Experiment No. 3
Explore Linux Commands
Date of Performance:
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Sign:

Aim: Explore user management commands of linux.

Objective:
Explore basic commands of linux

Theory:
A user is an entity, in a Linux operating system, that can manipulate files and perform several other operations. Each user is assigned an ID that is unique for each user in the operating system. In this post, we will learn about users and commands which are used to get information about the users. After installation of the operating system, the ID 0 is assigned to the root user and the IDs 1 to 999 (both inclusive) are assigned to the system users and hence the ids for local user begins from 1000 onwards.

In a single directory, we can create 60,000 users. Now we will discuss the important commands to manage users in Linux.

- useradd - create a new user or update default new user information ,useradd is a low

  level utility for adding users.
- userdel - delete a user account and related files
- groupadd - create a new group , The groupadd command creates a new group account

  using the values specified on the command line plus the default values from the system. The new group will be entered into the system files as needed.
- groupdel - delete a group , The groupdel command modifies the

system account files, deleting all

- entries that refer to GROUP. The named group must exist
- who - show who is logged on , Print information about users who are currently logged in.
- whoami - print effective

userid

- passwd - change user

password

The passwd command changes passwords for user accounts. A normal user may only change the password for his/her own account, while the superuser may change the password for any account. passwd also changes the account or associated password validity period.

1. to enter in root sudo su then password

2. to add new user type useradd csds11 (username)

3. to check a newly added user you have to type cat etc/passwod

4 set a password to new user : sudo passwd csds11

5. create a new group: groupadd csds12

6. Check group cat /etc/group

7. add new user in newly created group useradd -

G csds12 piya1 (group name and new user name)

8. to check : cat /etc/group

9. to enter in new user : su -

csds11 (username)

10. to delete user type : userdel csds (username that you hav

e to delete)

11. Again check whether it is deleted or not cat /etc/passwd

10. to delete user type : groupdel csds12 (group that you hav

e to delete)

12. Again check whether it is deleted or not cat /etc/passwd

13. who -

show who is logged on Print information about users who are currently logg

ed in.

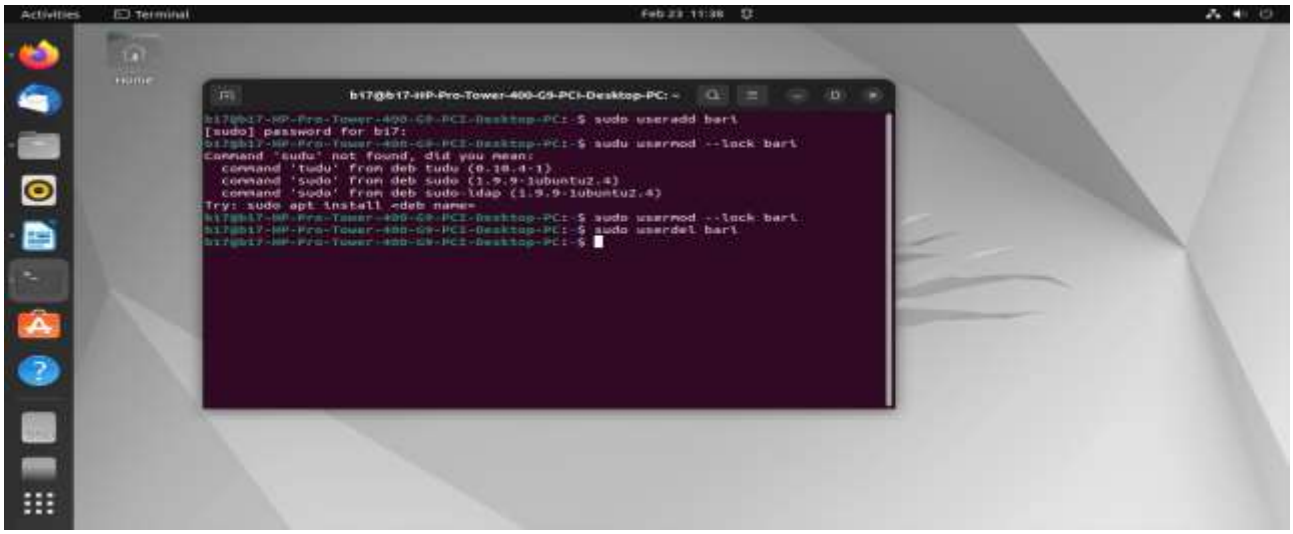
14.whoami - print effective userid

Code :

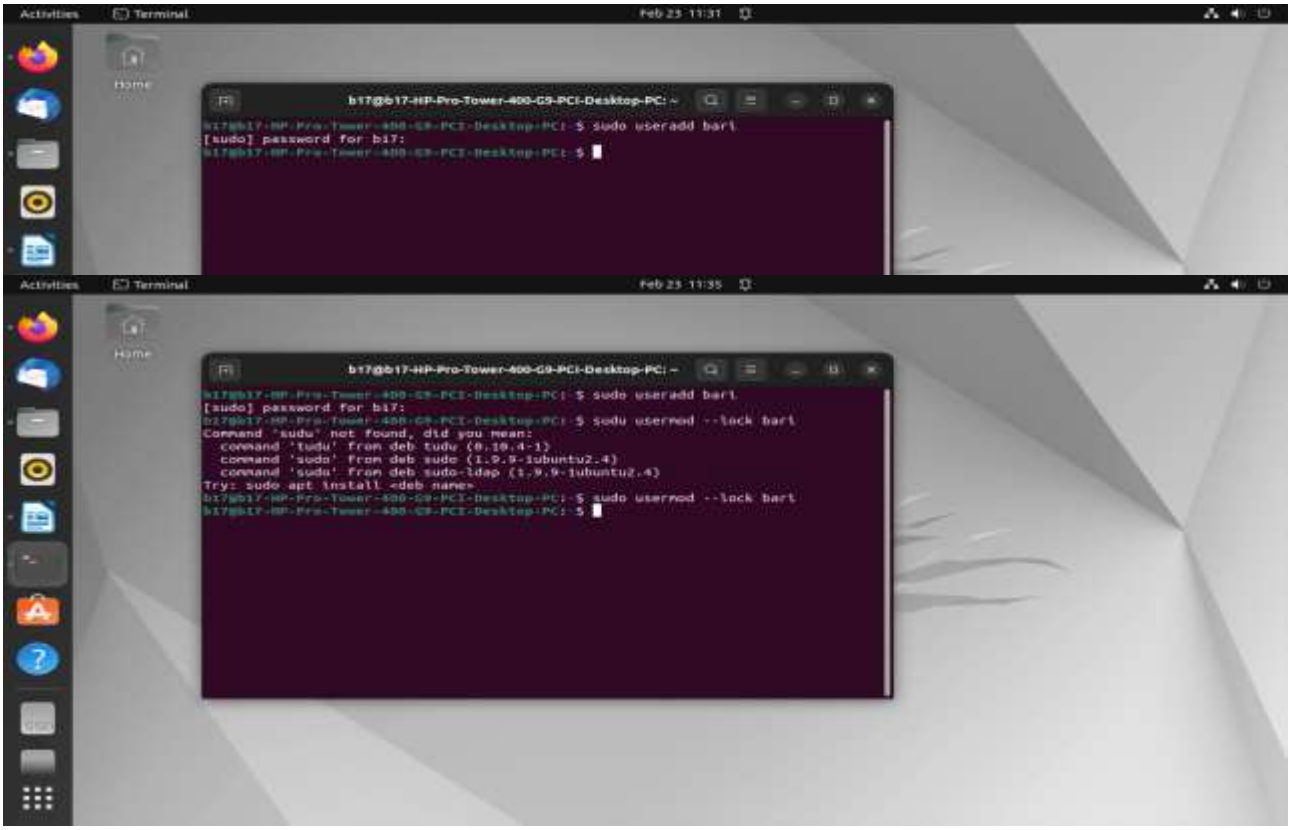
```
#include <stdio.h>
#include <unistd.h>
#include <sys/types.h>
#include <dirent.h>

int main(int argc, char *argv[]) {
   // Check if directory path is provided as argument
   const char *dir_path;
   if (argc > 1) {
      dir_path = argv[1];
   } else {
      dir_path = ".";
   }

   // Open the directory
   DIR *dir = opendir(dir_path);
```

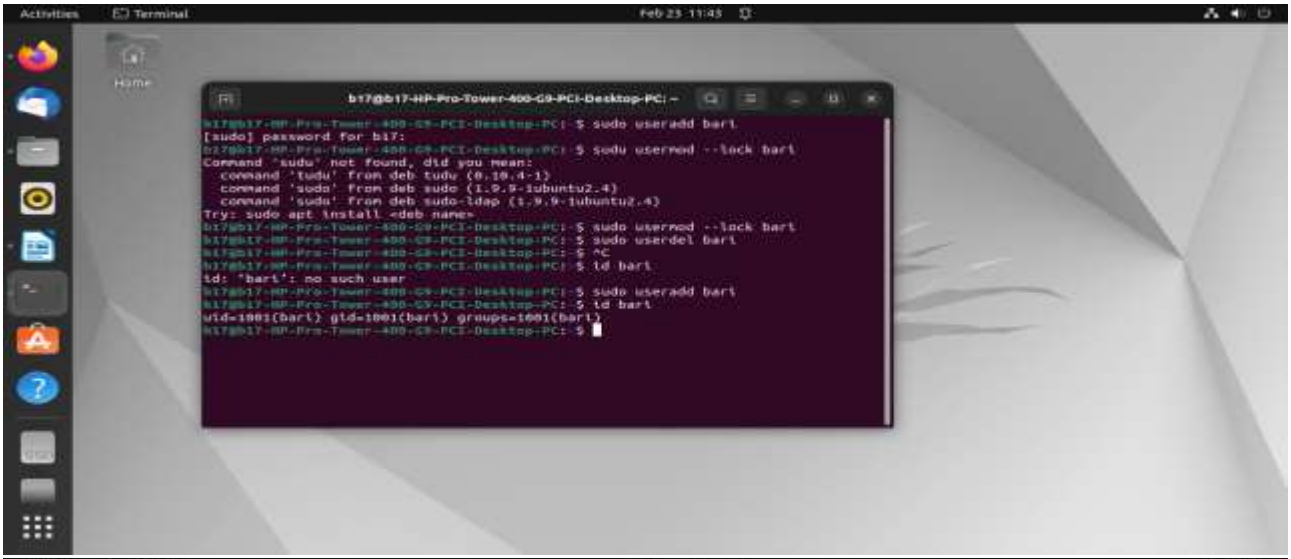
```
    if (dir == NULL) {
        perror("opendir");
        return 1;
    }

    // Read directory entries
    struct dirent *entry;
    while ((entry = readdir(dir)) != NULL) {
        printf("%s\n", entry->d_name);
    }

    // Close the directory
    closedir(dir);

    return 0;
}
```

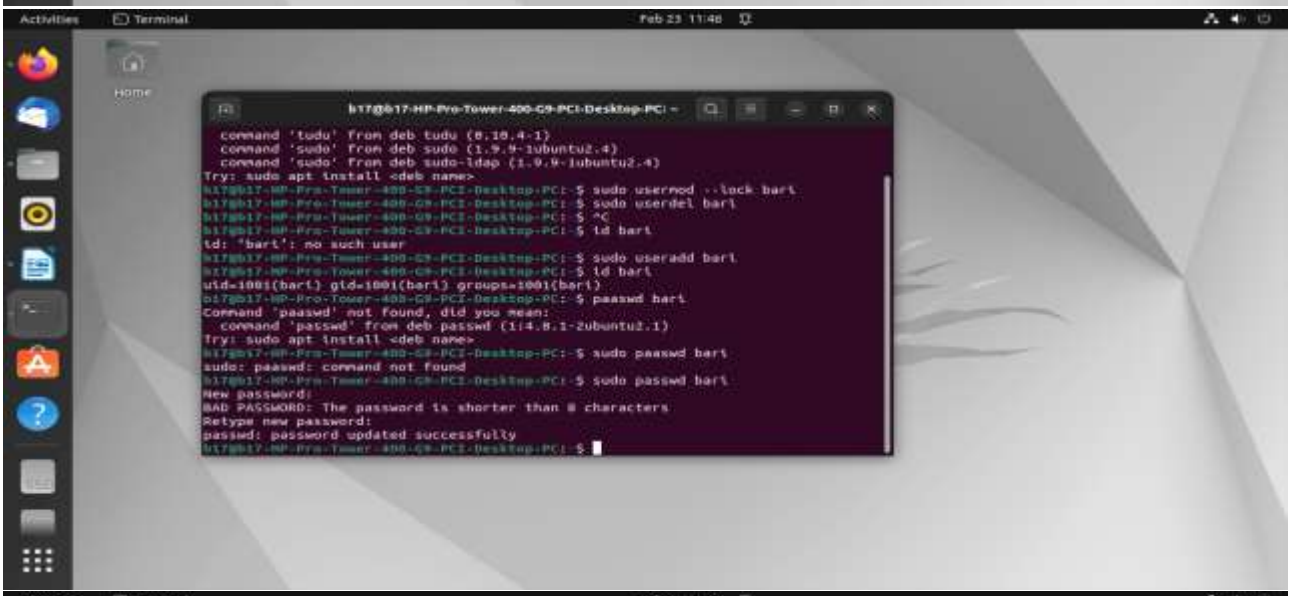
Compile this program using gcc:
gcc -o myls myls.c
Now you can run it like a regular ls command, providing an optional directory path as an argument:
./myls # Lists current directory contents
./myls /path/to/directory # Lists contents of specified directory
This program uses the opendir(), readdir(), and closedir() functions from the <dirent.h> header to open, read, and close directories, respectively. It prints the names of all directory entries to the standard output.

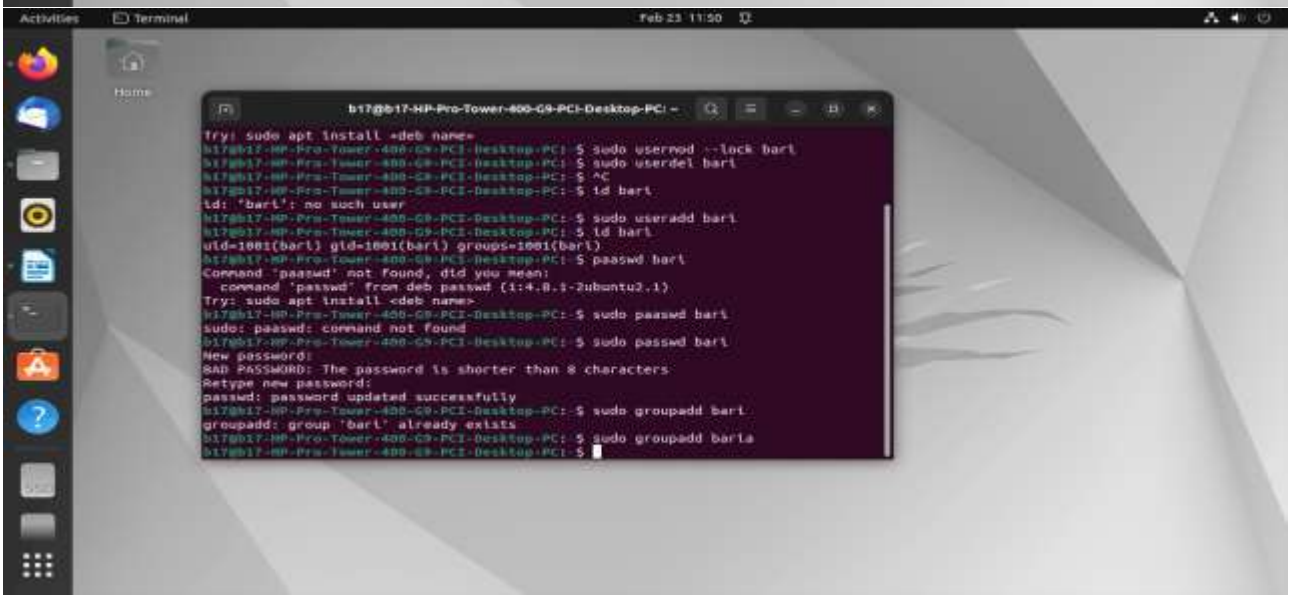

Activities
Terminal
Feb 23 11:38
Home
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: ~
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudo useradd bar1
[sudo] password for b17:
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudu usermod --lock bar1
Command 'sudu' not found, did you mean:
command 'tudu' from deb tudu (0.18.4-1)
command 'sudo' from deb sudo (1.9.9-1ubuntu2.4)
command 'sudo' from deb sudo-ldap (1.9.9-1ubuntu2.4)
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudo usermod --lock bar1
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudo userdel bar1
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$

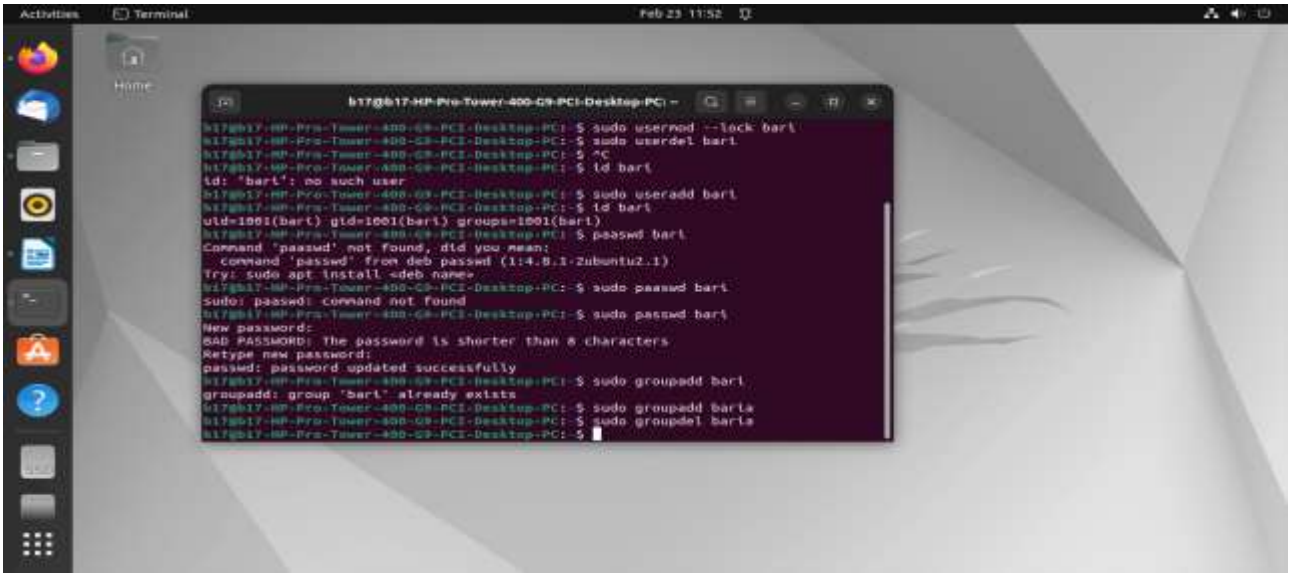
Output :


Activities
Terminal
Feb 23 11:31
Home
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: ~
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudo useradd bar1
[sudo] password for b17:
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$
Activities
Terminal
Feb 23 11:35
Home
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: ~
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudo useradd bar1
[sudo] password for b17:
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudu usermod --lock bar1
Command 'sudu' not found, did you mean:
command 'tudu' from deb tudu (0.18.4-1)
command 'sudo' from deb sudo (1.9.9-1ubuntu2.4)
command 'sudo' from deb sudo-ldap (1.9.9-1ubuntu2.4)
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$ sudo usermod --lock bar1
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC:~$


Activities
Terminal
Feb 23 11:43
Home
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: ~
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo useradd bari
[sudo] password for b17:
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudu usermod --lock bari
Command 'sudu' not found, did you mean:
command 'tudu' from deb tudu (0.10.4-1)
command 'sudo' from deb sudo (1.9.9-1ubuntu2.4)
command 'sudo' from deb sudo-ldap (1.9.9-1ubuntu2.4)
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo usermod --lock bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo userdel bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ ^C
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ id bari
id: 'bari': no such user
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo useradd bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ id bari
uid=1001(bari) gid=1001(bari) groups=1001(bari)
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $


Activities
Terminal
Feb 23 11:48
Home
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: ~
command 'tudu' from deb tudu (0.10.4-1)
command 'sudo' from deb sudo (1.9.9-1ubuntu2.4)
command 'sudo' from deb sudo-ldap (1.9.9-1ubuntu2.4)
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo usermod --lock bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo userdel bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ ^C
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ id bari
id: 'bari': no such user
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo useradd bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ id bari
uid=1001(bari) gid=1001(bari) groups=1001(bari)
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ paaswd bari
Command 'paaswd' not found, did you mean:
command 'passwd' from deb passwd (1:4.8.1-2ubuntu2.1)
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo paaswd bari
sudo: paaswd: command not found
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo passwd bari
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $


Activities
Terminal
Feb 23 11:50
Home
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: ~
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo usermod --lock bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo userdel bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ ^C
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ id bari
id: 'bari': no such user
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo useradd bari
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ id bari
uid=1001(bari) gid=1001(bari) groups=1001(bari)
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ paaswd bari
Command 'paaswd' not found, did you mean:
command 'passwd' from deb passwd (1:4.8.1-2ubuntu2.1)
Try: sudo apt install <deb name>
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo paaswd bari
sudo: paaswd: command not found
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo passwd bari
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo groupadd bari
groupadd: group 'bari' already exists
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $ sudo groupadd barla
b17@b17-HP-Pro-Tower-400-G9-PCI-Desktop-PC: $



Conclusion:

In conclusion, delving into the user management commands of Linux unveils a versatile toolkit essential for system administrators and users alike. Through commands like useradd, userdel, passwd, and others, Linux empowers users to efficiently manage accounts, access permissions, and security settings. This exploration underscores the robustness and flexibility of Linux in tailoring user environments to specific needs, whether for individual users or across organizational networks. By mastering these commands, users gain greater control over their Linux systems, enhancing both security and productivity.

Explain Linux API?

The Linux API (Application Programming Interface) is a set of functions, data structures, and protocols provided by the Linux operating system kernel to facilitate interaction between user-space applications and the kernel itself. It serves as an interface through which applications can request services from the kernel, such as accessing hardware resources, managing processes, and performing I/O operations.

Here are some key aspects of the Linux API:

System Calls: System calls are the primary means through which user-space applications interact with the kernel. They provide a way for applications to request services such as creating processes, accessing files, and managing memory. Examples of system calls include open(), read(), write(), and fork().

Standard C Library (libc): The C library provides a higher-level interface to the Linux API for C language programs. It wraps system calls in functions that are easier to use and understand. Functions like printf(), scanf(), malloc(), and free() are part of the C library and are commonly used in Linux programming.

File System Interface: Linux supports various file systems, and the API provides functions for interacting with files and directories. Operations such as opening, reading, writing, and closing files are performed using system calls like open(), read(), write(), and close().

Process Management: The Linux API allows for the creation, manipulation, and control of processes. System calls such as fork(), exec(), and wait() are used for process management tasks like creating new processes, replacing the current process with a new one, and waiting for child processes to terminate.

Networking: Linux provides a rich set of networking features, and the API includes functions for network communication. System calls like socket(), bind(), listen(), accept(), connect(), send(), and recv() are used for creating and interacting with network sockets.

Interprocess Communication (IPC): Linux supports various mechanisms for interprocess communication, such as pipes, message queues, shared memory, and semaphores. System calls like pipe(), msgget(), shmat(), and semop() are used for IPC.

Device Access: The Linux API allows applications to interact with hardware devices through device files located in the /dev directory. System calls like open(), ioctl(), and read()/write() are commonly used for device access.