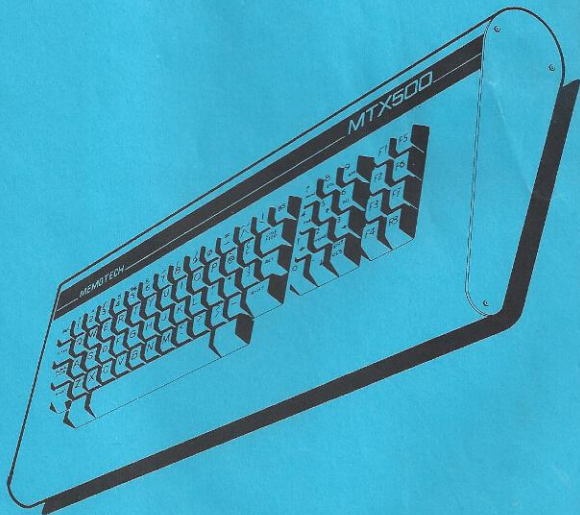


memopad

Memotech Computer User Club Magazine



MEMOTECH
MTX
SERIES



CONTENTS MAY 1985

EDITORIAL	PAGE 2
HI-SCORES	PAGE 3
REVIEW QUANTUM.....	PAGE 4
REVIEW MEMOSKETCH & MINER DICK.....	PAGE 5
REVIEW JUMPING JACK FLASH.....	PAGE 6
REVIEW TARGET ZONE & MINI REVIEWS.....	PAGE 7
3D GRAPHICS PART 3.....	PAGE 10
ALL ABOUT BASIC.....	PAGE 12
STARTING FORTH	PAGE 15
BASIC GRAPHICS PART 1.....	PAGE 18
STRUCTURED PROGRAMMING	PAGE 21
VIEWPOINT	PAGE 24
DANMARK'S BEDSTE MIKRO	PAGE 26
DISC MANIA ALL ABOUT IT.....	PAGE 28
PROGRAM THE SOUND OF MUSIC	PAGE 31
SOFTWARE	PAGE 34
HARDWARE	PAGE 35
END STATEMENT	PAGE 36

EDITORIAL

Hello again. We have had another very busy month here at Genpat ... there never seems to be enough time in a day ! I, of course, have been on my travels again. The summer months are slack as far as manufacturers are concerned but very busy for the programmers this is the time we start preparing all the documentation for the new products we seem to be in great demand at the moment.

Exciting things are taking place within Memotech & within Genpat. As most of you know, we do not run the User Group as a full time occupation, we are consultants to the computer trade and work for other companies as well as for the User Group. We are just on the point of moving. When, I don't yet know, but my wife has sold her business and I am being evicted from her premises. After the move, you will find that another person will be dealing with the general enquiries, and Michael will deal with most of the technical enquiries. We are moving into larger premises which will enable us to employ more programmers. I can assure you that you will also benefit from this move. I will say more about this as soon as Memotech's negotiations are completed.

Memotech have decided to have an all out push to try and gain a worthy place within the British market, and around July you should see a concerted effort on their part to attract sales.

It is with great regret that I have to announce the demise of Personal Computer Weekly. They were good friends of ours, and as you know, I did quite a lot of writing for them. Unfortunately they couldn't make any major impact on the British public ... two weeks ago they came out on the streets for the last time.

I would like to welcome all our Finnish friends who are very Memotech orientated.

Any member who has ordered FORTH please bear with us ... by the time you get this magazine, hopefully, the printer will have got off his backside and delivered the manuals the tapes are in stock !

There will be another bumper issue of software next month with enough choice to satisfy most people. All the new titles will be available on disc and some software will be available on disc but not on tape. We shall have a tape based spreadsheet available shortly plus another database.

The 250k disc drive is only available as a limited edition. There are 1000 drives available, and when they are sold, unfortunately, there will be no more. Memotech are producing a 80 column board & CP/m rom for this new drive and this will allow you to run CP/m with an 80 column screen for an amazingly low price. I mention this in passing to let you know the future do not start ordering the board until we let you know.

The Jaro Speed-Splitter will soon be ready... this will give all you modem freaks what you require for access to Prestel. Memotech have set off for Russia, once again, to deliver a new proposal. Things are looking good in that direction.

Keep on tapping

HI SCORES



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



GOLDMINE	8,995
ASTRO-PAC	148,700
BOUNCING BILL	14,184
SNAPPO	111,670
KNUCKLES	999,999+
NEMO	17,610
COBRA	8,924
MISSION ALPHATRON	50,020
TAPEWORM	126,415
TOADO	125,332
POT HOLE PETE	75,080
MAXIMA	271,000
STAR COMMAND	140,430
PHAID	26,000
OBLLOIDS	46,850
KILOPEDE	61,504
3D TACHYON FIGHTER	10,700
CONTINENTAL RAIDERS	106,240
BLOBO	148,283
QOGO 2	35,540
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
FELIX IN THE FACTORY	10,250



Daljinder Singh
Karl Woodger
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
Lesla Woodger
Sean Haverty
Elizabeth Mahon
Angus Grandison
Richard Nash
Sally Street
Richard Nash
Richard Nash
Richard Franks
Richard Franks
T.Eriksson
T.Eriksson
Richard Nash
Richard Nash
Richard Nash
Karl Woodger

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 !

REVIEW

QUANTUM SYNTAX SOFT

Mr. Hook has known for a long time that I have been a BREAKOUT fan. When he sent me QUANTUM to have a look at, I expected an Atari look alike. Was I in for a pleasant surprise? Quantum in no way resembles BREAKOUT or any other game I have seen - true you have a ball, and also a few walls, but the concept is completely unique to Quantum.

The copy I was presented with was a pre-production working copy which wasn't completely finished. This in no way distracted my attention from the game. Quantum is a game to test your dexterity at the keyboard, or joystick, and when the pace heats up .. you have to be quick ... AND I MEAN QUICK !

The Quantum playing area is partitioned off with four brick castles - one in each corner. The other area is grass and shrubbery - some you can run on some you can't. On each section of the game, and there are many, you are told which Kings you must destroy, and which Kings you must preserve ... this varies on each new game and level. You are a knight with a shield which is capable of bouncing a bolt toward the walls. You must try and demolish the walls, and then, and only then, can you destroy the Kings. This is not as easy as it may seem because there are moving objects which home in on the bolt and rebound it. You are limited to the amount of times you can catch the bolt on the shield and if you use all the lives, you are then left with trying to bounce the bolt without being able to catch it, this of course makes it very hard to direct the bolt in the desired direction. Another nice touch is the timer which constantly counts down and it is necessary to also compete against time.

The controls are very easy to use and all you need are the cursor keys or the joystick. I find it hard to describe Quantum. It is certainly an exclusive game for the MTX and is not a 'rip-off' of any other game in existence. If you want a game that tests your skills to the limits then this is it. It is a game for all the family, and even the people watching gain enjoyment. Just the right amount of nostalgia for the good old days is built into this game, and although it does not resemble Breakout, I certainly got that exciting gut feeling. ★

Thoroughly recommended. Excellent value.

Tim Marstian.

ED Quantum will not be available until May 30th.

REVIEW

MEMOSKETCH SYNTAX SOFT

This is an excellent utility which can be used to create screens that can be used as titles for programs etc., or you can use the display as a backdrop plain to move your sprites and animated characters over. Amazing displays can be designed with it, and careful use of colour can make pictures seem three dimensional.

This program lets the user create pictures by putting each pixel where it is wanted. The pixels can have a unique colour except when you have a horizontal line of pixels and the limit to these is set by the VDP chip.

I only had one example screen on the tape I was sent for review, but it was wonderfully designed. I would advise any purchaser to examine the demonstration screens very carefully - try changing them you will soon get the idea. I can say this is the best utility I have ever seen. ★

Marks out of Ten

Usefulness	9	This is a superb utility and well worth buying.
User friendly	8	
Colour Use	9	
Value	9	

Trefor Smith. *T. Smith*

REVIEW

MINER DICK XAVIERside

This is an excellent game and much better than what I saw of POTHOLE PETE. Some of the ideas have been stolen from Manic Miner but at least we have a new character. The graphics are different to the latter two mentioned games, and the movement of the game is very smooth.

The in-game title screen is good a nice touch is the moving words, and the stationary colours during the games, are also excellent. The same can be said for the sound effects and general sound - in the past I have argued in favour of tunes - this is o.k if you like noise but a nice facility with this game is the ability to be able to turn the sound off. Two players are also catered for.

It is a fairly fast game and is very difficult - I would not have seen all the screens except for the demonstration mode. Please buy this game if you want a good addition to your collection. ★

Marks out of Ten

Graphics	8	This is a good game so please do buy it and more games of this calibre may be written for our glorious computer.
Colour	8	
Sound	9	
Control	9	
Value	8	Trefor Smith. <i>T. Smith</i>

ED:- Note that Miner Dick is not available until the end of May.

SYNTAXsoft is launching a new budget label. This label will publish games etc that will retail at #2.95. The first titles will be published at the end of this month and are as follows:

DENNIS AND THE CHICKEN

DENNIS GOES BANANAS

DENNIS AND THE CIRCUS

SLOOPY'S CHRISTMAS 1 2 & 3 [3 GAMES IN ONE]

GHOSTLY CASTLE

COMBAT

REVIEW

JUMPING JACK

SYNTAX SOFT

JACK FLASH is a well presented game with good graphics and sound, and of sufficient, increasing difficulty, to make it compelling. The programmer has obviously taken considerable care with his task and attention to detail.

The object of the game is to jump - what else did you expect with a name like Jack Flash? - up through a number of moving holes on eight levels, and once at the top, proceed to the next screen. Jack can also move left or right. Easy isn't it? Not likely!

Screen 1 is straight forward except that if you mistime the jump poor old Jack bangs his head with a nasty crunching sound and lies stunned waving his legs in the air for several seconds. While in this state he will also fall down through any passing holes. However, with a little practice screen 1 is mastered and along comes screen 2. Things really start to hot up on this screen. There are: Pacmen, lorries, chain-saws, rampant silicon chips, even Sir Clive's C5 tries to do you a mischief! All these try to impede Jack's progress not to mention a large bomb that can drop through the holes, and you are never quite sure when it is going to explode. Mind you, all these malevolent meanies aren't that bad - a severe stunning is the worst that Jack will suffer followed by much leg waving.

I can't tell you what awaits beyond screen 5 because I have not managed to get that far but I understand that there are 20 screens so the game has plenty of scope. There is the option of using the keyboard or joystick, and it would have been a useful addition to allow the music to be turned off.

The scoring is very neat and a "Hall of Fame" is included. You start each screen with a number of bonus points, and these ebb away as Jack struggles to reach the top of the screen. If the bonus points run out, it's back to screen 1.

This is a good game which has that undefinable appeal to make you want to have "just one more go!" ★



REVIEW

TARGET ZONE

SYNTAX SOFT

TARGET ZONE is another game release from Syntaxsoft. This one is written by Chris Sawyer (Qogo, Qogo 2 etc). A lot of care has gone into designing the graphics, and the title screen is very impressive.

You are the pilot of a phantom jet and your mission is to complete a bomb run over enemy territory. You are equipped with a set number of bombs and a forward mounted machine gun.

You must first take off from the fleet aircraft carrier and fly into the target zone. The scrolling landscape moves from sea to land to city to sea, and the enemy will throw everything except the kitchen sink at you! When you reach the city there are guns mounted on roof tops, hidden on the ground, and mounted

on vehicles. These all add to the hazard of flying into enemy territory. At the top of the screen is your fuel guage, and if you do manage to catch sight of your carrier odds are against reaching her before you run out of fuel.

The screen scrolling is excellent, and as I have said before, a lot of thought has gone into designing the graphics. Sound is good, but I would have preferred a little more than is included in the program, however, no one can say that it becomes annoying.

This is a multi-level game and I found that after a short while I was addicted to it. I am sure this will be one for inclusion in the hi-score section of Memopad. A nice touch is the facility to redefine the keys used within the game, and there is also a roll of honour list for the high scores of the day.

Good value for money and an excellent game from Chris Sawyer. I enjoyed playing this piece of software, and so did the kids. ☆

Tim Marstian.

Mini Reviews for New Members

EDSAM: Edasm is an editor/assembler that is loaded into the computer. Once loaded the program takes over control of the computer. Edasm works in a similar manner to assemblers produced for other machines it produces OBJECT & SOURCE files. The program is not hardwired and this means that if the macro file is redefined it is possible to write machine code in 6502, 6509 etc., which can then be down-loaded to the target machine. EDASM IS ONLY AVAILABLE FOR THE 512.

AGROVATOR: Agrovator is a unique maze game that is written for the MTX 512. It is unlike any other maze game and should not be compared with Pacman. There are a massive 30 different screens which are generated in a random fashion so that the same screen is not produced on each re-sart of the game. Agrovator is a really good game and has been a constant best seller.

GRAPHICS: Graphics is a utility package that will allow you to design all your sprites, UDG's and even the ascii character set. The design of your graphics is aided by the matrix grid and once designed the character is shown actual size at the top of the screen. There is a USER MODULE which allows you to interface other commands to Graphics and call them from the main menu. Once you have designed your graphics the utility installs them into your own program and you then treat the new designs as though they were in Rom. You have no GENPAT statements to type in and the value of this package only becomes apparent once you have used it.

H&L SCREEN DUMPS This package allows you - at the press of a button - to dump your TEXT & GRAPHIC screens to a empson type printer, and at 4.95p it is not worth writing your own.

EXTENDED BASIC gives you added commands such as PAINT, FILL, Screen save, screen load etc. The line command on this package is very accurate and enhances any graphics that are drawn on the VS 4 etc.

LITTLE DEVILS is a unique arcade game which is fun for all the family. You have to try and destroy the little devils with the aid of blocks of ice and if you manage to ring the bell you can turn them into balloons. This was given a very good review when first released and will enhance any games collection.

SALTY SAM A game for all the family but the younger children really like this game. Based on the Ladders and platforms type, you must help Salty Sam collect the treasures from under the sea. However, it is not as simple as it may seem -- beware of th octupii !

HAWKWARS A classic shoot 'em up space game where the action gets so hot it is impossible to put down. A very good seller and very popular with the invader addicts.

ARCAZIONS/MISSILE KOMMAND Must represent the best value for money, available on the MTX today. Two classic games on one tape! Written by Chris (Qogo) Sawyer this is a must for the collection.

MISSION OMEGA far superior to **MISSION ALPHATRON** but basically the same game. This is also written by Chris Sawyer.

DOODLEBUG DESTROYERS This is our first imported game from the continent - they must be far more adept at the keyboard in Norway than here! I can't get off the first screen! A real space shoot 'em up game written entirely in machine code and so fast it is unbelievable.

PONTOON This is based on the classic card game and a must for anyone who likes to 'Brag' but doesn't want to loose any money.

REVERSI Othello has been a popular game for many years. The MTX version of this game makes it ever more enjoyable. The computer plays an excellent game and there are various levels to choose from. When no one will play with you, load this into the computer. ★

BRUNNING SOFTWARE

BRUNWORD £16-50 inclusive.

BrunWord loads in 31 seconds, has full text editing with INSERT and OVERWRITE, has temporary files in memory, cut & paste, search, block delete, format preview, enlarged, condensed, underline, and emphasized printing and uses a compressed format for memory files and cassette files. Specially written for the 40 column Memotech screen. Address on the right, Dear Sir on the left, yours sincerely in the middle. Type in using 40 columns. Prints up to 130 columns without re-formatting.

DATAFILE £12-60 inclusive.

This powerful card filing programme has a very fast FIND and UNRAVEL system which can search for data in any field or combination of fields and then sort into alphabetical, numerical or date order. Each file can have up to 22 data fields and can have the background colour set. The selection can be sent to the printer in full format with the headings or printed across the page in columns.

NEWORG £5-00 inclusive.

Relocate your assembly programmes. Write the programme in the usual way, use NewOrg to relocate it. NewOrg will only change the addresses that are labels and will ignore all other addresses and data.

BRUNSPELL available soon.

Use this programme to find your spelling mistakes in BRUNWORD files. A special technique enables a large number of words to be stored without reducing the available memory for BRUNWORD. MTX512 about 12000 words (and 14 pages of A4) MTX500 about 4000 words (and 7 pages of A4).

Programmes are designed to work with any printer that operates from the parallel printer port. Programmes are only available direct from us.



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Two Great
Adventures

SPELLI-COPTER: HELLI-MATHS: Two excellent education programs for the young child. **4.95**

EXTENDED BASIC: This excellent utility received rave reviews in Memopad. Extend the commands available to your basic programs. **£6.95**

MICRO CANVAS: This is a new drawing package that will allow you to design games screens, menus, title screens. **£7.95**

All available from The User Group at discount prices.

SENTIENT SOFTWARE

Sole distributors of Syntaxsoft and Continental software

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0532-791136**

3D GRAPHICS Part 3 J.R. Major

This is the third article in the 3-D graphics series and a good point to make clear exactly what we have done so far and where we are going. Also, as the last article was missing a diagram and some letters in the text were incorrect the last paragraph was more than a little obscure so we will backtrack and cover some of the same ground again to make up for the missing material.

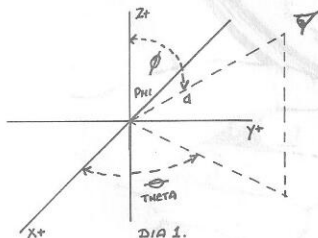
First, the story so far. Article one dealt with 2-D graphics as a preliminary to 3-D and is essential to understand the later articles (backnumbers available from Genpat). In this we looked at how you represent a point with x, y coordinates. We saw how to store a line by storing the coordinates of the vertices (ends) of the lines and how we store a shape by storing an array of vertices. We saw how you can transform this image using scaling, (making it bigger or smaller), translation (moving it up, down or sideways) and we saw how to rotate it. We looked at matrix maths as a way of achieving these transformations by doing a matrix multiplication on our arrays of x, y coordinates.

Then we looked at clipping - how we remove lines that would fall outside the screen.

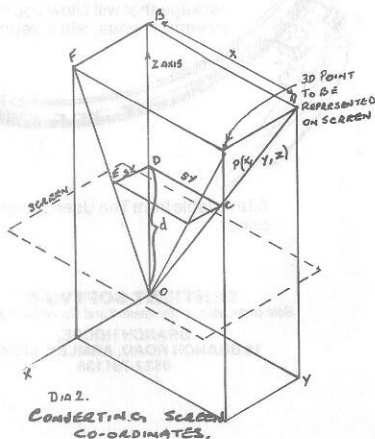
In article two we looked at how to represent a 3-D image and did this by adding a z axis to our x and y axes. We saw how we could achieve transformations by adding another row to our matrix to have a four by four matrix. We also noted that as well as representing our point by three coordinates, x, y, z we could also define it by two angles - the angle to the x axis and the angle to the z axis plus the distance in a straight line from the origin to the point. We shall be using this system of representation now.

This is where we take up the thread again and I hope it is much clearer where we are. What we will be doing now is seeing how we set about changing our x, y, z (expressing these in terms of the two angles and distance of the point from the origin) to the x, y coordinates we will need for plotting on the MTX screen. Look at diagram one. Here we can see:

1. What the two angles and the distance are - (theta) (phi) and d
2. Now imagine we put a screen between the object and the observer's eye. We need some method of converting our three numbers which define each point to two - x, y on the screen.

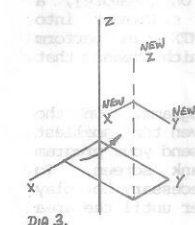


THE TWO ANGLES AND DISTANCES
TO DEFINE A 3-D POINT

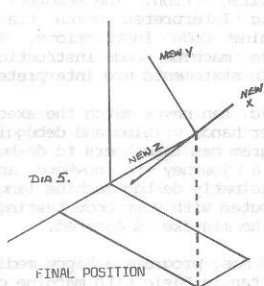
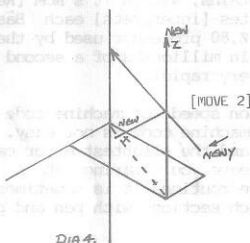


CONVERTING SCREEN
CO-ORDINATES.

Now look at the next diagram. Imagine we are looking straight up the z axis. Find P on this diagram. This is the point whose 3 coordinates we want to convert to the SX, SY of the screen coordinates. Find the screen coordinates SX SY on the screen. Now it is easy - ODC and OBA are similar triangles which means that $OC/OD=BA/OB$ so that $SY=d(y/z)$. Here, SY is our screen and x and z are two of the coordinates of the 3D point. In the same way, $SX=d(x/z)$. So we could easily find our screen coordinates by using these equations, the distance to the screen (which we set ourselves) and our arrays of x,y,z coordinates.



[MOVE 1]
ORIGIN TO OBSERVER'S EYE



FINAL POSITION

So now we must turn our axes so they point the way we want, ie so we are looking down the Z axis, and we do this by applying the matrix multiplications we have described earlier. First, we move the origin up to the observer's eye (diagram 3). Then we turn it so the new y axis points to old z axis (diagram 4). Finally, we twist it so that the Z axis points down to the origin (diagram 5). Now we have the situation described in diagram two and can simply change our 3-D coordinates in to two for the screen by applying the ratios we described earlier from the similar triangles. If we multiply these three matrices together (combining the three operations in one) we will end up with one matrix to apply:

$-\sin\theta$	$-\cos\theta\cos\phi$	$-\cos\theta\sin\phi$	0
$\cos\theta$	$-\sin\theta\cos\phi$	$-\sin\theta\sin\phi$	0
0	$\sin\phi$	$-\cos\phi$	0
0	0	d	1

Now let's try to get a small program applying some of this and put something on the screen, translating these operations into basic instructions..

ruthless b.....

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SKANDINAVIA

I Norge, Sverige, Danmark og Finland, kan alle Syntaxsoft programmer fås hos ScandaVisions i Norge.

ScandaVisions er ansatt av Genpat som enleverandør av Syntaxsoftware. De forhandler det meste i annen software til Memotech maskinene, også.

Kontaktpersonen heter Craig Dunn. Ønsker du katalogen, burde du sende en frankert, selvadressert konvolutt.

SCANDAVISIONS
Løvli 2
1822 Godheim
NORGE

Tlf (02) 81 97 53

All About Basic - Part One

Basic programs are composed of Basic Lines, and Basic Lines are made up from Basic Statements. The MIX allows you to program with Multi-statement Basic Lines. A statement is a command that tells the computer to carry out some specific action. The Memotech contains, within it's ROM [Read Only Memory], a Basic Interpreter which translates [interprets] each Basic statement into Machine Code instructions. The Z.80 processor used by the MIX can perform these machine code instructions in millionths of a second which means that Basic statements are interpreted very rapidly.

Basic can never match the execution speeds of machine code programs. On the other hand, writing and debugging machine code is not easy. Even the smallest program can take hours to de-bug, and the slightest error can send your program on a journey to nowhere and leave you staring at a blank screen. To efficiently de-bug machine language routines it is sometimes necessary to play computer with your code testing each section with pen and paper until the area of the mistake is located.

With most programs a happy medium can be struck. The bulk of the program can be written in Basic with machine code subroutines taking care of the program sections that need extra speed. For instance, the speed of a sort routine can be increased by a factor of 1000 by writing the actual sort in machine code. The latter is only one example: graphics, animation, and sound can also be greatly enhanced by this method of programming. You can also perform many more functions by writing sections of machine code to interface with your Basic program.

Overview of MIX Basic

You can input into your computer in two ways: Program Mode and Direct Mode.

In the Direct Mode you can enter commands direct from the keyboard, and as soon as you press the ENTER key the command will be executed immediately. E.g

```
CLS: LET X=3 : LET Y=X+1:PRINT Y <RET>
```

If you have typed the above line correctly the screen should now be displaying the answer 4. Examples of other direct commands are: RUN,NEW,AUTO.

The Programming Mode differs in that commands are entered into the computer prefixed by a Line Number. Pressing the ENTER key inserts the line into the current program without executing the instructions. E.G

AUTO	10,10	<ENTER>	[Direct Mode]
	10	CLS	
	20	LET X = 3 : LET Y = X+1	
	30	PRINT Y	

If you now RUN the program you will see that the end result is exactly the same as in the Direct Mode with the screen displaying the answer.

When you typed the Direct Command RUN Basic automatically stepped through the program lines performing each task as it was encountered. Basic always executes a program line number by line number in the correct order except when a GOTO or GOSUB causes it to branch to another higher or lower line number. The program will continue to run until it either runs out of line numbers, or an END statement is encountered which will cause the program to terminate.

```

10 CLS
20 INPUT " NAME PLEASE ";N$
30 PRINT "HELLO ";N$
40 INPUT "DO YOU LIKE YOUR MTX ";AN$
50 IF AN$ = "YES" THEN GOTO 80
60 PRINT "OH DEAR ! I'M SORRY ABOUT THAT ";N$
70 GOSUB 120: GOTO 100
80 PRINT "I'M VERY PLEASED YOU DO ! "
90 PRINT "BYE ";N$ : GOSUB 120
100 CLS
110 END
119 REM DELAY LOOP TO STOP SCREEN CLEARING TOO FAST
120 FOR I = 1 TO 500
130 NEXT
140 RETURN

```

This short program illustrates program flow within a computer. PROGRAMS FLOW FROM START TO FINISH WITH STATEMENT LINES NUMBERED IN ASCENDING ORDER. It is possible to alter the flow of the program, as we have done in line 50 by testing if the answer [AN\$] to the question was YES. If the answer was positive program flow was re-directed to line 80 and skipped over lines 60 & 70.

In the above program we have used lines numbered in multiples of 10. Why 10 ? Well, we could have used any line numbering, 1,2,3,4 or 1,3,5,7, it is, however, advisable to keep line numbering simple and uncluttered. If you use multiples of 10 you can always add further lines if you find it necessary.

You will use within your programs two types of operands: CONSTANTS and VARIABLES.

Constants are set values that never change. The value of Pi is a constant. There are two types of constants: Integer or non -decimal figures like 1,12,100,1111, and Real constants like 3.333, 1.00789 .

Variables are exactly what the name implies - they are variable. Variables are simply names that the program uses to set aside memory locations for storing numbers and character strings.

Another type of variable is the String Variable. In a nutshell they are simply strings of alphabetical, numerical, or special characters that have some significance within the computer. Strings are denoted by placing the Dollar sign [\$] after the variable name: E\$ = "ME" : L\$ = "YOU": X\$ = CHR\$(13)..

The MTX is capable of manipulating strings in many ways and the ability to handle strings provides one of the more powerful functions of the computer.

Another type of variable used within Basic is the Subscripted Variable. This is a very powerful, and important variable that will allow you to keep ordered lists, or store and access data in a random fashion. As you become more proficient in your programming you will find yourself using this type of variable more and more.

A typical example of a subscripted variable is: X(1) where X is the variable with a subscript of one. Another example is: X(6) meaning X subscript 6. All subscripted variables that carry the same name e.g. A(1), A(2) A(20) etc constitute an Array.

Arrays are created by DIMensioning them at the start of your program - this is not strictly true, but it is good programming practice to dimension arrays at the start of your program - e.g. DIM X(12) would dimension an array from X(0) through to X(12). The subject of arrays is too important to dismiss in a few short lines, and we shall discuss it fully

MTX basic includes a complete set of built in Functions. These functions can perform certain specialised computations: RANDOM and RND allow generation of random numbers - essential for games and simulation. Mathematical functions include: FIX (truncation), CINT(integer), INT(whole number), SIN(Sine of angle).

The computer includes a Line Editor which is invoked with the EDIT command. The Editor allows each individual line to be called up, the cursor positioned within the line, and characters can be removed, corrected or inserted.

STOP allows you to insert a Break Point, and stop program execution at any point. After STOP you can examine the contents of variables, arrays etc., while CONT will continue program execution after the STOP, providing the program has not been altered.

CLEAR set all variables to zero, and all strings to "" [null]. Arrays are also erased, and all loops are abandoned.

NEW deals a death blow to any resident Basic program, and wipes it from memory then re-initialises the Basic Interpreter. ★

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STARTING FORTH *Keith Jones*

This series of articles is aimed at the newcomer to FORTH, and should be used in conjunction with MIX-FORTH. I intend to give a broad overview of FORTH and give enough information to enable you to write programs in FORTH. I will also devote the final few articles to answering as many questions which the program, or these articles raise. So start writing to me, Keith Jones c/o GENPAT.

Most of the books on the market are aimed at the 79 standard of FORTH. Although at the basic level all FORTH's are the same, the more advanced programming techniques are as different as the various BASIC's ; a FOR...TO...NEXT loop is the same on the BBC, a ZX81 or the beloved MEMOTECH, but try using a CILSPR on a BBC !

So then, down to business. FORTH is an extensible language, you can define new words which then become part of the dictionary and are viewed by the interpreter as if they were always there. It is also an interactive language, it executes your words as soon as you type them in. Let's begin by defining a word. Type the following

```
: CHARS 127 32 DO I EMIT LOOP ;
```

When you press <RET> after the semi-colon then FORTH will respond 'ok', which means that it accepts your definition and there are no errors. If you get an error (MSG # 'number') then check that what you've typed is the same as the program above. If it's not then type a full stop followed by <RET> and if FORTH responds with 'MSG #1' then you're out of compilation mode and can retype the definition. If FORTH does not respond with anything except to move the cursor to the next line then type a semi-colon <RET> followed by 'FORGET CHARS <RET>' and retype the definition. Don't worry about what all this means as I will explain it.

Now with CHARS safely compiled just type

```
CHARS <RET>
```

and you will see the ascii character set printed out with 'ok' at the end. The 'ok' is just to let you know that the word executed correctly. I think you've now got the hang of when to type <RET> so in future I won't include it unless it's to show another use for it.

As a comparison between FORTH and BASIC the equivalent program would be

```
10 FOR F=32 TO 126: PRINT CHR$(F);: NEXT
```

This program would occupy 39 bytes. The FORTH program occupies 30 bytes, including the portion which contains the name 'CHARS' and other information. So if we save nine bytes on this small program then imagine how much we would save on a much larger one. As to the speed of FORTH an empty loop executed 10,000 times in BASIC takes 11 seconds, while in FORTH it takes 1 second. Also a loop executed 1000 times, and printing the loop value each time it passes through, takes 69 seconds in BASIC and 24 seconds in FORTH. Quite a difference.

If you now type

```
VLIST
```

and press <BRK> after the first line has been typed you will see 'CHARS' is at the top of your dictionary. VLIST is a word which prints out all the words contained in FORTH's dictionary (the V stands for Vocabulary in case you were wondering).

There is no need to type your definitions on one line, you can press <RET> after you've typed each word (with some reservations) if you like, and with longer definitions it's important that you don't just type in the program as one long line. All FORTH asks is that you leave a space between each key word.

Now then let's examine the definition which you've typed in as it contains the basis of all FORTH programs. We began with a colon. The colon tells the interpreter not to execute the word but to be prepared to accept a new definition into the next available free dictionary location. We then gave our definition a name, we could have used any name up to 31 letters in length which did not contain any spaces and was not already a name in the dictionary. We then gave the name a series of FORTH words to compile and we finished the definition off with a semi-colon. The semi-colon tells FORTH that the definition is finished and so it compiled it, checked it for errors and as it found none, it responded with 'ok'.

We'll now look at arithmetic in FORTH. As you already know FORTH uses Reverse Polish Notation (RPN), rumour has it that it's called this because it's as easy as reading Polish backwards ! This is not true of course. At first it will seem strange but once you've got the hang of it you'll find that it's as easy to use as infix notation, infix being 2+4 etc.

FORTH uses a last in first out stack to store its numbers, in other words the most recently entered value on the stack will be at the top. The best way to visualise this is to imagine a spring onto which we place plates. If we place plate number 1 on the spring then it is at the top. If we now place plate number 2 on the spring it will depress the spring, with plate number 1 the second one down and plate number two on the top. Let's stay with this plate analogy and examine some simple maths. We place a plate with 3 painted on it on the spring, and then place a second plate with 4 painted on it on the spring. We then throw a plate with + on it at these two and the plates shatter and reform into a 7 plate. Now this may seem a violent way to do maths but it will help you to remember that maths operators (i.e. */+ -) destroy the two values and leave a single value behind. In FORTH this looks like

```
3 4 +
```

which leaves 7 at the top of the stack. If you now type a full stop (called 'dot' in FORTH) followed by <RET> it will print whatever is at the top of the stack. It should be noted that this is called a destructive stack print, because it removes the values which are on the stack.

Now let's look at a way of converting between infix and RPN. Something like 3+2 is simply 3 2 +, but can you see how we arrived at this ? All we've done is moved the operator one space to the right. But what about something like

```
10*3/2*5-10
```

I'll work this one out step by step so that you can see how it's done. The first problem we face is what is the order to work it out. Let's assume that the equation is

```
((10*3)/(2*5))-10
```



So the first step is the (10*3). We would enter

10 3 *

This would leave the result on top of the stack. Next we work out the (2*5) as

2 5 *

So now we have two values on the stack, the result of (2*5) at the top and the result of (10*3) below it. To divide them all we need to do is type

/

Then all that's left on the stack is the single value of the division. We now only have the 10 left to subtract so we type

10 -

And now we are left with our result on top of the stack. Of course we could just type

10 3 * 2 5 * / 10 -

And this would leave the same result. To print the result we type "dot" followed by <RET> and this will type out the result.

That's all for this issue. Next time we'll look a bit more at how FORTH deals with numbers and I'll also introduce you to the EDITOR and RAM-DISC. ★

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GENPAT

BASIC GRAPHICS PART 1

Michael Gaut

The MTX is an extremely powerful machine, with one of the best abilities being its splendid graphics. This series will show you how to get the most from them, whilst ensuring that the routines to do so remain as simple as possible. Bearing this in mind, let us take a look at the two types of graphics available on the MTX.

The first, and easiest type of graphics, use the screen as a grid measuring 40 characters across and 24 characters deep. This is called the text screen, and writing on it is very simple. It can be done as follows:-

```
10 CSR 5,10:PRINT "MTX is ACE"
```

This line quite simply places the cursor at the character whose position is 5 rows from the left of the screen, and 10 rows from the top, and then prints 'MTX is ACE' starting at that position and working across the screen to the right.

Obviously, by changing the values following the CSR command, it would be possible to position your text anywhere on the screen. Although this is very useful for setting out text, it is somewhat limited if we need to draw detailed pictures. We could produce simple pictures by printing characters such as '*' or various types of lines i.e. '- \| / _'. With a little imagination and careful planning, we could produce simple drawings, but not to the standard we require. To do this we need to use the second type of graphics.

The high resolution graphics screen is a grid measuring 256 pixels across by 192 pixels down. This is exactly 8 times larger in each direction than the text screen, but is still the same size on your television, which means that each pixel (, or picture element for short,) is considerably smaller than a character on the text screen. This, therefore, allows us to create much finer lines, and, if we could manipulate these lines correctly, detailed patterns, drawings etc. on the screen. Let's look at how to go about doing this.

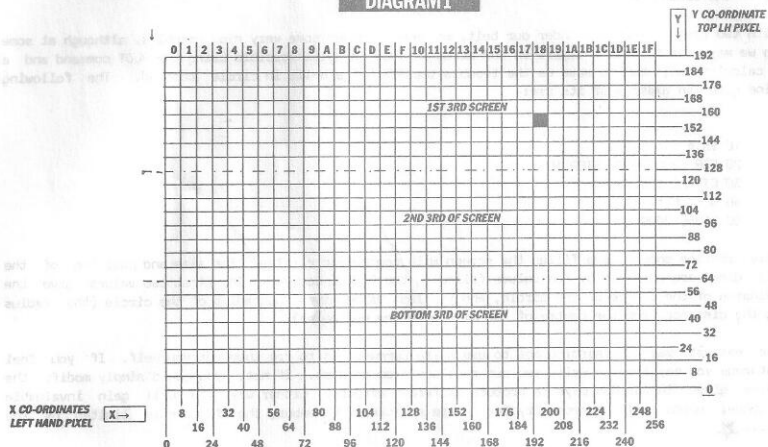
The diagram below shows a screen divided into both character and pixel blocks, with the emphasized lines representing character borders. The values across the top and down the left of the diagram show values for the characters at that position. The other values are for the pixel positions.

Type in, and RUN the following lines:-

```
10 VS 4:PLOT 128,96:PAUSE 1000:CLS
```

If it worked correctly, a tiny dot should have appeared at the centre of the screen, stayed on for a second and then disappeared. If you alter the values following the PLOT command, it is possible to make the dot appear anywhere on the screen. This appears to be similar to the previous example, except that it is using pixels instead of characters when it writes to the screen. This means that the PLOT command is the graphics equivalent (more or less) to the CSR command in text mode. The only difference being that the PLOT command moves its graphics cursor, and fills in a pixel, whereas the CSR command simply moves the cursor but doesn't write anything. Try changing the CSR command into a PLOT command in the first example. When it is RUN, it should respond with an error message. This happens because when the computer attempts to obey the PLOT command, it expects to be in graphics mode, but it isn't. Why then, does the second example work, because that contains a PLOT command as well ??? Evidently, as the instruction was carried out correctly, it must already have been in graphics mode. Therefore, as the only instruction preceding the PLOT command was VS 4, that must have selected graphics mode for us. Lets take a look at how it achieved this.

DIAGRAM 1



SCREEN RELATIONSHIPS GRAPHIC MODE II

Your computer uses things known as Virtual Screens (come back !). Virtual screens give you the ability to create small 'windows' on your screen. MTX basic uses four virtual screens, but at the moment, only virtual screens 4 and 5 are of interest to us. When the computer comes across the command 'VS 4', it switches to virtual screen 4, which is the graphics screen. Conversely, 'VS 5' switches to the text screen. Bearing this in mind, why didn't the first example need a 'VS 5' command before it set the cursor position and began printing? The simple answer is that the computer is in virtual screen 5 as a default, and therefore doesn't need to be switched on. Also, when the program terminates, it always reverts back to virtual screen 5, no matter which virtual screen it was on previously. This explains why we need the PAUSE statement at the end of the line. If you remove it, you'll see that the dot appears and disappears almost instantly.

Now that we know how to place a dot on the screen, it is only a small step further to draw lines. Type in the following example and RUN it.

```
10 VS 4:LINE 0,0,255,191:PAUSE 1000
```

This will draw a line starting at the bottom left of the screen, and finishing at the top right hand corner. The values after LINE give the positions of the two points on the screen which are to be joined together. Both pairs of values are worked out the same way as in PLOT. Therefore the PLOT and LINE commands can be used together quite simply. Try this program :-

```
10 VS 4
20 FOR F=0 TO 255 STEP 8
30 LINE F,0,128,96
40 NEXT F
50 PAUSE 2000
```

Although the pattern may appear complicated, it can be seen that the program to produce it is quite simple. It simply sets up a count from 0 to 255 in steps of 8 (line 20), and draws from this value across the bottom of the screen to the centre. Try changing the values in line 20 and see what happens. This may help you understand how it works.

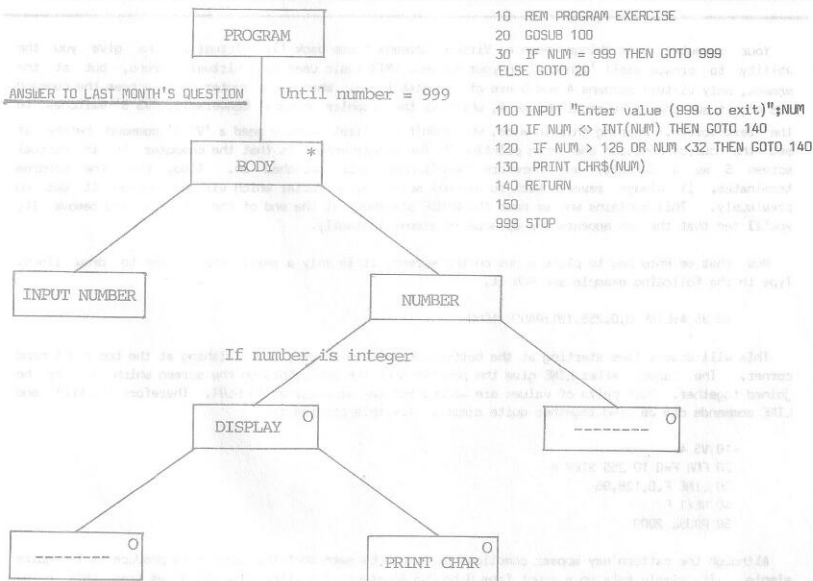
In short, the LINE command draws a line joining the first pair of coordinates following the word LINE, to the second pair.

With two graphic commands under our belt, we could produce some very nice graphics, although at some stage we may want to draw a circle on the screen. This is quite possible using the PLOT command and a few calculations, but to save us the trouble the MTX has a built in circle command. The following routine gives an example of its use:-

```
10 VS 4
20 FOR F=20 TO 90 STEP 10
30 CIRCLE 128,96,F
40 NEXT F
50 PAUSE 2000
```

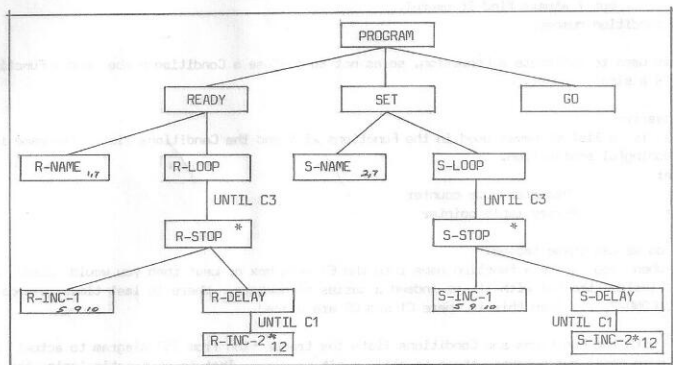
This routine should have filled the screen with concentric circles. The size and position of the circle drawn are governed by the values following the CIRCLE command. The first two values give the coordinates of the centre of the circle, and the last value gives the radius of the circle (the radius being the distance from the centre of the circle to the perimeter).

The easiest way of learning how to use these commands is to try them out yourself. If you feel adventurous you may like to write your own routines from scratch. If not, you could simply modify the examples given in various ways to produce different effects. Either way, you will gain invaluable experience, which will be necessary for future articles. Remember, the MTX is only limited by the user.... ☆



STRUCTURED PROGRAMMING

by PETER KNAGGS



Last time I left you with a small programming problem, which for those of you who bothered to work it out using the JSP structure method would prove very interesting.

Since last we met I have worked out why a * is used in the top right of a box to indicate an iteration, in computer terms the * means multiply, therefore perform the function a multiple number of times.

With luck many of you should be confused over the last article, all will become clear (some time). Now, what you read about last time was simply the bare means of laying down the structure of a program. However to do this properly you need to have a rough outline of what the program will do, its inputs, outputs and major functions:

You should have a small narrative describing the input, output and a brief rundown on its functions, thereby giving you a specification to work by, this can become very useful.

However, back on to the JSP track. As the state of the art stands at the moment, only small programs could be written without giving the designer a very serious complaint of some sort, more than likely from the spouse. To overcome this problem you should use what is called a functions list, this is automatically coupled with a conditions list, and a glossary of variables.

Functions list:

A functions list will list down in no particular order, the events that will happen in a program. These should be short, simple and not over descriptive, we don't want to write the program yet! (See example at end of article)

Conditions list:

Again a list of conditions used in the program. Remember those IF's, WHILE's, and UNTIL's. As with the functions list these are in no order. They are usually numbered C1, C2, ..., C10 etc.

Example:

C1 (UNTIL) Counter > 255

Actual condition.

Type of condition (IF, WHILE, UNTIL) not needed,
but I always find it useful.

The condition number.

The C is used to designate a Condition, so as not to confuse a Condition number and a Function number, which is a simple number.

The glossary:

This is a list of names used in the Functions list and the Conditions list. The name is given a more meaningful explanation.

Example:

Counter Character code counter
Pointer Memory table pointer

So how do we use these tables?

Well, when you write a function name into the Element box or Leaf then you would place a function number inside the box with it, or indeed a series of numbers. Where in last times examples I used COND-1, COND-2, ... then this is where C1 and C2 are placed.

Now with the Functions and Conditions lists the transaction from JSP diagram to actual program is rather more easy, but however, there is still a bit missing. That is of Symatic logic, the whole point of all this really. From the Symatic you can then code a program in virtually any language you like, BASIC, FORTH, FORTRAN, COBOL, LISP, M/C and so on. But I will leave that till next time.

I would like to bring your attention to the JSP diagram included in the example. You will notice that the function labelled GO has been expanded on a separate diagram than the remainder of the program. This is because the expansion is large and would not be able to be placed on the same diagram. This is a perfectly acceptable method of splitting a diagram for clarity's sake.

For now I would like you to try to rewrite last times exercise with the Functions, Conditions list and a Glossary.

EXAMPLE:

Slow Poke: The Kiddies (of all ages) will enjoy this one. It is a program to test reaction time. When the computer says "GO", you press any key to stop it. Then it's the next player's turn to RUN it. The player who stops it on the smallest number wins. Any player who gets a "Slow Poke" has to take the dog for a walk.

Functions:

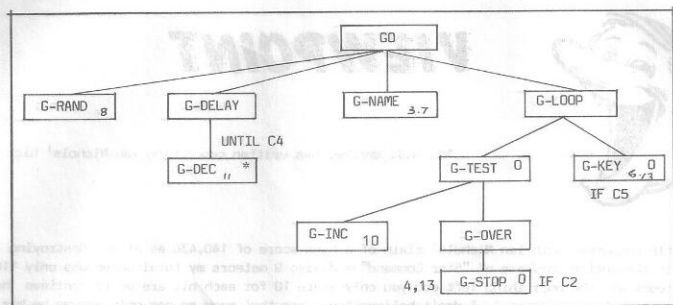
- 1 Display "GET READY"
- 2 Display "GET SET"
- 3 Display "GO!!!"
- 4 Display "SLOW POKE"
- 5 Display a full stop
- 6 Display counter
- 7 Initialise counter to 1
- 8 Initialise counter to random number
- 9 Initialise second counter to 1
- 10 Increment the counter by 1
- 11 Decrement counter by 1
- 12 Increment second counter by 1
- 13 Stop the program.

Conditions:

- C1 (UNTIL) second counter = 50
C5 (UNTIL) counter = 500
C2 (UNTIL) counter = 10
C3 (UNTIL) counter = 1
C4 (IF) A key has been pressed

Glossary:

- Second counter Inner loop counter
counter Outer loop counter



The Program:

```

5 REM "SLOW POKE" demonstration program
7 REM By Peter Knaggs.
10 CLS
20 PRINT "Get Ready ";
30 FOR X = 1 TO 10
32 PRINT ". ";
34 FOR Y = 1 TO 50
36 NEXT
38 NEXT
40 PRINT : PRINT "Get Set ";
50 FOR X = 1 TO 10
52 PRINT ". ";
54 FOR Y=1 TO 50
56 NEXT
58 NEXT
60 LET Y = RND (1500)
70 FOR X = Y TO 1 STEP -1
75 NEXT
80 PRINT : PRINT "GO!!!"
90 LET X = 1
100 IF INKEY$ <> "" THEN GOTO 140
110 LET X = X + 1
120 IF X = 500 THEN PRINT "SLOW POKE" : STOP
130 GOTO 100
140 PRINT X
150 STOP

```

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VIEWPOINT

Mr. N.J. Woodger has written concerning Ian Nichols' high score.

Dear Keith,

I am a little concerned with Ian Nichols' claim of a high score of 140,430 as after destroying every enemy ship in the entire universe of "Star Command" and also 9 meteors my total score was only 118,920. Now as meteors are the only thing left and you only score 10 for each hit are we to believe he hit 3,214 of them to better my score! I don't believe there are that many so can only assume he has added scores accumulated from missions completed, if this is so I can claim 352,630 for "Start Command" (3 completed missions)

Mr. Mc Carthy needs help with the Pascal rom

Dear Keith,

When using the pascal rom and trying to load a text file from tape using the G command, everything seems to be working correctly until the tape starts to play.

The text file loads correctly, but the G command also triggers the sound on channel 0 as soon as the tape starts to play. I then have to go back to basic to disable the sound channel before I can continue with my program. Any suggestions?

Mrs. Jefford also needs help, but of a different nature.

Dear Sir,

Please could someone help me with the Lords of Time. I have been stuck in the maze for three months and am nearly at my wits end.

Also, how can I transfer a program I have created, for the title of video films we have made, to the Video recorder

Here are a few comments from Mr. Seager, Mr. Whitelock and Neil from Basingstoke respectively.

How the bl--dy hell do Memotech hope to service the Ruskies if they get the big order when they can't give a half way decent service in their native land.

I have a 512, FDX disc, and a DMX80. The books that come with them do not link up as being from the same company, or from the same group of machines.

As a newcomer to computers and having NO previous experience, I think that I could well be compared with them and the likely future they have to look forward to!

In short I am far from impressed with the handling of a great machine by the company, as the enclosed letter shows.

The date is 10/05/85 and I'm still waiting for my disc to be returned!!!!.

In my view Memotech Ltd. have done a very poor marketing job on its computers. Full page advertisements are all very well, but in all the time I have taken any interest in computers (two years now) I have never seen any MTX other than my own. There have been at least three specialist computer shops in Exeter, and not one of these nor any of the High street retailers have ever had a Memotech on

display. A High street presence is absolutely essential if a computer is to make a significant penetration of the home market. A few months ago I went into the most recently opened specialist computer shop in Exeter, to see whether they had any software whatever for my computer (this was before I heard of Genpat), and to this day I still believe that the young men to whom I spoke thinks that I meant MSX, despite all my efforts to convince him otherwise. If a salesman in a specialist shop can have this reaction, I dare not imagine the reaction of those in, say, Boots or Laskys. Rubbing salt in the wound was the presence of the newly lauched Tatum Einstein in the front window. It would seem to me that a micro which is not visible in retail outlets is unlikely to be even considered by the vast majority of computer buyers, and is just as unlikely to get the software support from the big houses that it needs to be a success.

Against all this criticism, I readily acknowledge the fact that computers on demonstration in shops may represent essential cash tied up, and that from that point of view the company could in no way afford to have its machines lining the streets, and not generating necessary income. However, I'm sure that the company could have made some sort of arrangements with big computer retailers for a sufficient amount of cash to be generated until sales of the computer did take off. I agree that Tatum, for example, probably has far greater financial resources than Memotech, but I cannot accept what I see as the complete failure of the company to even attempt to gain a place for its excellent computer on high street shelves. Don't mention Tatum's problem with sales to me either - its Einstein was (until recently) much more expensive than a Memotech, and was launched at a much later date and would seem to have missed the boom period in home micro sales that Memotech might have been able to latch on to.

Forgive me if I am being unfair, but that is how I see the situation.

With regards to the great computer mag debate, let me just throw my two cents worth in. In the earliest days of my computing career I tended to buy just about everything on the market. But I found that as I got to know and understand a little bit more about the machines in general I became more choosy, going only for those which had bits on my machine (a VIC20 at the time). By the time I got my MTX I had virtually stopped buying the damn things altogether. Occasionally I flick through looking out for MTX articles but that is all. I thought the idea of writing to some of these 'erberts was good but I didn't fancy having to hunt around for the addresses, you print the addresses and I'll write to all of them if you like. Still I basically see it like this, if the mags want me to spend my money on them then they have got to give me something I want. Besides, with "Memopad" around who needs them!!

Mr. Wood has a Newword rom for sale. It is still boxed and unused (his disc system arrived at the same time). He is asking 60.00 and can be reached at:
12 Bishops Ave, Worcester, WR3 8XA.

Stuart Maltass has a problem with Alice:

Dear Viewpoint,

Please, please, please could someone give advice how to get past the guard dragon, and in Dungeon Adventure could you tell me how to get on the island with the beautiful girl on it?

Mr. K. Manning, 3, Larkway, Flitwick, Bedfordshire WOULD LIKE SOME QUESTIONS ANSWERED ON PASCAL

I would like to use Pascal for engineering applications and would like to know the following*

- 1) Can more than one procedure be compiled and linked together?
- 2) Are local variables allowed in procedures?
- 3) How many bytes are used to represent floating point numbers?
- 4) Can arrays be loaded and saved to tape?
- 5) Can source files be merged and renumbered?
- 6) Is Pascal compatible with the disc system?



DANMARK'S BEDSTE MIKRO

Memotech er nu Danmarks bedste hjemmedatamat, hvis man skal tro bladet Råd og Resultater, der udgives af Statens Husholdningsråd.

I sit seneste nummer bringer Råd og Resultater en oversigt over en række hjemmedatamater på det danske marked. Af disse giver bladet de bedste karakterer til BBC model B og næstbedste til Memotech MTX500, og da BBC ikke længere importeres til Danmark, betyder det, at Memotechs datamat dermed er blevet topscorer i undersøgelsen.

Ved bedømmelsen gives en stjerne for "særdeles god", en sort bolle for "god", en halv bolle for "acceptabel, en hvid bolle for "dårlig" og to hvide boller for "særdeles dårlig".

MTX500 får fire stjerner (for tastatur, hastighed, grafik og udvidelsesmuligheder), fem sorte boller (for skærbillede, redigering, hukommelse, BASIC og lyd) og to hvide boller for "guess what - sit software-udbud". Hvis man omsætter bedømmelsesskalaens stjerne til fem, den sorte bolle til fire o.s.v. ned til en for to hvide boller, får MTX500 ialt 41 points, mens BBC'en, der er dobbelt så dyr, får 46 points.

Karaktererne for de øvrige "deltagende" datamater er følgende: Acorn Electron fik 38 points, Spectravideo SV328 fik 37, Advance 86A fik 36, Commodore 64 fik 35, Dragon 32 fik 33 og Sinclair ZX Spectrum m. 48K fik 32 points og kom dermed ind som nummer sidst.

I forbindelse med undersøgelsen, der bygger på en engelsk undersøgelse, understreges det, at det kun er det engelske softwaremarked, der er gennemgået. Ved flere af datamaterne er der anført specielle bemærkninger. Således kritiseres Spectrum for det noget specielle tastatur, men Commodore 64 får nogle bemærkninger om sit dårlige BASIC og Advancen for "dårlig lyd og skærbillede". Ved Commodore 64 bemærkes også, at hastighedstesten ikke omfatter en grafisk test, som maskinen ikke kan udføre. Ved MTXeren har gruppen ikke fundet noget at kritisere.

.....

MTX BLIVER ALVORLIG...

En hel del mennesker har efterlyst seriøse, dansksprogede programmer til MTX'erne med den begrundelse, at det er synd blot at lege med en så seriøs datamat som Memotechs. Derfor har den danske Memotech-importør, Memodan, taget initiativ til at få afhjulpet denne mangel. I første omgang i form af programmer til erhvervsbrug.

Det første af disse programmer hedder "Faktura og Lagerstyring" og er beregnet til en MTX512 med parallelprinter og båndoptager. Programmet, der er udviklet af programhuset norman data, kan

udskrive faktura og kreditnota og samtidig holde lagerstyring på ikke mindre end 900 varegrupper, hvor hver enkelt kan indeholde en varetekst på 25 tegn, varepris uden moms, minimumslager og faktisk lagermængde - alt i alt en forbavsende stor mængde data til et så forholdsvis lille program.

Programmet har professionelt tilsnit på flere punkter. Det kan fx udskrive prisliste både på skærm og printer efter behag. Det samme gælder lagerstatus og genbestillingsliste. Den sidstnævnte finesse giver mulighed for at få udskrevet varer, hvis lagermængde er kommet under et vist niveau.

Et andet "professionelt" træk ved programmet er, at man kan indbygge en sladrehanke i form af een melding på skriveren, hver gang nogen person har foretaget ændringer af lageret. Denne facilitet rummer yderligere den sikring, at når den først er sat igang, kan den ikke mer slås fra. D.v.s., at ingen kan ændre noget, uden at de har skriveren i gang. Hver af disse udskrifter er nummereret, så det er let at se, hvis nogen har pillet ved lageret. Pris - inkl. et bånd til sikkerhedskopi - kr. 915 m.moms.

Til det meget større behov

Memodan har nu også bragt en større dansksproget administrationspakke på markedet. Pakken, der hedder Danmax-systemet, kræver CP/M og dermed diskettestation samt - naturligvis - en 512'er eller en RS128'er. Danmax-pakken er, som navnet antyder, 100 pct. dansk-opbygget og -udviklet af danske programmører til danske behov.

Der er tale om et modulopbygget system, bestående af seks dele: Finansbogholderi, fakturering, debitorbogholderi, kreditorbogholderi, lagerstyring og kartotek. De enkelte moduler kan anvendes hver for sig eller køre sammen, således at man fx ved fakturering får automatisk ajourføring af lageret og bogholderiet. Sidstnævnte omfatter: Opdatering af debitors konto og postering i debitorstyringen, postering af fakturabeløbet på varesalgskontoen, momskontoen og den samlede debitorkonto i finansbogholderiet, samt registrering af debitor og beløbet i en fakturajournal. Med andre ord - man spares for en hel masse omstændeligt og besværligt arbejde.

Danmax-pakken er et meget brugervenligt og behageligt system at arbejde med. De enkelte moduler koster fra 1500 til 4000 kr., men køber man hele pakken, får man ti pct.s rabat. Så vidt vi kan skønne, kan pakken rigeligt dække behovet i de fleste mindre eller mellemstore virksomheder.

NY MEMOTECH-IMPORTØR

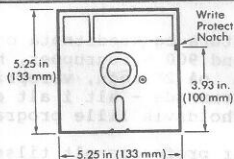
En hel del af læserne af dette blad er sikkert ikke blevet underrettet om, at Memotech lige før jul skiftede importør i Danmark. Den hidtidige importør, Dinamicro, blev erstattet af et nystartet firma, MEMODAN ApS, der har adressen: Rebæk Søpark 1, 2650 Hvidovre, og telefonnummer 01-470147.

Memodan har overtaget alle garantiforpligtelser, som Dinamicro og dette firmas forhandlere har udstedt, og hvis der er noget i vejen med ens datamat eller udstyr, kan man altså trygt henvende sig til sin sædvanlige forhandler om sagen.

I forbindelse med overtagelsen er der sket en række drastiske prissænkninger på Memotech-varerne - de fleste på ca. 30 pct. Memodan oplyser, at man gerne fremsender en prisliste. ★

Disc Mania

All about it!



The new low priced disc drive is here! We are finding, here at Genpat, that because the unit is so economical to buy, many of the sales are to users who have never had a disc unit before and are not familiar with what is required when using a unit. The purpose of this series of articles is to take the reader from the very basics to CP/m. Along the way we will be introducing some tricks of the trade and no matter which drive you are using: SDX, FDX single or FDX double, you will find something of interest.

Magnetic tape is a sequential storage medium. To access an item in the middle of the tape the tape must be wound forward and aligned with the data required. This method of accessing data means that tape storage is very slow. Another drawback with tape is that volume is critical, and as a data storage medium it is unreliable - cassettes were designed to store music not data.

Floppy discs provide an alternative method of storing data, and because discs are direct access devices data can be processed in a sequential or a random manner. The read/write heads can move directly over the track containing the desired data and vast amounts of information can be stored on one disc.

There are two standard sizes for floppies, 8" [standard] & 5 1/4" [mini]. Both types are similar in make-up with the main part being a MYLAR DISC with a coating of metal oxide. The disc is protected in a sealed envelope which has a soft inner lining. There is a cut out in this sleeve to allow the disc read/write head contact with the metal oxide.

The floppy has a large hole in the centre which fits onto the hub of the drive which in turn centres the disc and allows free rotation. There is, on the floppies used by Memotech, another hole. This is called the index or sector hole, and this small hole lines up with a similar hole cut into the protective sleeving once every rotation of the disc. Because the discs used by the Memotech are what is termed SOFT SECTORED there are no more holes in the disc. However there is also a HARD SECTORED disc which is in common use and this disc will have one hole per sector in addition to the index hole.

There is a further hole that is cut into the side of the protective sleeve and this hole is the most important as far as you, the end user, is concerned. It is termed the write protect notch. It acts in a similar way to the cut outs in the back of a cassette, except in reverse - when it is open data can be written to the disc and when it is covered with a metallic strip no data can be recorded onto the disc and this eliminates accidental corruption of data stored on the floppy.

Discs can also be double or single density, double or single sided. Single sided discs should not be used with double sided drives as their use may cause damage to the delicate recording heads of the drive. There is no reason why double sided discs cannot be used with single sided drives.

The methods employed to write, read and access data are very complex and this is one of the reasons why Disc Operating Systems [DOS] are used by manufacturers. A perfect example of a DOS is CP/m [Control Program Micro computers]. This system is loaded from disc into the computer and at 'Boot-up' time - boot-up comes from the old saying that if you were strong enough you could pull yourself up by your boot laces - and once loaded other languages, data or programs can be loaded and run. We shall deal with CP/m in a later article.

Before a floppy disc can be used it must be formatted for the type of system it is going to be used with. A word of caution before continuing: formatting a disc can be likened to erasing a tape. If you re-format a disc all the information stored on that disc will be lost forever!

Discs are formatted by executing the utility program FORMAT which is tailor made for your system and may not be transportable to other systems e.g. 250K or 500K

When a disc is formatted the operating system can read it and obtain vital information it needs to do its house-keeping. The format program divides the disc into Tracks and then into Sectors. The number of tracks [TPI] and sectors depend of DOS in use.

Each of the sectors is further divided into smaller units which store data for the operating system and the disc controller [FDC]. See diagram 3. Normally the sectors are divided in the following manner:-

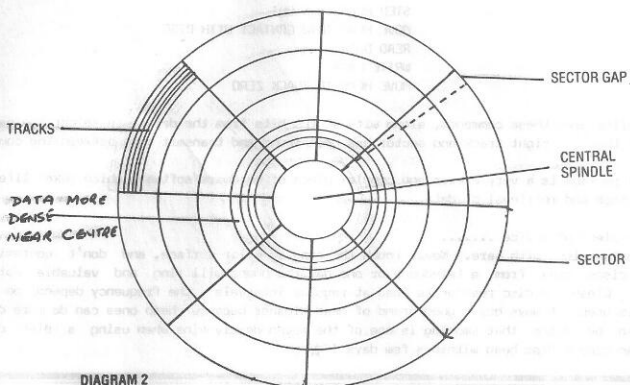


DIAGRAM 2

- Sector Header which contains information as to the current track and sector number. This is used by the disc controller when reading/writing etc.
- Data stored on disc.
- The Cyclic Reading Check [CRC]. This is only a couple of bytes long. When the CRC bytes are read the DOS does a few computations and depending upon the result, a read/write error may be generated which would cause a re-reading/writing or a BDOS error message.
- Sector Gap. The sector gap is necessary to ensure that data can be transported between identical systems - no two drives will be running at exactly the same speed and this gap ensures that data is not accidentally overwritten.

You should now understand why the memory available on a formatted disc is less than that of an unformatted floppy.

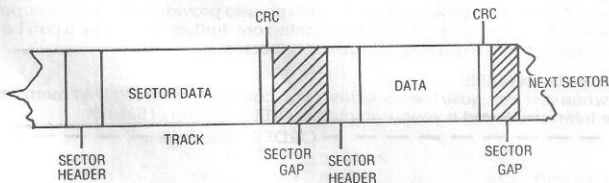


DIAGRAM 3

The discs are normally divided into two areas: the SYSTEM TRACKS and the DATA TRACKS. System tracks contain the operating system including the Basic Disc Operating System [BDOS]. This part of the disc, under normal circumstances, is not accessible by the user. The data tracks are sub-divided into DIRECTORY AREA and PROGRAM STORAGE AREA.

The Floppy Disc Controller [FDC] uses various commands to carry out operations. Some of the more common are:

STEP HEAD IN & OUT
MOVE HEAD INTO CONTACT WITH DISC
READ DATA
WRITE DATA
MOVE HEAD TO TRACK ZERO

The controller uses these commands, along with status bits from the drive, to select the part of the disc, check that the right track and sector has been found and transmit data between the computer.

The overall package is a very clever and complex piece of hardware/software which makes life very easy for the storage and retrieval of data.

One further piece of advice

Always handle discs with care. Never touch the exposed mylar surface, and don't contaminate them. Keep all discs away from a telephone or one day the phone will ring and valuable data will be corrupted. Clean the disc read/write head at regular intervals - the frequency depends on how often the drive is used. Always buy a good brand of head cleaner because cheap ones can do more damage than good. Also be aware that smoking is one of the seven deadly sins when using a disc drive Nicotine can clog a disc head within a few days ! ☆

MEMOTECH/GENPAT

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The Sound Of Music *Derek Brown*

If you are interested to explore the sound chip of the MTX then type in this program. Derek Brown, is about to start an article on the sound capabilities of the Memotech and he really knows his stuff. I am sure you will be amazed when you here this catchy little tune .. "Music Box Dancer".

```

1 REM MUSIC BOX DANCER
2 PRINT : PRINT : PRINT : PRINT
5 PRINT "      MUSIC BOX DANCER"
6 PRINT : PRINT : PRINT
7 PRINT "      Piano solo by"
8 PRINT : PRINT
9 PRINT "      FRANK MILLS"
10 PRINT : PRINT : PRINT : PRINT
11 PRINT "      Transcribed for Memotech"
15 DIM N(67)
16 LET N(1)=1015.0371
17 LET N(2)=N(1)/1.062
18 LET N(3)=N(1)/1.124
19 LET N(4)=N(1)/1.191
20 LET N(5)=N(1)/1.262
21 LET N(6)=N(1)/1.338
22 LET N(7)=N(1)/1.417
23 LET N(8)=N(1)/1.501
24 LET N(9)=N(1)/1.591
25 LET N(10)=N(1)/1.685
26 LET N(11)=N(1)/1.786
27 LET N(12)=N(1)/1.892
28 LET N(13)=N(1)*.5
31 FOR X=13 TO 66
32 LET N(X)=N(X-12)/2
33 NEXT X
34 LET N(67)=8
40 LET H=200
45 LET A=9: LET B=9: LET C=7: LET D=7
46 FOR X=1 TO 32
47 GOSUB 480
48 NEXT X
49 SOUND 1,0,0
51 LET A=10: LET B=10
52 FOR X=1 TO 32
53 GOSUB 480
54 NEXT X
55 SOUND 1,0,0
57 LET A=11: LET B=11: LET C=8: LET D=8
58 FOR X=1 TO 32
59 GOSUB 480
60 NEXT X
61 SOUND 1,0,0
63 LET A=12: LET B=12: LET C=9
64 FOR X=1 TO 32
65 GOSUB 480
66 NEXT X
67 SOUND 2,0,0: SOUND 0,0,0
70 FOR X=1 TO 2
71 GOSUB 480
72 NEXT X
73 SOUND 0,0,0
74 FOR X=1 TO 14

```



```

75 GOSUB 480
76 NEXT X
77 SOUND 2,0,0
78 FOR X=1 TO 2
79 GOSUB 480
80 NEXT X
81 SOUND 0,0,0
82 FOR X=1 TO 6
83 GOSUB 480
84 NEXT X
85 SOUND 2,0,0: SOUND 0,0,0
88 FOR X=1 TO 2
89 GOSUB 480
90 NEXT X
91 SOUND 0,0,0
94 FOR X=1 TO 3
95 GOSUB 480
96 NEXT X
97 SOUND 1,0,0
99 LET A=13: LET B=10: LET C=10: LET D=9
100 FOR X=1 TO 3
101 GOSUB 480
102 NEXT X
103 SOUND 2,0,0: SOUND 0,0,0
106 FOR X=1 TO 2
107 GOSUB 480
108 NEXT X
109 SOUND 0,0,0
110 FOR X=1 TO 14
111 GOSUB 480
112 NEXT X
113 SOUND 2,0,0
114 FOR X=1 TO 2
115 GOSUB 480
116 NEXT X
117 SOUND 0,0,0
118 FOR X=1 TO 6
119 GOSUB 480
120 NEXT X
121 SOUND 2,0,0: SOUND 0,0,0
124 FOR X=1 TO 2
125 GOSUB 480
126 NEXT X
127 SOUND 1,0,0: SOUND 0,0,0
130 FOR X=1 TO 1
131 GOSUB 480
132 NEXT X
133 SOUND 1,0,0
136 FOR X=1 TO 1
137 GOSUB 480
138 NEXT X
139 SOUND 1,0,0
141 LET A=14: LET B=11: LET C=11: LET D=10
142 FOR X=1 TO 4

```

143 GOSUB 480
144 NEXT X
145 SOUND 0,0,0
148 FOR X=1 TO 2
149 GOSUB 480
150 NEXT X
151 SOUND 0,0,0
154 FOR X=1 TO 6
155 GOSUB 480
156 NEXT X
157 SOUND 2,0,0: SOUND 0,0,0
160 FOR X=1 TO 2
161 GOSUB 480
163 NEXT X
164 SOUND 0,0,0
167 FOR X=1 TO 9
168 GOSUB 480
169 NEXT X
170 SOUND 0,0,0
173 FOR X=1 TO 5
174 GOSUB 480
175 NEXT X
176 SOUND 2,0,0: SOUND 0,0,0
179 FOR X=1 TO 2
180 GOSUB 480
181 NEXT X
182 SOUND 0,0,0
185 FOR X=1 TO 1
186 GOSUB 480
187 NEXT X
188 SOUND 1,0,0
191 FOR X=1 TO 1
192 GOSUB 480
193 NEXT X
194 SOUND 1,0,0
196 LET A=15: LET B=12: LET C=12
197 FOR X=1 TO 4
198 GOSUB 480
199 NEXT X
200 SOUND 0,0,0
203 FOR X=1 TO 2
204 GOSUB 480
205 NEXT X
206 SOUND 0,0,0
209 FOR X=1 TO 6
210 GOSUB 480
211 NEXT X
212 SOUND 2,0,0: SOUND 0,0,0
215 FOR X=1 TO 2
216 GOSUB 480
217 NEXT X
218 SOUND 0,0,0
221 FOR X=1 TO 1
222 GOSUB 480
223 NEXT X
224 SOUND 1,0,0
227 FOR X=1 TO 1
228 GOSUB 480
229 NEXT X
230 SOUND 1,0,0
233 FOR X=1 TO 4
234 GOSUB 480

235 NEXT X
236 SOUND 2,0,0
239 FOR X=1 TO 2
240 GOSUB 480
241 NEXT X
242 SOUND 0,0,0
245 FOR X=1 TO 11
246 GOSUB 480
247 NEXT X
248 SOUND 1,0,0: SOUND 2,0,0: SOUND 4,0,0: SOUND 0,0,0
249 RESTORE 500
250 LET H=200
251 LET A=15: LET B=12: LET C=7: LET D=7
252 FOR X=1 TO 32
253 GOSUB 490
254 NEXT X
255 SOUND 0,0,0
257 LET C=8: LET D=8
258 FOR X=1 TO 32
259 GOSUB 490
260 NEXT X
261 SOUND 0,0,0
263 LET C=9: LET D=9
264 FOR X=1 TO 32
265 GOSUB 490
266 NEXT X
267 SOUND 0,0,0
270 FOR X=1 TO 3
271 GOSUB 490
272 NEXT X
273 SOUND 1,0,0: SOUND 2,0,0
276 FOR X=1 TO 2
277 GOSUB 490
278 NEXT X
279 SOUND 2,0,0
280 FOR X=1 TO 14
281 GOSUB 490
282 NEXT X
283 SOUND 1,0,0
284 FOR X=1 TO 2
285 GOSUB 490
286 NEXT X
287 SOUND 2,0,0
288 FOR X=1 TO 6
289 GOSUB 490
290 NEXT X
291 SOUND 1,0,0: SOUND 2,0,0
295 FOR X=1 TO 2
296 GOSUB 490
297 NEXT X
298 SOUND 2,0,0
299 FOR X=1 TO 3
300 GOSUB 490
301 NEXT X
302 SOUND 0,0,0
305 LET B=10: LET C=10: LET D=10
306 FOR X=1 TO 3
307 GOSUB 490
308 NEXT X
309 SOUND 1,0,0: SOUND 2,0,0
312 FOR X=1 TO 2
313 GOSUB 490
314 NEXT X
315 SOUND 2,0,0
316 FOR X=1 TO 14
317 GOSUB 490
318 NEXT X
319 SOUND 1,0,0
320 FOR X=1 TO 2
321 GOSUB 490
322 NEXT X
323 SOUND 2,0,0
324 FOR X=1 TO 6
325 GOSUB 490
326 NEXT X
327 SOUND 1,0,0: SOUND 2,0,0
330 FOR X=1 TO 2
331 GOSUB 490
332 NEXT X
333 SOUND 0,0,0: SOUND 2,0,0
336 FOR X=1 TO 1
337 GOSUB 490
338 NEXT X
339 SOUND 0,0,0
341 FOR X=1 TO 1
342 GOSUB 490
343 NEXT X
344 SOUND 0,0,0
347 LET B=11: LET C=11
348 FOR X=1 TO 4
349 GOSUB 490
350 NEXT X
351 SOUND 2,0,0
354 FOR X=1 TO 2
355 GOSUB 490
356 NEXT X
357 SOUND 2,0,0
360 FOR X=1 TO 6
361 GOSUB 490
362 NEXT X
363 SOUND 1,0,0: SOUND 2,0,0
366 FOR X=1 TO 2
367 GOSUB 490
368 NEXT X
369 SOUND 2,0,0
373 FOR X=1 TO 9
374 GOSUB 490
375 NEXT X





SOFTWARE



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00010	MUSIC PAD	UTIL	CONT	6.02	I	ANY
00003	NEMO	ARC	CONT	6.02	I	ANY
00045	OBLOIDS	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
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00076	QOCO 2	ARC	MEGA	6.95	I	ANY
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00064	RETURN TO EDEN	ADV	LVL9	8.75	I	ANY
00020	REVERSI	BRD	CONT	7.95	I	ANY
00100	RUTHLESS BASTARD	ARC	LSFT	2.50	I	512
00002	SALES LEDGER	UTIL	SYNT	15.75	E	512
00029	SALTY SAM	ARC	SYNT	4.95	I	ANY
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00049	SNAPPO	ARC	CONT	6.02	I	ANY
00023	SNOBALL	ADV	LVL9	8.75	I	ANY
00036	SON OF PETE	ARC	MEGA	6.95	I	ANY
00026	SPELLI-COPTER	EDU	CONT	5.95	I	ANY
00080	SPOOLER	UTIL	MEM	4.95	I	ANY
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00004	SUPER MINEFIELD	ARC	CONT	6.02	I	ANY
00093	SURFACE SCANNER	ARC	MEGA	6.95	I	ANY
00039	TAPE TO DISC	UTIL	MEM	6.95	I	ANY
00007	TAPEWORM	ARC	CONT	6.02	I	ANY
00088	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
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00027	UTILITIES 1	UTIL	CONT	4.95	I	ANY
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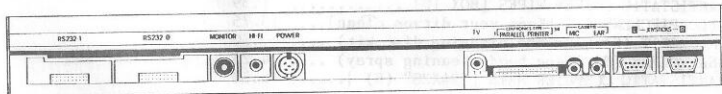


019995085
 MON 29 APR

Dear Sirs,

I still cannot find details of the National User Group for Memotech machines (GENPAT) on your pages. The organiser of the group gave you details some time ago and has been under the impression that the page was being displayed. Can you shed any light on this please?

KEY 1 TO SEND, KEY 2 NOT TO SEND



Memotech are still negotiating the Russian contract. Two representatives returned to Moscow during the early part of this month to deliver a further proposal. As soon as anything is definite I will keep you informed through the pages of the magazine.

Other exciting events are taking place Memotech are now convinced that they HAVE the best computer and are intent on starting a new campaign to get it off the ground. In fact, as I write this letter, I should have been at a meeting but because time is so valuable I have had to backdown. I can't say too much at the moment but I will let you know the results as soon as they are definite, and in writing.

Hope you all have had a nice Bank Holiday. Because of space we have held over the CONVERTING CONNECT 4 until next month. It seems we have too much to write about !