

<u>Help</u>

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**LE1.4** 

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## LE1.4.1: Convert Decimal Numbers To Binary

6/6 points (ungraded)

Convert the following decimal numbers to 6 bit 2's complement representation binary numbers. Provide the binary numbers using the format 0bXXXXXX.

15 = 0b 001111 **~** 

-15 = 0b 110001 ✓

6 = 0b 000110

-6 = 0b 111010 ✓

21 = 0b 010101

-21 = 0b 101011 ✓

Submit

#### LE1.4.2: Binary, Octal, and Hex Representations

6/6 points (ungraded)

#### **Binary representation:**

Convert the following integers to 6-bit 2's complement binary numbers. Binary numbers are prefixed with the string ob to indicate that you are specifying a binary number.

• 5 = 0b 000101

• 23 = 0b 010111

• -12 = 0b 110100 ✓

### **Octal and hexadecimal representation:**

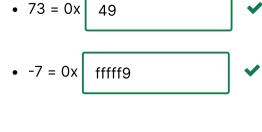
For the following problems, use 24 bit precision when answering the problems.

Convert the following integers to octal (base 8) representation using octal digits 0, 1, 2, 3, 4, 5, 6, and 7. Octal numbers should be prepended with the string on to indicate that you are specifying an octal number.

• 21 = O 25

Convert the following integers to hexadecimal representation. Hexadecimal numbers should be prepended with the string 0x to indicate that you are specifying a hexadecimal number.

**⊞** Calculator

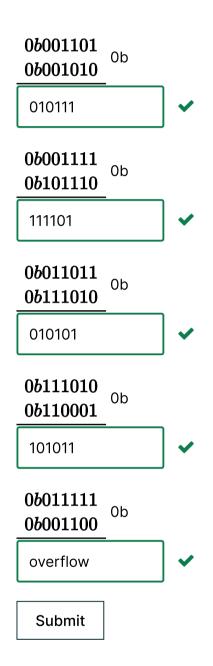


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#### LE1.4.3: Two's Complement Addition

5/5 points (ungraded)

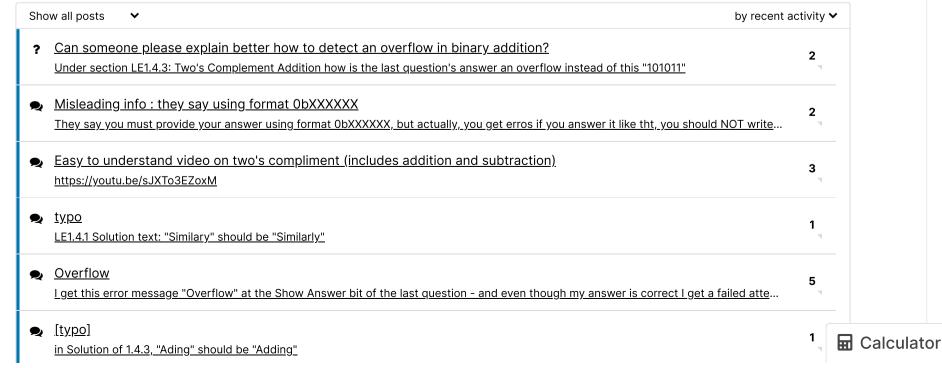
Perform the following addition problems using 6-bit 2's complement arithmetic. Provide your answer using the format 0bXXXXXX if the problem can be solved using 6 bit 2's complement representation. Otherwise provide the answer "overflow".





Topic: 1. Basics of Information / LE1.4

**Add a Post** 



Ì	Where should I learn the material needed to solve these problems?	4
	I watched the presentation video and then went on to solve the problems in LE1.4 as supposedly anyone else has done. However, I felt I h	
Ų	Prerequisite Course	6
	Comment: A prerequisite class should be required to fully appreciate the knowledge gained here. It is easy to understand once the answe	<b>T</b>
?	Question about the LE1.4.3	2
	LE1.4.3 says that 'Perform the following addition problems using 6-bit 2's complement arithmetic', so for example, if we compute the resul	
Š	Negative hex representation	3
	What does F stand for or why do we change is to F?	*
Ų	Wrong answers in LE1.4.1	5
	It seems the answers for the 2's complements of 6 and -6 in LE1.4.1 are incorrect.	<b>3</b>
•	How to know that an overflow occurred on the negative side?	6
	For example if one sums -15 + (-20). In binary: 110001 + 101100 Is the answer: "when there's no carry after the N-highest order term (in th	•

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