HOMEWORK 1. OPERATIONS

Consider the binary operation 11111111 – 11111111.

HOMEWORK 1 A. OPERATIONS (1/1 point)

What is the correct result of the operation?

- (•) 00000000 ✔
- ( ) 01111111
- ( ) 100000000
- ( ) 111111111

EXPLANATION

The operation in decimal is -1 –(-1) = -1+1 = 0.

The two's complement of 11111111 is 00000001. When added to 11111111, we get 00000000.

Final Check | **Save** | Hide Answer *You have used 1 of 2 submissions*

HOMEWORK 1 B. OPERATIONS (1/1 point)

Which of the following is true?

- (•) Overflow did not occur, since we are subtracting two negative numbers. ✔
- ( ) Overflow did not occur, since we are adding two negative numbers.
- ( ) Overflow did occur, since we are subtracting two negative numbers.
- ( ) Overflow did occur, since we are adding two negative numbers.

EXPLANATION

Subtracting two negative numbers is the same as adding a positive number to a negative one, for which overflow cannot occur. The carry out of 1 can be ignored.

Final Check | **Save** | Hide Answer *You have used 1 of 2 submissions*

HOMEWORK 2. OPERATIONS (4/4 points)

For the operation (A AND B) OR C, we first do A AND B and then we OR the result with C. For the operation A AND (B OR C), we first do B

OR C and then we AND the result with A.

For all combinations of A, B, and C shown in the truth table below fill in the results for (A AND B) OR C and A AND (B OR C).

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A	B	C	(A AND B) OR C		A AND (B OR C)	
0	0	0	0	**Answer:** 0	0	**Answer:** 0
0	0	1	1	**Answer:** 1	0	**Answer:** 0
0	1	0	0	**Answer:** 0	0	**Answer:** 0
0	1	1	1	**Answer:** 1	0	**Answer:** 0
1	0	0	0	**Answer:** 0	0	**Answer:** 0
1	0	1	1	**Answer:** 1	1	**Answer:** 1
1	1	0	1	**Answer:** 1	1	**Answer:** 1
1	1	1	1	**Answer:** 1	1	**Answer:** 1

SOLUTION OR EXPLANATION HEADING

For (A AND B) OR C, the output is a 1 whenever both A and B are a 1, or when C = 1.

For A AND (B OR C), A must be a 1, and either B or C must be a 1.

Final Check | **Save** | Hide Answer *You have used 1 of 2 submissions*

HOMEWORK 3. OPERATIONS (2/2 points)

For an Exclusive-OR (XOR) operation, the output is a 1 whenever there are an odd number of 1's on the input, and zero otherwise.

For all combinations of A, B, and C shown in the truth table below fill in the results for A XOR B XOR C.

A	B	C	A XOR B XOR C	
0	0	0	0	**Answer:** 0
0	0	1	1	**Answer:** 1
0	1	0	1	**Answer:** 1
0	1	1	0	**Answer:** 0
1	0	0	1	**Answer:** 1

1 0 1	0	**Answer:** 0
1 1 0	0	**Answer:** 0
1 1 1	1	**Answer:** 1

Help

SOLUTION OR EXPLANATION HEADING

For an Exclusive-OR (XOR) operation, the output is a 1 whenever there are an odd number of 1's on the input, and zero otherwise.

A XOR B XOR C is a 1 when only one of A, B, or C is a 1, or all three are 1.

Final Check | **Save** | Hide Answer *You have used 1 of 2 submissions*

HOMEWORK 4. OPERATIONS (1/1 point)

Which of the following operations on an input with value 10101010 will produce an output with value 01010101?

- AND the input with 11110000. Then OR that result with 01011010.
- AND the input with 01010101. Then OR that result with 00001111.
- OR the input with 01010101. Then AND that result with 10101010.
- (•) OR the input with 01010101. Then AND that result with 01010101. ✔

EXPLANATION

ORing the input with 01010101 produces 11111111. ANDing that result with 01010101 produces 01010101.

Final Check | **Save** | Hide Answer *You have used 1 of 2 submissions*

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