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DECUS NO.	8-382
TITLE	READABLE HIGH SPEED PUNCH COPIER
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COMPANY	Collins Radio Company of United Kingdom, Ltd. Hounslow, Middlesex, United Kingdom
DATE	September 19, 1970
SOURCE LANGUAGE	PAL III

READABLE HIGH SPEED PUNCH/READER COPIER

Object

To interpret ASCII characters into a readable binary format. It accepts 40
ASCII characters but space has been left for the remainder of the ASCII set.
Used in conjunction with the high speed reader, a readable leader can be
produced and attached to a tape to be copied.
This program was originally produced with the object of producing a form of
Kimballtag. By punching readable references on all library tapes, a stock
check program could be used to check all the tapes held in a library, by
reading, say the first six inches of tape. Comparing the readout with a list
held in store and punching out a list of missing tapes. This stock check was
being formulated, but,unfortunately, I lost access to a DEC machine.

Operating instructions.

Starting address 0200.
High speed punch/reader on.
Teletype on-line.
Depress start on PDP 8
Teletype keyboard can now be used. Depressing a key will result in the character
concerned being punched by the high speed punch.
When all required characters have been punched, place tape to be copied in the
high speed reader. Depress ALTMODE key on the teletype.
Six inches of blank tape will be produced and the tape will be copied.
Stop the computer manually when the trailer is reached otherwise a spurious
character will be punched.
Restarting at 0200 for the next job.

Restrictions.
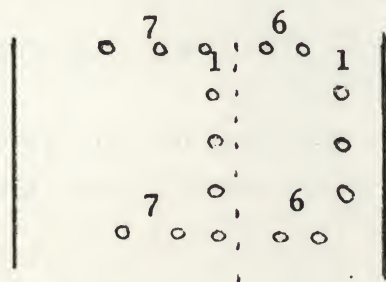
This program is not complete. It does what it is supposed to do but final
debugging was xx not completed. The program was in the course of being modified
so that when it read 50 (8) blanks the reader would halt. This was being done
in subroutine CON, but this does not appear to work. There is also a fault which
is only apparent intermittantly. On depressing ALTMODE the leader is produced but

instead of reading, the computer halts. An error in the listing is immediately
apparent *542 should be *543 and in the character table from location 0760
1 should be added to the contents of each location. ie

0760	0543
0761	0546
0762	0552

At present the above fault makes no difference to the working of the program,
because 0537 is a blank.

Program description

The program commences with initialising. The character is read in from the
keyboard stored and then checked for CRLF (which are omitted) and ALTMODE.
If none of these, the LH six bits are masked out and added to SOC the
character address pointer. The contents of the resultant address determine the
address of the start of the appropriate vector sequence. This address is stored
in MKAD and the contents of it are stored in CHAR1. This is rotated six bits
right and masked, to remove the second vector. The first vector is punched.
ChAR1 is masked to remove the first vector and the second is punched. The
Mark address is incremented and the process is repeated until six vectors
have been punched.
Receipt of ALTMODE produces a JMP to LDR, whereon 106 (8) blanks are produced
at the end of which any tape in the reader will be read.

Alteration of character shape.
Character design is a matter of personal choice and ingenuity.

Above is the character representation for the letter A
The vector sequence is

7611
1111
7600

By following the above format any character can be packed six vectors to three
words.
The Matrix is   6 x 5.   The last vector 00 gives a space between characters.

The principle is adaptable and further reference can be made to Mr. Murray's excellent character generator program for the KV8 graphic display.

As explained before, the author no longer has access to a DEC PDP 8 but any assistance required in connection with this and/or the Stock check program is readily available from the author.

```
                                /PROGRAM TO PUNCH ON HSP LEGIBLE CHARACTERS
                                /AND COPY PROGRAM
                   *200
  0200   7300   START,    CLA CLL              /INITIALIZE
  0201   6046             TLS
  0202   6026             PLS
  0203   6016             6016
  0204   1736             TAD I BUFF
  0205   3337             DCA CHAR
  0206   6031   NEXT,     KSF                  /GET A CHARACTER
  0207   5206             JMP  .-1
  0210   6036             KRB
  0211   6046             TLS
  0212   3737             DCA I CHAR           /STORE IT
  0213   1737             TAD I CHAR
  0214   1340             TAD M215             /IS IT CR
  0215   7650             SNA CLA
  0216   5206             JMP NEXT             /YES GET NEXT CHAR
  0217   7100             CLL
  0220   1737             TAD I CHAR           /NO, IS IT LINEFEED
  0221   1341             TAD M212
  0222   7650             SNA CLA
  0223   5206             JMP NEXT             /YES GET NEXT CHAR
  0224   7100             CLL
  0225   1737             TAD I CHAR
  0226   1335             TAD MODE             /NO IS IT ALTMODE
  0227   7650             SNA CLA
  0230   5275             JMP LDR              /YES PRODUCE LEADER
  0231   7100             CLL
  0232   1342             TAD C3
  0233   3344             DCA VCNT             /INITIALIZE COUNTER
  0234   1737             TAD I CHAR
  0235   0345             AND MASK77           /STRIP CHARACTER
  0236   1346             TAD SOC
  0237   3350             DCA MKAD             /GET CHARACTER ADDRESS
  0240   4242             JMS MARK
  0241   5206             JMP NEXT
  0242   0000   MARK,     0                    /VECTOR ROUTINE
  0243   7300             CLA CLL
  0244   1750             TAD I MKAD
  0245   3347             DCA PUND
  0246   7200   PUCH,     CLA
  0247   1747             TAD I PUND           /GET FIRST 2 CHARS
  0250   3343             DCA CHAR1
  0251   1343             TAD CHAR1
  0252   7012             RTR
  0253   7012             RTR
  0254   7012             RTR
  0255   0345             AND MASK77           /REMOVE 2ND VECTOR
  0256   4267             JMS PUNCH            /PUNCH 1ST VECTOR
  0257   1343             TAD CHAR1
```

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Ø26Ø	Ø345		AND MASK77	
Ø261	4267		JMS PUNCH	/PUNCH 2ND VECTOR
Ø262	2347		ISZ PUND	
Ø263	2344		ISZ VCNT	
Ø264	5246		JMP PUCH	
Ø265	5642		JMP I MARK	
Ø266	7ØØØ		NOP	
Ø267	ØØØØ	PUNCH,	Ø	/PUNCH ROUTINE
Ø27Ø	6Ø21		PSF	
Ø271	527Ø		JMP .-1	
Ø272	6Ø26		PLS	
Ø273	72ØØ		CLA	
Ø274	5667		JMP I PUNCH	
Ø275	73ØØ	LDR,	CLA CLL	/PRODUCE LEADER
Ø276	1332		TAD CTR1	
Ø277	3334		DCA CTR2	
Ø3ØØ	1333	AGN,	TAD BLK	
Ø3Ø1	4267		JMS PUNCH	
Ø3Ø2	2334		ISZ CTR2	
Ø3Ø3	53ØØ		JMP AGN	
Ø3Ø4	6Ø16		6Ø16	
Ø3Ø5	4325	CON,	JMS READ	
Ø3Ø6	3353		DCA DIG	
Ø3Ø7	1353		TAD DIG	/IS IT A SPACE?
Ø31Ø	765Ø		SNA CLA	
Ø311	5313		JMP .+2	/YES INCREMENT SP COUNT
Ø312	5322		JMP TROL	
Ø313	2351		ISZ SPCNT	
Ø314	7ØØØ		NOP	
Ø315	73ØØ		CLA CLL	
Ø316	1352		TAD M5Ø	
Ø317	1351		TAD SPCNT	
Ø32Ø	765Ø		SNA CLA	
Ø321	74Ø2		HLT	/SPACE COUNT = 5Ø HLT
Ø322	1353	TROL,	TAD DIG	
Ø323	4267		JMS PUNCH	
Ø324	53Ø5		JMP CON	
Ø325	ØØØØ	READ,	Ø	/READ SUBROUTINE
Ø326	6Ø11		RSF	
Ø327	5325		JMP .-1	
Ø33Ø	6Ø16		6Ø16	
Ø331	5725		JMP I READ	
Ø332	7672	CTR1,	-1Ø6	
Ø333	ØØØØ	BLK,	Ø	
Ø334	ØØØØ	CTR2,	Ø	
Ø335	74Ø3	MODE,	-375	
Ø336	14ØØ	BUFF,	14ØØ	
Ø377	ØØØØ	CHAR,	Ø	
Ø34Ø	7563	M215,	-215	
Ø341	7556	M212,	-212	

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0342	7775	C3,	-3	
0343	0000	CHAR1	0	
0344	0000	VCNT,	0	
0345	0077	MASK77,	77	
0346	0720	SOC,	0720	
0347	0000	PUND,	0	
0350	0000	MKAD	0	
0351	0000	SPCNT,	0	
0352	7730	M50,	-50	
0353	0000	DIG,	0	
			PAUSE	
		*403		
0403	0000		0000	
0404	0000		0000	
0405	0000		0000	
0406	7611		7611	/A
0407	1111		1111	
0410	7600		7600	
0411	7745		7745	/B
0412	4545		4545	
0413	3200		3200	
0414	3641		3641	/C
0415	4141		4141	
0416	2200		2200	
0417	7741		7741	/D
0420	4122		4122	
0421	1400		1400	
0422	7745		7745	/E
0423	4545		4545	
0424	4100		4100	
0425	7705		7705	/F
0426	0505		0505	
0427	0100		0100	
0430	7641		7641	/G
0431	4151		4151	
0432	7200		7200	
0433	7710		7710	/H
0434	1010		1010	
0435	7700		7700	
0436	4141		4141	/I
0437	7741		7741	
0440	4100		4100	
0441	2040		2040	/J
0442	4137		4137	
0443	0100		0100	
0444	7710		7710	/K
0445	2442		2442	
0446	0100		0100	
0447	7740		7740	/L
0450	4040		4040	
0451	4000		4000	

6

Ø452	77Ø1	77Ø1	/M
Ø453	Ø6Ø1	Ø6Ø1	
Ø454	77ØØ	77ØØ	
Ø455	77Ø2	77Ø2	/N
Ø456	Ø41Ø	Ø41Ø	
Ø457	77ØØ	77ØØ	
Ø46Ø	3641	3641	/O
Ø461	4141	4141	
Ø462	36ØØ	36ØØ	
Ø463	7711	7711	/P
Ø464	1111	1111	
Ø465	Ø6ØØ	Ø6ØØ	
Ø466	3641	3641	/Q
Ø467	5136	5136	
Ø47Ø	4ØØØ	4ØØØ	
Ø471	7711	7711	/R
Ø472	1131	1131	
Ø473	46ØØ	46ØØ	
Ø474	2245	2245	/S
Ø475	5121	5121	
Ø476	Ø2ØØ	Ø2ØØ	
Ø477	Ø1Ø1	Ø1Ø1	/T
Ø5ØØ	77Ø1	77Ø1	
Ø5Ø1	Ø1ØØ	Ø1ØØ	
Ø5Ø2	374Ø	374Ø	/U
Ø5Ø3	4Ø4Ø	4Ø4Ø	
Ø5Ø4	37ØØ	37ØØ	
Ø5Ø5	172Ø	172Ø	/V
Ø5Ø6	4Ø2Ø	4Ø2Ø	
Ø5Ø7	17ØØ	17ØØ	
Ø51Ø	772Ø	772Ø	/W
Ø511	142Ø	142Ø	
Ø512	77ØØ	77ØØ	
Ø513	6112	6112	/X
Ø514	Ø412	Ø412	
Ø515	61ØØ	61ØØ	
Ø516	171Ø	171Ø	/Y
Ø517	5Ø5Ø	5Ø5Ø	
Ø52Ø	77ØØ	77ØØ	
Ø521	4161	4161	/Z
Ø522	5145	5145	
Ø523	43ØØ	43ØØ	
Ø524	ØØ77	ØØ77	/[
Ø525	4141	4141	
Ø526	ØØØØ	ØØØØ	
Ø527	7777	7777	/
Ø53Ø	7777	7777	
Ø531	77ØØ	77ØØ	
Ø532	ØØ41	ØØ41	/]
Ø533	4177	4177	
Ø534	ØØØØ	ØØØØ	
Ø535	Ø4Ø2	Ø4Ø2	/ ↑

Ø536	77Ø2		77Ø2	
Ø537	Ø4ØØ		Ø4ØØ	
Ø54Ø	ØØØØ		ØØØØ	
Ø541	ØØØØ		ØØØØ	
Ø542	ØØØØ		ØØØØ	
		*542		
Ø542	ØØØØ		ØØØØ	/SPACE
Ø543	ØØØØ		ØØØØ	
Ø544	ØØØØ		ØØØØ	
Ø545	ØØØØ		ØØØØ	
Ø546	57ØØ		57ØØ	
Ø547	ØØØØ		ØØØØ	/:
		*6Ø4		
Ø6Ø4	ØØØØ		ØØØØ	
Ø6Ø5	ØØØØ		ØØØØ	
Ø6Ø6	ØØØØ		ØØØØ	
Ø6Ø7	ØØØØ		ØØØØ	
Ø61Ø	ØØØØ		ØØØØ	
Ø611	ØØØØ		ØØØØ	
		*612		
Ø612	ØØØ4		ØØØ4	/-
Ø613	Ø4Ø4		Ø4Ø4	
Ø614	ØØØØ		ØØØØ	
Ø615	4ØØØ		4ØØØ	/.
Ø616	ØØØØ		ØØØØ	
Ø617	ØØØØ		ØØØØ	
		*621		
Ø621	4Ø2Ø		4Ø2Ø	//
Ø622	1ØØ4		1ØØ4	
Ø623	Ø2ØØ		Ø2ØØ	
Ø624	3641		3641	/Ø
Ø625	4141		4141	
Ø626	36ØØ		36ØØ	
Ø627	ØØ42		ØØ42	/1
Ø63Ø	774Ø		774Ø	
Ø631	ØØØØ		ØØØØ	
Ø632	4261		4261	/2
Ø633	5145		5145	
Ø634	42ØØ		42ØØ	
Ø635	6Ø41		6Ø41	/3
Ø636	4547		4547	
Ø637	75ØØ		75ØØ	
Ø64Ø	1Ø14		1Ø14	/4
Ø641	1277		1277	
Ø642	1ØØØ		1ØØØ	
Ø643	4645		4645	/5
Ø644	4545		4545	
Ø645	3ØØØ		3ØØØ	

Ø646	3651		3651	/6
Ø647	5151		5151	
Ø65Ø	31ØØ		31ØØ	
Ø651	4121		4121	/7
Ø652	11Ø5		11Ø5	
Ø653	Ø3ØØ		Ø3ØØ	
Ø654	2651		2651	/8
Ø655	5151		5151	
Ø656	26ØØ		26ØØ	
Ø657	Ø611		Ø611	/9
Ø66Ø	1111		1111	
Ø661	77ØØ		77ØØ	
			PAUSE	
			/CHARACTER TABLE	
		*72Ø		
Ø72Ø	Ø4Ø3	SOCT,	Ø4Ø3	/@
Ø721	Ø4Ø6		Ø4Ø6	/A
Ø722	Ø411		Ø411	/B
Ø723	Ø414		Ø414	/C
Ø724	Ø417		Ø417	/D
Ø725	Ø422		Ø422	/E
Ø726	Ø425		Ø425	/F
Ø727	Ø43Ø		Ø43Ø	/G
Ø73Ø	Ø433		Ø433	/H
Ø731	Ø436		Ø436	/I
Ø732	Ø441		Ø441	/J
Ø733	Ø444		Ø444	/K
Ø734	Ø447		Ø447	/L
Ø735	Ø452		Ø452	/M
Ø736	Ø455		Ø455	/N
Ø737	Ø46Ø		Ø46Ø	/O
Ø74Ø	Ø463		Ø463	/P
Ø741	Ø466		Ø466	/Q
Ø742	Ø471		Ø471	/R
Ø743	Ø474		Ø474	/S
Ø744	Ø477		Ø477	/T
Ø745	Ø5Ø2		Ø5Ø2	/U
Ø746	Ø5Ø5		Ø5Ø5	/V
Ø747	Ø51Ø		Ø51Ø	/W
Ø75Ø	Ø513		Ø513	/X
Ø751	Ø516		Ø516	/Y
Ø752	Ø521		Ø521	/Z
Ø753	Ø524		Ø524	/[
Ø754	Ø527		Ø527	//
Ø755	Ø531		Ø531	/]
Ø756	Ø534		Ø534	/ ↑
Ø757	Ø537		Ø537	/
Ø76Ø	Ø542		Ø542	/SPACE
Ø761	Ø545		Ø545	/ !

Ø762	Ø55Ø	Ø55Ø	/"
Ø763	Ø553	Ø553	/#
Ø764	Ø556	Ø556	/$
Ø765	Ø561	Ø561	/%
Ø766	Ø564	Ø564	/&
Ø767	Ø567	Ø567	/'
Ø77Ø	Ø572	Ø572	/(
Ø771	Ø575	Ø575	/)
Ø772	Ø6Ø1	Ø6Ø1	/*
Ø773	Ø6Ø4	Ø6Ø4	/+
Ø774	Ø6Ø7	Ø6Ø7	/,
Ø775	Ø612	Ø612	/.
Ø776	Ø615	Ø615	/:
Ø777	Ø621	Ø621	//
1ØØØ	Ø624	Ø624	/Ø
1ØØ1	Ø627	Ø627	/1
1ØØ2	Ø632	Ø632	/2
1ØØ3	Ø635	Ø635	/3
1ØØ4	Ø64Ø	Ø64Ø	/4
1ØØ5	Ø643	Ø643	/5
1ØØ6	Ø646	Ø646	/6
1ØØ7	Ø651	Ø651	/7
1Ø1Ø	Ø654	Ø654	/8
1Ø11	Ø657	Ø657	/9