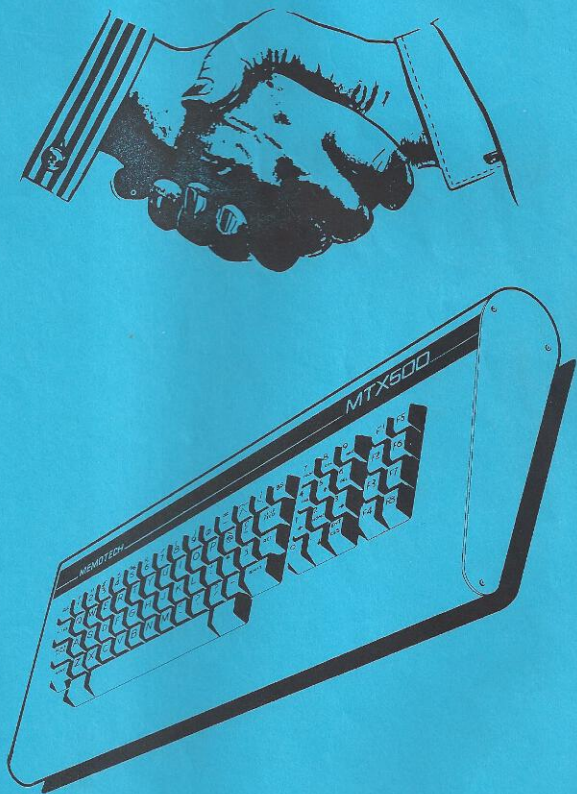


# memopad

Memotech Computer User Club Magazine



MEMOTECH  
**MTX**  
SERIES



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## EDITORIAL

Most members who subscribe to P.C.N will have been happy to see that 3 advertisements were placed in one edition ! They will have also noticed that for some strange reason there was an article on the MTX in the same edition ..... The following edition contained a two full pages on the Club and Memotech software. This advert was very successful, and I would like to welcome all the new users who are reading this as a sample magazine and hope that they realise the value that MEMOPAD represents to the MTX user.

It is Memotech bashing time again. I am thoroughly disgusted that the Company has made no attempt to solve the problem of the new User Manual. It is now standard procedure, whenever I ring them or they ring me, to mention this subject. I don't care what the original difficulties were, six months have elapsed, and anyone with a grain of sense could have resolved the problem by this time. It is time that they pulled their head out of the sand and realised that there are a lot of users waiting, and indeed, depending on the new manual to help them gain a better insight into the workings of the MTX. If it wasn't for the fact that the publisher has paid for the manuals, and is having to sit on them until such time as the courts resolve the problem, I would have written one myself and published through the original publisher !

After talking to a few of the leading software houses it has become apparent that they are not happy to spend time converting programs due to the 'mediocre sales' existing software houses have experienced. Ocean have shown an interest, but they have asked how many people would buy DALEY THOMPSON'S DECATHLON, subject to the response they will then decide yes or no. One title can cost as much as 1200 pounds to produce, and as yet, not many of the existing titles have shown a profit. This is very sad. There are, of course, arguments as to why etc but I mention this as an answer to those of you who do ask why other software is not available.

I must apologise to the members who haven't received the CRIB CARD yet. We totally underestimated the demand for this handy little reference, and sold out within the first week. Stocks are expected within the next few days and they will be posted as soon as available.

The Advanced Programming ... book is going ahead and we will advertise it as soon as we receive stocks. The book is in its final preparation and will go to the printer within the next couple of weeks.

I have been floating around the country these past few weeks talking to software houses and hardware manufacturers about the prospect of considering the MTX. If I have not been available for that urgent query, I do apologise but a lot of work goes on in the background which we don't shout about.


Once again I must ask you to use the phone as a last resort. If a letter will do please write. Phone calls take up a lot of time, and valuable work is delayed through this. We are always willing to help with those urgent requests for information, but such questions as "What new software is due out next month ?" or "Is Memotech still in business ?" etc can wait, and be answered by letter.

Many thanks for your letters of support ( due to editorial issue 7 ), it is most appreciated.

The Spectrum convertor will be ready very shortly, and all enquiries should be vectored toward Memotech. The cheapo disc drive is available from this week, and a review is contained within these pages.

## HI SCORES

HIGH SCORES : HIGH SCORES...Can you do better ??



GOLDMINE	8,995
ASTRO-PAC	147,180
BOUNCING BILL	14,184
SNAPPO	111,670
KNUCKLES	999,999+
NEMO	17,610
COBRA	8,924
MISSION ALPHATRON	50,020
TAPEWORM	126,415
TOADO	126,332
POT HOLE PETE	75,080
MAXIMA	271,000
STAR COMMAND	140,430
PHALD	26,000
OBOLOIDS	46,850
KILOPEDE	61,504
3D TACHYON FIGHTER	6,490
CONTINENTAL RAIDERS	106,240
BLOBO	148,283
QOGO 2	20,220
MINEFIELD	1,040
WILLI-WORM	10,000
TURBO	7,600
THESEUS & LABRYNTH	609
AGROVATOR	179,777
DOG FIGHT	315
FIREHOUSE FREDDIE	19,130
QOGO	21,360
ARCADIANS	15,100
MISSILE COMMAND	11,350
LITTLE DEVILS	8,070



Daljinder Singh
Dave Smith
Alan Dobson
Richard Franks
Sally Street
Richard Nash
Richard Nash
Patrick Wyles
Tammy Brooks (age 12)
Jon Andrewartha
Alan Hill
Lawrie Wemyss
Ian Nichols
Sally Street
Sean Haverty
Jon Andrewartha
T.Eriksson
Sean Haverty
Elizabeth Mahon
Trefor Smith
Richard Nash
Sally Street
Richard Nash
Richard Nash
Richard Franks
Richard Franks
T.Eriksson
T.Eriksson
Richard Nash
Richard Nash
Richard Nash

Can you beat these high scores ? Do you have a high score for a game not mentioned above ?

P.S. Andrew Barrett scored 76768 on Blobbo and he is only 11 years old. Embarrassing isn't it ?



## GENPAT Opening Times

MONDAY .....	9-15am	till	6-00pm	7-00pm	till	10-00pm
TUESDAY .....	9-15am	till	6-00pm	7-00pm	till	10-00pm
WEDNESDAY .....	CLOSED	ALL	DAY	CLOSED	ALL	EVENING
THURSDAY .....	9-15am	till	6-00pm	7-00pm	till	10-00pm
FRIDAY .....	9-15am	till	6-00pm	7-00pm	till	9-00pm
SATURDAY .....	9-30am	till	4-30pm	CLOSED	ALL	EVENING

SUNDAY DEFINITELY NO PHONE CALLS ON THIS DAY PLEASE !

## HARDWARE REVIEW SPEAKER/SYNTAXsoft

The speech synthesiser, available from Genpat, plugs into the port on the left side of the MTX, and is presented in a well made plastic casing. A well thought-out point is that when plugged in, the unit is at the same level as the computer, so no strain is imposed on the edge of the PCB or the connections.

Before you can start using the unit, it has to be connected to an amplifier and speaker via the 3.5mm jack-plug socket on the side of the casing. I have mine connected to an Archer mini amplifier/speaker unit, available from Tandy under part No. 2771008 at #8.95. As this works so well, I have not tried any other set-up.

A simple routine, followed by the appropriate data, is now all that is needed to add a new dimension to your programs. The routine is provided on tape in both Basic and Assembler along with a short demo program. Also provided is a four page fact-sheet giving all the data (in decimal and hex) for programming the allophones, plus some guidance notes on when to use particular sounds to produce the required effect. This fact-sheet is clear and easy to follow, but, as always, it is only through use that you become proficient.

It took me no time at all to start producing speech, but a certain amount of trial and error was needed until I began to think of words as their component sounds, rather than their spelling. As I mentioned above, the speech is generated via allophones and I soon learnt which to use where.

The voice produced is male (apologies to the ladies?) and not unlike a Dalek. It is certainly easy to understand, to the point that I have yet to convince my 4 year old that there isn't a man in the black box!

In conclusion, this is an excellent piece of hardware, and adding speech to programs is a satisfying way of broadening the scope of a home computer. I certainly won't part with mine! ★

Clive Taylor

## REVIEW

## EMERALD ISLE LEVEL 9

EMERALD ISLE is an adventure game from LEVEL 9 Computing and comes up to their usual high standard.

It is unfortunate that they have not allowed the MTX owner the facility of graphics but the descriptions are very good. The game is set in the ominous Bermuda Triangle and you, the pilot of an aircraft, crashed onto the island. Only one person is allowed to leave the island and he must be either King or Queen. You get three lives which is all to the good because ghouls and spiders abound - I even managed to get run over by a train!

You have to collect various items: coins, a lamp, a DIY manual etc., and there are strange letters lying around like a "n" carved into a lawn.

It is a very good game guaranteed to tease your intelligence. Good comments i.e. 'Pardon?', 'Eh?', 'Silly!', and 'Do WHAT with a seamstress?' are

scattered through out the program and it has obviously been written by someone with a sense of humour. Emerald Isle comes with a SAVE & LOAD facility and a map is included within the package. If only I could to the desert island before the giant spider eats me .....

We, as a family, rate the game 100% better than Murder at the manor, and on a par, if not better, than Alice. ★

CHRIS JOHNSON.

---

**REVIEW****MEMOSKETCH****SYNTAXsoft**

The advertising says 'unbelievable' but this is an understatement. Having struggled to design and program a full screen - with little success- this package is the answer to my dilemma and more than fulfils its promise. Memosketch allows even the novice to produce multicolour drawings to really professional standards with ease - the only programming needed is LOAD "MEMOSKETCH".

The program is supplied on tape with a separate instruction manual. The manual states that the software is complex and that it follows that the instructions are also complex . While this is undoubtedly true of the program, the instructions are clear and easy to follow. Loading and operating Memosketch cause no problems.

Two demonstration screens are included on the tape and it was these that I looked at first. A peep at these upholds the claim of 'unbelievable' and indicates what can be achieved so easily - the next step is to have a go yourself.

The instructions do seem daunting at first but within five minutes of hand-on use operating the package is simplicity itself. The program is controlled from on screen menus and an entire screen can be drawn using the key-pad or joystick. The only other key-presses are single key responses for saving or loading etc. The actual designing takes place on an edit screen which displays a magnified grid representing an area of 24\*24 pixels on which the cursor is positioned. Paper and ink colours are selected from a palette displayed on another part of the screen, and on this same screen the colours that are currently in use are displayed. The co-ordinates of the area being designed relative to the whole screen are also displayed with an actual size display of the area being edited is another useful touch.

There are several other features included in the package such as a zoom in / out, screens can be loaded, saved, and dumped to a printer. An interface routine is given within the manual that allows screens to be incorporated into programs, or used as a title screen.

Memosketch is everything it is claimed to be and more ! It deserves to be THE number one seller, and this is unreservedly a "Rave" review. My congratulations to all involved in the production of this brilliant piece of software ... and to fellow members: BUY IT! ★

CLIVE TAYLOR.



## REVIEW

## EDASM

## SYNTAXsoft

The literature packaged with EDASM claims that it is "one of the most advanced Editor/Assembler packages currently available for a tape based micro", having a healthy scepticism of all advertising, especially that produced by microcomputer manufacturers / software houses, I decided to look at the package in depth.

I'm happy to say that I have been more than pleasantly surprised with the standard of the software produced. EDASM has features that I have previously only seen on disc based micros. If you have used the CP/M macro assembler M-80 then the features that are included in EDASM will be familiar to you.

One of the most infuriating parts of buying new software is usually the problem of making a backup copy in case the tape breaks or the dog chews it, as most software houses are so paranoid about piracy that they cause the rest of us untold hardship, not so in this case, a backup is very easily made, perhaps just as well because once you start using this package I guarantee you won't want to use anything else on the market at the present time.

One of the main advantages of EDASM is its ability to locate the code produced at any point in memory, the MIX assembler is good but does suffer from being an "in-line" assembler, though that gives benefits to those incorporating machine code in BASIC programs.

EDASM is divided into two distinct parts, an Editor and a Macro assembler, the advantage of separate packages is that source code typed into the editor may be saved to tape under its own file name and included in other programs without having to type it all in again, very useful for all those favourite subroutines you've developed.

To fully describe the editor facilities would take several pages, as it does in the documentation, suffice it to say you won't be short of any commands. The commands available include copying blocks of text to other points in the file, deleting blocks of text, finding text strings, loading source files, joining source files, loading and saving object code files, printing text blocks, replacing strings and several others. To say the least it's rather comprehensive !! The source file can also be 128 columns wide so all of those with Centronics printers can now use the full width of the paper.

Turning to the Macro Assembler I can say that I have only one criticism, while it is assembling what you have typed into the editor it gives a blank screen, other than that its power is exceptional. Most other macro assemblers "hardwire" the set of instructions that the user is allowed to use i.e. Z80, 6809, 6502 etc. not so with EDASM. The instructions are themselves definable which means that if you desire you can redefine the assembler macros so that it generates code for a different machine, couple this with an EPROM programmer and you've got a very powerful package. The assembler accepts all the usual directives, DB, EQU, ORG, LOAD, END etc as well as labels and directives to turn the list file on and off. It also copes with logical and arithmetic expressions which is a particularly useful ability. However by far the most powerful feature is the full macro definition facility that is implemented. This allows the programmer to define sections of code that are not subroutines but will appear several times during the program perhaps with different values. To insert the text at that point only requires you to type the name of the



macro, the assembler does the rest. This facility along with the ability to conditionally assemble code must make this piece of software a must for any serious MIX programmer.

One final comment, the macro definition facility means that not only is it possible to redefine the instruction set of the assembler but it also feasible to write what would effectively be a compiler using the macro facility. If for example you defined the word ADD as being the code which would take the contents of the DE pair and add them to the contents of the IX register then every time the assembler saw the word ADD it would produce the required code. It doesn't take a lot of imagination to see that before too long we may be seeing a crop of compilers appearing for the MIX all written using EDASM. ★

Well Keith, the main problem I have had with any attempt at a review for EDASM is really that it is so comprehensive a product that it is difficult to cut short any description of it. I really am very impressed at the quality and so are several of my colleagues, so much so that we will probably be using it in our higher level programming courses.

Hoping to hear from you soon,

Regards,

*Terry*  
Terry.

---

## REVIEW

## FATHOMS DEEP MEGGASTAR

FATHOMS DEEP is real joy to play. This one those games that tempts you to have one more try before switching off the machine.

You must dive into the ocean and try - try being the operative word - to collect all the keys from the sea-bed. Once you have achieved this, you can place them into a keyhole which allows you to collect further treasures such as diamonds etc.

Various hazards are placed in your path: sharks, jellyfish and the like. Also, if you bump your head on the rocks this can have serious consequences and the kiss of life by the most beautiful girl in the world will not revive you!

There are various screens that scroll into view as you swim from one location to another. The graphics are quite good and animation is excellent.

I can thoroughly recommend this game to anyone who wants to add a program that is just that bit different to those available at present. In the two weeks I have had the game my skin has become wrinkled and webbed feet are the order of the day!

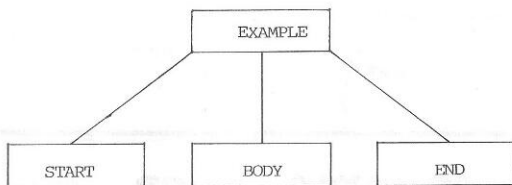
Peter Branstone.

# STRUCTURED PROGRAMMING

by PETER KNAQGS

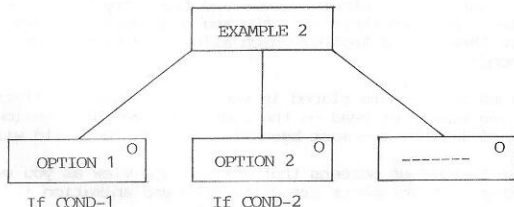
This is the first in a series of articles devoted to Structure and Structured Programming. Hey! Hang on! Don't turn over just yet, you might find it interesting. Structure has the same effect on most people, and murmurs of "Oh dear ! Not that." are frequent .... I had the same reaction until, as part of a training course, I had to use it. The method I was taught will be presented to you here, and is called 'Jackson Structured Programming' - JSP. After my course I became an avid believer as I am sure you will too.

In structured programming you represent a program by means of a 'Structured Diagram' which consists of a tree of events - each level breaking down the previous level. Each end of a branch is known, surprisingly, as a leaf. Every function in the tree is given an identification title, and any program can be broken down into a sequence of events :



Where EXAMPLE consists of executing the elements START : BODY & END in order [Left to Right].

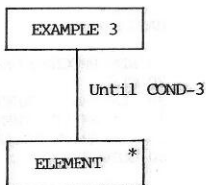
## A SELECTION OF EVENTS



The COND-x tells you which option is executed, and when. If COND-1 is true then execute OPTION 1. The O in the corner of the box is there to indicate that the function is an optional one. The last box with ----- is a spare just in case you have forgotten anything, or so that you can add to the list at a later date .... it isn't required but is good programming practice. It would be executed if both COND-1 & COND-2 are false.



## AN ITERATION OF EVENTS



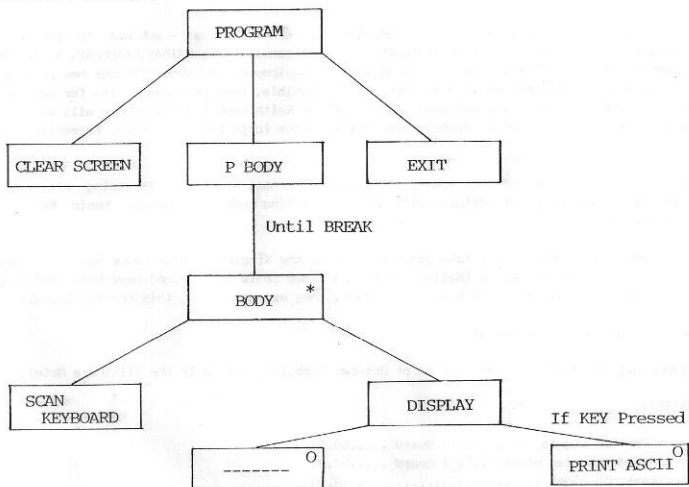
In this case the function ELEMENT is repeated or iterated until COND-3 is true. The condition is tested before the function is executed, thus if COND-3 is true when ELEMENT is entered then ELEMENT will not be executed. The \* is used to indicate that the function is iterated.

Note: Only one line can be connecting EXAMPLE 3 to a lower level. If you wish to iterate a sequence, then the sequence must be described under ELEMENT, and the line connecting ELEMENT to EXAMPLE 3 must have a terminating condition on it - this could be a WHILE, UNTIL or IF.

## EXAMPLE:

Here is an example program with it's structure diagram. The program is quite simple and does not need to be structured, but it is a good example. It scans the keyboard and returns the Ascii value of any key being pressed. If it is the BREAK key then the routine will exit.

## STRUCTURED DIAGRAM:



## BASIC PROGRAM:

```

10 REM PROGRAM EXAMPLE
20 CLS
30 LET A$ = INKEY$
40 IF A$ = "" THEN GOTO 30
50 PRINT ASC(A$)
60 GOTO 30

```

## EXERCISE:

WRITE A STRUCTURE DIAGRAM AND A PROGRAM THAT WILL LET YOU ENTER AN INTEGER BETWEEN 32 & 126, AND THEN DISPLAY THE ASSOCIATED CHARACTER ★

Enquiries to Peter Knaggs (MAX Software)  
12 Seymour Road, Chippenham, Wilts SN15 3NH.

Answer to exercise on page 26

## NOTICE OF INTENT

GENPAT are proud to announce that in late October of this year - subject to enough members participating - we will be holding a WORKSHOP. It will consist of a FRIDAY, SATURDAY, & SUNDAY. we shall have a SYSTEMS ROOM for you to bring along your equipment, and show off your new programs. We hope that several software houses will attend and, if possible, have some new titles for you to see and purchase. If you are lucky, you may even catch sight of Keith Hook ! The workshop will also give you the opportunity of meeting other members and develop those ideas that have been fermenting in your mind.

There will also be a lecture room where, among other things, I will be discussing all aspects of structured programming, other lectures will include: machine code programming, basic Basic, screen handling & sound.

The hotel where the workshop will take place is part of the Kingsmead Hotel Group and are experienced in user group conferences: NATGUG (National TRS-80 & Video Genie User Group) have been holding their meetings at this hotel for the past 6 years, in fact, they are organising this one for Genpat.

Now, the bit that hurts, the money!

The workshop will be held over the weekend of October 25th, 26th & 27th in the Wiltshire Hotel, Swindon.

## ACCOMMODATION:-

Single Room for two nights .....	Full Board .....	59.50
Sharing twin Bed room two nights ..	Full Board .....	52.90
Bed & Breakfast one night .....		18.50

THE FOOD IS EXCELLENT !!

Interested members please write to Peter Knaggs, 12 Seymour Rd, Chippenham, Wiltshire SN15 3NH

## ADVANCE INFO..

## JARO SPEED SPLITTER



The Memotech "MTX" series of microcomputers may be used with a number of peripheral devices, including those that communicate with the computer via a serial interface. To do this, the RS232 Communications Board must be fitted within the case of the computer.

This board provides two completely independent RS232 standard serial interfaces, by using a Zilog device called the Z80-DART (Dual Asynchronous Receiver Transmitter). The two channels, A and B, each have a transmitter and receiver which are "clocked" (provided with timing signals) from the Z80-CTC on the motherboard of the MTX. These clock pulses determine the baud rates of the transmitter (Tx) and receiver (Rx). On the DART, the Tx and Rx clock inputs on channel B are connected to a single pin on the IC. These must therefore run at the same baud rate and there is nothing which can be done to change this.

On channel A however, these clock inputs have separate pins. Unfortunately, Memotech have connected these together, and so, on setting the baud rate using the baud command, again, the Tx and Rx must run at the same rate. Thus, the V23 CCITT standard on popular modems (the Prestel 1200/75 system) cannot be used on a standard MTX computer; the V23 standard requires data to be transmitted to the host at 75 baud and received from the host at 1200 baud.

The Jaro speed-splitter board measures 135mm x 30mm and mounts inside the upper half of the MTX casing, on the right hand side, beside the keyboard pcb, almost underneath the function keys. No drilling or cutting is required and all fittings are provided. It intercepts the timing signals to the channel A transmitter and receiver, and, under software control, either relays these to the Z80-DART without any further action (transparent mode) or provides different timing signals to the transmitter or receiver for split-speed operation, i.e. 1200/75 baud or 75/1200 baud. A lead (provided) connects the uncommitted PIO port on the motherboard to a 4-way connector on the speed-splitter board, three wires from a second connector go to the RS232 board.

The module is available in two forms; module only for those who already own an RS232 board (a soldering iron is required to make one connection) at #15; however members receive a discount of 15% (#2.25) by sending #12.75 plus their Membership Number to Genpat; or fitted to an RS232 board ready to use - add a total of #60 (Members #53.25) to the above.

What does this give the user? The 1200/75 standard gives access to British Telecom's "Prestel" service and any other similar viewdata system. Prestel is a database of pages of information on just about everything. More than three-quarters of these are free - more about charges later. But Prestel also has Gateways into other computer systems: for example, home banking via the bank's own computers. I can check balances, pay bills, order chequebooks and statements, all without leaving home. The Great Universal mail order company not only allows shopping via Prestel (in common with many other companies) but also allows you to check their stock levels as well. Information comes also direct from computers at airports showing actual flight status of departures and arrivals; up-to-the-minute pages come from the Stock Exchange (but these pages are charged for). These are only a few examples of information sources.

Charges - a domestic subscription to Prestel is #6.50 for three months, and a time charge is made of 6p per minute if you access during 0900-1700 hours on weekdays. In addition, you pay normal call charges for the connected time on the telephone in the normal way - but over 97% of the UK access Prestel on a local call rate. Thus if you only use the system outside office hours on cheap rate, you only pay about 50p per week for your subscription and 60p an hour in telephone charges. Some private companies make charges for their pages because of the cost of providing the information contained therein; this varies from 1p to #2 but you are always given advance warning that you are about to access a chargeable page, and advised of the cost before you decide to select it.

The latest addition is the Telexlink facility. All Prestel subscribers can send electronic mail to each other free using the Mailbox facility, but they can now send telexes from their terminals to any telex number in the UK for 50p per Prestel page (40 characters by 24 lines). The next addition to the service will be the ability to send international telexes as well.

The pages received from a Viewdata system are in the same format as Teletext pages: 40 x 24 with six colours plus white and black, block graphics, flashing text, etc. However the limitations of the VDP in the MTX means that the colour information cannot be used; the best results can be seen using the 80-column card which is used in the FDX floppy disc system. For those that do not want to write their own software to control their modem, Jaro Computer Services are planning to distribute a program which will turn an MTX into a monochrome Viewdata terminal. Genpat members will be able to buy this at a reduced price and it is hoped that it may be reviewed in the near future in Memopad. For more information about Prestel and a free information pack and application form, dial 100 and ask for FREEPHONE PRESTEL SALES. ★

For technical information and assistance dial 100 and ask for FREEPHONE PRESTEL SERVICE.



## VIEWPOINT

Dear Keith,

I can't write long letters But I can try. This letter is supposed to tell you what I think of EMERALD ISLE. Emerald Isle is very good, I can get to the tree village, the palace, the beach, the mine but what I need most is a lamp. The clues are very good e.g 'Do what with a rusty lamp?' I can't think what you need a "u" for, I have tried to make a boat but all it says is: 'Do what with a hand axe?' ..... it's a pity there are no pictures.

ANDREW JOHNSON Aged 9.

Dear Keith,

We think Emerald Isle is very hard. Thank you for sending it. Love SARAH JOHNSON.

Ed. Sarah is a very sweet young lady ... I am ashamed to say I have forgotten her age but I think she is 7. The paper this letter was sent on is in the multi-colour mode and now decorates my office wall. Thank you Sarah.

Paul Daniels 106, Hilary Avenue, Liverpool, wants to know where the 6th treasure in Alice is located. He has found the casket, sword, necklace, key and sceptre.

Dear Keith,

I don't know how familiar you are with Xaviersine's COMPOSER because I have a beef regarding their advertising of the program. They claim that 'due to the standard notation used this has to be one of the finest methods of learning music available ...' This was a major influence in my purchase as I cannot read music fluently. I am familiar with the stave layout: EVERY GOOD BOY DESERVES FAVOUR [ EGBDF ] & FACE. However, COMPOSER DOES NOT CONFORM TO THIS CONVENTION. This seems a pity because in other respects COMPOSER is a good program. I wonder if any other members have any views on this program? ALUN ROACH SOUTH GLAMORGAN

ED There was a problem with the first duplication of Composer and the whole musical notation was completely 'up the shoot'. I am assured that this has now been corrected, and I suggest that you return your tape ( by recorded delivery ) and ask for an updated version. Personally, I don't think that the program is worth the money asked, and after using it I certainly don't recommend it.

Mr D.R. Lane, 22, Butts Way, Norton Canes, Cannock, Staffs. Wants to know how he can prevent freezing to death in LORDS OF TIME? How does he get past the venomous snake in COLOSSAL CAVERN?

Mr. F. Cembrola, 9 Winchester House, Billy Lawn Avenue, Havant, Hants PO9 5HP would like to contact any MTX owner in his area. Tel Havant 454690

J. Blance, 3, Wilson Street, Dunston, Gateshead, Tyne & Wear wants to know how to slay the dragons in ALICE and also how to get past the guards and get into the party?

D.J. England of Essex has come up with a solution to M. Paver's query in issue 7 regarding changing the colour of a NODDY page.

The main Noddy page is displayed, in Basic, on VS 5 so if no input is required the Basic PAPER X:PLOD "XYZ" will display the page in the background colour x .... INK colours are also set in this way.

Noddy screens take input on VS 7 so if an input is required the PAPER & INK colours for VS 7 need to be set before entering Noddy.... PAPER 12:INK 10:VS 7:PAPER 12:INK 7:PLOD "PAGE" By setting up the program page to return to Basic when a page colour needs changing, the whole range of 15 colours can be utilised.

New Member Burton R. Norton of Eliot, Maine would like to meet up with any Radio Hams who who like to have a QSO him on 21.370 or 14.315 MHz His call sign is KE1X and he transmits on the latter frequencies daily [ weather permitting ] at 1545 GMT. 73's

W.P. Jensma from Holland has found that he can increase the tape Baud rate to 3000 without any bad effects. You must poke 64863,50 .... but make sure you re-poke the value if you reset the machine.

To "VIEWPOINT"

Memopad

Dear Sir,

On reading issue 7 of Memopad I was most pleased to see that it now contains a members correspondence section - a good idea which I feel should be a platform for some lively debates, flow of information and ideas.

As I must be one of the earlier purchasers of the an MTX512 ( Dec 83) perhaps I could make a few comments and suggestions through the Viewpoint column.

The MTX is an excellent machine with many interesting features. Compared with more "popular" machines it is good value for money & I feel that Memotech are honest in their pricing. One isn't faced with having to pay an 'arm and a leg' for add-ons which are frequently necessary with some machines to make them other than games machines.

However, I do feel that Memotech's adverts read more like a technical specification rather than something to woo the general public. This may be fine with the FDX system but not for the MTX500 which should be aimed at the first time buyers and disillusioned Spectrum, Oric and Electron owners. BRING BACK THE BLACK PORCHE or something similar.

Although having an excellent hardware specification the MTX has been let down by lack of software support. Independent software houses have been reluctant to support us and in this respect PSS, Xaviersine, & Level 9 should be applauded, and supported. This situation, of course, is changing even to the point where WHAT MICRO, in their listings, state " some good quality games and business ....should be more popular ...."

I've been delighted with Genpat and I'm sure that a lot of work is being done behind the scenes by K.H to promote the Memotech range which will benefit all of us. Please keep it up. I have never believed that Genpat is in "Memotech's pocket", quite the opposite. Reading some past editorials in Memopad one feared for the Editor's life!

I endorse the request that members should write to the popular press and complain about the lack of coverage of our micro - I have been doing this for the past twelve months. Regarding Memotech's actions, why shouldn't it be a case of you scratch my back, I'll scratch yours ?

A. Hall  
Sheffield.

ED I agree with the writer's comments on the Porche. It is certainly the best advertisement that has ever been produced for the Memotech. The quality of the advertising over the past six months has been pathetic to say the least. If we are going to have a state of 'advertise when the favour is returned', then let us make sure that the advertising makes the necessary impact .... yes, BRING BACK THE PORCHE.

Members who subscribe to PCN will have noticed that we did get an article on the MTX the very first time we advertised .... strange what ? ★

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## URGENT REQUEST

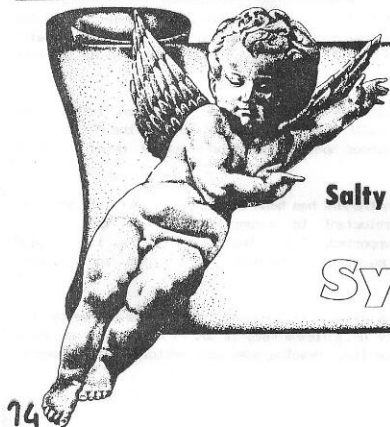
PETER BURNS TELEPHONE 0482-849670

Can any member help ? I have a friend who can barely see, and cannot cope with Braille. What I need is a program that lets me type in a capital "A" on the keyboard and produces a capital "A", twice as high & twice as wide which can then be transferred to the printer. Any ideas etc would be helpful as I am new to computing.

Peter Burns.

# MEGA STAR

ya!



Flummx

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Memosketch

# Syntaxsoft



# ASSEMBLER

This month, we will use the program published in the last edition to create and animate a simple stick-figure.

It works by printing characters, as demonstrated last month, at the correct places on the screen. Animation can be achieved by printing a certain character, pausing for a short period, wiping out the character, and then printing a different character in an adjacent screen location. If repeated fast enough, the character will animate quite effectively.

Now that we know how to animate, we must go about writing the code to do this for us. Firstly, we must make a few alterations to the existing code. These are the alterations which need to be made:-

- 1) The line at #8095 must be changed to read LD BC, 792 & the line at #80AC must be changed to LD BC, 792
- 2) The code which prints a message must be removed and replaced by a jump to the start of our new routine.
- 3) Our redefined character data must be added to the existing data.
- 4) The new routine must be entered.

Let's take each section in turn and show how it is done.

The first part is quite simple. Enter the assembler at line 5, and type 'E #8095' <RET>. When the line appears, position the cursor over the previous value, and type in the new one 792, then press ENT/CLS <RET> to come back to the prompt. That's the first part completed!

The second part is a little more complicated, but don't worry, I will explain it fully.

The deleting must be done in the Edit mode, so type "E #8049". At the bottom of the screen will appear the line 'CALL CLS'. One point to note is that if you didn't type in the NOP's when entering the program then the line will not be at the given address. The solutions to this are to either type in all the NOP's which you missed, or to list the program, find the line, and then edit at the new address. Although the first method may mean more typing, it may be simpler if we publish any more routines to add to the program.

Anyway, when you have the line at the bottom of the screen, and are in the Edit mode, you must press the EOL key, then return. This will have deleted the line. Repeat this slowly, until the line being edited at the bottom of the screen reads 'LOOPA: JR LOOPA'. This is the last line of the 'print a message' routine. This must be changed to 'LOOPA: JP START'. If you have followed this thoroughly, then you have completed the second part of the modifications successfully.

The third and fourth parts, may be combined into one, as the fourth part will directly follow the third. Because the lines are being added, it must be done in 'Insert' mode. To do this, type '#8401 <RET>'. The program below can then be entered, making sure you press 'EOL' before typing each line. This will ensure that the 'RET' statement which appears each time you enter a line will be removed.

When you have carefully typed in all of the lines, press <ENT/CLS> <RET> to return to the prompt. If you have reached this stage without any problems then you can exit the assembler, SAVE it, (just as a precaution) and RUN it.

Hopefully, you should see the stick figure walking (in a limited way!) across the screen. You will notice that when it reaches the edge of the screen it will move down one line and return to the other side of the screen. When it reaches the bottom of the screen, it should go back to the top, and carry on walking.

The character codes that are redefined as graphics for the man range between 123 and 130. These eight characters are split into two sets. One block of four is used for the top of the figure, and the other block for his legs. These two blocks match up to produce four sets, each consisting of two eight by eight characters, which will be displayed one above the other. One point to note is that to begin with, the

characters are displayed in ascending order i.e. starting with the first character and flicking through them one at a time until the last character is being displayed, and are then displayed in reverse order. This is done for animation purposes, and is logical if you ponder on it for a few minutes.

Try altering the character codes in the DB lines to create your own characters. Using this setup it is possible to have different actions taking place at the same time. The way to find out is to experiment.

Next month, for the members who are not sure how the assembler works, we will publish an article on using the assembler. ★

```

83CE      DB 0,0,#10,#28,#10,#10,#34,#58;THE FOLLOWING 4 LINES OF DATA ARE
83DE      DB 0,0,#10,#28,#10,#10,#30,#20;FOR THE MAN'S BODY
83DE      DB 0,0,#10,#28,#10,#10,#12,#34
83E6      DB #0,#0,#10,#28,#10,#10,#34,#58
83CE      DB #50,#10,#10,#18,#A4,#44,#8,#0;AND THE NEXT 4 LINES OF DATA
83F6      DB #1C,#10,#10,#10,#18,#18,#28,#50;ARE FOR THE MAN'S LEGS.
83FE      DB #58,#30,#10,#10,#10,#18,#24,#48
8406      DB #50,#10,#10,#18,#A4,#44,#8,0
840E      NOP;*****
840F      NOP;THE ROUTINE 'START' ANIMATES A MAN AND MAKES HIM WALK ACROSS THE SCREEN
8410      NOP;*****
8411 START: NOP;THIS ROUTINE ANIMATES A MAN AS HE WALKS ACROSS THE SCREEN
8412      NOP
8413      CALL CLS;CLEAR THE SCREEN
8416      LD A,1;SET THE INCREMENT VALUE.THIS IS ADDED TO THE CURRENT
8418      NOP;CHARACTER TO FIND THE NEW CHARACTER WHEN ANIMATING.
8419      LD (INC),A
841C      LD A,123;SET THE FIRST CHARACTER CODE
841E      LD (ANIM),A
8421      LD DE,0;SET THE POSITION OF THE MAN FROM THE START OF THE SCREEN DISPLAY.
8424      LD (POSIT),DE
8428 ANLP1: LD HL,#3C00;PUT THE START OF THE SCREEN INTO HL
842B      LD DE,(POSIT);GET THE POSITION OF THE MAN FROM THE START
842F      NOP; OF THE SCREEN DISPLAY
8430      ADD HL,DE;ADD THE TWO TOGETHER TO FIND THE ADDRESS OF THE MAN ON THE SCREEN
8431      CALL LRAM;SEND TO VRAM AT ADDRESS IN HL
8434      LD A,(ANIM);GET THE ASCII CODE OF THE MAN
8437      CALL DATA;SEND IT TO THE SCREEN
843A      ADC A,4;ADD FOUR TO FIND THE CODE OF THE MATCHING PAIR OF LEGS
843C      LD DE,32;ADD 32 TO THE CURRENT POSITION,TO MOVE DOWN ONE ROW
843F      ADD HL,DE;TO FIND WHERE THE LEGS SHOULD BE
8440      CALL LRAM;SEND TO VRAM AT ADDRESS IN HL
8443      CALL DATA;SEND THE CODE FOR THE LEGS
8446      CALL DELAY;WAIT FOR A WHILE SO THAT THE MAN DOESN'T MOVE TOO QUICKLY
8449 ANLP2: IN A,(2)
844B      BIT 7,A
844D      JR Z,ANLP2
844F      CALL LRAM;SET WRITE TO VRAM AT ADDRESS IN HL.THIS IS THE SAME
8452      NOP; ADDRESS AS BEFORE,BECAUSE HL HASN'T BEEN ALTERED SINCE.
8453      LD A,32;GET THE CODE FOR A SPACE
8455      CALL DATA;SEND THIS TO THE SCREEN.THIS WILL WIPE OVER THE
8458      LD DE,32;LEGS.THEN,32 IS TAKEN OFF THE ADDRESS,TO MOVE UP A
8458      AND A,LINE,SO THAT WE CAN WIPE OVER THE REST OF THE MAN.
845C      SBC HL,DE
845E      CALL LRAM;SET WRITE TO VRAM AT ADDRESS IN HL.
8461      CALL DATA;SEND THE SPACE TO WIPE OVER THE MAN'S BODY.
8464      LD DE,(POSIT);GET THE POSITION OF THE MAN

```

```

846B      INC DE;ADD ONE TO IT
8469      LD A,0;CHECK THE HIGH PART OF THE POSITION
846A      CP 2;IF IT IS 2,THEN THE MAN MAY BE GOING OFF THE SCREEN
846C      JR C,OKPOSIT;IF IT ISN'T THEN ITS OK TO STORE THE NEW POSITION
846E      LD A,E;CHECK THE LOW PART OF THE POSITION.
846F      CP 224;IF IT IS LESS THEN 224,THEN IT IS STILL ON THE SCREEN
8471      JR C,OKPOSIT
8473      LD DE,0;OTHERWISE RESET THE POSITION BACK TO THE TOP OF THE SCREEN
8476 OKPOSIT:LD (POSIT),DE;STORE THE NEW POSITION
847A      LD A,(ANIM);GET THE CHARACTER CODE OF THE CURRENT MAN
847D      LD B,A;STORE IT
847E      LD A,(INC);GET THE VALUE WHICH HAS TO BE ADDED TO THE CODE
8481      AND A
8482      ADC A,B;AND ADD IT

8483      JR NC,TEST1;IF THE CARRY FLAG IS CLEAR,THEN THE CODES
8485      NOP; ARE INCREASING.IE INC = 1
8486      CP 123;SEE IF THE CHARACTER IS STILL WITHIN THE RANGE OF
8488      NOP; DEFINED GRAPHICS FOR THE MAN
8489      JR NC,OKANIM;IF IT IS THEN STORE IT
848B      LD A,(INC);OTHERWISE REVERSE THE INC BY WORKING OUT THE
848E      NOP; TWO'S COMPLEMENT OF THE VALUE
848F      XOR 255;BY CHANGING ALL THE 0'S TO 1'S, AND 1'S TO 0'S
8491      INC A;AND THEN ADDING ONE.THIS WILL MAKE +1 INTO -1 AND -1 INTO +1
8492      LD (INC),A;STORE THE NEW INC
8495      LD A,124;SET THE CHARACTER CODE AT THE START OF THE PATTERNS
8497      JR OKANIM
8499 TEST1: CP 127;TEST TO SEE IF CHARACTER IF OUTSIDE THE RANGE OF DEFINED GRAPHICS
849B      JR C,OKANIM;IF IT ISN'T THEN IT IS OK TO STORE IT
849D      LD A,(INC);WORK OUT THE TWO'S COMPLEMENT OF THE INC AS ABOVE.
84A0      XOR 255
84A2      INC A
84A3      LD (INC),A;STORE IT
84A6      LD A,125;GET THE CODE OF THE NEXT TO THE LAST DEFINED CHARACTER.
84A8      NOP; THIS MAKES SURE THAT THE LAST CHARACTER ISN'T DISPLAYED TWICE.
84A9 OKANIM: LD (ANIM),A;STORE THE CHARACTER CODE
84AC      JP ANLP1;GO BACK AND DO IT ALL AGAIN
84AF      NOP;*****
84B0      NOP;THE ROUTINE 'DELAY' SIMPLY PAUSES THE PROGRAM FOR A
84B1      NOP;WHILE,SO THAT IT ANIMATES THE MAN SMOOTHLY.
84B2      NOP;*****
84B3 DELAY: LD BC,#A000;LOAD BC WITH THE VALUE TO COUNT DOWN FROM
84B6      NOP; IN ORDER TO MAKE A SUFFICIENT DELAY.TRY ALTERING THIS NUMBER AND
84B7      NOP; SEE WHAT HAPPENS
84B8 DEL1: DEC BC;TAKE ONE OFF THE VALUE
84B9      LD A,B;TEST IF ITS ZERO YET
84BA      OR C
84BB      JR NZ,DEL1;IF NOT THEN KEEP ON COUNTING
84BD      RET;RETURN WHEN FINISHED
84BE INC: DB 0;THIS IS THE INC AND IS USED WHEN WORKING OUT
84BF      NOP; CHARACTER CODES FOR ANIMATING THE MAN.
84C0 ANIM: DB 0;THIS IS USED TO STORE THE CURRENT CHARACTER CODE OF THE MAN.
84C1 POSIT: DW 0;THIS IS USED TO STORE THE POSITION OF THE MAN
84C3      NOP; FROM THE START OF THE SCREEN
84C4      RET

```

## PROGRAM LISTING



## UTILITIES

## Part 2

Eric  
Roy

## LISTING 3 "RENUMBER"

This program will renumber Basic program line numbers only. The numbers following GOTO, GOSUB, RESTORE etc., will have to be changed using EDIT. It is useful, however, in that programs having the same line numbers can be MERGED.

As with merged NODDY pages, if the computer is instructed to GOTO, GOSUB etc., it will only GOTO the FIRST OCCURRENCE of that line number in your program. EDIT works in the same way and so it is impossible to EDIT a merged subroutine [containing the same line numbers], to change the line number.

To test RENUMBER [ where ST= The step between line numbers (0-255) and FL=the first line number] use the following procedure:-

```
POKE (48929),ST
POKE (48926),FL-INT(FL/256)*256
POKE (48927),INT(FL/256)
LET R=USR(48928)
```

The above USR function calls CHECK which tests that there is a program to renumber. The STEP & FIRST LINE NUMBERS are then loaded for use in the main loop of the program.

RENURM finds the start of the program, that is, the start of the first line. The first two bytes of a line contain the length of that line and the next two bytes hold the line number. The routine then enters an assembly REPEAT- UNTIL loop and each time round the loop the current line length is found and a new line number is inserted into the bytes 2 & 3. The loop continues by adding the step size to the last line number to give the next one. The routine then adds the length of the current line to the address of the last line, and checks to see if the end of the program has been reached.

## LISTING FOUR "INTERRUPTS"

Surprising as it might seem, there is a mistake in the manual on page 182 which deals with the use of interrupts on the MTX ! It states '...if any of the user bits 4,5 or 6 in the INTIFF (#FD5E) are set, then a call is made to USERINT at #FA98'. However, BIT 7 of INTIFF must also be set before interrupts are vectored through the USERINT address.

To turn the interrupts on enter LET I=USR(48992) which will call INTON and will place the code for a jump to the KEYS routine in the 3-byte USERINT address. It will then set bits 4 & 7 of INTIFF.

Once the interrupts are enabled a call is made to the KEYS routine every 64th of a second - this checks for a specified key being pressed by taking the value held in the last key pressed system variable, and compares it with the key code of the keys under test : SPACE BAR, & first four function keys.

Pressing the space bar will save the current system variable values in OLD. F1 restores a NEWed program - to restore a RESET program use: LET O=USR(48707) because the USERINT location will have been reset to its default value, and interrupts will have to be turned back on to restore the vector address of KEYS. F2 switches interrupts off. This must be done when loading a program as the USERINT location is also saved and may not contain the address of the KEYS interrupt routine.

F3 & F4 renumber your program from 100 or 9000. Use F4 if you are writing programs that are later going to be merged.

LISTING FIVE SCLD was originally written to save and load the OLD, MERGE, RENUMBER & INTERRUPT code starting at address #BE00. By changing the length of the defined space in line 100, the destination address and length in line 200, the start address and length in line 300, the program can be used to save or load any area of memory.

To save code to tape use the following procedure: Ensure that the code to be saved is in memory - in this case OLD, MERGE etc. Enter GOTO 300 and this will store a copy of the code in the space defined for it in line 100. Line 400 then asks for a name for the code being saved. Enter the name, start the cassette and press RET.

Lines 440 & 450 save the program to tape so that it will auto-run from line 200 when reloaded. Line 200 also moves the code but this time from the defined space to #BE00. Lines 210 - 290 inform you that the code has been loaded, and that the interrupts are switched on.

MTX500 owners should change LD HL, #4007 [Line 200] and LD DE, #4007 [Line 300] to #8007 or the address of START in line 100. ★

#### 100 CODE

```

4007 SUB:  CALL #BE00; Store system variables of 'SUB'.
400A      LD HL, (#FAA4); HL=Start address of 'SUB'.
400D      LD DE, #C400; DE=Destination address of 'SUB'.
4010      LD BC, (#FACC); BC=Length of 'SUB'.
4014      LDIR; Move 'SUB' from HL to DE.
4016      LD (#BE86), DE; Store end address of 'SUB' after move.
401A      RET; NOW LOAD 'MAIN' PROGRAM.
401B MAIN: LD HL, (#FAA4)
401E      LD DE, (#FAA7)
4022      AND A
4023      SBC HL, DE; HL=Length of any Noddy pages in 'MAIN'.
4025      JR Z, NONOD; If no Noddy pages then jump, else
4027      PUSH HL
4028      POP BC; BC=Length of 'MAIN' Noddy.
4029      LD HL, (#FAA7); HL=Start address of 'MAIN' Noddy.
402C      LD DE, (#BE86); DE=End of 'SUB' program.
4030      LDIR; Move 'MAIN' Noddy to end of 'SUB'.
4032      LD (#BE86), DE; Store new end address of 'SUB'.
4036 NONOD: LD HL, (#BE86); HL=End address of 'SUB'.
4039      LD BC, #C400; BC=Start address of 'SUB'.
403C      PUSH BC; Save start address.
403D      AND A
403E      SBC HL, BC; HL=Length of 'SUB'.
4040      PUSH HL
4041      POP BC; BC=Length of 'SUB'.

```

```

4042      POP HL; HL=Start address of 'SUB'.
4043      LD DE, (#FAA7); DE=End of 'MAIN' basic.
4047      LDIR; Move 'SUB' to end of 'MAIN'.
4049 MERGE: LD HL, (#BE90); Calculate 'NEW' system variables.
404C      LD DE, (#FACC)
4050      ADD HL, DE
4051      PUSH HL
4052      LD (#FANC), HL; 'NEW' Top of each basic page.
4055      LD HL, (#FAA7)
4058      LD DE, (#FAAA)
405C      AND A
405D      SBC HL, DE
405F      PUSH HL
4060      LD BC, (#BE92)
4064      ADD HL, BC
4065      LD (#FAA7), HL; 'NEW' Top of current basic page.
4068      POP HL
4069      LD BC, (#BE9C)
406D      ADD HL, BC
406E      LD (#FAD6), HL; 'NEW' PGTOP.
4071      LD HL, (#FAA4)
4074      AND A
4075      SBC HL, DE
4077      LD BC, (#BE9B)
407B      ADD HL, BC
407C      LD (#FACC), HL; 'NEW' Top of arrays.
407F      POP HL
4080      LD (#FAA4), HL; 'NEW' Top of Noddy.
4083      RET
    
```


## 100 CODE

```

4007 CHECK: LD HL, (#FACC); Check for program in memory.
400A      LD A, H
400B      OR L
400C      RET Z; Return if no program to renumber.
400D      LD BC, (#BF1D)
4011      LD B, 0; BC=Step between lines 0 to 255.
4013      LD HL, (#BF1E); HL=First line number.
4016 RENUMR: LD IX, (#FAAA); IX=Start of basic.
401A REPEAT: LD E, (IX+0)
401D      LD D, (IX+1); DE=Line length.
4020      LD (IX+2), L
4023      LD (IX+3), H; Poke new line number into place.
4026      ADD HL, BC; Add step size to HL.
4027      PUSH HL
4028      ADD IX, DE; IX=Address of next line.
402A      PUSH IX
402C      POP DE; DE=Address of next line.
402D      LD HL, (#FACC); HL=Top of basic.
4030      AND A
4031      SBC HL, DE; Subtract line address from top of basic.
4033      JR C, END; END if address of line > top of basic.
4035      LD A, H
4036      OR L
4037      JR Z, END; END if address of line = top of basic.
4039      POP HL
403A      JR REPEAT; Not finished, renumber next line.
403C END:  POP HL
403D      RET
    
```

RENUMBER BASIC LINES  
 MTX 500,512 MICROS  
 (c) E.Roy June.84

## 100 CODE



```

4007 INTON: LD A,#C3; Code for JP (Jump).
4009      LD (#FA98),A; USERINT location.
400C      LD HL,#BF93; Interrupts vectored to this address = KEYS.
400F      LD (#FA99),HL; USERINT +1,2 = Interrupt vector address.
4012      LD A,(#FD5E); INTFFF system variable.
4015      OR #9F; Set bits 4 & 7.
4017      LD (#FD5E),A; INTERRUPTS ON.
401A      RET
401B INTOFF: LD A,(#FD5E); INTFFF.
401E      AND #0F; Bits 4 & 7 reset.
4020      LD (#FD5E),A; INTERRUPTS OFF.
4023      RET
4024 REN1:  LD HL,#64; First line number=100.
4027      LD (#BF1E),HL; Line number location.
402A      JR STEP
402C REN9:  LD HL,#2328; First line number=9000.
402F      LD (#BF1E),HL
4032 STEP:  LD A,#0A; Step between lines=10.
4034      LD (#BF1D),A; Step location.
4037      JP #BF20; Jump to renumber routine.
403A KEYS:  LD A,(#FD7C); Last key pressed system variable.
403D      CP #49; Is it SPACE BAR.
403F      JP Z,#BE00; Yes save system variables in OLD.
4042      CP #48; Is it key 'F1'.
4044      JP Z,#BE43; Yes restore NEW'ed program system variables.
4047      CP #46; Is it key 'F2'.
4049      JR Z,INTOFF; Yes switch interrupts off.
404B      CP #43; Is it key 'F3'.
404D      JR Z,REN1; Yes renumber program from 100.
404F      CP #41; Is it key 'F4'.
4051      JR Z,REN9; Yes renumber program from 9000.
4053      RET


```

```

*****
INTERRUPT ROUTINE
MTX 500,512 MICROS
(c) E.Roy June 84.
*****

```

## 100 CODE



```

4007 START: DS 200; Define space to hold code at the
40CF      DS 200; start of Basic program area.
4197      DS 32; In this case 432 bytes.
41B7 END:  RET
41B8      RET

```

```

Symbols:
START4007END41B7

```

```

*****
*** SAVE/LOAD CODE TO TAPE ***
*** MTX 500,512 MICROS ***
*** (c) E.Roy June 84. ***
*****

```

## 200 CODE

```

4251 LDCODE: LD HL,#4007; Start address of defined space.
4254      LD DE,#BE00; Destination address of code.
4257      LD BC,#01B0; Length of code to move = 432 bytes.
425A      LDIR; Move it.
425C      RET

```

```

Symbols:
LDCODE4251

```



```

205 CLS : CSR 14,0: PRINT "CODE LOADED"+CHR$(7)
210 LET I=USR(48992): CSR 13,1: PRINT "INTERRUPTS ON": PRINT
215 PRINT "PRESS KEY with INTERRUPTS ON": PRINT
220 PRINT " F1....TO RESTORE NEW'ed PROGRAM."
225 PRINT " F2....TO SWITCH INTERRUPTS OFF."
230 PRINT " F3....TO RENUMBER LINES FROM 100."
235 PRINT " F4....TO RENUMBER LINES FROM 9000"
240 PRINT "SPACE....SAVES SYSTEM VARS IN 'OLD'." PRINT
245 PRINT "USR ADDRESSES with INTERRUPTS OFF." PRINT
250 PRINT "LET O=USR(48707) TO RESTORE RESET PROG."
255 PRINT "LET M=USR(48800) TO MOVE SUBROUTINE."
260 PRINT "LET M=USR(48820) TO MERGE SUBROUTINE."
265 PRINT "LET I=USR(48992) SWITCH INTERRUPTS ON."
270 STOP
280 REM
300 CODE

```

```

454A SVCODE: LD HL,#8E00; Start address of code to be saved.
454D LD DE,#4007; Start address of defined space.
4550 LD BC,#01B0; Length of code to be saved = 432 bytes.
4553 LDIR; Move code into defined space.
4555 RET

```

Symbols:  
SVCODE454A

```

310 LET I=USR(49012): REM INTERRUPTS OFF
320 CLS : CSR 10,2: PRINT "CODE READY TO SAVE."
330 CSR 4,6: PRINT "ENTER FILENAME, SELECT RECORD"
340 CSR 10,8: PRINT "THEN PRESS RETURN."
350 CSR 6,10: INPUT "CODE FILENAME ";FILE$
360 SAVE FILE$
370 GOTO 200

```

**SALE**

Memotech RS128 with FDX disc unit (two 500K drives) plus Zenith amber monitor. Complete CP/M system including various pieces of software: NewWord, Turbo PASCAL, COMPAT (disk reformatting utility - reads/writes disks in various formats). Plus Memotech printer cable (fits any standard Centronics printer). As-new condition, hardly used: few months old (giving up home computing): worth around £1400, will sell the lot for £1000.

Telephone 031-557 3797 and ask for Robert.

MEMOTECH MIX 512 plus FDX DUAL DISC SYSTEM

Complete with 80 column colour board, RS232 communications board, NewWord, Supercalc spreadsheet, CP/m system disc, Utilities and 512 software.

All in excellent condition and still under guarantee. OFFERS TO:  
A. PHILIPS Newton Abbot 3375

**SALE**

## NODDYCOL

G.Passmore

In answer to M.Paver's query regarding changing ink and paper colours for Noddy. Above is a listing which will do more than he wants.

Enter the code and RUN it. When the ready appears type USER and press <RET>. The screen will change from BLUE and WHITE to YELLOW and BLACK. By changing the value at #A040 you can have any colour combination you want. (the byte holds the value 16\*INK+PAPER)

You can add the routine to a program and include the command USER in a line.

note. after entering the routine, run it, if you don't the SYNTAX check will not allow you to enter a line with USER in it.

You can enter program lines whilst in colour changed mode. But do not add, edit or delete any lines before the line which holds the routine.

If the code is moved whilst it is being used the system will crash and you will lose your program.

If you have to make an alteration to a line before the routine do this:-

1. type USER <RET> colour normal.
2. Make program alterations.
3. Re-assemble line holding routine.
4. RUN routine.
5. type USER <RET> colours change.

The command USER toggles between normal and selected colours.

## 1 CODE

```

4007      LD B,3;      SET UP SYSTEM
4009      LD A,7;      VARIABLES TO ALLOW
400B      LD HL,#FAB5;  THE USE OF THE
400E JP1:  LD (HL),A;   COMMAND USER
400F      INC HL;      AND SET JUMP TO
4010      DJNZ JP1;     SET NEW COLOURS
4012      LD (HL),#C9
4014      LD HL,USERCOM
4017      LD (#FABA),HL
401A      LD A,#C3
401C      LD (#FAB9),A
401F      LD HL,VSCOM
4022      LD (#FFEE),HL
4025      RET
4026 USERCOM: LD A,(#FFED);  USER ROUTINE
4029      CP #C3;      TOGGLES COL CHANGE
402B      JR NZ,JP2;   ON AND OFF.
402D      LD A,#C9
402F      JR JP3
4031 JP2:  LD A,#C3
4033 JP3:  LD (#FFED),A
4036      RET
4037 VSCOM: LD A,(#FD5E);  ALTER VDP
403A      PUSH AF;     REGISTER TO NEW
403B      XOR A;       COLOURS
403C      LD (#FD5E),A
403F      LD A,#1B;    NEW COLOURS
4041      OUT (2),A
4043      LD A,#87
4045      OUT (2),A
4047      POP AF
4048      LD (#FD5E),A
404B      RET

```



## HARDWARE REVIEW 250k Single Disc

Memotech have at last finished the single disc system. The system is a 250k drive type #02 and comes complete to Genpat members for 249.00 including the new type disc interface which plugs into the lefthand side of the computer.

The disc operates in MTX Single Disc Basic and comes complete with a 59K system disc which has a renumber and 5 games. Newlord will be available, through Genpat, at 30.00. The club will be doing a special offer for members who have already purchased the Newlord Rom. The Club will supply Newlord on disc for 10.00 with a trade-in of 20.00 for the Rom. It is not possible to use the disc to save Newlord files under the Rom version.

All the normal MTX commands are available under Disc Basic and the following are the added commands that allow for such things as random access filing and for storing programs to disc. The tape to disc transfer utility also works with this disc system

### COMMANDS:

CLOSE close a disc file after the OPEN command has been used.

DIR display all files currently on the disc.

EOF Detect the end of file and branch to a specified line number.

INPUT# read a data item from a disc file.

KILL close and erase a disc file

LINE INPUT# read an entire line from disc.

LOAD Load a file from disc

OPEN# allow input/output to a disc file

PRINT# write data to a sequential or random disc file.

READ read a block of data from a disc.

REC# position the record pointer to a specific record number in a file.

REN rename a disc file.

SYSCOPY copy the system tracks to a disc

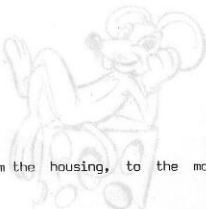
COPY copy a file to another disc

FORMAT format a disc to receive data.

This disc system is excellent value and the only difference, apart from the housing, to the more expensive disc system is the amount of storage that can be saved to disc.

We are encouraging authors to write for this system and it is expected to have FORTH & MEMOSKETCH available within the very near future. MEMOPAD will start a series of articles on how to use disc system starting from the very next issue.

This system must now open whole new applications for the ordinary MTX user no matter which language you use to program.

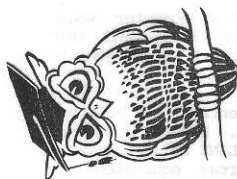


# Competition

Message to:-

MEMOTECH LIMITED,  
WITNEY,  
OXON,  
OX8 6BX

Dear Sir,



CLUES:-

- (1) THIS METHOD OF ENCODING IS QUITE EXCLUSIVE CODED MESSAGE TO MEMOTECH
- (2) THE SOLUTION MAY BE FOUND WHEN YOU SEND YOUR CODED MESSAGE TO MEMOTECH

15, 48, 57, 111, 0, 42, 53, 41, 82, 37, 42, 37, 105, 35, 32, 100, 72, 79, 119, 39, 59, 58, 101,  
56, 64, 76, 32, 47, 111, 47, 72, 86, 42, 42, 76, 73, 69, 39, 53, 172, 110, 87, 53, 100, 80, 233  
32, 83, 116, 115, 115, 105, 86, 104, 100, 105, 210, 114, 108, 104, 112, 119, 32, 121, 111, 197  
32, 98, 99, 117, 108, 100, 3, 71, 196, 101, 33, 98, 104, 101, 32, 78, 41, 42, 92, 204, 32, 118  
117, 32, 112, 100, 118, 103, 111, 116, 36, 54, 182, 32, 105, 110, 35, 105, 104, 66, 9, 119, 99  
14,

Yours Faithfully,  
John Hudson.

HERE IS THE FIRST OF OUR COMPETITION ENTRIES FOR THE CODED MESSAGE COMPETITION. IT IS YOUR TASK TO TRY AND DECODE THIS MESSAGE. IF YOU SUCCEED SEND YOUR ANSWER TO MEMOPAD AND WE WILL AWARD A PRIZE OF TWO PIECES OF MEGASTAR SOFTWARE. THE COMPETITION IS HARD BUT IF YOU STUDY THE TWO CLUES, AND EXAMINE THE LISTING OF DATA YOU SHOULD BE ABLE TO MAKE SOME SENSE OF IT..... AFTER ALL THAT'S WHAT THEY DID IN THE LAST WAR !!

# CONVERTING CONNECT 4

This month we are going to concentrate on setting up the main areas of memory that are to be reserved for variables and arrays. A similar method, to the one we have created, is adopted by Basic whenever you tell the computer to reserve memory for a variable with the LET X=2 statement. If you compare the way we have labelled the areas of memory, you will see how easy it is to associate machine code instructions etc., with Basic instructions.

The first instruction is JP START. If we didn't put this in the computer would try to carry out the Hex instructions held in the bytes from #800A, and this would result in a program crash, so we must skip over the variables and jump to the start of the game.

TABLE is used to point to the array GS1,2,3 ...etc and the entries to TABLE are the pointers to the elements in the array ( see last month). DIMR,DIMJ etc are easy enough to understand, they are simply the arrays from LINE 20 of the Basic program. GS1,GS2 through to GS8 are the elements of an array equivalent to TGS(8,8) in line 20 of the Basic program ( we don't need the final 2 because this is peculiar to MTX Basic). Each entry in the array is the address of a screen position within the playing board - in fact, they are the first positions because each board position is two characters wide.

DIMG holds the evaluation factors that are used by the computer to calculate the next best move.....Lines 1010 & 1020 of the Basic program.

THINK holds the screen starting address for the RED/GREEN band that appears when the computer is thinking. MESSAGE holds the very first screen position where each message will be printed.

CHECK1,YY,X,XX etc are all variables that will be used within the program, and their values will be stored in these areas. See 100 -140 of the Basic program.

A very important label is STACK. This is the location we shall store the STACK POINTER when we use it to pull information from within the arrays. We have already discussed the disasters that can occur if the Stack Pointer gets its knickers in a twist !

MES1 etc are the various messages that will be used by the computer to communicate with the human player. The 255 at the end of each message is the TERMINATION byte and the routine that prints messages to the screen will test each character of the message to see if it is 255 - if it is it will exit satisfied that it has reached the end of the message.

HS = Human character & CS = Computer character (H\$ & C\$ from the basic program). The data in these two locations are the left hand side Ascii character of each of the graphics.

When you have typed in the program double check it and when you are satisfied that it is correct, save it to tape. If you run the program nothing will happen except that you will return to Basic. I urge you to check your code - if you find the program doesn't run when we have completed the game, it is a daunting task to have to go back and check every byte. ★

## 10 CODE

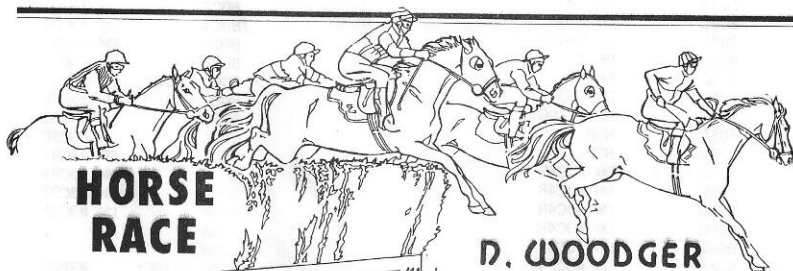
8007 JP START  
 800A TABLE: DW GS1  
 800C DW GS2  
 800E DW GS3  
 8010 DW GS4  
 8012 DW GS5  
 8014 DW GS6  
 8016 DW GS7  
 8018 DW GS8  
 801A NOP  
 801B NOP  
 801C DIMR: DB 00,00,00,00,00,00,00,00  
 8024 NOP  
 8025 NOP  
 8026 DIMJ: DB 00,00,00,00  
 802A NOP  
 802B NOP  
 802C DIMK: DB 00,00,00,00  
 8030 NOP  
 8031 NOP  
 8032 DIMA: DB 00,00,00,00  
 8036 NOP  
 8037 NOP  
 8038 DIMG: DW 0001  
 803A DW 120  
 803C DW 500  
 803E DW 15000  
 8040 DW 2  
 8042 DW 880  
 8044 DW 3000  
 8046 DW 15000  
 8048 DW 0001  
 804A DW 100  
 804C DW 1000  
 804E DW 15000  
 8050 DW 1  
 8052 DW 475  
 8054 DW 4000  
 8056 DW 12000  
 8058 NOP  
 8059 NOP  
 805A GS1: DW #3C45  
 805C DW #3C48  
 805E DW #3C4B  
 8060 DW #3C4E  
 8062 DW #3C51  
 8064 DW #3C54  
 8066 DW #3C57  
 8068 DW #3C5A  
 806A GS2: DW #3E05  
 806C DW #3E08  
 806E DW #3E0B  
 8070 DW #3E0E  
 8072 DW #3E11  
 8074 DW #3E14  
 8076 DW #3E17  
 8078 DW #3E1A  
 807A GS3: DW #3DC5  
 807C DW #3DC8

807E DW #3DCB  
 8080 DW #3DCE  
 8082 DW #3DD1  
 8084 DW #3DD4  
 8086 DW #3DD7  
 8088 DW #3DDA  
 808A GS4: DW #3D85  
 808C DW #3D88  
 808E DW #3D8B  
 8090 DW #3D8E  
 8092 DW #3D91  
 8094 DW #3D94  
 8096 DW #3D97  
 8098 DW #3D9A  
 809A GS5: DW #3D45  
 809C DW #3D48  
 809E DW #3D4B  
 80A0 DW #3D4E  
 80A2 DW #3D51  
 80A4 DW #3D54  
 80A6 DW #3D57  
 80A8 DW #3D5A  
 80AA GS6: DW #3D05  
 80AC DW #3D08  
 80AE DW #3D0B  
 80B0 DW #3D0E  
 80B2 DW #3D11  
 80B4 DW #3D14  
 80B6 DW #3D17  
 80B8 DW #3D1A  
 80BA GS7: DW #3CC5  
 80BC DW #3CC8  
 80BE DW #3CCB  
 80C0 DW #3CCE  
 80C2 DW #3CD1  
 80C4 DW #3CD4  
 80C6 DW #3CD7  
 80C8 DW #3CDA  
 80CA GS8: DW #3C85  
 80CC DW #3C88  
 80CE DW #3C8B  
 80D0 DW #3C8E  
 80D2 DW #3C91  
 80D4 DW #3C94  
 80D6 DW #3C97  
 80D8 DW #3C9A  
 80DA NOP  
 80DB NOP  
 80DC THINK: DW #3EAC  
 80DE MESSAGE: DW #3EA2  
 80E0 CHECK1: DW 0  
 80E2 CHECK2: DB 0  
 80E3 SAVEB: DB 0  
 80E4 Y: DB 0  
 80E5 YY: DB 0  
 80E6 XV: DB 0  
 80E7 TEMP: DB 0  
 80E8 XX: DB 0  
 80E9 MV: DB 0  
 80EA QV: DB 0

```

80EB NV: DB 0
80EC HV: DB 0
80ED RV: DB 0
80EE FV: DB 0
80EF WV: DB 0
80F0 SV: DB 0
80F1 OS: DB 0
80F2 XS: DB 0
80F3 AV: DB 0
80F4 HS: DB 133
80F5 CS: DB 135
80F6 P6: DB 0
80F7 INC1HK: DW 0
80F9 THCOL: DW 0
80FB ZV: DW 0
80FD UV: DW 0
80FF EV: DW 0
8101 CODE: DB 0
8102 LETTER: DW 0
8104 STACK: DW 0
8106 MES1: DB "DO YOU WANT TO GO FIRST?",255
811F MES2: DB "PICK A NUMBER BETWEEN 1 & 8",255
813B MES3: DB "ILLEGAL INPUT !!",255
814C MES4: DB "SORRY! I'VE BEAT YOU",255
8161 MES5: DB "WELL DONE! YOU'VE BEAT ME !!",255
817E MES6: DB "DO YOU WANT ANOTHER GAME?",255
8198 MES7: DB " "
81A7 DB " "
81B7 MES8: DB "THINKING",255
81C0 MES9: DB "I'M GOING IN COLUMN",255
81D4 MES10: DB "GOOD GAME,IT'S A DRAW!!",255
81EC START: RET

```



I've published this game because I like it ! When the racing has been called off this is the program to load into the computer.

Up to 8 people can play at the same time. A list of horses is shown with their odds. Obviously, the horses with the lower odds stand a better chance of winning but not always so. The program is self prompting so type it in and they're up and running !

29 VS 4

```

32 REM *****VARIABLES*****
34 DIM M(8),P(8),CH(8),BE(8),W(8)
36 CTLSPR 6,3
38 CTLSPR 2,16
40 CTLSPR 5,0
50 REM *****DESIGN HORSES*****
51 GENPAT 3,1,0,2,7,252,188,36,68,68
52 GENPAT 3,2,0,2,7,252,60,98,129,129
53 GENPAT 3,3,0,130,71,60,124,130,130,2
54 GENPAT 3,4,0,66,71,60,124,66,36,8
55 GENPAT 3,5,0,2,199,60,60,34,44,16
56 GENPAT 3,6,0,2,135,252,62,34,20,8
57 GENPAT 3,7,0,2,7,252,60,36,77,129
58 REM *****DESIGN JOCKEY*****
59 GENPAT 3,8,8,16,28,16,8,16,0,0
60 REM *****DESIGN VIRTUAL SCREENS*****
62 CRVS 2,1,0,0,32,10,32
64 CRVS 3,1,0,14,32,10,32
66 CRVS 6,1,0,10,32,4,32
100 REM *****START GAME*****
110 VS 2: PAPER 3: INK 15: CLS
120 VS 3: PAPER 11: INK 6: CLS
130 VS 6: PAPER 6: INK 14: CLS
140 VS 6: CLS
150 CSR 1,1
152 PRINT "How many wish to play?"
154 LET A=VAL(INKEY$)
156 IF A<1 OR A>8 THEN GOTO 154
158 VS 3: CSR 1,1
160 PRINT "THERE ARE ";A;" PLAYERS."
162 VS 6: CLS
164 REM *****GET NAMES*****
166 DIM N$(A,16)
167 PAUSE 1000: VS 3: CLS
168 FOR X=1 TO A
169 VS 6: CLS
170 CSR 1,2
172 PRINT "Name of player ";X;" ";
174 INPUT N$(X)
178 VS 3: CSR 1,X
179 PRINT "Player ";X;" is ";N$(X)
180 NEXT X
182 PAUSE 1000
184 DIM C(A)
185 VS 3: CLS
186 FOR X=1 TO A
188 LET C(X)=100
190 NEXT X
200 REM *****DRAW COURSE*****
205 VS 2: CLS
210 FOR Y=8 TO 72 STEP 8
215 LINE 0,Y,254,Y
220 NEXT Y
225 LINE 20,8,20,72
230 LINE 245,8,245,72
235 INK 1
240 FOR Y=8 TO 1 STEP -1

```



```

242 CSR 0,9-Y
245 PRINT Y
250 NEXT Y
255 CSR 9,0: PRINT "MTX Race Track"
260 VS 3: CLS : VS 6: CLS
265 VS 3
270 CSR 1,0
275 DIM H$(8,7),O(8)
280 REM *****HORSE NAMES*****
285 LET H$(1)="Pocklin"
290 LET H$(2)="Baldnig"
295 LET H$(3)="Lesaloo"
300 LET H$(4)="Karlace"
305 LET H$(5)="Jenspen"
310 LET H$(6)="Suzidog"
315 LET H$(7)="Jubicat"
320 LET H$(8)="Burrows"
400 REM *****WORK OUT ODDS*****
405 FOR X=1 TO 8
410 LET O(X)=INT(RND*20)+1
415 IF O(X)>10 AND O(X)<16 THEN LET O(X)=15:
    GOTO 425
420 IF O(X)>15 THEN LET O(X)=20
425 NEXT X
430 REM *****DISPLAY ODDS*****
435 VS 3: CLS
440 FOR Y=1 TO 8
445 CSR 1,Y
450 PRINT Y;" ";H$(Y);" ";O(Y);" ";1"
455 NEXT Y
500 REM *****PLACE HORSES ON TRACK*****
505 SPRITE 1,8,20,124,0,0,15
510 SPRITE 2,1,20,124,0,0,1
515 SPRITE 3,8,20,132,0,0,4
520 SPRITE 4,1,20,132,0,0,1
525 SPRITE 5,8,20,140,0,0,6
530 SPRITE 6,1,20,140,0,0,1
535 SPRITE 7,8,20,148,0,0,7
540 SPRITE 8,1,20,148,0,0,1
545 SPRITE 9,8,20,156,0,0,10
550 SPRITE 10,1,20,156,0,0,1
560 SPRITE 11,8,20,164,0,0,12
565 SPRITE 12,1,20,164,0,0,1
570 SPRITE 13,8,20,172,0,0,13
575 SPRITE 14,1,20,172,0,0,1
580 SPRITE 15,8,20,180,0,0,14
590 SPRITE 16,1,20,180,0,0,1
600 REM *****TAKE BETS*****
605 FOR X=1 TO A
610 VS 6: CLS
615 PRINT "WHICH HORSE PLAYER";X;" ";
620 INPUT CH(X)
625 IF CH(X)<1 OR CH(X)>8 THEN GOTO 610
630 VS 6: CLS
635 PRINT "HOW MUCH DO YOU BET";
640 INPUT BE(X)
645 IF BE(X)<0 OR BE(X)>100 THEN GOTO 630
650 LET BE(X)=INT(BE(X))
655 LET C(X)=C(X)-BE(X)
660 NEXT X: CLS

```

```

670 REM *****SHOW BETTING*****
675 VS 3: CLS
680 PRINT " PLAYER      HORSE      BET"
685 FOR X=1 TO A
690 CSR 0,X
695 PRINT X,H$(CH(X));":":CH(X),BE(X)
700 NEXT X
800 REM *****START RACE*****
805 LET F=0
810 FOR X=1 TO 8: LET M(X)=20: NEXT X
820 FOR X=1 TO 8
822 ADJSR 0,X*2,INT(RND*6)+1
825 LET P(X)=M(X)
830 LET M(X)=M(X)+INT(RND*3)+3
835 LET M(X)=M(X)-INT(D(X)/9)+INT(RND*5)+1
840 IF M(X)>=245 AND P(X)<245 THEN GOSUB 900
842 IF M(X)>=255 THEN LET M(X)=246: GOTO 855
843 ADJSR 0,X*2,INT(RND*6)+1
845 ADJSR 2,X*2,M(X)
850 ADJSR 2,X*2-1,M(X)
854 ADJSR 0,X*2,INT(RND*6)+1
855 NEXT X
860 GOTO 820
900 REM *****ITS A FINISHER*****
905 LET F=F+1: REM ***POSITION***
906 IF F=8 THEN GOTO 1000
910 ADJSR 1,X*2,0
915 ADJSR 1,X*2-1,0
920 LET M(X)=245: LET P(X)=245: LET W(X)=F
925 RETURN
1000 VS 6: CLS : VS 3: CLS
1005 FOR X=1 TO A
1010 CSR 1,X
1015 PRINT "Player:":X;":Horse position:":W(CH(X))
1020 NEXT X
1030 REM *****BOOKIE WORKINGS*****
1040 FOR X=1 TO A
1045 IF W(CH(X))>3 THEN GOTO 1080
1050 IF W(CH(X))=1 THEN LET BE(X)=BE(X)*O(CH(X))+BE(X)
1055 IF W(CH(X))=2 THEN LET BE(X)=BE(X)*INT(O(CH(X))/2)+BE(X)
1060 IF W(CH(X))=3 THEN LET BE(X)=BE(X)*INT(O(CH(X))/4)+BE(X)
1065 IF W(CH(X))=1 AND O(CH(X))=1 THEN LET BE(X)=BE(X)+BE(X)+BE(X)
1066 IF W(CH(X))=2 AND O(CH(X))=1 THEN LET BE(X)=BE(X)+BE(X)
1070 LET C(X)=C(X)+BE(X)
1080 NEXT X
1090 PAUSE 2000
1100 REM *****DISPLAY CASH*****
1110 VS 3: CLS
1115 FOR X=1 TO A
1120 CSR 1,X
1125 PRINT "Player:":X;": has $":C(X)
1130 NEXT X
1140 PAUSE 6000: GOTO 400

```



G.D.PRATT

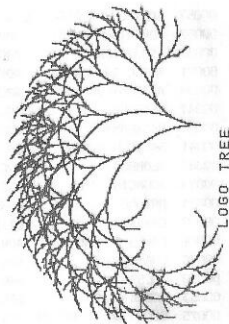


LOGO TREE

```

0 REM *****
1 REM *
2 REM *      LOGO TREE BY G.D.PRATT
3 REM *      THIS IS A RECURSIVE PROGRAM
4 REM *      USING THE EXCELLENT LOGO
5 REM *      TYPE GRAPHICS COMMANDS ON
6 REM *      THE MTX 512. BASED ON IDEAS
7 REM *      IN BORIS ALLEN'S BOOK
8 REM *      "INTRODUCING LOGO"
9 REM *
10 REM *****
11 REM
13 LET SKY=15: LET LEAF=6: REM CHANGE FOR DIFFERENT COLOURS
15 VS 4: COLOUR 2,SKY: COLOUR 4,SKY: COLOUR 3,STEM: CLS
20 ANGLE PI/2: LET TREERAD=0.55: LET BRANCH=99: LET REDUCTION=0.84: LET RELATIVE=0.35: LET TREEANGLE=0.6: LET ORDER=9
30 PLOT 169,30
40 GOSUB 1000
50 CSR 12,22: PAPER SKY: INK STEM: PRINT "LOGO TREE"
999 GOTO 999
1000 REM DRAW TREE
1010 IF ORDER=0 THEN RETURN : IF ORDER<3 THEN COLOUR 3,LEAF ELSE COLOUR 3,STEM: LET BRANCH=BRANCH*REDUCTION: ARC BRANCH,TREERAD: LET ORDER=ORDER-1
1020 GOSUB 1000
1030 LET ORDER=ORDER+1: IF ORDER<3 THEN COLOUR 3,LEAF ELSE COLOUR 3,STEM
1040 PHI PI: ARC BRANCH,-TREERAD: PHI PI: ARC BRANCH*RELATIVE,-TREERAD*TREEANGLE: LET ORDER=ORDER-1
1050 GOSUB 1000
1060 LET ORDER=ORDER+1: IF ORDER<3 THEN COLOUR 3,LEAF ELSE COLOUR 3,STEM
1070 PHI PI: ARC BRANCH*RELATIVE,TREERAD*TREEANGLE: PHI PI: LET BRANCH=BRANCH/REDUCTION
1080 RETURN
1998 REM***** PARAMETERS *****
1999 REM*
2000 REM* TREERAD : SPREAD OF TREE
2010 REM* BRANCH : LENGTH OF BRANCH
2020 REM* REDUCTION: AT EACH STAGE
2030 REM* RELATIVE : LEFT/RIGHT SIDE
2040 REM* TREEANGLE: LEAN OF TREE
2050 REM* ORDER : NO. OF BRANCHES
2060 REM*
2070 REM*****

```



LOGO TREE



## SOFTWARE



00057	3D TACHYON FIGHTER	ARC	CONT	6.95	I	ANY
00062	ADVENTURE QUEST	ADV	LVL9	8.75	I	ANY
00033	AGROVATOR	ARC	SYNT	5.95	I	512
00071	ALICE IN WONDER.	ADV	CONT	6.02	I	ANY
00008	ASTROMILON	ARC	CONT	6.02	I	ANY
00047	ASTROPAC	ARC	CONT	6.02	I	ANY
00058	BACKGAMMON	BRD	CONT	7.95	I	ANY
00041	BASIC BUSINESS	BS	CONT	5.95	I	ANY
00043	BLOBBO	ARC	CONT	6.02	I	ANY
00073	BOUNCING BILL	ARC	SYNT	4.95	I	ANY
00074	BRIDGE	CARD	CONT	6.95	I	512
00077	CANVAS	UTIL	CONT	6.95	I	ANY
00086	CAVES OF ORB	ADV	SYNT	9.95	E	ANY
00078	CHAMBEROIDS	ARC	CONT	6.95	I	ANY
00059	CHESS	BRD	CONT	8.75	I	ANY
00053	COBRA	ARC	CONT	6.02	I	ANY
00025	COLOSSAL ADVENTURE	ADV	LVL9	8.75	I	ANY
00028	COMPOSER	UTIL	XAV	13.00	I	ANY
00046	CON RAIDERS	ARC	CONT	6.02	I	ANY
00050	DEN GOES BANANAS	ARC	SYNT	6.02	U	ANY
00011	DENNIS & CHICKEN	ARC	CONT	6.02	U	ANY
00068	DOODLEBUG	ARC	SYNT	4.95	I	ANY
00056	DRAUGHTS	BRD	CONT	6.95	I	ANY
00063	DUNGEON ADVENTURE	ADV	LVL9	8.75	I	ANY
00067	EDASM	UTIL	SYNT	7.95	I	512
00066	EMERALD ISLE	ADV	LVL9	5.95	I	ANY
00038	ESCAPE FROM ZARKOS	ARC	MEGA	6.95	I	ANY
00082	EXTENDED BASIC	6.95	SENT	6.95	I	ANY
00083	FATHOMS DEEP	ARC	MEGA	6.95	I	ANY
00091	FIG FORTH	LANG	SYNT	15.75	I	512
00055	FIREHOUSE FREDDIE	ARC	CONT	6.02	I	ANY
00021	FIRST LETTERS 1	EDUC	CONT	8.75	I	ANY
00037	FLUMMOX	ARC	SYNT	5.95	I	512
00052	GAUNTLET	ARC	CONT	6.02	U	ANY
00031	GOLDMINE	ARC	CONT	6.02	I	ANY
00069	GRAPHICS	UTIL	CONT	5.95	I	ANY
00088	H & L DUMP	UTIL	MEM	4.95	I	ANY
00072	HAWKWARD	ARC	SYNT	4.95	I	ANY
00085	HELI-MATHS	EDUC	CONT	5.95	I	ANY
00034	HUNCHY	ARC	SYNT	4.95	I	ANY
00084	ICEBERG	ARC	SYNT	4.95	E	ANY
00015	JOHNNY REB	WAR	LOTH	6.02	I	ANY
00016	KEY TO TIME	ADV	LUMP	6.02	I	ANY
00042	KILOPEDE	ARC	CONT	6.02	I	ANY
00019	KNUCKLES	ARC	CONT	7.95	I	ANY
00079	LES FLICS	ARC	PSS	6.95	E	ANY
00032	LITTLE DEVILS	ARC	SYNT	4.95	I	ANY
00024	LORDS OF TIME	ADV	LVL9	8.75	I	ANY
00014	M CODER	UTIL	PSS	6.02	U	ANY
00035	M COMMAND & ARCAD.	ARC	SYNT	4.95	I	ANY
00070	MAN FROM GRANNY	ADV	SYNT	4.95	I	512
00022	MATHS 1	EDUC	CONT	8.75	I	ANY
00013	MAXIMA	ARC	CONT	6.02	I	ANY
00087	MEMOCHEQUE	UTIL	SYNT	6.95	E	ANY
00075	MEMOSKETCH	UTIL	SYNT	7.95	I	ANY
00090	MINER DICK	ARC	XAV	6.95	E	ANY
00044	MISSION ALPHATRON	ARC	CONT	6.02	I	ANY
00030	MISSION OMEGA	ARC	SYNT	4.95	I	ANY
00054	MURDER AT MANOR	ADV	LUMP	6.02	I	ANY
00010	MUSIC PAD	UTIL	CONT	6.02	I	ANY
00003	MEMO	ARC	CONT	6.00	I	ANY
00045	OBLIDS	ARC	CONT	6.02	I	ANY
00001	PAYROLL	UTIL	CONT	21.25	I	512
00005	PHATO	ARC	CONT	6.02	I	ANY
00061	PHYSICS 1	EDUC	CONT	8.75	I	ANY
00012	PONT & BLACKJACK	CARD	CONT	6.02	I	ANY
00009	POT HOLE PETE	ARC	CONT	6.02	I	ANY
00040	PURCHASE LEDGER	BN	CONT	12.75	I	512
00048	QOGO	ARC	CONT	6.02	I	ANY
00076	QOGO 2	ARC	CONT	6.95	I	ANY
00064	RETURN TO EDEN	ADV	LVL9	8.75	I	ANY
00020	REVERSI	BRD	CONT	7.95	I	ANY
00002	SALES LEDGER	UTIL	CONT	15.75	U	512
00029	SALTY SAM	ARC	SYNT	4.95	I	ANY
00049	SNAPPO	ARC	CONT	6.02	I	ANY
00023	SNOWBALL	ADV	LVL9	8.75	I	ANY
00036	SON OF PETE	ARC	MEGA	6.95	I	ANY
00026	SPELL-COPTER	EDV	CONT	5.95	I	ANY
00081	SPOOLER	UTIL	MEM	4.95	I	ANY
00017	STAR COMMAND	ARC	CONT	6.95	I	ANY
00085	SUPER BIKE	ARC	SYNT	4.95	I	ANY
00004	SUPER MINEFIELD	ARC	CONT	6.02	I	ANY
00039	TAPE TO DISC	UTIL	MEM	6.95	I	ANY
00007	TAPEWORM	ARC	CONT	6.02	I	ANY
00089	TARGET ZONE	ARC	SYNT	6.95	I	ANY
00051	THE ZOO GAME	ADV	CONT	6.02	I	ANY
00006	TOADO	ARC	CONT	6.02	I	ANY
00018	TURBO	ARC	CONT	6.95	I	ANY
00080	USER EXTEND	UTIL	MEM	7.95	I	ANY
00027	UTILITIES 1	UTIL	CONT	4.95	I	ANY
00092	VERNON & VAMPIRES	ARC	SYNT	5.95	E	ANY
00060	WORD & PICTURE	EDUC	CONT	8.75	I	ANY

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KEY: STOCK NUMBER : TITLE : TYPE : PUBLISHER : PRICE : WHICH MACHINE



TAPE OF THE MAG: APRIL

UTILITIES : LIGHT LINES : TEASER : HORSE RACE ..... 2.50p

\* Utilities will have to be installed on the MTX 500 by entering the assembler to relocate the code for the 500.

## FACT SHEETS:

RST 10 CALLS .....50p

SYSTEM VARIABLES .....50p

USING INTERRUPTS .....50p

NOTE: DUE TO THE SHORTAGE OF SPACE THE ANSWER TO THE STRUCTURED PROGRAMMING TEST WILL APPEAR IN THE NEXT ISSUE.

UNDER 9'S COLOURING COMPETITION



COLOURING COMPETITION: MYSTERY PRIZE

NAME .....

ADDRESS .....

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