```
 80 "L" RESTORE 101: CLEAR
 82 FOR V=7480 TO 7685 STEP 5
 84 READ A,M,S,L,D
 86 POKE V,A+200,M+5,S+5,L,D+5
 88 NEXT V
 90 GOTO 280
101 DATA -186,0,1,0,0
102 DATA -114,0,0,2,0
103 DATA -59,2,0,0,-2
104 DATA -57,1,1,0,-2
105 DATA 53,1,0,0,2
106 DATA -46,0,1,0,-2
107 DATA 41,1,-1,0,0
108 DATA -35,0,0,0,1
109 DATA -30,1,1,0,0
110 DATA -15,0,0,2,-2
111 DATA -13,1,0,2,0
112 DATA -11,-1,0,2,0
113 DATA -11,1,0,0,-4
114 DATA 10,3,0,0,0
115 DATA -9,2,0,0,-4
116 DATA 8,1,-1,0,-2
117 DATA -7,0,1,0,2
118 DATA 5,1,0,0,-1
119 DATA 5,0,1,0,1
120 DATA 4,1,-1,0,2
121 DATA 4,2,0,0,2
122 DATA 4,0,0,0,4
123 DATA -4,3,0,0,-2
124 DATA 3,2,-1,0,0
125 DATA -3,-1,0,2,2
126 DATA -2,2,1,0,-2
127 DATA -2,1,0,0,1
128 DATA -2,0,2,0,-2
141 DATA -173,0,0,1,-2
142 DATA 55,-1,0,1,2
143 DATA -46,1,0,1,-2
144 DATA 33,0,0,1,2
145 DATA 17,2,0,1,0
146 DATA -9,-1,0,1,-2
147 DATA -9,-2,0,1,0
148 DATA -8,0,1,1,-2
149 DATA -4,2,0,1,-2
150 DATA 4,1,0,1,2
151 DATA 3,0,-1,1,-2
152 DATA 2,-1,-1,1,2
153 DATA 2,0,-1,1,2
154 DATA -2,1,1,1,-2
280 "M" RESTORE 700:N=0
281 IF N>235 GOTO 880
282 READ A,B:A=.182A:B=.364*(B+90000)
283 X= INT (A/256):Z=A-256X:Y= INT Z: IF Z-Y>.5 LET Y=Y+1
284 POKE (7717+N),X: POKE (7718+N),Y
285 X= INT (B/256):Z=B-256X:Y= INT Z: IF Z-Y>.5 LET Y=Y+1
```

This program "P4" stores a lot of constants in memories. Most are for moon calculations.

After it has run, it does some checksums then it starts the cassette player to load the main Merlin II program (and P4 is wiped).

Keying MEM ENTER on a Merlin II shows 525, indicating that 525 bytes are unused—but actually they are occupied by the P4 constants.

"P4" p.2

```
286 POKE (7719+N),X: POKE (7720+N),Y
287 N=N+4: GOTO 281
300 "J": RESTORE 700: USING "###.##"
310 FOR V=0 TO 235 STEP 4
320 X=( PEEK (7717+V)*256+ PEEK (7718+V))/182
330 Y=( PEEK (7719+V)*256+ PEEK (7720+V))/364-90
340 READ A,B:A=A/1000:B=B/1000
350 PRINT 3600*(A-X),(B-Y)*3600
360 NEXT V
700 DATA 22566,-53743,344602,-59377,221178,-52874,110068,-51366
710 DATA 69090,-5473,158226,54317,176226,54388,315205,-32908
720 DATA 82765,-24513,146583,-22386,221592,44328,13613,25679
730 DATA 301077,29308,344790,-40630,249064,-4564,203533,30749
740 DATA 260198,-46145,172452,-72680,80248,-16823,88056,-16034
750 DATA 104271,-75830,81159,22860,334641,59909,170919,12268
760 DATA 1881,-20784,134494,49676,81876,5379,267271,74929
770 DATA 331189,22103,333158,-21132,216045,-47826,190029,-14499
780 DATA 233097,-44132,36964,9962,274380,-11045,132606,72983
790 DATA 352789,19407,43621,-12590,221613,-22072,211289,-72231
800 DATA 61384,30120,281687,-3443,293117,-36262,87868,66095
810 DATA 112519,6679,115090,-16021,261749,35843,149132,462
820 DATA 76130,-31129,238804,-42586,257271,7204,37090,46618
830 DATA 263887,-13782,271170,-65834,103387,-39606,203143,-2051
840 DATA 160499,-55872,284620,61738,224384,338
880 "K" RESTORE 890: FOR N=7955 TO 7999: READ M$: POKE N, ASC M$: NEXT N
890 DATA "S","U","N","L"," ","S","U","N","C"," ","S","U","N","U","
    ","M","O","O"
891 DATA "N","L","M","O","O","N","U","P","L","A","N",".","M","A","R","S"
    ," ","S","A"
892 DATA "T"," "," ","V","E","N","U","S"
896 DIM I(5),S(1),L(3),F(8)
898 "D"D=0: FOR N=7480 TO 7689:D=D+ PEEK N: NEXT N: BEEP 1: PAUSE
    "MOON=0? ";D-8468
900 "C"A=0: FOR N=7717 TO 7952:A=A+ PEEK N: NEXT N: BEEP 1: PAUSE
    "STARS= 1? ";A-28083
902 S=0: FOR N=7955 TO 7999:S=S+ PEEK N: NEXT N: BEEP 1: PAUSE "NAMES=
    2? ";S-3228
904 BEEP 2:Z=D+A+S-39779: PAUSE "TOTAL = 3?  ";Z: IF Z<>3 GOTO 910
906 CHAIN
910 PRINT "Z IS ";Z
```

ALLOCATION OF VARIABLES
MERLIN II

A {LHA Aries
B Body N°
C Course
D Day
E Ht of Eye
F MO. YEAR
G GMT
H Sext alt
I index cor
J dec°
K Klock Kor
L lat° for fix ← SET TO L(2)
M
N
O long° for fix ← SET TO L(1)
P (ID. N° at 0h)
Q (90° - eclipt. tilt ε)
R log
S speed
T clock time (latest)
U LHA°
V
W holds INT=W*60 Calt
X latest result Hc | fix long
Y holds alt corr Y*60 |
Z latest result Az | fix lat

F(0) latest azimuth ← Borrowed by "-1" where W is intercept°. and Z is azimuth
F(1) Σ sin 2Z
F(2) Σ cos 2Z
F(3) Σ W°*cosZ

F(4) Σ W°sinZ
F(5) Σ 1 = n (count)
F(6) Σ W°W°
F(7) latest int°
F(8) time of 1st sight

L(0) Dest°. lat
L(1) Dest°. long
L(2) ~~set to L on DEF S (in)~~ °.'
L(3) ~~set to 0 on DEF S (in)~~ °.'

S(0) Semi diam cor.
S(1) .005 sin (259-.053P)

F(8) L(3) S(1) I(5) use 8000 to 8191 (end)

Search

I(0) I(0) smallest int ← borrowed for Mer Pas
I(1) I(1) 2nd smallest int } Moon 10 min
Δλ I(2) Star N° for smallest
Δβ I(3) Star N° for 2nd smallest
π I(4) Az of smallest
A I(5) Az of 2nd smallest.
MOON

Bodies names: SunL SunC SunU MoonL MoonU
Jup Mars Sat Venus
use 7955 to 7999 (45 bytes)

Star coords use 59×4 = 236 bytes
from 77176 to 7952

[7953, 7954 free]

236
45
2
283
bytes POKEd.

SHARP PC 1248 CODES

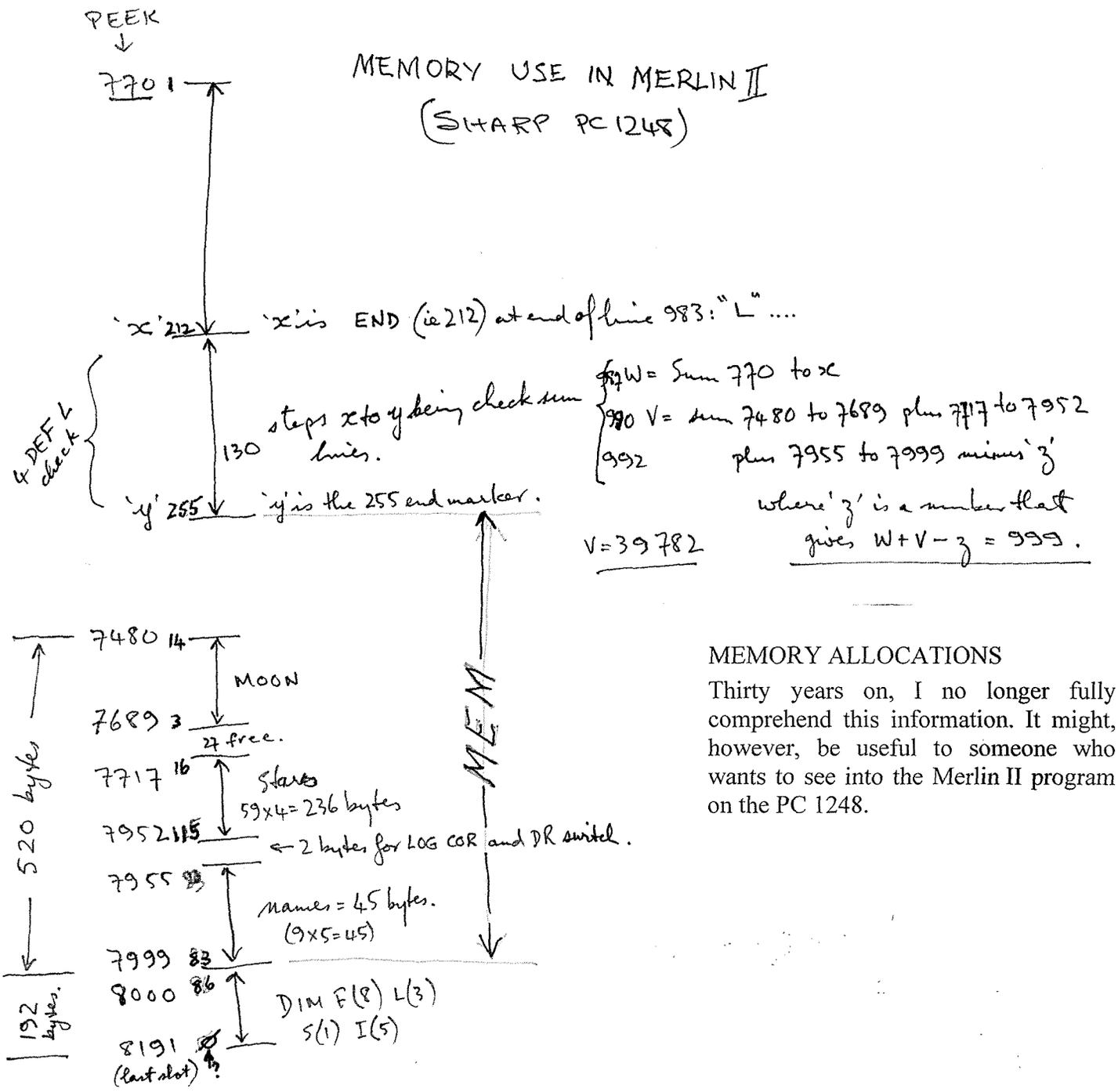
194 = Input
169 = INT

0	ignore chars after a 0.
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	SPACE
18	" ← ?
19	?
20	!
21	#
22	%
23	
24	$
25	π
26	√
27	,
28	;
29	:
30	@
31	&
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	(
49	)
50	>
51	<
52	=
53	+
54	−
55	*
56	/
57	^
58	
59	
60	
61	
62	
63	
64	0
65	1
66	2
67	3
68	4
69	5
70	6
71	7
72	8
73	9
74	.
75	E
76	
77	
78	
79	
80	
81	A
82	B
83	C
84	D
85	E
86	F
87	G
88	H
89	I
90	J
91	K
92	L
93	M
94	N
95	O
96	P
97	Q
98	R
99	S
100	T
101	U
102	V
103	W
104	X
105	Y
106	Z

PASSWORD LOCATION

On the Sharp PC 1248 the password is up to seven characters which are stored starting in hexadecimal registers 02D9 to 02DF. So if the password is "QQQQ" (as I always set it) then PEEK& 02D9 will show 97 and from the list 97 is Q, the first character of the password.

MEMORY USE IN MERLIN II
(SHARP PC 1248)



MEMORY ALLOCATIONS

Thirty years on, I no longer fully comprehend this information. It might, however, be useful to someone who wants to see into the Merlin II program on the PC 1248.

V=39782

Model	MEM	x 212	y 255	z	W
JJ	692	7216	7345		
JJa	648	7272	7351	539145	500362
LL	~~567~~	~~7323~~	~~7452~~	~~546662~~	~~507660~~
7/2/89	569	7301	7430	544664	505881
				31	28
LLa 24/4/89	544	7326	7455	545393	506610
LLb 1.6.89	535	7335	7464	547630	508847
MM 7/10	523	7349	7476	549090	510307
MM 9/11/89	525	7347	7474	548472	509689

← VERSION MM

MM		
9/11	27	3
	73	9
7340	69	5
	64	0
	27	3
	73	9
	71	7
	64	0
	29	1
7347	212	END
	0	
	233	
	135	
7351	216	GOSUB