 143-147 hex), point to \$B44A, which appears to be connected with the setting up of disk basic.

We now PEEK at the above pointers:-

```

ADDRESS      PEEK
DEC  HEX  DEC  HEX  ASCII
43622 AA66 70 46 F )BASIC COMMAND
43623 AA67 79 4F 0 )KEYWORD 'FOR'
43624 AA68 210 D2 )R=CHR$(82)+128=210
  
```

Each keyword has 128 added to it's last letter, for program counter identification. KEYWORDS are checked for a match. The counter counts the number of KEYWORDS checked until the correct one is located. Command KEYWORDS occupy a single byte. If a check of all command lists does not provide a match, then the count is set to 255 (FF-hex), (producing two - byte tokens, (ie. FUNCTION KEYWORD tokens are identified by 255 (FF-hex), an orange block preceeding the normal token in the program area), and is restarted at the start of the function lists. If no match is found, then 'SN ERROR' is sent. When a match is found, 128 (80-hex), is applied to the count, and the result then is the TOKEN value for that KEYWORD; eg, the first KEYWORD in the basic commands list is 'FOR', with a count of '0', so that it's TOKEN value is 128 (80-hex), which is then used in the program area to replace the KEYWORD, thus conserving RAM memory. (KEYWORD 'ELSE' with a count of 4, has a token value of 132 (84-hex).

When the program is 'RUN' basic subtracts 128 from the token value, multiplies the result by two (2), (since an address is involved), and adds that result to the execute vector table start address applicable, (in this case hex AB67), to obtain the ROM sub-routine start address, for the KEYWORD; and 'EXEC'utes using that address.

```

ADDRESS      PEEK
DEC  HEX  DEC  HEX
43879 AB67 173 AD )EXEC ADDRESS ROM
43880 AB68 71 47 )SUB-ROUTINE 'FOR'.
  
```

```

DEC  HEX  DEC  HEX  ASCII
43802 AB1A 83 53 S )BASIC/FUNCTION
43803 AB1B 71 47 G )KEYWORD 'SGN'
43804 AB1C 206 CE )N=CHR$(78)+128=206
* * * * *
43561 AA29 188 BC )EXEC ADDRESS ROM
43562 AA2A 122 7A )SUB-ROUTINE 'SGN'.
  
```

As demonstrated above, the recovery of BASIC KEYWORD list data from the ROM, is simple enough, however, in the case of ECB list data, although similar, extra steps by the

ECB ROM are involved. Here, therefore is information on the basic tables, and details of the ECB keyword tables:-

#### BASIC COMMAND TABLE

```

TOKEN 0=128 (80 hex)- 'FOR' - BASIC
  * 52=180 (B4 " )- ' < ' token #53
  * 53=181 (B5 " )- 'DEL' - ECB
  * 77=205 (CD " )- 'USING' " #78
  * 78=206 (CE " )- 'DIR' - DISK
  * 96=224 (E0 " )- 'DSK0$' " #97
  
```

#### BASIC FUNCTION TABLE

```

TOKEN 0=128 (80 hex)- 'SGN' - BASIC
  * 19=147 (93 " )- 'MEM' token #20
  * 20=148 (94 " )- 'ATN' - ECB
  * 39=167 (A7 " )- 'AS' token #40
  
```

#### ECB COMMANDS JUMP TABLE

```

DEL = $8970 PSET = $9361 PUT = $9758
EDIT = $8533 PRESET= $9365 DRAW = $9CB6
TRON = $86A7 SCREEN= $9670 PCOPY = $9723
TROFF= $86A8 PCLEAR= $968B PMODE = $9621
DEF = $8871 COLOR = $9546 PLAY = $9A22
LET = $AF89 CIRCLE= $9E9D DLOAD = $8C18
LINE = $938B PAINT = $98EC RENUM = $8A09
PCLS = $9532 GET = $9755
  
```

#### ECB FUNCTION JUMP TABLE

```

ATN = $8380 LOG = $8446 INSTR = $877E
COS = $8378 POS = $86AC TIMER = $8968
TAN = $8381 SQR = $8480 PPOINT= $9339
EXP = $84FE HEX$ = $8BDD STRING$= $874E
HEX$ = $8524 VARPTR= $86BE
  
```

Further information may be gained if we stroll again, along MEMORY LANE. After 'CLOAD'ing and 'RUN'ning a basic program here is a memory dump of selected sections of RAM, using the 'LITTLE GEM':-

```

ADDRESS      PEEK
DEC  HEX  DEC  HEX
23  17  127  7F) stack pointer
24  18   11  3) address.

25  19   30  1E) start of basic
26  1A    1  1) MEM pointer.

27  18   45  2D) start of simple
28  1C  225  E1) var/area pointer

29  1D   46  2E) variable arrays
30  1E  165  A5) pointer.

31  1F   46  2E) start of free
32  20  165  A5) space pointer.

33  21  127  7F) bottom of string
34  22   54  36) space pointer.

35  23  127  7F) next string
36  24  179  B3) space pointer.
  
```

```

37 25 127 7F) last string
38 26 180 B4) entered pointer.

39 27 127 7F) top of string
40 28 254 FE) space pointer.

```

In addition decimal addresses 474-481 hold the PROGRAM NAME after tape loading, and addr.487/488 the ML START address, addr. 157/158 the ML EXEC address and the END address of the last tape program loaded, is stored at addr.126/127 (-1 for ML).

When COCO is first switched on, (cold start), the start pointers are set as explained earlier, (\$1E01-ECB normal), while the address stored in addr. 27/28 is two higher than that stored in 25/26. As a basic program is keyed-in, program data is transferred from the 255 byte buffer to the program area, to be stacked between addr. 25/26 and addr. 27/28, pushing 27/28 higher in memory. As will be seen in the examples below, the first two program addresses hold a pointer to the second program line start address; program address three and four hold the program first line number; program data occupies the next memory block; a '0' is placed in the address immediately following the end of that line. The process then repeats throughout the program, the next two addresses holding pointers to the following line start, and so on, until a '0' is placed in the three addresses immediately following the program end. Addr.27/28 points to the address following the last of the three zeros, and the simple variables area stores program variable data as shown below.

This selection shows how BASIC stores a program - the start of MULTIBAS- (with comments):-

```

ADDRESS  PEEK
DEC HEX DEC HEX ASCII
7681 1E01 30 1E ) pointer to start
7682 1E02 31 1F ) addr. prog.line-2.
7683 1E03 0 0 ) program first line
7684 1E04 1 1 ) number store.
7685 1E05 129 81 ) 'G0'(tokens-part of
7686 1E06 165 A5 ) 'TO'(GOTO command.
7687 1E07 54 36 6) line-6.
7688 1E08 58 3A :) program data.
7689 1E09 135 87 ) 'PRINT' token.
7690 1E0A 34 22 ") program data.
7691 1E0B 48 30 0) " "
7692 1E0C 49 31 1) " "
* * * * *
7708 1E1C 72 48 H) program data.
7709 1E1D 34 22 ") " "
7710 1E1E 0 0 ) line-1 ends.
7711 1E1F 30 1E ) pointer to start
7712 1E20 86 56 ) addr.prog.line-3.
7713 1E21 0 0 ) program 2nd line
7714 1E22 2 2 ) number store.
7715 1E23 158 9E ) 'CLS' token
7716 1E24 58 3A :) program data.

```

```

7717 1E25 135 87 ) 'PRINT' token.
7718 1E26 90 5A ) program data.
* * * * *

```

This selection is the end of the program area / start of simple variable area:-

```

ADDRESS  PEEK
DEC HEX DEC HEX ASCII
11623 2D67 42 2A *) program data.
11624 2D68 34 22 ") " "
11625 2D69 0 0 ) end
11626 2D6A 0 0 ) of
11627 2D6B 0 0 ) program.
11628 2D6C 90 5A Z) string variable
11629 2D6D 177 B1 (1)Z1$-bit-7(128)set.
11630 2D6E 32 20 )No.bytes in string
11631 2D6F 0 0 ) reserved.
11632 2D70 127 7F ) addr.where string
11633 2D71 148 94 ) 32-bytes stored.
11634 2D72 0 0 ) reserved.
* * * * *
11642 2D7A 83 53 S) numeric variable
11643 2D7B 0 0 ) name store.
11644 2D7C 141 8D ) EXP.fl/point value
11645 2D7D 112 70 ) MSB " " "
11646 2D7E 8 8 ) " " "
11647 2D7F 0 0 ) " " "
11648 2D80 0 0 ) LSB " " "
* * * * *

```

From the above 'MEM-DUMPS' it should be obvious that a 'crashed' program may be recovered, by 'POKE'ing the start or end pointers, addr.25/26 or addr.27/28, with appropriate information. For instance, in the case of the start address, addr.25/26 should be 'POKE'ed with the next program line number pointer, free of the crashed section, or the program patched back to it's start address, using a series of 'POKE's', with the aid of program data and ASCII table and TOKEN table information. If COCO is able to be 'RESET' or restored using the 'BREAK' key, then it is possible to 'PEEK' at and restore the program. In the case of a program end 'crash', locate the end of the last line that is OK, and then 'POKE' the three following addresses with a '0', and addr.27/28 with the address following the one holding the last of the three '0's. When 'NEW' is entered or an 'I/O ERROR' occurs during a 'LOAD' then addr.27/28 is pointed to an address two higher than the start address. In order to sort the problem out it is necessary to 'POKE' addr. 27/28 with the address following the three '0's at the program end, and then to adjust the start of the program, as outlined above.

Well there it is, I've puzzled it out as best I could using information from what others had written, as a guide. While it may not be 100% accurate, it's the best I can do at my present stage of computer knowledge. As I said at the start of the article it may help stimulate curiosity.

# MiCo

Greetings to everybody for the New Year. It's been a long break from everyone but as always there remains no rest for the wicked.

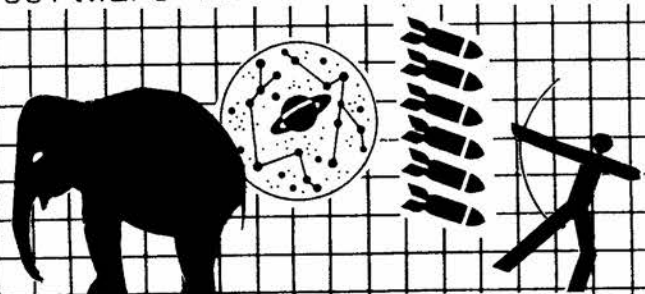
Most of the Christmas break was spent in setting up our CoCoLINK Bulletin Board System. If you ever feel you are not learning enough about computers and programming, set yourself a 'simple'?? task complete with a deadline which you should be able to meet and then start looking for the problems. I have learnt more in the past 2 months about OS8, opps! OS9 and BASIC09 than I ever thought would be possible. It has not been simple but we now have a working BBS. As a priority we are working on installing to the Board a MiCo special interest section which will enable MiCo users to up and down-load programs, read and post special interest messages etc. Hand in hand with this we are looking for a good reliable communications program we can recommend for use with MiCo. Has anyone a special favourite? Please let us know.

In an effort to increase the content of the magazine we have reduced the print size we are using for our text. This has effectively given us the same as an extra page for every 2 or 3 pages we print. That should enable us to include more technical or special interest articles such as that SUPERB discussion of Reg Lang's included this month.

Keep those programs coming in. The quality of your programming and spectrum of your knowledge is becoming more and more apparent and every effort you make adds to the abilities of our group, which in turn further improves the quality of your programs.

Its been a very active month and the coming month promises more of the same.

*Kevin*

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# LETTERS

Dear Graham,

I was sorry to hear of Greg's death. My sincere condolences to his wife.

I would like to know about Rainbow Check Plus. I don't know what it is, so I don't know what you are talking about.

I am having a few problems with the MC-10 regarding your programs (mainly the long ones!). My 16K RAM "Words" was one and "Skier" is another. On tape my MC-10 got one big headache and ever since that with 16K RAM I should get 19526 bytes but I get 19626 if I don't clear 100 (OS error).

I do find "MiCo" to be very helpful. Thank you for your help and assistance.

J.J. Heinis,  
S.A.

Rainbow Check Plus is a little program which assists you in the entry of programs into the computer by monitoring the number of characters you have typed.

The figures you see in the box at the beginning of some programs, are the figures that Rainbow Check Plus returns at each of the nominated stages of entry.

We will reprint the program next month in Rainbow.

I can't comment on your memory problems, perhaps one of our readers can help you.

Graham.

Dear Graham,

I'm writing about two things. Firstly, could you get one of the CoCo users to write a simple article on how to use USR(X). This is one of those functions that can be used by the MC-10, but is not in the manual. It's use has never really been explained to us nico users.

Secondly, I'd like to hear more from Richard Rothwell, especially with regard to hi-res graphics. Richard did say, in his letter, that he was trying to locate an MC-10 disassembly. Isn't this what's in "MiCo Exposed"?

Yours Faithfully,  
Grahame Pollock  
Minto. NSW.

P.S. I think that there is an 'OP' code missing from Richards list, ie '19142 BRN I'

P.P.S. I love the new Format of the magazine, even though it is a bit shy on MiCo space (sob, sob!)

Grahame,

Let me take this opportunity to thank you for your support last year and the great programs that you have been sending.

The article on USR(X) has been long overdue, and I think it's probably a job for Dr CoCo, unless anyone would like to volunteer in the next couple of weeks!

Richard's article was received enthusiastically, as you may have guessed! Yes, MICO EXPOSED is the book Richard was looking for.

As this letter brings the point to the front, I should just say that we are very grateful to those who have been supplying articles and programs so faithfully over the last five months or so.

In Greg's day, he used to send a little February, 1985

acknowledgement card, soon after the program are up to, but I would think that most of what you arrived, and I remember only too well looking forward to seeing the comments that he would invariably make regarding my efforts.

As you've been aware, we haven't had time to scratch ourselves for a while, and a few of the little things that Greg did for his regular contributors are missing. We want to do those things too, but it will be just a little longer before we can do them on a continuing basis.

That particular folk have stuck with us and continued to supply their best work has not however, gone un-noticed or unappreciated!

Lastly, if you've enjoyed what we've been doing, then I guess you'll be enjoying the magazine this month. The smaller print along with the additional pages means however, that we need MORE PROGRAMS Grahame!!! 'cos we can't print 'em if we don't get 'em!

Graham.

Dear Graham,

Congratulations on a fine magazine, although I personally would like to see more MC-10 content. Following in Greg's footsteps you certainly have a hard act to follow. I am sure that I speak for many when I say that without Greg and MiCo magazine, the MC-10 would have had little use and been relegated to some dark corner of the house. Instead it has given myself and my family a constant source of enjoyment.

Will you kindly send to me any advice on "Diamond Hunt" - after checking and re-checking the listing I am unable to make the program run.

Tony Hollway  
Revesby, NSW.

Tony,

We will recheck "Diamond Hunt", as our taped copy seems to run OK.

You are 100% correct regarding Greg. Greg's greatest love was the MC-10, and he is to blame solely for the fact that as much as Tandy would like it to, the MC-10 just won't lie down and die!

I am very proud for some of the contributors to MiCo. Richard Rothwell last month, and Reg Lang this month in particular, are opening new doors for the MC-10. Others like Tom, Les, Grahame, Brian, and a myriad more, regularly contribute quality programs.

As a result of the large quantity of programs, we have been able to increase the size of MiCo this month, (see Screen Dump). We can support a larger MiCo if the financial and content support is there in the longer term.

Graham.

Dear Graham,

I've had a Tandy MC-10 for about a year now. I'm starting to write my own programs. I'm trying to make a fully graphical game. I have two cassettes - "Lostworld Pinball", "Microgames" and a variety of books (Australian MiCo and other computer books). I'm taking parts of each program and making them into one program. I can't get the graphics to work. I was wondering if the MC-10 had animation. If it has I would very much like to know how it works.

Steven Lees-Smith (Age 14)  
Balmain. NSW.

Steven,

I don't really understand exactly what you  
AUSTRALIAN MiCo

however, tricks which Tandy hasn't told you about, and which we are only just finding.

Reg Lang, who has an article this month, was telling me the other day about some of the untapped possibilities of the MC-10, and I seem to think that he mentioned page flipping, so we'll ask him when we see him again.

In the meantime if one of you hot MC-10 programmers from Melbourne or Canberra can assist too, we should get Steven an answer in pretty short time.

Graham.

Dear Readers,

The copyright on all of L.W.T. or L.W. THURBON SOFTWARE is intended mainly for commercial firms and is not aimed at the individual reader. However copying of software that I have written is limited to three copys per reader and each reader must purchase one copy of Said magazine for each three copys made of my software. No software may be given away, sold or otherwise without the permission of the author.

Any trade inquiries for any of my software should be directed to myself or to Mr Graham Morphett of Australian Rainbow, Coco/Mico magazine.

L.W. Thurbon  
Canberra, ACT.

Dear Graham,

I have a 20K MC-10, and while I was writing the program Microworld into my computer I found a line that was very questionable. The line is:

```
2040 IF T THEN S=S+1
```

I would like to know if that is right. Also when I change to lower case, the figures show a reversed color 'b'. I would like to know if this is right.

Harold Turner  
Trundle, NSW.

Harold,

That line is incorrect, the line should read

```
2040 IF T=? THEN S=S+1
```

where ? = a quantity either set by the program or the programmer. Unfortunately, we are not able to tell you what this value is at present.

The reversed 'b' is the normal method of display for MC-10's and CoCo's of lower case.

Graham.





It seems that all electronic experts who design, construct and publish circuits and gadgetry for computers have assumed that laymen, like me, totally understand how and why the computer sends and receives information to and from internal peripherals via the address and data lines. I, for one, did not understand fully the above until I got into the machine to find out; perhaps others have had the same problem.

**CPU:** (Central Processor Unit). The MC-10 uses a Motorola 6803 I.C. CPU to control all operations and devices connected to it via address lines, data lines and control lines. We will look at the control lines first.

**Main CPU Clock:** Designated E, and appears at pin 28 at the I/O port on rear of the machine. On power up, the CPU will produce a square wave signal at E, with a potential of between ground and +5V at a frequency of 0.89Mhz, which is rigidly held at the above frequency by an external crystal. This means that at line E you will get an oscillating signal of between 0 volts and +5 volts in 1 cycle of the E clock. Converting down to nanoseconds, 1 cycle has a twice length of 890 nanoseconds. If we assume that the clock starts off at +5V on power up (could start off at 0V or +5V) then the cycle will begin by E going low (0v) and remaining low for a period of about 445 nanoseconds; then switching high and remaining high for another 445 ns. But in fact it does not, simply because the time taken to get from high to low and reverse will reduce the time where E is remaining high or low and reverse. This is only 1 cycle, so E will repeat this exact cycle nonstop until power is removed. The clock signal is used by the CPU to synchronise all operations either internally or externally. Below is a diagram of the E clock:

**Read-Write Time:** Designated R/W, and appears at pin 11 of the I/O port. Firstly, the R/W line will on power up, oscillate between 0V and +5V in unison with the E clock. Therefore if E is low then R/W line is low, if E goes high R/W line goes high. BUT as you will see later in the proceedings, it will depend on the operation to be carried out by the CPU. This line is used to signal to an external component (such as the memory IC) by the CPU,

that the CPU requires data from the memory, or that the CPU is about to send data to memory. As an example:-

If you wished to place a certain character in a certain position on the TV screen you would go about it something like this:

`POKE 16384,133`

Now "POKE" means to (for want of a better word) "write" to location 16384 (which is the first location in screen memory and appears in the top L/H unit) and place therein the character 133, which is a graphic character. Therefore the CPU writes to memory and when the CPU takes over operation to execute your command it will wait for the E clock to go HIGH and then almost immediately place a HIGH on the R/W line which tells memory to expect to receive data from the CPU. If you wished to see what is in location 16384 you would do the reverse, like thus:

`PRINT PEEK(16384)`

"PEEK" means to, indirectly, READ from memory location 16384 and print the result on the screen. On execution of the above command the CPU waits for E to go LOW and immediately places a HIGH on the R/W line which tells memory to send the data in location 16384 to the CPU. The R/W line signal is generated by the CPU and is an output line only. It must be remembered that the R/W line will remain low or high (depending on if the CPU is sorting to or reading from memory) for the total length of 1 cycle of E, it will not oscillate at the time when command execution is taking place. It will resume oscillation in unison with E if the power is on, but the computer is idle - before or after executing of a command.

**Reset:** Appears at pin 30 on I/O port. Reset is an output signal (only Reset is normally held HIGH) and is pulsed HIGH only in unison with E. If grounded by reset switch at rear of machine, (at the time of grounding, the I/O pin 30 will also go to ground) it will clear all memory locations of previous held data and will be as if you just turned machine on.

**Non Maskable Interrupt: (NMI)** appears on pin 31, and is normally held HIGH, and is pulsed HIGH only, in unison with E. If brought to ground during execution of a program, it will halt execution until the device that is providing the ground signal to the CPU is removed only. This pin could be used to update the position of the cursor when using joysticks (This is now being worked on).

**Select:** Appears on pin 29 and is normally held HIGH and is NOT pulsed high by E. If grounded by an external device it can change the memory mapping of the system. As an example:- If we had an external ROM connected to the I/O port that also placed a ground signal on "SEL", the address used by internal ROM could be redirected to an add on ROM externally, because the grounding of "SEL" will disable device selection of internal ROM and any address used therein could be burnt into an external ROM chip that contains data from a program to meet special needs (This is also being worked upon).

**Address Lines:** Designated A0 to A15 and appears on pins 12 to 27 at I/O port. These lines are output lines only and information travels in 1 direction only, outwards from CPU. There are 16 lines that are, in theory, divided into 2 selections. The lines A0 to A7 are called the least significant byte (LSB), and lines A8 to A15 are called the most significant byte (MSB). In the MC-10 the LSB lines are multiplexed (used as address and data lines) with the 8 data lines. To prevent address info being mixed up on the same lines, an IC called a latch is used to detect an address on the lines and hold that address while data is being transmitted on the same lines. How this happens will be discussed in the following, but firstly if we consider the previous discussion on the "POKE" statement. The location we used was 16384 which is the actual address in memory. When we "POKE 16384", the number is in decimal and the CPU will only recognise a binary code and will put out on the address lines a binary code. Each line can have 2 states, a high (called a 1) or +5V, or a low (called a 0) or ground. The lines can only have either of those states at any 1 cycle of E. Therefore a binary code is made up of 1's and 0's in a sequence according to its decimal number. As an example consider the following:

Address: 16384 - decimal is the same as  
Address: 0100000000000000 in binary.

You will notice that there are 16 individual numbers, be they 1 or 0. These 16 numbers are then divided into 2 groups of 8 each, being the LSB and MSB.

Same Address: [01000000] [00000000]

MSB LSB They then will correspond to the 16 addresses called A0 to A15.

Same Address: [01000000] [00000000]  
A15 to A8 A7 to A0

Therefore if address 16384 is placed on I/O lines A0 to A15 all lines except A14 will be at ground (or a 0) and A14 will have +5V (or a 1).

By using the binary code on 16 address lines you can have 65535 different combinations of 1's and 0's, and so

65535 different address locations. It is advised to obtain a decimal to binary conversion chart from somewhere to obtain the correct binary code for each decimal number.

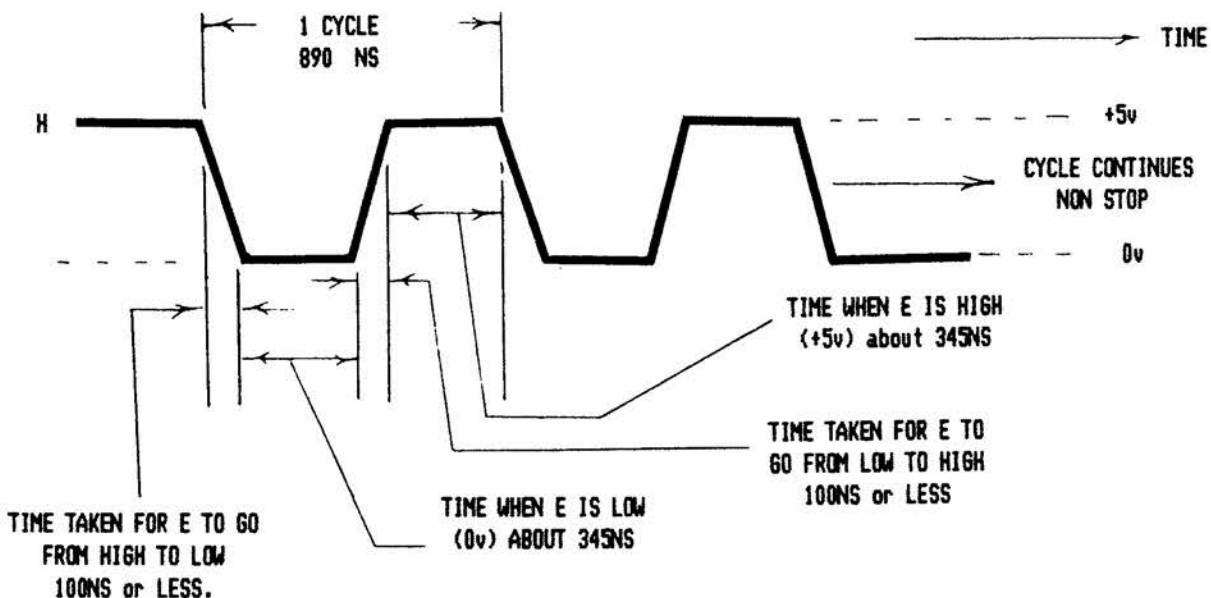
**Data Lines:** Designated D0 to D7 and appears on pins 3 to 10 at I/O port. These lines are bidirectional (data travels in both directions- from CPU to memory or from memory to CPU). There are 8 lines and 1's or 0's are placed on these lines in the same manner as address lines. As there are 8 lines there are only 255 different combinations of 1's and 0's available (255 bits of data available).

**+5V Line:** Appears on pin 32 at I/O and has a maximum current available of 250 MA.

**Ground:** Appears on pins 1, 2, 33, 34.

So let's put it all together from go to woe. We will use this statement: "POKE 16384,133". We will assume that we have punched the keys to put in the above statement and have hit "ENTER".

1. The E clock goes from high to low in 100 Ns
2. The R/W line has gone to LOW at the same time.
3. The R/W line signals to memory to expect data to be sent to it (This line stays low for the duration of E).
4. The address (in 1's and 0's) is placed on the address lines either within the same time (100 Ns) and stays for the duration of E (1 cycle).
5. From the start of E a period of 445 Ns has passed; then E begins to go high (takes about 100 Ns).
6. When E has reached high, data in the form of 1's and 0's are placed on the data lines and is accepted into the memory location of 16384.
7. A further 445 Ns pass and 1 cycle of E has



ended. Therefore the command has been executed.

8. The E clock continues on its merry way by going low again but this time seeing that no command has been entered it will pulse the address and data lines will be pulsed high and low in unison with E.

Now lets look at the statement "PRINT PEEK(16384)"

1. The E clock goes low in 100 Ns.
2. The R/W line has gone HIGH at the same time
3. The R/W line signals to memory to prepare to send the data to location 16384 to the CPU.
4. The R/W line stays high for the duration of E.
5. The address lines have assumed the address (in 1's and 0's) and are placed on the lines at the same time (100 Ns) and stay for the duration of E (1 cycle).
6. 445 Ns has passed and E goes high (100 Ns).
7. When E is high, data from memory is placed on data lines for the CPU to read.
8. The CPU processes the data and sends it to the VDG chip to display it on the screen.
9. 890 Ns has passed; 1 cycle of E has ended. 10. E continues on until next command is entered (the same as in heading 8).

That is about it, and I hope that I have helped in some small way. I have developed a peripheral control unit and also a speech synthesizer for use with the MC-10 with a vocabulary of 35 words which will be presented to you as soon as I can get around to drawing up all the circuit diagrams. I am now in the process of developing a speech recognition unit to match. I would like to hear from those people who are interested in anything I have written or can be of help in any way.

## REVIEW

### MICOWORD

John Day

No matter what sort of printer your MC-10 drives, be it the humble, (and cheap), TP-10 on which this was constructed, or a you-beaut imported model which prints out your graphics characters in Japanese, you will benefit from a word processing program.

There has been a spate recently, of such programs in MICO, or advertised therein and this is, I suppose, an affirmation for one of them.

Tino Delbourgo's "Micoword", published in October MICO is what I have loaded in my MC-10 as I write this. Not only does this program do all I need to write stuff like this, but it allows me to save text on cassette and reload it at a later date. That is something I have heard is not possible on an MC-10. But then I also heard that hi-res graphics was not possible on an MC-10!

And to top it off, "Micoword" justifies right, as you can see, quite as well as commercial printing firm will.

As a satisfied user, I thank you, Tino, for "Micoword". And you, too, of course, Graham, for publishing it. You do show a glimmering of good taste there sometimes!

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AUSTRALIAN MiCo

# ARTPRINT

Chris Deacon

Sometimes the work involved in designing a good graphics screen just does not seem worth the it. At best it seems unnecessarily difficult. So in an effort to simplify the process I have written ARTPRINT.

ARTPRINT presents you with a graphics screen and at the cursor position displays any of the CHR\$ characters. Also printed on the screen is the code for that character and the current cursor PRINT\$ location. As can be seen from the instructions in the listing it is possible to step through the entire range of CHR\$ codes, colours or even background colours. Text may be written simply on the screen in either upper or lower case, but it is necessary to return to upper case text before returning to graphics mode from text mode.

When writing in text you may move the cursor without leaving a trail by pressing <CONTROL> 2. Pressing <CONTROL> U will leave a black space when in text mode to save switching back and forth.

The Listing:

```
1 GOSUB 4000
2 REM BY CHRIS DEACON
4 REM 4K
19 A$=INKEY$:IF A$="" THEN 19
20 BB=5:DD=5
21 CLSO
35 T=129
40 PRINT@0,"THE ASCII CHARACTER
CODE IS" T;
80 C$=INKEY$
87 K=DD+BB*32
89 PRINT@485," PRINT @ POSITION"
;K;
90 IF C$="W" THEN BB=BB-1
92 IF BB<1 THEN BB=1
100 IF C$="Z" THEN BB=BB+1
102 IF BB>14 THEN BB=14
110 IF C$="S" THEN DD=DD+1
112 IF DD>31 THEN DD=0
120 IF C$="A" THEN DD=DD-1
122 IF DD<0 THEN DD=31
125 PRINT@K,CHR$(64);
127 FOR O=1 TO 10:NEXTO
130 PRINT@K,;CHR$(T);
133 IF C$="O" THEN GOSUB 900
134 IF C$="L" THEN GOSUB 1000
136 IF C$="K" THEN GOSUB 2000
137 IF C$="." THEN GOSUB 2100
138 IF C$="," THEN GOSUB 2200
139 IF C$="T" THEN GOSUB 3000
200 GOTO 40
900 REM CHANGE SCREEN COLOUR
```

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```

910 IF L<9 THEN L=L+1
920 IF L>8 THEN L=0
930 CLS(L)
950 RETURN
1000 REM CHANGE CHARACTERS COLOUR
R
1010 IF T<255 THEN T=T+16
1020 IF T>255 THEN T=T-16
1080 RETURN
2000 REM CHANGE CHARACTERS COLOUR
R
2010 IF T>32 THEN T=T-16
2020 IF T<32 THEN T=T+16
2030 RETURN
2040 END
2100 REM CHANGE CHARACTER
2110 IF T<255 THEN T=T+1
2120 IF T>255 THEN T=T-255
2130 RETURN
2200 REM CHANGE CHARACTER <
2210 IF T>32 THEN T=T-1
2220 IF T<32 THEN T=T+32
2230 RETURN
3000 REM TEXT
3002 H=K+1
3005 PRINT@0,"##### TYPE IN YOUR TEXT #####";
3010 F$=INKEY$:IF F$="" THEN 3010
3012 F=ASC(F$)
3020 PRINT@H,F$;:H=H+1
3022 PRINT@H,"@";
3023 SOUND244,1
3025 PRINT@H,CHR$(T);
3028 IF H>509 THEN H=509
3030 IF H<2 THEN H=2
3033 IF F=21 THEN H=K+1
3035 IF F=8 THEN H=H-2
3040 IF F=9 THEN RETURN
3045 PRINT@485," PRINT @ POSITION";H;
3080 GOTO 3010
4000 CLS
4010 PRINTTAB(10);" ART PRINT"
4013 PRINT
4015 PRINT" THIS IS A ETCHA-SKETCH PROGRAM"
4020 PRINT" USING THE PRINT @ FUNCTION "
4025 PRINT" YOU CAN USE ANY CHARACTER "
4030 PRINT" FROM <32 TO 255> BY "
4035 PRINT" PRESSING THE < & > SIGNS"
4045 PRINT" AND YOU CAN CHANGE THE "
4050 PRINT" CHARACTERS COLOUR BY PRESSING"
4055 PRINT" <<K>> AND <<L>> "

```

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```

4060 PRINT" TO CHANGE SCREENS COLOUR "
4063 PRINT" PRESS <<O>> "
4065 PRINT" TO DRAW USE THE ARROW KEYS "
4070 PRINT:PRINT" PRESS ANY KEY TO CONTINUE"
4080 A$=INKEY$:IFA$=""THEN 4080
4090 CLS
4100 PRINT@12," TEXT"
4102 PRINT
4120 PRINT" TO WRITE TEXT ON SCREEN "
4130 PRINT" POSITION CURSOR TO WHERE YOU "
4133 PRINT" WANT THE TEXT TO START "
4135 PRINT" THEN PRESS <<T>>"
4150 PRINT" TO BACKSPACE THE CURSOR PRESS "
4155 PRINT" CONTROL <<A>>"
4160 PRINT" TO BRING THE CURSOR BACK TO "
4165 PRINT" THE BEGINNING OF THE TEXT PRESS";
4170 PRINT" CONTROL <<Q>>"
4180 PRINT" TO RETURN TO PROGRAM PRESS "
4185 PRINT" CONTROL <<S>>"
4188 PRINT
4190 PRINT" PRESS ANY KEY TO START "
5000 RETURN

```

## CATCH

MiCo 4K

Brian McLaughlin

In an effort to send everybody crazy I have developed a simple little game. CATCH randomly places a small chequered block on the screen and using the arrow keys the player is given control of a high speed missile, which somehow must be made to collide with the target. Simple concept eh! What's difficult about that? Well firstly the target thinks nothing of repositioning itself just when you think you have him in your sights. And as if that wasn't enough you have a time limit within which ideally you will destroy the target a multitude of times. Good Luck!

The Listing:

```

0 CLS:PRINT@10,"*****"
1 PRINT@42,"*c a t c h*":PRINT@74,"*****":PRINT@129,"THE OBJECT OF THE GAME IS TO":PRINT@193,"HIT THE BLACK SQUARE WITH YOUR"

```

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```

2 PRINT@257,"MAN BEFORE THE TIME
  RUNS OUT":PRINT@321,"USE ARROWS
  TO MOVE YOUR MAN"
3 PRINT@257,"MAN BEFORE THE TIME
  RUNS OUT":PRINT@385,"ONE IS THE
  HARDEST LEVEL"
4 PRINT@450,"select_level_of_ski
  11 (1-4)";L$
6 Q=0:U=0:S=0:SL=0
7 L$=INKEY$:IFL$=""THEN7
8 L=VAL(L$):IFL>4THENL=4
9 P=16384
10 CLS
11 PRINT@490,"skill="L;
12 FORD=0T010
20 X=RND(400)
22 FORSL=1TOL*20
25 PRINT@Y," "
30 IFPEEK(P+X)<>143THENPRINT@X,C
  HR$(150);
40 P$=INKEY$
45 IFP$=""THENP$=Z$
50 IFP$="S"THENU=U+1
60 IFP$="W"THENU=U-32
70 IFP$="A"THENU=U-1
75 IFP$="Z"THENU=U+32
76 Z$=P$
81 IFPEEK(P+U)=150THENGOTO1000
82 IFU<0THENU=U+32
83 IFU>478THENU=U-32
90 PRINT@Q," "
100 PRINT@U,CHR$(42)
105 PRINT@500,"score="S;

106 Y=X
110 Q=U
111 PRINT@481,"time="D;
112 IFD=10THEN@6000
115 NEXTSL
120 NEXTD
130 GOTO2000
1000 S=S+10:SOUND235,1:SOUND230,
  1:SOUND200,1:SOUND230,1
1001 P$=""
1002 Z$=""
1003 IFS=100THEN5000
1004 IFD=10THEN@6000
1005 GOTO20
2000 PRINT@226,"another_game (Y/
  N)";K$
2005 K$=INKEY$:IFK$=""THEN2000
2007 IFK$="Y"THENCLS:GOTO1
2008 IFK$="N"THENEND
5000 FORI=1T025:CLS(RND(8)):PRIN
  T@168,"YOU ARE A WINNER";SOUNDR
  ND(235),1:NEXTI:GOTO2000
6000 FORI=1T025:CLS(RND(8)):PRIN
  T@165,"you_lose_fool_times_up";:
  SOUNDRND(100),1:NEXTI:GOTO2000
10000 FORI=1T04:CSAVE:SOUND50,50
  :NEXTI
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```

## MICOOZ THIS MONTH

In addition to the programs listed in MiCo this month, there are a couple of other programs to be found on MiCoOz.

Jim Rogers threatened to convert all the CoCo programs that appear in the CoCo section to MiCo, and he is sure catching up on me! They've been filling my 'to do' box and getting in the way and generally getting caught around my feet!

So rather than have them at my feet for very much longer, I thought it would be nice to be able to give you a little more on your MiCoOz this month.

TIMECALC was in Nov CoCo, and Jim has made a couple of alterations so that it now works on MiCo. See November's magazine for details of what the program does.

WORD SCRAMBLER FOR SPELLING LISTS was taken from October's Rainbow, and made to run on MiCo. Again, see Rainbow of that month for details of how the program runs.

Both of these programs need only 4K of memory.

I don't want to berate Jim's work, but it is usually possible to type most of the small programs for CoCo into MiCo without alteration. So why wait for Jim to do them for you - get into it and type the programs in yourself - it's the only way you are going to learn!

Brian McLaughlin wrote to say that SKI crashes if you have Little E in, and he has apparently also accessed OS8 and is able to run it on the MC-10. I am hopeful that he will be able to supply more details, because if indeed he has done this, then this is wonderful news for the MC-10 user.

In fact Jim Rogers tells me that this month's program in OS8 runs in an MC-10. I would think that you would need 20K, but if you can enter the program into your computer, then you will indeed get a more than complete understanding of how wonderful OS8 can be!

## HINTS

Q. What ROM?

A. Type EXEC 41175 (ENTER)

Q. High speed POKE?

A. POKE 65495,0 (ENTER).

\*Note that NO I/O is available using this POKE. Return to normal POKE 65494,0 (ENTER)

Q. Clear all graphics pages, ie. obtain maximum available memory for basic.

A. POKE 25,6:NEW(ENTER).

\*NOTE if you have DISK use POKE 25,14 (ENTER) POKE 26,0 (ENTER) NEW (ENTER)

Q. No list

A. POKE 383,158 (ENTER).

Return to normal POKE 383,0 (ENTER)

# A GOOD SORT

Back in 1966 whilst serving in the navy I was examined to become a computer programmer. Alas, my mind could not grasp the Nand/ Not Or/ Not And jargon of the day and I failed miserably. From then until recently, I remained, naturally, apprehensive and skeptical as to my ability and aptitude in grasping the complexities of the modern Q.C. of today.

Gratefully though, I was introduced to the MC-10 in March last year, and lo and behold, this ancient 43 year old computer cast off, through the wonderful language of "Basic", has finally entered into the incredible world of computer programming.

Now, nothing brilliant has happened as yet, I've still got a lot to learn - I know there's programs in my head but they aren't ready to come out yet. But I've got plenty of time as I've just received the complete issues of "MICO" and every program I test I learn something.

One program I hope to achieve eventually is sorting out mixed up data and I have entered a program to share with my fellow MiCo users. Forgive me for using some well known programmers' names for data. I've added a bit of info after the program to assist. (I still have a haze on arrays)

John E. Allen

## THE LISTING:

```
1 '***A GOOD SORT*****
   ***** BY J ALLEN *****
   ***** FOR MICO FEB85*****
90 CLEAR1000
100 DIM A$(10)
200 DIM B$(10)
300 FORI=0TO9
400 READ C$
500 A$(I)=C$
600 B$(I)="****"
700 NEXT
1000 K=0
1100 FORI=0TO9
1700 IF A$(I)="****"GOTO2500
1800 FORJ=I TO9
1900 IF A$(J)="****"THEN2100
2000 IF A$(J)<A$(I)THEN I=J
2100 NEXT
2200 B$(K)=A$(I)
2300 A$(I)="****"
2400 K=K+1
2405 CLS
2410 PRINTTAB(1)"UNSORTED";TAB(1)
February, 1985
```

AUSTRALIAN MiCo

```
5)"ALPHABETICAL"
2430 FORL=0TO9
2450 PRINTA$(L),B$(L)
2460 FORA=1TO100:NEXT
2470 NEXT
2480 I=-1
2500 NEXT
2600 PRINT"***** REM *****"
2610 PRINT"** SORTSPEED **"
2620 PRINT"** LINE 2460 **"
3000 DATA"MCLAUGHLIN B.,""LEHANE
T.,""BOYS F.,""KELLET J.,""HODS
ON D."
3010 DATA"WILSON G.,""PLOOCK G."
,"SHULZ P.,""THURBON L.,""HARTMA
NN A."
```

## AUSTRALIA

Alan Bridges



MiCo 20K

The idea for AUSTRALIA was born when someone asked me if my computer could draw a map of Australia. Well, of course it can! And so I set about proving my point.

To add a little more interest, rather than exhibit my prowess simply drawing a map of Australia I have included a brief examination of on the location of our state capitals and Canberra.

I have also tried to dress up the the running of the program to add just that bit more interest. I hope you enjoy my handwork.

## The Listing:

```
5 REM*****
6 REM* AUSTRALIA *
7 REM*BY ALAN BRIDGES*
8 REM* SEPTEMBER 1984*
9 REM*****
40 DIMX(161),Y(161)
50 CLS0:GOSUB1000
60 FORX=1TO160STEP2
70 FORY=0TO160STEP2
80 READX:READY
82 IFX=-1 OR Y=-1THENGOTO110
90 SET(X,Y,8)
100 NEXTY,X
110 PRINT2254,"1";
120 PRINT2380,"2";
125 PRINT2410,"3";
130 PRINT2408,"4";
135 PRINT2505,"5";
```

```

140 PRINT@339,"6";
145 PRINT@291,"7";
150 PRINT@14,"8";
200 GOTO2000
900 DATA46,0,47,0,48,1,49,2,50,2
901 DATA51,3,51,4,51,5,52,6,53,7
902 DATA54,8,55,8,55,9,56,10,57,
10
903 DATA57,11,58,12,59,12,60,13,
61,14
904 DATA61,15,61,16,62,17,61,18,
60,19
905 DATA59,20,58,21,57,22,57,23,
56,24
906 DATA55,25,54,26,53,26,52,26,
51,26
907 DATA50,27,49,26,48,26,47,25,
46,26
908 DATA45,27,44,26,43,25,42,25,
41,25
909 DATA40,24,40,23,39,23,38,22,
37,23
910 DATA37,22,37,21,36,21,35,22,
35,23
911 DATA34,22,33,21,32,20,31,20,
30,20
912 DATA29,19,28,19,27,19,26,19,
25,19
913 DATA24,20,23,20,22,20,21,20,
20,20
914 DATA19,21,18,21,17,22,16,22,
15,21
915 DATA14,22,13,22,12,22,11,22,
10,23
916 DATA9,23,8,23,7,23,6,23,5,22
917 DATA4,22,5,21,6,20,5,19,4,18
918 DATA3,17,2,16,1,15,0,14,2,14
919 DATA1,13,1,12,1,11,2,11
920 DATA3,10,4,9,5,9,6,9,7,9
921 DATA8,8,9,8,10,8,11,8,12,8
922 DATA13,7,14,6,14,5,14,4,15,4
923 DATA16,4,17,5,18,4,19,3,20,2
924 DATA21,2,22,2,23,2,24,3,25,2
925 DATA26,1,27,0,28,0,29,0,30,0
926 DATA31,0,32,0,33,0,34,0,35,0
927 DATA36,0,36,1,35,1,36,3
928 DATA37,4,38,4,39,4,40,4,41,5
929 DATA42,5,43,6,44,5,44,4,45,3
930 DATA45,2,45,1,47,28,48,29,49
,29
931 DATA50,29,51,29,50,30,50,31,
47,31
932 DATA46,30,46,29,-1,-1
1000 REM UP AUSTRALIA SUB
1010 A$="AUSTRALIA"
1020 A$(1)=LEFT$(A$,1)
1030 FORX=1T07:FORL=2T08
1040 A$(L)=MID$(A$,L,1)
1050 NEXTL,X
1060 A$(9)=RIGHT$(A$,1)

```

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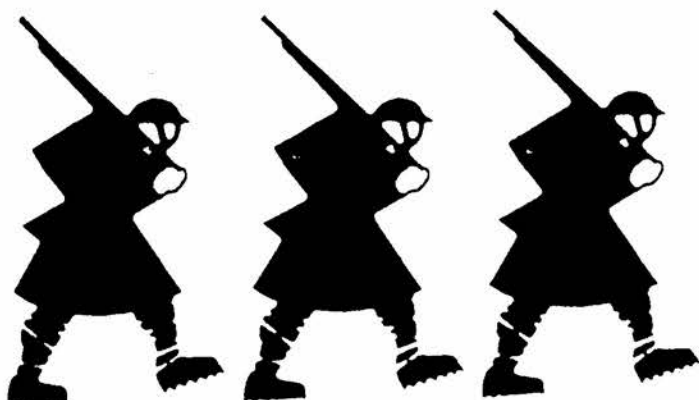
```

1065 P1=352:P2=0
1069 FORX=1T09
1070 FORP=P1TOP2STEP-32
1080 PRINT@P+X,A$(X);
1082 PRINT@P+32+X,"_";
1086 FORT=1T050:NEXT
1090 NEXTP:SOUND220,1:NEXTX
1095 RETURN
2000 REM
2004 B$="_____ "
2005 DIMQ$(8)
2020 FORX=1T08:READQ$(X):NEXTX
2030 PRINT@140,"where_is";
2032 R=RND(8)
2034 L=LEN(Q$(R))
2035 PRINT@208-(L/2),Q$(R);
2040 PRINT@266,"answer_1to_8";
2045 I$=INKEY$:IFI$=""THEN2045
2046 I=VAL(I$):IFI(<)RTHENGOTO300
0
2047 GOTO2100
2050 DATABRISBANE,SYDNEY,CANBERR
A
2060 DATA MELBOURNE,HOBART,ADELA
IDE
2070 DATAPERTH,DARWIN
2100 REM RIGHT
2120 SOUND220,1
2140 FORT=1T0200:NEXT
2150 PRINT@136,B$;
2160 PRINT@264,B$;
2175 PRINT@138,"THAT'S RIGHT";
2180 PRINT@264,"IS AT POSITION";
R;
2185 GOSUB5000
2187 PRINT@264,B$;
2188 PRINT@136,B$;
2189 PRINT@202,B$;
2200 GOTO2030
3000 SOUND100,5:REM WRONG
3010 FORX=1T020
3020 PRINT@137,"wrong_try_again"
;
3030 FORT=1T050:NEXT
3040 PRINT@137,B$;
3050 FORT=1T050:NEXT
3060 NEXTX
3065 PRINT@140,"where_is";
3070 I$=INKEY$:IFI$=""THEN3070
3080 I=VAL(I$):IFI(<)RTHENGOTO300
0
3090 GOTO2100
5000 REM ADVANCE AUSTRALIA
5010 SOUND89,5:SOUND133,5:SOUND8
9,5:SOUND58,5:SOUND89,5:SOUND133
,5:SOUND255,3:SOUND133,3:SOUND13
3,3:SOUND159,5:SOUND147,5
5020 SOUND133,5:SOUND125,5:SOUND
133,5:SOUND147,5:FORZ=1T02:FORSP
=1T0200:NEXT:NEXT
5030 RETURN

```



# WORDRILL



Alan Bridges

MiCo 4K

My young children often spend much of their homework time learning word recognition and spelling. MiCo now takes over much of the burden of that learning through this simple program which firstly displays the word on the screen and then (after clearing the screen) asks the user to repeat the spelling of the same word.

You may enter your own list of words and I usually find it best practice to type in the vocab they are studying that night before setting them free to drill themselves at their own pace. This is followed up with an oral test by me by which time they usually have their vocab down pat.

WORDRILL is a simple and useful program which more than helps to justify my extravagance in buying my MiCo.

The Listing:

```
0 DIMA(50)
1 REM *****
2 REM * WORDRILL *
3 REM * BY ALAN BRIDGES *
4 REM * SEPT 1984 *
5 REM *****
6 CLS
7 GOSUB2000
8 PRINT"THE WORDS PLEASE"
10 FORX=1TON
20 PRINT"WORD # ";X;:INPUTW$(X)
30 NEXTX
31 PRINT@453,"PRESS ANY KEY TO S
TART"
32 I$=INKEY$:IFI$=""THEN32
34 R=1
36 IFO=2THENR=RND(N)-
37 IFR=N+1THENR=1
38 GOSUB5000
50 L=LEN(W$(R))
60 PW$(1)=LEFT$(W$(R),1)
```

```
70 FORX=2TOL-1
80 PW$(X)=MID$(W$(R),X,1)
85 NEXTX
90 PW$(L)=RIGHT$(W$(R),1)
100 P1=111-(L/2):P2=335-(L/2)
110 FORX=1TOL
112 AS(X)=ASC(PW$(X))+32
120 FORP=P1TOP2STEP+32
130 PRINT@P+X,CHR$(AS(X));
140 PRINT@P+X-32,CHR$(128);
150 FORT=1T0100:NEXT
170 NEXTP:SOUND200,2:NEXTX
175 FORTD=1T0750:NEXTTD
177 FORX=1TOL
178 PRINT@335-(L/2)+X,CHR$(128);
:NEXTX
180 PRINT@389,"can_you_spell_the
_word";
182 PRINT@460,"_y_or_n_";
190 I$=INKEY$:IFI$=""THEN190
200 IFI$="Y"THENGOTO1000
210 CLS0:GOTO37
1000 CLS0:PRINT@69,"ok_you_think
_your_good";
1010 FORTD=1T01000:NEXT
1020 PRINT@137,"spell_the_word";
1030 GOSUB1100
1040 FORX=1TOL:AC(X)=ASC(AN$(X))
1041 IFAC(X)+32<>AS(X)THENGOTO10
50
1042 NEXTX
1043 PRINT@301,"right";
1045 FORX=180T0220STEP2:SOUNDX,1
:NEXT
1046 PRINT@457,"press_any_key";
1047 I$=INKEY$:IFI$=""THEN1047
1048 R=R+1:GOTO36
1050 FORX=1T05:SOUND50,1:PRINT@3
01,"_____";:SOUND20,3:PRINT@301,
"wrong";:NEXTX
1055 FORT=1T01000:NEXTT:GOTO37
1100 FORX=1TOL
1110 AN$(X)=INKEY$:IFAN$(X)="TH
EN1110
1120 P1=463-(L/2):P2=210-(L/2)
1130 FORP=P1TOP2STEP-32
1140 PRINT@P+X,AN$(X);
1150 PRINT@P+X+32,CHR$(128);
1160 FORT=1T050:NEXT
1170 NEXTP:SOUND200,2:NEXTX
1180 RETURN
2000 REM INSTRUCTIONS
2005 PRINT@508,"A.B.";
2010 PRINT@8,"*** WORDRILL ***"
2020 PRINT@65,"THIS PROGRAM WILL
DRILL YOUR CHILDREN IN THE W
ORDS THEY MUST"
2030 PRINT@129,"LEARN FOR SCHOOL
"
2040 PRINT@192,"HOW MANY WORDS W
```

```

ILL YOU USE";:INPUT N
2050 PRINT@238,"GOOD"
2060 PRINT@257,"WOULD YOU LIKE T
HE WORDS TO BE"
2070 PRINT@321,"(1) SEQUENTIAL O
R (2) RANDOM"
2075 PRINT@362,"ENTER 1 OR 2"
2080 O$=INKEY$:O=VAL(O$)
2082 IFO<1 OR O>2THEN2080
2100 CLS:PRINT" NOW TYPE IN THE
WORDS AND PRESS ENTER AFTER EACH
WORD":PRINT
2110 RETURN
3035 FORX=2T048STEP2
5000 REM WORDRILL TITLE
5010 CLS0:Z=4:C=RND(7)*16
5020 FORX=1T047STEP2
5025 FORY=0T048STEP2
5030 READA(X)
5032 READA(Y)

```

```

5034 IFA(X)=10 OR A(Y)=10THEN507
0
5035 PRINT@Z,CHR$(A(X)+C);
5040 PRINT@Z+32,CHR$(A(Y)+C);
5042 Z=Z+1
5045 NEXTY,X
5060 DATA133,132,128,131,128,137
,133,134
5062 DATA128,128,134,137,137,134
,128,128
5063 DATA142,142,137,137,128,128
,142,139
5064 DATA137,134,128,128,142,142
,137,137
5065 DATA128,128,138,138,133,133
,128,131
5066 DATA128,130,133,133,128,131
,128,130
5067 DATA10,10
5070 RESTORE:RETURN

```

# STAR TWO

John Wallace

MiCo 4K (Just)

## THE GAME:

You are the pilot of a spaceship ("E") that has been ambushed by an unknown enemy. You have no weapons with which to defend yourself. All you can do is flee and attempt to get to the nearest stargate ("G") before you are destroyed.

While you are attempting to escape, the enemy is filling the route to the nearest stargate with mines. Most of the mines are harmless unless you actually hit them ("K") but some of them ("L") are equipped with ray weapons that will damage your ship if you get within their range. If the damage is severe you may not be able to escape.

Even if you manage to reach the vicinity of the stargate your troubles are not over. Because of the laws governing the functioning of the stargate it can only be entered successfully at specific times. If you try to enter the stargate when it is not operating you will be severely damaged and flung back into space to the point from which you began.

For it's own protection the stargate is surrounded by a barrier ("X"). You must have enough energy to cross this barrier to reach the stargate. If you hit the barrier you will not be damaged but you will be flung back into space to the point from which you began.

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Your ship will not move if its energy level is too low (E<100). Because movement of the ship requires energy, the only way you can increase your energy is by staying where you are, otherwise any energy you gain will be used up as you move.

The more energy you have, the greater the distance you can travel each jump. (but watch out for "L" mines!)

It drives me to distraction when I have my input rejected because I don't have enough energy for a move, as the grid scrolls off the top of the screen and I usually can't remember my present co-ordinates. Trial and error mostly gets me blown back to the start. Does anyone know of a way to get rid of no longer necessary character lines without scrolling the grid off the screen until a move is accepted. (perhaps you could try re-drawing the screen after each input or someone may know the necessary POKEs to alter the screen scrolling area. Kevin)

If you are caught by an "L" mine and your energy falls below 100 (EE<100), you cannot escape. Press (BREAK) and restart the game.

Input errors can be erased if (CONTROL) and (A) are pressed together before (ENTER).

## HINTS FOR PLAY

- 1/ The stargate is closed when "G" appears in the top right of the grid.
- 2/ If EE<143 you can jump diagonally.
- 3/ "L" mines only operate along the x-y axes. They do not operate diagonally.
- 4/ If EE<20 or TF>99 the game finishes. You have lost!
- 5/ Look before you leap!
- 6/ If you input anything other than numbers with a "," between them the computer will assume

you have decided to stay where you are and increase EE by 10%. Press (ENTER) to continue. I hope you enjoy STAR TWO and wish you the best of luck.

The Listing:

```

10 REM*****
11 REM*****star two*****
12 REM*****WITH L MINES*****
13 REM***(VERSION:1.0/6.84)*****
20 CLS
110 PRINT@194,"star two RUNNING
--- STAND BY"
115 FORD=1T02000:NEXTD
120 DIMA$(8,8)
130 FORI=0T08:FORJ=0T08:A$(I,J)=
"-":NEXT:NEXT
180 XE=0:YE=0:EE=70:TF=0:R(1)=0
190 A$(8,8)="G":A$(8,7)="*":A$(7,8)="*":A$(7,7)="*"
210 TF=TF+1:CLS
215 IFRND(0)<.3THEN A$(8,8)=" ":GOTO230
220 A$(8,8)="G"
230 A$(XE,YE)="E"
310 FORY=8T00STEP-1:PRINTY;" ";
320 FORX=0T08:PRINTA$(X,Y);" ";
:NEXT:NEXT
370 PRINT"      0  1  2  3  4  5
6  7  8 ";
380 PRINTTAB(43)"EE=";INT(EE);"
TF=";TF
410 PRINT" YOUR MOVE (MAX.DIST.
=EE/100):      X,Y=";:INPUTX,Y
420 IFX<0ORX>8ORY<0ORY>8THENPRIN
T"ILLEGAL COORDINATES":GOTO455
430 DE=SQR((X-XE)^2+(Y-YE)^2)
440 IFDE<=EE/100THEN510
450 PRINT"INSUFFICIENT ENERGY FO
R DISTANCEREQUESTED.MIN NEEDED="
;INT(DE*100)
455 SOUND200,1:SOUND200,1:GOTO410
510 A$(XE,YE)="-" :XE=INT(X):YE=I
NT(Y)
530 IFA$(XE,YE)="*"THEN1010
540 IFXE=8ANDYE=8THEN2005
550 IFDE=0THENPRINT"RESTING:ENER
GY INCREASED 10%":EE=1.1*EE
610 XK=INT(9*RND(0)):YK=INT(9*RND(0))
630 IFXK*YK)=49THEN610
635 IFA$(XK,YK)="K" OR A$(XK,YK)
="L"THEN A$(XK,YK)="L":GOTO650
640 A$(XK,YK)="K"
650 PRINT" MINE RELEASED AT";XK
;";YK
710 IFA$(XE,YE)="-"THEN790
730 PRINT"YOU HAVE HIT A MINE.
YOU ARE BLOWN BACK TO START."
735 FORD=1T010:SOUND100,1:NEXTD
740 PRINT"ENERGY LOSS IS 30%":EE

```

```

=.7*EE
750 A$(XE,YE)="-"
760 XE=0:YE=0
790 GOSUB5020
810 IFEE<20ORTF>99THEN3010
820 SOUND200,1:PRINT"PRESS(ENTER
)FOR NEXT TIME FRAME.READY";:INP
UTA$
900 GOTO210
1010 PRINT:PRINT"YOU HIT THE STA
RGATE BARRIER!!!"
1020 FORD=1T010:SOUND155,1:NEXTD
1025 PRINT"BACK TO THE START FOR
YOU!"
1030 XE=0:YE=0:GOTO820
2005 IFA$(8,8)="G"THENPRINT"YOU
TRIED TO ENTER A CLOSED GATEYOU
MUST BEGIN AGAIN":XE=0:YE=0:FORD
=1T010:SOUND200,1:NEXTD:GOTO820
2009 R(1)=10*EE/(TF+1)
2010 CLS
2011 PRINT"*****
*****"
2020 PRINT"YOU HAVE ACHEIVED STA
R DIMENSION"
2025 PRINT"*****YOUR RATING IS "
;INT(R(1));" *****"
2026 PRINT"*****
*****"
2030 FORD=1T02000:NEXTD
2050 FORI=1T0100:PRINT@RND(512)-
1,"* . +      .";:SOUND100,1:SOU
ND200,1:NEXT
2090 GOTO10000
3010 PRINT"YOU ARE FINISHED-THIS
IS THE END"
3020 PRINT"ENERGY=";EE;"TIME FRA
ME=";TF
3030 FORD=1T05:SOUND10,5:NEXTD
3040 GOTO10000
5020 FORXSCAN=0T08
5030 IFA$(XSCAN,YE)<>"L"THEN5045
5035 IFABS(XSCAN-XE)=2THENE=EE*
.9:PRINT"X2-RAY HIT***EE=";EE:SO
UND200,1:SOUND100,1
5040 IFABS(XSCAN-XE)=1THENE=EE*
.8:PRINT"X1-RAY HIT***EE=";EE:SO
UND200,1:SOUND100,1
5045 NEXTXSCAN
5050 FORYSCAN=0T08
5055 IFA$(XE,YSCAN)<>"L"THEN5070
5060 IFABS(YSCAN-YE)=2THENE=EE*
.9:PRINT"Y2-RAY HIT***EE=";EE:SO
UND200,1:SOUND100,1
5065 IFABS(YSCAN-YE)=1THENE=EE*
.8:PRINT"Y1-RAY HIT***EE=";EE:SO
UND200,1:SOUND100,1
5070 NEXTYSCAN
5090 RETURN
10000 END

```

# soft gold

GoCo magazine is no more.

I always wanted to make a project of making the magazine work, but the costs were too high to make it viable. Further, we were not doing a good enough job, and this was reflected in the poor resubscription rate.

'softgold' is a new magazine which will depend entirely on Australian input. It aims to service the Model 100, the new Model 200, and the new Model 1000 and 1200, and perhaps the 2000.

It may seem that we are attempting an Australian GoCo, and in effect that is true, however I believe that the Model 1000 is the machine which will eventually make the magazine viable, taking 'softgold' out of these pages, and into a format of it's own.

The Model 1000 is an IBM runalike, and although I think it is a shame to be letting IBM dictate Tandy's marketing policy, the reality of computers in the last half of the nineteen eighties is that people will be demanding compatible computers.

The Model 1000 is an ideal mate to the Model 100, or is the logical next step from a CoCo if you have a growing business. The Model 1000 has joystick ports, and plays games; it has a light pen port, and runs most PC Software.

It comes complete with 'DeskMate', (an integrated software package not unlike the software in the Model 100), MS-DOS and BASIC. The 8088 16 bit CPU drives 128K of memory which is expandable to 643K. The built in disk drive has a storage capacity of 360K. There are facilities for three plug in IBM type option cards, and you can



The Model 1000

choose to use an existing TV or either a RGB or mono monitor.

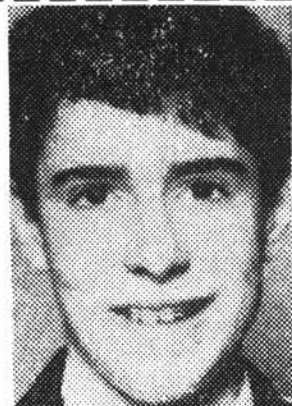
You can have either 40 columns or 80 columns by 25 lines for text.

Graphics are catered for with 640 X 200 resolution, there's three voice sound, a parallel printer port and a music generator.

We are supporting the Model 1000 with a Bulletin Board from the outset, this Bulletin Board should be up and running in early April; and of course, 'softgold' has been created with the model 1000 in mind.

If you are a former GoCo subscriber and don't want this magazine, we can transfer your subscription to CoCoLink, where there are files set up specially for you, or of course, we can refund any moneys outstanding. I would suggest that you think about Australian CoCo seriously. I know I'm biased, but there are many programs in the other sections that will run with little modification on the Model 100, and there are other items that are of interest to you too.

Just as CoCo and MiCo reflect the input of their readers, so the new magazine will be whar it's readers make of it. So how about downloading your latest program to us?



Tino Delbourgo achieved national recognition recently when he won the Australian Schools Software Competition. Tino carried off the prize with a program called 'Equable', an educational aid to mathematics. He won a computer (not one of the better known types!) and an investment account. We want hinto know that as his friends, we are very proud of him.

## DBASE II

## DUPLICATE

## NAME REMOVAL

I write programs in a number of languages, but one of my favorites is Dbase II. The query language is one of the friendliest around and it is not my intention to give a tutorial. That can be done so much better by many others.

I do wish to share with you a technique that gave me a bit of trouble and which I have just solved. This technique is one of the most useful parts of a true DBMS and is designed to remove duplicated records from a database. The person I designed this particular database for is using it as a mailing list for 4000 customers, and typing in the names from 5 different customer registers. This means that some of the names will appear more than once, and a percentage will appear up to 5 times. With the cost of postage, handling and materials, this could

February, 1985

be an enormous waste of money if the customer were to receive more than one form letter each month. Not to mention the embarrassment of sending up to five identical letters to some customers.

Hence, this routine was written. It scans through the database searching for an identical match on surname and postcode, and a partial match on the first three characters of the Christian name. This should find duplicated records in 99.99% of cases. My client types in full Christian names. If your database only uses initials, you should modify the search routine to only look for the first letter of the Christian name. This will still eliminate most of your duplicates. Also create your index file on the surname PLUS the first three (or one) characters of the Christian name. The syntax for this is:

```
INDEX ON SURNAME +$(FIRSTNAME,1,3) TO <INDEX FILE>
```

The routine uses a do while command to set up a search which works by storing the search key to a memory variable, skipping to the next record, transferring the

contents of the first variable to the second, and loading the first with the next name. It then checks for a match and if true displays the record and marks it for deletion. If false it does an endif and loops back to the next record in the file until EOF is reached.

We are also storing the record number to variable D and full information to variable C for display purposes only, as variables A and B which contain the search keys would look a bit peculiar if displayed, and would be harder to follow. It is not absolutely necessary to have the records displayed, as they are automatically marked for deletion, but I can find it more flexible as it gives the user an option to undelete certain records before a PACK takes place and all marked records are removed permanently.

This routine is listed below. As it was written for a particular database, do not type it in exactly. It should be used as a template for a similar routine to be incorporated in your own database. If you are having any trouble with Dbase, I can also recommend the Dbase II User's Guide by Adam B. Green.

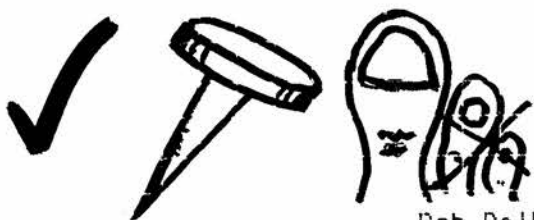
```
* PROGRAM..: FIND AND REMOVE DUPLICATE NAMES IN Dbase II FILE
* AUTHOR...: Paul R. Humphreys
* DATE.....: 12/01/85
SET TALK OFF
STORE $(STR(0,81),1,80) TO clearline
ERASE
? "                STRIP DUPLICATED NAMES. "
? "                ====="
?
? "Turn on printer - make sure paper is in place and printer is ON-
LINE."
? "An option to PACK the file will be given next to create an updated
index."
? "This should be done if a full SORT has been performed since the
last PACK."
? "If in doubt, do a PACK. It won't hurt anything except marked
records...."
? " "
ACCEPT "Press RETURN to continue " TO WAIT
* This next DO routine is optional. It is specifically set up for my
* database so it would be easier to write your own short routine.
DO MA-PACK
ERASE
ACCEPT "Do you want to send a list of duplicated names to the printer
(y/n)";
TO WANT
IF WANT = "y"
SET PRINT ON
ENDIF
USE MAIL INDEX MAIL
ERASE
@ 2,19 SAY "ROUTINE TO FIND AND STRIP DUPLICATED NAMES"
@ 3,19 SAY "*****"
@ 4,1 SAY " "
GO TOP
STORE " " TO B
DO WHILE.NOT.EOF
STORE SURNAME + $(FIRSTNAME.1.3) + POSTCODE TO A
February, 1985                softgold
```

```

STORE SURNAME+FIRSTNAME+STREET+TOWN TO C
STORE £ TO D
SKIP
IF B = A
DISP OFF D,C
IF .NOT. EOF
SKIP -1
ENDIF
DELETE
SKIP
ENDIF
STORE A TO B
LOOP
ENDDO
? " "
?
? "THE RECORDS LISTED ABOVE HAVE NOW BEEN MARKED FOR DELETION"
?
? "The first number in each column is the record number of a
duplicated name"
? "Go back to the main menu and exit to Dbase. Type 'use mail index
mail'."
? "To recall records you do not want deleted, type 'recall record n'
where"
? "n is the number of the record you do not wish deleted. "
?
? "          eg. 'recall record 14'. "
?
? "Repeat this procedure for each record you wish undeleted."
? "When you have undeleted all the duplicated records you want, return
to the"
? "main program by typing 'do mail' and PACK the database. This will
remove"
? "permanently all the records marked for deletion. Be careful with
this one."
? "To remove deletion marks from all records listed, type in 'recall
all'."
? " "
?
? "TO DELETE ALL MARKED RECORDS AUTOMATICALLY - EXIT TO THE MAIN MENU"
? "GO TO THE MAIN MENU OPTION (1), AND SELECT (4. PACK) AND ANSWER YES
TO ALL"
? "QUESTIONS. WARNING! THIS IS THE FASTEST WAY TO DELETE DUPLICATES,
BUT IT"
? "DOES A PERMANENT JOB, SO MAYBE YOU WILL WANT TO CHECK THE PRINTOUT
FIRST."
?
IF WANT = "y"
SET PRINT OFF
ENDIF
ACCEPT "Press RETURN to go back to REPORTS MENU " TO WAIT
RETURN

```

The above listing is 70 characters across as the printer wouldn't allow it to go to its full width. Each line should be typed in at the full 80 char. width of the screen and should not be split as Dbase does not allow this without a semi colon. When you see a line continuing onto the next printed line, type it in on the screen as one continuous line.



Bob Delbourgo

The game of TIC TAC TOE is as old as the hills. One can easily visualise stone age men scratching their O and X on the walls of their caves by firelight! True the game is primitive; true also that it lacks variety -- the player who starts cannot lose if he plays sensibly and makes his opening gambit at the centre; but the same criticism cannot be levelled at the three dimensional 4x4x4 version of TIC TAC TOE. This is a much more sophisticated affair, not so readily analysed. I offer you such a game here. You may either play against another player or against the computer. With the latter option, PoCo plays a decent hand but can be outwitted, especially as you have the advantage of playing first; however it can be quite ruthless if you slip up!

Because the screen is so limited I have been obliged to dissect the 4x4x4 box into 4 horizontal slices (z goes from 1 to 4). You enter your X or O by specifying your x coordinate (horizontally to the right), y coordinate (vertically up) and z coordinate (slice). Obviously as you cannot strictly see the pieces in 3-D you must be specially observant in your entries. PoCo handles that aspect much better in its memory but cannot play as strategically as you. The odds are pretty even therefore. Please give the computer a little time to think out its best move (even if that is not necessarily brilliant) and to check for a winning line which may sometimes be hard to spot. Cut out the BEEPs and SOUNDS when you type out the listing if you happen to be irritated by such exhibitionism. Personally, I find the notes warning me about a coming move quite useful.

The Listing:

```
10 CLS:PRINT@49,"n";:PRINT@84,"TIC 1D";:
PRINT@124,"TAC 3";:PRINT@164,"TOE";
15 LINE(20,12)-(44,42),1,B:LINE(44,42)-(
62,22):LINE-(62,0):LINE-(44,12):LINE(20,
12)-(40,0):LINE-(62,0)
20 PRINT@20,"by Bob Delbourgo";:SOUND418
February, 1985
```

```
4,25:SOUND5586,25:SOUND8368,25:PRINT@15,
"This game is played on a";:PRINT@55,"4x
4x4 board. The playing";
25 PRINT@95,"area is divided into 4";:PR
INT@135,"horizontal slices. Enter";:PRIN
T@175,"your piece by giving the";
30 PRINT@215,"x,y and z(=SLICE) coords."
;
32 DEFINTA-Z:DIMA(4,4,4),YZ(4,4),ZX(4,4)
,XY(4,4),DX(4),XD(4),DY(4),YD(4),DZ(4),Z
D(4):C(1)=88:C(2)=111:N(1)=5:N(2)=1
35 PRINT"Will you try a (<1>-PLAYER (vs.P
oCo) or (<2>-PLAYER game?
";
40 C$=INPUT$(1):C=VAL(C$):IFC<1ORC>2THEN
BEEP:GOTO40
45 PRINT@240,SPACE$(79);:FORT=1TOINT(VAL
(RIGHT$(TIME$,2)):R=RND(1):NEXTT
50 IFC=1THENPRINT@240,"OK, You (=X) go f
irst; PoCo (=o) goes next.";
55 IFC=2THENPRINT@240,"OK, X plays first
, followed by o."
60 FORT=1TO2000:NEXTT
110 CLS:FORI=1TO4:FORJ=1TO4:FORK=1TO4:PR
INT@2*I-80*J+8*K+310,CHR$(46);:NEXTK,J,I
120 FORI=1TO3:FORJ=1TO4:FORK=1TO4:PRINT@
2*I-80*J+8*K+311,CHR$(239);:NEXTK,J,I
130 FORJ=1TO3:FORK=1TO4:PRINT@80*J+8*K-4
8,STRING$(7,239);:NEXTK,J
140 FORI=1TO4:LINE(48*I-4,0)-(48*I-4,63)
:PRINT@273+8*I,"z =I";:NEXTI
180 P=P+1:IFP=3THENP=1
190 PRINTCHR$(27)"p";:PRINT@32,CHR$(C(P)
)" - play";:PRINTCHR$(27)"q";
195 IFC=2ANDC=1THEN1000
200 PRINT@112,"x =";:X$=INPUT$(1):X=VAL(
X$):IFX<1ORX>4THENBEEP:GOTO200ELSEPRINTX
210 PRINT@152,"y =";:Y$=INPUT$(1):Y=VAL(
Y$):IFY<1ORY>4THENBEEP:GOTO210ELSEPRINTY
220 PRINT@192,"z =";:Z$=INPUT$(1):Z=VAL(
Z$):IFZ<1ORZ>4THENBEEP:GOTO220ELSEPRINTZ
230 IFA(X,Y,Z)<>0THENGOSUB900:GOTO200
240 SOUNDP*1000,25:PRINT@2*X-80*Y+8*Z+31
0,CHR$(C(P));:A(X,Y,Z)=N(P):M=M+1
250 FORI=112TO232STEP40:PRINT@I,SPACE$(8
);:NEXTI
260 PRINT@272,SPACE$(8);:IFM<7THEN100ELS
EPRINT@272,"Checking";:GOSUB950
270 PRINT@272,SPACE$(8);:N1=4:GOSUB970:N
1=20:GOSUB970:IFN0=4ORN0=20THEN300ELSEIF
M=64THEN350ELSE180
300 PRINT@272,"";:PRINTCHR$(27)"p";CHR$(
C(P))" wins!";:PRINT@312,"<ENTER>";
305 FORT=1TO50:NEXTT:SOUND10000,1
310 PRINTCHR$(27)"q";:PRINT@272,CHR$(C(P)
)" wins!";:PRINT@312,"<ENTER>";
320 IFINKEY$<>CHR$(13)THEN300ELSECLS:RUN
32
350 PRINTCHR$(27)"p";:PRINT@272,"A draw!
";:PRINT@312,"<ENTER>";
```

```

355 FORT=1T050:NEXTT:SOUND10000,1
360 PRINTCHR$(27)"q";:PRINT@272,"A draw!";:PRINT@312,"<ENTER>";
370 IFINKEY$(>CHR$(13))THEN350ELSECLS:RUN
32
900 PRINT@272,"Filled";:PRINT@312,"space!";:FORI=112T0312STEP40:PRINT@I,SPACE$(6);:SOUNDI*10,10:NEXTI:RETURN
950 O0=0:OX=0:OY=0:OZ=0:FORI=1T04:DX(I)=0:DY(I)=0:DZ(I)=0:XD(I)=0:YD(I)=0:ZD(I)=0:FORJ=1T04:XY(I,J)=0:YZ(I,J)=0:ZX(I,J)=0:NEXTJ,I
951 FORJ=1T04:FORK=1T04:FORI=1T04:YZ(J,K)=YZ(J,K)+A(I,J,K):NEXTI:NEXTK,J
952 FORK=1T04:FORI=1T04:FORJ=1T04:ZX(K,I)=ZX(K,I)+A(I,J,K):NEXTI
953 NEXTI,K
954 FORI=1T04:FORJ=1T04:FORK=1T04:XY(I,J)=XY(I,J)+A(I,J,K):NEXTK
955 NEXTJ,I
956 FORI=1T04:O0=O0+A(I,I,I):NEXTI
957 FORI=1T04:OZ=OZ+A(I,I,5-I):NEXTI
958 FORI=1T04:OY=OY+A(I,5-I,I):NEXTI
959 FORI=1T04:OX=OX+A(5-I,I,I):NEXTI
960 FORI=1T04:FORJ=1T04:DX(I)=DX(I)+A(I,J,J):NEXTK
961 FORJ=1T04:XD(I)=XD(I)+A(I,J,5-J):NEXTK
962 NEXTI
963 FORI=1T04:FORJ=1T04:DY(I)=DY(I)+A(J,I,J):NEXTK
964 FORJ=1T04:YD(I)=YD(I)+A(J,I,5-J):NEXTK
965 NEXTI
966 FORI=1T04:FORJ=1T04:DZ(I)=DZ(I)+A(J,J,I):NEXTK
967 FORJ=1T04:ZD(I)=ZD(I)+A(J,5-J,I):NEXTK
968 NEXTI
969 RETURN
970 N=0:O=0:X0=0:Y0=0:Z0=0:I0=0:J0=0:K0=0:FORI=1T04:IFDX(I)=N1THENN=DX(I):O=I
971 IFDY(I)=N1THENN=DY(I):O=4+I
972 IFDZ(I)=N1THENN=DZ(I):O=8+I
973 IFXD(I)=N1THENN=XD(I):O=12+I
974 IFYD(I)=N1THENN=YD(I):O=16+I
975 IFZD(I)=N1THENN=ZD(I):O=20+I
976 NEXTI:IFO0=N1THENN=O0:O=25
977 IFOX=N1THENN=OX:O=26
978 IFOY=N1THENN=OY:O=27
979 IFOZ=N1THENN=OZ:O=28
980 FORI=1T04:FORJ=1T04
981 IFYZ(I,J)=N1THENN=YZ(I,J):I0=I:J0=J:X0=I
982 IFZX(I,J)=N1THENN=ZX(I,J):I0=I:J0=J:Y0=I
983 IFXY(I,J)=N1THENN=XY(I,J):I0=I:J0=J:Z0=I
984 NEXTJ,I:IFN(>0)THENN0=N:
985 II=0:Q=0:I=I-1:J=J-1:RETURN
990 IFA(R,S,T)=0THENBEEP:W=2*R-80*S+8*T+310:PRINT@W,CHR$(C(P));:PRINT@W,CHR$(239);:FORV=1T0800:NEXTV:PRINT@W,CHR$(C(P));:A(R,S,T)=N(P):M=M+1:BEEP:Q=1:RETURN

```

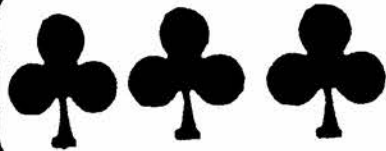
```

995 Q=0:RETURN
1000 PRINT@272,"Thinking";:GOSUB950
1010 IFM<5THENR=INT(2*RND(1)+2):S=INT(2*RND(1)+2):T=INT(2*RND(1)+2):GOSUB990:IFQ=1THEN260 ELSE1010
1020 N1=3:GOSUB970:IFN=3THEN1100
1030 N1=15:GOSUB970:IFN=15THEN1100
1040 N1=2:GOSUB970:IFN=2THEN1100
1050 N1=10:GOSUB970:IFN=10THEN1100
1055 BEEP
1060 R=INT(4*RND(1)+1):S=INT(4*RND(1)+1):T=INT(4*RND(1)+1)
1070 IFA(R,S,T)=0THENPRINT@2*R-80*S+8*T+310,CHR$(C(P));:A(R,S,T)=N(P):M=M+1:PRINT@272,SPACE$(8);:GOTO260 ELSE1060
1100 IFQ<29ANDQ>0THENONO GOTO2000,2000,2000,2000,2040,2040,2040,2040,2080,2080,2080,2120,2120,2120,2120,2160,2160,2160,2200,2200,2200,2240,2250,2260,2270:GOTO260
1110 IFX0=1THEN3000
1120 IFY0=1THEN4000
1130 IFZ0=1THEN5000
2000 FORII=1T04:R=0:S=II:T=II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2040 FORII=1T04:R=II:S=0-4:T=II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2080 FORII=1T04:R=II:S=II:T=0-8:GOSUB990:IFQ=1THEN260 ELSENEXTII
2120 FORII=1T04:R=0-12:S=II:T=5-II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2160 FORII=1T04:R=II:S=0-16:T=5-II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2200 FORII=1T04:R=II:S=5-II:T=0-20:GOSUB990:IFQ=1THEN260 ELSENEXTII
2240 FORII=1T04:R=II:S=II:T=II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2250 FORII=1T04:R=5-II:S=II:T=II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2260 FORII=1T04:R=II:S=5-II:T=II:GOSUB990:IFQ=1THEN260 ELSENEXTII
2270 FORII=1T04:R=II:S=II:T=5-II:GOSUB990:IFQ=1THEN260 ELSENEXTII
3000 FORII=1T04:R=II:S=I0:T=J0:GOSUB990:IFQ=1THEN260 ELSENEXTII
4000 FORII=1T04:R=J0:S=II:T=I0:GOSUB990:IFQ=1THEN260 ELSENEXTII
5000 FORII=1T04:R=I0:S=J0:T=II:GOSUB990:IFQ=1THEN260 ELSENEXTII

```







# CLUB NEWS



We heard from a lot of the Meet Contacts over the christmas break, and thank you all for making the effort to call at that busy time.

The Perth Users' Group's news letter 'CoCoPug' came again and had some very interesting articles. There is an article which shows that it is better to DRAW than to draw a LINE, some very useful material on the use of modems, and Jason Cristou, who I'm sure we will hear more from in time, presents a piece of CoCo magic called 'Gossec's Gavotte'.

Whoever it was that knicked off with the Valley CoCo-Nuts newsletter finally returned it about the same day as the next one arrived!

The latest effort is that of their new Editor, Brett Keep. It's a good effort that has a lot of local news, and some advertising that I'd like to have!

George Francis is a member of the club and he is also a Ham Radio operator (VK3HV). He sent a photo which will hopefully make it into RTTY next month.

The Noarlunga Color Computer Club's BULLETIN for summer also arrived. This club emphasises their interest in

assisting MC-10 as well as CoCo owners. They have a most helpful article on modems, a game by Robbie Dalzell called 'Centrit', (his version of 'Solitaire'), and some good articles. At 12 pages, this is a valuable publication.

There are some exciting things happening for users and prospective users of OS-9. In the first instance, there is an increasing range of software available, in the second instance, it looks like we'll have a larger quantity of material from the group in one of the magazines soon.

Other groups have started places as far afield as Leeton, Armidale, (Tom, I'm sorry, I've lost your phone number), BrisBiz, (the Business Users' Group), Cairns, (contact the local Tandy man), Morphettvale, (yes the place really exists, and what's more is named after a relative!), Moree, Murgon, Pymble, Seacombe Heights and Tahmoor.

Our family is growing, we have a computer that continues to confound the Twerps, and a lot of people are benefitting.

# user group CONTACTS

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

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Enlarge or reduce any portion of a screen by any amount, just like a photographic enlarger! Independent of the enlargement or reduction, rotate by any degree or fraction of a degree about any point on the screen.

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"Zoom in" x2, x4, or x8 on any portion of the screen to do fine pixel work. Allows editing of Graphicom character sets with ease!

### TYPESETTER & FONT EDITOR

Add text in 16 different sizes with several display modes to choose from including COLORED FOREGROUND & BACKGROUND text! Edit 8x8 characters for use in the typesetter. Over 30 character sets supplied on disk. "GRAB" function allows transfer of some Graphicom character sets to Graphicom Part II format.

### PIXEL BLASTER

Allows the user to easily substitute or remove colors. Widen lines, swap BLUE & RED without effecting BLACK & WHITE, etc.

### GRAPHICOM PART II DOES NOT REQUIRE GRAPHICOM TO RUN!

Graphicom Part II requires a 64K extended disk basic system, it will load and save both standard BIN files and Graphicom screens, and supports 1 to 4 disk drives with keyboard or joystick (analog or switch type). All functions support color or Hi-Res operation, as well as 4 screen display modes.

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- 12C - Art demo from WHITESMITH
- 13C - GRAPHICOM PART II function demo

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# user group CONTACTS

\*Stop between numbers = d.n. = disk  
 a.h.; but, hyphen between = both

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