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B. Tech

PECS 3409/PECS 3402

Seventh Semester Examination – 2008

ADVANCE OPERATING SYSTEM

Full Marks – 70

Time – 3 Hours

Answer Question No. **1** *which is compulsory and any* **five** *from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) What is a thread in the context of operating system ?

   (b) What is need of naming service in distributed system ?

P.T.O.

(c) What is computation migration ?

(d) What is process synchronization in distributed system ?

(e) What is the need of Distributed Mutual Exclusion algorithms ?

(f) Define and differentiate between Replication Transparency and Replication Consistency.

(g) What are the four best-known strategies used to handle deadlocks ?

(h) What are the different types of transparencies in a distributed system ?

(i) What are the essential features of microkernel ?

(j) Define and differentiate between work-station model and processor pool model of distributed system.

2. (a) What is a distributed system ? Write different types of transparencies in a distributed system. 5

(b) Explain how the resource replication can be used to enhance distributed system performance and availability ? 5

3. (a) Define the term Distributed System. What are the significant advantages of distributed

systems over traditional time-sharing system ? 5

(b) What is RPC communication model ? Explain the implementation of an RPC Mechanism. 5

4. (a) Consider a distributed operating system that supports "process migration". Given a process's ID (pid), the operating system must be able to find on which host the process is currently executing. Describe how the distributed operating system would find processes, given a pid. 5

(b) How can the system security design has an impact on overall system reliability ? How operating system provides protection and access to system resources ? 5

5. (a) Define Markov Process. Explain how Markov Process can be used to model the distributed system ? 5

(b) What is multiprocessor system ? What are the advantages of multiprocessor system ? What is synchronization problem in multiprocessor system ? 5

6. (a) What is the need of logical clock in distributed system ? Explain the use of

Lamport's Logical clocks to order the events in a distributed system. 5

(b) What is Distributed File System (DFS) ? What is DFS site discovery ? What is use of distributed files-system ? 5

7. (a) Just because a state is unsafe does not necessarily imply that the system will deadlock. Explain why this is true. Give an example of an unsafe state and show how all of the processes could complete without a deadlock occurring. 5

(b) Describe the general strategy behind deadlock prevention, and give an example of a practical deadlock prevention method. 5

8. (a) What is naming service ?

(b) What are the two major shortcomings of RPC facilities ?

(c) What are the different type of mutual exclusion algorithm in distributed system ?

(d) What is meant by the term Vector Timestamp ?

2.5×4