

IDENTIFICATION

Product Code: DEC-08-PMP0-D
Product Name: Readin-Mode (RIM) Punch
Date Created: November 22, 1966
Maintainer: Software Services Group

1. ABSTRACT

The RIM Punch program provides a means of punching out information contained in selected blocks of core memory as RIM-coded tape via the ASR 33 Perforated Tape Punch or 75E High Speed Punch. The punch program may occupy either low or high memory depending on the version used.

2. PRELIMINARY REQUIREMENTS

2.1 Equipment

PDP-8[®] with its associated ASR 33 or 75E punch.

2.2 Storage

This program requires 61 (decimal) memory locations.

3. LOADING OR CALLING PROCEDURE

3.1 Loading

This routine is loaded using the Binary Loader. See DEC-08-LBAA for a complete description of the Binary Loader.

3.2 Calling Sequence

None. This routine cannot be called as a subroutine.

4. USING THE PROGRAM OR ROUTINES

4.1 Switch Settings

The SWITCH REGISTER is used to enter the initial and final address of each block of core memory to be punched.

4.2 Start Up/Entry

- a. Make sure ASR 33 or 75E punch is on.
- b. Set the starting address 0041 (or 7441 if using the high-memory version) into the SWITCH REGISTER and press the LOAD ADDRESS key. Next press the START key.

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c. The computer halts. Set the initial address of the block to be punched into the SWITCH REGISTER and press the CONTINUE key.

d. The computer halts. Set the final address of the block to be punched into SWITCH REGISTER and press the CONTINUE key.

Note that the final address must be larger than the initial address.

e. A block of leader (code 200) is punched followed by the selected block of data in RIM format.

f. The computer halts. Steps c and d may now be repeated to punch as many blocks of data as desired. To terminate the tape, proceed as follows.

g. Set the terminating address 0074 (7474) into the SWITCH REGISTER and press the LOAD ADDRESS key. Next press the START key and a block of trailer is punched.

5. DETAILS OF OPERATION AND STORAGE

Reference to section 7.1, Flow Chart, will illustrate the following discussion.

After entry, a short subroutine is entered to punch a block of leader. Next the initial address is picked up and the six most significant bits are rotated right, masked out, added to 0100 (in order to punch channel 7), and punched. The least-significant six bits of the address are next masked out and punched.

A similar process is followed to punch the data associated with the corresponding address except 0100 is not added before the first character is punched.

This process is repeated until the final address is reached; then the computer halts at the starting address. If more blocks of data are to be punched, this is done as explained in step f above.

The routine is entered at a different address to punch the final trailer.

5.1 Execution Time

This routine is output limited with respect to speed.

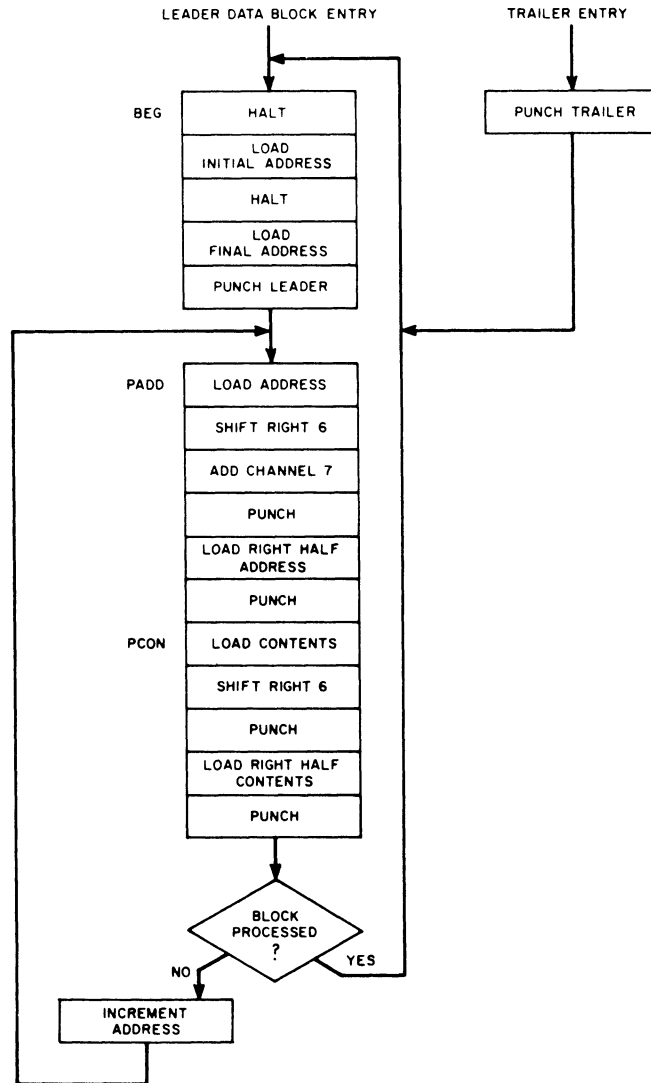
6. SPECIAL FORMATS

6.1 External Data

See Digital-8-2-U for a description of RIM paper tape format.

7. FLOW CHARTS AND LISTINGS

7.1 Flow Chart



7.2 Listings

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/DIGITAL-8-4-U-RIM
/RIM PUNCH 33 LOW MEMORY
*41
0041 7402  BEG,   HLT       /ENTRY FOR LEADER DATA BLOCK
0042 7604          LAS       /SET INITIAL ADDRESS
0043 3122          DCA IA
0044 7402          HLT
0045 7604          LAS       /SET FINAL ADDRESS
0046 3123          DCA FA
0047 4076          JMS LTS   /GO TO L/T SUBROUTINE
0050 1122  PADD,  TAD IA    /PUNCH ADDRESS
0051 4106          JMS SHFT
0052 1126          TAD CH7
0053 4114          JMS PUN
0054 1122          TAD IA
0055 0125          AND SL6
0056 4114          JMS PUN
0057 1522  PCON,  TAD I IA   /PUNCH CONTENTS
0060 4106          JMS SHFT
0061 4114          JMS PUN
0062 1522          TAD I IA
0063 0125          AND SL6
0064 4114          JMS PUN
0065 1122          TAD IA
0066 7041          CIA
0067 1123          TAD FA
0070 7650          SNA CLA   /TEST FOR END
0071 5075          JMP .+4
0072 2122          ISZ IA
0073 5050          JMP PADD
0074 4076          JMS LTS   /ENTRY FOR L/T
0075 5041          JMP BEG
0076 0000  LTS,   0         /L/T SUBROUTINE
0077 1127          TAD M101
0100 3124          DCA CTR
0101 1130  MORE,  TAD C200
0102 4114          JMS PUN
0103 2124          ISZ CTR
0104 5101          JMP MORE  /MORE L-T CODES
0105 5476          JMP I LTS
0106 0000  SHFT,  0         /SHIFT RIGHT
0107 7012          RTR
0110 7012          RTR
0111 7012          RTR
0112 0125          AND SL6
0113 5506          JMP I SHFT
0114 0000  PUN,   0         /PUNCH SUBROUTINE
0115 6046          TLS
0116 6041          TSF
0117 5116          JMP .-1
0120 7200          CLA
0121 5514          JMP I PUN
0122 0000  IA,    0
0123 0000  FA,    0
0124 0000  CTR,   0
0125 0077  SL6,   77
0126 0100  CH7,   100
0127 7677  M101, -101
0130 0200  C200,  200

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BEG 0041
 CH7 0126
 CTR 0124
 C200 0130
 FA 0123
 IA 0122
 LTS 0076
 MORE 0101
 M101 0127
 PADD 0050
 PCON 0057
 PUN 0114
 SHFT 0106
 SL6 0125

0121	5514	00530		JMP I PUN
0122	0000	00540	IA,	0
0123	0000	00550	FA,	0
0124	0000	00560	CTR,	0
0125	0077	00570	SL6,	77
0126	0100	00580	CH7,	100
0127	7677	00590	M101,	-101

0130	0200	00600	C200,	200
		00610		

/DIGITAL-8-4-U-RIM

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SYMBOL TABLE

BEG 0041
 CH7 0126
 CTR 0124
 C200 0130
 FA 0123
 IA 0122
 LTS 0076
 MORE 0101
 M101 0127
 PADD 0050
 PCON 0057
 PUN 0114
 SHFT 0106
 SL6 0125

BEG 7441
 CH7 7526
 CTR 7524
 C200 7530
 FA 7523

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IA 7522
 LTS 7476
 MORE 7501
 M101 7527
 PADD 7450
 PCON 7457
 PUN 7514
 SHFT 7506
 SL6 7525

/DIGITAL-8-4-U-RIM
 /RIM PUNCH 33 HIGH MEMORY
 *7441

7441	7402	BEG,	HLT	/ENTRY FOR LEADER DATA BLOCK
7442	7604		LAS	/SET INITIAL ADDRESS
7443	3322		DCA IA	
7444	7402		HLT	
7445	7604		LAS	/SET FINAL ADDRESS
7446	3323		DCA FA	
7447	4276		JMS LTS	/GO TO L/T SUBROUTINE
7450	1322	PADD,	TAD IA	/PUNCH ADDRESS
7451	4306		JMS SHFT	
7452	1326		TAD CH7	
7453	4314		JMS PUN	
7454	1322		TAD IA	
7455	0325		AND SL6	
7456	4314		JMS PUN	
7457	1722	PCON,	TAD I IA	/PUNCH CONTENTS
7460	4306		JMS SHFT	
7461	4314		JMS PUN	
7462	1722		TAD I IA	
7463	0325		AND SL6	
7464	4314		JMS PUN	
7465	1322		TAD IA	
7466	7041		CIA	
7467	1323		TAD FA	
7470	7650		SNA CLA	/TEST FOR END
7471	5275		JMP ,+4	
7472	2322		ISZ IA	
7473	5250		JMP PADD	
7474	4276		JMS LTS	/ENTRY FOR L/T
7475	5241		JMP BEG	
7476	0000	LTS,	0	/L/T SUBROUTINE
7477	1327		TAD M101	
7500	3324		DCA CTR	
7501	1330	MORE,	TAD C200	
7502	4314		JMS PUN	
7503	2324		ISZ CTR	
7504	5301		JMP MORE	/MORE L-T CODES
7505	5676		JMP I LTS	
7506	0000	SHFT,	0	/SHIFT RIGHT
7507	7012		RTR	
7510	7012		RTR	
7511	7012		RTR	
7512	0325		AND SL6	
7513	5706		JMP I SHFT	
7514	0000	PUN,	0	/PUNCH SUBROUTINE

7515	6046		TLS
7516	6041		TSF
7517	5316		JMP .-1
7520	7200		CLA
7521	5714		JMP I PUN
7522	0000	IA,	0
7523	0000	FA,	0
7524	0000	CTR,	0
7525	0077	SL6,	77
7526	0100	CH7,	100
7527	7677	M101,	-101
7530	0200	C200,	200

BEG	7441
CH7	7526
CTR	7524
C200	7530
FA	7523
IA	7522
LTS	7476
MORE	7501
M101	7527
PADD	7450
PCON	7457
PUN	7514
SHFT	7506
SL6	7525

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BEG	7441
CH7	7526
CTR	7524
C200	7530

FA	7523
IA	7522
LTS	7476
MORE	7501
M101	7527
PADD	7450
PCON	7457
PUN	7514
SHFT	7506
SL6	7525

/DIGITAL-8-4-U-RIM
 /RIM PUNCH 75 HIGH MEMORY
 *7441

7441	7402	BEG,	HLT	/ENTRY FOR LEADER DATA BLOCK
7442	7604		LAS	/SET INITIAL ADDRESS
7443	3322		DCA IA	
7444	7402		HLT	
7445	7604		LAS	/SET FINAL ADDRESS
7446	3323		DCA FA	
7447	4276		JMS LTS	/GO TO L/T SJBROUTINE
7450	1322	PADD,	TAD IA	/PUNCH ADDRESS

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7451	4326		JMS SHFT	
7452	1326		TAD CH7	
7453	4314		JMS PUN	
7454	1322		TAD IA	
7455	0325		AND SL6	
7456	4314		JMS PUN	
7457	1722	P CON,	TAD I IA	/PUNCH CONTENTS
7460	4326		JMS SHFT	
7461	4314		JMS PUN	
7462	1722		TAD I IA	
7463	0325		AND SL6	
7464	4314		JMS PUN	
7465	1322		TAD IA	
7466	7041		CIA	
7467	1323		TAD FA	
7470	7650		SNA CLA	/TEST FOR END
7471	5275		JMP .+4	
7472	2322		ISZ IA	
7473	5250		JMP PADD	
7474	4276		JMS LTS	/ENTRY FOR L/T
7475	5241		JMP BEG	
7476	0000	-LTS,	0	/L/T SUBROUTINE
7477	1327		TAD M101	
7500	3324		DCA CTR	
7501	1330	MORE,	TAD C200	
7502	4314		JMS PUN	
7503	2324		ISZ CTR	
7504	5301		JMP MORE	/MORE L-T CODES
7505	5676		JMP I LTS	
7506	0000	SHFT,	0	/SHIFT RIGHT
7507	7012		RTR	
7510	7012		RTR	
7511	7012		RTR	
7512	0325		AND SL6	
7513	5716		JMP I SHFT	
7514	0000	PUN,	0	/PUNCH SUBROUTINE

7515	6026		PLS	
7516	6021		PSF	
7517	5316		JMP .-1	
7520	7200		CLA	
7521	5714		JMP I PUN	
7522	0000	IA,	0	
7523	0000	FA,	0	
7524	0000	CTR,	0	
7525	0077	SL6,	77	
7526	0100	CH7,	100	
7527	7677	M101,	-101	
7530	0200	C200,	200	

BEG 7441
 CH7 7526
 CTR 7524
 C200 7530
 FA 7523
 IA 7522
 LTS 7476
 MORE 7501
 M101 7527
 PADD 7450
 PCON 7457
 PUN 7514
 SHFT 7506
 SL6 7525

BEG 0041
 CH7 0126
 CTR 0124
 C200 0130
 FA 0123
 IA 0122
 LTS 0076
 MORE 0101
 M101 0127
 PADD 0050
 PCON 0057
 PUN 0114
 SHFT 0106
 SL6 0125

/DIGITAL-8-4-U-RIM
 /RIM PUNCH 75 LOW MEMORY
 *41

0041	7402	BEG,	HLT	/ENTRY FOR LEADER DATA BLOCK
0042	7604		LAS	/SET INITIAL ADDRESS
0043	3122		DCA IA	
0044	7402		HLT	
0045	7604		LAS	/SET FINAL ADDRESS
0046	3123		DCA FA	
0047	4076		JMS LTS	/GO TO L/T SJBROUTINE
0050	1122	PADD,	TAD IA	/PUNCH ADDRESS
0051	4106		JMS SHFT	
0052	1126		TAD CH7	
0053	4114		JMS PUN	
0054	1122		TAD IA	
0055	0125		AND SL6	
0056	4114		JMS PUN	
0057	1522	PCON,	TAD I IA	/PUNCH CONTENTS
0060	4106		JMS SHFT	
0061	4114		JMS PUN	
0062	1522		TAD I IA	
0063	0125		AND SL6	
0064	4114		JMS PUN	
0065	1122		TAD IA	
0066	7041		CIA	
0067	1123		TAD FA	
0070	7650		SNA CLA	/TEST FOR END

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0071 5075      JMP  .+4
0072 2122      ISZ IA
0073 5050      JMP PADD
0074 4076      JMS LTS      /ENTRY FOR L/T
0075 5041      JMP REG
0076 0000     LTS,      0      /L/T SUBROUTINE
0077 1127      TAD M101
0100 3124      DCA CTR
0101 1130     MORE,    TAD C200
0102 4114      JMS PUN
0103 2124      ISZ CTR
0104 5101      JMP MORE    /MORE L-T CODES
0105 5476      JMP I LTS
0106 0000     SHFT,    0      /SHIFT RIGHT

0107 7012      RTR
0110 7012      RTR
0111 7012      RTR
0112 0125      AND SL6
0113 5506      JMP I SHFT
0114 0000     PUN,      0      /PUNCH SUBROUTINE
0115 6026      PLS
0116 6021      PSF
0117 5116      JMP  .-1
0120 7200      CLA
0121 5514      JMP I PUN
0122 0000     IA,      0
0123 0000     FA,      0
0124 0000     CTR,     0
0125 0077     SL6,     77
0126 0100     CH7,     100
0127 7677     M101,    -101
0130 0200     C200,    200

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BEG      0041
CH7      0126
CTR      0124
C200     0130
FA       0123
IA       0122
LTS      0076
MORE     0101
M101    0127
PADD     0050
PCON     0057
PUN      0114
SHFT     0106
SL6      0125

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