Started on	Monday, 27 January 2020, 8:57 PM
State	Finished
Completed on	Monday, 27 January 2020, 9:18 PM
Time taken	20 mins 44 secs
Marks	10.00/10.00
Grade	**100.00** out of 100.00

Question 1

Correct

Mark 1.00 out of 1.00

Pipelining improves CPU performance by

Select one:

- a. increasing CPU frequency
- b. decreasing latency of individual operations
- c. increasing bandwidth ✓
- d. decreasing memory access

The correct answer is: increasing bandwidth

Question 2

Correct

Mark 1.00 out of 1.00

Single Instruction, Multiple Data (SIMD) instructions work on

Select one:

- a. any memory locations
- b. only for memory locations in same array
- c. contiguous, cache aligned data ✓
- d. contiguous, randomly aligned data

The correct answer is: contiguous, cache aligned data

Question 3

Correct

Mark 1.00 out of 1.00

The computational intensity in a sequential computer with a two-level memory hierarchy (fast/slow) is defined as

Select one:

- a. the number of slow memory accesses multiplied by the time per memory access
- b. the number of arithmetic operations multiplied by the time per flop
- c. the number of flops divided by the number of slow memory accesses ✓
- d. the number of slow memory accesses divided by the number of flops

The correct answer is: the number of flops divided by the number of slow memory accesses

Question 4

Correct

Mark 1.00 out of 1.00

The computational intensity of a program is dependent upon

Select one:

- a. the memory hierarchy
- b. the CPU flop rate
- c. the memory bandwidth
- d. the algorithm for a problem ✓

The correct answer is: the algorithm for a problem

Question 5

Correct

Mark 1.00 out of 1.00

Which of the following is not an assumption of the performance model for Naive Matrix Multiplication?

Select one:

- a. cost of accessing fast memory is 0
- b. ignoring parallelism between memory and arithmetic operations
- c. arithmetic operations and memory operations have same time ✓
- d. memory latency is constant

The correct answer is: arithmetic operations and memory operations have same time

Question 6

Correct

Mark 1.00 out of 1.00

The potential computational intensity for matrix multiply just by considering size of inputs and outputs is

Select one:

- a. 2
- b. n^2
- c. 1
- d. n

The correct answer is: n

Question 7

Correct

Mark 1.00 out of 1.00

The computational intensity of naïve matrix multiply for a large n is:

Select one:

- a. 1/2
- b. n
- c. 1
- d. 2

The correct answer is: 2

Question 8

Correct

Mark 1.00 out of 1.00

In the blocked Matrix Multiply algorithm the constraint on the upper size of the block size is

Select one:

- a. none (it can be as large as needed)
- b. b must be smaller than a constant times the memory size M
- c. b must be smaller than a constant times the cube root of the memory size M
- d. b must be smaller than a constant times the square root of the memory size M

The correct answer is: b must be smaller than a constant times the square root of the memory size M

Question 9

Correct

Mark 1.00 out of 1.00

What is temporal locality?

Select one:

a. Multiple processors trying to write to adjacent items that fall into the same cache line

b. Reusing the same item that was recently accessed ✓

c. Accessing unrelated elements that accidentally fall into the same cache line due to a cache conflict

d. Accessing items that are nearby recently accessed elements

Your answer is correct.

The correct answer is: Reusing the same item that was recently accessed

Question 10

Correct

Mark 1.00 out of 1.00

What is spatial locality?

Select one:

a. Accessing unrelated elements that accidentally fall into the same cache line due to a cache conflict

b. Accessing items that are nearby recently accessed elements ✓

c. Multiple processors trying to write to adjacent items that fall into the same cache line

d. Reusing the same item that was recently accessed

Your answer is correct.

The correct answer is: Accessing items that are nearby recently accessed elements

◄ Lecture Video: Single Processor Machines

Jump to...

Lecture Video: Optimizing Matrix Multiply (cont), Introduction to Data Parallelism ►