



ENGINEERING & MANAGEMENT EXAMINATIONS, DECEMBER - 2007

DISTRIBUTED COMPUTING

SEMESTER - 7

Time : 3 Hours]

[Full Marks : 70

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

i) What is used to detect deadlock in distributed system ?

- a) Chandy-Misra-Hass algorithm b) Active time server
c) Ring algorithm d) Lamport algorithm.

ii) An attack which does not cause any harm to the system being threatened is known as a attack.

- a) active b) passive
c) denial-of-service d) replay.

iii) Threads deal with parallelism.

- a) coarse-grained b) very fine-grained
c) medium-grained d) fine-grained.

iv) Two events are said to be if they are not related by the happened before relation.

- a) transitive b) concurrent
c) causal d) none of these.

- v) The file accessing model of a distributed file system mainly depends on
- a) accessing remote file
 - b) unit of data transfer
 - c) both (a) and (b)
 - d) none of these.
- vi) Non-blocking synchronization is implemented by using the technique,
- a) polling
 - b) interrupt
 - c) both (a) and (b)
 - d) none of these.
- vii) Which of the following is false ?
- a) Logical time needs a perfect clock
 - b) Naming transparency is a major design issue of distributed system
 - c) Phantom deadlock may occur in centralized approach for dead detection
 - d) Workstation server model is designed for diskless workstation.
- viii) Roll back of processes is a method of deadlock
- a) detection
 - b) avoidance
 - c) recovery
 - d) prevention.
- ix) Granularity refers to distributed shared memory in terms of
- a) block size
 - b) page size
 - c) virtual address space
 - d) logical address space.
- x) In the best case bully algorithm needs
- a) n messages
 - b) $n - 1$ messages
 - c) $n - 2$ messages
 - d) $n - 3$ messages.

**GROUP - B****(Short Answer Type Questions)**Answer any *three* of the following.

3 × 5 = 15

2. a) What is masquerading? 2
- b) State some differences between virus and worm. 3
3. a) State the desirable features of a good process migration mechanism. 3
- b) What is scaling transparency? 2
4. a) In which respect are distributed computing systems better than parallel processing systems? 2
- b) State the differences that exists between a distributed operating system and a network operating system. 3
5. Among passive and active attacks which one is more harmful and why? 5
6. What is thrashing? Is it related to granularity? Explain. $1\frac{1}{2} + \frac{1}{2} + 3$

GROUP - C**(Long Answer Type Questions)**Answer any *three* of the following.

3 × 15 = 45

7. Describe the important issues involved in the design and implementation of Distributed Shared Memory System. What is false sharing in the context of Granularity? Give examples. Write down few advantages of Distributed Shared Memory over message passing strategy. 6 + 4 + 5
8. Differentiate between preemptive and non-preemptive process migrations. What are their relative advantages and disadvantages? Suppose you have to design a process migration facility for a distributed system. What factors will influence your decision to design a preemptive or a non-preemptive process migration facility? What is a name space? For a hierarchically structured name space, discuss the relative advantages and disadvantages of using a fixed number of levels and allowing an arbitrary number of levels for the hierarchy. 2 + 3 + 4 + 1 + 5

9. a) Briefly describe 2-phase locking protocol. Name the main component distributed file system.
- b) Define internal and external synchronization and periodic resynchronization clocks in a distributed system.
- c) What are the drawbacks of Lamport's logical clock ? (4 + 2) + 6
10. a) What is name server ? Differentiate between system oriented and human oriented names.
- b) What is cryptography ? Categorize different types of potential attacks on computer system.
- c) Briefly describe the concept of physical clock and logical clock. (2 + 3) + (2 + 4)
11. Write short notes on any *three* of the following :
- a) Stateless server
- b) Digital signature
- c) Task assignment in resource management
- d) Load balancing algorithm
- e) Stub generation in RPC.

END