

The Load Complement instruction treats the rightmost 32 bits of the Operand 2 register as a two's complement integer and computes its additive complement. Remember that if you add an integer and its additive complement, the result is zero. (The complement of 5 is -5. The complement of -33 is 33.) The computed complement is copied into the rightmost 32 bits of the Operand 1 register. The contents of Operand 2 are unchanged by this operation. **LCR** also sets the condition code based on the final contents of the Operand 1 register.

Condition Code	Meaning	Test With
0 (Zero)	Operand 1 = 0	BE, BZ
1 (Negative)	Operand 1 < 0	BL, BM
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 32-bit register (- 2,147,483,648). An overflow occurs because the complement will not fit in a single register. Assume R10 contains x'00000001' = 1. The additive complement of 1 is -1 = X'FFFFFFFF'

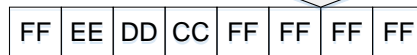
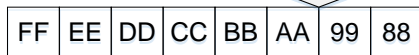
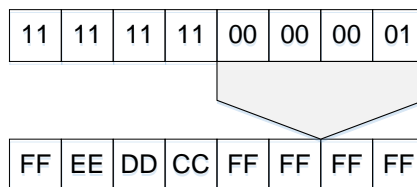
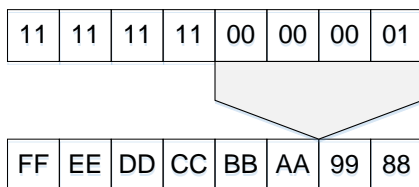
LCR R5, R10

The rightmost 32 bits of register 10 are complemented and copied to register 5, destroying the previous value in register 5. At completion, register 5 contains a 2's complement binary number equivalent to -1 in decimal. Register 10, which contains a binary number equal to 1 in decimal, is unaffected by the operation. Since the contents of R5 is negative after completion of the operation, the condition code is set to 1. The diagram below illustrates this operation.

LCR R5, R10

R10 (Before)

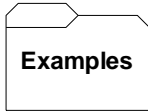
R10 (After)



R5 (Before)

R5 (After)

CC = 1 = Low/Negative



Some Unrelated LCR's

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R4 = X'FFFFFFFF' -1
R5 = X'00000028' +40
R6 = X'80000000' MAXIMUM NEGATIVE VALUE
R7 = X'00000000' ZERO
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LCR  R4,R5  R4 = X'FFFFFFD8' R5 = X'00000028' Cond. Code = Negative
LCR  R5,R4  R5 = X'00000001' R4 = X'FFFFFFFF' Cond. Code = Positive
LCR  R5,R6  R5 = X'FFFFFFFF' R6 = X'80000000' Cond. Code = Overflow
LCR  R6,R5  R6 = X'FFFFFFD8' R5 = X'00000028' Cond. Code = Negative
LCR  R6,R7  R6 = X'00000000' R7 = X'00000000' Cond. Code = Zero
LCR  R4,R4  R4 = X'00000001' Cond. Code = Positive
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