UNIVERSITY OF ILLINOIS

DIGITAL COMPUTER

Library Routine Correction

ILLINOIS CODE D 4 - 70

TITLE: Control Transfer Check Routine (41)

On page 1 of the description section under Parameters, it should say:

S3 = 00F 00mF placed in 3 instead of S3 = 00F 00nF placed in 3.

Date 1/5/53 RT 9/12/58
Coded by David Wheeler
Approved by J.P. Nash
Correction date 9/22/58 by R. Flenner

UNIVERSITY OF ILLINOIS

DIGITAL COMPUTER

LIBRARY ROUTINE D4 - 70

TITLE	Control Transfer Check Routine
TYPE	Special
NUMBER OF WORDS	41
TEMPORARY STORAGE	Internal
DURATION	3 ms per order pair sequenced
PARAMETERS	S3 = 00F 00 nF placed in 3 S4 = 00F 00 nF placed in 4 before routine is read in S5 = 00F 00 pF placed in 5
DESCRIPTION	The original program is read into the store but not started. This routine is then read into some unoccupied part of the store. While it is being read in the order pair at m is removed and replaced by a blocking order pair. When the original program is started it will proceed at normal speed, until control reaches the blocking order pair. Control is then transferred to Code D4, the old order pair replaced and the old program resumed under the control of D4. As each control transfer order is obeyed an entry is made in a p entry list from n+1-p to n. Each entry consists of an order pair, the left hand address containing the location of the control transfer order, and the right hand order being the actual control transfer order obeyed. When the list is full it is overwritten cyclically. Thus at the end of the program it will contain the last p control transfer orders obeyed. The list can be printed by Code C5.
NOTE	The address of the last entry listed is given by the right hand address of the 36th word of this routine.
RESTRICTION	The program up to n must not use N(m) as a constant.
USE	This program can be used to trace the last actions of a program, say leading to a zero left shift, or it can be used to decide if codes suffer from read around.

LOCATION	ORDER	NOTES	PAGE 1
0	L5 S3	R_2	
	40 L		
1	L5 3L	R_1	
	40 S3		
2	L5 3L		Interlude
	22 1014F		
3	40 2L		
	26 1L		
4	26 L		
	26 L		
5	26 1N		
1	L5 L	R_1	
	26 23L		
2	L5 L		
	26 23L		
3	60 F		
	00 F		
4	80 F		-1 + 00F 20F
	20 F		Constants
5	00 F		
	F0 F		Extract number
6	7L 4095F		+ 26L x 2^{-39}
	F0 26L		
7	LL 4095F	-2^{-19}	
	00 F		
8	50 (S3)		Cause the L.H. order to be 50 L after
	00 19F		a transfer of control to a R.H. order
9	L5 10L		
	10 19F		
10	22 11L		
	50 L		
11	50 (S3)		
	L1 7L		Select order pair and increase address

LOCATION	ORDER		NOTES PAGE 2
12	L4 8L		
	46 11L		
13	46 8L		
	S5 F		
14	40 1L		
	40 23L		
15	L4 3L		Is left hand order a control order?
	36 18L		
16	L4 3L		
	36 18L		
17	L5 21L		Then make it transfer to 28L
	46 23L		
18	J0 5L		
	S5 S5		
19	L0 4L		Is right hand order a control order?
	36 22L		
20	L4 6L		
	36 22L		
21	30 28L		Transfer ignored, address used.
	42 23L		Make it transfer to 26L.
22	L5 2L		Restore R_1 and R_2.
	50 L		
23	40 S3		
	22 24L		Slave order pair
24	40 2L		
	S5 1S4		Copy R_1 and R_2
25	40 L		
	26 40L	to 11	via delay
26	22 26L		
	40 2L		Transfer to control from R.H. order
27	L5 1L		
	26 30L		
28	22 28L		
	40 2L		Transfer of control from L.H. order.

LOCATION	ORDER	NOTES	PAGE 3 D4
29	L5 1L		
	10 20F		
30	40 1L		
	L5 8L		
31	L4 7L		Make list entry.
	46 1L		
32	L5 35L		
	L0 39L		Stop to next value in list.
33	36 34L		
	L0 18L		
34	L4 24L		
	42 35L		
35	L5 1L		
	40 (S4)F		Place entry in list.
36	00 20F		
	46 8L		Cause appropriate transfer of control
37	46 11L		
	00 5F		Test 2^{-5}
38	36 8L		Right hand
	26 11L		Left hand
39	75 1L		
	40 S4		Comparison constant
40	00 63F		
	26 11L		Delay
	20 1019N		

DATE 1/15/53 RT 9/12/58
CODED BY David Wheeler
APPROVED BY J.P.Nash