3rdy ISe

UVA WELLASSA UNIVERSITY
FACULTY OF SCIENCES AND TECHNOLOGY
COMPUTER SCIENCE & TECHNOLOGY DEGREE PROGRAM
FIRST SEMESTER EXAMINATION – FEB/MAR – 2012
CST 322-2 OPERATING SYSTEMS CONCEPT AND DESIGN

Time Allowed: **Two(02) hours**

Answer all questions in part A and part B. Wrong answer carries negative points.

Attach your all question papers to the answer script

Part A

Q1.

a. The client-server model is popular in distributed systems. Can it also be used in a single-computer system?
b. List some differences between personal computer operating systems and mainframe operating systems.
c. What's the main characteristic of the following operating systems?
   I. Batch Operating Systems
   II. Time-Sharing Operating Systems
   III. Network Operating Systems
   IV. Interactive Operating Systems
   V. Real-Time Operating Systems

(20 marks)

Q2.

a. Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is

   86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

   Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling FCFS algorithm?
b. In an operating system that uses FAT-64 file system, what's the maximum size of a partition?
c. If your windows operating system shut down unexpectedly, the next time the operating system starts up, it checks the file system. What's the reason for this action?
d. What are the main advantages of using NTFS file system? (20 marks)

Part B Answer all components.

Each part carries 2 marks.

1. What are the different phases of software development or software life cycle?
2. Differentiate between Complier and Interpreter?
3. Describe different job scheduling in operating systems.
4. What is the main difference between Micro-Controller and Micro- Processor?
5. What is Context Switch?
6. What is DRAM? In which form does it store data?
7. What is the state of the processor, when a process is waiting for some event to occur?
8. What are common functions of Interrupts?
9. Explain difference between primary storage and secondary storage?
10. While running DOS on a PC, which command would be used to duplicate the entire diskette?
11. What is CPU Scheduler?
12. What do you mean by deadlock?
13. What is Throughput, Turnaround time, waiting time and Response time?
14. Explain the difference between microkernel and macro kernel?
15. Give an example of microkernel
16. What is multi tasking, multi programming, multi threading?
17. What resources are used when a thread created? How do they differ from those when a process is created?
18. What is starvation and aging?
19. Explain different types of Real-Time Scheduling?
20. What are the conditions for deadlock occurrence?
21. What are the Methods for Handling Deadlocks?
22. Explain difference between Logical and Physical Address Space?
23. Describe binding of Instructions and Data to memory?
24. What is Memory-Management Unit (MMU)?
25. What are Dynamic Loading, Dynamic Linking and Overlays?
26. What are the different Dynamic Storage-Allocation methods?
27. What is fragmentation? Different types of fragmentation?
28. Define Demand Paging, Page fault interrupt, and Trashing?
29. Explain Segmentation with paging?
30. Why "page sizes" are always give powers of 2?