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CS 325-ON40

22 March 2021

<div align="center">Exam Two</div>

1.

    a. $4C.A_{16} = (4 * 16^1 + 12 * 16^0 + 10 * 16^{-1})_{10}$

       $4C.A_{16} = (64 + 12 + 0.625)_{10}$

       $4C.A_{16} = 76.625_{10}$

    b. $23 = 2 * 11 + 1$

       $11 = 2 * 5 + 1$

       $5 = 2 * 2 + 1$

       $2 = 2 * 1 + 0$

       $1 = 2 * 0 + 1$

       $23_{10} = 10111_2$

       $2 * 0.75 = 1.5$

       $2 * 0.5 = 1$

       $0.75_{10} = 0.11_2$

       $23.75_{10} = 10111.11_2$

    c. $10011.1011_2 = 0001\ 0011.1011_2$

       $0001\ 0011.1011_2 = 13.B_{16}$

    d. $FA.EA_{16} = 1111\ 1010.1110\ 1010_2$

    e. $110110.01_2 = (2^5 + 2^4 + 2^2 + 2^1 + 2^{-2})_{10}$

        $110110.01_2 = (32 + 16 + 4 + 2 + 0.25)_{10}$

        $110110.01_2 = 54.25_{10}$

2.

    a. 64 bits * (1 byte / 8 bits) = 8 bytes

    b. program counter: 64 bits

        instruction register: 8 bits

    c. 4 times

    d. system bus = data bus + address bus + control bus

        system bus = 16 lines + 64 lines + 8 lines

        system bus = 88 lines

    e. The module must obtain the use of the bus and transfer data via the bus.

3.

Step	PC	AC	IR	MBR	007	008	009	00A	00B
1	000				4	1	0	3	2
2			01	007					
3		4							
4			0F	002					
5	002								
6			06	008					
7		3							
8			21	007					
9					3				
10	003								
11			01	009					
12		0							
13			05	00A					
14		3							
15	004								
16			21	009					

17							3		
18			01	00A					
19		3							
20	005								
21			05	00B					
22		5							
23			21	00A					
24								5	
25	006								

4.

Address	Contents
000	091000B100
001	0A00014000
002	2105009100
003	0B0510A000
004	0505005052
005	2105009100
006	0B0500A000
007	0C0530A000
008	210500E008
050	0000000000
051	0000000003
052	0000000001
053	0000000006
100	n