



EXIT CODE=0000

#*SAS

#*** CLOCK= 23 /05 /72 AT 16H-47M-22S-

MNLD

		IDENT		MNLD	
00000					
00001		ENTRY		PROGLD	
00002		ASR	EQU	/10	
00003		S	EQU	1	
00004		H	EQU	0	
00005		* STORE IN A1 INPUT DEVICE ADDRESS : /10 FOR ASR			
00006		* /20 FOR PTR			
00007		*			
00008		* STORE IN A2 FORMAT OF INPUT D /4 FOR 4*4 FORMAT			
00009		* /8 FOR 8*8 FORMAT			
00010		*			
00011		* NO VALIDITY CHECK IS PERFORMED			
00012		*			
00013		* START AT INIT			
00014		* ON HALT WITH -1 IN A1, THE MNLD IS MODIFIER ACCORDING TO USER			
00015		* REQUIREMENTS			
00016		*			
00017		* IT MAY BE DUMPED AND THEN LOADED DIRECTLY BY BOOTSTRAP			
00018		INIT	EQU	*	
00019	0000	E920	CWK	A1,/10	
	0002	0010			
00020	0004	5000	0004	RF(0)	HALT
00021	0006	8340		Ld	A3,JUMP
	0008	0000 R	0006		<i>RF \ * +74</i>
00022	000A	8341		- ST	A3,PR0
	000C	0000 R	000A		
00023	000E	8320		LdK.L	A3,/FFC0
	0010	FFC0			
00024	0012	A341		- AN.S	A3,PR7
	0014	0000 R	0012		RESET CONSTANT VALUE TO 0
00025	0016	A341		- AN.S	A3,PR1
	0018	0000 R	0016		
00026	001A	A341		- AN.S	A3,PR2
	001C	0000 R	001A		
00027	001E	A341		- AN.S	A3,PR3
	0020	0000 R	001E		
00028	0022	A341		- AN.S	A3,PR4
	0024	0000 R	0022		
00029	0026	A341		- AN.S	A3,PR5
	0028	0000 R	0026		
00030	002A	A341		- AN.S	A3,PR6
	002C	0000 R	002A		
00031	002E	A941		- OR.S	A1,PR1
	0030	0000 R	0016		
00032	0032	A941		- OR.S	A1,PR2
	0034	0000 R	001A		
00033	0036	A941		- OR.S	A1,PR3
	0038	0000 R	001E		
00034	003A	A941		- OR.S	A1,PR4
	003C	0000 R	0022		
00035	003E	A941		- OR.S	A1,PR5

changes for PTR input

MNL D

```

00036 0040 0000 R 0026
00036 0042 A941
00037 0044 0000 R 002A
00037 0046 EA20
00038 0048 0004
00038 004A 5000 0004
00039 004C 8340
00040 004E 0000 R 004C
00040 0050 8341
00041 0052 0000 R 0050
00041 0054 8340
00042 0056 0000 R 0054
00042 0058 8341
00043 005A 0000 R 0058
00043 005C 8340
00044 005E 0000 R 0054
00044 0060 8341
00045 0062 0000 R 0058
00045 0064 8340
00046 0066 0000 R 0064
00046 0068 8341
00047 006A 0000 R 0068
00047 006C 8340
00048 006E 0000 R 006C
00048 0070 8341
00049 0072 0000 R 0070
00049          HALT      EQU      *
00050 0074 8120          LDK.L   A1,/FFFF
00051 0076 FFFF
00052 0078 207F          HLT
00052 007A 8F20          AB.L   PROGLD      BRANCH IF USER RESTARTS
00053 007C 0000 R 007A
00053 007E 570C          JUMP   RF      *+14
00054 0080 22FF          M1     ANK     A2,/FF
00055 0082 8F20          M2     AB.L   EIGHT3
00056 0084 0000 R 0068
00056 0086 8108          M3     LDR    A1,A2
00057 0088 EA20          M5     CWK    A2,/FF
00058 008A 00FF
00058          *****
00059          *
00060          * HERE ONLY STARTS THE USEFULL PART ONCE INITIALIZATION HAS
00061          * BEEN PERFORMED
00062          *
00063          *****
00064          * THIS SEQUENCE READS THE OBJECT CODE
00065          STAD     EQU      *
00066 008C 0000          BADDR   DATA  0=*-*
00067 008E 0300          RAFL    LDK    A3,0
00068 0090 0700          LDK    A7,0
00069 0092 8520          LDK.L  A5,BUFF

```

changes for 878 input format

line 213

→

MNLD

0094 0000 R 0092
 00070 0096 0600
 00071
 00072
 00073 0098 46D0
 00074 009A 0111
 00075 009C 4110
 00076 009E 5C04
 00077 00A0 4290
 00078 00A2 4AD0
 00079 00A4 5C04
 00080 00A6 0201
 00081
 00082 00A8 42D0
 00083
 00084 00AA 4A10
 00085 00AC 5C04
 00086
 00087 00AE 227F
 00088 00B0 5700 00B0
 00089
 00090
 00091 00B2 220F
 00092 00B4 1600
 00093 00B6 5100 00B6
 00094 00B8 1601
 00095 00BA 3A41
 00096 00BC 3A41
 00097 00BE 3A41
 00098 00C0 3A41
 00099 00C2 E235
 00100 00C4 5F1C
 00101 00C6 0600
 00102 00C8 E134
 00103
 00104 00CA 9108
 00105 00CC E135
 00106 00CE 1701
 00107 00D0 1501
 00108 00D2 B404
 00109 00D4 EF20
 00D6 0002
 00110 00D8 5A30
 00111 00DA 5000 00DA
 00112 00DC EF40
 00DE 0000 R 00DC
 00113 00E0 5000 00E0
 00114 00E2 5F3A
 00115
 00116 00E4 0400
 00117 00E6 21FF

LDK A6,0
 * THIS SEQUENCE IS ONLY AVAILABLE ON THE PAPER TAPE READER OF THE ASR
 PR0 EQU *
 CIO A6,S,ASR → RF \ *+74
 LDK A1,/11 X=ON
 OTR A1,0,ASR
 RB(4) *-2
 CIO A2,H,ASR
 SST A2,ASR
 RB(4) *-2
 LDK A2,1
 PR1 EQU *
 CIO A2,S,ASR → CIP \ A2,S, PTR
 PR2 EQU *
 INP2 INR A2,0,ASR → INR \ A2,0, PTR
 RB(4) *-2
 EIGHT1 EQU *
 ANK A2,/7F → ANK \ A2,/FF
 RF(7) SWITCH → line 778
 OBJINP EQU *
 EIGHT2 EQU *
 ANK A2,/F } → AB.L \ EIGHT3
 ADK A6,0
 RF(1) RIGHT
 ADK A6,1
 SLL A2,1
 SLL A2,1
 SLL A2,1
 SLL A2,1
 SCR A2,A5
 RB(7) INP2
 RIGHT LDK A6,0
 LCR A1,A5
 EIGHT3 EQU *
 ADR A1,A2 → LDR \ A1,A2
 SCR A1,A5
 ADK A7,1
 ADK A5,1
 XRR A4,A1
 CWK A7,2
 RB(2) INP2 FIRST WORD OF OBJECT RECORD
 RF(0) LENGTH LENGTH CHARACTER
 CW A7,COUNT IS IT END OF RECORD
 RF(0) END2 YES
 RB INP2 NO CONTINUE READING
 LENGTH EQU *
 LDK A4,0 * SECOND CHARACTER
 ANK A1,/FF

MNL D

LENGTH PROCESSING

00118	00E8	3941		SLL1	A1	
00119	00EA	1103		ADK	A1,3	
00120	00EC	8141		ST	A1,COUNT	
	00EE	0000	R 00DC			
00121	00F0	5F48		RB	INP2	
00122	00F2	0000		DATA	0=*-*	
00123			COUNT	EQU	*	
00124	00F4	E235	FIRST	SCR	A2,A5	
00125	00F6	1701		ADK	A7,1	
00126	00F8	1501		ADK	A5,1	
00127	00FA	5F52		RB(7)	INP2	
00128			PR3	EQU	*	
00129	00FC	4290	END2	CIO	A2,H,ASR	→ CIP \ A2, H, PTR
00130			PR4	EQU	*	
00131	00FE	49D0		SST	A1,ASR	→ SST \ A1, PTR
00132	0100	5C04		RB(4)	*-2	
00133	0102	0600		LDK	A6,0	
00134	0104	0200	TEMPO	LDK	A2,0	* WAIT
00135			PR7	EQU	*	
00136	0106	1202		ADK	A2,2	→ ADK \ A2, 0
00137	0108	5C04		RB(4)	*-2	
00138	010A	1600		ADK	A6,0	
00139	010C	5C80		RB(4)	RAFL	* ASCII
00140	010E	24FF		ANK	A4, /FF	→ line 67
00141	0110	5000	0110	RF(0)	PROLO2	→ line 220
00142	0112	46D0		CIO	A6,S,ASR	*.K. NO ERROR
00143	0114	0245		LDK	A2, /45	* OUTPUT E
00144	0116	4210		OTR	A2,0,ASR	
00145	0118	5C04		RB(4)	*-2	
00146	011A	0243		LDK	A2, /43	* OUTPUT C
00147	011C	4210		OTR	A2,0,ASR	
00148	011E	5C04		RB(4)	*-2	
00149	0120	4290		CIO	A2,H,ASR	
00150	0122	4AD0		SST	A2,ASR	
00151	0124	5C04		RB(4)	*-2	
00152	0126	207F	STOP	HLT		→ line 67
00153	0128	5F9C		RB(7)	RAFL	* IF YOU RESTART, YOU READ AGAIN
00154	012A	EA20	ASCINP	CWK	A2, /0D	* CR
	012C	000D				
00155	012E	5000	012E	RF(0)	END1	
00156	0130	EF20		CWK	A7, /10	
	0132	0010				
00157	0134	588C		RB(0)	INP2	→ line 84
00158	0136	E235		SCR	A2,A5	
00159	0138	1501		ADK	A5,1	
00160	013A	1701		ADK	A7,1	
00161	013C	5F94		RB(7)	INP2	
00162			PR5	EQU	*	
00163	013E	4290	END1	CIO	A2,H,ASR	→ CIP \ A2, H, PTR
00164			PR6	EQU	*	
00165	0140	4AD0		SST	A2,ASR	→ SST \ A2, PTR

MVLD

00166	0142	5C04		RB(4)	*-2	
00167	0144	8220		LDR,L	A2,BUFF	
	0146	0000	R 0092			
00168	0148	0601		LDR	A6,1	
00169	014A	8328		LDR*	A3,A2	
00170	014C	EB20		CWK	A3,/3A45	* IE
	014E	3A45				
00171	0150	5C4E		RB(4)	TEMPO	→ line 134
00172	0152	1202		ADK	A2,2	
00173	0154	8328		LDR*	A3,A2	
00174	0156	EB20		CWK	A3,/4F46	*OF
	0158	4F46				
00175	015A	5C58		RB(4)	TEMPO	→ line 273
00176	015C	207F		HLT		END OF LOADING , IF YOU RESTART
00177	015E	5700	007A	RF(7)	PROGLD	THE LOADED PROGRAM IS RUNNING
00178	0160	1300		ADK	A3,0	
00179	0162	59B2		RB(1)	OBJINP	→ line 89
00180				EQU	*	
00181	0164	EA20		CWK	A2,/7F	→ CWK \ A2, / FF
	0166	007F				
00182	0168	58C0		RB(0)	INP2	→ line 84
00183	016A	1300		ADK	A3,0	
00184	016C	5A44		RB(2)	ASCINP	→ line 754
00185	016E	EA20		CWK	A2,/1F	
	0170	001F				
00186	0172	5100	0172	RF(1)	ASCII	→ line 799
00187	0174	EA20		CWK	A2,/15	
	0176	0015				
00188	0178	5600	0178	RF(6)	OB1	
00189	017A	EA20		CWK	A2,/10	
	017C	0010				
00190	017E	5000	0178	RF(0)	OB1	
00191	0180	EA20		CWK	A2,4	
	0182	0004				
00192	0184	59DC		RB(1)	INP2	→ line 84
00193	0186	EA20		CWK	A2,0	
	0188	0000				
00194	018A	58E2		RB(0)	INP2	
00195				EQU	*	
00196	018C	2207		ANK	A2,7	
00197	018E	1301		ADK	A3,1	* OBJECT
00198	0190	5F9E		RB(7)	FIRST	→ line 723
00199	0192	1B01		SUK	A3,1	
00200	0194	5F6C		RB(7)	ASCINP	→ line 754
00201						*****
00202						*
00203						*
00204						*
00205						*PROCESS LOADING : THIS MODULE READS A CLUSTER
00206						* AND BRANCHES ACCORDING TO THE CLUSTER TYPE
00207						*

SWITCH
EIGHT5



→ line 134

→ line 273

→ line 89

→ line 84

→ line 754

→ line 799

→ line 84

→ line 723

→ line 754

```

00208 *      ON EXIT  A1= BUFF ADDRESS PLUS ONE
00209 *      A2= WORD COUNT
00210 *      A3= TYPE of cluster
00211 *      THE TYPE MUST BE 3,4,7 IF NOT THIS : HALT
00212 *****
00213 0196 8120 PROGLD LDK.L A1,/FFFF
      0198 FFFF
00214 019A 4100 WIM A1
00215 019C 20BF INH
00216 ABA EQU 0 line 66
00217 019E 81C1 ST A9,BADDR BADDR = BASE ADDRESS (1ST CELL FREE)
      01A0 008C R line 65
00218 01A2 82A0 PROLO LDK.L A10,STAD END ADDRESS 1ST CELL NON FREE
      01A4 008C R
00219 01A6 8F20 PROLO1 AB.L RAFL READ A CLUSTER line 67
      01A8 008E R
00220 PROLO2 EQU *
00221 01AA 8120 LDK.L A1,BUFF
      01AC 0000 R 0144
00222 01AE 0401 LDK A4,1
00223 01B0 E324 LCR A3,A1 A3 = TYPE
00224 01B2 1101 ADK A1,1
00225 01B4 E224 LCR A2,A1 A2= WORD COUNT
00226 01B6 1101 ADK A1,1
00227 01B8 EB20 CWK A3,3
      01BA 0003
00228 01BC 5000 01BC RF(0) CLCODE line 250 BRANCH ON CLUSTER CODE
      01BE EB20 CWK A3,4
      01C0 0004
00230 01C2 5000 01C2 RF(0) CLIMOD line 295 INTERNAL MODIFICATION
      01C4 EB20 CWK A3,7
      01C6 0007
00232 01C8 5000 01C8 RF(0) CLEND line 331 END/START
      01CA 5F26 RB(7) PROLO1 line 219 -> line 67
00234 *
00235 01CC 207F CLC01 HLT ADDRESS ERROR IN A CLUSTER
00236 *
00237 *

```

```

00238          EJECT
00239          *
00240          *****
00241          *****
00242          *CLUSTER CODE (TYPE 3)
00243          *      UPON ENTRY : A1=ADDRESS OF BUFF+1 (RBK)
00244                          A2= WORD COUNT
00245                          A9= BADDRESS
00246                          A10=ENDADDRESS
00247          *****
00248          *
00249          *
00250          CLCODE LD      A3,BUFF+6
00251          01D0 0000 R 01AA
00252          CLC01A RB(4)  PROLO1  EMBK SET SKIP THE CLUSTER
00253          01D4 8340 LD      A3,BUFF+4
00254          01D6 0000 R 01CE
00255          01D8 A311 TM      A3,A4      IS IT RELOCATABLE SECTION
00256          01DA 5000 RF(0)  CLC02      NO
00257          01DC 9306 ADR     A3,A9      YES
00258          01DE 5700 RF(7)  CLC04
00259          01E0 81A0 CLC02 LDK L A9,ABA ABSOLUTE SECTION
00260          01E2 0000 *** OR RF(7) *+2, RF(7)*+2
00261          01E4 8524 CLC04 LDR*   A5,A1      A5 =(RBK)
00262          01E6 1106 ADK     A1,6      A1 = ADDRESS OF FIRST CODE WORD IN BUFF
00263          01E8 1A03 SUK     A2,3      A2 = NUMBER OF CODE WORD
00264          *
00265          *
00266          *
00267          CLC05 SRC1    A4
00268          01EA 3CE1 LDR*   A6,A1
00269          01EC 8624 CWR    A3,A9      TEST IF
00270          01EE EB06 RB(2)  CLC01      ADDRESS IS WITHIN
00271          01F0 5A26 **** OR RF(7) *+2 CLC01      NOP IF CHECK ON LIMITS NOT WANTED
00272          01F2 EB0A CWR    A3,A10     LIMITS , YES STORE
00273          01F4 5E2A **** OR RF(7) *+2 CLC01      NO HALT
00274          01F6 A511 TM      A5,A4      NOP IF CHECK ON LIMITS NOT WANTED
00275          01F8 5000 RF(0)  CLC07
00276          01FA 9606 ADR     A6,A9
00277          01FC 862D CLC07 STR    A6,A3      YES STORE CODE WORDS
00278          01FE 1102 ADK     A1,2      UPDATE
00279          0200 1302 ADK     A3,2
00280          *
00281          *
00282          *
00283          *
00279          0202 1A01 SUK     A2,1
00280          0204 5C1C RB(4)  CLC05
00281          0206 5F66 RB(7)  PROLO
00282          *
00283          *

```

MVLD

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00284          EJECT
00285          *
00286          *****
00287          *****
00288          *INTERNAL MODIFICATION CLUSTERS (Type 4)
00289          *
00290          *          UPON ENTRY : A1 = ADDRESS OF BUFF+1 (RBK)
00291          *          A2 = WORD COUNT
00292          *          A9 = BASE ADDRESS
00293          *          A10= END ADDRESS
00294          *****
00295 0208 0701 CLIMOD LDK A7,1 A7= MASK FOR ADDRESS
00296 020A 8524 LDR* A5,A1 A5= (RBK)
00297 020C 1A01 SUK A2,1
00298 020E 3CE1 CLIM1 SRC1 A4
00299 0210 1102 ADK A1,2
00300 0212 8324 LDR* A3,A1 A3 = ADDRESS
00301 0214 A31D TM A3,A7 IS IT RELOCATABLE
00302 0216 5000 0216 RF(0) CLIM2 NO
00303 0218 9306 ADR A3,A9 YES ADD BASE
00304 021A EB06 CWR A3,A9
00305 021C 5A52 RB(2) CLC01 TEST IF
00306          **** OR RF(7) **2 NOP IF CHECK ON LIMITS NOT WANTED
00307 021E EB0A CWR A3,A10 ADDRESS O.K.
00308 0220 5E56 RB(6) CLC01 NO HALT
00309          **** OR RF(7) **2 NOP IF CHECK ON LIMITS NOT WANTED
00310 0222 1102 CLIM2 ADK A1,2 YES
00311 0224 8624 LDR* A6,A1 TAKE CODE WORD
00312 0226 A511 TM A5,A4 IS IT RELOCATABLE
00313 0228 5000 0228 RF(0) CLIM3 NO
00314 022A 9606 ADR A6,A9
00315 022C 862D CLIM3 STR A6,A3 YES STORE CODE WORD
00316          * UPDATE
00317 022E 1A02 SUK A2,2 POINTERS
00318 0230 5C24 RB(4) CLIM1 CONTINUE
00319 0232 5F92 RB(7) PROLO
00320          *
00321          *

```

```

00322          EJECT
00323          *
00324          *****
00325          *****
00326          * CLUSTER END/START (Type 7)
00327          * UPON ENTRY A1 = ADDRESS OF BUFF+1 (START ADDRESS)
00328          * A2 = WORD COUNT
00329          * A9 = BADDRESS
00330          * A10 = ENDADDRESS
00331  0234  8140  CLEND LD A1,BUFF+6 UPDATE BASE ADDRESS
00332  0236  0000 R 01D4 AD.S A1,BADDR
00333  023A  9141
00334  023C  008C R
00335  023E  9184 ADR A9,A1
00336  0240  E98A CWR A9,A10
00337          **** OR RB(7) PROLO IF CHECK ON LIMITS NOT WANTED
00338          RB(2) PROLO
00339          HLT OVERFLOW ON LENGTH
00340          *
00341          *****
00342  0244  BUFF RES 34
00343  0288  FFFF DATA /FFFF
00344          *
00345          *
00346          *****
00347          END
ASS.ERR. 00000

```



SYMBOL	**VALUE*		**SYMBOL**	**VALUE*		**SYMBOL**	**VALUE*	
CLIM3	022C	R	CLIM2	0222	R	CLIM1	020E	R
CLC07	01FC	R	CLC05	01EA	R	CLC04	01E4	R
CLC02	01E0	R	CLC01A	01D4	UNUSED	CLC01	01CC	R
CLEND	0234	R	CLIM0D	0208	R	CLCODE	01CE	R
PROLO1	01A6	R	PROLO	01A2	R	ABA	0000	A
OB1	018C	R	ASCII	0192	R	END1	013E	R
ASCINP	012A	R	STOP	0126	UNUSED	PROLO2	01AA	R
TEMPO	0104	R	FIRST	00F4	R	END2	00FC	R
COUNT	00F2	R	LENGTH	00E4	R	RIGHT	00C6	R
OBJINP	00B2	R	SWITCH	0160	R	INP2	00AA	R
BUFF	0244	R	RAFL	008E	R	BADDR	008C	R
STAD	008C	R	EIGHT5	0164	R	M5	0088	R
EIGHT3	00CA	R	M3	0086	R	EIGHT2	00B2	R
M2	0082	R	EIGHT1	00AE	R	M1	0080	R
PR6	0140	R	PR5	013E	R	PR4	00FE	R
PR3	00FC	R	PR2	00AA	R	PR1	00A8	R
PR7	0106	R	PRO	0098	R	JUMP	007E	R
HALT	0074	R	INIT	0000	UNUSED	H	0000	A
S	0001	A	ASR	0010	A	PROGLD	0196	R
A15	000F	UNUSED	A14	000D	UNUSED	A13	000B	UNUSED
A12	0009	UNUSED	A11	0007	UNUSED	A10	0005	A
A9	0003	A	A8	0001	UNUSED	A7	000E	A
A6	000C	A	A5	000A	A	A4	0008	A
A3	0006	A	A2	0004	A	A1	0002	A