GREAT BRITISH THEATRICAL TRADITIONS, No. 78...

HELLO DOBIN. HAVE YOU SEEN BUTTONS?

NEIGH!

HE'S BEHIND YOU!
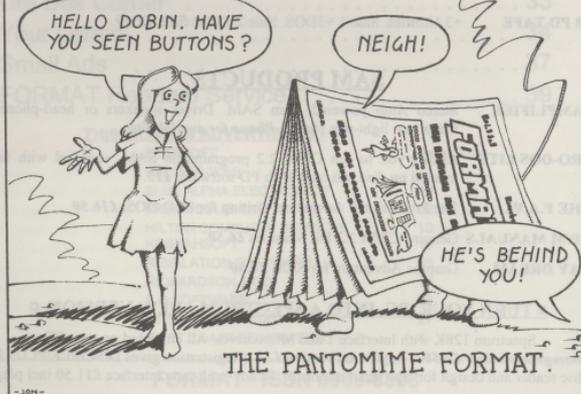
THE PANTOMIME FORMAT.

FORMAT
Your Ticket To The Ball.

CONTENTS

THIS MONTHS ADVERTISERS:-

NEWS ON 4

RECORD SALES

Revelation Software report record sales for their new DRiVER wimp system which was launched at the Gloucester Show on the 13th November. On the day they sold out well before the show was over and at one point there were at least five SAMs in the hall running DRiVER and all with large crowds of onlookers.

DRiVER's author, Steve Taylor, was at the show to help promote the software - if you didn't get his autograph at the show you should have done because this program is going to make him a household name in SAM circles.

SAM PAINT

A new graphics package is on its way from FRED Publishing. Called SAM PAINT it will run on 512K Sams and boasts many advanced features previously only seen on 16 bit machines.

You will be able to do gradiant fills (you know, one colour at one end of an area changing to another colour at the other end, that sort of thing), enlarge and reduce areas, rotate and much more.

The package is also said to have one of the best colour printing systems seen so far on SAM so all you colour printer owners will probably be at the front of the line.

Priced at £24.95 (with a 10% discount for INDUG members the package is sure to be a runaway success.

OFFICE EXPANDING

Over the next few months we are going to be expanding here at FORMAT HQ. As many of you know we already act as dispatch agents for Revelation Software,

well now, after long negotiations we are expanding to do the same for West Coast Computers.

The idea is simple, we have the expertize and facilities for handling order processing and dispatch so why should West Coast increase their overheads by taking on extra staff when they can pay us to do it instead.

So, With effect from the 1st December West Coast Computers have appointed FORMAT as their order processing agents. This leaves West Coast to handle marketing and overseas distributor sales and Blue Alpha to get on with the job they do best - the important job of assembling the hardware.

We intend to take on extra staff in the new year to help us cope with this and other new services we plan.

PERSONAL FILING SYSTEM

Hilton Computer Services, renouned and much respected for the Personal Banking System, have developed a new data storage program for the SAM Coupé. Called the *Personal Filing System*, the program allows full use of up to 2 drives and a 1meg RAM expansion.

Two versions are available, one for SAMDOS on a 512K machine, the other for MasterDos which will work on either 256K or 512K machines.

The program has *WYSIWYG* screen/printer formats, built in field validation facilities plus a label printing and mail merge feature. It is priced at £19.95 and comes with a comprehensive manual.

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*).

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Greetings from rainswept Gloucester. At least it was rainswept on Saturday the 13th November 1993 - the day of the big show.

Wow....
    Fantastic...
        Wonderful...

Just three of the descriptions that fall easy to hand. Over 250 people, all Spectrum and Sam enthusiasts, gathered together in one place at one time - made our first show an instant success.

Because of the timescale we can't give you a full run-down on the show this month. I have asked John Wase to do a write up but you will have to wait for the February issue for that. What I can say now is there will be another one sometime in March or early April (I had several people ask if I could do another one even sooner but with winter here I think it is best left to the spring) I will let you know the date as soon as the booking can be made.

A big thank you to everyone who turned up on the day - see you next time.

Right, now down to the impending festive season, the time of year I really like cos I'm just a big kid at heart.

I have had difficulty in finding much in the way of Christmas goodies for you this year because very little was sent in. So, please, the Christmas 1994 issue is just twelve months away - is that enough warning for all of you to get writing? I hope so, I want next years Christmas issue to be crammed full of seasonal fare.

Several people have put forward the idea that there should be special sections within INDUG to cater for minority interest groups. I would value readers

comments on starting Special Interest Groups (*SIG*s), perhaps you might like to start one - if so then get in touch. We will provide what help we can and give coverage in *FORMAT*.

This month sees the start of a new series on Uni-Dos Create Files. There have been many requests from readers on this subject which is one of the more powerful features of the excellent Uni-Dos system. Create Files allow for almost infinite expansion of the Uni-Dos syntax and, as you will see as the series develops, allows powerful new features to be added to Uni-Dos in a quite painless fashion.

My thanks to all who phoned or wrote to tell me about the *YS* distribution saga. It appears that many parts of the country say no copies (or only a handful) of the last issue. One newsagent I spoke to said that their copies arrived early and were gone the same day - they could not then obtain any more. It would appear that the magazine distributors themselves are partly responsible - taking the attitude that it was the last issue so you can't expect it to sell well.

Anyway, someone kindly presented me with a copy of the last issue at the Gloucester Show. I must admit there were a few interesting things inside and I am pleased to have it for my collection (well I do have a copy of issue one).

Well that's it for this year, Jenny and I hope you all have a good Christmas.

Now, I just have to get that January issue written and off to the printers before I can have my Christmas break.

Until next year.

Bob Brenchley, Editor.

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SHORT·SPOT
YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

Let's open *Short Spot* for December with a program for SAM from Lee Willis. This particular program was written specially, and is for those of you about to read *Short Spot* over the Festive Season. Type it in and run it while the goose is cooking. Then let me know what you think of it. Lee's pretty good at this sort of thing. Last month he sent me a super demo, in which various bits were BLITZed and this made the whole thing run very fast. Once you've seen the principle, get over domestic tantrums on Boxing Day by retiring to your SAM and shortening it with BLITZ. (The routine; not Boxing Day). Happy Christmas

```
  10 OPEN TO 10: CLEAR 163840
  20 MODE 4: CSIZE 8,8
  30 Set_Scr
  40 PEN 15
  50 LET P=15,NP=1,STADR=98304
  60 LET SN$=STRING$(30,CHR$ 0)
  70 RECORD TO a$: OVER 1
  80 IF LEN a$>65000 THEN RECOR
     D STOP : STOP
  90 LET NP=INSTR(SN$,CHR$ 0+CH
     R$ 0)
 100 IF NOT NP THEN GO TO 140
 110 IF NOT (NP MOD 2) THEN LET
     NP=INSTR(SN$(NP+1 TO ),CH
     R$ 0+CHR$ 0): GO TO 100
 120 LET x=RND(254)+1
 130 PLOT x,172: LET SN$(NP TO
     NP+1)=CHR$ x+CHR$ 172
 140 FOR x=1 TO LEN SN$ STEP 2
 150 LET D=RND(1)+3
 160 IF SN$(x TO x+1)=CHR$ 0+CH
     R$ 0 THEN GO TO 340
 170 DO : EXIT IF (POINT(CODE s
     n$(x),CODE sn$(x+1)-D)=0)
     AND ((CODE sn$(x+1)-d)>-1)
 180 LET d=d-1
 190 LOOP UNTIL NOT d
```

```
 200 IF NOT d THEN Proc_Stop: I
     F sn$(x TO x+1)=CHR$ 0+CHR
     $ 0 THEN GO TO 340
 210 IF CODE sn$(x+1)<0 THEN Pr
     oc_Stop
 220 PLOT CODE SN$(X);CODE SN$(
     x+1)
 230 IF SN$(x TO x+1)=CHR$ 0+CH
     R$ 0 THEN GO TO 340
 240 LET LR=RND(1000)
 250 IF (LR>600 AND LR<800) AND
     CODE sn$(x)<254
 260 IF (POINT(CODE sn$(x)+2,CO
     DE sn$(x+1)-d)=0) THEN LET
     sn$(x)=CHR$ (CODE sn$(x)+
     2)
 270 END IF
 280 IF (LR>800 AND LR<1000) AN
     D CODE sn$(x)>1
 290 IF (POINT(CODE sn$(x)-2,CO
     DE sn$(x+1)-d)=0) THEN LET
     sn$(x)=CHR$ (CODE sn$(x)-
     2)
 300 END IF
 310 LET SN$(x+1)=CHR$ (CODE SN
     $(x+1)-D): PLOT CODE sn$(x
     ),CODE sn$(x+1)
 320 NEXT x
 330 IF INKEY$=" " THEN GOTO 35
     0
 340 GO TO 80
 350 RECORD STOP
1000 DEF PROC Proc_Stop
1010 LET Tog=0
1020 IF CODE sn$(x) AND CODE sn
     $(x+1)
1030 IF NOT (POINT(CODE sn$(x)-
     1,CODE sn$(x+1)) OR POINT(
     CODE sn$(x)-1,CODE sn$(x+1
     )-1) OR POINT(CODE sn$(x)-
     1,CODE sn$(x+1)-2))
1040 LET sn$(x)=CHR$ (CODE sn$(
     x)-1),sn$(x+1)=CHR$ (CODE
     sn$(x+1)-1),Tog=3
1050 END IF : END IF
1060 IF Tog THEN GOTO 1110
1070 IF CODE sn$(x)<255 AND COD
     E sn$(x+1)
1080 IF NOT (POINT(CODE sn$(x)+
```

```
        1,CODE sn$(x+1)) OR POINT(
        CODE sn$(x)+1,CODE sn$(x+1
        )-1) OR POINT(CODE sn$(x)+
        1,CODE sn$(x+1)-2))
1090 LET sn$(x)=CHR$ (CODE sn$(
     x)+1),sn$(x+1)=CHR$ (CODE
     sn$(x+1)-1),Tog=1
1100 END IF : END IF
1110 IF NOT Tog THEN LET sn$(x
     TO x+1)=CHR$ 0+CHR$ 0: END
     PROC
1120 PLOT CODE sn$(x)+(tog-2),C
     ODE sn$(x+1)+1
1130 PLOT CODE sn$(x),CODE sn$(
     x+1)-1: END PROC
2000 DEF PROC Set_Scr
2002 MODE 4: CLS #: LET xos=0,y
     os=0,xrg=256,yrg=192
2004 RESTORE 2036
2006 RECORD TO a$
2008 FOR x=1 TO 69
2010 READ a,b,c
2012 IF NOT a THEN PLOT b,c: EL
     SE DRAW TO a,b,c
2014 NEXT x
2016 RECORD STOP
2018 CLS
2020 POKE 21976,0,0,1,1,16,16,1
     7,17,25,21,29,81,89,85,117
     ,127: POKE 21996,MEM$(2197
     6 TO 21976+15)
2022 LET Tog=0,xos=0,yos=0,xrg=
     256,yrg=192
2024 FOR x=1 TO 12
2026 IF tog THEN LET xos=xos+1:
     ELSE LET yos=yos+1
2028 LET tog=NOT tog
2030 PEN x: BLITZ a$
2032 NEXT x
2033 LET xos=0,yos=0,xrg=256,yr
     g=192
2034 END PROC
2036 DATA 0,39,100
2038 DATA 39,140,-1
2040 DATA 69,140,2.8
2042 DATA 69,100,-1
2044 DATA 0,113,132
2046 DATA 89,140,1
2048 DATA 95,120,2.8
2050 DATA 91,100,2.8
2052 DATA 115,108,1
2054 DATA 0,125,100
2056 DATA 125,136,-0.5
2058 DATA 146,138,-1
2060 DATA 124,110,-2.5
2062 DATA 0,146,115
2064 DATA 144,100,-0.9
2066 DATA 0,159,100
2068 DATA 159,136,-0.5
```

```
2070 DATA 180,138,-1
2072 DATA 158,110,-2.5
2074 DATA 0,180,115
2076 DATA 178,100,-0.9
2078 DATA 0,193,140
2080 DATA 193,126,0.5
2082 DATA 208,116,1.2
2084 DATA 223,126,1.2
2086 DATA 223,139,0.5
2088 DATA 0,208,116
2090 DATA 208,100,0.5
2092 DATA 0,29,80
2094 DATA 15,90,1.5
2096 DATA 9,60,1.1
2098 DATA 15,50,1.1
2100 DATA 0,40,50
2102 DATA 40,90,-0.5
2104 DATA 0,52,50
2106 DATA 52,90,0.5
2108 DATA 0,37,70
2110 DATA 55,70,1.5
2112 DATA 0,65,50
2114 DATA 65,88,-0.5
2116 DATA 76,90,-1
2118 DATA 63,60,-2.6
2120 DATA 0,78,65
2122 DATA 77,50,-1
2124 DATA 0,92,50
2126 DATA 92,90,-0.5
2128 DATA 0,120,80
2130 DATA 100,80,3.1415927
2132 DATA 120,60,0
2134 DATA 100,60,-3.1415927
2136 DATA 0,128,86
2138 DATA 148,86,-1.4
2140 DATA 0,138,90
2142 DATA 138,50,0.5
2144 DATA 0,156,50
2146 DATA 156,90,-1
2148 DATA 176,90,2.8
2150 DATA 176,50,-1
2152 DATA 0,193,50
2154 DATA 193,82,-1
2156 DATA 210,82,-2.8
2158 DATA 210,50,-1
2160 DATA 0,190,66
2162 DATA 213,66,-1
2164 DATA 0,241,78
2166 DATA 221,78,3.1415927
2168 DATA 241,58,0
2170 DATA 221,58,-3.1415927
```

While we're on SAM, here's an offering from Peter Alleston, one of our more youthful readers, of Sudbury, Suffolk, who writes with a program to put all of the colours on the screen at once using line palettes. Very short and sweet...

```
10 PALETTE: CSIZE 8,8: BORDER
   15:   PEN   0:  PAPER 15: C
   LS: LET pal=0
20 FOR x=174 TO 48 STEP -1
30 LET PAL=PAL+1
40 PALETTE 15, pal LINE x
50 NEXT x
60 PRINT AT 19,0;"All the pal
   ette  col   ours are on ";
   TAB 10;"the screen."
```

...and quite neat. Many thanks, Peter. Now over to the Spectrum. I'm currently very disappointed in the Spectrum. That's because I'm not getting a lot that I can print on for it: there's just one or two stalwarts...

Roy Burford, for instance, who tells me that I've dropped a whoopsie last month. I refer to the ZX Spectrum version of Andy Wright's 'Rose' article published first in *FORMAT* in December 1988, but I've never published a ZX version. So here it is...

```
10 LET k=PI/180: LET xrg=3: LE
   T xos=xrg/2: LET yrg=xrg*17
   6/256: LET yos=yrg/2
30 LET n=INT (RND*178)+1: LET
   d=INT (RND*178)
40 IF (n-(2*INT (n/2))) AND (d
   -(8*INT (d/8))) THEN LET b=
   180: GOTO 50
45 LET b=0
50 PRINT "N=";n'"D=";d
60 PLOT 127,87
70 LET a=0
90 LET a=(a+d)-360*(INT ((a+d)
   /360)): LET t=k*a: LET r=SI
   N (k*((n*a)-360*(INT ((n*a)
   /360))))
100 DRAW ((r*SIN t)+xos)*256/xr
    g-PEEK 23677,((r*COS t)+yos
    )*176/yrg-PEEK 23678: IF a<
    >b THEN GOTO 90
120 PAUSE 100: CLS : GOTO 30
```

Alan Cox of St. Clears also writes about Spirographs (I've really stirred it up on this one). He defends his algorithms in the program in September, but there are one or two errors for the case where the wheel is outside the ring.

You then need to change r1's sign by adding

```
:IF C$+"O" THEN LET r1=-r1
```

and rescale things by changing 80 to 40 in line 43.

The other problem is that for clarity and to avoid cumulative errors, Alan set out only to do one pass of the pen; a 'single draw'; things like Roy's 'Starfish' need several passes. Oh, the lengths to which some will go!!! Alan's got hold of a real Spirograph.

Here's a picture of a 'single pass' starfish done on the real McCoy.
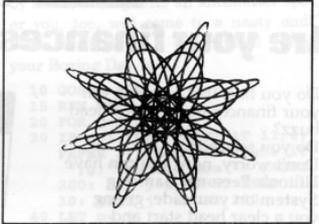
Now, take Alan's program, use wheel 60 inside ring B and MERGE the following lines...

```
30 FOR e=.1 TO .3 STEP .1 REM
   only three draws to avoid
   a complete hodge-podge
40 LET d=e*r1
43 LET F=80*(1-E)/(R-D)
65 NEXT e: STOP
```

A more serious problem is that the upper limit in the FOR loop in line 45 is wrong. The limit should be 2*PI*LCM/r, where LCM is the lowest common multiple of r and r1. Alan has no simple Algorithm to work out LCM. Help!! Does anyone know one? The particular line 45 in the example is a work-around which unfortunately fails in some cases. For now, a reasonable approximation for the

upper limit is 10*PI.

Many thanks, Alan.

Now, may books and magazines all be cursed. The next bit was going to be all about making wire drawings look 3-D on a Spectrum, and I'd got four little programs that drew ellipses, spirals, 3D-balls and other interesting things on-screen. It came out of a 1984 book and looked just the thing. After I'd adapted the text with references to pound coins and chocolate oranges for Christmas, the whole thing filled the last couple of pages of *Short Spot* when I'd finished it... when I noticed that two of the programs were the same. So I typed the first one in. And it doesn't work... I've therefore scrapped the whole business, having wasted several hours which I've not really got, and I'm going to try putting in a game.

This is an old Speccy game which my family have all played at one time or another. It runs well on the Spectrum, and is along the lines of the familiar munchman, though this time it's ghosts that are chasing you. It's not very quick, but that doesn't matter, for the machine always wins. Can you beat it? It's very easy for our beginners to break in, alter the program and give yourself infinite lives, or cut the number of ghosts. And delightfully easy for our advanced programmers to code, add sprites and sophistication, make the play fast and furious, change the ghost to Santa, you name it and it can be done. So let your imaginations run riot over Christmas: have a go at 'Ghosts', and once you've got it in, try a Christmas Modification. When you've done this, then there's a competition. See if you can do a similar job, but which runs twice as fast with half the code. The neatest, funniest and most addictive one I receive by the end of March, will win a £25 token to spend on

items from the **FORMAT** Readers Service Page.

The program itself was written by one Ian McAtamney, almost certainly before 1983, and the description runs...

"How long can you evade the nasty little ghosts that pursue you relentlessly around the screen? Your only change is to force the ghosts to step onto anti-matter spots. But first there is one ghost after you, and when he has been disposed of, two more will carry on the evil job. When the two have gone, three will appear, then four, then five....."

"Watch out that you don't get caught by them, or step onto an antimatter spot, or you, too, will come to a nasty end!" Well, now! What a description! Here's your Boxing Day task.

```
10 GOSUB 620
15 REM MAIN LOOP
20 FOR g=1 TO 20
30 IF g>1 THEN PRINT AT 11,4;
   PAPER 3; FLASH 1;" Made it!
   ";g;" ghosts now ": PAUSE
   200: FOR j=1 TO 5: BEEP .1,
   30: NEXT j: PAUSE 200
40 LET m= 0
50 GOSUB 520
55 REM SET UP ANTIMATTER
60 FOR j=1 TO 10
70 PRINT AT INT (RND*20)+1,INT
   (RND*30)+1; INK 5;CHR$ 146
80 NEXT j
85 REM SET UP PLAYER AND GHOST
   S
90 LET a=INT (RND*21)+1
100 LET b=INT (RND*31)+1
110 DIM a(g,2): DIM b(g,2)
120 FOR j=1 TO g
130 LET a(j,1)=INT (RND*21)+1
140 LET a(j,2)=INT (RND*31)+1
150 NEXT j
160 LET c=a: LET d=b
170 GOSUB 420
180 PRINT AT 0,0; PAPER 2;" "
190 PAUSE 0
195 REM MOVEMENT LOOP
200 FOR k=1 TO 3
210 LET c=a
220 LET d=b
225 REM PLAYER MOVEMENT
```

```
230 LET a=a+(INKEY$="6" AND a<2
    1)-(INKEY$="7" AND a>1)
240 LET b=b+(INKEY$="8" AND b<3
    1)-(INKEY$="5" AND b>0)
245 REM GHOST MOVEMENT
250 FOR j=1 TO g
260 IF j>g THEN GOTO 370
270 IF m=g THEN NEXT j
280 IF a(j,1)=200 THEN NEXT j
290 IF j>g THEN GOTO 370
300 LET b(j,1)=a(j,1): LET b(j,
    2)=a(j,2)
310 IF k=3 THEN GOTO 340
320 LET a(j,1)=a(j,1)+(a(j,1)<a
    )-(a(j,1)>a)
330 LET a(j,2)=a(j,2)+(a(j,2)<b
    )-(a(j,2)>b)
340 IF ATTR(a(j,1),a(j,2))=13 T
    HEN PRINT AT b(j,1),b(j,2);
    " ": BEEP .05,5: LET a(j,1)
    =200: LET m=m+1
350 IF a(j,1)=a AND a(j,2)=b TH
    EN GOTO 580
360 NEXT j
370 IF m=g THEN NEXT g
380 IF ATTR(a,b)=13 THEN GOTO 5
    40
390 GOSUB 420
400 NEXT k
410 GOTO 200
415 REM PRINT SCREEN
420 PRINT AT c,d;" "; AT a,b;CH
    R$ 144
430 BEEP .02,-20
440 PRINT AT 0,0; PAPER 2;"
       Ghosts left:";g-m;"
                           "
450 FOR j=1 TO g
460 IF a(j,1)=200 THEN NEXT j
470 IF j>g THEN RETURN
480 IF ATTR((a(j,1)),(a(j,2)))=
    14 THEN LET a(j,1)=b(j,1):
    LET a(j,2)=b(j,2)
490 PRINT AT b(j,1),b(j,2);" ";
     AT a(j,1),a(j,2); INK 6;CH
    R$ 145
500 NEXT j
510 RETURN
520 PAPER 1: INK 7: CLS : BORDE
    R 0
530 RETURN
535 REM END GAME
540 PRINT AT c,d;" "; AT a,b; F
    LASH 1; INK 2;CHR$ 146
550 PRINT AT 0,0; PAPER 4; INK
    0; FLASH 1;" Fool, you went
     onto antimatter "
560 BEEP 2,-45
570 PAUSE 0: PAUSE 0: RUN
580 PRINT AT b(j,1),b(j,2);" ";
     AT c,d; INK 2;CHR$ 145
590 PRINT AT 0,0; PAPER 4; INK
    0; FLASH 1;"     Got you t
    his time         "
600 BEEP 2,-45
610 PAUSE 0: PAUSE 0: RUN
615 REM USER DEFINED GRAPHICS
620 FOR j=0 TO 23: READ p: POKE
     USR "A"+j,VAL ("BIN"+STR$
    p): NEXT j
650 RETURN
660 DATA 10000,111000,10000,111
    100,10000,10000,101000,1000
    100,11000,1111100,1010100,1
    1010110,11111110,11111110,1
    1011010,10010010,111100,111
    1110,11111111,11111111,1111
    1111,11111111,1111110,11110
    0
```

The graphics are stored as UDGs. CHR$144 is a man, CHR$145 is a ghost, and nicely illogically, CHR$146 is antimatter. SAM user change the USR in line 620 to read UDG and add a MODE 1 at the start of the program. Then, when you're fed up with playing the game, try modifying it.

I'm short of snippets and time. And of course, I have to meet press dates. So last month, a similar disaster prompted me to include something longer than I would really like. Let's have some real snippets for the Speccy, now.

Come on, type it in, check it, print it out, put it on a disc (just the one item, and make sure not to include baffling code or unreproducible SCREEN$s). Then pack it and send it to the heart of Rural Worcestershire, and provided we're not flooded or snowed in, it will get to me:-

John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
Worcs,
WR10 2LX.

Have a Good Christmas! Cheers!

See you next month.

12

BASICally Speaking...

Part 2.

By:- David Finch.

If you practised what we covered in last month's article then you should be getting use to the Basic editor (the way you type programs in) and SAVEing/LOADing small programs. We can therefore advance to some more interesting topics and some new commands.

I want to introduce you to strings now. Strings are like scrabble pieces, stored on a rack. You give the rack a name, like rack A. The symbol for a string is $, so STRING A (or A-STRING) is written as A$. Suppose you wanted the letters on your rack to be D,A,V,I and D, in that order. You would type the following:-

    LET A$="DAVID"

with a line number in a program.

To PRINT your string in the screen you can now type:-   PRINT A$
Note you do not put quote marks round the A$ because if you did it would literally print A$ and not DAVID.

You do not have to use a single letter for the name. You could use FIRsTNAME$ or CHRSTNAME$ or NAME$. Type this in:-

    10 LET name$="DAVID"
    20 LET surname$="FINCH"

You have two scrabble racks with two strings on them. You could print them together like this:-

    30 PRINT name$+surname$

Which would print DAVIDFINCH. To get a space between them you could type:-

    30 PRINT name$+" "+surname$

Or even:-

    25 LET space$=" "
    30 PRINT name$+space$+surname$

I hope you are beginning to see how strings work. You can use SAVE, VERIFY and LOAD with strings if you need to, eg:-

    SAVE filename$
    VERIFY filename$

This is all a bit pointless in a program because you can just type out the string in quote marks (eg PRINT "Hello") instead of a string (eg PRINT h$). However, you can enter information to a string as part of the program using the keyboard. Inputing is putting information into the computer (outputing is when we take information out of the computer) and the INPUT command does this with the keyboard.

INPUT a$ will give you a pair of quote marks at the bottom of the screen and as you type, the letters appear between the quote marks. You type in the information then press ENTER or RETURN, then the program continues. Try this:-

    10 PRINT "What is your name?"
    20 INPUT name$
    30 PRINT "Oh, hello ";name$

RUN it and type in your name. RUN it again and type in a different name (any name) it always replies with exactly what you typed in. You can also do this:-

    10 PRINT "What is your name?
    ";name$
    20 PRINT "Oh, hello ";name$

13

Which will print "What is your name?" at the bottom of the screen where you type in the information.

It doesn't matter if your string name is in capitals, lower case or mixed. Name$, name$, NAME$ and NaMe$ are all the same as far as Spectrum/Sam Basic is concerned.

Variables are similar to strings except that they use numbers instead of letters and numbers, like algebra. You can do maths with variables though. Variables are used exactly the same as strings except they don't have a symbol. Again, their case (upper or lower) doesn't matter, so d is the same as D. eg:-

```
10 LET a=10
20 INPUT b
30 PRINT a+b
```

If you inputed 5 then it would print 15 on the screen (10 plus 5). You can only use one letter for a string variable name (eg a$,b$,c$...) unless you are using a SAM Coupé, which will let you have up to ten characters in a variable name (eg. age$, day$....) But numeric variables can be of almost any length "This_is_a_long_variable_name" is one rediculus example (the '_' characters need to be replaced by spaces to work on the Spectrum).

```
10 INPUT x
20 PRINT x;" multiplied by sev
   en is ";x*7
30 PRINT x;" divided by two is
   ";x/2
```

We use the * (star) sign for multiply and the / (stroke) for divide. Semi-colons (;) seperate text (in inverted commas) from variables and strings. Before, we used a plus (+) sign to JOIN strings. With variables the plus sign ADDs the two numbers together. You cannot type this:-

```
10 PRINT a+b$
```

because you cannot add a string to a variable (strings often include letters and you can't add letters). There are ways of printing variables as if they were strings, so joining them to strings with a plus for example, but this is a little to complicated for now.

I want to introduce you to loops now. If you go in a loop then you go round something then get to where you started. Loops in programs are the same. There are different types of loop. I will show you the most common first.

```
10 FOR a=1 to 10
20 PRINT a
30 NEXT a
```

Looks complicated, doesn't it? You could run it to see what it does. When the computer does line 10 first it makes the variable 'a' equal to 1 (the equivalent of LET a=1). It prints 'a' in line 20 then when it executes line 30 it goes back in a LOOP and does line 10 again, only this time 'a' becomes 2, then 3, then 4 and so on until it gets to 10 when the program carries on after the NEXT instruction. Try this:-

```
10 FOR a=1 TO 12
20 PRINT a;" times 2 is ";a*2
30 NEXT a
```

Or even a double loop

[Don't type these arrows]
```
10 FOR a=1 TO 12 <--LOOP A--\
20  FOR b=1 TO 10 <-LOOP B-\|
30   PRINT a;" times ";b;  ||
     " is ";a*b              ||
40  NEXT b        >--------/|
50 NEXT a         >---------/
```

This time it loops inside a loop. When 'a' is 1 it loops 'b' from 1 to 10, then it makes 'a' equal 2 and loops 'b' from 1 to 10 again. It does this until 'a' is 12 (so it has done its twelfth loop. Notice the 'b' loop is INSIDE the 'a' loop, so the 'b' loop is done twelve times. You must NEVER start a loop inside another loop without finishing it (with it's NEXT) inside the

SAME loop. the result would be chaotic.
NEVER program like this:-

```
10 FOR a=1 TO 12   <--LOOP A--\
20 FOR b=1 TO 10 <-LOOP B--\ |
30 PRINT a;" times ";b;     | |
   " is ";a*b                | |
40 NEXT a       >---------+-/
50 NEXT b       >----------/
```

The 'b' loop was started inside the 'a' loop but finished outside the 'a' loop, which is WRONG.

You can also loop with the GOTO command. GOTO makes the computer jump from one line number to another. If you typed GOTO 100, the computer would execute line 100 then continue with 101, 110 or whatever was next, eg:-

```
10 PRINT "Hello"
20 GOTO 100
30 PRINT "The computer will no
   t print this line because i
   t jumps to line 100 at line
   20"
40 PRINT "Nor will it print th
   is."
100 PRINT "The computer prints
    this because at line 20 it
    GOes TO line 100"
```

So you can loop like this:-

```
10 PRINT "This will carry on f
   or ever!"
20 GOTO 10
```

Don't worry about it printing SCROLL? at the bottom of the screen, this is just because too much is being printed on the screen that the top has to be scrolled away to make room for new text. Just press Y or ENTER/RETURN.

SAM Coupé users have another way of doing loops. This is the same as the GOTO method but is much neater and is supposed to be "good programming". You simply use the commands DO and LOOP. SAM users try this:-

```
10 DO            <-Loop--\
20 PRINT "This will       |
   carry on for ever!"    |
30 LOOP        >--------/
```

SAM's DO and LOOP commands can be used in a more complicated way, which I will show you after we have done conditions, which we are going to do next time - all being well.

DRiVER
The New WIMP System For SAM

Reviewed By:- Carol Brooksbank.

Just very occasionally, you look at a new piece of software and realise that this program is opening up a whole new era. DRiVER is like that.

What we have here is WINDOWS for Sam. The program as it stands is a very user-friendly DOS management system, with a simple word processor, a calculator, an icon designer and a puzzle game built in. But it opens up the exciting prospect of having other software in the future running under DRiVER, with its easy to follow WIMP (windows-icons-menus-pointer) system for controlling programs, and the ability to hold several applications in memory at once and transfer information between them. A suite of office programs, or a real DTP program, would be revolutionized by running them under DRiVER. My spies in Revelation tell me that there will soon be a technical handbook for programmers available, so get to it you programmers!

When you load DRIVER, there is one window on screen, with icons by which you choose one of the seven available applications (the four I listed above, plus a tutorial; an option for changing things like screen colours, which file types you want displayed etc; and an installation option for saving your customized backup copies, of which you are allowed to make two. Licences are required for more copies, or for simultaneous use of the program on more than one machine.)

Control is by mouse, or keyboard arrow keys with ',' and '.' representing the mouse buttons. ENTER and SPACE can also be used in place of the mouse right, or 'click' button. There are lots of shortcut keys, usually CTRL+another key, which let you select often-used options without using the pointer. That is a useful feature. Moving pointers can be irritatingly time consuming.

The tutorial takes you through the windows system, showing you how to move or re-size, open or close windows. It took me quite a while to discover how to get all the files on a disc displayed, rather than just the application files. The handbook tells you, but I found on more than one occasion that vital information like that was only in an odd sentence in the middle of a paragraph - a full index to supplement the contents page would help.

The program works under MasterDos, and will also support MasterBasic. Every open floppy disc or ramdisc will have a window on screen, showing icons representing the files (a page of paper for ordinary files, a folder for subdirectories and picture icons for applications.) Open a subdirectory, and it too has a window, showing all its files. Clicking on any visible bit of a window will bring that window to the front. You can opt for smaller icons allowing more information about the files to be displayed - file type, and date and time of saving.

Moving files in and out of subdirectories or from drive to drive is

simplicity itself. You bring the file's present window to the front, click on its icon and, holding the click button or key down, drag it to a visible corner of the window for its destination. You can even drag a file to the destination icon without opening the destination. You can rename files, and erase them temporarily or permanently but I could not find any way of renaming a disc other than going into Basic and doing it by direct command. It took me a long time to discover that, if you want to select more than one file at a time (to move or delete several at once), you need to hold down SHIFT while you click on each. The handbook tells you how to move all the selected files, but not how to select more than one at once.

There is a rather jolly dustbin icon, to which you can click and drag files. It grows fatter to show there is something in it. You have the option of emptying it - erasing the files permanently - or opening it - restoring them to the disc. If you have files in the bin, you can opt to recover or erase them when you close the relevant disc or directory. Closing the subdirectory windows will have the effect of returning to the previous directory level. Closing the main directory lets you change the disc in a drive.

In addition to the windows, there are pull-down menus which let you change the categories of files displayed, format discs or ramdiscs, empty the bin, create subdirectories and so on.

But DRiVER is more than just a visual DOS management system. Among the built-in applications is a word processor called NOTEPAD. It is a very simple one, with an 80 column line and user-definable tabs, but there are no adjustable margins, and no printer controls. There is wordwrap, but no justification. It is what its name suggests - a notepad, but it does have other things going for it. You can have more than one copy in memory at once, each holding a different document, and cut and paste bits of text from one to the other freely. Although its printed output is a bit dull - there are no margins on the page because it uses all 80 columns and the only style options you have are the choice of draft or NLQ globally - it can convert its files into the 64-column format used by OUTWRITE and THE SECRETARY and their files to its format. So you can always do your printing via one of the more sophisticated programs. Wordmaster files are compatible with it. Anyone who has tried to move files from WORDMASTER to OUTWRITE/THE SECRETARY or vice versa will know how much editing that leads to, but you can do it easily via NOTEPAD, which will also accept PC ASCII files.

The built in calculator works with pointer, number keys or the function keys. Be careful how you enter numbers - it has no CE button so if you make a mistake entering one number in a long calculation and try to cancel it, your whole sum is lost.

There is provision for making a 'bootstrap' file to allow you to load other programs from the DRiVER menu. You need an icon and the loading program on the disc when you make the bootstrap. You can design your own icon, using the built-in designer, or choose one from the collection supplied. If the program will not run with DRiVER present, you specify that DRiVER is to be turned off when the application is loaded. I managed to get the BETASOFT FILE MANAGER on the same disc. It needs DRiVER turned off while it is in use, but a simple modification to FILE MANAGER lets that reload DRiVER when you exit from it. It does not, of course, work under the WIMP system - DRiVER simply loads it. But it does appear with its icon along with the DRiVER applications, and you can return to DRiVER with the FILE MANAGER files still on the ramdisc. I am working on a way of getting some of them into NOTEPAD from the ramdisc.

The 'preferences' application lets you customize the program. A whole load of different screen colour combinations are there for you to choose from, or the really fussy can specify your own choices. Things like the types of files displayed, upper or lower case menu lettering, click delays and so on are all chosen from this menu, and you save your file of settings so that your preferences are used on loading.

Finally, there is a slidey puzzle, using letters, numbers or one of two pictures. It is very easy to do using letters or numbers, but a lot harder when you use a picture.

This is an excellent and very user-friendly program. Whether you use mouse or keyboard is up to you, it is just as easy with either. I gave up subdirectories some time ago because I got so fed up of using "DIR=something" or filenames like "\articles\reviews\Driver", but with this program it is so easy to organize your files that I think I shall start again.

And I hope that Sam programmers will soon be thinking automatically in terms of suites of interactive programs running under DRiVER. Who needs to struggle with a PC and WINDOWS when you have a SAM?

Now all we need is a hard disc...

Prize Wordsquare

Live Long and Prosper.
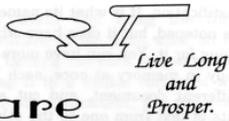
Yes folks, its back, the famous *FORMAT* Christmas Prize Wordsquare.

This year we have gone for a **STAR TREK** theme, following an idea by F.Evans of Waltham Abbey in Essex. I know most of you are Star Trek fans so this one should be just up your street. With 69 words still to find let's hope it doesn't turn into a five year mission for you. As usual we are offering small prizes - one lucky winner will get a full *12 MONTHS FREE SUBSCRIPTION* while ten runners-up will get an *EXTRA 3 MONTHS* added to their subscription next time they renew.

So, take a photocopy of this page, find the words and ring them, put your name, address and membership number on the back then send it to us to arrive by the 11th March 1994. We will put all the correct entries into a box, Jenny will make the draw and we will publish the names of the winners in the April'94 issue. Spoilt entries or entries without membership numbers will be excluded.

Here is the word list:-

ADMIRAL, ALIEN, ANDROID, ANTIMATTER, ASTEROID, BLACKHOLE, BRIDGE, CAPTAIN, CHEKOV, COMET, COMMUNICATOR, COMPUTER, CREWMAN, DILITHIUM, DRIVE, EARTH, ENGINES, ENTERPRISE, EXCELSIOR, EXETER, EXPLORE, FEDERATION, FRONTIER, GALAXY, GRAVITY, HELM, IMPULSE, KIRK, KLINGON, LOGIC, MCCOY, METEOR, MISSION, MOON, NECKPINCH, OFFICER, PHASER, PHOTON, PIKE, PLANET, PROBE, REDALERT, ROCKET, RODDENBERRY, ROMULAN, SCIENCE, SCOTTY, SENSORS, SHIELDS, SHUTTLECRAFT, SICKBAY, SPACE, SPOCK, STARBASE, STARDATE, STARFLEET, STARSHIP, SUBSPACE, SULU, TRANSPORTER, TRIBBLE, TRICORDER, TURBOLIFT, UHURA, UNIFORM, UNIVERSE, VOYAGE, VULCAN, WARP.

```
V P I H S R A T S I M I S S I O N P S T A R F L E E T Z B X
C C D E V I R D A S H I E L D S M C C O Y H T O L Z G D H G
P H A S E R K Q G X T D X P A X H H K A Y C W O B K B Q B L
U N C Z O K R W Q B E O N Y A B K C I S B D G E P T X P E K
N X O W K L I N G O N B S T A R D A T E Y T I V A R G M R U
L K M H X Y K P S N A K U N I V E R S E E U U W N P Z B U M
A M M A Q M R Y U B L W I C I B F W C K C A Q X D Y O X M M
Q D U S E Y O I B F P W L O U O T H G D I T R N E G D I R B
J Z N E L X E H E S L U P M I Y E X I T E M H T N N H F S D
E S I N B A T Y C O R Z G E C K J O C K U J P V H T X Q Y C
S H C I B L E U L A G E B T O O R K C O T H E Y K P O V A Y
A U A G I A M B O E P E T V M E C O S U L U D A I Q W L J F
B T T N R G J K G S L T C U T K R Y N A L U M O R E I E W N
R T O E T N B G I T R R A S P R N A M W E R C O M E I N A E
A L R J N W S X C W E O A I C M H K B T P U V U N E R T R C
T E J E O E L H N T J L S B N Y O N I D V Z E Z D C P E P K
S C V G T Z C Q R X A C L N C G N C N F Y X M Y V N X R D P
W R U A O V J O I R X A X A E L B O N A P T C B I E R P L I
R A L Y H F P R I X C I C X W S A O N L Y T T Q Q I O R E N
C F C O P S E M S K P B V K E H B T O R F R M O R C I I E C
X T A V N T D B H I M M L E H P I R R I E H X E C S S S B H
B H N A E A N O K C O P S J X M E E L C Q A D U V S L E O T
V Y R X D V L M B Q I Q V S A K B O I E G A E E N C E B R I
K T E U T E Z R H Y Y Q P T U N B F Q M L T L K E H C A P P
P N R I F L B O L X G A T N E R F T L E K D L O R N X N J A
F E O H A N A F U F C E D D U O J X R P B T S M O J E U Y E
N B D O B A R I O E R S D T M O I T W Y N O I T A R E D E F
X S S Q M Y U N C X V O D T R I C O R D E R D I O R D N A F
L F A X I D H U R N R M F R O N T I E R K Y B X Z L F X J A
D K V R C E U U Y E P S U B S P A C E D I L I T H I U M V T
```

20

Christmas Weigh-In

Or How To Make Friends At Your Christmas Party

By:- Bill Buxton.

Tiz the season to be jolly, and I'm sure many of you will be having a few parties over the festive season. Perhaps a few of your guests will be interested in their weights after their Christmas indulgences? If so here is a simple program to which will help to enlighten them. It is even good enough to politely chuckle at the result.

First weigh your victims on your bathroom scales and measure their heights with a metric rule. If you measure in centimetres enter this in as a decimal of a metre for "HEIGHT IN METRES". [e.g. For 170 cms. enter 1.70 metres]

If you are worried about the word *Obese* for any of your larger guests (for various reasons) then you could be more tactful by changing this word to *Corpulent*, thus showing your Christmas spirit.

For the more seriously minded the body mass index (B.M.I.) is a measure introduced in 1869, which divides a persons weight in kilograms by the square of their height in metres. I have merely converted the kilograms to pounds in the program because my scales are not metric.

OK, here is the program, it will work on both the Spectrum and SAM - in fact it should work on almost any computer with only a few small mods.

```
10 REM  EATING by BILL BUXTON
20 PRINT "BODY MASS INDEX"
30 PRINT
40 PRINT
50 INPUT "ENTER WEIGHT IN LBS"
   ,A
60 PRINT A
70 BEEP 0.5,0
80 BEEP 0.5,7
90 PRINT
100 INPUT "ENTER HEIGHT IN MET
    RES",B
110 PRINT B
120 BEEP 0.5,7
130 BEEP 0.5,0
140 FOR I=12 TO 36
150 BEEP .01,I
160 BEEP .01,24-I
170 NEXT I
180 PRINT
150 LET C=INT(A*0,454)/(B*B) PR
    INT "YOUR BODY MASS IS : ";
    C
160 PRINT
170 PRINT
220 IF C >29 THEN PRINT "THIS
    MAKES YOU OBESE"
230 IF C>24 AND C<30 THEN
    PRINT "YOUR WEIGHT COULD
    BE A HEALTH RISK"
240 IF C<25 THEN PRINT "YOUR
    BODY MASS INDEX IS DESIRABL
    E"
250 IF C<12 THEN PRINT "FOR A
    BEAN-POLE"
260 GOTO 40
```

Please treat this only as fun - height and weight can be interpreted in many different ways. Adding a few more printed comments could turn the program into a real fun event - just imagine Aunty June being told it was the cream cake she ate for breakfast that is responsible for her problem.

Don't blame me, or *FORMAT*, for any punch-ups or family rifts that result.

"Bon Appetit"

21

MACHINE CODE
WITHOUT THE TEARS

Part 23.

By:- Carol Brooksbank.

```
MIRROR   LD A,71
         LD (MOD1+1),A
         LD A,79
         LD (MOD2+1),A
         LD A,87
         LD (MOD3+1), A
         LD A,95
         LD (MOD4+1),A
         LD A,103
         LD (MOD5+1),A
         LD A,111
         LD (MOD6+1),A
         LD A,119
         LD (MOD7+1),A
         LD A,127
         LD (MOD8+1),A
         RET
```

This month's first routine sets up "mirror writing". It pokes values into BYT_DR which makes the routine start testing the bits at bit 0 and work up to bit 7, instead of the other way round. As the on-screen bit blocks are still drawn in the same order, the result is reversed characters. The locations poked are all MOD?+1 because the BIT tests are 2-byte instructions and the first byte is always 203.

```
MIR_CAN  LD A,127
         LD (MOD1+1),A
         LD A,119
         LD (MOD2+1),A
         LD A,111
         LD (MOD3+1),A
         LD A,103
         LD (MOD4+1),A
         LD A,95
         LD (MOD5+1),A
         LD A,87
         LD (MOD6+1),A
         LD A,79
         LD (MOD7+1),A
         LD A,71
         LD (MOD8+1),A
         RET
```

This subroutine cancels mirror writing by putting the original bytes in BYT_DR all back again. Both of these routines are called from Basic so that the changes are already in place when DRAWIT is called.

```
UD       LD A,(Y)
         PUSH AF
         LD A,8
         LD (COUNT),A
         LD HL,(CHRADD)
         LD BC,7
         AND A
         ADC HL,BC
UD_2     PUSH HL
         LD A,(HL)
         LD (VALBYT),A
         CALL BYT_DR
         LD A,(COUNT)
         DEC A
         JR Z,UD_EX
         LD (COUNT),A
         LD A,(HT)
         LD B,A
         LD A,(Y)
         SUB B
         LD (Y),A
         POP HL
         DEC HL
         JR UD_2
UD_EX    POP HL
         POP AF
         LD (Y),A
         RET
```

This is the routine for "upside down" writing. It is almost the same as CHR_DR, except that before the loop which copies the character bytes is entered, HL is pointed to the last byte. DEC HL is used to move to the next byte to be copied.

```
UD_SET   LD DE,UD
         LD A,E
         LD (MOD9+1),A
         LD A,D
```

```
         LD (MOD9+2),A
         RET
UD_CAN   LD DE,CHR_DR
         LD A,E
         LD (MOD9+1),A
         LD A,D
         LD (MOD9+2),A
         RET
```

These two short routines, both called from Basic, set up or cancel upside down writing by poking the required address into the call in DRAWIT. Upside down and mirror writing can both be in operation at the same time if you wish.

```
LEFT     CALL W_8
         CALL FP_BC
         LD A,(X)
         SUB C
         JR C,STRTLIN
         LD (X),A
         EI
         CALL SCREENOUT ;Sam only
         RET
STRTLIN  XOR A
         LD (X),A
         EI
         CALL SCREENOUT ;Sam only
         RET
```

This subroutine is the response to a left arrow keypress. The width of a character is deducted from the current x co-ordinate. If that sum gives carry, the original co-ordinate was closer to the left of the screen than W*8, so a jump is made to STRTLIN where the x co-ordinate is set to 0 - the leftmost point. If the full step was made, the new x co-ordinate is stored.

```
RIGHT    CALL W_8
         CALL FP_BC
         LD A,(X)
         ADD A,C
         JR C,ENDLIN
         LD (X),A
         EI
         CALL SCREENOUT ;Sam only
         RET
ENDLIN   LD A,(255)
         LD (X),A
         EI
         CALL SCREENOUT ;Sam only
         RET
```

A similar routine responds to the right keypress, adding w*8 to the current x co-ordinate and storing it if it is less than 255, or storing 255 if it would have been more. Obviously you could not start drawing a new character at x=255, but the normal co-ordinate checks will move to a new line when the next character is drawn.

```
UP       CALL H_8
         LD B,A
         LD A,(Y)
         ADD A,B
         CP 175
         JR NC,TOPLIN
         LD (Y),A
         EI
         CALL SCREENOUT ;Sam only
         RET
TOPLIN   LD A,175
         LD (Y),A
         EI
         CALL SCREENOUT ;Sam only
         RET
```

The up arrow moves up one character, or to the top of the screen if a whole character step is not possible.

```
DOWN     CALL H_8
         LD B,A
         LD A,(Y)
         AND A
         SUB B
         JR C,BOTLIN
         SUB B
         JR C,BOTLIN
         ADD A,B
         LD (Y),A
         EI
         CALL SCREENOUT ;Sam only
         RET
BOTLIN   JP ERR_SCR
```

The down arrow moves down a character, but we test again to see whether there is room for another character from the new y co-ordinate. If the original y co-ordinate was too close to the bottom of the screen for a full step to be made, or the new one does not leave room for a character to be drawn, we exit via the "Out of Screen" error message.

24

```
DEL      CALL LEFT
         DI
         CALL SCREENIN ;Sam only
         LD HL,CODE_ST
         LD (HL),32
         CALL STO_CH
         CALL CHR_DR
         EI
         CALL SCREENOUT ;Sam only
         RET
```

The response to the Delete key is very simple. We call LEFT to move back to the start of the character to be deleted. We have to disable the interrupts again because LEFT, which normally exits to BASIC, has enabled them. Similarly, LEFT has paged out Sam's screen. We now store 32, the code for a space, in CODE_ST and call STO_CH and CHR_DR to draw the space, rubbing out the unwanted character. The x co-ordinate is not moved, leaving the printing position at the deleted character.

That is the end of the machine code, except that Sam users must add the following library routines:-

```
STKBYT
SCREENIN
SCREENOUT
```

Everyone now add:-

```
END      EQU $
LENGTH   EQU END-HT
```

When you assemble the code, take a printout of the symbol table if your assembler will produce one, because we are using a number of the label addresses in the Basic. If you cannot get a printout, make a note of the label values needed for line 30 of the Basic from the screen display.

So now for the Basic, Sam users should replace RANDOMIZE USR with CALL whenever they come across it in the listing.

```
5 REM Sam add :MODE 1 to line 10
```

```
10 CLEAR 30999
20 LOAD "?????" CODE 31000 (use whatever name you gave the object code when you assembled the source)
25 REM in line 30, replace the label name and the brackets with the value of the label as shown in the symbol table
30 LET MULTW=[MULTW]:LET HT=[HT]:LET CODEST=[CODE_ST]:LET KEYC =[KEY]:LET MIRROR=[MIRROR]:LET MIRCAN=[MIR_CAN]:LET UDSET=[UD_SET]:LET UDCAN=[UD_CAN]:LET DRAWIT=[DRAWIT]:LET XLOC=[X]:LET YLOC=[Y]
40 INPUT "CLEAR SCREEN? Y/N";Y$
50 IF Y$="Y" OR Y$="y" THEN GO SUB 140
60 INPUT "WIDTH FACTOR? (maximum 9 digits)";N:GOSUB 300:INPUT "HEIGHT FACTOR";N:POKE HT,N
65 REM in line 70, the initial letter of each option is used to select it - you may wish to use INV VIDEO (Sam INV) to highlight the capital letters in the INPUT
70 INPUT "Mirror/Canc mirror/Ups dn/Rt way up/Write";M$
80 IF M$="M" OR M$="m" THEN GO TO 150
90 IF M$="C" OR M$="c" THEN GO TO 160
100 IF M$="U" OR M$="u" THEN GO TO 170
110 IF M$="R" OR M$="r" THEN GO TO 180
120 IF M$="W" OR M$="w" THEN GO TO 190
130 GOTO 70
140 CLS : POKE XLOC,0: POKE YLOC 175: RETURN
150 RANDOMIZE USR MIRROR: GOTO 70
160 RANDOMIZE USR MIRCAN: GOTO 70
170 RANDOMIZE USR UDSET: GOTO 70
180 RANDOMIZE USR UDCAN: GOTO 70
190 RANDOMIZE USR KEYC: GOTO 70
200 IF PEEK CODEST=226 (Sam 177) THEN GOTO 230
210 RANDOMIZE USR DRAWIT
```

25

```
220 GOTO 90
230 INPUT "SAVE SCREEN? Y/N";Y$
240 IF Y$="N" OR Y$="n" THEN GO
    TO 270
250 INPUT "NAME OF SCREEN";N$
255 REM in the line below use w
    hatever syntax is appropria
    te for your storage medium
260 SAVE d1;N$ SCREEN$
270 INPUT "MORE PRINTING? Y/N";
    Y$
280 IF Y$="N" OR Y$="n" THEN ST
    OP
290 GOTO 40
300 LET Z$=STR$ N
310 IF LEN Z$> 9 THEN LET Z$=Z$
    (1 TO 9)
320 FOR K=0 TO LEN Z$-1
330 LET ADDR=MULTW+K: POKE ADDR
    , CODE Z$(K)
340 NEXT K
350 POKE (MULTW+K),13
360 RETURN
```

You can leave out all the REM lines, which are only there to help you enter the BASIC. You can save it to autorun from LINE 10, on loading.

You should reply 'Y' the first time the program reaches line 40, so that the top left x,y co-ordinates are poked into the variables. Thereafter, you are eventually returned to line 40 after every STOP keypress. If you choose not to clear the screen, the printing you have done will be preserved and printing will continue from where you were when you entered STOP. This lets you change type size, mirror writing and so on, on the same screen.

Line 60 prompts you for the width and height factors. You can use up to 9 digits (including decimal point) for W, but HT must be an integer. Using decimal values for W will slow the program down, but can give interesting results. Even values below 1 can be used, but you will need to experiment to see what gives a readable small type - sometimes .8 is unreadable while .6 is perfectly clear. It depends on the typeface.

At line 70, every option will return you to line 70 until you choose "W" (write). Then the program will wait for a keypress, and draw the character if it is a printable ASCII character.

STOP takes you first to line 230, to give you the option of saving the screen, then to line 270, prompting you for whether you want to continue or exit. If you opt to continue, you return to line 40, with the option of clearing the screen or not.

The subroutine at 300 pokes the W value string into the variables.

You can see now that quite a lot of the work of the program is done by Basic. We are only using machine code where we have to because Basic would be very slow. We could, in fact, have read all the keypresses from Basic, but the KEY subroutine is short and efficient so we may as well use it.

I would always do SAVE/LOAD operations from Basic. If you put them into machine code you make it very difficult for the user to amend the program to suit his setup. If storage operations are in Basic, the program is much more flexible.

You can use fancy typefaces with this program. Spectrum users should load the font code block to any address above 32767. The two bytes at CHARS must then be poked with the font address-256, the high byte to CHARS+1 (23607) and the low byte to CHARS (23606). Sam users should load the new font to 20880, overwriting the original Sam typeface, and leave CHARS alone.

There are, of course, amendments you could make to the program. For a start, there is no cursor to tell you where you are on screen. CAPS LOCK is not recognised and gives INVALID CHARACTER, (though SHIFT/letter gives upper case). Or, you might want to make ENTER/RETURN move to the start of a new line. There may be other changes you would like to make. If you break what you want to do down into the simplest possible subroutines, as we have in this program, you should not find it difficult to make additions and insertions, and it will be excellent practice at working out what has to be done and translating it into machine code.

Next month, I want to think about where we go from here. See you then, in the meantime *MERRY CHRISTMAS*.

CORRECTIONS

Last month's *Machine Code Without The Tears* (part 22) seems to have come in for a bit of sabotage in its listings.

Carol found the errors and blames the IBM for mucking up her work, claiming "Perhaps it thinks that if too many people start writing machine code on SAM or Spectrum it will be out of a job".

Well, I don't know about that, but twice in the CHR_DR subroutine it has printed a label in the list of instructions, instead of at the start of the line with an instruction alongside it. The relevant bits of listing should read:-

```
       LD HL,(CHRADD)
NX_BYT PUSH HL
       LD A,(HL)
(etc.)

CHR_EX POP HL
       POP AF
(etc.)
```

Sorry for the mistakes, hope they won't happen again. At least it proves Carol checks what appears in print with her originals. Still, at least Carol drew it to our attention before you needed to assemble the code.

The HELP PAGE

Edited By:- Ray Bray..

Alan Price of Swindon has purchased a copy of Tasword+2 but can't get it to save/load using the PLUS D. The simple answer to this Alan is to purchase the TASCON+2 conversion software from *FORMAT* (Order Code FST-06 price £4.50). The alternative is to modify the program yourself, as originally suggested in an article by John Wase in the August 88 issue of *FORMAT*:-

1. Load the tape, this is done in two parts and then a screen is displayed. Break at this point.

2. Two lines need modifying:-

```
10 CLEAR VAL "25299" : PRINT '
   ''' TAB VAL "7";"Loading ta
   sword": LOAD d1;"tascode" C
   ODE : CLS
80 CLS : LOAD d1;"tasbas2"
```

3. Then SAVE d1 ;"Tasbas1" LINE 10.

4. Execute the following POKEs into the code:-

```
POKE 51966,207
POKE 51967,49
POKE 36894,7
POKE 36897,17
```

5. Enter NEW as a direct command. The machine code is safe above the new lowered RAMTOP. MERGE the next piece of BASIC from tape.

6. Modify line 10 to:-

```
10 POKE @6,1 : RANDOMIZE USR V
   AL "51966" : STOP (Note the
   new address for running the
   code)
```

7. Then SAVE d1;"tasbas2" LINE 1

8. RUN to initialise Tasword, change drive number to 1 and any other customising you want to do, go into Basic from the main menu, and type:-

```
SAVE d1;"tascode" CODE 253004
   40236.
```

The good news is that you can now load/save/merge and print text. The not so good news is that you can only CAT a disc from Basic, cannot print with Datamerge or SAVE Tasword from the menu option. The files produced are Microdrive type and you cannot successfully transfer them to another disc using MOVE.

You may recall that a few months ago Chris Dodd wrote asking for help in getting a sample of E-TRACKER music to run under interrupt on his SAM, but we were unable to help him. As luck would have it, a few days later his copy of FRED33 came through the door and this contained a program to do just that. However, although he found that this started the music playing, he was unable to stop it! Having listened to the sample in question I can understand that the first time round the music would be interesting but, by the third repeat, it becomes wearing. On this occasion we can offer some help. The machine code program is in three parts; the first at 16384 sets the interrupt vector to the address of the third section at 16436 which executes the music. The second section at 16416 resets the interrupt vector to it's original value. Therefore to stop the music playing you have to execute a CALL to 16416. If you wish to restart the music then you have to CALL

16384 followed by a CALL to 16436.

I have received four more letters on a subject which has been mentioned more times than any other I can think of and there are still problems....

What subject? The printer. The questions are varied but have been simplified without losing context, all refer to the Spectrum, both 48K and +2a.

a) Q. Can laser and ink jet printers be used with the Spectrum +2A using either the PLUS D or the built in printer port ? The answer is yes, in respect that either printer port can be used. I am using a Commodore ink jet with both. The old Kepston "E" can be used as well. I have one attached to my 48K+. I can see no reason why a laser cannot be used though I have never tried one. The only problem may be the control codes.

b) Q. I don't understand the printer manual, why has it got to be so complicated, who is it aimed at, who wrote it?

I don't know why printer manuals have to be so difficult, in theory there is no reason for it, and I often feel that those responsible for writing the manuals are either so expert that they can't appreciate our problems, or they have never had to set up the printer themselves! However, to be fair, the manuals have to be aimed at the widest possible range of user, and the printers are required to operate with almost any computer, therefore it is extremely difficult to write a manual which is concise, and simple to understand, whilst at the same time giving comprehensive cover of the subject.

c) Q. Are more control codes required for using laser and ink jet printers than for dot matrix. If so, could something like Tasword 2 cope?

To answer the Tasword bit first. With Tasword 2 you have 16 graphic locations in which control codes can be placed, each location can have a maximum of 4 bytes to perform a particular action (e.g. underline, bold etc). The only possible problems I can see is that 16 locations is not enough and you may require more than 4 bytes to perform a particular function. With the set up I have, there is one spare. G1-G4 and GS1-GS4 are on/off switches for styles (bold etc), G5 and GS5 are for 1/4 and 1/2, GS6 for div, GS7 and G7 toggle between draft and NLQ modes while G8 and GS8 switch between IBM and Epson. Four require all 4 slots to be used.

The number of control codes varies with printer makes, the more complex, the more required. Certain functions on both systems require more than 4 code slots, this is where the problems are going to lie when updating printers and using Tasword 2. Perhaps someone can comment on Tasword +2 and Tasword +3? (Note *The Secretary* caters for up to 34 codes with 16 bytes each.)

I am delighted to say that we have had some response from readers on three SAM queries that we were unable to answer fully in recent editions of the Help Page. The first concerns the query from W.V.Holden who wished to use Masterfile and Omnicalc on SAM, but we were unable to say whether they would run properly under an emulator. Maurice Smith of Ipswich confirms that both utilities will run under the Specmaker emulator from S.D.Software which, utilising a RAM-disc, gives very fast load and save operations.

Basil Lankester had a problem getting a graphics printout from the SAMPRINT program with a Cannon BJ10EX printer, which we were unable to help with. He has now written to say that, after much experimenting, he has solved the problem. For the benefit of others, the answer is to set the printer to MODE1/MODE2 and select DIP switches 3, 7, 10 and 11 to ON.

My sincere thanks to these readers for thier help.

Finally a general question. What is the difference between a computer and a PC, and when is a PC not a PC. This is what Harry Connell would like to know.

The answer is quite simple. The word computer applies to all machines, the definition of computer is; a machine that receives, stores and processes data according to a stored program. Originally the term PC (Personal Computer) referred to the IBM PC introduced in 1981 but the term was soon adopted by the computer industry to mean any computer that was compatible with the IBM PC, which was accepted as the industry standard, thus the saying 'IBM Compatible'. In theory, it meant that anything that worked on a 'true' IBM would work equally on other machines. Most 'PC clones' were 90% PC compatible. More recently, due to various factors, the term PC has been used to describe computers that will all run the same software, normally 8x86 processor based (e.g 8086, 8286, 8386, 8486).

The Spectrum and SAM are not PCs in the accepted sense of the word as they are 99.99% incompatible with other machines since they use the Z80 processor.

As to drawing up a list, it depends on what you want to use the PC for and how much you are prepared to spend. However, I regret we are unable to give specific advice on PCs and you will have to turn to a relevant journal for that information.

[**Editor's note:**- I have read the above points on the title PC and decided to print them as Ray sent them in.

However, I would like to point out to readers that many people hold an alternative view which I give here so people can make up their own minds.

This alternate view is that the title 'PC' stands for Personal Computer (Spectrum & Sam being two prime examples). IBM highjacked the title but can lay no legal claim to it. A PC is a computer used by one person at a time, usually a desk-top machine and almost always self- contained.

Uncle Sir Clive always referred to the Spectrum as a 'Personal Computer' in his adverts and so have many other manufactures.

I now find it difficult because I have a 386SX which I often refer to as 'The PC' something I really must cure myself of. I will always think of my SAM and Spectrum as far more Personal than any IBM compatible will ever be. *Bob.*]

OK, that is it for this month. As usual send your problems/answers to the following addresses:-

Uni-Dos Corner

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

As users of UNI-DOS will know CREATE files are used to add new commands and functions which can be used in your own BASIC programs. The CREATE files, when loaded, are stored in the BASIC memory space and they must be written to be relocateable.

Over the next few months I want to give you some useful examples of CREATE files. There will be a brief description, then the assembler listing and then a BASIC program for those who do not have an assembler.

This first months CREATE give a new command GOTO@ which lets you goto any statement on any line within the BASIC program, useful for writing very compact programs. The syntax is:-

```
GOTO @ <line number>,<statement
       number>
```

OK, here is the assembler source:-

```
        ORG 60000
START   DEFB 1 ;one syntax only
        DEFB 236 ;GOTO character
        DEFW GOTOLEN
L_GOTO  CP "@" ;code 64
        RET NZ ;reject if the
               syntax is wrong
        RST 40 ;point to the
               first parameter
        RST 16 ;call to Spectrum
               ROM
        DEFW 7298 ;check/
                  evaluate
        CP "," ;separated by a
               comma?
        RET NZ ;reject if the
               syntax wrong
        RST 40 ;point to the
               next parameter
        RST 16 ;call Spec ROM
```

```
        DEFW 7298 ;check/eval
        RST 24 ;accept syntax
        DEFB 13 ;syntax end.
        LD SP,(23613) ;copy the
                 value in 23613
                 to SP
        RST 16 ;get statement
               number from
        DEFW 7833 ;calc-stack
        LD A,C ;place value in A
               register
        LD (23620),A ;into NSPPC
        RST 16 ;get line number
               from calculator
        DEFW 7833 ;stack, place
        LD (23618),BC ;it to
                 NEWPPC
        RST 24 ;end of the mc
        DEFB 14 ;COM.END
GOTOLEN EQU $-L_GOTO
```

Right, for those of you without an assembler (which you really should have you know) here is the same routine in the form of BASIC DATA lines.

```
10 DATA 1,236,36,0,254,64,192,
   239
11 DATA 215,130,28,254,44,192,
   239,215
12 DATA 130,28,223,13,237,123,
   61,92
13 DATA 215,153,30,121,50,68,9
   2,215
14 DATA 153,30,237,67,66,92,22
   3,14
```

When you have finished typing this program (which ever way you do it) save the code by:-

```
SAVE d*"GOTO_code"USR 60000,42
```

Right, that gets you started. Next time I'll be back with a CREATE file which will print the memory left and memory available on screen. See you soon.

YOUR LETTERS

Dear Editor,

Just a few lines just to say 'Well Done'. The trip up the A38 for the Gloucester Show was well worth it - we were able to put faces to names as well as seeing future hardware and software on view - as well as present available items which we were able to buy or order.

Once again 'Well Done' thanks for all your efforts on putting the show together and hope that you will be able to put another one together in 1994.

Yours sincerely, Christopher, Ian & Eric Dodd.

───────

Dear Editor,

As a new subscriber may I first congratulate your excellent publication, much better than the so-called "magazines" that treat their readers like pre-pubescent delinquents (thank God they have disappeared).

What I think would be of great interest is a book, giving important news and events of home computers/game consoles since the mid-seventies (similar in style to the *Chronicle of the 20th Century*). It could also give reviews of most home computers/consoles that have distributed in the UK and finally show a list of "the top thirty people that have contributed the most to home computers". If such a book exists, it would allow the older generation to reminisce the great days before the two Japanese console giants (spit!) took over.

By the way, do you or any reader know where I can purchase a lead for connection from a TV Scart to the Spectrum+3's R.G.B. socket?

Yours sincerely, N.Exley.

I'm not sure about the book, sounds like a very big job to me, but I like the idea of a list of the top people. So, how about it readers? List your top ten people in home computer history. We will collate the figures and publish them in a future issue. We will use the method of giving 10 points for a first place vote, 9 for 2nd ..... 1 for 10th, so every vote counts.

As to your scart lead, try Blue Alpha, they should be able to make one up. **Ed.**

───────

Dear Editor,

I read the "I had a dream" article by John Eyre on his dream machine. I remember reading a long time ago (where, I can't remember - Possibly Sinclair User) that a company in France were developing a hand-held Speccy. Is this true? Who knows!

Anyway couldn't West Coast develop a console with a keyboard, to have features like the Amstrad note-pad, Able to play games with graphics similar to the Game Gears, as well as all the features John mentioned. The Mini Sam could also be linked up to the Sam 512K for easy programming of a cartridge. This I feel could possibly save the Sam/Speccy scene as it would be a new feature in computing. I don't see why it should be just a dream.

Could *FORMAT* pass on these ideas, and John's ideas from last month, on to West Coast as it would make interesting reading for a reply. Could *FORMAT* possibly do an interview with West Coast, so the Sam owners could know what they have planned, and what the future is?

What is the best Assembler for Sam, as I would really like to enter some of your Machine Code programs.

I have been contemplating starting my own games magazine, but really don't have resources to start. So if you need an editor for a *FORMAT* Games Mag, then I would be interested and I do have plenty of ideas which could help out. I would also be interested in helping out/review products for another editor.

May *FORMAT* continue to be a successful magazine and could there be a few more basic scrollers in Short Spot.

Yours sincerely, Robert E.Clayton.

───────

Dear Editor,

Regarding K.Murray-Taylor's letter in Vol 7 Nº 1 re his genealogical program, I would be very interested to see it published. I am a keen family history man and all my genealogical data is embedded in Tasword 2 and Masterfile files. A Sam program might be just what I want. I am sure K.Murray-Taylor is right. there must be many readers with a genealogical interest.

Yours sincerely, W.V.Holden.

───────

Dear Editor,

I am writing on behalf of myself, one of what seems like the only Sam user in Northern Ireland. I bought my Sam about two years ago in a shop in Belfast and since then have been hooked on the Sam but I'm feeling pretty alone. Nobody

else around me has a Sam but I do believe other people in N.Ireland do have Sam computers.

The shop in Belfast where I bought my Sam has since closed down and now I have to send away for all my software and repairs etc. I am appealing to West Coast Computers if possible to set up a shop, or supply an existing shop with Sam hardware/software as there is a market for it.

I have a few other questions to ask while I'm writing. I have two disc drives but only one seems to work - this being the drive one. The second drive is installed but does not work. Every time I try to use it the computer tells me that the disc drive is not installed - it does not exist. I changed the two disc drives around and found that the second one does work in drive 1 slot. Also when the second disc drive is installed the light comes on, but no discs will load up as the computer thinks the drive is not there.

Have you any helpful suggestions of what might be wrong? Also do you know where I could obtain a disc drive users manual? as I was not given one when I bought my Sam and two disc drives.

Also one of the pins on my euro-connector has broken, its pin 3A with signal WR. What does WR mean? Could this be repaired or do I need a new interface?

I will leave you with one last thought, perhaps you would consider holding a FORMAT Fair in N.Ireland.

Yours sincerely, Keith Watt.

From the bottom, I would love to organize a show in your part of the UK however, finding enough exhibitors prepared to travel across the waters would be impossible - they just could not get a financial return on it

I think you need to get your computer back to Blue Alpha for repair, give them a ring and they will tell you what to do and how much it will cost.

Revelation supply SAMDOS to West Coast, send them a cheque for £2.50 and they will send you a new manual.

As to supplying shops, WCC at the moment are concentrating on the mail order market because that allows them to keep the prices down. As the SAM market expands some shops may well be interested in stocking SAM items.

If any other Northern Irish users want to get in touch with you (and there are quite a few over there) we will pass on their letters. **Ed.**

Dear Editor,

With regards to your comments in 'The Editor Speaks', *FORMAT* Vol 7, Nº 1. Classic Spectrum software is still available for hire from Spectrum Software Hire, and will be for a quite a while to come I think.

From the same issue of *FORMAT*, the piece on page 8, concerning the use of fax paper in a Sinclair printer. Yes, fax paper does work in one of these, and yes, it works in an Alphacom 32 too. Print quality is better than the standard silvered paper, as noted in your article.

I hope these answers to some questions raised in FORMAT are of help to you.

Yours Sincerely, L.J. Garland.

The hiring of software, without the publisher's written permission, is illegal. I, in my twelve years in the home computer market, have never known a company to give permission. Therefore I am not prepared to publish the address you gave in your letter. If SSH can convince me that they have permission for each and every title they hire I will of course reverse this decision. **Ed.**

Dear Editor,

I received the November 1993 issue of FORMAT this morning, and I am writing with a couple of things relevant to matters raised in the issue:-

1. The problem with a +2 and 'TW2' mentioned on page 23 can be circumvent by either (i) putting the Spectrum into 48k Basic before loading or (ii) by typing **SPECTRUM** before loading. This allows the use of the SYMBOL SHIFT & A combination to call up the main menu.

2. In answer to your question regarding the distribution of the last issue of *YS*. I can tell you that it was available in this part of Sussex. I have to add, however, that I was able to get hold of a copy because I reserved a copy with my newsagent.

Finally, can I take it that you have shelved plans for your games-orientated title, given that I have not had a reply to my query regarding it since I first asked back in July??

Yours sincerely, Jon Rose.

GAMES FORMAT is still very much in my mind and I'm determined to get it launched one day. **Ed.**

Dear Editor,

After reading this month's letters page in *FORMAT* (re: D.E.Alexander LORDS OF MIDNIGHT) I think that I may be able to help him. *SU* put this game onto one of their cover tape's. The magazine in question was Nº121, April 1992. I suggest phoning (0858) 410510 and asking for 'Sinclair User back issues'. This was printed in all of the *SU*'s that I have, including the last issue. Also you asked readers to let you know if they could get the last *YS* or not. Well I managed to purchase a copy in W.H. Smith's in Swindon on the first day that

it was supposed to be on sale. At the time Smith's had about a dozen copies and as far as I know they were the only newsagent in Swindon to stock it.

And finally, I would like to pass on my feeling's (& thought's) on the subject of console's & computer's. Personally I own a Speccy +2 & an Atari Lynx. When I bought both machines I was told by many (including press and salesperson's) that neither would phase out easily. Well, the Speccy is now over 5 year's old and still going strong and although a few of my friend's own Amigas, I wouldn't swap my Speccy for anything else. If the Sam could load 100% Speccy software (including 128K) then I would buy one of them. As far as console's are concerned my Lynx is great in the sound and graphics department but that's all. My brother owns a Sega Megadrive (and Sonic the hedgehog) and I simply can't for the life of me understand what all the fuss is about with Segas and Nintendos.

I'm sorry if this bit is long winded but I just wanted to get my say across.

Yours Sincerely, Alan Price.

Dear Editor,

Please find enclosed a cheque for another year's subscription to *FORMAT*. Unfortunately, I have had a dreadful year so far, and with all the problems that fate has thrown my way I have had very little time for computing and none at all for my Spectrum. However, I will keep up my sub for the time being as I still enjoy reading *FORMAT* - if only for the letters page!

On this months letters page, Bernadette Dowsland asks about 5¼" drives. I suggest to anyone who has similar difficulty that they try Micro Mart (from newsagents). There are several vendors advertised there who

supply obsolete or second-user equipment. Bull Electrical (250 Portland Rd, Hove, East Sussex, Tel: 0273 203500) are also useful - I bought two 1Mb 3½" drives for £9 each from this supplier (although I haven't had time to test them).

I now use a PC almost exclusively (e.g. to type this letter), but I enjoy the old Spectrum games. I use the Z80 emulator, and the Spectrum/PLUS D is still the easiest way to transfer the tapes to my hard disc. Eventually, I will get around to building the tape interface, and then my Spectrum will need to find a new home.

Naturally I find the Sam articles of little relevance, but I read them anyway, as it is interesting to see how far an 8-bit machine can be pushed. Short Spot is always interesting, and so are the machine-code articles, (where I work we have a 1979-vintage MZ80K which runs a data-logger. I still have to program this using Z80 M/C and BASIC).

I wish INDUG and *FORMAT* the best of luck for the future. I will stay on for the ride - if only as an observer.

Yours Sincerely, John Pierpoing.

Dear Editor,

This month's Letters have sparked off a few responses from me. First, beware of using disc head cleaners too often. Whatever the manufacturer claims, the cleaners work by rubbing a mild abrasive against your microscopic head mechanism (even a soft felt or plastic pad is abrasive on a microscopic scale) and can wear it out quite quickly, sometimes after only a dozen or so 'thorough' cleanings, depending on the quality of the cleaner. In fact, floppy discs have special cleaning pads built-in, which clean the disc as it spins so the

head has very little chance to get dirty (unless perhaps you are a heavy smoker).

I am writing this on a machine whose drive has not been cleaned in eight years! So I would suggest using your cleaner once a year, at most - and use a reputable brand.

Has anyone else noticed how the Nintendo generation cluster in awe round old 8-bit games when given the chance? Something to do with playability.... How about Revelation or B.G.Services putting such classics as 3D Ant Attack or Lords of Midnight on a disc with a cut-down PC=Z80 and selling them as standalone PC versions?

A few weeks ago, I bought a switchable 40/80 track 5¼" drive for a BBC without any trouble. I am told that BBC and PC drives can not be used on each other's machines, so which does one need for a Spectrum or Coupe?

Finally, thanks for the info on the Speccy Joystick connections, Bob. You were right after all!

The last Your Sinclair did appear in Bristol in those few stationers (e.g. W.H.Smiths) who still carried it - but there weren't many copies, and they soon vanished!

Yours Sincerely, Guy Inchbald.

I know that Revelation and B.G.Services are looking for software for just that sort of project Guy. If anyone owns the rights to any Spectrum software then please get in touch with them or give me a ring at *FORMAT*.

Letters may be edited of shortened to fit on these pages.

SMALL ADS