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CS/B.TECH (CSE)/SEM-7/CS-704D/2012-13

2012

ADVANCED OPERATING SYSTEMS

Time Allotted : 3 Hours | Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

$10 \times 1 = 10$

i) Which of the following is for global snapshot algorithm ?

a) Chandi Lamport

b) Lamport's Logical Clock

c) Ricart Agarwala

d) None of these.

ii) Semaphores are

a) suitable for data abstraction

b) structured

c) both

d) none of these.

iii) Distributed OS works on the following principle.

a) file foundation b) Single system image

c) Multi system image d) Networking image.

iv) Regarding to a thread,

a) multiple threads in a process may share the same address space

b) a complete independent address space needs to be allocated

c) when it (thread) is blocked, all the threads in the same process must also be blocked

d) none of these.

v) Location transparency

a) allows are movement of resources and clients within a system without affecting the operations of users or programs

b) enables local and remote resources to be accessed using indentical operations

c) hides whether a resource is in memory or on disk

d) enables resources to be accessed without knowledge of their location.

vi) In synchronous communication,

a) A sender continues immediately after it has submitted its message for transmission

b) the sender is blocked until its messae is stored in a local buffer at receiving host, or to the receiver

c) timing plays a crucial role. The two successive messages may have a temporal relationship such as those in video and audio streams in multimedia applications

d) a message that has been submitted for trnasmission is stored by the communication system as long as it takes to deliver it to the receiver.

vii) Achieving mutual exclusion
   a) is only required in distributed system, and is never needed in single processor system
   b) is primarily used in distributed systems to enhance the performance
   c) is necessary for a process to read or write certain shared data
   d) none of these.

viii) Regarding to idempotent operation,
   a) appending data to a file is an idempotent operation
   b) adding an non-zero number to a bank account is not an idempotent operation
   c) adding one element to a set is not an idempotent operation
   d) none of thse.

ix) In making remote procedure call (RPC)
   a) the parameters can be passed by reference and pointer values
   b) the parameters can only be passed by value
   c) the parameters can be any objects
   d) the parameters can only be object references.

x) In making remote method invocation (RMI)
   a) the parameters can only be passed by value
   b) the parameters can be object references
   c) only remote objects can be used as parameters
   d) only local objects can be used as parameters.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. a) What is the difference between distributed systems and networked systems ? 2

   b) How to synchronize processes across nodes in a distributed system ? Explain using Lamport's logical clock. 3

3. What should a distributed system do ? Mention two advantages over Centralized Systems. Are there any disadvantages ?

4. What is the advantage of Ricart & Agarwala method over Lamport's method for implementing mutual exclusion in distributed system ?

5. Write short note on any *one* :

   a) Naming

   b) Distributed shared memory

   c) Process Migration.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

6. a) Discuss various methods to implement parallelism in process execution. 10

   b) Write a two-processor parallel algorithm using any one of the above to implement the following : 5

   "Read *n* number of elements and determine the difference between the average and max."

7. Explain what schemes you would adopt to solve Producer Consumer problem with Bounded Buffer in

   a) Centralized system

   b) Distributed system.

8. Describe Chandi Haas algorithm.

9. Discuss different modelswith diagrams to implement distributed system.