

ARITHMETIC OPERATIONS



5:43 / 5:43	1.0x			
-------------	------	--	--	--

Download transcript .txt

1. CHECK YOUR UNDERSTANDING (1/1 point)

What is the result of performing the two's complement subtraction $0111 - 0011$?

- ☒ 0100 ✓
- ☐ 0110
- ☐ 10100
- ☐ 11100

EXPLANATION

The two's complement of 0011 is 1101.

```
111
0111
+ 1101
0100
```

The carry out of the MSB is ignored.

[Final Check](#)[Save](#)[Hide Answer](#)

You have used 1 of 2 submissions

2. CHECK YOUR UNDERSTANDING (1/1 point)

What is the result of sign extending the value 110 to eight bits?

☐ 00000110☐ 10000110☐ 11110110☒ 11111110

EXPLANATION

For sign-extension, you replicate the most significant bit and pad it to the left of the original number. In this case, the most significant bit (MSB) is 1, so we replicate it five times to get 11111110.

[Final Check](#)[Save](#)[Hide Answer](#)

You have used 1 of 2 submissions

OVERFLOW

2:37 / 2:37

1.0x

[Download transcript](#) .txt

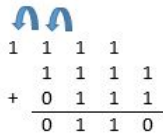
Help

3. CHECK YOUR UNDERSTANDING (1 point possible)

Consider adding the two's complement numbers 1111 and 0111. Did overflow occur?

- ☐ No, because the signs of both operands are the same, and the sign of the sum is different.
- ☐ No, because the carry in to the MSB is the same as carry out of the MSB. ✓
- ☐ Yes, because the signs of both operands are the same, and the sign of the sum is different.
- ☒ Yes, because the carry in to the MSB does not equal the carry out of the MSB. ✗

EXPLANATION



$$\begin{array}{r}
 1111 \\
 + 0111 \\
 \hline
 0110
 \end{array}$$

The addition of a positive and a negative number cannot cause overflow. The carry in to the MSB is the same as the carry out (both 1).

[Hide Answer](#)

You have used 2 of 2 submissions



EdX offers interactive online classes and MOOCs from the world's best universities. Online courses from MITx, HarvardX, BerkeleyX, UTx and many other universities. Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, math, medicine, music, philosophy, physics, science, statistics and more. EdX is a non-profit online initiative created by founding partners Harvard and MIT.

© 2015 edX Inc.

EdX, Open edX, and the edX and Open edX logos are registered trademarks or trademarks of edX Inc.

[Terms of Service and Honor Code](#)**About edX**

[About](#)

[News](#)

[Contact](#)

[FAQ](#)

[edX Blog](#)

[Donate to edX](#)

[Jobs at edX](#)

Follow Us

 [Facebook](#)

 [Twitter](#)

 [LinkedIn](#)

 [Google+](#)

 [Tumblr](#)

 [Meetup](#)

 [Reddit](#)

04/01/2015 10:01 AM

