Roll No .....

IT - 601

B.E. VI Semester

Examination, December 2015

Distributed Systems

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is distributed system? Give the important goals to build the distributed system.

b) Explain the Architectural and Fundamental models.

c) What are Semaphore, Monitors and Serializers?

d) What do you mean by absence of global clock? Give the impact of the absence of global time. What is logical clock? Explain, What are the limitations of Lamport clock? Briefly explain Vector clock.

OR

What is distributed mutual exclusion and briefly explain the requirements of mutual exclusion algorithm? Also explain the various algorithms regarding the mutual exclusion.

a) Define and Differentiate Deadlock and Starvation.

b) What are differences in communication and resource deadlocks?

c) What is the importance of different types of graph in deciding deadlock? What is the interactive consistency problem?

d) Explain the various distributed deadlock detection algorithms with the help of suitable examples (i.e path-pushing, Edge-chasing algorithms etc). Also compare the performance of the various algorithms.

OR

What are agreement protocols? Discuss the general system model where agreement protocols are used? Give the applications of agreement problem.

a) What do you mean by distributed objects?

b) What is Remote Procedure Call (RPC)?

c) What do you mean by distributed file system in distributed system?

d) Explain the concept of Remote Method Invocation (RMI) with a suitable example. What is the role of proxy and skeleton in RMI?

OR

Explain the sun network file system. And make a comparison of SUN NFS with CODA file system.

a) Give some reasons for why decentralized control may give advantages over centralized control in distributed systems?

b) What is voting protocols? Compare and contrast static and dynamic vote protocols.

Contd...

c) What are locks? What are essential differences in the lock based protocols and time stamped based protocols?

d) What is transaction? Explain, what are its major properties? What is flat and nested distributed transactions? What are transaction priorities in distributed deadlock?

OR

What are commit protocols? Explain two phase commit protocol for nested transactions. Also give the architecture for replicated transactions.

5. a) Explain the election algorithm with the help of suitable examples.

b) What is routing?

c) What is deadlock free packet switching?

d) What are the wave and traversal algorithms? Explain the termination, decision and dependence requirements of a wave algorithm. Give any three requirements satisfied by wave algorithm. Also, discuss the usage and application of wave algorithm.

OR

Explain the basic of how CORBA naming system works and what advantages it has? Give the architecture of CORBA.

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