

## Quiz Assignment-VI Solutions: Distributed Systems (Week-6)

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Q. 1 Consider the following statement:

“A randomized algorithm can ensure that a leader is elected with some probability”. Thus we can solve a variant of the leader election problem that relaxes the condition that eventually a leader must be elected in every admissible execution. The relaxed version of the leader election problem requires:

Safety: In every configuration of every admissible execution, at most one processor is in an elected state

Liveness: At least one processor is elected with some non-zero probability

By considering the above statement, identify the valid situation:

- A. Safety property can be relaxed that is, the algorithm can elect two leaders and the liveness condition has to hold, and the algorithm will always terminate with a leader.
- B. Safety property has to hold with certainty: that is, the algorithm should never elect two leaders and the liveness condition is relaxed, and the algorithm need not always terminate with a leader, rather, it is required to do so with nonzero probability.
- C. Both Safety and liveness property can be relaxed
- D. Both Safety and liveness property has to hold

Answer: B) Safety property has to hold with certainty: that is, the algorithm should never elect two leaders and the liveness condition is relaxed, and the algorithm need not always terminate with a leader, rather, it is required to do so with nonzero probability.

Q. 2 True (or) False

Consider the following statement:

“The approach that is used to devising a randomized leader election algorithm is to use randomization to create asymmetry by having processors choose random pseudo-identifiers, drawn from some range, and then execute a deterministic leader election algorithm.”

- A. True
- B. False

**Ans: A) True**

Q. 3 Peer-to-peer (P2P) network systems use \_\_\_\_\_organization of the network overlay for flexibly sharing resources (e.g., files and multimedia documents) stored across network-wide computers.

- A. Physical-level
- B. Network-level
- C. Transport-level
- D. Application-level

**Ans: D) Application-level**

Q. 4 In P2P networks, the ongoing entry and exit of various nodes, as well as dynamic insertion and deletion of objects is termed as \_\_\_\_\_

- A. Peer
- B. Churn
- C. Chunk
- D. Objects

**Ans: B) Churn**

Q. 5 Which of these is an example of Unstructured P2P overlay network?

- A. CAN
- B. CHORD
- C. Kademila
- D. Gnutella

**Ans: D) Gnutella**

Q. 6 Consider the following statements:

**Statement 1:** Exact keyword queries, range queries, attribute-based queries, and other complex queries can be supported in unstructured overlays.

**Statement 2:** Range queries, keyword queries, attribute queries are difficult to support in structured overlays.

- A. Both statements are false
- B. Both statements are true
- C. Statement 1 is true and statement 2 is false
- D. Statement 1 is false and statement 2 is true

**Ans: B) Both statements are true**

Q. 7 What is the characteristic of P2P network?

- A. Fault Tolerance
- B. Self-Adaptation
- C. Dealing with instability
- D. All of these

**Ans: D) All of these**

Q. 8 To keep the GFS (Google File System), highly available there are two strategies used namely \_\_\_\_\_ and \_\_\_\_\_.

- A. Fast Recovery , Garbage Collection
- B. Fast Recovery , Chunk Replication
- C. Master Replication , Data Integrity
- D. None of these

**Ans: B) Fast Recovery, Chunk Replication**

Q. 9 In GFS (Google File System) files are divided in \_\_\_\_\_ chunks.

- A. Variable Size.
- B. Fixed Size
- C. Both Fixed Size and Variable Size chunks
- D. None of these

**Ans: B) Fixed Size**

Q. 10 GFS (Google File System) supports following operations:

- A. read, write , make, delete
- B. update, add , read, write
- C. snapshot, remove, del
- D. read, write , open , close

**Ans: D) read, write , open , close**