

Name: _____

EECE.3170 Spring 2024
Quiz 2

1. Convert the following numbers from binary to hexadecimal. (4 points each)

a. 1001 1100 0101 1000

9. 12. 5. 8
0x9C58

b. 1011 1110 1110 1111

11. 14. 14. 15
0xBEEF

2. Answer the questions below using the memory diagram.

Address				
0x00	0x30	0x54	0x89	0xFF
0x04	0xA3	0xFE	0x34	0xC7
0x08	0xF5	0xFA	0x72	0xB3

a. Consider the word that starts at address 0x04:

i. If the word length of the system is 32-bits, what is the word? Is it aligned?
(3 points)

0xA3FE34C7, yes because 0x04 is divisible by 4 bytes.

ii. If the word length of the system is 16-bits, what is the word? Is it aligned?
(3 points)

0xA3FE, yes because 0x04 is divisible by 2 bytes.

b. Consider the word that starts at address 0x02:

i. If the word length of the system is 32-bits, what is the word? Is it aligned?
(3 points)

0x89FFA3FE, no because 0x02 is not divisible by 4 bytes.

ii. If the word length of the system is 16-bits, what is the word? Is it aligned?
(3 points)

0x89FF, yes because 0x02 is divisible by 2 bytes.

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3. Below are two op-code descriptions from the AVR ISA and their descriptions. In each case, r and d are the two registers the operation is performed on and d is the register where the result is stored. Use this information to answer the following questions.

ADD (add without passing the carry bit out) 0000 11rd dddd rrrr

OR (logical or) 0010 10rd dddd rrrr

Register 0 contains: 0000 0001

Register 1 contains: 0011 0100

Register 2 contains: 1100 0001

Register 3 contains: 1100 0100

- a. What is contained in register 0 after the following op-code is run: (5 points)

0000 1100 0000 0011

ADD operation

Before:

Rd = R0 = 0000 0001

Rr = R3 = 1100 0100

0000 0001 + 1100 0100 = 1100 0101

R0 now contains: 1100 0101

- b. What is contained in register 2 after the following op-code is run: (5 points)

0010 1000 0010 0001

OR operation

Before:

Rd = R2 = 1100 0001

Rr = R1 = 0011 0100

1100 0001 | 0011 0100 = 1111 0101

R2 now contains: 1111 0101