UNIVERSITY OF ILLINOIS

DIGITAL COMPUTER

LIBRARY ROUTINE Aux- W - 1 (89)

TITLE	Loop Cycling Control (SADOI or DOI)
TYPE	Closed with One program parameter
NUMBER OF WORDS	21
TEMPORARY STORAGE	0, 1, 2
DURATION	2 milliseconds first time through, 1 millisecond each cycle thereafter.
RAR	Adjacent to code ~ 17 Adjacent to 0, 1, 2 ~ 60 Adjacent to p, p+1 ~ 35

DESCRIPTION This routine will arrange a cycling around a loop of orders for m times ($1 \leq m \leq 127$). If this routine is located at t, entry is made via the following orders:

p	50		mF
	50		pF
p + 1	26		tF
	22	or	
	26		aF

The right hand order at (p + 1) is the transfer to the beginning of the routine to be cycled. After m cycles, the final exit is made to the left hand order at p + 2.

CODING NOTES 1. The value of m includes the first passage through the routine to be cycled.

2. During cycling, the count is stored in the 2^{-5} to 2^{-12} digits of p. Consequently, the left hand order at p, if printed out during a cycle will read 5B nF where B may range from 0 to 7. Following completion of the cycling, the order pair at p is returned to its original value.

3. Since all information pertinent to the cycling is stored in the routine being cycled, this subroutine may be used to control any number of simultaneous loops.

TECHNICAL NOTES: On first entry to this routine at t, the value of -m is stored in the 2^{-5} to 2^{-12} digits of p and the cycling count is kept there. The transfer address in the left hand order of (p + 1) is changed to (t + 8) for subsequent entries. On the completion of cycling, this address is restored to the value t and the order pair at p returned to its original form.

DATE May 28, 1953-RT: 11/25/59
PROGRAMMED BY R.M. Brown
APPROVED BY J. P. Nash

RMB/ns

LOCATION	ORDER		NOTES PAGE 1 W1
	OOK (W1)		
0	41 F		
	S5 F		
1	40 1F		
	46 F		$m.2^{-19}$ at 0
2	42 5L		p as address
	L4 6L		
3	42 7L		
	19 10F		2^{-11}
4	L0 F		
	00 7F		-m in 2^{-5} to 2^{-12}
5	L4 1F		
	40 F	By 2L	Replace
6	40 1F		
	50 1F		
7	L5 17L		
	46 F	By 3L	Set L.H. order (p+1) for 2nd entry
8	S5 L		2nd entry
	40 2F		
9	42 14L		
	42 19L		p as address
10	S5 58F		
	L4 6L		
11	42 16L		
	42 17L		p + 1 as address
12	L4 6L		
	42 20L		p + 2 as address
13	19 11F		2^{-12}
	L4 2F		Increase count and replace
14	40 2F		
	40 F	By 9L	
15	00 5F		
	36 17L		Test for cycle end
16	00 15F		
	22 F	By 11L	Exit to loop

LOCATION	ORDER	NOTES	PAGE 2 W1
17	L5 8L		Reset L.H. order (p+1) for first entry
	46 F		
18	09 1F		
	10 4F		Reset N(p)
19	L4 2F		
	40 F	By 9L	
20	00 10F		
	26 F	By 12L	Final Exit