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First Semester M.Tech. Degree Examination, Dec. 2013 / Jan 2014.
Advances in Operating Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

1.
 - a. Distinguish between space multiplexing and time multiplexing with examples. (05 Marks)
 - b. Describe the essential properties of following types of operating systems :
 - i) Batch systems ii) Time sharing systems iii) Embedded systems (09 Marks)
 - c. Explain the different views of software as a tool in solving problems. (06 Marks)
2.
 - a. Distinguish between sequential computation and multithreaded computations. (05 Marks)
 - b. Discuss the POSIX file operation system calls. (05 Marks)
 - c. Explain the following system calls, with examples :
 - i) Fork () ii) Join () iii) Execvc (). (06 Marks)
 - d. Write a windows program that creates a child process that prints a greeting, sleeps for 20 seconds, and then exits. The parent process should print a greeting before creating the child and then terminate. (04 Marks)
3.
 - a. Distinguish between Trusted software and untrusted software. Give examples. (04 Marks)
 - b. Explain the two techniques by which a program executing in user mode can request the Kernel's services. (06 Marks)
 - c. Describe the UNIX Architecture, with a neat labeled diagram. (05 Marks)
 - d. With a neat diagram, briefly explain the logical OS organization. (05 Marks)
4.
 - a. With a neat figure, explain in detail the working of a monolithic and modular kernel. Discuss their advantages. (08 Marks)
 - b. Describe the CHORUS Microkernel architecture, with a neat labeled diagram. (07 Marks)
 - c. What are the major issues that distinguish distributed operating systems from network operating systems? (05 Marks)
5.
 - a. Explain the four mechanisms used by the Linux Kernel to perform inter process communication, by a user process. (08 Marks)
 - b. With a neat diagram, explain the process and resource management organization in Linux. (08 Marks)
 - c. Write a short note on the virtual file system switch. (04 Marks)
6.
 - a. With a neat diagram, explain the windows NT/2000 organization. (08 Marks)
 - b. Explain the Win 32 API in windows NT/2000/XP system. (06 Marks)
 - c. Explain with a figure as to how traps, interrupt and exception are handled by the Win NT 2000 organization. (06 Marks)
7.
 - a. Give detailed explanation of five layers that constitute the Tcp – Ip protocol. (07 Marks)
 - b. With a neat diagram, explain the various system calls that are involved in a connection oriented protocol. (07 Marks)
 - c. Define clustering. What are the benefits of clustering? (06 Marks)
8.
 - a. Distinguish between : i) Reliability versus unreliability ii) Blocking versus non blocking process migration. (06 Marks)
 - b. What is process migration and what are the reasons for process migration to be desirable in distributed systems? (06 Marks)
 - c. Explain the distributed algorithm for mutual exclusion. (08 Marks)