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Question Paper Code: U6F03

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Computer Science and Design

21UCD603 - DISTRIBUTED COMPUTING

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1. Differentiate buffering and coaching?   CO1-U

2. Define transparency. What its type?   CO1-U

3. Write short notes on happen-before relation?   CO1-U

4. If the two events e1 and e2 of two different processes occur at same time, independently. What kind of relationship exists between e1 and e2?   CO2-App

5. Name the two types of message used in Richart-Agarwala's algorithms.   CO1-U

6. Node B receives a broadcast message from node A with timestamp vector T = [2, 1, 3, 4]. Node B has timestamp vector V = [3, 2, 4, 1]. Use Suzuki Kasami's Broadcast Algorithm to determine if node B should delay the message or deliver it immediately.   CO2-App

7. State the use of rollback recovery.   CO1-U

8. Define consistent cut.   CO1-U

9. Explain NIST definition of cloud computing?   CO1-U

10. Draw a basic cloud deployment model and cloud service model?   CO2-App

PART – B (5 x 16= 80 Marks)

11. (a) Explain how a parallel system differs from a distributed system?   CO1-U   (16)

Or

(b) (i) What is distributed system? What is the need of distributed system?   CO1-U   (16)

(ii) Explain global state of distributed system?

12. (a) During a synchronization cycle, the Madurai master node polls the   CO2-App   (16)

Virudhunagar and Tirunelveli offices' servers for their local times. Here are the times reported and the round-trip delay observed for each communication:

•Madurai (Master): 10:00:00 AM (reference time, no delay needed)

•Virudhunagar: 3:00:15 PM, with a round-trip delay of 200ms

•Tirunelveli: 11:00:10 PM, with a round-trip delay of 300ms.

Calculate the average time, considering the Madurai delays.

<div align="center">Or</div>

(b) The Chandy-Lamport algorithm can be integrated into a distributed supply chain management system to capture a consistent snapshot of inventory levels, order statuses, and logistics data across distributed warehouses and distribution centers. Discuss how the algorithm can facilitate real-time inventory management and order tracking. — CO2-App (16)

13. (a) Explain RicartAgarwala Algorithm with an example. — CO1-U (16)

<div align="center">Or</div>

(b) (i) Explain about the Chandy-Misra-Haas algorithm for the AND model. — CO1-U (16)
(ii) Chandy-Misra-Haas algorithm for the OR model.

14. (a) Discuss the issues and failure recovery with an example. — CO1-U (16)

<div align="center">Or</div>

(b) (i) Discuss about the synchronous check pointing and recovery. — CO1-U (16)
(ii) Details about the rollback recovery algorithm.

15. (a) Discuss about cloud computing operations in any large e-commerce platform like Amazon.com and explain their service in detail. — CO2-App (16)

<div align="center">Or</div>

(b) Suppose you're tasked with designing a load balancing solution for a high-traffic e-commerce website. What factors would you consider, and how would you approach the design process? — CO2-App (16)