

# IN1006 Systems Architecture (PRD1 A 2022/23)

[Home](#) | [My Moodle](#) | [IN1006 PRD1 A 2022-23](#) | [COURSEWORK 1: Weekly Assessed Quiz](#) | [Quiz 2 Weekly Assessed Quiz 2022](#)

**Started on** Thursday, 10 November 2022, 5:11 PM

**State** Finished

**Completed on** Thursday, 10 November 2022, 5:17 PM

**Time taken** 6 mins 3 secs

**Grade** 10.00 out of 10.00 (100%)

## Question 1

Correct

Mark 1.00 out of 1.00

What is the correct result of the operation below? The initial numbers should be considered as unsigned integers. The result should be given in 2's complement. (Hint: use 2's complement arithmetic to perform the operation.)

00010101 - 00001111

Select one:

- ☐ a. 11101010
- ☐ b. Don't know/no answer
- ☒ c. 00000110
- ☐ d. 00011001
- ☐ e. 11111010
- ☐ f. 10100101



To perform the subtraction we find the negative of the subtrahend:

00001111 (subtrahend)

11110000 (1's complement, flip one bit)

00000001 (add 1)

11110001 (2's complement of the subtrahend)

perform the addition:

00010101

11110001 +

00000110 (this is the result in 2's complement or 6 in decimal) (no overflow has occurred because the carry in equals the carry out of the sign bit)

The correct answer is: 00000110

Question **2**

Correct

Mark 1.00 out of 1.00

What is the equivalent decimal number of the binary number 10000001 which is written in signed magnitude?

Select one:

- ☐ a. 129
- ☐ b. Don't know/no answer
- ☐ c. -128
- ☒ d. -1
- ☐ e. 1
- ☐ f. -127



The MSB is "1" so this is a negative number.

The next 7 bits correspond to the magnitude: 1

So, -1

The correct answer is: -1

Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following 8-bit binary numbers represents number 77 in the decimal system (select one answer)?

- ☐ a. 1 1 0 0 1 1 0 1
- ☐ b. None of the rest of the choices
- ☐ c. 0 1 1 0 1 1 0 0
- ☒ d. 0 1 0 0 1 1 0 1
- ☐ e. 1 1 1 0 1 0 1 0



Correct answer.

Your answer is correct.

The correct answer is:

0 1 0 0 1 1 0 1

Question **4**

Correct

Mark 1.00 out of 1.00

Which of the following numbers is the octal number representing number 20 in the decimal system (select one answer)?

- ☐ a. 66
- ☐ b. 10
- ☒ c. 24
- ☐ d. 44
- ☐ e. 16

✓ Correct.

Your answer is correct.

The correct answer is:

24

Question **5**

Correct

Mark 1.00 out of 1.00

What are the binary and decimal representations of the hexadecimal number F4?

Select one:

- ☐ a. Binary: 11110010    Decimal: 244
- ☐ b. Binary: 11100100    Decimal: 244
- ☐ c. Binary: 11110100    Decimal: 240
- ☒ d. Binary: 11110100    Decimal: 244
- ☐ e. Don't know/No answer

✓

Your answer is correct.

To convert from base 16, we remember that  $F4_h$  means

$$F \times 16^1 + 4 \times 16^0$$

$$15 \times 16 + 4 \times 1$$

$$240 + 4$$

$$244_{10}$$

The correct answer is: Binary: 11110100    Decimal: 244

Question **6**


Correct

Mark 3.00 out of 3.00

Which of the following binary numbers corresponds to the result of the following subtraction of hexadecimal numbers (hint: transform the hexadecimal numbers to binary and perform subtraction as addition of the 2's complement the number to be subtracted):

$$62_{\text{hex}} - 39_{\text{hex}}$$

- ☐ a. 1010 1010
- ☐ b. 0000 1111
- ☐ c. 0011 1001
- ☐ d. 0111 0000
- ☒ e. 0010 1001

 Correct answer.

Your answer is correct.

The binary form of  $62_{\text{hex}}$  is: 0110 0010

The binary form of  $39_{\text{hex}}$  is: 0011 1001

Subtracting  $39_{\text{hex}}$  from  $62_{\text{hex}}$  can be carried out by adding the 2's complement of  $39_{\text{hex}}$  to  $62_{\text{hex}}$ .

To find the 2's complement of  $39_{\text{hex}}$  we first flip the bits of its binary representation. This gives us: 1100 0110 (flip bits)

And then we add 1, so we get:

1100 0110

+        1

This gives us:

1100 0111 (i.e., the 2's complement of  $39_{\text{hex}}$ )

Then we perform the addition:

0110 0010 ( $62_{\text{hex}}$ )

+ 1100 0111 (i.e., the 2's complement of  $39_{\text{hex}}$ )

The result of this addition is

0011 1101

and as the left most bit is 0 the number is a positive one and therefore it constitutes the answer.

The correct answer is:

0010 1001

Question **7**

Correct

Mark 1.00 out of 1.00

In performing a bit-wise addition of the following unsigned binary numbers, how many "carry out" bits will be generated?

1 0 0 0 1 0 1 1

0 1 1 1 0 0 0 1

- ☐ a. 3 "carried out" bits will be produced.
- ☐ b. 4 "carried out" bits will be produced.
- ☒ c. 2 "carried out" bits will be produced.
- ☐ d. 1 "carried out" bits will be produced.
- ☐ e. 0 "carried out" bits will be produced.

✓ Correct. The two carry out bits will be produced when adding two right most pairs of bits of the given numbers.

Your answer is correct.

The correct answer is:

2 "carried out" bits will be produced.

Question **8**

Correct

Mark 1.00 out of 1.00

Which of the following numbers is the binary number representing 15 in the decimal system (select one answer)?

- ☐ a. None of the rest of the choices
- ☐ b. 0 0 0 1 1 1 1 1
- ☐ c. 0 0 0 0 0 0 0 0
- ☒ d. 0 0 0 0 1 1 1 1
- ☐ e. 1 1 0 0 1 1 1 1

✓ Correct.

Your answer is correct.

The correct answer is:

0 0 0 0 1 1 1 1

◀ Quiz 1 \_ Weekly Assessed Quiz 2022

Jump to...

Quiz 3 \_ Weekly Assessed Quiz 2022 ►

## Quiz navigation

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

[Show one page at a time](#)

[Finish review](#)