Code: 9A05604

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III B. Tech II Semester (R09) Regular Examinations, April/May 2012

DISTRIBUTED SYSTEMS

(Computer Science & Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Define distributed system.
(b) What are the main characteristics of a distributed system?
(c) Why Internet is a distributed system?

2 Explain different middleware layers.

3 (a) Explain the X.500 directory information tree.
(b) What are the methods for directory access in X.500 directory services?

4 How the global states of a distributed as they execute are captured?

5 (a) Define deadlock. Explain the procedure for detecting deadlocks with example.
(b) Explain deadlock prevention. Discuss the advantages of locks to resolve deadlocks with example.

6 (a) What are the merits of DSM over message passing mechanism? List out its demerits.
(b) Discuss the procedure steps for page fault handling in a release consistency.

7 (a) Discuss the correctness criteria for replicated objects with example.
(b) Briefly explain the sequence of events to be performed under active replication.

8 (a) Define security. List out and explain security requirements.
(b) Discuss the role of cryptography in security.

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1 (a) Why concurrency is required in a distributed system? How it is achieved?
(b) What is independent failure? How it is related to a distributed system?

2 (a) What are the programming models that have been extended to apply to distributed programs?
(b) How middle ware helps in the provision of a location transparency?

3 (a) What is the difference between structure and unstructured peer to peer systems?
(b) What is a squirrel web caching service?

4 (a) What are the external and internal synchronization of clocks?
(b) How UNIX make facility uses time for execution?
(c) What is clocks crash failure?

5 (a) Define transaction. List out supporting goals. Discuss the role of recoverable objects.
(b) Describe the importance of ACID properties.

6 (a) Discuss the role of parameters and results in CORBA IDL with example.
(b) Discuss the examples of client and server programs in CORBA by supporting any language.

7 Write short notes on:
(a) Hierarchical two phase commit protocol.
(b) Flat two phase commit protocol.

8 Explain threats from mobile code. Discuss briefly information leakage.

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1 (a) How the hardware components are shared in a distributed system?
(b) How the software components are shared in a distributed system?

2 Explain in detail java RMI.

3 Explain the overlay caste study Tapestry.

4 Explain Berkeley algorithm for internal synchronization of clocks.

5 (a) Explain synchronization with and without transactions.
(b) Describe how a non-recoverable situation could arise if write locks are released after the last operation of a transaction but before its commitment.

6 (a) Discuss methods and attributes in CORBA IDL with example.
(b) Briefly give a description of IDL constructed types.

7 (a) Discuss types of phases in two phase commit protocol.
(b) Sketch the diagram and explain how coordinator and participant can be communicated in two phase commit protocol.

8 (a) Discuss worst case assumptions and supporting guidelines for security.
(b) What is cryptography? List out and explain its advantages.

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1 (a) What is software architecture?
(b) What is middle ware? What are the limitations of middle ware?

2 Explain how remote resources are accessed in UNIX/LINUX.

3 (a) Peer to peer systems software is responsible for maintaining the integrity and authenticity of data. Explain.
(b) How the routing layer provides the mechanism for placing and retrieving the relevant distributed knowledge?

4 What is the importance of time in a distributed system?

5 (a) What are the advantages and disadvantages of timeouts? Briefly describe the upgrade locks in CORBA.
(b) List out and explain the uses of locks in strict two phase locking.

6 (a) Explain timeline operations in a distributed shared memory system. Discuss the requirements of release consistency memory.
(b) How locks can be used in a release consistency memory? Explain with example.

7 (a) Describe flat and nested distributed transactions with example.
(b) Explain briefly the role and responsibilities of a coordinator in a distributed transaction.

8 Describe the syntax of services for client and server sessions using Kerberos.

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