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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Fourth Semester, B.E. - Computer Science and Engineering
Semester End Examination; June/July - 2015
UNIX System Programming

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer **FIVE** full questions, selecting **ONE** full question from each **Unit**.*

UNIT - I

1 a. Discuss the salient features of UNIX operations system. | 8

b. What are internal and external commands in UNIX? Explain any two internal and any two external commands with example. | 8

c. Build UNIX commands for the following statements:

i) Compute 6/8 upto 4 decimal places.

ii) Display the version number of UNIX operating system. | 4

iii) Display month name and day of the month.

iv) Display all the file names of the current directory including hidden file names.

2 a. Explain the different file types available in UNIX operations system. | 8

b. Explain the following commands with examples;

i) cd ii) mkdir iii) od iv) cmp. | 8

c. Construct a command line to concatenate two files f001 and f002 with some text input from the terminal inserted between the contents of these two files. The output has to be stored on a file called f003. | 4

UNIT – II

3 a. Interpret the significance of the seven fields of the *ls – l* output. | 6

b. What is file permission? Explain how file permissions can be changed in absolute and relative manner. | 8

c. Explain the find command with its various options. | 6

4 a. What is process status? Explain PS command with its options. | 6

b. A crontab entry is given below:

00 – 10 17 * 3, 6, 9, 12 5 find / -size + 2048 – print.

Discuss the meaning of each field in the above cron command. Also calculate how many times their command will be executed in the year 2007. | 6

(Hint : The 1st of March, June, Sept. and Dec. 2007 is Thursday, Friday, Saturday and Saturday respectively).

c. Explain the different options available in sort command with examples. | 8

UNIT - III

5 a. What is an environment variable? Explain any six environment variables. 8

  b. Define standard input, standard output and standard error? Explain with respect to UNIX. 8

  c. Explain the significance of the following two files : 4

    i) /dev/null   ii) /dev/tty

6 a. Discuss the significance of the following shell parameters : 5

    $#, $0, $*, $? and $!

  b. Explain with examples, the use of test and [ ] to evaluate expressions in shell. 7

  c. What is for loop in a shell script? Explain the different ways of making the lists. 8

UNIT - IV

7 a. What is POSIX standard? Explain the different subsets of POSIX standard. Write the structure of the C program to filter out non-POSIX complaint codes from a user program. 8

  b. Build a C/C++ POSIX complaint program that prints the POSIX defined configuration options supported on any given system using feature test macros. 8

  c. Why calling an API is more time consuming than calling a user function? 4

8 a. Explain how fcntl API can be used for file and record locking. 12

  b. Explain the different symbolic link file APIs. Construct a C/C++ program to emulate the UNIX *ln* command. 8

UNIT - V

9 a. With the help of a diagram explain the memory layout of a C program. 6

  b. Elaborate the UNIX Kernel support for a process. 8

  c. What is a race condition? Develop a C/C++ program to illustrate race condition. 6

10a. Explain the different exec functions with their prototypes. 10

  b. Discuss how UNIX operating system keeps process accounting. 10

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