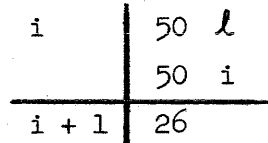


UNIVERSITY OF ILLINOIS

DIGITAL COMPUTER

Aux.
LIBRARY ROUTINE W - 2 134

TITLE Word Sorting According to an Ordering Relation
 (DOI or SADOI)
 TYPE Closed
 NUMBER OF WORDS 25
 TEMPORARY STORAGE 0, 1
 MAXIMUM DURATION $1.7 n^2$ milliseconds; n = number of words to be sorted
 ENTRY Accumulator has address of first word to be sorted in right-hand address position.



l is the address of the last word to be sorted.

DESCRIPTION This routine sorts consecutive words in the memory by the method of starting at the top of the list, comparing the first two and interchanging if necessary; then taking the second and third and if these are interchanged going back to the first and new second, etc.

The instructions that determine the order of sorting are at the end of the routine (words 21 to 24) and can conveniently be changed to any particular criterion. The one that is given here treats the words as positive integers less than 2^{40} and sorts the smaller numbers ahead of the larger. At the time control is transferred to the ordering instructions, the "ith" word of the list is in Q and OF and the "i + lth" word is in A and lF. The last ordering instruction should transfer to 8L with a positive accumulator if no interchange is desired or a negative accumulator if an interchange is desired.

RT: 14/3/61
DATE April 19, 1954
PROGRAMMED BY Ted Shapin
APPROVED BY: <i>J. Mash</i>

LOCATION	ORDER	NOTES	PAGE 1
0	42 4L 42 5L	Set top of list	
1	42 18L K5 1F	return link	
2	42 15L 10 20F	Set bottom of list	
3	42 6L 26 16L		
4	00 F 00 F	address of next number to be sorted	
5	0L 4093F 00 F	top of list	
6	00 F 00 F	bottom of list	
7	80 F 00 F	Constant	
8	32 13L L5 1F	no interchange	
9	50 F 40 F	interchange word at n, n + 1	
10	S5 F 40 F		
11	L5 18L L0 8L	count up	
12	42 18L L0 5L		
13	36 16L F5 4L		
14	42 4L 42 18L	count down	
15	L0 6L 32 F	→ exit	

LOCATION	ORDER	NOTES	PAGE 2
16	L5 18L 42 9L		
17	F5 18L 42 19L	Set test addresses	
18	42 10L		
19	L5 F 40 F L5 F		
20	40 1F 50 F	Get numbers to be tested	
21	J0 7L S4 F		
22	32 23L L5 F	Opposite sign digits	
23	26 8L L5 1F	signs agree	Ordering
24	L0 F 26 8L		