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NEWS ON 4

HAPPY 21ST TO THE Z80

1997 marks the 21st Birthday of the Z80 chip used as the microprocessor in both the Spectrum and SAM (and many other computers). First launched in 1976 by Zilog, although it was not until early 1977 that first shipments were made, except to secret military users in the US that is.

When first produced it was one of the most advanced microprocessors available and quickly set new standards for the industry. Other manufactures were swift to clone the Z80 and at one time it became the most widely used CPU in the world. Now, 21 years later, it is still selling in very large numbers and looks set for many more years of sterling service.

CARETAKER WANTED

FRED Publishing are looking for a temporary 'caretaker' for its operations. Colin McDonald, boss of FRED, needs to be away quite a lot over the next few months and to avoid letting down customers he is looking for someone to handle the order processing and also the dispatch of each months FRED.

Negotiations with a couple of interested parties are already underway but Colin may still be open to other offers if you would like to make them.

EMULATION ON AMIGA

There is a new 1997 version of Speculator coming out any day now, and another ZX emulator for the Amigas, this time dubbed 'Speccylator', from Scandanavia. It apparently works well but has not yet got as many features as ZXAM or Speculator.

Lots of ZX emulators for the Amiga and MAC, together with a range of freely distributable ZX software, will be on the cover CD of the edition of Amiga Format which is due out in March.

At least Amiga owners will now have access to some decent software.

CP/M GOING FREE

CP/M, one of the granddaddies of the Disc Operating System world, may soon be available *FREE*,

US company Caldera, have purchased the rights to all the former Digital Research (DR) products from Novell (who bought out DR's interest several years ago). The deal included the superb DR-DOS 6 and Novell DOS 7 operating systems for the PC, as well as the many variants of the CP/M operating system which is of great interest to our readers as it works on Z80 based systems.

Their plan appears to be to make working versions available to users on a 90 day free evaluation system. You will then either register as a user, either for a small fee or if you fit their list of exemptions you could escape charges altogether.

The PC products are already available for download for the WWW site, CP/M is expected soon. Caldera also plan to release the source code from all the operating systems to encourage further development and to encourage more software to be written to run under them. More news as we receive it.

Credits:- Simon Goodwin, Darren Fowler.

URGENT we need your news. Anything you think other people should know about. Each item printed earns the contributor 3 months extra subscription (*please claim when next renewing*).

The Editor Speaks

Right, straight down to business this month. Contributions - no not to my retirement fund (although those would be greatfully received) but contributions to ***FORMAT***, or rather the recent lack of them. Our once overflowing files are now sadly depleted because, of late, there has not been much coming in. So, A VERY URGENT DEMAND, put pen to paper or finger to keyboard and contribute something, please!

Remember that this is a user group, and as such we rely on you, the users, to fill the pages of ***FORMAT*** each month. And don't say you have nothing to contribute - everyone has *something*. A small letter, a little hint, tip or programming item for Short Spot, a single page article or a whole series - it really doesn't matter as long as you do your little bit to help fill these pages.

Now I've published appeals for stuff in the past, some have produced results, others have not. But this appeal is a very urgent one because if it is not heeded then we may well not have enough stuff to fill ***FORMAT*** issues in a few months (bear in 'mind that there is a delay between getting an article from you and it appearing in print because of the type-setting etc.)

If anyone needs help or advice then Jenny or myself are here to give it - we want to see you in print and so we will do everything we can to help you. Don't worry too much about the English, if several of our overseas readers can manage to contribute (when English is their second, or even third, language) I'm sure that there is not one of you out there that could not write something for us. Remember that what you see in ***FORMAT*** is the finished article, so don't be put off by thinking "I can't write that well" my reply to that would be "you ought to have seen some of the articles *before* we editied them".

Please, put in a little bit of effort, just for us.

Ok, this months issue is running a bit late, I was late starting it because of illness in my family, and now as I write this I still don't have Short Spot here because John Wase is having problems with illness in his family.

As such I don't know if this issue will be back to normal size (after our usual smaller January issue) or if we may have to run without Short Spot to get the issue out to you. If we are a little small, sorry, we will be back to normal next month.

Wetherby will be just a week away by the time you get this issue, I look forward to seeing many of our Northern members there - lets make this one a real success. But also remember that the next Gloucester Show is in April - so start making arrangements to come, no excuses now - the Gloucester shows are the ones that no Spectrum or SAM user can afford to miss.

Finally this month, Jenny is still looking for more material on the Year 2000 problem with computers. If you come across anything in magazines or newspapers she would really appreciate a cutting or copy to add to her file. This is certainly becoming a popular topic of conversation in computer circles and we want to keep everybody informed, so keep your eyes peeled please.

Until next month.

Bob Brenchley, Editor.

SAM GAMES AVAILABLE FROM REVELATION

SOPHISTRY

Our latest & BEST licenced game. Originally produced for the Spectrum by CRL, and now brilliantly converted for SAM, Sophistry is a game that is big, perplexing, colourful, frustrating, musical, bouncy, and above all DIFFERENT (and it even has the Spectrum version built in so you can take a trip down memory lane).

£9-95 (£8-95 to INDUG members)

T'N'T

Written by industry mega-star Matt Round - A game packed with humour☺, colour⊕, sound♪ and *above all* **ACTION!**

Loosely based on **Bomb Jack** (the game SAM owners have most requested over the years). As well as the normal one player game, **T'N'T** has gone one better by giving you ***TWO*** player action - competing against each other, in full glorious technicolour - at the *same* time. It even has a novel feature in a SAM game - a High Score Table, how many others have that?

Avoid the meanies, collect the bonus points, Jump, Hover, Fly - what more do you want???.

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NEW **ELITE** ***NEW***

The legendry game at last available on SAM disc. Using the code of the Spectrum version, long thought the best after the original BBC version, this game is a must for everyone who loves action and adventure. Full manuals, story book and packaging.

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GRUBBING FOR GOLD - the most advanced, the most playable, the most enjoyable quiz game since the legendary Quiz Ball. They said it could not be done - they said bringing a TV quiz show to SAM would not work. Well let them eat their hearts out because YOU GOT IT....

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Now Includes FREE Copy Of DRiVER's Extras Disc 1

DRiVER's Extras Disc still available for existing users at £5.95 (INDUG members £4.95)

SCADs PD Yes, at last, we are pleased to re-release SCADs - the arcade game development system for SAM. Previously sold by Glenco at £24.95 we have now placed the software into the Public Domain so the disc costs you ***Only £2.50***. The full manual (over 200 pages) is also available for £12.95 (overseas please add an extra £1 to postage rates below because of weight)

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SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

February brings the sleet; clanking drives and PSU heat! Spring is in the air and it's Short Spot time again!

Again, there is the usual interesting array (as it were) of problems. Peter Williamson of Sleaford had one (a problem with arrays - on SAM), and solved it. It goes something like this.

During the last few weeks of 1996, Peter had been trying to develop a data file on his SAM for use as a diary for the coming year. I would have liked to have used it in the Christmas issue, 'cos that's when we all give diaries, but this letter was posted on 19th December, and the sequel on the 24th! Anyway, back to the data file for the diary! The usual way to do this is to declare a string array with 365 fields, with each field a specified length. The problem with a diary in that some days there will be a lot of entries, while on others there will be hardly anything. The ideal way would be not to have a string array, but an array of separate strings. With a string, one does not have to declare the string's length, so it can be from zero to 65520 characters long. The problem is how to generate 365 separately named strings. As a string can have numbers in its name as long as the first character is alphabetic, this means we can have strings named, say, D1$ to D365$ quite legally. The problem now is how to generate these. Peter looked for a solution through the KEYIN command, and after several hours of trial and error, the basic (basic with a small b!) method evolved.

To manipulate the names of strings by the program, you must make that string the contents of a 'host' string. In Peter's program, the host strings are A$ and B$. Having manipulated the name of the 'tenant' string, which will be D000$, with the zeros changed to some number or other, one now has to remove the 'tenant' string and replace it in the program. In SAM Basic, KEYIN does just that. Peter finds that KEYIN is rather a temperamental command: one has to get the syntax just right, otherwise the dreaded error message appears, "not understood". He spent a lot of time satisfying KEYIN's syntax!

KEYIN is not very quick. Type in the 'diary' program; then select the '0' option on the menu. It'll take almost two minutes to generate the 365 separately named strings! Once they are done, it allows one to enter data into any specified string, erase the data or display the contents of any string. Peter suggests the program probably looks a bit weird, but it works! Never mind, Peter; it's still a lot shorter than trying to type 365 lines of data in! Just a minute, though! Look carefully: there aren't enough strings for a leap year! It's a good thing the program's still being developed to allow searching files for given keywords, and so on, isn't it! C'mon, get typing!

```
10 REM 1997 DIARY FILE
20 REM PROGRAM NAME "DIARY"
30 MODE 3: CSIZE 8,10: BORDER
```

```
    1: PAPER 1: PEN 15: CLS
 40
 50 PRINT "ENTER:-"
 60 PRINT : PRINT """0"" FOR F
    ILE GENERATION"
 70 PRINT : PRINT """1"" TO EN
    TER DATA"
 80 PRINT : PRINT """2"" TO CL
    EAR A FIELD"
 90 PRINT : PRINT """3"" FOR S
    INGLE/MULIFIELD DISPLAY"
100 PRINT : PRINT """9"" TO SA
    VE FILE AND PROGRAM"
110 GET A: CLS
120 IF A=0 THEN GENERATE
130 IF A=1 THEN ENTRIES
140 IF A=2 THEN CLEARFIELD
150 IF A=3 THEN SCANFIELDS
160 IF A=9 THEN SAVIT
170 GOTO 10
180
190 DEF PROC ENTRIES
200 INPUT #2"SELECT DAY NUMBER
     FIELD ";DN
210 INPUT #2"ENTER NEW DATA ";
    N$
220 LET A$="LET D000$=D000$+N$
    "
230 LET B$="PRINT D000$"
240 LET B$(8 TO 10)=STR$ DN
250 LET A$(6 TO 8)=STR$ DN
260 LET A$(12 TO 14)=STR$ DN
270 KEYIN "290"+A$
280 KEYIN "310"+B$
290 LET D4  $=D4  $+N$
300 CLS
310 PRINT D4  $
320 PAUSE 1000
330 END PROC
340
350 DEF PROC SAVIT
360 SAVE "DIARY" LINE 10
370 END PROC
380
390 DEF PROC CLEARFIELD
400 INPUT #2"SELECT DAY NUMBER
     FIELD FOR CLEARANCE ";DN
410 LET A$="LET D000$="""""
420 LET A$(6 TO 8)=STR$ DN
430 KEYIN "440"+A$
440 LET D4  $=""
450 END PROC
460
470 DEF PROC SCANFIELDS
480 INPUT #2"SELECT START DAY
    NUMBER FOR DISPLAY ";S
490 INPUT #2"SELECT FINISH DAY
     NUMBER FOR DISPLAY ";F
500 CLS
510 FOR DN=S TO F
520 LET A$="PRINT D000$"
530 LET A$(8 TO 10)=STR$ DN
540 KEYIN "560"+A$
550 PRINT INVERSE 1;"DAY NUMBE
    R ";DN
560 PRINT D3  $
570 NEXT DN
580 PAUSE 1000
590 END PROC
600
610 DEF PROC GENERATE
620 LET Q=700
630 FOR X=1 TO 365
640 LET Q=Q+1
650 LET A$="LET D000$="""""
660 LET A$(6 TO 8)=STR$ X
670 KEYIN STR$ Q+A$
680 NEXT X
690
1070 END PROC
```

Trouble with keen programmers is that this always happens... I find there's another, later letter. What have we here? Well, the sequel, posted on Christmas eve - ***FORMAT*** never sleeps!

Peter writes that he has now added several improvements to his program. In the GENERATOR procedure, Peter found it unnecessary to have KEYIN write the generated strings to separate lines, which, of course, extended the program length enormously, and used up lots of RAM. After experimentation, he found that KEYIN can repeatedly write to the same line. Although the program above *does* work, and don't forget it, it can, on the basis of this finding, be improved by deleting lines 620 LET Q=700 and 640 LET Q=Q+1. Line 670 now reads KEYIN "690" +A$. Lines 701-1065 are, now, also redundant, as one might expect.

Instead of merely generating empty strings, Peter has coupled this program with another one he had that generates a calendar. String array C$(365,35) carries the day, date and month of the year. He now loads this data into the empty strings as follows:

```
LET A$="LET D000$ = C$(000)
LET A$(6 TO 8) = STR$ X
LET A$(14 TO 16) = STR$ X
KEYIN "690"+A$
```

Incidentally, Peter's been doing some timings, and reckons that the KEYIN routine must be the slowest acting command in SAM Basic. Loading an empty string 365 times took just under 2 minutes; loading strings with content took considerably longer. While this little exercise using KEYIN to generate strings from within a program has been fascinating, it's also been time consuming and frustrating. "Does the SAM C language have this facility, for it would be well worth finding a way of cutting time here," asks Peter.

Well, could those C afficionados perhaps drop us a line on how (if at all) this could be done with SAM? Many thanks, Peter, and we look forward to some interesting sequels.

Staying with SAM (guess that's what's been sent in), we have an appeal to our readers. Vic Taylor of Weymouth, Dorset, asks about the expansion memory and RAMdiscs, and my knowledge of this is poor. Vic writes, asking for an explanation of the way the 1Mb expansion memory works. He understands that if one sets up a RAMdisc, then the expansion memory is automatically used first.

Vic wants to know if there are any other ways in which the extra memory is automatically used, and are there ways in which the memory can be used for Basic programming. Vic has a 512k SAM with a 1Mb expansion pack, and he normally uses MasterDOS plus MasterBasic 17. Oh, and at 79 and learning fast, he currently can't cope with machine code or C.

Well, I'm no expert on this! Anyone care to send letting us know something about the intricacies of the 1Mb RAMpack?

Next, still with SAM, Mr P. Ahamed Basheer of Abu Dhabi, a familiar name to many of our readers, writes with a program that is also useful to DISCiPLE and PLUS D users, too. Wow; everyone catered for. I like it.

Here we are; a 512k SAM program which needs MasterDOS to run. The system disc provided with SAMDOS2 has a backup routine which lets you back up an entire disc in 4 swaps. The routine is slow, since it accesses only one sector at a time, and the backup normally takes around 13 minutes. By making use of the multi-sector access capability of MasterDOS, the whole backup can be done in about 3 minutes. It still needs 4 swaps, though, and some bright spark should be able to reduce the time to about 2 minutes if 600 sectors are dealt with at a time, rather than the 400 sectors Miles has used. Once you've done it, the program can be used to back up DISCiPLE and PLUS D discs as well, so Spectrum owners don't lose out if they've got a SAM as well. I wonder if it would backup IBM PC-compatible discs, or, for that matter, Discovery discs. Worth trying.

```
  5 REM Sector Copier for Sam
  7 REM Needs MasterDOS
  9 REM By P.A.Basheer,Abu Dha
    bi
 10 CLEAR 32767:
 15 mast
 17 READ AT 1,0,1,40000,400
 35 targ
 40 WRITE AT 1,0,1,40000,400
```

```
 49 mast
 50 READ AT 1,40,1,40000,400
 55 targ
 60 WRITE AT 1,40,1,40000,400
 65 mast
 70 READ AT 1,128,1,40000,400
 75 targ
 80 WRITE AT 1,128,1,40000,400
 85 mast
 90 READ AT 1,168,1,40000,400
 95 targ
100 WRITE AT 1,168,1,40000,400
110 PRINT "Copy finished."
200 DEF PROC targ
250 PRINT "Insert target disc.
    .Press a key.": PRINT : PA
    USE 0
300 END PROC
420 DEF PROC mast
450 PRINT PEN 6;"Insert Master
     disc..Press a key.": PAUS
    E 0
480 END PROC
```

Many thanks, Ahamed, and good to hear from you again.

Finally, here's a program for the Spectrum (there, you thought I'd forgotten you, didn't you), from our old friend Miles Kinloch of Edinburgh.

Have you ever written a piece of prose about something abstruse, filed it, and then forgotten where you put it? Miles has a solution - 'Sector Search'. This will look through selected sectors of a disc for a given sequence of bytes. So you can find that elusive piece of prose about left hand threaded double-wicket sprockets with no trouble at all. More, even than that! It will replace each occurrence of the chosen bytes with an alternative sequence of the user's choice.

Beware, though. This is potentially a very destructive program. As it is irreversible, it could have disastrous consequences! Use a duplicate disc rather than taking the risk of losing any important data!

When used with BetaDOS, the program exploits the latter's multisector LOAD @/SAVE @ facilities, making it run considerabley faster than with G+DOS. To take advantage of this, BetaDOS owners should omit the REMs in the lines indicated. Although these commands are in conditional statements, the syntax itself can't be entered under G+DOS.

The 'search$' will be found even if split between two sectors, provided the sectors concerned are *consecutive*. Catering for these circumstances actually accounts for much of the program's complexity, and is also the reason for the search being carried out in two stages. In the first of these, every complete track is examined; then in the second, the last sector of each track is loaded for comparison with the first sector of the next, since the two sectors over which the string is split may belong to adjacent tracks, a possibility that needs to be allowed for.

An interesting (and slightly wicked) thought which occurred to Miles was that you could use the program on itself, to change all the instances of 'disk' to 'disc'!

Note, by the way, that the routine is case-sensitive, so that you would have to do both upper and lower case!

Here's the program.

```
 10 REM   DISK SECTOR SEARCH
 20 REM   (PD) By Miles Kinloch
 30 REM
 40 BORDER 0: PAPER 0: PEN 7: C
    LEAR 38999: GOSUB 1000
 50 INPUT "READ INSTRUCTIONS (Y
    /N)? "; LINE i$: IF i$="Y"
    OR i$="y" THEN GOSUB 780: C
    LS : GOTO 70
 60 IF i$<>"N" AND i$<>"n" THEN
     BEEP .8,-15: GOTO 50
 70 INPUT "ARE YOU USING BETADO
    S (Y/N)? "; LINE b$: IF b$<
    >"Y" AND b$<>"y" AND b$<>"N
    " AND b$<>"n" THEN BEEP .8,
    -15: GOTO 70
 80 LET b=(b$="Y" OR b$="y")
 90 INPUT "USE WHICH DRIVE? ";d
    : IF d<>1 AND d<>2 THEN BEE
    P .8,-15: GOTO 90
100 INPUT "HOW MANY FILES IN DI
    RECTORY"'"FORMAT? ";f: IF f
    <80 OR f>780 OR f/20<>INT (
    f/20) THEN BEEP .8,-15: GOT
    O 100
110 GOSUB 760: INPUT "LOOK FOR
    (T)EXT OR (N)UMBERS? "; LIN
    E t$: IF t$="T" OR t$="t" T
    HEN LET text=1: POKE 23658,
    0: GOSUB 450: GOTO 140
120 IF t$<>"N" AND t$<>"n" THEN
     BEEP .8,-15: GOTO 110
130 LET text=0: GOSUB 550
140 GOSUB 760: CLS : PRINT "INS
    ERT DISK THEN PRESS ANY KEY
    .": PAUSE 0
150 REM SEARCH ROUTINES
160 CLS : PRINT "SEARCH PHASE 1
    "; AT 6,0;"OCCURRENCES: 0":
     DIM w(9,2): LET count=0: P
    OKE 40005,(5101-m)-256*INT
    ((5101-m)/256): POKE 40006,
    INT ((5101-m)/256): POKE 40
    024,m: POKE 40047,9: POKE 4
    0072,9: POKE 40074,19: POKE
     40075,180: POKE 40077,37:
    POKE 40078,180
170 FOR n=f/20 TO 207: IF n=80
    THEN LET n=128
180 PRINT AT 3,0;"CHECKING TRAC
    K ";n
190 IF b THEN REM LOAD @d;n,1,4
    1000,10: REM Un-REM if you
    have Betados. (Statement do
    esn't pass syntax with G+DO
    S.)
200 IF NOT b THEN FOR s=1 TO 10
    : LOAD @d;n,s,41000+512*(s-
    1): NEXT s
210 LET v=41510: FOR c=1 TO 9:
    LET w(c,1)=PEEK v: LET w(c,
    2)=PEEK (v+1): LET v=v+512:
     NEXT c: RANDOMIZE USR 4004
    1
220 LET a=0
230 LET p=USR 40000
240 IF p AND text THEN LET coun
    t=count+1: PRINT AT 6,13;co
    unt: FOR a=1 TO m: POKE p+a
    -1,CODE c$(a): NEXT a: GOTO
     230
250 IF p AND NOT text THEN LET
    count=count+1: PRINT AT 6,1
    3;count: FOR a=1 TO m: POKE
     p+a-1,y(a): NEXT a: GOTO 2
    30
260 IF a THEN RANDOMIZE USR 400
    66: LET v=41510: FOR c=1 TO
     9: POKE v,w(c,1): POKE v+1
    ,w(c,2): LET v=v+512: NEXT
    c: IF b THEN REM SAVE @d;n,
    1,41000,10: REM  Un-REM for
     Betados.
270 IF a AND NOT b THEN FOR s=1
     TO 10: SAVE @d;n,s,41000+5
    12*(s-1): NEXT s
280 NEXT n
290 PRINT AT 0,13;"2": POKE 400
    05,(1021-m)-256*INT ((1021-
    m)/256): POKE 40006,INT ((1
    021-m)/256): POKE 40047,1:
    POKE 40072,1: POKE 40074,35
    : POKE 40075,164: POKE 4007
    7,37: POKE 40078,164
300 FOR n=f/20 TO 206: IF n=80
    THEN LET n=128
310 PRINT AT 3,0;"CHECKING TRAC
    K ";n;"/";STR$ (n+1) AND n<
    >79;STR$ 128 AND n=79
320 IF b THEN REM LOAD @d;n,10,
    41000,2: REM Un-REM for Bet
    ados.
330 IF NOT b THEN LOAD @d;n,10,
    41000: IF n<>79 THEN LOAD @
    d;n+1,1,41512
340 IF NOT b AND n=79 THEN LOAD
     @d;128,1,41512
350 LET w(1,1)=PEEK 41510: LET
    w(1,2)=PEEK 41511: RANDOMIZ
    E USR 40041
360 LET a=0
370 LET p=USR 40000
380 IF p AND text THEN LET coun
    t=count+1: PRINT AT 6,13;co
    unt: FOR a=1 TO m: POKE p+a
    -1,CODE c$(a): NEXT a: GOTO
     370
390 IF p AND NOT text THEN LET
    count=count+1: PRINT AT 6,1
    3;count: FOR a=1 TO m: POKE
     p+a-1,y(a): NEXT a: GOTO 3
    70
400 IF a THEN RANDOMIZE USR 400
    66: POKE 41510,w(1,1): POKE
     41511,w(1,2): IF b THEN RE
```

```
M SAVE @d;n,10,41000,2: REM
 Un-REM for Betados.
410 IF a AND NOT b THEN SAVE @d
;n,10,41000: IF n<>79 THEN
SAVE @d;n+1,1,41512
420 IF a AND NOT b THEN IF n=79
 THEN SAVE @d;128,1,41512
430 NEXT n
440 RANDOMIZE USR 56: STOP : RE
M Ensure interrupts are ena
bled before returning to BA
SIC.
450 GOSUB 760: INPUT "ENTER TEX
T TO FIND (2-255 CHARS)"' L
INE a$: IF LEN a$<2 OR LEN
a$>255 THEN BEEP .8,-15: GO
TO 450
460 CLS : PRINT "LOOKING FOR TE
XT:"'a$''''
470 LET m=LEN a$: DIM c$(m)
480 GOSUB 760: INPUT "REPLACE W
ITH? "' LINE g$: IF LEN g$>
m THEN BEEP .8,-15: GOTO 48
0
490 PRINT "REPLACING WITH:"''g$
500 GOSUB 760: INPUT "CORRECT (
Y/N)? "; LINE u$: IF u$="N"
 OR u$="n" THEN CLS : GOTO
450
510 IF u$="Y" OR u$="y" THEN GO
TO 530
520 BEEP .8,-15: GOTO 500
530 LET c$=g$: FOR a=1 TO m: PO
KE 40099+a,CODE a$(a): NEXT
 a
540 RETURN
550 DIM x(255): DIM y(255)
560 CLS : PRINT "SEQUENCE OF BY
TES TO SEARCH FOR:"''
570 FOR m=1 TO 255
580 GOSUB 760: INPUT "ENTER EAC
H NUMBER IN TURN (JUST ENTE
R ON ITS OWN TO FINISH)"' L
INE z$: IF NOT LEN z$ THEN
GOTO 620
590 LET z=VAL z$: IF z<0 OR z>2
55 THEN BEEP .8,-15: GOTO 5
80
600 LET x(m)=z: PRINT z;",";
610 NEXT m
620 LET m=m-1
630 IF m<2 THEN CLS : PRINT "AT
 LEAST 2 NUMBERS, PLEASE!":
 BEEP .8,-15: GOSUB 760: PA
USE 70: GOTO 560
640 GOSUB 760: INPUT "CORRECT (
Y/N)? "; LINE u$: IF u$="N"
 OR u$="n" THEN GOTO 560
650 IF u$<>"Y" AND u$<>"y" THEN
 BEEP .8,-15: GOTO 640
660 CLS : PRINT "INPUT THE BYTE
S TO REPLACE WITH:"''
670 FOR a=1 TO m
680 GOSUB 760: INPUT "ENTER EAC
H NUMBER IN TURN (JUST ENTE
R ON ITS OWN TO FINISH)"' L
INE z$: IF NOT LEN z$ THEN
GOTO 720
690 LET z=VAL z$: IF z<0 OR z>2
55 THEN BEEP .8,-15: GOTO 6
80
700 LET y(a)=z: PRINT z;",";
710 NEXT a
720 GOSUB 760: INPUT "CORRECT (
Y/N)? "; LINE u$: IF u$="N"
 OR u$="n" THEN GOTO 660
730 IF u$<>"Y" AND u$<>"y" THEN
 BEEP .8,-15: GOTO 720
740 FOR a=1 TO m: POKE 40099+a,
x(a): NEXT a
750 RETURN
760 IF LEN INKEY$ THEN GOTO 760
770 RETURN
780 CLS : PRINT BRIGHT 1; PAPER
 1; PEN 7;"      INFO AND I
NSTRUCTIONS      "''
790 PRINT "This utility lets yo
u search a  disk for any gi
ven text string  or sequenc
e of numbers, replac- ing t
his with another string at
every occurrence. The progr
am  searches the whole dis
k, apart  from the director
y sectors, and if using Bet
ados you will be  asked h
ow many catalogue entriesth
e disk has been formatted f
or."''
800 PRINT "The search-and-repla
ce works on a Procrustean b
asis; in other  words, the
 replace string can  never
 be longer than the search
string, and if shorter, wil
l be filled out with spaces
 (if text)or zeros (if numb
ers) to make itup to the sa
me length.": GOSUB 830
810 CLS : PRINT "The program co
uld be useful if  you have
many files all needing exac
tly the same change - just
 put them all on one disk a
nd do them in bulk."''
820 PRINT "The search string ma
y not be  found if it hap
pens to be split between tw
o NON-CONSECUTIVE  secto
rs in a file: this could be
the case if you have erased
  anything on the disk a
nd then  subsequently save
d onto it. The best solutio
n would be first to transfe
r the files of interest  to
 a blank, newly-formatted d
iskwith SAVE...TO, then per
form thesearch on this new
disk."
830 PRINT #0; AT 1,22;"ANY KEY>
>>": PAUSE 1: PAUSE 0: RETU
RN
1000 REM CODE POKER
1010 RESTORE : LET c=0: FOR a=40
000 TO 40090: READ d: LET c
=c+d: POKE a,d: NEXT a
1020 IF c<>11420 THEN BEEP .8,-1
5: PRINT "ERROR IN DATA - P
LEASE CHECK.": STOP
1030 DATA 243,17,40,160,1,236,19
,205,82,156
1040 DATA 19,11,120,177,32,247,2
51,201,197,213
1050 DATA 33,164,156,6,1,26,190,
32,9,19
1060 DATA 35,16,248,193,225,225,
251,201,209,193
1070 DATA 201,243,1,254,1,197,62
,9,33,40
1080 DATA 162,17,38,162,193,197,
237,176,35,35
1090 DATA 61,32,247,193,251,201,
243,1,254,1
1100 DATA 197,62,9,33,19,180,17,
37,180,193
1110 DATA 197,237,184,27,27,61,3
2,247,193,251,201
1120 RETURN
9999 SAVE d1"SECTSEARCH" LINE 10
```

Many thanks, Miles.

Some of the more astute of you will have noticed that this Short Spot is a little less varied than most, and some of you will have sent in pieces that haven't been printed. Unfortunately, we have had considerable and serious illness in the house for the past several months, and it's been even worse than usual for the past few weeks. I've therefore cheated with a few fairly big pieces to keep the column going this month! My apologies for omissions. I have high hopes that things will be better soon. We'll hope so!

So please keep all your snippets coming to me; although I didn't use them all, I will do next month, and without them I can't put a column together. Please send them to:-

John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
Worcs,
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See you next month.

FORMAT

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TALKING C

Part 4.

By:- Martin Fitzpatrick.

Welcome once again, to another instalment of SAM C. As I promised you last month, we will kick off with a nice little game.

LIGHT CYCLES (SORT OF)

Well, once again its time for the monthly program, and again I hope it includes most of what I've explained in this months article. Once again the program is game based, so sorry to anyone who's not particularly into 'that sort of thing'. Most SAM owners will have played a *Light Cycles* style game at one point or another, and that is what this months program is based around. It involves 'driving' your point around the screen attempting to stay alive for as long as possible - by avoiding driving into your own path or any other object on screen. Lastly, before I start, there are a few functions and header files used in this program which have not yet been described so sorry about that. However, where that has happened I'll describe those functions as far as required for an understanding of the program, leaving the full explanation till a later article. Right, enough of that, lets get started.....

```
#include "stdio   .h"
#include "graphics.h"
#include "system  .h"
#include "misc    .h"
#include "stdlib  .h"

char pal[16]={0,4,12,65,67,73,75
,86,116,116,94,94,124,124,127,12
7};
char xp,yp,xd,yd;

main()
{
unsigned int count;
char end,ky;
xp=128;yp=100
yd=0;xd=0;
count=0;
```

This first section of the program is, as always, used to set up variables and load header files that are needed by the program. As mentioned above, you might not be able to recognize some of the names of these header files, but description so the functions used from them will be given when required. There are four variables set up as global in this program: xp, yp, xd, yd. These are used to hold x position on the screen, y position on the screen, x direction of the point and y direction of the point. Inside the main() function variables are set up for looping, and the global variables shown earlier are reset to the required values - placing the point near(ish) to the middle of the screen and setting it not to move. The 'ky' variable is used to hold information about the current key pressed. Last time, I mentioned that variables can be set at compile time using a statement such as `char xp=0;` however, when I tried this it refused to work correctly. You might like to try this yourself as if it does work the code produced will be smaller and more efficient - not that it will affect much in this program, but its good to get into the habit. The count variable holds the time the player has managed to remain alive (by not crashing) in the game and can be treated as the score. The global array variable pal[ ] holds the values of the palette from 0-15. The palette provided is a grey/green scale, but any other palette can be substituted.

```
allpalette(pal);
pen(15);
plot(xp,yp);

create();
do{changed();}while((yd+xd)==0);
```

This short section is used to set up the playing area. The current palette is changed to the values in pal, using the allpalette function. The colour data is passed using a pointer (which I mentioned briefly earlier), and that is why no index (number of point in array) is required. Like I said earlier it really is quite complex, and so I'll come back to it later (maybe next time). The pen colour is then changed to 15 (which is bright white in this palette) and a point is placed on the screen at the current xp and yp co-ordinates (128,100). The create() function is then called and then screen is set up.

The next loop calls the changed() function (which reads the keyboard and updates the direction variables 'xd' and 'yd'). The values of these two variables are added together and if the result is equal to 0 then loop restarts.

The values are shown in this table:-

	X Direction	Y Direction	Result
Up	0	1	1
Down	0	-1	-1
Left	-1	0	-1
Right	1	0	1

So, because a diagonal direction is not allowed the only possible result of xd+yd when a direction key is pressed is either -1 or +1, which both cause the loop to exit (because they are non-zero values).

```
do {

pause(1);
ky=inp(254);
if(ky!=31)changed(ky);
end=update();

at(0,0);
printf("%d",count);
count++;
}while (!escape()&&end==0);
}
```

This section forms the main part of the program and is based around a DO loop which calls the various functions at the points required in the program. So, firstly the loop is set up, the loop conditions are left to the while command at the end, because whether or not the loop ends depends on a variable which is changed inside the loop. The position of the loop conditions do not actually have any effect in this example because either way, the loop would stop repeating the loop when the conditions are met, however it is much more logical to write the loop in this way, and it may well increase performance.

NOTE: The only real time you need to place the loop control variables at the beginning of the loop is when you want the conditions to be checked *before* the loop runs through the first time. Once the loop has started it has little effect.

The pause in the next line (for 1/50th of a second) is basically a setting to alter the speed of the program - without this pause the program runs too fast. The variable 'ky' is assigned the current value of port 254 through the function inp( ) - which is equivalent to the Basic IN command. Port 254 holds the value of the current key pressed - this isn't simply an ASCII value however, and this requires some explanation - except the keys I have used all produce separate values, with the value 31 being produced when no key is pressed.

The value stored in the 'ky' variable is then checked against 31 to see if a key is being pressed, and if this is the case the value stored in 'ky' is passed on to the changed( ) function. The variable 'end' (which is the loop control variable) is then set to the result of the update() function (see later).

The next block of the program is used to display the 'score' which is held in the count variable. First, the print position

is changed to 0,0 (top left hand corner) and printf prints the value of count in decimal at this point. The variable count is then incremented (to give the effect of increasing the score every loop). It's worth noting that the last two lines can be shortened to:-

```
printf ("%d", count++)
```

and this is how you would see it written in a professional C program.

The while command then checks that the escape key isn't pressed (using the escape( ) function from the stdio.h file) and that 'end' is equal to 0. If both these conditions are true (i.e. if escape is not pressed while the variable end is set to 0) the loop repeats.... otherwise the loop exits and the program ends. Lastly the main function is ended with the } symbol.

```
changed(char c)
{
if(c==30){yd=1;xd=0;}
if(c==29){yd=-1;xd=0;}
if(c==23){xd=-1;yd=0;}
if(c==27){xd=1;yd=0;}
}
```

The first function (other than main obviously!) is the changed (char c) function which is used to change the direction of your dot. The variable 'c' is passed to the function when it is called and holds the value obtained from the inp(254); in the main function. The reason the value is passed in this way (instead of simply calling the inp(254) function again) is that it requires fewer calls to the function - which improves speed. Also, C sometimes modifies repeated calls to a particular variable that has not changed by either placing it in a register or optimising the code - this also brings improved speed and is worth remembering when writing your own code. NOTE: Unless there are memory restrictions, always store values that are used frequently in variables (possibly initialized with the register command).

The four values 30, 29, 23, 27 relate directly to the keys A, Z, N, M (Up, Down, Left, Right), and are used to work out the desired current direction. For example, if the key N is pressed, the value at port 254 (and so the variable c) is 30. The variable 'xd' is then assigned -1, and 'yd' is assigned 0, indicating and upwards movement.

```
update()
{
static char col;
yp+=yd;
xp+=xd;

if(getpixel(xp,yp))return 1;

pen((col++)&15);
plot(xp,yp);
return 0;
}
```

The update function (unsurprisingly) updates your point on the screen, and also performs the process of collision detection. The first line sets up a char variable called 'col', which is used to hold the current pen value (0-15). The value is also set up with the static modifier which means that the variable maintains its value between calls of this function, along with any changes that are made to it - much like a global variable except this variable is available only to this function. The next lines increase 'yp' by 'yd' and 'xp' by 'xd' - which makes the point continue in the direction of xd, yd. This allows for constant movement while no keys are pressed as the computer continues to update the points position.

In the next line the pixel at xp,yp (current position) is read. This is done here because if the point was plotted first, the value of the current point would always equal more than 0 (except when the pen is equal to 0!) Again, the value of getpixel could be placed in a variable, except in this case there would be no real advantage. If the dot has collided with another point on screen the function returns 1, which is placed in the variable end. This has the effect of quitting the main loop when a collision occurs.

The next bit is a bit complicated, and features something not yet covered - binary logic (*wahey, sounds fun!*).... We already know that the pen( ) function is used to change the colour of the pen. In the brackets there is another set of brackets which contains an instruction to increment a. So, so far this line is equivalent to col++; pen(col); Next we add &15 (which is the binary logic part)....

This is linked with all that stuff I garbled last month about the way numbers are stored e.g. 8 Bit numbers are made up of eight bits, each representing its own value. These bits are set to on or off, and if set to on their value is added to the total. For example looking at the table below:-

128 64 32 16 8 4 2 1

the value 128 would be represented by 10000000, and the bit pattern 10101010 would be equal to 170 decimal. So, if you look at the bit pattern for the number 15:-

128 64 32 16 8 4 2 1
0 0 0 0 1 1 1 1

you can see, it is arranged in one continuous block from 8 to 1 and so covers all the numbers between 15 and 0.

Back to the program.... The & operator between 15 and the variable col, means that a binary AND is performed on these two numbers. The logic table below explains how this works:-

AND	X	Y	Result
	1	1	1
	1	0	0
	0	1	0
	0	0	0

So, each bit in the current value of col, is checked against the bit pattern of 15. Because in the bit pattern of 15 only the values below 16 are set to 1. This has the effect of discarding all the bits above this point in col. The end result being that the maximum value of col is 15 and the minimum is 0, even if the value is constantly incremented (as in this example) reducing the need for repetitive if statements which slow down the program dramatically.

I'll explain that in more detail, along with all the other operators, some other time, because I'm not sure I can cope just now! Anyway, back to the program (that is what we're here for after all!)

Underneath the pen statement, the update( ) function is finished off with the plot command, which places a point on screen at the current point xp, yp and then returns 0 into the end variable to prevent exiting of the program.

```
create()
{
unsigned char a,b;

for(a=0;a<176;a+=16){
for(b=0;b<240;b+=16){

box(8+b,8+a,2,2);
box(10+b,10+a,2,2);

}
}
```

This small function is called at the beginning of the program to set up the screen. Two variables are initialized for the for loops, and then the loops are started. They are embedded giving the effect of the outer loop incrementing only after the inner has completed. In this case the effect is a screen of boxes that moves from bottom to top, in rows which move from left to right. Lastly, the ".c" files have to be loaded:-

```
#include "graphics.c"
#include "system  .c"
#include "misc    .c"
#include "stdlib  .c"
```

That's the program finished for this month, time to dash off to the post office to catch the post. Again, if you have any questions, comments, or program ideas then you can contact me through the ***FORMAT*** office and I'll see what I can do.

Loki
The Machine That Never Was.

By:- David Thomas.

We all know the ZX Spectrum, in one form or another it was the biggest selling home computer in the world for many years. We also know of the ZX81 and even the ZX80 which preceded Uncle Clive's masterpeice. But have you heard of the Loki? No, you haven't? Not surprising, very few have. You see it never made it to the market place, it was one of Uncle Clive's dreams that never saw the spotlight of public aclaim. Well here, for those of you that are interested, is at least part of the story.

As I said, the Loki was never actually released, though Amstrad made use of some of the keyboard designs (the Spectrum +2 was a slightly modified Spectrum 128 in what was effectively a Loki case).

At the time of the Amstrad deal, Sinclair was well advanced with development plans for a new Spectrum micro - the SuperSpectrum. Designed to replace the Spectrum 128 and retail at under £200, the SuperSpectrum was code-named 'Loki' after the Norse god renound as a 'gamesplayer'. It was to have been an entertainment software computer with graphics and sound the likes of which had never been seen before even at five times the price.

Inspiration for the SuperSpectrum undoubtedly comes from Commodore's incredible Amiga machine. The key to the power of the SuperSpectrum (as with the Amiga) was to lie in its special custom chips. Loki was to have two sophisticated chips handling the video screen (Rasterop device) and sound synthesis, both with direct memory access. This was to give the machine the potential to produce incredibly fast 3D graphics manipulations and sound of hi-fi quality.

But where the Amiga cost over £1,500 at the time, LOKI was to scrape in at a little under £200 on the shop shelves.

The trick was that Loki was still an 8-bit machine. In fact, it even had a Spectrum 48K compatible mode if you wanted it. The processor it was to have used was a special up-rated version of the Spectrum's Z80A. Called the Z80H, the new chip ran twice as fast, at an incredible 7 MHz. At this speed there was time to provide a fast interrupt handler that keeps pace with the video display while still leaving time to run programs faster than the Spectrum 48K.

But the real power of the micro came from the two custom chips. Because they had direct access to the memory during time which would otherwise be wasted (a process known as DMA) large amounts of screen data can be moved about at speeds that the CPU couldn't manage, even if it had nothing else to do.

To match the CPU, fast-access RAM was required, and LOKI was to have plenty of that, being equipped with two 64K banks each made up of two 256K-bit chips. One bank was connected to both the CPU and custom-built Rasterop video hardware and normally held the

video information and sound waveform tables. This was part of the secret of the faster display, when the Z80 was accessing the other bank, the video memory was free for the custom chip to do with as it wanted.

Bank switching enabled the 16-bit address bus access to all the RAM. An extension (4-bit) addressing system was to allow a total address space of 1 Mbyte. Two banks were, in normal operation, occupied by ROMs, but the rest can be paged with RAM and there was to be a mode where all of the memory could be RAM to allow for other operating systems like CP/M to be loaded (see below).

One feature that was to mark out LOKI as different from every Sinclair micro before was the keyboard (as I've said, very similar to the +2's) suitable for the fastest of typists. With word-processing then fast becoming such a major attraction to people who would not consider buying a computer for games, a good keyboard was considered essential. Another change was the lack of keyword legends associated with 48K Spectrum Basic. The Basic was to have been a development of the QL's SuperBasic and an additional method of entering information will be via a light pen/barcode reader which may even have been made available as standard.

The machine was, as I've said, to be Spectrum 48K compatible. Inside LOKI were faithful copies of the old 48K ROMs. The video hardware could switch to the old format and the CPU clock slowed down to 3.5Mhz. With the same cassette interface available, it seemed likely then that a high proportion of Spectrum software would run in this special compatible mode. However, you would not have been able to write Spectrum Basic programs as the old Basic Rom was hidden from the user, though programs which use it were able to access it when loaded. There were also no plans to include the sound chip from the 128, so true 128 compatibility seemed unlikely.

The display quality relied on using around 53K of RAM for the screen. Even at 7Mhz a Z80 could not have manipulated this amount of data quickly enough to give reasonable animation, so the custom-designed graphics Rasterop chip was essential. It transferred 8-bit data in the video area from one address to another, and in the process could carry out logical functions using data from the destination and source addresses and its own masking registers.

Animation and selective screen scrolling becomes an automatic process with the CPU only sending a few instructions during each line interrupt.

Another idea taken from the Amiga is line drawing hardware - LOKI was capable of remarkable 3D wire-frame graphics. At the time the project was dropped, the software for this was already very advanced - a program like Elite would have been fantastic on LOKI. The screen mode that was considered to produce the best games was to have a 256 by 212 pixel resolution and 64 colours. A single byte was used for each pixel, leaving two bits spare for the Rasterop chip to use for 'bobs' (no, not a reference to the editor, it officially stood for Blitter OBjectS but they were often refered to as Bouncy Objects) that gave sprite-like animation and collision detection for multi-coloured graphic shapes.

The same principle of RAM sharing was to allow sound synthesis of a high quality as waveforms were stored in memory. Sound output, produced by an 8-bit digital to analogue converter, was piped through a TV speaker, stereo headphones or fed to a hi-fi system. An optional sound sampler was to have become available to record any sound and use it as a musical 'voice'. A music keyboard for LOKI was also a possibility as an add-on and in this area Sinclair set their sights on the Atari ST.

While it's easy to be blinded by this SuperSpectrum's startling graphics and sound qualities there were two other features which could have been just as important to the machine's success.

With the extra memory, program storeage was going to be important. Although LOKI was to have supported cassette tape (well most software companies at the time had heavy investment in tape duplication technology) another of Uncle Clive's pet projects 'Softcards' were looked on to become the new medium for program storage, giving instant program loading for users and piracy protection for software houses. These credit card size ROM cards were to hold a program of up to 1 Mbyte in size and they were going to be cheap to manufacture. Strangely there was no plan to upgrade the Sinclair Microdrives to work with LOKI.

The other feature which would have attracted a lot of users was the built-in CP/M operating system - add a controller and disc drive and LOKI would have become an Amstrad beater, running many of the same utilities as the Amstrad CPC and PCW computers.

The list of connections to the new machine was, for its time, very impressive. A fully buffered Z80 expansion bus; RGB, composite and TV video outputs; provision for a later floppy disc system; serial printer port; twin joystick ports; light pen; network and cassette ports; Midi In, Out and Thru; stereo sound input, output and Walkman-style headphone jack sockets were also there.

In addition, a genlock input which could lock LOKI's video hardware to video recorders, Laservision optical disc players and frame grabbers.

LOKI was not designed to equal the Amiga for speed but it was to come pretty close and could have been able to produce very similar effects at a fraction of the cost.

When Amstrad took over the Spectrum the LOKI project was dropped. Sinclair was himself not able to produce and market another machine due to the terms of the contract with Amstrad (although he did find a loop-hole that led to the Z88) and he was unable to get Amstrad to buy the rights - in fact they thought they already had the rights until they read the contract more closely.

Had it reached the market, at least four years before SAM did, it would have kept Sinclair at the top - where he always belongs. Sad that the Norse god of mischief did not see the light of commercial day in 1986, as it was we had to wait until the SAM Coupé came along to see many of the ideas from LOKI made available to the public.

"You're right, the fault you reported is basic. It's called 'not plugged-in'."

2nd NSSS

Saturday 22nd February '97

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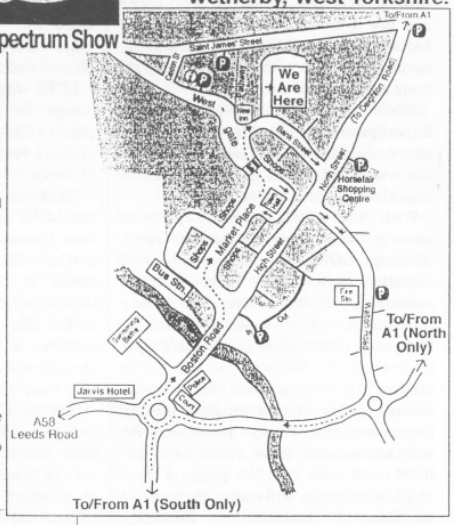
Due to the success of our last show, on the 22nd of February the second Northern SAM & Spectrum Computer Show will take place in Wetherby, a town between Leeds and York and just off the A1. All the major SAM and Spectrum companies are expected to be there including **Format**, **Fred**, **Crashed**, **Alchemist Research**, **Sintech**, **Persona**, **SD Software**, and many more. There's also our very popular *Sell, Swap & Buy* stand. Doors open to the public at 10:30am and close at 4:30pm.

GETTING TO THE SHOW

For people coming North, simply take the first turning for Wetherby, then follow the map on the right (you'll end up at the left-hand roundabout).
If you're travelling South, however, you should take the junction which is signposted for the **A58 to Leeds**. Once at the roundabout which is on the left-hand side of the map above, take the exit to Wetherby (which should also have an NSSS sign). Once over the bridge, take the first **left**. Follow this road round, go over the pedestrian crossing. Once past the crossing, turn **right** onto Bank Street. The hall is on the left, with a driveway leading up to the entrance.



PARKING

There is limited parking behind the hall itself, but there are many other car parks, most of them free, within a few minutes walk from the hall. Turning right after the bridge will take you to a free 200-space car-park, and the two car parks which are to the left of the hall on the map are also free. All of these car parks are within a minute's walk from the hall.

Entry is charged at £1.50 for adults, under 10's are free. Advance tickets available for £1.00 from the address below. Doors open 10:30am - 4:00pm.

For stand bookings or information on public transport, places to stay, etc. then write, enclosing an SSAE, to: ***NSSS, 123 Potternewton Lane, Chapel Allerton, Leeds, LS7 3LW.***

CP/M The Sleeping Giant

By:- Darren Fowler.

This is the first article I've ever writen for a magazine. So, although Bob has promised to do his best to edit the article into shape, I would like to appologize in advance if my ability to put things down on paper is not quite as lucid as other.

CP/M was one of the very early operating systems designed for use on microcomputers. There are at least three answers to the question "what does CP/M stand for?" *Control Program for Microcomputers* is the most generally accepted answer, but I have also seen *Control Program for Microprocessors* and *Control Program/Monitor* given in books and magazines. Even Gary Kildall (the original author of CP/M) has been known to give two different answers.

Anyone who has used DOS on a PC will soon get the hang of CP/M because, in many ways, the first versions of DOS back in the early 80s were straight steals from CP/M.

CP/M will soon be more freely available, this is because a company called Caldera, based in the USA, purchased the rights to all the former Digital Research (DR) products from Novell and in September last year announced that the source code and files for CP/M would be released for non-profit uses during the first quarter of 1997.

Until now developers have had to either buy the rights to use CP/M on their machines, or alternatively produce a clone which was 'nearly' CP/M but not quite.

CP/M is a very valuable tool for our computers - simply because it runs (in one form or another) on just about all Z80 based computers and on a lot of non-Z80s as well. There are versions produced for the Amstrad CPC and PCW ranges (and this is where there is the greatest interest in the British CP/M scene), the Spectrum+3 and SAM. The SAM version, PRO-DOS Lite is still available from B.G.Services for £12.50 (it comes with a manual on disc so you can print it out yourself).

There is a fantastic amount of software written for CP/M, although it is true to say that there are so many different implementations of CP/M that actualy finding a peice of software to run on your particular system may not prove as easy as it at first sounds. However, your efforts will be rewarded if you keep trying.

There is a CD disc now being shipped in the USA. It contains over 19,000 files with executable programs, source code, documentation, and other materials. The publishers have trawled the bulletin boards of the world to come up with masses of items, some of which would be very difficult to track down any other way. They say there is the entire personal collections of several leaders in the CP/M community contained on the CD. You'll find:-

Assemblers, compilers, editors, code libraries, programming tools, disc utilities, word processors, spreadsheets,

calculators, printer drives, modem and Comms software, archive and compression tools, BBS software (both for users and operators).

There are also re-types of articles from user's group journals and other publications, some games, a mix of educational software and lots of help files on many different aspects of CP/M and the computers it runs on.

The CD also includes CP/M emulators and other tools for working with CP/M files under DOS, OS/2, and Unix. Many programs not only include the documentation but also complete source code.

Programs for all different computers are on the disc: Kaypro, Osborne, Commodore, Amstrad, Starlet, and others. The disc comes with an MSDOS 'view' program which allows you to view, decompress, or copy files to your disc. It's fully BBS'd with description files compatible with popular MSDOS BBS programs.

The cost is $39.95 plus $10 for airmail overseas. For more details I would advise sending a quick line to:-

Walnut Creek CDROM,
1547, Palos Verdes,
Suite 260,
Walnut Creek,
CA 94596,
USA.

As I said before, CP/M has been around for a long time and has been implemented on lots of computers. One of the disadvantages of this is that there are several disc formats used. I think if I give you each in turn you will have something to refer to when it comes time to convert a program from one system to another.

First, the format used by CP/M 1.4 discs. CP/M 1.4 was designed to work with 8" 250k discs which are laid out in the following way:-

77 tracks in total.
26 sectors per track.
128 bytes per sector.
Software skewing.
2 reserved tracks.
2 directory blocks (1k each) giving 64 directory entries.
240 1k data blocks, numbered 2-241.

The software skewing means that the sectors are not laid out on the track in the form 1, 2, 3, etc. Instead they are laid out in the order: 1, 7, 13, 19, 25, 5, 11, 17, 23, 3, 9, 15, 21, 2, 8, 14, 20, 26, 6, 12, 18, 24, 4, 10, 16, 22. This allows for some processing to be done between reading one sector and the next. On both the Spectrum (DISCiPLE/PLUS D) and SAM there is no skewing of the sectors on native format discs as the machines are considered fast enough to read sectors in sequence.

The reserved tracks will normally contain an image of CP/M 1.4 which is used when the system is rebooted. It can therefore be deduced that CP/M 1.4 fits in 6.5k (remember that back in the 70s that was quite a big bit of code for a micro).

The CP/M 1.4 directory only has one type of entry:-

Status. 1 byte, 0 = File exists, 229 = File deleted, 128 = File exists and is hidden. (This last feature was undocumented and does not exist in later versions of CP/M although it does in some clones).

Filename. 8 characters.

Filetype. 3 characters. The characters used for these are 7-bit ASCII.

Extent counter. 1 byte. If a file grows above 16k, then it will have multiple

directory entries. The first entry has Extent counter = 0, the second = 1, etc. the range is from 0 to 31, allowing files up to 512k. CP/M 1.4 only allows 256k discs anyway.

Reserved. Two bytes, both set to 0.

Number of records. 1 byte. (1 record=128 bytes) used in this Extent. If it is 128, this Extent is full and there may be another one on the disc. File lengths are rounded up to the nearest 128 bytes.

Allocation. 16 bytes. Each byte contains the number of a 1k block on the disc. If any byte is zero, that section of the file has no storage allocated to it (ie it does not exist). For example, a 3k file might have allocation 5,8,90,0.... - the first 1k is in block 5, the second in block 8 and the third in block 9 (which is the last because it is followed by a byte with zero in it).

It is true to say that you will not come across 1.4 discs very often (I've only ever had one 5¼" disc in that format). However, the information may, one day, be just what you needed to work out how a program in an old book or magazine actually worked.

~ ~ ~ ~ ~ ~ ~ ~

CP/M 2.2 works with a much larger range of discs than CP/M 1.4. The disc statistics are stored in a parameter block (the DPB), which contains the following information:-

Spt. 2 byte word. The number of 128-byte records per track

Bsh. 1 byte. Block shift. 3 = 1k, 4 = 2k, 5 = 4k...

Blm. 1 byte. Block mask. 7 = 1k, 15 = 2k, 31 = 4k...

Exm. 1 byte. Extent mask, see below.

Dsm. 2 byte word. Number of blocks on the disc - 1

Drm. 2 byte word. Number of directory entries - 1

Dabm. 2 bytes. Directory allocation bitmap. The 16 bits are used to indicate which blocks of the disc are used for the directory.

Cks. 2 byte word. Checksum vector size, 0 for a fixed disc, otherwise the number of directory entries divided by 4, rounded up.

Off. 2 byte word. Offset, number of reserved tracks. These reserved tracks will contain an image of CP/M 2.2, used when the system is rebooted. Discs can be formatted as data only discs, in which case they have no system tracks and cannot be used to reboot the system.

The CP/M 2.2 directory has only one type of entry:-

User number. 1 byte. 0-15 (on some systems, 0-31). The user number allows multiple files of the same name to coexist on the disc. A user number of 229 means the file is deleted.

Filename. 8 characters

Filetype. 3 Characters. The characters used for these are 7-bit ASCII. If the top bit of the first character is set then the file is read-only. If the second bit of the first character is set then the file is a system file (this corresponds to 'hidden' on other systems).

Extent counter. 2 byte word. An extent is the portion of a file controlled by one directory entry. As with 1.4, if a file takes up more blocks than can be listed in one directory entry, it is given multiple entries. The formula is: Entry number = ((32*high byte)+low byte) / (Exm+1) where Exm is the extent mask value from the Disc Parameter Block.

Reserved. 1 byte. Set to 0.

Number of records. 1 byte. (1

record=128 bytes) used in this Extent, low byte. The total number of records used in this Extent is calculated by: (Extent counter & Exm) * 128 + Number of records. If this is 255, this Extent is full and there may be another one on the disc. The & in the equasion means that Exm (from the DPB) is logically ANDed with the Extent counter. File lengths are only saved rounded up to the nearest 128 bytes.

Allocation. 16 bytes. Each Allocation byte is the number of a block on the disc. If an number is zero, that section of the file has no storage allocated to it. For example, a 3k file might have allocation 5,6,8,0,0.... - the first 1k is in block 5, the second in block 6, the third in block 8. Allocation numbers can either be 8-bit (if there are fewer than 256 blocks on the disc) or 16-bit (stored low byte first).

You will see from this that the new format of CP/M 2.2 allowed the use of much bigger disc, as well as the creation of data only discs where no space was wasted with storing a copy of CP/M.

~ ~ ~ ~ ~ ~ ~ ~

Next time, I will give you the layouts for the remaining versions of CP/M, including the Amstrad one.

See you then.

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Spectrum 128K RAM-PAGEing

Part 2.

By:- Paul Wallace.

Last month I introduced you to the way in which the 128K Spectrums handle their Paged-RAM system. This month I want to continue with:-

MACHINE CODE PROGRAMMING AND THE EXTRA RAM

Machine code programmers must approach the extra RAM in the 128K Spectrums completely differently. There is no RAM disc as far as machine code is concerned, just a number of 16K RAM 'pages' which can be interchanged in the memory area from 49152-65536.

Unlike using the extra RAM from Basic, 128K (and +2, +3 and +2A) machine code programmers can look at the extra RAM in exactly the same way, as the method for switching RAM pages into memory at 49152 is the same for all 128K Spectrums. There are 8 RAM pages in total which make up the 128K of memory. Some of the pages are used for certain purposes however, like page 5 which is usually switched in at location 16384 (4000hex) and is used as screen memory. Page 2 is usually switched in at 32768 (8000hex) and is used by Basic as data storage as is page 0 which is switched in at 49152 (C000hex).

On the +3/+2A a chunk of page 7 is used by +3DOS for storage.

To the run-of-the-mill Basic programmer the RAM pages are completely 'transparent' and will be of no real direct use except if he uses the RAM disc which uses the RAM pages as storage. However, to the machine code programmer, the facility of having much more memory available that can be 'paged' in and out at will is very useful.

Switching different RAM pages into locations C000h-FFFh (49152d-65536d) is a simple easy task and doesn't take up too much space or processor time. The following assembly program shows how easy it is to switch between the eight RAM pages:-

```
LD A,17 ; Number in accumulator
     must equal 16+page number.
     In this case page 1.
LD BC,32765 ; Prepare for switch
OUT (C),A ; Perform switch
LD (23388),A ; Keep BANKM system
     variable up to date.
RET ; End.
```

Once a RAM page has been paged in you can store machine code, or for example a screen. You could then switch the page out by using the same routine as above but with a different page reference in the accumulator. Once another page has been switched in, although the data you put into the previous page has 'vanished', by re-paging that RAM page you can access all the data you put in it once again.

This technique or RAM page switching is well used in Spectrum games programming, with many games now coming in 128K versions. The programmers now use the RAM pages to store extra machine code that would either previously been left out or would have been included only in a tape-based multi-load game.

64K RAM ENVIRONMENTS

The +3 is unique among the Spectrum family in that it may have an entirely RAM environment with no ROM present at all. This RAM only environment provides a contiguous 64K of readable and writeable memory from 0 to 65535. This 64K environment hasn't been put to use that much though with only Locomotive Software's CP/M Plus operating system (to my knowledge) using true 64K paging. The advantage of this environment is that if your machine code programs do not need the ROM routines of ROM 3 (the 48 Basic ROM) or any of the others for that matter, you can completely lock them out and thus freeing the space. However, the complete lack of ROM routines means you must write your own routines for things like screen handling, printer driving, etc.

Unlike 'normal' paging which uses port 32765 (7FFDhex) the I/O port used for 64K environment and ROM switching is port 23399 (1FFDhex). In the scope of this article, the only bits of the port we are interested in are bits 1 and 2. Page 190 of the +3 manual gives details of the other bits, but in order to tell the I/O port we wish to use a 64K RAM paging we need to make sure that bit 0 is set to 1 (which controls ROM/RAM switching).

The 64K environment is to some extent user definable, with a choice of 4 RAM page configurations to choose from. The table at the top of the page shows the various configurations.

The pages indicated are in sequence from O to 65536 in 16K blocks. Programmers would be wise to note that if they wish to use time critical routines, some of the RAM pages are in contended memory where they share time with the video circuitry, thus slowing the effective clock frequency from the norm of 3.55MHz to 2.66MHz. Pages 4 to 7 are contended, while pages 0 to 3 are uncontended and so are more preferable to time critical code. Programmers wish to use the screen must also note that the 0,1,2,3 configurations doesn't have page 5 or page 7 available for screen memory, but is much faster as a result. However, the 4,5,6,7 configuration makes two screens available, but is slower because of this. Programmers using the 4,7,6,3 configuration must also remember to select screen 2 so that RAM page 7 becomes usable screen memory.

Writing code to work in a 64K environment can be a nasty business at the best of times and is not advised as the ideal introduction to RAM paging to a beginner. The method of creating code to run in your 64K environment is as follows.

Firstly, use an assembler to make assemble your code into normal RAM, and if everything is okay, reassemble it to address 0. You must remember that the RST 56 routine is needed so make a space in your code for it.

Now add a piece of code to move your code to the bottom page, i.e.

```
DI
LD A,bottom page of RAM configur
     ation ; this will be 16, i.
     e. page 0 - remember 16+pag
     e number) or 20, i.e. page
     4); or 28 - to switch in sc
     reen 2 in the 4,7,6,3 confi
     guration)
LD BC,32765
OUT(C),A
LD HL,start of your code
LD DE,49152
LD BC,16384
LDIR
LD BC,8189
LD A,page number disc on/off; ie
     4,5,6,3 configuration with
     disc off is 5.
OUT (C),A
EI
JP start
```


As a demonstration, use 20 for the bottom page, 0 (zero) for HL and 5 for the actual page number. That will set up a simplified ghost copy of ROM which you can muck about with.

And with that I will leave you with a couple of extra utility programs that you may find useful.

The first is a 'RAM Disc Erase' routine.

PROGRAM 3

```
 10 REM RAM Disc Erase
 20 CLEAR 49151
 30 PRINT "RAM Disc Catalogue:"
    :PRINT
 40 CAT !
 50 INPUT "Do you really want t
    o erase all these files?";
    LINE A$
 60 IF A$="N" OR A$"n" THEN STO
    P
 70 POKE 23388,23
 80 DIM A$(255,10)
 90 LET COUNT=0
100 LET F=59815
110 LET COUNT = COUNT+1: FOR N=
    1 TO 10
120 IF PEEK (F+1)=0 THEN LET CO
    UNT=COUNT-1 : GO TO 150
130 LET A$(COUNT,N) = CHR$ PEEK
     (F+N)
140 NEXT N
150 IF F>60390 THEN GO TO 170
160 LET F=F +20: GO TO 170
170 FOR N=1 TO COUNT
180 ERASE ! A$(N,1 TO 10)
190 NEXT N
200 PRINT "ALL FILES ERASED!"
210 STOP
```

Explanation: After displaying the catalogue in the normal way (e.g. CAT !), line 70 switches in RAM page 7 (16+7=23). RAM page 7 contains all the filenames of the files on the RAM disc. These names are then read into the array A$. Once done, the loop from line 170 to 190 erases all the files in turn.

Now to a similar routine that renames files:-

PROGRAM 4

```
 10 REM File Renamer
 20 CLEAR 49151
 30 PRINT "RAM Disc Catalogue:"
    : PRINT
 40 CAT!
 50 POKE 23388,23
 60 DIM A$(10):DIM B$(10):DIM C
    $(10)
 70 INPUT "Enter file to rename
    :";LINE A$()
 80 INPUT "Enter new name for "
    +A$()+":";LINE B$()
 90 LET F=59815
100 FOR N=1 TO 10
110 IF PEEK (F+1)+0 THEN GOTO 1
    50
120 LET C$(N)+CHR$ PEEK (F+N)
130 NEXT N
140 IF C$=A$ THEN GOTO 170
150 IF F>60390 THEN GOTO 220
160 LET F=F+20
170 FOR N=1 TO 10
180 POKE F+N,CODE B$(N)
190 NEXT N
200 PRINT "File Renamed!"
210 STOP
220 PRINT "File not found"
```

Explanation: Once again, after displaying the catalogue, RAM page 7 is switched in by line 50. You are then asked to enter the filename of the file you wish to rename and the new name to wish to give it. The routine then reads each filename in the catalogue and if it matches with the contents of A$() then a jump is made to line 170 where a loop renames that file. If a match is not found, line 150 makes a jump to line 220 where a suitable message is displayed.

THE END

Well, it is for now anyway, hope you found something useful in these two articles. I will be back sometime in the future (all being well) with an article on the memory layout of the SAM.

See you then.

Uni-Dos Corner

By:- Henk van Leeuwen. Edited by:- Adrian Russell.

Once more into the breach dear friends... Sorry this corner has been missing for so long but, I must admit, the response from readers has not been forthcoming (you lazy lot you) so I've had to buckle down and get some more UNI-DOS bits together myself.

Still, here it is, another CREATE file for you users of UNI-DOS, another exciting step forward for you all.

With this CREATE file it is possible to ERASE CREATES which are already in memory. It is neccesary to load this CREATE first because it will erase backwards.

The syntax is ERASE @.

```
        ORG 60000
;ERASE @
Start   DEFB 1 ;only one syntax
        DEFB 210 ;code for ERAS
      E
        DEFW Erase_len
L_erase CP "@" ;code 64
        RET NZ ;reject if wrong
        RST 40
        RST 24
        DEFB 13 ;SYN.END
        LD HL,(23635) ;start of
     Basic
        PUSH HL
; get the start of Basic and
; save it on the stack
        DEC HL ;this is the cha
     racter value
        DEC HL ;see below
        DEC HL
; length byte from the CREATE
        LD A,(HL)
; low byte in C from length
        LD C,A
        INC HL
        LD A,(HL)
        LD B,A
; high byte in B from length
        INC BC
; find total length
        INC BC
        INC BC
        POP HL
; start Basic program from stack
        SBC HL,BC
; find new start address
        RST 16
        DEFW 6632
; call the clear space routine
; at 6632 (#19E8) in main ROM.
        RST 24
        DEFB 14 ;COM.END
Erase_ln EQU $-L_erase
```

And again the DATA statements for a Basic poker program if you really need them.

```
350 DATA 1,210,29,0,254,64,192,
    239
351 DATA 223,13,42,83,92,229,43
    ,43
352 DATA 43,126,79,35,126,71,3,
    3
353 DATA 3,225,237,66,215,232,2
    5,223
354 DATA 14
```

When finished typing this program save it as:-

```
SAVE d**USR _code"USR 60000,33
```

Now, lets do roughly the same thing, but in a different way. The advantage with this program is that it gets rid of all CREATES in memory. This program is an EXECUTE file rather than a CREATE as we have seen so far in UNI-DOS Corner.

EXECUTE files are loads and executed, they are not extensions to Basic. Once used it would need to be loaded again if you want to use it a second time. See the UNI-DOS manual for more details.

OK, here is the source for the routine:-

```
        ORG 60000
        LD HL,(23635)
;Address of start of Basic
        LD DE,23755
;new Basic address
        AND A
        SBC HL,DE
        LD B,H
        LD C,L
;length from CREATEs
        LD HL,23755
        RST 16
        DEFW #19E8
;clear and reclaim space
        RET
```

And again the DATA statements.

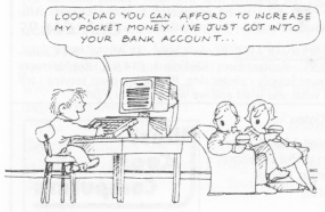
```
600 DATA 42,83,92,17,203,92,167
    ,237
601 DATA 82,68,77,33,203,92,215
    ,232
602 DATA 25,201
```

When you have finished typing the program save it as:-

```
SAVE d**ERASE_CR " X,60000
```

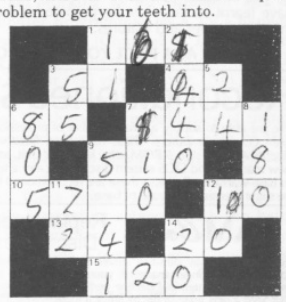
The 60000 address is only the one that the routine is saved from, it is not the one that the routine is loaded into when you use it.

Right, that is all for this time, thanks for reading. I will end with a plea for some contributions from readers please, just send them to Adrian via the ***FORMAT*** office.



PUZZLE ? SPOT ?

We have had many letters asking for the return of Puzzle Corner which we used to run a few years ago, it seems a lot of you like to have something to keep your brain cells ticking when you can't get at the computer. So, in an effort to please, here is a little Number Square problem to get your teeth into.



Across

1. 15 across plus forty-one
3. 1 down plus forty
4. 3 across minus nine
6. 1 down plus seventy-four
7. 2 down plus one
9. 3 across times ten
10. Four times 2 down
12. Millimetres in a centimetre
13. Months in two years
14. Millimetres in two centimetres
15. Minutes in two hours

Down

1. Digits 11 rearranged
2. Minutes in a day
3. Five times 1 down
5. Hours in a day
6. Five times 1 across
7. 3 down times two
8. Minutes in three hours
9. 10 across minus 119
11. 13 across plus forty-eight
12. 11 down minus sixty-two
14. 5 down minus four

The answer will appear next month. So, the big questions, is it too hard, or too easy, and do you want more - let us know what you think.

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The advanced computer that retains a user friendly appeal which makes even the beginner feel right at home. An easy to learn Basic and disc operating system (no messing with slow tapes here) will allow you to do things you never thought possible before. Your SAM comes with a very easy to read manual and everything you need to get started - it even has some pretty impressive demo software for you to run, just to give you a few ideas for starters.
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We are able to supply a small number of professionally reconditioned SAM Coupé computers. These have been fitted with a modern style disc drive, a version 3 ROM, new keyboard unit, and are supplied with new manuals and DOS system disc. They carry a full 90 day full return to base warranty. Because these are reconditioned machines there may be slight blemishes to case or base.

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Both types are available in either kit form or ready assembled. For the kit you will need screwdriver, soldering iron, solder and a reasonable level of soldering skills. All you need for the assembled version is a screwdriver. Full fitting instructions are given and the only other thing you need is a standard PC type disc drive from your local supplier (cost about £20 to £25).

If you have any doubts about which type of interface you need, or any questions about the drive fitting in general, then please give the FORMAT hotline a ring on 01452-412572 and they will be pleased to help you.

	Kit Form	Assembled
Internal Disc Interface Type 1 (without 1772)	£19.95	£29.95
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INTERFACES

These interfaces work with both the SAM élite and the SAM Coupé unless otherwise stated.

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West Coast Computers

YOUR LETTERS

Dear Editor,

In a past issue of ***FORMAT*** a reader requested help in getting 'Peking' to work on SAM. I had hoped to see a reply in ***FORMAT*** as to how this could be done, as it's my wife's favourite game as well. Any help would be appreciated.

Yours sincerely, M.C.Bastin.

Well we got a good response last time, so could someone please help Mr Bastin, either with a working copy or, better still, an article on how to convert the program. I'm sure there will be lots of others interested. ***Ed.***

Dear Editor,

This is the first time I am writing a letter to you. I have just made my first subscription to your excellent magazine, a few months ago. But I have all your issues since the beginning (I bought them with a +2, an RGB monitor and some other stuff for just about 30,000 drachmas). My first +2 was bought in 1986.

I am desperately looking for a video grabber for my Spectrum. I have searched all over my country but nothing. The only clue I have found was, that someone down in Athens had one. No names, not a thing. I would be really grateful, if you could show me any way to put up an end in this six years old 'Quest for Videoface' (or ROBO). (Hey! by the way, I can make an adventure game using the adv.creator).

The funny thing is that my friend George Siougas (he has joined the army) asked Romantic Robot if they would sell the rights to someone else. But nothing. I hate people who just a few years ago, were making fortunes by using the Spectrum's publicity and now they just don't give a dime.

I am working as an animator and a computer programmer on a TV Channel here in Greece (Channel 6). I would also like to ask if there is a genlock which I can use for real video titling. (Not just to pass the Speccy's screen on a SVHS tape). Is there any possibilities of using an Amiga genlock with the help of the composite video signal which my Speccy has.

All these years I have created some really interesting artspots with the help of the magnificent Art Studio 128K. The disc contains a few of them. Copy freely and if you can use them as a Clipart disc, I look forward to see some of the screen$ meet the lights of publicity.

Could you put an advert for me about a video digitizer for my Spectrum. No bother about the price. Finally, I have a strange problem with my Disciple. After some time of using it, when it starts to getting hot, strange crashings and things like start to come up. I am sure it isn't my Speccy's problem. I have tried on 2 +2s and one +128K. (The crashes appear more often to 128K than 48K). I am afraid to send it for a service, because I have read just enough in your letters pages about people who never get their interfaces back. If you have had any other situations like mine, could please answer back.

Well, somewhere here I have to stop. I hope I will see some of these lines in one of 'Your Letters' pages.

Keep up the good work and I believe

that all of us will enforce you. May the force be with you. (Star Wars is waiting for me on my +2. After all I hate X-Wing on my 586).

Yours sincerely, Anestis Koutsoudis (Spectro-Fanatic on the loose).

Well Anestis, lovely to hear from you. I've put your request for a digitiser in the small ads so that anyone who has one for sale can get in contact - hopefully you will find one soon. I don't know of a genlock device but I'm sure if there is one our readers will soon point us in the right direction.

It was nice to see the artwork you sent on disc, if I can I will get printouts of a few of the screens and print them in ***FORMAT*** sometime - it is a long time since anyone sent anything like this in and it make a pleasant change.

The DISCiPLE problem is an old one. The root of the problem is that the case is plastic and does not allow enough cooling of the voltage regulator inside the DISCiPLE. This is made worse when the Spectrum sits on top (hot air rises of course) and being in a warmer climate than our's also does not help the situation. As to how to cure it? Well moving to a colder country may not suit you, so the best advice is to do anything you can to cool things down - I had one DISCiPLE that I used to run without its case to keep it a little cooler. If you have anyone with electronics experience then you could get them to check the voltage regulator on the DISCiPLE, some start cutting out at a lower temperature than others. ***Ed.***

Dear Editor,

I need to use my SAM Coupé to print out cards for a party card game of my invention (Spacetrek), so I will have to change my printer for one that can print text in B/W or possibly in colour directly on to card.

Can you advise on hard and software please?

Some years back there was talk of a disc interface for the Spectrum. Is there any chance of it being revived? Perhaps a DIY kit? I would gladly fork out just for instructions on how to build.

I never buy 'shoot em ups' as they are always too fast for me, and I have wondered why programmers don't start the games dead slow and thn monitor the player's progress and up the speed accordingly, perhaps with random variation.

Yours sincerely, Richard Appleton.

Printer choice is very much down to personal preferences, so it is very difficult to give advice on that. Few printers will handle card unless it is quite thin, the thing to look for is as straight a paper path as possible, if the card has to bend then you have problems.

The PLUS D replacement was dropped when Blue Alpha went down. They were building the interface for us and without spending large sums of money to recover the PCBs that had been made, the project died with them. The real problem though was not the PCBs, these could have been redone, but with the PAL chips inside. We did not ourselves have access to the programming logic for the PALs and so, unless someone could work out the curcuit that the PALs replace, it was a non-starter.

And I could not agree with you more on the games front, my feelings exactly. ***Ed.***

Dear Editor,

Please renew my membership from the February 1997 issue, my old number was D3585 and if possible or if it is of any help to you then please feel free to use, continue with this number, if you wish.

I would like to take this opportunity to say how much I have missed the magazine the past few months, and to say how sorry I am to have left it so long before renewing.

May I also thank you and everyone

involved for the SAM conversion of 'Elite', and for the splendid Gloucester shows. I have attended every one so far and will continue to do so if you renew my membership.

For myself, a Sunday show would be better as I have to take a day off work on the Saturday to be there, and as a result I then have less money to purchase what I want. Though I do realise I am probably in the minority on this issue, and that it is not worth the risk as long as the Saturday shows continue to be well attended, it is just a personal view.

Your sincerely, Ken Pascoe.

Your membership number is your's for life Ken, we don't reuse them. And if, as in your case, renewals arrive a little late, we always back-date and send out the missed issues so you can catch up.

There has been a couple of letters about a Sunday show, what do other people think - we will go with the majority (not surprisingly) so which should it be Saturday or Sunday? ***Ed.***

Dear Editor,

Congratulations on an excellent first issue of FORMAT PC.

I am currently using a Spectrum, SAM and Laptop PC.

The majority of my interest - say 95% is on SAM, the laptop being used solely for reasons of portability.

I don't intend to become a PC person, but I will still be interested enough to purchase FORMAT PC.

Keep up the good work.

Your sincerely, K.Powley.

Thanks Mr Powley, glad you like it. ***Ed.***

Dear Editor,

Please find here the address of company called Rakewell Ltd., they are computer consultants who can help with using Z88's (and other computers). They also sell Z88's and both software and hardware to go with them. They also do newsletters, the one I have is issue 13 of the Z88's and issue 2 of the PC's.

Right, the address is: Rakewell Limited, 24, Putnams Drive, Aston Clinton, Aylesbury, Bucks, HP22 5HH, Tel 01296 630617, Fax 01296 632491. When phoning ask for Vic, mention me Phyl at Milton Keynes. Also - Bob - he goes to all the All Formats Shows. Wonder if he might go to yours. I will be seeing him this Saturday.

Your s sincerely, Phyl Smith.

Many thanks for the info Phyl. Since Bill Richardson/EEC went down last year it is good to see there is still support for the Z88. We will contact them soon with details of the Gloucester show. ***Ed.***

Dear Editor,

Thank you so much for my December issue of ***FORMAT*** and FORMAT PC and my two discs I ordered, safely received.

I have enclosed my cheque for future issues of FORMAT PC. Both magazines make excellent reading, may you be able to keep up the standard for many years to come. Well done.

Whilst pre Xmas shopping for some sliding drawer file folders, I took a copy of ***FORMAT*** with me to enquire about binders for ***FORMAT*** magazine. The gentleman in the shop photocopied your address page and said he would see what he could do. Of course whilst talking to him I realised I couldn't give an amount that may be required or ask for prices, but he took my name. I am hoping this will be of some use to your and all your readers who like me, must be getting desperate now to know where to store our mags safely.

If you would care to follow up my enquiry the name of the firm is enclosed. I do hope some of this information will be helpful. If not would you kindly let me know as I may have another idea I am currently working on.

You asked for favourite games to play.

I have my Scrabble, Backgammon, Chess, Paper boy, Trivial Pursuit sometimes, and my wife loves Fruit 2 as it saves her spending her money!! The tape broke recently and I haven't got a copy. Anyone Help? My grandson loves any 'scrambling' tapes and my granddaughter loves Butterfly. There's lots more I would write about but I expect you're fed up with all this by now, so I will close. Thanks again for a wonderful mag(s).

Yours sincerely, Eddie Byde.

Many thanks Eddie, will contact them soon and see what they can do for us. But don't let that stop you coming forward with another idea - it is always good to have more than one iron in the fire. ***Ed.***

Dear Editor,

1. I saw that you published Mr J.A.Lornie's letter in the December issue of ***FORMAT***. I don't know whether he has decided to join INDUG, but if he does, I believe that I may be entitled to a small reward. I enclose a photocopy of his letter to me, as evidence that I pointed him in the direction of ***FORMAT***.

2. I have been thinking for some time that it might be sensible belatedly to bring myself into the last quarter of the 20th Century by acquiring a SAM. However, as I understand it, SAM doesn't come with a colour monitor. Is it still possible to buy these monitors, or has one to depend on picking one up second-hand? I haven't seen one in the ***FORMAT*** Small Ads recently. Nor did I see one for sale at Quedgeley.

If I could lay my hands on one, I might well try to use it first to get the best out of my Spectrum 128/DISCiPLE, before deciding to change over to SAM.

3. At Quedgeley I bought a 3½" external disc drive, which I find a great improvement over 5¼". I would like to get another, but the same question arises - where from? The regular computer journals and catalogues don't advertise them any more. Is there somewhere I can buy one, or does one have to rely on the second-hand market? Judging from the November ***FORMAT*** Small Ads, everyone wants one!

4. I have two Spectrum+ with the same fault: vertical stripes all over the screen, and no response to the keyboard. Could this be a well-known fault with a well-known solution? I am quite prepared to get out my soldering iron and change a component or a standard microcircuit if that could provide the answer. Alternatively, do you know of anyone who is still repairing Spectrums? The Resource Directory in the September ***FORMAT*** didn't seem to include anyone who does.

5. If the answers to (2) and (3) above are that I do have to rely on the second-hand market, then would you please publish an advert for me in Small Ads.

Please put my, name, address and telephone number after each advertisement.

Yours sincerely,
E.H.Cooke-Yarborough.

Yes he has, thank you very much for pushing him in the right direction. A bonus 3 months has now been added to your membership (something we always do for members if they introduce someone new).

SAM does not come with a monitor but you should be able to get one (I got a Philips one second hand at the last Gloucester show), although I recommend going for a TV with a scart input as you then get the best of both worlds.

Personally, I still prefer the 5¼" drives, but then I'm tight-fisted and 5¼" discs are so much cheaper. There are still plenty of 3½" drives around, sold for use with the BBC computer and others - some may need a different cable (and

possibly a dualing-up cable so you can plug both drives in together) but it is usually not too difficult to get a drive working with the DISCiPLE/PLUS D. Of course you need a cased drive with a power supply.

However, we will run the small ad for you so you can see what is on offer.

There will be a new edition of the Resource Directory out later this year so if there are any companies we missed then its up to readers to tell us about them as soon as possible. ***Ed.***

Dear Editor,

First of all here's wishing everyone at ***FORMAT*** and their specialist contributors a Happy and Prosperous New Year. SAM computing would not be the same without your informative articles.

On the subject of informative articles, I would like to congratulate Martin Fitzpatrick on his series 'Talking C'. This is the first time I have had the mysteries of the language explained in simple terms. It seems to me however, that as SAM C is not compatible with the official C used by the PC's, a lot of the attraction of the language is lost, or am I missing something? If one wants to program in C then why not go the whole hog, beg borrow or buy a PC and learn the official version. The SAM C also suffers from the lack of a syntax checker when the program lines are being entered. Mistakes can only be picked up when the compiler chucks the program back with umpteen error messages.

It seems to me that what is really required for SAM is a first class Basic Compiler making use of SAM 's already excellent Basic. I would certainly buy such software. Are any software houses working on this?

I would be very interested to know how other ***FORMAT*** readers feel on this subject. There has not been much comment from the grass roots readers to date.

Yours sincerely P.J.Williamson.

C is a language that grows. Although there is an ANSI (American National Standards Institute) definition for C this is not to say that it is *the* standard.

SAM C is what is called a *small* implementation. It is no less valid than any other C and certainly should not be derided because it does not match the Cs available on the PC (there are many SMALL C compilers on the PC as well).

The trouble comes, not from the fact that SAM C is SMALL C, but from the fact that most of the books available are devoted to ANSI C (or Microsoft C which is yet another hybrid). Luckly, Martin is doing a good job for us. When his articles are more advanced then he hopes to cover how to implement some of the missing ANSI C commands on SAM.

On some computers having a compiled Basic would be a major step forward, but on SAM the speed increase would not be so great as it is already a very fast Basic. However, in some ways there is already a compiler built-in. RECORD/BLITZ allows for quite a few things to be speeded up, take a look at the original MGT/SAMCO demo program on the system disc to see what I mean.

If anyone would like to do a small article on RECORD/BLITZ, I'm sure it will be well received by readers. ***Ed.***

Dear Editor,

I first heard of INDUG and ***FORMAT*** from a news item in Computer Shopper, I sent off straight away and have every issue from the very first introductory copy. Every one has been full of interest so how could I fail to renew my sub? I couldn't, so here is my cheque for another year.

Meanwhile, congratulations on the last (as in just gone by) Gloucester show which proved interesting and stimulating as usual. If anyone bought a hard drive interface and is now looking

for a suitable drive, they might find what they are looking for at MS Brokering, Airport House, Purley Way Croyden, CR0 0XZ Tel 0181 286 6060. I have not tried them so do not know what their service is like.

Did someone enquire about keyboard membranes recently? If so they could try Trading Post, Victoria Road, Shifnal, Shropshire, TF11 8AF Tel 01952 462135. Their recent ad in Micro computer Mart listed 48K membranes, rubber mats and many other items including 3 inch disc drive belts for the Spectrum.

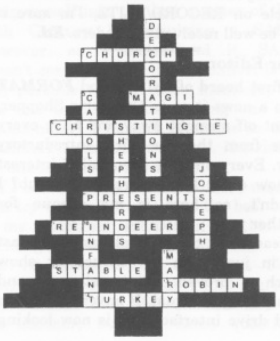
Yours sincerely, R.Bates.

Glad to hear you are staying with us, we will do our best to keep up the service. ***Ed.***

Letters may be shortened or edited to fit on these pages although we try to edit as little as possible.

This is YOUR letters page so it is up to you to fill it with interesting things. Come on, get writing, any subject even remotely related to computers. Just keep things as short as you can so we can fit in as many as possible each month. Please write clearly or type your letters. Send them to the address on page 3 or fax them to us on 01452 380890.

*And now here are the answers to the **Christmas Crossword** we published in the December issue.*



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FOR SALE Sinclair joystick, boxed, £3 or will exchange for working cassette recorder (no leads needed, I have plenty). 7 or 8 48K Spectrum tapes - free for collecting. Also, need someone in Gloucester/Cheltenham area to repair Spectrum. A.J.Harding, Phone 01452-618243 -(sorry, I'm deaf, so you have to speak through my wife).

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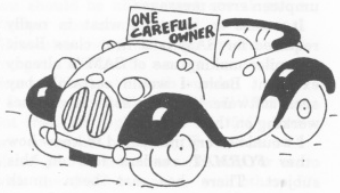

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HARDWARE

DUC LEAD For use with DISCiPLE or PLUS D. This 'Dualing Up Cable' allows two disc drives to be attached without the need for opening one drive to alter its ID. Allows you to switch drives to even out wear without opening cases. RRP £16.95
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The real inside info on SAM. No SAM is complete without one. RRP £16.95
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NEW SAM_CLOCK *NEW*

The SAM_CLOCK is fully compatible with the TIME and DATE functions of MasterDOS and has an integral battery that keeps the board functioning when your SAM is switched off. The board fits onto the expansion connector at the back of SAM but comes with a built-in through-connector so you don't need a Two-Up to use it in conjunction with another interface. R.R.P. £29.95
Order Code: SCH-01 **Price:** £24.95

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