List of Lab Assignments

1. Lab O(a) : Getting familiar with Linux Environment [0-1-0]

2. Lab O(b) : Introduction to Shell Scripting [0-1-0]

3. Lab 1 : Process Handling [0-1-0]

4. Lab 2 : Process Scheduling Algorithms [0-1-0]

5. Lab 3 : Semaphore [0-1-0]

6. Lab 4(a) : IPC - Shared Memory [0-1-0]

7. Lab 4(b) : IPC - Named and UnNamed Pipes [0-1-0]

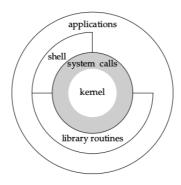
8. Lab 4(c) : IPC - Message Passing [0-1-0]

9. Lab 5 : Page Replacement Algorithms [0-1-0]

10. Lab 6 : Parallel Programming using MPI [0-1-0]

Lab O(a): Getting familiar with Linux Environment

In this lab we will gain the knowledge of a Linux based operating system (Process management, File system, Memory Mnagament, OS Design & Architecture) and to work in this environment with the help of commands and their actual implementations.



Architecture of the UNIX operating system

- UNIX, Linux and the GNU Project
- Users and Groups

```
#include "apue.h"
int main(void)
{
printf("uid = %d, gid = %d\n", getuid(), getgid());
exit(0);
}
```

- Processes
- Files
- Directory Layout, Pathnames and Symbolic Links
 - Relative and Absolute Pathnames
 - Symbolic Links
- Basic Commands
 - The Bash Shell
 - Is [with all the options]: Below is a sample C program how Is is implemented in OS.

```
#include "apue.h"
#include <dirent.h>
int
main(int argc, char *argv[])
{
    DIR *dp;
    struct dirent *dirp;
    if (argc != 2)
        err_quit("usage: ls directory_name");
    if ((dp = opendir(argv[1])) == NULL)
        err_sys("can't open %s", argv[1]);
    while ((dirp = readdir(dp)) != NULL)
```

```
printf("\%s \ n", dirp->d name);
             closedir(dp);
             exit(0);
       }
       cp [with all the options]
      • Essential: pwd, cd, rm, mv, mkdir, cat, less, file, fins, locate,
         chmod, gzip, gunzip, tar, df, head, tail, date, grep, kill

    Background and foreground jobs

      • Choosing a suitable editor: gedit, vi, vim, nano, emac

    Sample Progrm to show the use of the access function

                   #include "apue.h"
                   #include <fcntl.h>
                   int
                   main(int argc, char *argv[])
                   if (argc != 2)
                   err_quit("usage: a.out <pathname>");
                   if (access(argv[1], R_OK) < 0)
                   err_ret("access error for %s", argv[1]);
                   else
                   printf("read access OK\n");
                   if (open(argv[1], O_RDONLY) < 0)
                   err_ret("open error for %s", argv[1]);
                   printf("open for reading OK\n");
                   exit(0);
Sample Output:
$ 1s -1 a.out
-rwxrwxr-x 1 sar
$ ./a.out a.out
read access OK
open for reading OK
$ ls -1 /etc/shadow
-r---- 1 root
$ ./a.out /etc/shadow
access error for /etc/shadow: Permission denied
open error for /etc/shadow: Permission denied
```

Assignment:

- 1. Create a user in command window and provide the sudo access to it.
- 2. Access the manual of every command using 'man <command>' and execute the commands providing different types of arguments. And record the returned results.
- 3. Write a C-program to implement 'cat' command.

APPENDIX - I

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In order to run the given examples you have to set up the environment first:

1. Download the zip file from:

https://drive.google.com/file/d/1pABtdJnSnHSc4g9T64BteiT5yz_c_93a/view?
usp=sharing

- 2. Extract the tar.gz file and you will get a folder called 'apue' . Go to that folder in command window and run a command : make
- 3. Then compile the program (*.c file) using this format:

 gcc demo.c -o demo -I /path-to-this-folder/apue/include/ -L /path-to-thisfolder/apue/lib/ -lapue

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	<sys wait.h=""></sys>	•	•	•	•	process control (Section 8.6)