

Paper / Subject Code: 52771 / Distributed Computing

BE Sem - VIII R-2019 'C' Scheme Computer

Duration: 3hrs

[Max Marks:80]

- N.B. : (1) Question No 1 is Compulsory,
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

Attempt any FOUR

[20]

- a Explain issues in designing Distributed system.
- b Compare NOS and DOS
- c Explain desirable features of global scheduling algorithm
- d Explain the need of election algorithm.
- e Justify how Ricart-Agrawala's algorithm optimized the Message overhead in achieving mutual exclusion.

- 2 a What is Remote procedure call? Explain how transparency is achieved in RPC. [10]
- b Explain various forms of message oriented communication with suitable example. [10]

- 3 a What is logical clock? Why are logical clocks required in distributed systems? How Lamport does synchronizes logical clock? Which events are said to be concurrent in Lamports timestamp. [10]
- b Explain Chandy-Misra-Hass Algorithm for distributed deadlock detection. [10]

- 4 a Explain different load estimation and process transfer policies used by load balancing algorithms. [10]
- b Describe code migration issues in details. [10]

- 5 a Discuss and differentiate various client consistency models. [10]
- b Explain Absolute ordering and Casual ordering process with the help of example for many to many communication. [10]

- 6 a List desirable features of distributed File system. How are modifications propagated in file caching schemes? [10]
- b Discuss Raymonds tree based algorithm of token based in distributed mutual exclusion. [10]

- N.B. :** (1) Attempt any **five** questions.
(2) **All** questions carry **equal** marks.

1. (a) Explain Absolute Ordering and Causal Ordering process with the help of example for many to many communication. 10
(b) Explain RPC system model in detail. 10
2. (a) Discuss the need of the co-ordinator. Also give any one algorithm for co-ordinator selection. 10
(b) What is the difference between strict consistency model and sequential consistency model ? How sequential consistency model is implemented in DSM ? 10
3. (a) What is physical clock synchronization ? Explain any one algorithm in detail. 10
(b) Explain deadlock avoidance algorithm in a distributed system. 10
4. (a) How does light weight RPC work in cross domain architecture ? 10
(b) Discuss file caching for distributed system. 10
5. (a) Discuss how processes and resources are bound together. How does process migration take place in Heterogeneous environment ? 10
(b) What are the good features of a Distributed File Systems ? Explain file sharing semantics of it. 10
6. (a) Justify the need of stateful and stateless server in RPC management. 10
(b) How are failures handled in message passing system in distributed systems ? 10
7. Write any **two** of the following :— 20
 - (a) Distributed Transaction Management
 - (b) System Oriented Names for Distributed Computing
 - (c) Load Balancing Issues
 - (d) Distributed System Models.

N.B. : (1) Question No. 1 is compulsory.

(2) Solve any four from the remaining six questions.

1. (a) What is the need of removing unreferenced entity? 5
 (b) "Vector Time Stamp mechanism for synchronization is used for capturing causality of events". Justify. 5
 (c) What are goals of distributed system? 5
 (d) What are the stateful and stateless servers. 5
2. (a) Explain distributed algorithm for mutual exclusion. What are the advantages and the disadvantages of it over centralized algorithm. 10
 (b) Explain Absolute Ordering and Casual Ordering Process with the help of examples for many to many communication. 10
3. (a) Discuss issues concerned with parameter passing in RPC. 10
 (b) What are good features of a Distributed File Systems? Explain file sharing semantics of it. 10
4. (a) Explain recursive name resolution with advantages and disadvantages. 10
 (b) Define Thrashing. What are the methods used for solving thrashing problems? 10
5. (a) Explain the design issues with respect to Distributed Computing Environment. 10
 (b) What is the notion of a context in namespace? Explain the different clustering and context binding strategies of names. 10
6. (a) Explain the different load estimation policies and process transfer policies used by load balancing algorithms. 10
 (b) Explain various forms of message oriented communication with suitable examples. 10
7. Write short note on following any two. 20
 (a) Object Adapter
 (b) Light-weight RPC
 (c) Consistency Models
 (d) Fault Tolerance.

B.E - VIII | Distributed Computing / COMP
08.12.14

QP Code : 16000

(3 Hours)

[Total Marks : 100]

- N.B :** (1) Question no. 1 is compulsory.
(2) All questions carry equal marks.
(3) Attempt any four questions out of the rest.

1. (a) Discuss various Models of Distributed System? 10
(b) Differentiate between NOS and DOS giving examples of each? 10
2. (a) What is the difference between Stateful and Stateless server implementation models? Give example of distributed applications using each of the implementation model. 10
(b) What do you understand by clock synchronization in distributed systems? Explain one technique of logical clock synchronization. 10
3. (a) Explain Code Migration and the role of Mobile Agents? 10
(b) List down the issues in designing Distributed Load balancing technique. Explain any two in detail. 10
4. (a) Explain the issues to be handled while designing DSM. 10
(b) Explain RPC Call semantics. 10
5. (a) What are the various Group Communication protocols, Explain any one. 10
(b) How Deadlock Detection is different for a distributed system. Explain any one algorithm of Distributed Deadlock Detection. 10
6. (a) Explain Distributed algorithm for Mutual Exclusion. What are the advantages and the disadvantages of it over Centralized algorithms. 10
(b) Explain Process Migration in Heterogeneous environment. 10
7. Answer any two :— 20
 - (a) Lightweight RPC
 - (b) Name Resolution in DNS.
 - (c) Data Centric and Client Centric Consistency Models.

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01-06-15

B.E. Comp. Sem. VIII (Rev) June-2015
Sub- Distributed Computing QP Code : 8309

(3 Hours)

[Total Marks : 100]

- Note (1) Q.No.1 is compulsory
(2) Solve any 4 questions from the remaining questions.

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|-----|---|----|
| Q1. | a) Explain Distributed system models with diagram. | 10 |
| | b) Explain RPC system model in detail. | 10 |
| Q2. | a) What are the good features of a Distributed File System? Explain file sharing semantics of it. | 15 |
| | b) Explain various forms of message oriented communication with suitable example. | 10 |
| Q3. | a) Explain Distributed algorithm for mutual exclusion. What are the advantages and disadvantages of it over centralized algorithms. | 10 |
| | b) Compare stateful and stateless servers. | 10 |
| Q4. | a) Explain the distributed algorithms for clock synchronization. | 10 |
| | b) What are the common strategies used for handling deadlocks in distributed systems. | 10 |
| Q5. | a) Define Thrashing. What are the methods used for solving thrashing problems. | 10 |
| | b) Explain the different load estimation policies and process transfer policies used by load balancing algorithms. | 10 |
| Q6. | a) Write a note on system oriented names and human oriented names. | 10 |
| | b) Discuss file caching for distributed system. | 10 |
| Q7) | Write short note on (any two) | 20 |
| | a) Light-weight RPC | |
| | b) Distributed Transaction Management | |
| | c) Distributed computing environment (DCE) | |
| | d) Election algorithms | |

RJ-Con. 11446-15.

Total Marks : 100 marks

3 hrs.

Note :

1. Question 1 is compulsory
2. Attempt any 4 out of the remaining questions.

- Q1. (05)
 a) Comparison of NOS and DOS. (05)
 b) Explain the issues in designing Distributed Systems (10)
 c) Explain RPC Model for communication in a Distributed system.
- Q2. (10)
 a) Explain Absolute as well as Causal ordering semantics for group communication in a distributed system, with an example for each. (10)
 b) Explain the need for coordinator selection in a distributed system. Explain one of the strategies for the same, in detail.
- Q3. (10)
 a) Explain implementation of sequential consistency model for "Replicated and Migrating" block for distributed shared memory. (10)
 b) What do you understand by clock synchronization? Explain Lamport's Mechanism (10)
- Q4. (10)
 a) What is phantom reads problem. Explain any one algorithm for distributed deadlock detection. (10)
 b) What are data centric and client centric consistency models. Explain one model (10)
- Q5. (10)
 a) List desirable features of a good distributed file system. How are modifications propagated in file caching schemes? (10)
 b) Compare Load sharing to task assignment and Load balancing strategies for scheduling processes in a distributed system. (10)
- Q6. (10)
 a) Explain Address Space transfer mechanisms in process migration in a distributed System. (10)
 b) Explain stateless and stateful server implementation justifying advantages disadvantage of each (10)
- Q7) Write short note on any 4 (20)
 a) Issues in designing DSM.
 b) Naming Service
 c) Distributed Transactions
 d) Desirable feature of a good Naming System
 e) Lightweight RPC and Call back RPC.