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Question Paper Code : 31322

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Seventh Semester

Electrical and Electronics Engineering

CS 2411/CS 609/10144 CS 405 — OPERATING SYSTEMS

(Common to Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)

(Regulation 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is virtual machine?

2. What is system a call and what are the types of system call?

3. What is meant by starvation in operating system?

4. What is a critical section and what requirements must a solution to the critical section problem satisfy?

5. Differentiate between page and segment.

6. Differentiate between internal and external fragmentation.

7. What is a file management system?

8. What are the disadvantages of log-structured file systems?

9. What are device drivers?

10. What is tertiary storage?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Briefly explain various managements of the operating systems and their responsibilities in detail. (10)

(ii) What is context switching? Explain with necessary diagram. (6)

Or

(b) (i) Discuss about the issues to be considered with multithreaded programs. (8)

(ii) What is a remote procedure call? Describe the steps involved in executing a remote procedure call. (8)

12. (a) (i) What is deadlock detection and recovery? Describe the methods for recovering from deadlock. (10)

(ii) Discuss about the Linux real time scheduling strategies in detail. (6)

Or

(b) (i) What are the criteria for evaluating the performance of scheduling algorithms? Discuss about the approaches for evaluating the scheduling algorithms. (10)

(ii) Give a monitor solution to the dining philosopher problem and explain. (6)

13. (a) (i) Consider the page reference string: 1, 2, 3, 4, 2, 5, 3, 4, 2, 6, 7, 8, 7, 9, 7, 8, 2, 5, 4 and 9. How many page faults would occur for LRU, FIFO and Optimal page replacement algorithms when the number of frames is three? (12)

(ii) What are the advantages and disadvantages of contiguous and non contiguous memory allocation? (4)

Or

(b) (i) Describe the Linux memory management components in detail. (6)

(ii) Explain how logical memory addresses are translated into physical memory address in segmented memory management system. (10)

14. (a) Explain various file allocation techniques in detail with their relative advantages and disadvantages. (16)

Or

(b) (i) Describe the most common schemes for defining the logical structure of a directory. (10)

(ii) Explain how does NTFS recover from a system crash. (6)

15. (a) (i) Explain how I/O related portions of the kernel are structured in software layers. (8)

(ii) Explain how swap space is used, located on the disk and managed. (8)

Or

(b) (i) Describe the life cycle of an I/O request in detail. (8)

(ii) What is network-attached storage? Discuss about the benefits and limitations of Network-attached storage. (8)