Govt. of Karnataka, Department of Technical Education

Diploma in Information Science & Engineering

Fourth Semester

Subject: Linux Lab

Contact Hrs / week: 6   **Total hrs: 96**

DETAILS OF CONTENTS

PART-A

1. Introduction to Linux Administration

2. Understand Linux system organization

   Introduction to users groups & super user logging in & logging out

   Internal & external commands in Linux

   Internal commands in Linux echo, type, etc.

   External commands in Linux, ls, mv, rm, cat, useradd etc

   Command line commands – who, log name, banner, cal, date, bc, man, info etc.

   Related exercises.

3. Working with files & directories.

   Know the categories of files.

   Files & directory commands – cat, less, more, ls, comm, diff, tar

   Pipes & redirection- use of !, &, > ,touch, absolute & relative paths.

   Directory related commands – pwd, cd, mkdir, rmdir

   Manipulating file commands - cp, mv, rm

   Related exercises.

4. File permissions & file utilities.

   File link commands chmod, umask, file, type, wc, split, cmp, diff.

5. Learn to use vi editor

6. Simple Filters – head, tail, cut, paste, sort, uniq, tr, pr.

7. Expressions & search patterns   .(dot operator), *, ^, +, ?, grep, egrep, fgrep

8. Process Management commands.

   Process creation, status, Identifying process, ps -f & its options,

Running process in background, Job control, Process termination.

Changing process priority, Scheduling process(Usage of sleep and wait commands)

9. Communication utilities

Rlogin, telnet, ping, finger, write, msg, talk, and mail.

10. Linux file system storage & file structure.

11. Linux system administration

Managing file system, Disk management utilities, mounts,

umount, df, du, fdisk, su, useradd etc.

12. I / O redirection

I/P & o/p redirection, running multiple commands, redirecting error o/p.

Null redirection, Understanding and usage of file descriptors, Formatting o/p.

13. Linux Environment

Introduction, Environment variables, Command prompt system variables,

Profiles, files, terminal variable stty command and its options,

Command history, editing Environment variable.

14. Introduction to shell programming.

Introduction, Uses of shell script, Shell special characters, comments,

command separator, escaping, quoting command substitution.

Creating shell script, Shell identifiers, Shell variables,

Destroying a variable,Positional parameters & command line arguments ,

evaluating expressions,Text formatting with echo & tput script termination.

15. Shell control structures - if, case, for, while, relational and logical operators,

Advanced filter – sed and awk.

PART-B

GRADED EXERCISES

1. Write a Shell script to print the command line arguments in reverse order.
2. Write a Shell script to check whether the given number is palindrome or not.
3. Write a Shell script to sort the given array elements in ascending order using bubble sort.
4. Write a Shell script to perform sequential search on a given array elements.
5. Write a Shell script to perform binary search on a given array elements.

6. Write a Shell script to accept any two file names and check their file permissions.

7. Write a Shell script to read a path name, create each element in that path e.g: a/b/c i.e., 'a' is directory in the current working directory, under 'a' create 'b', under 'b' create 'c'.

8. Write a Shell script to illustrate the case-statement.

9. Write a Shell script to accept the file name as arguments and create another shell script, which recreates these files with its original contents.

10. Write a Shell script to demonstrate Terminal locking.

11. Write a Shell script to accept the valid login name, if the login name is valid then print its home directory else an appropriate message.

12. Write a Shell script to read a file name and change the existing file permissions.

13. Write a Shell script to print current month calendar and to replace the current day number by '*' or '**' respectively.

14. Write a Shell Script to display a menu consisting of options to display disk space, the current users logged in, total memory usage, etc. (using functions.)

15. Write a C-program to fork a child process and execute the given Linux commands.

16. Write a C-program to fork a child process, print owner process ID and its parent process ID.

17. Write a C-program to prompt the user for the name of the environment variable, check its validity and print an appropriate message.

18. Write a C-program to READ details of N students such as student name, reg number, semester and age. Find the eldest of them and display his details.

Text Book:

1. **"UNIX – Concepts and Applications",** Sumitabha Das, 4th Edition,
   Tata McGraw Hill, 2006.
   (Chapters 1.2, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18, 19).

2. **"Linux Command Line and Shell Scripting Bible",** Richard Blum,

Wiley India Pvt. Ltd, 2008. (Chapters 1.2, 2, 4, 5, 6, 7, 14, 15).

3. "Linux **Lab: Hands on Linux**", Dayanand Ambawade and Deven N.Shah,

Wiley Dreamtch Pvt. Ltd

Scheme of valuation

1	Record	05
2	Writing two programs one each from part A & part B	15 + 15 = 30
3	Entering two programs	05 + 05 = 10
4	Executing two programs with Result	15 + 15 = 30
5	Viva-voce	25
	Total Marks	100