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FORMAT

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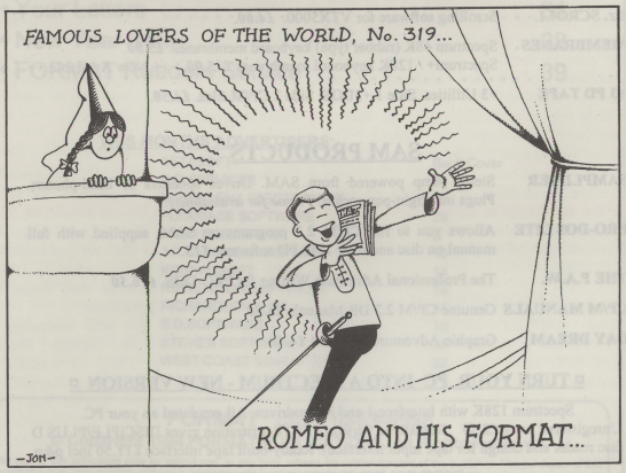

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NEWS ON 4

GO FOR SAM

GO is a very ancient Oriental game of strategy often considered more difficult to master than chess. It is considered *THE* game in Japan and is taught in schools and night classes.

Well now both Spectrum and SAM Coupé owners can play using a new computer version produced and marketed by John Marshall.

The program is for two players and allows the size of board, the colours and the control keys to be customized. It automatically provides handicap stones, records captures and keeps the rules (which are surprisingly easy to learn). Another advantage to using the computer version is that you can always save a game to reload later.

Priced at £2.99 it is supplied on tape for the Spectrum or on disc for SAM and is available direct from John Marshall, 7 Clarborough Drive, Arnold, Nottingham, NG5 7LL.

RADIO UPDATES

The AMRAD MULTIMODE and MULTILOG programs (see News On 4 Vol.6 N°5) have now been updated to versions 2.7 and 2.6 respectively. These programs are much respected among radio ham circles and are available as SHAREWARE.

For more details write to Ian Spencer, Fichtenweg 10C, 53804 MUCH, Germany. (Please note new post code).

CBM STILL IN TROUBLE

Heavy losses are still plaguing the ailing Commodore company in the US. A $590 million loss was recorded for the year ending 30th June 1993 which although far lower than the record $911 million loss of 1992 was still higher than expected.

In a statement issued from its US headquarters the firm commented: "The company's financial position and operating results raise substantial doubts about the company's ability to continue as a going concern."

Commodore are now attempting to restructure its finances by raising $50 million in order to escape from its 'negative equity position'. In other words it is looking both for new investment as well as looking to its creditors to convert debts into equity in the company.

TV GAMES WAR HOTS UP

Channel 4's highly successful *GamesMaster* show, which was the first of the glut of video games shows on TV, has been moved to Tuesday evenings at 6.30pm and has had its run guaranteed until at least the first quarter of 1995. With many new features they hope to keep ahead of the opposition

Meanwhile SKY are still claiming a growing audience for *Games World* (weekdays 6pm on SKY 1) which is actually produced by the same company - Hewland International - as *GM*) and are looking for a slot to repeat the show later each night to catch older games players.

ITV's Bad Influence also looks set to run until at least the end of 1994.

Credits:- Harold Lunsun, M.D.Palmer.

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

Well Christmas is over, the New Year has begun and so it is back to the grind-stone. Our sincere thanks to all of you who sent Christmas cards, they help to cheer up the office very much - I'm sorry we can't reply to you all personally but thank you for your kind thoughts.

The Christmas holiday seemed to flash by, helped I must say by the addiction to Revelations latest SAM game 'Legend Of Eshan'. I got a pre-release version a couple of weeks before Christmas but did not have time to play it properly until Boxing day. That was it, until Jenny turned up on the 4th January and forced me back into work mode, all I seemed to do was eat, watch TV, and play Eshan (and given the number of repeats on the box it is safe to say Eshan won more often than the TV).

It is not often I get time to play games but I made time for this one. Eshan can trace its roots back to games like 'Lords Of Midnight' which has probably been the subject of more letters in ***FORMAT*** over the years than any other Spectrum game. But, with the extra memory and Mode 4 graphics of SAM, Eshan goes far beyond *LOM* in both size and scope For anyone who likes an intelligent game - this is the one to start 1994 with.

The first Gloucester Gathering in November was very well attended. I've had lots of phone calls and letters pushing for us to organize another as quickly as possible. Well, we have booked a date. **Saturday 30th April**, same venue, same times. "Why so far away?" I can hear many of you say. By then the weather will be better, the days will be longer, both making it easier for people to travel longer distances. The other reason is that shows do take a lot of organizing and we need the time.

As with the first show we will be selling advanced tickets but I will give details of those next month. One idea that was raised, and I would like to pass on early, is that of car sharing or even joint hire of a mini-bus. If you would like to offer to organize a mini-bus from your area or if you can offer to share your car with other SAM/Spectrum enthusiasts then drop us a line right away. We can then publish your name and telephone number in the March issue so people can get in touch in plenty of time.

I can promise that this second show is going to be even bigger than the first so put the date in you shiny new 1994 diary before you forget.

Now, as they say, to something completely different. Last month I asked for help in finding a +3 copy of PCG's DTP. Well I'm pleased to say I had several phone calls on the subject and we have now produced a master copy. So, if you turn to the NEW YEAR SALE page you will find the +3 version is now available. The clip-art is another problem and we are looking into that but at least the main DTP program is available. I'm sorry there has to be a surcharge for the 3" disc version but 3" discs are just so much more expensive than 3½" or 5¼". Still, I think you will find the program is worth the money.

While I'm talking about the NEW YEAR SALE, please note that this is your last chance - the offers close on 1st March so get your orders in quick.

Until next month.

Bob Brenchley, Editor.

SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

Let's start February with a letter from across the continents. Mr L. G. Baumann of Cowies Hill, South Africa has a Spectrum tip, and as I was short of Spectrum items last month, we'll put it up-front. Ever put a listing which contains a lot of instructions into your little rubber-keyed beer mat? I bet you have. And I bet from time to time, you've looked at the screen and wondered what on earth is the crazy mixed up rubbish you've got on it. Or you've a beautiful print-out on-screen, but it prints rubbish on the printer. Mr Baumann's sent me several listings to demonstrate. He writes as follows:-

"There are times when you will want to add some lines of print to a program, and this requires some care if you want to avoid words being cut between two lines. You may also want to make all the lines right-justified. This is how it's easily done.

1. Enter a Line number and the Keyword **PRINT**.

2. Bring the Line down again to the Editing area. This lines it up correctly.

3. Add spaces across the screen and put an inverted comma in the last space of the line.

4. Now start typing the desired words and they will appear in the same position as they will when the program runs.

5. If you want to right-justify, then add the extra spaces needed as you finish each line. This is easier than going over the lines later.

6. Use a single apostrophe mark (symbol-7) before and after any Name.

7. When you have finished, run the lines to check that they appear correctly and to your satisfaction.

8. If this is a piece of a program, and you are short of room, now is the time to remove the unnecessary spaces from each line. You can also replace the apostrophes with two pairs of inverted commas if you want.

9. Now SAVE it.

Many thanks, Mr Baumann.

Now over to Roy Burford of Stourbridge, who is always meticulous in chasing up and correcting problems. And he's found problems a-plenty in the December issue...

First, my little 'Ghosts' game. Nice, innit. One o' me favritts. Except it didn't work on Roy's 128k Spectrum+ until he'd kept it happy by using CHR$ 196 instead of 'BIN' in line 620.

Back to Roy, now. Roy points out that there's something dodgy gone on in Alan Cox's 'Spirograph', because not all the starfish pattern appeared after he typed it in. (I guess we've dropped a bit during one of its many transcriptions: my apologies). The problem with changing r1's sign for the wheel outside the ring is that is also changes simultaneously the upper counter limit, so the plot never really gets under way. A bit of thought has led Roy to the correct upper limit: 2*PI*r1/r*LCM. Many thanks.

Roy now proposes to leave the matter

of spirographs for a while. Probably just as well, for we now have a couple of Spectrum programs from Barry Twyman. Yerss, folks, it's trouble himself again; him wot originally started my Spirograph correspondents 'till they almost came to blows. And he reckons he's got another starter here. It's rather long, but most of it is data which converts the character set to a sort of lousy script. You LOAD the program, RUN it and watch the numbers in the top left of the screen: when it's done thinking, the Spectrum gives you some on-screen prompts, and prints out a letter in lousy script. Barry confesses it's riddled with bad habits, so he's waiting for our readers to improve it (and fight): it's even got no print routine: he "did the pathetic print with the DISCiPLE screen dump. BUT, I pulled some lovely jokes in a New Year's Party by videoing lots of handwritten 'E-Mail' from 'Famous Persons' and performing an elaborate routine to convince family and (ex)-friends of access to an exclusive bulletin board." Wicked, 'ent 'e. Here's the routine:-

```
  1 POKE 23609,100
 10 PRINT "LETTER WRITER"
 20 IF PEEK 31500=0 THEN GOSUB
    9300
100 CLS : PRINT "LETTER WRITER"
110 INPUT "HOW WILL YOU SIGN YO
    URSELF?";a$
120 INPUT "WHO IS THE LETTER TO
    ?";b$
130 INPUT "TODAYS DATE?";c$
140 INPUT "TYPE IN TEXT OF LETT
    ER";d$: LET d$="          "+d
    $
150 FOR f=1 TO 5: LET d$=d$+"
          ": NEXT f
160 POKE 23606,24: POKE 23607,1
    20
200 FOR f=1 TO LEN d$-32 STEP 3
    2
210 IF d$(f+31)=" " THEN GOTO 3
    10
220 FOR g=f+31 TO f STEP -1
230 IF d$(g)=" " THEN GOTO 300
240 NEXT g
250 GOTO 310
300 FOR h=g TO f+31: LET d$=d$(
     TO g)+" "+d$(g+1 TO ): NEX
    T h
310 NEXT f
320 LET d$=d$( TO LEN d$-128)
400 CLS : PRINT ,c$' TAB 4;"Dea
    r ";b$;","
410 PRINT '': FOR f=1 TO LEN d$
    -32 STEP 32: PRINT d$(f TO
    f+31)'': NEXT f
420 PRINT '' TAB 10;"Yours,"'',
    a$;"^": PRINT TAB 14+LEN a$
    ;"`_": PAUSE 0
430 POKE 23606,0: POKE 23607,60
9300 FOR f=0 TO 768: POKE 31000+
    f,PEEK (15616+f)
9310 IF f/20=INT (f/20) THEN PRI
    NT AT 1,0;f
9320 NEXT f
9330 RESTORE 9350: FOR f=496 TO
    728: READ a: POKE 31000+f,a
    : NEXT f
9350 RETURN
9360 DATA 0,0,48,72,136,16,96,12
    8,1,134,120,0,0,224,16,32,0
    ,7,24,32,64,64,35,28
9400 DATA 0,0,56,4,62,197,60,0,1
    6,48,32,124,163,34,60,0
9410 DATA 0,0,28,32,96,163,28,0,
    4,4,4,62,69,196,60,0
9420 DATA 0,0,56,68,249,66,60,0,
    12,10,20,112,159,48,80,96
9430 DATA 0,0,28,36,93,134,4,24,
    0,48,80,96,120,203,76,0
9440 DATA 0,16,0,16,49,214,8,0,1
    6,0,16,48,211,60,80,96
9450 DATA 32,80,116,164,56,37,38
    ,0,24,40,40,48,80,145,14,0
9460 DATA 0,0,104,84,212,85,86,0
    ,0,0,0,56,100,165,38,0
9470 DATA 0,0,56,70,197,68,56,0,
    0,0,56,100,167,60,32,32
9480 DATA 0,0,56,100,188,5,6,4,0
    ,0,36,122,161,32,32,0
9490 DATA 0,0,48,64,187,4,56,0,3
    2,32,56,32,97,166,24,0
9500 DATA 0,0,36,100,164,37,26,0
    ,0,0,36,38,105,168,16,0
9510 DATA 0,0,34,106,171,42,20,0
    ,0,0,102,152,136,25,102,0
9520 DATA 0,0,36,100,191,20,36,2
    4,0,0,56,72,145,34,116,12
9550 DATA 24,36,36,60,36,165,102
    ,0,120,36,36,56,37,166,120,
    0,24,36,36,32,96,167,24,0
9560 DATA 60,82,81,57,97,209,62,
    0,56,72,64,48,64,199,56,0,3
    1,16,48,95,144,16,16,0
9570 DATA 56,68,68,64,207,68,56,
    0,100,36,36,60,36,165,102,0
    ,58,84,16,16,16,58,84,0
9580 DATA 63,22,8,8,72,72,48,0,9
    8,164,40,48,40,165,98,0,96,
    160,96,32,32,33,126,0
9590 DATA 34,54,42,42,34,163,98,
    0,108,178,162,34,34,34,35,0
    ,24,36,36,36,101,166,56,0
9600 DATA 60,34,34,124,160,32,32
    ,0,56,68,68,68,212,76,60,2,
    56,36,36,56,100,165,38,0
9610 DATA 28,34,32,92,130,3,28,0
    ,113,142,8,8,9,14,24,0,68,6
    8,68,68,68,197,62,0
9620 DATA 68,68,70,69,168,40,16,
    0,130,130,130,147,146,146,1
    08,0,130,68,40,16,16,170,68
    ,0
9630 DATA 18,18,50,94,130,15,18,
    12,62,68,8,16,32,77,242,0
```

So; I've had enough: I'm going to treat you rough. I know this is a rather long piece: get typing. And in compensation, here's a real short spot; also from Barry.

```
1 INPUT A$: CLS : FOR N=LEN A
  $ TO 1 STEP -1: PRINT A$(N)
  ;: NEXT N: GOTO 1
```

It should form the basis for any number of stupid party games/tricks/jokes/programs.... C'mon, I'm not handing you a tiddler like this on a plate. Type it in and tell me what it does...

Now over to SAM, who's been sulking merely because I've actually had a few Spectrum programs for a change.

Ben Booth of Charlton Kings, Cheltenham, has sent a little program to draw Pie Charts. It's really very simple. Just enter a title, and also the number of entries (pie slices) you want. Then enter a value and a name for each slice. The program calculates each slice as a proportion of the whole, and then converts this to an angle in radians. Finally, it adds up the angles to obtain a cumulative angle for each slice, and draws the lines. A separate angle is calculated which bisects each slice and is used to position the label. The on-screen picture colours each slice differently, and you are given the option to SAVE the file as a SCREEN$, so that you can edit it in FLASH! and print it any way you want.

Here it is: many thanks, Ben

```
 10 REM Pie charter
 12 REM By Ben Booth
 15 MODE 4: CLS #
 20 LET xc=125, yc=90,. rc=65,
    ll=5
 30 PRINT "Welcome to PIE-CHAR
    T!"
 40 INPUT "Graph title?",title
    $
 50 INPUT "Number of entries?"
    ,no
 60 PAPER 7: BORDER 7: CLS
 70 PEN 0
 80 PRINT AT 0,((32-LEN (title
    $))/2);title$
 90 :
100 CIRCLE xc,yc,rc
110 DIM Entr(no)
120 DIM lab$(no,ll)
130 FOR go=1 TO no
140 INPUT ("Enter value";go;"
    >");entr(go)
150 INPUT ("Enter label";go;"
    >");lab$(go)
160 NEXT go
170 :
180 LET total=0
190 FOR go=1 TO no
200 LET total=total+entr(go)
210 NEXT go
220 :
230 LET factor=360/total
240 DIM vlu(no)
250 FOR go=1 TO no
260 LET vlu(go)=(entr(go))*fac
    tor
270 LET vlu(go)=(vlu(go)/180)*
    PI
280 REM set angle in radians
290 NEXT go
300 :
310 REM draw the lines
320 PLOT xc,yc
330 DRAW rc,0
340 LET total=0
350 FOR go=1 TO no
```

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```
360 LET t2=total+(vlu(go))/2
370 LET total=total+vlu(go)
380 LET xp=COS (total)
390 LET xp2=COS (t2)
400 LET yp=SIN (total)
410 LET yp2=SIN (t2)
420 LET xp=(xp*rc)+xc
430 LET xp2=(xp2*rc)+xc
440 LET yp=(yp*rc)+yc
450 LET yp2=(yp2*rc)+yc
460 :
470 PLOT xp,yp
480 DRAW TO xc,yc
490 LET pn=go: IF pn>15 THEN L
    ET pn=pn-15
500 FILL PEN pn,((xp2-xc+1)/2)
    +xc,((yp2-yc+1)/2)+yc
510 LET yl=170-yp2
520 LET xl=xp2/8,yl=yl/8
530 IF xl<16 THEN LET xl=xl-(1
    l+1)
540 IF yl>11 THEN LET yl=yl+1
545 IF yl>18 THEN LET yl=18
550 IF yl<11 THEN LET yl=yl-1
560 PRINT AT yl,xl;lab$(go)
570 NEXT go
580 :
590 INPUT "Save(y/n)?",s$
600 IF s$="y" OR s$="Y" THEN I
    NPUT "Filename?",f$: SAVE
    f$ SCREEN$
610 CLS #
```

Pretty good, eh. Ben reckons that all you've got to do is to change TITLE to T$, ENTR to E, LAB$ to L$, GO to G, VLU to V, PEN to INK and CLS# to CLS, and if you omit lines 5, 490 and 500, it might even work on a Spectrum too, though it won't colour the segments. Pretty good. Ben is to be congratulated on a neat bit of programming.

I know it does what Ben wants, but I think we could improve it. It could show a sort of squat cylinder instead of a two dimensional circle. And one segment could be pulled out just a little from the rest - like a piece of cheese or a slice of cake - so that it stands out. Who's going to do it? Why; you are, of course. Get your solutions in to Short Spot; pronto.

Many thanks, Ben.

You know; I suffer from Technology. As my wife has developed a bad back as well as me, we've changed the solid fuel Rayburn cooker and the anthracite boiler which ran the central heating (4.5 hods of coal shovelled, and then down 70 or 80 foot of icy path; then empty the ashes. No joke) to a single oil unit. We've had double glazing in strategic places, a burglar alarm and a Fax/phone/answering machine. The current state of play is the Oil Rayburn's broken down, the man's just fixed the double glazing so that it doesn't let draughts through, Samsung's repair agents have changed the software chip to stop me recording 2.5 minutes of dialling tone - without success - I must wait for the exchange to be modernized in April, and the burglar alarm man's just fixing it (again) to stop me waking the neighbours in the middle of the night. I guess technology and I don't mix. Which is why, I think, I opened the pages and copied two identical wireframe programs into *Short Spot*, only realising I'd done it after the event. I am therefore particularly grateful to Ray Cox, who has offered to fix the offending section (I haven't forgotten, and will try and send a photocopy), and Eric Olyott, who sent a whole wad of stuff on wireframe drawing: unfortunately, a quick trawl through this has given me nothing to put into *Short Spot*. I have, however, got a little message from John Ewing, a Vetinerary Surgeon at Wooler, Northumberland. He mentions that he has not really been following the previous correspondence, but used to make use of a well known bug in the Spectrum ROM to produce interesting screen effects. A two line program like the example enclosed can produce very good effects, writes John. He also mentions that varying the third number

in the DRAW statement by trial and error will produce anything from a black circle to spiky stars.

Here's the program. It's a proper short spot, too!

```
10 PLOT 50,50
20 DRAW 80,80,750
```

And I should just mention that they have sent me a picture which I am passing on to Bob, because it's from one of those original printers; either Uncle Clive's or the Alphacom. I hope Bob will manage to reproduce it: it makes me feel all nostalgic. [Sorry John & John, the poor photocopy of the lovely silver paper you sent down just would not reproduce in a shrunken form on these pages. ***Ed***.]

Many thanks, John.

Finally, here's something a bit more esoteric; a demonstration of chaos! Chaos theory is in the news at the moment; believe me. This particular form of chaos is the reason why, even with the most powerful computers , one cannot forecast the weather ahead with any accuracy. When calculating non-linear expressions over and over again, the result can be incredibly sensitive to the starting values used, and minute changes there make big changes to the result. So a major change in the weather could perhaps be initiated by a butterfly's wings fluttering. This program, put together by Ted Cooke-Yarborough demonstrates this rather well. An equation published by Earle and Johnson in 'IEEE Spectrum' (no relation) in November 1993 (we're very up-to-date) is repeatedly calculated. The equation is:-

$$x_{n+1} = px_n(1 - x_n)$$

where the initial value of x is between 0 and 1.

The value of x obtained in one n+1 calculation is used for x in the next n calculation. For values of p less than 3, the calculated values settle down to a constant number. For p just over 3, the calculated numbers oscillate between two numbers. As p is increased, the oscillation becomes more complex; with p=3.6, the result looks random. Yet with identical starting numbers, the patten obtained is always the same, but if the start value of x is changed by as little as two parts in ten thousand million, then you get different patterns. This is because the Spectrum works to an accuracy of 9 or 10 decimal digits, and the Spectrum thinks numbers differing by less than this are the same. Type it in, press RUN and the program will ask for a value of p and for a starting value of x. If p is between 3 and 4, you get a descending wiggly line. The horizontal deflections correspond to changes of x in succeeding calculations. The line moves down one pixel per calculation until the bottom of the screen is reached, when it asks for another starting value for x: up to four vertical lines side by side will fit on the screen this way. At the end of the fourth line, a STOP is reached, and you'll have to key in RUN to start again.

This display can be used in a number of ways. For instance, if the second line is drawn with the same starting values as the first, you can easily see that the wiggles correspond exactly. The program will accept starting values of the form ".6+1E-8" and this corresponds to a very small increase in the starting value of x, namely 6. In spite of this, it's easy to see that a very different pattern eventually develops. If necessary, the sequence of calculation can be carried on from the end of one line to the start of the next, by keying-in "x" as the starting value for the next line. This line then starts with the value of x calculated in the previous line. This can be carried over to all four lines

if you want. For example, if you go from line to line in this way, you find that if p=2.999, the initial oscillation continues until it dies out on the third line. But if you start with p=2.997, it dies on the second line. The whole concept is philosophically important, for it shows that the future is much less predictable than we used to think.

```
 1 REM CHAOS Demonstration
 2 REM E H Cooke-Yarborough 9
   Jan 1994
 3 REM See Hunt & Johnson,IEEE
   Spectrum Nov. 1993
 4 REM Shows that irregular se
   quence  of resuts can depen
   d critically on exact start
   ing value x.
10 LET z=8: INPUT "p(1 to 4)="
   ;p: IF p<1 OR p>4 THEN GOTO
    10: REM Set       position
    of first line. Set value o
   f p.
15 INPUT "x(0 to 1)=";x$: LET
   x=VAL x$: IF x>1 OR x<0 THE
   N GOTO 15: REM Set  initial
    value of x
17 PRINT AT 0,0;"x=": PRINT AT
    0,z/8-2;x$: LET n=167: IF
   z<=160 THEN PRINT AT 0,z/8+
   5; INVERSE 1; OVER 1;" ": R
   EM Put headings above lines
   . Invert last character of
   headings
20 LET x1=p*x*(1-x): REM Equat
   ion from Hunt & Johnson
30 PLOT z+50*x,n+1: DRAW 50*(x
   1-x),-1: REM Draw change  i
   n value of x
35 LET n=n-1: LET x=x1: REM Pr
   epare   for next cycle
40 IF n>=1 THEN GOTO 20: REM I
   f not  at end of line, exec
   ute next cycle.
50 LET z=z+64: IF z>240 THEN S
   TOP : REM Position start of
    new line. Stop if  last li
   ne done.
60 GOTO 15: REM Start new line
    with  new value of x.
```

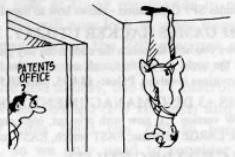
There are two very small ranges of values of x for which the program goes haywire. About plus or minus ten to the power of minus ten on either side of x=0.5, and also if the value of p is very close to 4. Anyone know why?

Many thanks, Ted.

And that's really all we've room for this month; I do hope you found it interesting. Please keep the snippets coming to me:-

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

See you next month.



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UNDERSTANDING DIGITAL ELECTRONICS

By:- Adrian Parker.

First of all, let me apologise for my absence over the last few months. Not Bob's fault (honest!) but I am going to make sure that this is more regular from now on. Right - apologies over, where were we?

You may remember (or if you don't, have a look at your July ***FORMAT***) that I left you with a little puzzle. I explained last time that the ASIC in your computer was monitoring the address and data lines just like any other device. We also know (from the Technical Manual) that 'port 254' is the port that controls the border colour. Going back to our analogy, this line of pure 'electroniccy jargon' means that when the ASIC 'hears' that the paperboy (Z80B) shouts out the address 254 on the address bus, AND shouts out that he is talking to the 'PORT' side of town, AND shouts out that he is sending or WRITING data (and of course sends the data) the ASIC will sense that the Z80 is talking to it and will 'capture' the data into itself and store it in the place where the border colour is controlled. (To complete the story, another 'department' of the ASIC is concerned with controlling the display, and it will take the data out of this port and convert it to a colour when the border needs 'colouring in' on the screen.)

OK, so we know that is when data is stored in the border port and we now know (I hope!) what is meant when we say 'border port'. This still doesn't answer the question from my last article - why do each of the following commands send data to the border port?

```
OUT 254,1
OUT 510,1
OUT 22014,1
OUT 43774,1
OUT 65534,1
```

Let's look at these commands in more detail. We will now look at what happens (in Binary) when the Z80 executes each of these commands. As you know, if you read the last article, the OUT instruction causes the IORQL (I/O request) and the WRite lines from the Z80 to become active, so we only need to consider the address lines here. Here are the commands listed again with the contents of the sixteen address lines in each case:-

```
OUT 254,1     0000000011111110
OUT 510,1     0000000111111110
OUT 22014,1   0101010111111110
OUT 43774,1   1010101011111110
OUT 65534,1   1111111111111110
```

Can you see a similarity in each of these binary numbers? The lower eight bits are identical in each case. So what does this tell us? In actual fact, the ASIC is only interested in the bottom eight address lines - it simply ignores the rest! This means that you can put ANY combination of bits on the top eight bits, and as long as the lower eight bits correspond to 11111110, the data will be sent to the border port. This technique of only monitoring part of the address bus is known as 'partial decoding'.

Now as we can produce 256 combinations with the eight bits that are

ignored, there are 256 different ports that you may write to which all correspond to the border port. No other device may use one of these ports, they are wasted. Now this may seem a bit drastic, but to make the ASIC look at all of the address lines would have taken up so much space in the ASIC that there would not have been enough room for all of the other circuitry. Of course, there are 65536 ports to choose from, so there are plenty left over!

Whew! Now that I've got that off my chest, onto other matters. As most of you know, up to now the articles that you have seen have been pretty much those from the (now discontinued) SAM Newsdisc. From this article onwards, we are going to be continuing where the Newsdisc left off.

Now that we have covered (and understood?) the basic logic gates, their operation and the binary counting system, along with a simple overview of how your computer works, let's have a go at designing something. So where should we start with our hardware design? Well, the simple (and most glib) answer is 'that depends what you want to design!' We shall assume that you wish to connect something to the computer, to allow you to send and receive information to your device from the computer. You will (presumably) also want to store the data that you send to your device either to be used by the device later, or to be retrieved by you at a later date. This is the essence of most pieces of hardware. So the first thing that we need to do is to allocate ourselves an address that our hardware can be made to recognise.

So, what address shall we choose? If you are working with a Spectrum, this can be a real problem. Apart from the 'built-in' ports used for border control etc, there was no recognised allocation of port addresses to hardware designers. The result was absolute chaos! Many peripheral manufacturers emerged randomly picking ports for their hardware to recognise. The inevitable result was that unless you bought all of your hardware from the same manufacturer, you could not guarantee that any two interfaces would work correctly together on the machine.

On SAM, the story is rather different. MGT (and later SamCo and West Coast) ask developers to request port allocation. This allows us to have a complete list of all ports that are used by all hardware currently in production (and future products), and so ANY combination of peripherals should work.

Right, so the choice of port is arbitrary, but should be selected carefully so that it doesn't clash with other devices which could be attached to the system. We are going to use port addresses 8048 (1F70hex) to 8063 (1F7Fhex). We will use partial decoding first to produce a signal that corresponds to these ports. (You may notice that the only difference in these port addresses is that the last Hexadecimal digit is different. Now as each Hex digit corresponds to four Binary bits, we simply do not include the bottom four address lines in our decoding. An indeterminate digit will now be represented by an 'x' - so our partially addressed ports are at 1F7x Hex) We shall be using Hex or Binary notation from now on as being the most appropriate. Now that that's decided, we now have to design some circuitry to make our interface recognise this address.

Figure 1 overleaf shows just such a circuit. Before continuing with this article, see if you can prove to yourself

that this circuit can recognise port address 1F7x hex and how it can do it.

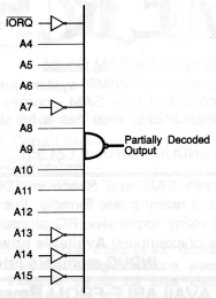

Fig.1 - Partial decoding for address' 1F7x Hex.

Did you manage it? This is how it works. We know that when the CPU accesses port address 1F7x hex (either IN or OUT) the CPU makes the I/O Request (IORQL) active and produces the binary equivalent of 1F7x hex on its address lines (000111110111xxxx). Now when the IORQL line becomes active it goes LOW. This is indicated either by a 'bar' over the top of the signal name, or an 'L' at the end of the name (because simple typewriters can't produce the bar)! So we know the combination of inputs that we want to recognise, how do we sense them and what do we mean by sense?

Let's take the last question first. As we have been dealing with signals going ON and OFF, and as that is all our digital logic can produce or detect, it makes sense to say that we will signify that 'our' address has been recognised by our 'output' becoming active. ie for every other address combination, our output will be inactive. You may note that I have taken care to use the words 'active/inactive' rather than ON/OFF. This is quite deliberate as we do not know whether we need an active-high or active-low output yet!

Let's consider the first stage of our address decoding now. I have chosen a 13-input NAND gate to form the essence of our first stage. You may remember that the output of a NAND gate goes low IF *AND ONLY IF* all of its inputs are high. Wait a minute though, we need some of our address lines (A7, A13...) and IORQL to go low when 'our' address appears. How can we accommodate this?

The answer, as you can see from the diagram, is that if we need an address line to go low to produce our address, we take that address line through a NOT gate before it reaches the NAND gate. So as the address line goes low (when our address is produced) the input to the NOT gate goes low, its output goes high, and this is connected to the input of the NAND gate. The same is also true of the IORQL line.

So, our address decoding is now complete. We have a piece of circuitry that can recognise the port address 1F7x hex (which represents 16 different addresses).

Next month, we will look at what we are going to do with this decoded address output. If anybody has any suggestions (no rude comments accepted) then please feel free to drop me a line at the Blue Alpha address (see the advert elsewhere in this issue).

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BASICally Speaking...

Part 4. **By:- David Finch.**

This month we will continue to explore Logic and Conditions - a very important part of programming.

OK, did you manage to control your fan last month? The final program will probably look like this:-

```
10 PRINT "This computer does n
   ot have a temperature senso
   r. Please type in the tempe
   rature below."
20 INPUT temperature
30 LET cold =temperature<18
40 IF cold THEN PRINT "Switch
   the heater on"
50 IF NOT cold THEN PRNT "Swit
   ch the heater off"
60 LET hot =temperature>25
70 IF hot THEN PRINT "Switch t
   he fan on"
80 IF NOT hot THEN PRINT "Swit
   ch the fan off"
```

You will find that if the temperature is between 18 and 25 then your program will tell you to switch both the fan and the heater off.

You could add the following.

```
90 IF NOT cold AND NOT hot THE
   N PRINT "The temperature is
    fine."
100 IF cold OR hot THEN PRINT "
   The temperature needs adjus
   ting."
```

I have just introduced you to two more commands, AND and OR. They work like in English:-

```
IF (this is true)
AND (that is true)
  THEN (do this)
```

For example:-

```
IF it is a weekday AND it is
    term time THEN go to school
IF you are tired OR you are ill
    THEN go to bed
```

Note: -

- If it was a weekday but it wasn't term time, you would NOT go to school (nobody would be there).
- You would go to bed if you were tired but not ill.
- You would definitely go to bed if you were tired AND ill.

So:-

- IF false AND false THEN don't
- IF true AND false THEN don't
- IF false AND true THEN don't
- IF true AND true THEN do
- IF false OR false THEN don't
- IF false OR true THEN do
- IF true OR false THEN do
- IF true OR true THEN do

I haven't used the equals sign = yet. This is used more often than the inequalities (< or >) signs are.

Example:-

```
10 PRINT "What is the month. E
   g Jan is 1, Feb is 2, Dec i
   s 12."
20 INPUT month
30 LET december = month=12
40 IF december THEN PRINT "Chr
   istmas is coming."
```

For line 30 you could have typed:-

```
30 LET december=month=12
```

which means the same thing, but is confusing. You could also type:-

```
30 LET december=(month=12)
```

which separates the condition, so it looks clearer. All do the same job.

There is a shortcut with conditions that I have deliberately not told you about yet. If you are sure you understand what I have said so far, try this: Delete lines 30 and 40 (type the line number then ENTER or RETURN).

Type:-

```
30 IF month=12 THEN PRINT "Chr
   istmas is coming."
```

You have combined the two lines into one. In English you might say:-

```
IF the month is the twelfth
THEN Christmas is coming.
```

Instead of saying

```
December is the twelfth month
      If it's December
THEN Christmas is coming.
```

Also, if you would have written IF NOT december THEN ... , you can now write IF month<>12 THEN ... <> means does not equal. I think that writing IF NOT (month=12) is neater.

Try rewriting the temperature program, but using the short cut this time.

Remember the inequality signs (< and >). I would like to introduce two more: <= and >=. The difference is:-

1<2 is true, 1<=2 is true

2<2 is false, 2<=2 is true (THE DIFFERENCE)

3<2 is false, 3<=2 is false.

<= means is less than OR equal to.

>= means greater or equal to.

If you are VERY confident with conditions, you may like to read this:

You don't need to use IF ... THEN ... statements to use a condition. Take the following example:-

```
10 PRINT "How many apples do y
   ou have?"
20 INPUT a
30 IF a=0 THEN PRINT "Do you w
   ant one of mine?"
40 IF NOT (a=0) THEN PRINT "Yo
   u have ";a;" apple"+("s" AN
   D a>1)
```

The part of line 40 that reads; PRINT "You have ";a;" apple"+("s" AND a>1) contains a condition. It only adds an 's' to the string being printed if you have more than one apple. The part that reads ("s" AND a>1) means "s" if a>1 and means "" if a<2 (ie NOT a>1).

The last few bits now are SAM only I'm afraid. Speccy owners may like to finish now, but you can read it if you wish. See you next month Speccy owners.

Now that they are gone, we SAM programmers are going to look at some great conditions. You may remember the ELSE command last month (look back if you have forgotten). We are now going to do long IFs.

Take this example:-

```
10 INPUT "How many apples do
   you have?";a
20 IF a>2
30 PRINT "You have got too ma
   ny apples."
40 PRINT "You must eat one."
   50 PRINT "You now have ";a
   -1;" apples."
60 END IF
```

You can see that the condition is spread over many lines. If you have more than two apples then lines 30 to 50 are executed. Otherwise the program goes straight to the END IF statement, without doing anything in between. You can use ELSE in long IFs too.

Change lines 60 onwards to:-

```
60 ELSE IF a=2
70 PRINT "You have just enoug
   h apples."
80 ELSE
90 PRINT "You don't have enou
   gh apples."
100 PRINT "Have one of mine."
110 PRINT "You now have ";a+1;
   " apples."
120 END IF
```

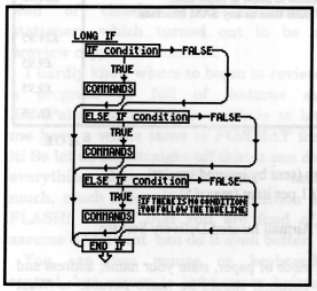
You will find that if a condition is true, when it executes the commands and comes to an ELSE statement, it automatically goes to the END IF.

You will also see that line 60 has a condition with the ELSE, but there isn't in line 80.

In a long IF: SAM looks at the first condition, and if it is true then the commands following are run, if SAM meets an ELSE then SAM goes straight to the END IF. If the condition is false, the commands are skipped until SAM meets an ELSE or END IF.

If SAM meets an ELSE: if the condition is true or there is no condition then the following commands are run, until an END IF or another ELSE is met. If the condition on the ELSE is false then the commands are skipped until SAM meets an ELSE or END IF.

See the diagram below for a clearer summary.



Next, as promised earlier, more with DO and LOOP. Do you remember this:-

```
10 DO
20 PRINT "This will carry on
   for ever!"
30 LOOP
```

You can attach conditions to the loop using the keyword WHILE and UNTIL. If you use WHILE [condition] then the loop will continue looping round WHILE the condition is true, but if (when it comes to LOOP) the condition is not true then the program continues running after the loop.

UNTIL [condition] is equivalent to WHILE NOT [condition], so it will keep looping UNTIL the condition is true.

Here is an example: -

```
10 DO
20 INPUT "What is the
   security code?";a$
30 LOOP UNTIL a$="secrets"
```

You can also place the condition on the DO. The SAM manual suggests that there is no difference between the two, *THERE IS.*

Try this:-

```
10 LET a=3
20 LET b=3
30 DO
40 PRINT "HELLO"
50 LOOP UNTIL a=b
```

This will print HELLO once, because a=b. However, now try this:-

```
10 LET a=3
20 LET b=3
30 DO UNTIL a=b
40 PRINT "HELLO"
50 LOOP
```

This will never print HELLO. The first program checks the condition AFTER the loop has been run once, so if the condition is true (a=b), then SAM will leave the loop after it has been run once.

In the second program SAM checks the condition before it runs the loop for the first time, and so in this example, it skips the commands inside the loop.

I think that is the subject of conditions totally covered. If you are still unsure then read the whole lot again and experiment with your own programs, that is the only way you will really come to understand everything. Soon you will get the hang of it and then there will be no stopping you.

Bye.

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SAMPaint

Reviewed By:- Carol Brooksbank.

Until the Gloucester Gathering in November, most of my Sam artwork started life as Spectrum screens, so that I could use the curve drawing modes, rescaling options and so on of programs like Art Studio, which FLASH! lacks. I transferred them to FLASH! and mode 4 later on for adding colour and fine details.

Why until the Gloucester Gathering? That was when Fred Publishing gave me a preview copy of SAMPaint, and a thick wad of closely typed continuous stationery which turned out to be a preview copy of the manual.

I hardly know where to begin to review a program as full of features as SAMPaint , since Bob is unlikely to let me have a whole issue of ***FORMAT*** for it! So let us say straight off that it can do everything that FLASH! does - and much, much more. If I don't mention a FLASH! feature that you are fond of, assume SAMPaint can do it even better.

You can use mouse or keyboard control, but mouse is light years better than keyboard. Freehand drawing with the mouse is a delight - I was even able to produce a reasonable copy of my signature on screen. Hot keys allow you to select ink, paper, fill patterns and so on, or do OK and UNDO, from the working screen without returning to the menu. There are four working screens between which you can flip, and facilities for transferring graphics from one to another. The fifth (OK) screen can be transferred to any of the others by UNDO. The palette is user-selectable, but as a short cut there are several pre-defined ones you can call up giving shades of grey, or blue, or green, or the Sam start-up palette, and so on.

Drawing tools include the usual circles, ellipses, rectangles and squares and also triangles, (separate or drawn with one side in common), parallelograms, multi-sided polygons - regular or irregular - (you specify the number of sides) - all in outline or filled with a colour or monochrome fill. Lines can be solid or stippled, or drawn in a fill pattern. You can select colours which your current line will avoid, so that it appears to pass behind them, or colours it will select, so that the line only appears when crossing the colours you have specified. All sorts of brush styles are available, and all can be redesigned and saved to disc. There are airbrushes and light shading brushes. If you draw a line and then wish to change either the colour or the brush, you select TRACE mode, the new brush and colour, and touch one end of the line. The whole line will be replaced.

There are two excellent curve modes. One lets you select two points, then move the pointer until the curve between them is what you want. The other mode is really for artisic duffers like me, incapable of drawing a series of smooth curves. Have you ever tried to draw a spiral? Freehand - it wobbles all over the

place; joining up a series of curves - you need the patience of Job. SAMPaint 's second curve mode lets you draw straight lines and it converts them to curves. And if you can't even keep the straight lines the right length, there is a grid mode which lets you specify how many pixels each move of the mouse will move the pointer. In fig.1 I used 8-pixel jumps, and managed the square spiral very easily. SAMPaint produced the spiral from that, and TRACE went over it with a different brush.

Block handling is very impressive. Any size or shape of block can be grabbed. Blocks can be rescaled, rotated, mirrored, flipped, skewed, or have perspective applied. They can even be saved to disc.

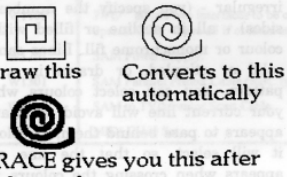
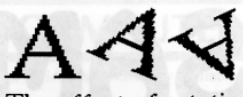


Fig.1

Rotating is not limited to 90° turns as fig.2 shows. Although some edges may get a little ragged, but nothing you cannot tidy up, using one of the two enlarge options (zooms). One zoom gives varying degrees of enlargement, using the whole screen. The other has a small enlarged window superimposed on the screen, so that the effects of changes can be seen in normal size as you work.

Fig.3 shows perspective. Not only the shape, but any filling or decoration in the shape, have perspective applied to them. The square front of the figure is a 2x magnification of the block to which



The effect of rotating a block through angles other than 90°

Fig.2

perspective was applied to get the side of the figure. You are not limited to one- or two-dimensional perspective. You can move the figure around three axes - x and y are as normal but z is a depth axis. The degree of perspective and re-sizing can be changed. As in all block operations, every change you make can be previewed before you decide whether to accept it or try again.

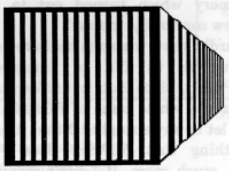


Fig.3

Two collections of fill patterns are provided - full colour and monochrome, and all can be redesigned and saved as files to disc. Even screens, bits of screens or blocks can be used as a fill. In addition, a gradient fill is available. You can choose a number of colours which will be applied to the shape assuming a light source from a given direction, to give correct shading. The 'dither' - the amount of blending between the shades - is under your control. When I think of

the time I have spent in the past, trying to make a ball look like a sphere instead of a disc - now you can do it with the touch of a button!

There is also an interesting bend option, which will apply a gradient fill, or a fill taken from a block, in a series of straight lines between two other lines. It is hard to describe this, but for instance, if you draw a circle with a point above it and bend a gradient fill between them, you get a cone effect. Fig.4 shows this effect with a gradient fill, and fig.3 with a fill taken from a block. Fig.4 looks less impressive in shades of black and grey than it would have done in colour - but ***FORMAT*** hasn't gone over to colour printing yet.

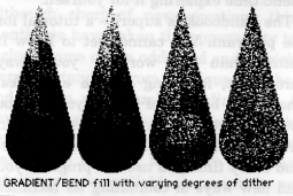


Fig.4

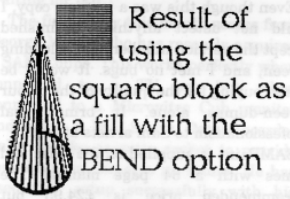


Fig.5

Window operations let you clear the window area; outline blocks within it with another colour (you specify which colours are to be outlined and whether the outline is to be outside or inside the existing shape); invert the window; shadow the shapes (you specify the depth, direction and displacement of the shadow and the colours to be shadowed); scroll the window contents; flip; mirror; shade areas using the current ink; thicken; blur or blend (ways of defocusing the artwork by making the line between colours less sharp); replace all the pixels of one colour with another colour; rotate through 90°.

Text handling is brilliant. There is an impressive number of fonts on the disc, and by using the block/window options you can create more by shadowing, outlining or rescaling. Fig.6 shows just a few of the fonts supplied.

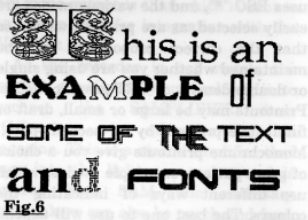


Fig.6

New fonts are defined by grabbing the letters from the screen, and then saving the font to disc. This is very quick and easy. Since the program will load Mode 1 screens, converting them automatically to Mode 4, you can very easily transfer PCG's DTP PACK Headliner fonts, or those from Spectrum programs like ICON GRAPHIX. You simply make a screen of the font, and then grab the letters one-by-one from the screen. You can, of course, grab fonts from other people's loading screens, though you may then have to make up missing letters yourself. There is also a facility for converting the 768-byte screen fonts like those in the ***FORMAT*** FONT LIBRARY

for use with the program.

Animation is catered for too. You grab the frames one by one from a screen, and the file of frames can be saved. When reloaded, the original screen must be in memory if you wish to test the animation, because the data saved is a list of the screen co-ordinates of the frame. There is also a way of saving a group of frames as a block in two code files, one of which acts as an index to the frame positions in the other. These files are independent of the original screen, and could be used in your own programs, because information about the make-up of the files is supplied in the handbook.

Printing is in monochrome or colour. It uses ESC "*", and the various modes are easily selected, as are printout widths so that the correct proportions can be maintained whether you are using single or double density or CRT graphic modes. Printouts may be large or small, draft or final (overprinted by a second pass.) Monochrome printouts give you a choice of grey, pattern or stipple modes, which use different ways of indicating the colours. The best one to use will depend on the screen you are printing.

The colour printing gives the best colour screen-dumps I have seen on Sam. There are two methods. One produces lighter shades by stippling and darker by solid colours. The other uses a different way of showing lighter colours, and gives an even better representation. Most colour screen-dumps play havoc with colour ribbons, corrupting the yellow band especially so that the ribbon is soon producing muddy colours. SAMPaint sees to it that all the yellow passes for a line of print are done first, then the red, and so on, instead of overprinting each colour separately. This prevents darker colours rubbing off on lighter and makes the ribbon last much longer.

There is so much I have not described in this review - plasma (a marbling effect); anti-aliasing (a way of outlining shapes with progressively lighter or darker pixels so that they blend into the background); comparing screen areas (transferring the pixels that are the same in an area in the two screens to a third - or the pixels that are different); merging screen areas (transferring the contents of a window from one screen to another one colour at a time); colour shift (lines drawn with regular colour changes; palette sequencing (the colours rotate in the palettes, so that colour shifted lines look animated). All I can suggest is that you get hold of it and spend time exploring it for yourself.

The handbook is superb - a tutorial for the program. You cannot get to know it better than by working your way through it, following all the examples. There will be lots of things you will be astonished that I have not described in detail, but I simply had to be selective. And every time you use the program you find new ways of combining its facilities to get different effects.

Even though this was a preview copy, I could not detect anything unfinished except the version number on the loading screen, and I met no bugs. It would be worth buying for the quality of the colour screen-dumps alone. It brings real professionalism to Sam artists at last.

SAMPaint is supplied on 3½" disc and comes with a 64 page manual The Recommended price is £24.95 but INDUG members get a 10% discount bringing the price down to £22.45 (remember to quote your number).

SAMPaint is available now from FRED Publishing, 40 Roundyhill, Monifieth, Dundee, DD5 4RZ.

The HELP PAGE

Edited By:- Ray Bray.

Looking back over past issues of Format I noticed that the Help Page has not been included in the January issue for the past three years. I assume the reason for this is either that readers are so busy during the run up to Christmas that they haven't time to write to us or, the compiler of the Help Page is in a similar position and fails to get his copy in on time! Both of these factors almost affected our production again this year. Although short of new questions this month, we have taken the opportunity to include some of the odds and ends which were outstanding from previous months, and, if you are actually reading this, I have succeeded in meeting Bob's deadline. [Well Ray did get the disc to me in time readers, but there just was not the space available to print it, so here it is - a month late - but worth waiting for. ***Ed.***]

The first query this month comes from George Munro who has recently acquired a SAM Coupé. This works perfectly when connected to a TV set but when connected to a Microvitec Cub monitor and using a W.H.Smith Data Recorder linked to the cassette socket to provide sound output, he gets no sound. He has used this setup successfully with his 128K and 48K Spectrums, and the SAM cassette connection works perfectly with loading and saving tapes. He wonders what is wrong and what can be done about it.

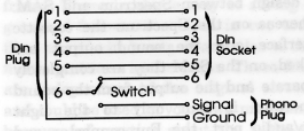
The problem here lies in the difference in design between Spectrum and SAM. Whereas on the Spectrum the cassette interface and the sound output are linked, on the SAM they are completely separate and the output from the sound generator is sent only to the light pen/audio port, the Euroconnector and the SCART socket.

All these outputs are stereo and the only mono output is that which is sent to the Power Unit for integration with the TV output signal.

As the recorder is not stereo, the simplest solution to your problem is to purchase the SAMPLIFIER from B.G.Services who advertise in this magazine. This is a stereo amplifier that plugs into the light pen socket and is powered from SAM, the necessary loudspeakers can also be purchased from B.G. As you claim to be handy with a soldering iron, another option is to make up your own amplifier which would need to be connected to the light pen socket pins 2, 3 and 5, which are left audio, right audio and audio earth respectively. A +5 volt power supply is available on pin 1 of the socket, but unless you are knowledgeable about the power requirements of the amplifier you should use an external power source.

Alternatively, if you wish to continue using the recorder for mono sound, you could make up an adaptor to fit between the power unit lead and it's socket, to pick off the mono output to the TV modulator. You will need a six pin DIN

socket and a plug to match the SAM power connection, a plug to match the ear socket on the recorder, a single-pole double-throw switch, a short length of screened six core cable and a length of co-axial cable to reach the recorder. The diagram below shows the wiring connections.



From several letters recently received there seems to have been plenty of bargains around in second-hand monitors (VDUs) which readers have been buying to use with their Spectrums. None of these letters asked for details of connections but it appears that most were bought without seeing them in operation, and this is where the problems have started.

One major problem is that some monitors need a custom built interface to work at all with the Spectrum; a minor problem is that many are not fitted with an audio amplifier and speaker. The solution to the first problem is beyond the scope of the Help Page and the second has been dealt with before.

Another problem frequently encountered is that some of these monitors will only reproduce two colours even though they work from the RGB socket. The variety of ink/paper combinations employed in a lot of the Spectrum software was obviously not designed for use with the many different monitors now being used, and some ink/paper combinations simply don't work in this new environment. As a result of this, areas of text will possibly not show up on the display.

Can anything be done about it? To a certain extent yes, especially if the INK and/or PAPER commands or the controls used are set within BASIC. The +2a, +2, +3 (and possibly the 128K?) have RGB and T.V outlets.

Plug your monitor and T.V into the appropriate sockets and run your program as normal. When you find text, etc, that is displayed on your T.V but not on the monitor, make a note of the differences and go hunting in the program for that particular part of the displayed text. Then, when you have found the relevant part, make the necessary changes to the INK / PAPER settings using both the monitor and the TV to check the results. Colours set in machine code are rather more difficult to find and change. Unless you have good working knowledge of machine code and some idea of the program architecture, then it will be impossible.

Art Studio is a particular example of this problem, in that some menus are not visible or are simply displayed as black boxes. Perhaps some reader has devised a way to set a user defined colour scheme, if so please let us know.

Finally, more information on the +2 sticking keys problem. Further to his advice in the September SHORT SPOT about this problem, Miles Kinloch has kindly dropped us a note giving more information on fitting the capacitors. The voltage rating of the capacitors is not important as the keyboard signals are only a fraction of a volt, also they are not polarised so it it makes no difference which way round the wires are connected to the diode. The capacitors I (Kevin) used were 220Pf ceramic discs, and were ordered from the Maplins Catalogue, (Page 449, Order No. WX 60 Q, price 7p).

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),
'Elmsleigh',
4, Tidworth Road,
Porton,
Salisbury,
Wiltshire, SP4 0NG.

Anything +3, CP/M:-
Mike Atkins (Format Help Page),
70, Rudgwick Drive,
Bury,
Lancashire, BL8 1YE.

Anything Spectrum (48K/128K/+2):-
Kevin Gould (Format Help Page),
2, Barleyfield Close,
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SAM 512K. Single drive, Comms interface, Mouse and software. £230 for the lot. Also Spectrum software for sale from £1 each. Tel Peter Hutchison on 0422 366120 (evenings).

WANTED. The games Bloodwych, Battle Command, Twin World, War In The Middle Earth. Also I would like a pen-pal to swop games and the like. William Goodwin, 57 Stanley Park, Litherland, Liverpool, L21 4JR. Tel 051 928 2122.

RADIO FAX Receive Interface (J&P Electronics) for 48K Spectrum, with software tape and booklet. £15. Peter Garrick. Tel: 0992 465428.

TOSHIBA ExpressWriter 301 Printer. Portable (mains or internal rechargable battery) 24 pin, 360dpi. Offers. **ProDos** NOT lite, boxed with manual £15. **Keleidoscope**, uncased £15. Phone David after 4pm on 0904 760692.

FOR SALE RAMWRITE Word processor and printer interface for Spectrum (not +2a/+3) £25. Faulty +2a (no video output to TV) for spares/repair, no PSU. £15. New +2a manual £5. All plus postage. Mr R.Connolly, 54 Churchview close, Kilkeel, Co. Down, Northern Ireland. BT34 4JE.

WANTED. VATRACK or similar share/ portfolio program for the Spectrum. Phone Peter Garrick on 0992 465428.

SPECTRUM GAMES. Send SAE for list of 48K, 128K,+3 disc games and light guns to Alan Cresswell, 18 West Street, Geddington, Northants, NN14 1BD.

WANTED. Version of SIM CITY for 48K Spectrum. Will pay reasonable price or does anyone know where I can get it from. Michael Capstick, 3 Sunnyridge Avenue, Pudsey, Leeds, LS28 7PN.

FOR SALE. Spectrum 48K (rubber key) for spares or repair £5. Spectrum 48K which I understand works £7. Saga Emperor keyboard for either of above £4. Neither computer has a power supply. Post/packing extra. Kevin Gould, 0522 793994.

PLUS D and Drive complete with 40 games on 3½" discs £47 including p&p will secure. ono. Phone Barry on 0462 684650.

SPECTRUM GAME, The Empire Strikes Back on cassette for 48/128K - still sealed, 75p incl p&p. Also ZX81 16K RAM Pack £1 incl p&p. Tel: Andrew More on 081 651 2529 (Croydon).

WANTED. Second 3½" 80 track DS/DD Drive for PLUS D Any sensible price considered. Phone Kevin Gould on 0522 793994.

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YOUR LETTERS

Dear Editor,

Thank you once again for an excellent magazine. Enclosed you will find an article I am submitting for inclusion in FORMAT if you feel it is interesting enough, and contains points of sufficient importance. If it is not acceptable then never mind, I got a great deal of satisfaction from writing it anyway.

There is one area, concerning the PLUS D, that very often sends me screaming to the kitchen for a cup of tea (I am T-Total so that is the best I can do). It involves that perennial old chestnut 'printer drivers'. Programs such as the +80 suite which require a driver to be loaded are an absolute pain, so is there a driver available for the PLUS D that can be loaded into such programs? If not could you do a few articles on solving such problems for us people with minimal knowledge of machine code.

Since I am a new subscriber I do not know if you have done this before. It might be an idea if you invited members to write in with details of any programs they have converted for the PLUS D printer port.

Thank you for printing my letter concerning Joe Daniels. I do not know the result as I have not heard from him for a few weeks, so fear the worst. I will write to Mavis this week and let you know the out come in due course.

Yours sincerely, J.J.Blizard.

I will look at the article as soon as I can and let you know, in the meantime thank you very much for at least making the effort.

Printer drivers were covered in early issues, probably the best being in Vol.1 Nº4. Of course, I know that we don't sell just that issue any more - you need to buy the complete volume, but they are well worth the investment.

However, if someone would like to write another article on the subject I will be only too pleased to consider it for a future issue. ***Ed.***

Dear Editor,

In one of the last editions of *Your Sinclair* there was an article on Spectrum emulators. I currently own a Spectrum +2A, but will soon be purchasing a 486PC in order to work from home, so I was particularly interested in the emulator sold by BG Services. *YS*, typically, failed to provide an in depth review. How do I get my tape-based software onto the PC's hard disc? Can I access the printer from the emulator? How are joy-sticks emulated? Can it run old 48K software that my +2A won't load? If you can answer my questions or, better still, print a proper review, please do.

Yours sincerely B.Chima.

A review for the Z80 emulator appeared in the October issue (Vol.7 Nº2) that should tell you all you need to know, if not ring the Hot-line sometime. ***Ed.***

Dear Editor,

Would it be possible for the writers to the *Your Letters* page to put a telephone number or their address when they require information or help?

This would reduce the phone calls to you, also a much quicker reply to them.

If the reply to the above is that it would shorten the *Your Letters* section it would be well to leave out some of the "Ed's" comments and the last letter in November issue Vol.7 N°3.

Yours sincerely P.A.Last.

Often the reply to one reader's question is of great interest to other readers so I try to encourage the use of these pages when possible. However we always pass on any letters we get straight away so they don't have to wait for the next issue of FORMAT to appear before they see some response. ***Ed.***

Dear Jenny,

I've written this letter to you because I think you do all the work and Bob get's all the credit, just like most bosses. With my last issue of ***FORMAT*** you sent me another renewal form. As this is the second one I assume the first one I sent in must have been lost in the Christmas post along with my cheque so I've sent in this one as I don't want to miss any issue's of ***FORMAT***.

I think the *Basically Speaking* articles are going to be a big help to people like me who don't know a lot about programming so keep them going.

Oh, by the way, ask Bob if he knows why my Sam Print program does not work on my new 24 pin printer, the design's are larger and go off the end of the A4 paper. It worked fine on my old 9 pin printer.

Yours sincerely, J. Stewart.

Now look here, anyone who spends any time in the ***FORMAT*** office soon finds out who the boss is - and it is not me. Still, at least Jenny makes a nice boss (and she is better to look at than most).

Anyway. Yes, a lot of people would have got a second renewal notice with their January issue - this is because they were packed up about a week before Christmas. Don't worry though, you were not the only one confused, every January the phone is red-hot with people who forget that Christmas does funny things to work schedules.

As to your 24pin printer. Well some are more compatible than others with the 9pin models. If you can find where the printer routines are you may be able to change things - but it would take a bit of work. ***Bob [general skivvy/Editor].***

Dear Editor,

Subscription due again! Another year must have gone. I refuse to write another of those letters saying how good ***FORMAT*** is and how much I look forward to receiving it etc.,

Though it must be said that help line can be a major contribution to sanity. I've rung Bob only a few times over several years and always got a friendly and extremely helpful reply. Bob has clearly not been on the course most 'service' people seem to go on where they are trained in the provision of unhelpful confusing data. We must all continue to keep him too busy to attend!

Again I will vow to finish that nearly complete masterpiece and send it in. Last year it was the shopping program, the year before the A level maths graphics engine. Now I have a printer I can at least list both programs so I stand some chance of understanding how they work! It seemed obvious at the time.

Perhaps an incentive like cancelling my subscription if I fail might work!

Yours sincerely, Alan Harper.

Time to go on courses? I'm lucky to have the time for sleeping these days.

And as for cancelling your subscription - heaven forbid. But how about a £5 fine for every month you take to finish your programming efforts? ***Ed.***

Dear Editor,

Do you or any of your readers know if it is possible to make a lead to go in the back of the Sam Coupé and then plug in to the Datel genius mouse and get it to work? You see I have a mouse which I got for my Spectrum 128K and I would like to get it to work on the Sam.

Yours sincerely Jon Rose.

No, sorry, not possible. The hardware is totally incompatible.

Dear Editor,

I asked your advice on the Hot-line about my problem with my disc drive. Well, I tried it out on my mates system with the same results. So, off it went with a covering letter back to Datel, posted last Thursday. I was amazed to find on Monday afternoon when I got home, that my PLUS D had been returned. One slight problem though, they put a standard type note in saying that they could not find a fault with it. I immediately got on the phone to check the note out, to find that after checking their records they HAD found a fault on the drive and replaced it with a brand new one. Apparently, the note had been put in in error.

All in all Bob, I'm well impressed with their service, especially after what you said about the stories you had heard.

As you can see by this, I'm back 'tickling the ivories' again now.

Once again Jenny & Bob, thank you for a most enjoyable *doo* at Gloucester. I'm looking forward to next March to pick up some more goodies and have a good natter.

Yours sincerely, Des Fisher.

Glad you got things fixed Des. As you will see from the Editorial a date for the next show has been fixed. ***Ed.***

Dear Editor,

Thanks for publishing such an informative magazine, I only wish I knew about it earlier. I purchased a PLUS D and disc drive from Richardson & Co a few months ago and they gave me your telephone number when I was unable to get it to work in 128 mode.

Unfortunately, you were unable to tell me what the problem was other than it would never work properly as it is not a proper Spectrum but a +2A (Soon to be sorted I hope when I get a +2A Mod kit from B.G.Services who were very helpful when I rang).

After two weeks of frustration I spoke to someone at Datel who told me I had an old PLUS D (Issue 2 June 88) users manual and that if I inserted two POKE@ statements I would be able to get it to snapshot and load in 128, which I am glad to say it does.

Anyway, I have now got the computer 'Bug' again and I look forward to ***FORMAT*** dropping through the letter box each month. This letter is printed using a Cannon T-22A MSX printer which I bought second hand and it too prints very well on thermal fax paper. Is there anyone in the Plymouth area who I can contact who can boost my computing interest further.

Yours sincerely , Kevin Cross.

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Dear Editor,

Just a line to let Keith Watt know (your correspondent in the December ***FORMAT***) that he is not the only Sam owner in Belfast. I also have one which I think I bought in the same shop as him. If he wishes to get in touch with me I would be happy to hear from him.

I enclose a stamped envelope for you to pass on my name to him.

Yours sincerely, Ivan R.Betts.

Very neighbourly of you Ivan. ***Ed.***

Dear Editor,

Please find enclosed a eurocheque to re-subscribe to your rather delightful magazine. It is nice to see what the rest of the Sam world is up to, and from another perspective than that of the excellent FRED.

Also congratulations on organizing what sounds like an excellent computer event, I hope to be able to get to England for the next happening you plan.

I would also like to know if West Coast Computers are still producing the SAMBUS unit (previously code W1105) plus a 1Meg (W1104). When ordering my mouse about a half year ago I also asked for a quote, but I received no reply (luckily I did receive my mouse). I hope you can improve their ordering system because it was totally pathetic.

I was just re-reading your reply to Geoff Winkless (September 1993). Although I think Geoff was being a bit negative (a simple hardware upgrade to allow scrolling would always be welcomed by me), especially I think slamming Enigma was rather below the belt since they were the only company who took the risk and produced commercial software for the Sam, if more companies had done so (instead of just talking about it) the Sam would have been noticed a whole lot more. Take the Spectrum code, change the graphics routines (optimized on speed which costs more memory but this is available) and bingo! If the original Spectrum programmer did this it would take little to no time at all.

I myself have also done some work for Statues of Ice and am therefore according to you a stupid demo writer, thanks! Demos are rather a good way to learn tricks that you can perform on your computer. As I see it, the demos are the testing ground of all good routines. If there hadn't been demos, ESI probably wouldn't have learnt to program, which would have meant no ETracker (which makes use of that excellent sound-chip). What use is a sound-chip without code to make proper use of it? Also, concerning samples, I wrote a program to play Amiga MOD files on the good old SAM (should be on FRED soon). These bits of music are not samples, but merely TUNES written WITH samples. This means that just as much musical talent is needed to write a good tune. All that the samples do is give some interesting instruments to play around with, and these can sound VERY cool.

Anyway, that was all from me, keep up the good work..

Yours sincerely , Stefan Drissen.

The best way to learn about a new machine is to convert an existing program to run on it or, if someone wants to try out some new feature, then why not write a game or utility that uses the feature? Make money as you learn.

The SAMBUS or Card Cage is being redesigned because some parts of the existing design are no longer available. ***Ed.***

Dear Editor,

The point of my letter is to ask why you don't cover the games side of computing. Let's face it, we all play the odd game now and then even if we normally just use the computer for business. I'm not saying you should fill ***FORMAT*** with cheats etc., I'm just suggesting a page or two listing new releases with a few details and the address where we can buy them from'.

Before I finish I wonder if you could pass on the enclosed letter to Keith Watt who thinks he is the only Sam owner in Ulster (Your Letters, December issue).

If you decide to publish this letter PLEASE print my address - perhaps other Sam owners in Ulster could get in contact and we could start some sort of club or something - it is: 14a, Innisfayle Gardens, Belfast, BT15 4GJ.

Yours sincerely, Gavin Smith.

It is not that we exclude games from FORMAT, rather that nobody seems to write about them. The only thing we don't publish is games reviews, everything else is quite welcome within these pages. ***Ed.***

Dear Editor,

I am writing about yours, and several readers' frankly ignorant, ill-informed and childish response to Geoff Winkless' letter in FORMAT Vol.7 Nº1.

Although I don't agree with everything that he said, Geoff does have a number of valid points.

Not admitting that the Coupé needs full-screen scrolling is ridiculous. So ingenious software design eliminates the need for full-screen scrolling, does it? In that case, why have there been so many un-original puzzle games and flip-screen platformers and so few truly original, playable games?

Eight of the ten new full-price games reviewed in issue 30 of Amiga Power, feature full-screen scrolling. Doesn't that tell you something?

Next, sampling. The point of sampling is not to provide sounds to be used in tunes, but a) to create atmosphere in games, and b) for professional music-making. Your comment about "taking the easy way out" is pure ignorance.

However, I must disagree with Geoff about Enigma Variations. If it wasn't for their software support in the early days, the Sam would have died a death. Perhaps you don't like them because they proved that big licenses can be done and done well on the Coupé, despite all of the inane bickering about sales figures and price structures.....

You must admit that the Sam needs all of the software support that it can get. Saying "Don't worry Sam, I still love you" every time someone points out that all is not well just isn't the answer.

Yours sincerely, Mark Sturdy.

There is much that could be improved on SAM. Its Basic, although the best on any home computer, could still be made more user friendly in some areas. It needs a Hard Disc interface, and the modem is long overdue. But to say it needs something just because other machines happen to have that feature and programmers just happen to have got stuck in the rut of constantly using that feature, is rubbish.

VERY GOOD games, playable and enjoyable games, were written for the ZX81. Many more were written and are still capable of being written for the Spectrum and SAM. The best software is that which is written to exploit the machine. Quite frankly, having watched *Games World* and the like on television, scrolling screen games often seem to be the most boring ones shown. ***Ed.***

Dear Editor,

Imagination.

Imagination has brought mankind through the Dark Ages to its present state of civilisation. Imagination led Columbus to discover America. Imagination led Franklin to discover electricity. Imagination has given us the steam engine, the telephone, the talking machine and the automobile, for these things had to be dreamed of before they became realities.

So I believe that dreams - daydreams, you know, with your eyes wide open and your brain-machinery whizzing - are likely to lead to the betterment of the world.

The imaginative child will become the imaginative man or woman, most apt to create, to invent, and therefore to foster civilization. *L.Frank Baun.*

From Dilson Mallio de Mosaes, Brazil, to INDUG England with compliments.

Dear Editor,

Bob and Jenny, on a filthy cold snowy, muddy, and generally awful day, I wish you both and all the team including "Prince" and Jenny's bairns a very happy and prosperous 1994. I hope you are not having to swim, or take a boat to work.

Very fortunately as it happens, we live at 500 feet and on the side of a hill so are spared the flooding, but not the cold gales of recent experience.

As a matter of interest, having received my copy of *SAMPaint* just before Christmas I have had a chance to play with it a bit and after *Flash!* I find it a great improvement in most respects. In the right hands it should be capable of some very good art work.

Many thanks for all your efforts over the past 12 months, and here's hoping you keep healthy over the next.

Yours sincerely , Basil Lankester.

Dear Editor,

Can I have more details of the Games in FORMAT Vol.7 Nº5 and more information on programming for basic please.

P.S. Could you tell me how big is the memory in the chips on a Spectrum 48K or 128K+2.

Yours sincerely, Darren Byrne.

I'm not quite sure what games you refer to Darren nor what sort of details you want so I can't answer your first question.

As to the second, well that depends on the model of Spectrum and its issue number, you could look up the chip numbers to find out. Could I ask why you want this information? ***Ed.***

Dear Editor,

If anyone wants to know where there is a shop or company selling surplus software, then get in touch with Software Shop, 48 High Street, Renfrew, Renfrewshire, Scotland, PA4 8QP. Telephone 041 885 2761.

Yours sincerely, William Goodwin.

Letters may be edited or shortened to fit on the pages.

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