Assignment
on
Distributed Systems: Module 2

Topics: Distributed Objects, File System, Fault Tolerance, Failure Recovery in Distributed Systems & Load Balancing

1. In the two-phase commit protocol, why can blocking never be completely eliminated, even when the participants select a new coordinator?
2. Compare and contrast the two-phase commit (2PC) protocol and the three-phase commit (3PC) protocol in terms of their advantages & disadvantages.
3. Discuss the blocking problem in the two-phase commit protocol and propose potential solutions to mitigate it.
4. What are dynamic voting protocols, and how do they differ from static voting protocols?
5. Discuss the role of majority voting in ensuring correctness and fault tolerance in distributed systems.
6. Describe the concept of adaptive quorum systems and their role in dynamic voting protocols for fault tolerance.
7. Describe the concept of backward recovery in distributed systems. What are its primary objectives, and how does it ensure system consistency and fault tolerance?
8. How transaction rollback mechanisms contribute to backward recovery in distributed databases. Provide an example scenario where transaction rollback would be necessary.
9. Discuss the role of checkpoints in backward recovery. How are checkpoints created and used to facilitate recovery in the event of failures?
10. How do communication protocols and network infrastructure contribute to effective load distribution in distributed systems?
11. Compare and contrast various load distributing algorithms based on their performance, scalability, and fault tolerance characteristics.
12. Classify the checkpoint-based rollback recovery techniques.
13. How Monotonic Read consistency model is different from Read your Write Consistency Model? Support your answer with suitable example.
14. Discuss the importance of feedback mechanisms in adaptive load distributing algorithms. How are feedback loops used to make real-time adjustments to load distribution?
15. Discuss the challenges associated with implementing load balancing mechanisms in large-scale distributed systems with heterogeneous resources.
16. Explain the general procedure of RPC with proper reference to client and server stub.
17. Compare and contrast Sun NFS and Andrew File system.
18. Explain the role of Name servers in DNS.
19. Explain different ways of sharing event notification to the subscribers.
20. What are the various issues involved in backward recovery approach.