UNIVERSITY OF ILLINOIS

DIGITAL COMPUTER LABORATORY

AUXILIARY LIBRARY ROUTINE X 13 - 250

TITLE:

Maximum Speed Sexadecimal Input Preparation (SADOI Only)

TYPE:

Complete Program

NUMBER OF WORDS:

63

FURPOSE:

This routine causes any program previously assembled in the Williams Memory (by any method) from 2 through 998 to be punched out in sexadecimal form, skipping all empty locations, The output tape, having its own bootstrap, read-in and sum-check program on the front, can be read into the machine without further modification at the maximum speed and the reader in a minimum of time. This read-in program performs a sum check in order to detect punching and reading errors.

The routine should have two major uses:

- (1) translating long, often-used programs with many symbolic addresses and/or interludes not actively involving the drum into tapes which effect a reasonable savings of read-in time and
- (2) stopping the computer at a convenient point in a calculation (where the contents of A and Q are unimportant) and punching out the W.M. so that the calculation may be resumed at any later time.

METHOD OF USE:

After the W.M. is ready to be punched out, the routine is placed in the machine with a hold start. The tape will be read in and stop on 24 06416. The operator must then read in with the black switch a specification control transfer order pair of the following form:

2**V** nF

TO F

where V = 0, 1, 2, 3, 4, 5, 6, 7, 9, S, J, L

n = (decimal) address to which the above specified control transfer should take place, and

T = either 0 (if no drum clear is wanted)

or N (if a drum clear is wanted).

i.e. 2V nF will be the starting directive placed at the end of the output tape and used on its subsequent read-in. The output tape will first clear or not clear the drum according as T is N or O. The output tape should be immediately rewound and read into the machine with a clear start in order to test it for errors in punching what was read from the drum. Upon reading this tape, if the sum check fails the computer will stop on FF 000, which can be bypassed with the white switch. Otherwise, the computer will obey the specified control transfer. If this control transfer is a stop transfer such that the computer is not allowed to begin immediately, then a comparison post mortem will reveal any errors which may have occurred in reading from the drum. These two operations immediately after the operation of this routine will thus verify with a high degree of certainty the agreement of the sexadecimal tape with the original state of the W.M. It must be remembered that only locations 2 through 998 are so treated.

SPEED:

The time necessary to punch such a sexadecimal tape can be approximately determined from the formula:

Punching time = 7.0 + 0.18n seconds
where n is the number of words to be punched.
The time necessary to read such a sexadecimal tape into the computer is given by:

Reading time = 1.5 + 0.038n seconds
where n is the number of words to be read.
On a program of maximum length (996 words) these times were
measured as follows:

Maximum punching time: 3.1 minutes

Maximum reading time: 39.2 seconds

DATE January 7, 1959
SUBMITTED BY W.W. Lichtenberger
APPROVED BY

LOCATION	ORDER			NOTES	PAGE 1
	J				
	l-hole delay			switch to Punch	
	00 K				
	85 11F				
	40 F		1	interlude to record	current
	26 F		1/	state of W.M. on dri	m
	00 F		1\		· .
	26 1469 n		1)		
	^		1)		
			1/		
	DOI			read in following pr	ogram withou
			17	affecting drum	
***************************************			1\		
			IJ		
	00 100K			•	
0	L5 28L			start	
	40 1018F			modify DOI	
1	26 1021F				
	L3 L				
2	32 3L		11	read specification o	rder mois
	41 L		17	and store in 53 L	ruci pari
3	26 1021F				
	92 63 F		K		
4	F5 29L				
	40 29L	•		punch leader	
5	36 6L				
	22 3L				
5	L5 63L		K		
	00 2 0 F				
7	36 8L			punch drum clear if	acked for
	92 770F			panen aram elear it	iskeu Ior
8.	92 63F				
	L5 30L		K		
9	82 40F			·	
	F5 8L			numah dana bada	
10	42 8L		>	punch tape bootstrap	and input
	10 51L			routine	

LOCATION	ORDER		NOTES PAGE 2	X1.3
11	32 EL		J	AUX -
	41 1F		clear for sum check	4
12	85 11F		read word	: Page 2
	00 11758F			
13 .	40 F	200 E CONTRA DE		
10 mg	L3 F		Parties of the Control of the Contro	22 (**) Project Project
14	36 52L		if empty	·
	L3 29L	The state of the s		3-3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
15	36 53L		if directive is to be	And the state of t
	L5 F		punched main	punching
16 ·	82 40F		punch word	
	L5 F			A Company Code
17	L6 1F			Participation of the control of the
· · · · · · · · · · · · · · · · · · ·	40 1F		sum check	enteresta i
18	F5 12L			SCORE A Property
	40 12L			
19	10 60L			Provide Charles
	36 12L		/	OC BERTAIN
20	92 195F		h	and the second
	L5 61L		punch directive to 3FL	
21	00 20F			ne portugues de la constante d
	82 8F			A STATE OF THE STA
22	L3 1F		punch sum check	
	82 40F			APPENDED TO THE PERSON OF THE
23	L5 63L		punch specified control transfer	c
	82 40F			e constituentes
24	92 195 F			MATERIAL COLOR
. o	L5 57L		punch directive to 314 to read t	Ln
25	00 8F		overwrite word to stop input	e V. College
	82 8F	•	()	e deligi di magani
26	L5 61L		punch overwrite	Number of the Parks of the Park
	82 40F			
27	OF F		stop	AT A 19th MAZEL
	OO F			At contract
28	40 lF	TO THE STATE OF TH	modification for DOE	1 de
	22 1L	2002221		en e
`	·	2		·

LOCATION	ORDER	NOTES PAGE 3	ray y L
29	IL 4095F	counter and switch	15 - 10 - 15 A
The Manager	LL 4091F		
i zo	80 40F		i i
1867 	40 lf		1
<u>.</u>	42 F		
	26 F		POUR PER
32	80 40F		
	40 1011F		# F 192
33	26 F	special tage bootstrap -	-
	00 1010F	does not use location 2 in WM	A STATE OF THE STA
34	F5 1009F		7840-0403/F
	42 1009F		
35	80 40F		A STATE OF THE STA
で できない かんしょう できない かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう はんしょう はんしょう はんしょう はんしょう はんしょう はんしょう しゅうしゅう しゅう	40 1012F		Target and
35	OO F		
	00 F		9
37	26 1009F		
	OO F		1
38	42 1015F		***
	91 4F		Mark Transfer
39	36 1015 F		STREET OF STREET
	80 8F		*
40	42 1015F	sexadecimal input routine	
	81 4F		44 M M M M M M M M M M M M M M M M M M
. 41	80 36F		THE PROPERTY OF THE PARTY OF TH
	40 F		
þ2	F5 1015F		Section of
Carlotte of the	26 1012F		Caramaca Caramaca
43	41 F		Maria Maria
	L5 2F		*
2,1,	L6 F		A STATE OF THE STA
	40 F	sum check routine	Will see the second
45	F5 1017F		:: abetysoch
ALL SAME	42 101.7F		a
46	IO 1023F		2
	32 1017F		\$ \$ \$
			1
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13	LOCATION	ORDER		NOTES PAGE 4 X13 Aux.
48	47	L3 F		Aux.
48		36 1000F		jump to specified control transfer
19	48	FFF	1	1 1
15 1000F 22 1012F 0verwrites tape bootstrap to start input routine test constant 15 51L 52	Herry Christian	26 1000F		jump anyway
15 1000F 22 1012F 00 F input routine test constant 15 51L 52 41 29L 0pen directive switch	49	N1 F	L	test constant for sum check loop
00 F input routine test constant		L5 1000F		
51	50	22 1012F		overwrites tape bootstrap to start
15 51L 29L 26 18L 26 18L 26 18L 27L 28 2F 29 2F 29 2F 29 2F 29 2F 29 2F 29 2F 20 32F 29 2F 20 12755F 61 26 1017F 26 2 85 11F 26 constant 26 2 85 11F 26 constant 26 2 2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2		00 F		input routine
52	51	12 63F		test constant
26 18L 49 29L 15 12L 54 10 62L 40 2F 55 10 8F 50 57L 56 00 6F 42 57L 57 06 3905F 92 F 58 15 2F 00 32F 59 82 8F 22 15L 60 05 11F 00 12755F 61 26 1017F F 62 85 11F test constant overwrite word F7 F		L5 51L		
15 12L 15 12L 16 62L 40 2F 55 10 8F 50 57L 57 62 85 11F 62 85 11F 15 15 15 15 15 15	52	41 29L	•	open directive switch
15 12L 10 62L 40 2F 55 10 8F 50 57L 56 00 6F 42 57L 57 06 3905F 92 F 58 15 2F 00 32F 59 82 8F 22 15L 60 05 11F 00 12755F 61 26 1017F 57 F 62 85 11F test constant 62 85 11F test constant 63 64 65 65 65 65 65 65 65	THE STATE OF THE S	26 18L		
54	53	49 29 L		
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55 10 8F 50 57L 50 00 6F 42 57L 57 06 3905F 92 F 58 15 2F 00 32F 59 82 8F 22 15L 60 05 11F test constant 00 12755F 61 26 1017F overwrite word F7 F 62 85 11F test constant	54	IO 62L		
50 57L 56 00 6F 42 57L 57 06 3905F 92 F 58 L5 2F 00 32F 59 82 8F 22 15L 60 05 11F 00 12755F 61 26 1017F F 62 85 11F close directive switch and punch directive test constant close directive switch and punch directive test constant close directive switch and punch directive test constant test constant overwrite word test constant	TO STATE OF THE PROPERTY OF TH	40 2F		
56 00 6F 42 57L 57 06 3905F 92 F 58 L5 2F 00 32F 59 82 8F 22 15L 60 05 11F 00 12755F 61 26 1017F F7 F 62 85 11F and punch directive and punch directive test constant overwrite word test constant test constant	55	10 8 F		
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57 06 3905F 92 F 58 L5 2F 00 32F 59 82 8F 22 15L 60 05 11F test constant 00 12755F 61 26 1017F overwrite word F7 F 62 85 11F test constant	56	00 6F		and punch directive
92 F 58		I		ny ma cade
58	57	06 3905F		College W.
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82 8F 22 15L 60 05 11F test constant 00 12755F 61 26 1017F overwrite word F7 F 62 85 11F test constant	58	g . Y		Friedrams
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62 85 11F test constant	61	1		overwrite word
	62			test constant
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24 100N	and the second s	24 100N		···
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