

The Load Positive instruction copies the absolute value of the contents of the register specified by Operand 2, into the register specified by Operand 1. The contents of Operand 2 are unchanged by this operation. Recall that absolute value of an integer x , denoted by $|x|$, is defined as follows,

$$|x| = x \text{ if } x \geq 0 \text{ and } |x| = -x \text{ if } x < 0$$

For example, $|7| = 7$ since $7 \geq 0$, and $|-5| = 5$ since $-5 < 0$.

LPR insures that the contents of Operand 1 will be non-negative after the operation has completed if an overflow has not occurred. Positive integers and zero are unchanged by this instruction. For negative integers, the two's complement of the integer is placed in Operand 1.

The condition code is set by this instruction based on the final contents of Operand 1.

Condition Code	Meaning	Test With
0 (Zero)	Operand 1 = 0	BE, BZ
2 (Positive)	Operand 1 > 0	BH, BP
3 (Overflow)	Overflow	BO

An overflow condition can occur only when Operand 2 contains the maximum negative value that will fit in a register (-2,147,483,648). An overflow occurs because the absolute value will not fit in a single register.

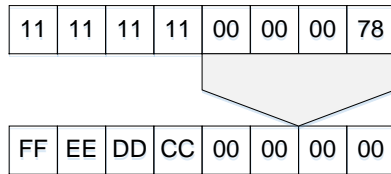
Consider the instruction below.

LPR R5, R10

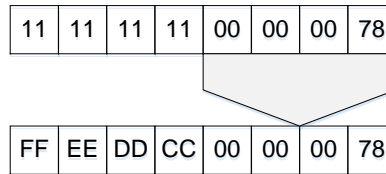
The contents of register 10 are examined and determined to be positive. As a result, the contents of register 10 are copied to register 5, destroying the previous value in register 5. Register 10, which contains a binary number equal to 120 in decimal, is unaffected by the operation. Since the contents of R5 is positive after completion of the operation, the condition code is set to 2. The diagram below illustrates this operation.

LPR R5, R10

R10 (Before)



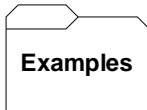
R10 (After)



R5 (Before)

R5 (After)

CC = 2 = High/Positive



Some Unrelated LPR's

R4 = X'FFFFFFFF' -1
R5 = X'00000028' +40
R6 = X'80000000' MAXIMUM NEGATIVE VALUE
R7 = X'00000000' ZERO

LPR R4, R5 R4 = X'00000028' R5 = X'00000028' Cond. Code = Positive
LPR R5, R4 R5 = X'00000001' R4 = X'FFFFFFFF' Cond. Code = Positive
LPR R5, R6 R5 = X'FFFFFFFF' R6 = X'80000000' Cond. Code = Overflow
LPR R6, R7 R6 = X'00000000' R7 = X'00000000' Cond. Code = Zero
LPR R4, R4 R4 = X'00000001' Cond. Code = Positive