EXPERMENT NO. 7

BASIC SYSTEM ADMINISTRATIVE TASK

1. **Process Management Commands: fg, bg, top, ps, ps PID, kill PID, nice, renice**

fg: "fg" is used to continue a program which was stopped and bring it to the foreground.

The simple syntax for this utility is:

fgjobname

Example

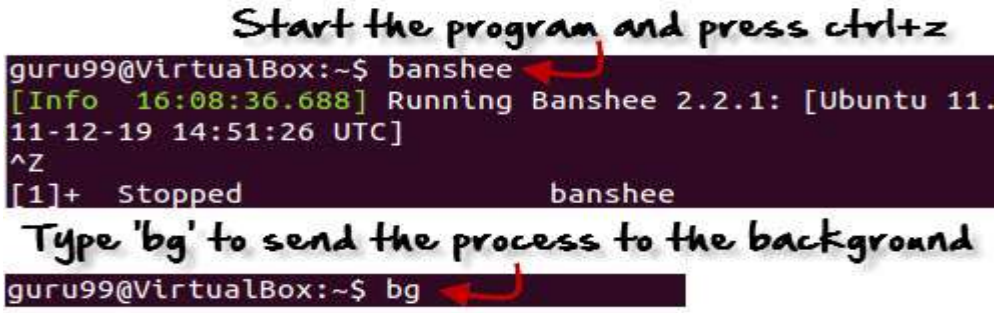
1. Launch 'banshee' music player
2. Stop it with the 'ctrl +z' command
3. Continue it with the 'fg' utility.

```
home@VirtualBox:~$ banshee
^Z
[1]+  Stopped                 banshee
home@VirtualBox:~$ fg banshee
banshee
[Info  00:36:19.400] Running Banshee 2.2.0: [Ubuntu oneiric
 (linux-gnu, i686) @ 2011-09-23 04:51:00 UTC]
```

bg:If you start a foreground program/process from the terminal, then you cannot work on the terminal, till the program is up and running.

Particular, data-intensive tasks take lots of processing power and may even take hours to complete. You do not want your terminal to be held up for such a long time.

To avoid such a situation, you can run the program and send it to the background so that terminal remains available to you. Let's learn how to do this –



top:This utility tells the user about all the running processes on the Linux machine.

```
home@VirtualBox:~$ top

top - 23:57:43 up  2:54,  1 user,  load average: 0.00, 0.01, 0.05
Tasks: 189 total,   2 running, 187 sleeping,   0 stopped,   0 zombie
Cpu(s):  0.7%us,  3.0%sy,  0.0%ni, 96.3%id,  0.0%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:   1026080k total,   924508k used,   101572k free,    37000k buffers
Swap:  1046524k total,    21472k used,  1025052k free,   367996k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 1525 home      20   0 1775m 100m  28m S  1.7 10.0   5:05.34 Photoshop.exe
  961 root      20   0 75972  51m 7952 R  1.0  5.1   2:23.42 Xorg
 1507 home      20   0  7644 4652  696 S  1.0  0.5   2:42.66 wineserver
 1564 home      20   0 75144  29m 9840 S  0.3  3.0   0:25.96 ubuntuone-syncd
 2999 home      20   0  127m  13m  10m S  0.3  1.4   0:01.36 gnome-terminal
 3077 home      20   0  2820 1188  864 R  0.3  0.1   0:00.76 top
    1 root      20   0  3200 1704 1260 S  0.0  0.2   0:00.98 init
    2 root      20   0     0    0    0 S  0.0  0.0   0:00.00 kthreadd
    3 root      20   0     0    0    0 S  0.0  0.0   0:00.95 ksoftirqd/0
```

ps: This command stands for 'Process Status'. It is similar to the "Task Manager" that pop-ups in a Windows Machine when we use Cntrl+Alt+Del. This command is similar to 'top' command but the information displayed is different.

```
home@VirtualBox:~$ ps ux
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
home      1114  0.0  0.8  46548  8512 ?        Ssl  Sep03   0:00 gnome-sess
home      1151  0.0  0.0   3856   140 ?        Ss   Sep03   0:00 /usr/bin/s
home      1154  0.0  0.0   3748   484 ?        S    Sep03   0:00 /usr/bin/d
home      1155  0.1  0.2   6656  3036 ?        Ss   Sep03   0:18 //bin/dbus
home      1157  0.0  0.2   9148  2368 ?        S    Sep03   0:00 /usr/lib/g
home      1162  0.0  0.2  31588  2296 ?        Ssl  Sep03   0:00 /usr/lib/g
home      1174  0.0  1.4 132472 14884 ?        Sl   Sep03   0:03 /usr/lib/g
```

pspid: Check the process status of a single process.

```
guru99@VirtualBox:~$ ps 1268
  PID TTY      STAT   TIME COMMAND
 1268 ?        S<l    0:02 /usr/bin/pulseaudio --start --log-target=syslog
```

Kill: This command **terminates running processes** on a Linux machine. To use these utilities you need to know the PID (process id) of the process you want to kill.

```
home@VirtualBox:~$ pidof Photoshop.exe
1525
home@VirtualBox:~$ kill 1525
```

NICE: Linux can run a lot of processes at a time, which can slow down the speed of some high priority processes and result in poor performance.

To avoid this, you can tell your machine to prioritize processes as per your requirements.

This priority is called Niceness in Linux, and it has a value between -20 to 19. The lower the Niceness index, the higher would be a priority given to that task.

The default value of all the processes is 0.

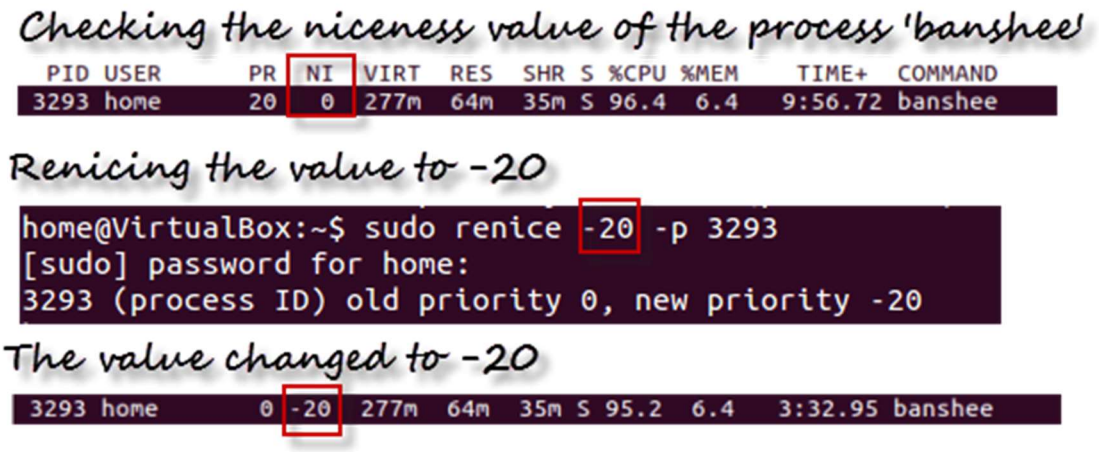
To start a process with a niceness value other than the default value use the following syntax

nice -n 'Nice value' process name

```
home@VirtualBox:~$ nice -n 19 banshee
```

Renice: If there is some process already running on the system, then you can 'Renice' its value using syntax.

renice 'nice value' -p 'PID'



2. Memory Management Commands: free, df, ipcs

Free: This command shows the free and used memory (RAM) on the Linux system.

You can use the arguments:
free -m to display output in MB
free -g to display output in GB

nilesh@DESKTOP-QCHD2JP:~$ free

	total	used	free	shared	buff/cache	available
Mem:	4070196	1867324	1966396	17720	236476	2062016
Swap:	12582912	169896	12413016			

nilesh@DESKTOP-QCHD2JP:~$ free -m

	total	used	free	shared	buff/cache	available
Mem:	3974	1823	1920	17	230	2013
Swap:	12288	165	12122			

nilesh@DESKTOP-QCHD2JP:~$ free -g

	total	used	free	shared	buff/cache	available
Mem:	3	1	1	0	0	1
Swap:	12	0	11			

nilesh@DESKTOP-QCHD2JP:~$

df: This utility reports the free disk space(Hard Disk) on all the file systems.

nilesh@DESKTOP-QCHD2JP:~$ df

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
rootfs	227143548	128224360	98919188	57%	/
none	227143548	128224360	98919188	57%	/dev
none	227143548	128224360	98919188	57%	/run
none	227143548	128224360	98919188	57%	/run/lock
none	227143548	128224360	98919188	57%	/run/shm
none	227143548	128224360	98919188	57%	/run/user
C:	227143548	128224360	98919188	57%	/mnt/c
D:	124553212	49140188	75413024	40%	/mnt/d
E:	20479996	16539972	3940024	81%	/mnt/e

If you want the above information in a readable format, then use the command

nilesh@DESKTOP-QCHD2JP:~$ df -h

Filesystem	Size	Used	Avail	Use%	Mounted on
rootfs	217G	123G	95G	57%	/
none	217G	123G	95G	57%	/dev
none	217G	123G	95G	57%	/run
none	217G	123G	95G	57%	/run/lock
none	217G	123G	95G	57%	/run/shm
none	217G	123G	95G	57%	/run/user
C:	217G	123G	95G	57%	/mnt/c
D:	119G	47G	72G	40%	/mnt/d
E:	20G	16G	3.8G	81%	/mnt/e

Ipcs: This command shows information on the inter-process communication facilities for which the calling process has read access.By default it shows information about all three resources: shared memory segments, message queues, and semaphore arrays.

nilesh@DESKTOP-QCHD2JP:~$ ipcs

------ Message Queues --------
keymsqid owner perms used-bytes messages

------ Shared Memory Segments --------
keyshmid owner perms bytes nattch status

------ Semaphore Arrays --------
keysemid owner perms nsems

3. **File System Management Commands:** ls, mv, cp, rm, emacs, diff, wc, chmod, gzip

- **ls ---** lists your files
- **ls -l ---** lists your files in 'long format', which contains lots of useful information, e.g. the exact size of the file, who owns the file and who has the right to look at it, and when it was last modified.
- **ls -a** --- lists all files, including the ones whose filenames begin in a dot, which you do not always want to see.
- **mv filename1 filename2** --- moves a file (i.e. gives it a different name, or moves it into a different directory (see below)
- **cp filename1 filename2** --- copies a file
- **rm filename** --- removes a file. It is wise to use the option rm -i, which will ask you for confirmation before actually deleting anything.
- **emacs**filename --- is an editor that lets you create and edit a file.
- **diff filename1 filename2** --- compares files, and shows where they differ
- **wc filename** --- tells you how many lines, words, and characters there are in a file
- **chmod options filename** --- lets you change the read, write, and execute permissions on your files. The default is that only you can look at them and change them, but you may sometimes want to change these permissions. For example, chmodo+r filename will make the file readable for everyone, and chmod o-r filename will make it unreadable for others again.
- **gzip filename** --- compresses files, so that they take up much less space. Usually text files compress to about half their original size, but it depends very much on the size of the file and the nature of the contents. There are other tools for this purpose, too (e.g.

compress), but gzip usually gives the highest compression rate. Gzip produces files with the ending '.gz' appended to the original filename.

4. **User Management Commands**: adduser, deluser, passwd, addgroup, delgroup, chage

adduser: The adduser command adds a new user to the system.
Example: $addusermynewuser
Creates a new user account, mynewuser.

nilesh@DESKTOP-QCHD2JP:~$ sudoaddusermynewuser
[sudo] password for nilesh:
Adding user `mynewuser' ...
Adding new group `mynewuser' (1007) ...
Adding new user `mynewuser' (1006) with group `mynewuser' ...
Creating home directory `/home/mynewuser' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for mynewuser
Enter the new value, or press ENTER for the default
Full Name []: Nilesh
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y

deluser: The deluser commands remove a user from the system.
nilesh@DESKTOP-QCHD2JP:~$ sudodelusermynewuser
Removing user `mynewuser' ...
Warning: group `mynewuser' has no more members.
Done.
nilesh@DESKTOP-QCHD2JP:~$

passwd: The passwd command is used to change the password of a user account. A normal user can run passwd to change their own password, and a system administrator (the superuser) can use passwd to change another user's password, or define how that account's password can be used or changed.
nilesh@DESKTOP-QCHD2JP:~$ passwd
Changing password for nilesh.

(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully

groupadd: Creates a new group.
nilesh@DESKTOP-QCHD2JP:~$ sudogroupadd IT

delgroup: Deletes the group.
nilesh@DESKTOP-QCHD2JP:~$ sudodelgroup IT
Removing group `IT' ...
Done.

chage: The command name ‘chage’ is an acronym for ‘change age’. This command is used to change the user's password's aging / expiry information. Any user can execute this command with the ‘-l’ option to view their password and aging information. No other unauthorised users can view the password's aging/expiry information. As the root user, you can execute this command to modify the aging information.

nilesh@DESKTOP-QCHD2JP:~$ chage -l nilesh
Last password change : Apr 08, 2018
Password expires : never
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7