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Unit 5 - Week 04: Comparator Networks; List Colouring

Register for Certification exam

Course outline

How to access the portal

Week 01: Models of Computation

Week 02: Performance of parallel algorithms,Basic techniques

Week 03: Basic Techniques

Week 04: Comparator Networks; List Colouring

- Lecture 1: Odd Even Merge Sort (OEMS)
- Lecture 2: OEMS, Bitonic-Sort-Merge Sort (BSMS)
- Lecture 3: BSMS, Optimal List Colouring
- Quiz : Assessment 4

Week 05: An Optimal List

Assessment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2019-02-27, 23:59 IST.**

1) The number of comparators in an odd even merge sorter with 16 inputs is _____. ***1 point***

- 51
- 63
- 79
- 95

No, the answer is incorrect.
Score: 0

Accepted Answers:
63

2) The time taken by an odd even merge network that merges two sorted arrays of size 64 each is _____. ***1 point***

- 6
- 7
- 8
- 12

No, the answer is incorrect.
Score: 0

Accepted Answers:
7

3) A 2-D array of $\log\log n$ rows and $n/\log\log n$ columns have processors marching down the columns, one position per step. Each array element holds an integer in $[1, \log\log n]$. ***1 point***

In the first step, elements of value 1 in row 1 are processed

algorithm, Expression Tree Evaluation, Merging and Cole's Merge Sort

Week 07: Cole's Merge Sort, Sorting Lower Bound, Connected Components

Week 08: Connected Components, Vertex Colouring and Interconnection Networks Algorithms

Week 09: Interconnection Networks Algorithms

Interaction Session

Week 10: Interconnection Networks Algorithms

Week 11: Interconnection Networks Algorithms

Week 12: Parallel Complexity Theory

- $\log \log n$
- $2 \log \log n - 1$
- $2 \log \log n$
- $2 \log \log n + 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$2 \log \log n - 1$

4) Which of the following is a bitonic sequence? ***1 point***

- 17 19 20 16 10 11 15
- 17 19 20 10 10 11 18
- 17 19 18 16 10 11 20
- 7 19 15 16 10 11 20

No, the answer is incorrect.
Score: 0

Accepted Answers:
17 19 20 16 10 11 15

5) When OEM network is invoked on the two sorted sequences 4, 8, 9, 14 and 3, 7, 10, 11, then the sequence produced before the final step is _____. ***1 point***

- 3 4 7 8 9 10 11 14
- 3 7 4 8 9 11 10 14
- 3 4 7 9 8 10 11 14
- 3 4 9 10 7 8 11 14

No, the answer is incorrect.
Score: 0

Accepted Answers:
3 7 4 8 9 11 10 14

6) When a purported sorting algorithm is run on input 4 3 8 10 9 11 14 7, the output is not sorted. The smallest element that appears out of order is 8. Which of the following is a binary sequence guaranteed to fail the algorithm? ***1 point***

- 0 0 1 1 1 1 1 0
- 0 0 1 1 1 1 1 0
- 0 0 0 1 1 1 1 0
- 0 1 1 1 1 1 1 0

No, the answer is incorrect.
Score: 0

Accepted Answers:
0 0 0 1 1 1 1 0

7) The number of comparators in a bitonic sort merge sorter with 8 inputs is _____. ***1 point***

- 18

- 19
- 23
- 24

No, the answer is incorrect.
Score: 0

Accepted Answers:
24

8) The time taken by a bitonic sort merge network that merges two sorted arrays of size 64 each is _____. **1 point**

- 7
- 8
- 9
- 12

No, the answer is incorrect.
Score: 0

Accepted Answers:
7

9) A comparator network that has a depth of d and cost of c can be simulated on a p processor PRAM in _____ time. **1 point**

- $\Theta(d)$
- $\Theta(c/p)$
- $\Theta(d+c/p)$
- $\Theta(c+d/p)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\Theta(d+c/p)$

10) When a bitonic sequence 20 30 40 50 60 55 45 35 is subjected to compare-exchange of diametrically opposite elements, the lower-higher sides are defined using a diameter passing between 20 and 30. If the lower-higher sides were defined using a diameter passing between 30 and 40 instead, which two elements swap places? **1 point**

- 20 and 60
- 50 and 35
- 40 and 45
- 30 and 55

No, the answer is incorrect.
Score: 0

Accepted Answers:
30 and 55

Previous Page End