Lab 3 : System Programming I

August 12, 2015

Objective :

- Lab 3 is intended to provide the way to use the most common system calls in order to make input-output operations on files, as well as operations to handle files and directories in Linux

Recommended Systems/Software Requirements:

- Any flavour of Linux

References:

1. *Unix concepts and applications*, Fourth Edition, Sumitabha Das, TMH.

Theoretical Background:

You are expected to refer to the resource reading file available at the course website before starting the lab.

Problems:

1. Implement in C the following UNIX commands using System calls : *cat*, *ls* and *mv*
2. In lecture classes,we described a program that copies the contents of one file to a destination file. This program works by first prompting the user for the name of the source and destination files. Write this program using POSIX API. Be sure to include all necessary error checking, including ensuring that the source file exists. Once you have correctly designed and tested the program, if you used a system that supports it, run the program using a utility that traces system calls. Linux systems provide the *ptrace* utility.
3. Determine the size of a file using the *lseek* command. Once you found out the size, calculate the number of blocks assigned for the file. Compare these results with the similar results obtained when using the function *stat*.
4. Write a C program that writes the lines of a file into another file, but in the reverse order. The names of the files should be read as input parameters.

5. Write a C program that deletes a directory with all its subfolders. The name of the directory should be read from the command line.

6. Write a program that deletes every 5th byte from a file, but without using a temporary file or allocating a buffer in the memory. For adjusting the size of the file you may use the *truncate* function.

7. Write a program having the name move, similar with the Linux command mv. The user should be able to call the program in any of the following ways:

   move numeFisOld numeFisNew

   move numeFis numeDir

   move numeDirOld numeDirNew