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**Question Paper Code : 77098**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fourth Semester

Computer Science and Engineering

CS 6401 — OPERATING SYSTEMS

(Common to Information Technology)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Do timesharing differs from Multiprogramming? If so, How?
2. Why API's need to be used rather than system calls?
3. List out the data fields associated with Process Control Blocks.
4. Define the term 'Dispatch Latency'.
5. What do you mean by 'Thrashing'?
6. Mention the significance of LDT and GDT in Segmentation.
7. List out the major attributes and operations of a file.
8. What is HSM? Where it is used?
9. Do FAT file system is advantageous? Why?
10. What is the responsibility of kernel in LINUX Operating system?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss about the evolution of Virtual Machines. Also explain how virtualization could be implemented in operating systems. (10)
- (ii) Sketch the structure of Direct Memory Access in detail. (6)

Or

- (b) (i) Explain the various types of System calls with an example for each. (10)
- (ii) Discuss about the functionality of System boot with respect to operating system. (6)
12. (a) (i) Explain the FCFS, preemptive and non preemptive versions of Shortest-Job-First and Round Robin (time slice = 2) scheduling algorithms with Gantt Chart for the four processes given. Compare their average turn around and waiting time. (12)

Process	Arrival Time	Burst Time
P1	0	10
P2	1	6
P3	2	12
P4	3	15

- (ii) Discuss how deadlocks could be detected in detail. (4)

Or

- (b) (i) Show how wait( ) and signal( ) semaphore operations could be implemented in multiprocessor environments, using the Test and Set( ) instruction. The solution should exhibit minimal busy waiting. Develop Pseudocode for implementing the operations. (10)
- (ii) Discuss about the issues to be considered with multithreaded programs. (6)
13. (a) Consider the following page reference string 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 4, 5, 3. How many page faults would occur for the following replacement algorithms? Assume four frames and all frames are initially empty. (16)
- (i) LRU replacement
- (ii) FIFO replacement
- (iii) Optimal replacement.

Or

- (b) (i) With a neat sketch, explain how logical address is translated into physical address using Paging mechanism. (10)
- (ii) Write short notes on Memory mapped files. (6)
14. (a) (i) Explain about the RAID structure in disk management with various RAID levels of organization in detail. (10)
- (ii) Briefly discuss about the various directory structures. (6)

Or

- (b) (i) Compare the functionalities of FCFS, SSTF, CSAN, and C-LOOK disk scheduling algorithms with an example for each. (12)
- (ii) Write short notes on free space management. (4)
15. (a) Explain the significance and steps involved in setting up Xen, VMware softwares on Linux Host for successful virtualization in detail. (16)

Or

- (b) (i) Briefly discuss about the requirements to become a Linux System Administrator. (6)
- (ii) Discuss about the steps involved in the installation of a Linux Multifunction server. (6)
- (iii) Write short notes on the Linux network services. (4)
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