July, 1988

For TANDY Color Computer Users

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COCO MAGAZINE

UTILITIES

— Pushing the right keys

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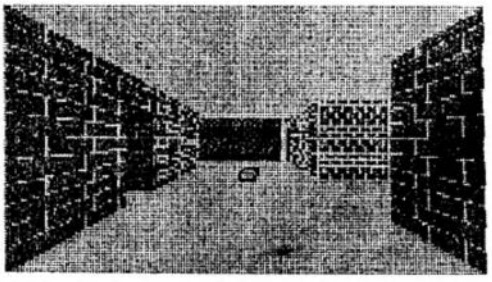
Color Computer 3



Author: G J Doak
Marketing: Blaxland Computer Services Pty Ltd
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Minimum System Req:

128k Color Computer 3

Program Enhanced with 512k

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Join in the fun.

CONF '88

Koonjewarre, Gold Coast, Qld.

October 1st and 2nd

Conf '88 is at Koonjewarre on the Gold Coast of Queensland. The dates are 1st and 2nd October - that is, during the October school holidays.

Expo '88 will still be on at this time, so you can come up for Conf '88 and then see Expo '88.

Despite Expo '88, we've managed to hold prices to the same level as last year - quite a feat given the accommodation price rises during Expo in Queensland.

The Program:

This year, the theme is "Computers in the Family", so we're encouraging you to involve your family in the weekend.

Apart from the education themes, we'll have activities for the children, and something also for those who would prefer less computer involvement.

Koonjewarre offers some beautiful bush walks and a unique gathering of broad varieties of animal life for you to discover.

On the tutorial front, we'll have tutorials on all the usual subject areas covering both the Tandy CoCo and the MS DOS worlds.

Subjects such as OS 9 will be covered in detail, as will computer communications, Basic Basic, Advanced Basic, Pascal, C, Forth and much more.

There'll be the usual presentation dinner on the Saturday night where the winners of the prizes in the various competition categories will be announced.

And finally, there'll be an opportunity to renew friendships or make new ones; to meet some of the authors from our magazines; and to find the answer to those problems you've been experiencing all year.

Bargains!

Traditionally, advertisers from our magazines use Conf to move stock - so Conf '88 is the place to find the bargains! Bring some spending money!

Accommodation

Accommodation is in camp style rooms. Usually, there are about 10 beds to a room, but there are a few family rooms for early bookings.

Last year, those who shared the large rooms had a ball!

Rates:

Accommodated

One person	$87.00
Family of 2	$155.00
Additional family members	$52.00 ea

This price includes supper Friday evening, breakfast, lunch, dinner and supper on Saturday, and breakfast and lunch on Sunday. PLUS accommodation on Friday and Saturday nights!

Non Accommodated

	One Day	Two Days
One person	$40.00	$58.00
Saturday Evening meal	$12.00	
Additional Family Members	$31.50	$45.50ea

This price includes morning tea, lunch and afternoon tea.

Payment

You may pay the total price when booking, or pay a deposit of $20 and pay the rest off by 7th September, 1988.

Conf '88 Registration Form

Name:.....

Address:.....

Phone:..... Number of people:.....

I am interested in attending tutorials on the following subjects:.....

.....

Please find enclosed $.....
(Chq/Money Order/Bankcard/Visa/Mastercard)

Card No:.....

Signature:.....

inside COCO JULY

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DEADLINES:
7th of the preceding month.

In a Nutshell

Ta-dah ... just when you thought we weren't going to make it in time - we're back! You see, we thought we'd keep you in suspenders, for a while anyway.

Many people ask (or I hear them say), "What's the difference between a utility and an application?".

The reply that you could say (I do) is, "A utility is something you use on your computer to eventually use the results of that utility into something productive for use in the running of your computer."

Confused? Try the other side!

"An application is a program that you use to figure out something in real life so you can use the results in a way that it will eventually NOT help you in the running of the computer in any way."

What are some examples of both? Below are some programs that will explain each:

The application programs:
* Quill
* Dice
* Tables

The utility programs:
* 40 track disk drive
* High speed sector seeker
* Disk file data

Of course, there is an exception to every rule, and this program (as an example) doesn't really fit into either a utility or an application!

* Customising your keyboard

So there!

Competitions

There's only a few weeks left in each of the competitions! Just to remind you of what could possibly be yours:

Last year, Craig Stewart send in "Pursuit" for the CoCo 3. He won the games competition and got royalites for his effort.

This year, you could be that person getting royalties for entering your program in the competition. Who knows?

Would a couple of thousand make any difference to your pocket money?

Remember, the above was for the games competition, and was sponsored by Tandy. We have plenty of prizes to give away for best programs, too!

Programming, Last Notes

* An elephant is a mouse with an operating system.
* Who cares if it doesn't do anything? It was made with our new Triple-Iso-Bifurcated-Krypton-Gate-MOS process ...
* If you put garbage in a computer, nothing comes out but garbage. But this garbage, having passed through a very expensive machine is somehow enobled and none dare criticize it.
* One good reason why computers can do more work than people is that they never have to stop and answer the phone.
* On a clear disk, you can seek forever.
* "System going down at 5 this afternoon to install new scheduler bug.
* Basic: the only high-level language which can be mastered in less time than any program written in it will take to execute.
* Data: a vital collection of variables which, when held in memory, leave no room for the program.

So there!

Alex

CONF 88 BE THERE!

SEE PAGE 4 FOR DETAILS

DR COCO

THE DOCTOR IS IN!

Dear Dr CoCo,
In CoCo News (May '88), there was mention of the Tandy Koala Pad. I bought one of these pads recently.
The artwork on the box suggests that it can be used for "freehand" draving on the graphic screen, or as a control device in lieu of a joystick or a mouse. The leaflet inside the box says what it can do, but does not say how.
I have managed to get a few scratchy lines in the top left hand eighth of the screen together with a lot of garbage with this listing:

```
10 PMODE 4,1:PCLS:SCREEN1,1
20 X=JOYSTK(0):Y=JOYSTK(1)
30 PSET (X,Y)
40 GOTO 20
```

If you know of a listing which will enable me to draw lines over the whole screen with the Koala pad, then I would be grateful. I am still using an old grey case CoCo 1, with tape and T.V.
Keiran Kenny,
Ryde, NSW.

Keiran,
Anything that you plug into the joystick port must all have one thing in common: they must all be in the same 64 x 64 grid format.
This means that joysticks, both deluxe and standard, mice both new and old versions, as well as Koala pads must be in this 64 x 64 grid format.
When you PSET something to the screen, you should realise that the graphics screen is much bigger than 64 x 64; its actual dimensions are 256 x 192.
The answer is simple: amplify the signals received by the joystick port.
The program:

```
10 PMODE 4,1:PCLS:SCREEN1,1
20 X=JOYSTK(0)*4
25 Y=JOYSTK(1)*3
30 LINE-(X,Y),PSET
35 GOTO20
```

To explain:
* Line 20 amplifies anything by 4: that means that you can get as far as 252 across the screen. (63*4=252).
* Line 25 amplifies anything by 3, and not by 4. There are only 192 (0-191) pixels vertically down the screen. So the further most you can get down the screen is 189. (63*3=189).
* Line 30: Instead of PSET'ting it as you have done, you will need to draw lines between each point, otherwise you won't be able to 'connect the dots' properly.

There's going to be a 4 pixel difference in each dot - this means a lot of space between each dot, if we were to PSET everything.

*

Dear Dr CoCo,
I have an EDTASM ROMpak which I use mainly to type in an occasional assembly language program from the magazines.
The instruction books say that EDTASM can be used to edit Basic programs, but does not say how.
I have an old grey case CoCo 1 with a recorder and a TV.
Keiran Kenny,
Ryde, NSW.

Keiran,
Didn't we just talk?
When EDTASM saves source code onto the tape, it saves it in ASCII. We know (by reading the book) that we can save Basic programs in ASCII, by adding the ",A" option, eg

```
CSAVE"BLAMAN",A
```

For this experiment to work properly, we have to save the program to tape.
Steps to edit a Basic program using the EDTASM ROMpak:

1. Save your program in ASCII.
2. Turn off your CoCo, put in your ROMpak, turn your CoCo on.
3. Type:

```
L <the name of your program>
```

4. You can now edit your program.

Last notes: I personally wouldn't want to do this, mainly for the time it takes to do what you want to do with it.
Basic has a very good editor, and I would recommend you learn it.

*

Dear Dr CoCo,
I bought the CoCo 3 part 3 tape and for four weeks I have been trying to load "SUNSET" from this tape.
After I load it in, all I ever get is ?UL error in 110, and the program disappears.
The same problem appears when I save something. It says "Finished", and I get an ?UL error in 110.
Please help me in solving these problems!
Waddy Juraszek,
Liverpool, NSW

Waddy,
I have heard that you are not the first to mention this bug.
We are going to get in touch with the author regarding this bug and we should have something within the next few months.
However, on the lighter side of things, the disk version works perfectly, eg saving and loading to and from disk encounters no problems what so ever!
Food for thought!

*

Dear Dr CoCo,
I have just recently bought a disk system for my cool Colour Computer 2 which rarely makes mistakes.
I have already typed in "CoCo Address Book" by Wayne Kely (December CoCo, P58) and had decided to make it read and write to the disk drive.
Well, I have changed it as much as I could and kept on getting an ?IE error (input past end of file) in line 590.
Could you please help me with this. Keep up the good work.
Wayne Marriot,
Traralgon, VIC.

Wayne,
For some reason, CoCo doesn't like having records written in the following manner:

```
PRINT#1,A$,B$,C$
```

... mainly because you can't read it in the same way, ie ...

```
INPUT#1,A$,B$,C$
```

So the best thing for you to do is to write each string separately, ie

```
PRINT#1,A$:PRINT#1,B$:PRINT#1,C$
```

... and when you want to read the same data in again, this is how you would write the code:

```
INPUT#1,A$:INPUT#1,B$:INPUT#1,C$
```

And there you have it (or, as Alex would say ...)

So there!

Dear Graham,

I am in the process of setting up a User Group in the Riverland of South Australia, and would appreciate if you could include us in the contacts of CoCo and Softgold.

Our first meeting was in April and was more an expression of interest than anything else. The response has been astounding and it seems that such a group is long overdue for this area.

If you could give me any advice, guidelines or suggestions, I would appreciate all help given at this stage, as I have no experience in this type of group.

Lauren Brown,
Loxton, 5333

Lauren,

I'm glad to hear to a User Group is finally starting up in your area.

Each group has its own character and dynamics, so it is difficult to prescribe a formula which will work for every group.

Nonetheless, there are some thoughts that I would like to share with you.

Firstly, in the area of setting up the group, the traditional way has always been to advertise in all the local computer shops, newsagents with computer magazines and schools.

Some groups are able to get free community advertising in their local newspaper.

Getting the people to your group is the easy bit, maintaining their interest is more difficult, if you feel that numbers are important.

I say this because there are two philosophies regarding User Groups - one says that the more people you have, the more successful you are - the other says that quality is more important than quantity.

If you go for the quantity theory, then you need lots of activities, contests, workshops, outings, and entertainment. You'll have a lot of fun and you'll certainly be very busy.

If you lead a fairly busy life already, you may be inclined to follow the second theory.

The logic of which is that if people really want your help, they'll come along to your meeting, they'll tell you what they need and they will provide the impetus for the topics discussed.

In reality, most groups operate somewhere between the two extremes.

Unfortunately, many people expect to be spoon fed or entertained. If you have the time to deal with such people, then I'm sure you'll reap the benefits in terms of personal satisfaction.

Good luck with your venture. We look forward to seeing the growth of interest in CoCo in your area as a result of your group's existance.

*

Dear Graham,

My name is Neville Hughes, and I am 13 years and 7 months old. I own a "Tandy 64K Colour Computer 2".

My family and I live in Tannymorel (near Warwick) in Queensland. My friend (Brendan O'Mara) and I are trying to start a TRS User Group and I was wondering if you have any hints, ideas, information, posters or anything you have that would be of help to me.

It would be greatly appreciated.

Neville Hughes,
Tannymorel, 4370

Neville,

It's very interesting to see the growth of a second group in your area.

It's not hard to tell where the good Tandy shops are!

All that I have said in the letter above applies, and in addition I would caution against any User Group becoming a "Software Copying Club", or even a "Software Review Club"; that is, a club where all you do is look at new software.

Copying and reviewing of software do not provide any basis at all for a long-term group.

The only reason Tandy groups have been as strong as they have been over the last nine years, is because with most of them, the emphasis has been on teaching the members about their computer.

Whilst it is true that one or two teaching groups have dropped out, virtually no software copying clubs of five years ago are still in existance, whereas many teaching groups which started up to nine years ago still run to this day.

In any case, copying of software to give to others amounts to theft, unless the software specifically includes the notation that it is "Public Domain".

We've sent you some posters. I hope they will help you to get your group started.

Graham.

*

Dear Graham,

Recently I saw a movie called "War Games". It was about a boy who tapped into various other computers with the use of a 'modem'.

Is this possible, and if so, how does it work and how did he do it? What steps would he take to get into another computer? What process would he take? Could a Tandy CoCo do this?

Please tell me as much as you can!

Chris Dawson,
Narrandera, NSW

Chris,

There's this bridge I have for sale ...

In theory, what happened in "War Games" might be possible under some very freakish conditions.

In practice, although we hear a lot about "Computer Hackers", most of the talk is just that - talk, and nothing more.

A modem is a device that you attach to your computer, which allows your computer to use the phone system to interface with other computers.

The theory says that a good programmer, once he has a phone number of a computer database could set up his computer to continually access that computer until he "cracks" an identity number on the system.

There's a couple of flaws in that logic. The major flaw is that you'd have to be prepared for a telephone bill that would run into the thousands of dollars, because most computer databases only give you three goes at identifying yourself before they throw you out.

And even given a limitless supply of phone money, most identification systems are almost impossible to break.

Take Viatel (please). Viatel provides its subscribers with a ten digit identity number which remains yours whilst you remain a customer. You also get a four digit password, which you are able to change at any time.

Now just think about the combinations available to users to keep others out of their Viatel account. To crack my Viatel account, you first have to happen upon the ten digits which Viatel have given me, and

then you have to also enter a four digit password, each digit of which can be any of the 26 lowercase characters of the alphabet, or any of the 26 uppercase characters of the alphabet, or any of ten digits (0 - 9), or any of the symbols available on the videotex system (+, -, *, :, etc).

In truth, most "Hackers" break into a computer the easy way - they are told or given an identity and password.

But even once you are in a computer database, there are levels of security - so you can see that it would take someone VERY special to be able to achieve the type of thing shown in the movie, especially given that the computer he allegedly broke into belonged to a defence institution.

Your CoCo nonetheless, is very capable of communicating on a phone line with other computers.

A manual modem, such as the Avtek mini modem, which is available from Blaxland Computer Services for around $200, will allow you to "talk" to most major databases, provided you have some software which turns your computer into a terminal.

An ideal package is Ron Wright's SuperTex, which we have available for $39.95.

Using a computer to obtain information can not only be educational, but also a great deal of fun. Perhaps we'll see you on Viatel one night?

Graham.

*

Dear Graham,

I want to thank you and all the people who submit articles and programs to Softgold and CoCo. As a relative new owner of a CoCo 3, I have found both magazines invaluable in helping me understand my CoCo a little better, although I still feel it will be some time before I am ready to submit anything worthwhile.

I would in particular like to mention Johanna Vagg of Forbes who has helped me immensely to unravel the maze of information available. I spoke to Johanna by phone after reading many of her articles in your magazines and she sent me a disk full of programs by herself and her son - I was truely amazed at the things she had done with the CoCo.

Keep up the good work, Johanna.

I was interested to read in Softgold (July 1987) a letter from Di Souphandavong of Tennant Creek who is using a Brother CE-50 Daisy-Wheel Typewriter as a text printer with her CoCo 2.

As I have the same typewriter, I would like to know if I can do this with my CoCo 3, and if so, what do I need?

I have Disk Scripsit and the VIP Library.

LETTERS

I would also like to thank Darren Reed for a hint in CoCo (May 1988) that has saved me the cost of a monitor. His tip on changing the disk of Deskmate and OS-9 is fabulous. I have had both for over three months and have not been able to use them until now.

I also have the same type of problem with another program called "Newspaper Design System" from Spectrum Projects.

It is a section of the program called "Type-up" and it is written in Machine Language.

Yours Sincerely,
Lauren Brown.
Loxton, 5333.

Lauren,

You are right, of course.

Johanna Vagg has won more friends through her articles in the magazine than anyone else that I know.

Her concerned interest in one is all the more amazing when you realize what a busy life she leads.

As a mother of eight, Johanna really only gets near her computer late at night.

We haven't heard of Di in Tennant Creek, for a little while, but I'm sure a letter addressed to her simply to the post office there would find her. So far as I know, if the modifications she described work on the CoCo 2, there should be no problem working on a CoCo 3.

I do not know the program you refer to in the last part of your letter, perhaps one of our readers can enlighten us.

Graham

*

Dear Graham,

Hi, how is everyone? I haven't written for a while, so I thought it was time, as I've got a couple of things to mention.

Firstly, the new format of the magazines is great! Now those with a certain computer don't have to pay for two magazines to get one magazines' worth of info ($4.50 isn't a lot I know, but it all adds up when you're involved in this hobby).

A couple of constructive criticisms.

* The Com-Stat 642 column could turn out to be a great source of information, if it followed some sort of organized format. Very often the answer to problem is found, but the original question is not included, making it very unclear what the solution is for.

* It is also annoying to have a ongoing discussion scattered haphazzardly over the two pages.

* In May, there were 6 Viatel pages between 'Tony' and 'Jeff', but they were spread out all over!

* The Panasonic printer sounds great, but I feel when you rap things like that, you should either investigate and report, or warn (especially newcomers) printers, as they may not work with many programs, eg the "Home Publisher" recently released by Tandy is no use to me as I have no OS-9 drive for my Amust printer.

Other than that, the magazine is looking better all the time.

I would also like to comment on the letter from Harry Tuplin. You all know my views about Tandy as a company, but I have to say that in 5 years my grey case has NEVER ever hinted at problems and my CoCo 3 is nearly 12 months old and (touch wood!) I haven't yet had problems with it.

I am not doubting Harry's problems for a moment - I just find it surprising!

Even before computers, I've also found other Tandy products to be of excellent quality - EXPENSIVE, yes, mainly due to exorbitant makeup, as is evidence by the incredible (!) sales they can have - but still good quality.

Whilst on the subject of Tandy though, my local agent informs me that Tandy won't take back stock from stores that have had their wrappers opened. This may be to stop piracy, but it will also turn away new customers as it means they will have to buy the product sight unseen (or untried)!!

Well, that's it. Hope to see all again soon.

Barry Sidebottom,
Sunbury, 3429.

COCO NEWS

WITH GRAHAM MORPHETT

Welcome to the July 1988 edition of Australian CoCo Magazine.

It was in July 1984 we learned of the death of Greg Wilson, the founder of our magazines. It was his death that catalysed the beginnings of Goldsoft.

Greg not only laid down the principles under which Goldsoft still operates today, but he foresaw and indicated the way a successful computer supplier must operate in Australia.

Basically, Greg maintained - and the subsequent years have more than proven him correct - that the supplier must keep in touch with his users. He must react to their needs, and he must be seen to react to their needs.

The users also have to make the effort to communicate with the supplier. They have to KNOW him.

In short, in the world of home and small business computing, there must be a real partnership between the supplier and the user.

Greg's theories have been proven correct in the case of all major players in the business. They are guidelines ~~it is~~ well to apply to the future.

We miss Greg. He was a goad, sometimes an embarrassment (as all prophets are), but above all, he was very much a friend to computer users.

The Tandy Programming Contest

Last year, Tandy sponsored this contest to find a commercially viable program for both the MSDOS computers and for the CoCo 3's.
A prize was not awarded in the MSDOS section, but an excellent program for the CoCo 3 was produced by Craig Stewart called "Pursuit", which just blew the opposition away.

Craig won a contract with Tandy for the game and Tandy are still selling this excellent program in their stores.

This year, the contest closes in September (15th) and we have some nice programs already. But we do not have anything quite as amazing as Craig's program from last year.

So if you want to enter, we need a commercially viable game for a CoCo 3 and a commercially viable game for MSDOS computers and you could very much, still be a winner.

The winner will be announced at Conf '88 and the prize is again a contract with Tandy. So far Craig has done very well from his contract - to the tune of several thousand dollars. So if you'd like to be a winner this year, get your thinking cap on now - time as they say, is running short.

Other Contests

In addition to the Tandy programming contest, there will be the usual contests and prizes for other forms of programs and articles.

Prizes will be awarded for Games, Utilities, Education programs, Hardware articles, Machine Language programs, and so on.

Our magazine depends on you to send programs and articles for publication. The contests are one way we reward you for your efforts.

Conf '88

I spent a pleasant Sunday with my wife Annette and daughter Katie recently, walking some of the tracks around Springbrook in preparation for the promised bushwalks at Conf '88 this year.

And what walks there are in the area!

Springbrook Falls drop some 700 feet into dense rainforest just a mile or so from our conference site. You look up and you can see virtually all the Gold Coast, all the way to North Stradbroke Island.

Another lookout is called "Best Of All" lookout, and it really does live up to its name. On the way to Best Of All you pass through a small Antarctic Beech forest. These trees are over one thousand years old.

It is an unbelievable experience to be in the presence of one thousand year old trees. I was glad my secretary Karen wasn't there - she has been known to hug trees, an activity I find peculiar, but almost gross when dealing with someone one thousand years old!

For those who develop a taste for this sort of thing, (not the tree hugging) Purlingbrook Falls offer a really beautiful walk which culminates in a cave right underneath the waterfall.

As for the computer side of conference, I've spent this month working with Tandy to get some really excellent prizes for the various contests.

Next month we will be in a position to announce most of the tutorials and perhaps even offer an indication of what times each tutorial will take place.

During our recent visit to Springbrook, we called into Koonjewarre and were once again reminded that this site is well able to cope with what we have planned - a family camping atmosphere.

Those members of your family who do not share your interest in computing will have something to keep them amused all weekend.

You'll have tonnes to keep you amused; and every now and then the two interest groups can get their heads together and zip out to one of these great local attractions. So plan to be here in October, this is the big one!

Good-bye Joe Tanner

As mentioned by Wilfred in last month's magazine, Joe Tanner, Intertan's previous Managing Director, returned to the US in June.

This magazine wishes Joe well. We have shared some very constructive conversations during Joe's stay in Australia. I can't recall a visit with Joe that did not produce something gainful. Something really helpful to the magazine or to Tandy's computer users.

Intertan is most fortunate to be able to draw upon the services of such men.

Hello Mal Williams

Mal Williams has been strongly committed to the growth and

maintenance of a strong Tandy presence in the Australian computer market for as long as I care to remember. (I'm getting old; I'm not liking it; and I'm NOT revealing how long back I can remember this occurrence because in so doing, I'll remind Mal how old he is, and he might suddenly decide he doesn't like my magazine anymore!)

Mal fostered the halcyon years in Tandy's computer history, and I believe he will lead Tandy into yet another prosperous time - much of that prosperity being based on a strong computer business.

We look forward to his time as Managing Director with excitement.

New Low Cost Point of Sale Unit

We have been fortunate to see a new "Point of Sale" product by a Gold Coast company - Sherileah Business Machines. Sherileah's system is both low cost, and it will work simply, even with your own Basic programs.

The system consists of a cash drawer which connects to your printer port. Its that simple. Every time you write to the printer port - say to write a cash docket, the drawer opens.

At $650 from Goldsoft, the product is REAL value.

Of course, for those who want ready to run software, Sherileah can provide that too.

Doctor's Database for Sculptor

The Sculptor package which is advertised in our magazine, often draws comment either because it is perceived as being too dear, or because it really brains people with its power!

I guess you can't have it both ways - a powerful package is almost certainly going to cost you more than a less powerful one.

CoCo owners are lucky because a lower price for Sculptor was announced in May. MS Dos users will find the price for their package commensurate with other equivalent 4GL systems.

And now a new medical practice package has been released written entirely in Sculptor.

Called RECALL, the system includes:

* a Cash Book,
* a whole sub-system to account for Worker's Compensation,
* a sub-system to account for Medicare,
* a Veteran's Affairs sub-system,
* a sub-system to monitor and describe practice growth,
* a sub-system to assist with practice building,
* a word processor shell

and finally,

* a patients medical records sub-system.

Because the system is written in Sculptor, it can be transported between a huge range of computers including the CoCo 3, MS DOS computers and most main frames.

Contact us here at Goldsoft should you require more information about RECALL.

Our CoCo 3 Blows a 6809!

Recently Alex bumped the multipack interface on his CoCo 3 whilst it was on, and we blew a CPU.

Tandy were great - they had the computer to Sydney for repair and back in a week.

Not bad service is it! Having a top man at the local Tandy store helps - I'm sure some of those sleepy Victorian stores couldn't do as well!

What do YOU Want From Your Computer?

Doing the work I do puts me in contact with a range of computer users.

There are people who use computers at work. Usually these people operate within just one or two programs.

There are people who build hard and software for the industry.

There are people who use their computers to extend what they do during the day, at night.

There are teachers and parents who use computers to extend their children's education.

There are sales people who have to know a lot about a lot of systems.

And there are home users who like to dabble a little in a lot!

Quite a range of people isn't it! And believe it or not, ALL of them from time to time, express dissatisfaction with their computer!

As far as I can tell, the dissatisfaction comes because as we compute, we learn. And as we learn, we begin to want to do more.

Usually this results in us pushing the capabilities of our current computer to the outer limits. Once there, we're on shaky ground!

I think it helps to understand where the limit of our computer is. You can still push those limits, but so long as you know you're doing it, it doesn't hurt so much when the thing just won't co-operate.

How do you find those limits? Well that could be a whole different packet of worms for you! The easy answer is to join a User Group. You independent characters out there who don't want to join User Groups will just have to fall into the traps and read a lot!

This Magazine

This month is our Utilities issue. Utilities are definitely easier to use if you have a disk drive.

But tape users probably need utilities even more than disk users.

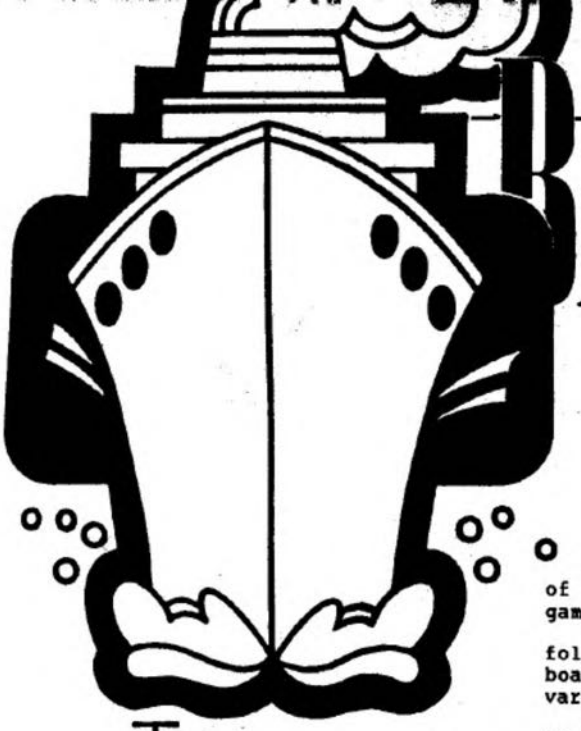
A utility helps you get a job done more efficiently.

Usually you'll want to modify a (or is that "an") utility to do your own work your own way.

We hope the programs you find here this month are of real value to you.

See you next month.

Graham



BATTLE SHIP GAME

by GEORGE McLINTOCK

THIS IS A computerised version of the board game Battleships, which can be played as a two person, two computer game.

It can also be played as a single person game using one computer. As further options, it can also be set up as a zero person game on one or two computers, or as a single person game on two computers.

The game was developed mainly to 'try out' some of the options available for two computer games, and no attempt has been made to apply any of the advanced graphics or sound options which might appear natural for this game.

The CoCo seems to have the capability to approximate the sound effects produced by the electronic version of Battleships, and could provide suitable graphics to match.

While these have not been attempted, the program has been designed to allow these features to be added.

The program uses graphic characters on the text screen to display the progress of the game for the players. This display is intended to represent the two grids which can be seen by each player with the board game.

The colours and symbols used for the different functions are set to suit a black and white TV set, but can be easily altered to be more colourful.

The game play is controlled by numeric arrays and does not depend on the display format.

The Game Itself

The general structure of the game of Battleships should be well known.

It requires two players, where each player sets up his ships on a 10x10 grid and then fires shots at his opponents grid until he sinks all his opponents ships. The results of all shots are made known to both players.

The first player to sink all of his opponents ships wins the game.

The rules for the game here follow the options given for the board game, with some variations.

The grid is 10x10, referenced by a character and a number, ie rows A-J and columns 0-9.

Each player has five ships, each with the following point score ...

Carrier - 5 points
Battleship - 4 points
Cruiser - 3 points
Submarine - 3 points
Destroyer - 2 points

Options for play are

* Normal battleships - each player fires one shot for each round
* Salvos - each player fires 5 shots for each round (one for each ship)
* Advanced salvos - the number of shots fired by each player for each round equals the number of ships remaining, eg each player starts with 5 shots. When one of his ships is sunk, the number of shots is reduced by one.

Shot Exchange Sequence

There are two basic options for the sequence in which shots are exchanged ...

* Sequential - player 1 sets up his move while player 2 waits. The results of player 1's move are scored and displayed in both machines before player 2 starts the setup of his move.

With this sequence, the number of shots available for the advanced salvos game is the number of ships remaining after the enemy has fired his shots.

* Simultaneous - with this option, both players set up their move at the same time. When both players have finished their set up, the exchange of shots takes place, and the results for both players displayed.

With this sequence, the number of shots available for the advanced salvos game is the number of ships remaining before the exchange of shots.

Time Limit On Moves

This is an option which can be applied to the simultaneous exchange sequence for either salvo game.

The basic idea is that when one player has completed his set up, the other player has a limited time to complete his set up before the exchange of shots takes place. The time limit is variable.

If the second player has not finished his set up when the time has expired, then the exchange of shots takes place anyway for the number of shots which have been set up at that time. A minimum of one shot will always be fired, and if no shots have been set, then the first shot from the previous exchange will be used.

With a short time limit, this provides a mechanism to even up the advanced salvos game if desired, eg if one player is lucky and has say 5 shots to his opponents 1 or 2, then the second player can limit the number of shots his opponent can set up to fire for each round by setting his shots as fast as possible.

Even with a longer time limit, it can keep a game moving if one of the players tends to be a bit slow in setting up.

Mixing Options

With two computers, most options can be different in each machine, eg one player can play advanced salvos while the other plays normal salvos, etc.

The only mixture that is not allowed is one computer sequential and the other simultaneous.

For the single computer game, the computer plays the same options as the player.

Number of Computers/Players

Battleships is a two person game and always requires two players. This program is written to allow it to be played by zero, one or two players using one or two computers.

With one player, the computer plays the game for the second player, while for zero players, the computer plays the game for both players.

While the zero player option may appear a bit pointless, it is a natural extension to some of the other options and provides a form of demonstration of how it works.

A further option is included to allow you to transfer between 'computer to play' and 'player to play' while a game is in progress. This can be useful if two players are playing and one has to leave before its finished. The player can still return and take over later if the game is still going.

This is achieved by pressing the "@" key at any time during

the set up of shots for player 1.

The computer will take over for the next move and displays that it will do so.

Two Computers, Two Players

The basic option for the game is to have two computers and two players. With two computers, the computers have to be connected together with a communication cable as described with "COMSBUF" (CoCo Magazine, April 88, Page 47), and part of the COMSBUF ML routine must be included with the Basic program.

With this set up, each player is player 1 for the program in the computer he is using. In this instance, the players are separately identified by the computer they are using, ie one computer is nominated as computer one and the other is computer two.

It is this computer number that controls the exchange of data between the computers, not the player number. The player number controls other parts of the program logic, and operates in the same way in both computers.

Each computer must have a different number. ie one must be #1 and the other must be #2. If both have the same number then the communications will not work.

Within each computer, the player is player 1, and the other computer is player 2. The logical sequence of play in each computer is the same Player 1, in computer 1, sets his move which is then sent to the other computer (computer 2) which scores the results of the move (as the move for player 2 in computer 2) and returns the results to the first computer (where it again becomes the move for player 1, in computer 1).

At the end of this sequence, both computers know the move and results for that round for that computer and player.

Each computer can then display the results of that round for the appropriate player, eg computer 1 displays the results for player 1, while computer 2 displays the same results as being for player 2.

At the end of this sequence, control then passes to computer 2, to allow its player 1 to set up his move, and the same sequence of events takes place for that player and computer.

For the simultaneous exchange, the transmit data line for each computer is turned off after each exchange of data. Each player makes his move at the same time. When a player is finished his move, his transmit data line is set back on again.

When both transmit data lines are on, the next exchange of data takes place for both computers, and the line turned off again.

The time limit for the simultaneous exchange is applied by the program checking the data input line during the INKEY$ loop on the keyboard for data entry.

When the receive data line goes on (ie when the other computer turns on its transmit data line), the program starts its count for each loop. This count is displayed on the screen.

When this count reaches the value specified, the number of shots for that move is adjusted to the number of shots entered at that stage, and a normal exchange of data takes place.

One Computer, One Player

The second basic option for the game is for a single player with one computer.

In this instance, the player is player 1 and the computer plays the game for player 2.

The logical sequence of play for this game is much the same as for the two computer version. The only real difference is that there is no exchange of data between computers.

Instead of sending the move data to the second computer to process as the move for player 2, it is passed directly to the routine in the single computer which would normally process the move for the other computer.

To allow this, there is a simple switch arrangement which determines if the exchange of data is to be between two computers or whether all processing is done within a single computer.

The actual operations performed is the same in both cases, its really a matter of which program in which computer actually does the work. In effect, the program in the single machine plays the game as if it were operating as player 2 in a second computer.

Computer to Play, or Player to Play

This program has been designed so that it will operate in much the same way for both basic options above.

As a result it contains all the routines required to operate as player 1 and a player 2 in either machine. Hence it becomes a fairly simple exercise to extend the options to allow the computer to play as player 1 in either (or both) machines and display the normal results for player one on this basis.

Following on from this we get the logical option of a single player, two computer, or no player on either one or two computers.

In effect the program performs all of the various functions required independently of each other, ie setting up the moves, scoring the move, and displaying the results are all independent of each other.

The only operations actually performed by the player is to set up a move, and the computer is required to do this in the single computer game anyway.

The way in which each function is actually performed is controlled by various switches and parameters within the program, and these are set according to the options selected.

Setup and Play

The game is set up by running the program and following the menu to select the options.

For the two computer game, the program tests the communication connection and exchanges data before the game actually starts (after all options have been selected).

The program will not proceed past this point unless the connection is correct.

If you have problems here, check the connection as described in the April magazine.

If the computer appears to hang up, press the "@" key, which will return control from the ML routine.

If the programs do not synchronise correctly, (ie hangs at this point) ensure the transmit data line is on, with a POKE &HFF20,2, and try again.

Jhots are set up by entering the cell value from the keyboard eg A0, B7 etc.

Press the alpha key first, which will cause the display to change, and then the numeric key. It is not necessary to press enter while setting up shots.

At any time while entering shots, you can use the left arrow key to remove earlier key strokes.

During the set up of shots, pressing the "@" key will transfer between computer to play and player to play.

The results of a single shot which misses is displayed on the bottom line of the screen. All other results are displayed on half the screen.

Program Design

There are two logical approaches to program design for two computer games:

* One is to have the main program in one computer, with the second computer acting as a simple terminal to the first one. With this set up the internal logic for the main program may be a little simpler, because you can use a single player number switch to decide if the input is to come from the main computer keyboard or the terminal.

However, the disadvantage with this approach is that you need a different program in the terminal machine to the one in the main computer because it performs a different function.

* The second option is to have the same program operating in both machines and control the inter reaction between the computers in much the same way as done here. This program follows the second option.

Program Structure

The program structure may appear excessively complicated for what is essentially qûite a simple game. However, it is worth noting that many apparently simple games can become quite complicated when you attempt to program a computer to play them.

For this one, other complications arise from the inclusion of so many options.

The various routines used for this program are identified by comments in the program listing.

Some of the more significant parameters are ...

```
P=player number (0-1)
K1=number of computers (1-2)
K=this computer number (1-2)
G=game option (1-3)
E=exchange sequence (1-3)
W=player or computer to play
(0-1)
C0=colour of left side grid
C1=colour of right side grid
C2=symbol displayed when shot
set
C3=symbol displayed when shot
fired
C6=symbol displayed in overlay
when shot set
C9=symbol displayed in overlay
when shot fired
CB=cell colour in overlay
W1=colour of blank out left
side
W2=colour of blank out right
side
E$=symbols used for row grid
F$=symbols used for column grid
N=row ident of cell during
processing
N1=column ident of cell during
processing
V=number of shots for this move
```

Arrays are used to allow the same routines to work for any player or option by setting the appropriate parameter values before calling the routine.

The main arrays are ...

P(1,1,10,10) - a numeric array which retains the progressive results of the game

The cells are identified as follows:

```
1st param=player number
2nd param
   =0=left side of screen
   =1=right side of screen
3rd param=row number of grid
4th param=column number of grid
```

```
Contents of these cells are:
 0 = nothing in this cell
-1 = been hit, nothing there
1-5 = ship present, where ...
   1=carrier,
   2=battleship,
   3=cruiser,
   4=sub,
   5=destroyer
```

Each hit on a ship adds 10 to the value in the cell. A second hit on an empty cell adds -1 to the value in the cell.

K(1,5,2) is used to track progress of hits.

```
1st parameter is player number
2nd parameter is ship number
3rd parameter is tracking value
and all start equal to ship
value.
```

Subscript 0 is reduced by one for each hit during scoring.

Subscript 1 always equals ship point value.

Subscript 2 is reduced by one for each hit during the display of results.

F(1,5,5,1) is used for computer set up of shots, and records the cells containing ships as they are hit.

```
Param 1 is player number.
Param 2 is ship number.
Param 3 is shot number (hits).
Param 4 is cell ident where 0
is row number and 1 is column
number.
```

V(1,5,4) is used to retain the cells fired on for this move.

```
Param 1 is player number.
Param 2 is shot number.
Param 3 is data for each shot
where ...
subscript 0 is row number
subscript 1 is column number
subscript 2 is character from
P$()
subscript 3 is character from
B$()
subscript 4 is results of shot
which is value from P() array of
opponent.
```

NS(1) is number of shots available for each player for this move ...

```
subscript 0 is for player 1,
and 1 is for player 2
```

```
P$(1,1,10) is used for display
 param 1 is player number
 param 2 is side of screen
  0=left side 1=right side
 param 3 is row number
each string contains 10
characters, one for each column
```

```
B$(1,10) is the alternative
display during the set up of
shots
 param 1 is player number
 param 2 is row number
```

The other string arrays are used to space out the screen display.

The Listing:

```
1 '**  BATTLESHIPS THE GAME
       BY GEORGE MCLINTOCK
2 GOTO 10
3 SAVE"192:1":SAVE"192:3":END'GA
M
4 'A GAME FOR ONE OR TWO PLAYERS
    ON ONE OR TWO COMPUTERS
10 PCLEAR 1
20 GOTO 5710 'BATTLESHIPS
30 'ENTER SHOTS
40 PRINT@16," ENTER POSITION ";
50 A$=INKEY$:IF E=3 THEN 450
60 IF A$="" THEN 50
70 PRINT@16,V2$;:RETURN
80 V1=1:V2=1:D0=0:DX=0
90 IF V1>V THEN RETURN ELSE GOSU
B 40:IF DX<>0 THEN RETURN
100 IF A$=CHR$(8) THEN GOSUB 220
:GOTO 90 ELSE IF A$="@" THEN W=1
:PRINT@0,"COMPUTER TO TAKE OVER"
;
110 ON V2 GOSUB 120,140:GOTO 90
```

```
120 N=INSTR(E$,A$):IF N=0 THEN R
ETURN
130 PRINT@BA+N*B,B$(P,N);:V2=2:R
ETURN
140 N1=INSTR(F$,A$):IF N1=0 THEN
 RETURN
150 V(P,V1,0)=N:V(P,V1,1)=N1:V(P
,V1,2)=ASC(MID$(P$(P,Q,N),N1,1))
:V(P,V1,3)=ASC(MID$(B$(P,N),N1,1
))
160 IF V(P,V1,2)<>C1 THEN 540
170 MID$(P$(P,Q,N),N1)=B$:MID$(B
$(P,N),N1)=C$
180 PRINT@BA+N*B,P$(P,Q,N);
190 V1=V1+1:V2=1:IF V>1 THEN PRI
NT@485,V-V1+1;
200 RETURN
210 'BACKSPACE ENTRY
220 ON V2 GOTO 240,230
230 PRINT@BA+N*B,P$(P,Q,N);:V2=1
:RETURN
240 IF V1=1 THEN RETURN ELSE V1=
V1-1:IF V>1 THEN PRINT@485,V-V1+
1;
250 N=V(P,V1,0):N1=V(P,V1,1):MID
$(P$(P,Q,N),N1)=CHR$(V(P,V1,2)):
MID$(B$(P,N),N1)=CHR$(V(P,V1,3))
260 PRINT@BA+N*B,B$(P,N);:V2=2:R
ETURN
270 FOR X=0 TO 14:PRINT@X*B,W$(0
);:NEXT X:RETURN 'CLEAR LEFT
280 FOR X=0 TO 14:PRINT@X*B+16,W
$(1);:NEXT X:RETURN 'CLEAR RIGHT
290 PRINT@0,V1$;:PRINT@32,V3$; '
PRINT LEFT SCREEN
300 FOR X=1 TO 10:PRINT@B+X*B,H$
(0,X);P$(0,0,X);H$(1,X);:NEXT X
310 PRINT@12*B,V3$;:PRINT@13*B,V
1$;:PRINT@14*B,N3$;
320 RETURN
330 PRINT@16,V2$;:PRINT@48,V4$;
'PRINT RIGHT SCREEN
340 FOR X=1 TO 10:PRINT@48+X*B,H
$(2,X);P$(0,1,X);H$(3,X);:NEXT X
350 PRINT@48+11*B,V4$;:PRINT@48+
12*B,V2$;:PRINT@48+13*B,N4$;
360 RETURN
370 'CHECK NOT SAME CELL
380 IF P(P,1,V(P,V1,0),V(P,V1,1)
)<>0 THEN RETURN
390 IF V1=1 THEN V1=2:RETURN
400 FOR I=1 TO V1-1
410 IF V(P,I,0)=V(P,V1,0) AND V(
P,I,1)=V(P,V1,1) THEN I=V+V
420 NEXT I:IF I>V THEN RETURN
430 V1=V1+1:RETURN
440 'APPLY TIME LIMIT
450 IF (PEEK(M9) AND 1)=0 THEN 6
0
460 IF D0=0 THEN PRINT@0,"TIMING
";D1-D0;
470 D0=D0+1:IF (D0 AND 7)=7 THEN
 PRINT@6,USING"#####";D1-D0;
480 IF D0<D1 THEN 60
490 PRINT@0,"FIRING WHATS READY"
;
500 IF V2=2 THEN A$=CHR$(8):GOSU
B 220
510 V=V1-1:IF V<1 THEN V=1
520 DX=2:GOTO 70
530 'HAVE HIT BEFORE
540 GOSUB 270
550 PRINT@8*B,"HAS BEEN HIT";
560 PRINT@9*B+3,"BEFORE";
570 PRINT@11*B,"Y TO CONFIRM";
580 PRINT@12*B+2,"OR ENTER";
590 PRINT@13*B+5,"TO REDO";
600 A$=INKEY$:IF A$="" THEN 600
610 GOSUB 290
620 IF A$="Y" THEN 170 ELSE 90
630 'MAIN LOOP
640 CLEAR 2000
650 GOSUB 3950 'SETUP
660 IF DZ<>0 THEN PRINT@0,"OPTIO
NS DIFFERENT";
670 IF E>1 AND K1>1 THEN POKE M8
,0:FOR X=1 TO 1000:NEXT X
680 IF E=1 THEN 910 'SEQUENTIAL
690 IF K1=1 THEN 800 'SINGLE COM
P
700 'SIMULTANEOUS GAME
710 POKE M8,0:Q=1:P=0:V=NS(0)
720 GOSUB 1350:V(0,0,0)=V 'SET S
HOTS
725 IF PEEK(35)*256+PEEK(36) - P
EEK(33)*256+PEEK(34) <150 THEN E
XEC 46481
730 POKE M8,2:PRINT@480,"WAITING
";
740 IF (1 AND PEEK(M9))=0 THEN 7
40
750 IF K=1 THEN P=0:GOSUB 5380:G
OSUB 1760:P=1:GOSUB 1760:P=0 ELS
E P=1:GOSUB 1760:P=0:GOSUB 5380:
GOSUB 1760 'EXCHANGE
760 POKE M8,0 'OFF AGAIN
770 P=0:V=V(0,0,0):GOSUB 1520:P=
1:V=V(1,0,0):GOSUB 1520 'DISPLAY
780 GOTO 850
790 'SINGLE COMPUTER GAME
800 Q=1:P=0:V=NS(0)
810 GOSUB 1350:GOSUB 1760
820 P=1:V=NS(1):GOSUB 2540:GOSUB
 1760
830 P=0:V=NS(0):GOSUB 1520:P=1:V
=NS(1):GOSUB 1520
840 'CHECK RESULTS
850 P=0:GOSUB 1040:Y=A:P=1:GOSUB
 1040
860 IF A=0 AND Y=0 THEN P=0:CLS:
PRINT@260,"TIE  -  NO WINNER":GO
TO 2230
870 IF A=0 THEN P=1:GOTO 2220
880 IF Y=0 THEN P=0:GOTO 2220
890 GOTO 680
900 'SEQUENTIAL GAME
910 IF K=2 THEN 970
920 Q=1:P=0:V=NS(0)
930 GOSUB 1350 'SET SHOTS
940 GOSUB 1760 'SEND&SCORE
950 GOSUB 1520 'DISPLAY
960 GOSUB 1060:GOSUB 1040:IF A=0
 THEN 2220
970 P=1:V=NS(1)
980 IF K1=1 THEN GOSUB 2540 'SET
 SHOTS
990 GOSUB 1760 'SEND&SCORE
1000 GOSUB 1520 'DISPLAY
1010 GOSUB 1060:GOSUB 1040:IF A=
0 THEN 2220
1020 GOTO 920
1030 'TEST FOR WINNER
1040 A=0:FOR X=1 TO 5 'TEST IF W
ON
1050 A=A+K(P,X,0):NEXT X:RETURN
1060 'HOLD AS REQ
1070 IF XZ<>0 THEN PRINT@493,"AN
Y KEY TO CONT"; ELSE IF V=1 THEN
 1100 ELSE PRINT@480,"PAUSE";:FO
R X=1 TO 1000:NEXT X:GOTO 1090
1080 A$=INKEY$:IF A$="" THEN 108
0
1090 PRINT@480,W$;
1100 RETURN
1110 A$=INKEY$:IF A$="" THEN 111
0
1120 RETURN
1130 'OPTION TO REDO COMPUTER SE
T SHIPS
1140 P=0:GOSUB 3490
1150 GOSUB 290
1160 GOSUB 280
1170 PRINT@1*B+18,"COMPUTER SET"
;
1180 PRINT@2*B+19,"SHIPS ARE";
1190 PRINT@3*B+19,"DISPLAYED";
1200 PRINT@6*B+18,"PRESS ENTER";
1210 PRINT@7*B+19,"TO ACCEPT";
1220 PRINT@9*B+22,"OR C";
1230 PRINT@10*B+19,"TO CHANGE ";
1240 A$=INKEY$:IF A$="" THEN 124
0
1250 PRINT A$;:IF A$="C" THEN 13
00
1260 GOSUB 280
1270 GOSUB 330
1280 RETURN
1290 'REDO CUMPUTER SET SHIPS
1300 FOR X=1 TO 10:P$(0,0,X)=STR
ING$(10,C0):B$(P,X)=STRING$(10,C
B)
1310 FOR Y=1 TO 10:P(0,0,X,Y)=0
1320 NEXT Y,X
1330 GOTO 1140
1340 'SET UP YOUR SHOTS
1350 B$=CHR$(C3)
1360 IF V>1 THEN PRINT@480,"ENTE
R";V;"MORE SHOTS"; ELSE PRINT@48
0,"ENTER YOUR SHOT";
1370 IF W=1 THEN 1410
1380 GOSUB 80
1390 PRINT@480,W$;:RETURN
1400 'COMPUTER SET SHOTS AS PLAY
ER 1
1410 PRINT " BY COMPUTER";
1420 D0=V:V1=1:V=1
1430 FOR R=1 TO D0
1440 GOSUB 2550:V=V+1:N=V(P,V1-1
,0):N1=V(P,V1-1,1)
1450 MID$(P$(P,Q,N),N1)=B$:MID$(
B$(P,N),N1)=C$:PRINT@BA+N*B,P$(P
,Q,N);
1460 IF D0>1 THEN PRINT@485,D0-V
1+1;
1470 FOR I=1 TO 200:IF INKEY$="@
" THEN W=0:PRINT@0,N1$;" TO TAKE
 OVER";
1480 NEXT I
1490 NEXT R:V=D0
1500 GOTO 1390
1510 'DISPLAY RESULTS
1520 IF V=1 AND V(P,1,4)=0 THEN
1530 ELSE 1590
1540 FOR X=1 TO D2:NEXT X
1550 PRINT@480,W$;
1560 IF P=0 THEN PRINT@480,"YOU
MISSED"; ELSE PRINT@480,"ENEMY M
ISSES";
1570 FOR X=1 TO D2:NEXT X
1580 PRINT@480,W$;
1590 GOTO 1730
1600 PRINT@P*16+3,"RESULTS OF";:
V=V(P,0,0)
1610 IF P=0 THEN PRINT @1*B+3,"Y
OUR SHOTS"; ELSE PRINT @1*B+18,"
ENEMY SHOTS";
1620 T=3:FOR X=1 TO V:IF T>12 TH
EN T=0:PRINT@P*16,W$(P);:PRINT@B
+P*16,W$(P);
1630 PRINT@P*16+T*B,MID$(E$,V(P,
X,0),1);V(P,X,1)-1;" ";
1640 IF V(P,X,4)<>0 THEN PRINT "
HIT"; ELSE PRINT "MISSED";:GOTO
1700
1650 A=V(P,X,4):T=T+1
1660 IF A<1 OR A>5 THEN PRINT@P*
16+T*B+4,"WRECKAGE";:GOTO 1700
1670 PRINT@P*16+T*B+2,T1$(A);:T=
T+1
1680 K(P,A,2)=K(P,A,2)-1
1690 IF K(P,A,2)<1 THEN PRINT@P*
16+T*B+5,"SUNK"; ELSE PRINT@ P*1
6+T*B+1,K(P,A,2);"MORE TO SINK";
1700 T=T+1:NEXT X
1710 IF XZ<>0 THEN GOSUB 1060 EL
SE FOR X=1 TO 1000:NEXT X
1720 PRINT@480,W$;
1730 GOSUB 290:GOSUB 330
1740 RETURN
1750 'EXCHANGE SHOTS AND SCORE
1760 IF P=0 THEN T=1 ELSE T=0
1770 PRINT@480,W$;:IF P=0 THEN P
RINT@480,"FIRING NOW"; ELSE PRIN
T@480,"INCOMING FIRE";
1780 IF K1=1 THEN 2050
1790 IF P=1 THEN 1940
```

```
1800 'IS PLAYER 1 THIS COMPUTER
1810 MID$(J$,1)=CHR$(V)
1820 FOR X=1 TO V:Y=X-1
1830 MID$(J$,1+Y*3+1)=CHR$(V(P,X
,0))
1840 MID$(J$,1+Y*3+2)=CHR$(V(P,X
,1))
1850 NEXT X
1860 J$=USR(J$) 'SEND IT
1870 K$=USR1(K$) 'GET RESULT ALT
ER TO K$ ?
1880 R=ASC(MID$(K$,1,1))
1890 FOR X=1 TO R:Y=X-1
1900 V(P,X,4)=ASC(MID$(K$,1+Y*3+
3)):IF V(P,X,4)=255 THEN V(P,X,4
)=-1
1910 NEXT X
1920 GOTO 2080
1930 'GET STRING PLAYER OTHER CO
MPUTER IS PLAYER 2 THIS ONE
1940 K$=USR1(K$) 'GET IT
1950 PRINT " NOW";
1960 R=ASC(MID$(K$,1,1)):V(1,0,0
)=R
1970 FOR X=1 TO R:Y=X-1
1980 V(P,X,0)=ASC(MID$(K$,1+Y*3+
1))
1990 V(P,X,1)=ASC(MID$(K$,1+Y*3+
2))
2000 V(P,X,4)=P(T,0,V(P,X,0),V(P
,X,1)):IF V(P,X,4)<0 THEN V(P,X,
4)=255
2010 MID$(K$,1+Y*3+3)=CHR$(V(P,X
,4))
2020 NEXT X
2030 K$=USR(K$)
2040 GOTO 2080
2050 V(P,0,0)=V:FOR X=1 TO V
2060 V(P,X,4)=P(T,0,V(P,X,0),V(P
,X,1))
2070 NEXT X:R=V
2080 FOR X=1 TO R
2090 A=V(P,X,4)
2100 N=V(P,X,0):N1=V(P,X,1)
2110 IF A>0 THEN Y=10 ELSE Y=-1
2120 P(T,0,N,N1)=P(T,0,N,N1)+Y
2130 P(P,1,N,N1)=P(P,1,N,N1)+Y+A
2140 IF A>5 THEN A$=MID$(P$(P,1,
N),N1,1) ELSE IF A>0 THEN A$=CHR
$(ASC(LEFT$(T$(A),1))+32) ELSE A
$=CHR$(C2)
2150 MID$(P$(P,1,N),N1)=A$
2160 MID$(P$(T,0,N),N1)=A$
2170 IF A>0 AND A<6 THEN MID$(B$
(P,N),N1)=A$ ELSE MID$(B$(P,N),N
1)=C1$
2180 IF A>0 AND A<6 THEN K(P,A,0
)=K(P,A,0)-1:Y=K(P,A,1)-K(P,A,0)
:F(P,A,Y,0)=N:F(P,A,Y,1)=N1:IF G
=3 THEN IF K(P,A,0)<1 THEN NS(T)
=NS(T)-1
2190 NEXT X
2200 RETURN
2210 'SOMEONES WON
2220 CLS:IF P=0 THEN PRINT@268,"
YOU WIN" ELSE PRINT@268,"YOU LOS
E"
2230 D0=XZ:IF K1=2 THEN POKE M8,
2 'TURN ON
2240 PRINT:PRINT" PRESS ENTER TO
 SEE":PRINT" ENEMY POSITION":GOS
UB 1110
2250 CLS:PRINT N2$;
2260 PRINT"'S POSITION"
2270 FOR X=1 TO 10
2280 PRINT H$(0,X);P$(1,0,X);H$(
1,X);H$(2,X);P$(1,1,X);H$(3,X);
2290 NEXT X
2300 PRINT N4$;N3$;
2310 PRINT:PRINT"ENTER TO CONTIN
UE OR":PRINT"R TO RE-DISPLAY YOU
R SCREEN";:GOSUB 1110
2320 IF A$<>"R" THEN 2340
2330 CLS:GOSUB 290:GOSUB 330:XZ=
1:GOSUB 1070:CLS:GOTO 2240
2340 CLS:PRINT "ANOTHER GAME WIT
H SAME OPTIONS  (Y/N)";
2350 GOSUB 1080:IF A$<>"Y" THEN
STOP
2360 '
2370 CLS:PRINT "RESETTING ARRAYS
 FOR NEW GAME":XZ=D0:EXEC 46481
2380 FOR T=0 TO 1:FOR A=0 TO 1:F
OR X=1 TO 10:FOR Y=1 TO 10
2390 P(T,A,X,Y)=0:NEXT Y,X,A,T
2400 FOR T=0 TO 1:FOR A=1 TO 5:F
OR X=1 TO 5:FOR Y=0 TO 1
2410 F(T,A,X,Y)=0:NEXT Y,X,A,T
2420 FOR X=0 TO 1:T=5
2430 FOR Y=1 TO 5:FOR A=0 TO 2:K
(X,Y,A)=T:NEXT A
2440 T=T-1:IF Y=3 THEN T=T+1
2450 NEXT Y,X
2460 P$(0,0,1)=STRING$(10,C0):P$
(0,1,1)=STRING$(10,C1)
2470 P$(1,0,1)=P$(0,0,1):P$(1,1,
1)=P$(0,1,1)
2480 B$(0,1)=STRING$(10,CB):B$(1
,1)=B$(0,1)
2490 FOR Y=2 TO 10:FOR X=0 TO 1
2500 P$(X,0,Y)=P$(0,0,1):P$(X,1,
Y)=P$(0,1,1):B$(X,Y)=B$(0,1)
2510 NEXT X,Y:IF G=1 THEN NS(0)=
1:NS(1)=1 ELSE NS(0)=5:NS(1)=5
2520 GOSUB 4650:GOTO 660
2530 'COMPUTER SET UP SHOTS
2540 V1=1
2550 FOR X=5 TO 1 STEP -1:T=0
2560 IF K(P,X,0)=K(P,X,1) THEN 2
820 'NOT FOUND YET
2570 IF K(P,X,0)=0 THEN 2820 'SU
NK
2580 N=F(P,X,1,0):N1=F(P,X,1,1)
'FIRST SHOT
2590 IF F(P,X,2,0) = 0 THEN 3140
 'NO DIRECTION YET
2600 IF F(P,X,2,1)=F(P,X,1,1) TH
EN 2900'GOING VERTICAL
2610 FOR Y=N1 TO 10 'GOING HORIZ
ONTAL
2620 IF P(P,1,N,Y)=0 THEN 2650
2630 IF P(P,1,N,Y)<0 THEN T=0:GO
TO 2670
2640 NEXT Y:GOTO 2670
2650 V(P,V1,0)=N:V(P,V1,1)=Y:T=Y
2660 GOSUB 380:IF V1>V THEN RETU
RN
2670 FOR Y=N1 TO 1 STEP -1
2680 IF P(P,1,N,Y)=0 THEN 2710
2690 IF P(P,1,N,Y)<0 THEN Y=0:GO
TO 2730
2700 NEXT Y:Y=0:GOTO 2730
2710 V(P,V1,0)=N:V(P,V1,1)=Y
2720 GOSUB 380:IF V1>V THEN RETU
RN
2730 IF K(P,X,0)<2 THEN 2820
2740 IF T>0 AND T<10 THEN V(P,V1
,0)=N:V(P,V1,1)=T+1:GOSUB 380:IF
 V1>V THEN RETURN
2750 IF Y>1 THEN V(P,V1,0)=N:V(P
,V1,1)=Y-1:GOSUB 380:IF V1>V THE
N RETURN
2760 IF K(P,X,0)=2 THEN 2820
2770 IF T>0 AND T<9 THEN V(P,V1,
0)=N:V(P,V1,1)=T+2:GOSUB 380:IF
V1>V THEN RETURN
2780 IF Y>2 THEN V(P,V1,0)=N:V(P
,V1,1)=Y-2:GOSUB 380:IF V1>V THE
N RETURN
2790 IF K(P,X,0)=3 THEN 2820
2800 IF T>0 AND T<8 THEN V(P,V1,
0)=N:V(P,V1,1)=T+3:GOSUB 380:IF
V1>V THEN RETURN
2810 IF Y>3 THEN V(P,V1,0)=N:V(P
,V1,1)=Y-3:GOSUB 380:IF V1>V THE
N RETURN
2820 NEXT X
2830 'DO RANDOM SHOTS
2840 N=RND(10):N1=RND(10)
2850 IF P(P,1,N,N1)<>0 THEN 2840
2860 V(P,V1,0)=N:V(P,V1,1)=N1
2870 GOSUB 380:IF V1>V THEN RETU
RN
2880 GOTO 2840
2890 'SHIP GOING VERTICAL
2900 FOR Y=N TO 10
2910 IF P(P,1,Y,N1)=0 THEN 2940
2920 IF P(P,1,Y,N1)<0 THEN T=0:G
OTO 2960
2930 NEXT Y:GOTO 2960
2940 V(P,V1,0)=Y:V(P,V1,1)=N1:T=
Y
2950 GOSUB 380:IF V1>V THEN RETU
RN
2960 FOR Y=N TO 1 STEP -1
2970 IF P(P,1,Y,N1)=0 THEN 3000
2980 IF P(P,1,Y,N1)<0 THEN Y=0:G
OTO 3020
2990 NEXT Y:Y=0:GOTO 3020
3000 V(P,V1,0)=Y:V(P,V1,1)=N1
3010 GOSUB 380:IF V1>V THEN RETU
RN
3020 IF K(P,X,0)<2 THEN 2820
3030 IF T>0 AND T<10 THEN V(P,V1
,0)=T+1:V(P,V1,1)=N1:GOSUB 380:I
F V1>V THEN RETURN
3040 IF Y>1 THEN V(P,V1,0)=Y-1:V
(P,V1,1)=N1:GOSUB 380:IF V1>V TH
EN RETURN
3050 IF K(P,X,0)=2 THEN 2820
3060 IF T>0 AND T<9 THEN V(P,V1,
0)=T+2:V(P,V1,1)=N1:GOSUB 380:IF
 V1>V THEN RETURN
3070 IF Y>2 THEN V(P,V1,0)=Y-2:V
(P,V1,1)=N1:GOSUB 380:IF V1>V TH
EN RETURN
3080 IF K(P,X,0)=3 THEN 2820
3090 IF T>0 AND T<8 THEN V(P,V1,
0)=T+3:V(P,V1,1)=N1:GOSUB 380:IF
 V1>V THEN RETURN
3100 IF Y>3 THEN V(P,V1,0)=Y-3:V
(P,V1,1)=N1:GOSUB 380:IF V1>V TH
EN RETURN
3110 GOTO 2820
3120 'ONLY ONE HIT
3130 'TEST IF RESTRICTED
3140 A=0:IF N=10 THEN 3160 ELSE
FOR Y=N+1 TO 10:IF P(P,1,Y,N1)<>
0 THEN 3160
3150 A=A+1:NEXT Y
3160 IF N=1 THEN 3180 ELSE FOR Y
=N-1 TO 1 STEP -1:IF P(P,1,Y,N1)
<>0 THEN 3180
3170 A=A+1:NEXT Y
3180 IF A<K(P,X,0) THEN 2610 'HO
RIZ
3190 A=0:IF N1=10 THEN 3210 ELSE
 FOR Y=N1+1 TO 10:IF P(P,1,N,Y)<
>0 THEN 3210
3200 A=A+1:NEXT Y
3210 IF N1=1 THEN 3230 ELSE FOR
Y=N1-1 TO 1 STEP -1:IF P(P,1,N,Y
)<>0 THEN 3230
3220 A=A+1:NEXT Y
3230 IF A<K(P,X,0) THEN 2900
3240 'RANDOM AROUND
3250 T=RND(4):Y=0
3260 ON T GOTO 3270,3320,3370,34
```

```
20
3270 Y=Y+1:IF Y>4 THEN 2820
3280 IF N>9 THEN 3320
3290 IF P(P,1,N+1,N1)<>0 THEN 33
20
3300 V(P,V1,0)=N+1:V(P,V1,1)=N1
3310 GOSUB 380:IF V1>V THEN RETU
RN
3320 Y=Y+1:IF Y>4 THEN 2820
3330 IF N1>9 THEN 3370
3340 IF P(P,1,N,N1+1)<>0 THEN 33
70
3350 V(P,V1,0)=N:V(P,V1,1)=N1+1
3360 GOSUB 380:IF V1>V THEN RETU
RN
3370 Y=Y+1:IF Y>4 THEN 2820
3380 IF N<2 THEN 3420
3390 IF P(P,1,N-1,N1)<>0 THEN 34
20
3400 V(P,V1,0)=N-1:V(P,V1,1)=N1
3410 GOSUB 380:IF V1>V THEN RETU
RN
3420 Y=Y+1:IF Y>4 THEN 2820
3430 IF N1<2 THEN 3270
3440 IF P(P,1,N,N1-1)<>0 THEN 32
70
3450 V(P,V1,0)=N:V(P,V1,1)=N1-1
3460 GOSUB 380:IF V1>V THEN RETU
RN
3470 GOTO 3270
3480 'COMPUTER SETUP SHIPS
3490 FOR X=1 TO 5:V=LEN(T$(X))
3500 N=RND(10):N1=RND(10):T=RND(
4):Z=N:Z1=N1
3510 ON T GOTO 3520,3650,3760,38
50
3520 IF 10-N1 < V THEN 3760
3530 IF P(P,0,N,N1+V)<>0 THEN 35
00
3540 IF N1>1 THEN IF P(P,0,N,N1-
1)<>0 THEN 3500
3550 FOR Y=0 TO V-1
3560 IF P(P,0,N,Y+N1)<>0 THEN 35
00
3570 IF N>1 THEN IF P(P,0,N-1,Y+
N1)<>0 THEN 3500
3580 IF N<10 THEN IF P(P,0,N+1,Y
+N1)<>0 THEN 3500
3590 NEXT Y
3600 MID$(P$(P,0,N),N1)=T$(X)
3610 FOR Y=0 TO V-1
3620 P(P,0,N,Y+N1)=X
3630 NEXT Y
3640 GOTO 3940
3650 IF 10-N<V THEN 3850
3660 IF P(P,0,N+V,N1)<>0 THEN 35
00
3670 IF N>1 THEN IF P(P,0,N-1,N1
)<>0 THEN 3500
3680 FOR Y=0 TO V-1
3690 IF P(P,0,N+Y,N1)<>0 THEN 35
00
3700 IF N1>1 THEN IF P(P,0,N+Y,N
1-1)<>0 THEN 3500
3710 IF N1<10 THEN IF P(P,0,N+Y,
N1+1)<>0 THEN 3500
3720 NEXT Y
3730 FOR Y=0 TO V-1:MID$(P$(P,0,
N+Y),N1)=LEFT$(T$(X),1)
3740 P(P,0,N+Y,N1)=X
3750 NEXT Y:GOTO 3940
3760 IF N1<V THEN 3520
3770 N1=N1-V:IF N1<1 THEN N1=1
3780 IF N1+V<=10 THEN IF P(P,0,N
,N1+V)<>0 THEN 3500
3790 IF P(P,0,N,N1-1)<>0 THEN 35
00
3800 FOR Y=0 TO V-1
3810 IF P(P,0,N,Y+N1)<>0 THEN 35
00
3820 IF N>1 THEN IF P(P,0,N-1,Y+
N1)<>0 THEN 3500
3830 IF N<10 THEN IF P(P,0,N+1,Y
+N1)<>0 THEN 3500
3840 NEXT Y:GOTO 3600
3850 IF N<V THEN 3650
3860 N=N-V:IF N<1 THEN N=1
3870 IF N+V<=10 THEN IF P(P,0,N+
V,N1)<>0 THEN 3500
3880 IF P(P,0,N-1,N1)<>0 THEN 35
00
3890 FOR Y=0 TO V-1
3900 IF P(P,0,N+Y,N1)<>0 THEN 35
00
3910 IF N1>1 THEN IF P(P,0,N+Y,N
1-1)<>0 THEN 3500
3920 IF N1<10 THEN IF P(P,0,N+Y,
N1+1)<>0 THEN 3500
3930 NEXT Y:GOTO 3730
3940 NEXT X:RETURN
3950 CLS:PRINT@10,"BATTLESHIPS"
3960 PRINT@38,"BY GEORGE MCLINTO
CK"
3970 PRINT:PRINT TAB(6);"THE TRA
DITIONAL GAME":PRINT TAB(5);"WHI
CH CAN BE PLAYED BY"
```

IN THE LAND OF MATHMATICS

MODULAR ARITHMETIC

by ANDREW HART

UTILITY

HERE'S A program that will convert any number from one base to another.

When you run the program, you will be asked to input the base of the number being converted.

Valid responses to this prompt include any integer between 1 and 37 exclusive. Make a similar response to the next prompt.

The "number to be converted" may be up to 32 digits in length. Appropriate safe-guards against ?OV errors and ?OS errors have been inserted into the program so there should be no problems with these two types of errors.

Now for a quick summary of how the program works.

After the user has input the relevant data, the program first checks that the "number to be converted" is in the correct base. If not, you will be informed and asked to re-enter the number.

Next, the number is converted into base ten, and then into the base defined by the user at the second prompt.

I hope that some of you will find this program useful, particularly in your programming.

Note: future Ideas

I am hoping to write a Basic program that will add and subtract using two's compliment binary arithmatic. This should be handy to anyone getting into assembly language programming.

The Listing:

```
0 GOTO2
1 SAVE"176:1":SAVE"176:3":END'UT
L
2 ' ****************************
4 ' MODULAR CONVERTION PROGRAMME
6 ' BY A G HART
8 ' ****************************
10 CLS
20 CLEAR 256
30 PRINT TAB(2);"MODULAR CONVERT
ION PROGRAMME":PRINT:PRINTTAB(11
);"BY A G HART"
40 PRINT:PRINT
50 K$="0123456789ABCDEFGHIJKLMNO
PQRSTUVWXYZ"
60 INPUT"CONVERT FROM WHICH BASE
";F
70 IF F<2 OR F>36 THEN PRINT"BAS
E MUST BE FROM 2 TO 36":GOTO 60
80 INPUT"CONVERT TO WHICH BASE";
T
90 IF T<2 OR T>36 THEN PRINT"BAS
E MUST BE FROM 2 TO 36":GOTO 80
100 INPUT"CONVERT WHAT NUMBER";N
$
110 IF LEN(N$)>30 THEN PRINT"YOU
 ARE LIMITED TO 30 DIGITS":GOTO
100
120 PRINT:PRINT"CALCULATING ..."
130 PRINT
140 FOR I=1 TO LEN(N$)
150 IF MID$(N$,I,1)<"0" OR MID$(
N$,I,1)>MID$(K$,F,1) THEN A=1
160 NEXTI
170 IF A=1 THEN PRINT"NUMBER MUS
T BE IN BASE";F:GOTO 100
180 D=0:B=1:A=0
190 FOR I=LEN(N$) TO 1 STEP -1
200 D=D+B*(INSTR(K$,MID$(N$,I,1)
)-1)
210 IF D>1E+30 THEN I=0:A=1
220 B=B*F
230 NEXTI
240 IF A=1 THEN 340
250 R=D-INT(D/T)*T:D=INT(D/T)
260 IF INSTR(STR$(R),".")>0 OR I
NSTR(STR$(R),"E")>0 THEN 340
270 C$=MID$(K$,R+1,1)+C$
280 IF D>0 THEN 250
290 PRINTN$:PRINT"IN BASE";F:PRI
NT"=":PRINTC$:PRINT"IN BASE";T
300 PRINT
310 PRINT "ANOTHER NUMBER, (Y/N)
?"
320 A$=INKEY$:IF A$="Y" THEN 10
ELSE IF A$<>"N" THEN 320
330 CLS:END
340 PRINT"THE NUMBER YOU HAVE CH
OSEN IS":PRINT"UNCALCULABLE BY T
HIS PROGRAMME.":GOTO 300
```

```
3980 PRINT TAB(7);"ONE OR TWO PL
AYERS":PRINT TAB(3);"USING ONE O
R TWO COMPUTERS"
3990 PRINT:PRINT TAB(11);"SETTIN
G UP"
4000 POKE &HFF20,2
4010 DIM P$(1,1,10),V(1,5,4),F(1
,5,5,1),P(1,1,10,10),B$(1,10),K(
1,5,2),H$(3,10),W$(1),NS(1)
4020 DIM P,X,Y,N,N1,V1,V,A$,BA,B
:X=RND(-TIMER)
4030 C0=191:C1=175 'LEFT & RIGHT
 SIDE
4040 C2=159:C3=153 'WHEN FIRED &
 WHEN SET
4050 W1=32:W2=32
4060 B=32:B1=35:B2=51:BA=52
4070 CB=128:C$="-":C1$="+":C6=AS
C(C$):C9=ASC(C1$) 'ALTERNATE
4080 C7=128:C8=ASC("-") 'VERTICA
L & HORIZONTAL
4090 P$(0,0,1)=STRING$(10,C0):P$
(0,1,1)=STRING$(10,C1)
4100 P$(1,0,1)=P$(0,0,1):P$(1,1,
1)=P$(0,1,1)
4110 B$(0,1)=STRING$(10,CB):B$(1
,1)=B$(0,1)
4120 FOR Y=2 TO 10
4130 FOR X=0 TO 1
4140 P$(X,0,Y)=P$(0,0,1):P$(X,1,
Y)=P$(0,1,1):B$(X,Y)=B$(0,1)
4150 NEXT X,Y
4160 E$="ABCDEFGHIJ":F$="0123456
789"
4170 W$(0)=STRING$(16,W1):W$(1)=
STRING$(16,W2):W$=STRING$(31,32)
4180 J$=STRING$(16,32):K$=J$
4190 T$(1)="AAAAA":T1$(1)="CARRI
ER":T2$(1)=STRING$(10,175):T2$(0
)=STRING$(10,191)
4200 T$(2)="BBBB":T1$(2)="BATTLE
SHIP":T2$(2)=STRING$(10,207)
4210 T$(3)="CCC":T1$(3)="CRUISER
":T2$(3)=STRING$(10,223)
4220 T$(4)="SSS":T1$(4)="SUBMARI
NE":T2$(4)=STRING$(10,239)
4230 T$(5)="DD":T1$(5)="DISTROYE
R":T2$(5)=STRING$(10,255)
4240 FOR X=0 TO 1:T=5
4250 FOR Y=1 TO 5:K(X,Y,0)=T:K(X
,Y,1)=T:K(X,Y,2)=T
4260 T=T-1:IF Y=3 THEN T=T+1
4270 NEXT Y,X
4280 'SET UP REST DISPLAY
4290 V1$=STRING$(15,C8)+CHR$(C7)
:V2$=CHR$(C7)+STRING$(15,C8)
4300 N3$=STRING$(16,32):N4$=N3$
4310 V3$="  "+F$+"    "+CHR$(C7):
V4$=CHR$(C7)+"    "+F$+"  "
4320 FOR X=1 TO 10:A$=MID$(E$,X,
1)
4330 H$(0,X)=" "+A$
4340 H$(1,X)=A$+"  "+CHR$(C7)
4350 H$(2,X)=CHR$(C7)+"  "+A$
4360 H$(3,X)=A$+" "
4370 NEXT X
4380 A=PEEK(27)*256+PEEK(28)-150
4390 DEFUSR0=A
4400 DEFUSR1=A+&H77
4410 M8=&HFF20:M9=&HFF22
4420 POKE M8,2
4430 D1=100:D2=500:D3=1000 'TIME
 DELAYS
4440 PRINT@486,"INSTRUCTIONS (Y/
N) ?";:GOSUB 1080:IF A$="Y" THEN
 GOSUB 5410
4450 CLS:PRINT"ENTER NUMBER OF C
OMPUTERS":GOSUB 1110
4460 IF A$="2" THEN K1=2 ELSE K1
=1
4470 IF K1=1 THEN K=1:GOTO 4500
4480 PRINT:PRINT"ENTER THIS COMP
UTER NUMBER (1/2)":GOSUB 1110
4490 IF A$="1" THEN K=1 ELSE IF
A$="2" THEN K=2 ELSE PRINT "INVA
LID":GOTO 4480
4500 PRINT"ENTER YOUR NAME"
4510 INPUT N1$
4520 IF K1=1 THEN N2$="COMPUTER"
4530 PRINT "ENTER C IF COMPUTER
IS TO PLAY  PLAYER 1":INPUT "OR
PRESS ENTER";A$:IF A$="C" THEN W
=1 ELSE W=0
4540 PRINT"ENTER TO PAUSE AFTER
EACH MOVE":INPUT "NON ZERO TO HA
LT";XZ
4550 CLS:PRINT"GAME OPTIONS ARE"
4560 PRINT"1 NORMAL BATTLESHIPS"
4570 PRINT"2 SALVOS":PRINT"3 ADV
ANCED SALVOS"
4580 GOSUB 1110:IF A$="3" THEN G
=3 ELSE IF A$="2" THEN G=2 ELSE
G=1
4590 IF G=1 THEN NS(0)=1:NS(1)=1
 ELSE NS(0)=5:NS(1)=5
4600 PRINT:PRINT"EXCHANGE SEQUEN
CES ARE"
4610 PRINT"1 SEQUENTIAL":PRINT"2
 SIMULTANEOUS":PRINT"3 SIMULTANE
OUS WITH TIME LIMIT"
4620 GOSUB 1110:IF A$="3" THEN E
=3 ELSE IF A$="2" THEN E=2 ELSE
E=1
4630 IF K1=1 AND E=3 THEN PRINT
"NOT ALLOWED":GOTO 4600
4640 IF E=3 THEN PRINT:PRINT "TI
ME LIMIT IS";D1:PRINT "PRESS ENT
ER TO ACCEPT":INPUT "OR ENTER NE
W TIME";A:IF A<>0 THEN D1=A
4650 GOSUB 4920
4660 IF K1=1 THEN 4880
4670 PRINT:PRINT "TESTING COMPUT
ER CONNECTIONS"
4680 POKE M8,0 'OFF
4690 IF (PEEK(M9) AND 1)=0 THEN
FOR X=1 TO 500:NEXT X:GOTO 4720
4700 X=0:PRINT "OTHER COMPUTER N
OT READY"
4710 IF (PEEK(M9) AND 1)=1 THEN
X=X+1:IF X<2000 THEN 4710 ELSE 4
700
4720 POKE M8,2
4730 X=0:PRINT "WAITING FOR OTHE
R COMPUTER TO   ACKNOWLEDGE"
4740 IF (PEEK(M9) AND 1)=0 THEN
X=X+1:IF X<2000 THEN 4740 ELSE 4
730
4750 CLS:PRINT"CONNECTION OK"
4760 IF K=1 THEN 4820
4770 A$=USR1(A$) 'IS COMP 2 GET
FROM COMP 1
4780 N2$=MID$(A$,3)+"":X=ASC(LEF
T$(A$,1)):Y=ASC(MID$(A$,2,1))
4790 A$=CHR$(G)+CHR$(E)+N1$
4800 A$=USR(A$) 'SEND IT
4810 GOTO 4860
4820 FOR X=1 TO 1000:NEXT X 'COM
PUTER 1
4830 A$=CHR$(G)+CHR$(E)+N1$:A$=U
SR(A$) 'SEND
4840 A$=USR1(A$) 'GET OTHER
4850 N2$=MID$(A$,3)+"":X=ASC(LEF
T$(A$,1)):Y=ASC(MID$(A$,2,1))
4860 IF E=1 AND Y<>1 THEN PRINT
"EXCHANGE SEQUENCE NOT COMPATABL
E":STOP
4870 IF E <> Y OR G<>X THEN DZ=1
4880 MID$(N3$,INT((16-LEN(N1$))/
2))=N1$
4890 MID$(N4$,INT((16-LEN(N2$))/
2))=N2$
4900 GOTO 5250
4910 'MAKE SUBROUTINE
4920 CLS:PRINT "SETTING UP SHIPS
"
4930 IF K1=1 THEN PRINT "SETTING
 UP PLAYER 2'S SHIPS":P=1:GOSUB
3490
4940 IF W>0 THEN PRINT "SETTING
UP SHIPS FOR COMPUTER ASPLAYER 1
":P=0:GOSUB 3490:GOTO 5250
4950 PRINT "ENTER  C  FOR COMPUT
ER TO SET UPYOUR SHIPS":INPUT "O
R PRESS ENTER TO DO IT YOURSELF"
;A$
4960 IF A$="C" THEN GOSUB 1140:R
ETURN
4970 'SET UP OWN SHIPS
4980 CLS:PRINT@82,"SETUP SHIPS";
:PRINT@146,"ENTER YOUR";:GOSUB 2
90
4990 BA=34:Z=E:E=1:T=C1:C1=C0:P=
0:Q=0
5000 FOR Y=1 TO 5
5010 PRINT@210,T1$(Y);
5020 B$=LEFT$(T$(Y),1):C$=B$:V=L
EN(T$(Y))
5030 PRINT@480,"ENTER";V;"CELLS"
;
5040 GOSUB 80
5050 PRINT@480,W$;
5060 PRINT@210,"CHECKING IT";
5070 IF V(0,1,0)=V(0,2,0) THEN N
=1:N1=0 ELSE N=0:N1=1 'HOR VERT
5080 FOR X=2 TO V:IF V(0,X,N1)<>
V(0,1,N1) THEN QA=1:GOTO 5290
5090 NEXT X
5100 A$="":FOR X=1 TO V:A$=A$+ST
R$(V(0,X,N))+" ":NEXT X
5110 FOR X=1 TO 10:IF INSTR(A$,S
TR$(X)+" ")<>0 THEN 5130
5120 NEXT X:QA=2:GOTO 5290
5130 IF X+V>11 THEN QA=3:GOTO 52
90
5140 QB=X:FOR X=X TO X+V-1:IF IN
STR(A$,STR$(X)+" ")=0 THEN QA=4:
QC=X:GOTO 5290
5150 NEXT X
5160 FOR X=1 TO V
5170 IF P(0,0,V(0,X,0),V(0,X,1))
<>0 THEN QA=5:GOTO 5290
5180 NEXT X
5190 FOR X=1 TO V
5200 P(0,0,V(0,X,0),V(0,X,1))=Y
5210 NEXT X
5220 PRINT@272,W$(1);:PRINT@304,
W$(1);:PRINT@208,W$(1);
5230 GOSUB 290:NEXT Y
5240 BA=52:E=Z:C1=T:RETURN
5250 GOSUB 290:GOSUB 330
5260 FOR X=1 TO 10:B$(0,X)=STRIN
G$(10,CB):NEXT X:C$=CHR$(C6)
5270 V(0,1,0)=1:V(0,1,1)=1 'IN C
ASE
5280 RETURN
5290 PRINT@272,"INVALID";:PRINT@
304,"TRY AGAIN";
5300 Z$=A$
5310 FOR X=1 TO V
5320 MID$(P$(0,0,V(0,X,0)),V(0,X
,1))=CHR$(V(0,X,2))
5330 MID$(B$(0,V(0,X,0)),V(0,X,1
))=CHR$(V(0,X,3))
5340 NEXT X:PRINT@210,W$;
5350 GOSUB 290:GOTO 5010
5360 PRINT@480,"ANY KEY TO CONTI
NUE";
5370 GOTO 1080
5380 FOR X=1 TO 1000:NEXT X:RETU
RN
5390 IF DX<>0 THEN FOR X=1 TO 50
00:NEXT X
5400 RETURN
5410 CLS:PRINT "GAME REQUIRES TW
O PLAYERS. EACH PLAYER SETS UP 5
 SHIPS ON A     10X10 GRID, AND
THEN FIRES SHOTSAT HIS OPPONENTS
 GRID UNTIL ALL SHIPS ARE SUNK"
5420 PRINT:PRINT "THE PLAYER WHO
 SINKS ALL HIS     ENEMY'S SHIPS
FIRST WINS THE     GAME"
5430 GOSUB 5360:CLS
5440 PRINT "FOR THE ONE COMPUTER
 GAME":PRINT"THE COMPUTER PLAYS
FOR THE       SECOND PLAYER"
5450 PRINT:PRINT"FOR THE TWO COM
PUTER GAME, THE  COMPUTERS MUST
```

BICENTENNIAL

by ANDREW GREEN

GRAPHICS

THIS WAS ORIGINALLY written by a friend who owns an MSX computer. I ended up getting his permission to re-write the program for the humble 'ol CoCo.

It plays the Australian Anthem as well.

Have fun!

The Listing:

```
0 GOTO 10
1 '******************
2 '*  BICENT  WAS  *
3 '*    CREATED    *
4 '*      BY       *
5 '* ANDREW GREEN  *
6 '*   OF  TAREE   *
7 '*    1/2/'88    *
8 '******************
9 SAVE"185A:1":SAVE"185A:3":END'
GRF
10 CLS 0
20 PRINT@102,"BICENTENNIAL PICTU
RE";
30 PRINT@171,"CREATED BY";
40 PRINT@234,"ANDREW GREEN";
50 PRINT@299,"(C) 1/2/88";
60 PMODE 4,1:PCLS1
70 COLOR 0,1
80 '
90 LINE(70,15)-(25,115),PSET
100 LINE(80,15)-(35,125),PSET
110 LINE(70,15)-(80,15),PSET
120 LINE(25,115)-(35,125),PSET:P
AINT(72,20)
130 LINE(85,15)-(40,130),PSET
140 LINE(90,15)-(45,135),PSET
150 LINE(85,15)-(90,15),PSET
160 LINE(40,130)-(45,135),PSET
170 LINE(100,15)-(55,145),PSET
180 LINE(115,15)-(70,160),PSET
190 LINE(100,15)-(115,15),PSET
200 LINE(55,145)-(70,160),PSET:P
AINT(101,16)
210 LINE(120,15)-(91,105),PSET
220 LINE(155,45)-(131,140),PSET
230 LINE(120,15)-(155,45),PSET
240 LINE(91,105)-(131,140),PSET:
PAINT(121,20)
250 LINE(136,145)-(170,0),PSET
260 LINE(151,160)-(180,35),PSET
270 LINE(136,145)-(151,160),PSET
280 LINE(170,0)-(180,35),PSET:PA
INT(145,130)
290 LINE(156,165)-(185,43),PSET
300 LINE(161,170)-(189,55),PSET
310 LINE(156,165)-(161,170),PSET
320 LINE(185,43)-(189,55),PSET
330 LINE(171,180)-(198,69),PSET
340 LINE(181,190)-(205,85),PSET
350 LINE(171,180)-(181,190),PSET
360 LINE(198,69)-(205,85),PSET:P
AINT(173,175)
370 LINE(0,0)-(255,191),PSET,B
380 LINE(80,80)-(165,91),PRESET,
BF
390 DRAW"BM92,82;BD1D6U4NR5U2E1R
3F1D6"
400 DRAW"BM99,82;D6F1R3E1U6"
410 DRAW"BM106,82;BD1D1F1R3F1D2G
1L3H1BU5E1R3F1BD6"
420 DRAW"BM113,82;R4L2D7BR3"
430 DRAW"BM120,82;ND7R4F1D1G1NL4
F1D3"
440 DRAW"BM127,82;BD1D6U4NR5U2E1
R3F1D6"
450 DRAW"BM134,82;D7R5"
460 DRAW"BM141,82;R4L2D7L2R4BR1"
470 DRAW"BM148,82;BD1D6U4NR5U2E1
R3F1D6"
480 LINE(100,91)-(143,102),PRESE
T,BF
490 DRAW"BM102,93;R4L2D7L2R4BR1"
500 DRAW"BM109,93;BD1D1F1R3F1D2G
1L3H1BU5E1R3F1BD6"
```

continued on p22

```
BE CONNECTED      TOGETHER WITH A
 COMS CABLE AS    DESCRIBED IN 'B
UFFER BUSINESS'   COCO MAGAZINE A
PRIL 88 PAGE 47"
5460 GOSUB 5360:CLS
5470 PRINT "THE COMPUTER CAN ALS
O PLAY THE  GAME FOR THE FIRST P
LAYER AS    WELL. YOU CAN TOGGLE
 BETWEEN THECOMPUTER AND PLAYER
AS PLAYER 1 BY PRESSING THE @ KE
Y WHILE THE SHOTS ARE BEING SET
UP"
5480 PRINT:PRINT "SHOTS ARE ENTE
RED BY SPECIFYING THE CO-ORDINAT
ES REQUIRED       EG AS A6, J7 E
TC"
5490 PRINT:PRINT "WHILE ENTERING
 SHOTS YOU CAN    CHANGE YOUR MI
ND, AND REMOVE ANYENTRY BY USING
 THE LEFT ARROW   KEY";
5500 GOSUB 5360:CLS
5510 PRINT "NORMAL BATTLESHIPS A
LLOWS EACH  PLAYER ONE SHOT FOR
EACH TURN"
5520 PRINT:PRINT "SALVOS ALLOWS
EACH PLAYER FIVE  SHOTS FOR EACH
 TURN"
5530 PRINT:PRINT "ADVANCED SALVO
S ALLOWS EACH     PLAYER ONE SHO
T FOR EACH OF HIS SHIPS WHICH IS
 STLL AFLOAT"
5540 GOSUB 5360:CLS
5550 PRINT "THE SEQUENTIAL EXCHA
NGE GAME HASEACH PLAYER FIRE HIS
 SHOTS IN   SEQUENCE. THE OTHER
PLAYER WAITSWHILE HIS OPPONENT S
ETS UP HIS  SHOTS"
5560 PRINT:PRINT "FOR THE SIMULT
ANEOUS EXCHANGE,  BOTH PLAYERS S
ET UP THEIR SHOTS AT THE SAME TI
ME AND THEN BOTH  FIRE AT THE SA
ME TIME WHEN BOTH ARE FINISHED"
5570 GOSUB 5360:CLS
5580 PRINT "THE SIMULTANEOUS EXC
HANGE WITH  TIME LIMIT, FORCES A
N EXCHANGE  OF SHOTS WITHIN THE
TIME SPECIF-IED AFTER EITHER PLA
YER HAS SET UP HIS SHOTS"
5590 PRINT:PRINT "WHEN THE TIME
HAS EXPIRED, THE  OTHER PLAYER I
S FORCED TO FIRE  AND WILL FIRE
ONLY AS MANY SHOTSAS HE HAS SET
UP BY THEN"
5600 GOSUB 5360:CLS:RETURN
5610 'PRINT DISPLAYS
5620 C=ASC(C$):IF C=C0 OR C=C1 T
HEN C$=" - ":RETURN
5630 IF C=C2 OR C=C3 THEN C$=" M
 ":RETURN
5640 C$=" "+C$+" ":RETUEN
5650 PRINT#-2,"DISPLAYS"
5660 FOR X-1 TO 10:A$="":B$="":F
OR Y=1 TO 10
5670 C$=MID$(P$(0,0,X),Y,1):GOSU
B 5620:A$=A$+C$
5680 C$=MID$(P$(0,1,X),Y,1):GOSU
B 5620:B$=B$+C$
5690 NEXT Y:PRINT#-2,A$;" : ";B$
5700 NEXT X:STOP
5710 '
5720 LN=56000:FOR X=0 TO 147 STE
P 25:IF X<124 THEN N=25 ELSE N=2
2
5730 GOSUB 5750:NEXT X
5740 RESTORE:GOTO 5830
5750 PRINT LN;:A=0:FOR Y=0 TO N-
1
5760 READ C$:B=VAL("&H"+C$):A=A+
B
5770 NEXT Y:READ C$:IF A<> VAL("
&H"+C$) THEN PRINT "ERROR IN LIN
E NO";LN:STOP
5780 LN=LN+10:RETURN
5790 '
5800 FOR Y= 0 TO N-1:READ C$:POK
E A,VAL("&H"+C$)
5810 A=A+1:NEXT Y:READ C$:RETURN
5820 '
5830 M$="9E1B308900936F806F806F8
09F1B39":Y=&H01DA
5840 B=0:FOR X=1 TO 30 STEP 2:N=
VAL("&H"+MID$(M$,X,2)):B=B+N:POK
E Y,N:Y=Y+1:NEXT X
5850 IF B <> &H5C5 THEN PRINT "E
RROR IN LINE NO 55110":STOP
5860 EXEC &H1DA:CLEAR
5870 A=PEEK(27)*256+PEEK(28)-150
:LN=56000
5880 FOR X=0 TO 147 STEP 25:IF X
<124 THEN N=25 ELSE N=22
5890 GOSUB 5800:NEXT X
5900 '
5910 PRINT:PRINT "ML ROUTINE NOW
 ADDED TO END OF  BASIC PROGRAM"
:PRINT "IT CAN NOW BE (C)SAVE'D
AND     RELOADED LATER IN ITS PR
ESENT   FORM":PRINT:PRINT "OR EN
TER RUN AGAIN TO EXECUTE   NOW"
5920 '
5930 DEL 5720-5990
5940 DATA A6,84,8D,E,E6,84,27,9,
EE,2,A6,C0,8D,4,5A,26,F9,39,34,1
7,1A,50,8D,16,5F,9AF
5950 DATA 8D,15,C6,8,34,4,5F,44,
59,58,8D,B,35,4,5A,26,F3,8D,2,35
,97,C6,2,F7,FF,959
5960 DATA 20,8D,0,9E,95,8C,9E,97
,8C,9E,97,30,1F,26,FC,39,8D,F1,C
6,8,34,4,8D,E9,12,B18
5970 DATA 12,F6,FF,22,54,46,35,4
,5A,26,F0,8D,DB,35,95,4F,34,15,1
A,50,F6,FF,22,54,24,A2F
5980 DATA DD,86,FE,B7,FF,2,B6,FF
,0,81,FE,26,EE,35,1,C6,FF,35,94,
CE,1,DA,EF,2,8D,E4C
5990 DATA DC,26,10,1F,89,A7,84,2
7,A,8D,D2,26,8,A7,C0,5A,26,F7,39
,6F,84,39,8E6
6000 GOTO 640
```

At home

WITH JOHANNA VAGG

OUR PRINTER came to live with us about two and a half years ago. I have, with the help of others, learnt quite a bit about printer graphics. There always seems to be something more to learn.

I will attempt to write about various forms of BORDER graphics.

If I don't give all the information you need, then please let me know, and I'll try again.

For those without printers, I will give some opinions about other topics before I become engrossed in one of my favourite subjects.

Do you play a musical instrument? Have you ever played a duet with CoCo? I know of one lady who has done this, much to her husband's delight. He has done a lot of work with MUSIC+, so he was very pleased to have his wife accompany CoCo, playing 'his' music.

Monica wants to learn to play the flute this year and we have decided that she would probably benefit from playing duets with CoCo, who is likely to be a patient 'teacher'.

If you would like to do the same for one of your kids, and you don't have MUSIC+, then don't worry; the PLAY command will do nicely.

First program the notes, eg type:

```
20 PLAY"O3CDEFGABO4CO3BAGFEDC"
```

RUN that as is; then experiment with another line, ie

```
10 PLAY"T4"
```

Changing the number after the T will change the tempo. As the student progresses, this number can be adjusted.

We have a program called MUSICA. This is a commercial program. I have just looked up the meanings of the word 'commercial'; one of them is:

" ... setting profits or immediate gains above artistic considerations".

If that was the only meaning, it would be wrong of me to describe MUSICA as commercial. I will quote from the manual to explain:

" ... MUSICA II is an 8K machine language music synthesizer for Tandy computers. It requires 32K and either a disk drive or a cassette recorder. ECB required. Entry of music is almost as easy as writing it on paper since all notes are displayed on standard musical treble and bass staffs. Up to four voices can be entered."

From this, you can see that it should also help a student with music theory. As I said, however, the PLAY command can be quite useful. If you have CoCo play the 'tune of the week', you will soon get an idea of the melody (provided you programmed it correctly, of course) which makes it easier to play this tune on your chosen instrument.

Last month I made some comments about some items in February 1988 Softgold. I would like to add a few remarks relating to the programs in both of the February magazines.

Remember these are my observations and opinions, and not necessarily shared by others.

First I must say that if you are keying in 'the talking keyboard' for use without the Speech Sound Pak and you leave out lines 16-26 as I suggested AND you still type ...

```
GOSUB20:GOSUB26
```

... in all those lines (34-76 and others), you will have a problem. It is easily fixed. Just add:

```
20 RETURN
26 RETURN
```

This is the remedy if you have already typed those particular GOSUBs. If not, then leave them out. It will make the program a bit shorter!

I do like short programs, but, if you have young children, then this 'longish' one would be worth the effort.

ADVANCE, a long program in CoCo, does not need to be entered in its entirety for you to see the Bi-Centennial logo and hear Advance Australia Fair.

Simply type to 790 and add 800 RETURN. The authors could write to me for some hints about the rest of the program if they wish.

The AMAZING MAZE in Feburary Softgold can be enjoyed even if you cut the typing in half. The GRAPHIC TEXT routine adds a nice touch. It also adds to the length. If you'd like to play Aaron's game (we haven't made it through yet) with only half the work, then type from 390 to 880, and add:

```
20 Q=120
900 RUN
```

Use the appropriate high speed POKE for your computer if desired. The graphics 'find of the month', in my books, is NOMADIX (Softgold). I haven't had the patience to view the shading effect.

The picture looks great without it, as you can see from the dump. These dumps in the magazines are a good idea: You know what to expect before you start. The on-screen version looks even better than the printout.

To see it without the shading, type up to and including 1880, then add 1890 GOTO 1890. If you would prefer the picture without the word 'nomadix', leave out lines 120-500. That would make the program only about one page long ... pretty good for such a beaut picture!

I can't comment on MUSIC2 (CoCo) at this stage because I don't have it, but I can say that I like MUSIC1. The bad news about it is that the music is not 'smooth', however, the good news makes up for this.

The good news is that you will see a 'piano keyboard' and you will see which note is being played, as it is being PLAYed.

As far as I can tell, there is a high speed POKE 'around' the READ routine only. On the CoCo 3 this high speed POKE is ignored, so it is possible that there is another one POKEd for the PLAYing, but I don't think so.

My personal preference is to use the high speed AND adjust the Tempo in line 470.

Experiment with the value at the end of the second 'line' of line 470.

One correction is needed in the Directory Printer program on page 61 of CoCo. The variable after FILES in line 73 should be AA, not just A. I have used the program only a little. Some changes had to be made for my printer, of course, as it was

written for an AMUST printer (Epson type). After some appropriate 'fiddling', it seems to be fine.

Usually it is easy enough to change this type of printer program from Epson to Tandy or vice-versa. The same is not true of printer graphics programs. I have written two printer related articles, one called PRINTER TRIVIA (August 1987 Softgold), and another called NOT SO TRIVIAL (not printed as at the middle of March).

Since writing these, I have made more discoveries. One is the fact that the DMP100 and DMP110 have 60 dots per inch vertically, and the DMP105 and DMP200 (and probably most other Tandy printers) have 72 dots per inch. This means that if you do a screen dump, the printout on a DMP105 will be five-sixths the height (or depth?) of one done on a DMP110. Although the Epson-type printers also have 72 dots per inch, the programs for BORDER graphics about which I will be writing, are not suitable for these printers.

The graphic codes are very different. The Tandy printers print 7 dots in a vertical dot column, and the Epsons print 8.

If the Tandy dots are numbered right side up, then the Epson ones are numbered upside down...

The first time I saw some 'fancy border designs' was in June 1986. There was a letter from Mal McLauchlan in CoCo. The letter included a short program which I tried. I found I needed to add a code for elongate to produce the same results on my DMP110 as Mal had produced on his DMP200. The 110 has 960 addressable dots horizontally. The DMP 200 and 105 have 480 addressable dots horizontally, assuming you are in 'normal' and not compressed or condensed.

Both of these printers will print graphics in the different 'sizes', but I don't know what effect, if any, this has on the print head positioning. The 110 and the 130 print graphics in the one size only.

Throughout my article, I will assume that the DMP 200s and 105s are in 'normal' mode.

Once you are aware of the differences, it is possible to make adjustments to programs such as Harry Hoffmann's BORDER (August 87 Softgold with update in December) and Frank Buttigieg's BORDER GRAPHICS (February 1988 CoCo). Harry's program was written fpr a DMP105, so DMP110 owners need to add elongate. Frank's was written for the DMP110.

Therefore, other Tandy printers will need to have the elongate deleted. There was a problem with Harry's BORDER program on disk (and possibly tape too). I think the program must have been SAVEd while the computer was in High Speed. To fix the program, LOAD it; then type 3841 and press ENTER. Now type in line 330 from the listing. Also EDIT line 480. It needs X after FOR. As Harry pointed out, it is not just for the CoCo 3. Read Harry's introduction.

In November 1986 Mal wrote to me after he read my LETTERHEAD article in that month's CoCo. I have just realised that I have written more than two printer related articles! Mal included some samples of his borders. They looked a bit different from the ones I printed on my 110, but I assumed it was the different print quality.

I know nov that mine were just slightly bigger, and that they contained twice the number of dots, ie the 200 printed dot space dot space etc, where the 110 had dot dot dot dot.

Mal told me that the border patterns could also be done from Telewriter-64. I didn't try this until about a week ago when I was doing my 'studying' for this article. It works.

I may explain how to do this one day, but I have found other ways which suit me. Mal's article, PRINTER GRAPHICS, and accompanying program (December 87 CoCo) was noted by Frank Buttigieg.

PRINTER GRAPHICS appeared first in January 1987 CoCo. If you don't have one magazine, you probably have the other, so, as Frank suggested, read Mal's article. (Your printer manual will do, if you don't have either).

The January issue of CoCo includes a diagram. When you know how to work out which CHR$ prints which dot pattern, you will be able to use Frank's program. If you don't want to bother with this side of the proceedings, help is available!

In May 1987 CoCo there was a program by Bob Delbourgo called PRETTY. I thought it was just what I wanted. It would let me design my borders on-screen; SAVE my creations to disk; AND it had the option of 'Left, Centre or Right justification on Printer' of the length of border I specified. Great. It was by Bob, so it must work.

The problems I encountered must have been of my own making. The disk drive was very new to me. Maybe Mal could help. I sent out an SOS, but kept trying. We both produced some patterns. I found it necessary to do a cold start between most operations.

Without this, I often saw a 'funny' error message on the screen ... ?NO ERROR ... if there was no error, why did it stop? (FILE NOT OPEN)

As there are never enough hours for all the "must-do's", this program didn't get a lot more attention. I still think it's a great program, and I CAN get it to co-operate, but I have found other programs. If anyone

is trying to use PRETTY and having problems, feel free to write to me and I'll try to help. I won't go into more detail nov as it is a disk program (although, come to think of it, you must be able to use the design and print functions without disk..?)

The next BORDER program was just that: BORDER by Harry Hoffmann. (See earlier reference). This program allows you to create a design in a 28 by 21 grid on the screen. This design is then printed 17 times across the page. I was a little disappointed that the border could not be saved for future use.

Rather than attempt a modification, I wrote a program which would print a specific border all around the printer page. I could have used graph paper and my head to find the CHR$, but in September 1987 CoCo, I found a utility which would let CoCo do the hard work for me.

DMDATGEN by Alan Bridges was ideal. I could again design on-screen, but this time CoCo 'figured out' which codes needed to be sent to my printer to re-produce my designs on paper.

The program was quickly changed for disk operation, by changing every occurrence of PRINT#-1 to PRINT#1. The programs produced by DMDATGEN were intended for the DMP110, so they contain an elongate code.

This is easily deleted, making it suitable for many more printers. Those printers can use them with the elongate and you will get a result twice as wide as we see on our DMP 110s.

Mal had sent me some small pictures on graph paper. I had intended to convert these pictures to printer codes myself, but I gave the job to CoCo.

I used the DATA produced by DMDATGEN in my programs.

Several of my penfriends, including Reg Hallam in Queensland and Margaret Williams on Kangaroo Island, have copies of my McVagg Productions. I made one version for the DMP110

and another for the DMP105/200 - the latter has been tested by Mal, Reg and Margaret.

The 105/200 version has also been successfully tested on the DMP130 by Lauren Brown in South Australia. One of my "must do's" is to combine the programs into a user-friendly ONE, which I will then send to Goldsoft (maybe for inclusion in At Home 3).

The combining will be easy as I used variables. I have not done this yet, because shortly after I finished the McVagg Productions, Harry's update was printed.

With this you could do a full page border, and I thought there may be no need for mine. It was school holiday time and with five kids, I just didn't find the time or the energy to try Harry's update.

Last week I tried it. I had to make some adjustments, of course. For a full page, Harry used 33 repeats. On the 110, I should need approximately 5/6 of that number.

By varying the number of repeats, you can do any length border. I found that printing with Harry's program was somewhat slow, but this is often not very important for the home computer user.

If you have a Form Feed code, you could set CoCo and your printer to make a stationery set while you do something else. I haven't found a Form Feed code for the DMP105 yet. On the DMP110 and DMP200, it is CHR$(12).

Frank's BORDER GRAPHICS program, page 34, February 1988 CoCo is a beaut program. One of the big advantages of this one is that it is not ... big, that is! It's amazing what can be done with a short program.

It is NOT exclusively for the CoCo 3. Simply leave out line 20, and possibly line 15.

Line 15 will give lowercase on an orange screen in WIDTH32 on a CoCo 3. It will do the same on the CoCo 2 with the slashes, not the dashes.

Remember that POKE359,57 interferes with ASCII (C)SAVES. See my SECOND LOOK (Jan 88 Softgold) for an alternative.

Frank's program is written for the DMP110, but you can use it on your DMP105 or DMP200 etc.

A slight hitch appeared in the program for the DMP110. In line 200, Frank has asked CoCo to make X2=176 if S2=3 instead of limiting the value of X2 to 176 if S2=3. EDIT the last part of line 200 to read:

```
IF S2=3 AND X2>176 THEN X2=176
```

If you have a DMP 110, then read Frank's instructions, Mal's article, and the section on printer graphics in your manual.

If you have any other Tandy DMP printer, also try this:

* Don't use the elongate (in line 60 and 340)
* Adjust the Baud rate in line 10.
* Use start sector 0
* Use end sector 1
* You only have sectors 0 and 1. See your manual. (You may have more sectors in compressed or condensed?) Sector 0 has position 0 - 255 and sector 1 has a maximum of 224 (0 - 223); ie 256 + 224 = 480 dots. This means that the maximum input for "End @ POS.." should be 216 (224-8).

To get the full width border, answer 0, 0, 1, 216, 60 to the first 5 of the 6 prompts when you choose 5 from the menu.

First you will need to create a design. Pick 4 from the menu. Now type in the numbers which Frank suggests, ie ...

```
255  193  201  221  201 193 255
128.
```

Next pick 5 and answer the prompts with 0, 0, 1, 216, 60, 10. This will print a sample (not the same as in 2 ... it is only the top line).

Frank discovered that he should use 87 for the sixth answer. Remember he has a 110 which has 60 dots vertically for your 72 dots. For a full page border, you can use 104.

With this program it is possible to do any size border, eg for a letterhead, or around (a rectangle??) anything you wish to highlight.

By choosing your start and end positions you specify WHERE across the page it will be printed; the BLOCKS per column determines how long your border will be.

If you do change the start and end positions, you will have to work out the number of BLOCKs (across) required too. The information you need is in the instructions, Mal's article, and your printer manual.

If you would like to use the program without studying, that is possible too.

Use the full width every time; it is easy to vary the length with different answers to the sixth prompt. I have even worked out the numbers for you to use for a few designs.

I thought that I would be very limited, with only 8 dots by 7 dots with which to work, but I was pleasantly surprised.

These numbers are the same for the DMP110, by the way. Try these:

```
136 148 162 201 162 148 136 128
160 192 192 194 190 130 128 128
159 169 169 169 175 176 160 128
156 148 182 201 182 148 156 128
```

One of these is an ego trip on my part; but I won't say which one. You'll find out!

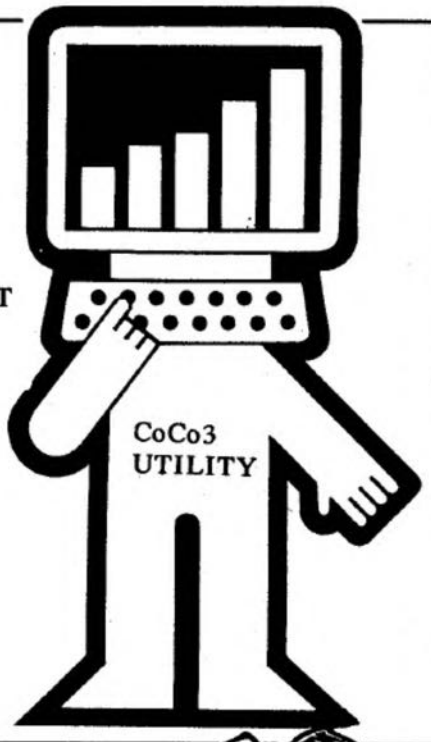
continued from p19

BICENTENNIAL BICENTENNIAL BICENTENNIAL

```
510 DRAW"BM123,93;NG1R3F1D1G5R5
520 DRAW"BM130,93;BD1D5F1R3E1U5H
1L3G1BD6BR5"
530 DRAW"BM137,93;BD1D5F1R3E1U5H
1L3G1BD6BR5
540 SCREEN 1,1
550 DRAW"BM30,35;NU20ND20NL20NR2
0NE20NF20NG20NH20"
560 FOR I=2 TO 28 STEP 3:CIRCLE(
30,35),I,1:NEXT
570 LINE(10,15)-(50,55),PRESET,B
F
580 DRAW"BM230,35;NU15ND15NL15NR
15NE15NF15NG15NH15"
590 FOR I=2 TO 24 STEP 3:CIRCLE(
230,35),I,1:NEXT
600 LINE(215,20)-(245,59),PRESET
,BF
610 DRAW"BM223,95;NU12ND12NR12NL
12NE12NF12NG12NH12"
620 FOR I=2 TO 14 STEP 3:CIRCLE(
223,95),I,1:NEXT
630 LINE(208,80)-(238,110),PRESE
T,BF
640 A$="T3O3L4FB-FDFL4.B-L8B-L4B
-O4DCO3B-AB-O4L2.C"
650 B$="O3L4FB-FDO2B-O3L4.FL8FL4
FO4DCO3B-AGL2.F
660 C$="L4FL4.GL8AL4B-GL4.FL8DL4
DFGB-O4E-DL2.C"
670 D$="O3L4FL4.GL8AL4B-GL4.FL8B
-L4B-O4CL4.DO3L8B-O4L4.CO3L8AL2.
B-"
680 E$="O4L4DE-DCO3B-AGFB-O4L2DO
3L8B-O4L2CO3L8AL2.B-"
690 X$="XA$;XB$;XC$;XD$;XE$;"
700 PLAY X$
710 DRAW"BM230,145;NU15ND15NL15N
R15NE15NF15NG15NH15"
720 FOR I=2 TO 24 STEP 3:CIRCLE(
230,145),I,1:NEXT
730 LINE(215,130)-(245,160),PRES
ET,BF
740 DRAW"BM110,155;NU10ND10NL10N
R10NE10NF10NG10NH10"
750 FOR U=2 TO 15 STEP 3:CIRCLE(
110,155),U,1:NEXT
760 LINE(100,145)-(120,165),PRES
ET,BF
770 GOTO 550
```

menu system

by RICHARD SCHMIDT



THIS IS A self-replicating, index type of disk menu program. In other words, if you have the program on one disk, then you can use the same program to read another disk!

You will be prompted for a disk name, which will then be automatically saved onto the new disk, with the program.

It will, besides run your favorite programs with a minimum of keystrokes, rename a file, kill a file, copy a file from one disk/drive to another, and provide various information about each file, eg. number of granules, file type, saved in ASCII or not, latest update of each file (B-DOS option only).

This could be useful if you accidently damage the directory track.

You will need at least 6 free granules on your disk (5 for the program and 1 for the disk name), although it is probably ideal to have it as the first program on the disk. It is fairly self-explanatory (I think!), and although it has been designed for use under B-DOS, it will still work almost equally well under RS-DOS.

Unfortunately I seem to have lost the POKE's to allow side B of the disk to be read under RS-DOS.

If you don't like the screen colours, change the palette codes and/or the variables FCOLOUR and BCOLOUR in line 20.

If your printer (or interface) doesn't run at 4800 baud, then change the POKE in line 10 to suit your needs. Some baud rates are ...

150,87 = 600 baud

TABLES

by J NIEKAMP
16K CoCo
EDUCATIONAL

TABLES IS, as the name implies, a little program to help young children learn their tables.

I have tried to make it user friendly and it should not accept any wrong inputs.

On running you will be asked for your name and which table you wish to practice.

The chosen table will be displayed till a key is pressed, after which a multiplication sum will be displayed.

The answer is entered by inkeys, and does not require enter to be pressed.

With a wrong answer the same sum will be displayed again, a correct answer brings a new sum.

While the program runs, the score will be displayed on the screen.

The Listing:

```
0 GOTO10 .
1 '***** TABLES
2 '***** J NIEKAMP
3 SAVE"171A:1":SAVE"171A:3":END'
EDU
10 GOTO30
20 CSAVE"TABLES":END
30 CLS RND(9)-1
40 PRINT@74,"T A B L E S";
50 PRINT@174,"B Y";
60 PRINT@262,"J. H. N I E K A M
P.";
70 PRINT@327,"  R.S.D. 1030    "
;
80 PRINT@360,"EAST TAMAR HWY.";
90 PRINT@393,"DILSTON. 7252";
100 PRINT@426," TASMANIA. ";
110 PRINT@484,"PRESS ANY KEY TO
START.";
120 EXEC44539:'***SAME AS INKEY$,
 USED TO PAUSE A PROGRAM.****
130 CLS
140 INPUT"HELLO!!    WHAT IS YOU
R NAME            ";N$
150 CLS
160 PRINT:PRINT"WHICH TABLE WOUL
D YOU LIKE TO   PRACTISE? ";N$;:
INPUT B
170 GOSUB580
180 '*****PRINT SCORE & SUM****
190 CLS
200 C=RND(10)
210 PRINT@35,"CORRECT ";R;:PRINT
@52,"WRONG ";W
220 PRINT@231,"WHAT IS "C" X "B
230 PRINT@416,"PRESS ( H ) TO LO
OK AT THE TABLE"
240 '****RECIEVE & CHECK ANSWERS
*
250 LL$=STR$(C*B):L=LEN(LL$):L=L
-1
260 PRINT@334,"";
270 I$=INKEY$
280 IF I$="H" THEN I$="":GOSUB58
0:GOTO210
290 IF I$=""THEN270
300 SOUND200,1
310 PRINTI$;
320 IF I$=CHR$(8) THEN 350
330 A$=A$+I$
340 GOTO360
350 IF A$=""THEN360ELSE A$=LEFT$
(A$,LEN(A$)-1)
360 IF LEN(A$)<>L THEN270
370 L=0:A=VAL(A$):A$=""
380 IF A=C*B THEN490
390 '******WRONG ANSWER****
400 CLS
410 FOR T=135 TO 1 STEP-5
420 PRINT@267,"WRONG!!"
430 SOUND T,1
440 NEXT
450 W=W+1
460 '****REPEAT SAME QUESTION***
470 CLS:GOTO210
480 '****CORRECT ANSWER*****
490 FOR T=1TO 15
500 CLS RND(8)
510 SOUND RND(255),1
520 PRINT@230,"VERRY GOOD ";N$;"
.";
530 FOR X=1TO5:NEXT
540 NEXT T
550 FOR T=1TO400:NEXT
560 R=R+1
570 GOTO190
580 '****PRINT REQUIRED TABLE**
590 CLS
600 PRINT:PRINT:PRINT
610 FOR I=1TO9
620 PRINT TAB(8)I;" X ";B;" = "I
*B
630 NEXT
640 PRINT TAB(8)"10  X ";B;" = "
;10*B
650 PRINT@480,"PRESS A KEY PLEAS
E! ";N$;"."
660 Z$=INKEY$:IF Z$="" THEN 660
670 CLS
680 RETURN
```

```
150,41 = 1200 baud
150,18 = 2400 baud
150,7  = 4800 baud
150,1  = 9600 baud
```

If it uses different escape codes for double width printing to the Olympia NP, then EDIT lines 1205 and 1235.

The Listing:

```
5 REM Color Computer disk menu s
ystem
6 REM Originally by A.M. Hearn
7 REM Expanded and extensively m
odified
8 REM for the CoCo3 by Richard S
chmidt
9 REM
10 VERIFYON:CLEAR500,&H7FFF:CLEA
R5000:POKE150,7 'Set Printer to
4800 Baud
15 POKE&H143,0:POKE&H13E,0 'CoCo
3/BDOS compatability pokes
20 RGB:WIDTH40:SW=65496:FT=65497
:FCOLOUR=0:BCOLOUR=0:PALETTE8,9:
PALETTE0,62 '       Colour 9 is b
lue, Colour 62 is yellow
25 N=68:DIM PN$(N),PT$(N),AC$(N)
,FG$(N),NG$(N),DA$(N),ST$(N),EN$
(N),EX$(N)
30 ON BRK GOTO1330
35 ON ERR GOTO1320
40 POKE FT,0:SD=PEEK(&HEB):CLS B
C+1:ATTR FC,BC:LOCATE 11,1:PRINT
"MENU SYSTEM":LOCATE 11,2:PRINT"
**** *******"
45 LOCATE 5,4:ATTR FC,BC,U:PRINT
"DESCRIPTION OF FUNCTIONS";:ATTR
 FC,BC:LOCATE 0,6:GOSUB530:RN=1
50 REM
55 REM Read Directory of current
 drive
60 IX=1:BS=0:MB=0:DT=0
65 DSKI$SD,17,2,D3$,D4$
70 FOR SECTOR=3TO11
75 DSKI$SD,17,SE,D1$,D2$
80 DRIVE SD
85 FOR PART=1TO8
90 IF PA<5 THEN DI=(PA-1)*32 ELS
E DI=(PA-5)*32
95 IF PA=5 THEN D1$=D2$
100 PN$=MID$(D1$,DI+1,8)
105 PN$=PN$+"/"+MID$(D1$,DI+9,3)
110 PT$(IX)=STR$(ASC(MID$(D1$,DI
+12,1)))
115 AC=ASC(MID$(D1$,DI+13,1)):IF
 AC<>0 THEN AC$(IX)="ASC"ELSE AC
$(IX)="BIN"
120 G2=ASC(MID$(D1$,DI+14,1)):FG
$(IX)=STR$(G2)
125 T1=ASC(MID$(D1$,DI+17,1)):T2
=ASC(MID$(D1$,DI+18,1)):T3=T1*25
6+T2:YY=INT(T3/512):MM=INT((T3-Y
Y*512)/32):DD=T3-YY*512-MM*32
130 T3=T1*256+T2:YY=INT(T3/512):
MM=INT((T3-YY*512)/32):DD=T3-YY*
512-MM*32
135 IF DD<0THEN DD=0ELSEIF DD<10
THEN DD$=RIGHT$(STR$(DD),1)ELSE
DD$=STR$(DD)
140 IF MM<0THEN MM=0ELSEIF MM<10
THEN MM$=RIGHT$(STR$(MM),1)ELSE
MM$=STR$(MM)
145 IF YY<0THEN YY=0ELSEIF YY<10
THEN YY$=RIGHT$(STR$(YY),1)ELSE
YY$=STR$(YY)
150 DA$(IX)=RIGHT$("0"+DD$,2)+"/
"+RIGHT$("0"+MM$,2)+"/"+RIGHT$("
0"+YY$,2)
155 LA=ASC(LEFT$(PN$,1)):IF LA=2
55THEN215
160 IF LA=0THEN210
165 IF PN$="BOOT     /SYS"THEN BS
=-1
170 IF PN$="M        /BAS"THEN MB
=-1
175 IF PN$="DISKNAME/DAT"THEN DT
=-1
180 PN$(IX)=PN$
185 G1=0
190 G1=G1+1
195 GT=ASC(MID$(D3$,G2+1,1))
200 IF GT<70THEN G2=GT:GOTO190
205 NG$(IX)=STR$(G1):IX=IX+1
210 NEXT PA,SE
215 IX=IX-1:PM=INT(IX/32+.95)
220 FR=FREE(SD)
225 REM
230 REM Read "DISKNAME/DAT"
235 POKE SW,0:DRIVE SD
240 IF(BS=-1 OR MB=-1)AND DT=-1T
HENGOSUB405ELSEGOSUB430
245 REM
250 REM Print page 1
255 POKE FT,0:PG=1:GOSUB360
260 REM
265 REM Main Branching Routine
270 POKE FT,0:CY=22:GOSUB1030:LO
CATE 5,CY:PRINT"FUNCTION ('H for
 help):";
275 GOSUB1305
280 POKE282,255:IFASC(QQ$)>32THE
NPRINT QQ$
285 IF QQ$="H"THENGOSUB525:GOTO2
70
290 IF QQ$="K"THENGOSUB625:GOTO2
70
295 IF QQ$="R"THENGOSUB660:GOTO2
70
300 IF QQ$=";"THENGOSUB690:GOTO2
70
305 IF QQ$="L"THENGOSUB1205:GOTO
270
310 IF QQ$="S"THEN715:GOTO270
315 IF QQ$="N"THENGOSUB965:GOTO2
70
320 IF QQ$="*"THENBS=0:MB=0:DT=0
:GOTO60
325 IF QQ$="D"THENGOSUB1110:GOTO
60
330 IF QQ$="M"THENGOSUB1045:GOTO
270
335 IF QQ$="C"THENGOSUB1140:GOTO
270
340 IF QQ$="T"THENGOSUB1255:GOTO
270
345 IF QQ$="E"THENPOKE SW,0:ENDE
LSE270
350 REM
355 REM Print page
360 CLS:LOCATE 7,0:ATTR FC,BC,U:
PRINT DN$;:ATTR FC,BC:LOCATE 0,2
365 FOR N=(PG-1)*32+1 TO PG*32
370 IF N>IX THEN PN$(N)=" "
375 PRINTUSING"##)%
    ";N;PN$(N);
380 NEXT
385 LOCATE 0,21:PRINT"DRV."SD;:L
OCATE 6,21:PRINT FR"Free Grans."
;:LOCATE 20,21:PRINT;IX"Files pg
."PG"of"PM;
390 RETURN
395 REM
400 REM Use "DISKNAME/DAT"
405 OPEN"I",#1,"DISKNAME/DAT"
410 INPUT#1,DN$:CLOSE#1
415 RETURN
420 REM
425 REM Create "DISKNAME/DAT"
430 MS$="M/BAS"' If BDOS is used
, MS$= "BOOT/SYS" will auto-run
this program
435 POKE SW,0:IF BS=0AND MB=0 TH
ENPRINT"SAVING '";MS$;"'":SAVE""
+MS$:IF DT=-1THEN60
440 PRINT"Creating 'DISKNAME/DAT
'"
445 INPUT"DISK NAME (max. 8 char
.)";DN$
450 IF DN$=""THEN445
455 IFLEN(DN$)>8THEN445
460 IFLEN(DN$)<8THENDN$=DN$+" ":
GOTO460
465 GOSUB1270
470 DN$=DN$+" Created "+DA$
475 DRIVE SD:OPEN"O",#1,"DISKNAM
E/DAT"
480 PRINT#1,DN$
485 CLOSE#1:RUN
490 REM
495 REM Input Program
500 CY=22:GOSUB1030:INPUT"     S
elect Program:";PN$:PN=VAL(PN$)
505 IF PN>IX OR PN<0THEN500
510 RETURN
515 REM
520 REM Help Screen
525 CLS:LOCATE 0,2:ATTR FC,BC,U:
PRINT"FUNCTION    DESCRIPTION";:A
TTR FC,BC:LOCATE0,4
530 PRINT"  H     Help. Show this
 list"
535 PRINT"  ;     Show next page"
540 PRINT"  R     Run a Program"
545 PRINT"  L     List the direct
ory to the printer";
550 PRINT"  D     Read Directory
of other Disks"
555 PRINT"  *     Re-read Directo
ry for this drive"
560 PRINT"  S     Display statist
ics for this drive";
565 PRINT"  N     Rename a file"
570 PRINT"  K     KILL  a file"
575 PRINT"  C     COPY a file to
another disk"
580 PRINT"  M     Multiple KILL o
r COPY files"
585 PRINT"  T     Input current d
ate (DD/MM/YY)"
590 PRINT"  E     Exit this progr
am (40 char/line)"
595 PRINT"BREAK  Exit to 32 char
acters per line"
600 IF RN=0THENRETURN
605 PRINT:LINEINPUT"Press <ENTER
> to return to the main menu";A$
610 GOSUB360:RETURN
615 REM
620 REM Kill
625 GOSUB500:IF PN=0THENRETURN
630 CY=22:GOSUB1030:PRINT"      D
elete File "PN$(PN)" (Y/N)?";
635 GOSUB1305
640 IF QQ$="Y"THENKILL PN$(PN):P
N$(PN)="":NG$(PN)="":PT(PN)=9
645 GOSUB360:RETURN
650 REM
655 REM Run Programs
660 GOSUB500:POKE SW,0
665 IF PN=0THENRETURN
670 IF PT$(PN)=" 0"THENLOAD PN$(
PN),R
675 IF PT$(PN)=" 2"THENWIDTH32:L
OADM PN$(PN):EXEC
680 LOCATE 5,23:PRINT"  I CAN'T
RUN THAT!       ";:CY=23:GOSUB103
0:RETURN
685 REM
690 REM Next page
695 PG=PG+1:IF PG>PM THENPG=1
700 GOSUB360:RETURN
705 REM
710 REM Disk statistics
715 POKE SW,0:WIDTH80:PRINTTAB(5
);:ATTR FC,BC,U:PRINT"Disk stati
stics for ";DN$;:ATTR FC,BC:PRIN
T:INPUT"Do you want this display
ed on the (S)creen or the (P)rin
ter";YN$:IF YN$="P"THEN PD=-2ELS
EIF YN$=""THENWIDTH40:GOTO215ELS
E PD=0
720 REM Printer is assumed to be
 on-line as soon as "P" is enter
ed
```

```
725 FR=FREE(SD)
730 IF PD=-2 THEN PRINT#-2:PRINT
#-2,STRING$(78,"="):PRINT#-2,"Di
sk Statistics for ";DN$
735 PRINT#PD
740 PRINT#PD,"Number of granules
  Free";FR;" used";68-FR;
745 PRINT#PD,"     Allocation Ma
p - Sector 2"
750 DSKI$SD,17,2,D1$,D2$
755 N=1:PRINT#PD,"         1
     2         3         4
   5         6         ":ATTR FC,B
C,U:PRINT#PD,"12345678901234567
89012345678901234567890123456
78901234567890123456789012345
6789012345678";:ATTR FC,BC:
PRINT#PD
760 IF PD=-2THENPRINT#-2,STRING$
(68,"-")
765 FORN2=1TO68
770 GM=ASC(MID$(D1$,N,1)):N=N+1
775 IF GM=255THENGM$="."ELSEIFGM
<68THENGM$="P"ELSEGM$="E"
780 PRINT#PD,GM$;
785 NEXTN2:PRINT#PD
790 PRINT#PD:PRINT#PD,"  '.'=FRE
E , 'E'=EOF , 'P'=FILE PART":PRI
NT#PD
795 PRINTTAB(25);"PLEASE WAIT...
":N=1
800 REM Read M/L files informati
on
805 IF PT$(N)<>" 2" THEN ST$(N)=
"     ":EN$(N)=ST$(N):EX$(N)=ST$
(N):GOTO870
810 OPEN"D",1,PN$(N),1
815 FIELD1,1 AS C$:R=1
820 GET#1,R:IF ASC(C$)=255 THEN
855
825 GET#1,R+1:L=256*ASC(C$)
830 GET#1,R+2:L=L+ASC(C$)
835 GET#1,R+3:A=256*ASC(C$)
840 GET#1,R+4:A=A+ASC(C$)
845 ST$(N)="$"+RIGHT$("0000"+HEX
$(A),4)
850 R=R+L+5:GOTO820
855 GET#1,R+3:E=256*ASC(C$)
860 GET#1,R+4:E=E+ASC(C$)
865 EN$(N)="$"+RIGHT$("000"+HEX$
(A+L-1),4):EX$(N)="$"+RIGHT$("00
0"+HEX$(E),4)
870 CLOSE #1:IF N<IX THEN N=N+1:
GOTO 805
875 IF PD=0THEN LOCATE 25,10:PRI
NT"BIN/  Granule";TAB(27);"BIN/
 Granule"ELSE PRINT#PD,TAB(25);"
BIN/  Granule       Latest
    M/L addresses"
880 IF PD=0 THEN PRINT"   Name
   Ext.  Type   ASC   ST  NUM
  Name      Ext.  Type  ASC   ST
  NUM     Date  M/L addr: Start
End   Execute     Date  M/L addr
: Start End   Execute"
885 IF PD=-2THEN PRINT#-2,"   Na
me     Ext.  Type   ASC   ST  NU
M     Date            Start End
  Execute"
890 CY=13:FOR N=(PG-1)*10+1TO PG
*10
895 IF N/2=INT(N/2) THEN CX=40:C
Y=CY-2 ELSE CX=0
900 IF N>IX THEN PT$(N)="":AC$(N
)="":FG$(N)="":NG$(N)="":DA$(N)=
""
905 IF PD=0 THEN LOCATE CX,CY
910 IF PD=-2THENIF N>IX THENPRIN
T#-2,STRING$(78,"="):PD=0:GOTO94
5
915 PRINT#PD,USING"##)%
 %    %%    % % % % % %  ";N;P
N$(N);PT$(N);AC$(N);FG$(N);NG$(N
);
920 IF PD=0 THEN LOCATE CX,CY+1
925 PRINT#PD,USING"   %       %
     % % %   %   %   %   ";DA$
(N);ST$(N);EN$(N);EX$(N);
930 CY=CY+2:NEXT:IF PD=-2 THENPR
INT#-2
935 IF N<=IX AND PD=-2 THEN PG=P
G+1:GOTO890 ELSE IF N<=IX THEN A
TTR FC,BC,U:PRINT"PRESS 'M' to s
ee more files, or 'X' to return
to the main menu";:ATTR FC,BC:PR
INTSTRING$(16," ");ELSE945
940 GOSUB1305:IF QQ$="M"THENLOCA
TE0,13:PG=PG+1:GOTO875ELSEIF QQ$
="X"THEN PG=1:WIDTH40:GOSUB360:G
OTO270ELSE940
945 LOCATE0,23:ATTR FC,BC,U:PRIN
T"Press 'X' to return to the mai
n menu, or 'R' to re-display fil
es information";:ATTR FC,BC:PRIN
T"   ";
950 GOSUB1305:IF QQ$="R"THENLOCA
TE0,13:PG=1:GOTO875ELSEIF QQ$="X
"THEN PG=1:WIDTH40:GOSUB360:GOTO
270ELSE950
955 REM
960 REM Rename
965 GOSUB500:IF PN=0THENRETURN
970 CY=22:GOSUB1030:PRINT"RENAME
 FILE ";PN$(PN);" (Y/N)?";
975 GOSUB1305:IF QQ$="N"THENPRIN
T"N";:RETURNELSEPRINT"Y";
980 CY=22:GOSUB1030:INPUT"New Na
me(including extn.):";NN$
985 IF NN$=""THENRETURN
990 P1=INSTR(NN$,"/"):P2=INSTR(N
N$,"."):IF P1>P2 THEN PS=P1 ELSE
 PS=P2
995 IF PS>0 AND PS<9 THEN NN$=MI
D$(NN$,1,P1-1)+" "+RIGHT$(NN$,4)
:GOTO 990
1000 FORN=1TOIX
1005 IF NN$=PN$(N)THENCY=22:GOSU
B1030:PRINT" I can't rename that
: New Name EXISTS";:RETURN
1010 NEXTN
1015 RENAME PN$(PN) TO NN$:PN$(P
N)=NN$:GOSUB360:RETURN
1020 REM
1025 REM Blank Function line
1030 LOCATE 0,CY:FORWA=1TO500:NE
XT:PRINT STRING$(39," ");:LOCATE
 0,CY:RETURN
1035 REM
1040 REM Multiple KILL/COPY
1045 POKE SW,0:CLS:PRINT"Do you
want to (K)ill or (C)opy ";
1050 GOSUB1305:IF QQ$="K"THEN106
0ELSEPRINT QQ$:PRINT"To Which Dr
ive#(0-3)";
1055 GOSUB1305:IF QQ$<"0"OR QQ$>
"3"THENPRINT QQ$:GOTO1045ELSE SD
$=":"+QQ$:KC=1:PRINT QQ$:GOTO106
5
1060 PRINT QQ$:KC=2
1065 FORN=1TOIX
1070 PRINTPN$(N);
1075 IF KC=2THENINPUT" KILL this
 file";A$ELSEINPUT" COPY this fi
le";A$
1080 IF LEFT$(A$,1)<>"Y"THEN1095
1085 IF KC=2THENKILL PN$(N):PRIN
T"Killed":NEXTN:FOR WA=1TO1000:N
EXT:RUN
1090 IF SD=VAL(QQ$)THENCOPY PN$(
N)+SD$:PRINT" copied"ELSECOPY PN
$(N)+":"+RIGHT$(STR$(SD),1) TO P
N$(N)+SD$:PRINT" copied"
1095 NEXT N:FOR WA=1TO1000:NEXT:
RUN
1100 REM
1105 REM Read other drives
1110 CY=22:GOSUB1030:PRINT"Which
 drive# to access(0-3)?";
1115 A$=INKEY$:IF A$=""THEN1115
1120 IF A$=CHR$(13)THENRETURN
1125 DN=ASC(A$)-48:IF DN<0THEN11
10
1130 IF DN=SD THENCY=22:GOSUB103
0:PRINT"Insert a new disk, then
press <ENTER>":EXEC44539:GOTO60E
LSE SD=DN:PRINT SD:RETURN
1135 REM
1140 REM Copy Files
1145 GOSUB500
1150 IF PN=0THENRETURN
1155 CY=22:GOSUB1030:PRINT"
COPY file "PN$(PN)" (Y/N)?";
1160 A$=INKEY$:IF A$=""THEN1160
1165 IF A$="N"ORA$="n"THEN RETUR
N
1170 CY=23:GOSUB1030:PRINT"
To which drive# (0-3)?";
1175 A$=INKEY$:IF A$<"0"OR A$>"3
"THEN1175ELSE A=VAL(A$):PRINT A;
:POKE SW,0
1180 IF A=SD THEN COPY PN$(PN):G
OTO1190
1185 COPY PN$(PN)+":"+RIGHT$(STR
$(SD),1)TO PN$(PN)+":"+RIGHT$(ST
R$(A),1)
1190 GOSUB360:RETURN
1195 REM
1200 REM List page to printer
1205 CY=22:GOSUB1030:PRINT"
List page(s) to printer (Y/N)";:
GOSUB1305:IF QQ$="N"THENPRINT"N"
;:RETURN
1210 POKE SW,0:PRINT#-2:PRINT#-2
,CHR$(27)"W"CHR$(1);' Double wid
th escape code
1215 PRINT#-2,TAB(5);DN$:PRINT#-
2,"  "STRING$(25,"-"):PRINT#-2
1220 FOR N=1 TO IX
1225 PRINT#-2,USING"##)%
 % ";N;PN$(N);:PRINT#-2,"     ";
1230 NEXT N
1235 PRINT#-2:PRINT#-2,"DRIVE"SD
;FR"FREE GRANULES ";IX;"FILES"
1240 PRINT#-2,STRING$(34,"=");CH
R$(27)"W"CHR$(0);:PRINT#-2,STRIN
G$(3,13);:RETURN
1245 REM
1250 REM Input today's date
1255 IF PEEK(&H14E)=0THEN 1270
1260 N=PEEK(&H14E)*256+PEEK(&H14
F):YY=INT(N/512):MM=INT((N-YY*51
2)/32):DD=N-YY*512-MM*32:CY=22:G
OSUB1030:PRINT"Today's Date is:
";RIGHT$(STR$(DD),2);"/";RIGHT$(
STR$(MM),2);"/";RIGHT$(STR$(YY),
2):PRINT" Correct (Y/N)?";
1265 GOSUB1305:IF QQ$="Y"ORQQ$=C
HR$(13)THEN CY=23:GOSUB1030:RETU
RNELSEPRINT"N";
1270 CY=23:GOSUB1030:CY=22:GOSUB
1030:INPUT"Today's Date (DD/MM/Y
Y)";DA$
1275 IFLEN(DA$)=0THENRETURNELSEI
FLEN(DA$)<8ORVAL(MID$(DA$,4,2))>
12THEN1270
1280 DD$=LEFT$(DA$,2):MM$=MID$(D
A$,4,2):YY$=RIGHT$(DA$,2):DC=VAL
(YY$)*512+VAL(MM$)*32+VAL(DD$):D
1$=DD$+MM$+YY$
1285 FORN=1TO6:IFINSTR("01234567
89",MID$(D1$,N,1))=0THEN1270ELSE
NEXT
1290 POKE&H14E,INT(DC/256):POKE&
H14F,DC-INT(DC/256)*256:RETURN
1295 REM
1300 REM Inkey routine
1305 QQ$=INKEY$:IF QQ$=""THEN130
5ELSERETURN
1310 REM
1315 REM Error trapping routines
1320 IF ERNO=23THEN ST$(N)=" I/E
 ":EN$(N)="ERROR":EX$(N)="     "
:GOTO870
1325 PRINT"ERROR!!! error no.";E
RNO;"exists in line";ERLIN:POKE
SW,0:STOP
1330 WIDTH32:POKE SW,0:RGB
```

Las Vegas

by ALAN MURRELLS

CoCo3 GRAPHICS

THIS IS MY first-ever program that I have submitted.

I have had the CoCo 3 since Christmas to keep my mind active. You see, I have retired.

The only way that I could complete this program was to go to the manual and look up the commands, as well as experimenting. It took me a week to work out how to hold something on the screen.

This is the cheaper way to play the pokies.

The Listing:

```
0 GOTO5
3 SAVE"183:1":SAVE"183:3":END'GA
M
5 '*****************************
6 '*********LAS VAGES**********
7 '******BY ALAN MURRELLS******
9 '*****************************
10 WIDTH32
20 PRINT@36,"THIS GAME REVOLVES
AROUND A POKER MACHINE"
30 PRINT@100,"YOU ARE CREDITED W
ITH 40 CHIPS TO START WITH"
40 PRINT@164,"WITH EACH ROLL YOU
R CREDIT WILL REDUCE BY ONE"
50 PRINT@228,"THE CREDIT FOR EAC
H ROLL WILL BE SHOWN SEPERATLY"
60 PRINT@292,"ALSO THE TOTAL CRE
DIT OF ALL ROLLS WILL BE SHOWN"
70 PRINT@356,"AT THE END,YOU WIL
L SEE YOUR LOSS OR GAIN AGAINST
THE ORIGINAL 40 CHIPS"
80 PRINT@452,"ANY KEY TO START"
90 A$=INKEY$:IFA$=""THEN90
100 PALETTE CMP
110 HSCREEN 2
120 HCLS8
130 C=RND(8)
140 HCOLOR8:HLINE(0,0)-(319,191)
,PSET,B:HCOLOR7:HLINE(1,1)-(318,
190),PSET,B:HCOLOR6:HLINE(2,2)-(
317,189),PSET,B:HCOLOR5:HLINE(3,
3)-(316,188),PSET,B:HCOLOR4:HLIN
E(4,4)-(315,187),PSET,B
150 HCOLOR3:HLINE(5,5)-(314,186)
,PSET,B:HCOLOR2:HLINE(6,6)-(313,
185),PSET,B:HCOLOR1:HLINE(7,7)-(
312,184),PSET,B:HCOLOR0:HLINE(8,
8)-(311,183),PSET,B
160 HDRAW"C7BM120,50;U6H4L22G4D2
2F4R22E4U6L8D4R4D2L20H2U18E2R18F
2D4R4":HDRAW"BM156,40;L22G4D22F4
R22E4U22H4BD6H2L18G2D18F2R18E2U1
8":HDRAW"BM170,40;D30R20U4L16U26
L4BR30D30R24E6U18H6L24BF4D20R18E
4U10H4L18"
170 HCOLOR4:HLINE(108,12)-(102,2
8),PSET:HLINE(102,28)-(104,28),P
SET:HLINE(104,28)-(106,24),PSET:
HLINE(106,24)-(114,24),PSET:HLIN
E(114,24)-(116,28),PSET
180 HCOLOR4:HLINE(116,28)-(118,2
8),PSET:HLINE(118,28)-(112,12),P
SET:HLINE(112,12)-(108,12),PSET:
HLINE(110,14)-(108,22),PSET:HLIN
E(108,22)-(112,22),PSET:HLINE(11
2,22)-(110,14),PSET
190 HLINE(158,12)-(152,28),PSET:
HLINE(152,28)-(154,28),PSET:HLIN
E(154,28)-(156,24),PSET:HLINE(15
6,24)-(164,24),PSET:HLINE(164,24
)-(166,28),PSET:HLINE(166,28)-(1
68,28),PSET
200 HLINE(168,28)-(162,12),PSET:
HLINE(162,12)-(158,12),PSET:HLIN
E(160,14)-(158,22),PSET:HLINE(15
8,22)-(162,22),PSET:HLINE(162,22
)-(160,14),PSET
210 HLINE(208,12)-(202,28),PSET:
HLINE(202,28)-(204,28),PSET:HLIN
E(204,28)-(206,24),PSET:HLINE(20
6,24)-(214,24),PSET:HLINE(214,24
)-(216,28),PSET:HLINE(216,28)-(2
18,28),PSET
220 HLINE(218,28)-(212,12),PSET:
HLINE(212,12)-(208,12),PSET:HLIN
E(210,16)-(208,22),PSET:HLINE(20
8,22)-(212,22),PSET:HLINE(212,22
)-(210,14),PSET
230 HCOLOR4:HLINE(120,80)-(140,1
00),PSET,B:HCOLOR4:HLINE(118,78)
-(142,102),PSET,B:HLINE(110,86)-
(118,90),PSET:HLINE(110,94)-(118
,90),PSET:HLINE(110,86)-(110,94)
,PSET
240 HLINE(148,78)-(172,102),PSET
,B:HLINE(150,80)-(170,100),PSET,
B:HLINE(142,88)-(148,88),PSET:HL
INE(142,92)-(148,92),PSET:HLINE(
142,88)-(142,92),PRESET:HLINE(14
8,88)-(148,92),PRESET
250 HLINE(178,78)-(202,102),PSET
,B:HLINE(180,80)-(200,100),PSET,
```

THE COCO Commodore CONNECTION

by IAN LEE

Commodore Joystick Modification

TO CONVERT A Commodore joystick to use with a CoCo a number of modifications are required and four 47K 1/4W resistors are needed.

First remove the star shaped piece that is riveted to the circuit board by removing two bits from it.

The easiest way of doing this is to remove the two screws opposite each other, leaving a hole in each half allowing each piece to be screwed or riveted back onto the printed circuit board.

Before doing that, cut the circuit traces so that the two halves are isolated from each other, because the switches RIGHT and DOWN are connected to +5V and LEFT and UP and are connected to ground.

Also, cut the trace at the top just to the right of where the two wires from the fire button on the stick are soldered onto.

Make sure the two halves of the switch are electrically isolated from each other and the RIGHT and DOWN side is also isolated from ground.

Follow these points ...

* solder the two fire button traces together.
* solder the BLACK wire to the ground or top lefthand side of the board, not too close to the oilcan switch.
* the RED wire goes to one of the fire button traces - it does not matter which one, as they

```
B:HLINE(172,88)-(172,92),PRESET:
HLINE(178,88)-(178,92),PRESET:HL
INE(202,90)-(210,86),PSET:HLINE(
202,90)-(210,94),PSET:HLINE(210,
86)-(210,94),PSET
260 HLINE(172,88)-(178,88),PSET:
HLINE(172,92)-(178,92),PSET
270 HDRAW"C0;BM13,84;E2D6NL2NR2"
:HCOLOR4:HLINE(42,84)-(48,84),PS
ET:HLINE(42,86)-(48,86),PSET:HDR
AW"C4;BM62,84;U2;R6;D4;L6;D2;R6"
280 HDRAW"C0;BM13,104;E2D6NL2NR2
":HDRAW"C3;BM28,108;L5H1E1R5E1U2
H1L4G2":HDRAW"C4;BM68,102;L6;D4;
R6;D2;L6":HLINE(42,104)-(48,104)
,PSET:HLINE(42,106)-(48,106),PSE
T
290 HDRAW"C0;BM13,124;E2D6NL2NR2
BR10NL2NR2U6NG2BR10NG2D6NL2NR2":
HDRAW"C4;BM62,122;D6":HDRAW"C4;B
M68,122;D6;L4;U6;R4":HLINE(42,12
4)-(48,124),PSET:HLINE(42,126)-(
48,126),PSET
300 HDRAW"C3;BM12,144;E2R3F1D2G1
L4G1F1R5BR10L5H1E1R4E1U2H1L3NG2B
R10NG2R3F1D2G1L4G1F1R5":HDRAW"C4
;BM62,142;D6":HDRAW"C4;BM68,142;
D6;L4;U6;R4":HLINE(42,144)-(48,1
44),PSET:HLINE(42,146)-(48,146),
PSET
310 HDRAW"C6;BM242,83;E1R4F1D2NL
2D2G1L4NH1BR11NH1R4E1U2NL2U2H1L4
G1BR11E1R4F1D2NL2D2G1L4H1"
320 HDRAW"C4;BM298,82;L6;D4;R6;D
2;L6":HLINE(290,82)-(290,88),PSE
T:HLINE(272,84)-(278,84),PSET:HL
INE(272,86)-(278,86),PSET
330 HDRAW"C1;BM242,106;E4D4NL4NR
2D2BR10U2NR2L4E4D4BR12L2ND2NU4L4
E4":HCOLOR4:HLINE(272,104)-(278,
104),PSET:HLINE(272,106)-(278,10
6),PSET:HDRAW"C4;BM282,102;R6;D4
;L6;D2;R6":HDRAW"C4;BM292,102;R6
;D6;L6;U6"
340 HDRAW"C7;BM242,128;R6U2L6U4R
6BR10L6D4R6D2NL6BR4R6U2L6U4R6":H
COLOR4:HLINE(272,124)-(278,124),
PSET:HLINE(272,126)-(278,126),PS
ET:HDRAW"C4;BM298,122;L6;D4;R6;D
2;L6":HDRAW"C4;BM282,124;U2;R6;D
4;L6;D2;R6"
350 HDRAW"C4;BM242,142;D5F1R4E1U
2H1L2NG1BR7BU2D5F1R4E1U2H1L2NG1B
R7BU2D5F1R4E1U2H1L2G1":HLINE(272
,144)-(278,144),PSET:HLINE(272,1
46)-(278,146),PSET:HDRAW"C4;BM28
8,142;L6;D4;R6;D2;L6":HDRAW"C4;B
M292,142;R6;D6;L6;U6"
360 HCOLOR1:HCIRCLE(30,40),10,,1
:HPAINT(30,40),1,1:HLINE(34,44)-
(42,44),PSET
370 HCOLOR7:HLINE(282,26)-(268,4
0),PSET:HLINE(268,40)-(270,44),P
SET
380 HLINE(270,44)-(274,40),PSET:
HLINE(274,40)-(280,40),PSET:HLIN
E(280,40)-(280,52),PSET:HLINE(28
0,52)-(284,52),PSET:HLINE(284,52
)-(284,40),PSET
390 HLINE(284,40)-(292,40),PSET:
HLINE(292,40)-(292,36),PSET:HLIN
E(292,36)-(278,36),PSET:HLINE(27
8,36)-(284,30),PSET:HLINE(284,30
)-(282,26),PSET:HPAINT(272,38),7
,7
400 HCOLOR 7:HPRINT(14,14),"CRED
IT":HCOLOR 0:HPRINT(11,16),"LAST
 ROLL":HCOLOR 4:HPRINT(10,18),"T
OTAL ROLL":T=40:W=0:P=0:HPRINT(2
0,14),T:HPRINT(20,16),W:HPRINT(2
0,18),P
410 HCOLOR1:HPRINT(12,20),"ANY K
EY TO ROLL":A$=INKEY$:IFA$=""THE
NGOTO410
420 :HCOLOR8:HPRINT(12,20),"ANY
KEY TO ROLL":HCOLOR8:HPRINT(15,1
1),A:HPRINT(19,11),B:HPRINT(22,1
1),C:HPRINT(20,14),T:HPRINT(20,1
6),W:HPRINT(20,18),P
430 SOUND100,5:HCOLOR4:A=RND(6):
B=RND(6):C=RND(6):HPRINT(15,11),
A:HPRINT(19,11),B:HPRINT(22,11),
C:W=0
440 IFA=1ANDB=1THENW=0:IFA=2ANDB
=2THENW=0:IFA=3ANDB=3THENW=0:IFA
=4ANDB=4THENW0:IFA=5ANDB=5THENW=
0:IFA=6ANDB=6THENW=0
450 IFA=1THENW=2:SOUND15,5:FORX=
1TO20:HPAINT(125,82),0,4:NEXTX:H
PAINT(125,82),8,4
460 IFA=1ANDB=2THENW=5:SOUND50,5
:FORX=1TO20:HPAINT(125,82),0,4:H
PAINT(160,82),3,4:NEXTX:HPAINT(1
25,82),8,4:HPAINT(160,82),8,4
470 IFA=1ANDB=1ANDC=1THENW=10:SO
UND75,5:FORX=1TO20:HPAINT(125,82
),0,4:HPAINT(160,82),0,4:HPAINT(
190,82),0,4:NEXTX:HPAINT(125,82)
,8,4:HPAINT(160,82),8,4:HPAINT(1
90,82),8,4
480 IFA=2ANDB=2ANDC=2THENW=10:SO
UND100,5:FORX=1TO20:HPAINT(125,8
2),3,4:HPAINT(160,82),3,4:HPAINT
(190,82),3,4:NEXTX:HPAINT(125,82
),8,4:HPAINT(160,82),8,4:HPAINT(
190,82),8,4
490 IFA=3ANDB=3ANDC=3THENW=15:SO
UND140,5:FORX=1TO20:HPAINT(125,8
2),6,4:HPAINT(160,82),6,4:HPAINT
(190,82),6,4:NEXTX:HPAINT(125,82
),8,4:HPAINT(160,82),8,4:HPAINT(
190,82),8,4
500 IFA=4ANDB=4ANDC=4THENW=20:SO
UND170,5:FORX=1TO20:HPAINT(125,8
2),1,4:HPAINT(160,82),1,4:HPAINT
(190,82),1,4:NEXTX:HPAINT(125,81
),8,4:HPAINT(160,82),8,4:HPAINT(
190,82),8,4
510 IFA=5ANDB=5ANDC=5THENW=25:SO
UND210,5:FORX=1TO20:HPAINT(125,8
2),7,4:HPAINT(160,82),7,4:HPAINT
(190,82),7,4:NEXTX:HPAINT(125,82
),8,4:HPAINT(160,82),8,4:HPAINT(
190,82),8,4
520 IFA=6ANDB=6ANDC=6THENFORX=1T
O255:SOUNDX,1:NEXTX
530 IFA=6ANDB=6ANDC=6THENW=50:FO
RX=1TO20:HPAINT(125,82),2,4:HPAI
NT(160,82),2,4:HPAINT(190,82),2,
4:C=RND(6):HPAINT(100,42),C,7:C=
RND(6):HPAINT(140,42),C,7:C=RND(
6):HPAINT(172,42),C,7:C=RND(6):H
PAINT(202,42),C,7:NEXTX
540 HPAINT(125,82),8,4:HPAINT(16
0,82),8,4:HPAINT(190,82),8,4:W=W
:T=T-1:P=P+W
550 HCOLOR4:HPRINT(20,14),T:HPRI
NT(20,16),W:HPRINT(20,18),P
560 IFT=0THENFORX=1TO460*2:NEXTX
:GOTO580
570 GOTO 410
580 P=P-40:HCLS8:HCOLOR4:HPRINT(
16,4),"GAME OVER":HPRINT(8,8),"Y
OU FINISHED WITH CHIPS":HCOLOR6:
HPRINT(31,8),P:HCOLOR4:HPRINT(8,
12),"DO YOU WANT ANOTHER GAME<Y/
N>?"
590 I$=INKEY$:IFI$="Y"THEN110ELS
EIFI$="N"THEN600ELSE590
600 HCLS8:HPRINT(16,8),"SO LONG"
610 GOTO 610
```

⊕

should both be joined together.

* solder two of the resistors to the ground. Connect one of these resistors with the GREEN wire to the UP trace and to the DOWN trace.
* join the third resistor to the same point as the GREEN wire.
* solder the YELLOW wire to the second resistor.
* solder the fourth resistor to the RIGHT trace, and a short wire from that point to the LEFT trace.
* the WHITE (+5V) wire is soldered to one of the spare pads at the bottom of the board.
* solder the GREEN and YELLOW wires to the above point.
* a length of wire is needed to take the +5V from the WHITE wire to the top right hand side of the board or the center part of the RIGHT and DOWN switch.
* the last connection is to solder a wire from the center point of the UP and LEFT switch to the ground.

Before re-assembling the joystick, plug it into the computer and run this program to check it out.

```
10 CLS
20 A=JOYSTK(0)
30 B=JOYSTK(1)
40 F=PEEK(65280)
50 PRINT@0,A,B,F
60 GOTO20
```

When you run this program, your screen should clear and show values of '31,31' and either '127' or '255'. Pressing the fire button will change this to a '126' or a '254'.

Push the stick left. This should change the first '31' to a '0'.

Push the stick right. This should change the first '31' to a '63'.

Similarly, up should change the second '31' to a '0', and down should change it to a '63'.

⊕

Correction

We have now found out that we apparently missed a few lines out of an old listing. DISASSEM (March CoCo, 1987) won't work too well if you don't add the following lines of Basic:

```
271 'STRING$
272 Z$="":FORZJ=1TO ZL:ZS$=ZS$+
CHR$(ZC):NEXT:RETURN
275 'HEX_DEC HX$=HEX(HX)
276 HX$=""
278 Z2=INT(HX/16):Z1=HX-Z2*16:HX
$MID$("0123456789ABCDEF",Z1+1,1)
+HX$:IFZ2=0THENRETURNELSEHX=Z2:G
OTO278
279 'DEC_HEX  ZN=VAL(ZH$)
280
ZN=0:ZF=1:FORZJ=1TOLEN(ZH$):ZM$=
MID$(ZH$,LEN(ZH$)+1-ZJ,1):IF ASC
(ZM$)>64THENZI=ASC(ZM$)-55ELSE Z
I=VAL(ZM$)
282 IFZI>15THENPRINT"FC ERROR":S
TOPELSEZN=ZN+ZI*ZF:ZF=ZF*16:NEXT
:RETURN
```

⊕

40 TRACK DISK DRIVE

A FEW NIGHTS ago, I was looking back at my collection of old RAINBOW magazines, when I found something of interest.

In one of these mags there was a heading saying "Discover the 'hidden' 5 tracks", and upon reading on, the article/program seemed to say that Tandy drives can really get access to 40 tracks on a disk, adding another 22k of memory storage to each disk. This gives you another 10 granules to use. "Well," I thought, "I'm going to have to try this out!"

It worked! My disks formatted with all 40 tracks being used.

Though this is really great, only Tandy drives with Disk Basic 1.1 or 2.1 can use it. Another thing is that the really old grey drives cannot do this.

I think that the only reason Tandy do not use the full 40 tracks is for the users who own the older grey drives. The program was written in Basic, but I found that if you did a warm start, you would lose it.

So I re-wrote it in ML, so that if for any reason you have to preform a warm start, you can easily continue with a simple EXEC.

The ML version is situated in memory locations 20480 to 20533. After loading it, simply type EXEC and you are in business.

I have also supplied a Basic version for those of you who wish not to delve into ML.

by LINDSAY BRADFORD

CoCo3 or 64K CoCo2 (disk only)

M/L Listing:

```
00100 *40 TRACKS BY LINDSAY BRADFORD, ORIGIONAL PROGRAM BY JIM PEAKE.
00110 * WARNING: ALWAYS LOAD THIS PROGRAM BEFORE LOOKING AT A 40 TRACK DISK.
00120 *IF YOU DON'T YOU COULD LOSE THE LAST 5 TRACKS AND THE FILES IN THEM,
        MAKING THE DISK 35 TRACK AGAIN.
00130  ORG $3000
00140 START
00150  LDA #$28
00160  STA $D65F
00170  STA $D682 SET DSKINI TO 40 TRACKS
00180  LDB #$27
00190  STB $D534 SETS DSKI
00200  STA $D29D SETS DSKO
00210  LDA #$4E
00220  STA $C735 MOVES 'FAT' TO 10 MORE GRANULES
00230  LDB #$54
00240  STB $C75A INCREASES SPACE TO ALLOW GRANULES
00250  STA $C7BB SETS MOVE OF 'FAT' TO 10 MORE
00260  STA $C7D0 USE 78 GRANULES
00270  STA $C7EF 78 GRANULES
00280  STA $CD26 SEARCH 78 GRANULES
00290  STA $CEB5 LETS 'FREE' COMMAND CHECK 78
00300  STA $D44D SETS 'COPY' TO 78 GRANULES
00310  CLRA
00320  LDB #$14
00330  STA $D7C0
00340  STB $D816 SETS TO 6MS STEPPING RATE
00350  RTS RETURN TO BASIC
00360 END
```

The Listing:

```
0 GOTO10
3 SAVE"180:1":SAVE"180:3":END'UT
L
10 'ROUTINE TO SET DISK BASIC1.1
   TO 40 TRACKS IN A 64K COCO.
11 'JUNE 1984, JIM PEAKE
12 'NOTE: LIMITS TO A MAX OF 3
          DRIVES
1010 POKE&HD65F,&H28:POKE&HD682,
&H28      'SETS DSKINI TO 40 TRACK
1015 POKE&HD534,&H27 'SETS DSKI
1020 POKE&HD29D,&H28 'SETS DSKO
1030 POKE&HC735,&H4E'SETS MOVE
FILE ALLOCATION TABLE
1035 POKE&HC75A,&H54 'INCREASES
SPACE FOR EACH DRIVE'S FAT
1040 POKE&HC7BB,&H4E 'SETS MOVE
OF FAT TO 10 MORE GRANULES
1045 POKE&HC7D0,&H4E 'USE 78 GRA
NULES
1050 POKE&HC7EF,&H4E 'USE 78
GRANULES
1055 POKE&HCD26,&H4E 'SEARCH 78
GRANULES
1060 POKE&HCEB5,&H4E 'LET FREE
COMMAND CHECK 78
1065 POKE&HD44D,&H4E 'SET COPY
TO 78 GRANULES
1070 POKE&HD7C0,0:POKE&HD816,&H1
4
'SET TO 6MS STEPPING RATE
```

COMPUTER RESOURCE DATABASE

Goldsoft Publishing endeavours to place current data into the Computer Resource Database. However, Goldsoft Publishing makes no claims as to the accuracy of the information supplied for use in this database.

Prices quoted were current at the time of entry. Where two suppliers have differing prices, we have quoted the highest price.

The Database is a free service of Goldsoft Publishing. If you market a product for use with the computers we service in this magazine, you can forward information to:

CRD Manager
Goldsoft Publishing
PO Box 1742
Southport. Qld. 4215.

Please note that many programs have fuller descriptions on the monthly disk which partners this magazine. (See contents page for details of this disk.)

BUSINESS

Name:	Hardware:	Source:	Price:	Rate:
MAILIST PRO	BOTH	B	$ 39.95	@@
COMP. CHQ BOOK	BOTH	B	$ 39.95	@@
NEWSROOM	COCO 3	B	$ 99.95	@@@
COLOR SCRIBE	COCO 3	B	$ 99.95	@@@
WORD POWER 3	COCO 3	B D	$ 130.00	***
IMS	BOTH	B	$ 250.00	@@@
SCULPTOR	COCO 3 512K	D B	$ 495.00	****
SCREEN STAR	COCO 3 512K	B	$ 99.95	@@
TEXT FORMATTER	COCO 3	B	$ 69.95	@@@
DYNASTAR	BOTH	D	$ 180.00	@@
TELEWRITER-64	COCO 2 64K	B	$ 84.95	****
TELEWRITER-128	COCO 3	B	$ 140.00	****
VIP-WRITER	COCO 2 64K	B	$ 98.95	@@@
VIP-DATABASE	COCO 2	B	$ 84.45	@@@
VIP-SPELLER	COCO 2	B	$ 77.95	@@@@
BEST OF #4	BOTH	C	$ 16.00	***
VIP CALC	BOTH	B	$ 84.45	@@@
BUS A/C SYSTEM	COCO 2	B	$ 112.95	@@
STYLO PACK	COCO 3	D	$ 359.94	****
STYLO III	COCO 3	D	$ 203.94	****
DYNACALC (OS9)	BOTH	D	$ 179.94	****
D'CALC (RSDOS)	COCO 2 64K	D	$ 179.94	****

GAMES

Name:	Hardware:	Source:	Price:	Rate:
P-51 FLIGHT SIM	COCO 2	D	$ 49.95	@@@
3D ROMMEL	COCO 2	D	$ 44.95	@@@
SPEED RACER	COCO 3 64K	D	$ 49.95	***
TIME BANDIT	COCO 2	D	$ 39.95	****
CASHMAN	COCO 2 64K	D	$ 39.95	****
EXETER	COCO 3 128K	B	$ 29.95	****
ROGUE	COCO 3	B	$ 69.95	****
THEXDER	COCO 3	B	$ 49.95	****
BOUNC. BOULDERS	BOTH	B	$ 59.95	**
GANTELET	BOTH	B	$ 59.95	****
APPROACH CNTRL.	COCO 2 64K	B	$ 49.95	@@@
RET. OF JR REV.	COCO 3	B	$ 59.95	@@@
BEST OF #2.1	BOTH	C	$ 16.00	***

Rating explanation :

* is used for products we have used or tested

@ is used for the reputation of a product

The number of symbols defines the opinion or reputation ie:
1 symbol is a poor rating and 5 symbols is a good rating
Lack of symbols simply means we have not commented on the product
It does not infer the product is of poor quality
A good middle of the road product has 3 symbols.

Source explanation :

A - Tandy
B - Blaxland
C - Goldsoft
D - Paris Radio
E - Computer Hut Software

INTERTAN NEWS

TANDY'S THOR CD'S OUTSHINE OPPOSITION.

CVA Computer and Peripherals have announced the early launch of their new erasable CD's just one month after Tandy's new THOR CD's were announced.

The THOR CD's are the latest in optical disc technology which allows the user to repeatedly record and erase digital information with all types of CD audio and CD-ROM players.

However the Maxtor product is not compatible with any existing CD players and only has a 160 Mbyte drive while Tandy offers 550 Mbyte.

Despite being beaten to the launch, with such features as these, the THOR CD's go to the top of the class and will be well worth the wait.

TANDY HELPS IN AGRICULTURAL FIELD.

In continuing it's commitment to the Australian Agricultural field, Tandy Electronics is now marketing the award winning Ag-Vantage Stud program.

Written by Far South Coast Computer Specialists, Ag-Vantage Stud manages and analyses stud records and is available for dairy, beef, sheep and angora or cashmere goat studs specifically with a special version for other stud operations such as horses, cats and dogs.

Records can be displayed of each animals production performance for the preparation of sales catalogues, animal registration forms and management reports.

The program maintains an unlimited generation of pedigrees and all awards and achievements for each animal are kept and can be refferred to as required.

Replacing the old manual system, the computer holds many advantages over it including being able to handle large volumes of information at any one time and being more flexible as it can reorganize the information into whatever form it is needed.

The program runs on MS-DOS computers including Tandy's T1000 TX and is available through Tandy stores all over Australia.

NEW CORPORATE STRATEGY ANNOUNCED BY TANDY.

InterTAN Australia Limited has announced a new Corporate/ Government Purchasing Service which is aimed at providing future computing needs to Australian Corporations and Government Departments.

For maximum reliability, all Tandy computers are manufactured by Tandy Corporation in the USA and has the largest range of IBM compatibles as well as the most complete range of peripherals, accessories and software of any company.

With this in mind and Tandy's high quality and reliability, Computer Marketing Manager, Lyall Jones believes these factors make Tandy an ideal supplier for major corporations and government departments and with the new Computer Purchasing Service, give Tandy a huge edge on their competitors.

The service includes professional systems analysis, installation, operator training and ongoing systems support to ensure that they get the highest level of service and support throughout Australia.

PERSONAL DESKMATE 2- A MUST FOR TANDY 1000'S.

Fish and chips, bread and butter, Personal Deskmate 2 and T1000's - you can't have one without the other.

Personal Deskmate 2 is a desktop program that provides seven applications including word processing, spreadsheet, database and calendar facilities as well as ten utilities including Notepad, Calculator, Phone Directory and Clipboard.

The package is included with both the T1000 HX and T1000 TX so first time computer buyers can use it straight away as it can be easily controlled by a mouse, joystick or keyboard.

A graphics oriented version is also available which again is easy to use for a first time or experienced user.

Many users start computing with word proccessing, and with Deskmate, great looking documents can be easily produced with functions such as boldfacing, underlining, block moving and block copying.

For database applications the personal filer is a simple card file system that allows any type of information to be stored or printed.

Using the three voice sound circuitry in the Tandy 1000 HX/TX the Music application allows the composition and playing of the various sounds and music. Painting can also be done using Deskmate's 'picture editor' which enables pictures to be drawn and filled in with a variety of colours and patterns.

Also included is the communications program, Telecom, which provides access to information services and other computers with an optional modem.

With all these functions and more, Personal Deskmate 2 really does add extra value to the Tandy 1000 TX and Tandy 1000 HX personal computers.

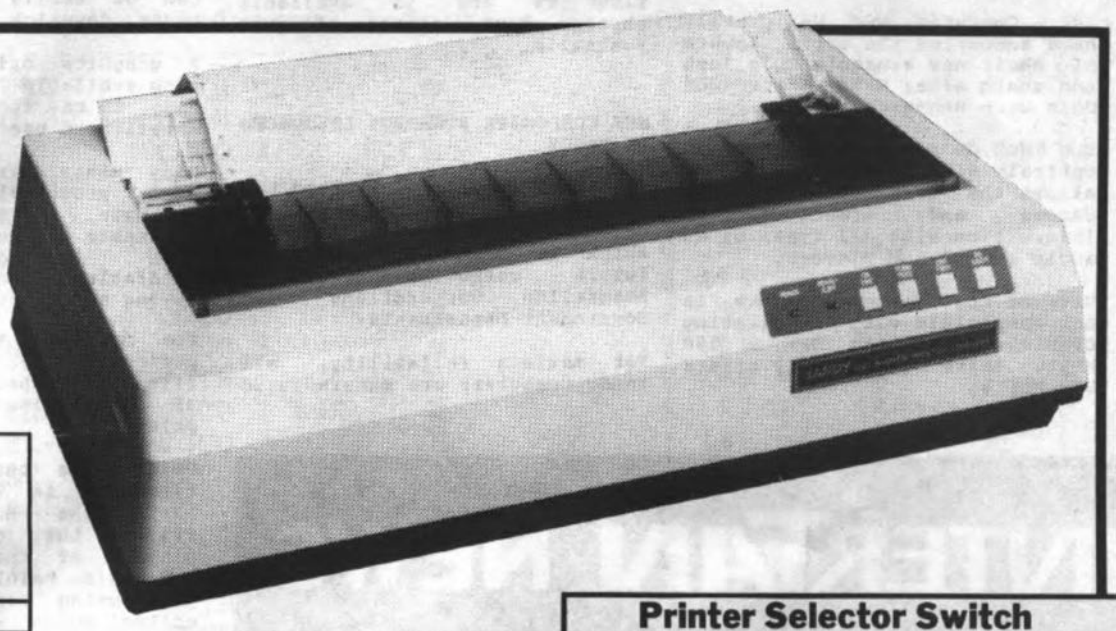
TANDY WAREHOUSE SALE.

If you don't already know, Tandy Electronics are having an Australia wide Warehouse Sale.

With huge savings in all of Tandy's 360 stores, you would be crazy to miss out.

Rockhampton store.

Sale! Tandy Dot Matrix Printer



SAVE $500
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CLEARANCE

Printing Has Just Become More Affordable!

With a SAVING of **$500, NOW** is definitely the time to invest in the IBM® compatible **DMP-430!** This remarkable printer delivers crisp data, prints 180 characters per second and features word processing, data procesing and dot-addressable graphic modes. It also has four character print styles: elongated, standard, elite and condensed for the most professional results. Delivers detailed bit image graphics and has a built-in pin driven tractor! Parallel and color compatible serial interface. 26-1277 Sorry no rainchecks.

Replacement Ribbon. 26-1296 ..... **34.95**

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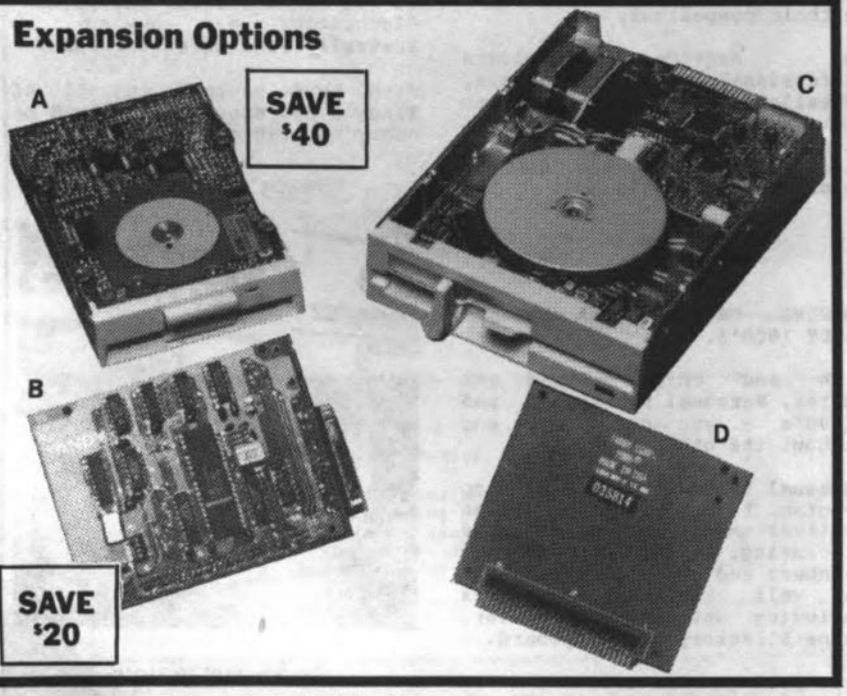
Printer Selector Switch

Printer Selector 2 Interface. Connect two printers to one computer or two computers to one printer. Cables not included. 26-2820 ... **169.95**

Expansion Options



A. 8.89cm Disk Drive Kit. For Tandy 1000 HX or for use in the T1000 TX/SX/3000 HL & PC compatibles (Requires Adapter Kit 25-1066). Mounts internally. Installation recommended (not included). 25-1065 Reg 269.95 ..... **Sale! 229.95**

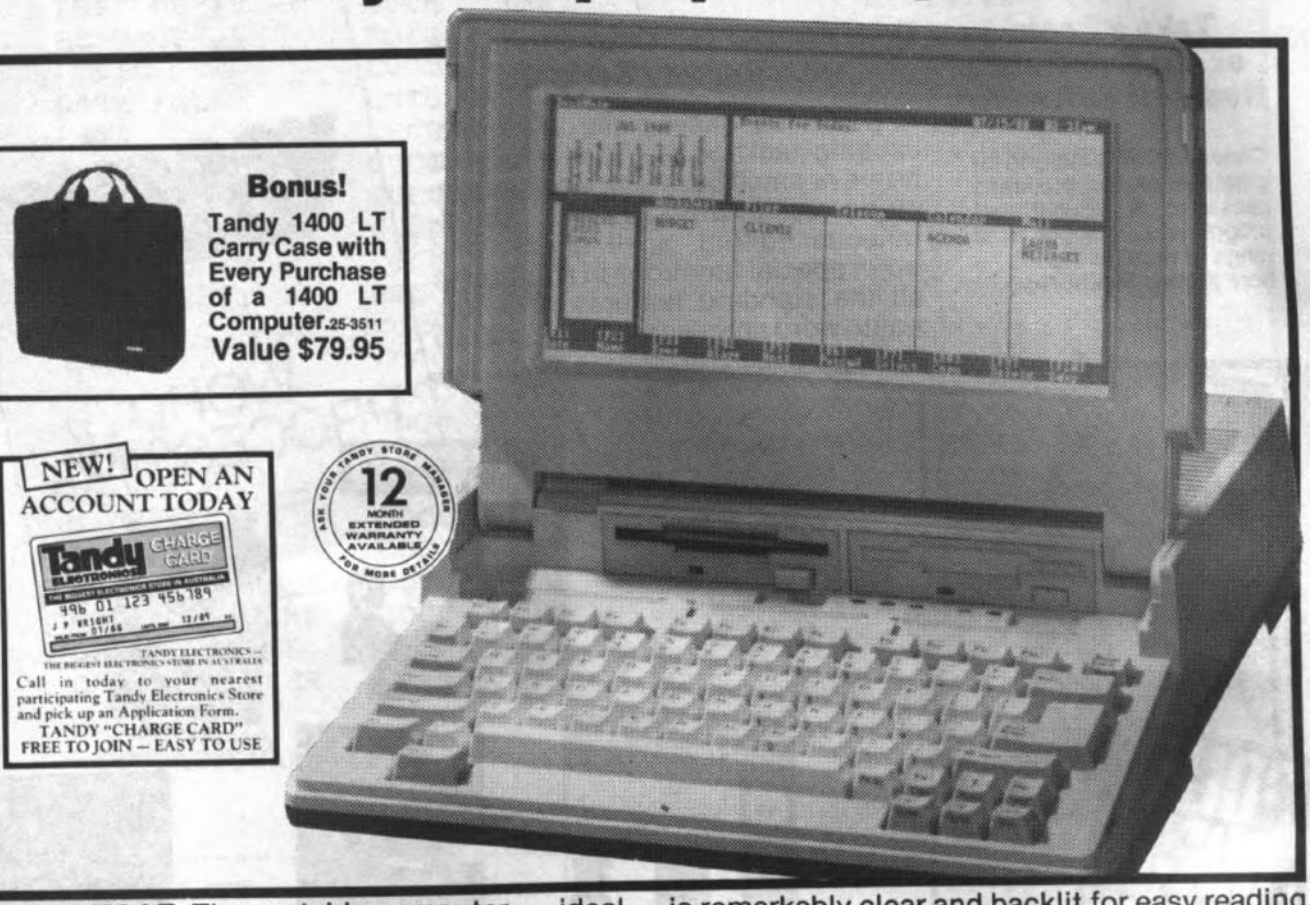
B. PLUS RS-232 Interface. Connects several devices such as a mouse, modem, printer or plotter. 25-1031 Reg 149.95 ..... **Sale! 129.95**

C. 13.3cm Disk Drive Kit. For Tandy 1000 SX/TX. Mounts internally. Installation recommended (not included). 25-1063 ..... **329.95**

8.89cm to 13.3cm Disk Drive Adapter. For 8.89cm disk kit. Not shown. 25-1066 ..... **69.95**

D. PLUS Upgrade Adapter Board. Allows use of PLUS upgrade boards for the 1000/SX in a standard PC card slot. 25-1016 ..... **44.95**

Tandy's Laptop Computer!



Bonus!
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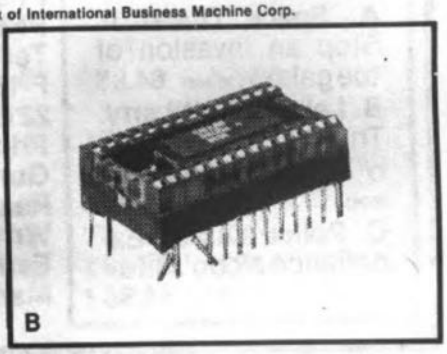
A

A. 8.9cm 720K External Disk Drive for 1000EX/HX. Provides twice the storage of a 13.3 cm drive. 25-1061 ..... **549.95**

B. Smartwatch. A. perpetual clock calendar with battery backup in a chip. For Tandy 1000 and PCs. 25-1033 ..... **79.95**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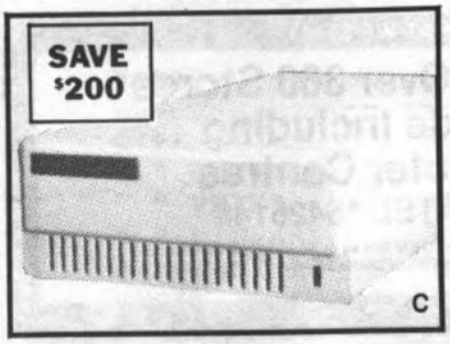

C

C. 20-Megabyte External Hard Disk Drive. Expansion option for 1000 series. (Requires 25-1007 Hard Disk Controller).
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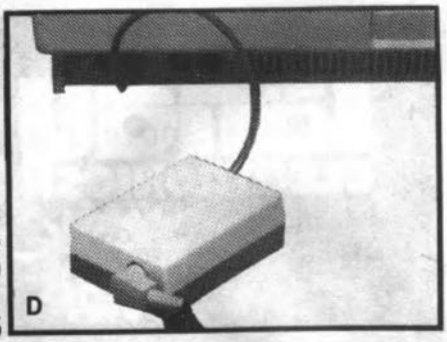
D. Universal Expansion Option. Lets you connect an IBM® compatible keyboard to a Tandy 1000 or 1000 SX.
25-1030 ..... **229.95**


D

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Choose from hundreds of great new games, business packages & educational programs! Check our wide range of popular brands — here at your Tandy store.

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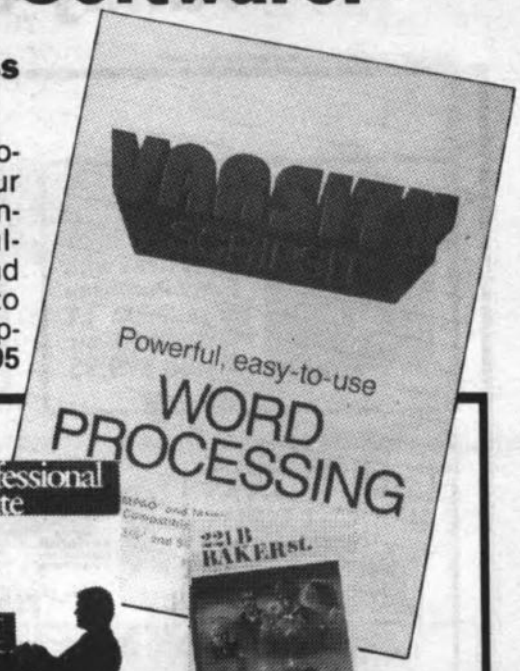

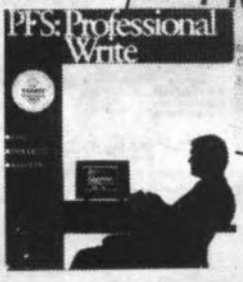

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A. Space Quest II. Stop an invasion of the galaxy. 25-9667 . **64.95**

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Name:	Hardware:	Source:	Price:	Rate:
GEOGRAPHY	COCO 2	B	$ 99.95	@@
EARS	BOTH	B	$ 190.00	@@@
BEST OF #1	BOTH	C	$ 16.00	***
BEST OF #6	BOTH	C	$ 16.00	***
BEST OF #10	BOTH	C	$ 16.00	***

GRAPHICS

Name:	Hardware:	Source:	Price:	Rate:
COLORMAX	COCO 3	B D	$ 135.00	***
COCO-MAX 3	COCO 3	B D	$ 150.00	****
COCOMAX II	COCO 2 64K	B	$ 100.00	****
3D GRAPHIMATOR	COCO 2 64K	B	$ 79.95	@@
BEST OF #7	BOTH	C	$ 16.00	**
PIX CONVERTOR	BOTH	D	$ 54.94	@@@

MUSICAL

Name:	Hardware:	Source:	Price:	Rate:
LYRA	BOTH	B	$ 110.00	****
" " CONVERT	BOTH	B	$ 29.95	@@@@
" " PRINT	BOTH	B	$ 59.95	@@@@
" " LIBRARY	BOTH	B	$ 69.95	@@@@
SYMPHONY 12	BOTH	B	$ 140.00	@@@@
MUSICA LIBRARY	COCO 2	B	$1 @ 59.	****
MUSICA II	COCO 2	B	$ 59.00	****

ADVENTURES

Name:	Hardware:	Source:	Price:	Rate:
NUKE LOVE BOAT	COCO 3 512K	B	$ 59.95	**
MAGIC OF ZANTH	COCO 3	B	$ 69.95	@@@
KINGS QUEST 3	COCO 3	B	$ 79.95	@@@@
CALADURIL	BOTH	B	$ 59.95	@@@@
ESCAPE: 2012	COCO 2 64K	B	$ 56.00	@@
ROBOT ODDY.	COCO 2 64K	B	$ 69.95	@@
BEST OF #5	BOTH	C	$ 16.00	***
WAR OF THE WRDS	COCO 2 64K	E	$ 50.45	@@@
BLACK SANCTUM	COCO 2 64K	E	$ 33.45	@@@
CALIXTO ISLAND	COCO 2 64K	E	$ 33.45	@@@
SEA SEARCH	COCO 2 64K	E	$ 33.45	@@@
SHENANIGANS	COCO 2 64K	E	$ 33.45	@@@
TREKBOER	COCO 2 64K	E	$ 33.45	@@@
VORTEX FACTOR	COCO 2 64K	E	$ 33.45	@@@
WARP FACTOR X	COCO 2 64K	E	$ 39.45	@@@
PRESRVE QUANDIC	COCO 2 64K	E	$ 44.95	@@@@
MARTIAN CRYPT	COCO 2 32K	E	$ 33.45	@@@
DRAGON BLADE	COCO 2 64K	E	$ 33.45	@@@
SYZYGY	COCO 2 32K	E	$ 33.45	@@@
BLACKBEARDS IS	COCO 2 32K	E	$ 33.45	@@@
DARKMOOR HOLD	COCO 2 64K	E	$ 33.45	@@@
ATLANTIS ADV	COCO 2 16K	E	$ 24.45	@@
4 MILE ISLAND	COCO 2 16K	E	$ 19.95	@@
SPORTS CAR ADV	COCO 2 16K	E	$ 14.95	@@
GRENADA INVASN	COCO 2 16K	E	$ 16.95	@@
ESPIONAGE IS.	COCO 2 32K	E	$ 19.95	@@@
KNGDM OF BASHAM	COCO 2 32K	E	$ 19.95	@@
ALCATRAZ	COCO 2 32K	E	$ 19.95	@@@
SPACE ESCAPE	COCO 2 32K	E	$ 27.95	@@@
MANSION OF DOOM	COCO 2 32K	E	$ 27.95	@@@
IS. OF FORTUNE	COCO 2 32K	E	$ 27.95	@@
BOMB SCARE	COCO 2 32K	E	$ 27.95	@@@
FUNHOUSE	COCO 2 32K	E	$ 27.95	@@@
STALAG	COCO 2 32K	E	$ 27.95	@@
DOOM AT 2100	COCO 2 32K	E	$ 27.95	@@
STONE OF ROKAN	COCO 2 32K	E	$ 27.95	@@@
TUCKER'S MINE	COCO 2 32K	E	$ 27.95	@@
BEACON	COCO 2 32K	E	$ 27.95	@@
ADV. COMBO	COCO 2 32K	E	$ 44.95	@@@

APPLICATIONS

Name:	Hardware:	Source:	Price:	Rate:
DISK LABELER	BOTH	B	$ 39.95	@@
VCR TAPE ORG.	BOTH	B	$ 39.95	@@
SUPER VOICE	BOTH	B	$ 160.00	@@@
GENEOLOGY	COCO 2	B	$ 33.95	@@

HARDWARE

Name:	Hardware:	Source:	Price:	Rate:
10MB DRIVE	BOTH	B	$1299.00	@@@@

20MB DRIVE	BOTH	B	$1599.00	@@@@
512K UPGRADE	COCO 3 128K	B D	$ 220.00	@@@@
DRIVE 40T DSDD	BOTH	B	$ 630.00	@@@
MONITOR	BOTH	B	$ 300.00	@@@@
HI-RES INTRFACE	COCO 3	B	$ 19.95	@@@@
COCO 3 128K	BOTH	B	$ 370.00	****
MULTIPACK	BOTH	B	$ 199.95	***
DMP-106 PRINTER	BOTH	B	$ 399.00	***
AVTEK MINIMODEM	BOTH	B	$ 250.00	****
DMP-130	BOTH	B	$ 599.00	****
VIDEO DRIVER	COCO 2	B	$ 38.00	****
" " W/OUT SOUND	COCO 2	B	$ 32.00	****
NX-1000 DMP	BOTH	B	$ 525.00	@@@
CITIZEN DMP	BOTH	B	$ 599.00	@@
COCOCONNECTION	BOTH	C	$ 219.95	****
Y-CABLE	BOTH	D	$ 47.94	***
THE PROBE	BOTH	C	$ 49.95	**
ADOS 3	COCO 3	D	$ 65.94	@@@
DISTO 80COL CRD	COCO 2	D	$ 239.94	@@@
DISTO C/P	COCO 2	D	$ 119.94	@@@
DISTO: THE LOT	COCO 2	D	$ 479.94	@@@@
J&M CONTROLLER	BOTH	D	$ 299.94	@@@
PBJ-RS232 CARD	BOTH	D	$ 179.94	@@@
PBJ CCBUS	BOTH	D	$ 287.94	@@@
PBJ PC PACK	BOTH	D	$ 167.94	@@@
PBJ WORDPAK I	COCO 2	D	$ 239.94	@@@
PBJ WPAK, RSDOS	COCO 2	D	$ 239.94	@@@
RSDOS CONTRLR.	BOTH	D	$ 239.95	@@@
WYSE 30 TRMNLS	BOTH	B	$ 999.00	@@@
ARCHER JOYSTIX	BOTH	B	$ 27.00	@@

BOOKS

Name:	Hardware:	Source:	Price:	Rate:
6809 ASSEMBLY	BOTH	B	$ 41.95	@@@
COCO 3 SECRETS	BOTH	B	$ 39.95	@@@@
300 PEEKS POKES	BOTH	B	$ 39.95	@@@
BASIC09 TOUR	BOTH	B	$ 34.95	***
DECB UNRAVELLED	BOTH	B	$ 39.95	@@@
INSIDE OS9 L2	BOTH	D B	$ 79.00	****
500 PEEKS POKES	BOTH	B	$ 33.95	@@@@
COCO 3 FACTS	BOTH	B	$ 19.95	@@@
SUPER ECB	BOTH	B	$ 49.95	@@@
ECB UNRAVLED.	BOTH	B	$ 79.95	@@@
RNBOW GDE OS9L2	BOTH	D B	$ 39.95	@@@
500 PEEKS POKES	BOTH	D	$ 24.95	****
US RAINBOW MAG	BOTH	D B	$ 9.95	**
RAINBOW ON DISK	BOTH	D	$ 29.94	@@
UTL ROUTINES 1	BOTH	D	$ 29.95	
BASIC PRG.TRIX	BOTH	B	$ 29.95	@@

UTILITY

Name:	Hardware:	Source:	Price:	Rate:
OS-9 LEVEL 2	COCO 3	B	$ 129.95	****
DESKMATE 3	COCO 3	B D	$ 129.95	***

ADOS 3	COCO 3		B		$ 69.95	***
MULTIVUE	COCO 3		D		$ 99.95	@@@
THE WIZ	COCO 3	512K	B	D	$ 140.00	@@@
DISKFIX	COCO 3		B		$ 59.95	***
ADV. DISKFIX	COCO 3		B		$ 99.95	***
PROG. UTILITY	COCO 2	64K	B		$ 39.95	@@@
SECTOR INSPEC.	COCO 2		B	D	$ 39.95	@@@
DEPUTY INSPECT.	COCO 2		B		$ 39.95	@@@
COCOTEX	BOTH		B		$ 79.95	****
VIP-TERMINAL	BOTH		B		$ 39.95	@@@
SBU	COCO 2		B		$ 59.95	****
UTL ROUTS, PT1	BOTH		D		$ 47.94	@@@
UTL ROUTS, PT2	BOTH		D		$ 53.94	@@@
OS9 DEVEL SYS.	COCO 3		D		$ 175.00	@@@
MULTI-VUE	COCO 3		D		$ 99.94	****
SDISK 3	COCO 3		D		$ 71.94	@@
BASIC09	COCO 3		D		$ 179.94	****
C COMPILER	BOTH		D		$ 179.94	***
HI-RES SCREEN	BOTH		D		$ 71.94	@@@
OS-9 SOLUTION	BOTH		D		$ 83.94	@@@
RAMDISK	COCO 3	512K	B		$ 39.95	@@@

More details on most of the programs listed in this database can be found on this month's edition of CoCoOz, tape or disk.

CUSTOMIZING YOUR COCO3 KEYBOARD

by FRANK X BUTTIGIEG

CoCo3
UTILITY

THIS MAY BE "Old News" for the seasoned CoCo nuts so I'll aim this Utility to the novices or the unwary, as I was till recently.

Now since ROM in the CoCo 3 is copied onto RAM each time we turn the computer on, we have the opportunity to do a bit of experimenting with the ROM routines by directly poking and peeking in that region, which was a taboo area in the CoCo 2.

Recently I discovered (thanks to Allen Drennon, author of "Customizing your keyboard" page 116 Dec'87 Rainbow magazine) that the region between 41582 and 41601 is the special character area, eg. if I PEEK(41593), I get decimal 18 which is the ASCII character for <shift+0>, or the lower-case mode.

Well, it is annoying for me. I even attempted to do a bit of hacking (like I did on the CoCo 2) and put a 'caps. lock' on/off switch, but I found that it didn't work on the CoCo 3. Gloom fell upon me ...

How silly but relieved I felt when I later found out that all I needed was to poke 18 within the region of 41582-41601, eg type POKE41600,18 and PRESTO - now you have a "One key stroke Caps. lock" key on the [ALT] and [@] keys.

And that is only one example. Now I'm not going to go on with what I found in that region.

Mind you, the information is already supplied by the author of C.Y.K.

So, here are the changes I did to certain keys, like the [BREAK/ESC] key.

When you're playing a game using the keyboard, the up arrow is a bit too close to the BREAK button. To eliminate the problem, first find the location (which is 41598) and by typing POKE41598,X (X = 0 to 255) you disable the BREAK completely, or, as I did, change it to a <$> key by making X=36. You can still BREAK from a program or a listing by pressing SHIFT+ESC.

Now isn't that nifty, eh? Of course you can make X=(any number) for the character or function you need.

You may wish to merge this program with any of your programs. I started my listing from 50000 in case the computer locks-up, and you have to press the RESET button to get out of it.

After (C)loading or Merging, type RUN or RUN50000. The screen will turn light cyan, and soon you'll see the first screen which tells you that you now have new key functions on your keyboard followed by part of a detailed explanation of each key changed.

The second screen shows the full details, while the third screen gives the warning that I mentioned above.

Also, if you use Telewriter 64, it will revert your key changes back to its own uses, (the only reason why I still miss the use of the ill fated C/L on/off switch on my CoCo 3).

Before I forget: for those who intend to merge this program with one of theirs, DELete line 50300, otherwise you'll lose both programs.

Finally to identify the "keys" I do not recommend the use of temporary biro scribbled masking tape - it will only cheapen the keyboard.

Instead, do as I did: buy two sheets of 'Letrasets', preferably 1mm for small letters and 2mm for capital letters.

Lets try the BREAK key! Now find a flat spot on the table and roll a piece of 'blue tack' into a ball place under the cap. That will secure the cap from moving sideways (I used a part of a thick white letraset letter,say a part of the leg of the letter "n").

Cut a piece long enough to cover the black letters over BREAK on the red cap.

Now I have decided that the BREAK key should be one keystroke with a < $ > sign.

Since the break function key has two memory locations, I still have the BREAK when I need it. It is a 2 keystroke button with no more "Oops! I hit the BREAK instead of UP-ARROW key" blues.

Handy, eh?

Now all you need is a piece of clear sticky tape long enough to cover the whole cap from the inside of one end to the inside of the other end.

Do the same to the other keys, and Voila! you have got a neat looking and enhanced keyboard.

Cheers for now, and if you have any questions regarding this program, my telephone number is 03-7416482.

PS, I've tried to use the <F1>, <F2> & <CTRL> keys, but they are outside the limit of the 20 poke locations available for us to use.

In fact, the location for the <F1> key is 41604 & 41605, and when I poked a number there, the computer just locked up!

Also, if you intend to use it with a CoCo 2 program that uses graphic screens, then you must delete line number 50100, for it seems to crash the program every time a Syntax error occurs, and you will have to press the RESET button.

Although you won't lose your program, you will lose the altered keys.

This is only a problem with the CoCo 2 Pmode Screen and it works perfectly within the CoCo 3 Hscreen environment I have incountered no problems.

If I do I'll let you know, and if you do please let me know.

A reaction from you is most welcome!

The Listing:

```
0 GOTO4
1 ' COSTUME KEYBOARD....BY FX BU
TTIGIEG.....24/2/88
3 SAVE"178:1":SAVE"178:3":END'UT
L
4 PALETTE12,0:PALETTE13,31:PALET
TE0,31:PALETTE8,0:CLS
50000 POKE41588,19 'RIGHT ARROW
IS NOW A PAUSE BUTTON
50002 POKE41584,34 'DOWN ARROW I
S NOW A <">
50005 POKE41596,92 'CLEAR IS NOW
 A REVERSE SLASH
50010 POKE41597,12 'SHIFT-CLEAR
IS NOW THE CLEAR BUTTON
50015 POKE41598,36 'BREAK IS NOW
 A $ SIGN...TO BREAK MUST USE WI
TH SHIFT SIMULTANEOUSLY
50020 POKE41600,18 'ALT IS NOW A
 CAP.LOCK TOGGLE SWITCH...WORKS
LIKE <SHIFT-0>..
50025 POKE41601,64 'TO TOGGLE <@
> ON, USE WITH SHIFT
50030 POKE41582,35 'UP ARROW IS
NOW A <#>
50035 POKE41583,94 'SHIFT+^(#) I
S NOW AN <^>
50040 POKE41595,95 'CANCEL EDIT
COMMANDS = SHIFT+ENTER
50100 POKE359,57:POKE65314,16
50110 PRINT@3,"Alternative keys
are now        available...here
are the        changes...
50115 PRINT"[RIGHT ARROW] is now
 a <PAUSE>  [DOWN  ARROW] is nov
 a < '' >   [UP    ARROW] is nov
 a < # >    [BREAK] is now a < $
 >          [SHIFT+ESC] is to <B
REAK>              anykey to con
tinue":EXEC44539
50120 PRINT"[CLEAR] is nov a < \
 >          [SHIFT+CLEAR] is to
<CLEAR>     [ALT or @] is now a
<CAPS.lock> [SHIFT+@ or ALT] is
nov a < @ > [SHIFT+^] is now an
< ^ >       [SHIFT+ENTER] is now
 a <COMMAND neutralizer in EDIT
mode in leauof [SHIFT+^]."
50125 PRINT"    (any key for War
ning)":EXEC44539:CLS:PRINT" WARN
ING:-If you press <RESET>  or(C
OLD START). You lose these alte
rnative KEY changes and be  back
 to the old KEYBOARD...!!!
50200 'POKE65497,0 'FAST POKE
50300 NEW
```

barman

by Geoff Donges
GRAPHICS

I HAD NEVER owned a computer before and bought a Tandy CoCo 3 when I was on holidays late January, both to fill in my time and for the kids who are both school age.

Needless to say the kids hardly get to use it as I can't get off it!

Having read the manual and played around with it a while, I started to write the "Barman" program. It's a detailed drawing of a bar room, with a barman standing behind the bar.

He moves up and down (across) the bar. I originally had a section at the top of the screen where I could type in comments, eg "Walk left", "Walk right", "Return", etc.

Then I discovered the CoCoOz Magazine - I put the barman away and subscribed to CoCo and loved it.

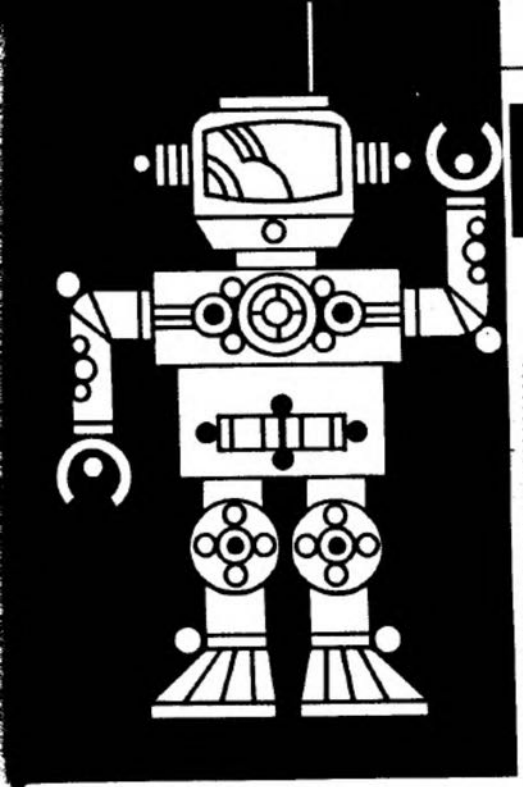
I have cut out the commands section and now have the barman continually running up and down behind the bar for simplicity - perhaps others can add to this and we may come up with one long program that does all sorts of things.

I will eventually get back to this program, but with CoCoOz and so on, there is so much to learn - I may not get the time.

This program should give beginners a good idea of when "GET" and "PUT" are all about.

The Listing:

```
 0 GOTO10
1 '**** BARMAN
2 '**** GEOFF DONGES
3 SAVE"186:1":SAVE"186:3":END'GR
F
10 HSCREEN2:HCLS10:A$="*********
*******************************"
:HPRINT(0,0),A$:SOUND200,1:HPRIN
T(0,4),A$:SOUND200,1:HPRINT(10,8
),"!! A GEOFF DONGES !!":HPRINT(
13,12),"# PRODUCTION #"
20 HPRINT(0,20),A$:SOUND200,1:HP
RINT(0,24),A$:SOUND200,1:FORX=1T
O500:NEXTX:HCLS10:HDRAW"BM60,28R
30D10L5U5L20D70R20U10L8U5R21D5L8
D15L30U80":HPAINT(61,29),1,1
30 HDRAW"BM102,28D80R30U5L25U30R
25U5L25U35R25U5L30":HPAINT(103,2
9),2,1:HLINE(137,28)-(167,108),P
SET,B:HLINE(142,33)-(162,103),PS
ET,B:HPAINT(138,29),3,1
40 HDRAW"BM172,28D80R5U35R15U5L1
5U35R25U5L30":HPAINT(173,29),4,1
:HDRAW"BM207,28D80R5U35R15U5L15U
35R25U5L30":HPAINT(208,29),5,1
50 HLINE(242,20)-(247,30),PSET,B
:HPAINT(243,21),6,1:HDRAW"BM252,
28D45R25D30L25D5R30U40L25U35R25U
5L30":HPAINT(253,29),7,1:SOUND20
0,2
60 HDRAW"BM65,130D40R50U18L3U4R3
U18L50BR5BD5D10R40U10L40BD30R40U
10L40D10":HPAINT(66,131),4,1:HDR
AW"BM120,130D40R5U15R40D15R5U40L
50BR5BD5D15R40U15L40":HPAINT(121
,131),3,1
70 HDRAW"BM175,130D40R5U15R30BR5
R10U25L50BR5BD5D15R40U15L40":HDR
AW"BM210,155F15R5H15":HPAINT(211
,152),2,1:FORX=1TO250:NEXTX:HCLS
10:HBUFF1,850
80 HLINE(0,10)-(320,10),PSET:HDR
AW"BM10,10F25D122G35":HDRAW"BM35
,35R250E25":HLINE(192,10)-(200,1
3),PSET,B:HCIRCLE(196,13),3,1,1,
0,.50:HDRAW"BM196,16D44F5L10E5":
HCIRCLE(196,65),3,1,1,0,.50
90 HLINE(258,10)-(266,13),PSET,B
:HCIRCLE(262,13),3,1,1,0,.50:HDR
AW"BM262,16D44F5L10E5":HCIRCLE(2
62,65),3,1,1,0,.50:HDRAW"BM163,3
8R10BD2L10BD2R10BD2L10BD2R10":HD
RAW"BM222,38R10BD2L10BD2R10BD2L1
0BD2R10"
100 HLINE(320,28)-(294,41),PSET:
HLINE-(294,91),PSET:HLINE-(320,1
05),PSET:HLINE(320,30)-(296,43),
PSET:HLINE-(296,89),PSET:HLINE-(
320,103),PSET:HLINE(50,37)-(95,5
7),PSET,B:HLINE(52,39)-(93,55),P
SET,B
110 HLINE(50,60)-(95,157),PSET,B
:HLINE(52,62)-(93,157),PSET,B:HC
IRCLE(87,110),2:HDRAW"BM285,35D6
1R2F19D55R2D3L2D5F14":HDRAW"BM26
6,155U3R12D3L12":HLINE(266,155)-
(263,187),PSET:HLINE-(265,187),P
SET:HLINE-(266,176),PSET
120 HLINE(266,176)-(277,176),PSE
T:HLINE(277,176)-(278,187),PSET:
HLINE-(280,187),PSET:HLINE-(278,
155),PSET:HLINE(268,156)-(266,17
4),PSET:HLINE-(277,174),PSET:HLI
NE-(276,156),PSET:HLINE-(268,156
),PSET
130 HLINE(200,143)-(212,146),PSE
T,B:HLINE(200,146)-(197,181),PSE
T:HLINE-(199,181),PSET:HLINE-(20
0,170),PSET:HLINE-(211,170),PSET
:HLINE-(212,181),PSET:HLINE-(214
,181),PSET:HLINE-(212,146),PSET
140 HLINE(202,147)-(200,167),PSE
T:HLINE-(211,167),PSET:HLINE-(21
0,147),PSET:HLINE-(202,147),PSET
:HLINE(279,170)-(308,170),PSET:H
LINE(279,173)-(308,173),PSET:HDR
AW"BM265,170L52BD3R51BL53L11BL2L
34U3R34":HDRAW"BM277,170L11BD3R1
1"
150 HDRAW"BM306,178L27BL1L12BL2L
50BL2L13BL2L30U5BU3U47":HLINE(16
5,117)-(306,123),PSET,B:HDRAW"BM
167,115D2L2U20R2D20BU20U1R60BD2L
26BD14L27U5R27BL27U9R27BD9R25BL2
5BD5R24"
160 HDRAW"BM247,112R49BU5BL5L45B
R27BU9R09L36":HLINE(245,96)-(287
,96),PSET:HLINE(282,98)-(298,113
),PSET:HLINE(273,96)-(245,96),PS
ET:HLINE(35,157)-(167,157),PSET
170 HCIRCLE(236,78),5,1,1,.50,0:
HCIRCLE(230,78),1:HCIRCLE(230,77
),1:HCIRCLE(229,78),1:HCIRCLE(24
2,78),1:HCIRCLE(242,77),1:HCIRCL
E(243,78),1:HDRAW"BM230,79D2R1D2
":HDRAW"BM242,79D2L1D2":HCIRCLE(
236,83),5:HLINE(235,85)-(237,85)
,PSET
180 HDRAW"BM234,85U2R4D2L1U1L2D1
L1":HDRAW"BM232,78R2BR2R2":HCIRC
LE(234,80),1:HCIRCLE(238,80),1:H
DRAW"BM232,86G2F4":HDRAW"BM240,8
6F2G4":HLINE(235,88)-(234,92),PS
ET:HLINE(237,88)-(238,92),PSET
190 HCIRCLE(236,89),1:HDRAW"BM23
5,90D14R2U14":HDRAW"BM230,107R12
BD1L12BR5D1R3U3L3D2":HCIRCLE(230
,91),3,1,1,.50,.75:HCIRCLE(242,9
1),3,1,1,.75,0:HLINE(233,94)-(23
1,96),PSET
200 HLINE(231,96)-(231,93),PSET:
HLINE(239,94)-(241,96),PSET:HLIN
E-(241,93),PSET:HLINE(231,95)-(2
29,113),PSET:HLINE-(225,112),PSE
T:HLINE-(227,91),PSET:HLINE(241,
96)-(243,113),PSET:HLINE-(247,11
2),PSET:HLINE-(245,91),PSET
210 HDRAW"BM225,112L4D1R4G2F1E3"
:HDRAW"BM247,112R4D1L4F2G1H3":HD
RAW"BM229,112R14":HPAINT(236,76)
,7,1:HPAINT(246,113),7,1:HPAINT(
226,113),7,1:HPAINT(233,88),4,1:
HPAINT(239,88),4,1:HPAINT(233,92
),4,1:HPAINT(239,92),4,1
220 HPAINT(204,144),7,1:HPAINT(1
98,177),7,1:HPAINT(272,154),7,1:
PALETTE8,4:HPAINT(236,140),8,1:H
PAINT(205,166),8,1:HPAINT(276,16
6),8,1:HPAINT(172,100),8,1:HPAIN
T(300,116),8,1:HPAINT(300,176),8
,1:HPAINT(236,176),8,1:HPAINT(17
6,176),8,1
230 HPAINT(236,113),8,1:HPAINT(1
80,171),4,1:HPAINT(202,171),4,1:
HPAINT(236,171),4,1:HPAINT(272,1
71),4,1:HPAINT(296,171),4,1:HPAI
NT(176,119),4,1:HPAINT(51,61),4,
1:HPAINT(51,38),4,1:HPAINT(295,4
2),4,1:PALETTE15,24:PALETTE14,49
240 HPAINT(308,68),15,1:HPAINT(2
0,12),8,1:HPAINT(8,16),14,1:HPAI
NT(40,40),14,1:HPAINT(312,20),14
,1:HPAINT(228,20),8,1:HPAINT(276
,20),8,1:HPAINT(120,176),3,1:HPA
INT(68,48),15,1:HPAINT(68,80),2,
1
250 ONBRKGOTO290
260 HGET(219,72)-(253,116),1:FOR
X=217TO177STEP-2:HPUT(X,72)-(X+3
4,116),1,PSET:NEXTX
270 FORX=177TO246STEP2:HPUT(X,72
)-(X+34,116),1,PSET:NEXTX
280 FORX=246TO177STEP-2:HPUT(X,7
2)-(X+34,116),1,PSET:NEXTX:GOTO2
70
290 WIDTH32:CLS:PRINT@168,"THATS
 ALL FOLKS":END
```



ROBOT

by ANDREW GREEN
GRAPHICS

ROBOT IS FOR A friend who asked me to write for him. It draws a robot that looks a bit like an astronaut. It was made using the line-master utility.

It also makes it a lot easier to have someone read out the data statements. Hope you like it!

Happy computing!

The Listing:

```
0 GOTO 10
1 '******************
2 '*      ROBOT      *
3 '*  BY A.GREEN!    *
4 '*  (C) 16/5/88    *
5 '* 30A SPENCE ST  *
6 '*  TAREE  2430    *
7 '*   AGE:- 14!     *
8 '******************
9 SAVE"185:1":SAVE"185:3":END'GR
F
10 CLS(0)
20 PRINT@101,"ANDREW GREEN PRESE
NTS";
30 PRINT @203,"R";:SOUND 100,4:F
ORI=1 TO 100:NEXT
40 PRINT @205,"O";:SOUND 100,4:F
OR I=1 TO 100:NEXT
50 PRINT@207,"B";:SOUND 100,4:FO
R I=1 TO 100:NEXT
60 PRINT@209,"O";:SOUND 100,4:FO
R I=1 TO 100:NEXT
70 PRINT@211,"T";:SOUND 100,4:FO
R I=1 TO 100:NEXT
80 FOR A=0 TO 31:B=RND(9)-1:SET(
A,0,B):SET(0,A,B):SET(63-A,0,B):
SET(63,A,B):SET(A,31,B):SET(63-A
,31,B):NEXT A
90 PRINT@298,"(C) 16/5/88";
100 PRINT@458,"PLEASE WAIT";
110 PMODE 4:PCLS1:COLOR 0,1
120 FOR Z=1 TO 227
130 READ A,B,C,D
140 LINE(A,B)-(C,D),PSET
150 NEXT
160 PAINT(128,50)
170 PAINT(165,50)
180 LINE(1,1)-(254,190),PSET,B
190 PAINT(0,0)
200 SCREEN 1,1
210 GOTO 210
220 DATA 68, 30, 76, 22
230 DATA 76, 22, 82, 26
240 DATA 82, 26, 84, 23
250 DATA 84, 23, 91, 26
260 DATA 91, 26, 90, 36
270 DATA 90, 36, 80, 38
280 DATA 80, 38, 71, 43
290 DATA 71, 43, 68, 30
300 DATA 71, 43, 70, 52
310 DATA 70, 52, 79, 46
320 DATA 79, 46, 85, 44
330 DATA 85, 44, 91, 44
340 DATA 91, 44, 89, 36
350 DATA 91, 44, 93, 48
360 DATA 93, 48, 84, 48
370 DATA 84, 48, 78, 50
380 DATA 78, 50, 71, 56
390 DATA 71, 56, 70, 53
400 DATA 71, 57, 70, 62
410 DATA 70, 62, 78, 55
420 DATA 78, 55, 86, 52
430 DATA 86, 52, 94, 50
440 DATA 94, 50, 93, 48
450 DATA 96, 51, 99, 53
460 DATA 99, 53, 98, 56
470 DATA 98, 56, 95, 53
480 DATA 95, 53, 87, 54
490 DATA 87, 54, 81, 57
500 DATA 81, 57, 76, 64
510 DATA 76, 64, 74, 71
520 DATA 74, 71, 71, 65
530 DATA 71, 65, 70, 62
540 DATA 74, 71, 76, 77
550 DATA 76, 77, 80, 83
560 DATA 80, 83, 85, 74
570 DATA 85, 74, 91, 66
580 DATA 91, 66, 99, 62
590 DATA 99, 62, 98, 56
600 DATA 99, 62, 103, 66
610 DATA 103, 66, 92, 73
620 DATA 92, 73, 86, 81
630 DATA 86, 81, 83, 86
640 DATA 83, 86, 81, 83
650 DATA 83, 86, 78, 102
660 DATA 78, 102, 78, 115
670 DATA 78, 115, 79, 125
680 DATA 79, 125, 83, 137
690 DATA 83, 137, 94, 142
700 DATA 94, 142, 111, 141
710 DATA 111, 141, 130, 138
720 DATA 130, 138, 145, 136
730 DATA 145, 136, 151, 133
740 DATA 151, 133, 154, 126
750 DATA 154, 126, 152, 117
760 DATA 152, 117, 149, 109
770 DATA 149, 109, 140, 105
780 DATA 140, 105, 136, 97
790 DATA 136, 97, 137, 85
800 DATA 137, 85, 141, 74
810 DATA 141, 74, 144, 69
820 DATA 144, 69, 104, 66
830 DATA 109, 66, 102, 59
840 DATA 102, 59, 99, 52
850 DATA 99, 52, 96, 43
860 DATA 96, 43, 98, 33
870 DATA 98, 33, 100, 25
880 DATA 100, 25, 95, 32
890 DATA 95, 32, 97, 40
900 DATA 100, 25, 104, 14
910 DATA 104, 14, 112, 7
920 DATA 112, 7, 122, 4
930 DATA 122, 4, 134, 3
940 DATA 134, 3, 148, 8
950 DATA 148, 8, 160, 22
960 DATA 160, 22, 163, 30
970 DATA 163, 30, 159, 40
980 DATA 159, 40, 158, 44
990 DATA 158, 44, 159, 54
1000 DATA 159, 54, 164, 53
1010 DATA 164, 53, 168, 47
1020 DATA 168, 47, 169, 39
1030 DATA 169, 39, 167, 33
1040 DATA 167, 33, 163, 31
1050 DATA 166, 33, 162, 40
1060 DATA 162, 40, 162, 47
1070 DATA 162, 47, 163, 53
1080 DATA 158, 54, 153, 63
1090 DATA 153, 63, 143, 69
1100 DATA 125, 67, 136, 65
1110 DATA 136, 65, 148, 56
1120 DATA 148, 56, 154, 49
1130 DATA 154, 49, 154, 37
1140 DATA 154, 37, 153, 27
1150 DATA 153, 27, 146, 17
1160 DATA 146, 18, 135, 10
1170 DATA 136, 10, 126, 8
1180 DATA 126, 8, 113, 13
1190 DATA 113, 13, 104, 22
1200 DATA 104, 22, 100, 34
1210 DATA 100, 34, 101, 48
1220 DATA 101, 48, 106, 58
1230 DATA 106, 58, 116, 67
1240 DATA 108, 23, 116, 16
1250 DATA 116, 16, 123, 12
1260 DATA 123, 12, 126, 16
1270 DATA 126, 16, 117, 21
1280 DATA 117, 21, 109, 23
1290 DATA 134, 22, 137, 20
1300 DATA 137, 20, 139, 24
1310 DATA 139, 24, 137, 25
1320 DATA 137, 25, 134, 21
1330 DATA 139, 19, 142, 22
1340 DATA 142, 22, 146, 21
1350 DATA 146, 21, 141, 16
1360 DATA 141, 16, 139, 19
1370 DATA 141, 27, 138, 27
1380 DATA 138, 27, 141, 34
1390 DATA 141, 34, 143, 34
1400 DATA 143, 34, 142, 27
1410 DATA 144, 26, 148, 26
1420 DATA 148, 26, 150, 33
1430 DATA 150, 33, 146, 33
1440 DATA 146, 33, 144, 26
1450 DATA 153, 64, 156, 69
1460 DATA 154, 73, 155, 68
1470 DATA 156, 59, 161, 65
1480 DATA 161, 65, 161, 71
1490 DATA 161, 71, 158, 76
1500 DATA 155, 66, 158, 63
1510 DATA 155, 68, 161, 68
1520 DATA 156, 71, 160, 73
1530 DATA 144, 70, 149, 72
1540 DATA 149, 72, 159, 79
1550 DATA 159, 79, 147, 91
1560 DATA 147, 91, 144, 98
1570 DATA 144, 98, 143, 106
1580 DATA 149, 109, 157, 99
1590 DATA 157, 99, 167, 91
1600 DATA 167, 91, 168, 89
1610 DATA 168, 89, 165, 85
1620 DATA 165, 85, 159, 80
1630 DATA 168, 89, 173, 90
1640 DATA 173, 90, 171, 94
1650 DATA 171, 94, 164, 98
1660 DATA 164, 98, 156, 107
1670 DATA 156, 107, 153, 112
1680 DATA 153, 112, 150, 109
1690 DATA 154, 112, 156, 113
1700 DATA 156, 113, 160, 105
1710 DATA 160, 105, 167, 101
1720 DATA 167, 101, 175, 98
1730 DATA 175, 98, 176, 95
```

AUTO MUSIC

by JOHANNA VAGG

16K ECB MUSIC UTILITY

NOW YOU WILL be able to listen to your Music+ files while you do the dishes, without having to dry your hands to "LOADM" and "EXEC" each one.

Just put it into automatic! "Individual" will let you listen to the ones of your choice, if your hands are dry.

Only the first 30 titles will be on the screen if in individual mode.

The Listing:

```
0 '**********AUTOMUSE************
  ********JOHANNA VAGG***********
  **********MAY 1987************
1 GOTO10
3 SAVE"149E:1":SAVE"149E:3":END'
MUS
5 'MAIN PROGRAM IS LARGELY JEFF
  WHITE'S PICTURE SHOW
6 'KEYBOARD BY G THURSTON
10 CLS:PRINT"IF YOU GET AN ERROR
, PERHAPS YOU NEED TO PCLEAR1 BE
FORE LOADING"
11 CLEAR230:Z=RND(-TIMER)
12 A$="D60R10U20L3U40L7R10"
14 D$="L3D40R6U40L3"
16 E$="R3D40L3D20R10U20L3U40L4R7
"
18 F$="R10D60L10U20R3U40R7"
20 PMODE0:SCREEN1,1:PCLS1
22 COLOR0,1
24 DRAW"BM10,60
26 FORA=1TO3
28 DRAWA$+D$+E$+D$+F$
30 DRAWA$+D$+E$+D$+E$+D$+F$
32 NEXT
34 FORA=0TO14
36 READB:PAINT(B,75):NEXT
38 N$="U15M+10,-4D17
40 DRAW"BM180,40":DRAWN$
42 DRAW"BM10,20":DRAWN$:DRAW"BM1
10,160":DRAWN$
44 FORT=1TO6:READX,Y
46 CIRCLE(X,Y),3:PAINT(X,Y)
48 NEXT
50 DATA20,30,50,60,70,90,100,120
,130,140,160,170,190,200,210
52 DATA 8,23,18,20,178,43,188,40
,108,163,118,160
54 FORT=1TO1000:NEXT
60 CLS:PRINT:PRINT"IF YOU ONLY H
AVE MUSIC+ FILES ON YOUR DISK TH
EN YOU MAY LOAD  A  PMODE 4 SCRE
EN. IF YOU WISH TO DO THIS, THEN
 BREAK, COLDSTART, LOADM THE SCR
EEN, LOAD AUTOMUSE AND RUN 120"
65 PRINT:PRINT"  IF  YOUR DISK
ALSO HAS COCO- COMPOSER FILES, O
R YOU ARE HAPPY WITH THE KEYBOAR
D AND NOTES,   THEN PRESS ANY KE
Y TO CONTINUE"
68 PRINT"     PMODE WILL THEN BE
 0"
70 S$=INKEY$:IF S$=""THEN70
120 CLS2
130 PRINT"DO YOU WANT INSTRUCTIO
NS  (Y/N)?";
150 A$=INKEY$:IF A$="" THEN 150
160 IF A$="Y" THEN 1080
170 CLEAR3000:DIM C$(11),MUS$(68
),EXT$(68)
190 CLS2:INPUT"WHICH PMODE ARE Y
OU USING (0-4)";P
195 IF P>4 THEN P=0
200 PRINT"AUTOMATIC OR INDIVIDUA
L (A/I)"
220 AI$=INKEY$:IF AI$="" THEN 22
0
230 IF AI$="A" THEN A=1 ELSE A=2
232 IF A=1 THENPRINT:INPUT"fORWA
RDS, bACKWARDS OR rANDOMLY";W$
233 IF W$="F" THEN W=1
234 IF W$="B" THEN W=2
235 IF W$="R" THEN W=3
240 PRINT@256,"          (ENTER
)= 0"
250 POKE1279,95
260 PRINT@224,"";:INPUT"ENTER DR
IVE NUMBER (0,1,2,3)";K
270 IF K<0 OR K>3 THEN 200
280 DRIVE K
290 PMODEP:SCREEN1,1
300 GOSUB550
310 PRINT@480,"ENTER THE NUMBER
OR Q TO QUIT";
400 PRINT@510,"";:LINE INPUT"";F
$
420 IF F$="Q" THEN 900
430 F=VAL(F$)
440 IF F<1 OR F>C THEN 370
450 P$=MUS$(F)+"/"+EXT$(F)
470 PMODEP:SCREEN1,1:LOADM P$:PO
KE&HFF40,0:EXEC
475 GOSUB720:GOTO310
550 'GET FILE NAMES
560 FOR X = 3 TO 11
570 DSKI$ K,17,X,A$,B$
580 IF (LEFT$(A$,1)=CHR$(&HFF))
THEN 600
590 C$(X)=A$+LEFT$(B$,127):NEXT
X
600 POKE&HFF40,0:X=X+1:C=1
610 FOR Y = 3 TO X:FOR Z=0 TO 7
620 IF MID$(C$(Y),Z*32+9,3)="BIN
" THEN630 ELSE 680
630 MUS$(C)=MID$(C$(Y),Z*32+1,8)
640 EXT$(C)=MID$(C$(Y),Z*32+9,3)
650 O$=LEFT$(MUS$(C),1)
660 IF (O$=CHR$(0) OR O$=CHR$(&H
FF)) THEN 680
670 C=C+1
680 NEXT Z:NEXT Y
690 IF A=1 THEN GOSUB790
700 C=C-1
710 IF C=0 THEN 1260
720 MID=15
730 CLS:TAB=1
740 FOR D = 1 TO C
750 PRINT@TAB,USING"##";D;:PRINT
".--> ";MUS$(D);
760 TAB=TAB+32:IF D=MID THEN TAB
=16
765 IF D=30 THEN780
770 NEXT D
780 RETURN
790 'AUTOMATIC
792 IF W=1 THEN X=1:Y=C-1:Z=1
794 IF W=2 THEN X=C-1:Y=1:Z=-1
796 IF W=3 THEN D=RND(C-1):GOTO8
20
800 FORD= X TO Y STEPZ
820 IF C=1 THEN 1260
840 P$=MUS$(D)+"/"+EXT$(D):PMODE
P:SCREEN1,1:LOADM P$:POKE&HFF40,
0:EXEC
850 FORT=1TO600:NEXTT:IF W=3 THE
N 796
870 NEXTD
880 C=C-1
890 GOSUB720
900 CLS:PRINT@384,"DO YOU WISH T
O DO ANOTHER DISK?
(Y/N)"
950 A$=INKEY$:IF A$="" THEN950
960 IF A$="Y" THEN 170
970 IF A$="N" THEN 980 ELSE 950
980 END
1080 'INSTRUCTIONS
1090 CLS:PRINT"NOW YOU WILL BE A
BLE  TO LISTEN TO YOUR MUSIC+  F
ILES WHILE YOU DO THE DISHES...
WITHOUT HAVING TO DRY YOUR HANDS
  TO LOADM AND EXEC EACH ONE"
1100 PRINT:PRINT"JUST PUT THIS I
NTO AUTOMATIC.."
1110 PRINT:PRINT"INDIVIDUAL WILL
 LET YOU LISTEN  TO THE ONES OF
YOUR CHOICE..IF  YOUR HANDS ARE
DRY!!"
1120 PRINT"ONLY THE FIRST 30 TIT
LES WILL BE ON THE SCREEN IF IN
INDIVIDUAL"
1130 PRINT:PRINT"     ANY KEY TO
 CONTINUE"
1250 T$=INKEY$:IF T$=""THEN1250
1255 GOTO170
1260 DIR
1270 PRINT:PRINT"THERE ARE NO <B
IN> FILES ON THIS DISK"
1280 FORT=1TO2000:NEXT
1290 GOTO170
```

```
1740 DATA 176, 95, 173, 93
1750 DATA 176, 97, 178, 102
1760 DATA 178, 102, 169, 103
1770 DATA 169, 103, 162, 107
1780 DATA 162, 107, 158, 115
1790 DATA 158, 115, 155, 113
1800 DATA 158, 116, 159, 118
1810 DATA 159, 118, 168, 113
1820 DATA 168, 113, 178, 109
1830 DATA 178, 109, 177, 103
1840 DATA 178, 108, 184, 115
1850 DATA 184, 115, 185, 122
1860 DATA 185, 122, 179, 124
1870 DATA 179, 124, 172, 118
1880 DATA 172, 118, 169, 124
1890 DATA 169, 124, 170, 130
1900 DATA 170, 130, 163, 127
1910 DATA 163, 127, 159, 118
1920 DATA 171, 122, 178, 127
1930 DATA 178, 127, 179, 124
1940 DATA 178, 127, 182, 127
1950 DATA 182, 127, 185, 126
1960 DATA 185, 126, 185, 122
1970 DATA 145, 137, 139, 141
1980 DATA 139, 141, 128, 141
1990 DATA 128, 141, 118, 143
2000 DATA 118, 143, 112, 143
2010 DATA 112, 143, 112, 141
2020 DATA 111, 143, 99, 145
2030 DATA 99, 145, 94, 144
2040 DATA 94, 144, 94, 142
2050 DATA 94, 144, 95, 148
2060 DATA 95, 148, 108, 149
2070 DATA 108, 149, 112, 147
2080 DATA 112, 147, 112, 143
2090 DATA 114, 147, 128, 145
2100 DATA 128, 145, 138, 143
2110 DATA 139, 143, 146, 140
2120 DATA 146, 140, 145, 138
2130 DATA 147, 141, 146, 145
2140 DATA 146, 145, 133, 148
2150 DATA 133, 148, 122, 149
2160 DATA 122, 149, 112, 149
2170 DATA 112, 149, 112, 147
2180 DATA 111, 149, 108, 151
2190 DATA 108, 151, 99, 150
2200 DATA 99, 150, 94, 150
2210 DATA 94, 150, 95, 148
2220 DATA 94, 150, 86, 160
2230 DATA 86, 160, 82, 168
2240 DATA 82, 168, 79, 181
2250 DATA 79, 181, 92, 185
2260 DATA 92, 185, 103, 182
2270 DATA 103, 182, 106, 171
2280 DATA 106, 171, 109, 159
2290 DATA 109, 159, 114, 149
2300 DATA 147, 144, 156, 153
2310 DATA 156, 153, 163, 164
2320 DATA 163, 164, 163, 170
2330 DATA 163, 170, 151, 178
2340 DATA 151, 178, 139, 182
2350 DATA 139, 182, 122, 186
2360 DATA 122, 186, 106, 185
2370 DATA 106, 185, 103, 181
2380 DATA 79, 181, 82, 186
2390 DATA 82, 186, 92, 187
2400 DATA 92, 187, 103, 185
2410 DATA 103, 185, 104, 182
2420 DATA 101, 186, 111, 188
2430 DATA 112, 188, 127, 188
2440 DATA 127, 188, 139, 186
2450 DATA 139, 186, 151, 181
2460 DATA 151, 181, 159, 177
2470 DATA 159, 177, 165, 172
2480 DATA 165, 172, 164, 167
```

HCOT MON

by MAL MCLAUCHLAN

CoCo3 MUSIC

IN COCO MARCH'88 issue, Joy Wallace answered my earlier request for Scottish tartan graphics on CoCo 3's super hi-res screen. Joy came up with some truly delightful examples of tartan designs.

So I have used my favourite from her collection as background for the music of a stirring Scottish reel in 4-part harmony, which I set using the MUSIC+ program, but which can be used independently.

The result of combining the tartan graphics and the M/L music is an example of how different programmers, each with their own talents, can combine to produce something really worthwhile.

The program is arranged so that the Basic "SCOTPIPE" acts as a loader for the machine language "SCOTREEL". With disk, this happens automatically when you RUN "SCOTPIPE". With tape, you have to change "LOADM" in Line 170 to "CLOADM", then leave the Play button depressed when you RUN "SCOTREEL".

The Listing:

```
0 GOTO10
1 '####A WEE BIT O' SCOTLAND####
###SCOTTISH REEL MUSIC SET TO###
##COCO BY MAL MCLAUCHLAN, AND###
##THE ROYAL STEWART TARTAN BY###
########JOY WALLACE#############
2 '##CAN BE USED WITH TAPE BY
CHANGING 'LOADM' IN LINE 170 TO
'CLOADM' - AND BE SURE TO LEAVE
'PLAY' PRESSED DOWN ON RECORDER#
3 SAVE"182:1":SAVE"182:3":END'MU
S
10 POKE65497,0
20 HSCREEN2:HCLS0
30 PALETTE0,0:PALETTE1,54:PALETT
E2,6:PALETTE3,36:PALETTE4,24:PAL
ETTE5,36:PALETTE6,63:PALETTE7,2:
PALETTE8,0:PALETTE9,0
40 HCOLOR5:HLINE(72,0)-(96,191),
PSET,BF:HLINE(216,0)-(240,191),P
SET,BF:HLINE(0,72)-(320,96),PSET
,BF
50 HCOLOR2:FORX=60TO96STEP36:HLI
NE(X,0)-(X+12,191),PSET,BF:NEXTX
:FORX=204TO240STEP36:HLINE(X,0)-
(X+12,191),PSET,BF:NEXTX:FORY=60
TO96STEP36:HLINE(0,Y)-(320,Y+12)
,PSET,BF:NEXTY
60 HCOLOR7:FORX=60TO96STEP36:HLI
NE(X,60)-(X+12,108),PSET,B:NEXTX
:FORX=204TO240STEP36:HLINE(X,60)
-(X+12,108),PSET,B:NEXTX:FORY=60
TO96STEP36:HLINE(60,Y)-(108,Y+12
),PSET,B:HLINE(204,Y)-(252,Y+12)
,PSET,B:NEXTY
70 FORX=65TO101STEP36:HPAINT(X,6
5),7,7:HPAINT(X,100),7,7:NEXTX:F
ORX=210TO246STEP36:HPAINT(X,65),
7,7:HPAINT(X,100),7,7:NEXTX
80 HCOLOR8:FORX=44TO192STEP144:H
LINE(X,0)-(X+10,191),PSET,BF:NEX
TX:FORX=114TO258STEP144:HLINE(X,
0)-(X+10,191),PSET,BF:NEXTX:FORY
=44TO114STEP70:HLINE(0,Y)-(320,Y
+10),PSET,BF:NEXTY
90 HLINE(0,186)-(320,191),PSET,B
F
100 HPAINT(84,74),3,7:HPAINT(228
,74),3,7:FORX=20TO300STEP140:HPA
INT(X,20),3,8:HPAINT(X,170),3,8;
NEXTX
110 HCOLOR4:HLINE(42,0)-(44,191)
,PSET,BF:HLINE(124,0)-(126,191),
PSET,BF:HLINE(186,0)-(188,191),P
SET,BF:HLINE(268,0)-(270,191),PS
ET,BF:HLINE(0,42)-(320,44),PSET,
BF:HLINE(0,124)-(320,126),PSET,B
F:HLINE(0,186)-(320,188),PSET,BF
120 HCOLOR6:HLINE(84,0)-(228,191
),PSET,B:HLINE(0,84)-(320,84),PS
ET:HLINE(57,0)-(111,191),PSET,B:
HLINE(201,0)-(255,191),PSET,B:HL
INE(0,57)-(320,111),PSET,B
130 HCOLOR9:HLINE(79,0)-(89,191)
,PSET,B:HLINE(78,0)-(90,191),PSE
T,B:HLINE(223,0)-(233,191),PSET,
B:HLINE(222,0)-(234,191),PSET,B:
HLINE(0,79)-(320,89),PSET,B:HLIN
E(0,78)-(320,90),PSET,B
140 HCOLOR1:HLINE(54,0)-(114,191
),PSET,B:HLINE(198,0)-(258,191),
PSET,B:HLINE(0,54)-(320,114),PSE
T,B
150 HCOLOR0:HLINE(0,0)-(320,191)
,PSET,B
160 POKE65496,0
170 LOADM"SCOTREEL":EXEC
180 GOTO180
```

quill

by TOM LEHANE

CoCo1/2/3
UTILITY

QUILL IS A small Basic wordprocessor that can be used for letter writing or a reporters kit.

If you would like to write an article or a review of a program you have just purchased or an old one you think could do with an up-date review, then this small wordprocessor will do the job.

The text from this word processor is saved in ASCII and can be read by the professional wordprocessors that will load ASCII files (even OS-9 likes 'em - Ed!).

When using QUILL, the only control key to remember is the UP ARROW. This instruction is displayed on the menu screen.

When first run, you are asked for a line length. This is for the number of characters per line your printer can handle - as for the TP-10 thermal printer, this is 32 characters.

This program has a minimum of 32 and a maximum of 80. If you just press enter from this prompt, the characters per line is set at 80. This makes QUILL compatible with other printers and can be used from the TP-10 up to the more expensive models.

From the main menu, entering (1) takes you to the text input mode and the keyboard is in lowercase. The computer will make a sound when your text has reached the characters per line limit set at the beginning. This works like the old typewriters, where a bell would sound for a carriage return.

Once the sound has been made, no more print can be entered and only vertical characters will be displayed so you can backup using the left arrow to make any adjustments to the text and press enter to start a new line.

It does not take long to get the feel how far your text limit is when typing to the screen. To return to the MAIN MENU, press the up arrow from a new lineinput. That's when the orange cursor is at the left hand side of your screen after pressing the enter key.

Entering (2) from the menu takes you to the print mode. The print mode allows you to print the text to the screen or printer. When text is shown on the text screen, four lines will be displayed per screen.

Pressing enter will display the next four lines until all text has be shown.

To save your text to tape or disk, just follow the on screen prompts. If saving text to disk DON'T USE AN EXTENTION as the program puts a "/DAT" after your file name.

The next mode is EDIT, or number 4 from the main menu. When in the edit mode, your text is shown one full line at a time and a number of prompts are displayed below your text.

The Yes prompt is entered when you wish to make a correction to that line. The edit mode will then ask for the phrase to delete. You may enter a complete word or just a single letter or more than one letter.

For example if the text read 'A LETTER WAS WRITEN FOR A FRIEND' and you wanted to correct the word WRITEN to WRITTEN, all you need to do is type 'ITE' at the phrase to delete it and press enter.

Another prompt will appear asking for the replacement phrase. Type in ITTE and press enter - QUILL will adjust the word WRITEN and make the correction requested to WRITTEN.

If you had only entered TE the first letters starting with TE would be changed and in the case of our example the word LETTER would have been chosen by the edit mode. If you don't want to edit that line then press (N) and the next line will be displayed.

(M) will take you out of the edit mode and return you to the menu. You can step back a line by entering (P) for Previous line. This allows you to step back and forth through your text.

The edit routine comes from a sample program in TANDY'S GETTING STARTED manual.

The Listing:

```
0 GOTO10
1 '***** QUILL WORDPROCESSOR
2 '***** TOM LEHANE
3 SAVE"147:1":SAVE"147:3":END'UT
L
10 GOTO 1100
20 TL$="COCO QUILL WORD-PROCESSO
R"
30 C$=CHR$(255)
40 CLS:PRINT:PRINT"INSTRUCTIONS
:USE UP ARROW (^)":PRINTTAB(2)"O
N NEW LINE INPUT FOR MENU"
50 '
60 EX=32:GOSUB 210:EX=0
70 PRINT@163,TL$
80 PRINTTAB(7)"BY TOM LEHANE 198
8":PRINTTAB(7)STRING$(18,140)
90 PRINT:INPUT"ENTER LINE LENGTH
 (32 - 80)";LL
100 IF LL=0THEN LL=80 ELSE IF LL
<32 THEN40 ELSE IF LL>80THEN 40
110 IF LL=32 THEN L=33
120 FORD=1TO10:READM$(D):NEXT
130 GOTO 250
140 DATA (1) ENTER TEXT,(2) PRIN
T TEXT,(3) SAVE/ LOAD
150 DATA (4) EDIT TEXT,(1) SAVE
 TEXT,(2) LOAD TEXT,(3) MENU
160 DATA (1) PRINT TO SCREEN,(2)
 SEND TO PRINTER,(3) MENU
170 PRINT@161,STRING$(30,131)
180 FOR D=A TO B:PRINT TAB(8)M$(
D):NEXT:RETURN
190 X$=INKEY$:IF X$="" THEN 190
200 RETURN
210 FOR X=1024 TO 1119+EX
220 POKEX,PEEK(X)-64
230 NEXT
240 RETURN
250 CLS:PRINT@3,TL$:PRINT:PRINT"
 USE (^) ON NEW INPUT FOR MENU."
:A=1:B=4:GOSUB 210:GOSUB 170
260 PRINT@131,"LINE LENGTH SET A
T"LL"CHRS"
270 GOSUB 190:C=INSTR("1234",X$)
:ON C GOTO 290,560,670,900
280 GOTO 250
290 POKE282,0:CLS
300 IF L=33 THEN GOSUB 1110:GOTO
 320
310 FOR X=1 TO T:PRINTA$(X):NEXT
320 T=T+1
330 LP=0
340 PRINTC$;
```

DISK FILE DATA

by GRAHAM DICKINSON

CoCo WITH DISK UTILITY

DISK FILE Data is a disk utility program that accesses the data stored in the Granule Allocation Table (GAT) and the File Allocation Table (FAT). A tutorial on this subject appeared in the November 87 issue of Australian Coco.

The data is then reformatted into a complete listing including Filename, File Mode and Type, Granule, Track, Sector Start and Sector End information.

Display options include individual file data to screen or printer, or a complete hardcopy data listing of all files on disk.

DFDATA was written for use in conjunction with my disk repair program. This repair utility requires the user to painfully construct a record (paper and pencil job) of granule allocations before disk repair can commence.

DFDATA obviates the need for this tedium.

Program Execution

The opening display requests the user to insert a disk and press any key to procede.

The directory track is then accessed and the data contained in the GAT (track 17 sector 2) and FAT (track 17 sectors 3-11) is stored in arrays.

This method allows for quick retrival of information later in the program.

The screen now displays a listing of up to the first 24 files on the disk. The bottom screen line offers the following options:

File <#> - select corresponding file for display.
<H>ardcopy - hardcopy of all files.
<C>ontinue - Applicable only if disk contains more than 24 files.
<E>xit - exit program.

Selection of the file # option invokes a further screen or printer option whilst a request for a hardcopy immediately continues the program.

Filename, file type and file flag of the file is then listed and granule information previously stored in arrays is converted to track and sector information and appended to the listing.

Program Notes

This program utilises the speed-up poke. If problems arise with it's usage, delete all poke statements in lines 90, 100, 180, 410, 590, 750 and 870.

The program may be restarted by typing GOTO 180 if you accidentally exit the program and wish to continue. This will by-pass the "reading disk directory" routine.

```
350 I$=INKEY$:IF I$=""THEN350
360 IF LP>=LL+1 THEN 390
370 IF I$=CHR$(13) THEN 450
380 IF LP=0 ANDI$="^" THEN T=T-1
:GOTO250
385 IF LP=LL-1 THEN SOUND 200,10
390 IF LP>=LL AND I$<>CHR$(8)THE
N I$=CHR$(154)
400 LP=LP+1
410 A$(T)=A$(T)+I$
420 IF I$=CHR$(8) THEN 470
430 PRINTCHR$(8);:PRINTI$;C$;
440 GOTO 350
450 IF L=33 AND LP>=32 THEN PRIN
T"";:PRINTCHR$(8);:GOTO 320
460 PRINT:GOTO 320
470 LP=LP-2:IF LP<0 THEN LP=0
480 H=LEN(A$(T))
490 F=H-2
500 IF LP=0 THEN F=0
510 A$(T)=LEFT$(A$(T),F)
520 IF F=0 THEN PRINTCHR$(8);:GO
TO 350
530 IF T<0 THEN T=1
540 GOTO 430
550 ' print text
560 CLS:A=8:B=10:GOSUB 170
570 GOSUB 190
580 C=INSTR("123",X$):ON C GOTO5
90,600,250
590 P=-0:GOTO610
600 P=-2
610 CLS
620 FOR D=1 TO T
630 PRINT#P,A$(D):IF P=-0 THEN M
=M+1
640 IF M=5 THEN M=0:EXEC44539
650 NEXTD:INPUT"press enter for
menu";ZZ$:M=0:GOTO250
660 ' save text
670 CLS:A=5:B=7:GOSUB 170
680 GOSUB 190:C=INSTR("123",X$)
690 IF C=3 THEN 250
700 CLS:INPUT" 1> disk 2> tape";
M:IF M=2 THEN M=-1ELSE IF M<>1TH
EN560
710 ON C GOTO 730,800,250
720 GOTO 670
730 PRINT:INPUT"FILE NAME";F$
740 IF M=1 THEN F$=F$+"/DAT"
750 OPEN"O",#M,F$
760 FOR P=1 TO T
770 PRINT#M,A$(P)
780 NEXT P
790 CLOSE#M:GOTO250
800 PRINT:INPUT"FILE NAME";F$
810 IF M=1 THEN F$=F$+"/DAT"
820 OPEN"I",#M,F$
830 T=0
840 T=T+1
850 IF EOF(M) THEN 880
860 LINEINPUT#M,A$(T)
870 GOTO 840
880 T=T-1:CLOSE#M:GOTO250
890 ' edit mode
900 CLS3:PRINT"edit"CHR$(128)"mo
de";
910 POKE282,255
920 FOR X=1 TO T
930 PRINT@160,STRING$(64,143):PR
INT@160,A$(X):PRINT@288,"EDIT yE
S-nO--mENU-pREVIOUS LINE";:GOSUB
 190:C=INSTR("YNMP",X$):ON C GOT
O970,940,250,950
940 NEXTX:GOTO250
950 X=X-1:IF X=0 THEN X=1
960 GOTO 930
970 POKE 282,0
980 PRINT@288,"TYPE PHRASE TO DE
LET":LINEINPUT D$
990 W=LEN(D$)
1000 PRINT"TYPE REPLACEMENT PHRA
SE"
1010 LINEINPUT R$
1020 FOR Z=1 TO LEN(A$(X))
1030 IF MID$(A$(X),Z,W)=D$ THEN1
060
1040 NEXT Z
1050 GOTO 930
1060 E=Z-1+LEN(D$)
1070 A$(X)=LEFT$(A$(X),Z-1)+R$+R
IGHT$(A$(X),LEN(A$(X))-E)
1080 POKE 282,255
1090 PRINT@288,STRING$(128,175);
:GOTO930
1100 PCLEAR1:CLEAR8000:DIMA$(200
),M$(10):GOTO20
1110 FOR X=1 TO T
1120 IF LEN(A$(X))=32 THEN PRINT
A$(X);:GOTO 1140
1130 PRINTA$(X)
1140 NEXT
1150 RETURN
```

The Listing:

```
1 '* FILENAME: "DFDATA/BAS"
2 '* BY GRAHAM DICKINSON
3 '* FERNY HILLS QLD  073512332
   * MARCH 1988
4 SAVE"158:1":SAVE"158:3":END'UT
L
10 CLEAR2000:FT$="FILE TYPE=":FL
$="FILE FLAG=":FH$="FILE NAME=":
T$="THESE ARE YOUR FILES ON DISK
:"
20 FD$=" GRAN    TRACK    SECTOR
 SECTOR                    START
   END"
30 AA$="  ##       ##       ##
   ##"
40 DIMG(20),SB(20),SE(20),TR(20)
,N$(910):P=1:S=0
50 CLS:PRINT@102,"INSERT SUBJECT
 DISK":PRINT@227,"PRESS ANY KEY
WHEN READY":EXEC44539
60 CLS:PRINT@197,"READING DISK D
IRECTORY":PRINT@329,"PLEASE WAIT
"
70 REM BUILD FILE DATA ARRAYS***
80 DSKI$0,17,2,FA$,B$
90 FORF=3 TO 11:POKE65494,0
100 DSKI$0,17,F,A$,B$:POKE65495,
0
110 C$=A$+LEFT$(B$,127)
120 N$=MID$(C$,S*32+1,14)
130 S$=LEFT$(N$,1):IFS$=CHR$(255
) OR S$=CHR$(0)THEN150
140 N$(P)=N$:P=P+1
150 S=S+1:IFS<>8THEN120
160 S=0:NEXT F
170 REM PRINT ARRAYS **********
180 POKE65495,0:S=0:CLS:PRINTT$:
PRINT
190 FOR X=1 TO P-1
200 PRINTUSING"##";X;:PRINT" ";L
EFT$(N$(X),11),
210 S=S+1:IFS<>24THEN290
220 PRINT:INPUT"FILE# <H>COPY <C
>ONT <E>XIT";A$
230 IFA$="C"THEN280
240 IFA$="E"THEN870
250 IFA$="H"THENM$="P":FORX=X TO
 P-1:NEXTX:GOTO350
260 A=ASC(A$):IFA<49ORA>57THEN18
0
270 F=VAL(A$):IFF>P-1THEN180ELSE
360
280 S=0:CLS:PRINTT$:PRINT
290 NEXTX
300 PRINT@480,"FILE#  <H>COPY  <
E>XIT ";:INPUTA$
310 IFA$="H"THENM$="P":GOTO350
320 IFA$="E"THEN870
330 A=ASC(A$):IFA<49ORA>57THEN18
0
340 F=VAL(A$):IFF>P-1THEN180ELSE
360
350 FORF=1 TO P-1
360 REM GET FILE DATA *********
370 FT=ASC(MID$(N$(F),12)):FL=AS
C(MID$(N$(F),13)):G1=ASC(MID$(N$
(F),14)):IFA$="H"THEN410
380 PRINT"<S>CREEN OR <P>RINTER?
";
390 M$=INKEY$:IFM$=""THEN390
400 IFM$<>"P"THEN450
410 POKE65494,0
420 PS=PEEK(65314):IFINT(PS/2)=A
BS(PS/2)THEN450
430 PRINT:PRINT"CHECK PRINTER -"
:PRINT"PRESS ANY KEY WHEN READY"
:EXEC44539
440 GOTO420
450 CLS:PRINTFH$;LEFT$(N$(F),8);
".";MID$(N$(F),9,3)
460 IFM$="P"THENPRINT#-2,,,FH$;L
EFT$(N$(F),8);".";MID$(N$(F),9,3
)
470 IFFT=0THENPRINTFT$;"BASIC"EL
SE490
480 IFM$="P"THENPRINT#-2,FT$;"BA
SIC":GOTO550
490 IFFT=1THENPRINTFT$;"DATA"ELS
E510
500 IFM$="P"THENPRINT#-2,FT$;"DA
TA":GOTO550
510 IFFT=2THENPRINTFT$;"ML"ELSE5
30
520 IFM$="P"THENPRINT#-2,FT$;"ML
":GOTO550
530 IFFT=3THENPRINTFT$;"TEXT"ELS
E550
540 IFM$="P"THENPRINT#-2,FT$;"TE
XT"
550 IFFL=0THENPRINTFL$;"BINARY"E
LSE570
560 IFM$="P"THENPRINT#-2,FL$;"BI
NARY":GOTO590
570 IFFL=255THENPRINTFL$;"ASCII"
580 IFM$="P"THENPRINT#-2,FL$;"AS
CII"
590 POKE65495,0
600 REM GET FAT DATA **********
610 X=1:G(X)=G1:GOTO640
620 FORX=2 TO 68
630 G(X)=ASC(MID$(FA$,1+G(X-1)))
640 IFG(X)<=68THEN670
650 IFG(X)>=192ORG(X)<=201THEN73
0
660 GOTO870
670 'CONVERT GRAN TO TK & SECTOR
680 A=ABS((G(X))/2):I=INT((G(X))
/2):TR(X)=I
690 IFA=I THENSB(X)=1ELSESB(X)=1
0
700 IFSB(X)=1THENSE(X)=9ELSESE(X
)=18
710 IFG(X)>=34THENTR(X)=TR(X)+1
720 IFX=1THEN620ELSENEXTX
730 GL=G(X)-193
740 SE(X-1)=SB(X-1)+GL
750 IFM$="P"THENPOKE65494,0
760 PRINTFD$:PRINTTAB(1)STRING$(
30,"-")
770 IFM$="P"THENPRINT#-2,FD$:PRI
NT#-2,TAB(1)STRING$(30,"-")
780 FOR Y=1 TO X-1:PRINTUSINGAA$
;G(Y);TR(Y);SB(Y);SE(Y)
790 IFM$="P"THENPRINT#-2,USINGAA
$;G(Y);TR(Y);SB(Y);SE(Y)
800 NEXTY
810 PRINTTAB(1)STRING$(30,"-")
820 IFM$="P"THENPRINT#-2,TAB(1)S
TRING$(30,"-")
830 IFA$="H"THENNEXTF
840 PRINT:PRINT@480,"CONTINUE Y/
N?";
850 A$=INKEY$:IFA$=""THEN850
860 IFA$="Y"THEN180
870 POKE65494,0:END
```

dice

by LINDSAY BRADFORD

16K CoCo

APPLICATION

THIS IS A small little program designed to eliminate the need for dice in boardgames, though the original idea of making this program was simply because I kept loosing my dice.

I have found other uses for it, one of which is stopping people from cheating when using the dice. Some of you out there may not believe me when I tell you it is possible to cheat using dice, but it is!

A friend of mine on average can get double six on the dice 1 out of every 3 times.

Upon doing the program I found the easiest way of going about it was to use the CoCo 2's CHR$ command. This not only makes the program much faster, but it is also compatible on CoCo 2's with little modification.

In fact the only change needed is in the first few lines. Instead of the Coco 3's fast poke, swap it for the CoCo 2's fast poke of ...

```
POKE65495,0
```

... and get rid of the 'ON BREAK' command. (Ed's note: this has been done for you ...).

Well, I hope this little program can be of use to more people than just myself.

The Listing:

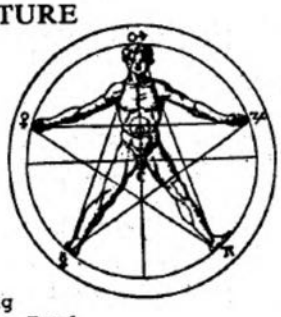
```
0 '*******************************
   ******** RANDOM DICE ********
   **** BY LINDSAY BRADFORD ****
   ********** 24/4/88 **********
   *******************************
1 GOTO30
3 SAVE"170:1":SAVE"170:3":END'AP
P
30 B$=CHR$(128):B$=B$+B$
40 SCREEN0,1:POKE359,57
50 X$=CHR$(207):A$=X$+X$+X$+X$+X
$+X$+X$+X$+X$+X$+X$+X$+X$+X$+X$
60 CLS0
70 PRINT@2,"HIT ANY KEY FOR RAND
OM DICE";:EXEC44539
80 PRINT@455,"BY LINDSAY BRADFOR
D";
```

continued on p53

the VALLEY

by GEOFF SPOWART

32K ECB TAPE ADVENTURE



IN THE VALLEY, you have to find the Helmet of Evanna. It is hidden in Vounims Lair (in the woods). You will need a rating of at least 25 and a lot of luck.

Alarians Amulet (with its stones in place) provides life after death and dramatically increases the rate by which you gain treasure and therefore a higher rating. The Amulet is hidden in one of the temples of Y'Nagoith (in the swamps). The six amulet stones are hidden in the Black Tower of Zaexon.

Hints

The ability to defeat monsters depends on combat strength, psi power and experience. Build these up before you enter the Black Tower or suffer the dire consequences.

Spells use more stamina that physical combat but may be more effective as experience and psi power increase.

Spell 1 may be the best option if you look to be in danger of defeat.

Movement

7	8	9
4	x	6
1	2	3

... or E - Ego, displays a number from 0 to 28. If you have Alarians Amulet, the number of stones will be displayed.

Ego numbers and their meanings:

0 - Nothing
1 - Monster Food
2 - Peasant
3 - Cadet
4 - Cannon Fodder
5 - Path Walker
6 - Novice Adventurer
7 - Survivor
8 - Adventurer
9 - Assasin
10 - Apprentice Hero
11 - Giant Killer
12 - Hero
13 - Master of the Sword
14 - Champion
15 - Necromancer
16 - Laremaster
17 - Paladin
18 - Superhero
19 - Dragon Slayer
20 - Knight of the Valley
21 - Master of Combat
22 - Dominator
23 - Pince of the Valley
24 - Guardian
25 - War Lord
26 - Demon Killer
27 - Lord of the Valley
28 - Master of Destiny

Combat

H - Attack monsters head
B - Attack monsters body
L - Attack monsters legs
S - Spell: 1 - sleepit
2 - psi lance
3 - crispit

If given a choice ...

R - Retreat
A - Attack

The Listing:

```
0 GOTO100
1 '***** THE VALLEY
2 '***** BY GEOFF SPOWART
3 SAVE"184:1":SAVE"184:3":END'AD
V
100 DIMD(3),G(73),P(8),N(8),S(4)
,T(2)
110 DIMM$(18),MS(18),N1(18)
120 VG$="":GC$="":F$="":DL$=""
130 TS=0:TN=0:TM=10:CF=0
300 FORI=1TO32
310 READC$
320 NEXTI
330 FORI=0TO18
340 READM$(I):READMS(I):READN1(I
)
350 NEXTI
1000 CLS:PRINT"LOAD FROM TAPE?"
1010 VG$="YN":GOSUB1500
1020 INPUT"CHARACTERS NAME";J$
1050 IFGC$="N"THEN1240
1060 CLS:PRINT"POSITION TAPE"
1070 PRINT"PRESS PLAY,ENTER"
1080 INPUTGC$
1090 OPEN"I",#-1,J$
1100 INPUT#-1,P$,TS,EX,TN,CS,PS,
T(0),T(1),T(2),C1,P1
1210 CLOSE#-1
1220 C=150
1230 GOTO1400
1240 CLS:PRINT"CHARACTER TYPES..
.CHOOSE ONE"
1250 PRINT
1260 PRINT"WIZARD     (1)"
1270 PRINT"THINKER    (2)"
1280 PRINT"BARBARIAN (3)"
1290 PRINT"WARRIOR    (4)"
1300 PRINT"CLERIC     (5)"
1310 INPUTA
1330 IFA=1THENP$="WIZARD":P1=2:C
1=0.5:CS=22:PS=28
1340 IFA=2THENP$="THINKER":P1=1.
5:C1=.75:CS=24:PS=26
1350 IFA=3THENP$="BARBARIAN":P1=
.5:C1=2:CS=28:PS=22
1360 IFA=4THENP$="WARRIOR":P1=1:
C1=1.25:CS=26:PS=24
1370 IFA=5THENP$="CLERIC":P1=1.2
5:C1=1:CS=25:PS=25
1380 IFA<1ORA>5THENP$="DOLT":P1=
1:C1=1:CS=20:PS=20
1390 EX=5:C=150
1400 PRINT"GOOD LUCK"
1410 PRINTJ$;" THE ";P$
1420 DF=150:DL$="D":GOSUB36000
1430 GOSUB10000
1440 DF=5:GOSUB36000
1450 GOTO2000
1500 GC$=INKEY$:IFGC$=""THEN1500
1510 FORI=1TOLEN(VG$)
1520 IFMID$(VG$,I,1)=GC$THEN RET
URN
1530 NEXTI
1540 GOTO1500
1700 FORI=1TO10:GC$=INKEY$:NEXTI
1710 TV=0
1720 FORI=1TO400
1730 GC$=INKEY$:IFGC$=""THEN1750
1740 GOTO1770
1750 NEXTI
1760 TV=1
1770 PRINT@352,"":PRINT@384,"":P
RINT@416,"":PRINT@448,""
1780 RETURN
2000 M=W:PK=PEEK(W):POKEM,79
2010 C=C+10
2020 IFPK=134ORPK=137THEN2040
2030 PRINT@352,"YOUR MOVE:::WHIC
H DIRECTION ?":GOTO2050
2040 PRINT@352,"SAFE ON THE PATH
...WHICH WAY ?"
2050 FORI=1TO10:GC$=INKEY$:NEXTI
2060 GC$=INKEY$:IFGC$="E"THEN450
00
```

```
2070 A=VAL(GC$):IFA=0THEN2060
2080 IFA>3THENA=A-3:GOTO2080
2090 W=M+A-2-32*(INT((VAL(GC$)-1
)/3)-1)
2100 TN=TN+1:GOSUB1770
2110 Q=79:Q1=PEEK(W):IFQ1=96ORQ1
=45THEN2190
2120 IFQ1=35THEN48000
2130 IFQ1=191ORQ1=90ORQ1=223THEN
TN=TN-1:GOTO2030
2140 IFQ1=87ORQ1=84ORQ1=83ORQ1=2
55THEN9000
2150 IFQ1=176ORQ1=159THEN9090
2160 IFQ1=153THEN15000
2170 IFQ1=175OR(GC$="5"ANDPK=175
)THENQ=79:C=C-20:IFC<=0THEN55000
2180 IFQ1=42THEN2800
2190 POKEM,PK:PK=PEEK(W):M=W:POK
EM,Q
2200 IFPK=134ORPK=137THENDF=5:GO
TO2250
2210 RF=RND(100)
2220 IFRF<33THEN3000
2230 IFRF>75THEN2300
2240 PRINT@352,"NOTHING OF VALUE
...SEARCH ON":DF=80
2250 GOSUB36000
2260 GOTO2010
2300 RF=RND(6)
2310 ON RF GOSUB2340,2380,2380,2
410,2410,2440
2320 DF=80:GOSUB36000
2330 GOTO2010
2340 PRINT@352,"CIRCLE OF EVIL..
DEPART IN HASTE"
2350 CS=CS+INT((FL+1)/2):PS=PS-I
NT((FL+1)/2):C=C-20
2360 IFC<=0THEN55000
2370 RETURN
2380 PRINT@352,"A HOARD OF GOLD"
2390 TS=TS+INT(FL*RND(100)+100)
2400 RETURN
2410 PRINT@352,"YOU FEEL THE AUR
A OF DEEP MAGIC ALL AROUND YOU"
2430 GOTO2450
2440 PRINT@352,"A PLACE OF ANCIE
NT POWER"
2450 PS=PS+2+INT(FL*P1):CS=CS+1+
INT(FL*C1):C=C+25
2460 RETURN
2800 POKEM,96:M=W:PK=96:POKEM,79
2810 RN=RND(100):GOSUB1770
2820 IFS=6ANDRN>95ANDT(1)=6ANDT(
2)=0ANDRT>25THENT(2)=1:GOTO2870
2830 IFS=5ANDRN>85ANDT(0)=0THENT
(0)=1:GOTO2880
2840 IFS=4 AND RN>70 AND T(0)=1
AND T(1)<6 AND FL>T(1) THEN2890
2850 IFRN>43THENPRINT@352,"A WOR
THLESS BAUBLE":GOTO2940
2860 PRINT@352,"A PRECIOUS STONE
 !":GOTO2930
2870 PRINT@352,"YOU FIND THE HEL
M OF EVANNA !":GOTO2930
2880 PRINT@352,"THE AMULET OF AL
ARIAN..EMPTY..":GOTO2930
2890 PRINT@352,"AN AMULET STONE.
..":PRINT
2900 DF=60:DL$="D":GOSUB36000
2910 IFRN>85THENPRINT@384,"...BU
T THE WRONG ONE !":GOTO2940
2920 PRINT@384,"...THE STONE FIT
S !":T(1)=T(1)+1
2930 TS=TS+100*(T(0)+T(1)+T(2)+F
L)
2940 DF=80:GOSUB36000
2950 GOTO2010
3000 PRINT@352,"**BEWARE..THOU H
AST ENCOUNTERED"
3010 MS=0:N=0:CF=1
3020 RF=RND(16):IFRF>9ANDRND(100
)>85THEN3020
3030 IFQ1=175ORPK=175THENRF=RND(
2)+16
3040 IFRF=16ANDRND(10)<7THEN3020
3050 IFFL<5ANDRF=15THEN3020
```


```
3060 X$=LEFT$(M$(RF),1)
3070 FORI=1TOLEN(F$)
3080 IFMID$(F$,I,1)=X$THEN3110
3090 NEXTI
3100 GOTO3020
3110 M$=RIGHT$(M$(RF),LEN(M$(RF)
)-1)
3120 IFMS(RF)=0THEN3150
3130 MS=INT((CS*.3)+MS(RF)*FL^.2
/(RND(10)/10+1))
3140 IFN1(RF)=0THEN3160
3150 N=INT(N1(RF)*FL^.2/(RND(10)
/10+1))
3160 U=INT((RF+1)*(FL^1.5))
3170 IFRF>23THENU=INT((RF-22)*FL
^1.5)
3180 PRINTLEFT$(R$,12-(LEN(M$))/
2);"AN EVIL ";M$
3190 DF=40:GOSUB36000
3500 IFRND(10)<6THEN4000
3510 PRINT@352,"SURPRISED HIM,AT
TACK OR RETREAT"
3520 GOSUB1700
3530 IF GC$="R"THEN3900
3540 IFTV=1THEN3600
3550 IFGC$<>"A"THEN4000
3560 DF=30:DL$="D":GOSUB36000.
3570 PRINT@352,"***STRIKE QUICKL
Y***"
3580 GOSUB1700
3590 IFTV=0THEN3620
3600 PRINT@352,"***TOO SLOW...TO
O SLOW***"
3610 HF=0:GOTO3830
3620 E=39*LOG(EX)/3.14
3630 IFGC$="S"THEN4500
3640 IFMS=0THENPRINT@352,"YOUR S
WORD AVAILS YOU NOUGHT":GOTO3830
3650 C=C-1
3660 IFC<=0THENPRINT@352,"YOU FA
TALLY EXHAUST YOURSELF":GOTO5500
0
3670 RF=RND(10)
3680 IFGC$="H"AND(RF<5ORCS>MS*4)
THENZ=2:GOTO3730
3690 IFGC$="B"AND(RF<7ORCS>MS*4)
THENZ=1:GOTO3730
3700 IFGC$="L"AND(RF<9ORCS>MS*4)
THENZ=.3:GOTO3730
3710 PRINT@352,"YOU MISSED IT !"
3720 HF=0:GOTO3830
3730 IFHF=1THEND=MS+RND(9):HF=0:
GOTO3760
3740 D=INT((((CS*50*RND(100)/100
)-(10*MS)+E)/100)*Z):IFD<0THEND=
0
3750 IFCS>(MS-D)*4THENHF=1
3760 MS=MS-D
3770 PRINT@352,"A HIT..."
3780 DF=60:DL$="D":GOSUB36000
3790 IFD=0THENPRINT@360,"BUT..NO
 DAMAGE":HF=0:GOTO3830
3800 PRINT@360," DAMAGE...":IFMS
<=0THEN3860
3810 IFHF=1THENDF=30:DL$="D":GOS
UB36000
3820 IFHF=1THENPRINT"THE ";M$;"
STAGGERS DEFEATED"
3830 DF=110:GOSUB36000
3840 IFHF=1THEN3570
3850 GOTO4000
3860 PRINT@416,"..KILLING THE MO
NSTER.."
3870 EX=EX+U:HF=0:CF=0
3880 DF=80:GOSUB36000
3885 PRINT@320,""
3890 GOTO2010
3900 PRINT@352,"KNAVISH COWARD !
":CF=0
3910 GOTO3880
4000 PRINT@352,"THE CREATURE ATT
ACKS..."
4010 DF=50:DL$="W":GOSUB36000
4020 IFMS=0THEN4300
4030 IFMS<N ANDN>6 ANDRND(10)<5
THEN4300
4040 MS=MS-1:IFMS<=0THEN4240
4050 RF=RND(10)
4060 ON RF GOTO4070,4080,4090,41
00,4110,4110,4120,4120,4130,4140
4070 PRINT@352,"IT SWINGS AT YOU
...AND MISSES":GOTO4280
4080 PRINT@352,"YOUR BLADE DEFLE
CTS THE BLOW":GOTO4280
4090 PRINT@352,"..BUT HESITATES,
UNSURE..":GOTO4280
4100 Z=3:PRINT@352,"IT STRIKES Y
OUR HEAD !":GOTO4150
4110 Z=1.5:PRINT@352,"YOUR CHEST
 IS STRUCK !":GOTO4150
4120 Z=1:PRINT@352,"A STRIKE TO
YOUR SWORDARM !":GOTO4150
4130 Z=1.3:PRINT@352,"A BLOW TO
YOUR BODY !":GOTO4150
4140 Z=.5:PRINT@352,"IT CATCHES
YOUR LEGS !"
4150 DF=60:DL$="D":GOSUB36000
4160 G=INT((((MS*75*RND(100)/100
)-(10*CS)-E)/100)*Z)
4170 IFG<0THENG=0:PRINT@352,"...
SAVED BY YOUR ARMOUR !":GOTO4280
4180 C=C-G
4190 IFG>9THENCS=INT(CS-G/6)
4200 IFG=0THENPRINT@352,"SHAKEN.
.BUT NO DAMAGE DONE":GOTO4280
4210 PRINT@352,"YOU TAKE..";G;"
DAMAGE.."
4220 IFCS<=0ORC<=0THEN55000
4230 GOTO4280
4240 PRINT@352,"..USING ITS LAST
 ENERGY IN THE  ATTEMPT"
4250 EX=INT(EX+U/2):CF=0
4260 DF=100:GOSUB36000
4265 PRINT@320,""
4270 GOTO2010
4280 DF=100:GOSUB36000
4290 GOTO3570
4300 PRINT@352,"HURLING A LIGHTN
ING BOLT AT YOU"
4310 G=INT(((180*N*RND(10)/10)-(
PS+E))/100):N=N-5:IFG>9THENN=N-I
NT(G/5)
4320 DF=80:DL$="W":GOSUB36000
4330 IFN<=0THENN=0:GOTO4240
4340 IFRND(100)<25THEN4410
4350 IFG<=0THENG=0:GOTO4400
4360 PRINT@352,"IT STRIKES HOME
!"
4370 DF=110:GOSUB36000
4380 C=C-G:IFG>9THENPS=INT(PS-G/
4)
4390 GOTO4210
4400 PRINT@352,"YOUR PSI SHIELD
PROTECTS YOU":GOTO4280
4410 PRINT@352,"..MISSED YOU !":
GOTO4280
4500 PRINT@352,"WHICH SPELL SEEK
 YE ?":GOSUB1700
4510 IFTV=1THEN3600
4520 IFVAL(GC$)>0ANDVAL(GC$)<3T
HEN4540
4530 PRINT@352,"NO SUCH SPELL...
```

```
":GOTO4640
4540 IF4*PS*RND(100)/100<=N THEN
 4590
4550 ONVAL(GC$)GOSUB5000,5200,54
00
4560 ON SC GOTO4620,4640,4660,45
70,4600,4580,4590
4570 PRINT@352,"IT IS BEYOND YOU
":GOTO4640
4580 PRINT"BUT THE SPELL FAILS..
!":GOTO4640
4590 PRINT@352,"NO USE,THE BEAST
S PSI SHIELD    PROTECTS IT":GOT
O4640
4600 PRINT@352,"THE SPELL SAPS A
LL YOUR STRENGTH"
4610 GOTO55000
4620 DF=100:GOSUB36000
4625 PRINT@320,""
4630 GOTO2010
4640 DF=60:GOSUB36000
4650 GOTO4000
4660 DF=60:GOSUB36000
4670 GOTO3570
5000 C=C-5:IFC<=0THENSC=5:RETURN
5010 PRINT@352,"SLEEP YOU FOUL F
IEND"
5030 DF=100:GOSUB36000
5040 PRINT@352,"THE CREATURE STA
GGERS"
5050 DF=40:DL$="D":GOSUB36000
5060 IFRND(10)<6THEN5090
5070 PRINT"AND COLLAPSES..STUNNE
D"
5080 EX=INT(EX+U/2):CF=0:SC=1:RE
TURN
5090 PRINT"BUT RECOVERS WITH A S
NARL"
5100 SC=2:RETURN
5200 IFMS>C ORPS<49 OREX<1000 TH
ENSC=4:RETURN
5210 C=C-10:IFC<=0THENSC=5:RETUR
N
5220 IFN=0THENPRINT@352,"THIS BE
AST HAS NO PSI TO ATTACK":SC=2:R
ETURN
5230 PRINT@352,"WITH MY MIND I B
ATTLE THEE FOR  MY LIFE"
5240 DF=120:GOSUB36000
5250 RF=RND(100):IFRF<40ANDN>10T
HENSC=6:RETURN
5260 D=INT((((PS*50*RF/100)-5*(M
S+N)+E)/50)/4)
5270 IFD<=0THEND=0:SC=7:RETURN
5280 PRINT@352,"THE PSI-LANCE CA
USES ";D*2;" DAMAGE"
5290 N=N-3*D:IFN<=0THENN=0
5300 MS=MS-D:IFMS<=0THENMS=0
5310 IF(MS+N)>0THENSC=2:RETURN
5320 PRINT"..KILLING THE CREATUR
E"
5330 EX=EX+U:CF=0:SC=1:RETURN
5400 IFPS<77 OREX<5000 THENSC=4:
RETURN
5410 C=C-20:IFC<=0THENNSC=5:RETU
RN
5420 PRINT@352,"WITH THE MIGHT O
F MY SWORD I    SMITE THEE"
5430 PRINT"WITH THE POWER OF MY
SPELL I    CURSE THEE"
5440 PRINT"BURN YE SPAWN OF HELL
 AND SUFFER"
5450 DF=240:GOSUB36000
5460 PRINT@352,"A BOLT OF ENERGY
 LASHES AT THE  BEAST..."
5470 DF=80:DL$="W":GOSUB36000
5480 IFRND(100)/100>(PS/780)*(5-
P1) THENPRINT@352,"MISSED IT !":
SC=2:RETURN
5490 D=INT((CS+PS*RND(100)/100))
-(10*N*RND(100)/100)))
5500 IFD<=0THEND=0:SC=7:RETURN
5510 IFMS=0THENN=N-D:GOTO5530
5520 MS=MS-D:IFD>10THENN=INT(N-(
D/3))
5530 PRINT@352,"IT STRIKES HOME
CAUSING ";D;" DAMAGE"
5540 IF(MS+N)<=0THEN5570
5550 DF=80:DL$="D":GOSUB36000
5560 SC=2:RETURN
5570 PRINT"THE BEAST DIES SCREAM
ING"
5580 EX=EX+U:CF=0:SC=1:RETURN
9000 IFQ1=255ANDPK=175THENPRINT@
352,"YOU CANNOT ENTER THIS WAY..
":GOTO9110
9010 FORI=2TO7
9020 P(I)=0
9030 N(I)=RND(3)+1
9040 IFN(I)=3THEN9030
9050 NEXTI
9060 IFS=1THENMP=M
9070 P(2)=RND(30)
9080 TF=TN:GOTO9130
9090 IFTN>TF+RND(6)THEN9130
9100 PRINT@352,"THE WAY IS BARRE
D"
9110 TN=TN-1:C=C-10:DF=100:DL$="
W":GOSUB36000
9120 GOTO2010
9130 C=C-10:POKE M,96:POKE W,Q
9140 IFQ1=159THENS=1:FL=1
9150 IFQ1=176ANDS=4THENS=1:FL=1
9160 IFQ1=176ANDS=5ORS=6THENS=S-
3:FL=FL-4:M=MW
9170 IFQ1=83THENS=2:FL=2
9180 IFQ1=87THENS=3:FL=3
9190 IFQ1=87ORQ1=83THEND2=RND(3)
*32:R2=RND(20)+5
9200 IFQ1=84THENS=4:FL=2
9210 IFQ1=255THENS=S+3:FL=FL+4:M
W=M
9220 ON S GOSUB 10000,12000,1201
0,14000,14010,14010
9230 DF=5:GOSUB36000
9240 GOTO2000
10000 CLS:F$="VAEGH":FL=1:S=1
10010 FORI=0TO31
10015 PRINT@I,CHR$(191)
10020 NEXTI
10025 FORI=32TO256STEP32
10030 PRINT@I,CHR$(191)
10035 PRINT@I+31,CHR$(191)
10040 NEXTI
10052 FORI=288TO319
10054 PRINT@I,CHR$(191)
10056 NEXTI
10060 IFG(0)<>0THEN10190
10070 M=1057+RND(7)*32
10080 L=M:MP=M:W=M:G(0)=M:G(1)=3
5
10090 FORI=2TO58STEP2
10100 IFRND(100)>50THEN10120
10110 PC=134:L1=L+33:GOTO10130
10120 PC=137:L1=L-31
10130 IFL1>=1311ORL1<=1057THEN10
100
10140 G(I+1)=PC
10150 IFI>2ANDG(I+1)<>G(I-1)THEN
L=L+1
10160 G(I)=L1:L=L1:POKEG(I),G(I+
1)
10170 NEXTI
10180 G(59)=35
10190 FORI=0TO58STEP2
10200 POKEG(I),G(I+1)
10210 NEXTI
10220 IFS(0)<>0THEN10280
10230 FORI=0TO4
10240 N1=RND(8):N2=RND(24)
10250 S(I)=1057+(32*N1)+N2
10260 IFPEEK(S(I))<>96ORPEEK(S(I
)+1)<>96THEN10240
10270 NEXTI
10280 POKES(0),87:POKES(0)+1,87:
POKES(1),87:POKES(1)+1,87
10290 POKES(2),83:POKES(2)+1,83:
POKES(3),83:POKES(3)+1,83
10300 POKES(4),84
10310 M=MP:W=M
10320 RETURN
12000 F$="AFL":PC=45:GOTO12020
12010 F$="FAEHL":PC=90
```


```
12020 PK=96
12030 CLS
12031 FORI=0TO31
12032 PRINT@I,CHR$(159)
12033 NEXTI
12034 FORI=32TO256STEP32
12035 PRINT@I,CHR$(159)
12036 PRINT@I+31,CHR$(159)
12037 NEXTI
12038 FORI=288TO319
12039 PRINT@I,CHR$(159)
12040 NEXTI
12045 L=1057
12050 FORI=1TO150
12060 POKEL+RND(254),PC
12070 NEXTI
12080 PL=1057+D2+R2
12082 POKEPL,175
12084 POKEPL+1,175
12090 POKEPL+31,175:POKEPL+32,17
5:POKEPL+33,175:POKEPL+34,175
12100 POKEPL+62,175:POKEPL+63,17
5:POKEPL+64,96:POKEPL+65,96:POKE
PL+66,175
12110 POKEPL+94,175:POKEPL+95,17
5:POKEPL+96,255:POKEPL+97,96:POK
EPL+98,175
12120 POKEPL+127,175:POKEPL+128,
175:POKEPL+129,175:POKEPL+130,17
5
12200 POKE1310,96:W=1310
12210 IFQ1=176THENM=MW:W=M
12220 RETURN
14000 F$="CAGE":P=0:H=N(FL):PK=9
6:GOTO14020
14010 F$="CBE":P=0:H=N(FL):PK=96
:P(FL)=P(2)
14020 FORI=0TO18
14025 PRINT@I,CHR$(223)
14030 NEXTI
14035 FORI=32TO256STEP32
14040 PRINT@I,CHR$(223)
14042 PRINT@I+18,CHR$(223)
14045 NEXTI
14050 FORI=288TO306
14055 PRINT@I,CHR$(223)
14060 NEXTI
14070 RESTORE:FORI=1TOP(FL)
14080 READV:IFV=100THENRESTORE
14090 NEXTI
14100 L1=1056
14110 FORJ=1TO3
14120 READD(J):P=P+1
14130 IFD(J)=100THENRESTORE:D(J)
=3:P=P+1
14140 NEXTJ
14150 FORI=0TO9:PC=191
14160 L=L1+(32*I):IFL>1310THEN14
260
14170 IFI=1THENPC=96
14180 IFD(1)=0THENPC=191:GOTO142
00
```

```
14190 POKEL+D(1),PC:PC=191
14200 IFI=2THENPC=96
14210 POKEL+D(1)+D(2),PC:PC=191
14220 IFI=3THENPC=96
14230 POKEL+D(1)+D(2)+D(3),PC:PC
=191
14240 NEXTI
14250 L1=L1+(32*H)+32:GOTO14110
14260 L1=1057
14270 FORJ=1TO4
14280 L=L1+(32*J*(H+1))
14290 FORK=0TO16
14300 IFL>1312THEN14350
14310 POKEL+K,PC
14320 IF K=2 OR K=6 OR K=3*H OR
K=15 THEN POKEL+K,96:POKEL+K-32,
96:POKEL+K+32,96
14330 NEXTK
14340 NEXTJ
14350 IFS=5ORS=6THEN14380
14360 IFFL/2=INT(FL/2)THENPOKE10
57,153:GOTO14380
14370 POKE1297,153
14380 IFFL=2ORS=5ORS=6THENPOKE13
20,176:POKE1288,96
14390 IFP(3)=0THENW=1288
14400 IFS=5THEN14470
14410 IFS=6THEN14450
14420 PRINT@56,"THE"
14425 PRINT@84,"BLACK TOWER"
14430 PRINT@117,"OF ZAEXON"
14440 PRINT@182,"FLOOR ";FL-1:GO
TO14490
14450 PRINT@55,"VOUNIM'S"
14455 PRINT@89,"LAIR":GOTO14500
14470 PRINT@57,"THE"
14472 PRINT@86,"TEMPLE OF"
14474 PRINT@118,"Y'NAGIOTH"
14490 P(FL+1)=P(FL)+P
14500 IFFL<4ORRND(10)<3THEN RETU
RN
14510 FORI=1TORND(5)+1
14520 N1=RND(16)
14530 N2=RND(6)
14540 IFPEEK(1057+32*N2+N1)<>96T
HEN14520
14545 A=(1057+32*N2+N1)
14550 POKE A,42
14560 NEXTI
14570 RETURN
15000 POKEW,79:POKEM,96
15010 PRINT@352,"A STAIRWAY...UP
 OR DOWN ?":TV=FL
15020 VG$="UD":GOSUB1500
15030 IFGC$="U"THENFL=FL+1:GOTO1
5050
15040 FL=FL-1
15050 IFFL>7ORFL<2THEN15080
15060 DF=110:DL$="D":GOSUB36000
15070 GOTO9220
15080 PRINT@352,"THESE STAIRS AR
E BLOCKED"
15090 DF=60:DL$="D":GOSUB36000
15100 FL=TV:GOTO15010
36000 FORDL=1TO(DF*TH)
36010 NEXTDL
36020 IFDL$="D"THENDL$="":RETURN
36030 PRINT@352,""
36040 PRINT
36050 PRINT
36055 PRINT
36060 IFDL$="W"THENDL$="":RETURN
36070 IFCS>77-INT(2*P1^2.5)THENC
S=77-INT(2*P1^2.5)
36080 IFPS<7THENPS=7
36090 IFPS>INT(42*(P1+1)^LOG(P1^
3.7))+75THENPS=INT(42*P1+1)^LOG(
P1^3.7))+75
36100 IFC>125-(INT(P1)*12.5)THEN
C=125-INT(INT(P1)*12.5)
36120 PRINT@384,"TREAS=";TS;" EX
P=";EX;" TURNS=";TN;" COMB.STR="
;CS;" PSI=";PS;" STAM=";C
36180 IFCF=1THEN36210
36200 RETURN
36210 PRINT@320,M$;
36220 PRINT"...M STR =";M8;N
36230 RETURN
45000 DF=5:DL$="W":GOSUB36000
45010 RT=INT(.067*(EX+TS/3)^.5+L
OG(EX/((TN+1)^1.5))):IFRT>28THEN
RT=28
45020 IFRT<0THENRT=0
45030 PRINT@352,"YOUR RATING NOW
 BE";RT
45040 IFT(2)=1THENPRINT"YOU HAVE
 THE HELM OF EVANNA"
45050 IFT(0)=1THENPRINT"AMULET S
TONES..";T(1)
45060 DF=250:DL$="W":GOSUB36000
45070 IFGC$="E"THENC=C-10:GC$=""
:GOTO2010
45080 RETURN
48000 PRINT@352,"THOU ART SAFE I
N A CASTLE":IFCS<20THENCS=20
48010 POKEM,PK:PK=PEEK(W):M=W:PO
KEM,Q
48020 PRINT"WILT THOU LEAVE THE
VALLEY (Y/N)"
48030 VG$="YN":GOSUB1500
48040 DF=5:DL$="W":GOSUB36000
48050 GOSUB45000
48060 DF=110:DL$="W":GOSUB36000
48070 IFGC$="Y"THEN50000
48080 C=150:PRINT@352,"THY WOUND
S HEALED...THY SWORD   SHARP"
48090 PRINT"GO AS THE GODS DEMAN
D..TRUST    NONE OTHER"
48100 DF=120:GOSUB36000
48110 GOTO2010
50000 CLS:PRINT"DO YOU WISH TO S
AVE ";J$;" ?"
50010 PRINT:PRINT"Y/N ?"
50020 VG$="YN":GOSUB1500
50030 IFGC$="N"THEN50230
50040 CLS:PRINT"POSITION TAPE...
PRESS PLAY AND  RECORD...PRESS <
ENTER>"
50060 INPUTA$
50070 OPEN"O",#-1,J$
50080 PRINT#-1,P$,TS,EX,TN,CS,PS
,T(0),T(1),T(2),C1,P1
50190 CLOSE#-1
50200 PRINT@112,"***DONE***"
50230 END
55000 C=0:CS=0:PS=0:CF=0
55010 DF=110:GOSUB36000
55020 IFT(1)=6THEN55070
55030 PRINT@352,"OH WHAT A FRAIL
 SHELL IS THIS   THAT WE CALL MA
N"
55050 DF=300:DL$="W":GOSUB36000
55060 CLS:GOTO50230
55070 T(0)=0:T(1)=0:TS=0:CS=30:C
=150:PS=30
55080 PRINT@352,"ALARIANS AMULET
 PROTECTS THY    SOUL.......LIVE
 AGAIN..."
55100 DF=150:GOSUB36000
55110 L=G(0):MP=L:M=W:S=1:GOTO92
20
60000 DATA4,7,3,6,4,4,6,5,3,6,0,
3,8,4,3,5,5,3,8,3,4,5,0,6,3,6,4,
6,4,7,4,100
60010 DATA AWOLFEN,9,0,AHOB-GOBL
IN,9,0,AORC,9,0,EFIRE-IMP,7,3,GR
OCK-TROLL,19,0
60020 DATA EHARPY,10,12,AOGRE,23
,0,BBARROW-WIGHT,0,25,HCENTAUR,1
8,14
60030 DATA EFIRE-GIANT,26,20,VTH
UNDER-LIZARD,50,0,CMINOTAUR,35,2
5,CWRAITH,0,30
60040 DATA FWYVERN,36,12,BDRAGON
,50,20,CRING-WRAITH,0,45,ABALROG
,50,50
60050 DATA LWATER-IMP,15,15,LKRA
KEN,50,0
```

COLOUR CROSSFIRE CORRECTIONS

Disk version

Please make these changes to the program "XFIRE D" to fix a bug I have found in it. (May 1988, page 28.)

* Delete line 110
* Alter the following lines:

```
530 OPEN"I",#1,T$
540 IF EOF(1) THEN 580
550 INPUT#1,T$
560 FORX=1TO15
570 INPUT#1,Q$(X):INPUT#1,A$(X):
NEXT X
580 CLOSE:IF ZZ=12 THEN RETURN
590 CLS:PRINT"PLAYER";PL;"YOUR C
ATAGORY IS":PRINT T1$

1710 T$="GENERAL":T1$="general k
nowledge":RETURN
1720 T$="THEBIBLE":T1$="the bibl
e":RETURN
1730 T$="GEOGRAPH":T1$="geograph
y":RETURN
1740 T$="HISTORY":T1$="history":
RETURN
1750 T$="MUSIC":T1$="music":RETU
RN
1760 T$="LITERARY":T1$="literary
 knowledge":RETURN
1770 T$="TV&FILM":T1$="tv/film":
RETURN
1780 T$="PEOPLE":T1$="people":RE
TURN
1790 T$="SPORT":T1$="sport":RETU
RN
1800 T$="AUSTRALI":T1$="australi
a":RETURN
1810 T$="SCIENCE":T1$="science":
RETURN
```

In the program "CFX DATA", change the following lines:

```
160 OPEN"O",#1,T$:PRINT#1,T$:PRI
NTT$
180 PRINT#1,Q$(X),A$(X):NEXT
190 CLOSE#1
210 T$="GENERAL"
380 T$="THEBIBLE"
550 T$="GEOGRAPH"
720 T$="HISTORY"
890 T$="MUSIC"
1060 T$="LITERARY"
1230 T$="TV&FILM"
1410 T$="PEOPLE"
1590 T$="SPORT"
1760 T$="AUSTRALI"
1930 T$="SCIENCE"
```

Sorry, but not having a disk drive makes me unaware of some of the perculiarties of these animals. I hope it will work properly.

Davip Philips

CASHBOOK 2

by IAN LOBLEY

OS9

Ed's note: due to popular demand, we are proud to re-publish the enhanced version of Ian Lobley's Cashbook program.

But due to the length of the programs involved, we will have to print it over a four month period. You will find the entire source listing on the CoCoOz disk for October.

Please note: this is PART TWO!

WHEN THE COLOUR computer was first released by Tandy I sold one to a friend who then managed a Motel, a CoCo, disk drive and printer. We both looked around for a simple cash book program, but could not find one.

To save a beautiful friendship, I sat down one Easter weekend and wrote one for him. It was in Tandy's disk basic and it worked well.

When OS-9 was released, I re-wrote the program in Basic09, mainly because I was interested to know how easy (or difficult) OS9 and Basic09 were.

In the early stages, I had a lot of help from Warren Brown, until he recently moved to the United States. He was the Australian agent for Micro Ware.

Warren knew everything about OS-9.

In part one of this series of articles, I hope to be able to show how the program was written and developed.

I have a twin disk drive system and used O-Pak for the screen layout. The screen width is 64 characters across, so if you haven't got O-Pak or something similar you will have to change a few procedures.

In the first article, we will set up a file for our cheque record, bank balance, start bank balance, company name and code/catagory list.

The first procedure will later run some procedures that will create these files.

If you only have a single disk system, don't give up. The program will still work under one drive.

To type up the programs, you'll need Basic09 with a memory of 20000 bytes.

For the time being, type in all the listings and save them as you go.

The Listing:

```
PROCEDURE create_menu
 0000       DIM choice:STRING[1]
 000C       PRINT CHR$(12)
 0011       RUN create_items
 0015       RUN input_items
 0019       RUN create_name
 001D       RUN create_bank
 0021       RUN create_chq
 0025       END
PROCEDURE create_chq
 0000       PRINT CHR$(12)
 0005       TYPE record=date:STRING[8]; number:INTEGER; payee:STRING[25
             ]; ammt:REAL; item:STRING[4]
 0037       DIM chq_rec:record
 0040       DIM path:BYTE
 0047       chq_rec.date=""
 0052       chq_rec.number=0
 005D       chq_rec.payee=""
 0068       chq_rec.ammt=0
 0074       chq_rec.item=""
 007F       CREATE #path,"chq_record"
 0092       PUT #path,chq_rec
 009C       CLOSE #path
PROCEDURE create_bank
 0000       DIM choice:STRING[1]
 000C       DIM balance:REAL
 0013       PRINT CHR$(12)
 0018       DIM path:BYTE
 001F       balance=0
 0027       PRINT "Next we have to set up your bank Account "
 0054       PRINT
 0056       PRINT "Input your beginning of the Financial Year Bank Balance"
 0091       INPUT " > ",balance
 009C       CREATE #path,"bank"
 00A9       PUT #path,balance
```

```
 00B3       CLOSE #path
 00B9       CREATE #path,"start_bal"
 00CB       PUT #path,balance
 00D5       CLOSE #path
 00DB       END
PROCEDURE create_name
 0000       PRINT CHR$(12)
 0005       DIM name:STRING[20]
 0011       DIM path:BYTE
 0018       PRINT "The next thing we have to do is to enter the name you want"
 0056       PRINT "used when you generate any Printouts "
 007F       PRINT
 0081       PRINT "You have space for up to 20 Characters "
 00AC       INPUT "Type Name in Here > ",name
 00C8       CREATE #path,"company_name"
 00DD       PUT #path,name
 00E7       CLOSE #path
PROCEDURE create_items
 0000       PRINT CHR$(12)
 0005       DIM x:INTEGER
 000C       TYPE types_all=code:STRING[4]; name:STRING[20]
 0027       DIM a:STRING[1]
 0033       DIM choice:INTEGER
 003A       PRINT " The first thing we have to do is create a file that contains"
 007B       PRINT " a list of Catagories and Codes for your Expenses and Deposits
"
 00BD       PRINT
 00BF       PRINT " You have space for 30 ITEMS "
 00E0       PRINT
 00E2       PRINT " The idea is to allocate a code to a particular Expense "
 011E       PRINT " or Deposit item that is easy to remember when you have to "
 015D       PRINT " enter in your cheque butts and deposit slips. "
 0190       PRINT
 0192       PRINT " For example, instead of having a code system such as :-"
 01CE       PRINT " Code                    Item"
 01ED       PRINT " 1000                     Hire of Equipment"
 021A       PRINT " 1001                     Salary J Tanner"
 0245       PRINT " 1002                     Tax J Tanner"
 026D       PRINT " 1003                     Car lease"
 0292       PRINT
 0294       PRINT " and so on, "
 02A4       PRINT
 02A6       PRINT " It is much easier to have a system like :-"
 02D5       PRINT
 02D7       PRINT " Code                    Item"
 02F6       PRINT " hire                    Hire of Equipment"
 0322       PRINT " sajt                    salary J Tanner"
 034C       PRINT " tajt                    Tax J Tanner"
 0373       PRINT " carl                    Car  Lease"
 0398       PRINT
 039A       PRINT " The only restriction on entering expense codes is that they"
 03DA       PRINT " have to be 4 characters long. It is also easier to enter them
"
 041C       PRINT " later if they are all lower case. Remember the computer will"
 045D       PRINT " not recognise your code unless it is EXACTLY the same as you"
 049E       PRINT " have coded it. For example Hire is different to hire"
 04D7       PRINT
 04D9       PRINT " Deposit items are different in that the first three character
s"
 051C       PRINT " of the deposit code HAS to be dep. (in lower case)"
 0553       PRINT
 0555       PRINT " The fourth character can be a letter or number"
 0588       PRINT " For example:- "
 059B       PRINT " dep1                Sale of sheep"
 05C0       PRINT " dep2                Sale of hay"
```

```
05E3        PRINT " dep2                Profits from Stock"
060D        PRINT
060F        PRINT " Remember you only have a total of 30 Spaces in the file for"
064F        PRINT " both Deposits and Expenses   HOWEVER  "
067A        PRINT
067C        PRINT " You do NOT have to enter them all here, but can enter them "
06BC        PRINT " later, even when you are entering cheques and deposits"
06F7        PRINT  \ PRINT  \ PRINT  \ PRINT
06FF        INPUT " Press <enter> to Begin to enter codes",a
072D        DIM path:BYTE
0734        DIM types:types_all
073D        CREATE #path,"items_list"
0750        choice=30
0757        types.code=" "
0763        types.name=" "
076F        FOR x=1 TO choice
0780          PUT #path,types
078A        NEXT x
0795        CLOSE #path
PROCEDURE input_items
0000        PRINT CHR$(12)
0005        PRINT TAB(20); "I N P U T  \  S E E    I T E M S "
002E        PRINT  \ PRINT
0032        PRINT TAB(25); "Code"; "   "; "Name"
004B        TYPE types_all=code:STRING[4]; name:STRING[20]
0066        DIM x:INTEGER
006D        DIM choice:STRING[20]
0079        x=0
0080        DIM path:BYTE
0087        DIM types:types_all
0090        OPEN #path,"items_list"
00A3        WHILE NOT(EOF(#path)) DO
00AE 50       GET #path,types
00BB          x=x+1
00C6          PRINT TAB(25); types.code; "   ";
00D9          PRINT types.name
00E1          IF types.code=" " THEN
00F1            PRINT TAB(20); "You have space for "; 31-x; "  Items"
011D            PRINT
011F 60         INPUT "Input CODE <4 characters>  <e> to END ",choice$
0150            IF choice$="e" OR choice$="E" THEN 100
0168            IF LEN(choice$)<>4 THEN 60
0178            types.code=choice$
0184            INPUT "Input Name  <20 Characters>  ",types.name
01AD            SEEK #path,(x-1)*SIZE(types)
01C0            PUT #path,types
01CA          ENDIF
01CC          GOTO 50
01D0        ENDWHILE
01D4 100    CLOSE #path
```

continued from p 46

```
90 FORD=1TO6:X1=RND(-TIMER):X2=R
ND(-TIMER):X1=RND(6):X2=RND(6)
100 F=96:FORG=1TO7:PRINT@F,A$;:F
=F+32:NEXTG
110 F=114:FORG=1TO7:PRINT@F,A$;:
F=F+32:NEXTG
120 IF X1=1 THEN PRINT@198,B$;
130 IF X2=1 THEN PRINT@216,B$;
140 IF X1=2 THEN PRINT@130,B$;:P
RINT@266,B$;
150 IF X2=2 THEN PRINT@148,B$;:P
RINT@284,B$;
160 IF X1=3 THEN PRINT@130,B$;:P
RINT@266,B$;:PRINT@198,B$;
170 IF X2=3 THEN PRINT@148,B$;:P
RINT@284,B$;:PRINT@216,B$;
180 IF X1=4 THEN PRINT@130,B$;:P
RINT@266,B$;:PRINT@138,B$;:PRINT
@258,B$;
190 IF X2=4 THEN PRINT@148,B$;:P
RINT@284,B$;:PRINT@276,B$;:PRINT
@156,B$;
200 IF X1=5 THEN PRINT@130,B$;:P
RINT@266,B$;:PRINT@138,B$;:PRINT
@258,B$;:PRINT@198,B$;
210 IF X2=5 THEN PRINT@148,B$;:P
RINT@284,B$;:PRINT@276,B$;:PRINT
@156,B$;:PRINT@216,B$;
220 IF X1=6 THEN PRINT@130,B$;:P
RINT@266,B$;:PRINT@138,B$;:PRINT
@258,B$;:PRINT@134,B$;:PRINT@262
,B$;
230 IF X2=6 THEN PRINT@148,B$;:P
RINT@284,B$;:PRINT@276,B$;:PRINT
@156,B$;:PRINT@152,B$;:PRINT@280
,B$;
235 NEXT D
240 EXEC44539
250 GOTO 90
260 POKE65496,0:SCREEN0,0
```

Logo Corner

by NIGEL PURDEY

LOGO GRAPHICS

THE FOLLOWING SEVEN programs are for those who have the Logo package from Tandy and who don't really know how to or have had the patience to use it.

If this is the case, then we have here very short and sweet logo programs.

They are ...

* Tape: draws a cassette
* Scene: picture of a house and dog, flowers etc ...
* Phones: set of headphones
* Rialto: set of buildings
* Disk: a floppy disk
* Circle: hi-resolution circle.
* House: a small house with windows and chiminey.

```
'CIRCLE' BY HAMISH PURDEY

4/4/88

TO CIRCLE :R
REPEAT 360(PU FD :R-1 PD FD 1
PU BK :R RT 1)
END
```

```
'HOUSE' BY NIGEL PURDEY

4/4/88

TO HOUSE
RT 90 FD 40 LT 135
FD 40 LT 90 FD 40
LT 135 FD 55 RT 90
FD 60 RT 90 FD 55
RT 90 FD 60 RT 45
FD 10 LT 45 FD 20
RT 90 FD 10 RT 90
FD 10 RT 45 FD 25
LT 45 FD 59 LT 90
FD 20 LT 90 FD 20
RT 90 FD 15 RT 90
FD 20 RT 90 FD 35
RT 90 FD 40 RT 90
PU FD 10 LT 90
PD FD 10 RT 90
FD 10 RT 90 FD 10
RT 90 FD 10 RT 90
FD 5 RT 90 FD 10
RT 90 FD 5 RT 90
FD 5 RT 90 FD 10
RT 90 PU FD 20
PD FD 10 RT 90
FD 10 RT 90 FD 10
RT 90 FD 10 RT 90
FD 5 RT 90 FD 10
RT 90 FD 5 RT 90
FD 5 RT 90 FD 10
HT
END
```

```
'PHONES' BY NIGEL PURDEY

TO PHONES
PU FD 40 PD RT 90
FD 30 RT 45 FD 30
RT 55 FD 30 RT 90
FD 7 LT 90 FD 20
LT 90 FD 14 LT 90
FD 20 LT 90 FD 7
RT 90 FD 30 LT 55
FD 30 LT 45 FD 40
LT 45 FD 30 LT 55
FD 30 LT 90 FD 7
RT 90 FD 20 RT 90
FD 14 RT 90 FD 20
RT 90 FD 7 HT
END
```

```
'TAPE' BY NIGEL PURDEY

(C) 3RD APRIL, 1988

TO TAPE
LT 90 FD 40 LT 90
FD 40 LT 90 FD 80
LT 90 FD 40 LT 90
FD 40 LT 90 PU
FD 5 PD RT 90 FD 30
LT 45 FD 5 LT 45
FD 20 LT 45 FD 5
LT 45 FD 60 LT 45
FD 5 LT 45 FD 20
LT 45 FD 5 LT 45
FD 40 LT 90 PU
FD 35 RT 90 FD 10
RT 135 PD FD 13
RT 45 FD 20 RT 45
FD 13 LT 135 PU
FD 30 LT 90 PD FD 40
LT 45 FD 5 LT 45
FD 5 LT 45 FD 5
LT 45 FD 40 LT 45
FD 5 LT 45 FD 5
LT 45 FD 5 LT 135
PU FD 15 RT 180
PD LT 90 PU FD 40
PD RT 90
PRINT "BAD HT

END
```

```
'RIALTO' BY NIGEL PURDEY

TO RIALTO
FD 85 RT 90 FD 40
RT 90 FD 130 LT 90
FD 20 RT 180 FD 120
RT 180 FD 60 LT 90
FD 90 LT 90 FD 30
LT 90 FD 90 RT 180
FD 10 RT 90 FD 70
LT 90 FD 10 LT 90
FD 70 RT 90 FD 10
RT 90 FD 70 LT 90
FD 10 LT 90 FD 70
RT 90 FD 10 RT 90
FD 70 LT 90 FD 10
LT 90 FD 70 RT 90
FD 10 RT 90 FD 70
LT 90 FD 10 LT 90
FD 70 RT 90 FD 10
RT 90 FD 70 LT 90
FD 10 LT 90 FD 40
RT 90 FD 10 RT 90
FD 40 LT 90 FD 10
LT 90 FD 40 RT 90
FD 10 RT 90 FD 10
RT 90 FD 130 LT 90
FD 10 LT 90 FD 130
RT 90 FD 10 RT 90
FD 130 RT 90 FD 50
RT 90 FD 90 LT 90
FD 10 LT 90 FD 90
LT 90 FD 20 LT 90
FD 90
HT
END
```

```
'DISK' BY NIGEL PURDEY

4/4/88

TO DISK
RT 90 FD 40 RT 90
FD 60 RT 90 FD 60
RT 90 FD 60 RT 90
FD 20 RT 90 FD 10
RT 90 FD 20 LT 90
FD 15 LT 90 PU
FD 25 PD LT 45 FD 5
```

```
  RT 45 FD 5 RT 45
  FD 5 RT 45 FD 5
  RT 45 FD 5 RT 45
  FD 5 RT 45 FD 5
  RT 45 FD 5 HT
  END


'SCENE' BY HAMISH PURDEY


TO SQU :L
REPEAT 4(FD :L RT 90)
END

TO TRI :L
LT 90
REPEAT 3(RT 120 FD :L)
RT 90
END

TO FLOWER :X :Y
SETX :X SETY :Y
RT 45 FD 5 BK 5 LT 90 FD 5
BK 5 RT 45 FD 10 LT 90
FD 2 RT 90 SQU 4
END

TO PERSON :X :Y
SETX :X SETY :Y
RT 135 FD 10 BK 10 RT 90
FD 10 BK 10 RT 135 FD 15
BK 7 LT 90 FD 5 BK 10
FD 5 RT 90 FD 7 LT 90 FD 5
RT 90 SQU 10
END

TO HOUSE :X :Y
SETX :X SETY :Y
SQU 50 FD 50
TRI 50
BK 50 RT 90 FD 20 LT 90 FD 25
RT 90 FD 10 RT 90 FD 25
LT 90 FD 20 LT 90 FD 30
LT 90 PU FD 5 PD FD 10
RT 90 SQU 10 TRI 10
LT 90 PU FD 30 PD
RT 90 SQU 10
TRI 10
END

TO DOG :X :Y
SETX :X SETY :Y
RT 45 FD 5 RT 90 FD 5 BK 5
LT 45 FD 15 RT 135 FD 5 BK 5
LT 90 FD 5 BK 5 LT 135
FD 5 RT 45 FD 5 BK 5
LT 135 FD 15 RT 90 FD 5 BK 10
FD 5 LT 90 FD 5 RT 90 FD 5
RT 90 FD 5
END

TO SCENE
HT
FLOWER 10 50
FLOWER 20 50
FLOWER 30 50
HOUSE 40 50
FLOWER 100 50
FLOWER 110 50
FLOWER 120 50
PERSON 140 57
FLOWER 160 50
FLOWER 170 50
FLOWER 180 50
DOG 200 50
TREE 25 190 50
END

TO TREE :L :X :Y
SX :X SY :Y
LT 90 FD 50 LT 90
REPEAT 360(RT 1 FD :L BK :L)
END
```

Steve presents..

by STEPHEN BELL

16K CoCo (min)
APPLICATION

Foreword by Johanna Vagg

TOWARDS THE end of 1987, a lady rang me from Wollongong (Figtree). She wanted information about Maths programs suitable for her boys.

She had asked about programs, but, being parents,we talked about kids. After a few minutes I had convinced her to send me a sample of Stephen's work.

Stephen turned 8 in October, 1987. He bought a 16K ECB CoCo 2 in July and started programming almost immediately.

The CoCo has been upgraded to 64K.

I am proud to present his first three programs:

* STRYWRTR (storywriter),
* NUMBERS and * POKES.

Stephen will tell you about his programs, but I would like to comment on his first program.

STRYWRTR was written for Stephen's TP-10 printer which only prints 32 characters per line. What you see on the screen, is what you get on the printer, ie you just have to be careful not to break words at the end of the screen lines.

I tried the program while I had a Machine language program in memory to restrict printing to 32 characters per line. Then I tried it without the ML program and found that it was still fine: I just made sure that I pressed ENTER before the middle of each 3rd screen line... two and a half screen lines equals 80 characters.

The following is Stephen's work:

STRYWRTR is a program I wrote so that my brother, Greg (5), could type stories easily and press @ to send them to my TP-10 printer.

NUMBERS is easier to use than a calculator. Great for checking homework or just for fun!

POKES helps you find the POKE values of 256 characters. When you RUN the program you will see POKE. This first value (....) tells you where the character is to be placed on the screen.

This can be from 1024 to 1535. For example, in this program the first character you ask for after the title screen is POKEd at 1039.

I have used these POKEs in my title screen to show that you can POKE numbers and punctuation on a black background (like lowercase). These characters can not be PRINTed on the screen, they can only be POKEd.

The Listing:

```
0 GOTO10
3 SAVE"STRYWRTR":END
5 'STORY WRITER BY STEPHEN BELL-
AGE 8.NOV.'87      FOR 16KECB
6 *****STEPHEN BELL**********
  *****12 GREENHILL AVENUE****
  *****FIGTREE  NSW 2525******
10 CLSRND(9)-1:PRINT@71,"***STOR
Y WRITER***";:PRINT@105,"-STEPHE
N BELL-";:PRIN'@291,"WHEN YOU FI
NISH YOUR STORY";:PRINT@364,"TYP
E "CHR$(34)"@"CHR$(34);:PRINT@41
9,"TO SEND IT TO THE PRINTER.";
11 PLAY"T3":FORX=1TO15:PLAYSTR$(
RND(12)):NEXT
12 CLEAR10000:CLS:DIMA$(500)
13 FORA=1TO500:LINEINPUTA$(A):IF
A$(A)="@"THEN14ELSENEXT:A=A+1
14 FORB=1TOA-1:PRINT#-2,A$(B):NE
XTB:RUN12
```

The Listing:

```
0 GOTO10
3 SAVE"NUMBERS":END
5 'NUMBER OPERATIONS BY STEPHEN
BELL-AGE 8.NOV.'87  FOR 16KECB
6 *****STEPHEN BELL**********
  *****12 GREENHILL AVENUE***
  *****FIGTREE  NSW  2525****
10 CLSRND(9)-1:PRINT@135,"NUMBER
 OPERATIONS";:PRINT@206,"BY";:PR
```

continued on p57

HIGH SPEED SECTOR SEEKER

by JOHN WILTSHIRE

32K DECB
UTILITY

I READ YOUR article on how to submit a program and decided then and there that such a task was not beyond me, so here goes ...

I work mostly with machine code and disc operating systems. This often results in software errors on the subject disk.

These are easy to correct but usually very hard to find.

I have used commercial disk correction software, but all that I have seen so far are so dreadfully slow in the search phase.

So I developed the following which is a no frills high speed disk search program.

I have included the listing which I have assembled using Tandy Edtasm. After assembly in memory save $7000 - $7C00. Execute from $7000.

The only options are ASCII or Hexadecimal displays.

To use it Loadm & Exec.

The Listing:

```
00100 *PROGRAM TO DISPLAY SECTORS
00102 *WRITTEN - JOHN WILTSHIRE
00103 * ALBANVALE 1987
00110 BUF EQU $00EE
00120 COM EQU $00EA
00130 TRK EQU $00EC
00140 SEC EQU $00ED
00150 COUNT EQU $77F0
00160 TEMP EQU $77F2
00170 TYPE EQU $77F3
00180 POLCAT EQU $A000
00190 * INITALIZATION ********
00200  ORG $7000
00210 START LBSR CLEAR
00220  LDY #MENU
00230  LDX #$0420
00240  LBSR DISP
00245  BRA KY1
00270 AHS LBSR CLEAR
00280  CLR TYPE
00290  LDY #ASC
00300  LDX #$0504
00310  LBSR DISP
00320 ASH JSR [POLCAT]
00330  BEQ ASH
00340  CMPA #$41
00350  BEQ ASA
00360  INC TYPE
00370 ASA LDD #$0200
00380  STD COM
00390 L1 LDY #TEXT
00395  LBSR CLEAR
00400  LDX #$0504
00410  LBSR DISP
00420  LBSR INKEY
00430  LBSR CONV
00440  CMPB #$2A
00450  BHS L1
00460  STB TRK
00470  LBSR CONV
00480  CMPB #$13
00490  BHS L1
00500  STB SEC
00510  LDD #$0400
00520  STD BUF
00530  LBSR CLEAR
00540 L2 JSR [$C004]
00550  LBSR ALTER
00560  LDX #$FFFF
00570 DL1 LEAX -1,X
00580  BNE DL1
00590  LDX #$05FE
00600  LDA SEC
00610  LBSR SHOW
00620  LDX #$05FC
00630  LDA TRK
00640  LBSR SHOW
00650 KY1 JSR [POLCAT]
00660  BEQ KY1
00670  CMPA #$5E
00680  BEQ BACK
00690  CMPA #$0A
00700  BEQ FWD
00701  CMPA #$4D
00702  LBEQ START
00710  CMPA #$53
00720  LBEQ L1
00730  CMPA #$41
00740  LBEQ AHS
00741  CMPA #$0D
00742  LBNE L1
00750  RTS
00760 BACK DEC SEC
00770  BNE L2
00780  LDA #$12
00790  STA SEC
00800  DEC TRK
00810  BRA L2
00820 FWD INC SEC
00830  LDA SEC
00840  CMPA #$13
00850  BNE L2
00860  LDA #$01
00870  STA SEC
00880  INC TRK
00890  BRA L2
00900 **********************
00910  ORG $7800
00920 SHOW LDB #$30
00930  STB ,X
00940  STB 1,X
00950  CMPA #$00
00960  BEQ CO3
00970 CO2 LDB #$0A
00980 CO1 INC 1,X
00990  DECB
01000  BEQ CO4
01010  DECA
01020  BEQ CO3
01030  BRA CO1
01040 CO3 RTS
01050 CO4 INC ,X
01060  LDB #$30
01070  STB 1,X
01080  DECA
01090  BEQ CO3
01100  BRA CO2
01110 **********************
01120 ALTER LDA TYPE
01130  BEQ TIDY
01140 CHANGE LDU #$04FF
01150  LDY #$0600
01160 CH0 LDX #CHAR
01170  LDA ,U
01180  LEAU -1,U
01190  STA TEMP
01200  ANDA #$0F
01210 CH3 CMPA ,X+
01220  BEQ CH4
01230  BRA CH3
01240 CH4 LDA $F,X
01250  STA ,-Y
01260  LDX #CHAR
01270  LDA TEMP
01280  ANDA #$F0
01290  RORA
01300  RORA
01310  RORA
01320  RORA
01330 CH1 CMPA ,X+
01340  BEQ CH2
01350  BRA CH1
01360 CH2 LDA $0F,X
01370  STA ,-Y
01380  CMPY #$0400
01390  BHS CH0
01400  RTS
01410 CHAR FDB $0001
01420  FDB $0203
01430  FDB $0405
01440  FDB $0607
01450  FDB $0809
01460  FDB $0A0B
01470  FDB $0C0D
01480  FDB $0E0F
01490  FDB $7071
```

```
01500  FDB $7273
01510  FDB $7475
01520  FDB $7677
01530  FDB $7879
01540  FDB $4142
01550  FDB $4344
01560  FDB $4546
01570 **********************
01580 TIDY LDX #$0400
01590 TI0 LDA 0,X
01600  BEQ TI2
01610  CMPA #$41
01620  BHS TI1
01630  ADDA #$40
01640 TI1 STA ,X+
01650  CMPX #$500
01660  BNE TI0
01670  RTS
01680 TI2 LDA #$60
01690  BRA TI1
01700 **********************
01710 INKEY LEAX -7,X
01720  CLR COUNT
01730 IN1 JSR [POLCAT]
01740  BEQ IN1
01750  STA ,X+
01790  INC COUNT
01800  LDA COUNT
01810  CMPA #$04
01820  BNE IN1
01830  LEAX -4,X
01840  RTS
01850 **********************
01860 CONV LDD ,X++
01870  CMPA #$00
01880  BEQ CN1
01890  SUBA #$30
01900 CN1 SUBB #$30
01910 CN3 CMPA #$00
01920  BNE CN2
01930  RTS
01940 CN2 ADDB #$0A
01950  DECA
01960  BRA CN3
01970 **********************
01980 CLEAR LDX #$0400
01990  LDD #$FFFF
02000 CL1 STD ,X++
02010  CMPX #$0600
02020  BNE CL1
02030  RTS
02040 **********************
02050 DISP LDA ,Y+
02060  CMPA #$41
02070  BHS DP2
02080  ADDA #$40
02090 DP2 STA ,X+
02100  CMPA #$FF
02110  BNE DISP
02120  RTS
02130 **********************
02140  ORG $7400
02150 TEXT FCC 'TRACK&SECTOR(XXXX)?'
02160  FCB $FF
02170 ASC FCC 'ASCII OR HEX ? (X)'
02180  FCB $FF
02190 MENU FCC '    HIGH SPEED DISC SEARCH
02200   FCC '
02210   FCC '   AUTHOR  - JOHN WILTSHIRE    '
02220   FCC '
02230   FCC '
02240   FCC '     UP ARROW  - PREVIOUS SECTOR'
02250   FCC '     DWN ARROW - NEXT SECTOR    '
02260   FCC '     S  KEY    - ENTER SECTOR   '
02270   FCC '     A  KEY    - DISPLAY MODE   '
02290   FCC '     M  KEY    - MENU           '
02291   FCC '     ENTER     - QUIT TO BASIC  '
02300   FCC '
02310   FCC '
02320   FCC '
02330   FCC '     PRESS ANY KEY TO CONTINUE  '
02340   FCB $FF
02350   END
```

continued from p55

```
INT@265,"STEPHEN BELL";:PLAY"T3C
P32L8CP32CL4ECL2GFEDC"
11 CLS:PRINT"CHOOSE AN OPERATION
-ENTER NUMBER":PRINT"    1) ADD
                         2) SUBT
RACT
IPLY                     3) MULT
                         4) DIVI
DE
12 PRINT"    5) SQUARE
             6) CUBE
             7) SQUARE ROOT  OR
             8) EXPONENTIAL":INP
UTA
13 ON A GOTO 14,15,16,17,18,19,2
0,21:RUN11
14 INPUT"TYPE TWO NUMBERS";A,B:P
RINTA"+"B"="A+B:GOSUB22
15 INPUT"TYPE TWO NUMBERS";A,B:P
RINTA"-"B"="A-B:GOSUB22
16 INPUT"TYPE TWO NUMBERS";A,B:P
RINTA"*"B"="A*B:GOSUB22
17 INPUT"TYPE TWO NUMBERS";A,B:I
FB=0THENPRINT"YOU CAN'T DIVIDE B
Y 0":GOTO17ELSEPRINTA"/"B"="A/B:
GOSUB22
18 INPUT"TYPE A NUMBER";A:PRI"TH
E SQUARE OF"A"IS"A*A:GOSUB22
19 INPUT"TYPE A NUMBER";A:PRINT"
THE CUBE OF"A"IS"A*A*A:GOSUB22
20 INPUT"TYPE A NUMBER";A:PRINT"
THE SQUARE ROOT OF"A"IS"SQR(A):G
OSUB22
21 INPUT"TYPE TWO NUMBERS";A,B:P
RINTA"TO THE POWER OF"B"IS"INT(A
^B):GOSUB22
22 PRINT@488,"any key for more";
:EXEC44539:GOTO11
```

The Listing:

```
0 GOTO10
3 SAVE"POKES":END
5 'STEPHEN BELL(8)
6 *****STEPHEN BELL***********
  *****12 GREENHILL AVENUE****
  *****FIGTREE  NSW  2525*****
9 'THIS PROGRAM HELPS YOU FIND
   THE POKE VALUES OF 256
   CHARACTERS.
10 C=RND(8):IFC=1THENC=0
11 CLSC:PRINT@38,"finding poke v
alues";
12 POKE1069,32
13 POKE1074,32
14 PRINT@103,"you type a number"
;
15 POKE1130,32:POKE1135,32:POKE1
137,32
16 PRINT@136,"from   to      ";
17 POKE1164,32:POKE1166,32:POKE1
169,32:POKE1173,32:POKE1174,46:P
OKE1165,48:POKE1170,50:POKE1171,
53:POKE1172,53
18 PRINT@194,"when poking these
characters";:PRINT@258,"to the s
creen  position them";:PRINT@322
,"using poke     to poke      ";
19 POKE1296,32:POKE1295,44:POKE1
235,32:POKE1229,32:POKE1222,32:P
OKE1284,32:POKE1288,32:POKE1305,
32:POKE1363,32:POKE1351,32:POKE1
356,49:POKE1357,48:POKE1358,50:P
OKE1359,52:POKE1360,44:POKE1368,
49:POKE1369,53:POKE1370,51:POKE1
371,53:POKE1372,44
20 POKE1373,46
21 PRINT@492,"ANY KEY";:IFINKEY$
=""THEN21
22 CLS
23 FORX=0TO14
24 INPUT"POKE....,";A
25 IFA>255THENNEXT:GOTO23ELSEIFA
<0THENNEXT:GOTO24
26 POKE1039+(X*32),A
27 NEXTX
28 IFINKEY$=""THEN28ELSE22
```

BRIZZY'S EXPO

by TONY TARABORRELLI

CoCo3
GRAPHICS

TO CELEBRATE the opening of Expo 88, I have drawn the Expo symbol for the graphics competition. This is my first attempt at graphics.

Although it's only a picture, it may interest some people how I achieved such detail.

First, I photocopied the Hscreen 2 graph from the back of the manual and enlarged it to A3 sized paper.

I then got the picture I wanted to draw and enlarged it to A3 size.

After, I put the picture into the photocopier and put through the graph so that the picture copied onto the graph paper.

All I had to do then is to plot the points with a ruler and put them into a Line statement or a Drav statement.

It takes a while, but it's better than the hit or miss method I used before.

The Listing:

```
0 GOTO10
1 '**** BRISBANE EXPO
2 '**** TONY TARABORELLI
3 SAVE"189:1":SAVE"189:3":END'GR
F
10 POKE65497,0
20 PALETTE 0,64
30 RESTORE
40 HSCREEN2:HCOLOR1
50 FOR X=1TO28
60 READ P1,P2,P3,P4
70 HLINE(P1,P2)-(P3,P4),PSET
80 NEXT X
90 HPAINT(80,83),1,1
100 HPAINT(110,92),1,1
110 HPAINT(148,96),2,1
120 HPAINT(164,96),1,1
130 HPAINT(200,96),13,1
140 HPAINT(252,96),2,1
150 DATA118,48,127,55,127,55,63,
119,63,119,15,108,15,108,118,48
160 DATA 129,55,143,52,115,114,1
43,52,115,114,66,119,66,119,129,
55
170 DATA 146,52,118,114,118,114,
156,124,156,124,156,57,156,57,14
6,52
180 DATA 159,57,170,52,170,52,19
8,114,198,114,159,125,159,125,15
9,57
190 DATA 172,52,186,56,186,56,24
8,118,248,118,202,114,202,114,17
2,52
200 DATA 172,52,186,56,186,56,24
8,118,248,118,202,114,202,114,17
2,52
210 DATA 189,55,196,48,196,48,30
2,108,302,108,252,118,252,118,18
9,55
220 HCIRCLE(80,83),8,3:HPAINT(80
,83),3,3
230 HCOLOR3:HLINE(112,74)-(135,7
3),PSET:HLINE(112,74)-(129,55),P
SET:HLINE(129,55)-(143,52),PSET:
HLINE(143,52)-(135,73),PSET:HPAI
NT(130,64),3,3:HCOLOR1
240 HCOLOR4:HLINE(112,74)-(135,7
3),PSET:HLINE(135,73)-(127,88),P
SET:HLINE(127,88)-(98,88),PSET:H
LINE(98,88)-(112,74),PSET:HPAINT
(114,78),4,4
250 HCOLOR2:HLINE(97,89)-(95,91)
,PSET:HLINE(95,91)-(126,91),PSET
:HLINE(126,91)-(127,89),PSET:HLI
NE(127,89)-(97,89),PSET
260 HPAINT(100,90),2,2
270 HCIRCLE(110,92),9,13:HPAINT(
110,92),13,13
280 HCIRCLE(109,89),2,3
290 HCIRCLE(58,93),7,3:HPAINT(58
,93),3,3
300 HCOLOR3:HLINE(86,100)-(67,11
9),PSET:HLINE(67,119)-(99,116),P
SET:HLINE(97,116)-(86,100),PSET
310 HPAINT(84,108),3,3
320 HCOLOR2:HLINE(142,55)-(137,6
6),PSET:HLINE(137,66)-(118,85),P
SET
330 HLINE(118,85)-(114,83),PSET:
HLINE(114,83)-(142,55),PSET:HPAI
NT(124,76),2,2
340 HCOLOR4:HLINE(117,84)-(137,6
3),PSET
350 HCOLOR2:HLINE(101,97)-(104,1
00),PSET:HLINE(104,100)-(95,107)
,PSET:HLINE(95,107)-(101,97),PSE
T:HPAINT(102,101),2,2
360 HCIRCLE(177,68),9,2,1,.20,.7
0
370 HCOLOR2:HLINE(180,75)-(174,6
0),PSET:HPAINT(176,74),2,2
380 HCOLOR3:HLINE(82,100)-(71,11
1),PSET:HCIRCLE(78,85),16,3,1,.2
0,.43
390 HCIRCLE(78,84),28,3,1,.30,.4
5:HPAINT(68,104),3,3
400 HCIRCLE(78,84),22,2,1,.28,.4
3
410 HCIRCLE(78,84),23,2,1,.29,.4
3
420 HCOLOR4:HLINE(116,49)-(116,6
6),PSET:HLINE(103,79)-(91,79),PS
ET:HLINE(91,79)-(91,64),PSET:HLI
NE(91,64)-(116,49),PSET:HLINE(11
6,66)-(103,79),PSET:HCOLOR1
430 HPAINT(96,76),4,4
440 HCIRCLE(104,70),3,2:HPAINT(1
04,70),2,2
450 HCOLOR2
460 FOR L=1 TO12
470 READ P1,P2,P3,P4
480 HLINE(P1,P2)-(P3,P4),PSET
490 NEXT L
500 DATA 113,68,113,58,109,62,11
3,58,109,62,108,54,108,54,104,57
,104,57,101,62,101,62,100,59,105
,62,105,62,100,59,96,66,96,66,10
0,73,100,73,103,79,103,79,109,73
,109,73,113,68
510 HCIRCLE(104,69),8,2,.5,.50,.
0
520 HCIRCLE(104,69),8,2,.5,0,.50
530 HPAINT(106,60),2,2
540 HPAINT(104,75),2,2
550 HCOLOR3:HLINE(192,100)-(188,
91),PSET:HLINE(188,91)-(178,88),
PSET:HLINE(178,88)-(159,97),PSET
:HLINE(159,97)-(159,110),PSET:HL
INE(159,110)-(192,100),PSET:HCOL
OR1
560 HPAINT(176,99),3,3
570 HCOLOR13:HLINE(159,63)-(175,
63),PSET:HLINE(159,66)-(176,66),
PSET:HLINE(159,69)-(178,69),PSET
:HLINE(159,72)-(179,72),PSET:HLI
NE(159,75)-(180,75),PSET
580 HCOLOR1
590 FOR X=1TO27
600 READ P1,P2,P3,P4
610 HLINE(P1,P2)-(P3,P4),PSET
620 NEXTX
630 DATA 227,93,222,80,222,80,23
3,90,233,90,217,60,217,60,221,62
,221,62,235,88,235,88,232,74,232
,74,241,86,241,86,237,60,237,60,
243,86,243,86,248,64,248,64,252,
85,252,85,256,65,256,65,254,85,2
54,85,266,68,265,68
640 DATA 260,89,260,89,274,72,27
4,72,262,90,262,90,279,78,279,78
,266,95,266,95,286,86,286,86,267
,98,267,98,290,95,290,95,270,104
,270,104,290,102,290,102,270,106
,270,106,286,111,286,111,252,118
650 HPAINT(252,108),1,1
660 HCIRCLE(245,111),19,2,1,.64,
.06
670 HCIRCLE(245,111),22,2,1,.63,
.04
680 HCOLOR2
690 HLINE(230,96)-(231,97),PSET:
HLINE(263,115)-(266,115),PSET
700 HPAINT(265,113),2,2
710 HPAINT(248,74),2,1:HPAINT(25
9,81),2,1:HPAINT(270,87),2,1
```

```
720 HCOLOR2:HLINE(189,110)-(193,
100),PSET:HLINE(193,100)-(198,11
4),PSET:HLINE(198,114)-(159,125)
,PSET:HLINE(159,125)-(159,110),P
SET:HPAINT(176,112),4,2
730 HLINE(165,109)-(166,122),PSE
T:HLINE(171,107)-(170,121),PSET:
HLINE(176,106)-(175,119),PSET
740 HLINE(180,105)-(180,118),PSE
T:HLINE(185,103)-(185,116),PSET:
HLINE(190,102)-(191,115),PSET
750 HLINE(166,109)-(166,115),PSE
T:HLINE(172,107)-(172,113),PSET
760 HLINE(181,105)-(181,111),PSE
T:HLINE(186,103)-(186,109),PSET:
HLINE(191,102)-(191,108),PSET
770 HCOLOR1
780 HLINE(195,99)-(195,79),PSET:
HLINE(195,79)-(209,79),PSET:HLIN
E(209,79)-(229,99),PSET:HLINE(22
9,99)-(216,115),PSET:HLINE(216,1
15)-(202,114),PSET:HLINE(202,114
)-(195,99),PSET
790 HPAINT(217,92),1,1
800 HCOLOR2:HLINE(195,99)-(195,7
9),PSET:HLINE(195,79)-(209,79),P
SET:HLINE(209,79)-(209,89),PSET:
HLINE(209,89)-(205,96),PSET
810 HLINE(205,98)-(208,98),PSET:
HLINE(206,101)-(208,98),PSET:HLI
NE(206,101)-(208,105),PSET:HLINE
(208,110)-(205,110),PSET
820 HLINE(205,110)-(207,114),PSE
T
830 HLINE(199,82)-(202,84),PSET:
HLINE(202,84)-(205,81),PSET:HLIN
E(198,87)-(204,87),PSET
840 HCIRCLE(201,87),5,2,1,0,.50
850 HPAINT(198,88),2,2
860 HLINE(212,90)-(218,90),PSET:
HCIRCLE(215,90),5,2,1,.50,0
870 HPAINT(215,89),2,2
880 HLINE(201,108)-(203,104),PSE
T:HLINE(203,104)-(210,104),PSET:
HLINE(210,104)-(214,101),PSET
890 HLINE(214,101)-(210,105),PSE
T:HLINE(210,105)-(203,105),PSET:
HLINE(203,105)-(201,108),PSET:HL
INE(201,108)-(201,108),PSET
900 HCOLOR3:HLINE(195,65)-(188,7
0),PSET:HLINE(188,70)-(187,74),P
SET:HLINE(187,74)-(190,78),PSET:
HLINE(190,78)-(188,82),PSET
910 HLINE(188,82)-(188,84),PSET:
HLINE(188,84)-(194,88),PSET:HLIN
E(194,88)-(195,93),PSET:HLINE(19
5,93)-(194,95),PSET:HLINE(194,95
)-(194,78),PSET:HLINE(194,78)-(2
07,78),PSET:HLINE(207,78)-(195,6
5),PSET
920 HPAINT(196,71),3,3
930 HLINE(225,106)-(231,110),PSE
T:HLINE(231,110)-(231,112),PSET:
HLINE(231,112)-(228,112),PSET:HL
INE(228,112)-(230,116),PSET
940 HLINE(230,116)-(240,125),PSE
T
950 FOR X=1TO17
960 READ P1,P2
970 HCIRCLE(P1,P2),2,3,.5
980 NEXT X
990 DATA 167,45,186,45,177,48,18
4,52,177,58,182,64,183,72,189,63
,197,122,209,125,210,118,219,120
,229,124,247,124,231,103,223,110
,235,112
1000 HCOLOR3
1010 HLINE(146,52)-(144,57),PSET
1020 HDRAW"BM144,57;D4;L2;D5;L1;
D7;L5;D7;R6;U12;R3;U4;R1;U6;R2;U
4"
1030 HLINE(149,54)-(146,52),PSET
1040 HPAINT(146,60),3,3:HPAINT(1
40,77),3,3
1050 HLINE(152,55)-(154,56),PSET
1060 HDRAW"BM152,55;D5;L1;D5;L2;
D6;L3;D8;R3;D1;R5;D1;R1;U9;L4;U3
;R1;U5;R1;U8"
1070 HPAINT(148,78),3,3
1080 HDRAW"BM131,85;R4;D4;L4":HD
RAW"BM138,83;R4;D1;L5;U1;L3"
1090 HDRAW"BM145,82;R4;D1;R5;D1;
R2;D2;L2;U1;L4;U1;L5;U1;R3":HDRA
W"BM131,89;L2;D1;E2"
1100 HDRAW"BM140,88;L3;G1;R3;U1;
L3":HDRAW"BM147,87;L3;D1;R1"
1110 HDRAW"BM132,91;C4;L1;D1;L1;
D1;L1;D4;R1;D3;R1;D1;R3;U1;R2;U1
;L1;U1;L1;U5;D1;L3;U1"
1120 HPAINT(132,96),4,4
1130 HDRAW"BM140,91;C4;L2;D1;L1;
D2;L1;D2;R2;D4;R1;D1;R1;U1;R2;U2
;L1;U6;D1;L2;U1"
1140 HPAINT(139,95),4,4
1150 HDRAW"BM150,88;R5;D6;L1;D2;
L1;D1;L1;D1;L2;D2;L2;D1;L3;U4L2U
3R1U2R1U1R2U1R3U1"
1160 HPAINT(148,95),4,4
1170 HCOLOR3
1180 HDRAW"BM136,102;G2;U1;D3;E3
;L1;G1":HDRAW"BM143,102;L1G1D2E2
L1":HDRAW"BM154,99;D2L1U1L1D1L1D
1L1D1L1U1L1D2L1U1"
1190 HDRAW"BM139,106;L1G1L1G2L1D
2L1R1D1F3U2E2U1E3L1G5":HDRAW"BM1
44,106;D1L1D2L1U1D2L1U1D3L1U3D5L
1U3"
1200 HDRAW"BM156,102;D21L3U2L1U2
L1U2L2U2L1U2L1U2L1U2R1U1R1U1R1U1
R1U1R2U1R2U1R2":HPAINT(150,112),
3,3
1210 HDRAW"BM144,112;G1R1D2R1U1D
3R2D1L1D1R2D1L1R1D1R1D1"
1220 HDRAW"BM145,121;H5D4R3":HDR
AW"BM139,119;H4D3R3":HDRAW"BM135
,115;H3D3R3"
1290 LET Q1=34:LET Q2=46
1300 FOR A=1TO11
1310 HCIRCLE(Q1,116),22,2,1,.16,
.35
1312 HCIRCLE(Q1,120),22,2,1,.16,
.35
1313 IF A=11 THEN GOTO 1330
1314 HCIRCLE(Q2,155),22,2,1,.66,
.85
1316 HCIRCLE(Q2,159),22,2,1,.66,
.85
1320 Q1=Q1+25:Q2=Q2+25
1330 NEXT A
1335 HCOLOR2
1340 HLINE(23,134)-(23,139),PSET
:HLINE(295,134)-(295,139),PSET
1350 HPAINT(25,137),2,2
1360 HCOLOR8
1370 HDRAW"BM84,7D17R13ERE2U3H2L
3HL8D8FR9E2U4H3ER2E2U3HLHL14R2D8
R8EREU4H2":HPAINT(85,8),8,8:HPAI
NT(98,11),8,8:HPAINT(100,20),8,8
1380 HDRAW"BM104,7D17R3U8R6F3D2F
DFR3HUHUHUHL2HUR2E4U2H2L2HL11R3D
9R6H2RURU3H3":HPAINT(105,12),8,8
:HPAINT(118,12),8,8:HPAINT(117,1
9),8,8
1385 HDRAW"BM153,7D17R13ERE2U3H2
L3HL8D8FR9E2U4H3ER2E2U3HLHL14R2D
8R8EREU4H2":HPAINT(154,8),8,8:HP
AINT(167,11),8,8:HPAINT(169,20),
8,8
1390 HDRAW"BM127,7D17R4U17L4":HP
AINT(128,9),8,8
1400 HDRAW"BM149,8HL10GLG2D3F3R6
F4D3G2L10HU3RF4R9E3U4H2L5HL3H3U2
E2R2":HPAINT(136,12),8,8:HPAINT(
135,23),8,8:HPAINT(148,18),8,8
1410 HLINE(181,6)-(171,24),PSET
1420 HLINE(181,6)-(191,24),PSET:
HLINE(184,17)-(176,17),PSET
1430 HLINE(187,24)-(191,24),PSET
:HLINE(187,24)-(180,9),PSET:HPAI
NT(182,9),8,8
1440 HLINE(197,7)-(197,24),PSET:
HLINE(197,7)-(200,7),PSET:HLINE(
200,7)-(213,19),PSET:HLINE(197,7
)-(213,24),PSET:HLINE(213,7)-(21
3,24),PSET:HPAINT(204,13),8,8
1450 HDRAW"BM219,7D17R15U3G3L9U9
R9D2H2E2D2L9U8L4R15D2H2":HPAINT(
220,10),8,8
1500 HLINE(14,155)-(18,155),PSET
:HLINE(22,169)-(18,155),PSET
1510 HLINE(26,155)-(22,169),PSET
:HLINE(26,155)-(29,155),PSET
1520 HLINE(29,155)-(33,169),PSET
:HLINE(33,169)-(37,155),PSET
1530 HLINE(37,155)-(41,155),PSET
:HLINE(41,155)-(34,177),PSET:HLI
NE(34,177)-(31,177),PSET:HLINE(3
1,177)-(28,163),PSET
1540 HLINE(28,163)-(23,177),PSET
:HLINE(23,177)-(20,177),PSET:HLI
NE(20,177)-(14,155),PSET:HPAINT(
16,157),8,8
1550 HLINE(77,155)-(77,177),PSET
:HLINE(77,177)-(81,177),PSET:HLI
NE(81,168)-(88,177),PSET:HLINE(8
8,177)-(93,177),PSET:HLINE(93,17
7)-(87,169),PSET:HLINE(81,177)-(
81,170),PSET
1560 HDRAW"BM87,169RE4U6HUH2L12"
:HDRAW"BM81,158D7R6EU4H2L4":HPAI
NT(79,157),8,8
1570 HLINE(103,155)-(103,177),PS
ET:HLINE(103,177)-(113,177),PSET
:HLINE(113,177)-(113,172),PSET:H
LINE(113,172)-(106,172),PSET:HLI
NE(106,172)-(106,155),PSET:HLINE
(106,155)-(103,155),PSET:HPAINT(
104,160),8,8
1580 HDRAW"BM121,155D22R11E2RE3U
2EU6HU2H6L10":HDRAW"BM124,158D15
R7E3UEU5H2UHLHL6":HPAINT(123,159
),8,8
1590 HDRAW"BM156,155D22R10U5L7U4
R7U4L7U4R7U5L10":HPAINT(159,157)
,8,8
1600 HLINE(178,155)-(182,155),PS
ET:HLINE(182,155)-(187,161),PSET
:HLINE(187,161)-(192,155),PSET:H
LINE(192,155)-(196,155),PSET
1610 HLINE(196,155)-(190,165),PS
ET:HLINE(190,165)-(196,177),PSET
:HLINE(197,177)-(192,177),PSET:H
LINE(192,177)-(187,169),PSET:HLI
NE(187,169)-(182,177),PSET:HLINE
(182,177)-(178,177),PSET
1620 HLINE(178,177)-(185,165),PS
ET:HLINE(185,165)-(178,155),PSET
:HPAINT(182,156),8,8
1630 HLINE(206,155)-(206,177),PS
ET:HLINE(206,177)-(210,177),PSET
:HLINE(210,177)-(210,168),PSET:H
LINE(210,168)-(216,168),PSET
1640 HDRAW"BM216,168RE4U6HUH2L12
":HDRAW"BM210,158D7R6EU4H2L4":HP
AINT(207,157),8,8
1650 HCIRCLE(57,166),8:HCIRCLE(2
37,166),8:HCIRCLE(57,166),13:HCI
RCLE(237,166),13:HPAINT(49,161),
8,8:HPAINT(234,158),8,8
1660 HCIRCLE(273,159),3:HCIRCLE(
273,159),7:HCIRCLE(295,159),3:HC
IRCLE(295,159),7:HCIRCLE(273,170
),4:HCIRCLE(273,170),9:HCIRCLE(2
95,170),9:HCIRCLE(295,170),4
1670 HPAINT(272,155),8,8:HPAINT(
272,163),8,8:HPAINT(269,168),8,8
:HPAINT(290,168),8,8:HPAINT(294,
164),8,8:HPAINT(294,155),8,8
1690 HDRAW"BM284,180C8R10L5D10R5
U10F10U5NH5E5"
1700 FOR X=1 TO 63:PALETTE 8,X:F
OR H=1 TO 1000:NEXT H:NEXT X
1710 EXEC44598
1720 POKE65495,0:RGB:HCOLOR1:END
```

STRUCTURED PROGRAMMING
THE END OF THE STRINGS

by JOHN REDMOND

IN A FARILY heavy session last month, we broke the back of the Forth-based assembly library routines for string I/O and manipulation.

It's now time to finish the job, starting with TRIM (the equivalent of Forth's -TRAILING), which requires on the stack an address, followed by a length:

```
TRIM  2, U LDX  0 ,U LDD 0= NOT
 IF D ,X LEAX ( point to end)
  0 ,U LDY (char count)  # 32 LDA
  BEGIN  0= NOT  IF ,X -R CMPA  THEN
  0= NOT  WHILE  -1 ,Y LEAY REPEAT
 0 ,U STY  RTS
```

TRIM looks at a string, using its starting address and maximum length, and returns the address and actual length.

It starts with address of the END (see part 2 of this series) and works backwards until it finds a character not equal to 32. The special case is where all characters are spaces. It is nesessary then to stop when the decremented length (in the Y register) gets to zero.

Attentive readers will have noted a sameness in the way many of the parameters are passed to the Forth-like words: address, then character count is required by EXPECT, TYPE, TRIM and BLANK, and they are provided by COUNT.

All part of the austere beauty of Forth. Very similar parameters are required by CMOVE, which uses address1, address2 and character count to move a block of memory from address1 to address2.

```
CMOVE  ,U R++ LDY  D X PULU
0= IF RTS THEN (count zero)
D U PSHS (we will need U)
U PULS (dest in U)
BEGIN ,X R+ LDA  ,Y R+ STA
 -1 ,Y LEAY  0= UNTIL
U PULS  RTS
```

Now we are in a position to accept (EXPECT) keyboard input into a buffer, and subsequently move it somewhere else in memory. Assume we have a counted string at SOURCE and we need to move it, without any trailing spaces, to DEST:

```
# SOURCE LDD  D PSHU  COUNT JSR
TRIM JSR  # DEST LDD  D PSHU
SWAP JSR  CMOVE JSR
```

... and we have done it! At the top level, the program we have written using these library routines consists of little more than providing the parameters on the U stack and feeding them to the functions.

During execution, each function takes what it needs from the stack and returns any results back there.

It is the task of the programmer to maintain the stack integrity:

```
          USES              RETURNS
COUNT   SOURCE              SOURCE+1, CNT1
TRIM    SOURCE+1,CNT1       SOURCE+1, CNT2
SWAP    SRCE+1,CNT2,DST     SRCE+1,DST,CNT2
CMOVE   SRCE+1,DEST,CNT2    empty
```

To make the library most useful for your assembly programming, all JSRs in the library code should be replaced with LBSRs to make the object code position-independent. It can be assembled into a solid block, best ORGed at 0, and all the function entry points noted.

When it is offset loaded at any other address, the entry points will all have the same bias added.

The application code can be assembled ORGed just above the function block and the memory image saved to tape or disk.

This is possible, partly because the library functions do not include a single variable.

They are free souls and not tied to any part of the memory.

Any of the intermediate values (and there are many of them) have only a transient existence on the stack (as illustrated above). This is pure functional programming - and the only sort of programming which can survive the rigours of a multitasking system.

It is the foremost lesson of Forth.

To round off this discussion of strings, let me suggest a few very small functions, equivalent to standard Forth words:

```
CR  # 13 LDD  D PSHU  EMIT JSR  RTS
BS  # 8  LDD  etc.
SPACE  # 32 LDD etc.
```

These are all just specific character outputs. Another nice one is:

```
SPACES  BEGIN ,U++ LDX  0= NOT
 WHILE  -1, X LEAX  X PSHU
 SPACE JSR  REPEAT  RTS
```

SPACES expects a non-zero number on the stack to tell it how many spaces to leave on the screen. If the number is zero, nothing will be done. It is a very useful function for neat writing to the screen. Using a database we might, for instance, code:

```
# NAME LDD  D PSHU  COUNT JSR
TRIM JSR  TYPE JSR (no spaces at end)
# 5 LDD  D PSHU  SPACES JSR
# ADDRESS LDD D PSHU
  (etc., etc, to type out)
CR GOSUB (go to next line)
```

For comparison, the equivalent Forth code would be:

```
NAME COUNT -TRAILING TYPE  5 SPACES
ADDRESS COUNT -TRAILING TYPE  CR
```

There can be no quarrel, of course, as to which is the more readable - or writable.

That is the last of the explicit code that I have for you in this series, but let me emphasise that the principles we have developed are completely general.

The two guiding lights for you are ...

1. Keep the definitions short. The shorter they are, the more likely they are to be generally useful.
2. Avoid storage of intermediate values in memory locations. If you find the temptation overwhelming, your definition is probably too big. Try rethinking the code factoring.

Look back at your favorite assembly programs, or ones you have adopted, and rethink their factoring. Try to package up small and general functions which can replace a lot of your repeated inline code. You will never notice the speed difference.

Start to extend the library with simple arithmetic functions. We defined ADD last month. How about SUB, MUL and DIV and MOD. The basic coding for these is in the assembly texts, but generalize them so that each expects on the stack two parameters and returns one at the end. Give up forever the passing of parameters in registers and allow your blood pressure to drop.

Extend the arithmetic group to bitwise logic with AND, OR and XOR. Again, each expects two and returns one parameter on the stack. Define NOT to reverse all the bits of the top stack entry.

Think about the construction of functions which return a logical value on the stack (-1 for true and 0 for false). Emulate some of the better C functions like isupper(), isdigit() which expect a value on the stack and return a boolean. Isdigit(), for example, will return -1 if given a character from '0' (48) to '9' (58) inclusive.

Work out how the boolean results of such test functions can be combined by bitwise logic (e.g., OR) to give a composite result, such as ...

"is the char uppercase or a digit ?"

When it is possible to make such judgements, it is possible to feed them to functions which can make decisions, such as IF or WHILE. Then you are really programming at a level which has no consideration for the dirty work of trying to remember the contents of the CPU registers from instant to instant - and then you are able to produce programs which do something useful.

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Delby	Merrick Tansky	074 62 3228
Gladstone	Carol Cathcart	079 78 3594
Gold Coast	Graham Morphett	075 39 6177
Gympie	Bert Lloyd	071 821 9100
Hervey Bay	Lesley Norwood	071 22 4989
Mackay	Len Maloney x782	079 51 1133
Maryborough	John Effer	071 23 1369
Mt. Isa	Jack Rae	077 43 3486
Murgon	Peter Angel	071 68 1628
Rockhampton	Kelran Simpson	079 28 6162
Sunshine Coast	Bob Lansman	071 42 1611
Tannymore (Warwick)	M. Hughes	T.B.A
Tara	Debbie Derfield	074 65 3177
Toowoomba	Len Gerszkowski	076 35 8264
Townsville	John O'Callaghan	077 73 2064

South Australia:

Adelaide:

Port Noarlunga	Rob Dalzell	08 386 1647
Seacomb Heights	Glenn Davis	08 296 7477
City	John Haines	08 278 3560
Loxton	Lauren Brown	085 84 7775
Port Lincoln	Bill Boardman	086 82 2385
Port Pirie	Vic Krauerhase	086 32 1230
Whyalla	Malcolm Patrick	086 45 7637

Tasmania:

Devonport	Jeff Best	004 24 6759
Hobart	Bob Delbourgo	002 25 3896
Kingston	Win de Puit	002 29 4950
Launceston	Bill Bower	003 44 1584
Salthton	Harry Chrisafis	004 52 1590
Wynyard	Andrew Wyllie	004 35 1839

Victoria:

Melbourne:

Melbourne CCC	Les Leishman	03 484 0822
Blackburn	Andrew Rawlings	03 894 1443
Dandenong	David Borrocks	03 707 5870
Doncaster	Justin Lipton	03 857 5149
Frankston	Gordon Chase	059- 71-1553
Narre Warren	Leigh Eames	03 704 6680
North Eastern	Peter Wood	03 435 2018
Melton	Mario Gerada	03 743 1323
Pakenham	Jay Hall	059 41 1398
Ringwood	Ivor Davies	03 758 4496
Sunbury	Jack Salt	03 744 1355
Sunshine	Ian Buttrise	03 314 8242
Upr. Ferntree Gully	Rory Doyle	03 758 2671
Bairnsdale	Colin Lehmann	051 57 1545
Ballarat	Mark Bevelander	053 32 6733
Daylesford	Danny Hadji	054 24 8329
Geelong	David Collem	052 43 2128
Maffra	Max Huckerby	051 45 4315
Moe	Joseph Hester	051 27 7817
Mornington	Michael Monck	03 789 7997
Morwell	Jeff Sheen	051 33 9904
Shepparton	Ross Farrar	058 25 1007
Smythesdale	Tony Patterson	053 42 8815
Swan Hill	Barrie Gerrand	050 32 2838
Tongala	Tony Hillis	058 59 2251
Traralgon	Leigh Dawes	051 74 5552
Wonthaggi	Lois O'Meara	056 72 1593

Western Australia:

Perth:

City	Iain MacLeod	09 448 2136
Girrawheen	Hank Willemsen	09 342 7639
Kalgoorlie	Terry Burnett	090. 21.5219

Overseas: Canada

Ontario	Richard Hobson	416 293 2346
Toronto	Franz Lichtenberg	416 845 2889

Teacher's Interest Group

Brisbane	Bob Horne	07 281 8151

Business:

Brisbiz	Brian Bere-Streeter	07 349 4696

OS-9 Groups:

Queensland:

Brisbane Non-Smokers	John Poxon	07 208 7820
Clayfield	Jack Fricker	07 262 8869

New South Wales:

Bankstown	Carl Stern	02 646 3619
Carlingford	Roake Mackay	02 624 3353
Gladesville	Mark Rothwell	02 817 4627
Sydney East	Jacky Cockinos	02 344 9111
Cooma	Ross Pratt	064 52 3065

Victoria:

Latrobe Valley	George Francis	051 34 5175

Western Australia:

Kalgoorlie	Terry Burnett	090 21 5212

MC-10 Contacts:

Lismore	Bob Millard	066 24 3089
Sydney	Graham Pollock	02 603 5028

Tandy 1000/MS-DOS:

Queensland:

North side	Biran Dougan	07 30 2072
South side	Barry Cawley	07 390 7946
Gold Coast	Bruce Kerr	075 39 6177

New South Wales:

Gladesville	Mark Rothwell	02 817 4627
Sydney West	Roger Ruthen	047 39 3903
Wyong	John Wallace	043 90 0312

South Australia:

Port Lincoln	Bill Boardman	086 82 2385

Victoria:

Latrobe Valley	Peter Foley	051 74 5791
Melbourne	Tony Lloyd	03 882 4664

Forth:

Sydney	John Redmond	02 85 3751

Christian Users' Group:

Moe	Raymond L. Isaac	051 27 2695

MSX:

Franskton	Alan Hassell	03 786 6290

Model Railway Club:

Beenleigh	David Phillips	07 807 2663

Bulletin Boards
300 Baud

Frankston	(21:30-07:30)	059 71 1553
Infocenter		02 344 9511
Tandy Access		02 625 8071
The CoCoConnection		02 618 3591

VideoText Systems

Viatel	01955
Mousetex	059 42 5528
VTX 4000	03 741 3295

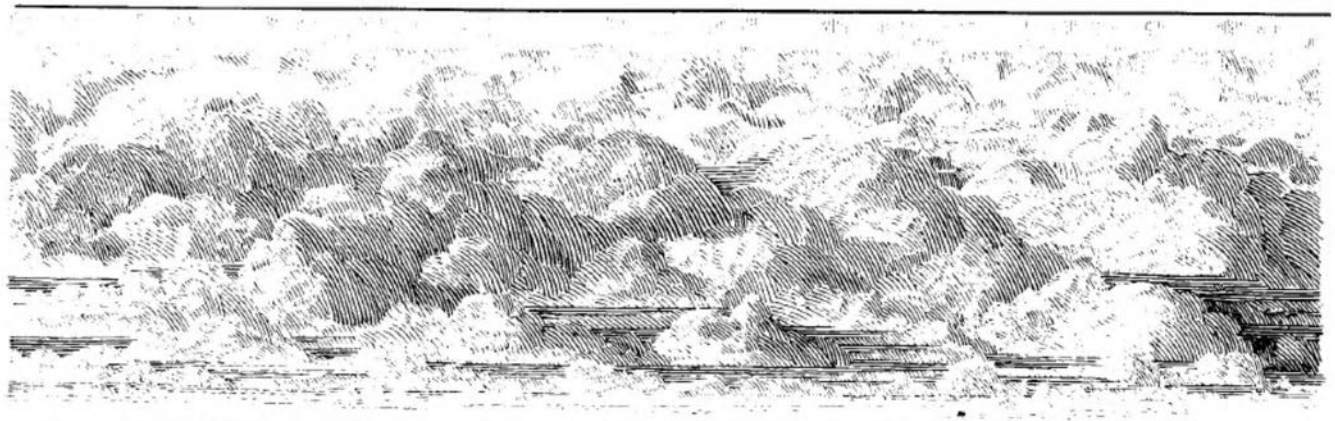
Tandy Information on Viatel (01955)

Goldlink	*642#
Tandy	*642621#

Some Tandy Users On Viatel (01955)

Allan Beale	726353300	Fred Bisseling	848232630
Jack Fricker	726288690	John Grigsby	945872020
Stuart Hall	939765790	Bob Kenny	665122050
Jeff Larsen	705471270	G. Levin	954811900
Iain MacLeod	944821360	Chris. Nagle	689523360
R. Pankhurst	280717870	Ross Pratt	648230650
R. Schmahl	298151500	Arthur Slade	262289400
D. O'Toole	755100150	Ron Wright	352924510

Key: Stop between numbers (eg 123.45.1234) means ring in business hours and hyphen between numbers (eg 123-45-1234) mean ring anytime (within reason.)



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