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Question Paper Code : 65024

5 Year M.Sc. DEGREE EXAMINATION, MAY/JUNE 2013.

Seventh/Ninth Semester

Computer Technology

XCS 591 — DISTRIBUTED OPERATING SYSTEMS

(Common to : 5 Year M.Sc. – Information Technology)

(Regulation 2003)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages work-station server model compared to workstation model?

2. Name the primitives for explicit and implicit addressing of processes.

3. What is marshaling? List the activities involved in marshaling process.

4. Differentiate between weak consistency and release consistency.

5. How do clock synchronization issues differ in centralized and distributed computing?

6. What are the advantages and disadvantages of collective requests method for deadlock prevention?

7. What are the issues involved in freezing a migrant process on its source?

8. What are the similarities and differences between load sharing and load balancing?

9. What are the primary file properties that directly influence the distributed file system to tolerate faults?

10. Differentiate between location transparency and location independency.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the monolithic kernel and microkernel approaches for designing a distributed operating system. Also discuss their relative advantages and disadvantages. (8)

(ii) Briefly explain absolute ordering, consistent ordering and casual ordering of messages with a mechanism to implement each one. (8)

Or

(b) (i) Describe various failure handling mechanisms used in a message-passing system. (8)

(ii) Explain blocking and nonblocking types of IPC with their relative advantages and disadvantages. What type of IPC is easier to implement and why? (8)

12. (a) (i) Explain the approaches for binding a client with a server. (9)

(ii) Describe the important issues involved in the design and implementation of DSM systems. (7)

Or

(b) (i) Discuss about the major issues involved in server management in RPC-based applications. (7)

(ii) Explain various data locating mechanisms used in a DSM system that uses the replicated, migrating blocks strategy. (9)

13. (a) Illustrate WFG-based distributed algorithm for deadlock detection with suitable example. (16)

Or

(b) (i) What is false deadlock and when does it occur? Describe a method to avoid detection of false deadlock. (10)

(ii) Describe the centralized approaches for clock synchronization in distributed systems. (6)

14. (a) (i) Briefly describe the issues in designing load balancing algorithms. (12)

(ii) Differentiate between preemptive and non-preemptive process migration. (4)

Or

(b) (i) Discuss the relative advantages and disadvantages of implementing a thread package in user space and in the kernel. (8)

(ii) Explain various approaches for address space transfer mechanisms used for process migration. (8)

15. (a) (i) Describe various file sharing semantics in detail. (8)

(ii) Discuss about the features of a good naming system. (8)

Or

(b) (i) What is name-space? Discuss the relative advantages and disadvantages of using fixed number of levels and arbitrary number of levels in a hierarchically structured name space. (8)

(ii) Discuss about various approaches for file recovery in detail. (8)
