

LGP-30 USERS' ORGANIZATION - POOL

Program No. L3-72

Dec. 22, 1959.

Program Title: "Operand Address Changer"

Author: James H. Boatwright

Installation: Western Electric Company Inc., Winston-Salem, North Carolina.

PURPOSE

To modify operand addresses of a program previously stored in memory. For example, suppose a program has numerous instructions referring to the same operand address, M_0 ; (C $[M_0]$ H $[M_0]$ etc.) It is decided to change these operand addresses to M_n ; (C $[M_n]$ H $[M_n]$ etc.)

This program will search each sector within a given area for all words which have an operand address equal to M_0 , and will replace these operand addresses with the new operand address of M_n , without disturbing the operation bits.

Numerical Information Supplied to Program and Computer (Input)

I. $S_0 S_f = \text{XXXXYYYY} =$

The boundary addresses of the area to be searched

II. $M_0 M_n = \text{XXXXYYYY}$

M_0 = The original operand address

M_n = The new operand address

OPERATION of Program

Stop and transfer to L_0 of program. When the input light comes on, enter $S_0 S_f$ and push "start compute." When the input light comes on, enter $M_0 M_n$ and push "start compute." The program is now in operation. Upon completion of the search, the program returns to L_0 . There is no format control.

To enter $M_0 M_n$ alone, transfer to $L_0 + 0009$. The search area will be the same as set previously.

STORAGE

This routine takes one track and no temporary storage and may be repositioned.

TIME

About five seconds per track of search area.

THIS PROGRAM IS LOANED TO
MEMBERS OF POOL ONLY. CONTACT BY
TO NON MEMBERS OF POOL IS PROHIBITED

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STOPS

There are no programmed stops.

However, an overflow stop may occur at $L_0 + 0019$.
Press "Start Compute" to continue.

Addendum to Operand Address Changer

Purpose: To print location of instruction containing address which has been changed by the Operand Address Changer.

Location: Start Fill = $L_0 + 0100$ of Operand Address Changer. One track of storage is required. Set modifier = L_0 of Operand Address Changer.

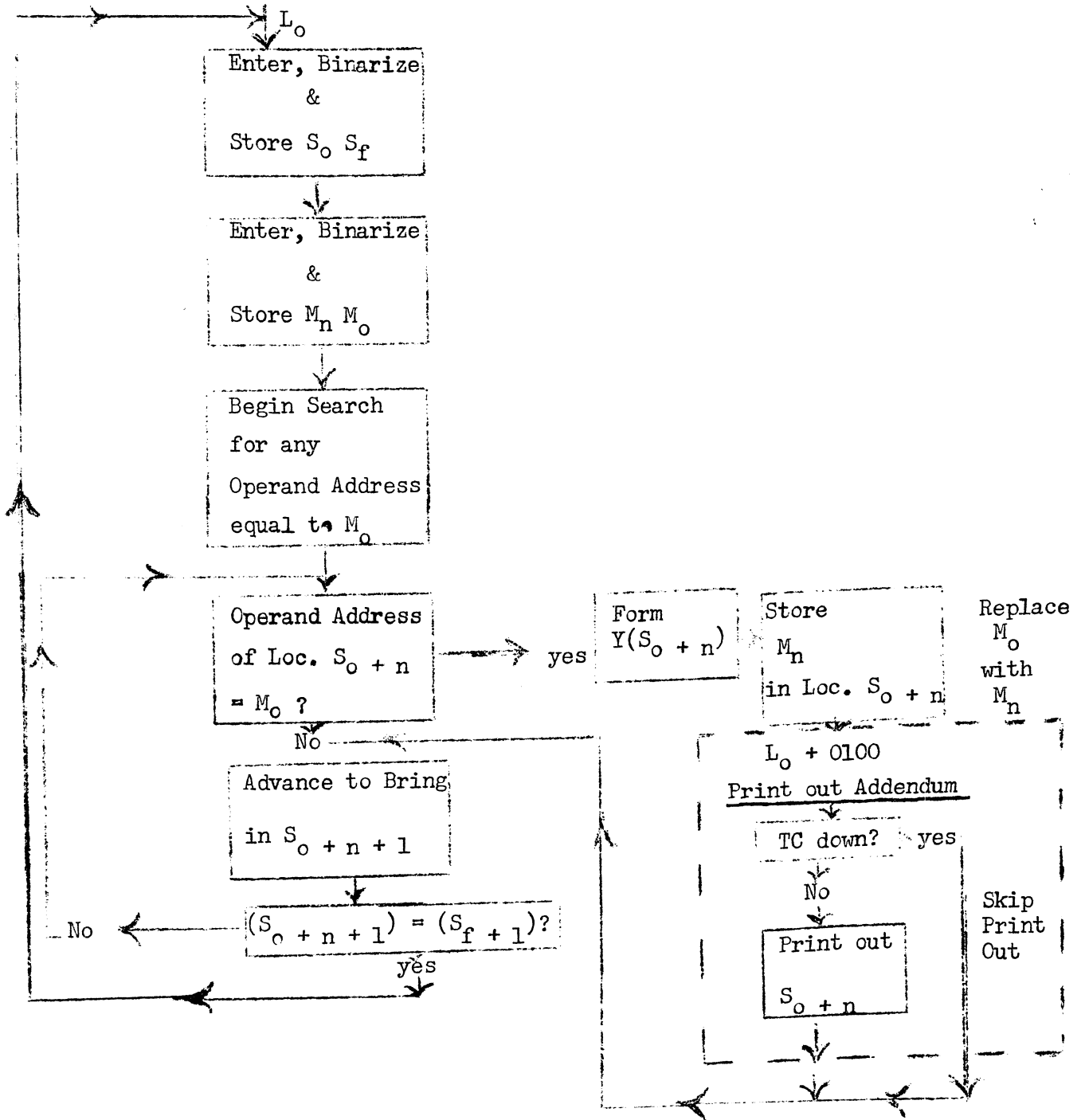
Changes in Operand Address Changer: After loading addendum in $L_0 + 0100$, change $L_0 + 0034$ to $U(L_0 + 0100)$.
The above change has already been made on tapes labeled "Operand Address Changer and Printer."

Location will not be printed if Transfer Control switch is DOWN.

If the program is to be used as a "Memory Search and Print" routine, let $M_0 = M_n$ = the operand address that is to be searched for.

Program Title: OPERAND ADDRESS CHANGER

Author: James H. Boatwright





LGP-30 CODING SHEET

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JOB NO.	PROGRAM NO. L3-72	PROGRAM PREPARED BY: J. H. Boatwright	PROGRAM CHECKED BY: Pool Review	DATE 12-22-59.
PROBLEM: OPERAND ADDRESS CHANGER				TRACK

PROGRAM INPUT CODES	STOP	LOCATION	INSTRUCTION		STOP	CONTENTS OF ADDRESS	NOTES
			OPERATION	ADDRESS			
30000	/						
0000	/						
		10 10	X	P 0101510	/		Enter S ₀ S _f
		10 11	X	I ZIZIZIZ	/	XI(M _n)	
		10 12		R 0101417	/	Bin	
		10 13		U 0101315	/	X S _f	
		10 14		A 0101610	/	1 (29)	B (S _f)
		10 15		H 0101515	/	B (S _f + 1)	
		10 16		R 0101417	/	Bin	
		10 17		U 0101418	/	X S ₀	
		10 18		C 0101117	/	B(S ₀ + n)	B(S ₀)
		10 19		X P 0101519	/		Enter M ₀ M _n
		11 10		X I T 0101610	/		
		11 11		R 0101417	/	X Bin	
		11 12		U 0101315	/	M _n	
		11 13		Y 0101011	/	XI (M _n)	B (M _n)
		11 14		R 0101417	/	Bin	
		11 15		U 0101418	/	X M ₀	
		11 16		Y 0101612	/	Z(M ₀)	B(M ₀)
		11 17		B Z ZIZIZ	/	B(S ₀ + n)	
		11 18		E 0101611	/	WWWOWWWW	Zero Command Bits
		11 19		S 0101612	/	X Z(M ₀)	
		12 10		T 0101213	/	≠	Step to Next Sector
		12 11		S 0101517	/	1 (30)	Test for ACC = 0
		12 12		T 0101310	/	=	ACC = 0
		12 13		B 0101117	/	X B(S ₀ + n)	Step To
		12 14		A 0101610	/	1(29)	Next Sector
		12 15		H 0101117	/	B(S ₀ + n)	
		12 16		S 0101515	/	B(S _f + 1)	Test for end
		12 17		T 0101117	/	X	Not end
		12 18		U 0101010	/		end
		12 19		X Y 0101010	/		
		13 10		B 0101117	/	B(S ₀ + n)	
		13 11		Y 0101313	/	X	

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	L3-72	J. H. Boatwright	Pool Review	12-22-59.	
PROBLEM:				TRACK	
OPFRAND ADDRESS CHANGER					

PROGRAM INPUT CODES	STOP	LOCATION	INSTRUCTION		STOP	CONTENTS OF ADDRESS	NOTES
			OPERATION	ADDRESS			
	/						
	/	X					
		3 2	B	0 0 0 1	/	XI(M _n)	Store New Operand
		3 3	Y	Z I Z I Z I	/		Address
		3 4	U	0 1 0 2 3	/	or U0100 if Add. is used	Return to Step
		3 5	H	0 1 0 5 1 1	/	X W ₁ W ₂	Bin W ₂
		3 6	N	0 1 0 6 1 0	/	1(29)	
		3 7	E	0 1 0 5 1 2	/	3 WWWJ	
		3 8	H	0 1 0 5 1 3	/	N	
		3 9	E	0 1 0 5 1 4	/	X 3J3J0	
		4 0	M	0 1 0 5 1 6	/	K0000000	
		4 1	A	0 1 0 5 1 3	/	N	
		4 2	H	0 1 0 5 1 3	/	N	
		4 3	E	0 1 0 5 1 8	/	X 00WWW00	
		4 4	M	0 1 0 5 1 9	/	F0000000	
		4 5	A	0 1 0 5 1 3	/	N	
		4 6	A	0 1 0 6 1 3	/	XB0000	Form B ()
		4 7	U	(Z I Z I Z I)	/	X Exit Bin	
		4 8	B	0 1 0 5 1 1	/	W ₁ W ₂	Bin W ₁
		4 9	M	0 1 0 2 1 9	/	1 (14)	
		5 0	U	0 1 0 3 1 7	/		
0 1 0 1 0 1 0 1 0 1 1 3	1	5 1		W 1 W 2	/	X	
		5 2		3 W W W J	/		
		5 3			/	N	
		5 4		3 J 3 J 1 0	/		
		5 5	B	Z I Z I Z I	/	X B(S _F + 1)	
		5 6	K	0 1 0 1 0 1 0 1 0	/		
		5 7			/	1 (30)	0021
		5 8	O	0 1 W W W W 0 0	/		
		5 9	F	0 1 0 1 0 1 0 1 0	/	X	
		6 0			/	1 (29)	0024 0004 00036
		6 1	W	W W W 0 W W W W	/		Mask to Zero Command
		6 2		Z I Z I Z I	/	Z(M ₀)	
		6 3	B	0 1 0 0 1 0	/	X	



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JOB NO.	PROGRAM NO. L3-72	PROGRAM PREPARED BY: J. H. Boatwright	PROGRAM CHECKED BY: Pool Review	DATE 12-22-59.
PROBLEM: ADDENDUM OPERAND ADDRESS CHANGER				TRACK

PROGRAM INPUT CODES	STOPS	LOCATION	INSTRUCTION		STOPS	CONTENTS OF ADDRESS	NOTES
			OPERATION	ADDRESS			
	/						
	/	10 10	8 0 0	T 0 0 2 3	/	No Prnt; To OAC	From O.A.C.
		10 11		B 0 0 1 7	/	B (S ₀ + n)	
		10 12		H 0 1 4 2	/	N OXXYY	
		10 13		E 0 1 3 9	/	XZ6300	
		10 14		D 0 1 4 0	/	10 ² (23)	
		10 15		A 0 1 4 1	/	1(30)	
		10 16		H 0 1 4 6	/	N1	
		10 17		M 0 1 4 3	/	X10(21)	
		10 18		E 0 1 3 7	/	XZ6000	
		10 19		A 0 1 3 8	/	XP0261	
		11 10		C 0 1 1 1	/		
		11 11		P 0 0 0 0	/	X Print Character	
		11 12		S 0 1 4 8	/	XZ0001	
		11 13		A 0 1 4 9	/	Co	
		11 14	X	Z 0 0 0 0	/	Delay	
		11 15		T 0 1 2 1	/	X end prt 2 char	
		11 16		H 0 1 4 9	/	Co	
		11 17		B 0 1 4 6	/	N1	
		11 18		N 0 1 4 7	/	10(31)	
		11 19		E 0 1 5 5	/	X7WWWWW0	
		12 10		U 0 1 0 6	/		
		12 11		B 0 1 3 6	/	XZ0001	
		12 12		C 0 1 4 9	/	Co	
		12 13		S 0 1 4 5	/	X Z0001	
		12 14		A 0 1 5 3	/	Co T	
		12 15		T 0 1 3 1	/	exit prnt	
		12 16		H 0 1 5 3	/	Co T	
		12 17		B 0 1 4 2	/	X N	
		12 18		E 0 1 5 0	/	XZ0063	
		12 19		D 0 1 5 1	/	10 ² (29)	
		13 10		U 0 1 0 5	/		
		13 11		X P 0 3 1 7	/	X Space	

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PROBLEM: ADDENDUM TO OPERAND ADDRESS CHANGER				TRACK

PROGRAM INPUT CODES	STOP	LOCATION	INSTRUCTION		STOP	CONTENTS OF ADDRESS	NOTES
			OPERATION	ADDRESS			
	/						
	/	0 1 3 2	B	0 1 1 5 1 1	/	XZ0001	
		3 3	C	0 1 1 5 3	/	Cot	
		3 4	X	Z 0 0 0 0	/	Delay	
		3 5	U	0 0 0 2 1 3	/	X	exit to O.A.C.
		3 6	X	Z 0 0 0 0 1 1	/		
		3 7	X	Z 6 0 0 0 1 0	/		
		3 8	X	P 0 2 1 6 1 1	/		
		3 9	X	Z 6 1 3 0 1 0	/	X	
1 0 1 0 1 0 0 1 0 1 1 6	/	4 10		6 1 1 0 1 0	/	10 ² (23)	
		4 11			/	1 (30)	
		4 12			/		
		4 13		2 8 1 0 1 0	/	X 10 (21)	
		4 14			/	vacant	
		4 15			/		
		4 16	(/	N1	
		4 17			/	X 10 (31)	
		4 18			/	1 (29)	
		4 19		(0 1 0 1 1 4)	/	Co	
		5 10		W 1 J	/		
		5 11		1 1 9 0	/	X 10 ² (29)	
		5 12			/	vacant	
		5 13		(0 1 0 1 1 4)	/	Cot	
		5 14			/	1 (29)	
			7	W 1 W 1 W 1 W 1 0	/	X	
0 0 0 0 0 0 0 0	/	5 16			/		
		5 17			/		
		5 18			/		
		5 19			/	X	
		6 10			/		
		6 11			/	Vacant	
		6 12			/		
		6 13			/	X	