OPERATING SYSTEMS LABORATORY
IT 253
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Handout 1: This handout covers instructions for basic Unix and shell programming

Basic Unix Commands: Please try out the basic unix commands as instructed below. Prepare a report of your observations for each instruction into a doc file. Submission details will be announced later.

1. Open your terminal and try the instructions from Basic Unix Commands.pdf file.
2. For any help and usage of these commands you may use “man instruction” or search in google. But do try and understand the usage.
3. Check for the new instruction in Unix Cheet Sheet.pdf and try them as well
4. If any command requires sudo access (administrative privillages), you may skip trying that.
5. Additional instructions are present in Unix-Shell-Help.pdf. This file has some advanced commands like email communication, netwroking etc. These are for additional learning
6. At this point you should know usage of Unix commands. Please solve the excercises from Excercise 1 below and submit the solutions in a seperate document. Please try for yourself before taking help from your friend or internet.

Shell Programming:

1. This requires a bsic programming language understanding such as loops and conditionals etc. This is very case sensitive. Based on Bourne shell programming.
2. Go to file Unix-Shell-Help.pdf.From page 4 there is introduciton to shell programming.
3. Execute all the concepts explained to undestand the shell programming. Prepare a report as you execute the programs based on your observations
4. After you become comfortable with the linux programming, solve excercises from Excercise 2 below and submit solutions in a seperate document. Please try for yourself before taking help from your friend or internet.

Excercise 1: UNIX Programming Excercises

1. Create a file called hello.txt that contains the words "hello world". Can you use "cp" using "terminal" as the source file to achieve the same effect?
2. How would you create and then delete a file called "$SHELL"? Try it.
3. What is the output of the command: echo {con,pre}{sent,fer}{s,ed}? Now, from your home directory, copy /etc/passwd and /etc/group into your home directory in one command given that you can only type /etc once.
4. Use find and grep and sort to display a sorted list of all files in the /home subdirectory tree that contain the word hello somewhere inside them.

5. Type umask 000 and then create a file called world.txt containing the words "hello world". Look at the permissions on the file. What's happened? Now type umask 022 and create a file called world2.txt. When might this feature be useful?
6. Describe three different ways of setting the permissions on a file or directory to r--r--r--. Create a file and see if this works.
7. Run sleep 15 in the foreground, suspend it with Ctrl-z and then put it into the background with bg. Type jobs. Type ps. Bring the job back into the foreground with fg.
8. Run sleep 15 in the background using &, and then use kill to terminate the process by its job number. Repeat, except this time kill the process by specifying its PID.
9. Run sleep 15 in the background using &, and then use kill to suspend the process. Use bg to continue running the process.
10. Use grep to isolate the line in /etc/passwd that contains your login details.

Excercise 2: Shell Programming Excercises

1. Write a shell script program to display “HELLO WORLD”.
2. Write a shell script program to develop a scientific calculator.
3. Write a shell script program to check whether the given number is even or odd.
4. Write a shell script Program to search whether element is present in the list or not.
5. Write a shell script program to check whether given file is a directory or not.
6. Write a shell script program to count the number of files in a Directory.
7. Write a shell script program to copy the contents of one file to another.
8. Use a pipeline and command substitution to set the length of a line in file to a variable. Write a program using sed command to print duplicate lines of Input.
9. Write a shell script that accept a file name starting and ending line numbers as arguments and display all the lines between given line no
10. Write a shell script that delete all lines containing a specified word
11. Write a shell script that displays a list of all the files in the current directory
12. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly whenever the argument is a file or directory.
13. Write a shell script that accept a list of file names as arguments count and report the occurrence of each word.
14. Write a shell script to find the factorial of a given integer
15. Write a shell script to guess the number. In a given range, your program chooses a random number and allow the user to guess the number