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Short answer homework for CSCI 230

9/4/2019

1. Answers for 1:
    a. The von Neumann bottleneck refers to the fact that the von Neumann model is restricted to a single path between the memory system and the control unit of the CPU, which forces instruction and execution phases to take turns. My solution would be to use a neural network as a source of instruction, but I'm not sure how that would be implemented.
    b. The processer reads, or fetches, an instruction from memory, and then performs what's instructed.
    c. 1024(bytes) x 1024(KB) = 1,048,576 or 1MB
        i. 1,048,576 * 20 = 20,971,520
    d. Parallel computing is the practice of diverting the burden of a task from one processor to several. For example, instead of using one processor to accomplish a task, you use two processors.
2. Answers for 2:
    a. 210210_3
    b. 327_{10}
    c. 0111 1010 0000 0001
    d. 49.65625

The work for these problems are shown in a file "Work shown for HW" in within the zipped files

3. Answers for 3:

Unsigned Integer	4-bit binary Value	Signed Magnitude	One's Complement	Two's Complement
0	0000	0000 or +0	0	0
1	0001	0001 or +1	1	1
2	0010	0010 or +2	2	2
3	0011	0011 or +3	3	3
4	0100	0100 or +4	4	4
5	0101	0101 or +5	5	5
6	0110	0110 or +6	6	6
7	0111	0111 or +7	7	7
8	1000	1000 or -0	-7	-8
9	1001	1001 or -1	-6	-7
10	1010	1010 or -2	-5	-6
11	1011	1011 or -3	-4	-5
12	1100	1100 or -4	-3	-4
13	1101	1101 or -5	-2	-3
14	1110	1110 or -6	-1	-2
15	1111	1111 or -7	-0	-1