(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 110701 Roll No. | | | | | | | | | |

B.Tech.

(SEM. VII) THEORY EXAMINATION, 2015-16

DISTRIBUTED SYSTEMS

[Time:3 hours] [MaximumMarks:100]

SECTION-A

Note : Attempt all questions. All question carry equal marks. Write answer of each part in short. (10×2=20)

Q1. (a) How shadow versions are helpful in recovery?

(b) Differentiate between local and global check pointing.

(c) Discuss the role of file system in distributed system.

(d) What is consistent cut & inconsistent cut?

(e) Explain desirable features of a good message passing system.

(f) What is termination detection problem?

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(g) What are distributed shared memory design issues?

(h) Where distributed transactions can be used?

(i) Why clocks need to be synchronized?

(j) List the goals of distributed systems?

SECTION-B

Note: Attempt any <u>five</u> questions. All question carry equal marks. (5x10=50)

Q2. Discuss at least three main issues that are relevant to the understanding of distributed fault tolerance system. Explain how that make it important.

Q3. Explain how the two phase commit protocol for nested transaction ensures that if the top level transactions commit, all the right descendents are committed or aborted?

Q4. What are Lamport logical clocks? List the importand conditions to be satisfied by Lamport logical clocks. If A and B represent two distinct events in a process and if A->B then C(A)<C(B) but vica-versa not true. Justify the statement.

Q5. Caching is one of the techniques used to improve access to naming data. What are the benefits of caching and what assumptions must hold for it to be useful?

Q6. What do you mean by backward and forward error recovery? Discuss recovery in concurrent systems in detail.

Q7. What are distributed systems? What are significant advantages, applications & limitations of distributed systems? Explain with examples, what could be the impact of absence of global clock & shared memory.

Q8. What are agreement protocol? Discuss the general system model where agreement protocols are used. Give the applications of agreement protocols.

Q9. Discuss the optimistic methods for distributed concurrency control. What are the different validation conditions for optimistic concurrency control? Explain.

SECTION-C

Note: Attempt any <u>two</u> questionsfrom this section.

(2×15=30)

Q10. How distributed mutual exclusion is different of mutual exclusion in single-computer system? Classify mutual exclusion algorithms? How the performance of mutual exclusion algorithms is measured? Compare the performance of token and non-token based algorithms? How the Ricart-Agrawala algorithm optimize the lamport's algorithm.

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Q11. What do you mean by casual ordering of messages? If process P sends two message m1 & m2 ti to another process Q, what problems may arise if the two messages are not received by recipient Q, in the order they were sent by process P. Develop an algorithm which guarantees the casual ordering of message in distributed system.

Q12. Discuss following terms in context of distributed systems:

(a) 2PL & Strict 2PL

(b) Timestamp ordering for transaction management

(c) Highly available services

(d) Wait for graph with the example of distributed transaction.

(e) Scquential Consistency.

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