

IV B.Tech. II Semester Supplementary Examinations, July -2005

DISTRIBUTED SYSTEMS

(Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Explain the terms Access Transparency, Location Transparency, Failure Transparency and Concurrency Transparency with examples.
(b) Discuss important concepts that a distributed operating system designer might use to improve the reliability of his or her system.
2. (a) Explain the term internet working.
(b) Explain the terms 'Bridge' and 'router'.
(c) Present the ATM cell format and explain its various fields.
3. (a) Explain wait-die deadlock prevention algorithm with an example.
(b) Explain wound-wait deadlock prevention algorithm with an example.
4. (a) Discuss the issues that has to be considered in allocating processors to processes in a distributed system.
(b) Discuss the hierarchial, heuristic and the bidding algorithm for processor allocation.
5. (a) Write about Satyanarayanan's observation on file usage in a distributed system. How it is useful in implementation of a file system
(b) Compare write through and write once protocols
6. (a) Explain **NUMA** Multiprocessor
(b) Explain about sequential consistency model
7. Discuss about Process, Threads, Memory objects, Ports and Messages with respect to mach OS.
8. (a) Can a DCE client connect to multiple servers ? Explain.
(b) How can a server keep track of multiple clients? (in DCE)
(c) How do you perform asynchronous RPC? (in DCE)

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1. (a) What is a Single System Image ? Discuss.
(b) Explain the main guidelines and principles that a distributed operating system designer must follow for good performance of his or her system.
2. Describe the functionalities of the different layers of the ATM protocol reference model.
3. (a) Explain lamport's happen before relation. what are the situations where this relation can be observed?
(b) Explain lamport's algorithm for assigning time to events using an example .
4. (a) Discuss the issues that has to be considered in allocating processors to processes in a distributed system.
(b) Discuss the hierarchial, heuristic and the bidding algorithm for processor allocation.
5. (a) Write about Satyanarayanan's observation on file usage in a distributed system. How it is useful in implementation of a file system
(b) Compare write through and write once protocols
6. (a) Explain about Dash(Directory Architecture for shared memory)
(b) How **NUMA** multiprocessor differ from other multiprocessor
7. (a) Explain how different ports are used in process management.
(b) Can two process simultaneously have receive capabilities for the same port? How about send capabilities?
8. (a) What is the need for distributed file system (in DCE)
(b) Discuss the main features of distributed file system(in DCE)

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1. (a) What are some of the common types of incompatibilities encountered in heterogeneous distributed systems?
(b) What are the common issues with which the designer of heterogeneous distributed system must deal?
2. Describe the functionalities of the different layers of the ATM protocol reference model.
3. Explain
 - (a) Dead locks in Distributed Systems
 - (b) Atomic transactions
 - (c) Compare the three algorithms used for enforcing mutual exclusion in Distributed systems.
4. Discuss the various faults and explain how fault tolerance can be achieved in a distributed system.
5. Illustrate the concept of caching in distributed file system.
6. (a) Explain **NUMA** Multiprocessor
(b) Explain about sequential consistency model
7. Discuss the process scheduling of Mach OS in multiprocessor system ?
8. Discuss the directory service, time service and security service of DCE.

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1. (a) Explain the main differences between a network operating system and a distributed operating system.
(b) What are the major issues in designing a distributed operating system?
2. (a) Describe the following types of call semantics.
 - i. Last-one call semantics.
 - ii. At-least-once call semantics.
 - iii. Exactly-once call semantics.(b) Explain how the use of stubs helps in making an RPC mechanism transparent?
3. (a) Can we use semaphores and monitors to deal with critical regions in distributed systems? what are the constraints?
(b) Explain centralized algorithm to achieve mutual exclusion.
(c) What are the shortcomings of centralized algorithm to achieve in mutual exclusion in distributed systems?
4. (a) Discuss the issues that has to be considered in allocating processors to processes in a distributed system.
(b) Discuss the hierarchical, heuristic and the bidding algorithm for processor allocation.
5. (a) Explain about various semantics used for file sharing in a distributed systems
(b) What is an immutable file? Can a file system be designed to function correctly by using only immutable files
6. (a) Explain **NUMA** Multiprocessor
(b) Explain about sequential consistency model
7. Discuss the process scheduling of Mach OS in multiprocessor system ?
8. (a) What are the advantages of DCE?
(b) Discuss briefly about Distributed Computing and DCE?
