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CS753

NEW SCHEME

Seventh Semester B.E. Degree Examination, Dec. 06 / Jan. 07
CS / IS
Distributed Operating System

Time: 3 hrs.] [Max. Marks:100

Note : ***Answer any FIVE full questions.***

1 a. Explain the following distributed computing system models
   i) Workstation-server model
   ii) Processor-pool model. **(08 Marks)**
   b. Describe the implementation of Kernels in distributed operating systems. Draw the diagram for different Kernel design. **(08 Marks)**
   c. Why is heterogeneity unavoidable in distributed system? Explain common types of incompatibilities in heterogeneous distributed system. **(04 Marks)**

2 a. Explain the desirable features of a good message passing system. **(12 Marks)**
   b. Write a code for implementing a producer consumer pair of processes. They use a buffer that can accommodate up to n messages. Producer produces messages and puts them in a message buffer and consumer consumes messages from message buffer. Assume all messages are of fixed size. **(08 Marks)**

3 a. Explain with examples the degree of reliability in one-to-may communication. **(04 Marks)**
   b. Describe the method of implementing CBCAST protocol. **(08 Marks)**
   c. Explain 4.3 BSD UNIX IPC features and primitives. **(08 Marks)**

4 a. What are the different ways for server implementation? Which is preferred in distributed system? **(08 Marks)**
   b. Why the remote procedure call gets disrupted? Describe different types of call semantics used in RPC system. **(12 Marks)**

5 a. Compare the write-invalidate and write-update approaches of memory coherence in replicated migrating blocks strategy. **(10 Marks)**
   b. Describe the issues to be addressed in replacement strategy, in distributed shared memory. **(10 Marks)**

6 a. What are the drawbacks of centralized approach in mutual exclusion? Explain probe based distributed algorithm for dead lock detection. **(12 Marks)**
   b. Explain ring algorithm to elect a coordinator process. **(08 Marks)**

7 a. Explain load estimation and process transfer policies. **(12 Marks)**
   b. Describe desirable features of process migration. **(08 Marks)**

8 Write short notes on : **(20 Marks)**
   a. Logical clock implementation using physical clock
   b. File models
   c. Binding time
   d. Thrashing.

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CS764

NEW SCHEME

Seventh Semester B.E. Degree Examination, May 2007
CS / IS
Client Server Computing

Time: 3 hrs.] [Max. Marks:100

Note : ***Answer any FIVE full questions.***

1 a. What is a client-server computing? List the salient features of client-server computing. **(10 Marks)**
b. Explain the advantages of client-server computing. **(10 Marks)**

2 a. Distinguish between 2-tier and 3-tier architecture. **(10 Marks)**
b. Explain middleware with its clases. **(10 Marks)**

3 a. With relevant diagram explain the function of a Remote Procedure Call (RPC). **(08 Marks)**
b. Explain Dynamic Date Exchange (DDE). **(06 Marks)**
c. Compare GUIs with OOUIs. **(06 Marks)**

4 a. Explain server functionality in detail. **(10 Marks)**
b. Discuss the role of NOS in client-server computing. **(10 Marks)**

5 a. Explain communications interface technology in client-server connectivity. **(10 Marks)**
b. List the interprocess communication services. **(05 Marks)**
c. Discuss WAN technologies. **(05 Marks)**

6 a. Explain the transaction management standards. **(10 Marks)**
b. What is distributed objects? Explain its benefits. **(10 Marks)**

7 a. Explain a minimalist component with its properties. **(10 Marks)**
b. Explain CORBA object services. **(10 Marks)**

8 Write short notes on the following :
a. Super component
b. Stored procedure
c. Distributed Computing Environment (DCE)
d. Peer-to-peer protocols. **(20 Marks)**

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CS753

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NEW SCHEME

Seventh Semester B.E. Degree Examination, May 2007
CS / IS
Distributed Operating System

Time: 3 hrs.] [Max. Marks:100

Note : ***Answer any FIVE full questions.***

1 a. Briefly explain the major technological, economical, and social factors that motivated the development of distributed computing systems. Further enlist the main advantages and disadvantages of distributed computing systems over centralized ones.

b. Why is heterogeneity unavoidable in many distributed systems? What are some of the common types of incompatibilities encountered in heterogeneous distributed systems? Discuss the common issues with which the designer of a heterogeneous distributed system must deal. **(10 Marks)**

2 a. With respect to distributed computing environment explain the following issues in IPC by message passing: i) Synchronization ii) Buffering. **(10 Marks)**

b. What do you mean by absolute ordering, consistent ordering and causal ordering of messages? Explain further; indicate a mechanism to implement each one of them. **(10 Marks)**

3 a. What are the main issues in designing a transparent RPC mechanism? Is it possible to achieve complete transparency of an RPC mechanism? If no, explain why. If yes, explain how. **(10 Marks)**

b. With an aid of a neat functional schematic, describe various steps employed in creating an RPC application in sun RPC environment. **(10 Marks)**

4 a. Why is a global sequence needed in a sequentially consistent Distributed Shared Memory (DSM) system that used the write – update protocol? Explain. **(08 Marks)**

b. Discuss the main causes of thrashing in a DSM system. Further, describe the commonly employed methods to solve the thrashing problem, indicating their suitability in different fields. **(12 Marks)**

5 a. In distributed system, there may be unpredictable variation in the message propagation time between two nodes. Explain why? How does this problem make the task of synchronizing clocks in a distributed system difficult? Give two methods that can be used in a clock synchronization algorithm to handle this problem. **(10 Marks)**

b. With an illustrative example, explain the working of bully algorithm, which is generally used as an election algorithm in distributed systems. **(10 Marks)**

6 a. Discuss in brief, various issues considered in designing good balancing algorithms with regard to effective resource management in distributed environment. **(12 Marks)**

b. List and narrate the desirable features of a good process migration mechanism. **(08 Marks)**

7 a. In a distributed system, parallelism improves performance and blocking system calls make programming easier. Explain how the concept of threads can be used to combine both advantages. **(10 Marks)**

b. What do you mean by file caching? Describe different key decisions to be addressed in a file-caching scheme for a distributed file system. **(10 Marks)**

8 Write short notes on the following:
a) 4.3 BSD UNIX IPC mechanism b) Client – server binding
c) Granularity in DSM systems d) Process migration in distributed systems. **(20 Marks)**

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CS753

Seventh Semester B.E. Degree Examination, Dec. 07 / Jan. 08
Distributed Operating Systems

Time: 3 hrs. Max. Marks:100

Note : *Answer any FIVE full questions.*

1 a. What is distributed computing system? Explain. (06 Marks)
b. Explain the work-station model of distributed computing with neat figure. (08 Marks)
c. What are the issues concerned with design of distributed operating system? Explain. (06 Marks)

2 a. Explain the typical message structure with components. (06 Marks)
b. How failure can be handled in distributed systems? Explain with 4, 3, and 2 message reliable IPC. (14 Marks)

3 a. List and explain the primitives of 4.3 BSD UNIX IPC. (08 Marks)
b. What is transparent RPC mechanism? Explain the implementation of RPC. (12 Marks)

4 a. With the neat architecture of DSM, explain the issues concerned in design of distributed shared memory. (10 Marks)
b. What are the advantages of DSM? Explain. (10 Marks)

5 a. Briefly explain the clock synchronization algorithm. (12 Marks)
b. What is 'happened before relation' of event ordering? Explain with space time diagram. (08 Marks)

6 a. Why do we use election algorithm? Explain Bully algorithm with an example. (10 Marks)
b. What are the issues concerned in designing load balancing algorithm? Explain. (06 Marks)
c. Write note on Task assignment. (04 Marks)

7 a. In a distributed system what are the advantages we see after implementing process migration? Explain. (10 Marks)
b. Briefly explain the load balancing algorithms. (10 Marks)

8 Write notes on the following:
a. Consistent ordering.
b. Stateful server.
c. Mutual exclusion.
d. Distributed file system. (20 Marks)

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