



zx mushroom club

MAY 1988

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Boy, this year just seems to be flying by! When I last sat down to think just how long the year ahead seemed it was the beginning of the year, now we are half-way to the end, well just about!

I.E. has got a number of GREAT titles which are due to arrive when the newsletter goes to print. Look at these great titles inside. For those of you who are FLYING FANATICS, ATF (Advanced Tactical Fighter) is on order for you. This game got 10 stars in the March SU. Great Stuff. Price - 38.99. You may say that the prices of the games advertised in this newsletter are a bit steep, but when you take into consideration the fact that the exchange rate of R4.15 per Pound, I think that the prices are very reasonable.

I.E. is following a totally new strategy in importing goods from England, and this will hopefully get rid of the delays that they, and ultimately you, have been experiencing in the last 6 months. [I suggested that they try and follow some of the strategies from PSI Trading, Bismark or High Frontier!]

PLEASE NOTE:-

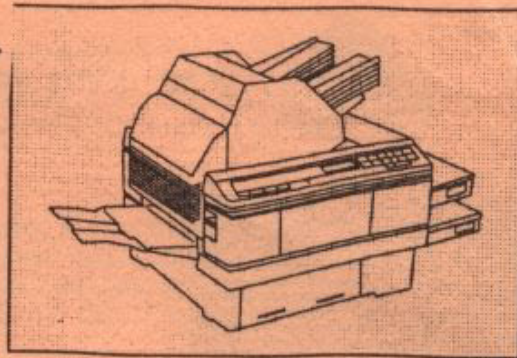
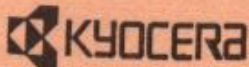
I have been forced to introduce subscription fees again as a result of increased printing costs as a direct result of the growing club. Further details are on page 15.

Every so often-well very often actually- you write to tell us that we know nothing about anything and insist that some program we trashed is actually the best game ever. Conversely you blast us for saying something is great that you absolutely loath and detest. Enough is enough. We can't take any more, if you think you're as clever you write the damn magazine. We mean it! Think about that! An offer you can't refuse, hay? Tanks to all of the good blokes in the Club though, who have given me some very good food for thought - thanks for your great letters and support. I try to keep YOU happy.

Remember that the Factory is open on Saturdays and the ride out there is really worth the effort. I am still negotiating for special discount vouchers for members to use at the local O.K., Pick n Pay and the ever present Maroela Sun. For those of you who like pottery, there is a great factory out there.



Introducing the Kyocera Compact Laser Printers. The features are top-end. The price isn't.



When the word LASER is mentioned to you, what do you think of? Eye operations, Star Wars, Laser Guns, Stonecutters, Burglar Alarms, Discos or Printers?

If your company, or even yourself, are looking for an outstanding printer with lightening-fast speed - then stop looking - and look at the new KYOCERA range of compact laser printers. For the best technology you don't have to pay a high price, KYOCERA proves that. With lightening-fast speed, abundance of built-in fonts, massive memory and of course unquestionable quality - what more could you want? Stated simply, you just won't find comparably priced laser printer that can match the performance of KYOCERA.

An impressive cast of characters

KYOCERA LASER PRINTERS give you over sixty (60) resident fonts. No, that is not a typographical error either! Some of the fonts are: Helvetica, Letter Gothic, Prestige Elite and even Times Roman. With a selection like this, you won't have to buy additional font cartridges. Ever.

The printer is also capable of condensing wide-carriage spreadsheets down to a letter size format. And due to the KYOCERAS' Hewlett Packard Laser Jet Plus emulation, sophisticated software can download its own fonts.

Easy to feed

Besides having from 250-page capacity, the KYOCERA can handle smaller, odd sized paper due to their manual feed. And because they eject printed matter in a facedown position, multipage printing jobs come collated and ready to staple.

At a swift ten pages per minute, the KYOCERA outruns most other competition whilst offering sharp resolution of 300 dpi. But just because it runs fast, ... that doesn't mean that it breathes hard! In fact the KYOCERAS operate so quickly, you can barely tell they are on. And when it comes to memory you might as well forget the competition! With one megabyte of RAM or more, they offer twice the capacity of most comparably priced units.

As a result, they can produce crisp, 150 dpi full page graphics, or two-thirds page graphics at 300 dpi in both portrait and landscapes. Which means they can produce bar graphs, line graphs, spreadsheet and even pie charts.

Their huge memory allows them to buffer numerous pages of text. and all this without having to use an expensive external buffer!

An accomplishment of minor proportions

The KYOCERA printers may be heavy on performance but you sure can't tell by their sizes. To call them small is an understatement. At a meager 29KG they are actually the most compact laser printers on the market. Therefore, they can boldly go where few laser printers could fit before!

The inside story

The KYOCERAS' conscientious clamshell design allows for easy servicing. And unlike other laser printers, their toner and optical drum are separated components. So you won't have to throw away good optical drums every time the toner runs out.

They get along well with others

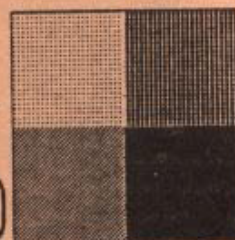
Laserjet Plus, Epson FZ-80, Diablo 630, NEC Spinwriter, Qume Sprint II, and the IBM Graphics Printer. Consequently, software designed for any of these is compatible with the KYOCERA. And because they come standard with both serial and parallel ports, they will interface to your existing systems, as is.

High-end features without the high-end price.

Sure you might find a laser printer that matches the performance of the KYOCERA compact laser printer, but you can bet one thing - they won't come close to matching the KYOCERAS' price!



FROM:-
R5999.00



send R1 + SAE for more details



KYOCERA

A tradition of innovation.



MACHINE CODE

PART 4

Machine Code Tape Header Reader

Mb SOFTWARE PROJECTS

One of the least explored and certainly most fascinating areas of our favourite machine is the ROM. It contains an incredible number of routines just waiting to make your machine code programming easier.

The particular routines I am going to use here now are some that we have all used in our time, from BASIC, yet probably without even wondering about what else we could do with them. They are:

- 1) The ROM tape header reader
- 2) The ROM restart routine for printing to screen

Every time you use the BASIC commands "LOAD", "SAVE", "MERGE" or "VERIFY" the routine at ROM address #0556h is run to read the header information being sent from the cassette. By simply changing the starting information (PARAMETERS) in the registers used by the routine we can then place the header data where we want it, to manipulate from machine code or even BASIC !

Let me demonstrate:

I like to describes my machine code routines in the following way:

ENTRY CONDITIONS: i.e what must be in which registers and what
: locations before the routine may run.
: e.g HL= start , BC= counter , etc.

EXIT CONDITIONS: i.e what will be in which registers and what
: locations after the routine is run.
: e.g HL= end+1 , BC= zero , etc

REGISTERS USED: Merely a list of all registers used by the
: routine, so that you can save them on the
: stack or elsewhere in memory if you do not
: want them overwritten
: e.g AF, BC, E, H, IX , etc

I will be using this standard throughout my program and supporting notes. I have also assumed that you can get your hands on a good Assembler program (I'm sure I.E would oblige to sell you one of the superb programs on the market!) If not, a BASIC routine to allow entry of the HEX CODE is supplied after the listing. Also, read up on the "RANDOMISE USR" expression to RUN any machine code you may have entered.

THE ROM HEADER READER ROUTINE:

ENTRY CONDITIONS: IX = start of free area in RAM

: DE = Number of bytes to read from tape (17 normally)
: A = zero
: Carry flag SET

EXIT CONDITIONS: "DE" number of bytes will be read from the tape header into memory locations starting from "IX".

REGISTERS USED: Assume all.(AF, BC, DE, HL, IX, IY & alternates)

.. and this is the actual routine

HEX CODE	ASSEMBLER MNEMONIC	COMMENT
	ORG 29092	
DD214871	READ LD IX,29000	: free area = 29000
DDE5	PUSH IX	: store on stack
111100	LD DE,17	: No of bytes to read
AF	XOR A	: zero to accumulator
37	SCF	: SET carry flag
CD5605	CALL #0556	: ROM routine
DDE1	POP IX	: all bytes read ?
30EE	JR NC,READ	: if not then more..

Another well-used ROM routine is one of the print routines. It is called a RESTART routine and will print the CHARACTER in the A-register (ACCUMULATOR).

But remember, garbage in - garbage out ! Do not try to print a character that is not between ASCII 32 and 164.(Check the back of the Spectrum Handbook). You're liable to just get something wrong if your values are incorrect because EVERY character can sometimes have a special or implied meaning !

Let's have a look at a simple working routine, which, although not part of the actual tape header reader, shows what I've described.

ASSEMBLER MNEMONIC	COMMENT
TEST LD A,65	: The ASCII code for the character "A"
RST 16	: The ROM restart routine
RET	: END.

Now DON'T PANIC !. The character "A" was certainly printed on the screen, but probably in the bottom section, and so the BASIC message "0:1 OK" has overwritten it ! If you use the "PAUSE" expression you could hold the character on screen long enough to read before the BASIC program to run the machine code ends. But this is not the only alternative. The best method would be to load the System Variable TV_FLAG (23612) with zero before running the program, and this way the printing will all take place in the upper part of the screen. This is how to do this in machine code:

HEX CODE	ASSEMBLER MNEMONIC	COMMENT
AF	XOR A	: Zero into A-register
323C5C	LD (23612),A	: and store in TV_FLAG

This routine would precede the previous routine to print the "A" at the top of the 'page', and is the second part of our cassette header reader program.

Let us advance a step further now and write an easy routine to clear the screen display area.

ENTRY CONDITIONS: None needed (The routine sets them up itself)

EXIT CONDITIONS: Take a guess ! (One cleared screen ,of course!)

REGISTERS USED: HL, BC, A

HEX CODE	ASSEMBLER MNEMONIC	COMMENT
210040	LD HL,16384	: Start of screen area
010018	LD BC,6144	: No. of bytes in area
AF	CLS XOR A	: Set A-reg to zero
77	LD (HL),A	: overwrite byte on screen
23	INC HL	: point to next byte
0B	DEC BC	: decrement counter
78	LD A,B	: Method used to check if
B1	OR C	: BC = 0
20F8	JR NZ,CLS	: If not then carry on...

This routine does not actually do any more than just overwrite all the dots on the screen, that is, it ignores the colours of the PAPER and INK in the attributes area, but it is sufficient for our needs.

Next month we start with the really interesting stuff; setting up of the SCREEN information from the data we've just read in from tape. Look out for Part 5!

ITS NEW-ITS GREAT ITS Z88

A computer with a full-size keyboard, in a package less than the size of an A4 pad, with a total weight of less than 2lb...

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 CMOS-technology computer with the power to address 4 Mbytes of memory...

A computer with a work-area display of 8 lines of 80 characters, an LCD screen which outdates all others, and a unique dynamic page map on screen...

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...

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POWERFUL!
PORTABLE!**

only
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*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,

FIRST TIME USERS

FROM:-

MALCOLM STEVENS

I HAVE RECENTLY LEARNT HOW TO PROGRAM IN MACHINE CODE AND AFTER A COUPLE OF HOURS COMPILED THIS SHORT MACHINE CODE PROGRAM. THE PROGRAM CREATES A MOZAIC EFFECT ON THE SCREEN. THE SCREEN COLOURS ARE ALL DIFFERENT AND ARE GENERATED AT RANDOM. THE ONLY PROBLEM IS THAT I USE A BASIC PROGRAM TO POKE IN THE RANDOM NUMBERS, BUT THE ACTUAL MACHINE CODE IS INSTANT. THE EFFECT IS QUITE ATTRACTIVE AND WORKS WELL AS A SCREEN BACKGROUND.

TABLE 1 CONTAINS THE BASIC PROGRAM

TABLE 2 CONTAINS THE MACHINE CODE PROGRAM WHICH IS TO BE TYPED IN ON A Z80 ASSEMBLER

"I emerged from the computer room, a bleached physical wreck, blinking in the unaccustomed light, with the working program."

TABLE 1

```
10 REM MOZAIC BASIC
20 FOR F = 50000 TO 50980
30 POKE F,INT ( RND * 255+1 ) : NEXT F
```

TABLE 2

10	ORG 40000	;START AT 40000
20	LD BC,201	;LOAD BC REGISTER WITH 201
30	LD DE,40000	;LOAD DE REGISTER WITH 40000
40	LD HL,22528	;LOAD HL REGISTER WITH 22528
50	LOOP LD A,(DE)	;LOAD A REGISTER WITH CONTENTS OF DE REGISTER
60	LD (HL),A	;LOAD CONTENTS OF HL REGISTER WITH THE A REGISTER
70	INC DE	;INCREMENT (INCREASE) DE REGISTER
80	INC HL	;INCREMENT (INCREASE) HL REGISTER
90	DJNZ LOOP	;B=B-1:IF B<0 THEN GOTO LOOP
100	LD BC,201	;LOAD BC REGISTER WITH 201
110	POOL LD A,(DE)	;LOAD A REGISTER WITH CONTENTS OF DE REGISTER
120	LD (HL),A	;LOAD CONTENTS OF HL REGISTER WITH THE A REGISTER
130	INC DE	;INCREMENT DE
140	INC HL	;INCREMENT HL
150	DJNZ POOL	;B=B-1:IF B<0 THEN GOTO POOL
160	LD BC,201	;LOAD BC REGISTER WITH 201
170	POLO LD A,(DE)	;LOAD A REGISTER WITH CONTENTS OF DE REGISTER
180	LD (HL),A	;LOAD CONTENTS OF HL REGISTER WITH THE A REGISTER
190	INC DE	;INCREMENT DE
200	INC HL	;INCREMENT HL
210	DJNZ POLO	;B=B-1:IF B<0 THEN GOTO POLO
220	RET	;RETURN TO BASIC
230	END	;END

THE MACHINE CODE MUST BE ENTERED USING AN ASSEMBLER. LABLES LOOP, POOL & POLO ARE TO BE ENTERED AS LABLES. TO EXECUTE CODE USE RANDOMIZE USR 40000

BRIEFLY..

PLEASE NOTE: Just because the telephone answering machine is on at the PRETORIA OFFICE of INFORMATION ENTERPRISES, this does not mean that they are no longer around. As a direct result of the bulk orders that they have received, the staff of the Pretoria office are no longer as much as before. You are therefore requested to phone the factory in Bophuthatswana, where there will always be someone to help you! (except between 1-2 when they are closed for lunch).

Telephone number of the factory

0146-30774

6



the best alternative

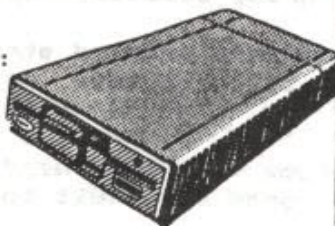
I.E. now has the following disk drives in stock. The drives are a real bargain - so if you are looking to expand your system by adding the power and speed of a disc drive to your spectrum - then now is your chance.

3.5" DS/DD CHINON, uncased Drives for R200.00!

These drives can format up to 360K of information. What more could you want?

The drives are suitable for:

- * Sandy QBoard
- * Beta Interface
- * Disciple Interface
- * Plus D Interface



Don't let this chance slip you by - and expand NOW!

If you purchase the UNCASED drive, then you will need a cable for the drive to the interface. I.E. has these cables ready made up for:

1M (one meter)	R24.00
2M (two meters)	26.00

For those of you who do not want to be saddled with the hassels of installing a drive, I.E. has

DS/DD MITSUBISHI CASED Drives, with built in Power supply, ON/OFF switch, Format capability of 760K, with cable

for only	R479.00
P&P	6.00



LOAD 48K PROGRAMS IN

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WITH THE **PLUS D** DISC/PRINTER INTERFACE

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This interface offers you the following:

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- * From MGT - the designers of the Disciple - supported by INDUG - the Disciple Users Group.

Price only	R249.00
P&P	2.00

7



POWER Savings

POWER SUPPLIES POWER SUPPLIES POWER SUPPLIES

Does your power supply take a lot of punishment? Does it look as if it is going to fall apart at any moment? Don't let this happen to you - get yourself a backup power supply now and be prepared.

Do you own a Z88 and wish that you could just plug it into the mains and save on your battery power? Now is your chance to get it and save.

I.E. has managed to get hold of some very special switchable power supplies at very reasonable prices. Just look.

1 AMP and .5 AMP, switchable between 3/6/9/12 volts

Suitable for Spectrum	Suitable for Z88
1 AMP	.5 AMP
R39.00	R21.00
1.50 P&P	1.50 P&P

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ARE YOU RUNNING SHORT OF ZX PRINTER PAPER?

Now is your chance to stock up and not to be caught with your pants down!!!??

I.E. is offering SILVER ZX PRINTER PAPER at a very special price for the month of May, so take advantage of this offer and book you paper now. Stocks are expected to arrive on 20 May 1988 from England.

Special Price for 5 rolls	R12.50
Normal Price for 5 rolls	35.00
You save	22.50!
P&P	3.00

Believe it or not, I.E. is the cheapest in the whole of South Africa for TRACTOR FEED PAPER! If you do not believe it then feel free to price around and see what you come up with!

2 000 sheets of tractor feed paper	R34.50!
P&P	4.50

NEWS & VIEWS

THE BASIC ALTERNATIVE

L. GROENEWALD

Sooner or later most Speccy owners try to program their machines (normally when the old faithful joystick decides to join the great IC in the sky.) Often the aspiring programmer is disappointed by his/her efforts. There are many reasons why a program can be disappointing (bad planning, untidy coding even not understanding the real requirements.) SPECTRUM BASIC is often also not the ideal language to use.

Although BASIC is relatively easy to learn, it does suffer from many shortcomings, to name a few:

A. As most BASIC's use an interpreter program, execution speed is slow.

B. BASIC does not always have the necessary command structures (for example the IF...THEN...ELSE...or ON ERROR GOTO...) to create really tidy and fast programs

C. The control flow in BASIC can also become very "confused" when there are many GOTO's and GOSUB's. This makes such a program difficult to change without major changes to the program.

These shortcomings can however be overcome by various means, a few of which I will mention:

BASIC

EXPANSION

The use of BASIC expansion programs that add commands and functions to the Speccy's BASIC. Generally these programs also feature optimized routines that execute faster than Speccy BASIC. A good example of such a program is BETA BASIC. This is often the easiest route to follow as most programmers all ready have a workable knowledge of BASIC.

The disadvantage is that these programs generally use a big chunk of memory.

COMPILERS

The other BASIC option is to use a BASIC COMPILER. This does not generally add new functions or control structures but can in certain circumstances speed up BASIC programs (by as much as 20 times.) A word of warning, many compilers produced were difficult to use and also could not compile all the Spectrum commands. So, make sure the one that you buy has all the functions you require. Compilers are not necessarily memory efficient, however after compiling, you are only left with the compiled code and, the compiler is discarded.

MACHINE CODE

Many Spectrum users try to steer clear of machine code. Unfortunately many m/c programmers have made m/c programming sound as though one needs a BSC degree before attempting m/c programming.

This is not the case, and there are many good books and articles on m/c programming, and it can be mastered in a relatively short time by anyone really interested.

M/C routines can be used to replace slow sections of BASIC, or can be used to create new command structures. Many m/c routines are published in magazines and can be used without a great deal of knowledge required.

Machine code routines are also sold as library routines on tape which the programmer can use (Example SUPERCODE.) The required routines are loaded along with the BASIC and normally used from BASIC with a RANDOMIZE USR #####. Library programs of this nature are normally well documented and easy to use without any m/c knowledge.

Alternatively an assembler program may be used to create m/c. (see latter.)

UTILITY PROGRAMS

Many utility programs exist that could save a programmer a lot of tedious work. These programs reduce the amount of general programming knowledge required when

only certain results are required. Often the programmer is trying to reinvent the wheel when he could be driving a Lamborghini. Examples of these programs are MASTERFILE, TASHORD, OMNICALC and THE ARTIST. These programs can be very versatile when used correctly.

PROGRAMMING LANGUAGES

The other option open to the programmer is to use a high level (H/L) language other than BASIC.

Spectrum owners do not always realise how many other computer languages their humble machines can run successfully. Every computer language has inherent advantages as well as disadvantages. There simply is no all-purpose universal language (although many languages claim to be just that.)

It is beyond the scope of this article to discuss the pro's and con's of the various languages but we will mention a few of the popular languages that run on the Speccy.

BETA BASIC :

Not really a new language as it is still BASIC but such a powerful implementation of BASIC it necessitates mention. Various versions now exist, the latest being ver 4. Supports PROCEDURES a'la most H/L languages. BETABASIC adds many new functions and command structures to the Speccy BASIC. (Newsletters May 87, Oct 87)

LOGO :

Logo was designed to provide an introduction to programming with particular emphasis on simplicity. Logo was also designed to aid in the development of logical thinking and is today widely used in school to teach programming.

It is a procedure orientated language, but is most widely known for its TURTLE GRAPHICS. A must for someone with young children, but of limited use for serious applications.

C :

C is generally considered to be a high level language, however it supports a few low level commands. Developed by Denis Ritchie for UNIX based machines, it is a compiled language, therefore fast. It features excellent data structures and a fairly structured control flow. Due to its portability C is one of the fastest growing languages today. A vast library of C routines exists. C is normally used in multi-user systems.

PASCAL :

Pascal is a language that is generally compiled, (therefore fast) and is also procedure orientated. It's format forces structured programming (a principal I do not always subscribe to.) Pascal has very powerful file handling capabilities. When no machine dependant code is created, PASCAL can be very portable. PASCAL is classified as a scientific language. (Newsletter Oct 86)

FORTH :

Forth was developed by Charles Moore to control radio telescopes. It is unusual in that it uses reverse polish notation and a programmer controlled stack for calculations (a'la HP calculators.) Forth is extremely fast and produces very memory efficient code.

There are various implementations on the Speccy available, some easier to use than others.

ASSEMBLERS :

These are not languages, but are used to translate machine code mnemonics to machine code. Assemblers allow the programmer to use words (mnemonics) to create machine code. They also eliminate a lot of the problems of hand assembly by allowing the use of labels instead of absolute addresses. Most assemblers feature debugging aids. If you are serious about m/c programming, shop around for a good assembler.

This is not by any means a complete list of languages, or options for the Speccy programmer but, I hope I have provided some food for thought. I plan to provide some more information on some of the languages in the future, but how about some club members pitching in and helping?

Software

Update

NEW RELEASES

SOFTWARE TITLES ON ORDER. Comming into stock

TITLE	STARS	PRICE	P&P
-------	-------	-------	-----

Match Day II	7	R33.99	1.80
Trap Door	8	9.99	1.50
Deviant	9	9.99	1.50
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Harrier, Commando, Frank
Bruno's Boxing Airwolf

Predator is great. It's fast and
violent and very tricky indeed.
The atmosphere of the film has
been captured well, with lots of
victims looking all yucky and
dead.

Deviants is a game that
would be more than
acceptable in the over £7
area, and is a real bar-
gain in on budget.

Anybody
out there
working?..

ME...

STAR RATINGS FROM SINCLAIR USER

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QL

Speed Screen
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129.99	2.00
85.00	2.00

If you want any of these titles, then book
yours now, so that you are not dissapointed
because you orded to late and I.E. is out of
stock!

I'VE GOT THIS PROBLEM..

BEGINNERS OF ALL AGES

Are you new to computig? Wil jy rekenaar
klasse in jou eie sitkamer bywoon?

Now I.E. brings you all the lessons that
you could ever want in the comfort of your
sitting room! Now you can have all you
could ever wish for to improve YOUR SKILLS -
no matter what your age! Don't lose out,
take advantage of I.E.'s cheap prices, and
invest in your future! Roer nou en verbeter
jouself!

COMPUTING	SP. OFFER	P&P
Learn advanced BASIC programming on the Spectrum	R39.50	2.00
USE AND LEARN (your perfect Spectrum Starter kit. 25 BASIC programs you can use immediately)	16.99	2.00

1 ()



THE REPAIR MAN



REPAIRS

Due to the dissatisfaction of some of the members of the Club, I.E. has decided to stop offering the REPAIR SERVICE that they have been offering for some time. Because they are stopping the service, this does not mean that you will be stuck with dead equipment, just phone them and they will refer you to someone who will be able to help you.

This DOES NOT apply to those of you who have equipment which you have purchased from them and is still under guarantee. If you have problem equipment which you purchased from I.E. then you must return it to them. If you have to return a faulty item to them, PLEASE USE THE STREET ADDRESS. The address is : 417 Milner Street, Waterkloof, 0181.

This is just one of the letters that I.E. Has received in connection with repairs. It was received from one of the Club members parents.

"While I do understand that you do not actually do the repairs yourself, I feel that the kind of service that Peter has received from your organisation is very unsatisfactory"

From: R. Lupton

BOOKS

Beyond simple BASIC - DELVING DEEPER into your ZX Spectrum	19.99	1.50
Programming your Spectrum	19.99	1.50
The Century Computer programming course for the ZX Spectrum	29.99	2.00
Creating ADVENTURE programmes on the ZX Spectrum	16.99	1.50

WORD PROCESSING

SP. OFFER P&P

Tasword II with TasTutor This is the ideal package for both beginners and proffessional users. It teaches all that you need to know about WORD PROCESSING right from step one.	R28.50	2.00
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WHERE?
RECENTLY?
WHAT'S?
MY?

If you get one of these packages, then you will not have to ask the dubious Dr Rupe!

(but Dr. Rupe has the answer)

Micro-Aid

MEMBRANES MEMBRANES

Those of you who have had problems with your keyboard as a direct result of playing to many games, you will know that I.E. has not had membranes for the Spectrum for a VERY long time! Well, your wait is over! I.E. has recieved new stocks of the membranes, and we suggest that you stock up so that you are not caught again.

Quantity	1	2	3
Spectrum membranes	R32.50	R59.98	R82.50
P&P	2.00	2.50	3.00

REMEMBER that I.E. stocks a full range of parts at very REASONABLE PRICES FOR THE SPECTRUM, QL, AMSTRAD PC.

For those of you who are fairly handy with your hands, I.E. has full repair manuals for DO-IT-YOURSELF REPAIRS:-

Spectrum Repair manual	R16.00
Interface I and Microdrive	10.00
ZX Printer	8.00
QL	16.00
Spectrum 128	16.00

MACHINE CODE

Software.

With all this talk of MACHINE CODE over the past couple of months, you are probably starting to wonder as to what exactly is available. Well here is a list of utilities that might help you with getting into programming in MACHINE CODE.

Title	Price	P&P
MCODER (translates BASIC prgrams into MACHINE Code)	R32.50	1.50
DEVPAC 4 Assembler/Debugger	50.99	2.00
ZEUS Assembler	19.99	1.80
MONITOR Assembler/Disassembler	19.99	1.80
SPDE Disassembler + Editor	19.99	1.50
LASER GENIUS	59.99	2.00

BOOKS

Complete Machine Code Reference Guide	19.99	2.00
---------------------------------------	-------	------

Spectrum lessons

At last MACHINE CODE!

A BEGINNER'S COURSE IN Z80 MACHINE CODE - part 2

By D. Roux

The program in last month's article should draw several vertical stripes on the screen. After typing NEW, the code will still be intact in memory. Try PEEK if you don't believe me. To save it on tape you'll use SAVE "name" CODE 65000,15 and to load it from tape you'll use LOAD "name" CODE 65000,15 or LOAD "name" CODE. The CLEAR 64999 instruction in line 5 simply lowers RANTOP - a protection against NEW. If you leave it out and enter NEW, the code will be lost.

Now we move on to more important stuff!

*Using your assembler

Get to know your assembler package. Read the manual through carefully. Even if you do not understand everything, there are two things which are absolute requisites:

- you must know how to enter mnemonics (commands)
- you must know how to compile (assemble) the code, so that it is converted to numbers in memory.

*Learning the mnemonics

This series is going to teach you how to program in Machine Code mnemonics. The numbers I use are in all cases decimal. Some of the old assemblers will accept numbers only in hexadecimal format - you will need to convert them.

I am skipping quite a few mnemonics and their branches. The main purpose is to get you comfortable with the language and to lay a sturdy foundation for further study.

*Binary numbers

I familiarized you with addresses in last month's article. Unfortunately, it is impossible for the computer to actually store a decimal number on an address circuit. An electric current can only be on or off (0 or 1) - and believe it or not, computers work with electricity. So how is it done? Easy. The binary system is used. Humans count up to nine before they switch to ten. In binary, you count up to 1 before you switch to ten.

Therefore, the first five positive numbers in binary look like this:

1 10 11 100 101

while the first five positive numbers in decimal look like this:

1 2 3 4 5

12

The computer has to do the conversion. You enter the digits in decimal, but by the time your 4 reaches the "brain" or CPU of the computer it has been changed into a 100! How is this conversion done? I'll show you a sneaky short-cut: pay close attention.

Each 0 or 1 in a binary number is called a bit. The maximum amount of bits your Spectrum can cope with is eight. The biggest number, thus, that can be stored at an address is 11111111 (binary) which equals 255 (decimal).

Now, let us suppose we want to convert the binary number 01000111 to decimal. We write the following on a piece of paper:

128 64 32 16 8 4 2 1

We have eight numbers, starting at 128, each one being the previous one divided by two.

Beneath these numbers, write your binary number.

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

Look at the numbers above all the 1's. They are: 64, 4, 2 and 1.

Add them together:

$$64 + 4 + 2 + 1 = 71$$

The decimal counterpart for 01000111 is 71. Try converting 00000111 - you should get 7.

What's the use of all this? It will become clear later.

*All about ORG

The mnemonic ORG is derived from ORiGiN. It is always the first command in an assembly program and it tells the assembler where in memory you want the code, in byte-form, stored. For storage to start at address 50000 you would use

ORG 50000

Need I say more?

*The registers

Look closely at the following letters and their arrangement:

A	F
B	C
D	E
H	L

Remember that A always stands with F, B always stands with C, D always stands with E and H always stands with L.

These letters are the names of a concept unique to Machine Code - the registers. Registers are distant relatives of Basic variables. Each register can store a decimal number in the range of 0-255. To store numbers larger than 255, we use register pairs. The three register pairs are BC, DE and HL. Other combinations won't work.

There is no AF register pair.

A is a very important register. It stands for accumulator, and most sums and decisions are made using it.



F is the flag register and is rarely used.

We also find the IX and IY registers. I am not going to discuss them.

*Loading with LD

LD is a mnemonic standing for Load. It resembles the Basic instruction LET and is always used with the registers. To load a number, say 12, in a register, say the B register, we use

```
LD B,12
```

e.g. load 12 into B. If we wish to store a large number we use a register pair. Suppose we wish to store 16384 in DE:

```
LD DE,16384
```

If we wish to copy the contents of one register to another, say the contents of A to D, we use

```
LD D,A
```

which is roughly equivalent to LET d=a in Basic. Unfortunately, it is impossible to copy the contents of one register pair to another in one step. We go about it in a rather roundabout way. Say we wish to copy the contents of HL to DE, we use

```
LD D,H  
LD E,L
```

LD can also be used like POKE in Basic. When we do this, it is safest to work only with the HL register pair and A register. They were designed to facilitate this function.

To store the number 20 at address 40000 (e.g. POKE 40000,20 in Basic) we use

```
LD HL,40000  
LD (HL),20
```

The brackets mean contents of address, so LD (HL),20 means load the contents of address HL with 20, and HL is 40000.

*RET to retire

RET stands for RETire and is always found at the end of a program or subroutine. RET, as we are going to use it, means "return to Basic"

*The first program

A Machine Code routine which stores the number 34 at address 30000.

```
ORG 50000  
LD HL,30000  
LD (HL),34  
RET
```

The program will be stored at address 50000 (see ORG). Run it using RANDOMIZE USR 50000 after compiling it and exiting the assembler. The computer should instantly retort with OK 0:1. Check if the program worked with

```
PRINT PEEK 30000
```


to see if 34 was indeed stored at address 30000.

15

Here follows an exercise - write a Machine Code program which picks up a number at address 40000 and copies it to address 40100. Check if you are correct:

```
ORG 50000
LD HL,40000
LD A,(HL)
LD HL,41000
LD (HL),A
RET
```

To see how this works: compile it and exit the assembler. Type POKE 40000,20 Run the Machine Code program with RANDOMIZE USR 50000 or whatever your ORG address is. Now type

PRINT PEEK 41000

which should give you 20, since the contents of address 40000 was copied to address 41000.

Another exercise: write a program which exchanges the byte at address 40000 with the byte at address 40001.

Next month, the answer to the exercise and much more...

ATTENTION

AN IMPORTANT ANNOUNCEMENT TO ALL,

COMPUTER CLUB

Due to the enormous expansion of the Club, both internally and externally with new members, we are unfortunately forced to introduce SUBSCRIPTION FEES again. This will be used to cover printing costs mainly. Just because you now have to pay to be a member of the Club does not mean that you are just an ordinary member - in fact you will become a VIP member with many, many more special offers just for you! At the moment I am busy negotiating with various people including Printer suppliers, Stationary suppliers and of course the Marula Sun for special discounts for members and special vouchers when visiting the Marula Sun! To be able to take part in these very special offers, you must subscribe to the Club before AUGUST 1988. Members will still of cours receive the newsletter, if you do not subscribe, you will unfortunately fall of our mailing list! So if you care about the newsletter and the Club, then fill in the Subscription form immediately!

Using DISCiPLE with "The Writer" by AJ Erasmus

LOAD & SAVE

Replace the "run" program with the following BASIC program:

```
4 LET a=USR VAL "47270" :IF a>10 THEN LOAD d1"PRMERGE"

5 BORDER NOT PI :CLS :POKE VAL "23617",NOT PI:
  INPUT "Drive number:":dr :CAT dr!:
  PRINT #NOT PI:AT NOT PI,2:"Press any key to continue":
  PAUSE VAL "1" :PAUSE NOT PI :RUN

6 POKE @6,1 :POKE @11,NOT PI :POKE VAL "32000",VAL "207" :
  POKE VAL "32001",VAL "49" :POKE VAL "32002",VAL "201":
  RANDOMIZE USR VAL "32000" :CLEAR VAL "24999" :
  BORDER NOT PI :PAPER NOT PI :INK 5 :CLS :
  LOAD d1"WRITER"CODE VAL "47270" :RUN
```

One can get a catalog by using the "EXT B" (RETURN TO BASIC) command from within "The writer".

PRINTING

The modifications for LOADING and SAVING enables one to print a document with the "PRINT MERGE" program using STREAM 3.

If one wants to use the normal PRINT command one has to make the following modifications:

1. Install "The Writer" as if you are using the Euroelectronics Interface.
- 2 Type in the following program and run it. (Your disk with the installed Writer must be in Disc drive 1)

```
10 CLEAR 47269:
  LOAD d1"WRITER"CODE
20 LET start=47714:
  LET chksum=0
30 FOR a=start TO start+24:
  READ b:
  LET chksum=chksum+b:
  POKE a,b:
NEXT a
40 IF chksum<>3840 THEN PRINT "ERROR in DATA" :STOP
50 POKE 47481,116:
  POKE 47482,186
60 ERASE d1"WRITER" :
  SAVE d1"WRITER"CODE 47270,18110
```

Push your Sinclair
to the limit

**SOFTWARE &
PERIPHERALS**



A new best hardware **MAKE YOUR BUSINESS SUCCESSFUL**

hits town: Star LC-10.

INTRODUCING the new multi-font LC-10 from STAR, which is now printing at a realistic 144 characters per second!!

As with all Star printers, the LC-10 can handle single sheets as well as continuous stationery using the standard push tractor which, with the secured lid, offers all the benefits of low form tear off!

The multi-font LC-10 prints in near letter quality at an impressive 36 cps in NLQ Elite mode and produces excellent quality printing better than some of the 24 pin printers around today!

The LC-10 also comes with the revolutionary PAPER PARKING facility which means you can use single sheets without having to remove the tractor paper! There will also be an optional low cost cut sheet feeder available.

The multi-font LC-10 has eight (8) resident fonts, six (6) of which are selectable from the front panel, all of which are available in both proportional spacing and condensed mode, as well as Pica (10 cpi) and Elite (12 cpi), all of these pitches can be selected from the simple to use front control panel.

The STAR LC-10 is the printer that has been developed for everyone - whether at home, at school, at work - who is looking for a budget-priced printer with no cutbacks in performance or facilities. The LC-10 is just about the only printer in its price bracket that offers first class printing, an enormous range of printing possibilities, easy operation and a host of extras costing nothing extra. See for yourself!

NORMAL PRICE	R799.00
SPECIAL INTRODUCTORY PRICE	749.00
P&P	14.00

17

If you want any more details on any of the printers advertised in this article, please send a SAE + R1 to I.E. and they will gladly send you further details.

Are you thinking of expanding your system, but have a slight problem with finances?

We'll look at these BEST BUYS UNDER R1000.00 and see how these prices grab you!

Are you superstitious? Now is your chance to make that dreaded FRIDAY 13th a day of good happenings - the day you purchased your new STAR GEMINI PRINTER FOR ONLY R429.00. Don't let superstition get the upper hand - show it who is the BOSS!

PRICED BETWEEN R400 and R1 000

MODEL	PRICE	P&P
STAR GEMINI (see sp. offer)	R 699.00	14.00
STAR LC10 (see sp. intro. off)	799.00	14.00
SEIKOSHA SP1200	649.00	14.00
SEIKOSHA SL80 (24 pin)	999.00	14.00
EPSON LX800	699.00	14.00

For those of you who do not have quite such a tight budget, here are I.E.'s choice of best buys over R1 000.

PRICED BETWEEN R1 000 and R1750

SEIKOSHA MP5330 132 coll	R1499.00	14.00
EPSON FX800 80 coll.	1299.00	14.00
EPSON FX100 132 coll	1699.00	14.00

FEATURES OF THE EPSON FX SERIES:-

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Z88-

LEARN BASIC PROGRAMMING

Have you just got yourself a Z88 and just itching to use this wonderful machine to its full potential?

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STOCKS ARE VERY LIMITED ON THIS TUTORIAL SET,
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NORMAL PRICE	R45.99
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(A-Z in BBC BASIC

NEWS-HOUR
South African alternative

BACKUP ALPHA

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

features include:- TOOLKIT, MENU DRIVEN BREAK INTO PROTECTED BASIC, FASTLOAD OPTION, just to name a few.

SUPPORT LOCAL HARDWARE and get your BACKUP ALPHA NOW!

SPECIAL PRICE	159.00
P&P	2.00

WE'D RATHER SELL'EM THAN COUNT 'EM

I.E. is busy clearing their stock at the moment and have one, yes only one, of each of the following titles in stock. I have reached an agreement with them and the prices have been reduced by 10% just for you! Remember, its first come first serve!

Title	Price	P&P
Android Two	15.99	1.50
Armageddon	16.99	1.50
Agent X	12.99	1.50
Astro Blaster	14.99	1.50
Backpackers Guide to the Universe	23.75	1.50
BC's Quest for Tires	29.99	1.50
Black Hole	19.00	1.50
Bristles	23.70	1.50
Bozy Boa	14.50	1.50
Buggy Blast	21.80	1.50
Cosmic Wartoad	24.99	1.50
Curse of Sherwood	12.99	1.50
Chemistry (Longman)	16.99	1.50
Centibug	15.50	1.50
Classic Adventure	15.99	1.50
Cop-out	16.99	1.50
Count About (educational)	19.50	1.50
Crack it Towers (quiz)	37.00	1.50
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Hocus Focus	35.00	1.50
Quest for the Holy Grail	18.00	1.50
How to be a hero	11.99	1.50

Just in case the last item has been taken by the time that we receive your order, please give a second choice which has the same value of your first choice.

For Sale: ZX Spectrum 48K, DK'Troniks keyboard
Data Recorder, 20 games for only R350.00.
Phone Herman Minny at (W) (283721)X424 (012)

For Sale: Zenith monochrome monitor, Sinclair
QL, double disk drive, interface, Star Printer
120 C.P.S., printer interface. Complete
package for only R1700.00. Phone (012) (W)
835289. Ask for Dr Jon Seeliger.

QUESTIONS

Simon Evans of Edenvale has sent us a map on
the adventure game THE HELM, as well as some
tips. If you would like to receive this,
send R1 + SAE to the CLUB.

Do you have any tips and maps for the adventure
SORDEONS SHADOW from Beyond? Simon is at a
complete loss as to what he has to do. Please
help.

In the FEB. newsletter there was an enquiry
about whether the DISCIPLE INTERFACE was
compatible with the INTERFACE ONE from
Machine Code. In a review in ZX computing it
states that the following. "Unlike the OPUS
disk drive, the DISCIPLE INTERFACE is fully
compatible with INTERFACE ONE and MICRODRIVE
in BASIC and MACHINE CODE since the hook codes
are the same.

I.E. is not psychic, and therefore does not
always know exactly what you as members of
the Club, and I.E.'s customers, want.

They have indicated to me, that they would
appreciate it if you would just drop a note
in the post indicating what software and
books you would like them to import, if
possible for you. Remember that you must
include details like PUBLISHER/SOFTWARE-
HOUSE and ANY ADDRESSES if you have them.
This also applies to hardware that you
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**Gizmo gone bonkers? Can't get your thingy
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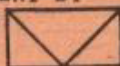
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Spectrum +	8.00	14.50
Spectrum + 2	10.00	13.80
Spectrum + 3	11.90	14.50

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