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November 1996.

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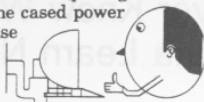
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# NEWS ON 4

## SAM-CLOCK

When the expansion of INDUG into the PC market was announced some months ago, we promised that Spectrum and SAM users would benefit. Well the first benefit is set to happen soon.

We have purchased the rights to the SAM\_CLOCK from West Coast and plan to release it in the New Year as a **FORMAT** product. The board will fit 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.

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. It will be priced at £24.95 for INDUG members, £29.95 for non members. However, as a launch offer, we will accept advance orders at the special price of £20 on the basis that cheques will not be cashed until the SAM\_CLOCK is ready to ship. Advance orders must be post-marked no later than Friday 20th December. Overseas readers please add the usual extra postage.

A Spectrum version will follow as soon as the design can be done (see this months editorial).

## LAST WELSH SAM

Since SAMCO went down, SAMs have been built in South Wales by a small team of out-workers. First under the control of Blue Alpha, then by West Coast. For the last 12 months we have passed orders direct to them as they have come into the office here in Gloucester.

But, from the start of the New Year, production of all West Coast products will shift to Gloucestershire, using

similar skilled out-workers..

The move has been prompted for two reasons. The first is that one of the girls is quitting home assembly work to start a family. The other reason is cost, moving the parts and the assembled machines and interfaces to and fro between Gloucester and Swansea adds a fair bit to the overheads.

Interface production has already moved and the last SAM Elite will come out of Swansea sometime during mid December. It is planned that this last machine will have a special sticker on it to commemorate the special occasion.

While it is sad that one era will be coming to an end, we can look forward to what looks like being an even brighter future for SAM and for SAM users..

## HOLDFAST CHANGE

Guy Inchbold, who formally ran Holdfast Computing, has taken over the assets and customer support from his old company.

Guy has stocks of the 'Early Learning Joypad' which, if you haven't seen it before, is yellow with chunky red buttons designed for even very young children to use. It is Atari, SAM, and Kempston joystick compatible (a small program makes it work with the SAM's cursor keys). Adaptors for the BBC and PC joystick ports are also available. For more details contact Guy Inchbold at Park View, Queenshill, Upton-on-Severn, Worcs, WR8 0RE.

In addition, Guy will also continue to supply special cables to order. Just send him details with an SAE and he will send you a quote.

## Credits:

**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

Nice day for the Gloucester Show wasn't it? Sunny morning and no more than a little light drizzle until late in the evening. The show was very successful, although for some strange reason attendance was down on the April one, what's the matter with you all - don't you like having so much notice? Still, thanks to all who did turn out, hope you enjoyed yourselves. I'll let you know the date of the next Spring show as soon as it is fixed.

The second issue of **FORMAT PC** will be out towards the end of the month. The first issue has gone down very well and the demand for the second issue is already very high. If you have not yet reserved your copy then send us £2 in stamps together with your INDUG number and we will send it to you with the December issue of **FORMAT** (overseas readers please see the leaflet enclosed with this issue).

In the news page you will have seen the item about the new SAM\_CLOCK interface we will be launching in the New Year. Well I also want to produce a Spectrum version as soon as possible. I am looking for a hardware person, with good knowledge of the Spectrum, to convert the design. I would like to get the Spectrum version (which I regret may have to cost a little more because of the more expensive edge-connector) on the market as soon as possible. I think I am right in saying this would be the first clock/calendar board ever produced for the Speccy (unless one of you knows better). Anyone interested in doing the re-design please get in touch.

And the SAM\_CLOCK is not the only new piece of hardware that is planned.

Keep reading **FORMAT** as there are several new things to be announced in the New Year.

Right, next thing on the agenda for this month. Spectrum keyboard membranes. I've had several readers on the phone recently, after replacements for their Speccy, and so far I have not been able to help. Do any of you know where they are still available? 128K, +2 and the original 48K seem to be the ones in demand.

Next, my usual, regular, appeal for articles. We are getting a little low again at the moment and as you know I like to have a nice bit stock-pile to chose from. There seems to have been more coming in recently for the Spectrum (but don't let that put you off doing some more) but I could do with more SAM material to help keep the balance within these pages and I could also do with any general Z80 articles - especially something in the hardware line.

Now I know there are quite a few of you out there that are into things like Amateur Radio and other interesting subjects. Well how about an article on how you use your Spectrum or SAM to help your hobby along. I'm sure there will be lots of people interested in what you do, so come on, get it down in writing and off to us right away.

Finally, another appeal for Christmas items. It is just around the corner and we need your help in finding more seasonal items for next months issue. Cartoons, puzzles, seasonal programs or stories. You name it, we want it - but quickly please.

Until next month.

Bob Brenchley, Editor.

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# SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

'Tis November already, and this is Wase reportin'. I'm sitting here, struggling with a grey Spectrum+2 (yet another of the many; it's not really mine, it's Lorri's), trying to format discs. Only standard double density discs, dammitt! Not very high tech, or anything. They won't. The drive keeps on giving sector errors. I've taken a batch of discs. The first one failed. So I tried a HD disc. Formatting it to DD, I mean, just in case the recording medium was defective - the particle size in the HD stuff is tested to higher limits. After a bit of fiddling, that formatted. But the next low density disc wouldn't.

Trouble is, my guess is that sod's law was, as usual, affecting Wase. I think I just struck lucky - occasionally, it *will* format a disc. But it took a lot of fiddling to find out. Like, the low density discs format straight away on a PC compatible. It's still not formatting the discs properly, and I'm trying to find out why. That's not really your problem (though any clues on utterly arbitrary sector errors on a PLUS D/Lifetime drive combination will be gratefully received). What I was really musing on was the contrariness of nature when one comes to computing. I mean, had the HD disc not formatted, I would have saved a couple of hours..... Isn't life a pig!

Talking of life being a pig - don't refer to Ettrick Thomson as being at Aldeburgh as I did - he's moved! He sent to me, mentioning this and he, too, complained, though this time about moving house! This, writes Ettrick, has

seriously interfered with his computing. I'm not surprised, though glad to hear he is gradually getting back to it.

Anyway, Ettrick took a different view from the view Roy Burford took last month, and assumed that words can be hidden in the wordsquare, and they can be horizontal, vertical, diagonal and in both directions, so that means there are eight sets of strings to be scanned. So he wrote a program for SAM - some time ago, in fact. Because it was some time ago, its objective was a bit different from that of Simon Turk, but it's interesting just the same. The idea of Ettrick's program was not to find a hidden word, but rather to find all words. So all eight sets of strings are displayed horizontally, in turn, and therefore any hidden word will eventually appear in its proper letter order as part of one of the displayed strings.

Ettrick very kindly 'fudged' it by adding a few extra lines, so that I could enter a wordsquare; he used the wordsquare in the Christmas 1993 competition. However, as there is no real way of providing an array, short of typing it in, it's just not worth printing this. Just type in the 28x28 Competition square, and it'll find all the words. It's a good example, so if you've got the 1993 volume (and I know that many of you have indeed got this on the shelf), try it: it's all full of christmassy bits and pieces, so it's seasonal too! Once you've had a little play along the lines suggested, RUN and enter your own wordsquare.

Here is 'wordsq+' so get typing!



```

5 REM Wordsquare:Ettrick Tho
mson:
10 MODE 3: CSIZE 8,9: POKE SV
AR 618,0
20 INPUT #2;"size of wordsqua
re (no.of rows=no.of colum
ns):";n
30 DIM w$(n,n)
40 PRINT "input wordsquare, r
ow by row"
50 FOR i=1 TO n
60 INPUT #2;(i);":":w$(i)
70 NEXT i
80 LET s$=STRING$(n+5," ")
90 MODE 3: CSIZE 8,9
100 disp$or "Horizontal ","lef
t","right","top to bottom"
110 disp$gen "Vertical ","top",
"bottom","left to right",1
,n,"1","n",1,0,0
120 disp$gen "Diagonal ","SW","
NE","top left to bottom ri
ght",2,2*n,"n-(n+1-i and i
<n)",1-(n+1-i and i>n)",
-1,-1,-1
130 disp$gen "Diagonal ","NW","
SE","bottom left to top ri
ght",1-n,n-1,"1-(i and i<0
)",-n-(i and i>0)",1,1,n
140 PRINT AT 11,0;"Press:''1
: To repeat the analysis''
''2: To enter another words
quare''3: To stop"
150 DO : GET c: LOOP UNTIL 0<c
AND c<4
160 IF c=1 THEN GOTO 100: ELSE
IF c=2 THEN RUN : ELSE ST
OP ::
200 DEF PROC disp$or a$,b$,c$,
d$
210 CLS : PRINT a$;b$;" to ";c
$d$
220 PRINT AT 11,0;"The 1st lin
e of the title shows the o
rder in which the letters
are used for the sequence
displayed.""The 2nd line
shows the order in which
the sequences are used.""
There is a PAUSE after eac
h sequence"
230 prthor 1,n,1
240 CLS : PRINT a$;c$;" to ";b
$d$
250 prthor n,1,-1
260 END PROC :
300 DEF PROC prthor j1,ju,s
310 FOR i=1 TO n: PRINT AT 5,0
;i1;" ";
320 FOR j=j1 TO ju STEP s
330 PRINT w$(i,j);: NEXT j
340 PAUSE : NEXT i
350 END PROC :
400 DEF PROC disp$gen a$,b$,c$,
d$,il,iu,l$,u$,s,k,d
410 CLS : PRINT a$;b$;" to ";c
$d$
420 prt$gen l$,u$,s
430 CLS : PRINT a$;c$;" to ";b
$d$
440 prt$gen u$,l$,s
450 END PROC :
500 DEF PROC prt$gen p$,q$,r
510 FOR i=i1 TO iu: PRINT AT 5
,0;s$; AT 5,0;i+d$;" ";
520 FOR j=VAL p$ TO VAL q$ STE
P r: PRINT w$(j,i+k*j);: N
EXT j
530 PAUSE : NEXT i
540 END PROC

```

Although this does not directly solve Simon's problem, it could be adapted to do so, and is, in any case, a good example of how to read and display such strings. Ettrick suggests a satisfactory method of then going about comparing if a given word appeared in any of the strings is to use Sam's INSTR function to detect if it does. Many thanks, Ettrick.

A letter has also arrived from Roy Burford of Norton, Stourbridge, who writes that he had, indeed, failed to appreciate the complexities of Simon Turk's problem. However, all that's well ends well. He also, more importantly, mentions that in Mrs Taylors erring line 270, there is clearly something wrong with Mrs Taylor's version. The interpretation of the line should be something like:-

```
PRINT #(number or variable)
```

where the output is channelled to various locations - 0 and 1 to lower screen, 2 to upper screen, 3 to printer. Either PRINT # R1 will return, on the

assumption that R1 is a variable, or PRINT R1 will also return, but here the variable will be printed, by default, to the screen, again on the assumption that this is a variable; in both cases one must assume some value has been assigned to the variable by doing something like LET R1=3, or whatever. If this has not been done, then there will be an error report, because the Spectrum doesn't understand what is going on. Mrs Taylor quite rightly got just such an error message, showing that line 270 was involved. Many thanks, Roy.

Ettrick, too, has sent a further letter roughly repeating what Roy has said. Ettrick suggests that the correct version is likely to have been something like...

```
270 PRINT #1; "NO MATCH FOUND":
which would have put the message on
the lower screen - quite a reasonable
place for such a message, after all.
Finally, Ettrick mentions that Simon
Turk's improved 'wordsearch cracker'
is quite a program. A slight improvement,
saving time, is achieved by replacing line
265 by:-
```

```
252 LET u=x+xdisp*(LEN-1) : LE
T v=y+ydisp*(LEN a$-1)
256 IF a<1 OR u>c OR v<1 OR v>
r THEN GOTO 250
```

Instead of checking separately that each character of the sought for word would be within the specified area, the program merely checks that its last character is: if so, then the whole word will, of necessity, also be there, within the area.

Many thanks (again), Ettrick.

Finally, on the vexed problem of Mrs Taylor's erring line, I have a late-arrived word once again from Ray Burford. Ray notes that in connection with Mrs. Taylor's line 270 problems, he has just typed in 'colour weaver' from Volume 10, Number 2 of *FORMAT*, page 12, October

1996, and found the same syntax problems. These occur in Lines 1680, 1710, 1860 and 1710. Leaving out the 'R' solved the problem. Further, Line 5030 has UDG rather than the correct word USR and 'E' should be 'A'. In Line 1700, 'A' would appear to be GRAPH 'A', though Ray suspects 'E' would be more appropriate! Nevertheless, Ray writes that "compared with a lot of bug-ridden stuff published both before and after 1988, this is an excellent program. I suspect that the above problems are something to do with the translation to hardcopy which has occurred recently, as the Editor noted in 'Short Spot', p7, Vol 10, N<sup>o</sup> 1."

This, I think, also answers Mr Smart's problems, if I can digress. Mr Smart from Selkirk, in Scotland, has also written to complain that his computer makes electronic v-signs at him whenever he tries to get it to accept the dreaded lines 1680, 1710, 1860 and 7010! And Mr Smart has, of course, spotted the problem in line 5030, where it interprets USR as UDG and 'A' as 'E', though he has not got the program to go as far as Line 1700. Our apologies, Mr Smart, and I hope this explains that there is a little glitch in the translation program somewhere!

Next, we have one or two little bits from Mr Round of Stirchley, Birmingham, again; we hope they don't suffer too much during printing!

Firstly, there is a marvellous little program called 'patterns'. It's a tiny program, and runs on any old Spectrum, no bother. What is surprising and unexpected is the sheer variety of patterns you can get out of it! Try changing the numbers in Line 20, and see what you can get!

```
1 REM ** PATTERNS **
2 REM **BY JAMES SPENCER OF
COVENTRY **
```

```

3 REM ** SINCLAIR USER MAY 19
86**
5 REM TRY CHANGING NUMBERS I
N LINE 20
10 PAPER 0: PEN 4: BORDER 0: C
LS
20 FOR A=51 TO 10000 STEP 100
30 PLOT 65,30
40 DRAW 120,120,PI*A
50 CLS
60 NEXT A

Good, isn't it. I expect some comments
from some of our more experienced
programmers on why such a little
snippet produces such a variety.

Next we have an extremely simple
example of basic artificial intelligence.
'Crosses' is a noughts and crosses game
program where you play against the
computer. Try and beat it!

2 REM **NOUGHTS AND CROSSES**
3 REM ** BY.MARY PICKFORD**
4 REM ** SINCLAIR USER 1986/7
**
10 RANDOMIZE
15 POKE 23609,35
20 DIM B(3): DIM C(3)
30 FOR F=1 TO 3: READ B(F): NE
XT F
40 FOR F=1 TO 3: READ C(F): NE
XT F
80 DATA 54,98,142
90 DATA 35,77,122
95 GOSUB 6000
97 CLS
100 GOSUB 8000: REM GRID
990 DIM A(3,3): DIM L(8)
1000 INPUT "CO-ORDINATES";X,Y
1010 IF X<1 OR X>3 OR Y<>INT(Y)
OR Y<1 OR Y>3 OR Y<>INT(Y)
) THEN PRINT AT 21,3;"OUT O
F RANGE TRY AGAIN": GOTO 10
00
1015 IF A(X,Y)>0 THEN PRINT AT 2
1,3;"POSITION FILLED": GOTO
1000
1017 PRINT AT 21,3;"(22 spaces)"
1020 LET X$="X": LET SC=1
1030 IF X$="X" THEN PLOT B(X),C(
Y): DRAW PEN 2;35,35: PLOT
B(X)+35,C(Y): DRAW PEN 2;-3
5,35: GOTO 1040
1035 CIRCLE PEN 0;B(X)+17,C(Y)+1

```

10

```

7,17
1040 LET A(X,Y)=SC
1050 LET L(X)=L(X)+SC
1060 LET L(Y+3)=L(Y+3)+SC
1070 IF X=Y THEN LET L(7)=L(7)+S
C
1080 IF X+Y=4 THEN LET L(8)=L(8)
+SC
1085 IF RND>.5 THEN LET R1=8: LE
T R2=1: LET R3=-1: GOTO 109
0
1086 LET R1=1: LET R2=8: LET R3=
1
1090 FOR Z=R1 TO R2 STEP R3
1100 IF SC=1 AND L(Z)=3 THEN GOT
O 9010
1101 IF SC=10 AND L(Z)=30 THEN G
OTO 5000
1110 NEXT Z
1115 IF SC=10 THEN GOTO 1000
1120 REM COMPUTERS GO
1125 RESTORE 1137
1130 LET SC=10: LET X$="O"
1135 FOR W=1 TO 4
1136 READ Q
1137 DATA 20,2,10,1
1138 LET R=RND
1139 IF R>.5 THEN LET R1=8: LET
R2=1: LET R3=-1: GOTO 1143
1140 LET R1=1: LET R2=8: LET R3=
1
1143 FOR Z=R1 TO R2 STEP R3
1150 IF L(Z)=Q THEN GOTO 1170
1160 NEXT Z
1161 NEXT W
1162 PRINT AT 19,1;"STALEMATE":
GOTO 9110
1170 IF Z>3 THEN GOTO 1200
1180 IF RND>.5 THEN FOR W=1 TO 3
: GOTO 1190
1190 IF A(Z,W)=0 THEN LET X=Z: L
ET Y=W: GOTO 1030
1195 NEXT W
1200 IF Z>6 THEN GOTO 1240
1210 FOR W=1 TO 3
1220 IF A(W,Z-3)=0 THEN LET X=W:
LET Y=Z-3: GOTO 1030
1230 NEXT W
1240 IF Z=8 THEN GOTO 1280
1250 FOR W=1 TO 3
1260 IF A(W,W)=0 THEN LET X=W: L
ET Y=W: GOTO 1030
1270 NEXT W
1280 FOR W=1 TO 3
1285 IF A(W,4-W)=0 THEN LET X=W:

```

```

LET Y=4-W: GOTO 1030
1290 NEXT W
4999 STOP
5000 REM COMP WIN
5010 PRINT AT 2,2;"HA HA THE COM
PUTER WON": GOTO 9110
6000 REM INSTRUCTIONS
6010 PEN 1: PAPER 6: BORDER 6: C
LS : PRINT AT 2,2;"NOUGHTS
AND CROSSES"; AT 3,2;"MARY
PICKFORD 1986"
6020 PRINT AT 7,2;"DO YOU REQUIR
E INSTRUCTIONS?"; AT 8,2;"(
Y OR N)": PAUSE 0: IF INKEY
$="N" OR INKEY$="n" THEN RE
TURN
6030 PRINT AT 7,2;"(92 paces)"
6040 PRINT AT 7,2;"THIS IS THE C
OMPUTER VERSION OF NOUGHTS
AND CROSSES."
6050 PRINT AT 9,2;"YOU ARE CROSS
ES."; AT 10,2;"YOU HAVE TO
GET A LINE"; AT 12,4;"DIAGO
NALLY"; AT 13,4;"HORIZONTAL
LY"; AT 14,1;"OR VERTICALLY
"
6060 PRINT AT 16,2;"THE FIRST PE
RSON(YOU OR FRED)"; AT 17,2
;"TO DO THIS WINS"; AT 18,2
;"P.S FRED IS THE COMPUTER"
6070 PRINT AT 19,2;"YOU TYPE THE
CO-ORDINATES OF"; AT 20,2;
"WHERE YOU WANT TO GO"
6080 PRINT AT 21,2;"PRESS ANY KE
Y TO START": PAUSE 0: RETUR
N
8000 REM GRID
8010 PLOT 50,30: DRAW 0,132: DRA
W 132,0: DRAW 0,-132: DRAW
-132,0
8015 BEEP .5,1
8020 DRAW 0,44: DRAW 132,0: DRAW
0,44: DRAW -132,0
8025 BEEP .5,3
8030 DRAW 0,44: DRAW 44,0: DRAW
0,-132
8035 BEEP .5,5
8040 DRAW 44,0: DRAW 0,132
8045 BEEP .5,6
8050 PRINT AT 20,8;"1"; AT 20,14
;"2"; AT 20,20;"3"
8060 PRINT AT 4,4;"3"; AT 9,4;"2
"; AT 14,4;"1"
9000 RETURN
9010 FOR G=1 TO 2

```

```

9015 PAUSE 40
9020 BEEP .2,1: BEEP .2,3: BEEP
.2,5: BEEP .3,6: BEEP .3,1
9025 PAUSE 5
9030 BEEP .2,6: BEEP .2,5: BEEP
.2,6: BEEP .3,8: BEEP .4,3
9035 PAUSE 5
9040 BEEP .2,3: BEEP .2,5: BEEP
.2,6: BEEP .2,10
9050 BEEP .2,8: BEEP .2,8: BEEP
.2,6: BEEP .2,6: BEEP .2,5
9060 BEEP .2,3: BEEP .2,5:
9065 IF G=1 THEN BEEP .2,1
9070 NEXT G
9080 BEEP .2,6
9090 CLS : PRINT AT 2,2;";{46
paces}"
9100 PRINT AT 8,2: PEN 2;";{208
spaces}"
9110 PRINT AT 20,1;"DO YOU WANT
ANOTHER GO(Y OR N)": PAUSE
0: IF INKEY$="Y" OR INKEY$=
"y" THEN RUN

```

Finally, here's one for a bit of modification. 'k/lido' is a little program about a little kaleidoscope! It treats the screen as being divided into four quarters and anything it plots on one gets reflected in the other three.

```

1 REM **SINCLAIR USER FEB 198
7 ** BY.RUPERT GOODWINS**
20 REM ***** K/LIDO*****
30 PAPER 0: BORDER 0: CLS
30 PEN RND*7: BRIGHT RND
40 LET x=1+RND*126: LET y=1+RND
D*86
50 LET a=x: LET b=y: GOSUB 100
0
60 LET b=174-y: GOSUB 1000
70 LET a=255-x: LET b=y: GOSUB
1000
80 LET b=174-y: GOSUB 1000
90 GOTO 30
1000 PLOT a,b: PLOT a+1,b: PLOT
a+1,b+1: PLOT a,b+1
1010 RETURN

```

Now, when I had a kaleidoscope, it was divided into three walls with the usual mirror bits, and when you looked down it, the image was based on a hexagon, divided into six sectors: I can't remember what happened beyond, but I am sure

11

you know. How about some modifications so that the program does three or six segments. There, now, no one can do it, can they! Wase has beaten you! (Or has he...).

Finally, I'd like to finish with a game. From my old friend Bjorn Nyberg, who used to send quite regularly, from Edinburgh. He now writes from Bude (so it's a case of from one end of the country to the other) that it will soon be a year since his removal, and he still hasn't got his library, nor his Spectrum stuff unpacked and in order. Nevertheless, Bjorn has taken pity on us and sent us an adventure program which I'm putting in now, called 'Xmas Quest'. You should get it some time in November. It's quite long, and the first thing is to grab your Speccy or your SAM and type it in, that'll probably take well into December! Then you just have time to get used to the rules and things before Christmas, but not enough time to play it properly.

Here it is, then: Xmas Quest:-

```

20 CLS : PRINT AT 8,1;"THE FAN
TASY WORLD OF CHRISTMAS"; A
T 19,4;"PRESS SPACE TO CONT
INUE": PAUSE 0
30 RANDOMIZE
35 DEF FN a$(x,y)=h$(x)+k$(y)
37 DEF FN a(z)=INT (RND*Z+1)
40 POKE 23561,150
45 POKE 23658,8
50 GOSUB 8000
55 GOSUB 5200: GOSUB 5300
60 LET TOUR=1
65 LET FACE=0
70 LET TRY=0
80 LET JUL=0
90 CLS : INPUT "TYPE IN YOUR N
AME:";N$
100 PRINT AT 8,(32-(6+LEN N$))/
2;"DEAR ";N$;"!"" WELCOM
E TO THE FANTASY WORLD OF""
AT 15,11; FLASH 1;"CHRIST
MAS!"
110 GOSUB 7000
120 PRINT AT 20,10;FLASH 1;"PRE
SS SPACE!";FLASH 0: PAUSE 0

```

```

150 GOSUB 8000
190 CLS : PRINT "You are about
to embark on a thrilling
quest for the Lost Sack
of Christmas Gifts."
200 PRINT "To succeed in your
quest, you have to enter
the dreaded Spook Castle. T
here you may have to solv
e some problems and vanquis
hdangerous monsters."
210 GOSUB 6000
220 GOSUB 7600
230 GOSUB 8000
300 CLS : PRINT "You have taken
the risk to enterthis gloo
my castle in search of Chri
stmas adventure and the Los
tSack of Christmas Gifts.":
PAUSE 0
310 GOSUB 8000
320 CLS : PRINT "You face a lo
cked door!": PAUSE 0
325 GOSUB 7600
330 CLS : PRINT "You have to d
educue the correct passcode
to be able to open the doo
r!": PAUSE 0
340 CLS : PRINT "The passcode
can be found by rearrang
ing the following jumbleof
letters:"
350 PRINT "RERYM MISSCHART"
355 PRINT "The passcode consi
sts of two words."
357 INPUT "Type in the passcode
and press ENTER ";LINE A$
365 IF A$<>"MERRY CHRISTMAS" TH
EN LET TRY=TRY+1: GOSUB 135
0
367 IF A$="MERRY CHRISTMAS" THE
N GOTO 600
420 CLS : GOTO 340
600 CLS : PRINT "You have the c
orrect passcode!"
605 GOSUB 7600
610 PRINT "The door opens. You
gothrough.": PAUSE 0
650 GOSUB 8000
700 CLS : PRINT "You enter a lo
fty hall. ""You see a larg
e wooden table in the middl
e of the floor."
710 PRINT "On top of the tabl
e is a letter. ""It carrie

```

```

s no address.": PAUSE 0
712 CLS : PRINT "Only the righ
t person can open the magi
c letter!""Type in your n
ame and press ENTER to s
ee if it is you!": INPUT c$
715 IF C$(TO 2)=N$(TO 2) THEN
GOTO 720
718 CLS : PRINT "The name you p
rinted lacks the magic pow
er!""You cannot open the
letter with that! Your ques
tcannot continue!": PAUSE 0
GOTO 1400
720 CLS : PRINT "You are ";N$;"
!""You can open the magic
letter!": GOSUB 7600: PAUS
E 0
725 CLS : PRINT "You open the l
etter.": PAUSE 0
730 PRINT "The message reads:"
: PAUSE 0
735 GOSUB 8000
740 CLS : PRINT "YOU MAY ENCOU
NTER MONSTERS ON YOUR WAY
!""THE MAGIC WORD SCRAM W
ILL SAVE YOU!": GOSUB 7600
: PAUSE 0
800 CLS : PRINT "You cross the
hall. There is only one
other exit: a dark, vault
ed opening.": PAUSE 0
805 PRINT "This must be the en
trance to thecastle dungeon
s!": PAUSE 0
810 GOSUB 2000
1000 GOSUB 8000: CLS : PRINT "Th
ere is a flash and a clap o
f thunder!"
1005 GOSUB 7600: PAUSE 30
1010 PRINT "The monster gives a
loud shriek and collapses
in a smoking heap,destroyed
by your magic!": GOSUB 765
0: GOSUB 7650: PAUSE 0
1100 CLS : PRINT "You step over
its smouldering carcass."
""Bad cess to all these mo
nsters!": PAUSE 0
1160 RETURN
1200 CLS : PRINT "A huge crowd h
as gathered in front of
the castle to applaud your
success.": GOSUB 7600: GO
SUB 6000: PAUSE 0: CLS : PR

```

```

INT ""Mum and Dad are ther
e, holding alarge sign. It
reads:"
1215 PRINT AT 8,(32-(6+LEN N$))/
2;"DEAR ";N$;"!"" AT 11,5;
"MERRY CHRISTMAS TO YOU!"
1220 GOSUB 7500
1230 PAUSE 0
1240 CLS : PRINT AT 7,12;"THE EN
D": PAUSE 25: FLASH 1: PRIN
T AT 9,0;"AND THE BEGINNING
OF CHRISTMAS" AT 10,11;"H
OLIDAYS!"; FLASH 0
1245 FOR q=1 TO 2
1250 GOSUB 7000
1252 PAUSE 20
1255 NEXT q
1300 GOSUB 7500: PAUSE 20: GOSUB
7500
1310 GOTO 1400
1350 CLS : PRINT "NOT THE RIGHT
PASSWORD!""TOO DIFFICULT?
""THINK OF THE SEASON!":
GOSUB 7600: PAUSE 0
1355 IF TRY>=3 THEN GOTO 1390
1360 RETURN
1390 CLS : PRINT AT 9,0;"SORRY,
YOU DIDN'T PASS THE TEST!":
PAUSE 0
1400 FLASH 0: CLS : PRINT AT 9,4
;"Do you want to play again
?"" AT 11,10;"Press Y or N
"
1410 PAUSE 0
1415 IF INKEY$="Y" THEN RUN
1420 IF INKEY$="N" THEN GOTO 150
0
1430 GOTO 1400
1500 STOP
2000 CLS : PRINT "You continue
deeper into the dungeons
.": PAUSE 0
2010 PRINT "The walls are wet w
ith dripping damp. There is
a sour smell in the air."
: PAUSE 0
2020 PRINT "You hear various st
range noises.": GOSUB 7700:
GOSUB 7700: PAUSE 0
2022 GOSUB 5000
2024 GOSUB 7700
2025 PAUSE 0
2026 IF n>5 THEN LET n=0
2027 LET Z=INT (RND*3+1)
2028 LET n=n+Z

```

```

2029 IF N>6 THEN GOTO 2026
2033 GOSUB 5015: GOSUB 7700
2034 PAUSE 0
2035 PRINT "An eerie place! And
to be here when it's Chri
stmas and all!": GOSUB 7700
: PAUSE 30: GOSUB 7000: PAU
SE 0
2037 GOSUB 8000
2040 CLS : PRINT "You enter a ";
: GOSUB 5100: PAUSE 0: GOSU
B 7600
2050 REM CLS : PRINT "You are co
nfronted by a menacingmonst
er!""It is a";FN a$(FN a(
5),FN a(5)): LET face=FN a(
5): GOSUB 7650: PAUSE 0
2051 CLS : LET check=FN a(5): IF
check=face THEN GOTO 2051
2053 PRINT "You are confronted b
y a menacingmonster!""It
is a";FN a$(FN a(5),FN a(5)
): LET face=FN a(5): GOSUB
7650: PAUSE 0
2055 PRINT "It wants you for it
s Christmas dinner!": GOSU
B 7000
2060 PRINT "It is ready to atta
ck you!": PAUSE 0
2070 CLS : PRINT "Kill the monst
er! Use the magic word!"
2080 INPUT b$
2085 IF b$<>"SCRAM" THEN GOTO 21
00
2090 IF b$="SCRAM" THEN GOSUB 10
00
2095 GOTO 2200
2100 CLS : PRINT "WRONG WORD! YO
U ARE IN DANGER!": GOSUB 76
50: PAUSE 0: GOTO 2070
2200 LET tour=tour+1
2205 IF tour<2 THEN GOSUB 2000
2210 IF tour=4 THEN GOTO 2330
2300 LET r=INT (RND*7+1)
2310 IF r>3 THEN GOSUB 2000
2320 IF r<4 THEN GOTO 2330
2330 CLS : PRINT "The dead monst
er clutches a piece of
paper in its clawlike fist
. It is a crude map, showin
gan exit from the dungeons.
": PAUSE 0
2335 PRINT "In a corner, you al
so see a hugesack. You exam
ine it. It is fullof Christ

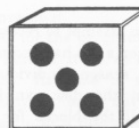
```

```

mas gifts - you have foun
d the Lost Sack!": PAUSE 0
2340 CLS : PRINT "You follow the
map, carrying thesack, and
finally find your way out
without any problems.": PAU
SE 0
2350 GOTO 1200
5000 DIM j$(6,47)
5010 LET n=INT (RND*6+1)
5015 RESTORE 5030
5020 FOR p=1 TO n: READ j$(n): N
EXT p
5030 DATA "A mouldering skull st
ares at youfrom a niche.",
You hear rats squeaking in
the dark.", "A slimy lizard
nudges you but runs off.
", "A giant spider scuttles
across your path.", "A wart
y giant toad croaks at youf
rom a nook.", "A snake hisse
s at you from a rock she
lf."
5040 PRINT j$(n): RETURN
5100 DIM d$(10,14)
5110 RESTORE 5130
5120 LET n=INT (RND*10)+1: FOR p
=1 TO n: READ d$(n): NEXT p
5130 DATA "large hall.", "weird c
rypt.", "damp dungeon.", "gra
y chamber.", "dank catacomb.
"
5135 DATA "large hall.", "weird c
rypt.", "damp dungeon.", "gra
y chamber.", "dank catacomb.
"
5140 PRINT d$(n)
5150 RETURN
5200 DIM h$(5,7)
5210 RESTORE 5230
5220 FOR p=1 TO 5: READ h$(p): N
EXT p: RETURN
5230 DATA "horrid", "fanged",
gaping", "n awful", "smelly"
5300 DIM k$(5,9)
5310 RESTORE 5330
5320 FOR p=1 TO 5: READ k$(p): N
EXT p: RETURN
5330 DATA "WOLFMAN!", "OGRE!",
ZOMBIE!", "GHOUL!", "ORC!"
6000 PRINT #1;"REMEMBER - Always
press SPACE tocontinue!":
PAUSE 0
6010 RETURN

```

Please turn to page 17.



# +3 DICE

Reviewed By:- Keith Davis.

The 'Disc Information Copier & Editor' (or DICE for short), is a disc maintenance utility produced for the Spectrum +3 by Kobrahsoft.

The first thing you notice from both its advertising in magazines and the instructions manual is that it is completely unpretentious about what it does. It has good reason to, its sheer wealth of features enable DICE to be used in a variety of situations, all of which DICE will more than adequately cope with.

On loading DICE you are presented with a screen showing a representation of the usage of the disc that is in the disc drive. The latest version of DICE (v3) can read a wider variety of disc formats, including 173K, CPC 175K and 178K, 193K and 203K. This makes DICE vastly more usable than the older version because the majority of +3 users use either the Supermat or HiFormat utilities to format their discs. DICE can also format discs to any of the capacities just listed.

From the main screen all of DICE's functions can be accessed. The NEW option instructs DICE to clear its current data and read in new information from the disc in the disc drive. The INIT option enables you to format discs to PLUS 3, System, Data, 193K or 203K formats. The FILES option enables you to list and modify the disc's directory. DISC allows you to access the disc's data at sector level. ANALYSE does much the

same, but enables access to non-standard sectors, as used in copy-protected programs. Finally, the QUIT option sends you back to +3 BASIC.

All these options are available with a single key-press, e.g. F for the FILE option or A for the ANALYSE option.

When you select the FILES option, the display changes to show a list of the directory entries on the disc. Erased files and CP/M files with CP/M info are specially marked.

From this display files can be renamed, erased or copied onto any disc. The MARK option enables specific files to be used during the copying or erasing options.

The COPY option has two advantages over the COPY command in +3DOS. Firstly, files are copied to the new disc in an unfragmented form whereas the file may be scattered all over the place on the original disc. This makes file loading faster. Secondly, the copying process is speeded up by the lack of disc swapping necessary. For an entire disc, DICE only requires you to swap discs 3 times (4 times for a high capacity format), whereas +3 DOS's COPY command requires a disc change for every file on the disc.

The SELECT option enables you to find out specific information about a particular file. This information includes the exact position on the disc where the file is located, the space it occupies and whether it is an erased file. Erased files



can be recovered at this point using the RECOVER option. However, if part of the file has been over-written recovery will not be possible and DICE will tell you this.

A graphic display also represents where the file is on the disc. This is very useful as it shows if a file has been fragmented across the disc. Options are also available to examine the file's header to find out what kind of file it is, where it loads to in memory, etc; as well as an option to change the protection, system and archive file attributes of the file.

The EXAMINE option enables you to examine the file in Hex and ASCII format. In this mode you use the cursor keys to look through the file. Alterations to the file can be made directly to the file byte by byte. In this edit mode, the value of each byte is also disassembled into assembly so that machine code routines may be examined. Although it does not have the scope of a full-blown disassembler it is very useful to have limited features available within DICE.

The DISC option from DICE's main title screen allows you to examine or alter the disc's contents at sector level as opposed to file level. The screen contains 128 bytes of data from the block, track and sector position marked at the top of the screen. You can scroll through the disc's contents using the cursor keys. You can also jump to a specific sector, block or track on the disc if required.

Being able to look through the contents of a disc, and jump to specific parts of disc, is all very well but what about if you know what you want to look at but you don't know where on the disc to find it? Well, the FIND option comes in very useful here with you being able to specify a string of up to 8 bytes for DICE to

search the disc for.

You are also able to attempt to recover data in this mode when a file has become corrupted for some reason. Individual blocks of data from the disc can be 'logged' and when all the blocks for a particular file have been found on the disc, these blocks can be copied to a new disc with a filename attached to them so that a new file is created. Although, it is sometimes not possible to recover the whole of a particular file after corruption has occurred it is normally possible to recover the vast majority.

Disc data can be modified using the EDIT option, which works in the same way as for the edit functions for particular files.

Finally, the ANALYSE option on the main menu enables you to examine and modify data on discs where the their sectors are stored in a non-standard format. Basically, this means that discs which don't have 9 sectors of 512 bytes can still be examined.

This is not the kind of thing you want to be doing if you're faint hearted, as the process is quite complicated.

DICE's instructions manual is very good indeed. It does a good job of explaining what all the program's options do, as well as giving some quite in-depth technical information about how files are stored on discs, how to recover corrupted data and such like. The manual contains example screen pictures to show you what you should be expecting from the program at different points of the program, which is essential for beginners who could otherwise unwittingly wreck a disc without such information.

The only moans about the manual is its lack of an index and its A4 sized manual would have been more

convenient.

As for the program itself, it can hardly be faulted. It allows so many things to be done. Its ease of use and the user's ability to back out of doing anything drastic to a disc's contents at any point make it ideal for everyone. Even though it has some very advanced features indeed, there is still enough there to warrant people who may never use the advanced features to still buy it.

Existing DICE users with the older versions are equally advised to get hold of the new version. Kobrahsoft's policy for customers wanting updates on old versions means you can get DICE V3 for half price.

The only thing that I could find that DICE couldn't do, was that for discs with bootable boot sector, it is not possible to see the disc's directory. For commercial games, data will probably not be stored as files, but for programs such as Music Writer which is bootable and stores its data as standard +3 DOS files, you can't get at them with DICE.

DICE has always been the best disc maintenance utility for the Spectrum +3, and with the release of version 3, Kobrahsoft are onto a winner, and with a price tag of only £14.95 the value for money is great. Miss it at your peril.

+3 DICE is available from:-

**Kobrahsoft,  
'Pleasant View',  
Hulme Lane,  
Hulme,  
Longton,  
Stoke-on-Trent,  
Staffs.  
ST3 5BH.**

There is an equally excellent SAM version of DICE available from the same company.

Now if only they would do one for the PLUS D...

Continued From Page 14.

```
7000 RESTORE 7020
7005 FOR n=1 TO 20
7010 READ K: BEEP .2,K: NEXT n
7020 DATA 12,12,12,7,4,7,12,12,1
      2,7,4,7,12,12,14,16,17,1
      9,19
7040 RETURN
7500 RESTORE 7520
7505 FOR n=1 TO 20
7510 READ K: BEEP .2,K: NEXT n
7520 DATA 17,17,21,17,17,17,16,1
      6,19,16,16,16,14,14,17,11,1
      1,11,14,12
7530 RETURN
7600 FOR j=1 TO 2
7605 BEEP 0.2,5
7610 BEEP 0.5,8
7615 NEXT j
7620 RETURN
7650 FOR j=1 TO 3
7655 BEEP 0.2,5
7660 NEXT j
7665 BEEP 0.7,1
7670 RETURN
7700 FOR v=30 TO 1 STEP -2
7705 BEEP .01,v
7710 NEXT v
7720 RETURN
8000 LET y=INT (RND*7)
8010 BORDER y: PAPER y: PEN 17:
      CLS
8020 RETURN
```

Thanks, Bjorn.

And that's virtually all. Except for the usual plea, plus a bit. I'm getting very short of stuff again. Please keep all your snippets coming to me; without them I can't put a column together. And please, if you have any snippets to do with Christmas, send them in immediately, as I shall be sending in the Christmas copy to Bob by the end of November! Please send them to:-

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

See you next month.



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# EXTRA POWER FOR SAM

A DIY Solution By:- Cliff Jackson.

SD Software's launch of the SAM Hard Drive interface has inevitably created a great deal of interest and many SAM users have already upgraded. While some have bought the interface and power supply unit (PSU) to be used with either an existing Hard Drive or a new one to be purchased separately, others have chosen to order a complete installation. SD's interface is now available as a package including choice of a new drive of appropriate size from at least two other sources.

There must be other SAM users who would like to upgrade but, for a number of reasons, do not wish to purchase a 'package' and are not sure just what a DIY job entails. This may therefore be an appropriate time to discuss the options available, the practical problems that may be met, and one way of solving some of them.

While the 'package' may be the obvious or even the only choice for some, others may be compulsive constructors who prefer to build their own peripherals wherever possible. Although I fall into that category, there is another factor which caused me to adopt a DIY approach - of which more later.

It all started when I was offered a surplus 80Mb IDE drive which had been replaced by a new 850Mb unit. This was a challenge I just could not resist and planning commenced. Almost immediately I bought a non-working five-and-a-quarter inch external drive for

£2 just to use its smart but very rugged two-part metal case as a housing for my 'new' drive. Having had a little training and considerable practical experience of amateur electronics construction, I had expected to design and build a power supply to share a housing with the Hard Drive but when I opened the new drive box to remove and discard the former resident (beautifully made but now well past its sell-by date) I found that the internal height is little more than two inches, so I was forced to accept that this dimension plus ventilation and insulation requirements demanded a re-think. I must either settle for an external PSU or locate (or make?) a larger box to accommodate PSU and HD. As the low profile of the £2 box fitted my desk nicely and allowed my MIDI switch box to be placed conveniently on top I was reluctant to abandon it so the idea of an internal PSU was dropped in favour of an external one.

The 'special needs' mentioned earlier involve the use of the SamBus card-cage which usually has three and sometimes four interfaces plugged in. While the A-D conversion board which I built from a magazine article is used only occasionally, the 1Mb Ram Pack external memory module and the Comms Serial/Parallel interface are both invariably attached. These all draw current and, when I am transferring documents to and from other machines via the RS232 serial port, the drain

increases significantly. The SamCo 'Hardware Development Kit' has turned out to be an excellent 24-bit Input and Output Port based on an industry standard chip, the 8255A, which permits SAM to control and monitor external events. This interface is also plugged into the SamBus most of the time and, when in use, the external circuitry connected to it can draw some additional current from SAM.

SAM's own PSU was not designed to handle all this extra loading which could well result in a voltage drop on SAM's +5v supply rail causing errors or even a crash. This possibility was obviously anticipated when the SamBus was designed as provision was made for an auxiliary PSU to be plugged directly into that unit. This then provides power not only to all interfaces plugged into SamBus but also to any external units which they may supply. Thus SAM is relieved of any extra loading which could adversely affect performance.

Although an auxiliary PSU was said to be available for this purpose, I cannot recall ever having seen one advertised and both MGT and SamCo had disappeared when I decided I needed one. After opening the SamBus to verify that it required only a +5v supply and identify the polarity of the socket, I made up an adaptor cable to tap off the +5v supply available at the plug of a spare SAM PSU and feed it into SamBus - I was reluctant to modify this PSU in any way in case I ever needed it for SAM. I then connected both PSUs to one mains plug to ensure that they were powered up simultaneously and this experimental arrangement has worked extremely well for a couple of years.

Having two SAM PSUs on the floor beneath my desk has guaranteed warm

toes in the winter and has caused little inconvenience although the addition of a third PSU seemed likely to leave insufficient room for feet. I therefore decided that if I was to have a new PSU, it must replace both the existing units. As I use a Philips 8833 monitor, I do not need the modulated TV output provided by SAM's PSUs - the unused cables were removed from both PSUs long ago - and a new PSU without a modulator would therefore present no problems in that respect. To support a Hard Drive plus SAM, twin internal drives, the SamBus and everything plugged into it a PSU capable of generating +5v at perhaps 5 Amps and +12v at around 3 Amps would be required as a minimum. I then visited Greenwell Electronics, my local electronics 'Aladdin's Cave' where a range of 'surplus' PSUs can be obtained and I eventually settled on a switch-mode unit which measures 5\*4\*4 inches and looks brand new. It was probably designed for a small PC and is rated +5v @ 7.5A, +12v @ 3A and -12v @ 0.5A - although the latter is not needed. This unit seemed to be just what I required but there was one small point to consider.

Unlike the MGT PSUs it is not silent in operation as, in common with many PSUs capable of that level of output, it has a built-in cooling fan. As I am accustomed to the background noise of the fan in my PC this was not an obstacle in my case but others may feel differently. Although there is a wide choice of new and used equipment of this type being offered very cheaply at Computer Fairs as well as electrical surplus dealers, most of the items I saw were clearly intended for installation inside the metal case of something like a PC and some were not fully enclosed. For

safety reasons such units would need to be installed in an additional ventilated case which may not be easy to obtain and would present a significant constructional project.

The PSU I chose is fully enclosed with the mains input via the now familiar 3-pin Euro connector with a switch. The output cables which comprise 14 colour coded wires projecting about six inches from the case were the only aspect requiring attention. These were terminated at two separate connectors of the in-line type used to make easy connection to PCBs by plugging onto a row of special pins. The cables were much too short and the terminators unsuitable for connecting to either the Hard Drive or 'extension' cables so something must be done.

No data was supplied with the PSU beyond the label stuck on the case which gave only the ratings quoted above. A meter was used to establish which colour carried which voltage and it is worth mentioning that a switch-mode PSU does not produce correct voltages on its outputs until it has a load. A spare car lamp bulb was connected before a reading was attempted.

Then, by carefully dismantling the PSU I established that all the wires of a given colour originate from a common source on the PCB and this made things easier. I decided to use two 1.5m lengths of three core flexible mains cable to connect to SAM and the Hard Drive respectively. Although I could have removed the existing cables completely and soldered the new ones directly to the PCB, the existing cables were neatly secured internally and routed well away from cooling fins and other vital components and it seemed unlikely that the PVC sheathed mains cables could

follow the same path. I then identified a position where a chock-block screw connector could be attached to the inside of the case well away from critical components and this solution would merely require the existing wires to be suitably shortened before connection to the chock-block. This was cut to provide 5 screwed terminals, one for +5V, one for +12V and the third was for the -12v line, merely to retain it for safety. The numerous ground lines were shared between the two remaining terminals which were bridged by a short length of stout copper wire to spread the load. Before the PSU was re-assembled two holes were drilled in the case at the chosen location to take self-tapping screws of a size to fit the moulded holes in the chock-block.

All swarf was carefully removed from the case and the PSU re-assembled. The existing outputs were then shortened and connected to one side of the chock-block and the two new cables connected to the other side after threading them through the existing cable strain relief grommet which was then locked into position. Finally the chock-block was screwed to the inside of the case and the cover replaced after ensuring that the wiring could not come into contact with any components.

Maplins supplied new fittings for the outer ends of the cables; a 6-pin Din plug for SAM with the +5v wire soldered to pin 1, the +12v wire to pin 5 and the ground line to pin 3. Also connected to pins 1 and 3 is a lead terminating in a 3.5mm jack plug which fits the external PSU socket in SamBus. It seemed undesirable to have the Hard Drive permanently wired to the PSU so a

Please Turn To Page 33.

# SPACE SAVING

By:- Paul Farrow.

When writing a Basic program on the Spectrum there are several techniques which can be used to minimise the amount of RAM used, but unfortunately most of these tend to reduce the readability of the program. In this article I'll present several ideas which I've used effectively over the years and which I hope will be of use to other readers.

The obvious method to reduce RAM usage is to minimise the number or size of **REM** statements since these serve no functional purpose. If **REM** statements are required then it is better to place these at the end of a line via the use of a colon, e.g.

```
1050 LET score=score+100 : REM Bonus for reaching the end of the level
```

This saves 4 bytes over the equivalent two line version and is due to the manner in which a Basic line is stored in memory. Each line begins with two bytes that hold the line number and it is then the Basic interpreter that translates these into the digits that are displayed on the TV screen. The line number value is generated by  $256 * \text{first byte} + \text{second byte}$ . It is possible to change the line number value of any given Basic line by **POKE**ing new values into these two bytes. In this way even line number values of zero can be generated. The next two bytes of a Basic line contain the number of characters making up the rest of the Basic line; this always includes the trailing **ENTER** character at the end of each line. This quantity value is

generated via  $1st\ byte + 256 * 2nd\ byte$ . Hence each Basic line incurs an overhead of 5 bytes. The use of the colon to produce multi-statement lines saves 4 bytes each time it is used. It is also advisable to reduce the total number of Basic lines when ever possible.

On the subject of reducing the number of Basic lines, a very useful method is the use of calculated destinations in **GOTO** and **GOSUB** statements. For example, using **GOSUB 1000\*A** occupies far fewer bytes than separate **IF A=value THEN GOSUB line** statements. Another useful example that has been used numerous times in the past allows for monitoring the keyboard. Take the case where the variables **x** and **y** hold screen pixel co-ordinates and these must be incremented and decremented in steps of 10 as the appropriate cursor keys are pressed. The program must also ensure that the co-ordinates do not go outside the screen area. For each cursor key the following two lines could be used:-

```
100 IF INKEY$="8" THEN LET X=X-10
110 IF X>255 THEN LET X=255
```

However, it is far more efficient to use the following two lines as these deal with all four cursor keys at once and performs checking on the resultant screen co-ordinates.

```
100 LET X=X+10*((INKEY$="8") AND X<255)-((INKEY$="5") AND X>0)
110 LET Y=Y+10*((INKEY$="7") AND X<175)-((INKEY$="6") AND X>0)
```

Let us assume **X** holds a value of 9. Now if only the 8 key is pressed then **INKEY\$="8"** evaluates to 1, i.e. true, and **INKEY\$="5"** evaluates to 0, i.e. false. As **X** is less than 255 then **X<255** evaluates to 1 and since **X** is greater than 0, **X>0** also evaluates to 1. Hence the expression effectively becomes  $X=X+10*((1\ AND\ 1)-(0\ AND\ 1))$  which is equivalent to  $X=X+10*(1-0)$ . This is also the same as  $X=X+10*1$  and hence **X** is increased by a value of 10. If the 5 key was pressed then the expression evaluates to  $10*(0-1)$ , i.e.  $10*-1 = -10$ , and so **X** is decreased by 10. An identical process happens with the **Y** variables and cursor keys 6 and 7. Thus two lines have implemented the function that eight would have done, and saved at least half the number of bytes.

Such techniques can save many bytes, but there is a far more important method by which greater savings can be made. This involves the manner in which the Spectrum stores numbers in a Basic program. Each number is in fact stored twice in the Basic listing. The first instance stores the number exactly as it was entered. After this, a byte containing character code 14 is placed and is followed by a further five bytes that store the value of the number in a manner which allows the Spectrum to quickly access and process the number. These additional 6 bytes are invisible in the Basic listing shown on the TV screen but each and every number will have an associated extra six bytes. Thus if the quantity of numbers in a Basic program can be reduced then so will the size of the program. There are several ways in which this can be done. The most straightforward method involves the use of the **VAL** function. Writing **VAL "12.34"** actually occupies less bytes in memory than simply writing 12.34; in fact 3 bytes are saved. It is easy to imagine a program that makes reference

to say 500 numbers, and yet converting all of these to **VAL** statements would save 1500 bytes, which is nearly 1.5K of memory. This principle can be extended to expressions, e.g. **VAL "20+(X\*10)/3"**, instead of using a separate **VAL** statement for each number specified. Further savings can be made with certain numbers by replacing them with expression that evaluates to the desired value. For example, the number 100 would occupy 9 bytes in a Basic program. The use of **VAL "100"** reduces this to 6 bytes but this can be further reduced by replacing it with the expression **CODE "d"**. This only requires 4 bytes and can be used for values up to 255. Note that keywords such as **THEN**, **PRINT** and **COPY** can be placed inside the quotes. For many keywords, it is necessary to type **THEN** in order to obtain the **K** mode cursor. The desired keyword can then be entered and the **THEN** keyword deleted afterwards.

Common numbers such as 0, 1 and 3 can be generated via expressions such as **NOT PI**, **SGN PI** and **ABS PI**, and these only occupy two bytes of memory. A final method is to define variables for certain frequently used constants, e.g.

```
LET ZERO=NOT PI
LET ONE=SGN PI
LET TWO=VAL "2"
```

These variables can then be used instead of explicitly stating the value everywhere that it is required. Obviously, the shorter the variable names the fewer bytes they will occupy but again this will tend to reduce the readability of the program.

Hopefully this short article will encourage readers to consider how they can make their programs memory efficient and hence get more out of their computer, and to borrow an old phrase "Look after the bytes and the kilobytes will take care of themselves".



# The HELP PAGE

Edited By:- Ray Bray.

To compensate for the lack of a Help Page for the last two months we have a special treat this month - a question from a Spectrum +3 user! David Barnett of Goldenhill, Stoke-on-Trent wishes to know if the PLUS D Interface can be used with the +3 and, if there is any way to transfer games on tape to discs? Dattel used to sell PLUS D interfaces to use with all makes of Spectrum but now these are no longer available, therefore the only way to obtain one is to advertise for one (in **FORMAT** for instance), and to keep an eye on the for-sale columns. However, this begs the question why do you need the PLUS D? It is quite feasible to connect a 3½" drive to the B Drive port on the +3 to give you the use of a second drive, although the disc will only be formatted to 173K unless you have some additional software which enables you to format to 706K using "BFORMAT". You may still be able to obtain this from Brian Gaff who's address is:- 64 Roebuck Road, Chessington, Surrey, KT9 1JX Tel. 0181-287-4180.

The disc connected to the Drive B port will of course be formatted to the +3 standard. If you need to read and write to PLUS D discs then there is another utility called DiSCDOS which emulates a PLUS D/DISCIPLE on any +3 with a 3½" DSDD B: drive. The program is patched into Basic but you can still use the +3 Basic as well as the PLUS D commands. The program comes on disc with several other utilities and games and, at £6, is excellent value. It can be obtained from:- Dominic Morris, 20 Greenhill Drive, Malvern, Worcs. WR14 2BW.

With regard to your second query,

there have been several utilities on the market for copying Spectrum tape games to +3 discs. Mike has used two of these and has achieved a 99% success rate with both of them. They are 'WD1b' by LERM Software and 'SP6' by KOBRAHSOFT. The latter has been updated to 'SP7' and is available on disc for £19.95 (inc p&p), but if you want a copy of 'WD1b' you will have to keep an eye on the adverts. For further details of 'SP7' write to:- KOBRAHSOFT Software, Pleasant View, Hulme Lane, Longton, Stoke-on-Trent, Staffs. ST3 5BH. Tel: 0178 230 5244.

Our next query also concerns disc drives. Deryck Morris of Newport, Shropshire wishes to add a second disc drive to his PLUS D and would like to know how to connect it and, if the two drives can be stacked on top of each other, how can they be secured? To connect a second drive to the PLUS D all you need is the DUC lead advertised on the Format Readers Services page of this issue, Order Code DUC-01 price £11.95. This allows a second drive to be connected without the need to open up the drive and alter it's ID. You can mount the second drive on top of the first but the means you use to secure them depends upon your engineering ability and facilities at your disposal. The two drives could be secured in a metal tray or held together by two metal straps using the case securing screws on the side of the drives. Alternatively, if you are into woodworking rather than metal-bashing you could construct a plywood rack into which they could be fitted. Failing all else, hold them together with black

plastic tape but don't completely wrap the cases in tape or film as, although they don't get very hot, they do need some air to circulate round them.

Still on the subject of disc drives, in the August issue Ian Minshull wanted to know what could be done about getting the disc drive toggle to work on the SAM version of the PGC DTP pack. Fortunately two readers have come up with an answer. Frank Harrop kindly sent in a disc with a modified version of the program (which I have forwarded to Ian). Additionally Dave Marriott sent a revised line for the AUTOWORD loader which does the same thing. Apparently, when the disc drive toggle key is pressed, the machine code program jumps to line 15 of the loader program. To modify the AUTOWORD loader, amend line 15 to read line 18, insert a new line 15:-

```
15 DEVICE D3-PEEK SVAR 7
```

and change the statement DIR 1 in line 50 to read DIR \*, then save the amended program. Thank you for your help Frank and Dave. Incidentally, Dave also mentioned in passing that, with reference to SAM compatible joysticks, he has found that the Quickshot II Turbo (Model QS111) works with SAM, providing the switch is on "Manual Fire", but he does say that this model is getting hard to find.

Our next query concerns printing graphics. Simon Turk writes to say that he was able to buy a second-hand IBM Proprinter X24 from a firm which had just obtained new printers. Although he is able to LIST and LPRINT using his SAM Elite, he is unable to obtain graphic printouts using the Dump utility. Simon was unable to get a handbook with the printer. I likewise don't have access to a handbook for that printer so I am not sure that I will be able to solve your problem. However, as you say that all you get is a jumble of characters, it is clear that your printer is not receiving

the correct command to go into the bit-image graphics mode required to print the screen. I do not know whether the printer has an Epson emulation mode which can be selected by setting a DIP switch. If it does not support the Epson mode you will have to modify the screen dump program.

The dump program uses the Epson printer command 'ESC \* 4' to select what is known as CRT1 bit image graphics which prints at 80 dots per inch. The Proprinter does not recognise the 'ESC \*' command and so stays in text printing mode, hence the jumble of characters. Unfortunately there is no equivalent command for the Proprinter and the nearest you can get is an 'ESC K' command which gives 60 dots per inch. Therefore all I can suggest is that you try changing the command and see what happens, and this can be done as follows:-

1. Load the dump program using MERGE "dump1d" CODE.
2. POKE 20372,75 and 20373,0.
3. Save the revised code using SAVE "dump1d2" CODE 20224,512,20224

Note the autorun address 20224. The line spacing will be greater than normal as the Proprinter uses n/180" instead of n/216" used by Epson printers, but as the horizontal dot spacing will also be larger the aspect ratio of the printout might be alright. If you wish to adjust the line spacing this is controlled by byte 20363 which is normally set to 24. To increase the height of the picture, POKE 20363 with a larger number and, to decrease the height, POKE it with a smaller number (the limits being 0 to 255).

Another point to bear in mind is that the X24 along with the XL24 has an Alternate Graphics Mode (AGM), which is selected by DIP switches to give a high resolution 24-pin graphics mode. This causes the commands which affect the line spacing to adopt the standard units

of the corresponding Epson commands. The setting of these switches will also affect the line spacing but, without the handbook, I can't tell you which switches should be changed to set or cancel this option.

Now for a couple of questions about data transfer. Firstly, Peter Deane wrote to us from Brighton wishing to know about the RS232 connections on the +2 Spectrum and the SAM Communications Interface. I'm sure we have had this query before but I can't locate an answer to it in previous Help Pages, so I'll give the connections again.

SPECTRUM		SAM	
Pin	Function	Pin	Function
1	GND	5	GND
2	RXD	3	TXD
3	TXD	2	RXD
4	CTS	4	DTR
5	DTR	8	CTS
6	N/C		

Secondly, in the July issue there was a letter from a reader who wanted to transfer data from a PSION to his SAM. I am informed that the latest version of the SAM Transfer Utility written by Cliff Jackson (which I first mentioned last year), now works equally well when linking SAM to a PC or PSION Series 3. It is available on disc as 'STU(v5.5)' from SAM PD, 18 Mill Lane, Skelmersdale, Lancs. WN8 8RH, price £1.50.

That's all we have for this month. Please keep sending your problems/answers to the following addresses:-

Anything SAM or General Purpose:-  
Ray Bray (*FORMAT* Help Page),  
Spring Cottage, Bourne Close,  
Porton, Salisbury, Wilts, SP4 0LL.

Anything +3, CPM:-  
Mike Atkins (*FORMAT* Help Page),  
70, Rudgwick Drive,  
Bury, Lancashire, BL8 1YE.

Please remember that if you want any discs/printouts etc returned then you must include an SAE.

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# TOWARDS 2000

By:- Brian Milton.

Last November someone warned me that we had roughly 1,000 days at the office to deal with the end of the 1990s. Today, I have good news, and I have bad news.

The closest I can come to good news is that we still have about 800 work days to go before Monday, January 3rd 2000. The bad news is, our problems with dates will show up at least a year earlier.

For example, a recent article I read noted that 9/9/99 was used as a 'magic' value for data-set expiration dates on one company's mainframe system. This date was equivalent to a flag saying "never delete this." The writer wondered what other strange things might happen during the last year before "twenty-ought."

I've collected a long list of "I can top that" anecdotes. People have seen a year code of 99 used for 'year unknown', 'recurring every year', 'go on forever' or any number of other arbitrary meanings.

So we don't need to wait for 'Y2K' as people are starting to call it, to enjoy the personal growth that comes from facing total chaos (although being a computer buff I would say Y2K is the year 2048 - wouldn't you!). We can start seeing serious problems in information systems a full year sooner than that.

Apart from these wild-card behaviours, we have a lot of code and data built around six-character date fields that use the format YYMMDD. It wasn't a good idea, but it was the law - or at any rate,

the accepted form - if you were programming in the 1970s or 80s.

Federal Information Processing Standards in the United States even specified this format, beginning in 1970, and many US government bodies would not do business with you if your computer systems did not obey the rules. One would think that anyone who went to the trouble of writing a regulation on this subject would have thought a little further ahead: When the mountain labours and brings forth a mouse, at least it should have four legs and a tail.

One solution to six-digit dates is the sliding century window. A typical implementation would assume that in 1996, any two-digit year less than 62 refers to year 2000+, and would increase that threshold value each year.

This breaks down, however, in domains such as health care and insurance, as centenarians stop being unusual. Some insurance workers already report problems with applications that were not designed to deal with people more than 99 years old.

Even when programs carry all the digits they need, they can still get confused about leap years. All together, now: "2000 is the first century leap year since the invention of the Gregorian calendar". Some coders knew just enough to be dangerous and thought that 2000 (like 1900) will only have 365 days.

It would probably be worse if the coming '00 milestone were not a 400-year

exception: There's probably a lot of code out there that puts 29 days in every fourth February, ignoring the matter of centuries. At least that logic won't fail until 2100. For those of you not familiar with the rules they are: If the year is divisible by 4 *but not by 100* then it is a leap year. That is true unless the year is divisible by 400 - in which case it is a leap year. 1900, the last year of the 19th century, was not a leap year but 2000 will be.

Many professional programmers are preparing to make a killing as the magic year approaches, I've no doubt that as we get closer we will see more and more about the problem in newspapers and on TV. Banking, commerce and international trade will be under threat and there will be programmers laughing all the way to the bank with nice fat contract fees for sorting out the problem.

So, be warned: If software on your system uses dates a lot, then now is the time to start getting worried. Fixing the problem in advance may be expensive, but waiting for the bomb to go off could well cost you much more. The clock is ticking

800; 799; 798 ...

#### Editor's Note:-

This article first appeared in issue number one of **FORMAT PC**. Just a few days after the issue was mailed out, The Times newspaper published a five page feature on the impending computer problems of the year 2000. Since then the BBC2's Money Programme devoted over a third of its show (on Sunday 3rd November 1996) to the problem.

So, is the world, as we know it, doomed to come crashing down around us as computers all over the planet enter terminal hysterics on the 1st January

2000? Only time will tell.

However, this is a very interesting subject and I'm sure there will be lots more in the papers and magazines over the next few years. If anyone comes across an article on the subject we would be very grateful of a copy so that we can try and keep readers abreast of the developing story. **Ed.**

## SMALL ADS

**WANTED** 3 1/2" disc drive to work with PLUS D. Contact Darren Cox on 0121-559-0549.

**WANTED** PLUS D interface with single or twin 3 1/2" drive(s). Will pay reasonable price for system in GWO. Write to Mr B.Nyberg, 20, West Park Road, Bude, Cornwall, EX23 8PB.

**WANTED** Volumes 1,2 & 3 of **FORMAT** and anything **SAM** related in print. Write to John Adams, 17, Abbey Gardens, Belfast, BT5 7HL.

**WANTED** DISCIPLE or PLUS D with disc drive. Must be in GWO. Contact Ron Willmore on 0117 957 1049.

**FOR SALE** Spectrum games, SAE for list, also some C64 and Amstrad CPC titles. John Thomson, 78 Holtdale Avenue, Leeds, LS16 7SG.

**FOR SALE** **FORMAT** magazine from issue 1 to date. Complete. Offers. John Heinrichs, 16, Kimmeter Place, Annan, Dumfriesshire, DG12 6JU.

**WANTED** Working copy of GDOS V3d system tape or disc (3 1/2 or 5 1/4"). Write to Phyl Smith, 279 Beadlemead, Netherfield, Milton Keynes, MK6 4HZ.

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# YOUR LETTERS

Dear Editor,

While I'm writing to you I thought I'd make a small suggestion. I have noticed that when people write in to the letters page they invariably ask three or four questions in one letter and probably due to pressure of space only two questions get answered in depth. Have you thought of using your Help Page writers as a fine tooth comb so to speak. I'm sure people writing in are often not sure as to which department to send their queries to (especially if the letter is wide ranging). Perhaps if the writers numbered their questions this would help.

*Yours sincerely, Andrew Rycraft.*

True Andrew, people often pose questions in their letters, that are better answered in the Help Page, and these we send on to Ray Bray. Ray, by the way, is always bemoaning the fact that there's never enough Help Page material coming in - what is the matter with you all, I can't believe you are all without problems.

Anyway, it is true that long letters often do not get long answers because I don't want one person to take up too much space. So the secret to getting your letter in print is 'keep it short'. **Ed.**

Dear Editor,

I have got rather behind with my **FORMAT**'s and have just come across a request for a simple word processor from Mr Pettit in the June issue. There was one of course, the Key Press which Revelation brought out and then faded. I

have used it quite a lot at school with 7 or 8 year olds for whom it works well. I find that by the time they are 9 they can manage Outwrite which is my standard word processor.

If you could find out if Mr Pettit still wants one, or let me have his address, he could have mine as I have now retired and I can't see me needing it again.

*Yours sincerely, Mike Wynn.*

I never did play with Key Press but you seem to recommend it highly so we have passed on your letter to Mr Pettit so he can contact you. **Ed.**

Dear Editor,

In reply to John Adams' letter, here are my answers for the list.

Best game: Waterworks 1 and 2 - Good graphics, nice sound and great game play. Most used Utility: Comet - Best Z80 Assembler there is! Best WP/DTP package: I guess SC-WORD pro (I don't have it).

In addition, in the Short Spot section it was mentioned that the OUT 227,0 instruction spins the drive motor. However, it actually positions the drive head to track 0 and hence the spinning of the drive motor. OUT 224,0 on the SAM does the same.

I hope I have been of some help.

*Yours sincerely, Martijn Groen.*

Your's is the only letter so far Martijn, and if you can write from The Netherlands then I wonder what the rest of our members are waiting for? **Ed.**

Dear Editor,

I see that the years still go by at an accelerated pace in direct proportion to ones years, and that the tendency to procrastinate is also coupled inexorably with this phenomenon.

Somehow or another my inability to produce an article for your excellent magazine, along with a lack of knowledge gets muddled up with this law of nature, but I do enjoy reading and trying out the ideas abounding in the publication.

I therefore have much pleasure in renewing my subscription and enclose my cheque with an additional £1 that I trust will be acceptable instead of five 20p stamps for the next issue of **FORMAT** PC.

*Yours sincerely, D.Scott.*

With word-crafting skills like that Mr Scott, please write again soon. **Ed.**

Dear Editor,

My SAM and Spectrum user group has been one big flop! After advertising locally and in **FORMAT** I only got one person who replied. So for now it is on the shelf for a later date, till more people are interested, thanks for asking.

Doesn't time fly, membership due again, twelve months have passed so quick. On the questionnaire you always ask for comments on the articles mostly enjoyed or least enjoyed which appear in **FORMAT**. Because I read **FORMAT** cover to cover and really enjoy all the articles and the letters from readers. The magazine is well set out and you can read the lettering without having to take a magnifying glass to read it, like some small magazines out at the moment which support the Spectrum and SAM.

Topics that I like to see covered in future issues are any items relating to Printers, particular Citizen Swift 240C

printers. I can never fathom out printer manuals.

Most of all I am always playing games on my computer, I have loads of Spectrum games.

My comments on the show in Wetherby. It was a shame it was not advertised early enough, then perhaps more people might have attended the computer show. Top marks though that someone had a bit of sense to organize a show up North. They should be encouraged to organize another show up here, but advertise it earlier. The hall was well planned out, spacious, and not everybody crammed together on tables. Best of all you got a cup of tea in a cup and a biscuit. I say all the best to Allan Clarkson for good organization. It was nice to talk to someone from Holland, he gave me a S.G.G disc Free.

Saying all that why don't you organize one up here because you do a good job down in Gloucester, and you made it up to Wetherby, so no excuses. Going to Wetherby round trip was 150 miles, going to Gloucester round trip 370 miles. Saved a lot on petrol.

Think about it Bob, hold a show up here.

*Yours sincerely, Norman Fryer.*

Hi Norman, good to see you at both Wetherby and Gloucester. I think Wetherby had good advanced publicity. Full editorial coverage in the August issue and more in the September one - linked with adverts in the September issue. For a first show it was very good and Allan Clarkson is planning another for next year - exact dates when we get them.

As to organizing shows outside of Gloucester, no way! It is hard enough organizing one on our door-step, let alone trying to plan something hundreds of miles away. There is a big difference

between going to someone else's show and organizing one yourself.

Sorry you haven't been able to get a few of the lazy Spectrum and SAM users in your area to get off their bums and get a club going. Don't drop the idea completely, I'm sure its time will come. **Ed.**

Dear Editor,

Please find enclosed my renewal for continued membership, I have enclosed my cheque and also wish to claim my extra 3 months subscription for the 'Video Titling' article which was published in Vol 9 No 7.

I would like to take this opportunity to wish you, Bob and Jenny and all at **FORMAT** all the very best. Continue with the good work that you all put in to produce us with such a useful and informative monthly magazine in **FORMAT**. I, like many others look forward to it, many thanks.

*Yours sincerely, Deryck R.J.Morris.*

Oh my head, the swelling will take days to go down. Thanks Deryck, and thanks for the article you did, look forward to anything else you care to do. **Ed.**

Dear Editor,

Thank you for the apology enclosed with the August issue of **FORMAT**. Unfortunately I still haven't received the April 1996 issue. When I saw Bob in June, I thought that it was on the way, so I only asked Bob for the others that I hadn't received. Five months is a long time for sea-mail, it is usually between eight and ten weeks. We posted three parcels back to New Zealand at the beginning of July (by sea) and received them the third week in August. That was a total of seven weeks. A record!

I hear that the heat wave is now over and everything is back to normal as

regards temperature. It was the best summer that I can recall, with a late spring merging into a lovely summer.

Is there any news of binders for **FORMAT**? I have been using A5 files to keep them in. I purchased these from a stationery firm in Farnborough when I lived there, but these are unobtainable here in N.Z. All I can get are A5 ring binders. I could use these but it would mean ruining copies of **FORMAT** by punching holes in them. This I am very reluctant to do. The stationery firm was called MEMO, and it was a lot better than W.H.Smith. (The less said about them the better,) as it carried a bigger range of goods. If you can find a source of the A5 files please let me know and I will send for some.

*Yours sincerely, Alan Rutherford.*

There seems to have been a lot of trouble with overseas mail this year. We have sorted out a few people but if there is anyone who has not contacted us about a missing issue then please do so, rather than wait for your renewal to tell us.

Binders are on the back burner at the moment, we got fed up with looking and not finding. If anyone has contacts with a plastics company then we do have a design for magazine holders that we would like to see in production. I will supply the design if they do the production and in return for the quantity we would need, they can have the sales rights. **Ed.**

Dear Editor,

Having made it to the Gloucester Show, I have to say it was well worth the trip from London. I came looking for old computers and some technical information on the SAM COMMS interface. I got more than I had hoped for. I was able to get a ZX81 in good working order and the possibility of a



ZX80 which I would love to own.

My collection of old (classic) computers is now growing, which includes babies such as the QL, Dragon 32, Oric, MSX and BBC, plus many others. However, I am still looking for a Jupiter Ace, Memotech MTX52 and an Einstein, preferably in working order. I might even be willing, for the right machine, to part with one of mine as I have several of them.

Referring back to Gloucester, I also had a long chat with Cliff Jackson about my SAM COMMS' interface which I bought in 1990 and never got working. It seems the early MGT unit had a fault which Cliff has long since identified and solved. With his help my unit could soon be up and running.

Well, I have to say I've enjoyed my day, not only visiting the show, but also seeing Gloucester for the first time. I will return again to see more of it. Perhaps when the next show is on. Many thanks to INDUG.

*Yours sincerely, Graham Howden.*

Thanks for coming Graham, glad you enjoyed both the show and Gloucester itself. Not a bad old town is it?

And I would also like to thank Cliff Jackson for the wonderful work he put in at the show. I know a lot of people I spoke to had enjoyed chatting with him and it was good to see such enthusiasm and knowledge. Well done Cliff. *Ed.*

**Dear Editor,**

This is with reference to your decision to start **FORMAT PC**. I believe that this is a logical route for you to take if you wish to continue with the present set up. I wish to receive the new magazine and am waiting for further details.

I say logical, since the disc based OUTLET magazine has also gone the PC way and report good response from their subscribers. I wish that with new extra

work load, you can start paying Jenny a little bit more. She deserves it, since the spelling mistakes have come down drastically ever since she has started working for you.

What happens to all this above said logic when it comes to games? Don't think that only kids play games. I am a couple of years senior to you, but I do play games, be it Spectrum, PC or Mega Drive. Before I buy a game, I need to know what it is all about and whether it will be suitable or worth my money. For this purpose, I subscribe to other magazines as well. This activity is important since these games are expensive and one can not afford to buy them blindly. So these mags have a purpose since they protect the reader from needless loss. Since there is no such a game oriented magazine for SAM, you have to step in until some other magazine appears on the scene. All we need to know is whether the new game is good value for money and what it is all about. We are not asking for a change of editorial content or make the mistakes made by ZX Computing, Crash and SU. What is really needed is a nut shell type of review only, where the game can be described in a few words, and is it worth the money; or possibly a rating. If that is not agreeable, another way could be to produce a pull out for games, the way you did your Resource Directory, which by the way, was a splendid effort by Jenny.

*Yours sincerely, P.Ahamed Basheer.*

I really enjoyed typing this letter in, thank you for the nice comments you made and I will always do my best to keep up the good standards. *Jenny.*

Yes, well, she would like it wouldn't she. Always after money these women, secretaries are nearly as bad as wives.

As to the games reviews, well at the

moment I'm content to leave those in the hands of FRED who seem to do such a good job. However, one thing I would say, with SAM games being so cheap I think most SAM enthusiasts buy everything that comes out anyway. *Ed.*

**Dear Editor,**

In the September issue of **FORMAT** you published a letter from Philip Smith re obtaining cables/leads for monitors etc.,

The company mentioned in the letter is now renamed Stack Computer Solutions Ltd, and the address is as follows; 28-30, Farriers Way, Netherton, Merseyside, L30 4XL. The telephone number is as stated in Mr Smith's letter.

I telephoned this company at 09.05 on Monday and placed an order for a lead to connect my Sinclair QL to an Amstrad CPC monitor. The gentleman who took my order verified that they indeed did supply the necessary cable but that it was out of stock and would have to be made. Delivery would be 4 to 5 days.

Imagine my surprise when at 08.10 on Tuesday morning (less than 24 hours later) the lead arrived by First Class post.

I do not have any connection with this company, but feel that they deserve a mention for obviously putting the customer first.

*Yours sincerely, Sam Quigg.*

**Dear Editor,**

While I was demonstrating my version of *The Secretary* program at the show in Gloucester on Saturday with one of our members, we came across a problem with the program listing in my article 'More new Tricks for The Secretary - Part 3' from the September issue of **FORMAT** (Vol.10, N°1, page 22).

In column 2 of that page, line 11215 should read:-

```
11215 PRINT #5;CHR$ 27;CHR$ 40;C
      HR$ 99;CHR$ 4;CHR$ 0;CHR$
      (a*10); CHR$ 0; CHR$ 0; CH
      R$ 4
```

That is, there is an extra CHR\$ 0 before the final CHR\$ 4.

I do hope that this hasn't caused inconvenience to too many people and apologize if it has.

*Yours sincerely, Rev Tony Kinch.*

Many thanks for the correction Tony, and even more thanks for turning out at the show. You seemed to gather a good crowd of people. Keep up the good work and we hope to see you again in April. *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 email them to us at [FormatPub@aol.com](mailto:FormatPub@aol.com)

**Continued From Page 21.**

suitable plug/socket was needed. There are several units available in the well established Bulgin range and I chose the 3-pin P429 chassis plug and P646 line socket, both rated 3 amps at 6v DC (Maplin HL20W and HL44X). The second output cable was then soldered to the Bulgin line socket and the chassis plug will need a 19mm mounting hole for which there is ample space on the back wall of the proposed drive housing.

After careful testing of all the outputs at both connectors, SAM's existing PSUs were replaced by the new one. As usual, the moment of switch-on was rather tense but all was well and SAM came to life quite normally. A lot of work still needs to be done to install the drive in its new home before the HD Interface can be connected - but that is another story.

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# TALKING C

Part 2.

By:- Martin Fitzpatrick.

Welcome again, another SAM C article already started..... badly. Last time I told you a little about the main elements to SAM C, such as variables, inputting and printing characters. I'm going to leave that area of C for now, and instead concentrate on the graphics library instead. The routines supplies cover almost all of the graphics commands that are used in Basic, except with the major advantage that they are a lot faster. Firstly I will deal with the more basic commands, which are all located in the "graphics.h" and "graphics.c" files on the main disc.

## C FUNCTIONS FOR PLOTTING AND DRAWING

As in basic there is the basic plot command, which is accessed in much the same way as it is in basic. It takes the form:-

```
plot (int x, int y);
```

As can be seen the command is extremely basic to use and follows exactly the same format as the one used in basic. The most common use for this in the past has most probably been to move the graphics co-ordinate around the screen. The main problem with this is that it places a dot on the screen, which is quite often just over written - which wastes time. For this reason (and also to allow you to move the point without making dots all over the screen) another function is supplied and is used as follows:-

```
moveto (int x, int y);
```

As you see, the format used is exactly

the same as that of the plot (x,y) function. Because this function does not place a point on the screen, and instead just alters the co-ordinates, there is a definite speed advantage.

Next, there are the routines for drawing lines. In Basic there were the two main commands for this purpose, DRAW x,y and DRAW TO x,y. The first simply draws from the current point x pixels across and y pixels up, the second draws to a particular point on the screen specified in x,y. Functions are supplied in C, along with some extensions. There is no equivalent to the DRAW x,y command however as the use of this is limited - however it is simple to use one of the other commands for this function if it is required.

```
drawto (int x, int y);
```

This function simply draws from the current position on the screen to the position held between the parenthesis. This is exactly equivalent to the Basic DRAW TO command.

```
line (int x1, int y1, int x2, int y2);
```

This command draws a line from the position x1,y1 to the position x2,y2 and is directly equivalent to:-

```
moveto (int x1, int y1); drawto (int x2, int y2);
```

As I mentioned earlier these commands can be used to emulate the Basic DRAW x,y command. This is done as follows:-

```
line (cx, cy, cx+x, cy+y);
```

....where cx and cy are the co-ordinates of

the offset (or centre point) and x and y are the increases to use from that point e.g.

```
line (50,50,50+60,50-10);
```

...is equivalent to the Basic...

```
PLOT 50,50
DRAW 60,-10
```

SAM C also allows for boxes to be drawn, without continued calls to the line or drawto functions. The command is (unsurprisingly) called 'box' and is used in the following way:-

```
box (int x, int y, int width, int height);
```

Where x and y are the starting co-ordinates for the top left hand corner, and width and height are the width and height of the box on the screen in pixels. Doesn't really require much explanation does it...

...And neither does the next one.

As well as a function to draw boxes, SAM C also provides a function for drawing the three sided equivalent - a triangle. It is called in much the same way:-

```
triangle(int x1,y1,x2,y2,x3,y3);
```

The various values give the co-ordinates of each of the corners in turn, which it draws in turn e.g.

```
triangle (10,10,100,100,190,10);
```

This would draw a triangle with one corner at 10,10 (bottom left of screen), the next at 100,100 (near the middle of the screen), and 190,10 (near the bottom right of screen).

In all these commands the limits depend on the mode of the current screen (see later) e.g.

```
Mode 1,2 & 4
x range = 0 to 255
y range = 0 to 191
Mode 3
x range = 0 to 511
y range = 0 to 191
```

As in Basic a FATPIX command is supplied for use in Mode 3 to alter the x range from 0 to 511 to the setting used in the other modes of 0 to 255. This function is used as follows:-

```
fatpix (int s);
```

...where if s is null (zero) then fatpix is disabled (range 0 to 511) and if s is greater than zero then fatpix is enabled (range 0 to 255).

If you have used Basic you may know about the yos, xos, yrg, and xrg variables which are used to set various origin and scaling settings for the graphics. Normally in SAM Basic the yos is set to 0 which means that the y range runs from -18 to 173. However under the SAM C shell the yos is set to -18 and so the range is 0 to 191 instead. This can cause problems as programs which run under the SAM C shell will sometimes not work in Basic. The way round this is to place the Basic command LET yrg = -18 at the beginning of the program which calls the C code. This will solve the problem allowing for your C code to run in both Basic and under SAM C.

#### OTHER C GRAPHICS FUNCTIONS

Another of the most useful commands in Basic is the CLS command, which is used for clearing the screen. The C command is the same as the Basic one, and it is accessed as follows:-

```
cls (int a)
```

The variable a is used to set the way the screen is cleared. If a is set to 0 then the entire screen is cleared, and if it is greater than 0 then only the current window is cleared (windows will be described later). The manual says upper screen - which is the area which is cleared if no windows have been set on the main screen before the call to this function.

In Basic the OVER command allows for different settings of the plot

command to change how it places INK on the screen where there is already INK. There is a function in C for the same job:-

```
setover (int o)
```

The settings available are as follows:-

```
0 - Normal
1 - XOR
2 - OR
3 - AND
```

**Normal** The plot just simply overwrites what is on the screen, regardless of what is there.

**XOR** If the pixel is not set it will be left, if it is set then it will be altered to the current pen.

**OR** If the pixel is not set then it will be set, if it is set it will be reset to the paper colour.

**AND** If the pixel is set then it will be overwritten, otherwise it will be left blank (paper colour).

Sometimes you may want to check the position of the graphics pen on screen (as changed by moveto). There are two commands for doing this called getx and 'gety'. They both return the value into the variable they are called with e.g.

```
x = getx(); y = gety()
```

Stores the x co-ordinate in x, and the y co-ordinate in y. This can be used to find the position of x and y before using drawto (x,y) to check if you need to use a moveto command. I'm not sure of the speed advantage of this - it might even be quicker just to issue a moveto(x,y). However it could be used after random drawing to find the current position - I'm sure someone will find a use for it.

#### CHANGING COLOUR IN C

If you were only restricted to one colour for drawing things might start to look a bit drab. Because of this C provides functions for changing the colour of various elements to a picture,

just like in Basic.

```
pen (int i)
```

This sets the current pen/ink colour to i as is used in SAM Basic. The value i can be from 0 to 15 and corresponds to the position in the current palette e.g.

```
pen (5);
line(100,100,110,110);
```

...would draw a line from 100,100 to 110,110 (10 pixels long) in pen 5.

There is also a command equivalent to the SAM Basic PAPER command, which is used in the following way:-

```
paper (p);
```

This works in exactly the same way as the pen command, so p is the position in the current palette (0 - 15) to use as the current background.

**NOTE** :- Just as in Basic, in order to get the entire screen to change colour to the new paper you need to use the cls(int a) command to clear either the full screen or the current window to the new colour. Otherwise the only areas which will change colour will be those where you print characters to. However, if you require highlighting of characters this can be done by not using the cls function.

If you wish to change both the paper and pen in one go, there is a command available for this as well. It takes the form:-

```
color (int i, int p);
```

Where i is the ink/pen and p is the paper colour. Notice also that colour is spelt 'color' in this function, otherwise it won't work.

The BORDER command in Basic allows you to change the area of the screen surrounding the main area which is changed by using the PAPER command. In SAM C there is also a function equivalent to this Basic command which is used as follows:-

```
border (int c)
```

As with both paper, ink and color functions, c is the palette position which is to be used as the border. It behaves just like in Basic, and so, unlike the paper function there is no need for you to use cls.

The PALETTE command in Basic allows you to change one of the colours in the current palette (0-15) from the full selection of colours ranging from 0-127 (the full list of descriptions in available in the SAM Users Manual). In SAM C there are two commands to do this. Firstly there is the command equivalent to the Basic:-

```
palette (char pos, int col);
```

Where pos is the position (0-15) in the current palette and col is the colour in the full palette (0-127). So to change position 11 (normally set to light blue) to colour 127 (bright white) you would use...

```
palette (11,127);
```

Anything on the screen drawn in pen 11 would then change immediately from light blue to bright white. There is no function equivalent to the Basic PALETTE x, c1, c2 which allowed for automatically flashing colours, though these can be set up beforehand in Basic.

If you want to change a block of colours at the same time instead of having to go through each one individually, you can use the function:-

```
allpalette (char pal[16]);
```

This allows an array of 16 numbers (representing the colours in each palette position) to be used to set the colours. The numbers held in the array pal[] must be in the range 0-127 e.g.

```
char pal[16]={0,10,16,72,97,65,44,47,99,110,23,26,34,37,120,127};
allpalette (pal);
```

Would set the palette to the values set up in the initialization of the array pal[]. (Remember that the values of a variable can be set up on initialization).

There is also another command which is not covered in the SAM C manual. In Basic the POINT x,y command could be used to find the current pen value (0-15) at the position x,y. In SAM C there is a function supplied for this:-

```
char getpixel(int xp, int yp);
```

This function returns the pen colour at the coordinates xp,yp into the char used to call the function. So for example on a screen with a paper colour of 15...

```
c=getpixel(100,100);
```

...would return the value of the pixel at 100,100 which in this case is 15.

And that is all there is room for this month. Next time I will continue with more aspects of screen control. 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.

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