

Unit 3 - Week 1

Course outline

How does an NPTEL online course work?

Week 0 Assignment 0

Week 1

● Lecture 01 : Introduction to High Performance Computing

● Lecture 02 : Architecture for Parallel Computing

● Lecture 03 : Architecture for Parallel Computing (continued)

● Lecture 04 : Architecture for Parallel Computing (continued)

● Lecture 05 : Shared and distributed memory in parallel computing

● Lecture 06 : Shared and distributed memory in parallel computing (continued)

● Lecture material of Week 1

○ Quiz : Week 1 Assignment 1

● Week 1 Feedback Form

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

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Detail Solution

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Week 1 Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-09-30, 23:59 IST.

- 1) Which of these is not a source of overhead in parallel computing? 1 point
- a. Non-uniform load distribution
b. Less local memory requirement in distributed computing
c. Synchronization among threads in shared memory computing
d. None of the above
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
- 2) A datacenter uses 80000 kW of power for IT components including the server, switches etc. It also draws power at a rate of 33000 kW for cooling, lighting, building management etc. What is the PUE of the data center? 1 point
- a. 2.42
b. 0.291
c. 1.4125
d. 0.708
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
c.
- 3) In a parallel execution, the performance will always improve as the number of processors will increase 1 point
- a. True
b. False
- a.
 b.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
- 4) How does a cache memory compare with the DRAM? 1 point
- a. Smaller size, lower latency
b. Higher size, lower latency
c. Lower bandwidth, higher latency
d. Smaller size, higher latency
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
a.
- 5) Consider a calculation involving x words in a contiguous memory, the cache size is y word ($x > y$). What will be the cache hit ratio? 1 point
- a. x/y
b. $\text{int}(x/y)-1$
c. $\text{int}(x/(x-y))$
d. None of the above
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
d.
- 6) Which one is not a characteristic of NUMA multiprocessors? 1 point
- a. It allows shared memory computing
b. Memory units are placed in physically different location
c. All memory units are mapped to one common virtual global memory
d. Processors access their independent local memories
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
d.
- 7) 1 MB data is to be communicated from one processor to another in a distributed memory networked system. Two options available are (i) sending through 100 kB data packets and (ii) transferring the whole data as a single packet. Which one will incur more communication time? 1 point
- a. (i)
b. (ii)
c. Both
d. More information required.
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
a.
- 8) Which of these steps can create conflict among the processors? 1 point
- a. Synchronized computation of local variables
b. Concurrent write
c. Concurrent read
d. None of the above
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
- 9) It is possible to run different tasks in different processors in a SPMD model: 1 point
- a. True
b. False
- a.
 b.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
a.
- 10) Which one is not a limitation of a distributed memory parallel system? 1 point
- a. Higher communication time
b. Cache coherency
c. Synchronization overheads
d. None of the above
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.