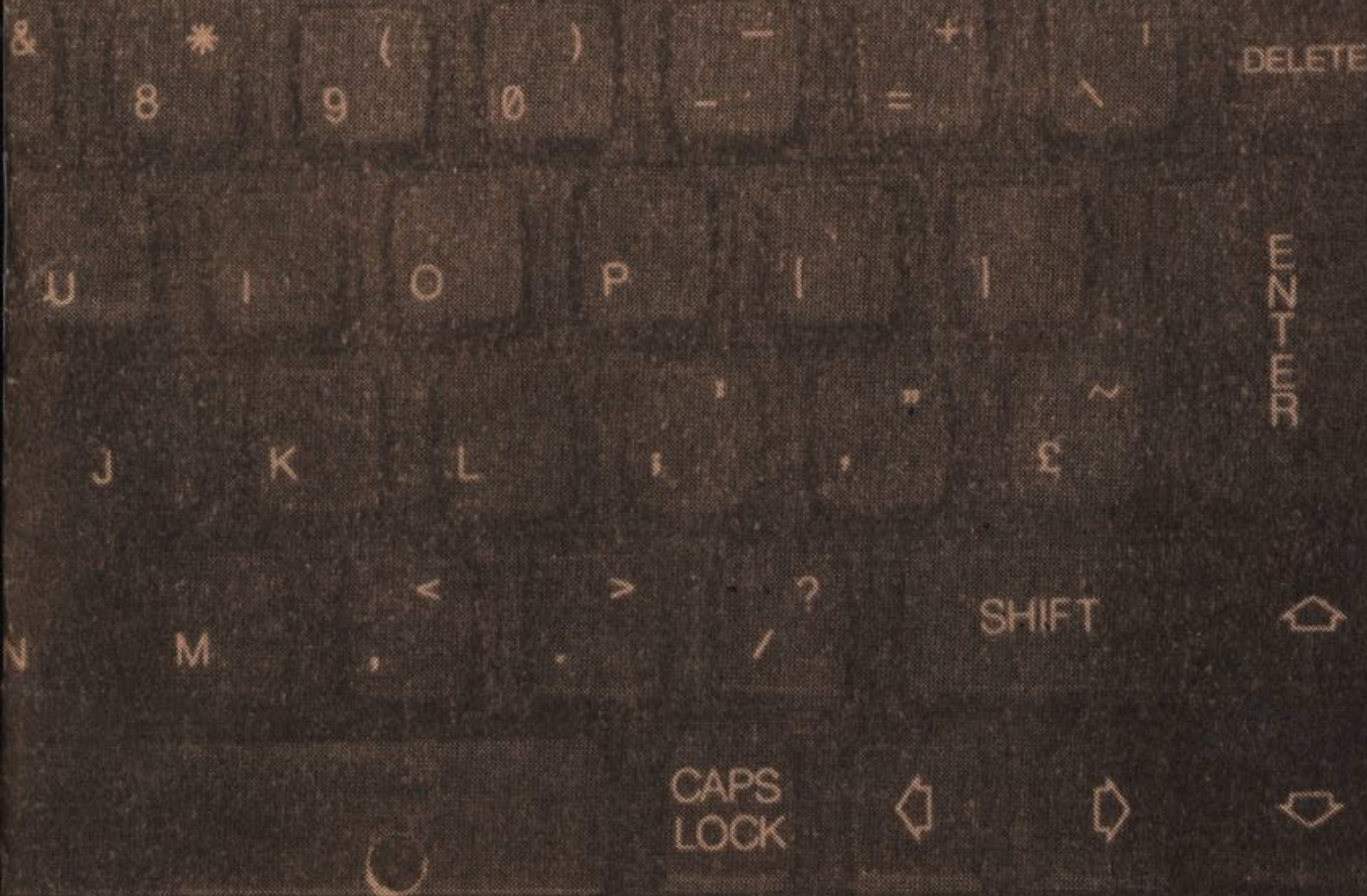


outs, and would certainly be on, it may be worth looking at the readsheet extract:

1988	1989
5.500	5.500
2.600	

⬅	Return	⬅	Shift +	Next word	⬅	Next column
⬅	Start of slot	⬅	Shift +	Previous word	⬅	Previous column
⬅	Swap case	⬅	Shift +	Screen up	⬅	Top of column
⬅	Tab	⬅	Shift +	Screen down	⬅	Bottom of column
⬅	LAYOUT MENU	⬅	OPTIONS MENU	⬅	PRINT MENU	⬅





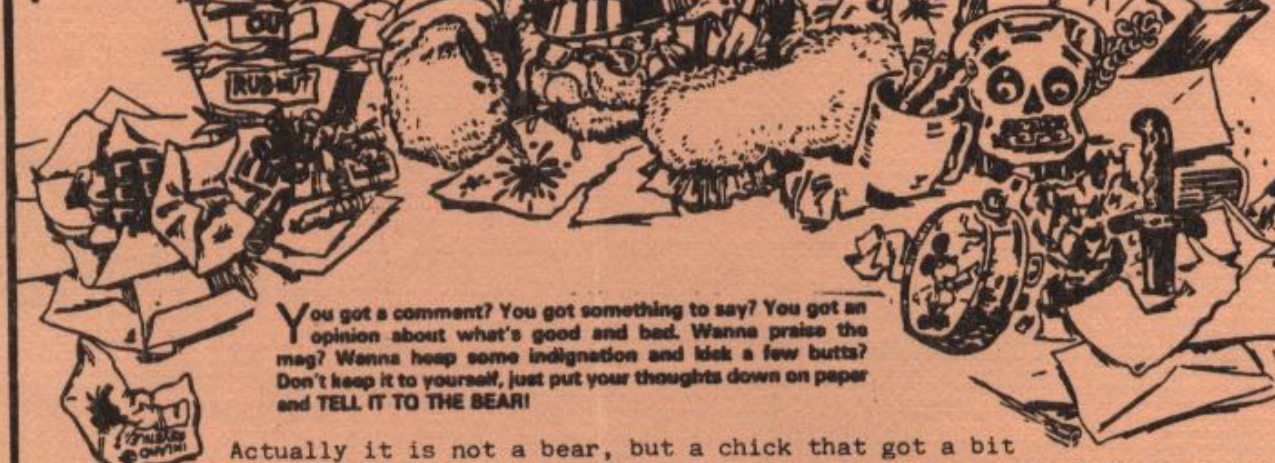


zx mushroom club

35644  
MENLO PARK 0102  
(012) 46-8226  
TELEX 3-21945 S.A.

A P R I L 1988

# TELL IT TO THE BEAR!



You got a comment? You got something to say? You got an opinion about what's good and bad. Wanna praise the mag? Wanna heap some indignation and kick a few butts? Don't keep it to yourself, just put your thoughts down on paper and TELL IT TO THE BEAR!

Actually it is not a bear, but a chick that got a bit hairy because of all the work that is piled on her in the club, and the fact that she was made an April Fool on the first made her even more hairy!!! Only kidding, this chick is very unhairy, just overworked! Got something to say? well then say it and let us know.

The Z88 has made life a lot easier for me, and I can now work on the newsletter and other things while on my way to work and back on the bus. Further details about this wonderful machine are in the newsletter. As you may or may not have noticed, the cover of this months newsletter is the Z88. This is an exact representation of the size of the machine! If you don't believe me, make an appointment at I.E. and see for yourself! Now you can see that the machine is TRULY PORTABLE, and not luggable. I must say that the Z88 is much, much more powerful than I expected. I was really surprised. Well for more details, look inside.

As a direct result of the questionnaire that I sent out earlier in the year, we have included our second series on Machine Code. This was the most asked for, well now you are getting it. Want Anything else? Please let us know, and we will see what we can do for you.

I.E. has ordered a lot of software from England, all of it really great stuff, you will not be disappointed when you see the titles that come in, when they do. Please don't strip your mo\*/r, it is coming! All the titles that are on order have a minimum of 8 stars. With such high ratings, where can you go wrong? So please support I.E. and keep the magazine going. Thanks.

Thinking of starting a business? See what I.E. has to offer you, and you will certainly save a packet if you accept! Think about it, it is really worth it.

If you are going, or have been on holiday. I hope that you enjoyed it.

Anne

2



## FOR OUR YOUNG ENTHUSIASTS

DO YOU KNOW THE BINARY NUMBER SYSTEM IS MUCH SIMPLER THAN OUR DECIMAL NUMBER SYSTEM AND ONCE YOU HAVE READ THROUGH THIS ARTICLE YOU ARE GOING TO WISH YOU COULD USE IT AT SCHOOL

by Jacqueline Snell

### INTRODUCTION

What is 1+1 ?

"Aha" you say, feeling bright this morning, "1+1=2."

But not so fast. I am talking about the Binary number system and

1+1=10 i.e. 1  
1+

--  
(1+1=0 carry 1 in the 10  
Binary system) ==

### CONVERTING BINARY NUMBERS TO DECIMAL NUMBERS USING YOUR HANDS

The easiest way to convert binary numbers to their decimal equivalent is to imagine you are writing the "place value" of each binary column on the fingers of your hands. Each digit on each finger is different, increasing in value in powers of 2. Begin with your right hand (palm facing you) and write digit 1 on your index finger; 2 (1\*2) on your middle finger; 4 (2\*2) on your ring finger; 8 (2\*4) on your little finger. Now change to your left hand and write digit 16 (2\*8) on your little finger; 32 (2\*16) on your ring finger; 64 (2\*32) on your middle finger; 128 (2\*64) on your index finger. Your hands should now look like this reading from the right hand to the left hand.

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

Now lets test if the above really does work: Binary number 01011101 convert to a decimal number using above finger method.

Hold your hands in front of you (palms facing you) now begin, starting with your index finger on your right hand and

moving across to the ring finger on your right hand and moving across to the ring finger on your left hand manipulate your fingers to accomodate the undermentioned binary number as follows: 01011101

1 hold index finger up  
0 hold middle finger down  
1 hold ring finger up  
1 hold little finger up  
1 hold little finger up  
0 hold ring finger down  
1 hold middle finger up  
0 hold index finger down

Now do some adding:

1+0+4+8+16+0+64+0=93

Eureka!! It works !!

Convert the undermentioned BINARY numbers on your own and then check your answers on your computer using the routines below.

00000101,00001010,00001111,  
00010100,00011001,00011110,  
00100011,00101000,00101101.

### A LISTING FOR YOUR COMPUTER TO CONVERT BINARY NUMBERS TO DECIMAL NUMBERS

```
*****
5 REM ** PROGRAM FOR CONVERTING
  BINARY NUMBERS TO DECIMAL
  NUMBERS**
10 PRINT "BINARY NO." ,"DECIMAL
  NUMBER."
15 PRINT "=====" ,"=====
  ====="
20 INPUT "Enter Binary number:";
  LINE A$
30 LET d=0: LET c=1:LET n=LEN A$
40 LET d=d + 2 ^ (n - c) * VAL
  A$ (c)
50 IF n=c THEN GO TO 70
60 LET c=c + 1: GO TO 40
70 PRINT A$,d
80 GO TO 20
```

NOTE: The symbol after the digit 2 in Line 40 is obtained by pressing symbol shift and the key H. Take care when you type in commas and semi-colons for it will effect your program.





# BINARY NUMBERS CONTINUED.....

A LISTING FOR YOUR COMPUTER TO  
CONVERT DECIMAL NUMBERS TO  
BINARY NUMBERS

```

5 REM**PROGRAM FOR CONVERTING
  DECIMAL NUMBERS TO BINARY
  NUMBERS**
10 PRINT "DECIMAL NO.", "BINARY
  NO."
15 PRINT "-----", "-----
  ="
20 INPUT "Enter Decimal number
  :";d
30 DIM a$(8); FOR n=1 TO 8
40 LET U=INT (d/2 ^ n- INT(d/2
  ^ n) + .50005)
50 LET A$(9 - n)=STR$ U:NEXT n
60 PRINT d,A$
70 GO TO 20

```

NOTE: The symbol after the  
digit 2 in line 40 is obtained  
by pressing symbol shift and  
key H. Take care with commas  
and semi-colons.

TO FILL THIS PAGE SOME MORE  
NUMBERS TO EXPERIMENT WITH:

0	00000000
1	00000001
2	00000010
3	00000011
4	00000100
5	00000101
6	00000110
7	00000111
8	00001000
9	00001001
10	00001010
11	00001011
12	00001100
13	00001101
14	00001110
15	00001111
16	00010000
17	00010001
18	00010010
19	00010011
20	00010100
21	00010101
22	00010110
23	00010111
24	00011000
25	00011001

26	00011010
27	00011011
28	00011100
29	00011101
30	00011110
31	00011111
32	00100000
33	00100001
34	00100010
35	00100011



PLEASE NOTE THAT SINCE THE PRINTING COSTS OF THE NEWSLETTER HAVE GONE UP, THE PRICE FOR  
PLACING AN ADVERTISEMENT IN THE NEWSLETTER HAS GONE UP TO 30c PER WORD. ADVERTISEMENTS WILL  
ONLY BE PLACED ONCE FULL PAYMENT FOR THE ADVERTISEMENT HAS BEEN RECEIVED. THANK YOU.

# MACHINE CODE

## PART 3

Here it is in two sections; the first to supply the divisor (10000, 1000, 100 ,etc.) and to return back to the CALLing routine, while the second converts the numbers, changes them to ASCII , and puts each number where DE is pointing.

HEX CODE	ASSEMBLER MNEMONIC	COMMENT
D5	NM PUSH DE	: Save the pointer value
011027	LD BC,10000	: The first divisor
CD5472	CALL N1	: run the second part
01E803	LD BC,1000	: do it again..
CD5472	CALL N1	
016400	LD BC,100	
CD5472	CALL N1	
010A00	LD BC,10	: ..until only units over
CD5472	CALL N1	
7D	LD A,L	: then convert the units
C630	ADD A,48	: to ASCII
E1	POP HL	: retrieve the pointer
77	LD (HL),A	: for the last time..
C9	RET	: ..and go back

.. and section two

HEX CODE	ASSEMBLER MNEMONIC	COMMENT
1600	N1 LD D,0	: to count subtractions
ED42	N2 SBC HL,BC	: keep subtracting until
3803	JR C,N3	: less than zero..
14	INC D	: ..while increasing count
18F9	JR N2	
09	N3 ADD HL,BC	: add back for remainder
7A	LD A,D	: convert the no. of
C630	ADD A,48	: subtractions to ASCII
C1	POP BC	: (temporary)
D1	POP DE	: pointer into screen
12	LD (DE),A	: store ASCII character
13	INC DE	: bump pointer..
D5	PUSH DE	: ..and save it again
C5	PUSH BC	: restore return address
C9	RET	: go back to part 1

5

You've so far entered the first two of the three parts:  
The main routine, and the sub-routines.



**All that's left is the actual Screen Picture at address 29000...**

HEX CODE	ASSEMBLER MNEMONIC	COMMENT
	ORG 29000	: !NB! start address
000000000000	DEFS 18	: 18 bytes of space for
000000000000		: the tape header data
000000000000		
16010D	DEFB 22,1,13	: "AT" 1,13
484541444552	DEFM "HEADER	
160305	DEFB 22,3,5	: "AT" 3,5
20202020202020	DEFB 32,32,32,32,32,32,32,32	
4E616D65203A	DEFM "Name :	
2020202020202020	DEFB 32,32,32,32,32,32,32,32,32,32	
160507	DEFB 22,5,7	: "AT" 5,7
5374617274	DEFM "Start	
202020202020	DEFB 32,32,32,32,32,32	
3A	DEFM ":	
2020202020	DEFB 32,32,32,32,32	
16070B	DEFB 22,7,11	: "AT" 7,11
4C656E677468203A	DEFM "Length :	
2020202020	DEFB 32,32,32,32,32	
00	DEFB 0	: !NB! This byte shows
		: the END of the Screen
		: Picture Area

**..and that's it! You can save it to tape with:**

**SAVE "HEADCODE" CODE 29000,288**

**or to microdrive with:**

**SAVE \* "m";1;"HEADCODE" CODE 29000,288**

**All in all the result code is 289 bytes long, and that INCLUDES the 17 bytes read from tape as well as about 90 bytes for the Screen Picture Area ! Try writing something similar in BASIC (without the ROM call, of course) and you'll be astounded by its length.**

**My own requirements for writing this routine were that I really only needed to know the start and end addresses of any machine code I had stored to tape, as well as any "auto-starting" BASIC program. But that does not stop you from changing it slightly to also recognise character and numeric arrays stored from BASIC (The first byte in the tape header data area is "1" and "2" respectively). If you would like such a routine, but do not feel you have the knowledge or confidence, then drop a line to IE (with a Self-Addressed Envelope, a cassette & R2-50) and I'll gladly send the source and machine code with an explanation of what a full routine to recognise all data types on cassette should do.**

**Here follows an example of a typical BASIC program to run the machine code program we have just written:-**

```

10 CLS: PRINT AT 10,10;"LOADING THE CODE"
20 LOAD "HEADCODE" CODE: REM LOAD "*"M";1;"HEADCODE" CODE for m/drive
30 PRINT AT 21,0;"START THE TAPE":RANDOMISE USR 29092:BEEP .1,10
40 PRINT AT 20,20;"'P' TO PRINT";AT 21,0;" (14 spaces) "
50 LET A$=INKEY$: IF A$="" THEN GOTO 40
60 IF A$="P" THEN PRINT AT 20,20;" (12 spaces) ":COPY
70 GOTO 30

```

.. and for the benefit of those who do not have an Assembler program, here is a quick BASIC program to allow you to enter all the Hex Codes I have supplied down the left hand side of my program.

```

5 REM *****
  * BASIC HEX LOADER *
  *****
10 CLS:INPUT "STARTING ADDRESS ";X
15 PRINT AT 0,0;"NB ! USE CAPITAL LETTERS"
20 LET A$=""
30 IF A$="" THEN INPUT A$:PRINT X;" ";A$
40 LET Y=CODE A$-48:IF Y>9 THEN LET Y=Y-7
50 LET Z=CODE A$(2)-48:IF Z>9 THEN LET Z=Z-7
60 POKE X,16*Y+Z
70 LET X=X+1
80 LET A$=A$(3 TO)
90 GOTO 30

```

```

*****
* !NB! YOU MUST TYPE ALL HEX CODE IN CAPITAL LETTERS *
*****

```

You are going to have to be quite certain of the 2 addresses that you give to the prompt at the start of this program, I have supplied them earlier in the listing.

The Hex Loader was written so that a long line of Hex numbers can be entered all together, it is not necessary to enter then two digits at a time. To exit from the program, delete the left quotes and type "STOP".

Next month we will be looking at one of the least explored and certainly most fascinating areas of our favourite machine - the ROM. The ROM contains an incredible number of routines just waiting to make your machine code programming easier! Look out for next months article.

# WIZBALL

In the January edition of the newsletter, there was a question on the 2 player option on WIZBALL. Gary Muston of Germistion sent the following answer:-

In the instructions, it states that WIZBALL is a one player game only. The idea under the two player option is that the first player uses life 1, the second player uses life 2 and so on. Gary completed WIZBALL with a score of 427200 in December. The colours needed to complete it are:-

Level one	: Red, cyan, magenta
Level two	: Green, cyan, lyan
Level three	: blue, green, cyan
Level four	: Magenta, red, green
Level five	: Green, magenta, cyan
Level six	: Cyan, green, yellow.

If you complete level two before level one, you are placed outside the playing area on level five, and have to reload, since there is no abort key. At the end of level six, you go to WIZLAB, and the message "wot a wizace" appears. You then go back to level one, without any permanent weapons, and start again. I hope this is of some help to someone!

7



# LOOK

8

# HERE

Just because the world is against us in all aspects that they can think about, that does not mean that we will not find a way to get around all the roadblocks that they are setting for us!

I.E. is having tremendous difficulties in getting parts for the Spectrum. Those of you who need a membrane will already know about this. Unfortunately this is not just restricted to membranes, but to ULA's for both the Spectrum and the Interface I. I.E. has been waiting for these spares for the last 3 shipments and has still not received them. I have however, got some inside info that the next shipment will have them on board!

If you do not want to get into trouble with spares, then I would advise you to get your spares now, and prebook your order! I am not trying to push you into ordering these items, but if you don't you may never be able to get them very easily again!

Part	Price	Special offer	P&P
ZX Membranes	32.50	55.00 for 2	2.00
Spectrum + membranes	33.50	49.00 for 2	2.00
QL Membranes	37.50	65.00 for 2	2.00
Interface I ULA	79.00	-----	1.50
Spectrum ULA	52.00	-----	1.50
Microdrive ULA	19.99	-----	1.50
ZX Printer ULA	19.99	-----	1.50
QL CLA	56.00	-----	1.50
Spectrum CPU	7.50	13.00 for 2	1.50

Get your spares now and don't be sorry in the future!

## paperbox BRIEFLY..

The same applies to ZX Printer paper. If you do not want to be stuck with out paper, then now is the time to get your order in, so that as soon as stock arrives, then you will not be let down!

- 5 Rolls of paper for only R15.00, P&P R3.00
- 3 Rolls of paper for only R13.00, P&P R2.80
- 2 Roll of paper for only R8.00, P&P R2.50
- 1 Roll of paper for only R4.50, P&P R1.50

## BETA BASIC

BETA BASIC , WHAT IS IT?

BETA BASIC is a softwar utility which enhances the normal Spectrum basic through the addition of new programming functions such as PROCEDURES, new graphical functions, TOOLKIT freatures etc. BETA BASIC was written by Dr Wright of Betasoft in the UK. There are now two versions, viz. Version3.0 and .4.0. The 4.0 version has been specially updated for use on 128k machines. BETA BASIC allows th user to write structured programs and although it occupies approximately 17K of memory, this is outweighed by the positive aspects, eg. - write a complete sort routine in normal Spectrum Basic and it will take up more than 2K, yet it is one of the 40 or more functions of BETA BASIC (all in 17K!) It is really a must for programmers.

In future newsletter we will include a Beta Basic corner for programmers, and you are requested to send in all contributions to reach us before the 20th of the month prior to publication.

Please

## BETA BASIC 3.0 AND 4.0 now available:-

### FOR SPECTRUMS WITH 128K MEMORY

BETA BASIC 3.0 gave you a structured BASIC with procedures, great graphics commands, better editing, lightning-fast data handling and a full range of toolkit features. SINCLAIR USER said: 'FANTASTIC'. CRASH: 'elegant...comprehensive'. MICRONET: 'Get it now!'. EVERYDAY ELECTRONICS: 'Powerful...thoroughly recommended'. Now BETA BASIC 4.0 adds new commands to unleash the power of the 128K Spectrum! Beta Basic 4.0 is Spectrum Basic compatible, but adds more than 100 new commands and functions to transform your machine!

Both available for only:-

R49.99

Upgrade also available for only: R29.99

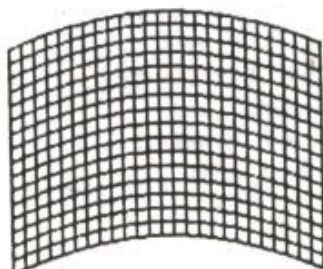
(You have to provide proof of having version 3.0 to be able to purchase the upgrade)



## PROC DISTORT - stretching screen pictures.

Some time ago I saw a review of a flashy graphics system in Personal Computer World magazine. One of the facilities allowed the user to stretch the image in any direction. I wondered if this would be possible in Beta Basic, using ROLL or SCROLL, and set to work with enthusiasm. It turns out to be fairly easy to achieve a left or right distortion, but harder in the vertical dimension, since ROLL will not handle a single column of pixels. However, it proved possible to use one character column as a working area, rolling a column of pixels into it, and then moving the character column up or down. It looks odd, but it works! I wrote a PROC GRID to give a screen picture for DISTORT to work on, but you could just do a LIST or load a screen picture (as I did for the illustration). The variable  $\theta$  in line 90 controls the degree of distortion. Of course, you can distort the same picture in several directions. The method of specifying left, right, up or down using DATA in the DEF PROC and a control words list in a string searched by INSTRING might be of interest. The words are arranged at regular locations (1,5,9 and 13) in the string so that the relevant ROLL code can be easily derived.

What would you want to use this PROC for? Well, I looked back at the PCW article and it didn't say... but having written it, I'll publish it anyway! (I get mail saying things like "I liked the item on —, very clever. Like me, your contributors seem to like mucking about" but also, "I think some of your contributors are so carried away by their own cleverness that they forget what they are doing it for!" which may be the same message expressed in different words.)



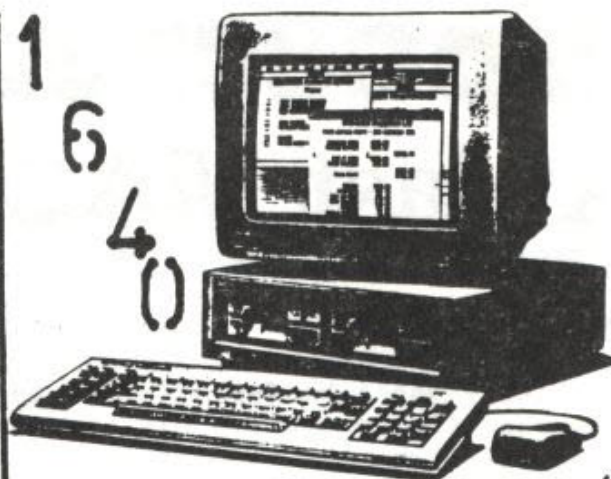
10 grid  
20 distort left  
30 PAUSE 50  
40 distort right  
50 PAUSE 50  
60 distort up  
PAUSE 50  
distort down



```
70 DEF PROC distort DATA
80 LOCAL a$,d,f,n
90 LET f=50
100 READ LINE a$
LET a$=SHIFT$(2,a$)
110 LET d=(INSTRING(1,"leftdownup right",a$)+19)/4
120 IF d=5 OR d=8 THEN
FOR n=0 TO 175
ROLL d,SINE(n/175*PI)*f+1;0,n;32,1
NEXT n
130 IF d=6 OR d=7 THEN
FOR n=0 TO 247
ROLL 5
ROLL d,SINE(n/247*PI)*f+1;248,175;1,176
ROLL 5,7;248,175;1,176
NEXT n
ROLL 5
140 END PROC

150 DEF PROC grid
160 LOCAL x,y
170 FOR x=0 TO 255 STEP 8
180 PLOT x,0
DRAW 0,175
190 NEXT x
200 FOR y=0 TO 175 STEP 8
210 PLOT 0,y
DRAW 255,0
220 NEXT y
230 END PROC
```

This article is an extract from the Beta Basic Newsletter, which the club receives, and has received permission to reproduce. If you would like to receive the Newsletter, then send us R20.00 for a years subscription.



# The BIGGEST Amstrad ever!

(At a price that won't make your mouse squeak\*)

## FEATURES:

- \* 640K standard
- \* 8086 processor chip
- \* mouse and Joystick adaptor
- \* Socket for 8086 Maths co-processor
- \* Serial and parallel ports for printers
- \* 3 extra slots

4 system disks which include:-  
GEM Paint, GEM Desktop, and  
MS DOS 3.2

The features of this machine were printed last month, but unfortunately the information supplied to us by the agent was incorrect.

The Computer is not switch selectable between the Hercules, EGA and CGC cards, but has the facility that the computer selects the correct card when the program is inserted into the drive,

ALL THIS FROM ONLY R2 499.00





# Spectrum lessons

## At last MACHINE CODE!

A BEGINNER'S COURSE IN Z80 MACHINE CODE - part 1

By D. Roux

I think I won't be far off mark when I venture that 40 percent of the Mushroom Club's members has already had a little scuffle with Machine Code. Slow results usually discourage people from a longer battle. This series is no exception. Machine Code is difficult, to say the least. Certain basic concepts have to be understood before progress can be made. You must have some determination and patience, and, *very important*, try every example given. Still interested? Read further!

### \*What is machine code?

My first contact with computers was early in 1984. I brought a 48K Spectrum with a rubber keyboard, which I in fact still own. Free, with the machine, the store gave me a game called Samurai Warrior. This is a 16K strategy, written entirely in Basic. It was nearly a month before I brought my second game - the legendary Chequered Flag. Needless to say, my breath was taken away. A 3D view of the road! An actual dashboard! How did Psion achieve this?

Machine Code, said my friends. This was my personal introduction to the programming language - a god-like inspiration beyond the scope of mere mortals. Anyway, I plodded along with Basic until I found it too drastically lacking in speed for my taste. Over the next year or so, I studied all kinds of alternatives. I finally latched onto Machine Code.

Machine Code, believe it or not, is the only language your computer really understands. It consists of numbers - and numbers only. Instead of instructions in word form, like STOP in Basic, you use instructions like 201 (which means the same thing - nearly!).

When you write in Basic, the computer translates your commands to numbers and stores it in memory. When you type RUN, it starts reading the numbers. When it encounters the numeric counterpart for, say, PRINT, it calls a long Machine Code program stored in an area in memory called ROM or Read Only Memory. This carries out the function of PRINT, and is over 100 commands long! Understand now why Basic is so slow?

Instead of using these subroutines in ROM, we can actually write our own and get a speed increase of up to 50 times. Programming in numbers isn't very comfortable, though, which brings us to

### \*Assemblers

Assemblers are programs you buy which assist you in writing Machine Code. For example, instead of remembering that you have to enter 201 to stop, you simply type RET (short for RETire) and the assembler will translate the command to a number (e.g., in this case, 201). Are you still keeping up? If not, read everything again - this is an important part.

There are several good assemblers on the market of which Ocean's Lazer Genius is probably the best. Another highly acclaimed assembler is HiSoft's Devpack. Personally, I use an assembler package by Picturesque called Editas (Editor Assembler).



It is essential to buy one before trying to tackle machine code. This series of articles, specifically, does not cater for people who do not own assemblers (er - sorry, that sounded a bit bitchy).

#### \*How to store and run Machine Code programs

Obviously, Machine Code programs are not written like Basic programs with line numbers etc. You may or may not know this, but your Spectrum has a number of "addresses" - over 60 000, in fact!

Nearly everything the computer knows and does is stored in these addresses. When you enter a Basic program, it translates it to numbers and stores each number at a different address. You can see an address as a letter box - large enough to hold only one letter! The number at an address may not be larger than 255, since the Spectrum is an 8-bit computer (more about that later).

Remember what I said about ROM? The ROM routines, which Basic uses, are stored from address 0 to address 16383. These addresses are reserved. You cannot change their contents - imagine the chaos which would evolve if you could alter the routine manipulating IF in Basic. Hence the name, Read Only Memory. It can only be read, not changed. From address 16384 onwards, however, we can alter at leisure. To store a number at an address we use POKE in Basic. For instance, I want to store the number 31 in address 30100. I type

```
POKE 30100,31
```

Try poking 400 in address 40100, e.g.

```
POKE 40100,400
```

It won't work. No numbers bigger than 255, remember? To see what we stored at an address, we use PEEK. Type

```
POKE 30000,10
```

and then

```
PRINT PEEK 30000
```

The Spectrum should retort with 10. You poked 10 in address 30000 and then checked it. Comprehendo?!

A machine code program is simply a series of such numbers at sequential addresses. Numbers represent Machine Code commands. To run a Machine Code program, we use USR. If we had a program starting at address 50000, we could use

```
RANDOMIZE USR 50000
```

to run it. It will start at address 50000, read the number at that address, do what the number tells it to and then moving on to address 50001, follow the same procedure until it encounters a command number which halts it.

When using an assembler, however, you need not POKE the numbers into memory. The assembler translates your words, or "mnemonics", as it is also called, into numbers and starts storing it at an address which you specify. After it did this, you need simply type

```
RANDOMIZE USR (where program starts)
```

11



## ANDER REKENAARS - 'N PAAR WENKE

deur OLAF BACON (Pretoria)

Die SPECTRUM rekenaar het vir baie van ons geleer hoe om met 'n goeie rekenaar te kan werk. Nou, hoe praat ek met 'n IBM-soort PC (Personal Computer) "clone" wat nie die bekende SPECTRUM BASIC taal ken nie, en nie eers 'n ingeboude taal het as hy aangeskakel is nie?

Hier volg 'n paar wenke wat u in die toekomst sal kan gebruik.

Die gewone taal is deur Microsoft geskryf, en is MS-DOS genoem. Die huidige uitgawes is MSDOS 3.1X (1985), en MSDOS 3.2X (1986). Dit is nodig om die rekenaar aan te skakel met 'n skyf wat DIE stelsel taal het, asook 'n program genoem COMMAND.COM, wat in DRIVE A: moet wees. Daar sal ook twee ander programme wees, wat jy nie gewoonweg sal kan sien nie, wat die OPERATING SYSTEM sal laat laai.

Nou, om 'n lys te kry van die inhoud van die skyf, met die grootte in BYTES asook die DATUM en TYD van laaste verandering, (sonder die SYS lêers te wys), probeer:

**DIR**

Op sommige masjiene kan u dit een bladsy op 'n slag kry met:

**DIR /P**

'n Korter lys, gedruk vyf per lyn:

**DIR /W**

Om dié informasie na die drukker te stuur pleks om na die skerm:

**DIR > PRN**

'n Lys van lêers in die "subdirectories"

**TREE A: /F**

As u twee skywe het, kan u die name van die twee SYSTEM lêers asook 'n derde vanaf die LABEL van u diskette sien, as u CHKDSK kan hardloop vanaf skyf A: en jou diskette in skyf B: ingesit is, met

**A:CHKDSK B:/V**

Dit is handig om altyd te weet in watter DIRECTORY u is. Gebruik

**PROMPT \$P\$G**

wat u ook handig in 'n AUTOEXEC.BAT lêer kan sit. Dié sal dan laai nadat die stelsel gelaai het.

En HOE kry ek al die snaakse letters soos é en ë ? Druk die ALT sleutel en tik dan die ASCII desimaal nommer van die letter op die nommer sleutels, dan los die ALT sleutel. As u skerm en u drukker die "extended ASCII character set" kan druk, daar het u dit! "é" = ALT 130, "ë" = ALT 136. "ë" = ALT 137, "Ê" = ALT 156, byvoorbeeld. Sommige skermes het dit nodig dat u eers GRAPHICS moet laai.

As u BASIC wil gebruik, moet dié taal ook ingelaai word. Gewoonlik laai u GRAPHICS (as u die soort skerm het), dan GWBASIC. IBM en vorige uitgawes het dit miskien anders gespél. Met twee DISK DRIVES is dit 'n goeie idee om eers na "B:" te gaan, as jou "default" skyf, dan BASIC te laai met "A:GWBASIC" vanaf jou MSDOS diskette, en jou werkende diskette in die "B:" DRIVE te sit. Laai jou BAS(ic) program met **LOAD"MYPROG"** byvoorbeeld.

Nou, GWBASIC verstaan ook sy eie taal, wat anders is as MSDOS se dialek!

Om vanuit GWBASIC 'n lys te kry van die lêers, gebruik FILES. Om tydelik na MSDOS te rug te gaan, gebruik SHELL met 'n EXIT te rug na GWBASIC. Om uiteindelik uit GWBASIC na MSDOS te gaan, gebruik die woord SYSTEM.

In GWBASIC kan u van die FUNCTION KEYS gebruik - kry hul inhoud met KEY ON onder op die skerm.

Om 'n GWBASIC lêer te stoor, sodat u dit later vanuit MSDOS kan lees met **TYPE MYPROG.BAS**, byvoorbeeld, stoor dit in ASCII karakters vanuit GWBASIC met **SAVE"MYPROG",A**

Nou, probeer gerus, en miskien sal u ook vind dat die taal wat Sir Ian Sinclair ons op die SPECTRUM geleer het, baie nuttiger is as IBM of Microsoft s'n. Y

---

I would like to thank all the club members for all the fantastic articles that they have sent to me for the newsletter, you guys (and gals), are really great! I would also like to thank all the people that have volunteered to be contact people, and the fantastic feedback that I have received from members in connection with questions and other dumb requests that I have not been able to answer. Thanks, please keep it up, that is what the Club is all about! 12



## NEW RELEASES

Unfortunately since we are having trouble getting goods from England, the shipment this month is VERY small. These are the only titles that were received.

Title	Price P&P
Thundercats	36.99 2.00
Trantor (The last storm)	34.99 2.00
Dizzy	12.50 1.50
Lin-O-type	34.50 2.00
Dumpy	34.50 2.00

**GAMES**

**&**

**EDUCATION**

# Learning Box

Learning Box is a series of computer programs to help your child develop basic reading and number skills. Each Box comes with:-

- \* A beautifully illustrated story book
- \* A story tape with reading of the story
- \* An easy to follow, step-by-step guide to the learning activities of the computer program for parents
- \* An overlay, which is placed on your Spectrum. The overlay simplifies the keyboard for even the youngest child
- \* Each program has a number of fascinating activities that relate to the story and the educational activity of each program

Titles in the series include :-

### NINE CURRANT BUNS

I can do sums - Software for kids up to 6

### FIVE LITTLE DUCKS

I can count - Software for kids up to 6

### RED RIDING HOOD

I can read words - Software for kids up to 6

### THE ENORMOUS TURNIP

I can build words - Software for kids up to 8

### MISTER MAC'S DAY

I can tell the time - Software for kids up to 8

### THE MAGIC SHOP

I can use money - Software for kids up to 8

Each program in this series costs only

**13**

R19.99  
2.00

P&P

# KNOCKOUT SAVINGS!

Stock up on your stationary NOW, and don't be sorry when you run out. I.E. has all the stationary that you could ever care for for Spectrums, Disk Drives, Printers. You name it and they will get it for you for the best price in town!

## Cut-Price Disks

### DISKETTES

5.25" Bondwell (per 10)	17.88	2.00
5.25" Bondwell (per 20)	33.90	2.00
5.25" Bondwell (per 30)	48.75	2.50
5.25" Bondwell (per 40)	66.15	3.00
3.5" BASF SINGLE SIDED (per 10)	59.99	2.00
3.5" BASF DOUBLE SIDED (per 10)	85.00	2.00
5.25" Verbatim (per 10)	28.50	2.00
5.25" Verbatim (per 20)	53.98	2.00
5.25" Verbatim (per 30)	78.00	2.50
5.25" Verbatim (per 40)	102.00	3.00
5.25" Verbatim (per 50)	124.95	3.00
3" Maxwell (Per disk)	12.00	1.50

**-Lowest Yet!**

### PAPER

132 Column, 2 000 sheets of fan fold paper	44.99	3.00
A4, 2 000 sheets of fan fold paper	32.50	3.00
A4, 2 000 sheets of KLEENEDGE fan fold paper	54.00	3.00
A4 THERMAL sheets, 100, white	11.00	2.00
A4 ROLL, 50 Metres, white	6.99	2.80
A4 REAM of duplicating paper	8.70	3.00
FAX Paper, rolls	12.50	3.00

## printers

### PRINTER RIBBONS

STAR NL 10	29.99	2.00
STAR 160 (Gemihi)	4.50	1.50
SEIKOSHA GP 550	13.99	1.50
SEIKOSHA GP 50S	13.99	1.50
SEIKOSHA SP 1200	22.50	1.80
SEIKOSHA SP 180AI	22.50	1.50
SEIKOSHA MP 5330	36.95	1.80
SEIKOSHA BP 5445	32.45	1.80

I.E. can also get ribbons for EPSON, FUJITSU, BROTHER and a host of others. Phone for prices.

We apologise for the delay in goods, especially hardware coming in from England. Unfortunately the delay is due to circumstances beyond our control. Please be patient, and we will do the best we can.

Thank you. Aileen Pidgeon, I.E.



to run it. Each number ~~at~~ an address is called a byte. Remember this - it's very important. If I say a program is 20 bytes long, it means there are 20 numbers.

To save or load a Machine Code program, we use CODE.

If we had a program starting at address 50 000 and which is 43 bytes (numbers long, e.g. every address from 50000 up to 50042 is filled with a byte, we would save it using

SAVE "name" CODE 50000,43

and load it using

LOAD "name" CODE 50000,43 or just simply LOAD "name" CODE

and run it using

RANDOMIZE USR 50000

How would this look if we had a program of 5098 bytes long and which started at address 40000? Try it by yourself and then check the answer:

Save using SAVE "name" CODE 40000,5098

Load using LOAD "name" CODE 40000,5098 or LOAD "name" CODE

Run using RANDOMIZE USR 40000

Now try, in the same way, a program of 12354 bytes long which starts at address 54000.

In conclusion, Enter the following and RUN it.

5 CLEAR 64999

10 FOR i=65000 TO 65014: READ n: POKE i,n: NEXT i

20 DATA 33,0,64,1,255,23,54,6,35,11,120,177,32,248,201

You have read a short Machine Code program of 15 bytes into memory starting at address 65 000. Run it using RANDOMIZE USR 65000. What does it do? Now type NEW. Type RANDOMIZE USR 65000 again. Does it still work? How would you save and load this program (use CODE)? What do you think the function of CLEAR 64999 in line 5 is?

The answer to this, and much more, can be found... next month.

---

## BETA BASIC

Are you one of the Beta Basic freeks? Did you read the article that appeared in the January '88 newsletter entitled "Soundscanner"?

Robert Cells of Edenvale has made the following modifications to the program. This modification gives 21 lines with the graph of the sound. One can get better results by dimensioning a numeric array - say DIM a(5000) - and forming a loop to read in the sound without plotting a graph. Only once the array is full do you then plot the graph. It is more accurate.

Here is the program which is written in ZX Basic.

```
10 IF PEEK 40 000 < 1 THEN GOSUB 100
20 FOR Y = 167 TO -8 STEP -8
30 FOR X = 0 TO 255
40 LET L = ABS ((USR 40 000) - 255)
50 IF L > 175 THEN LET L = 175
60 PLOT X,Y: DRAW 0,L121
70 NEXT X:NEXT Y:CLS:GOTO 20
100 REM BASIC LOADER FOR M/C as in
    original program
```





15

## BACKUP ALPHA

The Ultimate Backup Device For The

48K Sinclair ZX Spectrum

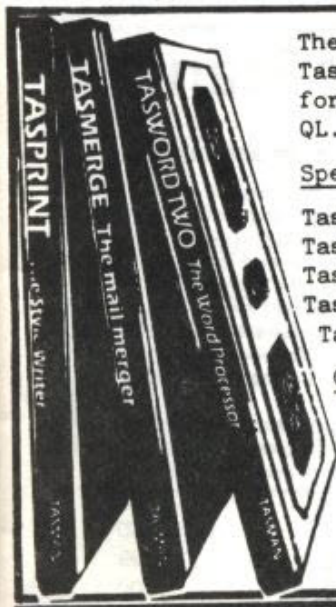
SUPPORT LOCAL HARDWARE SUPPORT LOCAL HARDWARE

BACKUP ALPHA is the ultimate backup device for the 48K Spectrum.

Key features of the interface include:-

- \* Compatible with: Interface I  
The Disciple disk interface  
Beta Disk interface  
Opus Discovery Disk drive  
(compatibility with other interfaces is assumed, but not tested)
- \* Programs can be saved to tape with a FASTLOAD option
- \* ALL copied programs LOAD AND RUN independently of the interface
- \* Programs may be compacted before saving
- \* the screen picture may or may not be included
- \* An extremely powerful toolkit is included
- \* BREAK into protected BASIC or infinite machine code loops
- \* etc, etc.
- \* interface is totally menu driven
- \* comes with a comprehensive manual.
- \* All this and more for only

SUPPORT LOCAL HARDWARE and get your ALPHA NOW!



The following titles from Tasman are again available for the both the Spectrum and QL. Stocks are very limited.

### Spectrum

Tasword 2	R29.99
Tasmerge	29.99
Tasprint	29.99
Tasprint (mdv)	34.50
Tascopy	29.99

### QL

Tasprint	69.50
Tascopy	61.99

Get your copy now while stocks are available to avoid disappointment.

# LERM Software

## LERM TAPE

### UTILITY

If you are a bit short of cash, but would like to make back-ups of your software, or transfer programs from tape to microdrive or disk, then the other alternative is the LERM Tape Utility. Although LERM is a lot more difficult to use than any of the interfaces, it is probably the best software back-up device available on the market. The program also allows you to load in "terbo loaders" and save them at normal speed, thus enabling you to relocate the code as necessary.

Normal Price	R49.99
Special Price	46.00
P&P	2.00

This program comes with a very comprehensive manual.

## Timeslip in Adventurebury

"One morning while in my office, a colleague of mine, Ms Duplecheek told me that she came upon a strange story .....

It involved a pirate called Holloweye that grew up in a town with the name of Adventurebury. During his raids he set foot at the coast of Africa. There he found the tomb of Tutankhamen and removed all the gold from it. What he did not know was that a curse was upon anyone that removed something from the tomb. Holloweye escaped with his life before the tomb came down upon 15 of his men.

2 days later his ship was hit by a terrible storm and only Holloweye survived. The following day he, and the gold, was washed ashore near the West coast of Africa on a cannibal island.

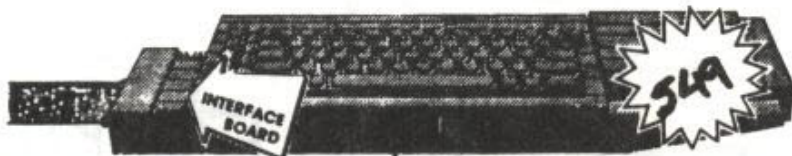
If you want to find out what happened to Holloweye, then you will have to buy the Graphic Adventure

TIMESLIP IN ADVENTUREBURY for only R20.00.

SUPPORT LOCAL SOFTWARE SUPPORT LOCAL SOFTWARE



# Q.L.



Systems for Businessmen

## MAKE YOUR BUSINESS SUCCESSFUL

Have you started your own small business? Or are you thinking of doing so? Now is the time to step into the future and computerise your business. This need not be an expensive venture, infact you can save a lot by going for the ultimate in business machines with the Sinclair QL!

this machine can even be used by the cabbage heads among us, because it is very easy to use and comes with a very easy to understand manual, so you just can't get lost!

Take advantage of this very special offer. This offer is valid until the 15 May 1988, or while stocks last.

Just look at what you get:-

Where else can you get a standard 128K machine at this price?

Where else do you get a WORDPROCESSOR, DATABASE, SPREADSHEET and GRAPHICS PACKAGE all thrown in for no extra money?

Where else do you get a COMPLETE users manual on the software and hardware included in the price?

The QL can offer you all this and much, much more. don't let this offer slip you by!

If you think that just because the computer is so cheap and has such a range of software included, then it must be junk - that is where you are making the biggest mistake that you can ever think of making! The machine is unexpectantly powerfull and the programs are of the highest quality. If it convinces you at all, the Club uses the Spreadsheet that came with their QL to keep all the records of all the members of the club on it. There are 3600 members at the moment!

Price	R549.00
P&P	15.00

## QL Decision Maker

Real problem solving with your micro

The techniques presented in **QL Decision Maker** can be used to perform an explicit analysis of a particular situation, and reveal the appropriate strategy to adopt. Your role as decision maker is simplified because you can see how various actions taken now generate different outcomes in the future. It is this structuring of the decision problem, combined with a means to measure the value of the decision which is the key attribute of Decision Analysis. You can 'unbundle' the problem - breaking it down into sequential component parts, and this process will lead you to a more enlightened view of the options, allowing you to take greater control over the pattern of future events.

**QL Decision Maker** is a powerful tool for anyone interested in strategy and decisions in all walks of life, who wants to minimise the risks involved. Even at their most basic, these procedures will allow you to project yourself into the future with confidence and dexterity, assured of a more logical understanding of the problem addressed and its solution in terms of your own requirements.

Normal Price	R159.00
Special Price	117.00
P&P	2.00

## QL Cash Trader

**QL Cash Trader** is designed for businesses that pay for their goods or services as they are supplied, rather than on a credit basis. Such businesses will have a number of suppliers who give credit and may give a few of their customers some short term credit or accept payment in instalments. **QL Cash Trader** will handle these credit transactions.

The program was designed with four specific criteria in mind:

- 1 In normal business life, financial transactions occur in a random order.
- 2 Most businesses are run by engineers, salesmen, or managers, and not by accountants.
- 3 Businessmen use computers to obtain speedy and accurate management information and want to see the results of the entry as each one is completed.
- 4 Most computer users are not typists.

The best way to understand **QL Cash Trader** is to imagine that your QL is a large container into which you enter sales, purchases, cash payments, standing orders, VAT inputs, expenses, and credit card vouchers, in any order, one after another without pre-sorting by date or type.

Normal Price	R199.00
Special Price	179.00
P&P	2.00

## QL Project Planner

Take control of time on any task

**QL Project Planner** will present to you a simple, yet sophisticated analysis technique which will prove particularly useful in planning the schedule for any project, however complex. You will be able to manipulate the project parameters to determine the most appropriate course of action to suit your needs. When the analysis is complete, you will have a comprehensive master plan against which you can measure the progress of the project. The benefit of all such analysis techniques is that they provide you with a framework upon which you can build your understanding of the elements of a complex problem.

If you want to be able to predict with confidence how long a particular project should take, and when each of the component parts will occur, then you will find **QL Project Planner** an invaluable aid.

Normal Price	R169.00
Special Price	110.99
P&P	2.00



# QL-Macro Assembler

## incorporating QL-Linker and QL-Screen Editor

For the serious QL user who uses Assembly language on his computer, this program is an absolute must. The MACRO ASSEMBLER comes with a very extensive manual which is divided into three parts, describing in detail how to use each of the three programs which make the package:

- \* MACRO ASSEMBLER
- \* LINKER
- \* SCREEN EDITOR

Each program's documentation is self-contained. The MACRO ASSEMBLER'S manual tells you:-

- \* what inputs the assembler takes and what outputs it produces
- \* how the assembler language instructions should be coded
- \* what assembler directives are available, what they do, and how to code them.

It is usually convenient to write programs as several separate source files and compile or assemble them at different times. It is then necessary to combine these compiled parts of program to form a single program file before the program can be run and the program which does this combining is called a LINKER. The LINKER'S manual tells you:-

- \* what inputs the linker takes and what outputs it produces
- \* details for the Sinclair relocatable binary file format

The SCREEN EDITOR may be used to create a new file or to alter an existing one. The text is displayed on the screen, and can be scrolled vertically or horizontally as required. The size of the program is about 20K bytes and it requires a minimum workspace of 8K bytes.

**PLEASE NOTE:-** This program is for the serious programmer who already knows the assembly language. the program does NOT teach programming in general, assembler programming or 68000 programming in particular.

Do not miss this great offer for a really fantastic package!

Normal price	R157.00
Special Price	99.00
P&P	2.00

Books

Recommended by  
QL-User magazine

## THE SINCLAIR QL SERIES

Title	Price	P&P
Wordprocessing on the Sinclair QL	14.50	2.00
Profiting from the Sinclair QL	14.50	2.00
Introducing Superbasic to the Sinclair QL	14.50	2.00
Exploring the Sinclair QL	14.50	2.00
Exploring Artificial Intelligence on your Sinclair QL	19.99	2.00
QL Easel	19.99	2.00
QL Quill	19.99	2.00

## TRANSACT BOOK-KEEPING SYSTEM

There are many people in business who have had the unenviable task of having to set up some sort of book-keeping system for their new business.

"what books should I buy?"  
"how many analysis columns will I need?"  
"what reports will I need to produce?"  
"how do we calculate GST?"

Such questions are usually answered by accountants.

TRANSACT has been designed to provide a dedicated alternative to a manually operated system.  
The main features of the program are:

A standard method of recording information from any source document.  
A large "user-defined" storage base for detailed analysis.  
Automatic assignment of 'debits' and 'credits'.  
Compatibility with other manually operated systems.  
Comprehensive reporting of all financial information recorded.

Normal Price	R199.00
Special Price	179.00
P&P	2.00



# ON THE ROAD WITH Z88

As I start getting more involved in the Z88, I am astonished at all the hidden surprises in the machine. Apart from being just about the easiest system that I have ever used, the additional features that are built in are more than just the cherry on the top!

The wordprocessor is not only a very powerful wordprocessor with all the functions one could want, it is powerful enough to use as both a Spreadsheet and a Database as well. I must say that I was truly surprised when I did a few exercises using these facilities as I expected them to be very elementary, but that is probably the biggest underestimation that I have ever thought of on the Z88! Entering information and data into both of these files is as easy as 1,2,3.. The same applies for sorting or moving information around in the document. This really stuck me as it is so easy! All I had to do to move a block of information was to highlight the block using  $\diamond$  X, take the cursor to where I wanted to move the information and then simply press  $\diamond$  BM, and that's that! Simple.

F6	sum(B6E6)/\$F\$7*100	A.....	B.....	C.....	D.....	E.....	F.....
		Jan	Feb	March	April	Percentage	
Rates	£66.67	£66.67	£66.67	£66.67	£66.67	12%	
Mortgage	£200.00	£200.00	£200.00	£200.00	£200.00	17%	
Food	£120.00	£130.00	£120.00	£130.00	£130.00	23%	
Car	£40.00	£42.00	£44.00	£46.00	£46.00	8%	
Gas/Elect	£100.00	£120.00	£110.00	£112.00	£112.00	20%	

The keywords are very easy to learn as the first symbol for "extended mode" is the  $\diamond$ , and then the keywords relate to the function, eg, if you want to print a sentence in bold, all you have to do is key in  $\diamond$  PB. this means "code", Print, Bold. This is another amazing feature, Bold, Underline, Italics, Superscripts, Subscript and many more fonts are there at the touch of a button!

R2	A.....	B.....	C.....	D.....	E.....	F.....
	A Once-in-a-lifetime Party					
1	You are invited to a party to celebrate the creation of my first					
2	document with the Z88 computer. Champagne and smoked salmon will be					
3	provided.					

As you probably already know, you can transfer files from a PC to the Z88 and visa versa. This process is also very easy, (everything about the machine is easy!) as every step you have to follow is clearly prompted before you can go ahead to do anything. You simply can't get lost or lose information because you pressed something that you should not have.

Another very impressive feature of the Z88 is the pop-down's. These include:- a clock, calendar, calculator, alarm, filer, panel and Import/Export facilities. The great thing about these pop-down's is that while you are working in PipeDream, for arguments sake, you can call up the clock by typing in  $\diamond$  T, look at the time and then return to what you were doing in PipeDream. Another example is, if you suddenly thought of something that you have to do on Monday at work, then you can POP into the Diary with  $\diamond$  D, enter what you have to do and then carry on in PipeDream! Simple.

When I first saw the Z88, I was very apprehensive about the fact that the screen was so small. I'm one of those people who like to see what I'm typing and how the end product is going to look. The Z88 has a very nice feature in that on the side of the screen there is a small display which shows you EXACTLY how the end product is going to be printed. This convinced me that I had to get one, because even on my PC I can't see what the whole document is going to look like! I can't tell you as to what exactly convinced me to get the machine, but this feature was a definite YES!

The page-display map gives an overall view of the current page of the document you are working on in PipeDream. Each character in the document is represented by a single dot in the map, enabling you to see the layout of the whole page and, if necessary, adjust the layout to improve the appearance.

The following examples show the page display maps for a letter, a letter including a spreadsheet, a poem, and a financial audit.





I don't want to make out that because the Z88 is such a simple machine to use, that it was designed for simpletons who have to be held by the hand for every step they take, but it was designed to make computing an absolute pleasure, even for people who are not pro machines can't resist this one!

Unfortunately even though the Z88 is self-contained, you do need to purchase some extra items to be able to use the computer to its absolute maximum.

## INPUT/OUTPUT OPTIONS AND DEVICES

The RS232-compatible port offers:

### Printing

A RS232 cable is available from I.E. to connect the Z88 to most popular printers.

### Text- and data-transfer to and from IBM and other micros

the Z88 is self-contained, but it is often valuable to be able to exchange text or data with an office computer. The Z88 will interface with IBM and other micros. The resident software formats data for interchange with an IBM-compatible micro. If it has 5.25" or 3.5" disk-drives and runs powerful programs as wordstar, Lotus 1-2-3 or Wordperfect, you can exchange text and data between it and the Z88, and work on either machine. You will need an RS232 cable with the correct connections for your machine and a short program on a floppy disk to prepare your host machine to send or receive. Cable and disk are available from I.E.

### Modem

A modem to allow text- and data transmission by telephone is presently being developed and will soon be available.

## SMALL IS BEAUTIFUL

Well this is just a little more information about this great machine for you to chew over. The Z88 is a real investment in my opinion and most certainly worth its weight in gold! (especially when gold was at its high in 1980!)

The outside cover is the actual size of the Z88, in case you were not so sure that it was truly portable! It really is and can just be popped into your briefcase when you go out of the office. Think about it, where can you get this type of quality at such a good price?

128K EPROM PACK	R200.00
Z88 PC LINK	R89.00
EPROM ERASER	R159.00
MAINS ADAPTOR	R59.00
128K RAM PACK	R200.00

SERIAL PRINTER CABLE	R39.00
PARALLEL PRINTER CABLE	R119.00 (interface incl)
MODEM	+ R330.00
Z88 BBC LINK	R89.00

## Z88 PERIPHERALS

*Where laptops compromise on display and RAM capacity to achieve portability, and desktops seem to equate price with power, the Z88 is a personal computer which makes no compromises.*

*There has never been a computer like the Z88.*

*A computer with solid-state permanent storage...*

*A computer with advanced word-processing, spreadsheet and ingenious time- and data-management software built-in...*

*A computer which is completely self-contained, which gives you up to 20 hours active computing from just 4 AA batteries, yet which talks and listens to your IBM...*

*A computer with a full-size keyboard, in a package less than the size of an A4 pad*

**A Z88.  
A COMPLETE  
PERSONAL**

**R899.00 IT COSTS  
JUST R899.00  
COMPUTER  
SYSTEM.**

The Z88. A computer without compromises.

**Z88**





## SPECTRUM+3 - THE BEST ADD-ON FOR MULTIFACE 3

In the beginning there was the Spectrum. Lots of people bought one. Lots of other people wrote games for the Spectrum, and lots of people bought these as well.

But there was a snag - everything used cassette tapes, which were fine for *Space Invaders* but not for so hot for computer software. Slow, unreliable and frustrating were some of the kinder terms used for the medium.

Now there's the 128K+3, a games machine that has all its software on tape and built in disc drive... Guess what Romantic Robot has produced?

Multiface 3, that's what. Plug it into your 128K+3, and load a game from tape. Press the red button and you can put it on to disc at any stage, yours to load in a trice at a whim's notice. Multiface works by waiting for the program to load and run. Then it takes a copy, and as the program was running at the time, it will run when the copy is loaded back later.

The tape to disc function of the Multiface 3 would be enough to recommend it to anyone. But there's more. When the red button is pressed, a whole range of functions appears. You can look through the 128K+3's memory, altering it at will. High scores have never been so easy to obtain. Memory can be displayed as hexadecimal, decimal or text. All of the 128K+3's 128K of Ram can be fiddled with, not just the 48K's worth that Basic has access to.

You can also print out areas of memory and screens in a variety of different forms. The Multiface 3 can do the same types of graphics dumps as its brother Multiface 2, straight text, Spectrum-style Copy and a couple of shaded screen

dumps. It can't do much more than 128K+3 Basic does, but it does it in the middle of programs.

The main purpose of the Multiface is to get things on to disc. As well as the simple *Save and Load*, it's got a few other tricks up its interface. You can, for example, use the disc from 48K mode. Lots of people got excited by this.

Other things that the Multiface can do is allow you to erase a file to make room on a disc, in case you need to save something in mid-game and can't get to Basic to do the deed. You can't format a disc from the Multiface, alas.

Multiface also compresses stuff automatically, and doesn't *Save* empty areas of memory. These two features mean that you can get (for example) more than three games on the 170-odd K allowed you per disc side. But you can turn these features off, if need be.

Everything is accessed by the traditional one- or two-line menu and single keypresses. Multiface 3 is very careful about invalid inputs, and didn't crash or otherwise misbehave at all. And I did try to confuse it.

More than that, what can I say? I enjoy a good rant, most reviewers do, but the Multiface 3 seems set on continuing the Romantic Robot tradition of doing the job reliably. I can't even complain a little.

Any 128K+3 owner will find it a wonderful device, indispensable even - I'm not giving mine back without a fight. I expect to see the usual extra programs appear for the best in due course (Genie et al), whereupon not owning a Multiface 3 will brand one a complete idiot!

EXCERPTS FROM REVIEW IN



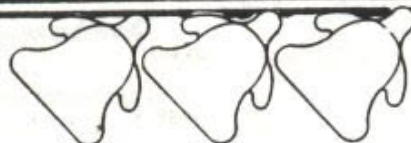
Just because these titles are cheap, it does not mean that they are junk games, this is not true at all. The games are real quality games that are worth buying, especially those of you who want to expand your games collection. With these prices you can really go overboard!

Title	Price	P&P
Flash Gordon	11.90	1.50
Skyranger	9.50	1.50
Curse of Sherwood	7.25	1.50
Devils Crown	9.50	1.50
The empire fights back	9.50	1.50
Casino Royal	9.50	1.50
Chiller	9.50	1.50
Agent X	7.50	1.50
Kentilla	9.50	1.50
Lap of the Gods	7.99	1.50
Locomotion	9.50	1.50
Orc Attack	7.99	1.50
Killer Kong	7.99	1.50
Finders Keepers	9.50	1.50
The Incredible Shrinking Fireman	9.50	1.50
Sport of Kings	12.74	1.50
A ticket to ride	9.50	1.50
Kane	10.50	1.50
Future Games	12.50	1.50
1985 - The day after	9.50	1.50
Quest for the holy grail	12.50	1.50
Kobyashi Naru	9.99	1.50
Master of the magic	12.50	1.50
One man and his droid	7.99	1.50
Nonterraqueous	12.50	1.50
Matt Lucas	9.50	1.50
Amavrote	11.80	1.50

NOW ARE THESE BARGINS OR WHAT??!!

## DO YOU USE LOGO AT SCHOOL?

# Logo Logo



if you use Logo at school, you will know what fun this program is to use, and would like to have a copy at home to do your own thing on: Well now is your chance! Although the program is no longer produced, we will make you a copy for only R25.00 which will cover our copying costs and costs incurred for the reproduction of the manual. PLEASE NOTE THAT IF YOU DO DECIDE TO ACCEPT THIS OFFER YOU MUST INCLUDE YOUR OWN TAPE. We have obtained permission to do this, and it is therefore not in contravention of the Copyright. This is a special service for those of you who use the program and enjoy it.

For those of you who would like to know what Logo is, it's a program that uses a "turtle" to create pictures on the TV/Monitor screen. The turtle is a cursor which moves around the screen in response to the instructions you give it. As it moves the turtle draws a line to show where it has been. These lines are the basic building blocks from which increasingly complex shapes, images and designs can be created



I have received some very disturbing letters from members of the Club who would like to expand their system. The disturbing aspect about these letters has been the fact that they have been questioning the credibility of the STAR GEMINI 160 printer that was offered at such a good price a short time ago. The letters were received from people who want to expand, but are scared of getting a bum deal.

I sincerely hope that the following article will convince these people otherwise! This article was received from one of our Club members who is very satisfied with the printer. The article was printed using the original that was sent to us. Now is this quality or what.??!!

## BIG COPY

BY MARIUS v/d MALT

THIS ROUTINE COPY'S THE SPECCY SCREEN DOUBLE SIZE TO A "BIG" PRINTER .

IT IS DESIGNED TO DRIVE THE STAR GEMINI 160 BY MEANS OF THE RS 232 PORT ON THE INTERFACE 1 .

IF YOU HAVE A DIFFERENT HARDWARE SETUP IT SHOULDN'T BE TOO DIFFICULT TO CUSTOMIZE THE ROUTINE FOR YOUR OWN NEEDS .

```
9980 OPEN #3,"B"
9981 LPRINT CHR$ 27,"M";CHR$ 10;
9982 FOR X=0 TO 252 STEP 4
9983 LPRINT CHR$ 27,"K";CHR$ 96;CHR$ 1;
9984 LET P$=""
9985 FOR Y=0 TO 175
9986 LET L$=CHR$ (128*POINT (X,Y)+64*POINT (X,Y)+32*POINT (X+1,Y)+16*POINT (X+1,Y)+8*POINT (X+2,Y)+4*POINT (X+2,Y)+2*POINT (X+3,Y)+POINT (X+3,Y)
9987 LET L$=L$+L$
9988 LET P$=P$+L$
9989 NEXT Y
9990 LPRINT P$;
9991 LPRINT CHR$ 27,"J";CHR$ 16;
9992 NEXT X
9993 LPRINT CHR$ 27,"M";CHR$ 0;
9994 CLOSE #3
```

21

LINE 9981 SETS THE LEFT MARGIN A COLUMN 10 SO THAT THE PICTURE WILL NOT BE AGAINST THE PERFORATION .  
THE MARGIN IS RESET BY LINE 9993 .  
BOTH LINES CAN BE OMITTED IF NEEDED .

LINE 9983 SELECTS THE PRINTER'S GRAPHICS MODE .

LINE 9985 TO 9989 CALCULATES THE DATA TO BE SENT TO THE PRINTER .

LINE 9990 SENDS IT .

LINE 9991 CAUSES A SMALL LINE FEED .  
BY CHANGING THE "CHR\$ 16" TO A DIFFERENT VALUE , YOU CAN GET AN DIFFERENT LENGTH LINE FEED TO SUIT YOUR NEEDS .

I have managed to get I.E. to let me offer the printer at a special offer price for 2 days in April. I hope that you will take advantage of this offer, since the printer is not going to be offered at this price, or so low again for a very long time. The printers present price is again at its normal price of R699.00.

SPECIAL OFFER ONLY VALID FOR THE FOLLOWING 2 DAYS:-

15 April 1988  
31 April 1988



# CLASSIFIED

FOR SALE: Sinclair QL, monitor, joystick, 720K floppy disk system, floppies, cartridges, books, software, and spares, R1000.00  
CASH. Phone (021) 650 2669 (W) OR (021) 477328 (H)

FOR SALE: Spectrum + with built in Joystick interface, Currah Micro Speech, manual, introductory cassette, R400.00. Phone Pieter (01361) 5411.

TE KOOP: ZX Spectrum Currah Microspeech en Demo Tape R50.00. Tel Manis (01361) 6194 na 6 n.m.

For Sale: 48K Spectrum with Plus Keyboard, Interface I, 2 Microdrives with 26 cartridges, 12 inch green hi-res BMC moitor, Seikosha GP250X printer, Kempston E interface, National Tape Recorder, Multifact I, DK'Tronics Keyboard, all manuals and leads, many books, business and utility software and games, magazines. ALL FOR ONLY R900.00. Tel (011) 4401965.

## QUESTIONS

### HELP!

Can anyone please assist Jack Hatting to get the programme MASTER FILE to print on a SMITH CORONA TP-I PRINTER? This is a "daisy wheel" Serial printer and works well on Tasword Two. If it is of any assistance, the basic print command is : Format "t"; 1200: Open 3; "t".

Here is another printer problem for some Boffin to solve. J. Hall of Bonaero Park has the following problem: He has a RAMPRINT CENTRONICS INTERFACE and a DM 100 Olivetti printer. Commands are not getting through to the printer. Do you know whether the printer is RCI compatible, and whether the printer will work with this interface.

### Can you help?

Please let us know if you can with any of these queries, even if you are not sure whether or not you have the right answer!!!

Pierre Le Roux of Durbanvill has the following question:-

He has the following system, opus Discovery, Spectrum + and a Star Gemini 10X. He would like to use VU-FILE and VU-CALC, but has not been able to get the program to print. Do you have any suggestions?

### HELP!

Mr Kattenhorn of benoni has the following problem. when printing from the program LETTA-HEAD+ only garbage comes out on the printer. He has a Seikosha GP-500A printer. He also uses the ZXLPint III printer interface. Would a club member please advise him what to do if you have an answer.

The ZX128K's have the following snags, they do not accept any printer commands that use the ESCAPE (character 27) sequences or similar control codes. This is particularly the case with the +2 and the Seikosha SP 1000. Have you found a way to overcome this problem? Please let us know.

Mr A. de Waal van Postmasburg vra die volgende Hy wil lang, verskillende inhoude van geskrewe werk op sy rekenaar stoor, en dan later terug roep, verander, werk byvoeg en laat druk. hy soek n program wat dit kan doen. Hy het die volgende:- Spectravideo MSX, EN Seikosha SP 800 drukker.

Do you know the following person? He enroled for the Club, but did not fill in his whole address! His name is Mr Jan Potužník from PO Box 29110,?????

Do you know how to play the game THE HELM? G. Ward Able of Randpark Ridge is having problems and can't get anywhere with this text adventure.

# BOOOBO

BB000 BO. BB000 BO. BB000 BO. BB000 BO BB000

Last month in the listing that was given with the CHARACTER DESIGNER, 2 errors crept in.

Here are the corrections:-

Line 10 should read .... INKEYS\$="0".....

Line 10 should read:-

```
10 PRINT AT W,5;"*":PAUSE 0: IF INKEYS$="0"  
  THEN INPUT a:POKE q+w,a: PRINT AT 10,10;  
  PRINT AT 10,10;CHR$ p: PRINT AT w,0; TAB  
  3:PRINT AT w,0; PEEK (q+w):GOTO 25
```

AND Line 15 should read:-

```
15 IF INKEYS$ = CHR$ 49 THEN LET w = -1:  
  CLS: GOTO 5
```



NAME \_\_\_\_\_ TEL \_\_\_\_\_ MEMBER REF #:

ADDRESS \_\_\_\_\_

To: INFORMATION ENTERPRISES, PO Box 35644, Menlo Park, 0102

## DESCRIPTION

PRICE

\*\*\*\*\*

R \_\_\_\_\_

R \_\_\_\_\_

R \_\_\_\_\_

R \_\_\_\_\_

R \_\_\_\_\_

R \_\_\_\_\_

**HOW TO ORDER . . . .**

BY PHONE



(0146) 30 774

BY POST

PO BOX 35644  
Menlo Park  
0102

BY FAX

(012) 46 5788

GENERAL  
ENQUIRIES

(012) 46 8226

**ie**ADVICE ON  
EQUIPMENT AND  
SOFTWARE

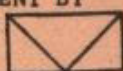
(012) 46 8226

TECHNICAL  
ENQUIRIESPO BOX 35644  
Menlo Park  
0102

BY TELEX



321945

PAYMENT BY  
POSTSend cheques/  
POs made pay-  
able to I.E.  
PO BOX 35644  
Menlo Park  
0102

SUBTOTAL: R \_\_\_\_\_

POSTAGE: R \_\_\_\_\_

TOTAL: R \_\_\_\_\_

SOFTWARE

	Surface Mail	Air Mail
1 Tape	1.15	1.50
2 Tapes	1.50	1.85
3 or more tapes	2.30	2.80
Packs	1.85	2.30

HARDWARE

Interfaces (all)	1.85	2.30
Disc Drive (single)	5.90	9.00
Disc Drive (double)	7.00	11.50
Expansion pack	3.45	5.75
A4 Printer	10.00	13.80
Timex Printer	4.45	5.90
Joystick	1.80	2.30
Monitor (green)	8.00	10.50
QL computer	8.00	14.50
Spectrum +	8.00	14.50
Spectrum + 2	10.00	13.80
Spectrum + 3	11.90	14.50

PARTS

Membrane	2.30	2.80
All other parts	1.85	2.00

STATIONARY

Box of paper (2000)	3.00	5.00
Alphacom paper (1)	1.00	1.50
Alphacom paper (2)	1.50	2.00
Alphacom paper (5)	3.00	4.00
A4 roll of paper	2.80	4.90

KEYBOARDS

All keyboards	1.85	3.45
Z88 computer	5.00	7.50

ALL ORDERS NORMALLY DESPATCHED WITHIN 48 HRS

ALL ORDERS NORMALLY DESPATCHED WITHIN 48 HRS

POSTAGE AND PACKAGING

All items are registered for your protection. Remember to take your ID to the Post Office when collecting a parcel.



# Z88

CURSOR  
EDIT  
LAYOUT  
FILES  
BLOCKS  
PRINT  
OPTIONS

947

might even prove actively dangerous  
unwise. To understand our position  
at the costs in the following

	1987
Site Purchase	45,500
Site Prer	23,750

SINGLE KEY FUNCTIONS		To abort press ESC		End of slot	⇧D	Insert/overlay
Clear marks	⇧X	Delete row	⇧Y	Format paragraph	⇧R	Mark
Delete character	⇧G	Delete word	⇧T	Insert ref.	⇧K	Next option
Delete end of slot	⇧H	Edit expression	⇧O	Insert row	⇧A	Recalculate
BLOCK MENU	⇧B	CURSOR MENU	⇧C	EDIT MENU	⇧E	FORMAT MENU

ESC 1 2 3 4 5 6 7

TAB Q W E R T Y

MENU A S D F G H

SHIFT Z X C V B N

HELP TOPIC □ ◇