

✓ Module 1: Introduction to Distributed Systems

1. What are various issues in distributed systems? *(repeated 3 times)*
 2. Explain minimum 5 issues. Each issue carries 1 mark.
 3. What is distributed computing? Explain various system models of distributed computing? *(repeated 2 times)*
 4. What are the goals of a distributed system? Explain various system models.
 5. What is group communication? Explain 1:M and M:1 group communication.
 6. Identify and explain five issues in distributed systems.
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✓ Module 2: Communication

1. Explain the message communication model: transient synchronous, transient asynchronous, persistent synchronous, and persistent asynchronous in detail. *(repeated 3 times)*
 2. What is RPC? Explain the working of RPC in detail with the help of a diagram. *(repeated 4 times)*
 3. Difference between RMI and RPC?
 4. Define Remote Procedure Call (RPC). Explain the working of RPC in Detail.
 5. Differentiate between message-oriented and stream-oriented communication. *(repeated 2 times)*
 6. Explain the architecture and performance of the Andrew File System (AFS) compared to Network File System (NFS). *(partially overlaps with DFS in Module 6)*
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✓ Module 3: Synchronization

1. Explain Suzuki-Kasami Broadcast Algorithm of mutual exclusion. *(repeated 4 times)*
 2. Justify how Ricart-Agrawala's algorithm optimized the message overhead in achieving mutual exclusion. *(repeated 4 times)*
 3. Explain the process of synchronization w.r.t. physical and logical clocks.
 4. What is a logical clock? Why are logical clocks needed in a distributed system? Explain Lamport algorithm.
 5. Explain the election algorithm. *(repeated 2 times)*
 6. Explain Maekawa's algorithm in detail and also specify properties of Quorum Set. *(repeated 3 times)*
 7. Compare various client-centric consistency models. *(overlaps with Module 5)*
 8. Describe the need of a coordinator. Also explain any one algorithm for coordinator selection.
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✓ Module 4: Resource and Process Management

1. What are desirable features of global scheduling algorithm? *(repeated 2 times)*
2. Compare process and thread. *(repeated 2 times)*
3. Compare load sharing to task assignment and load balancing strategies in a distributed system. *(repeated 3 times)*
4. Explain the difference between data-centric and client-centric consistency models.

5. Describe code migration and its techniques. *(repeated 2 times)*
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✓ **Module 5: Consistency, Replication, and Fault Tolerance**

1. Explain different data-centric consistency models in detail. *(repeated 2 times)*
 2. What is the difference between data-centric and client-centric consistency models? Explain one model of each.
 3. Discuss the various client-centric consistency models.
 4. What is fault tolerance? Explain various types of failure models.
 5. Discuss the need of the coordinator. (Linked to reliability and coordination in distributed systems)
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✓ **Module 6: Distributed File Systems and Name Services**

1. Write a note on code migration. *(linked with Module 4, but also mentioned under DFS context)*
2. Explain the features of DFS and draw and explain Model file service architecture. *(repeated 2 times)*
3. Explain Andrew File System (AFS) in detail. *(repeated 2 times)*
4. Explain Hadoop Distributed File System (HDFS).
5. Compare the Andrew File System (AFS) and Network File System (NFS).