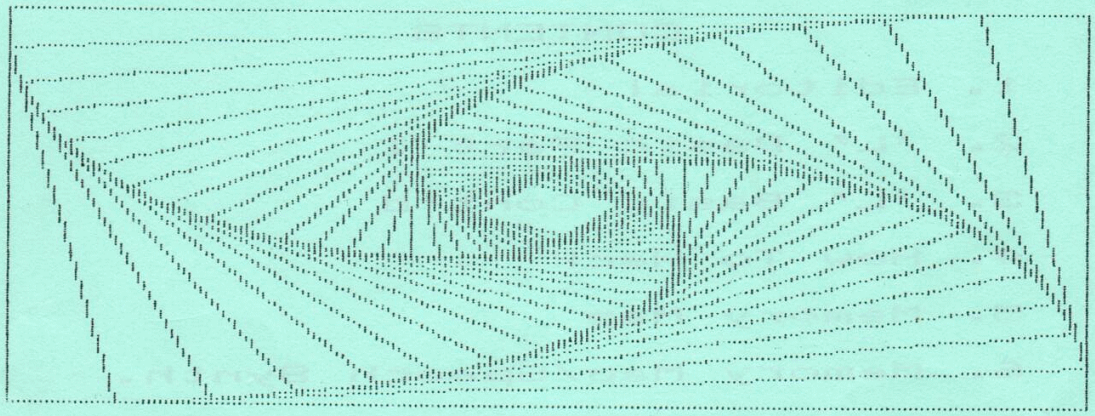
VOL. 1 ISSUE 9

JUNE 1985

THE MEMOTECH OWNERS CLUB MAGAZINE



SPECIAL BUMPER ISSUE

FEATURES:-

ASSEMBLER BUBBLE SORT

MEMORY MAPPING EXPLAINED

TWO SPECIAL REVIEWS

SPEECH SYNTHESISER PROJECT !!

A FULL LIST OF RST 10 CODES

PUBLISHED BY MEMOTECH OWNERS CLUB
23 DENMEAD ROAD
HAREFIELD SOUTHAMPTON

CIRCA ...240

M.O.C.

VOLUME 1 ISSUE NUMBER 9

CONTENTS

o o o O O O o o o

E D I T O R I A L (June 1985)

Phil Eyres
23 Denmead Road
Harefield
Southampton
SO2 5GS

Richard Adams
18 Nightingale Rd
Pilands Estate
Bursledon
Southampton

This month sees a real bumper issue, by far this mag. contains much, much more of what you say you want to see. For the first time we have a review of hardware which is not actually anything to do with Memotech, the JUKI 2200 Electronic Typewriter! by Peter Rolls. We have managed to get a special master duplicator stencil made which allows you to see properly the quality of the print and the layout of the typeface. We would obviously like to see more reviews like this, as I know for a fact that you all have a vast range of printers connected to your MTX's. If you lay it out as a proper page for the mag we can get the special stencil made, the quality of the print needs to be quite good however!. Also I am interested in trying to load a cassette Neword file onto my FDX and then to read it, if this is possible I could save a bit of time re-typing articles that have been typed once already. If someone sending in an article could provide me with a tape copy as well as a hardcopy I will try to transfer it to disc.

Thanks for all the offers for reviewing software, I've chosen at random two names :-
Tony Street (and Co.!) Hewelsfield Gloucester
I. Heath Hemel Hempstead Herts.

Memotech have announced that the prices of hardware items such as computers, printers, FDX's etc are coming down in price very soon, the price of a MTX512 for example will be only £200!!.

We have received an idea for an incentive to get more members in our club, it is so good that we feel we have to implement it right away, so here it is! ... any member that enrols a new member will have his/her membership extended by TWO issues!!!.

While we are on the point of new members, did you all see the bit in the June PCW from the club, it was an article previously printed by us and sent by us to PCW for publication. Richard Dennis, who's article it was will receive any monies due as soon as we can get it from PCW. So that is really another incentive to send in articles to us. Also if anyone is sending in articles to magazines, would you put in a couple of lines about us?, obviously we would find some way of thanking you.

The winner of this months tape, ...Chamberoids from Megastar is, Jeff Forsyth Officers Mess, Swanton Morley, whose name was picked at random from the contributors to this months magazine. Many Thanks!!

If anyone would like back issues they are available for all past magazines for the small remittance of 80p.

It should be noted that all articles are the copyright of the sender and M.O.C., anyone wishing to have articles published elsewhere should inform us first.

L BASIC PART I

GIVING YOUR PROGRAM SOME THOUGHT

In an effort to support those of us who are still learning the fundamentals of programming in Basic, I thought that I would put together a few articles to show how to build a typical file handling type program in basic.

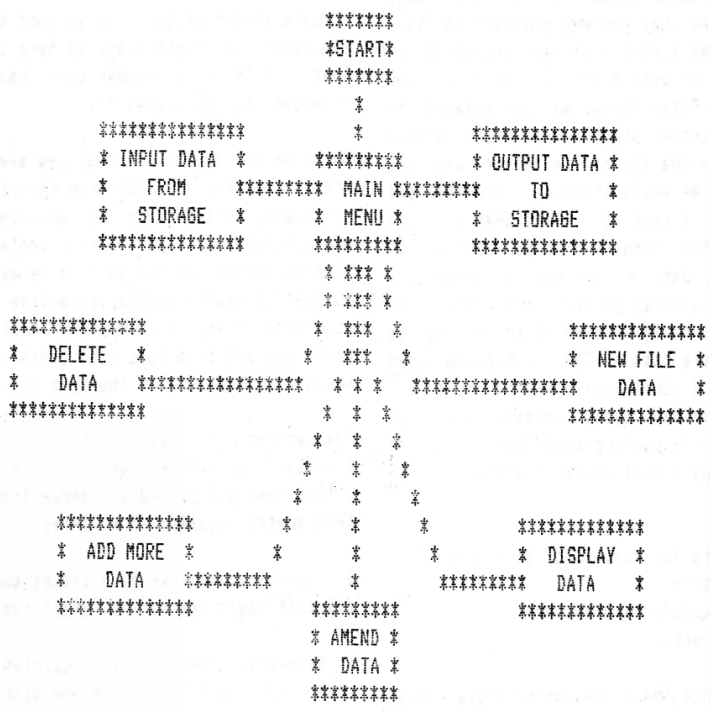


DIAGRAM SHOWING LAYOUT FOR A SIMPLE DATABASE FILE SYSTEM

It is a major fault to just sit down and start tapping away at the keys on your computer, it will invariably lead to untidy, bug-ridden programs with little structure that are almost impossible to follow. All of the above problems are easily overcome however, all you have to do is plan ahead a bit.

The 'Flow-Chart' above shows the major routines that my program will require to run, I have not been able to use conventional flow-charting symbols as I have not yet figured out how to adapt my Neword to do it. From my Main Menu I can call up any routine, which may itself have it's own Menu. i.e the printout routine may allow for several different types of printer or multiple copies etc. A flow-chart for this will be looked at later!. From just that one flow-chart our task has been made much simpler, we can now make separate programs for each 'arm' of our program and merge them as subroutines called from our Main Menu.

The use of Basic for such a Database program is not bad at all as although it will probably end up quite long it will only be operating on one particular patch of the program at any one time. It would be advisable however, to read through Paul Schofields article in the 7th issue (pg6) as this does contain some very useful tips as to program structure to obtain maximum speed.

Overleaf is a program that I have made to do the task of Main Menu, it is fundamentally very simple, but none-the-less it will do the job for which it is intended, anyone wishing to learn more about Basic should spend some time playing with this routine, try expanding it, any expansion asking for inputs should include error traps though, to prevent incorrect input or program 'crashing'

It might be a good idea to include a library of help pages in NODDY to guide the user through the program, see the manual for help with this.

```
5 REM
10 REM MAIN MENU
15 REM
20 REM ALL VARIABLES REQUIRED ON START UP TO BE PLACED HERE
30 DIM FILE$(100,6,30)
99 REM **** START OF MENU ****
100 VS 5: CLS
110 CSR 14,2: PRINT "MAIN MENU"
120 CSR 14,3: PRINT "~~~~~~~~~~"
130 CSR 5,5: PRINT "1. INPUT DATA FROM TAPE"
140 CSR 5,7: PRINT "2. SAVE DATA TO TAPE"
150 CSR 5,9: PRINT "3. OPEN NEW FILE"
160 CSR 5,11: PRINT "4. AMEND DATA"
170 CSR 5,13: PRINT "5. DELETE DATA"
180 CSR 5,15: PRINT "6. ADD MORE DATA TO FILE"
190 CSR 5,17: PRINT "7. PRINT FILE"
200 CSR 8,19: INPUT "ENTER (1 - 7)?";CHOICE$
203 LET CH=ASC(CHOICE$)-48
205 IF CH<1 OR CH>7 THEN CSR 8,19: PRINT "                    ": GOTO 200
210 ON CH-1 GOSUB 1000,2000,3000,4000,5000,6000,7000
220 GOTO 100
1000 REM INPUT DATA
1010 PRINT "1000": PAUSE 1000
1020 RETURN
2000 REM SAVE DATA
2010 PRINT "2000": PAUSE 1000
2020 RETURN
3000 REM OPEN FILE
3010 PRINT "3000": PAUSE 1000
3020 RETURN
4000 REM AMEND FILE
4010 PRINT "4000": PAUSE 1000
4020 RETURN
5000 REM DELETE FILE
5010 PRINT "5000": PAUSE 1000
5020 RETURN
6000 REM ADD MORE DATA
6010 PRINT "6000": PAUSE 1000
6020 RETURN
7000 REM PRINT OUT
7010 PRINT "7000": PAUSE 1000
7020 RETURN
```

Notes about the Main Menu Subroutine

Lines 30-99
Right at the beginning of the program, space has been left for variables to be assigned their initial values on start up.

Lines 100-190
Set-up of Main Menu screen, display all options from this menu.

Lines 200-203
Enter option from display, note input has been purposely made a '$' value to cater for any type of input, this should prevent the program from crashing. The only way to stop the program is via the break key. Line 203 converts character input into a number and Line 205 checks to ensure that it is in the range 1 - 7.

Line 210
A very interesting line!, this will call any of the subroutines 1 to 7 according to the value of CH-1. Play with this one if you do not understand it!!

All the other lines are only to demonstrate that the main menu is in fact working correctly, at each multiple of 1000 Line numbers we will make a subroutine to cover the required task.

******

Next month I'll have a program for the New File Data subroutine. If anyone comes up with a good main menu program or an addition to mine I would love to see it.

Oh!, the variable FILE$ at line 30 is going to be my main data holding variable, it's values 100,6,30 means that I will be able to have up to 100 files with 6 fields in each file and each field can have up to 30 characters in it. This one variable alone takes up 18,000 bytes of memory, obviously if you have a 64K machine or a memory expansion board fitted then you will be able to make this variable larger if you think this to be necessary.

Phil Eyres

WHAT TO DO WHEN YOU'VE PRESSED RESET
OR
"HOW TO 'HACK' EARLY CONTINENTAL GAMES"

If you start dis-abling the break key or playing around with ROM routines it will probably not be too long before you are forced to press the reset keys. A POKE 64167,1 followed by a LIST will show your program still exists, but that the start has been corrupted. Nothing else can be done with it from Basic in this state and PANEL must be used to repair it.

To illustrate the procedure I have used the game BLOBBO as an example. This is very similar to TOADO at the start so should enable anyone to experiment with this technique. I should point out that this is not much help for pirating software as it only works with the very early Continental Programs. The newer games are protected, so apart from being illegal ,it's not worth the effort to save £6.95.

The steps involved are :-

1. Press Reset keys
2. POKE 64167,1
3. LIST
   1286DCBA.....

   10 SAVE "BLOBBO"
   100 CODE

   4030 DI
   <BRK>

   On the MTX500 addresses 4xxx will be 8xxx.
4. Unless you wish to preserve the autostart, the first statement of interest is CODE, so look for that using PANEL.

PANEL
D 4018
<BRK>

The important line of the display is:-

```
4028   FF   51   28   64   00   C2   49   28
        |    |         |         |    |
      LINE  LINE    LINE NO.   CODE
      END   LENGTH    100      TOKEN
```

5.Patch up the start of the program so that it looks like a single REM statement.

D 4000

```
29 <RET>  00 <RET>   ;set line length =29(16) bytes
01 <RET>  00 <RET>   ;set line number =1
80 <RET>             ;token for REM
20 <RET>             ;space character
<BRK>
D 401A

20 <RET>             ;remove unwanted end of line code
<BRK>
B
Exit?Y
```

6. LIST
   1 REM .....
   100 CODE

   4030 DI
   <BRK>

7. The program can now be run, but before saving you have to repair the system variables describing the program structure. Most of these can be found by looking at other programs. If it is your own program, the REM can be deleted and the original first line inserted. Don't forget to reassemble any CODE lines as they may have moved. Also don't make line 1 a code statement as it is much more difficult to repair.

Ed-> I appear to have lost the letter that accompanied this article so to whom ever it belongs ...Many Thanks!!

---ooo000ooo---

Next Month ... A method of auto-starting your programs and making them very difficult to hack.

MEMORY MAPPING

Several members have been asking about the MTX memory mapping system, John Hodgson provides the answer!!

To start with as far as the Z80 processor is concerned there is no such thing as ROM mode or RAM mode. All it can see is a 64k address range and it does not care if it is talking to RAM or ROM, for example it will not object if you try to write to ROM.

The picture of the memory in a MTX512 with 64k byte of RAM is as per Listing 1.

All that the Z80 processor can see is as Listing 2.

If you now select page 1 then the two 16k blocks of RAM are switched out and the single 16k block of RAM in page 1 is switched in.

The Z80 processor now sees as Listing 3.

You will see from this that when you switch from page 0 to page 1 any code that is in RAM between address £4000 and £BFFF cannot be accessed. Any code that does page switching must be located above address £C000 in the top 16k of RAM.

There are two ways to switch RAM pages, they are both written in assembler as it is not possible to page switch in Basic.

You can switch as follows :-

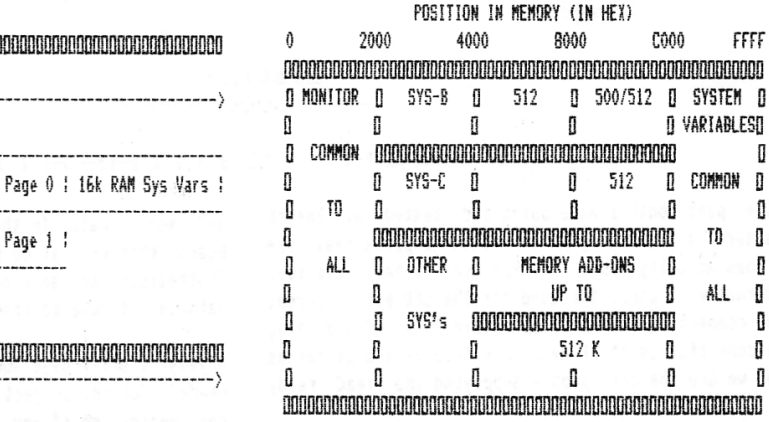
```
LD A,PAGENO ;0 or 1 for MTX512
LD (£FAD2),A
OUT (0),A
```

I prefer to use the following code :-

```
LD A,PAGENO
CALL £64A   :this is the page select routine in ROM
```

Listing 4 overleaf is an assembler program which shows page switching.

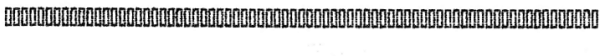
Below is a diagrammatic view of the MTX memory map



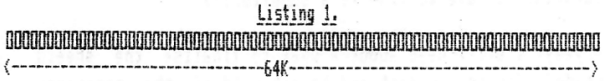
SYS-B -> Basic Rom
SYS-C -> Assembler & Panel Rom

All Ram expansion is between 4000 - 8000 Hex.

Any programs controlling pages must be in memory between C000-FFFF Hex.



Listing 1.



Listing 2.

Listing 3.

```
10 CODE

NOP   ; DEMO PROGRAM TO SHOW PAGE SWAPPING ON A MTX512
NOP   ; THIS CODE MUST BE MOVED TO AN ADDRESS ABOVE
NOP   ; £C000
LD HL,£9000
LD A,"A"
LD (HL),A        ; STORE "A" AT ADDRESS £9000 IN PAGE ZERO
LD A,1
CALL £64A        ; SELECT PAGE ONE
LD HL,£9000      ; NOTE REG HL IS SAVED BY THE ROUTINE £64A
LD A,"Z"         ; HL IS RESET TO £9000 TO MAKE CODE CLEAR
LD (HL),A        ; STORE "Z" AT ADDRESS £9000 IN PAGE ONE
LD A,0
CALL £64A        ; SELECT PAGE ZERO
LD HL,£9000
LD A,(HL)
CALL £CAB        ; PRINT OUT "A" FROM PAGE ZERO
LD A,1
CALL £64A        ; SELECT PAGE ONE
LD HL,£9000
LD A,(HL)
CALL £CAB        ; PRINT OUT "Z" FROM PAGE ONE
LD A,0
CALL £64A        ; SELECT PAGE ZERO
LD HL,£9000
LD A,(HL)
CALL £CAB        ; PRINT OUT "A" AGAIN
RET
```

Listing 4.

---ooo000ooo---

SPEECH SYNTHESISER

Over the past month I have built and tested my Speech Synthesiser, I must say it is quite imppressive, the speech does actually sound like English!, I have utilised the internal port connector used for the LED kit so anyone with the connecting lead will only have to build and plug in. The connector is still available from us and as far as I know we are the only people supplying the lead ready built.

Why buy the speech synthesiser as a kit?, well apart from the saving in cost, building electronics projects is really a great hobby, this kit is fairly easy to build (a bit more of a challenge than the previous kit), and it will no doubt teach many something about electronic principles. It really is better value for money to actually build it yourself, all you will need is a soldering iron, smaller pair of wire cutters and some spare time.

I have a simple program that uses DATA strings to hold the data for the words and I am currently working on a better program that would allow DSI (Direct Screen Input) to make and modify data. In the future I intend to build a small board that will allow data ROM's to be connected to the Synthesiser to save on time needed to build up speech data.(All I have to find is a supplier!!)

Anyway, I still need about a week to finalise the sheets needed for the project and to get hold of the necessary components, so if you would like a kit then send me your order at the beginning of July.

Interface price list

A full set of components and instructions for the LED kit --)£6.95

A full set of components and instructions for the Speech Synthasiser kit --)£18.00

Connecting cable for the internal port (needed for both projects) --)£4.50

All prices are fully inclusive. Please allow 14 days for delivery and make checks payable to MOC.

PROGRAM OF THE MONTH

BUBBLE SORT

By
Jeff Forsyth

The following listing is an assembler Bubble sort program, it will sort alphabetically the first string dimensioned in any Basic program, it's only limitations are memory size plus 2 dimensional arrays must be used, the second dimension of which must be less than 255. The ROM routine at location 0008 is used to put the data in the location addressed by the HL into the DE, (RST 8) whilst incrementing the HL up to the first character in the first array.

```
10 GOTO 100
20 CODE

          NOP               ;ASSEMBLER BUBBLE SORT
          NOP               ;BY J.FORSYTH  29.5.85
START:    LD A,0
          LD (MARK),A       ;ZERO MARKER
          LD HL,(£FAAC)
          RST 8             ;GET 1ST ARRAY ELEMENT - 1ST SUBSCRIPT
          DEC DE
          LD (ARN),DE       ;STORE NO. OF COMPARISONS REQUIRED
          RST 8
          LD (ARL),DE       ;STORE ARRAY LENGTH - 2ND SUBSCRIPT
          LD (STS),HL       ;HL NOW POINTS TO START OF 1ST ARRAY
          LD (INC),HL       ;THIS VARIABLE USED FOR STEPPING THROUGH
                             THE ELEMENTS OF EACH ARRAY
LOOP:     DEC DE
          LD (COUNT),DE     ;FOR CHECKING PROGRESS THROUGH ARRAY
          LD E,(HL)         ;GET CHARACTER OF FIRST ARRAY
          LD BC,(ARL)
          ADD HL,BC
          LD A,(HL)         ;GET CHAR OF 2ND ARRAY
          CP E              ;COMPARE THEM
          JR C,EX           ;IF 1ST ARRAY IS GREATER THEN SWOP
          JR NZ,NCOM        ;IF CHARS<> THEN COMPARE NEXT ARRAYS
          LD HL,(INC)
          INC HL
          LD (INC),HL
          LD DE,(COUNT)
          LD  A,D           ;IF CHAR'S EQUAL THEN  LOOK  FOR  NEXT
                             CHARACTERS
          OR E
          JR NZ,LOOP
          JR NCOM           ;IF ALL CHARACTERS EQUAL THEN GOTO NEXT
                             ARRAY
EX:       LD HL,(STS)
          LD DE,TEMP
          LD BC,(ARL)       ;STORE 1ST ARRAY IN TEMPORARY LOCATION
          LDIR
          LD DE,(STS)
          LD BC,(ARL)       ;PUT 2ND ARRAY IN 1ST POSITION
          LDIR
          LD HL,TEMP
```

```
          LD BC,(ARL)       ;PUT 1ST ARRAY IN 2ND POSITION
          LDIR
          LD A,1
          LD (MARK),A       ;SET MARKER TO SHOW EXCHANGE HAS
                             TAKEN PLACE
NCOM:     LD HL,(STS)
          LD BC,(ARL)
          ADD HL,BC
          LD (STS),HL       ;POINT STS TO NEXT ARRAY
          LD (INC),HL
          LD DE,(ARN)
          DEC DE            ;DEDUCT 1 FROM COMPARISON COUNT
          LD (ARN),DE
          LD A,D
          OR E              ;ALL COMPARISONS MADE?
          LD DE,(ARL)       ;(RESET FOR JUMP BACK TO LOOP)
          JR NZ,LOOP        ;IF ALL COMPARISONS NOT MADE THEN GO
                             AROUND AGAIN
          LD A,(MARK)
          CP 1              ;HAS EXCHANGE TAKEN PLACE?
          JP Z,START        ;IF SO, SORT NOT COMPLETE
          RET               ;SORT COMPLETE
MARK:     DB 00
ARN:      DB 00,00
ARL:      DB 00,00
STS:      DB 00,00
INC:      DB 00,00
COUNT:    DB 00,00
TEMP:     DS 254

30 RETURN
100 DIM A$(100,30)
110 FOR F=1 TO 100
120 LET A$(F,1)=CHR$(RND*26+65)
130 LET A$(F,2)=CHR$(RND*26+65)
140 PRINT A$(F);" ";
150 NEXT F
160 CLOCK "000000"
170 GOSUB 20
180 PRINT ,,,TIME$
190 FOR F=1 TO 100
200 PRINT A$(F);" ";
210 NEXT F
```

Typical times to sort an array A$(x,30) are:-

```
         3 secs    where    x =  100
        13  "        "      x =  200
        35  "        "      x =  300
 1 min 05  "        "      x =  400
 1 min 48  "        "      x =  500
10 min 30  2        "      x = 1000
```

If the 30 in A$(x,30) is reduced then the time needed for the sort is also reduced.

Thanks Jeff Forsyth!!!

Y O U R L E T T E R S

Games High Score Table

TOADO	67801	G.HULSHORSTBLOBBO	71233	T.PICKSTONE
NEMO	10450*	P.CRIGHTON	OBLOIDS	60040	M.GELDER
P.PETE	39630	A.DOBSON	MISS.ALPH	43840	T.PICKSTONE
KILOPEDE	26116*	P.CRIGHTON	GOLDMINE	5175*	P.CRIGHTON
CONT RAID	10810	M.GILL	STAR COMM	77700	M.GILL
MAXIMA	252830	M.GILL	TURBO	23030	M.GELDER
QOGO 2	107560	A.DOBSON	ASTRO PAC	69390	A.DOBSON
COBRA	1718	A.DOBSON	SNAPPO	62960	A.DOBSON
T FIGHTER	1900	A.DOBSON	S M/FIELD	629	A.DOBSON
ASTROMIL.	3070	A.DOBSON	PHAID	1965	A.DOBSON
SON OF PETE	880	A.DOBSON	F.DEEP	1290	A.DOBSON
S.SCANNER	1590	A.DOBSON	ICEBERG	17431	A.DOBSON
KNUCKLES	100000	SALLY STREET			
FELIX	18450	T.PICKSTONE			
TAPEWORM	168515	A.DOBSON AT LEVEL 1			
	150500	A.DOBSON AT LEVEL 9			
BOUNCING BILL	94340	A.DOBSON			
SNOWBALL	450*	P.CRIGHTON			

* Denotes new high score.

######

Software Swaps

1. I would like to swap my Alice in Wonderland for any LEVEL 9 adventure. (Preferably Snowball)
Mark Gill, 11 Grassholme, Woodthorpe, York, YO2 2ST.

Hints & Tips

1. Hint about how to enter the Assembler via RST 28 :-
The data byte for this instruction is £40, this is a very clever routine, the computer will work out what line number the current address is in the basic listing and will call the assembler up with that line.

EXAMPLE OF USE

```
START:  RST 28   ;this program will run the assembler
        DB £40   ;loading all the code that uses the
        RET      ;same line no. as the RST 28 instr.
```

Andrew Capon

2.Ed-> This is not really a Hint or a Tip but it is of interest :-
The last time I wrote I was hoping to receive two cassettes from a company called Tri-com and I said that I hoped to review them. However I never heard from them. I sent a cheque to them over 6 months ago and after a letter from them apologising that the adventure game would not fit on an MTX500, they invited me to phone them to re-order, (which I did) I heard nothing further. I have written several letters to them at several address' but none have been acknowledged. I have given up hope of the return of the money, but did anyone else buy anything from Tri-com?. The advert was in a direct mail shot probably addressed from a mailing list bought from Memotech by Tri-com.

3.Something for the mag!.
A routine to convert CSR positions to PLOT positions :-

```
1 REM LINE 70 IS THE ALGORITHM
10 VS 4: CLS
20 FOR XT=5 TO 30 STEP 3
30    LET YT=3
40      FOR D=1 TO 10
50        CSR XT,YT
60        PRINT "*";
70        LET XP=(XT*8)+2:LET YP=(23.5-YT)*8
80        CIRCLE XP,YP,5
90        LET YT=YT+2
100     NEXT D
110   NEXT XT
120 GOTO 120
```

The converse PLOT to CSR positions is:
CSR X,Y=(PLOT X-2)/8,23.5-(PLOT Y/8)
With the proviso that the computed CSR positions may be up to one character position out (obvious when you think why).
Tony Street, Gloucester.

4.If after you press the two RESET keys on the MTX you POKE 64167,1 you can list the program which was previously in memory. However the first line of the program becomes corrupted and prevents the program from being RUN. Any ideas how to overcome this?.
Ed-> Next month I will publish an assembler program that will do a full 'OLD' command.
Iain Dickson, Midlothian.

Just a Little Tete-A-Tete

I just happened to be passing Whitney a couple of weeks ago and called in on Memotech to see how they were getting on with the Spectrum Emulator. They were most welcoming and helpful and even gave me a demostration of it working. It was still at the prototype stage but it's performance was most impressive. It consists of a pack which plugs into the side port and software which allows you to run any one of 20 Spectrum games. I saw "Tornado Low Level and "Jet Pack" in operation. Although the programmes run slightly slower they are still fast enough for the most avid games player.

Jeff Forsyth

MICRO TECHNOLOGY SUPPORT CENTRE

SOFTWARE

	R.R.P	MTSCP
TOADO	6.95	6.00
KILOPEDE	6.95	6.00
KNUCKLES	8.95	8.00
BLOBBO SPEC	6.95	6.00
CONT RAIDERS	6.95	6.00
PHAID	6.95	6.00
OBLOIDS	6.95	6.00
CHESS	9.95	8.50
REVERSI	8.95	8.00
ALICE IN W/L	9.95	8.50
BASIC BUS	4.95	4.00
PHYSICS	9.95	8.50
TAPEWORM	6.95	6.00
ADVENT QUEST	9.90	8.50
DUNGEON ADVENT	9.90	8.50
3D Tachyon Fighter	6.95	6.00
COBRA	6.95	6.00
NEWORD (ROM)	75.00	72.00
Agrovator	5.95	5.00
Bouncing Bill	4.95	4.25
Doodlebug Dest	4.95	4.25
Extended Basic	6.95	6.00
Graphics	6.95	6.00
Heli-maths	5.95	5.00
Little Devils	4.95	4.25
Mission Omega	4.95	4.25
Salty Sam	4.95	4.25
Spelli-copter	6.95	6.00
Man from Granny	4.95	4.25
Escape from Zarkos	6.95	6.00
Surface Scanner	6.95	6.00
Blank Cassettes packs of 5		2.00
Caves of Orb	9.95	9.00
Fig Forth	15.75	14.50
Memosketch	7.95	7.00
Pontoon & Blackjack	6.95	6.00
Purchase Ledger	14.95	13.75
Return To Edan	8.75	7.80
Super Bike	4.95	4.25
The Zoo Game	6.95	6.00
Utilities	4.95	4.25
Floppy Discs	25.50	19.50

	R.R.P	MTSCP
NEMO	6.95	6.00
SUPER M/FIELD	6.95	6.00
BLOBBO	6.95	6.00
GOLDMINE	7.95	7.00
MISS ALPHA	6.95	6.00
ASTROMILON	6.95	6.00
STAR COMMAND	7.95	7.00
BACKGAMMON	8.95	8.00
DRAUGHTS	7.95	7.00
FIRST LETTERS	9.95	8.50
PAYROLL	25.00	22.00
MATHS	9.95	8.50
SNOWBALL	9.90	8.50
LORDS OF TIME	9.95	8.50
COLOSSAL CAVERN	9.90	8.50
MAXIMA	6.95	6.00
Astropack	6.95	6.00
PASCAL (ROM)	60.00	58.00
Arcadians &Missile	5.95	5.00
Composer	14.95	12.75
Edasm	7.95	6.90
Flummox	5.95	5.00
Hawkwars	4.95	4.25
Hunchy	4.95	4.25
Micro Canvaas	9.95	8.50
Murder at Manor	6.95	6.00
Son Of Pete	6.95	6.00
The Key To Time	6.95	6.00
Qogo-2	6.95	6.00
Chamberoids	6.95	6.00
Fathoms Deep	6.95	6.00
Bridge	7.95	7.00
Emerald Isle	5.95	5.00
Firehouse Freddie	6.95	6.00
Music Pad	6.95	6.00
Pot Hole Pete	6.95	6.00
Qogo	6.95	6.00
Snappo	6.95	6.00
Target Zone	6.95	6.00
Turbo	7.95	7.00
Word & Picture	9.95	9.00

As a member of the Micro Technology Support Centre an additional discount is available. Games under 5.00 MRP deduct .25p, under 8.00 MRP deduct .35p and over 8.00 deduct .50p per game ordered.

****

S P E C I A L O F F E R

Verbatim Floppy discs 5 year guarantee

SS/SD Box of 10 £17.50 on orders by 10th July 1985

****

DMX 80 — USER

USER-DEFINED CHARACTERS ON THE DMX 80 PRINTER

By E.A.J.B

Design Grid for DMX80 UDC's.

Col.No	1	(A)	2	(B)	3	(C)	4	(D)	5
128									
64									
Val 32									
if 16									
mkd 8									
"1" 4									
2									
1									
Column Totals		0		0		0		0	

CHARACTER GRID MATRIX FOR THE DMX 80

It is unfortunate that the DMX80 Operating Instruction Book can be less than comprehensible at times. One special area of difficulty is the design and programming of User-Defined Characters, which is where the above illustration comes in!!

A word of explanation; the printhead moves 1/2 dot-width each strike. Any one dot on a line MUST have a clear column either side of it, otherwise the character will bear no resemblance to your intention - so normally only use the numbered columns, and score the lettered ones "0". (Patience ; the recipe for '0' follows!) The normal format therefore is a 7 line, 5 column grid, line value 1 being the 'Descender' line and the 4 lettered columns being used to smooth off gradients or curves on characters, remembering always not to mark two adjacent columns on the same line.

Enter as follows:-
LPRINT CHR$(27);"Y"(command code);either 'CHR$(ASCII of chr being replaced)' or '"CHR"';CHR$(total col.1);CHR$(total col.2);.....

So, '0' looks like this !!
LPRINT CHR$(27);"Y";"0";CHR$(124);CHR$(0);CHR$(138);CHR$(0);
CHR$(146);CHR$(0);CHR(162);CHR$(0);CHR$(124);

RST 10 — IN FULL!!

By Sean Newman

I have included a full list of RST 10 codes to suppliment those printed in the 3rd issue of MOC. All the codes 1 - 31 are included but I do not know any more of the codes that work in conjunction with Escape (code 27,x).

ASCII CODE:	FUNCTION
1)	PLOT x,y
2)	LINE x1,y1,x2,y2
3)	CURSOR x,y
4)	PAPER (colour 0 to 15)
5)	PLOT INK (colour 0 to 15)
6)	INK (colour 0 to 15)
7)	BELL
8)	CURSOR LEFT
9)	TAB
10)	CURSOR DOWN (Line Feed)
11)	CURSOR UP
12)	CLS & HOME
13)	CARRIAGE RETURN
14)	CTLSPR p,x
15)	GENPAT p,n,d0,d1,d2,d3,d4,d5,d6,d7
16)	COLOUR p,n
17)	ADJSPR p,n,v
18)	SPRITE n,p,xp,yp,xs,ys,col N.B. xp & yp are 2 byte no.'s
19)	MOVSPR p,n,d
20)	VIEW dir,dis
21)	INSERT
22)	DELETE
23)	BACK TAB
24)	TURNS PAPER OF CURRENT VS BLACK (Used by MTX whem init'
25)	CURSOR RIGHT a new virtual screen)
26)	HOME
27)	ESCAPE
27)	,65 ATTR p,state
27)	,67 GR$ x,y,b (Result of GR$ test held at Hex FE1A)
27)	,89 CRVS n,t,x,y,w,h,s
27)	,90 VS n
28)	PAGE OFF
29)	PAGE ON
30)	CURSOR ON
31)	CURSOR OFF

Many thanks to Sean for this article

---oooOOOooo---

HARDWARE REVIEW I

250K SINGLE DISC DRIVES

By
Clive Taylor

Ed-> Because I feel that the new drives are more important than the Turbo Pascal Review I promised, I will carry over the Pascal review to next month.

The 250k single disc drive is now available, and is well up to the usual high standard of construction expected of Memotech. The drive comes complete with everything necessary to install it, down to an Allen key to open the computer to fit the communications board and cable.

Fitting the internal board is very simple as it just plugs onto the edge of the mother board, the ribbon cable then just plugs onto the socket provided. The fitting instructions are clear and easy to follow, so opening the MTX should hold no fears for anybody. The ribbon cable, once outside the machine then just plugs into the underside of the drive, the only other connection necessary being to plug the power pack in. (This transformer is identical to that which powers the computer). No soldering or any other special skills are needed to fit the drive.My only criticism is that the ribbon cable is rather short, this is because it is

---

'...No soldering or any other special skills are required.'

---

intended that the drive sits behind the computer as with the FDX unit. The overall depth of this set-up is 550mm which is fine for a desk top, but I feel that for home use it is probably better if the drive can be placed alongside the computer. This can be achieved by buying a longer cable and new connectors, ... all available from your local electronics shop.

On the software side, a 59K system disc is provided. In addition to all the usual MTX commands, this provides 20 disc handling commands. These are all explained in the accompanying manual, with brief examples of their parameters and use.(Ed-> If these commands are explained like the FDX Basic disc handling commands you may find some difficulties!!, as yet I have not achieved error proof random files, any examples gratefully received). Although the manual is concise, enough information is provided to get going, and I found no particular problems writing file handling programs (Ed-> Can I have a copy?), but a few more example programs would be helpful.

A utility included on the system disc displays the status of the disc in the drive, and for your information Phil, a formatted and system copied disc has 151K left for the user.

My opinion of the drive is that it is everything it sets out to be, and I consider it to be a worthwhile investment

---

'... I consider it to be a worthwhile investment for the home user'

---

for the home user. I understand that it is likely that software will be forthcoming, also there may be a development in the future to allow CP/M to run on single disc machines.

Bearing in mind Phil's editorial comments on disc drives in issue 8, you must certainly give careful consideration as to which set-up to buy. But if, like me, you can not run to the dearer systems and still want the speed, flexibility, and convenience of disc storage, then this is the drive for you.

****

On the point of CP/M, we have heard that it will become a reality in the future. Also it is possible to add on a second drive if required at a latter stage, I believe that you will not be restricted to another 250k drive, you can add-on anything up to a 1M drive.

Memotech have also informed us over a recent chat on the 'blower' that their prices are to be dropped even further, MTX 500's will cost £175, MTX 512's £200 and second dummy drives could cost as little as £130!!.

****

JUKI 2200 ELECTRONIC TYPEWRITER

Peter Rolls

The Juki 2200 is one of the new breed of typewriters that can be linked to a home micro. Readers may like to know something of its operation with the MTX 512 and Brunword WP program.

The Juki operates in two modes: as an electronic typewriter and as a computer printer. No separate interface unit is needed, the machine links directly to the MTX Centronics port. The printer mode is set on the Juki keyboard by <Code + P>: this passes control to the MTX, awaiting the Brunword Margin and Print command sequence. The Juki is returned to the typewriter mode by keying <Code + Z>.

When driven by the MTX, the Juki daisy-wheel gives the 96 characters shown below. Eight of the symbols do not correspond to those on the Memotech keyboard, but these discrepancies are unlikely to cause much difficulty. The main oddity is that the 'hat' symbol used for denoting mathematical indices in MTX Basic is printed as ↑. The MTX £ key (Shift 3) produces a #, but a £ sign is available - albeit via the MTX key for a RH curly bracket.

Print-out of the Memotech keyboard
on the Juki 2200 (Herald Elite type)

```
1234567890-↑½     !"#$%&'()0=µ¶
qwertyuiop@[      QWERTYUIOP°§
asdfghjkl;:]      ASDFGHJKL+*£
zxcvbnm,./_       ZXCVBNM<>?_
```

As a typewriter, the Juki offers automatic centering, tabbing and correction routines. These are not available to the printer, but underlining can be achieved by embedded commands in the Brunword text:

Switch on underline by <Shift F4>
Switch off by <Shift F8>

The <Shift F4> command works automatically, but the switch-off command must be set up on the MTX keyboard at the start of each printing session. The following sequence, using <Shift F8> as the control key, is based on the principles given in the Brunword manual.

Key <ESC> and <P>
Key <Shift F8>
Type <27> and <RET>
Type <82> and <RET>
Type <0> and <RET>

Daisy-wheels are, of course, limited in their use for graphics work. And they do not offer the expanded lettering and other typographical curiosities given by dot matrix printers. However, for those mainly interested in well-presented text, they give excellent print quality in a wide range of type styles at 10-, 12- or 15-pitch.

The Juki is supplied with single-strike mylar ribbon, which gives the crisp results shown in this contribution. The cheaper multi-strike ribbons are not yet available from Juki, but I have found that Olivetti Praxis fabric ribbons are compatible and are very economical. My ribbon has so far produced over 15,000 words and is still good enough for any drafting and listing work (see § below).

Daisy-wheels are generally slower than dot matrix printers and, even with its bi-directional printing, the Juki's output of 10 c.p.s. makes it a relatively low-speed device. However, I do not personally crave high speed production and find it quite agreeable that the first page of this piece, for example, takes 5 minutes to print. The machine has a 2K buffer, and the system returns to the Brunword screen input mode, while the printer finishes the last third of a page or so. Work can thus continue on other files with only a short break.

The Juki 2200 is advertised at around £340 (inc VAT): the Centronics cable will be extra. It is not the cheapest printer, nor the fastest, nor the quietest, but in all such respects I find it a very acceptable compromise. In terms of print quality, ease of use and the versatility offered by a dual typewriter and printer, I think it is excellent value.

§ As shown by this footnote, a multi-strike ribbon reproduces quite well even after a lot of use.

P R O G R A M L I B R A R Y

I have some sheets of information that I was not previously able to let anyone have due to not having the copying facilities, this has now been rectified, so, if anyone would like the sheets that I have explaining the system variables in more detail please send a SAE and 50p to cover copying costs.

Section Types:-
1. Programs & Utilities Basic/Assembler, as before.
2. Programs & Utilities Written in Pascal. I have none at the moment but I will rectify this soon.
3. Articles from previous magazines. This is introduced for the benefit of new members so that they can obtain old articles on anything that interests them, it will also include Hardware reviews for members who are thinking of buying new equipment.
4. CP/M articles/Utilities/Programs
5. Space permitting and programs/articles forthcoming, any spare space will be filled with short reviews of new items included in the Library.

1.Basic & Assembler Programs

1.Hex-Dec-Bin Convertions. (Binary Bit In Assembler)
2.CGEN Sprite Generator.
3.3D Drawing Board. Rotate a skeleton of a cup & saucer in 3D.
4.Whist.
5.Memory Save. This Utility will Save a block of memory to tape and retrieve it.
6.MTX Drawing Board.
7.LOGO Drawing Board.
8.Simplex Tablaeux. Applications Program
9.Breakeven. Applications Program
10.Light Cycles. Arcade Game
These 3 on cassette only!!!
11.Hex/Dec Dec/Hex conversions using USER commands!
12.Renumber II ** New ** Renumbers Including GOTO's etc
13.RELOC Relocs Assembler Properly!!

3.Articles From Previous Magazines

1.PANEL Utility. Makes use of system variable FEXPAND to add a hard copy option to your Front Panel.(Vol1 ISS.4)
2.PANEL2 Utility. As above but updated to include a second feature.
3.Undocumented Neword dot commands.(Vol1 Iss.7)
4.Hisoft Pascal Review (vol1 Iss.8)
5.Neword Rom Review (Vol1 Iss.5)
6.RST10 Codes Explained (Vol1 Iss.3)
7.VDP Explained Using assembler (vol1 Iss4,5,6)

To obtain anything from the library just send a SAE and a couple of spare stamps for each item you would like. Programs are available on cassette at £1 per cassette incl. P&P. Two programs per cassette.

5.Program Reviews
Renumber II

This is a second version of last months Renumber, the program resides in high memory from £F000 onwards and is now called using the USER command. (Previously it was called user the USR command)

This excellent utility will renumber any Basic program, including all the GOTO's and GOSUB's, it's only limitation is that you must not use NODDY!

When relocated into high memory, (the program does this automatically!) the low memory where Basic resides is left free for your program/s, use the USER command as prompted and your programs will be magically renumbered.

****

Reloc

This is another excellent utility, it will relocate any assembler program up into high memory, it acts much like the renumber program above in that when it relocates the code it updates the JP locations in order to keep everything in step. The Panel routine has a relocation routine but this does not take into account the JP and JR mnemonics.

This program is typed in along with your program and when run your program will be moved up in memory. Use PANEL to make sure all is well and hey presto! this very complicated task is accomplished in next to no time at all.

****

An update for those who have the CGEN sprite generator :

Line 810 should read :-

```
810 SPRITE 4,4,16,84,6,0,CC
```

Abridged Terms & Conditions (Downloads)

Disclaimer

www.primrosebank.net, (***the website***) is provided by Dave Stevenson as a service to the public, is provided "as is" and carries no warranties, expressed or implied, of any kind.

Dave Stevenson is not responsible for, and expressly disclaims all liability for, damages of any kind arising out of use, reference to, or reliance on any information contained within the website or made available for download. Whilst the information contained within the website site is periodically updated, no guarantee is given that the information provided on the website is correct, complete, and up-to-date.

A number of articles on the website contain technical data and practical guidance which may be of use in testing and maintaining various items of vintage computer and electronics hardware. Such articles are not intended to cover all aspects of the tasks involved and may omit essential information, including necessary safety precautions. Performance of the tasks described may risk damage to equipment and/or people. The reader is responsible for ensuring that he/she is capable of performing the tasks described and well as assessing the inherent risks involved and taking appropriate measures to mitigate such risks.

Dave Stevenson expressly disclaims all liability for, damages to equipment or injury of any kind arising out of use of such technical data and guidance.

As far as possible, information included on the website from other sources has been credited to the respective author and/or publisher. The majority of content on the website is derived from material first published in the 1980s. ***This material is likely still under copyright of the original author and/or publishers.*** The authors and/or publishers may not have given express permission to copy, transmit or make this information available for download, but I believe that they would have no objection to this archive information being placed into the public domain.

However, should the author and/or publisher of the original material find any content on the website for which they wish to assert their rights, they should notify Dave Stevenson (by e-mail to: webmaster@primrosebank.net) who would be pleased to enter into a dialogue to agree a satisfactory resolution of their concerns.

If you obtained this file as part of a paid-for package, you have been scammed! I suggest that you request a refund from the seller, please also advise Dave Stevenson at the e-mail address above.