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Unit 6 - Week 05: An Optimal List Ranking algorithm

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

Week 05: An Optimal List Ranking algorithm

- Lecture 1: Description
- Lecture 2: Analysis
- Lecture 3: Applications
- Quiz : Assessment 5

Assessment 5

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.   **Due on 2019-03-06, 23:59 IST.**

1) The cost of the simple pointer jumping algorithm for ranking a list of length n is Θ (_____).   *1 point*

- ○ $\log n$
- ○ $n/\log n$
- ○ n
- ○ $n \log n$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$n \log n$

2) From a queue of people waiting to purchase tickets that would be numbered in the order in which they are issued, Suresh steps out after ensuring that Ramesh and John, who are ahead and behind him respectively, will continue in the queue, and after requesting John to purchase four tickets on his behalf. On his return Suresh finds that Ramesh and John have tickets numbered consecutively in the ranges 27 to 38 and 39 to 49 respectively. Which are the tickets that belong to Suresh?   *1 point*

- ○ 27 to 30
- ○ 39 to 42
- ○ 35 to 38
- ○ 46 to 49

No, the answer is incorrect.

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contraction we studied in Lecture 16. What are the new ranks of A, B, D, E and H?

- ○ 2, 5, 5, 9, 5
- ○ 2, 5, 7, 8, 2
- ○ 2, 3, 3, 5, 2
- ○ 2, 3, 3, 8, 2

No, the answer is incorrect.
Score: 0

Accepted Answers:
2, 5, 5, 9, 5

4) In the contraction phase, if every vertex turns out to be ``lucky'', as we discussed in Lecture 13, then which of the following labels will never attach to any vertex.   **1 point**

- ○ inactive
- ○ active
- ○ subject
- ○ removed

No, the answer is incorrect.
Score: 0

Accepted Answers:
subject

5) The number of independent sets removed by the list contraction phase is certain to be _____, when we begin with a linked list of n nodes and $n/\log n$ processors.   **1 point**

- ○ $O(n/\log n), but\ \omega(\log n)$
- ○ $O(n), but\ \omega(n/\log n)$
- ○ $\Theta(\log n)$
- ○ $o(\log n)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\Theta(\log n)$

6) Consider these statements regarding the optimal list ranking algorithm we saw in lectures 13 and 14:   **1 point**

(i)A ruler gets at most $\log \log n$ subjects.

(ii)When we start from a ruler and travel along the list in any of the two possible directions, no subject of that ruler can be found beyond the first local minimum on colours.

(iii)A ruler is a local maximum on depth. Which of the above statements is/are true?

- ○ only i
- ○ only ii and iii
- ○ only i and iii
- ○ all of them

No, the answer is incorrect.
Score: 0

Accepted Answers:
all of them

7) Consider these statements regarding the optimal list ranking algorithm **1 point**
we saw in lectures 13 and 14:
(i) A ruler may have subjects on either side of it
(ii) The subjects of a ruler that are to one side of it are logically consecutive.
(iii) The processor sitting on a ruler can advance in its column only after removing all
its subjects.
Which of the above statements is/are true?

- only i and ii
- only ii and iii
- only i and iii
- all of them

No, the answer is incorrect.
Score: 0

Accepted Answers:
all of them

8) In the analysis, it is shown that the total weight on all the list reduces by **1 point**
a factor of at least _____ in each step of list contraction.

- $(\log \log n)/4$

- $1 - 1/4 \log \log n$

- $1/4 \log \log n$

- $1 - (\log \log n)/4$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$1 - 1/4 \log \log n$

9) Exactly three of the following are Euler circuits of the same tree. Which **1 point**
is the odd one out?

- AFABECDBEBA
- BCBDBEBAFAB
- EBAFABCBDBE
- EBAFABCBDBE

No, the answer is incorrect.
Score: 0

Accepted Answers:
AFABECDBEBA

10) An Euler circuit of a tree is ``CDCEFGFECABAC''. If this tree rooted at **1 point**
vertex ``A'', then the level number of vertex F is _____, if the root is at level 0.

- 1
- 2

◯ 3

◯ 4

No, the answer is incorrect.
Score: 0

Accepted Answers:
3

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