

**SSN COLLEGE OF ENGINEERING, KALAVAKKAM**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**CS8461 - OPERATING SYSTEM LAB**

---

### **Lab Exercise 3 Simulation of system commands using system calls**

#### **AIM:**

To develop a C program to implement the cp, ls, grep commands (with some options) using system calls.

#### **cp command: basic cp, -i**

To copy a file into another

#### **ls command: basic ls, -l, -R**

To list all files in the directory

#### **grep command: basic grep, -c, -v, -n**

To search the given pattern in the file

#### **Procedure for cp:**

1. The arguments should be obtained in command line and error messages should be printed if they are not sufficient.

2. Use open, read, write, creat, close system calls to do the following.

mycp sourcefilename destinationfilename

-copies source file to destination file

3. The failure messages for opening a file, creating a file should be intimated.

Note: mycp is the user programs implementing cp.

#### **Procedure for ls:**

1. To view the files in a directory include dirent.h that helps for opening, reading, closing a directory.

2. Open the user named directory giving specific path using opendir system call. This returns a [pointer to a DIR](#) data structure that represents a directory.

3. Can even use "." to represent the current working directory.

4. Traverse the directory entries using readdir system call. readdir () returns a [pointer to a dirent structure](#) whose member d\_name contains the name of the current file.

5. Output the entries of directory.

6. Close the directory pointer

NOTE: Use open, read, write, creat, close, opendir, readdir, closedir system calls wherever necessary.

#### **Procedure for grep:**

1. Open the command line specified file using the required system call.

2. Read the contents iteratively till the end of the file and compare it with the pattern you are searching for.

3. If word found print the line on to the display.

4. Count the number of occurrences and display it finally.

5. Close the file descriptor.

NOTE: Use open, read, write, creat, close system calls wherever necessary.

### **SAMPLE INPUT/OUTPUT:**

#### **cp:**

Source.txt:

SSN COLLEGE OF ENGINEERING

target.txt:

SSN NAGAR

KALAVAKKAM

`$ ./mycp source.txt target.txt`

**FILE COPIED!**

#### **ls:**

`$ ./mys ls lab`

OUTPUT:

.

..

diros

diros.zip

Ex-3-cp-cat.doc

Ex-3-cp-cat.pdf

Ex-4-ls-grep.doc

fork.pdf

grep.doc

prgs.doc

sys-call prgs.doc

#### **grep:**

`$ ./mygrep pattern filename`

OUTPUT:

Display the contents of the file that has the pattern in it