Total No. of Questions : 12]

SEAT No. :

P3438

[Total No. of Pages : 3

[4959]-213

B.E.(Computer Engineering)

DISTRIBUTED OPERATING SYSTEMS

(2008 Course)(Semester-II)

Time :3Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answer to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION-I

Q1) a) How do we achieve the security in the distributed operating system? Explain it with access matrix model for security. **[6]**

b) Compare between multiprocessor operating system, Multicomputer operating system, network operating system and distributed operating system. **[10]**

OR

Q2) a) Why distributed operating systems more difficult to design than the operating system for centralized time sharing system? **[6]**

b) Explain the following with respect to distributed operating system. **[10]**

i) Naming ii) Scalability

iii) Compatibility iv) Process synchronization

Q3) a) Explain the following with respect to synchronization in distributed operating system. **[10]**

i) Clock skew ii) Drift rate

iii) Casual ordering iv) Partial ordering

b) What is NTP? Disscuss the factors to be taken into account when deciding to which NTP server a client should synchronize its clock. **[6]**

OR

P.T.O.

Q4) a) Compare the following. **[10]**

i) physical clock

ii) logical clock

iii) vector clock

in distributed operating system

b) Why election algorithm is required in distributed operating system? Explain it with any one election algorithm. **[6]**

Q5) a) Discuss the impact of message loss following deadlock detection algorithms. **[10]**

i) a path pushing algorithms ii) a edge chasing algorithms

b) Explain the Lamport's algorithm for mutual exclusion. Show that in Lamport's algorithm the critical section is accessed according to the increasing order of timestamp. **[8]**

OR

Q6) a) Distributed deadlock detection algorithms normally have substantial message overhead, even when there is no deadlock. Instead of using a deadlock detection algorithm, we can handle deadlocks in distributed systems simply by using "timeouts" i.e. after waiting certain time declares that it is deadlock, what are the risks in using this method? Explan the above scenario by comparing this with any deadlock detection algorithm. **[10]**

b) Show that Byzantine agreement cannot always be reached among four processor if two processor are faulty. **[8]**

SECTION-II

Q7) a) Write short note on. **[12]**

i) Log structure file system ii) Google file system

b) Discuss whether message passing or DSM is preferable for fault tolerant application. **[6]**

OR

Q8) a) What is distributed scheduling? Why it is needed? What are the different issues in load distribution? Explain receiver initiated algorithm in detail.**[12]**

b) What are various coherence protocols used in DSM? Give the brief about each. **[6]**

Q9) a) How the recovery mechanism achieved in distributed operating system using rollback and shadow paging? Explain with suitable example. **[10]**

b) What is checkpoints? How does it help in recovery mechanism? **[6]**

OR

Q10) a) What is the voting protocol for fault tolerant system? Explain any voting protocol in designing a fault tolerance system in distributed environment. **[8]**

b) How do we achieve the security in the distributed operating system? Explain it with access matrix model for security. **[8]**

Q11) a) What is the cluster? How do you compare cluster with distributed system? How do we classify the clusters? Give any suitable example of the cluster. **[8]**

b) What is service oriented architecture? How web services used in service oriented architecture? How does it different than component based development architecture? **[8]**

OR

Q12) a) Explain the relation of the following system with distributed system **[10]**

i) cluster computing

ii) grid computing

iii) cloud computing

iv) service oriented architecture

b) Explain the following with respect to cloud computing **[6]**

i) elements of cloud computing

ii) features of cloud computing

iii) advantages and disadvantages