The Aussie Mag for Amstrad owners

THE AMSTRAD USER

Issue No. 28 $3.75 May 1987

- *Review of the PC1512 word processor TASWORD PC, Educational Software and Games*
- *Exclusive Tape Speed Checker program and CPC version of "Battleships"*
- *Label Printer for PCWs + Mail Order Shopping*

FOR THE NOVICE & EXPERIENCED USER

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THE AMSTRAD USER

Serious Side

Issue No. 28
May 1987

For Tape subscribers, the programs can be found at the following approximate positions:
Side 1: SPEEDCHK - 11 , RESRAM1 - 36, RESRAM2 - 98, RESRAM3 - 57, BATSHIPS - 70

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Contributions are welcome from readers or other interested parties. In most circumstances the following payments will apply to published material: Letters $5.00, Cartoon $5.00 and a rate of $10.00 per page for programs, articles etc. Contributions will not be returned unless specifically requested coupled with a suitable stamped and return addressed padded bag (for tapes or discs).

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THE AMSTRAD USER

G'day,

There can be no doubt that the PC1512 is creating a few waves in the UK.

First there was the rumour that the IBM compatible had an overheating problem which has since been proven to be unfounded. Now Amstrad has issued a libel writ against the BBC following the publication of an article which alleges that the PC1512 is unsafe!

The article published on 25th March in Ariel, a publication circulated to BBC employees worldwide, reports that British Aerospace and "at least one university" have banned the PC1512 on safety grounds, despite the fact that all eight models have passed the necessary British electrical safety standard and have been granted certificates by the British Electrotechnical Approvals Board.

Amstrad's corporate lawyer says that the BBC have been unable to substantiate the allegations. This is not surprising as he apparently has letters from British Aerospace and a university acknowledging the PC1512 meets recognised safety standards. So too is Australia, where our version is constructed to comply with the safety and double insulation requirements of the relevant Australian Safety Standards.

Obviously the success of the PC1512 is worrying a few people, but if that causes enough large waves, it should wash off any mud thrown at it.

While on the subject, the PC is probably too new to expect any feed back from users. That doesn't mean that the machine should be ignored. Anyone who feels confident enough to put together articles for this magazine are most welcome to contact me with an outline of their ideas.

Back to this month's magazine, tape drive owners will be pleased to see an article and program to help them through the frustrations of read errors. For the hackers there is an article on reserved RAM, and to keep all CPC owners out of mischief, an Amstrad version of Battleships. PC owners can rejoice with the fact that Tasword PC is now available for their machine, and PCW owners can produce their own labels.

See you next month,

Ed

Letters

All correspondence published in this section earns a payment of five dollars.
Letters should be addressed to The Editor, The Amstrad User, Suite 1, 245 Springvale Road, Glen Waverley, Victoria 3150.
We regret that we cannot enter into any personal correspondence.

With reference to Mr. Beltrami's letter in Issue 26 asking about screen dumps from the Trojan Products LP-1 Light Pen, I have a somewhat cruse solution which allows me to output my drawings to my Epson-compatible SP-1000A.

I use the Basic Screen Dump program printed in Issue 9 to create an RSX. The modified light pen program is then CHAINed, thus

```
120 READ check:IF check=cs
THEN CALL s: CHAIN
"lightpen.bas" ELSE PRINT
"Error in Data statement"
```

The modifications to the light pen program primarily consist of altering line 10810 to read

```
10810 TX=13:ty=10:WA=0:NU=5:
TS=2: GOSUB 30000: IF NU<>5
THEN GOSUB 19960: POKE &A133,
NU-1: |SCRDMP: GOTO 10800 ELSE
GOTO 10010
```

Of course this won't give you any proportional effects, but it does the job of getting the image on paper.

D.C. MacKinnon, Unanderra, NSW

We received a number of solutions all pretty well the same as the above, so thanks to those people who took the time to write in but didn't get their's published.

Here is a different answer . . .

I hardly call myself an advanced user, being only 14, but in response to Mr. Beltrami's letter I have a simple solution to the problem which I too came across.

The following program should be placed in front of your screen dump program (for people with a DMP-2000 the "Graphics Screen Dump" at the back of the manual will suffice). Before you commence the dump you need a copy of the screen designer picture saved onto a different cassette.

Type in the program below followed by the screen dump program in the manual. Save it elsewhere, then RUN and put in the cassette with the saved picture. Press play on the tape and and switch on your printer. Once the screen has been loaded the printer will automatically dump the picture.

If you are using the screen dump in the DMP-2000 manual you can adjust shades on the printer output by changing the DATA statements in lines 10100 and 10110 according to the mode.

```
10 BORDER 0:INK 0,0
20 A$=""
30 A$=LEFT$(A$,8)
40 IF A$="" AND DP=1 THEN 20
50 IF SL<>8 THEN 130
60 IF DP THEN 70
70 IF DP THEN OPENOUT A$+".DAT"
ELSE OPENOUT "!"+A$
80 WRITE #9,A$,MO
90 FOR T1=0 TO 15:WRITE #9,
A(T1):NEXT T1
100 WRITE #9,PA:CLOSEOUT
110 MODE MO:IF DP THEN SAVE
A$=".SRN",B,&C000,&4000 ELSE
SAVE "!"+A$,B,&C000,&4000
130 IF DP THEN OPENIN A$=".DAT"
ELSE OPENIN "!"+A$
140 INPUT #9,A$,A
150 T1=0
160 INPUT #9,PA
170 PAPER PA:CLOSEIN
180 MO=A:MODE MO:IF DP THEN
LOAD A$+".SRN",&C000 ELSE LOAD
"!"+A$
190 CLOSEIN
200 X2=-9:Y2=-9:A$=INKEY$:IF
A$="" THEN GOSUB 220:GOTO 200
ELSE IF A$<>" " AND ASC(A$)<>10
THEN A=500
210 IF ASC(A$)=10 THEN 200
220 GOTO 10000
230 END

10000 REM Place your screen
dump program here
```

Robert Jadrijevic, Northbridge, NSW

. . . but we didn't get the time to check it.

MAILBAG

I am operating a CPC6128 and I am having trouble with one of the command files given on the system disk. The problem is with using SET.COM to protect individual files. Once I have obediently followed the instructions given in the handbook, the system won't let me use the file I've protected, coming up with a BDOS error, something to do with passwords.

A friend and I have been struggling to work this out for some time and would dearly appreciate some help in this matter. Also, I don't fully understand the reason for protecting a directory (using SET.COM) as when you have protected it, the system still happily gives you a DIR of the disc.

Can someone help please?

Andrew Kernebone, Mildura, Vic

I have purchased a PCW8512 with dual disc drive to be used in my business. I chose the SAGESOFT accounting package which included a learning tape and a demonstration disc. Both were very helpful indeed for a relative beginner to computer work.

After a short while I mastered allocating accounts and posting routines. And then I struck trouble!

Accidentally, instead of pushing the return key, I pushed the f7-f8 or f5-f6 keys which are right next to the return key, with disastrous results. The computer locked completely and no matter what I did it did not want to exit! The only way was to switch off and start again. This, of course, had also disastrous results to my customer accounts which had already been entered.

Before starting all over again, I fabricated a little gadget from clear perspex to slide over the right hand side of the keyboard. This part is not being used with accounting. When copying or using LocoScript, I slide the cover out of the way. I've never had any trouble since. Has any other user similar troubles? I will gladly send anyone interested a small drawing of the gadget.

Also, I can't find any instructions on how to erase Customers if they are no longer needed. Can anyone help? Finally, I cannot find any information or report on the PCW 8512 in your magazine, in particular games which are suitable for this model.

Harry Hartmann, Sunshine, Vic

Unless an application has been designed to use specific function keys within the program you will find with both the 8256 and the 8512 that pressing the f5-f6 key will lock the keyboard. To unlock it merely press the f3-f4 key.

In the Sagesoft package customers can only be deleted if they have zero balances. This is achieved by calling up the customer and in the name position typing UNUSE CUSTOMER NAME. This flags the record for deletion and it will disappear the next time you run RECONFIG.

The PCW 8256 was reviewed in the December 1985 issue of The Amstrad User. There was little point in reviewing the 8512 because it was essentially the same, just a bigger capacity. In terms of information, in most cases you can read 8512 as 8256 and vice-versa in the twenty or so pages allocated to the PCWs each month.

Games? We thought you used your machine for business? Watch next month's issue!

I have 'discovered' a number of special memory locations in my 6128 which correspond to certain functions such as Shift Lock, Caps Lock and Key Repeat which can be incorporated to give programs control over these functions. They are:

46641 Shift lock (0-63 Off, 64-255 On)
46642 Caps lock (0-127 Off, 128-255 On)
46643 2nd Speed Key value
46644 1st Speed Key value
44041 Width value
44432 Err value
44575 Trace (0 Troff, 1-255 Tron)
46900 Symbol After

Note: Poke will set the values and Peek will check them.

P.S. I have more if you want them.

Chris Wootton, Mornington, Tas

Yes please.

In answer to Anthony Trost's letter (January 1987), the easiest way to 'unformat' a disc is to bulk-erase it in a strong magnetic field, in other words to deliberately do what we are warned against on the disc inserts. It will cause no physical damage to the medium, but the information on both sides of the disc will be lost.

Ideally, the magnetic field should be alternating, but permanent magnets would do. Just pass the magnet slowly over the disc, or pass the disc through an electro-magnet and remove slowly before switching off.

Specially designed bulk-erasers for magnetic tapes and discs are available, but any school Physics lab should have suitable magnets. Another option is to retrieve the permanent magnet from a burnt out speaker. The magnet field must be quite strong to have any effect.

Having done it inadvertently, I know that it is possible to scramble the Disc Parameter Block to prevent the DOS recognising any disc format, but I would not advise doing it deliberately.

Petr Lukes, Toowoonba, QLD 4350

May I contribute yet another way of drawing bingo numbers, which I think follows the actual practice of drawing the numbers more closely than those published in the "Mailbag" recently. It is at least ten times faster than Arthur Pounsett's Method 1 (TAU March 1987) and twice as fast as his Method 2.

If you think about the process, once a ball is drawn it is no longer int he container from which the balls are being drawn. My approach is therefore to place the 100 numbers in an array at the beginning of the process (like the balls in the container). As a number is drawn it is replaced with zero (ie. it is no longer there). It is only necessary then to check that the number drawn is non-zero to know that it has not been drawn before.

```
10 CLS:DIM a(100), b(100)
20 FOR k=1 TO 100
30 a(k)=k
40 NEXT k
50 FOR j=1 TO 100
60 bingonumber=INT(RND*100)+1
70 IF a(bingonumber)=0 then 60
80 PRINT bingonumber,
90 b(j)=bingonumber
100 a(bingonumber)=0
110 NEXT j
120 END
```

A 'randomise time' could be included in any of the programs to improve the random nature of the drawings.

I recently realised why David Rich (TAU June 1986) had trouble with my synthesiser program. I used 'cursor' as a variable name which works fine on a CPC464 as 'cursor' is not a BASIC keyword on the early machines, even though it is on the 664 and 6128. The problem will vanish if another variable name is substituted, or David's ingenious 'logical' solution is adopted.

The reason for raising it at this late stage is to stress a tip which would have shown that 'cursor' was not a suitable

variable name on a 664 or 6128 the first time the line was listed - **Always type programs in lower case. When listed, all keywords will be converted to upper case.**

It follows that keywords which aren't converted, and variable names that are, need attention - because of mistyping, or the use of reserved keywords as variable names respectively. It is therefore good practice to list the program periodically as you are typing in and check. At the same time 'save' just in case of a power failure or other disaster.

Peter Campbell, North Hobart, Tas

Having just formed the Gold Coast Amstrad Users Group and being surprised at the amount of work this has generated for me, trying to write our first newsletter amongst other things, I was given a newsletter from another club to see if I could find anything interesting to pass on to our club members. I then got to thinking about having a central posting address for clubs all over Australia to send their back copies and current Newsletters to, so there could be a central Bank of Information for other clubs to have access also.

My idea would be for Clubs to post back issues to me which could then be sent to other clubs upon request. A stamped self addressed manila envelope would be required with these requests. In this way all clubs would receive a newsletter from another club/area, at minimal cost to the club.

Any other suggestions regarding this scheme would be most welcome. Please write to 17 Ewan Street, Southport, QLD 4215.

Mark Abbott, Southport, QLD

We have trouble persuading user groups to send us a copy of their newsletters each month, but perhaps you will have more success.

Frankly, we see too many admin. and distribution problems to make the service a workable proposition. Unless a club has already seen a copy of another newsletter, how are they going to know if it's worth sending for?

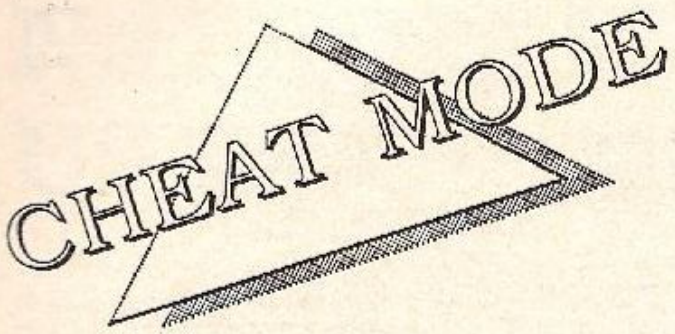
However, the ingenuity of user groups may devise a modified scheme for the benefit of all.

TEXTDEM1 and 2 (April 1987, Issue 27)

The 464/6128 gremlin struck again at the two listing on Page 57/57 last month. As the number of queries was very small, most 464 readers would have worked out that the ",2" in line 1010 of the first program and lines 1020 and 2030 in the second program should be removed.
Save the revised version and see it spring into life!
Our apologies.

ADVERTISING DEADLINES

Issue	Booking by	Copy by
JUL '87	15/05/87	29/05/87
AUG '87	12/06/87	30/06/87
SEP '87	10/07/87	24/07/87
OCT '87	07/08/87	21/08/87



. . .perhaps the only way to improve your scores, but don't tell anyone!

Poke Methods

Here is how to input the majority of Cheat Mode pokes. The instructions for each poke tell you which of the two different methods to use. If you have a 664 or 6128, you'll have to type | tape before typing either.

Method 1

Make sure that you've rewound the game tape to the beginning. Now type in the poke listing. Then type RUN and press the Enter key. (Don't use the key marked CTRL or Control; that would stop the poke from working). Press the Play key on the cassette deck, and then any key on the main keyboard - the spacebar will do nicely. The tape should now start to play through in the normal way.

Method 2

For this method, you have to skip the first bit of the game program.

To do that, start by rewinding the game tape to the beginning. Now type in the listing.

Then type CAT and press Enter. Start the tape by pressing Play and then any key. Then watch the screen.

After a little while you'll get the message

Found something block 1

It doesn't matter what the something actually is; this will vary from one game to another. If the instructions with the poke just tell you to skip the first block, you should stop the tape here.

If the instructions tell you to skip several things, stop the tape when the Found message comes up for the last thing you're trying to skip.

Once you've stopped the tape, press Escape, type RUN and press Enter. Now press Play on the tapedeck and any key on the keyboard to start the tape running.

LIGHT FORCE

A real treat for owners of FTL's shoot-em-up: two tape pokes and one for the disk. Peter Featherstone has produced a poke for the cassette version that gives infinite lives and invulnerability (lines 100 and 110). It was then converted to work with the disk version. Enter the tape poke using Method 1. The disk poke you just type in, save onto the game disk and run.

```
Disk poke
2 'The Amstrad User May 87
10 OPENOUT"Y":MEMORY &500
20 MODE 1:LOAD"DISC"
30 FOR t=&641 TO &660
40 READ a$
45 POKE t,VAL("&"+a$)
50 NEXT t
60 CALL &5D0
70 DATA 21,B8,1C,CD,83,BC
80 DATA CD,7A,BC,21,DA,79
90 DATA 36,00,21,87,79,36
100 DATA C9,0E,FF,21,31
110 DATA 73,CD,16,BD,00
120 DATA 00,00,00,C9
```

```
Tape poke
1 'Lightforce 1
2 'The Amstrad User May 87
10 MODE 1
20 f=&BE00
30 READ a$
35 IF a$="999" THEN GOTO 60
40 POKE f,VAL("&"+a$)
50 f=f+1:GOTO 30
60 OPENOUT"d"
65 MEMORY &5DB
70 LOAD"!"
80 POKE &642,195
83 POKE &643,0
86 POKE &644,190
90 CALL &5DC
100 DATA af,32,da,79
110 DATA 3e,c9,32,87,79
120 DATA 0e,ff,21,31,73
130 DATA cd,16,bd,999
```

Meanwhile, Phil Howard has been rummaging around to find some lovely little pokes as well. It not only gives you four bullets every time you press the fire button, but provides the Escape key as a pause key (restart with Enter). When you restart with the '+' key you get an extra life. Use Method 1.

```
1 'Lightforce 2
2 'The Amstrad User May 87
```

```
10 DATA 00,3e,ff,32,8a,8a,3a,00,be,3c,32
20 DATA 00,be,fe,03,d8,af,32,00,be,3e,ef
30 DATA 32,8a,8a,c9,21,2b,7b,36,c3,23,36
40 DATA 01,23,36,be,21,30,85,36,cd,23,36
50 DATA 33,23,36,be,c3,31,73,3e,42,cd,1e
60 DATA bb,28,18,3e,42,cd,1e,bb,20,f9,3e
70 DATA 12,cd,1e,bb,20,0a,3e,1c,cd,1e,bb
80 DATA 28,f2,cd,d4,78,3a,89,8a,c9
90 DATA MODE 1:OPENOUT"w":MEMORY &500
100 y=0:FOR x=&BE00 TO &BE55
110 READ a$
112 a=VAL("G"+a$)
120 POKE x,a:y=y+a:NEXT
130 IF y<>&227D THEN PRINT "Data error!"
    :END
140 LOAD"Lightforce"
150 POKE &642,&C3
160 POKE &643,&1A
170 POKE &644,&BE
180 CALL &5DC
```

GREEN BERET

Nicholas Pavis has done some delightful things to the disk version of the Imagine stab-em-up. Just type in the poke and run it. When prompted for a number type in one of these combinations followed by pressing the Enter key. Type them in as shown, with the comma separating the two parts.

Charlie Chaplin-style movement	BD,19
You are invisible	16,F1
Start, abort and restart to move along top of screen	03,DB
Send baddies to bed	1E,66
No character detection	25,3B
Fast game	25,0B
Infinite bazookas if you have them	14,34
No sound	0A,F1

```
1 'Green Beret Disk
2 'The Amstrad User May 87
10 MEMORY &3000
20 LOAD"beret.bin",&3ECE
30 POKE &BC5F,&C3
40 POKE &BC60,&50
50 POKE &BC61,&BF
60 INPUT"Enter the number you want"
   ;a$,b$
70 POKE &BF50,&21
80 POKE &BF51,VAL("&"+b$)
90 POKE &BF52,VAL("&"+a$)
100 POKE &BF53,&36
110 IF b$="34" THEN t=0 ELSE t=&C9
120 POKE &BF54,t
130 POKE &BF55,&C9
140 CALL &3ECE
```

HERBERT'S DUMMY RUN

This poke from Phil Howard for the Mikro-Gen game gives infinite lives. It's entered using Method 1.

```
1 'Herbert's Dummy Run
2 'The Amstrad User May 87
10 DATA 21,08,1d,36
15 DATA 00,c3,03,01
20 MEMORY &1FFF
30 FOR x=&BE03 TO &BE0A
40 READ a$
50 POKE x,VAL("&"+a$)
60 NEXT
70 LOAD""
80 POKE &2030,&BE
90 CALL &2000
```

IKARI WARRIORS

Nicholas Green has some invaluable advice for Elite's latest bomb-and-shoot-em-up.

The section leading up to the first tank is probably one of the trickiest in the game. Grenade and shoot frequently. Bullets are easily replenished by picking up supplies. Always slow down to kill green soldiers: these carry supplies which you can pick up. When you come to the pillbox, stand below it and slightly off-centre, then grenade it.

When you're in the tank don't waste bombs-just run over most soldiers. If the tank is hit and starts to flash, get out as soon as possible by holding the fire button down and move well away from it. To blow up an enemy tank stand out of its firing range about an inch from the edge of the screen. Fire a grenade as the the tank moves across the screen and move up with it. If the tank fires in line with you, quickly move down again.

When a helicopter arrives keep firing grenades and walk forward in line with it. When crossing water keep well away from the blue blobs because they kill even when you aren't touching them. You can shoot them only when they appear or disappear at the edge of the screen.

On the final blue-and-yellow section the small box-like things have no function. But be careful of the helicopters. On the barracks you should pick off the men before advancing through the cleared area. Try to take on bazooka firers from the side as they always fire down then screen, but with a long range.

Stay out of the water as much as possible: you move slower and are therefore more vulnerable. At the end you get a million points and start again from the beginning with seven lives. Keep away from the edges of the screen because enemy soldiers can blunder aimlessly into you, giving you no time to react.

TRAP DOOR

The solution to this very enjoyable game comes from Kenneth Bamford. It tells you everything you need to do, but you may still find a problem or two in actually carrying out the tasks.

Can of Worms: Easy-peesy this one. Simply get the can from the room just left of the start. Then go and open the trap door and fill it with worms. Watch out for Drutt - he doesn't give you much chance to get them!

Fried Eggs: Not too hard. Get the pan from the same room as the can and take it to the room just right of the start. Drop it in front of the stairs, go back to the can room and tip up the wicker basket to reveal the bullet. Take this and put it next to the trap door. Open the trap door and let the bird out. If another creature starts to appear, close the door quickly and try again. Once the bird is out, put the bullet on the trap door and wait for the bird to come back. As it passes over the door, open and close it very quickly, stunning the bird. Run to the pan and the bird will lay an egg - catch it. Repeat this four times and then place the pan on the small stove until it flashes, then send it up.

Eyeball Crush: It's a good idea to try to set this up beforehand. It's not hard but takes a lot of time to do. First plant the eye-ball seeds in the plant pots in the far room up the stairs. Then push the vat up to the ledge in the room where it's found. Wait until the eyeballs drop off the plants and put them in the vat by dropping them from the ledge above it.

Push the vat just to the right of the room where the vat was and place it under the pipe leading from the bottom of the vat. Let the bouncing creature with boots on out of the trap door. If the vat is in the right place the crush will be bottled; if not, see where the creature bounces and push the vat to that spot.

Boiled Slimies: Again it's a good idea to have this one ready-planned because it's the hardest and most time-consuming. Get the cauldron from the can room and push it to the same place as you put the pan for the eggs. Go to the only room downstairs and get the slimies one by one. Drop them into the cauldron by climbing the stairs and dropping them into it from above.

Let out the fire-breathing creature. Go and stand right in front of the cauldron. Wait until the creature is about to breathe fire at you and then move away. While it's spinning around, move back in front of the cauldron and repeat the action about seven times. Go to the weight and lift it to the top, then move up one step. The lift has a pressure-pad; as soon as the creature comes under it will be destroyed. Quickly push the cauldron onto the dumb-waiter and send it up.

Clearing Up: You have to be playing Superberk level to do this. When you get here, everything has to be got rid of. You can crush things under the weight or send them down the trap door. When you've finished send the lift up and a safe comes down. Push it under the weight and hey presto.

General Tip: When you open the trap door watch out for the ghost, because it's very irritating. To get rid of it pick up a worm and walk into it.

ZUB

Having trouble with the teleport system? Well Gerard Fazakerley has the answer.

Planet	Base destinations:		
	Left	Middle	Right
Zub 1	2	3	2
Zub 2	1	3	3
Zub 3	1	2	4
Zub 4	6	5	3
Zub 5	4	6	7
Zub 6	7	4	5
Zub 7	8	9	6
Zub 8	7	9	7
Zub 9	7	10	8
Zub 10	9	9	9

If you're uncertain whether the next base is upper right or left, always travel to the left when trying to get your bearings. Crashing into the barrier at left means you can stay on the platform, whereas you fall off at the right.

If you're further along the left side of the screen, ensure that you're pointing to the right for firing, as the aliens come down from the centre. The reverse obviously applies when you're on the right. It's far easier to get into a safe position to shoot the aliens by waiting for them to come to you. Single touches allows correct positioning on the platform.

Before making the last leap onto the transporter, check your life indicator. If it's considerably above the gun then carry on but if it's only just above it then reduce energy a bit so that you can get extra power pills at the end of the level.

All "cheats" are received with enthusiasm and should be sent to:

CHEAT MODE
The Amstrad User
1/245 Springvale Road
Glen Waverley, Vic 3150

TAPE TROUBLES

Some guidance on how to deal with tape errors including a Tape Speed check program

Messages, messages - the erroneous type

Cassette users see those familiar read or write error messages rather too frequently. Message pops up, system crashes. All very infuriating. Here is an analysis of these errors - when they occur and why.

Read Error a: The data bit read was too long. This occurs if the cassette is halted during loading or cataloguing. It may even happen if there is a lot of wow. ('Wow' sounds like what it means: the tape motor running at an uneven speed).

Read Error b: There has been a CRC (cyclic redundancy check) fail. This is the most common of the errors and can occur if there is dust or a defect on the tape surface.

Read Error d: I tried desperately to attain this error message, but failed to do so, It indicates that the block read was too long. The only way to get this error, it seems, is to program it deliberately.
Write Error a: The write frequency is set too high. This again can only be programmed intentionally. So you shouldn't ever encounter this and the previous error message.

We have - but don't want

Read errors can be caused by dirty tape heads or pinch rollers - this could lie with any tape deck. In Amstrad 664 and 6128 machines, the problem could be with improper setting of volume and tone controls. Owners of the 464 don't have this problem as these levels are preset.

Your recording heads could do with a good clean fairly often - especially if you frequently use low-grade cassettes. The best way is with cotton buds dipped in methylated spirits (or Isopropyl Alcohol). Definitely do not use abrasive detergents or sharp objects. Ensure that the head is dry when you finish.

As well as the head, the pinch roller (usually rubber, to one side of the mechanism) should be given the treatment.

Using a 'cleaning tape', which you can buy from a hi-fi shop, will give the best results. Dirty pinch rollers can be the cause of many a problem: they can make the tape speed vary or, even worse, they can eat or crease your tape.

One final step to improve the performance of your cassette deck is to align the tape head - the azimuth angle. Azimuth, from Latin, means 'degrees of arc above the horizontal'. In the case of cassette players, it means the angle of the head relative to the horizon - the magnetic tape inside the cassette shell.

There are various commercial azimuth aligners on the market and in the first instance you could enquire with your local hi-fi dealer.

On the outside trying to get in?

The 664 and 6128 machines need an external cassette recorder if tape programs are to be loaded into memory. Naturally, a new set of problems is likely to come into play.

Positioning of the cassette deck and leads can be crucial for satisfactory loading or saving. The recorder should not be too close to any magnetic field - such as the monitor. Likewise, the leads shouldn't run parallel to mains leads, or close to magnetic fields. The reason is that tiny impulses in the cassette leads can easily be distorted. (And of course tapes or disks should never be placed on top of the monitor.)

Whenever possible, use a tape deck that runs from mains electricity. Battery-operated decks are prone to fluctuating power signals, which causes a degree of wow.

Everyone's favourite now:tone and volume settings. (Memories from my Spectrum programming days). Being the hardest and the most annoying to set correctly, they are the most common cause of data loss. The volume should be set fairly high. However, if it's too loud, distortion results - poor old Arnold will get an earache. The tone should be set between three-quarters and full, giving a high (trebley) sound.

If you go carefully through all these procedures and you still have read/write problems, there is either something wrong with your tapedeck or the software you are trying to load is faulty (ie. the tape has been corrupted).

One point I failed to mention concerning external cassette decks:

you may not have remote-control on your deck. This causes problems when loading certain commercial software that insists on stopping the cassette motor while it draws a title screen or something.

There is no simple way of overcoming this problem. The only thing I can suggest is that every time you hear a relay click in your CPC, pause the tape till another click.

There is certain, very old, software that insists on having all the memory it can grab. Machines with a disc drive will reserve about 500 bytes of memory - if not more. The result is that these software packages will not run on your Amstrad. Here is a short program that will reclaim all memory, giving a completely free machine.

```
10 FOR t=&A000 TO &A017
20 READ a$:POKE t,VAL
   ("&"+a$)
30 NEXT t:CALL &A000
40 DATA 21,08,A0,0E,FC,
   CD,16
50 DATA BD,3E,C9,32,CB,
   BC,11
60 DATA 40,00 21,FF,AB,
   DF,16
70 DATA A0,06,C0
```

Tape Speed Check program

This utility checks the health of your tape drive - not for azimuth but for defects in the mechanics.

It works by recording a fixed-frequency test tape, then replaying it to measure fluctuations in frequency every 0.1 of a second. These are plotted on a graph as speed variations over ±5% of the average.

Several things can be deduced from the graph. If there is a general trend downwards with time, it indicates a tight wind-off spool. Occasional sharp peaks would point to 'snatching' of the spool. A regular variation indicates a fault related to rotation of a part of the mechanism - the frequency of this will give a clue to which part.

At the end of the test you will get a read-out of the maximum and minimum variation. For a good drive these should be within ±1%. Anything over ±3% suggests a problem.

The most common of these is the pinchwheel.

The program gives you two more graphs to help in diagnosing this. The first shows a filtered version of the original graph, making it easier to see any regular changes. If you can line up the pinchwheel grid with regular peaks (use Shift and the cursor keys for faster motion) it indicates slippage each time the pinchwheel rotates. This can be taken further by pressing E. to take you onto a frequency spectrum plot of the section around the grid.

```
1 'Speed Checker
2 'j Kenneally
3 'May 87 Amstrad User
10 MEMORY 41999:GOSUB 1050
20 MODE 2:DEFINT i,k:DIM v(600),f(50)
30 WINDOW#1,1,80,5,24
40 CLS:LOCATE 30,1
50 PRINT"Tape Speed Checker."
60 CLS#1:WINDOW#2,30,50,11,14
70 PRINT #2,"1. Create test tape."
80 PRINT #2:PRINT #2,"2. Run a test."
90 GOSUB 1260:IF a$ = "2" THEN 160
100 IF a$ <> "1" THEN 90 ELSE CLS#1
110 LOCATE 20,12:PRINT "Load test tape ";
120 PRINT"for recording. Press any key."
130 GOSUB 1260:CALL &BC6E
140 FOR i = 1 TO 2000: NEXT
150 CALL 42850,1200:CALL &BC71:GOTO 40
160 CLS #1:LOCATE 20,12
170 PRINT "Load test tape, press ";
180 PRINT "Play then any key"
190 GOSUB 1260
200 CALL &BC71:CALL &BC6E
210 FOR i = 1 TO 200:NEXT
220 CLS#1:ORIGIN 0,0,0,639,399,0
230 DRAWR -604,0:DRAWR 0,304
240 i1=10:GOSUB 740
250 GOSUB 1020
260 LOCATE 30,3:PRINT"Running test"
270 av=0:FOR i=1 TO 20
280 i2 = 0:CALL 42000,@i2
290 IF i2 > 300 AND (i2<500) THEN av=av+i2 ELSE 280
300 NEXT
310 iav=av/20:var=0.05*iav
320 plus=-100:minus=100
330 FOR i=1 TO 600:i2=0
340 CALL 42000,@i2:PLOT i,0
350 change=(i2-iav)/var:v(i)=change
360 DRAWR 0,change*150
370 plus=MAX(plus,change)
380 minus=MIN(minus,change)
390 NEXT
400 CALL &BC71
410 LOCATE 1,23:PRINT"Test over. ";
420 PRINT "Peak variation is:";
430 PRINT INT(50*plus)/10;" to ";
440 PRINT INT(50*minus)/10;" %"
450 LOCATE 30,25
460 PRINT"Press any key to continue."
470 GOSUB 1260
480 GOSUB 640
490 GOSUB 710:PRINT CHR$(23);CHR$(1);
```

```
500 ix=0:GOSUB 610
510 LOCATE 1,24:PRINT CHR$(20);
520 PRINT"Pinch-wheel grid. Move ";
530 PRINT"using l/r arrow keys"
540 PRINT "Press E to continue."
550 GOSUB 1260
560 IF a$="E" THEN GOSUB 800:GOTO 490
570 GOSUB 610:i=ASC(a$)
580 IF i=242 OR (i=246) THEN ix=MAX(0,ix-i+241)
590 IF i=243 OR (i=247) THEN ix=MIN(ix+i-242,530)
600 GOSUB 610:GOTO 550
610 a=ix
620 FOR i1=0 TO 9:PLOT a,-50:DRAWR 0,100
630 a=a+6.68:NEXT:RETURN
640 LOCATE 1,24:PRINT CHR$(20);
650 PRINT"Filtered plot coming."
660 t=0:FOR i=1 TO 600
670 t=0.95*t+0.05*v(i):v(i)=v(i)-t:NEXT
680 t=(v(1)+v(2)+v(3))/3:FOR i=3 TO 599
690 v(i)=t:t=0.5*t+0.5*v(i+1):NEXT
700 RETURN
710 CLG:i1=10:GOSUB 740
720 FOR i=3 TO 599: PLOT i,0
730 DRAWR 0,v(i)*150:NEXT:RETURN
740 ORIGIN 20,200,20,620,350,50
750 PLOT 0,-150
760 DRAWR 0,300:PLOT 599,-150
770 DRAWR 0,300:PLOT 0,-150
780 FOR i=0 TO i1:DRAWR 600,0
790 MOVER -600,30:NEXT:RETURN
800 PRINT CHR$(23);CHR$(0);:k1=ix
810 LOCATE 1,24:PRINT CHR$(20);
820 PRINT"Calculating spectrum."
830 t=0:FOR i=k1 TO k1+49
840 t=t+v(i):NEXT:t=t/50
850 b=2*PI/50:RAD:fmx=0
860 FOR k=0 TO 24:f1=0:f2=0
870 b1=b*k:FOR i=0 TO 49
880 f3=v(i+k1)-t:f1=f1+f3*SIN(b1*i)
890 f2=f2+f3*COS(b1*i):NEXT
900 f(k)=SQR(f1*f1+f2*f2)
910 fmx=MAX(fmx,f(k)):NEXT
920 CLS#1:i1=-1:GOSUB 740
930 PLOT 0,-150:DRAWR 600,0
940 FOR i=0 TO 24:PLOT i*24,-150
950 i1=f(i)/fmx*300:DRAWR 0,i1
960 DRAWR 24,0:DRAWR 0,-i1
970 IF i>5 AND (i<9) THEN FOR i2=1 TO 24:MOVER -1,i1:DRAW
R 0,-i1:NEXT
980 NEXT
990 LOCATE 1,24:PRINT CHR$(20);
1000 PRINT"Press any key to continue"
1010 WHILE INKEY$="":WEND:RETURN
1020 LOCATE 1,3:PRINT"+5%"
1030 LOCATE 1,23:PRINT"-5%"
1040 LOCATE 1,13:PRINT"0":RETURN
1050 RESTORE 1050
1060 GOSUB 1070
1070 READ a,a$
1080 WHILE a$<>""
1090 FOR i=1 TO 19 STEP 2
1100 i1=VAL("&"+MID$(a$,i,2)):POKE a,i1
1110 a=a+1:NEXT:READ a$:WEND
1120 RETURN
1130 DATA 42000
1140 DATA f30100f5110000216419
1150 DATA 0e00ed78e680b9280213
1160 DATA 4f2b7cb520f2dd6e00dd
1170 DATA 6601732372fbc9000000
1180 DATA ""
1190 DATA 42050
1200 DATA f30100f6dd5e00dd5601
1210 DATA 2ec92d20092ec81b7bb2
1220 DATA 2007fbc93e033d20fd3e
1230 DATA 10ed793e3d3d20fd3e30
1240 DATA ed793e393d20fd18db00
1250 DATA ""
1260 a$="":WHILE a$="":a$=INKEY$:WEND
1270 a$=UPPER$(a$):RETURN
```

AT YOUR LEISURE

Seven Games under the critical eyes of Andre Urankar and Darren Robinson

Three Martial Arts games reviewed by Andre Urankar ....
Having been accused of being an "adventure freak", I thought it might be opportune to break new ground and examine another branch of the games field; that of the Martial Arts simulation. Three current games were selected for the purposes of comparison, and to see if I would become a convert. These were:

Sai Combat from Mirrorsoft
Karate from Endurance Games
Thai Boxing from Anco

The objective in each of these games was, through a combination of kicks, jabs and jumps, to pound the opposing combatant to a pulp. Sounded frightfully violent, particularly since I had only been used to the gentleness of adventures - killing dwarves and pirates, and facing other nasties on, under and off this planet.

Each simulation was examined both in 'isolation' (how did it measure up as a game), and then in comparison to each other. As a summarization I have tabulated my evaluation so that it is possible to see how I judged these games.

So, armed with my (t)rusty joystick I was ready to face my first battle.

INTERNATIONAL KARATE

This is described as a one or two player fighting game, using recognized Karate moves and contested against a backdrop of six locations. Sixteen different movements are possible via joystick or keyboard control.

The rounds are organized as a 'best of three' bouts, with each bout lasting 60 seconds. The winner of each round has the opportunity to increase his score by an irrelevant bonus round consisting of smashing his (the screen figure, not the button pusher!) head against a stack of tiles.

Apart from the change in background, the only difference between the levels is the amount of 'computer' aid that is provided to the 'non-active' combatant in the two player option. I had visions of setting up the two player option then leaving one of the fighters static while I pounded it with the other. My delusions were shattered when at round two, the computer took over and gave me a battle royal. Thus forcing me to reach the higher levels 'more honestly'.

Scoring is based on the effectiveness of a particular strike and is assessed by a 'wise old judge'. He decides whether the blow merits a 'half point' or a 'full point'. A total of two full points are required before a winner is declared. Timeout results in either the judge deciding on a winner (in the two player mode) or declaring a re-match. (Wish I knew how to bribe the judge!).

The graphics depicting the fighters could only be described as adequate rather than impressive, due to the relatively small size of the figures. Execution of the various moves is smooth and graphically good. Particularly effective are the somersaults. Thankfully the inappropriate continuous 'background music' can be switched off, leaving only the sound effects for the blows.

'Game play' is good in the sense that I could not determine a particular set of moves that would guarantee success. Every bout was different. Actually I found that I was progressing further when I concentrated on perfecting only a few moves, rather than trying to use the full repertoire. By the way, the computer controlled opponent does use the full complement of moves; to devastating effect.

In a sentence: an enjoyable simulation, easy to manipulate, even though the backgrounds are totally irrelevant.

SAI COMBAT

Sai (or to give it its full title - Sai Karate) is a Martial Arts form that combines 'normal' Karate and the use of a quarterstaff (the Sai) to inflict damage on the opposing fighter. Play can be against another button pusher or the computer.

The objective in this simulation is to win your way through the eight coloured 'belts' levels (from white to black) and then through the eight 'Dans' levels to become the Sai Master

Joystick or keyboard is used to provide 16 possible combinations or moves, all brilliantly executed.

The bouts are performed on what appears to be a stage, with an audience of two innocent looking old men; one on each side. These

old men didn't remain 'innocent' at the black belt stage - but more about that later.

Points are scored by the effectiveness of the type of blow used, and is seen as the colouring of the dragon's head in the lower section of the screen. Three 'lives' are provided for the complete battle. A life is forfeit at each fall. Unfairly though, the opposition receives three lives at the start of each belt (and Dan) level while you have only the initial three.

A very oriental sounding theme plays until the first movement of the fighters. Subsequent sound effects are for the movements and blows.

Technically the game looks brilliant: reasonable sized characters, attention to detail, beautifully staged animation, smooth flow, and almost ballet precision in the moves.

'Game play' was another matter in the one-player mode. I found that I could progress from one level to the next by simply staying at the starting point, and exercising a continuous series of 'thrust to the neck' attacks. Four hits and the opposing fighter was flattened; all the way up to Dan 3 of the Black belt level. After that the play was complicated by those 'innocent' old men throwing nasty three-bladed spinning knives across the stage. In the next few bouts I lost my three lives in trying to avoid these knives and having to cope with the attacking figure. My best result was 32800 points and Black belt, 7th Dan level.

After losing a contest, two options are provided. Either to return to the previous successful level, or starting from the White Belt level. In both cases however the points scored are reset to zero.

In a sentence: brilliantly produced simulation, spoilt only by the lack of randomness of the opposition tactics.

THAI BOXING

This is a rather brutal combination of Karate and street fighting, with the aim of inflicting as much damage to the opponent as possible in the shortest possible time.

The fights are staged in four different locations with two 'levels' per locations. Thus requiring eight wins to reach the end. The combat zones are graphically represented in 3-dimensions in that familiar 'Ultimate' style (used in Knight Lore, etc), and the fighters can move in all directions.

This is strictly a 'man against computer' battle (no two player option!) and is further limited by having only 5 aggressive and 3 defensive moves. Control is via joystick only.

The state of the boxers are shown in the two 'faces' at the top of the screen. These faces show the effects of the blows in gory detail - complete with bruises and blood. A feature that I found slightly repulsive and not really necessary. Two colour bars also show the stamina levels of both fighters throughout the bout. Each attacking move takes a toll on stamina. Stepping back out of the close-contact battle helps regain some stamina (it also helps the stamina re-building of the opposition).

A bouncing melody accompanies the game until the first contact blow. Unfortunately I believe the writer of this theme may have had the thought that it was intended for some cowboy type simulation, rather than an Asian Combat simulation.

The fighting figures are much too small for any detail, and I had no idea of what the attacking moves were actually achieving. So it was a matter of getting in close and twiddling the joystick. It really is a pity since there is obviously some good programming in this package that is going to waste.

In a sentence: ineffective, frustrating, not worth the effort.

SUMMARY

A particular lack that I noticed in all three games: no 'practice' mode. I would have had more enjoyment if I had the opportunity to experiment with a combination of moves before facing those computer-controlled killing machines.

One factor that I found amusing was the background. All three games went to some effort to detail various background scenes. However, once the action had started, all concentration was on the fight, and it really did not matter where the battle was staged. Perhaps less emphasis on the background and more on the fight would have improved the ratings.

Did I get converted? Almost. There is a lot of fun to be had with these games, and I will be re-visiting both Sai Combat and Karate. If only there was a way to combine the technical excellence of Sai, and the randomness of Karate, then I would be converted.

.... and four games reviewed by Darren Robinson

WILLOW PATTERN

Don't be put off by the title, this particular game is nothing to do with wallpaper hanging ... in fact it's a 2D maze game where the objective is to defeat the Samurai army, rescue a damsel in distress and outrun the princess's father on the way to a rescue boat.

Set in an Oriental jungle, Chang (the hero) travels around a detailed landscape, consisting of trees and many buildings of various description. Strategically placed around the maze are many rather large samurai with a passion for trying to kill you. You see, these fellows like to guard the pathways. Find a sword, kill one, he disappears and the path is

clear. Simple eh? Actually they're very easy targets as they just remain in one place and spin around. Touch him and you die. If you're lucky the samurai will throw a sword at you. Dodge this successfully and Chang has another weapon to take and use on the next guard. There is a catch of course - only a limited number of swords are available. Make a mistake and the game cannot be finished. Attempting to carry 2 swords at once results in the inexplicable loss of one, so this is a mistake!

Despite a good size maze, mapping is not necessary as the path is fairly straightforward. There is dull background music to accompany Chang's exploits and no other sound effects. Collision detection is sometimes terribly inaccurate.

A couple of bridges are placed on the pathways near the start. Touching one transports him to a weird screen where he must jump across a river using 4 islands situated beneath a bridge. On this bridge are some giant Japanese men reaching down to grab him. Survive this and you are returned to the pathway.

The overall appearance of the maze is pleasing to the eye; the temples scattered around sure beat boring old brick walls. Chang charges around the maze with a good turn of pace, though there is no time limit.

Chang has 5 lives and the score is given as a percentage. This can be boosted by collecting the odd treasure. There are joystick/keyboard and music on/off options. The doco is wrong regarding pause mode-hit 'R' to restart.

While Willow Pattern is addictive and has pretty good graphics, there isn't much variety in the gameplay. Still, not a bad effort from the Firebird budget range.

ELEVATOR ACTION

Agent Otto has been having his ups and downs lately. Y'see, he's just been assigned to travel the most dangerous elevators in the world in order to penetrate the enemy building, find the red doors and steal the secret plans kept therein.

"Prepare to die", says the intro screen, but Otto is no novice in these matters, as all good spywatchers know, because this is the licenced Quicksilva version of the original Taito coin-op game.

Your well trained spy is able to shoot, jump, duck and perform devastating karate kicks. Formidable as this fellow is, he needs to be because he is vastly outnumbered by the enemy agents occupying the building, which has 30 stories. As you descend, all of the red doors must be entered before you are permitted to exit the ground floor and zoom away in an unglamourous delivery van.

Terrific spy music is played constantly in EA; unfortunately there are no other sound effects during gameplay whatsoever. I would dare say this music is even better than the original game's theme.

As progress is made, Otto discovers that not all floors are connected by lifts - sometimes escalators must be used instead. He also finds some darkened corridors, and here agents often pop out unexpectedly from an invisible doorway.

When travelling in an elevator it's a good idea to try shooting the lights. Not only do agents appear to dislike the dark - there are less of them here - but you may succeed in making a light fall onto one. Other ways to score include shooting, entering a red doorway and squashing someone with an elevator. It appears all these enemy agents have soft heads because once you get the knack Otto can start leaping onto them. Doing this kills them just the same and scores better. It's not too hard avoiding bullets - you can either duck or leap up. The way Otto jumps is weird; he sort of hangs there and lifts his legs off the ground.

The main appeal of EA is the constant action, so it can be frustrating just standing around waiting for a lift to arrive. However it is quite amusing to watch a would-be assassin commit suicide by jumping atop a moving elevator and getting squashed at the top. Of course, that won't happen to any of us!

So overall, how does EA shape up to the coin-op? Apart from lacking some speed, pretty darn good. If you like Commando-type games where it's just you against everybody then I can recommend this.

WEST BANK

TV western movies have always portrayed banks as dangerous places to be, and now West BAnk puts you right in the thick of the action. Based on the arcade game 'Bank Panic', the plan is to collect deposits from the good citizens of South Dakota, whilst keeping out the villains who want to steal it.

Upon beginning WB you are faced with 3 doors. One by one these will open to reveal a character of the town. It is quickly learnt that some ought to be shot on sight, while others are best left alone.

Five lives are granted to you and one is lost whenever you shoot a good citizen or if a villain beats you to the draw. To make things harder, further into the game more characters with less predictable personalities are introduced.

Apart from the normal people, there is a funny little bloke called Bowie the dwarf who wears a lot of hats. Shooting them all reveals the object beneath the last hat; it may be a bomb but usually it's a deposit for you.

Once money has been received

from each of the 9 doors a bonus screen is reached. This comprises facing 3 of the nastiest looking hombres in town. After a short countdown they reach for their weapons. Kill them in the correct order, and a bonus is awarded, depending on how fast you react.

Other features of West Bank include an excellent loader screen, joystick/keyboard option, a difficulty selection menu and a high score table. One minor complaint is unless you get onto the high score table your score gets erased immediately the shootout is over. This is a problem because the table is very hard to get onto.

Sound - some merry piano music jangles between games. A different tune accompanies gameplay but other sound effects are limited.

Graphics - are fairly good but there is little animation to speak of. The scrolling is jerky when new doors come into view.

Documentation - unfortunately the doco doesn't accurately describe what the program does. One can only assume it was written for another version.

In summary, this is mainly a reflex action game with insufficient variety of gameplay to keep me coming back for more.

WIBSTARS

Software distributors have a tough job if Wibstars is anything to judge by. This game claims to be part business simulation and part arcade game, but in the end it is only arcade skills and luck that decide your measure of success. The basic idea is to deliver computer goods from a central warehouse to the customers, making as much money as possible in the process.

You start off in Wibstars guiding a man in a forklift to select goods for purchase and distribution. Two hundred pounds is granted for the task, and items available are cassettes, discs and Sinclair computers.

All stock is then taken to the blokes in Despatch whose job it is to drop the whole lot down several vertical chutes. The aim in this screen is to drive a delivery van left and right in order to catch the raining merchandise. This occurs all too quickly and usually about half my stock gets destroyed because the van isn't fast enough.

The next part involves driving along a grid of streets, a bird's eye view being shown of the road you are in. A competitors van travels ahead and drops dangerous garbage behind him. Hitting this causes damage to your van which is calculated in pounds in a running total, and comes out of profits later on. He also drops some goods which may be picked up.

In the final screen, having arrived at a customer's loading bay, you are required to remove the goods from the van either individually or in bulk. Then the problem is to push the item around a screen full of conveyor belts, lifts and platforms so that it arrives at a doorway at the top. Goods are quite easily smashed underneath the elevator or by dropping them too far.

Wibstars is best described as 3 mini arcade games rolled into one. Although it's a good idea only the last is skilful and interesting - these days that's not enough. There is also an error in the program in the driving sequence. Picking up a disc or cassette from the road not only adds to your stock, the damage total increases as well, much more than the item is worth. Also there are several customers that offer prices below what you paid for the item, thus making a profitable delivery impossible.

If this was a budget game there would be some value in it, but it's not so I suggest you dust the cobwebs off that old copy of Ghostbusters - at least that plays a jolly tune.

If you are searching for:

AFTERSHOCK
AIR COMBAT EMULATOR
ACTIVATOR
BOMBSCARE
BOOTY
DR. WHO
DRUID
ELEVATOR ACTION
FORMULA 1 SIMULATOR
FUTURE KNIGHTS
HYPERBOWL
LORD OF THE RINGS
MAGIC MATHS
MINI OFFICE II
NECRIS DOME
SPORT OF KINGS
STORM
TERRA COGNITA
TOMAHAWK
TRAILBLAZERS

LOOK NO FURTHER THAN PAGE 64

PRIVATE TUITION

A look at 16 Educational Software packages across the CPC and PCW range

It is a common plea from Amstrad owners that there is little Educational software, or that which is available is hard to locate. On the other hand, speak to most dealers and they will tell you that when they do get it in they find it difficult to sell. It seems to be a vicious circle, an unsoluble equation.

Perhaps one of the *excuses* given when choosing to buy a computer is to provide oneself or ones children the means to improve our education. This may not necessarily be the *reason*. Perhaps Educational software developers find it difficult to compete against a classroom environment (although I don't believe they intentionally try), or just run out of ideas to make the subject as exciting as Space Invaders.

There are too many unknowns to solve the equation. My feeling is, in terms of Educational software, that it sounds like a good idea to use a home computer to improve oneself. But in reality 'going to school' lacks attraction to many which in turn reflects upon the software houses' keeness to develop low demand packages.

However, if my thoughts are to believed, the next few pages will please the minority and perhaps convert others. You will find a list of some sixteen Educational packages (three of them got a mention in greater detail a couple of issues ago). Don't look at them as being the answer to all your problems - they have not been written, nor can be, for that purpose. Most serve as a basis for revision to be used in conjunction with text books.

If you know of any more, we'd be pleased to hear from you.

MATHS

PLAY-SCHOOL (Ages 3-4)
School Software/Pactronics

A cute package which will surely get the little ones used to a computer keyboard and pick up some rudiments on the way. Various Nursery Rhymes play during the course of running the program which is split up into 6 small modules with normally just four questions to answer in each.

Counting - a number of objects are displayed on the screen, counted and the result entered by child or parent.

Find it - press the letter on the keyboard which corresponds with the display.

Paint Box - choose a colour and draw simple lines via the cursor keys.

Match Up - match the design in the last box with the five numbered boxes.

Game - youngsters own version of Pacman. Gobble up any or all objects by moving the "man" over the objects via the cursor keys.

How Many - very simple maths achieved by adding separately the number of objects in each box and, of course, providing the answer. (See also Issue 26).

CPCs - Disc $34.95; Cass $22.95

MAGIC MATHS (Ages 3-9)
Players/ISD/The Amstrad User

The difference with this package is that it comes with digitised speech which uses the built in speaker of the Amstrad and so requires no bolt-on goodies. There are 10 levels of difficulty spanning the whole range of addition, subtraction, multiplication and division. It is colourful and easy to use.

CPCs - Cass $9.98

MAGIC MATHS (Ages 4-8)
School Software/Pactronics

Not to be confused with the previous package, this one claims to be "in keeping with the best pedagogical standards and modern mathematical educational methodology". In the CPC versions, a train is presented on the screen. The idea is to provide the right answer to the question and thereby increase the train's speed by 10 m.p.h. each time. Success arrives with a speed of 100 m.p.h. Failure comes with two incorrect answers (to the same question) - the train explodes. You don't get these graphics with the PCW version but all keep a log of the last 100 questions and answers, so the parent/guardian/teacher can isolate persistent problems. Covers addition and subtraction only.

CPCs - Disc $34.95; Cass $22.95
PCWs - Disc $34.95

MATHS (Ages 4-12)
North Coast Computers, Taree, NSW
Compared with the School Software Magic Maths, this package provides a bit more for your money in that side one deals with addition, subtraction and a combination of both and side two covers multiplication and division plus combination. However, the same "train" idea has been used but to less effect as there is no incentive to increase the speed. The wide age range is catered for with six levels of difficulty.
CPCs - Disc $29.95; Cass $19.95

MATHS MANIA (Ages 8-12)
School Software/Pactronics
The next step up from Magic Maths. You still get the train but this time the questions deal with multiplication and division.
CPCs - Disc $34.95; Cass $22.95
PCWs - Disc $34.95

MAXI MATHS (Ages 12-16)
School Software/Pactronics
It says 9-15 on the cover but the program displays 12 to 16 which is probably nearer the mark. This set essentially covers basic Geometry. Angles, triangles, rectangles, circles and sin/cos/tan all get a mention in the form of diagrams and information on how to perform the calculations. The revision section at the end is where one tests to see if it's all sunk in.
CPCs - Disc $34.95; Cass $22.95

BETTER MATHS 1 (Ages 12-16)
School Software/Pactronics
Life is now getting a little more complicated with the introduction of more advanced aspects of maths. This package covers Measuration (a strange title that I cannot find in my dictionary) meaning volumes, surface areas and so on. Statistics, simple interest rates/ratios, factors, percentages and algebraic expressions and factors are brought into play along with tables and approximations. Again, the test at the end will tell you if you've grasped it all.
CPCs - Disc $34.95; Cass $22.95
PCWs - Disc $34.95

MICRO MATHS (Ages 12-16)
LCL/AAUC
This package differs from the other formats in that it will ask a question and if your answer is wrong will give you a clue to the formula required. If you don't get

it right a second time it then provides the correct answer but also tells you how it arrived at the answer. As the calculations are likely to get a bit lengthy, depressing function key 0 will break the program and allow you to use the Amstrad as a calculator. Pressing function key 0 or 1 takes you back. Both sides of the disc are used. Side one covers such subjects as percentages and fractions, ratio and proportion, base numbers etc. Flip the disc and you move on to geometry, algebra and calculus.
CPCs - Disc $79.00; Cass $79.00

MEGA MATHS (Ages 16+)
LCL/AAUC
Now we are into the big time, going beyond the HSC level in many areas. More advanced geometry (including three dimensional), complex numbers, logarithms, quadratic equations, series, and polynomial, remainder and binomial theorems can be found on the first side. Side two reveals derivatives, trigonometry (graphs, identities etc.) partial fractions and integrals to name but a few. The "calculator mode" is also available on this package.
CPCs - Disc $79.00; Cass $79.00

SCIENCES

All the packages in this subject are from the same source. They follow the same format of a question, a hint if you get the answer wrong, and the answer. They are all menu driven with notes optionally displayed at the beginning of each selection.

PHYSICS (Ages 12-16)
School Software/Pactronics
Contents: Matter (density), law of the lever, pressure, states of matter, heat and temperature, electricity, magnetism and electrostatics, and light and sound. (See also Issue 26).
CPCs - Disc $34.95; Cass $22.95

BIOLOGY (Ages 12-16)
School Software/Pactronics
Contents: Life and cells, mammals and plants, photosynthesis and enzymes, respiration and excretion, transport including osmosis and transpiration, sensitivity/stimulus/response, reproduction/growth/development, and soil and micro-organisms.
CPCs - Disc $34.95; Cass $22.95
PCWs - Disc $34.95

CHEMISTRY (Ages 12-16)
School Software/Pactronics
Contents: Chemical changes, oxygen and hydrogen, atoms/bonding/valency, carbon/sulphur, oxidation/reduction, acids/bases/salts, activity series and ion exchange/water. (See also Issue 26).
CPCs - Disc $34.95; Cass $22.95
PCWs - Disc $34.95

GEOGRAPHY : Weather and Climate (Ages 13-17)
School Software/Pactronics
Although titled Geography, it really deals with weather and climate- its subtitle. It is a revision course covering measurement and recording, rainfall, climate types, pressure, wind and temperature.
CPCs - Disc $34.95; Cass $22.95

SPELLING/ENGLISH

You may wonder how a spelling tutor can improve your spelling. To flash on the screen "How do you spell OCCUR" obviously doesn't work because you've got the answer already! To ask for the past tense of the word OCCUR is a different matter. There are certain rules and exceptions to learn in our extremely complex English language. This is where the tutors can help. They test the "pupil" for knowledge of the language and at the same time provide the spelling lesson.

BETTER SPELLING (Ages 9-Adult)
School Software/Pactronics
This package is effectively split into two sections. The first delves into plurals, irregular and otherwise, words with prefixes and suffixes, words with "silent" Es and past tense traps. The second part deals with common spelling errors (eg. their/there/they're or to/two/too) and the IE/EI rule. It also covers the use of WHOM/WHO/WHICH, IS/ARE and BEEN/BEING.
CPCs - Disc $34.95; Cass $22.95
PCWs - Disc $34.95

SPELLING (Ages 10-16)
North Coast Computers
Whereas the School Software package spread its testing over 16 modules, North Coast Spelling extends to 24. All the words (there are 900 of them) and rules have been taken from a grade four text book. The screen layout includes an image of a head which moves its mouth as a particular rule is displayed. [It looks remarkably like the Max Headroom figure published in Issue 22 of The Amstrad User - I don't know what Mr. J.C. Ablett would say about his work being used in a commercial piece of software!] Words which have been incorrectly spelled keep popping up until the right answer is entered.
CPCs - Disc $29.95; Cass $19.95

MICRO ENGLISH (Ages 12-16)
LCL/AAUC

This is by far the most comprehensive package dealing in the main with composition and comprehension. Within the composition section are punctuation, elementary and advanced spelling, vocabulary tests, figures of speech, irregular plurals and 'phrase to word' summary. The spelling tests are different from any other packages in that an audio cassette is supplied with the package and is played through a normal cassette recorder/player. A voice barks out the word which is entered by the 'pupil' onto the screen. In the comprehension section (side two) are eight multiple choice tests and eight summary tests.

Let me expand on that a bit. The multiple choice tests involve a display of a passage of text which when read will provide the correct answer to a choice of five questions at the foot of the screen. This tests to see if the reader has understood the passage. The summaries on the other hand test the reader in understanding the salient points of a displayed passage. This is achieved by the reader identifying the key phrases through moving the cursor across selected text. The selections are checked with a 'blue-print' in the program and reported accordingly.

The package has a degree of flexibility which cannot be found in others as it allows the user, parent or teacher to change some of the questions and answers or even record words for the spelling tests. This is done by changing selected data statements, so the person making the changes will have to have some understanding of Basic. If you buy the disc version, any amendments are restricted to one spelling and one comprehension test.

CPCs - Disc $79.00; Cass $79.00

For more details on fthe above software items you can contact the relevant distributors below:

PACTRONICS
33-35 Alleyne Street
Chatswood, NSW 2067
(02) 407 0261

AAUC
Suite 5, 26 Whistler St
Manly NSW 2095
(02) 977 4697

NORTH COAST COMPUTERS
22 Albert Lane
Taree, NSW 2430
(065) 526691

THE AMSTRAD USER
1/245 Springvale Road
Glen Waverley, Vic. 3150
(03) 233 9661

GOSSIP FROM THE UK

* Figures recently released by Amstrad in the UK prove that the company is going from strength to strength. The half-yearly figures show a dramatic increase in profit of nearly 160% to over £70 million. Pundits expect a pre-tax profit for the year to be in the region of £130 million helped along with the controlled release of new products. One of these products is the DMP4000 printer, essentially for the PC1512 but also compatible with the CPC range. It has a 15 inch wide carriage with more than 100 type face combinations. It should also work on a PCW if a Centronics interface unit (CPS8256) is attached.

* Will the ingenuity of games manufacturers never end? Alligata Software have just included a "Quick - the boss is coming" escape button for all those PCW people who play computer games in the office when they should be slaving away over a hot word processor. The idea is that if you are in the middle of a game and suddenly hear the sound of footsteps behind your back you use your lightning quick reactions to hit the delete key. Immediately the screen is filled with an impressive looking Word Processing Tutorial screen which the company suggests is certain to impress the head man, especially if he thinks he has caught you playing games. When he's gone you hit the delete key again and you are right back into the action with lives and points intact. This special feature comes with Blagger and Guardian.

* Amstrad is getting tough with people who it thinks are using its name, or part of it, improperly. They have been successful against a dealer calling himself Amstrad Computers Limited. That one's pretty obvious, but Amstrad are also looking at another 20 or so companies who are using the 'Ams' prefix.

* You may remember reading in the March issue the scurrilous rumours concerning the PC1512 overheating. ICI, where the trouble supposedly began, have now concluded that there are no overheating problems with the machine. ICI's director of Information Technology has written to Amstrad stating "The PC1512 met all ICI's requirements for a 808X processor based personal computer and is judged to offer very good value for money. During the trials no problems were experienced with overheating when the Amstrad was connected to a token ring network." He confirmed that the machine had been approved for purchase by ICI operating units.

* Two simulations are on their way from Activision for two sports not usually associated with computer games. Championship Basketball - Two on Two where you are partnered by the computer in one or two player games of basketball, and Sailing, a game based on the America's Cup race.

* Mastertronic, the long established budget software house, has acquired Melbourne House, producers of such games as The Hobbit and Way of the Exploding Fist. The acquisition will not effect Software Licensing and Marketing (nee Melbourne House) in Australia who will continue to operate independently.

* Cheetah Marketing, responsible for the highly acclaimed Amdrum, had launched another set of voices for its digital drum system. The package called Afrokit contains eight new sounds; trunk, buash, hi conga, low conga, clave, coconut, guiro and whistle This new release brings the total number of drum sound kits to four - standard rock (free with Amdrum), Latin, Electro and now Afro.

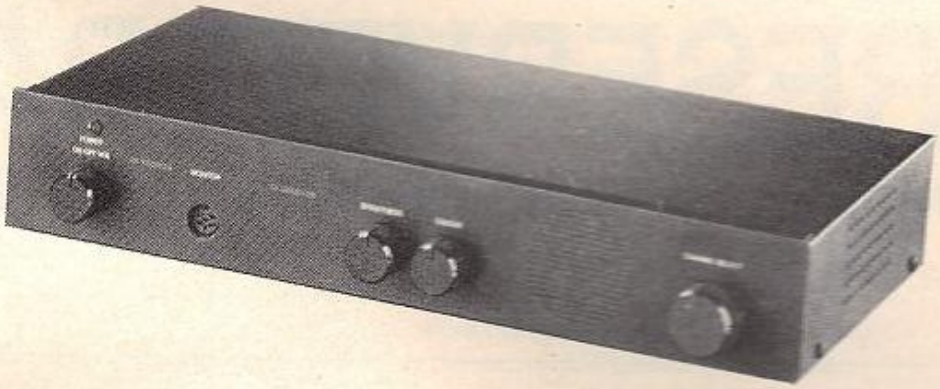
No overheating problems at Albury

To dispel any rumours, Ashlin Computers can testify to having run both a dual floppy colour and a hard disc colour PC1512 continuously for over 2 weeks without any errors occurring and certainly no overheating problem. The company has a store in Benalla and now a new one in Albury situated in Kiewa Street. Their main product is the Amstrad PC1512 which is sold with two hours free training on the basic operation. In addition they offer training on most of the popular professional packages, eg. Wordstar, Lotus 123, dBase II and III, Supercalc 3, Multiplan, Easy, Gem and Paradox. They are also responsible for developing a special bracket set to fit Tandon Hard Discs to the PC1512.

Enquiries to Ashlin Computers, 531 Kiewa St, Albury, NSW 2640 Phone (060) 411 744

Turn your Monitor into a colour TV.

by Julian Tipper



The latest offering for the Amstrad range of computers is a handy little device which turns any colour monitor into a colour television. The company DK'Tronics is a successful third party hardware add-on vendor, which has been around for as long as the Amstrad computers.

The initial tuner was made for the British television system and was not suited to Australian conditions. After an outcry from users in Australia, DK'Tronics were approached by Fred Gillen of Giltronic (an independent Melbourne Amstrad dealer). The result in less than two weeks, the first and only Australian version of the tuner arrived.

The concept for the tuner was simple - plug in the monitor and the TV aerial and away you go. This was done (very quickly) and soon our anxiety was put to rest, for on our 6128 monitor was a crisp, clear smiling Humphrey B. Bear!

After the initial excitement had died down a little, Fred contacted England and told DK'Tronics the good news and soon ten more were on their way out to the colonies.

The actual tuner comes in an attractive black box with on/off, channel select, brightness and colour switches. It has a connector for the aerial at the back, one at the front for a monitor and a switch which changes from VHF to UHF allowing Channel 0/28 to be accessed. The sound is through a 2" mini speaker on the front panel giving a good quality output.

The operation is simple, you connect it up, turn it on, select the channel you wish to view, adjust the picture controls, then sit back and relax.

The unit has been checked with the 464, 664 and 6128 range and works excellently. There is a possibility in the future that the tuner will work with the PC1512 colour monitor, so stay tuned for more details. Any aerial which works on a domestic television set will work on the tuner, including 'rabbit ears', but the best quality is obtained using an external aerial.

In summary the DK'Tronics tuner is an excellent product, and with a special introductory price of only $279 makes a good investment instead of a second colour TV. They are available right now at Giltronic but be quick - they will sell very quickly.

Enquiries to Giltronic, 528a Nepean Highway, Bonbeach, Vic 3196 Phone (03) 773 1244.

Electronic Workshop for Motor Trade

One of the new products now being demonstrated at PC Network is a program for any Garage, Motor mechanics or home mechanic with a PC1512. Called "The Electronic Workshop", it is a series of computerised servicing modules used in conjunction with a PC to service Electronic Fuel Injected motor vehicles. The programs are guaranteed foolproof and, as long as the instructions on the screen are followed, success is ensured along with a saving of many hundreds of dollars on service fees. As every type of vehicle has differing specifications there is a module for each make and model of car. Demo discs are available for retailers. Each module retails for $199 with generous discounts to retailers. Vehicles currently supported include the Holden Commodore VK and Calais, the Camira JD, the Mazda 323 and the Ford range. More modules are being developed to eventually cover the entire range of vehicles available in Australia.

Enquiries to AMSNET, 106a Scarborough Street, Southport, Qld 4215 : Phone (075) 325 464.

New Business Software for the PCW

A new range of business software for the PCW range is available from Pactronics. Three packages are currently available - TAIT Accounting, TAIT Database and Labeller and TAIT Manager. TAIT Accounting has been specifically designed for smaller businesses, and operates on the normal double entry method using three ledgers - Debtors, Creditors and Nominal. A single entry posts to both relevant ledgers. No real experience is required as the on screen prompts guide the user through all functions. The package includes a special section dealing with company overheads and, for total control, also includes TAIT Manager - a menu driven utility program which records and evaluates sales tax expenditure.

TAIT Database and Labeller is a simple but effective database for the PCW. No training is required with this package which will store or retrieve data, sort or print out all records, or print out labels.

Enquiries to Pactronics, 33-35 Alleyne Street, Chatswood, NSW 2067 : Phone (02) 407 0261

RESERVED RAM

A trip into the foreground data area of an unadulterated 464

by Ian Wallace

Reserved RAM on the unexpanded CPC 464 occupies a total of 5614 bytes, from &0000 to &0170, and from &AB80 to &BFFF. An extra 1284 bytes are reserved when a disc drive is connected; upper reserved RAM then occupies &A67C to &BFFF. Of this, only the following areas are explained in any detail in the 'official' literature:

&0000 to &0040;	Low kernel jumpblock.
&B900 to &B923;	High kernel jumpblock.
&BB00 to &BDF3;	Main jumpblock.
&BFFF down;	The stack.

Don Thomasson's excellent book, the Whole Memory Guide, explains most of the remaining area from &B100 upwards, which is used by the Firmware, or lower ROM. This article will provide details on some of the locations in the foreground data area, from &AC00 to &B0FF, when the Basic interpreter (or upper ROM) is using it. Only a small proportion of the actual locations will be mentioned, providing but a glimpse of the useful things that can be achieved through manipulation of this area. Although the information will mainly be of interest to assembly language programmers, much of it will be useful to everyone.

Of course the information applies only to the CPC464, but BASIC 1.1 users should note that the corresponding locations for their machines are usually not far away, and should not be too difficult to find, with the information presented here.

It is a good idea to draw your own memory map on graph paper, with useful locations and their details written down, so that all information is on one (or two) pages. However, since related information is not always stored at nearby locations in the foreground RAM, it will not be presented here in numerical order of location.

The Stack

This area is not part of foreground data, but is mentioned because it can be useful for other purposes. On the unexpanded machine the area from &BDF4 to &BFFF is available: Clearly few programs would use this much stack space. Even with a disc connected, the remaining area available from &BE80 to &BFFF is quite large, and could be used for short machine code routines, with the added bonus that this area is not written over after a reset. (And is probably unique in this regard.)

&AC01 to &AC1B

There are nine three byte instructions stored here which are called by the interpreter at various times, as listed below:

&AC01 Called just before the 'Ready' message appears and the interpreter is in command mode.
&AC04 Called just before an error message is printed.
&AC10 Called during evaluation of each character in a program during run time.
&AC13 Called during evaluation of each character in a program while listing the program.
&AC16 Called whenever a Basic keyword is found during run time.
&AC07, &AC0A, &AC0D, &E30B ? Sometimes called prior to error handling and CALL &AC04, for syntax errors only.

Normally these locations contain RETurn instructions, but it is possible to write vectors to your own program so that, for example, your program is executed every time an error appears (like ON ERROR GOTO, except that it also works in command mode). The following frivolous program (RESRAM1) is an example of a possible use of these locations.

Change lines 100 - 120 to whatever messages you want, but each message, including control codes, must not exceed 40 characters, and must end with a zero byte.

The Basic program NEWs itself after writing the machine code to reserved RAM, and must be saved before running. The machine code program itself is located below the stack, but the messages are stored in the sound manager workspace, so if you define a volume envelope you will destroy them. Of course the Basic program will have to be rerun after a reset, since the messages and pointers are destroyed.

Because the program calls an interpreter routine to print the messages (to save memory), it will not work on Basic 1.1. machines.

(RESRAM1)

```
90 'PERSONALISE your interpreter
100 m1$=CHR$(10)+"Hi handsome, I'm "+CHR$(10)+CHR$(0)
110 m2$="Silly sausage, there's a"+CHR$(10)+CHR$(0)
120 m3$="thinking... "+CHR$(10)+CHR$(0)
130 s=&BE80
140 j=&AC01
150 k=&AC16
160 FOR i=s TO s+6
170 READ v:POKE i,v:NEXT
```

```
180 FOR i=s+8 TO s+14
190 READ v:POKE i,v:NEXT
200 FOR i=s+16 TO s+24
210 READ v:POKE i,v:NEXT
220 FOR i=1 TO LEN(a$)
230 POKE &B620+i,ASC(MID$(a$,i,1))
240 NEXT
250 FOR i=1 TO LEN(a2$)
260 POKE &B650+i,ASC(MID$(a2$,i,1))
270 NEXT
280 FOR i=1 TO LEN(a3$)
290 POKE &B680+i,ASC(MID$(a3$,i,1))
300 NEXT
310 FOR i=j TO j+5
320 READ v
330 POKE i,v
340 NEXT
350 FOR i=k TO k+2
360 READ v
370 POKE i,v
380 NEXT
390 DATA &21,&21,&b6,&cd,&41,&c3,&c9
400 DATA &21,&51,&b6,&cd,&41,&c3,&c9
410 DATA &e5,&21,&81,&b6,&cd,&41,&c3,&e1,&c9
420 DATA &c3,&80,&be
430 DATA &c3,&88,&be
440 DATA &c3,&90,&be
450 NEW
```

LOADING AND SAVING FILES

Several locations are of use here:

&AE3F and &AE40	Start address of last loaded file
&AE43 and &AE44	Length of last loaded file
&AE45	File type flag
&B821 and &B822	Entry address for cassette files
&A76F and &A770	Entry address for disc files

Using these addresses, backup copies of binary files can be made by:

1 Load the program
2 If there is a 'Memory full' message, reset memory with MEMORY PEEK(&AE3F) + 256*PEEK(&AE40) - 1 , then load again.
3 If the file was loaded from tape, save (to tape or disc) with SAVE"filename",B, PEEK(&AE3F)+256*PEEK (&AE40), PEEK(&AE43)+256*PEEK(&AE44), PEEK (&B821)+256*PEEK(&B822)
If the file was loaded from disc, save with SAVE"filename",B, PEEK(&AE3F)+256*PEEK(&AE40), PEEK(&AE43)+256*PEEK(&AE44), PEEK(&A76F)+256* PEEK(&A770)

Further action may be required when a program is loaded from tape and saved to disc for later use. Files that load into the symbol table area or the DOS ram area will have to be relocated.

It is worth noting that saving and loading binary programs do not require the cassette buffer areas. However, loading using LOAD (as opposed to RUN") will produce an error message if there is no room for the (unused) buffer below HIMEM (dare we call this a bug?). In this case it is not possible to save a backup copy of this program in the normal way. This can be solved by loading using RUN"filename" while a machine code program to intercept the interpreter before the file is closed is resident. Such a program is listed below (RESRAM2) in the form of a Basic program that loads the mc routine then destroys itself.

```
5 'UNRUN BASIC LOADER
6 'BASIC PROGRAM DISAPPEARS AFTER LOADING BINARY PROGRAM
10 READ n
30 FOR i=&BE80 TO &BE80+n
40 READ a:POKE i,a
50 NEXT i
60 FOR i=&BC7A TO &BC7C
70 READ a:POKE i,a
80 NEXT i
130 NEW
140 DATA 14
150 DATA 33 , 69 , 174 , 175
160 DATA 119 , 33 , 140 , 190 , 229, 207 , 252
170 DATA 163 , 195 , 103 , 192
180 DATA 195 , 128 , 190
```

As an extra, the file type at location &AE45 is also changed (to 0, or unprotected Basic). One problem with this program is that the re-entry point into the interpreter is not entirely suitable, resulting in syntax errors until something like "76<enter>" is typed. If anyone knows of a better re-entry point please share it. (Note: RESRAM2 changes the file type flag. If you don't want this to happen delete line 150, amend line 140 to DATA 9 and line 160 to DATA 33, 140, 190, 229, 207, 252)

Generally, Basic programs are relatively easy to make backup copies of, but a problem can arise when there is not enough room for the buffers between the top of the Basic program and HIMEM. This might occur because a large program on cassette is being loaded while the DOS is resident. The locations listed below store values relating to the locations in RAM of the buffers used by Basic:

&B08F and &B090, &AE7B and &AE7C, &AE7D and &AE7E

These can be altered to point to screen RAM, by the following method:

Before loading, POKE &B090,&D0
After loading, POKE &B090,&A6: POKE &AE7C,&A6
(&A6 is the standard value when a DOS is present, but check the value your computer has stored here first)
Before saving, POKE &AE7C,&D0: POKE &AE7E,&D0
After saving, POKE &AE7C,&A6: POKE &AE7E,&A6

Trying to use this method to load binary programs does not work, since when MEMORY is set, the interpreter expects

the buffers to be below HIMEM, and if they are not then the program will not load. I have used this method successfully to save GEMS OF STRADUS, when all else had failed.
At this point I should mention that screen RAM, while generally unavailable, should not be forgotten when short term storage is required, as in this case.

&AC21 holds the number of the currently selected output stream.

&AC22 Holds the number of the currently selected input stream.

These can be changed to redirect output or input from one stream to another, but care must be taken as the rules can change from one device to another.

The RSX in the Basic program below (RESRAM3) is an example of how the first location can be utilised. The program was created using Brenton Ross's RSXGEN, from the source code that is listed here after the Basic program. All characters that are sent to the jumpblock for printing to the VDU are also sent to the line printer via a ROM routine that determines the control codes to send. This routine requires the number 8 to be at &AC21. Unfortunately, many outputs (most notably the 'echo' of keyboard input) are sent straight to the output routine in lower ROM, and cannot be intercepted. Use this program with care; be prepared to turn your printer off if it does strange things because the computer sent it some strange control codes. The new commands are shift@,TIE and shift@,UNTIE. This RSX will not work on BASIC1.1 machines because the interpreter routine it calls is not standard.

(RESRAM3)

```
7 'TIE
8 'Ties screen output to the printer
9 '
10 READ n: cs = n
20 s=HIMEM-n: MEMORY s-1
30 FOR i=1 TO n
40 READ a:cs=cs+a:POKE s+i-1,a
50 NEXT i
60 READ n:cs=cs+n
70 FOR i=1 TO n
80 READ a,b:cs=cs+a+b
90 a=a+s:ah=INT(a/256):al=a-ah*256
100 POKE s+b-1,al:POKE s+b,ah
110 NEXT i
120 READ check: IF check=cs THEN CALL s: NEW ELSE PRINT"e
rror in data statements !"
130 END
140 DATA 121
150 DATA 33 , 0 , 128 , 1 , 10 , 128 , 205 , 209 , 188 ,
201
160 DATA 18 , 128 , 195 , 29 , 128 , 195 , 47 , 128 , 84
, 73
170 DATA 197 , 85 , 78 , 84 , 73 , 197 , 86 , 195 , 0 , 1
7
180 DATA 100 , 128 , 33 , 90 , 187 , 1 , 3 , 0 , 237 , 17
6
190 DATA 33 , 63 , 128 , 205 , 54 , 128 , 201 , 33 , 100
, 128
200 DATA 205 , 54 , 128 , 201 , 17 , 90 , 187 , 1 , 3 , 0
210 DATA 237 , 176 , 201 , 195 , 66 , 128 , 245 , 124 , 2
54 , 203
220 DATA 32 , 6 , 125 , 254 , 80 , 204 , 104 , 128 , 58 ,
 33
230 DATA 172 , 50 , 95 , 128 , 62 , 8 , 50 , 33 , 172 , 2
41
240 DATA 245 , 223 , 26 , 128 , 62 , 0 , 50 , 33 , 172 ,
241
250 DATA 0 , 0 , 0 , 201 , 62 , 13 , 205 , 100 , 128 , 20
5
260 DATA 43 , 189 , 62 , 10 , 205 , 100 , 128 , 205 , 43
, 189
270 DATA 201
280 DATA 16
290 DATA 0 , 2 , 10 , 5 , 18 , 11 , 29 , 14 , 47 , 17 , 1
00 , 31
300 DATA 63 , 42 , 54 , 45 , 100 , 49 , 54 , 52 , 66 , 65
 , 104 , 77
310 DATA 95 , 83 , 26 , 93 , 100 , 108 , 100 , 116 , 1530
0
```

This is the source code for the above program, for the interest of assembler enthusiasts who may like to change it.

```
;*SC-PR
;PRINT ALL SCREEN OUTPUT
;TO PRINTER AND SCREEN
;
            ORG 08000H
            LOAD 08000H
;
LOGEXT:     EQU 0BCD1H ;LOG EXTENSION
TXTOUT:     EQU 0BB5AH ;TXT OUTPUT
PRICHR:     EQU 0BD2BH ;PRINT CHAR
; SETUP     RSX
SET:        LD HL,SET ;WORKSPACE
            LD BC,COM
            CALL LOGEXT
            RET
COM:        DW COM1 ;COMMAND TABLE
            JP TIE ;FIRST COMMAND
            JP UNTIE ;SECOND COMMAND
COM1:       DB "TI","E"+80H
COM2:       DB "UNTI","E"+80H
;
PRICHK:     DW 0C356H ;ROM PRINT+CHECK
            DB 0 ;ROM 0 (BASIC)
; SETUP VECTORS
TIE:        LD DE,NORM ;STORAGE OF
            LD HL,TXTOUT ;NORMAL INSTRUCTIONS
            LD BC,03H
            LDIR
```

```
            LD HL,REDIR ;REDIRECT INSTRUCTIONS
            CALL PUT ;PUT INTO JUMPBLOCK
            RET
;
UNTIE:      LD HL,NORM ;NORMAL INSTRUCTIONS
            CALL PUT ;PUT INTO JUMPBLOCK
            RET
;
PUT:        LD DE,TXTOUT ;CHANGE JUMPBLOCK
            LD BC,03H
            LDIR
            RET
;
REDIR:      JP PROGM ;THESE TO JUMPBLOCK
; MAIN PROGRAM
PROGM:      PUSH AF ;STORE CHAR
            LD A,H
            CP 0CBH
            JR NZ,GOPRIN
            LD A,L
            CP 50H ;HL @ 'BREAK'?
            CALL Z,BKED ;CR BEFORE BRK
GOPRIN:     LD A, (0AC21H) ;PRESENT STREAM
            LD (RESEL+1),A ;STORE IT
            LD A,8 ;PRINTER STRM
            LD (0AC21H),A ;SELECT STREAM
            POP AF ;RECOVER CHAR
            PUSH AF
            RST 18H
            DW PRICHK ;CHECK AND PRINT
;
RESEL:      LD A,0 ;RESELECT STREAM
            LD (0AC21H),A ;STREAM
            POP AF ;RECOVER CHAR
NORM:       DS 3 ;PRINT INSTRUCTIONS
            RET
; EXTRA     CR + LF
BKED:       LD A,13 ;CR
            CALL NORM ;SCREEN
            CALL PRICHR ;PRINTER
            LD A,10 ;LF
            CALL NORM ;SCREEN
            CALL PRICHR ;PRINTER
            RET
            END
```

By the way, there is a small bug (?) in the RSXGEN program. Any start or end addresses above &8000 that are input in hex form (and most assembly language programmers work in hex) produce incorrect values. This is because the UNT() function is performed automatically, producing negative values above &8000. If the following inverse-UNT instruction is executed after input the problem is solved:

```
sal = sal - 65536 * (sal<0)
```

THE BASIC PROGRAM

The group of locations below refer to the storage of a Basic program and its variables and other storage areas. The list is in ascending order of the storage location referred to. If two or more locations store the same information, it is probable that the values will differ at some time during the operation of the interpreter.

&AE7F and &AE80 Points to the bottom of the lower foreground data area (normally contains &0040).

&AE81 and &AE82 Points to the top of the lower reserved ram area and one less than the normal location for the start of the Basic program (normally contains &016F). These values can be altered before loading a Basic program so that memory is reserved for machine code programs or data: eg POKE &AE82,&02:POKE &AE80,&01 will reserve 256 bytes, from &0040 to &013F. The advantage of this method of reserving memory compared with the MEMORY command is that subsequent Basic programs are unlikely to overwrite the area, or to reset HIMEM above it, which can happen even to RSX's.

&AE83 and &AE84, &AE85 and &AE86 Location of end of Basic program, and start of variables.

&AE87 and &AE88, &AE89 and &AE8A Location of end of variables in Basic program.

&B08D and &B08E Location of bottom of current string storage space.

&B09D and &B09E, &B0BB and &B0BC Location just below current string storage space.

(The difference between the above values (&AE87 - &B08D) is the available free memory.)

&B092 and &B093 HIMEM minus 4kBytes (Used to set I/O buffers)

&B08F and &B090, &AE7B and &AE7C Bottom of buffer area. (=(&B092/3) when buffers used, =HIMEM when no buffers). It is possible to alter HIMEM by POKEing values into the location &AE7B/C. This has the advantage over the MEMORY command that the computer cannot reject the value, as it will often do if, for instance, a binary program has just been loaded.

&AE7D and &AE7E Bottom of buffer area. (=top of symbol table when no buffers)

(A use for these locations when loading and saving was mentioned earlier.)

&B094 and &B095 Bottom of symbol table area.

&ADAB and &ADAC. Location in line at which Break was pressed.

&ADAD and &ADAE. Points to line number at which Break was pressed.

Used by CONTinue. Altering these values can make a Basic program start at a different line (with the same variables) after typing CONT. Perhaps there is a key here to a method of saving all the variables in a Basic program, then continuing from the same point with the same variable values after re-loading the program and variables.

&ACA4 to &ADA3 This is the Basic command buffer, where anything entered straight from the keyboard is stored while it is being analysed. Binary programs could use this as a temporary storage area.

JOYSTICK or CURSOR CONTROL

by Ian Barnes

This is the second article in a series that is aimed at giving you ideas and routines that will help you when writing games and utilities. In this month's article I will be looking at ways to control a program using the joystick or keyboard, starting with simple joystick control and advancing to a completely re-programable joystick/ keyboard control.

The Basic program used for this article is the simple line drawing program shown in **List 1**.

There are two main ways to control a program of this type. The first I will call the 'PACMAN' method. In a game such as PACMAN, it is necessary to receive each new change of direction only once. The character will keep moving in its current direction until it becomes possible to move in the direction that has been selected most recently, of course in our demonstration program the line can change direction at once. The input routine is shown in **List 2**.

This routine first discards all but the most recent input and then, if the key that has been pressed most recently is one used for a direction, the current direction is altered. In a game such as PACMAN, lines 1020-1050 would also contain a check to test if it was possible to move in the selected direction, and if it was not possible, the current direction would not change. Note that until another key is pressed, the most recent input is stored in b$ which means that the program will repeatedly check to see if it can move in the selected direction, which is the effect we were after.

As you can see from this example, it is possible to implement this type of movement routine by simply reading the characters that are put into the keyboard buffer whenever the joystick is moved or a key is pressed. If you have typed in this short example program you will have found that it is only possible to move in four directions, and that the only way to stop is by running into the edge of the screen. This means that this type of input is useful in only a few situations.

The next type of routine is one that is used (in some form or another) in most computer and arcade games; and in utilities such as drawing programs or any programs that use a pointer. In this type of routine the keyboard or joystick is being tested constantly. As soon as a direction is selected the pointer (or whatever) will begin moving in the selected direction, but if the key is released the movement will stop. Using this method you would normally have eight different possible directions, compared to four for the last method. You also have much more control over the position of whatever you are controlling. The example input routine for this method is shown in **List 3** for cursor key control.

The 'Key Numbers' in the INKEY( ) command can be changed so that any of the normal keys (or the joysticks) can be used to control the program.

LIST 1

```
10 MODE 1                                   Set the mode
20 x=320:y=200                              Set the starting X and Y co-ordinates
30 ix=0:iy=0                                Set the starting X and Y increments
40 WHILE (1<>0)                             This is an infinite loop
50 GOSUB 1000                               Go to the input Subroutine
60 x=x+ix:if (x<0 OR x>638) THEN x=x-ix     Add X inc to X and check screen edges
70 y=y+iy:if (y<0 OR y>398) THEN y=y-iy     Add Y inc to Y and check screen edges
80 PLOT x,y,1                               Plot a point at X,Y
90 WEND                                     End of loop
1000 REM The input routine goes here
```

LIST 2

```
1000 a$=INKEY$                                  Keep reading inputs
1010 IF a$<>"" THEN b$=a$:GOTO 1000             until the most recent is found
1020 IF b$=CHR$(&0B) THEN ix=0:iy=2             Up on joystick.
1030 IF b$=CHR$(&0A) THEN ix=0:iy=-2            Down on joystick.
1040 IF b$=CHR$(&08) THEN ix=-2:iy=0            Left on joystick.
1050 IF b$=CHR$(&09) THEN ix=2:iy=0             Right on joystick.
1060 RETURN                                     End of subroutine
```

LIST 3

```
1000 ix=0:iy=0                                  Reset direction at beginning of routine
1010 IF (INKEY(0)<>-1) THEN iy=2                Test if UP is being pressed
1020 IF (INKEY(2)<>-1) THEN iy=-2               Test if down is being pressed
1030 IF (INKEY(8)<>-1) THEN ix=-2               Test if left is being pressed
1040 IF (INKEY(1)<>-1) THEN ix=2                Test if right is being pressed
1050 RETURN                                     End of routine
```

Alternatively the joystick(s) can be tested by use of the JOY( ) command which returns a bit significant value. (Anyone who already understands bit significance feel free to skip this next section). This means that if you were to type PRINT BIN$ (JOY(0),5) you would have a five digit binary number on your screen in which each digit indicates the state of one of the switches in joystick 0. For example the lowest (ie. right-most) digit will be a 1 if the UP switch on the joystick is 'on', otherwise it will be a zero.

To test the joystick, we take this number and mask it by using the AND function so that we are only looking at one switch at a time. The final routine is given below in **List 4.**

This routine is exactly the same as the one above, except that it gives you joystick control. Note, even in machine code a routine that operates similarly to this is easily implemented by use of the KM GET JOYSTICK function at &BB24.

Finally, it is possible to fairly easily alter the cursor key control given earlier to give you an entirely reprogammable control so that people will be able to select keys that suit them. The altered routine is givenin **List 5.**

Of course, 'up', 'down', 'left' and 'right' have not been defined yet, and this will require a special routine. This routine redefines the keys so that the character they produce when pressed will have an ASCII code equal to the key number. Hence when a key is pressed, the character placed into the keyboard buffer will be the number needed to test that key using INKEY( ). Note that CALL &BB00 will reset the keyboard to its normal state, as otherwise the keyboard will produce rubbish after this routine is used. The routine required is shown in **List 6.**

It would be possible to alter this routine in a number of ways. One way to improve the routine would be to have a string for each key stored in an array so that the user is given some positive feed-back to which keys have been selected, another simple way would be to print the messages used in the above routine using the shadowed text routine in the last article. These routines are by no means the only or the best ways to control an object on-screen, but they can form the basis for a large variety of programs.

LIST 4

```
1000 ix=0:iy=0                                  Reset direction at beginning
1010 IF (JOY (0) AND &X0001)<>0 THEN iy=2       Test if up switch is on
1020 IF (JOY (0) AND &X0010)<>0 THEN iy=-2      Test if down switch is on
1030 IF (JOY (0) AND &X0100)<>0 THEN ix=-2      Test if left switch is on
1040 IF (JOY (0) AND &X1000)<>0 THEN ix=2       Test if right switch is on
1050 RETURN                                     End of routine
```

LIST 5

```
1000 ix=0:iy=0
1010 IF (INKEY(up)<>-1) THEN iy=2
1020 IF (INKEY(down)<>-1) THEN iy=-2
1030 IF (INKEY(left)<>-1) THEN ix=-2
1040 IF (INKEY(right)<>-1) THEN ix=2
1050 RETURN
```

LIST 6

```
35  GOSUB 2000

2000 FOR loop=0 to 79                          Reprogram keys
2010 KEY DEF loop,0,loop,loop,loop
2020 NEXT
2030 FOR loop=0 to 40:a$=INKEY$:NEXT           Discard all characters in buffer
2040 PRINT:PRINT "Which key for UP:";
2050 GOSUB 3000:down=ASC(a$)                   Get key used for UP
2060 PRINT:PRINT: "Which key for DOWN:";
2070 GOSUB 3000:down=ASC(a$)                   Get key used for down
2080 IF (down=up) THEN 2070                    Try again if same as for up
2090 PRINT:PRINT "Which key for LEFT:";
2100 GOSUB 3000:left=ASC(a$)                   Get key used for left
2110 IF (left=down) OR (left=up) THEN 2100     Try again if already used
2120 PRINT:PRINT "Which key for RIGHT:";
2130 GOSUB 3000:right=ASC(a$)                  Get key used for right
2140 IF (right=left) OR (right=up) THEN 2130   Try again if already used
2150 IF (right=down) THEN 2130
2160 CALL &BB00                                Reset keyboard
2170 RETURN

3000 a$=""                                     Get the next character
3010 WHILE a$=""                               Or wait if no key pressed yet
3020 a$=INKEY$
3030 WEND
3040 RETURN
```

ADVENTURER'S ATTIC

by Philip Riley

In this month's column I have decided to present a pot-pourri of different odds and ends which although they don't have anything in common should help you to program better adventures.

MAZES

You may recall a few months ago I talked about mazes, how to solve them and how to program them.

Well it was while driving along in my car one sunny day that a thought suddenly struck me (as you can see I didn't have my mind on the road, I was thinking of my next adventure!). *How to make solving mazes more difficult*. You may also remember that I suggested the best way to find your way around a maze was to drop items as you went. How do you combat this? Simple, each time a person moves in a maze you check through all the rooms of the maze and move any items that you find to other locations in the maze. Simple isn't it? *(That's not fair !- Ed)*

SETTING THE MOOD

Probably the simplest part of writing an adventure is preparing the introductory story line, and it is very important that it is done well. You need to tell the people who are playing your game just what has been happening but it is always a good idea that you don't tell them too much - let them find out later on in the game (possibly the hard way). Remember the one Arnold Blackwood adventure in which you had no idea what you were supposed to be doing? Remember also, the more mystery that you can create the better.

LARGE ADVENTURES ARE NOT NECESSARILY GOOD ADVENTURES

Your adventure does not have to be large to be good. I have seen and played many good adventures that had only a small amount of rooms (the smallest had only 12 locations). If the various problems that have to be solved are clever and the various items that can be picked up are originally placed in the right position you can have people moving backwards and forwards a great many times. Remember also that it is your location description that take up most room and the more you have of these the less room you have for other more important things.

RANDOM

The use of RND statements can also make an adventure more enjoyable and interesting to play. I played one adventure that was set in a seven floored castle and at the base of each flight of stairs was a door. To open the door you had to have the correct password. Each floor's password was different and each time you played the game a new one was chosen using the RND statement.

Another way of using random would be to place the player or objects at random places in the game when you commenced a new game. One thing to be careful of if doing this is to make sure that you don't put the person into a situation that they cannot get out of or that you don't put an object where it cannot be reached.

Yet another use of random statements is to have creatures, monsters and other assorted nasties roaming around your adventure in random directions. You could then introduce things like a level of strength for your character in the game. When he bumps into one of the above mentioned nasties he must do combat. Depending on how the fight goes, strength can be lost. Food and drink found around the game could give more strength. Of course, if you lose all strength you will die. The amount of strength lost in a fight could depend on the type of weapon you are carrying, the better the weapon the shorter the fight and the less strength lost.

I think that is about all the odds and ends that I can think of for this month. Next month I hope to have one of the maps drawn for us by Steve Alatakis ready. Sorry about the delay Steve but the maps are on the drawing board now and I should have them completed for the Editor by next month.

GAMEWORX SOFTWARE

We are still getting the odd complaint from people who have sent $2 to Gameworx Software for a hint sheet, normally Secrets of Bastow Manor. The telephone number we have is (03) 735 3525.

ADVENTURE BASE

Danny Liebke has written to advise of an amendment to his program published in the February issue of The Amstrad User. In line 120 change the number 255 to "p" and add line 1145 PRINT "YOU CAN'T GO THAT WAY."

A HINT OF SUCCESS

Sea Base Delta, Forest at World's End, King Solomon's Mines, Mordons Quest, Jewels of Babylon - the list goes on - are all responsible for generating a great deal of queries to these offices. Then we had a brain wave. Why not offer $25 to those people who have managed to solve these or other popular adventure games on the Amstrad? Good idea eh?

All the clever people who have "been there and done it" take note. If you want to help other less fortunate adventurers and earn some loot at the same time, put together an original "Hint Sheet", not necessarily giving the whole game away, as clearly (preferably typed) and succinctly as possible. We will pick the best each month, publish it and send the author a cheque for $25.

IN THE MEANTIME

Justin Alcorn (Brisbane) wants to know how to get into the volcano in Forest at Worlds End, how to pick up the dish in Message from Andromeda and a quick way into the Cannibals Village in Jewels of Babylon. He also want some hints for Three weeks in Paradise and a poke to open all the doors and to score with infinite lives as well! A tall order indeed. In compensation Justin advises that to get into practice mode in Sorcery+, press the fire button and "C" together when given the message, and to get into demo mode press "S".

K. Rigby (Para Hills) is unable to master the fuel skimming from a sun's surface, needs a full proof way to collect space debris without sacrificing any integrity, and wants to know how to obtain a "cloaking device" in Elite.

Lord of the Rings has become a major problem for Karla Slack (Springwood). How many elf-stones are there *(three from memory - Ed)*, one is in a tree, where are the others? How does she get from the tree with the elf-stone back to Merry's house? How does she get to the Blue Mountains Observatory to visit Radagast the Brown? Actually, there are too many questions to print here, so Karla has suggested that anyone who can help with this game can write direct to PO Box 201, Springwood, NSW 2777. She offers in return a solution to Adventure Quest if anyone wants it.

Herrin Larkan (Nambour West) is unable to work out how to stick the photograph onto the blank ID card, thus making him qualified enough to talk to the flight crew. The game is Knight Tyme.

A belated answer for James Edmundsen's problem with The Hobbit (he's probably solved it now but others may be interested). The original question was 'what path do you need to take to get to the Dragon from Beorn'? David Brooks (Maitland) says 'you must first find the wood elf. He is almost always in the forest both north and south of Beorn's house. The wood-elf should then catch you (follow him around if he doesn't) and place you in his dungeon. The secret is to wait by typing in "WAIT" (I prefer "SIT") until someone unlocks the door. Open the door twice (someone will attempt to close it) and head west then south. If you have the ring put it on and wait for the butler to throw the barrel through the trapdoor. Type "JUMP ON BARREL". This will take you to the Long Lake. If you don't have the ring, you must go north and south and continue this cycle until the barrel is thrown. You must also make sure that the dungeon door is kept open (in case you are caught again). From here you must go to the Wooden Town then head north to the dragon.

Another belated answer, this time for Stephen Snow from "Ed II". The original problem was to get past the witch's hovel. The answer is to enter the hovel wearing the ring obtained from the nymph (say "WEAR RING"). Then enter the hut and she will scream and die. By the way, the chest at the bottom of the ledge (in the volcano) can be opened with the key in the hovel. After getting your sword, go to the rock wall and touch the glowing rock - the rest is easy. If you save the princess, you've got to get back to the beginning.

BATTLESHIPS

from Steven Hall

Most people have probably played Battlships at one time or another, and we have Steven to thank for transferring the popular game to the Amstrad. It provides two levels of difficulty with operation through either the joystick or cursor keys. We have tested the program successfully on both the 464 and 6128.

How it Works

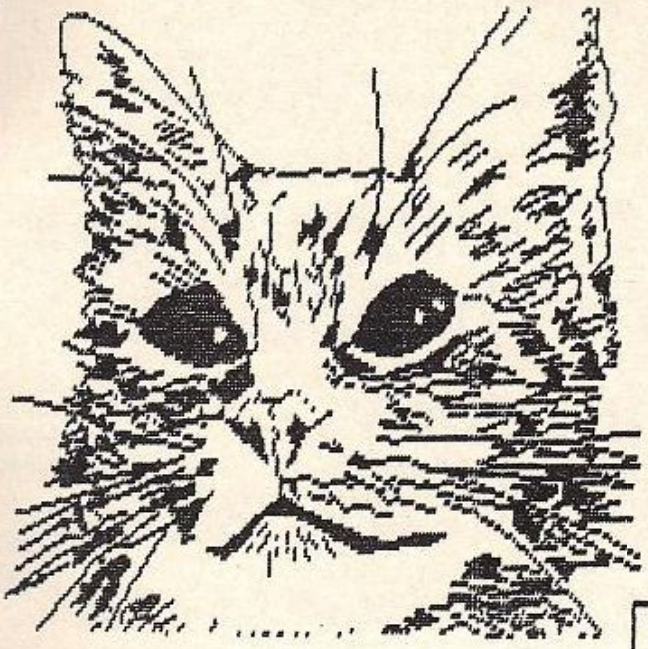
150-320	Initial Input Section, Choice for instructions, Joystick or Keyboard & Difficulty level.
320-420	Draws the Game grid.
420-570	Print ammunition & difficulty level reminder onto screen.
580-710	Prints co-ordinates onto game grid.
720-830	Draw ships onto Right Hand Side of screen.
840-1180	Handles Keyboard/Joystick input of type of ammunition & your co-ordinates.
1190-1250	Tests and prints whether co-ordinates have been used before and if there is a hidden ship at this location.
1260-1340	Erases ships on left hand side when fully destroyed.
1350-1440	Prints the results of your shot onto the grid whether hit/miss.
1450-1490	Erases a bomb when one fired.
1500-1600	Erases a torpedo when one is fired.
1610-1670	Fires a Horizontal Torpedo.
1680-1730	Fires a Vertical Torpedo.
1740-1960	This is the main routine where the computer hides the ships.
1970-2200	Symbols for ships on left hand side of screen.
2200-2350	Instructions Routine.
2360-2420	Instruction stepping routine.
2430-2540	Lose routine, also uncovers any ships not yet revealed.
2550-2670	Win routine, Plays tune and prints a message.
2680-2760	Data for win tune.
2770-2830	Lose tune routine.
2840-2870	Lose routine's tune data.

```
10 REM ******************************************
20 REM ******************************************
30 REM *****                                *****
40 REM ***** PROGRAM NAME : BATTLESHIPS     *****
50 REM *****                                *****
60 REM ***** AUTHOR       : STEVEN HALL     *****
70 REM *****                                *****
80 REM ***** DATE         : 23 OCTOBER 1986 *****
90 REM *****                                *****
100 REM ******************************************
110 REM ******************************************
120 a$=INKEY$:IF a$<>"" THEN 10
130 FOR n=500 TO 10 STEP -50:SOUND 1,n,10,15,0,0:NEXT n
140 REM
150 REM ************** INITIAL SELECTIONS *************
160 REM
170 MODE 1:PAPER 0:INK 0,14:INK 1,0:INK 2,4:INK 3,3:BORDE
R 16
180 LOCATE 10,10:PRINT "Instructions (Y)/(N)"
190 a$=INKEY$:IF a$="" THEN 190
200 IF a$="Y" OR a$="y" THEN GOSUB 2270
210 GOSUB 2010
220 CLS:LOCATE 10,10:PRINT "(J)oystick or (K)eyboard"
230 a$=INKEY$:IF a$="" THEN 230
240 IF a$="J" OR a$="j" THEN j=1 ELSE j=0
250 CLS:LOCATE 10,10:PRINT "   Select Difficulty (1)-Easy
 (2)-Hard"
260 a$=INKEY$:IF a$="" THEN 260
270 IF a$="2" THEN torp=2:dif=2 ELSE torp=4
280 FOR n=2 TO 5:a(n)=n:NEXT n:a(1)=2
290 ON ERROR GOTO 1990
300 bomb=30
310 MODE 1:BORDER 14
320 GOTO 1780
330 REM
340 REM ************ DRAW GRID ************************
350 REM
360 FOR n=(21*16) TO (640-16) STEP 32
370 PLOT n,6*16,2:DRAW n,400-16,2
380 NEXT n
390 FOR n=(6*16) TO (400-16) STEP 32
400 PLOT 21*16,n,2:DRAW 640-16,n,2
410 NEXT
420 PEN 2
430 REM
440 REM ******** BOMBS TORPS. & Diff. LEVEL ***********
450 REM
460 LOCATE 2,2:PRINT"BOMBS:";
470 LOCATE 2,24:PRINT "Difficulty Level"
480 PEN 1
490 IF dif=2 THEN LOCATE 7,25:PRINT"HARD" ELSE LOCATE 7,2
5:PRINT "EASY"
500 LOCATE 8,2:PRINT "";
510 FOR a=1 TO 3
520 FOR n=1 TO 10:PRINT CHR$(252);:NEXT n:PRINT
530 PRINT "       ";
540 NEXT a
550 LOCATE 9,8:FOR n=1 TO torp:PRINT CHR$(131);" ";:NEXT
n
560 LOCATE 9,9:FOR n=1 TO torp:PRINT CHR$(132);" ";:NEXT
n
```

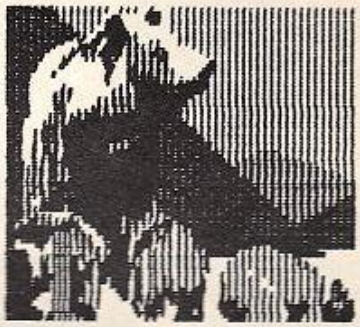
```
570 PEN 2
580 LOCATE 2,8:PRINT "TORPS:"
590 REM
600 REM ************** PRINT GRID No.'s ***************
***
610 REM
620 PEN 1
630 x=0
640 FOR N=22 TO 38 STEP 2
650 X=X+1
660 LOCATE N,21:PRINT X
670 NEXT N
680 X=10
690 FOR N=3 TO 19 STEP 2
700 X=X-1
710 LOCATE 19,N:PRINT X
720 NEXT N
730 REM
740 REM ********************* DRAW SHIPS ***************
*
750 REM
760 PEN 3
770 LOCATE 6,12:PRINT CHR$(147);CHR$(146);CHR$(145)
780 LOCATE 5,13:PRINT CHR$(135);CHR$(142);CHR$(143);CHR$(
144);CHR$(129)
790 LOCATE 6,15:PRINT CHR$(140);CHR$(141)
800 LOCATE 5,16:PRINT CHR$(135);CHR$(138);CHR$(139);CHR$(
129)
810 LOCATE 6,18:PRINT CHR$(136);CHR$(137);CHR$(129)
820 LOCATE 6,20:PRINT CHR$(130);CHR$(129)
830 LOCATE 6,22:PRINT CHR$(133);CHR$(134)
840 PEN 1
850 REM
860 REM ******************* INPUT HANDLING **************
****
870 REM
880 LOCATE 21,23:PRINT"(T)orpedo or (B)omb"
890 IF J=0 THEN 930
900 JO=JOY(0):IF JO=4 THEN A$="T":GOTO 940
910 IF JO=8 THEN A$="B":GOTO 940
920 GOTO 900
930 LOCATE 26,24:a$=INKEY$:IF a$="" THEN 930
940 LOCATE 21,24:PRINT "                    ":LOCATE 21,2
5:PRINT"                    "
950 a$=UPPER$(a$):IF a$<>"B" AND a$<>"T" THEN LOCATE 26,2
4:PRINT CHR$(7);:GOTO 880
960 REM
970 LOCATE 21,23:PRINT"Co-ordinates (x,y) "
980 IF J=0 THEN 1130
990 X=5:Y=5:FI=0
1000 LOCATE 26,24:PRINT "(";X;",";Y;")"
1010 JO=JOY(0):IF JO=32 OR JO=16 THEN FI=FI+1:LOCATE 2,8:
PRINT CHR$(7):FOR n=1 TO 60:NEXT
1020 IF JO=1 AND FI=0 THEN X=X+1
1030 IF JO=2 AND FI=0 THEN X=X-1
1040 IF JO=1 AND FI=1 THEN Y=Y+1
1050 IF JO=2 AND FI=1 THEN Y=Y-1
1060 FOR n=1 TO 25:NEXT
1070 IF x>9 THEN x=1
1080 IF x<1 THEN x=9
1090 IF y<1 THEN y=9
1100 IF y>9 THEN y=1
1110 IF FI<2 THEN 1000
1120 PRINT CHR$(7):GOTO 1140
1130 LOCATE 26,24:INPUT x,y
1140 LOCATE 21,23:PRINT"                    "
1150 LOCATE 26,24:PRINT "          "
1160 IF x>9 OR y>9 THEN GOTO 970
1170 IF bomb=0 AND torp=0 THEN GOTO 2460
1180 IF a$="T" THEN GOTO 1560
1190 IF a$="B" AND bomb=0 THEN LOCATE 21,24:PRINT "No Bom
bs Left.":GOTO 880
1200 h=1
1210 REM
1220 REM ******** HIT,MISSED,ALREADY HIT ROUTINES *******
************
1230 REM
1240 IF g(x,y)=10 THEN LOCATE 21,24:PRINT "Those Co-ordin
ates":LOCATE 21,25:PRINT"Already Destroyed":GOTO 880
1250 ENT 1,100,2,2:SOUND 1,284,150,7,0,1
1260 FOR n=1 TO 500:NEXT n
1270 IF g(x,y)=0 OR g(x,y)=10 THEN LOCATE 27,25:PRINT "Mi
ssed":ch=252:GOTO 1410
1280 SOUND 129,0:FOR n=1 TO 10:SOUND 1,584/n,10,15,0,0,1+
n:NEXT n:ch=238:n=g(x,y):a(n)=a(n)-1:LOCATE 21,25:PRINT "
Hit":IF a(n)=0 THEN LOCATE 22,25:PRINT " & Destroyed":des
t=dest+1
1290 REM
1300 REM ********* ERASE SHIP ROUTINE ******************
1310 REM
1320 IF a(5)=0 THEN LOCATE 6,12:PRINT "    ":LOCATE 5,13:
PRINT "      "
1330 IF a(4)=0 THEN LOCATE 6,15:PRINT "   ":LOCATE 5,16:P
RINT "      "
1340 IF a(3)=0 THEN LOCATE 6,18:PRINT "   "
1350 IF a(2)=0 THEN LOCATE 6,20:PRINT "   "
1360 IF a(1)=0 THEN LOCATE 6,22:PRINT "   "
1370 PEN 3
1380 REM
1390 REM ********** PRINT RESULTS ON GRID *************
1400 REM
1410 FOR d1=0 TO 1:FOR d2=0 TO 1:LOCATE 2*x+21-d1,21-2*y-
d2:PRINT CHR$(22);CHR$(1);CHR$(ch);CHR$(22);CHR$(0):NEXT
d2:NEXT d1:g(x,y)=10
1420 PEN 1
1430 IF ch=238 THEN BORDER 6:INK 0,6:FOR n=1 TO 10:NEXT n
:BORDER 14:INK 0,14
1440 IF LP=3 THEN PEN 3:GOTO 2530
```

```
1450 IF dest=5 THEN GOTO 2620
1460 IF a$="T" THEN GOTO 1520
1470 REM
1480 REM ************ ERASE USED BOMB ******************
1490 REM
1500 IF INT(bomb/10)=bomb/10 THEN LOCATE 7+(bomb-(INT((bo
mb-1)/10)*10)),INT((bomb-1)/10)+2:PRINT " ":bomb=bomb-1:E
LSE LOCATE 7+(bomb-(INT(bomb/10)*10)),INT(bomb/10)+2:PRIN
T " ":bomb=bomb-1
1510 IF bomb=0 AND torp=0 THEN GOTO 2460
1520 ON h GOTO 880,1680,1750
1530 REM
1540 REM *************** ERASE USED TORPS. **************
*
1550 REM
1560 IF torp=0 THEN LOCATE 26,24:PRINT "No Torps. Left":G
OTO 880
1570 IF torp=4 THEN LOCATE 15,8:PRINT " ":LOCATE 15,9:PRI
NT " "
1580 IF torp=3 THEN LOCATE 13,8:PRINT " ":LOCATE 13,9:PRI
NT " "
1590 IF torp=2 THEN LOCATE 11,8:PRINT " ":LOCATE 11,9:PRI
NT " "
1600 IF torp=1 THEN LOCATE 9,8:PRINT " ":LOCATE 9,9:PRINT
 " "
1610 torp=torp-1
1620 IF y=1 THEN 1700
1630 x=0
1640 REM
1650 REM ***************** HORIZONTAL TORP. ROUTINE ******
************
1660 REM
1670 x=x+1:SOUND 1,90,30,5,0,0,7:IF g(x,y)<>0 AND g(x,y)<
>10 THEN h=1:PEN 3:GOTO 1280:ELSE h=2:GOTO 1270
1680 LOCATE 27,25:PRINT "            ":IF x=9 THEN x=0:GO
TO 880
1690 GOTO 1670
1700 y=0
1710 REM
1720 REM ***************** VERTICAL TORP. ROUTINE ********
************
1730 REM
1740 y=y+1:SOUND 1,90,30,5,0,0,7:IF g(x,y)<>0 AND g(x,y)<
>10 THEN h=1:GOTO 1280:ELSE ch=252:h=3:GOTO 1270
1750 LOCATE 27,25:PRINT "            ":IF y=9 THEN y=0:GO
TO 880
1760 GOTO 1740
1770 REM
1780 REM ********************* HIDE SHIPS ****************
**********
1790 REM
1800 FOR x=1 TO 9
1810 FOR y=1 TO 9
1820 g(x,y)=0
1830 NEXT y
1840 NEXT x
1850 FOR p=0 TO 5
1860 f(p)=0
1870 NEXT p
1880 FOR s=5 TO 1 STEP -1
1890 r=INT(RND*2)+1:d(s)=r:IF s=1 THEN LET b=1 ELSE LET b
=s-1
1900 IF r=2 THEN 1940
1910 x=INT(RND*8)+1:IF x+b>9 THEN 1910
1920 y=INT(RND*8)+1:FOR l=x TO x+b:IF g(l,y)<>0 THEN 1910
:REM next*l 420
1930 NEXT l:FOR l=x TO x+b:g(l,y)=s:NEXT l:GOTO 1970
1940 y=INT(RND*8)+1:IF y+b>9 THEN 1940
1950 x=INT(RND*8)+1:FOR l=y TO y+b:IF g(x,l)<>0 THEN 1860
:REM next*1370
1960 NEXT l:FOR l=y TO y+b:g(x,l)=s:NEXT l
1970 h(s)=x:v(s)=y:NEXT s
1980 MODE 1:GOTO 360
1990 RUN
2000 REM
2010 REM ******************* INITIALISE *****************
***
2020 REM
2030 SYMBOL AFTER 129
2040 SYMBOL 129,0,0,0,7,255,87,254,252
2050 SYMBOL 130,4,4,30,147,255,245,255,127
2060 SYMBOL 131,0,56,16,56,56,56,56,56
2070 SYMBOL 132,56,56,56,56,56,56,56,16
2080 SYMBOL 133,0,1,1,3,191,255,191,0
2090 SYMBOL 134,128,192,192,192,254,255,254,0
2100 SYMBOL 135,0,0,0,0,255,127,63,31
2110 SYMBOL 136,31,63,31,31,255,117,63,31
2120 SYMBOL 137,4,142,4,4,255,85,255,255
2130 SYMBOL 138,58,59,255,255,255,171,255,255
2140 SYMBOL 139,168,249,254,254,255,85,255,255
2150 SYMBOL 140,0,1,3,1,0,1,128,71
2160 SYMBOL 141,116,40,244,249,226,252,172,252
2170 SYMBOL 142,135,71,63,61,255,255,255,255
2180 SYMBOL 143,250,251,250,171,254,255,255,255
2190 SYMBOL 144,185,186,188,188,255,255,255,255
2200 SYMBOL 145,0,0,0,48,49,162,164,184
2210 SYMBOL 146,3,231,101,241,241,243,250,171
2220 SYMBOL 147,1,0,0,7,39,17,9,7
2230 RETURN
2240 REM
2250 REM ************** INSTRUCTIONS ********************
*
2260 REM
2270 MODE 1:PRINT " In Battleships you are firing at a gr
idwhere the enemy have hidden their ships. The enemy has
hidden Five vessels whichare shown on the right hand side
 of the screen."
2280 PRINT:PRINT "The ships take a certain amount of
```

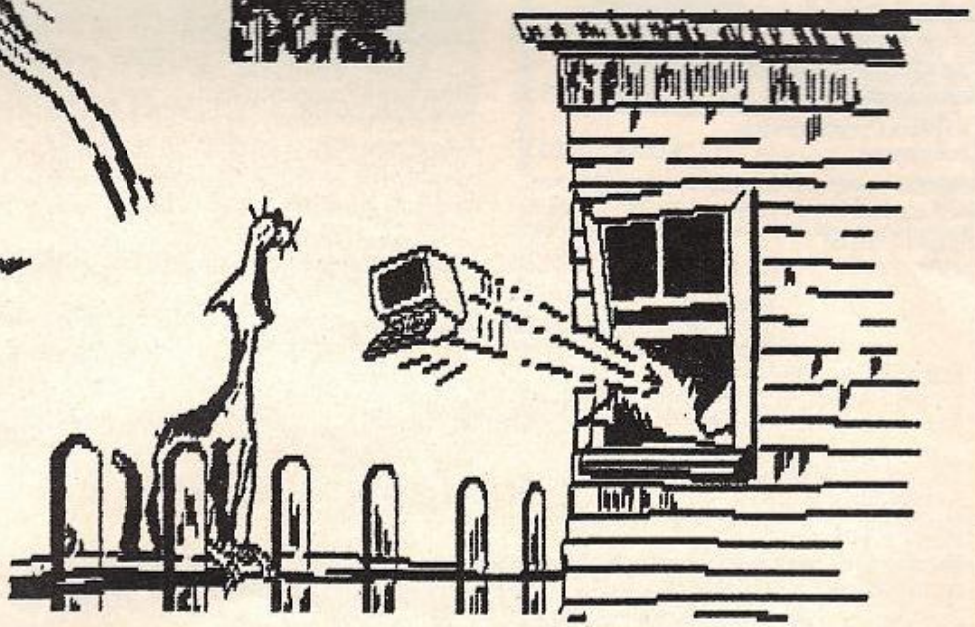
```
direct hits to sink them.
                         Cruiser..............5
                                              Destroyer.
...........4                    "
2290 PRINT "                                       Trans
port............3
                  Landing Craft........2
                                        Submarine.......
.....2"
2300 GOSUB 2420
2310 CLS:PRINT " To fire a shell you select (B)omb and  E
nter the co-ordinates,a bomb will       destroy one square
 of the grid and the  results will be reported accordingl
y"
2320 PRINT " A torpedo is fired similarly except    that
one of the co-ordinates needs to bea one,The torpedo will
 fire              perpindicular to the axis the
 co-ordinate is close to.";
2330 PRINT "A torpedo continues along a line until  it hi
ts a vessel."
2340 GOSUB 2420
2350 CLS:PRINT "When you have destroyed a ship it will  d
isappear on the left hand side.         You have 30 bombs
to destroy the enemy  and 2 or 4 torpedoes depending on t
he   difficulty level."
2360 PRINT " If you choose joystick operation you   push
left or right to select bomb or     torpedo.
                   To choose the co-ordinates you push up
 or down on the joystick and fire to set."
2370 GOSUB 2420
2380 GOTO 210
2390 REM
2400 REM ***************** INST. CONT. ROUTINE **********
****
2410 REM
2420 PRINT:PRINT:PRINT:PRINT "                (Any Key To C
ontinue.)"
2430 a$=INKEY$:IF a$="" THEN 2430
2440 RETURN
2450 REM
2460 REM ************************ LOSE ROUTINE **********
***********
2470 REM
2480 RESTORE 2960
2490 PEN 3
2500 FOR X=1 TO 9
2510 FOR Y=1 TO 9
2520 IF G(X,Y)<>10 AND G(X,Y)<>0 THEN CH=206:LP=3:GOTO 14
10
2530 NEXT Y
2540 NEXT X
2550 GOSUB 2890
2560 LOCATE 21,23:PRINT "<SPACE> / FIRE To Cont.
2570 af$=INKEY$:IF af$=" " THEN PEN 1:PAPER 0:RUN
2580 jo=0
2590 jo=JOY(0):IF jo=16 OR jo=32 THEN PAPER 0:PEN 1:RUN
2600 GOTO 2580
2610 REM
2620 REM ****************** WIN ROUTINE ***************
*********
2630 REM
2640 RESTORE 2810
2650 PEN 3
2660 LOCATE 5,13:PRINT "YOU"
2670 LOCATE 5,15:PRINT "HAVE"
2680 LOCATE 5,17:PRINT "WON"
2690 LOCATE 3,19:PRINT "CONGRATULATIONS"
2700 LOCATE 21,23:PRINT "<SPACE> / FIRE To Cont.
                                                  "
2710 READ a,b:IF a=0 THEN 2810
2720 af$=INKEY$:IF af$=" " THEN PAPER 0:PEN 1:RUN
2730 j=0
2740 jo=JOY(0):IF jo=16 OR jo=32 THEN PEN 1:paper0:RUN
2750 SOUND 1,a,b,15
2760 SOUND 1,0,1
2770 GOTO 2710
2780 REM
2790 REM ******************* WIN TUNE DATA **************
***********
2800 REM
2810 DATA 159,50,159,25,159,25,142,50,159,25,179,25,159,5
0,190,25,213,25,239,50,190,25,159,75,159,25,142,50,159,25
,179,25
2820 DATA 159,50,159,50,190,25,179,25,159,50,159,25,159,2
5,142,50,159,25,179,25,159,50,190,25,213,25,239,75,190,25
,159,75,190,25,179,50,179,25,190,25,213,50,213,50,190,25,
179,25,159,50,159,25,159,25,142,50,159,25,179,25
2830 DATA 159,25,159,25,190,25,213,25,239,50,190,25,159,5
0,159,25,159,25,142,50,159,25,179,25,159,50,159,75,190,25
,179,50,179,25,190,25,213,75,213,25,190,20,190,60,190,25,
213,25,239,75,190,25,179,50,179,25,190,25,213,20,213,30,2
39,25,250,50,239,100
2840 DATA 0000,0
2850 RUN
2860 REM
2870 REM ******************** LOSE TUNE ROUTINE  ********
**************
2880 REM
2890 READ a,b:IF a=55555 THEN RETURN
2900 SOUND 1,a,b,15
2910 SOUND 1,0,5
2920 GOTO 2890
2930 REM
2940 REM ******************* LOSE TUNE DATA ************
************
2950 REM
2960 DATA 300,100,290,100,300,20,300,100,250,110,270,110,
250,40,260,20,300,150
2970 DATA 55555,0
```



FINE ART transfered from SCREEN DESIGNER to AMX PAGEMAKER



pussycat pussycat
where have you been?



As the heading describes, the above pictures were drawn with Screen Designer, transferred to Pagemaker and then printed in draft mode on a CPB80. It took about 27 minutes to complete the printing.
Notice the 'cropped' ear of the cat - this occurs because the Pagemaker screen is smaller than the Screen Designer screen.

All the pictures are in Mode 1 except the 'cat on the fence' which is Mode 2.
They are supplied by Tony Blakemore and Carlos Pereira of the Eastern Amstrad User Group Inc.
A demonstration of Pagemaker is planned for their next meeting on Sunday, 3rd May.