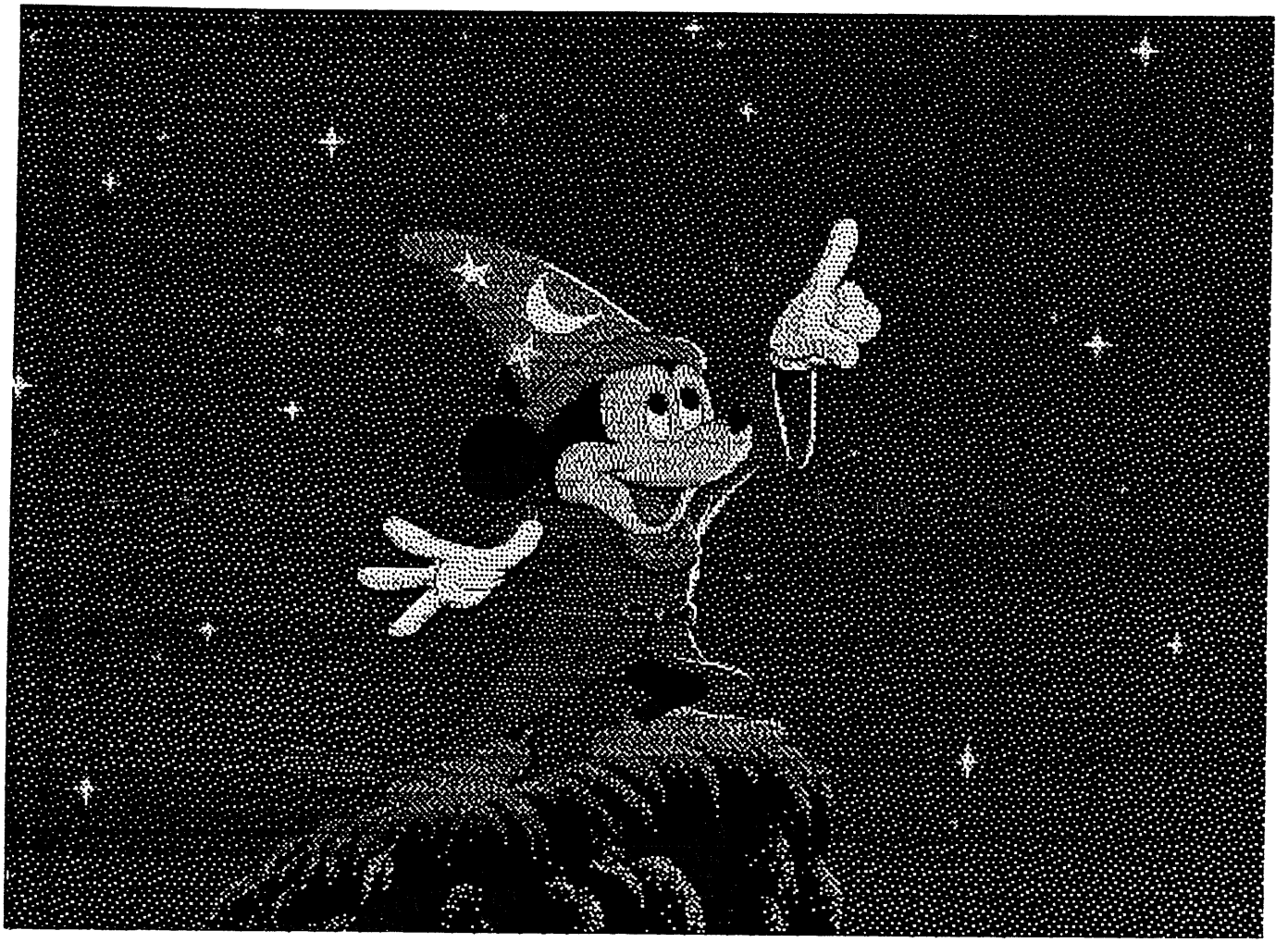
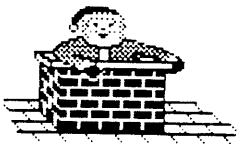
SINC-LINK

NOV-DEC '93 VOL 11-6




PEACE
ON
EARTH

TORONTO TIMEX-SINCLAIR USERS CLUB

SINC-LINK

NOV-DEC '93 VOL 11-6

SINC-LINK IS A PUBLICATION OF THE TORONTO TIMEX-SINCLAIR USERS CLUB AND IS ISSUED 6 TIMES A YEAR. CLUB MEMBERS RECEIVE FREE COPIES AS PART OF THE $20.00 ANNUAL MEMBERSHIP FEE.

NEWSLETTERS ARE EXCHANGED, FREE OF CHARGE, WITH OTHER TIMEX-SINCLAIR USER GROUPS.

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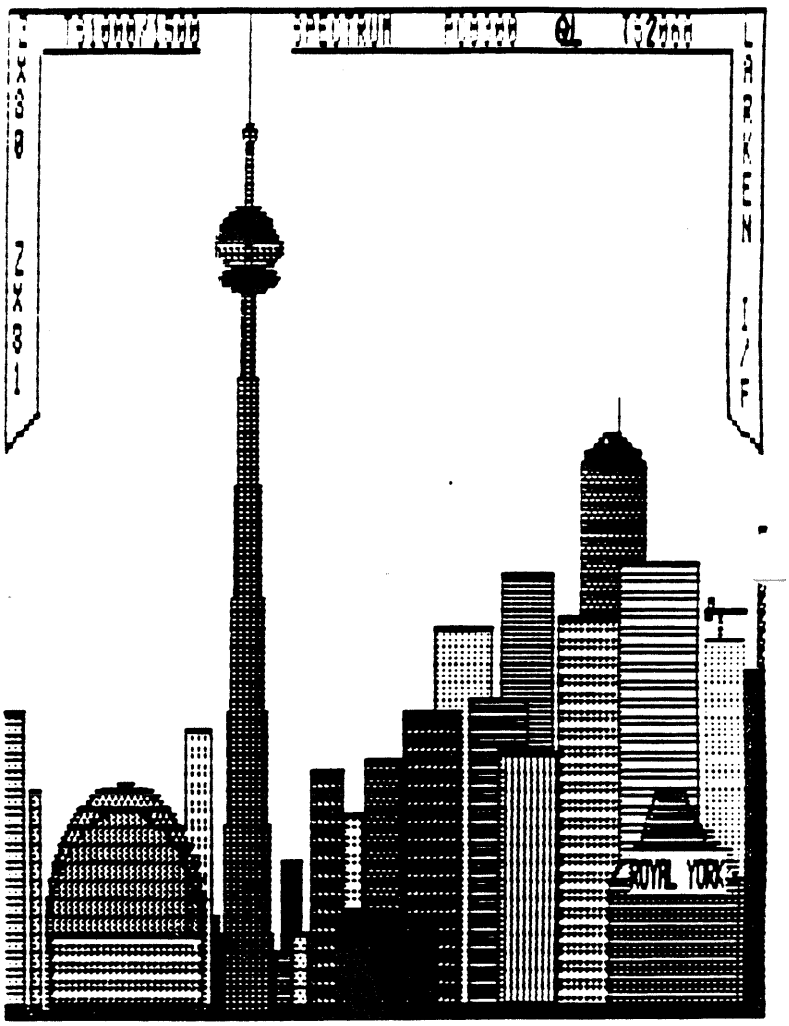
THE TS2068 & ZX-81 GROUP MEETS ON THE FIRST WEDNESDAY OF EACH MONTH AT 14 RICHOME COURT, SCARBOROUGH, ONT. 7PM START.

THE QL SIG WILL MEET AT 586 ONEIDA DRIVE, BURLINGTON, ONT. 7PM START. NEXT MEETING TO BE ANNOUNCED.

SINC-LINK IS PRODUCED ENTIRELY ON SINCLAIR AND TIMEX-SINCLAIR COMPUTERS.

SEND CORRESPONDANCE TO:

SINC-LINK EDITOR, TORONTO TIMEX-SINCLAIR USERS CLUB, 14 RICHOME COURT, SCARBOROUGH, ONTARIO, CANADA M1K 2Y1.



TORONTO TIMEX-SINCLAIR
USERS CLUB

(AREA CODE 416)

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TORONTO TIMEX-SINCLAIR USERS CLUB

EDITORIAL

News of our demise has been somewhat premature, to twist a famous quote. The club is **not** folding despite what some readers may have heard or inferred. The format of the newsletter has changed, of course, as ZX81 and TS2068 interest wanes, but we will be back in 1994 for our twelfth year of publication. Depending on support we may, or may not, put out six issues as customary. It all depends on you, the readers (and writers, I hope!). Let's not give up on our marvellous little wonders.

On behalf of the Club Executive, I'd like to wish you all the best in the coming year. Happy Computing!

J.T.

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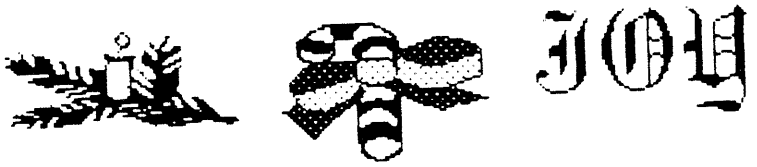

FOR SALE FOR SALE FOR SALE

One of our club members is moving from the Timex world and has a quantity of TS2068 material to sell. It is too lengthy to list here but you can send him a SASE, and ask for a list.

His stuff includes a TS2068 w/Spectrum ROM, Aerco printer interface, Larken disk system, Larken RAMdisk, TS2050 modem. Also some TS2068 books, programs, games, etc.

I don't have any prices; I suggest you make him an offer, either for items which interest you or for the whole.
Address: Keith Worral, 22...2nd Avenue North, St. Mathieu, Quebec, CANADA J0L 2H0

2068 24-PIN BIT IMAGE GRAPHICS FOR 24-PIN OR BUBBLE JET PRINTERS IN EPSON EMULATION

Larry Crawford / 357 Reynolds Rd / London Ontario Canada N6K 2P8
(519) 657-9119 PUBLIC DOMAIN 05 Nov 93

If you went for a 24-pin or bubble jet printer and had thoughts of trying to print some graphics in the 24-pin bit image mode, you were probably somewhat taken aback by the apparent comlexity of it all, just as I was.

This article should take some of the mystery out of the process. The demo program will give you the information needed to develop your own applications.

BACKGROUND

The 24 print head pins are arranged into three groups of eight. In effect, each group acts as a separate 8-pin head covering 1/3 of a print line. Thus, with one pass it is possible to achieve the vertical definition of three 8-pin passes with only one pass. Furthermore, it is possible to achieve a density of 360 dots per inch in Hex Density mode.

These attributes make the printing very fast and should allow a CAD program to produce printed circuit board layouts with good solid lines without the need for multiple passes. Unfortunately, the existing CAD programs that I have seen are all based on 72 dots per inch (dpi) horizontal density and 8/72" vertical line spacing. The 24-pin printer does not have the 72 dpi option. Instead, it uses multiples of 60 dpi and 1/360" paper feed. This makes the size of the printed image larger than that produced by an 8-pin printer.

Consequently, it cannot be used by software programs such as Pixel Print or CAD in their present form: a) two columns of 64 characters will not fit side by side on a page and b) the socket hole spacing on a pcb layout would be too great. It should be possible to modify the calculations performed by a CAD program to get the scale of the final image correct.

There are numerous other applications, of course, so feel free to make use of the information that follows.

As a demonstration, we will print the first line of the screen in 24-pin double density bit image graphics. The data in the conversion chart that follows is essential to the process.

Type in the following program (without the parenthetic comments, of course):

```
  5 REM 24-pin bit-image demo
 10 CLS: PRINT "QWERTYUIOPASDFGHJKLZXCVBNM123456"
    [this will put a single line on the screen to copy]
 20 IF IN 127<>236 THEN INPUT;: PRINT #0;"PUT PRINTER ON LINE":
    PAUSE 2: GO TO 20
    [An important reminder since the screen will go blank and
    nothing will happen if the printer is not ON.
    <INPUT;> is a simple way to clear out the bottom of the
    screen]
 30 RESTORE 30: GO SUB 500: DATA 27,65,8,999  [set Line Feed to
    8/60"]
 40 LET y=175: RESTORE 40: GO SUB 500: FOR x=0 to 255: DATA
    27,42,33,0,2,999  [y points to top of screen; codes are sent
```

```
    to set printer for 24-pin bit-image double density: it will
    expect 2x256 bytes of data: the x loop will point to all 256
    pixel columns across the screen]
 50 LET b1=224*POINT (x,y)+28*POINT (x,y-1)+3*POINT (x,y-2)
    ["b1" is the "top" byte. Following the chart, if the top 3
    pixels of the screen are INK then the value assigned to "b1"
    will be 224+28+3=255. Therefore, all top 8 pins of the print
    head will fire]
 60 LET b2=128*POINT (x,y-2)+112*POINT (x,y-3)+14*POINT (x,y-4)
    +POINT (x,y-5)
    ["b2" is the "middle" byte. Following the chart, if the
    pixels 3rd, 4th, 5th, & 6th from the top of the screen are
    all INK then "b2" is assigned a value of 128+112+14+1=255.
    Therefore, the middle 8 pins will all fire]
 70 LET b3=192*POINT (x,y-5)+56* POINT (x,y-6)+7*POINT (x,y-7)
    ["b3" is the bottom byte. Following the chart, if the pixels
    6th, 7th & 8th from the top of the screen are INK then "b3"
    will be assigned a value of 192+56+7=255. Therefore, the
    bottom 8 pins will all fire]
 80 RESTORE 80: GO SUB 500: NEXT x: DATA b1,b2,b3,b1,b2,b3,999
    [send the 3 bytes to the printer twice for double density]
 90 INPUT;: PRINT #0;x: NEXT x  [clears the bottom of the screen
    then prints the pixel column # to let you know that the
    computer is calculating the data bytes. Gets the next col #]
100 RESTORE 100: GO SUB 500: STOP: DATA 13,10,999
    [send CARRIAGE RETURN and Line Feed]
500 READ a: IF a=999 THEN RETURN
    [999 is a dummy value to signal the end of current data]
510 IF IN 127<>236 THEN GO TO 510  [if the printer is busy, wait
    until it is ready for data. (<INPUT;> is a simple way of
    clearing the bottom 2 lines of the screen)]
520 OUT 127,a: GO TO 500  [send data to the printer]
9999 RANDOMIZE USR 100: SAVE "11dem.B1"
```

Now <GO TO 9999> to save it to disk and then <RUN>

It takes nearly a minute to get to the actual printing because of all the calculations to be done in BASIC.

If you want to print a whole screen, make the following changes:

LINE 10: Replace with: 10 LET ctr=0: RANDOMIZE USR 100: LOAD "screen name" SCREEN$
['ctr' will keep track of the print line being processed]

LINE 40: Replace <LET y=175> with <FOR y=175 TO 7 STEP -8: LET ctr=ctr+1:>
[This will set up a loop to deal with all 22 screen lines and increment the line counter]

LINE 90: Add <ctr;",";> immediately after <PRINT #0;>

LINE 100: Add <NEXT y:> immediately ahead of <STOP:>

LINE 9999: Change program name

LINEs 40 and 100 set up a loop to look at all 22 lines of the upper screen, outputting the data to the printer at the end of each line. A full screen takes over 20 minutes to copy.

To print out in triple density, change the data in line 30 to 27,42,39,0,3 and add another set of b1,b2,b3 to the data in line

80. The printer will then expect 3x256 bit image data bytes.

A much faster version gets the data from the screen file instead of the screen. It puts the data into 1 or 22 line files, ready to be loaded from disk then sent to the printer by a 205-byte m/c routine. It takes about 5 minutes to create and save the 22 files and less than one minute to print them all in triple density.

George Chambers has a copy of this program with documentation on a LARKEN club disk. If you would like an Oliger version, send me $5.00 cash or money order. (Larry C.)

A full screen produces an image 4.25" by 2.9" (10.8 by 7.4 mm) and is proportioned so that squares are square and circles are round. Different screen images can be printed consecutively on the same sheet so that a composite image can be 4.25" by any length.

8-PIN TO 24-PIN CONVERSION CHART
FOR A 24-PIN PRINTER WITH EPSON EMULATION

	8-PIN	24-PIN		
	PIN#	PIN#	CODE	
TOP (BIT 7)>	1	1		
		2	224	
		3		
		4		"TOP BYTE"
	2	5	28	
		6		
		7		
	3	8	3	
		1	128	
		2		
	4	3	112	
		4		"MIDDLE" BYTE
		5		
	5	6	14	
		7		
		8	1	
	6	1		
		2	192	
		3		
	7	4	56	"BOTTOM" BYTE
		5		
		6		
	8	7	7	
		8		

Q L I P S

by Hugh Howie

For some time now I have been experiencing a problem with one of my disk drives on my #2 QL, in that I could not always format a disk in #2 drive. I would get a "Failed" message, or the disk would be formatted with less than the correct number of sectors. I was able to use this drive to write to, and to read, with no apparent problem, but format was unreliable.

This particular setup has three drives on the Trump Card:-

#1	5 1/4	720
#2	3 1/2	DD
#3	5 1/4	360

I am able to use three drives on the Trump Card as I obtained from Miracle Systems a small adapter (card) which permits the Trump or the Gold Cards, to handle up to four drives. This configuration means that in conjunction with my #1 QL, I can copy the TorQLib Library to just about any configuration that may be presented to me by a member.

Recently I had occasion to be copying some disks for someone who sent me 5 1/4 disks, and in the process of copying I found one of his disks "Not Found" which usually means it has not been formatted. I reformatted it in #1 a number of times with varying results, none of them correct. I returned it to him, and he replied that he had no problem with that disk, that it formatted, was written to, and was readable with no difficulty.

I then recalled another member who had a setup similar to mine, and he was having trouble of a like nature. I began to ponder if the problem could be in the small Disk Adapter, so I made a few test runs to format a disk in #2 drive, the one most likely to give me trouble.

I started up the system, and, using a new 3 1/2 disk I formatted it four times, and there was no instance where I got other than 1440/1440. I tried it again, using the command:-

```
for i=1 to 4:format flp2_:end for i
```

This time I got one report of less than normal. Subsequent runs gave varying results. So I tried another two disks with similar results.

I then switched off the unit, removed the Disk Adapter, and after many runs of all disks, I had no errors. Replaced the Adapter, and started getting errors again.

I checked the adapter to see if there were any wires touching where they should not, and pried any doubtful ones away from the board. It should be noted that the board is open and it is possible for undue pressure to be applied to its components

Next day I thought I would retry the experiment, and the results were exactly the same.

Again, the initial results were fine, but after the QL had been running (warming up the Adapter?) for a short period of time, I began to get less than satisfactory results.

Conclusions:-

1. The Disk Adapter does allow up to four disk drives to run from Trump Card or the Gold Card.

2. With the adapter, flp2_ appears to be faulty in formatting.

3. Flp1_ would appear to be OK except for that one disk which I mention.

4. Until the Adapter "warms up", it would appear to be reasonably reliable, but not always.

5. Without the Adapter, the unit formats fine.

If there is anyone who has had similar experiences in using this Adapter, I would be glad to hear from them.

This is my story, This is my song,
If you have any ideas, Just send them along.

Hugh H. Howie, 586 Oneida Dr.
Burlington, Ont. Canada, L7T 3V3

DID YOU KNOW ? That there are two different controller chips used in the LKdos EPROM I/F board? They are WD1770 and WD1772. The machine code in the EPROM on the cartridge board is slightly different for each one. If you have the WD1770 chip your version 3 EPROM will be marked L3. If you have the WD1772 controller you will find that your EPROM is marked L3f.

The disassembly that has been appearing in Sinc-Link was made from a version 3f EPROM. The disassembly was done by Ken Shoenberger using his TSDB disassembler program. It was 35 pages long and he had analyzed it making handwritten remarks. Before I submitted it to Sinc-Link I retyped it in MScript so I could print it with a smaller font and type in his remarks. I was able to reduce it to 21 pages. As of writing this article only the first eight pages have been published.

To verify that I hadn't left anything out or botched the typing I proofed it against my chip. I have an EPROM reader/burner that will make a disk copy of the EPROM. It works on an IBM clone so I converted it to a LKdos disk using the Larken Disk Editor. When I am ready to proof a page I load the LKdos code at address 40,000, load TSDB and select an offset of 25536. When I disassemble I get the correct addresses on the screen. Since I have the (earlier?) WD1770 chip I have the L3 EPROM. That is where I discovered the difference between the two chips. L3f has two additional RRA instructions at addresses 2336 and 2337. There is a 2 byte difference in all addresses from there up to 4364. So the code between 2336 and 4364 in the disassembly will be different if you have the L3 version. (That is, pages 7 to 12 of the disassembly.)

Reading the code with the EPROM reader also verifies that the "forbidden addresses" (98 to 111) are accurate as they appeared on the first page of the disassembly.

One of the reasons for submitting the entire disassembly was to answer part of the questions raised by Robert Shade in his letter published in Vol. 11, #1, about increasing the size of the RAMdisk. In the RAMdisk assembly instructions Larry Kenny says "The order of the ramchip selection is not linear because of a small PCB error". A lookup table at 4175 to 4222 compensates for this. I haven't studied the posibility of adding more RAM, but it is obvious that two things would have to occur before this could even be considered: 1) correct the circuit board error, and 2) revise the code in the vicinity of 4153 where the lookup table is used. (See page 12 of the disassembly.)

Pages 1 through 13 were done in MScript. Pages 14 through 21 were done on a MacIntosh. The file was transfered to a MSdos disk where I could then read it back into MScript using the Larken Disk Editor. My only problem with this process was the diference in how tabs are handled. The Mac program uses a 9 to indicate a tab and I discovered that MScript "pads" the tabbed areas with spaces. I changed all the 9's to spaces (32) and then had to add more to return to the desired configuration. My original reason for doing this was to save typing time because I could type columns on the Mac. This turned out to be a "pay me now or pay me later" exercise. We live and learn! +LSC+

SHOPPING in the U.S.A.

I read the comments by Louis Laferriere in the last issue of Sinc-Link, and of his experience of making a purchase in the U.S.A., and how the Post Office collected the GST, (General Sales Tax to the unitiated), then charging him $5 for the privilege of doing so.

My experience is similar, but much more expensive.

I phoned J. D. Hannam Inc. in Anaheim, California, and asked them to send me an ED disk drive. I forgot to tell them to send it by Mail.

I couple of days after I placed the order I realised my omission, but as I thought the goods had probably been dispatched, I did nothing about it. I had a good idea as to what was going to happen. Sure enough it did.

A few days later I had a phone call from UPS in Windsor, saying they had a package for me, and that the tax would be $xx, I said OK, and was told that there also would be a brokerage fee of $20. (Shipping charge at source, $5.70 US)

To travel to Windsor and clear the package myself, would have cost me more in gasoline than brokerage fee, so I had to go along with this exorbitant larceny.

From the size of the UPS truck/trailer combinations I have seen in my travels, heading north to Canada, I can only conjecture that if every package is subjected to the same brokerage, then UPS could quite possibly transport goods free, and live on the brokerage fees.

I had a similar experience with UPS a couple years ago, but in this case the Port of Entry was Fort Erie, so I went there and cleared the package with no problem, and it only took me five minutes with Customs to do so.

Since the Fort Erie experiences, I have asked my suppliers to send the packages by Mail, and have had no problems. I am notified when there is a package at the Post Office to be collected, I do so, and if all I am charged is $5, then that is better than $20. I still agree that the $5 fee Louis was charged by the Post Office would be onerous to me.

I can only say to anyone making a purchase from the States, that they request the supplier to send it by Mail. If they do otherwise, then refuse to accept delivery.

I would ask all USA suppliers sending anything to Canada, to send it by Mail. The time taken by the Mail Services is not that much different from the Parcel Services - and cheaper.

Hugh Howie.

SOFTLY AS I LEAVE YOU
An adaptation of a familiar melody
to the TS 2068 Computer
By Joan Kealy

One of our members, Joan Kealy, has sent us a rare treat; a Larken disk with several melodies which she has adapted to the TS2068 computer. These adaptations make use of the sound chip in the 2068 computer.

Very little in the Timex world has been done to take advantage of this feature of the computer, and we are pleased to be able to offer this listing.

This is the second time we have received work of this nature from Joan. The first collection of her musical adaptations are on the Larken library disk #20. We shall add the several compositions we've received this time to the same disk. We can also make this available to club members on tape, if there is a demand. Ask for it. G.F.C.

P.S. Joan also sent us a couple of short sound effects, with the hope that some club member could experiment and come up with a better rendition.

```
  10 REM  THE SOUND OF SURF

 160 PAUSE 50: SOUND 7,63
 170 SOUND 6,31,7,7,8,31,13,14,1
1,48,12,48: PAUSE 880
 172 SOUND 6,31,7,7,8,31,13,14,1
1,48,12,15: PAUSE 200
 175 SOUND 7,63,8,0,13,0
```

```
  10 REM   THE SOUND OF BULLS

8000 FOR I=1 TO 3: SOUND 7,50,0,
8,1,0,8,31,3,0,8,24,8,24,11,8,2
5,13,12: PAUSE 20: NEXT I: RETU
RN    REM VARY SEAGULL CRY AND
 SOUND GROUP3--TOO MECHANICAL
```

```
   1 BORDER 5: SOUND 7,63: BRIGH
T 0
   2 PAPER 6: INK 1: CLS : PRINT
 AT 10,0;"      SOFTLY, AS I LEAV
E YOU      ": PAUSE 200: CLS
   3 REM TRANSLATED TO TS2068 BY
 JOAN KEALY..COPYRIGHTED TO PUBL
IC DOMAIN 1992...HALF NOTE=1
   4 GO SUB 1995: GO SUB 1018
   5 FOR N=1 TO 8: READ D,P: BEE
P D,P: NEXT N
  11 DATA 1,12,1,5,16,.25,14,.25
,17,.5,16,.5,14,1,16,1.5,12
  15 POKE 23692,255
  20 GO SUB 1995
  25 RESTORE 40: FOR B=1 TO 109:
 READ C,L$,D,P
  30 PRINT TAB P+1.2;L$: GO SUB
C: BEEP D,P
  35 NEXT B
  39 REM DATA "CHORD","WORD","DU
RATION OF BEEP","PITCH OF BEEP"
  40 DATA 1017,"SOFT-",1,0,1015,
"LY",1.5,4,1050,"",0,0,1900,"I"
,.25,2,1900,"WILL",.25,3,1035,"L
EAVE",.5,4,1900,"YOU",.5,2,1015,
"SOFT-",1,4,1900,"LY",1.5,7,1050
,"",0,0
  45 DATA 1900,"FOR",.25,5,1900,
"MY",.25,9,1035,"HEART",.5,7,190
0,"WOULD",.5,5,1017,"BREAK",1.5,
7,1018,"IF",.25,12,1018,"YOU",.2
5,11,1900,"SHOULD",.25,12,1030,"
WAKE",1.5,9
  47 DATA 1910,"",0,0
  50 DATA 1900,"AND",.25,7,1900,
"SEE",.25,5,1900,"ME",.25,9,1015
,"GO.",1.5,7,1050,"",0,0
  60 DATA 1900,"SO",.375,5,1900,
"I",.25,4,1035,"LEAVE",.5,4,1900
,"YOU",.5,2,1127,"SOFT-",1,3,190
0,"LY",1.5,7,1045,"",0,0
  65 DATA 1045,"LONG",.25,5,1900
,"BE-",.25,8,1105,"FORE",.5,7,19
00,"YOU",.5,5,1127,"MISS",1,7,19
00,"ME",1.5,10,1045,"",0,0
  70 DATA 1910,"",0,0
  75 DATA 1900,"LONG",.25,5,1900
,"BE-",.25,12,1105,"FORE",.5,10,
1900,"YOUR",.5,5,1127,"ARMS",.5,
10,1900,"CAN",.25,15,1900,"BEG",
.5,14,1900,"ME",.5,15,1130,"STAY
",1.25,12
  80 DATA 1900,"FOR",.25,10,1900
,"ONE",.25,8,1900,"MORE",.25,12,
1055,"HOUR",1.5,10
  85 DATA 1910,"",0,0
  90 DATA 1045,"OR",.5,5,1105,"O
NE",.5,7,1900,"MORE",.5,5,1017,"
DAY.",1.25,4
  95 DATA 1050,"AF-",.25,2,1900,
"TER",.25,5,1035,"A[illegible]",.5,4,1900
"THE",.5,2,1015,"[illegible]",2,5
 100 DATA 1050,"I",.25,5,1900,"C
AN[illegible]",.25,9,1035,"BEAR",[illegible]
00,"THE",.25,11,1055,"TEARS",1,1
2,1035,"TO",1,12,1030,"FALL",1.5
,12
 103 DATA 1910,"",0,0
 105 DATA 1900,"SO",.5,12,1130,"
SOFT-",1,12,1900,"LY",1.5,12,104
5,"AS",.25,12,1900,"I",.25,12,19
00,"LEAVE",.5,10,1900,"YOU",.5,8
,1017,"THERE.",2,5,7
 107 DATA 1920,"",0,0
 110 DATA 1050,"AF-",.25,2,1900,
"TER",.25,5,1035,"ALL",.5,4,1900
,"THE",.5,2,1015,"YEARS",2,5,7
 112 DATA 1910,"",0,0
 115 DATA 1050,"I",.25,5,1900,"C
AN'T",.25,9,1035,"BEAR",.5,7,19
00,"THE",.25,11,1055,"TEARS",1,1
2,1035,"TO",1,12,1030,"FALL",1.5
,12
 117 DATA 1910,"",0,0
 120 DATA 1045,"AS",.25,12,1900,
"I",.25,12,1105,"LEAVE",.5,10,19
00,"YOU",.5,8,1017,"THERE",2,7,1
050,"AS",.25,5,1900,"I",.25,9,10
35,"LEAVE",.5,7,1900,"YOU",.5,5,
1015,"THERE",1.5,7,1050,"AS",.25
,5,1900,"I",.25,9,1035,"LEAVE",.
5,7,1900,"YOU",.5,14,1017,"THERE
.",1.5,12
 125 GO SUB 1999: PAUSE 200: GO
TO 9999
1015 SOUND 0,209,1,0,2,165,3,0,4
,139,5,0: RETURN : REM C MAJ
1017 SOUND 0,162,1,1,2,75,3,1,4,
23,5,1: RETURN : REM LOWER C MAJ
1018 SOUND 0,165,1,0,2,139,3,0,4
,104,5,0: RETURN : REM C MAJ cho
rd inversion etc
1030 SOUND 0,156,1,0,2,124,3,0,4
,104,5,0: RETURN : REM F MAJ
1035 SOUND 0,139,1,0,2,110,3,0,4
,93,5,0: RETURN : REM G MAJ
1045 SOUND 0,156,1,0,2,131,3,0,4
,104: RETURN : REM F MINOR
1050 SOUND 0,186,1,0,2,156,3,0,4
,124,5,0: RETURN : REM D MINOR D
 FNATURAL A
1055 SOUND 0,248,1,0,2,209,3,0,4
,165,5,0: RETURN : REM A MIN
1105 SOUND 0,234,1,0,2,185,3,0,4
,155,5,0: RETURN : REM E FLAT MA
J
1122 SOUND 0,95,1,1,2,39,3,1,4,2
48,5,0: RETURN : REM D# DIM(D#F#
A) lower version
1127 SOUND 0,234,1,0,2,175,3,0,4
,139,5,0: RETURN : REM Eb INVERS
ION
1130 SOUND 0,7,1,1,2,209,3,0,4,1
75,5,0: RETURN : REM Ab
1900 RETURN : REM DUMMY CHORD TO
 REGULATE DATA
1910 CLS : RETURN
1920 PAUSE 60: CLS : RETURN
1995 CLS : SOUND 7,63: PAUSE 60:
 SOUND 7,56,8,15,9,15,10,15,11,[illegible]
1,12,12,13,13: RETURN : REM [illegible]
[illegible]
[illegible] SOUND 7,63,8,0,9,0,10,0: RE
TURN : REM OFF
[illegible] STOP
[illegible] CLEAR : RANDOMIZE USR 100
[illegible] "SOFTLY" LINE 1
[illegible] RANDOMIZE USR 100: LOAD [illegible]
[illegible]
```

August 15, 1993

John E. Juergens
18 Bryce Canyon Way
Pacifica CA 94044-3723

Hugh H. Howie
QL Contact
586 Oneida Drive
BURLINGTON ONT.
CANADA L7T 3V3

Dear Hugh,

This is in response to your QLIPS note on EXCHANGE. Would like to talk you out of a copy if I could.

Am using the original, bundled Archive for our checking and tax program and it has worked just fine for us for many, many years. My only complaint with it is that, like all of the programs in the Psion suite, it did not come with a start-up macro.

Long ago I augmented Quill with Turbo +. Did not know at the time of purchase that we were also getting macros with it; particularly, CTRL-S which has saved a lot of time and keystrokes when starting Quill.

I have used Psion's PC-4 group and it, as apparently does the EXCHANGE group, uses TSL. TSL, at least as far as the PC-4 group is concerned, is really ONLY a start-up macro.

It would have been nice if the KeyDefine program included a start-up macro as well - then I wouldn't be asking you for a favor.

Anyway, the only reason I am interested in EXCHANGE is for the TSL. However, it may turn out to be more of a hassle than pushing that single key to invoke the KeyDefine macro at the Archive opening screen. We'll see.

On another note, have been using QL-PC FileServer since writing you recently. Have been using it to spellcheck and edit a QL _doc.

Developed 2 macros, using Turbo +: The first takes my standard page(s) of text and exports it, via a printer_dat set up for only CRs, to the PC drive D: (a 100K ram/vdisk).

The PC is started with a disk in drive A: and, via the AUTOEXEC.BAT file without further ado, it starts the PC side of QL-PC FileServer; the PC then pauses for a keypress.

Once the QL _doc file is sent over to the vdisk on drive D:, I press any key on the PC. When this happens, it loads PFS:1st Choice and then by a 1st Choice macro the QL file in D: is loaded and spellchecking begun.

When spellchecking and editing are finished another 1st Choice macro sends the file back to drive D: and ready for import into the QL.

The second QL macro does just that, actually the reverse of the first, getting the file back from the PC's drive D: and importing it into Quill by line, and re-setting the margins, Justification, etc.

Although somewhat complicated to explain, it works rather well and much easier than it appears above. PFS:1st Choice is, if you don't know, also a suite like EXCHANGE comprising a Word Processor, Spreadsheet (one of the worst I've seen), a Data Base that makes Archive look like it cost $500, and a Telecomunications program, etc., etc.

The Word Processor is not bad. It contains both a spellchecker and a Thesaurus. The only reason I bought it (US$40 at Damark) was the price. You are probably finding out, as you now have access to a PC, software vendors are closing out their DOS products to make shelf space available for their Windows versions. Old fuds like myself, who shall probably never use Windows, are finding bargains amongst their close-outs.

Am enclosing my usual US$1.00, trust it's sufficient.

Thanks in advance,

jej

NO TORONTO FEST IN 1994

With many regrets I have to announce there will NOT be a Sinclair Fest in Toronto in 1994.

I would like to express my appreciation to the many who took time and trouble to send in the questionaire which was in the last issue of Sinc-Link, stating they would like to come and whom they would like to see at such a Fest.

To others who were unable to reply owing to the deadline, I also give my thanks.

I am sorry to have to write this letter, but I feel that to go ahead with this project would be too much for me to accomplish on my own.

Thank you, one and all.

Hugh H. Howie.
November 1/93

XCHANGE QUESTION ANSWERED

In the September issue I mentioned that I thought XCHANGE, the recently released to Public Domain program, was multi-tasking, that I had heard it was not really a multitasking program and could anyone enlighten me.

The other night I received a call from Howard Clase and in a few short words he showed me the difference between such as Taskmaster and Xchange.

Taskmaster, which is a true multitasker, keeps plugging along when the program is changed, whereas Xchange stops work on a program when you switch to another.

So that means you can xchange one program for another, but operation of the first is suspended while you are away from it.

Taskmaster works in the background while you are away on something else.

My question is answered, and a big Thank You to Howard Clase for the call.

Hugh Howie

X C H A N G E

Complete program now in library

I have just received from Howard Clase a copy of XCHANGE, the Psion program recently released to Public Domain.

This is the latest PD version from the West Midlands Quanta Sub Group, and is on a DD disk, utilising all space on that disk, (3/1440 sectors).

It has been placed in our library bearing the title of "Xch-1" Should anyone wish a copy the usual rules apply, send a formatted disk plus return post and packing, and I will get it back to you as soon as possible.

I have just added an ED drive, so can supply programs on 3 1/2 DD, HD, ED, and also on 5 1/4 360 or 720. So that should cover whatever you might have.

On behalf of the club and its members,
Many thanks Howard.

Hugh Howie

DID YOU KNOW ?

I have enjoyed the quality of our newsletter and I have been awed by the knowledge of some of our contributors. I guess that I have assumed that everyone else has all the information that I have available to me. Our last newsletter and the out of town letter from George reminded me what assuming does. The request for information about the code for our DOS and the comment that a schematic is unavailable triggered me. Ken Schoenberger has written a good disassembler and he printed out the code and added remarks as he analysized it. It is 38 pages long with two columns per page. Rather that print out a copy to send in (I have nearly worn mine out and Ken's comments would be lost) I have started to key it in to MScript so that it can be printed out at 15 CPI with narrow spacing. My Christmas present was a Canon Bubble Jet Printer and it seems readable at this smaller type. It is labor intensive so this installment will cover the first third of the code. The code in the "forbidden area" was given to us and I have not verified it. I hope to do this before the last installment and I will report back later.

The second item, the cartridge and I/F schematic, was something I was curious about when I first got my Larken system. I had looked over the cartridge and had started to put it on paper. To verify that I had it right I built a unit on a discarded Zebra board. After one false start with one wiring error it worked. So the cartridge schematic should be correct. I did not recognize the marking on one diode, so I merely recorded what was on it. I used a diode that looked like it and it worked. I do have to apologize for not using a Timex to do the schematic, but I thought it would be clearer done on a Laser printer.

I have not done anything on the disk I/F. If anyone is seriously interested in the schematic for it I could work on it after I complete the disassembly of the cartridge.

If any one knows of a m/c patch that would allow me to send the disassembly to memory instead of screen or printer, I would be interested in trying that rather than retyping the remaining pages.

My typing skills are far from perfect, so in case anyone is interested in verifying a particular piece of code here is how it was done:

1. Clear 39999
2. Load in TSDB at 60000
3. Key in a short basic routine to do a LKdos peek and poke to 40000 + address
4. Set offset so that proper addresses show in print out (send disassembly to screen or)
5. Set margin for left column
6. set printer on in TSDB
7. disassemble until page is full
8. reset margin to print right column
9. disassemble until page is full
10. repeat 5 thru 9 for next page

Les Cottrell 108 River Heights Drive Cocoa, FL 32922-6630

THIS IS THE CONCLUSION OF LES'S DISASSEMBLY. SEE ISSUES 11-2,11-3 & 11-5

ED.

```
name   Dec   Hex   Instr-Dec      Remarks          (16)
       5710  164E  JR C, 5719
       5712  1650  CP 165
       5714  1652  JP NC, 5985
       5717  1655  LD A, 35       ; #
       5719  1657  LD HL, 0
       5722  165A  LD L, A
       5723  1656  ADD HL,HL
       5724  1657  ADD HL,HL
       5725  1658  ADD HL,HL
       5726  165E  EX DE, HL
       5727  165F  LD HL, (8218)  ; chars
       5730  1662  ADD HL, DE
       5731  1663  LD A, (HL)
       5732  1664  LD (16079), A
       5735  1667  PUSH HL
       5736  1658  CALL 5860
       5739  166B  POP HL
       5740  166C  LD DE, 16080
       5743  166F  LD BC, 8
       5746  1672  LDIR
       5748  1674  LD (16077), DE
       5752  1678  LD BC,(16065)  ; X
       5755  167B  CALL 5967
       5759  167F  LD (16076), A  ; Y  ?
       5762  1682  LD (16068), HL ; screen address
       5765  1685  LD B, 8
       5767  1687  PUSH BC
       5768  1688  LD HL, (16077)
       6771  168B  LD A, (HL)
       5772  168C  DEC HL
       5773  168D  LD (16077), HL
       5776  1690  LD L, A
       5777  1691  LD A, (16076)
       5780  1694  AND A
       5781  1695  JR Z, 5793
       5783  1697  LD B, A
       5784  1698  LD H, 0
       5786  169A  SRL L
       5788  169C  RR H
       5790  169E  AND A
       5791  169F  DJNZ 5786
       5793  16A1  LD DE, (16068) ; screen address
       5797  16A5  LD A, (DE)
       5798  16A6  XOR L
       5799  16A7  LD (DE), A
       5800  16A8  CALL 5945
       5803  16AB  LD A, (16076)
       5806  16AE  AND A
       5807  16AF  JR Z, 5814
       5809  16B1  INC DE
       5810  16B2  LD A, (DE)
       5811  16B3  LD A, H
       5812  16B4  LD (DE),A
       5813  16B5  DEC DE
       5814  16B6  LD HL, (16068) ; screen address
       5817  16B9  CALL 5841
       5820  16BC  LD (16068), HL ; screen address
       5823  16BF  POP BC
       5824  1600  DJNZ 5797
       5826  1602  LD A, (16079)
       5829  16C5  LD A, (16065)  ; X
       5832  16C8  LD B, A
       5833  16C9  LD A, (16070)  ; char width
       5836  16CC  ADD A, B
       5837  16CD  LD (16065), A  ; X
------ 5840  16D0  RET
       5841  16D1  PUSH AF
       5842  16D2  LD A, H
       5843  16D3  DEC H
       5844  16D4  AND 7
       5846  16D6  JR NZ, 5858
       5848  16D8  LD A, L
       5849  16D9  SUB 32
       5851  16DB  LD L, A
       5852  16DC  JR C, 5858
       5854  16DE  LD A, H
       5855  16DF  ADD A, 8
       5857  16E1  LD H, A
       5858  16E2  POP AF
------ 5859  16E3  RET
       5860  16E4  LD B, 8
       5862  16E6  LD A, (16079)
       5865  16E9  LD C, A
       5866  16EA  AND A
       5867  16EB  SRL C
       5869  16ED  JR NC, 5874
       5871  16EF  DEC B
------ 5872  16F0  JR 5866
       5874  16F2  LD A, B
       5875  16F3  LD (16070), A  ; char width
       5878  16F6  LD A, (16065)  ; X
       5881  16F9  ADD A, B
       5882  16FA  JR C, 5890
       5884  16FC  LD B, A
       5885  16FD  LD A, (16062)  ; right
       5888  1700  CP B
       5889  1701  RET NC
       5890  1702  LD A, (16060)  ; left
       5878  16F6  LD (16065), A  ; X
       5896  1708  LD A, (16066)  ; Y
       5899  170B  LD B, A

name   Dec   Hex   Instr-Dec      Remarks
       5900  170C  LD A, (16063)  ; bottom
       5903  170F  CP B
       5904  1710  JR C, 5910
       5906  1712  CALL 6023
------ 5909  1715  RET
       5910  1716  LD A, B
       5911  1717  SUB 8
       5913  1719  LD (16066), A
------ 5916  171C  RET
       5917  171D  LD HL, (8218)  ; chars
       5920  1720  INC H
       5921  1721  LD C, (HL)
       5922  1722  LD B, 8
       5924  1724  AND A
       5925  1725  SLA C
       5927  1727  JR NC, 5931
       5929  1729  DJNZ 5924
       5931  172B  LD A, (16060)  ; left
       5934  172E  LD C, A
       5935  162F  LD A, (16065)  ; X
       5938  1732  SUB B
       5939  1733  CP C
       5940  1734  RET C
       5941  1735  LD (16065), A  ; X
------ 5944  1738  RET
       5945  1739  PUSH AF
       5946  173A  PUSH HL
       5947  173B  LD A, D
       5948  173C  RRC A
       5950  173E  RRC A
       5953  1740  RRC A
       5954  1742  AND 3
       5956  1744  OR 88           ; X
       5958  1746  LD H, A
       5959  1747  LD L, E
       5960  1748  LD A, (16074)  ; win attr
       5963  174B  LD (HL), A
       5964  174C  POP HL
       5965  174D  POP AF
------ 5966  174E  RET
       5967  174F  LD A, (23632)  ; chans (hi)
       5970  1752  CP 93           ; ]
       5972  1754  JR C, 5980
       5974  1756  LD DE, 9731    ; scrmbl (2068)
------ 5977  1759  JP 19
       5980  175C  LD DE, 8874    ; (spectrum)screen address
------ 5983  175F  JR 5977
       5985  1761  POP AF
       5986  1762  POP AF
       5987  1763  POP BC
       5988  1764  POP DE
       5989  1765  POP HL
       5990  1766  LD (15994), A
       5993  1769  LD (15996), DE
       5997  176D  LD A, (23632)  ; chans(hi)
       6000  1770  CP 93           ; ]
       6002  1772  JR C, 6009
       6004  1774  LD DE, 1280    ; sendtv(2068)
------ 6007  1777  JR 6012
       6009  1779  LD DE, 2548    ; send char to scn(speccy)
       6012  177C  PUSH DE
       6013  177D  LD A, (15994)
       6016  1780  LD DE, (15996)
------ 6020  1784  JP 186          ; jpout
       6023  1787  LD A, (16060)  ; left
       6026  178A  LD B, A
       6027  178B  LD A, (16062)  ; right
       6030  1781  SUB B
       6031  178F  SRL A
       6033  1791  SRL A
       6035  1793  SRL A
       6037  1795  INC A
       6038  1796  LD (13434), A
       6041  1799  XOR A
       6042  179A  LD (13435), A
       6045  179D  LD A, (16063)  ; bottom
       6048  17A0  LD B,A
       6049  17A1  LD A, (16061)  ; top
       6052  17A4  SUB B
       6053  17A5  SCF
       6054  17A6  CCF
       6055  17A7  RRA
       6056  17A8  RRA
       6057  17A9  RRA
       6058  17AA  LD (13443), A
       6061  17AD  LD BC, (16060) ; left
       6065  17B1  LD (16072), BC
       6069  17B5  LD A, 8
       6071  17B7  LD (13442), A
       6074  17BA  LD BC, (16072)
       6078  17BE  CALL 5967
       6081  17C1  EX DE, HL
       6082  17C2  LD BC, (16072)
       6086  17C6  LD A, B
       6087  17C7  SUB 8
       6089  17C9  LD B, A
       6090  17CA  LD (16072), BC
       6094  17CE  PUSH DE
       6095  17CF  CALL 5967
       6098  17D2  POP DE
       6099  17D3  LD BC, (13434)
```

```
name   Dec   Hex   Instr-Dec      Remarks          (17)
       6103  17D7  LD (13436), HL
       6106  17DA  PUSH HL
       6107  17DB  PUSH DE
       6108  17DC  PUSH BC
       6109  17DD  LDIR
       6111  17DF  POP BC
       6112  17E0  POP DE
       6113  17E1  POP HL
       6114  17E2  DEC H
       6115  17E3  DEC D
       6116  17E4  LD A, (13442)
       6119  17E7  DEC A
       6120  17E8  AND A
       6121  17E9  JR Z, 6128
       6123  17EB  LD (13442), A
_______6126  17EE  JR 6106
       6128  17F0  LD A, (13443)
       6131  17F3  DEC A
       6132  17F4  AND A
       6133  17F5  JR Z, 6140
       6135  17F7  LD (13443), A
_______6138  17FA  JR 6069
       6140  17FC  LD B, 8
       6142  17FE  LD HL, (13436)
       6145  1801  PUSH HL
       6146  1802  LD A, (13434)
       6149  1805  LD (HL), 0
       6151  1807  INC HL
       6152  1808  DEC A
       6153  1809  JR NZ, 6149
       6155  180B  POP HL
       6156  180C  DEC H
       6157  180D  PUSH HL
       6158  180E  DJNZ 6146
       6160  1810  POP HL
       6161  1811  LD A, (16064)  ; scroll count
       6164  1814  DEC A
       6165  1815  LD (16064), A  ; scroll count
       6168  1818  AND A
       6169  1819  RET NZ
       6170  181A   LD A, (16079)
       6173  181D  LD (13438), A
       6176  1820  LD HL, 6202    ; " SCROLL ??"
       6179  1823  LD B, 10
       6181  1825  LD A, (HL)
       6182  1826  PUSH AF
       6183  1827  PUSH BC
       6184  1828  PUSH HL
       6185  1829  CALL 5667
       6188  182C  POP HL
       6189  182D  POP BC
       6190  182E  POP AF
       6191  182F  INC HL
       6192  1830  DJNZ 6181
       6194  1832  LD A, (13438)
       6197  1835  LD (16079), A
_______6200  1838  JR 6217
       6202  " SCROLL ??"          <pointer @ 6176
       6217  1849  CALL 7841
       6220  184C  LD A, 191
       6222  184E  IN A, 254
       6224  1850  CP 31
       6226  1852  JR Z, 6217     ; not n/l, l, k,j or h
       6228  1854  LD A, (16063)  ; bottom
       6231  1857  LD B, A
       6232  1858  LD A, (16061)  ; top
       6235  185B  SUB B
       6236  185C  RRA
       6237  185D  RRA
       6238  185E  RRA
       6239  185F  LD (16064), A  ; scroll count
       6242  1862  LD A, (16060)  ; left
       6245  1865  LD (16065), A  ; X
_______6248  1868  JP 6140
       6251  186B  LD (8222), A
       6254  186E  AND A
       6255  186F  JR Z, 6263
       6257  1871  CP 1
       6259  1873  JR Z, 6268
_______6261  1875  JR 6273
       6263  1877  LD HL, 16000   ; window 0 info
_______6266  187A  JR 6276
       6268  187C  LD HL, 16020   ; window 1 info
_______6271  187F  JR 6276
       6273  1881  LD HL, 16040   ; window 2 info
       6276  1884  LD DE, 16060
       6279  1887  LD BC, 20
       6282  188A  LDIR
_______6284  188C  RET
CLEAR  6285  188D  RST 32         ; next char
       6286  188E  CALL 5369
       6289  1891  CP 3
       6291  1893  JP NC, 4554
       6294  1896  CALL 6251
       6297  1899  LD A, (16060)  ; left
       6300  189C  LD B, A
       6301  189D  LD A, (16062)  ; right
       6304  18A0  SUB B
       6305  18A1  SRL A
       6307  18A3  SRL A
       6309  18A5  SRL A

name   Dec   Hex   Instr-Dec      Remarks
       6311  18A7  INC A
       6312  18A8  LD (13434), A
       6315  18AB  XOR A
       6316  18AC  LD (13435), A
       6319  18AF  LD A, (16063)  ; bottom
       6322  18B2  LD B, A
       6323  18B3  LD A, (16061)  ; top
       6326  18B6  SUB B
       6327  18B7  SCF
       6328  18B8  CCF
       6329  18B9  RRA
       6330  18BA  RRA
       6331  18BB  RRA
       6332  18BC  INC A
       6333  18BD  LD (13443), A
       6336  18C0  LD BC, (16060)  ; left
       6340  18C4  LD (16072), BC
       6344  18C8  LD A, 8
       6346  18CA  LD (13442), A
       6349  18CD  LD BC, (16072)
       6353  18D1  CALL 5967
       6356  18D4  EX DE, HL
       6357  18D5  LD BC, (16072)
       6361  18D9  LD A, B
       6362  18DA  SUB 8
       6364  18DC  LD B, A
       6365  18DD  LD (16072), BC
       6369  18E1  CP 200
       6371  18E3  JR C, 6383
       6373  18E5  PUSH DE
       6374  18E6  POP HL
       6375  18E7  LD BC, 32
       6378  18EA  OR A
       6379  18EB  SBC HL, BC
_______6381  18ED  JR 6388
       6383  18EF  PUSH DE
       6384  18F0  CALL 5967
       6387  18F3  POP DE
       6388  18F4  LD BC, (13434)
       6392  18F8  LD (13436), HL
       6395  18FB  PUSH HL
       6396  18FC  PUSH DE
       6397  18FD  PUSH BC
       6398  18FE  CALL 6476
       6401  1901  POP BC
       6402  1902  POP DE
       6403  1903  POP HL
       6404  1904  DEC H
       6405  1905  DEC D
       6406  1906  LD A, (13442)
       6409  1909  DEC A
       6410  190A  AND A
       6411  190B  JR Z, 6418
       6413  190D  LD (13442), A
_______6416  1910  JR 6395
       6418  1912  LD A, (13443)
       6421  1915  DEC A
       6422  1916  AND A
       6422  1917  JR Z, 6430
       6425  1919  LD (13443), A
_______6428  191C  JR 6344
       6430  191E  LD HL, (16060)  ; left
       6433  1921  LD (16065), HL  ; X
       6436  1924  CALL 6442
_______6439  1927  JP 4499
       6442  192A  LD A, (16071)
       6445  192D  AND A
       6446  192E  JR Z, 6454
       6448  1930  CP 1
       6450  1932  JR Z, 6459
_______6452  1934  JR 6464
       6454  1936  LD DE, 16000   ; wondow 0 info
_______6457  1939  JR 6467
       6459  193B  LD DE, 16020   ; wondow 1          info
_______6462  193E  JR 6467
       6454  1936  LD DE, 16040   ; wondow 2 info
       6467  1943  LD HL, 16060   ; current windoe info
       6470  1946  LD BC, 19
       6473  1949  LDIR
_______6475  194B  RET
       6476  194C  LD (HL), 0
       6478  194E  XOR A
       6479  194F  LD (DE), A
       6480  1950  CALL 5945
       6483  1953  INC HL
       6484  1954  INC DE
       6485  1955  DEC BC
       6486  1956  LD A, C
       6487  1957  OR B
       6488  1958  JR NZ, 6476
_______6490  195A  RET
VERIFY 6491  195B  XOR A
       6492  195C  LD (8221), A   ; curtrk
       6495  195F  CALL 126       ; track
       6498  1962  CALL 123       ; loadbf
       6501  1965  LD HL, (8324)  ; varofset
       6504  1968  LD A, H
       6505  1969  ADD A, A
       6506  196A  LD H, A
       6507  196B  LD (8245). HL  ; temp6
       6510  196E  CALL 123       ; loadbf
```

```
name   Dec   Hex   Instr-Dec      Remarks          (18)

       6513  1971  CALL 129       ; nexttr
       6516  1974  LD HL, (8245)  ; temp6
       6519  1977  PUSH HL
       6520  1978  LD A, L
       6521  1979  CP 2
       6523  197B  JR Z, 6528
       6525  197D  CALL 129       ; nexttr
       6528  1980  LD A, (8221)   ; curtrk
       6531  1983  POP HL
       6532  1984  CP H
       6533  1985  JR C, 6510
______6535  1987  JP 4499
       6538  198A  RST 32         ; next char
       6539  198B  CALL 144       ; evalu
       6542  198E  LD (8241), BC  ; temp2
       6546  1992  LD A, B
       6547  1993  AND A
       6548  1994  JR NZ, 6585    ; integer out of range
       6550  1996  RST 32         ; next char
       6551  1997  CALL 144       ; evalu
       6554  199A  LD A, B
       6555  199B  AND A
       6556  199C  JR NZ, 6585    ; integer out of range
       6558  199E  LD A, C
       6559  199F  LD (8242), A   temp2+1
       6562  19A2  LD HL, (23645)       ; chadd
       6565  19A5  LD A, (HL)
       6566  19A6  CP 44          ; ,
       6568  19A8  JR NZ, 6583    ; parameter error
       6570  19AA  RST 32         ; next char
       6571  19AB  CALL 144       ; evalu
       6574  19AE  LD A, B
       6575  19AF  AND A
       6576  19B0  JR NZ, 6585    ; integer out of range
       6578  19B2  LD A, C
       6579  19B3  LD (8222), A
______6582  19B6  RET
______6583  19B7  RST 8 ERR 26   ; parameter error
______6585  19B9  RST 8 ERR 11   ; integer out of range
TABLE with <pointer @ 7197
       6587  00 00 00 00 00 00 00 00
       6595  FF FF FF FF FF FF FF FF
       6603  55 AA 55 AA 55 AA 55 AA
       6611  CC CC 33 33 CC CC 33 33
       6619  C0 C0 0C 0C C0 C0 0C 0C
       6627  C0 C0 00 00 0C 0C 00 00
       6635  88 44 22 11 88 44 22 11
       6643  11 22 44 88 11 22 44 88
       6651  FF 08 08 08 FF 80 80 80
       6659  18 24 42 81 81 42 24 18
DRAW   6667  1A0B  LD HL, (23677) ; coords
       6670  1A0E  LD A, H
       6671  1A0F  ADD A, 15
       6673  1A11  LD H, A
       6674  1A12  LD (8249), HL
       6677  1A15  CALL 6538
       6680  1A18  CALL 141       ; endln
       6683  1A1B  LD HL, (8241)  ; temp2
       6686  1A1E  XOR A
       6687  1A1F  CP H
       6688  1A20  JP Z, 4499
       6691  1A23  CP L
       6692  1A24  JP Z, 4499
______6695  1A27  JP 6821
       6698  1A2A  LD BC, (8247)
       6702  1A2E  LD A, 191
       6704  1A30  SUB B
       6705  1A31  RET C
       6706  1A32  LD B, A
       6707  1A33  AND 192
       6709  1A35  RRA
       6710  1A36  RRA
       6711  1A37  RRA
       6712  1A38  LD H, A
       6713  1A39  LD A, B
       6714  1A3A  AND 7
       6716  1A3C  OR H
       6717  1A3D  OR 64
       6719  1A3F  LD H, A
       6720  1A40  LD A, C
       6721  1A41  RLCA
       6722  1A42  RLCA
       6723  1A43  RLCA
       6724  1A44  AND 199
       6726  1A46  LD L, A
       6727  1A47  LD A, B
       6728  1A48  AND 56
       6730  1A4A  OR L
       6731  1A4B  RLCA
       6732  1A4C  RLCA
       6733  1A4D  LD L, A
       6734  1A4E  LD A, C
       6735  1A4F  AND 7
       6737  1A51  LD B, A
       6738  1A52  LD A, (8222)
       6741  1A55  LD C, A
       6742  1A56  LD A, 1
       6744  1A58  INC B
       6745  1A59  RRCA
       6746  1A5A  RLC C
       6748  1A5C  DJNZ 6745

name   Dec   Hex   Instr-Dec      Remarks

______6750  1A5E  RET
       6751  1A5F  BIT 0, C
       6753  1A61  JR Z, 6758
       6755  1A63  OR (HL)
       6756  1A64  LD (HL), A
______6757  1A65  RET
       6758  1A66  CPL
       6759  1A67  AND (HL)
       6760  1A68  LD (HL), A
______6761  1A69  RET
       6762  1A6A  LD A, (8239)
       6765  1A6D  AND A
       6766  1A6E  RET Z
       6767  1A6F  CALL 6698
       6770  1A72  CALL 6751
       6773  1A75  EX DE, HL
       6774  1A76  LD HL, 8239
       6777  1A79  DEC (HL)
       6778  1A7A  RET Z
       6779  1A7B  LD HL, 8247
       6782  1A7E  INC (HL)
       6783  1A7F  LD A, (HL)
       6784  1A80  AND 7
       6786  1A82  AND A
       6787  1A83  JR NZ, 6767
       6789  1A85  EX DE, HL
       6790  1A86  INC HL
       6791  1A87  LD A, (8239)
       6794  1A8A  SUB 8
       6796  1A8C  JR C, 6767
       6798  1A8E  CP 8
       6800  1A90  JR C, 6767
       6802  1A92  LD (8239), A
       6805  1A95  LD A, (8222)
       6808  1A98  LD (HL), A
       6809  1A99  LD A, (8247)
       6812  1A9C  ADD A, 8
       6814  1A9E  LD (8247), A
       6817  1AA1  AND A
       6818  1AA2  JR NZ, 6790
______6820  1AA4  RET
       6821  1AA5  LD A, (8242)
       6824  1AA8  LD (8240),A    ; temp1
       6827  1AAB  LD HL, 6587
       6830  1AAE  LD A, (8222)
       6833  1AB1  AND A
       6834  1AB2  JR Z, 6860
       6836  1AB4  CP 10
       6838  1AB6  JR NZ, 6845
       6840  1AB8  LD HL, 23540
______6843  1AB8  JR 6860
       6845  1ABD  CP 11
       6847  1ABF  JP NC, 6585
       6850  1AC2  LD B, A
       6851  1AC3  XOR A
       6852  1AC4  ADD A, 8
       6854  1AC6  DJNZ 6852
       6856  1AC8  LD C, A
       6857  1AC9  LD B,0
       6859  1ACB  ADD HL, BC
       6860  1ACC  LD (8243), HL  ; temp4
       6863  1ACF  LD HL, (8249)
       6866  1AD2  LD A, H
       6867  1AD3  AND 7
       6869  1AD5  LD (8328), A   ; datablock
       6872  1AD8  LD HL, (8243)  ; temp4
       6875  1ADB  LD C, A
       6876  1ADC  LD B, 0
       6878  1ADE  ADD HL, BC
       6879  1ADF  INC HL
       6880  1AE0  LD (8245), HL  ; temp6
       6883  1AE3  LD A, (HL)
       6884  1AE4  LD (8222), A
       6887  1AE7  LD A, (8241)   ; temp2
       6890  1AEA  LD (8239), A
       6893  1AED  LD BC, (8249)
       6897  1AF1  INC B
       6898  1AF2  LD A, B
       6899  1AF3  CP 192
       6901  1AF5  JR NC, 6949
       6903  1AF7  LD (8249), BC
       6907  1AFB  LD (8347), BC
       6911  1AFF  LD A, (8328)   ; datablock
       6914  1B02  INC A
       6915  1B03  CP 8
       6917  1B05  JR NZ, 6926
       6919  1B07  LD H,, (8243)  ; temp4
       6922  1B0A  LD (8245), HL  ; temp6
       6925  1B0D  XOR A
       6926  1B0E  LD (8328), A   ; datablock
       6929  1B11  LD HL, (8245)  ; temp6
       6932  1B14  LD A, (HL)
       6933  1B15  INC HL
       6934  1B16  LD (8245), HL  ; temp6
       6937  1B19  LD (8222), A
       6940  1B1C  CALL 6767
       6943  1B1F  LD HL, 8240    ; temp1
       6946  1B22  DEC (HL)
       6947  1B23  JR NZ, 6887
______6949  1B25  JP 4499
CIRCLE 6952  1B28  CALL 6538
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name    Dec   Hex   Instr-Dec      Remarks          (19)
        6955  1B2B  LD HL, (8241)  ; temp2
        6958  12BE  LD E, 16
        6960  1B30  ADD A, H
        6961  1B31  LD H, A
        6962  1B32  CP 191
        6964  1B34  JR C, 6968
_______6966  1B36  RST 8 ERR 11   ; integer out of range
        6968  1B38  LD (8249), HL
        6971  1B3B  LD (8247), HL
        6974  1B3E  CALL 6698
        6977  1B41  LD D, A
        6978  1B42  AND (HL)
        6979  1B43  AND A
        6980  1B44  JP NZ, 4499
        6983  1B47  XOR A
        6984  1B48  LD (8240), A   ; temp1
        6987  1B4B  LD (8239), A
_______6990  1B4E  JP 7197
        6993  1B51  CALL 6698
        6996  1B54  AND (HL)
        6997  1B55  AND A
        6998  1B56  JR NZ, 7013
        7000  1B58  LD HL, (8247)
        7003  1B5B  INC L
        7004  1B5C  LD A, L
        7005  1B5D  AND A
        7006  1B5E  JRZ, 7024
        7008  1B60  LD (8247), HL
_______7011  1B63  JR 6993
        7013  1B65  LD HL, (8247)
        7016  1B68  DEC L
        7017  1B69  LD A, L
        7018  1B6A  CP 255          ; end of track map
        7020  1B6C  RET Z
        7021  1B6D  LD (8247), HL
        7024  1B70  LD HL, (8247)
        7027  1B73  LD A, L
        7028  1B74  AND 7
        7030  1B76  CP 7
        7032  1B78  JR Z, 7059
        7034  1B7A  CALL 6698
        7037  1B7D  LD D, A
        7038  1B7E  AND (HL)
        7039  1B7F  RET NZ
        7040  1B80  LD A, D
        7041  1B81  CALL 6751
        7044  1B84  CALL 7096
        7047  1B87  LD HL, (8247)
        7050  1B8A  LD A, L
        7051  1B8B  AND A
        7052  1B8C  RET Z
        7053  1B8D  DEC L
        7054  1B8E  LD (8247), HL
_______7057  1B91  JR 7024
        7059  1B93  CALL 6698
        7062  1B96  LD A, (HL)
        7063  1B97  AND A
        7064  1B98  JR NZ, 7034
        7066  1B9A  LD A, (8222)
        7069  1B9D  LD (HL), A
        7070  1B9E  LD (8245), HL  ; temp6
        7073  1BA1  CALL 7134
        7076  1BA4  LD HL, (8247)
        7079  1BA7  XOR A
        7080  1BA8  LD A, L
        7081  1BA9  SBC A, 8
        7083  1BAB  CP 255          ; end of track map
        7085  1BAD  RET Z
        7086  1BAE  LD L, A
        7087  1BAF  LD (8247), HL
        7090  1BB2  LD HL, (8245)  ; temp6
        7093  1BB5  DEC HL
_______7094  1BB6  JR 7062
        7096  1BB8  LD A, (8239)
        7099  1BBB  AND A
        7100  1BBC  RET NZ
        7101  1BBD  LD A, (8240)   ; temp1
        7104  1BC0  LD BC, (8247)
        7108  1BC4  CP 1
        7110  1BC6  JR Z, 7115
        7112  1BC8  INC B
_______7113  1BC9  JR 7116
        7115  1BCB  DEC B
        7116  1BCC  LD (8243), BC  ; temp4
        7120  1BD0  CALL 6702
        7123  1BD3  AND (HL)
        7124  1BD4  AND A
        7125  1BD5  RET NZ
        7126  1BD6  LD HL, (8243)  ; temp4
        7129  1BD9  LD A, L
        7130  1BDA  LD (8239), A
_______7133  1BDD  RET
        7134  1BDE  LD A, (8239)
        7137  1BE1  AND A
        7138  1BE2  RET NZ
        7139  1BE3  LD A, (8240)   ; temp1
        7142  1BE6  LD BC, (8247)
        7146  1BEA  CP 1
        7148  1BEC  JR Z, 7153
        7150  1BEE  INC B
_______7151  1BEF  JR 7154

name    Dec   Hex   Instr-Dec      Remarks
        7153  1BF1  DEC B
        7154  1BF2  LD (8243), BC  ; temp4
        7158  1BF6  EX DE, HL
        7159  1BF7  CALL 6702
        7162  1BFA  LD A, (HL)
        7163  1BFB  EX DE, HL
        7164  1BFC  CP 255          ; end of track map
        7166  1BFE  RET Z
        7167  1BFF  LD BC, (8243)  ; temp4
        7171  1C03  CALL 6702
        7174  1C06  AND (HL)
        7175  1C07  AND A
        7176  1C08  JR Z, 7189
        7178  1C0A  LD BC, (8243)  ; temp4
        7182  1C0E  DEC C
        7183  1C0F  LD (8243), BC  ; temp4
_______7187  1C13  JR 7171
        7189  1C15  LD HL, (8243)  ; temp4
        7192  1C18  LD A, L
        7193  1C19  LD (8239), A
_______7196  1C1C  RET
        7197  1C1D  LD HL, 6587
        7200  1C20  LD A, (8222)
        7203  1C23  AND A
        7204  1C24  JP Z, 7230
        7206  1C26  CP 10
        7208  1C28  JR NZ, 7215
        7210  1C2A  LD HL, 23540
_______7213  1C2D  JR 7230
        7215  1C2F  CP 11
        7217  1C31  JP NC, 6585
        7220  1C34  LD B, A
        7221  1C35  XOR A
        7222  1C36  ADD A, 8
        7224  1C38  DJNZ 7222
        7226  1C3A  LD C, A
        7227  1C3B  LD B, 0
        7229  1C3D  ADD HL, BC
        7230  1C3E  LD (13434), HL
        7233  1C41  LD (13436), HL
        7236  1C44  LD A, (8248)
        7239  1C47  AND 7
        7241  1C49  LD (8328), A   ; datablock
        7244  1C4C  LD HL, (13434)
        7247  1C4F  LD C, A
        7248  1C50  LD B, 0
        7250  1C52  ADD HL, BC
        7251  1C53  LD (13434), HL
        7254  1C56  LD A, (HL)
        7255  1C57  LD (8222), A
        7258  1C5A  XOR A
        7259  1C5B  LD (8240), A   ; temp1
        7262  1C5E  CALL 6993
        7265  1C61  LD A, (8239)
        7268  1C64  AND A
        7269  1C65  JR Z, 7325
        7271  1C67  LD A, (8328)   ; datablock
        7274  1C6A  INC A
        7275  1C6B  CP 8
        7277  1C6D  JR Z, 7291
        7279  1C6F  LD (8328), A   ; datablock
        7282  1C72  LD HL, (13434)
        7285  1C75  INC HL
        7286  1C76  LD (13434), HL
_______7289  1C79  JR 7301
        7391  1C7B  LD HL, (13436)
        7294  1C7E  LD (13434), HL
        7297  1C81  XOR A
        7298  1C82  LD (8328), A   ; datablock
        7301  1C85  LD A, (HL)
        7302  1C86  LD (8222), A
        7305  1C89  LD A, (8239)
        7308  1C8C  LD HL, (8247)
        7311  1C8F  LD L, A
        7312  1C90  INC H
        7313  1C91  LD (8247), HL
        7316  1C94  XOR A
        7317  1C95  LD (8239), A
        7320  1C98  LD A, H
        7321  1C99  CP 191
        7323  1C9B  JR C, 7262
        7325  1C9D  LD A, 1
        7327  1C9F  LD (8240), A   ;temp1
        7330  1CA2  LD HL, (8249)
        7333  1CA5  DEC H
        7334  1CA6  LD (8247), HL
        7337  1CA9  LD A, H
        7338  1CAA  AND 7
        7340  1CAC  LD (8328), A   ; datablock
        7343  LD HL (13436), A
        7346  1CB2  LD C, A
        7347  1CB3  LD B, 0
        7349  1CB5  ADD HL, BC
        7350  1CB6  LD (13434), HL
        7353  1CB9  LD A, (HL)
        7354  1CBA  LD (8222), A
        7357  1CBD  LD HL, (13436)
        7360  1CC0  LD BC, 7
        7363  1CC3  ADD HL, BC
        7364  1CC4  LD (13436), HL
        7367  1CC7  CALL 6993
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name    Dec   Hex   Instr-Dec      Remarks          (20)
        7370  1CCA  LD A, (8239)
        7373  1CCD  AND A
        7374  1CCE  JR Z, 7430
        7376  1CD0  LD A, (8328)   ; datablock
        7379  1CD3  DEC A
        7380  1CD4  CP 255         ; end of track map
        7382  1CD6  JR Z, 7396
        7384  1CD8  LD (8328), A   ; datablock
        7387  1CDB  LD HL, (13434)
        7390  1CDE  DEC HL
        7391  1CDF  LD (13434), HL
_______ 7394  1CE2  JR 7407
        7396  1CE4  LD HL, (13436)
        7399  1CE7  LD (13434), HL
        7402  1CEA  LD A, 7
        7404  1CEC  LD (8328), A   ; datablock
        7407  1CEF  LD A, (HL)
        7408  1CF0  LD (8222), A
        7411  1CF3  LD A, (8239)
        7414  1CF6  LD HL, (8247)
        7417  1CF9  LD L, A
        7418  1CFA  DEC H
        7419  1CFB  LD (8247), HL
        7422  1CFE  XOR A
        7423  1CFF  LD (8239), A
        7426  1D02  LD A, H
        7427  1D03  AND A
        7428  1D04  JR NZ, 7367
_______ 7430  1D06  JP 4499
        7433  1D09  LD HL, (15990)
        7436  1D0C  INC HL
        7437  1D0D  INC HL
        7438  1D0E  LD C, (HL)
        7439  1D0F  INC HL
        7440  1D10  LD B, (HL)
        7441  1D11  ADD HL, BC
        7442  1D12  INC HL
        7443  1D13  LD (15990), HL
_______ 7446  1D16  RET
        7447  1D17  LD HL, (23635) ; prog
        7450  1D1A  LD (15990), HL
        7453  1D1D  LD HL, 13430
        7456  1D20  LD D, (HL)
        7457  1D21  INC HL
        7458  1D22  LD E, (HL)
        7459  1D23  LD (15992), DE
_______ 7463  1D27  JR 7474
        7465  1D29  CALL 7433
        7468  1D2C  LD A, (HL)
        7469  1D2D  CP 40           ; (
        7471  1D2F  JR C, 7474
_______ 7473  1D31  RET
        7474  1D32  LD HL, (15990)
        7477  1D35  LD B, (HL)
        7478  1D36  INC HL
        7479  1D37  LD C, (HL)
        7480  1D38  LD HL, (15992)
        7483  1D3B  OR A
        7484  1D3C  SBC HL, BC
        7486  1D3E  RET C
        7487  1D3F  LD A, H
        7488  1D40  OR L
        7449  1D41  JR NZ, 7465
        7491  1D43  LD HL, (15990)
        7494  1D46  PUSH HL
        7495  1D47  INC HL
        7596  1D48  INC HL
        7497  1D49  LD C, (HL)
        7498  1D49  INC HL
        7499  1D4B  LD B, (HL)
        7500  1D4C  POP HL
        7501  1D4D  INC BC
        7502  1D4E  INC BC
        7503  1D4F  INC BC
        7504  1D50  INC BC
        7505  1D51  CALL 192       ; shrink
_______ 7508  1D54  RET
        7509  1D55  LD HL, (23627) ; vars
        7512  1D58  INC HL
        7513  1D55  LD (23627), HL ; vars
        7516  1D5C  CALL 7447
        7519  1D5F  LD HL, 13430
        7522  1D62  INC HL
        7523  1D63  INC HL
        7524  1D64  LD C, (HL)
        7525  1D65  INC HL
        7526  1D66  LD B, (HL)
        7527  1D67  LD HL, (15990)
        7530  1D6A  INC BC
        7531  1D6B  INC BC
        7532  1D6C  INC BC
        7533  1D6D  INC BC
        7534  1D6E  PUSH BC
        7535  1D6F  PUSH BC
        7536  1D70  XOR A
        7537  1D71  OUT 84,A
        7539  1D73  CALL 189       ; ld#1
        7542  1D76  LD A, 8
        7544  1D78  OUT 84,A
        7546  1D7A  POP BC
        7547  1D7B  LD HL, 13430

name    Dec   Hex   Instr-Dec      Remarks
        7550  1D7E  LD DE, (15990)
        7554  1D82  LDIR
        7556  1D84  POP BC
        7557  1D85  LD HL, (23627) ; vars
        7560  1D88  DEC HL
        7561  1D89  LD (23627), HL ; vars
_______ 7564  1D8C  RET
MERGE   7565  1D8D  CALL 138       ;cmdck
        7568  1D90  LD HL, 8226    ; progmm
        7571  1D93  CALL 132       ; indir
        7574  1D96  LD A, (8224)   ; errnu
        7577  1D99  CP 10
        7579  1D9B  JP Z, 147      ; nofil
        7582  1D9E  CALL 135       ; movdir
        7585  1DA1  XOR A
        7586  1DA2  LD (8248), A
        7589  1DA5  LD HL, 8250    ; directory
        7592  1DA8  INC HL
        7593  1DA9  LD A, 253      ; 1st block
        7595  1DAB  CP (HL)
        7596  1DAC  JR NZ, 7592
        7598  1DAE  LD (8245), HL  ; temp6
        7601  1DB1  LD HL, (8245)  ; temp6
        7604  1DB4  INC HL
        7605  1DB5  LD (8245), HL  temp6
        7608  1DB8  LD A, (HL)
        7609  1DB9  CP 249         ; name end
        7611  1DBB  JP Z, 7815
        7614  1DBE  LD (8221), A   ; curtrk
        7617  1DC1  CALL 126       ; track
        7620  1DC4  CALL 123       ; loadbf
        7623  1DC7  LD A, (8224)   ; errnu
        7625  1DCA  CP 25
        7628  1DCC  JP Z, 195      ; dterr
        7631  1DCF  LD A, (8248)
        7634  1DD2  CP 50          ; 2
        7636  1DD4  JR Z, 7746
        7638  1DD6  LD HL, 5090    ; track length
        7641  1DD9  LD (8241), HL  ; temp2
        7644  1DDC  LD HL, 8328    ; datablock
        7647  1DDF  LD (8236), HL  ; start
        7650  1DE2  LD HL, (8241), ; temp2
        7653  1DE5  LD BC, 5
        7656  1DE8  SBC HL, BC
        7658  1DEA  JR C, 7722
        7660  1DEC  LD HL, (8236)
        7663  1DEF  LF A, (HL)
        7644  1DF0  CP 40          ; (
        7666  1DF2  JP NC, 7815
        7669  1DF5  INC HL
        7670  1DF6  INC HL
        7671  1DF7  LD C, (HL)
        7672  1DF8  INC HL
        7673  1DF9  LD B, (HL)
        7674  IDFA  INC BC
        7675  1DFB  INC BC
        7676  1DFC  INC BC
        7677  1DFD  INC BC
        7678  1DFE  LD A, B
        7679  1DFF  CP 5
        7691  1E01  JR NC, 7784
        7683  1E03  LD HL, (8241)  ; temp2
        7686  1E06  OR A
        7687  1E07  SBC HL, BC
        7689  1E09  JR C, 7722
        7691  1E0B  LD (8241), HL  ; temp2
        7694  1E0E  LD HL, (8236)
        7697  1E11  LD DE, 13430
        7700  1E14  LDIR
        7702  1E16  LD (8236), HL  ; start
        7705  1E19  CALL 7509
        7708  1E1C  LD HL, (8241)  ; temp2
        7711  1E1F  LD A, H
        7712  1E20  OR L
        7713  1E21  JR NZ, 7650
        7715  1E23  XOR A
        7716  1E24  LD (8248), A
_______ 7719  1E27  JP 7601
        7722  1E2A  LD BC, (8241)  ; temp2
        7726  1E2E  LD HL, (8236)
        7729  1E31  LD DE. 13430
        7732  1E34  LDIR
        7734  1E36  LD (8238), DE
        7738  1E3A  LD A, 50       ; 2
        7740  1E3C  LD (8248),A
_______ 7743  1E3F  JP 7601
        7746  1E42  LD HL, 8328
        7749  1E42  LD DE, (8238)  ; datablock
        7753  1E49  LD BC.2000
        7756  1E4C  LDIR
        7758  1E4E  XOR A
        7759  1E4F  LD (8248), A
        7762  1E52  LD HL, 13430
        7765  1E55  LD A, (HL)
        7766  1E56  CP 40          ; (
        7768  1E58  JR NC, 7815
        7770  1E5A  INC HL
        7771  1E5B  INC HL
        7772  1E5C  LD C, (HL)
        7773  1E5D  INC HL
        7774  1E5E  LD B, (HL)
```

```
name    Dec   Hex   Instr-Dec      Remarks          (21)
        7775  1E5F  INC BC
        7776  1E60  INC BC
        7777  1E61  INC BC
        7778  1E62  INC BC
        7779  1E63  LD A, B
        7780  1E64  CP 5
        7782  1E66  JR C, 7786
_______ 7784  1E69  RST 8 ERR 16   ; no room for line
        7786  1E6A  PUSH BC
        7787  1E6B  POP HL
        7788  1E6C  LD BC, (8241)  ; temp2
        7792  1E70  OR A
        7793  1E71  SBC HL, BC
        7795  1E73  PUSH HL
        7796  1E74  POP BC
        7797  1E75  LD HL, 8328    ; datablock
        7800  1E73  ADD HL, BC
        7801  1E79  LD (8236), HL  ; start
        7804  1E7C  LD HL, 5090    ; length of track
        7807  1E7F  OR A
        7808  1E80  SBC HL, BC
        7810  1E82  LD (8241), HL  ; temp2
_______ 7813  1E85  JR 7705
        7815  1E87  LD A, (23622)  ; ppc(hi)
        7818  1E8A  CP 255         ; end of track map
        7822  1E8C  JP NZ, 4499
        7823  1E8F  LD HL, (8321)  ; linenu
        7826  1E92  LD (23618), HL ; newppc
        7829  1E95  LD A, H
        7830  1E96  CP 255         ; end of track map
        7832  1E98  JR Z, 7835
        7834  1E9A  XOR A
        7835  1E9B  LD (23620). A  ; nsppc
_______ 7838  1E9E  JP 4499
        7841  1EA1  PUSH AF
        7842  1EA2  LD A, 127
        7844  1EA4  IN A, 254
        7846  1EA6  CP 30          ; is it "break"
        7848  1EA8  JR Z, 7852
        7850  1EAA  POP AF
_______ 7851  1EAB  RET
_______ 7852  1EAC  RST 8 ERR 13   ; break - cont repeats
        7854  1EAE  LD IX, 16090   ; mwide
        7858  1EB2  LD A, (IX+3)   ; ppas
        7861  1EB5  LD B, A
        7862  1EB6  AND A
        7863  1EB7  JR NZ, 7952    ; tokens
        7865  1EB9  POP AF
        7866  1EBA  CP 13          ; enter?
        7868  1EBC  CALL Z, 8016
        7871  1EBF  CP 6           ; print comma?
        7873  1EC1  JP Z, 8056
        7876  1EC4  CP 10          ; cursor down?
        7878  1EC6  JR Z, 7925
        7880  1EC8  CP 12          ; delete?
        7882  1ECA  JR Z, 7941
        7884  1ECC  CP 16          ; ink?
        7886  1ECE  JR C, 7928
        7888  1ED0  CP 23          ; tab?
        7890  1ED2  JR C, 7928
        7892  1ED4  JP Z, 8050
        7895  1ED7  CP 32          ; space?
        7897  1ED9  JR C, 7928
        7899  1EDB  CP 123
        7901  1EDD  JR C, 7925
        7903  1EDF  CP 128
        7905  1EE1  JR C, 7941
        7907  1EE3  CP 165
        7909  1EE5  JP NC, 8075
        7912  1EE8  LD B, 79
        7914  1EEA  SUB B
        7915  1EEB  CALL 8080
        7918  1EEE  LD A,8
        7920  1EF0  CALL 8080
        7923  1EF3  LD A, 95       ; _
        7925  1EF5  CALL 8001
        7923  1EF8  POP BC
        7929  1EF9  POP HL
_______ 7930  1EFA  JP 186         ; jpout
        7933  1EFD  POP AF
_______ 7934  1EFE  JR 7925
        7936  1F00  CALL 8080
_______ 7939  1F03  JR 7928
        7941  1F05  PUSH AF
        7942  1F06  LD A, (23632)  ; chans(hi)
        7945  1F09  CP 93          ; ]
        7947  1F0B  JR C, 7933
        7949  1F0D  POP AF
_______ 7950  1F0E  JR 8075
TOKENS  7952  1F10  POP AF
        7953  1F11  BIT 5, B
        7955  1F13  JR NZ, 7936
        7957  1F15  BIT 7, B
        7959  1F17  JR NZ, 7928
        7961  1F19  BIT 6, B
        7963  1F1B  JR NZ, 7974
        7965  1F1D  DEC (IX+3)     ; lfeed
_______ 7968  1F20  JR 7928
        7970  1F22  LD A, 5
_______ 7972  1F24  JR 7996
        7974  1F26  LD B, A

name    Dec   Hex   Instr-Dec      Remarks
        7975  1F27  LD A, (IX+0)   ; width
        7978  1F2A  CP B
        7979  1F2B  JR NC, 7988
        7981  1F2D  LD B, 0
        7983  1F2F  PUSH BC
        7984  1F30  CALL 8069
        7987  1F33  POP BC
        7988  1F34  LD A, (IX+1)
        7991  1F37  CP B
        7992  1F38  JR NZ, 7983
        7994  1F3A  LD A, 1
        7996  2F3C  LD (IX+3), A   ; ppas
_______ 7999  1F3F  JR 7928
        8001  1F41  CALL 8080
        8004  1F44  LD HL, 16090   ; mwide
        8007  1F47  LD A, (HL)
        8008  1F48  INC HL
        8009  1F49  INC (HL)
        8010  1F4A  LD C, (HL)
        8011  1F4C  CP C
        8012  1F4C  CALL C, 8016   ; lf
_______ 8015  1F4F  RET
LF      8016  1F50  LD A, 13       ; do a line feed
        8018  1F52  CALL 8080
        8021  1F55  LD A, (IX+2)   ; lfeed
        8024  1F58  CP 10          ; lfeed + carr ret?
        8026  1F5A  JR NZ, 8031
        8028  1F5C  CALL 8080
        8031  1F5F  LD (IX+1),0    ; put 0 in lfeed
        8035  1F63  LD B, (IX+4)   ; margin
        8038  1F66  XOR A
        8039  1F67  CP B
        8040  1F69  RET Z
        8041  1F69  LD A, 32       ; space
        8043  1F6B  CALL 8080
        8046  1F6E  DJNZ 8041      ; repeat until marg done
        8048  1F70  XOR A
_______ 8049  1F71  RET
        8050  1F72  LD (IX+3), 64
_______ 8054  1F76  JR 7928
        8056  1F78  CALL 8069
        8059  1F7B  LD A, (IX+1)
        8062  1F7E  AND 15
        8064  1F80  JR NZ, 8056
_______ 8066  1F82  JP 7928
        8069  1F85  LD A, 32       ; space
        8071  1F87  CALL 8001
_______ 8074  1F8A  RET
        8075  1F8B  POP BC
        8076  1F8C  POP HL
_______ 8077  1F8D  JP 5990
        8080  1F90  PUSH AF
        8081  1F91  CALL 7841      ; check for break
        8084  1F94  LD A, (IX+6)   ; printer type
        8087  1F97  AND A
        8089  1F98  JR Z, 8100     ; 0=Aerco I/F
        8090  1F9A  DEC A
        8091  1F9B  JR Z, 8129     ; 1=Tasman I/F
        8093  1F9D  DEC A
        8094  1F9E  JR Z, 8112     ; 2=A&J I/F
        8096  1FA0  LD HL, (8216)  ; ptdrv (user defined)
_______ 8099  1FA3  JP (HL)
Aerco   8100  1FA4  IN A, 127      ; printer check
        8102  1FA6  BIT 4, A
        8104  1FA8  JR NZ, 8081    ; not ready
        8106  1FAA  POP AF
        8107  1FAB  OUT 127, A     ; print!
        8109  1FAD  IN A, 127
_______ 8111  1FAF  RET
A&J     8112  1FB0  IN A, 65
        8114  1FB2  AND 4
        8116  1FB4  JR NZ, 8081    ; not ready
        8118  1FB6  POP AF
        8119  1FB7  OUT 66, A      ; print!
        8121  1FB9  LD A, 4
        8123  1FBB  OUT 65, A
        8125  1FBD  XOR A
        8126  1FBE  OUT 65, A
_______ 8128  1FC0  RET
Tasman  8129  1FC1  IN A, 191
        8131  1FC3  BIT 0, A
        8133  1FC5  JR NZ, 8141
        8135  1FC7  IN A, 251      ; printer check
        8137  1FC9  BIT 0, A
        8139  1FCB  JR NZ, 8081    ; not ready
        8141  1FCD  XOR A
        8142  1FCE  OUT 251, A     ; motor on
        8144  1FD0  DEC A
        8145  1FD1  OUT 123 A
        8147  1FD3  OUT 251, A
        8149  1FD5  POP AF
        8150  1FD6  OUT 123 A
        8152  1FD8  LD A, 247
        8154  1FDA  OUT 251, A
        8156  1FDC  LD A, 255
        8158  1FDE  OUT 251, A
_______ 8160  1FE0  RET
        8161  1FE1  NOP
          thru      all NOP's
        8191  1FFF  NOP
```

HOWARD CLASE plays with DISKS

Formats - Formatting IBM disks - Sector reader - Renaming - Listings included.

Playing with disks.

After reading Bryan Davies' remarks about disk formatting using an ED drive and Gold Card in his trouble shooter column in the May '93 issue of QL World I decided to play about a bit myself. As I explored I found myself writing a number of little SuperBASIC routines to help me, and copies of these are being send to Hugh for inclusion in the Toronto User Group QL Library.

In my language, a "routine" is a short piece of rough and ready code designed for a specific job. It works, but to turn it into a "program" I would need a lot of work on things like pretty screens, foolproofing, user friendliness etc. You are supposed to get into EDIT (or ED) and adapt them to suit your own purposes and systems. I have tried to put most of the things that might need changing into the first PROCedure, Set_up, with REMs indicating the changes you might want to make. Since there is not much error trapping, (in fact I cannot work out how to reliably trap the no-disk-in-drive error for direct sector reading,) if you do create an error, or BREAK the program for any reason you may leave the disk OPEN, so enter "close" or "finish" at the keyboard before running the routine again. The routines are: disk_sector_reader, disk_PC_formatter, and disk_rename (two versions)

Bryan Davies mentioned drilling a HD hole in a DD disk, so I took a copy of each format to my workshop, selected a drill bit of about the same size of the square hole in the HD disk and made a round hole in the same place on my DD disk. Back to the old QL, and sure enough 2880 sectors appeared when I formatted it. He mentions an undocumented GG command "flp_density D" to impose DD format (H for HD and E for ED), when I tried this on my doctored disk my experience was the same as his: "format failed". "So", I thought, "the disk drive is detecting the hole in some way, perhaps it's shining a light through?" I put a bit of sticky paper over the top of the hole and still got 2880. Holding it up to the window I could see that the paper wasn't totally opaque, so I tried filling the hole with a blob of "blu-tack" (An opaque blue substance a bit like sticky plasticene which is available in the UK and has all sorts of uses.) Result 1440: but then I thought, "there's another way to test for the presence of holes, and that's to try to poke a solid object through it. Perhaps it's poking its fingers up from the bottom." and sure enough the piece of paper stuck on the bottom also gave 1440 sectors. At this point reason got the better of empiricism and I realised that since the holes are near the outer edge of the disc case I could probably see the mechanism if I lifted up the drive's dust flap, and sure enough, there were three strategically placed brass pins: one on the left for the write protect tab, and two on the right for ED and HD disk testing. (According to a note in the latest International QL Report you can set the jumpers on your drive so that it doesn't physically test the disk, but believes what the software tells it, and FLP_DENSITY seems to work under these conditions.)

The next thing to try, obviously, was an ED hole in a DD disk. This worked almost through to the center giving me about 5900 sectors - how do I know where it failed? - you can hear when a cylinder fails to format since the regular sequence of roughly 1 sec "thunks" from the disk drive breaks up into a quicker pattern. The centre, where the sectors are physically shorter, is obviously the most challenging place for the magnetic medium.

It is of course possible that some other drive manufacturers use the optical method, but a bit of opaque paper on the bottom should cope with both systems. This is so that you can use the disk in it's original format if you don't trust the new one or if it doesn't format properly.

In practise, I wouldn't recommend formatting a DD disk as ED, you are pushing things a bit to close to the limit, and the result is likely to be unreliable. On the other hand I have

heard it said that the only difference between some manufacturers DD and HD disks is the hole, the label and the price - it's not worth their while to have two different grades of magnetic material. If this is correct the only problem I can see here is the danger of getting bits of plastic turnings inside the sleeve.

Disk Formats

While I am on the subject of disks I should add a bit about the three different formats of 3.5" disks available to Gold Card users. For the absolute beginner I should explain the terms as I understand them. Firstly we have the "tracks", these are a series of concentric circles on which the data are recorded magnetically. You cannot see them, the material is uniform, you depend upon your disk drive mechanism moving the heads to exactly the right place. According to the words on the side of my disk box there are 135 tracks per inch, and since there are a total of 80 of them on a side the total width used is only about 0.6 of an inch. Most 3.5" disks are double sided, two heads read the corresponding tracks on both side of the disks at the same time, this combination is called a "cylinder". Since computers generally start counting at zero rather than one the tracks are numbered from 0 to 79 from the outside in, and the sides are numbered 0 and 1.

Each track is divided into a number of sectors, and this is where the formats differ. In DD (double density) format each track is divided into 9 sectors, each capable of holding 512 bytes (or 0.5 kbyte - the same as a microdrive sector)) so the whole disk has 9*2*80 = 1440 sectors (or 720 kbytes).

High density (HD) disks squeeze every thing up closer fitting 18 x 512 kbyte sectors into the same space, thus doubling the capacity. But this doesn't mean that you can have 1440 or 2880 files on each disk since in both these formats the sectors are assigned to files in blocks of three, generally interweaving them as 1-4-7, 2-5-8, 3-6-9 etc - but other formats are possible, it's all to do with the time it takes to perform the saving operations. This means that if you save only one byte there are immediately 1536 fewer bytes available for other files. A few sectors in track zero are also reserved for disk information, such as format information and the disk directory. So you can have about 500 and 1000 small files on DD and HD disks repectively. Apart from the reserved information these formats are exactly the same as those used by IBM PCs, and you can in fact read the information from an IBM disk on your QL, although not in a very convenient form!

Disk_sector_reader, will enable you to explore the contents of a QL disk (& IBM - DD & HD only) sector by sector.

However, when Miracle went to ED (Extra high density) format they decided to squeeze every bit onto them that they could and adopted a non-IBM format. Each track is split into 10 sectors, and each sector now contains 2048 bytes, so when it tells you that it is formatted to 6400 sectors it is telling a lie - it's really only 1600, but since they are four times as big as the standard QL sector size the total amount of memory available is the same. Now, however, sectors are assigned to files individually, so you can put over 1500 small files onto one disk. Since disk rotation speed is the same whatever the format this means that the QL has to be able to read ED disks at over four times the speed of a DD disk. Hard disks are faster still.

As an exception to the rule of counting from zero, tracks are numbered from 1 to 9, 18 or 10 for DD, HD or ED respectively.

Formatting IBM disks on your QL

As I mentioned above, the magnetic format of QL and IBM DD and HD disks is the same. In each disk drive interface software there is a toolkit of commands and functions specifically directed to disk operations (these are sometimes thought of as part of Toolkit 2, but they are really quite separate.) One of these enables you to read and write disk

sectors directly, irrespective of the disk's filing system, and it is this that enables you to copy the vital sectors from a ready formatted IBM disk into your QL and then copy them back onto a preformatted QL disk, so that it will behave exactly as though it had been formatted on one of the original IBoMinables. Don't think that you will then be able to read your QL files off it with a PC though, you only get an empty formatted disk, any files on the disk will be lost. It also only produces a data disk, not a system disk.

I got the basic idea from a little routine that Simon Goodwin sent me, but I've modified it quite a bit. The program as listed is incomplete, it needs a set of data statements, but since it also contains a procedure to create these there's no need to worry. The first time you use the program as supplied you should have ram1_ available (if not use flp2_ or mdv1_ making sure that you have a disk or tape available and change all references to ram1_ to flp2_ or mdv1_ in the program.) Put an empty, but formatted PC disk into flp1_, and then enter "make_data" at the keyboard and follow instructions to create the necessary DATA statements in a file called ram1_data. (Make_data is a stand alone procedure - really a separate program since it is not invoked at all when you RUN the main program, it can only be called directly from the keyboard.) Then type "MERGE ram1_data" to add its lines to the program and save it in its expanded form. It can then be used to change the format of a QL disk without further reference to a genuine IBM disk. I've done it this way so as not to risk infringing anyone's copyright.

How it works: 1. Make_data.

The vital information on the format of the disk (QL or IBM) is found in sector 1, track 0, side 0; this can always be read whatever the format, otherwise we would be in a catch 22 situation. It is known as the boot bloc and is read into a string variable b$ - all 512 bytes of it - in line 925 of the program. The first statement of this line is one of those disk toolkit specials. Instead of just OPENing a specific file on the disk it opens the whole disk at once - a dangerous procedure if you aren't sure what you are doing! The parameter, which must be in quotes, opens the disk on flp1 as a double density (second d) disk with 512 kbyte sectors (the 2) - you need to know this in advance - but all QL and IBM DD disks use this format. When a disk is OPENed like this all you can do is to read and write (that's what makes it dangerous) whole sectors, each individual sector is identified by a number (the sector id) made up as follows: (sector + 256*side + 65536*track). Since the first side and the first track are both numbered 0, 1 always refers to the boot bloc sector. The GET function is next used to read the sector into b$; the syntax is:

```
GET[channel number]\sector_id,string_variable
```

only the channel number is optional, but you will almost always need to put it in, since it is very unlikely that you will ever use the command with the default channel, #1! The effect then in line 925 is to dump all 512 bytes of the boot bloc sector from the sector into b$. Since that is all that is required from the disk it is immediately closed again.

The next line, 930, OPENs a conventional file in a ram disk (you could use flp2 or mdv1 here remember), dumps the sector bloc from b$ into that, and closes it again. It is immediately reOPENed in line 935, but for input only, and another new file, ram1_data, created. The loop from 940 to 965 copies the 512 bytes from the boot bloc into ram1_data, changing the format as it goes. It first prints a line number and the word DATA to the file (945), takes the bytes one at a time from channel 3 (using BGET) as integers this time not characters (b% - the % sign declares the variable an integer) and prints them to channel 4 followed by a comma except for the last one (960). The program has automatically written a line of BASIC for you: a DATA statement with sixteen numbers. This is repeated 15 more times, and everything CLOSEd (970).

(Those readers with a bit of programing experience will have asked themselves why I used the intermediate file ram1_boot_bloc rather than just read the characters back out of b$ and convert them to integers using coersion. I wondered that too later; but I left it as it is since it illustrates more of the file handling commands.)

You merge this set of DATA statements in to complete the program and you can save it for future use. The line numbers for the DATA statements are carefully chosen so as not to conflict with other lines in the program, so don't RENUMBER until it is complete. (I couldn't make the MERGEing automatic since MERGE will not work from within a PROCedure)

How it works: 2. The Formatter

This is basically make_data in reverse. The integers are READ back from the DATA lines into b$ as the corresponding characters (180) and PUT back into the first sector. (PUT is just like GET except that the information goes the other way). When I examined the rest of the sectors in the first cylinder of a freshly IBM formatted, virgin disk I found that most of them were filled with zeros, (byte 0 not character 0) except that 2 and 5 had 249,255,255 as their first three bytes, so lines 240 to 280 duplicate this on the new disk, this is also true of a preformatted IBM disk I have checked. Simon's routine did something different here which didn't work for me, so I suspect there may be other formats around. If this routine doesn't work for you have a look at the contents of these sectors on a newly formatted virgin disk, and duplicate them (disk_sector_reader will help here.) I have no idea what any any of these codes do, I'm just a copycat. Once again, disk_sector_reader will help if you want to explore the details.

Changing the name of a QL disk.

If you alter the above program to print out b$ (or use "disk_sector_reader") you will find that the name of a QL format disk occurs fairly early along the string - actually in bytes 5 to 15 (counting from zero remember!). As I wrote these notes I was reminded of a routine I had once written to change the name on a disk see "disk_name". As it stands it will only cope with a DD disk in flp1_, but it was easily extended to deal with the other formats and as many drives as you have. This extended version is also being sent to the QL Library, and should be available from Hugh. If you have understood my explanations of "PC_formatter" you should be able to work out how these work for yourself, the principle is very similar, it just reads the boot bloc, alters it a bit, and then writes the modified version back onto the disk.

Disk_sector_reader

This is probably too long to be printed in the magazine. It will deal with all three QL formats and the two compatible PC ones (DD and HD). It first asks for the drive and disk format (on your own head be it if you give wrong information here!) and then which track(s) you want to examine. It then dumps the contents of each sector in order onto the screen, if you want to examine it in more detail press "D" and it will display the sector byte by byte giving the byte's position in the sector, its normal character (if printable) and its ASCII code. As supplied it is designed to work on a TV, if you use a monitor and want to see more at once alter the values of "cols" and "batch" to suit your set up in PROCedure Set_up. (Batch should divide nicely into 512.) This program may work even on a partially corrupted disk and could be adapted to act as a file rescue program.

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DISK_PC_FORMATTER

```
100 nm$=        "Disk_PC_formatter"
110 REMark SG modified 1992.07.22 hjc
120 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^Main
130 Set_up: Do_it: Finish: STOP
140 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^æ
150 DEFine PROCedure                      Set_up
155 CLS:b$="": RESTORE
160 PRINT "This program converts a QL format disk to"\"PC format, by
inserting the boot bloc for"\"a PC disk to track 0, and initialising
an"\"empty PC directory.  DD disks only!"
180 FOR i=0 TO 511: READ b%: b$=b$&CHR$(b%)
190 END DEFine
200 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^æ
210 DEFine PROCedure                       Do_it
220 PRINT\"Insert a formatted QL disc & press any key": PAUSE(-1)
230 OPEN#3,"flp1_*d2d": PUT#3\1,b$
240 c$=CHR$(249)&CHR$(255)&CHR$(255)
250 c$=c$&FILL$(CHR$(0),509)
260 FOR s=2,5: PUT#3\s,c$
270 FOR s= 3,4, 6TO 9,257TO 261
280   PUT#3\s,FILL$(CHR$(0),512): END FOR s
290 END DEFine
300 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^æ
310 DEFine PROCedure                      Finish
320 CLOSE#3: PRINT\"Conversion complete"
330 END DEFine
340 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^DATAæ
900 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
910 DEFine PROCedure                   make_data
920 LOCal b$,i,j: CLS
930 PRINT"Put a formatted PC disk into flp1_,"\"then press any key."
940 PAUSE(-1)
950 OPEN#3,'flp1_*d2d': GET#3\1,b$: CLOSE
960 OPEN_NEW#3,ram1_boot_bloc: PRINT#3,b$;:CLOSE
970 OPEN_IN#3,ram1_boot_bloc:OPEN_NEW#4,ram1_data
980 FOR i=0 TO 511 STEP 16
990   PRINT#4,350+i!'DATA ';
1000   FOR j=0 TO 15
1010     BGET#3,b%: PRINT#4,b%;
1020     IF j<>15: PRINT#4,',';
1030 END FOR j:PRINT#4:END FOR i
1040 CLOSE
1050 PRINT"Now enter 'MERGE ram1_data' at the "\"keyboard, and resave the
program."
1060 END DEFine
```

DISK SECTOR READER

```
5 nm$=        "Disk_sector_reader"
10 REMark PD H.J. Clase 1993.09.09 ver1.3
15 REMark Displays contents of disk sectors
20 REMark of QL (DD,HD&ED) and MSDOS (DD&HD only)
25 REMark disks.
30 REMark N.B. Requires SuperToolkit II
35 Set_up: Read_sectors: Finish
100 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
105 DEFine PROCedure                    Set_up
110 CLS: FLP_SEC 2
115 pd$="1,2":  REMark Numbers of drives available
120 pf$="D,H,E":           REMark possible formats
125 dev$=Get_flp$: fmt$=Get_fmt$
130 Get_tracks Ftrack,Ltrack
135 REMark For "detailed" display, TV values
140 REMark for wider screens try 6 & 64
145 cols=3: batch = 32 :REMark <--- <--- <--- <---
150 END DEFine
200 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
205 DEFine PROCedure               Read_sectors
210 LOCal a$,k$,si,se,tr
215 ch%=FOPEN(dev$&fmt$)
220 FOR tr=Ftrack TO Ltrack
225   FOR si=0,1
230    FOR se = 1 TO maxsec
235     GET#ch%\(se+256*si+2^16*tr),a$
240     PRINT"Track"!tr!"side"!si!"sector"!se\a$
245     PRINT\\"Press D for detailed display"
250     PRINT"or any other key to continue"\\
255     IF INKEY$(5000)=="d": Details
260 END FOR se:END FOR si: END FOR tr
265 END DEFine
300 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
305 DEFine PROCedure                    Finish
310 CLOSE#ch%
315 END DEFine
400 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
405 DEFine FuNction                   Get_flp$
410 LOCal d$,n$,lp,p$: d$="flp1_": p$="("&pd$&")"
415 REPeat lp
420   PRINT"Which drive is the disk in? ";p$,
425   n$=INKEY$(-1): PRINT "flp";n$
430   IF n$ INSTR(pd$) AND n$<>",": Pip: EXIT lp
435   PRINT "Drive ";n$;" not available.":Bip
440 END REPeat lp
445 d$(4)=n$: RETurn d$: END DEFine
500 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
505 DEFine FuNction                   Get_fmt$
510 LOCal f,f$,p$,r$: p$="("&pf$&")"
515 REPeat lp
520   PRINT"Disk format? ";p$,,
525   f$=INKEY$(-1):PRINT f$&"d"
530   IF f$ INSTR(pf$) AND f$<>",": Pip: EXIT lp
535   PRINT "Format ";f$;"d unknown.":Bip
```

```
540 END REPeat lp
545 f = CODE(f$): SELect ON f
550   = 68,100: r$="*D2D": maxsec=9
555   = 69,101: r$="*D4E": maxsec=18
560   = 72,104: r$="*D2H": maxsec=10
565 END SELect : RETurn r$: END DEFine
600 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
605 DEFine PROCedure              Get_tracks(Ft,Lt)
610 LOCal lp
615 REPeat lp
620   INPUT"First track (0-79)",,,Ft
625   IF Ft<80 AND Ft>=0: Pip: EXIT lp
630   PRINT "0-79 only, try again!": Bip
635 END REPeat lp
640 REPeat lp
645   INPUT"Last track ("&Ft&"-79)",,,Lt
650   IF Lt<80 AND Lt>=Ft: Pip: EXIT lp
655   PRINT Ft;"-79 only, try again!": Bip
660 END REPeat lp: END DEFine
700 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
705 DEFine PROCedure Pip: BEEP 100,30: END DEFine
710 DEFine PROCedure Bip: BEEP 4000,40: END DEFine
800 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
805 DEFine PROCedure                        Details
810 LOCal c$,i,l$,mb,n%: l$=CHR$(10): mb=256: n%=1
815 IF maxsec=10: mb=2048
820     PRINT"Position, character, code"\\
825 FOR i=1 TO mb
830   f$='#### # ####   '
835   c$=a$(i): IF c$=l$:c$=" ":    REMark LF trap
840   PRINT_USING f$,i,c$,CODE(a$(i))
845   IF NOT n% MOD cols: PRINT
850   IF NOT n% MOD 32
855     PRINT\\"Press any key when ready."
860     PRINT\"Position, character, code"\\
865     PAUSE(2000)
870   END IF :n%=n%+1
875 END FOR i: PRINT \\: END DEFine
```

DISK RENAME

```
5 nm$=          "Disk_rename"
10 REMark  h.j.c. 1993.6.25 version 0.9
15 REMark N.B. Uses TK II
20 Rename_disk: Finish: STOP
100 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
105 DEFine PROCedure                    Rename_disk
110 CLS: FLP_SEC 2: a$="": n$=""
115 OPEN#3,'flp1_*d2d': GET#3\1,a$
120 PRINT "Old name = ":a$(5 TO 14)
125 INPUT "New name (ENTER to keep old) = "!n$
130 IF n$<>"": a$(5 TO 14) = n$: PUT#3\1,a$
135 END DEFine
200 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
205 DEFine PROCedure                         Finish
210 CLOSE: WHEN ERRor :REPORT
215 END DEFine
```

DISK RENAME2

```
5 nm$=          "Disk_rename2"
10 REMark  h.j.c. 1993.8.18 version 2.0
15 REMark N.B. Requires TK II
20 Set_up: Rename_disk: Finish: STOP
100 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
105 DEFine PROCedure                        Set_up
110 CLS: FLP_SEC 2
115 pd$="1,2":  REMark Numbers of drives available
120 pf$="D,H,E":            REMark possible formats
125 dev$=Get_flp$: fmt$=Get_fmt$
130 END DEFine
200 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
205 DEFine PROCedure                   Rename_disk
210 LOCal a$,n$: a$="": n$=""
215 ch%=FOPEN(dev$&fmt$)
220 GET#ch%\1,a$
225 PRINT\\"Old name = ";a$(5 TO 14)
230 INPUT "New name (ENTER to keep old) = "!n$
235 IF n$<>"": a$(5 TO 14) = n$: PUT#3\1,a$
240 END DEFine
300 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
305 DEFine PROCedure                        Finish
310 CLOSE#ch%
315 END DEFine
400 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
405 DEFine FuNction                       Get_flp$
410 LOCal d$,n$,lp,p$: d$="flp1_": p$="("&pd$&")"
415 REPeat lp
420   PRINT"Which drive is the disk in? ";p$,
425   n$=INKEY$(-1): PRINT "flp";n$
430   IF n$ INSTR(pd$) AND n$<>",": Pip: EXIT lp
435   PRINT "Drive ";n$;" not available."
440 BEEP 4000,30: END REPeat lp
445 d$(4)=n$: RETurn d$: END DEFine
500 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
505 DEFine FuNction                       Get_fmt$
510 LOCal f,f$,p$,r$: p$="("&pf$&")"
515 REPeat lp
520   PRINT"Disk format? ";p$,,,
525   f$=INKEY$(-1):PRINT f$&"d"
530   IF f$ INSTR(pf$) AND f$<>",": Pip: EXIT lp
535   PRINT "Format ";f$;"d unknown."
540 BEEP 4000,30: END REPeat lp
545 f = CODE(f$): SELect ON f
550   = 68,100: r$="*D2D"
555   = 69,101: r$="*D4E"
560   = 72,104: r$="*D2H"
565 END SELect : RETurn r$: END DEFine
600 REMark ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
605 DEFine PROCedure Pip: BEEP 100,30:END DEFine
```

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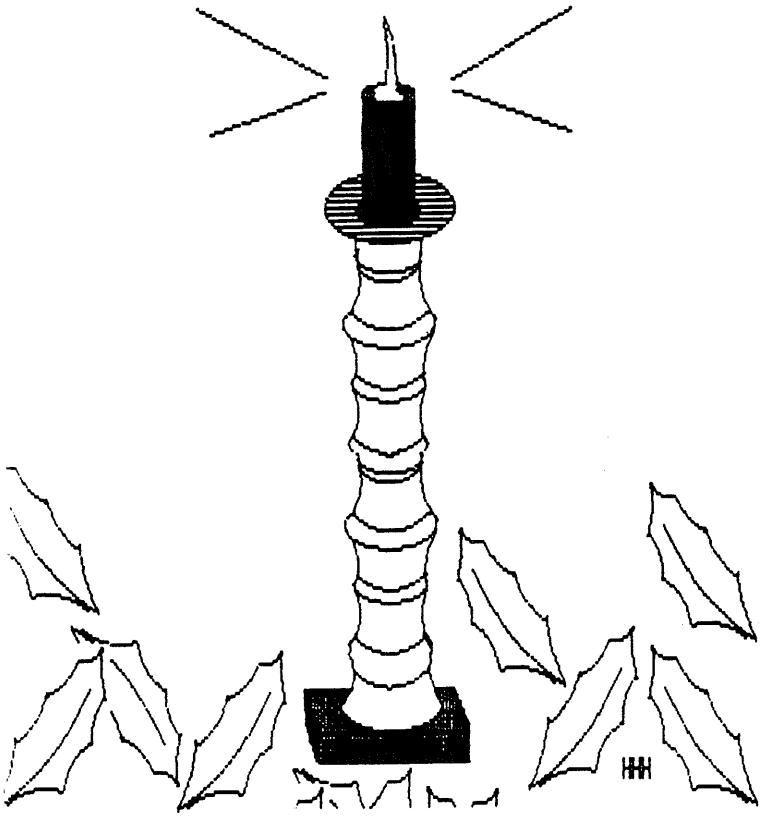

No man,
when he hath lighted a
candle,
putteth it in a
secret place,
neither under a bushel,
but on a candlestick,
that they which come in
may see the light.

The Northern Light of Sinclair Computing

bring you

SEASONS GREETINGS

and wish one and all

A MERRY CHRISTMAS

and

A HAPPY AND PROSPEROUS NEW YEAR

TORONTO TIMEX-SINCLAIR USERS CLUB

NOV/DEC 1993

Dec 24, 1993

Dear Out-of-Town Members,

Another year has just about passed and TTSUC is still here. Jeff Taylor has some comments in his editorial, which you might take to heart.

Larry Crawford, one of our members from London, Ontario asks, in a letter I just received, why not put out a list of members names & addresses (possibly phone numbers, why not?), so that members could communicate directly with each other as interests them. I think this is a good idea. Possibly at the same time I could write a notation as to their main Timex computer interest. How about this idea. If anyone does not want to be on the list they could drop me a line, requesting deletion.

I have spoken only to Jeff Taylor about this. He is favourable to the idea. We will have to consider it at our next meeting; maybe there's an aspect that I have not thought of. If it is a go, I suggest that the next newsletter may bring the information.

Our 2068 Larken library has had some additions which you Larken owners might be interested in. Firstly, Larry Crawford has been working Tasword over considerably. Incorporating many club members suggestions into it. Well, it can cope with I/O's as varied as tape/LKDOS/OLIGER. And there's a host of other refinements. Some of you may have an earlier vintage of Larry's work. Ask for a revised Larken library Disk #42.

Larry has also been refining his Interbank Database program on Larken library disk #30. The demonstration on the library disk contains the Sinc-Link Index. You need a Larken RAMDISK to make use of it. If you already have an earlier version, do get the updated copy.

Larry C. has really been busy! He has also reworked an earlier version of his AROS utility. This program also makes use of the Larken RAMDISK. Using this utility allows you to store several programs, one on each of seven 32K chips of the RAMDISK. The utility allows you to bankswitch any desired program into the 2068, from the RAMSISK chips. Ask for it on library disk #56.

Wow, our Larken 2068 library is up to disk #57. Let's describe some of them. Our printed catalogue is up to Disk #50. We'll start from there:

#51...MSCRIPT SUPPORT PROGRAMS
#52...TIMEX INFORMATION FILES
#53...MUSIC FORM SPECTRUM GAMES TAPES
#54...SPECTRUM/TS2068 ROM CONVERSION
#55...STEPHEN GUNHOUSE COLLECTION
#56...AROS DEMONSTRATION

Is anyone waiting for anything club-wise, from me? If so, I've overlooked you. Sorry about that. write and remind me.

Shall close wishing you the very best of the New Year.

Sincerely

George Chambers.