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MCA-502

M. C. A. (Fifth Semester)

EXAMINATION, Nov.-Dec., 2007

UNIX AND SHELL PROGRAMMING

(MCA-502)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 40

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) Discuss in brief UNIX file system structure. 6
 (b) What is BUFFER CACHE ? How it improves the performance of a system ? 8
 (c) What should happen if the kernel attempts awaken all processes sleeping on an event, but no processes are asleep on the event at the time of the wake up ? 6
2. (a) What is In-Core Inode ? Discuss an algorithm for allocation of In-Core Inode. 10
 (b) Write an algorithm to convert a path name to an Inode. 10
3. (a) What is super block ? Discuss the fields associated with super block. 4
 (b) What is context switch ? Where it is used ? 4
 (c) Discuss Directory structure of UNIX file system. Write an algorithm for conversion of byte offset to block number in file system. 12

4. (a) What is link system call ? Discuss the algorithm for linking a file. 10
 (b) Describe the mounting and unmounting of file system. 10
5. (a) Differentiate between named and unnamed pipes. Discuss the pipe system call. 12
 (b) What is U-area ? 4
 (c) Describe all conditions where the reference count of an inode can be greater than 1. 4
6. (a) Discuss the algorithm for "fork" system call. 10
 (b) What is IPC ? Explain the system-V IPC packages. 5
 (c) What is UNIX Zombie process and why is the concept necessary ? 5
7. (a) Discuss different features of LINUX operating system. 5
 (b) What are awk built in variables ? 5
 (c) Write a program that prints the owner, file type, access permissions and access times of files supplied as parameters. If a file is a directory, the program should read the directory and print the above information for all files in the directory. 10
8. Write short notes on any *four* of the following : 5 each
 - (i) The SHELL
 - (ii) Memory Management
 - (iii) STAT and FSTAT
 - (iv) File permissions
 - (v) Process states transitions