

Unit 5 - Week 3

Course outline

How does an NPTEL online course work?

Week 0 Assignment 0

Week 1

Week 2

Week 3

Leader Election (Ring LE & Bully LE Algorithm)

Leader Election in Rings (Classical Distributed Algorithms)

Design of Zookeeper

Week 3: Lecture Material

Quiz : Assignment-3

Week 3 - FEEDBACK

Assignment-3 Solution

Week 4

Week 5

Week 6

Week 7

Week 8

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Assignment-3

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

Due on 2020-02-19, 23:59 IST.

1) Consider the following statements:

1 point

Statement 1: Katta is a distributed indexer that uses Zookeeper for coordination, and it is an example of a non-Yahoo! application.

Statement 2: Katta divides the work of indexing using shards. A master server assigns shards to slaves and tracks progress.

- Only statement 1 is true
 Only statement 2 is true
 Both statements are true
 Both statements are false

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both statements are true

2) _____ is a distributed publish-subscribe system. The system manages thousands of topics that clients can publish messages to and receive messages from. The topics are distributed among a set of servers to provide scalability.

1 point

- Fetching service
 Access Control Lists
 Yahoo! Message Broker (YMB)
 Watches

No, the answer is incorrect.
Score: 0

Accepted Answers:
Yahoo! Message Broker (YMB)

3) True or False ?

1 point

There is no leader election algorithm for anonymous rings, even if algorithm knows the ring size (non-uniform) and synchronous model.

- True
 False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

4) ZooKeeper itself is intended to be replicated over a sets of hosts called _____

1 point

- Chunks
 Ensemble
 Subdomains
 None of the mentioned

No, the answer is incorrect.
Score: 0

Accepted Answers:
Ensemble

5) In a Classical Algorithm of Ring Election, what will be the message complexity for N labelled processes ?

1 point

- (N-1) messages
 (2N-1) messages
 (3N-1) messages
 (4N-1) messages

No, the answer is incorrect.
Score: 0

Accepted Answers:
(3N-1) messages

6) Consider the following statements:

1 point

Statement 1: When two processes are competing with each other causing data corruption, it is called deadlock.

Statement 2: When two processes are waiting for each other directly or indirectly, it is called race condition.

- Only statement 1 is true
 Only statement 2 is true
 Both statements are true
 Both statements are false

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both statements are false

7) Find the message and time complexity of below algorithm:

1 point

```
send value of own id to the left
when receive an id j (from the right):
if j > id then
    forward j to the left (this processor has lost)
if j = id then
    elect self (this processor has won)
if j < id then
    do nothing
```

- $O(n^2)$ Messages and $O(n)$ Time
 $O(\log n)$ Messages and $O(\log n)$ Time
 $O(n)$ Messages and $O(n^2)$ Time
 $O(n^3)$ Messages and $O(n)$ Time

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $O(n^2)$ Messages and $O(n)$ Time

8) True or False ?

1 point

Consider the following statement:

"Leader Election problem represents a general class of non symmetry-breaking problems."

- True
 False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

9) In the $O(n \log n)$ messages leader election algorithm, the probe distance in phase k is _____ and the number of messages initiated by a processor in phase k is at most _____ including probes and replies in both directions.

1 point

- $2^{k-1}, 4^k$
 $2^k, 4 * 2^k$
 $2k, 4 * 2^k$
 $k, 2^k$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $2^k, 4 * 2^k$

10) True or False ?

1 point

Zookeeper is a replicated service that holds the metadata of distributed applications.

- True
 False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True