0 分，共 0 分

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| Question 4 - 2 (1.9.2) | 8 分，共 8 分 |
|---|---|

Section 1.6, 1.8

Assume for arithmetic, load/store, and branch instructions, a processor has CPIs of 1, 12, and 5, respectively. Also assume that on a single processor a program requires the execution of 2.56E+9 arithmetic instructions, 1.28E+9 load/store instructions, and 256 million branch instructions. Assume that each processor has a 2 GHz clock frequency. Assume that, as the program is parallelized to run over multiple cores, the number of arithmetic and load/store instructions per processor is divided by 0.7 x p (where p is the number of processors) but the number of branch instructions per processor remains the same.

If the CPI of the arithmetic instructions was 3, what would the impact be on the execution time of the program on 1, 2, 4, or 8 processors?

✓ Execution time on 1 processor? (Round off to the 2nd decimal place)  2/2

12.16 ✓

✓ Execution time on 2 processor? (Round off to the 2nd decimal place)  2/2

8.87 ✓

✓ Execution time on 4 processor? (Round off to the 2nd decimal place)  2/2

4.75 ✓

✓ Execution time on 8 processor? (Round off to the 2nd decimal place)  2/2

2.7 ✓

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