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Fourth Semester B.E. Degree Examination, Dec.2013/Jan.2014
UNIX and Shell Programming

Time: 3 hrs.

Max. Marks: 100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Describe briefly the major features of the UNIX operating system. (08 Marks)
- b. Define a file. With examples, explain the three categories of files supported by UNIX. (06 Marks)
- c. Briefly describe:
 - i) System calls
 - ii) PATH
 - iii) HOME. (06 Marks)
- 2 a. Explain the significance of all the fields of `ls -l` output. Which of the attributes can be changed only by the super user? (08 Marks)
- b. With a neat diagram, explain the three modes of vi editor. (06 Marks)
- c. Assuming that a file's current permissions are `rx(-r-xr--)`, specify the `chmod` expression (using both relative and absolute methods) required to change them to:
 - i) `rw-rw-rw-`
 - ii) `r--r-----`
 - iii) `---r--r--` (06 Marks)
- 3 a. Devise wild – card patterns to match filenames:
 - i) Comprising of atleast three characters where the first char is numeric and the last char is not alphabetic.
 - ii) With three character extensions except the ones with `log` extension.
 - iii) Containing `2004` as an embedded string except at the beginning or end. (06 Marks)
- b. Explain the three distinct phases of process creation. How is the shell created? (08 Marks)
- c. What are environment variables? Briefly describe any five of them. (06 Marks)
- 4 a. Distinguish between hard links and symbolic links with suitable examples. (08 Marks)
- b. Describe the sort filter and illustrate its usage with `-k`, `-u`, `-n`, `-r` and `-c` options. (06 Marks)
- c. i) Use `find` to locate all files named `a.out` and all C source files in your home directory tree and remove them interactively.
- ii) Display only the names of all users who are logged in and also store the result in `users.txt`.
- iii) Invoke the vi editor with the last modified file. (06 Marks)

PART – B

- 5 a. Explain with suitable examples, the sed filter along with its two forms of addressing. Also describe in brief the substitution feature provided by sed. (08 Marks)
- b. Describe the grep filter along with any five options. (06 Marks)
- c. i) Use sed to delete all blank lines from a file named `sample`.
- ii) Use grep to list only the sub-directories in the current directory.
- iii) Replace all occurrences of the word "UNIX" with "LINUX" in a file named `sample`. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 6 a. Define a shell script. What are the two ways of running a shell script? Write a shell script to accept pattern and a file and search for the pattern in the file. (08 Marks)
- b. Explain the shell's for loop giving the possible sources of the list. (06 Marks)
- c. Write a menu-driven shell script to perform the following:
- List of users who are logged in.
 - List of files in the current directory.
 - List of processes of user.
 - Today's date.
 - Quit to UNIX.
- (06 Marks)
- 7 a. Describe the awk filter with syntax and example. How are awk arrays different from the ones used in most programming languages? (08 Marks)
- b. Explain the looping constructs supported by awk. (06 Marks)
- c. Briefly describe the built-in functions supported by awk for arithmetic and string operations. (06 Marks)
- 8 a. With examples, explain the string handling functions supported by perl. (08 Marks)
- b. How are split and join used in perl scripts? (06 Marks)
- c. Write a perl script to determine whether a year is leap year or not. (06 Marks)