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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- March-April 2017

B.Tech/ M.Tech VIII Semester

COURSE CODE: 10M11CI212 MAX. MARKS: 25

COURSE NAME: Advanced Operating Systems

COURSE CREDITS: 3 MAX. TIME: 1.5 Hrs

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1:

a. Name three differences between a multiprocessor and a distributed system (DS) that cause problems for the DS? [1]

b. Explain the design issues granularity in distributed shared memory? [1]

c. What means by stateless server? [1]

d. What is the mean of path pushing algorithm in distributed deadlock detection, explain with an example? [2]

Q2:

a. Describe how the Swap() instruction can be used to provide mutual exclusion that satisfies the bounded-waiting requirement? [2]

b. Consider a multiprocessor system and a multithreaded program written using the many-to-many threading model. Let the number of user-level threads in the program be more than the number of processors in the system. Discuss the performance implications of the following scenarios?

a. The number of kernel threads allocated to the program is less than the number of processors.

b. The number of kernel threads allocated to the program is equal to the number of processors.

c. The number of kernel threads allocated to the program is greater than the number of processors but less than the number of user level threads. [3]

Q3:

a. How read and write operations can be performed in IVY (Integrated shared Virtual memory at Yale)? [3]

b. If the FIFO channel assumption in the Chandy-Lamport algorithm is violated, then which step of the proof for the Chandy-Lamport algorithm given a consistent cut, breaks down? [2]

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Q4:

a. How a prefix table can be constructed in SPRITE file system to perform the name resolution? [2]

b. How a token-based algorithm works differently to the non-token based algorithm. Explain a token based algorithm? [3]

Q5:

a. We saw that some deadlock detection algorithms may detect false deadlocks, i.e., pronounce a deadlock where none actually exists. Do you think diffusion based algorithm deadlock will detect false deadlocks? Why? [2]

b. Explain the issues related with the caching in the distributed file system with respect to: caching site, memory used, and consistency? [3]