UNIX for Users
(Version: 1.6) Lab Book

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Document Revision History

Date	Revision No.	Author	Summary of Changes
	1	Veena Deshpande	New course creation
30-Sept-2009	2	Kishori Khadilkar	Revamped as per new template
20-June-2011	3	Rathnajothi Perumalsamy	Revamped as per Integrated syllabus
30-Sep -2013	4	Amit Sali	Lab for SVN(subversion) is added.
9-Mar-2015	5	Vishal Pachpute	Lab for AWK is added.
27-May-2016	6	Shilpa Bhosle	Created subset of standard UNIX course as a part of post-integration activity.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Table of Contents

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Getting Started

Overview

This lab book is a guided tour for learning Unix. It comprises 'To Do' assignments. Follow the steps provided and work out the 'To Do' assignments.

Setup Checklist

Here is what is expected on your machine in order for the lab to work

Minimum System Requirements

- Intel Pentium 90 or higher (P166 recommended)
- Microsoft Windows 95, 98, or NT 4.0, 2k, XP.
- Memory: 32MB of RAM (64MB or more recommended)

Please ensure that the following is done:

- A text editor like Notepad is installed.
- Participants should be able to connect to UNIX server through telnet (IP address : 192.168.224.34)

Instructions

- For all coding standards refer Appendix A. All lab assignments should refer coding standards.
- Create a directory by your name in drive <drive>. In this directory, create a subdirectory html_assgn. For each lab exercise create a directory as lab <lab number>

Learning More (Bibliography if applicable)

- UNIX Concepts and Application by Sumitabha Das
- The Unix Programming Environment", by Kernighan and Pike.
- UNIX Primer Plus, Third Edition. Don Martin, Stephen Prata, Mitchell Waite, Michael Wessler, and Dan Wilson
- Advanced Unix : a programmer's guide / Stephen Prata

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Lab 1.Connecting to the Unix Server

Goals	• Learn to connect to the Unix server • Learn to log out of the Unix server
Time	5 min

1.1: Connecting to the Unix Server

Step 1: Enter your login name and password to login to the UNIX system.

1.2: Logging out of the system

Step 1: Type the exit command at $ prompt or else, press ctrl and d together to log out.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Lab 2.Unix Basic Command

Goals	• Learn to use basic Unix commands
Time **Lab Setup**	100 min Telnet with Unix Server

2:1 Executing basic commands:

1. To display the current working directory, the command is:
   pwd
   The output is as follows.
   /home/trg1
2. Display the path to and name of your HOME directory.
3. Display the login name using which you have logged into the system
4. Display the hidden files of your current directory.
5. List the names of all the files in your home directory.
6. Using the long listing format to display the files in your directory.
7. List the files beginning with chap followed by any number or any lower case alphabet. (Example, it should display all files whose names are like chap1, chap2, chap3 ……., chapa,ahapb,chapc,……..)
8. Give appropriate command to create a directory called C_prog under your home directory. (Note: Check the directory using ls)
9. Create the following directories under your home directory. (Note: Check using ls)

   newdir

   newdirectory
10. List the names of all the files, including the contents of the sub directories under your home directory.
11. Remove the directory called newdirectory from your working directory.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

12. Create a directory called temp under your home directory.
13. Remove the directory called newdir under your home directory and verify the above with the help of the directory listing command.
14. Create another directory directorynew under the temp directory.
15. Change the directory to your home directory.
16. From your home directory, change the directory to directorynew using relative and absolute path.
17. Remove the directory called c_prog, which is in your home directory.
18. Change to the directory /etc and display the files present in it.
19. List the names of all the files that begin with a dot in the /usr/bin directory.
20. Create a file first.unix with the following contents.

    Hi! Good Morning everybody.

    Welcome to the First exercise on UNIX.

    Hope you enjoy doing the assignments.
21. Copy the file first.unix in your home directory to first.unics.
22. (Note: checked using ls, first.unix file also should exist along with first.unics)
23. List the contents of first.unix and first.unics with a single command.
24. Create a new directory under the temp directory.
25. From your home directory, copy all the files to the directory created under the temp sub directory.
26. Move the file first.unix to the directory temp as second.unix
27. Remove the file called first.unics from the home directory.
28. Change your directory to temp and issue the command rm *. What do you observe?
29. Move all files whose names end with a, c and o to the HOME directory.
30. Copy all files that end with a 'UNIX' to the temp directory.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

31. Issuing a single command, remove all the files from the directory temp and the directory itself.

1. Try commands cp and mv with invalid number of arguments and note the results.

32. Use the cat command to create a file friends, with the following data:

Madhu	6966456	09/07/68
Jamil	2345215	08/09/67
Ajay	5546785	01/04/66
Mano	7820022	09/07/68
David	8281292	09/09/60
Simmi	7864563	12/12/70
Navin	2224311	30/05/68

The fields should be separated by a tab.

33. Display contents of the file friends.

34. Copy contents of friends to newfriend without using the cp command.

35. Display contents of the file friends and newfriends in a single command.

36. Find all users currently working on the system and store the output in a file named as users.

37. Append contents of friends file to the file, users.

38. Display current system date and time and record your observations. How is the time displayed?

39. Display calendar for the month and year of your birth.

40. Try following commands and record your observations.

date “+ %”

date “+%m”

date “+%D”

date “+%/%Training Activity” date “+%Training Activity” date “+%r”

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Lab 3.UNIX File System & Permissions

Goals	• Learn to grant and to remove permissions and to view the file system
Time **Lab Setup**	15 min Telnet with Unix Server

3.1: Viewing the File System and Granting/Removing Permissions

(Note: Create required files if doesn't exists.)

41. Give the execute permission for the user for a file chap1
42. Give the execute permission for user, group and others for a file add.c
43. Remove the execute permission from user, give read permission to group and others for a file aa.c
44. Give execute permission for users for a.c, kk.c, nato and myfile using single command
45. Change the directory to root directory. Check the system directories, like bin, etc, usr etc

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Lab 4.Simple and Advance Filetrs

Goals	• Learn to use Pipes & Filters in UNIX
Time **Lab Setup**	100 min Telnet with Unix Server

4.1: Using Pipes and Filters:

1. Redirect the content of the help document ls, into a file called as lsdoc.
2. Display the content of the lsdoc page wise.
3. Display only the first 4 lines of the lsdoc file.
4. Display only the last 7 lines of the file lsdoc.
5. Remove the file lsdoc.
6. There will be B'day celebration from the friends file, find how many B'day parties will be held. If two of the friends have the B'date on the same day, then we will be having one party on that day.
7. Display the lines starting with Ma, in the file friends.
8. Display the lines starting with Ma, ending with i or ending with id, in the file friends.
9. Print all the files and the directory files from the current directory across all the sub directories, along with its path
10. Print only the Directory files.
11. Display the files starting with chap, along with its path.
12. Sort the file friends in ascending order of names.
13. Display the contents of the file friends in uppercase letters.
14. Store the contents of your home directory in a file called dir.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

15. From the above file dir, display the file permissions and the name of the file only.
16. From the same dir file, store only the file names in a file called files.
17. From the same dir file, store only the permissions of files in a file called perms.
18. From the same dir file, store only the file sizes in a file called sizes.
19. Display the file names, sizes and permissions from your directory in that order.
20. Display the number of users working on the system.
21. Find out the smallest file in your directory.
22. Display the total number of lines present in the file friends.
23. Create the following fixed record format files (with "|" delimiter between fields) with the structure given below, and populate them with relevant data use these files to solve following questions

    emp.lst: Empid(4),Name(18),Designation(9),Dept(10),Date of Birth(8),Salary(5)

    dept.lst : Dept.Code(2),Name(10),Head of Dept's id(4)

    desig.lst: Designation Abbr.(2), Name (9)

    1. Find the record lengths of each file.
    2. Display only the date of birth and salary of the last employee record.
    3. Extract only employee names and designations. (Use column specifications). Save output as cfile1.
    4. Extract Emp.id, dept, dob and salary. (Use field specifications). Save output as cfile2.
    5. Fix the files cfile1 and cfile2 laterally, along with the delimiter.
    6. Sort the emp.lst file in reverse order of Emp. Names.
    7. Sort the emp.lst file on the salary field, and store the result in file srtf.
    8. Sort the emp.lst file on designation followed by name.
    9. Sort the emp.lst file on the year of birth.
    10. Find out the various designations in the employee file. Eliminate duplicate listing of designations.
    11. Find the non-repeated designation in the employee file.
    12. Find the number of employees with various designations in the employee file.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

13. Create a listing of the years in which employees were born in, along with number of employees born in that year.
14. Use nl command to create a code table for designations to include designation code (Start with dept. code 100, and subsequently 105, 110 …).

24. PCS has its offices at Pune, TTC and Mumbai. The employees' data is stored separately for each office. Create appropriate files (with same record structure as in previous assignment) and populate with relevant data.

    1. List details about an employee 'Manu Sharma' in the Mumbai office.
    2. List only the Emp.Id. And Dept. of Manu Sharma.
    3. List details of all managers in all offices. (O/P should not contain file names.).
    4. Find the number of S.E. in each office.
    5. List only the Line Numbers and Employee names of employees in 'H/W' in Pune file.
    6. Obtain a listing of all employees other than those in 'HR' in the Mumbai file and save contents in a file 'nonhr'.
    7. Find the name and designation of the youngest person who is not a manager.
    8. Display only the filename(s) in which details of employee by the name 'Seema Sharma' can be found.
    9. Locate the lines containing saxena and saksena in the Mumbai office.
    10. Find the number of managers who earn between 50000 and 99999 in the Pune office.
    11. List names of employees whose id is in the range 2000 – 2999: in Pune Office; in all offices.
    12. Locate people having same month of birth as current month in Pune office.
    13. List details of all employees other than those of HR and Admin in file F1.
    14. Locate for all Dwivedi, Trivedi, Chaturvedi in Pune file.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

15. Obtain a list of people in HR, Admin and Recr. depts. sorted in reverse order of the dept.

Stretched assignments:

25. Write a command sequence that prints out date information in this order: time, day of week, day number, month, year:
26. 13:44:42 IST Sun 16 Sept 1994
27. Write a command sequence that prints the names of the files in the current directory in the descending order of number of links
28. Write a command sequence that prints only names of files in current working directory in alphabetical order
29. Write a command sequence to print names and sizes of all the files in current working directory in order of size
30. Determine the latest file updated by the user

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Lab 5.Vi Editor

Goals	Work with Vi Editor in Unix
Time **Lab Setup**	30 min Telnet with Unix Server

5.1: Working wth Vi Editor

1. Create a file using Vi. Enter the following text:
   A network is a group of computers that can communicate with each other, share resources, and access remote hosts or other networks. Netware is a computer network operating system designed to connect, manage, and maintain a network and its services. Some of the network services are Netware Directory Services (NDS), file system, printing and security.

   a. Change the word “Netware” in the second line to “Novell Netware”.
   b. Insert the text “(such as hard disks and printers)” after “share resources” in the first line.
   c. Append the following text to the file:
   “Managing NDS is a fundamental administrator role because NDS provides a single point for accessing and managing most network resources.”

2. Create the data files, used in the previous lab sessions using vi editor.

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.

Lab 6.SED Commands

Goals	Learn to use SED Commands in Unix
Time **Lab Setup**	15 min Telnet with Unix Server

6.1: Using SED Commands

1. Create a file “Employee.dat” with text as follows.

James	76382	PACE	Chennai
John	34228	GRIT	Hyderabad
Peter	22321	GE	Bangalore
Albert	32342	GRIT	Pune
Mathew	23222	PACE	Mumbai
Richard	23232	ACS	Pune

a) Write a sed command to print only the lines starting at line 2 and ending with the letters “Pune”

b) Write a sed command that will display the top 5 lines from the file

c) Write a sed command that will substitute the word “Chennai” for "Pune" used in all instance of the word

d) Write a sed command that will replace occurrence of the character e with the string UNIX in all lines. (Use –e option)

e) Write a sed command to delete blank lines

f) Write a sed command to delete lines from 3 to 5

2. Create a new file “PACE.dat which has only the lines that contain the word “PACE” from Employee.dat

©2016 Capgemini. All rights reserved.
The information contained in this document is proprietary and confidential. For Capgemini only.