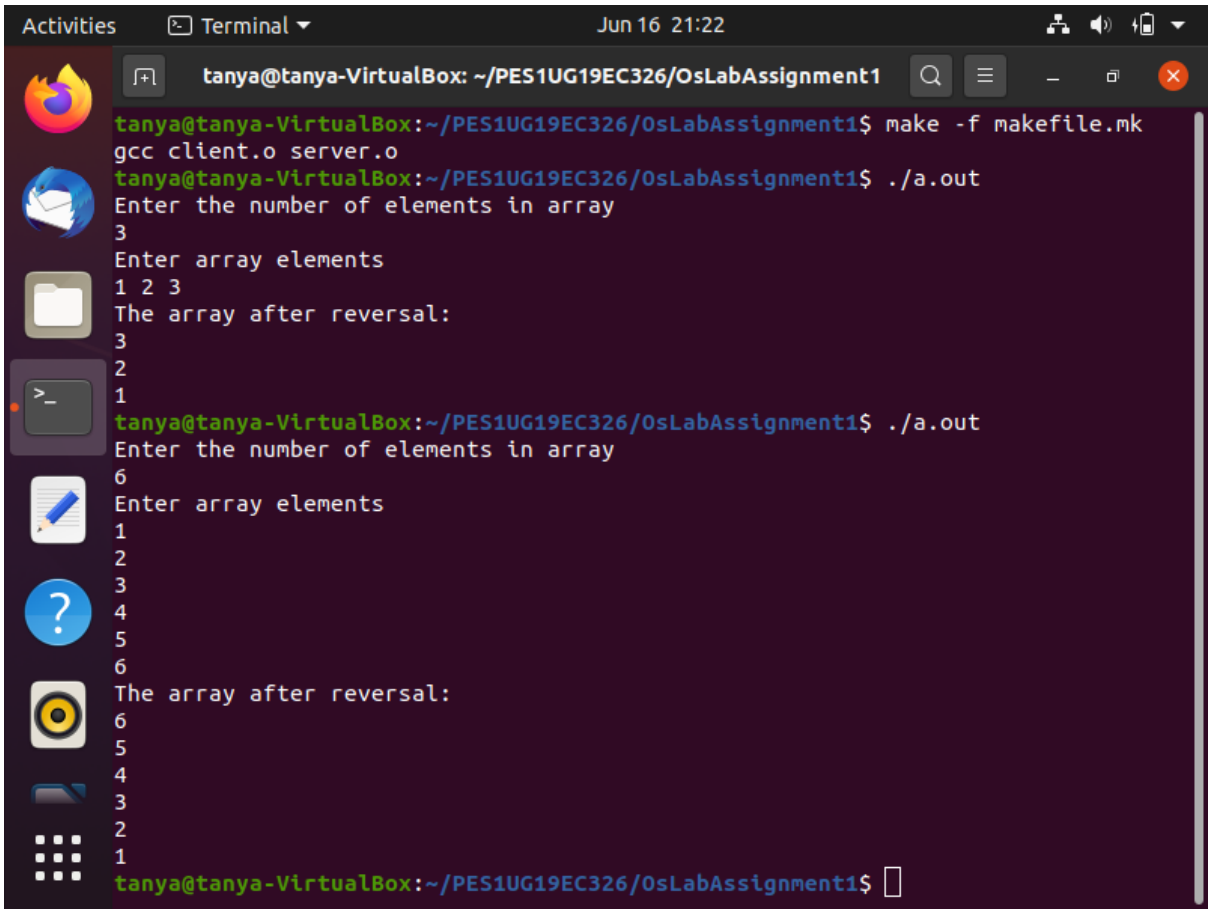
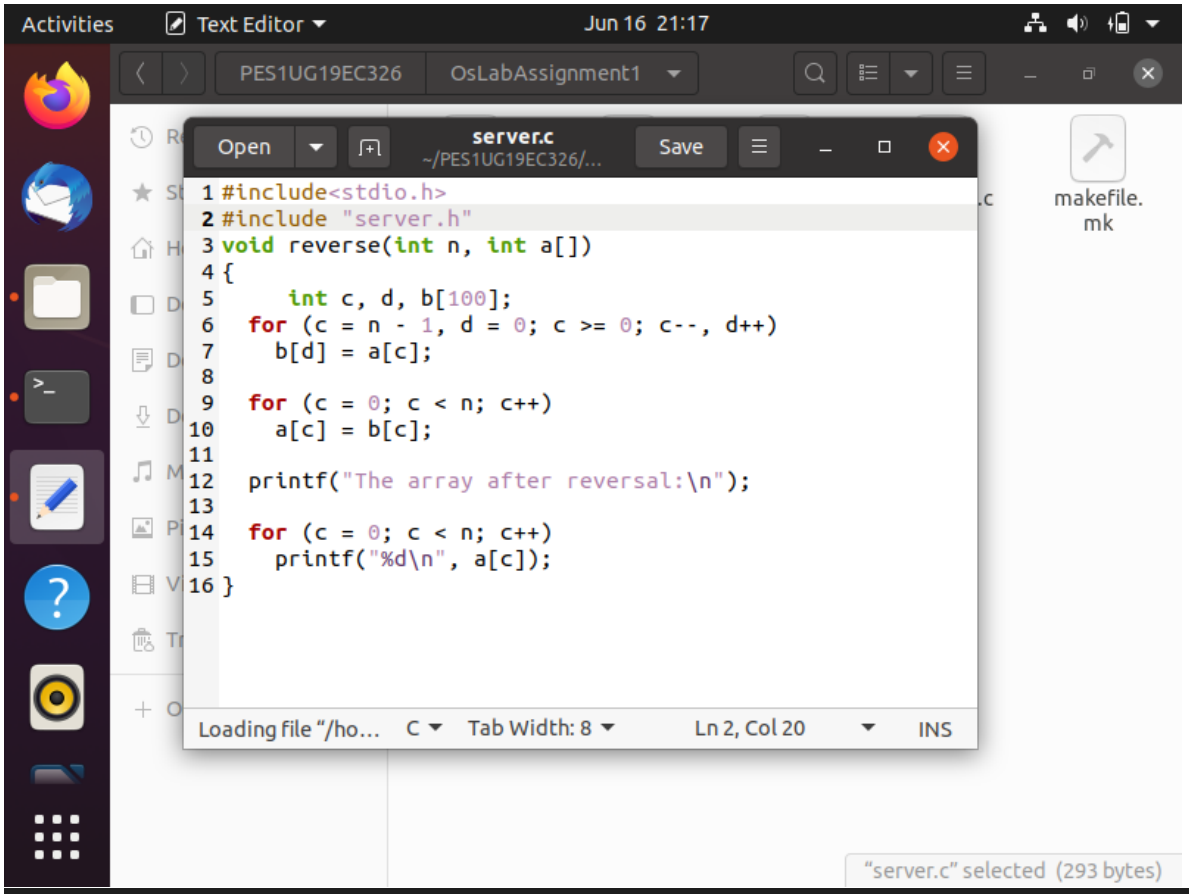
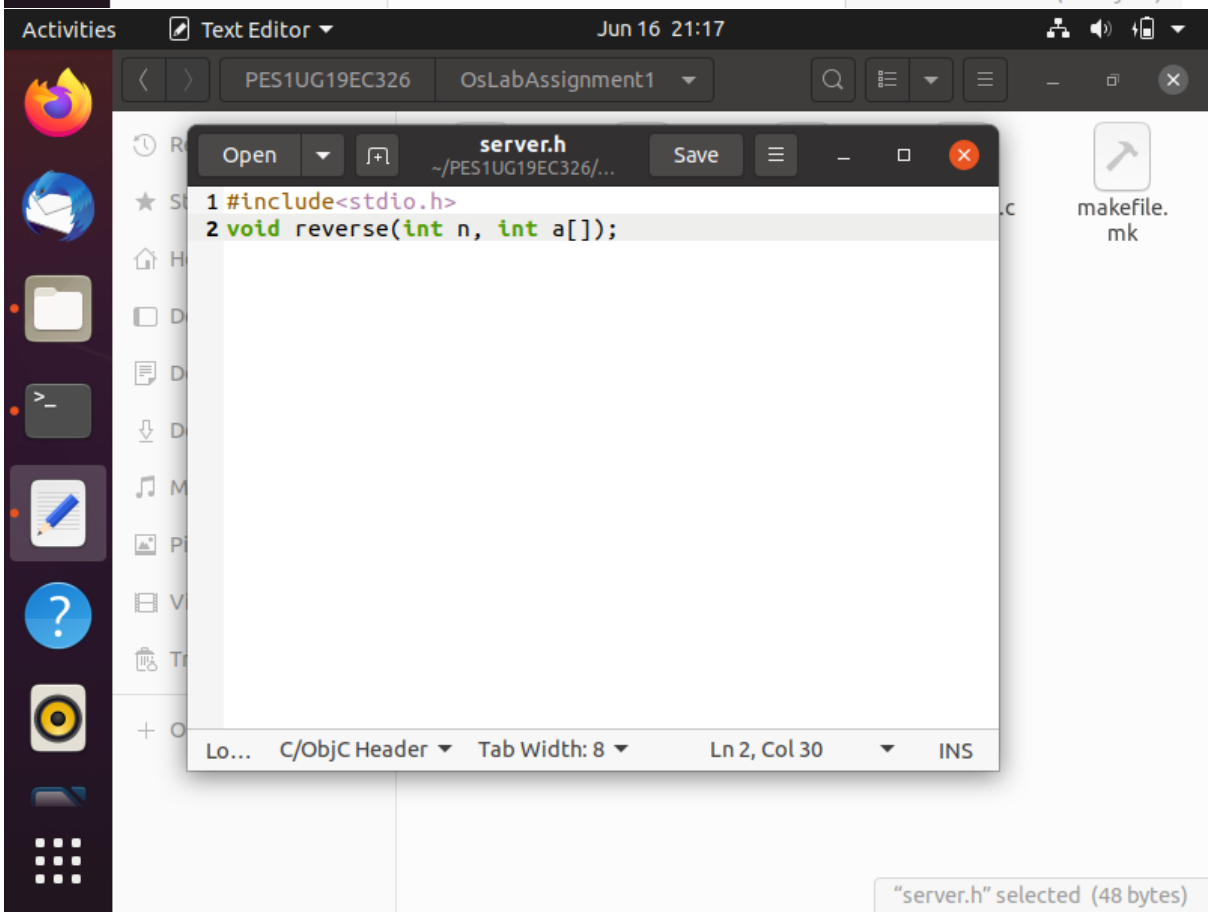
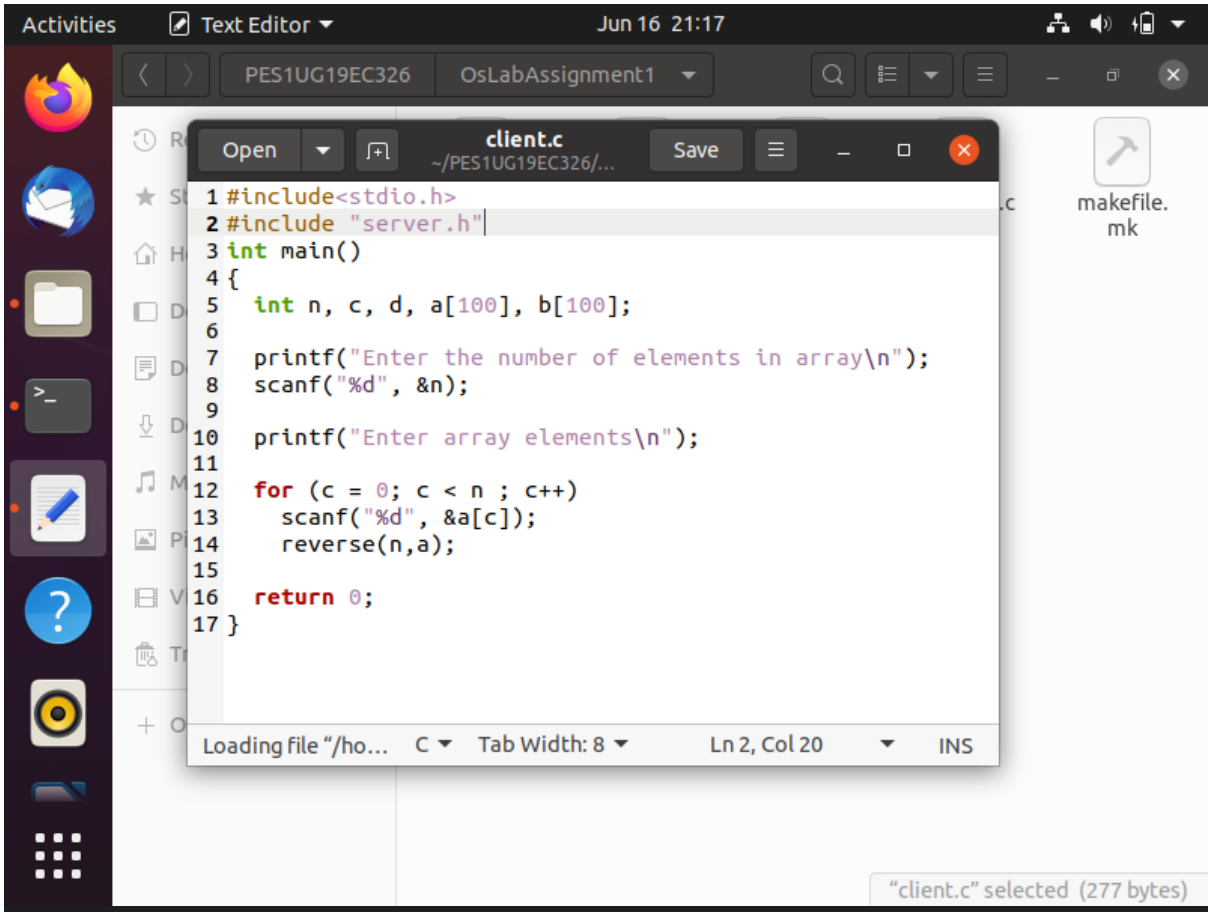
**Name: Tanya Chanchalani**
**SRN: PES1UG19EC326**
Sem: 4
Course: OS Lab Assignment 1

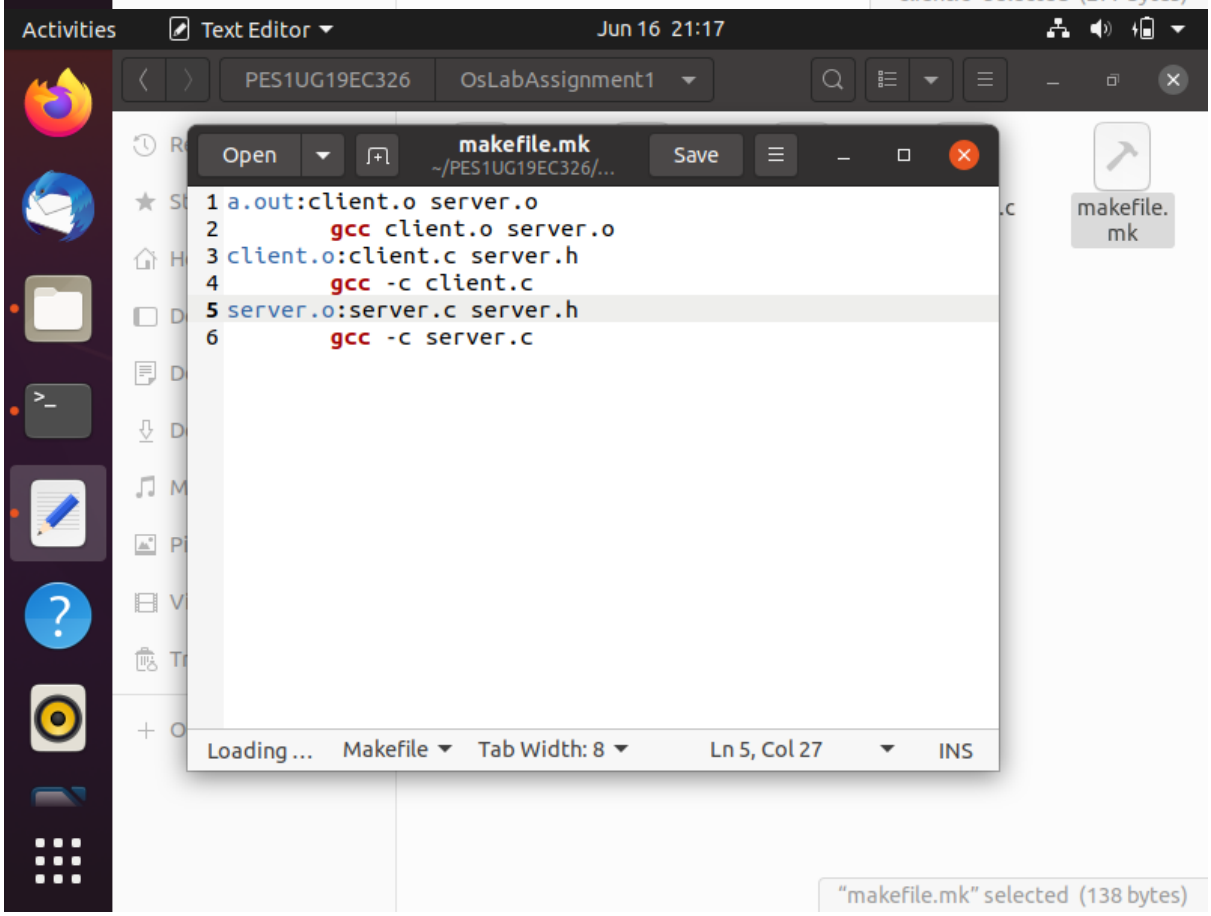
2)Output:-




Activities
Text Editor
Jun 16 21:17
PES1UG19EC326
OsLabAssignment1
Open
server.c
~/PES1UG19EC326/...
Save
1 #include<stdio.h>
2 #include "server.h"
3 void reverse(int n, int a[])
4 {
5 int c, d, b[100];
6 for (c = n - 1, d = 0; c >= 0; c--, d++)
7 b[d] = a[c];
8
9 for (c = 0; c < n; c++)
10 a[c] = b[c];
11
12 printf("The array after reversal:\n");
13
14 for (c = 0; c < n; c++)
15 printf("%d\n", a[c]);
16 }
Loading file "/ho...
C
Tab Width: 8
Ln 2, Col 20
INS
makefile.
mk
"server.c" selected (293 bytes)


Activities
Text Editor
Jun 16 21:17
PES1UG19EC326
OsLabAssignment1
Open
server.h
~/PES1UG19EC326/...
Save
1 #include<stdio.h>
2 void reverse(int n, int a[]);
Lo...
C/ObjC Header
Tab Width: 8
Ln 2, Col 30
INS
makefile.
mk
"server.h" selected (48 bytes)


Activities
Text Editor
Jun 16 21:17
PES1UG19EC326
OsLabAssignment1
Open
client.c
~/PES1UG19EC326/...
Save
1 #include<stdio.h>
2 #include "server.h"
3 int main()
4 {
5 int n, c, d, a[100], b[100];
6
7 printf("Enter the number of elements in array\n");
8 scanf("%d", &n);
9
10 printf("Enter array elements\n");
11
12 for (c = 0; c < n ; c++)
13 scanf("%d", &a[c]);
14 reverse(n,a);
15
16 return 0;
17 }
Loading file "/ho... C Tab Width: 8 Ln 2, Col 20 INS
makefile.mk
"client.c" selected (277 bytes)


Activities
Text Editor
Jun 16 21:17
PES1UG19EC326
OsLabAssignment1
Open
makefile.mk
~/PES1UG19EC326/...
Save
1 a.out:client.o server.o
2 gcc client.o server.o
3 client.o:client.c server.h
4 gcc -c client.c
5 server.o:server.c server.h
6 gcc -c server.c
Loading ... Makefile Tab Width: 8 Ln 5, Col 27 INS
makefile.mk
"makefile.mk" selected (138 bytes)

1)
a)
cal - To display a calendar.

- cal [-mjy] [[month] year]
- -m Display Monday as the first day of the week.
- -j Display Julian dates (days one-based, numbered from January 1).
- -y Display a calendar for the current year.

b)
pwd – confirm current directory
pwd [-LP]

- pwd -L: Prints the symbolic path.
- pwd -P: Prints the actual path.

c)
last – show history of logins into the system
last [OPTIONS] [USER] [<TTY>...]

- last -i : The -i (--ip) option forces last to always show IP address, and the -d (--dns) to show hostnames.
- last -F: As last doesn't show the seconds and the year. We can use the -F, --fulltimes option to view full login and logout times and dates:

d)
whoami – shows the username

- whoami --version: It gives the version information and exit.
- whoami --help: It gives the help message and exit.

e)
top – show tasks and system status

1. top -u tanya - Display Specific User Process
2. top -h - Shows top command syntax

It provides a dynamic real-time view of the running system.

- PID: Shows task's unique process id.
- PR: Stands for priority of the task.
- SHR: Represents the amount of shared memory used by a task.
- VIRT: Total virtual memory used by the task.
- USER: User name of owner of task.
- %CPU: Represents the CPU usage.
- TIME+: CPU Time, the same as 'TIME', but reflecting more granularity through hundredths of a second.
- SHR: Represents the Shared Memory size (kb) used by a task.
- NI: Represents a Nice Value of task. A Negative nice value implies higher priority, and positive Nice value means lower priority.
- %MEM: Shows the Memory usage of task.

f)
ps – list processes - ps displays information about a selection of the active processes.
ps [OPTIONS]
**ps -ef -**

- The -e option instructs ps to display all processes.
- The -f stands full-format listing, which provides detailed information about the processes

**ps aux -**

- The a option tells ps to display the processes of all users. Only the processes that not associated with a terminal and processes of group leaders are not shown.
- u stands for a user-oriented format that provides detailed information about the processes.
- The x option instructs ps to list the processes without a controlling terminal. Those are mainly processes that are started on boot time and running in the background.

g)
date – show current date and time
date [option]... [+format]

- date -d "2000-11-22 09:10:15": The -d option allows users to operate on a specific date.
- date --set="20100513 05:30": To change the system clock manually, use the --set command.

h)
uname – print Unix system information: hostname, kernel version, etc
uname [OPTION]
**$uname -a**

- -a option: It prints all the system information in the following order: *Kernel name, network node hostname, kernel release date, kernel version, machine hardware name, hardware platform, operating system*

**$uname -n:** It prints the hostname of the network node(current computer).

i)
cat – concatenate files and show contents to the standard output
**$cat filename**

- It reads data from the file and gives its content as output. It helps us to create, view, concatenate files.

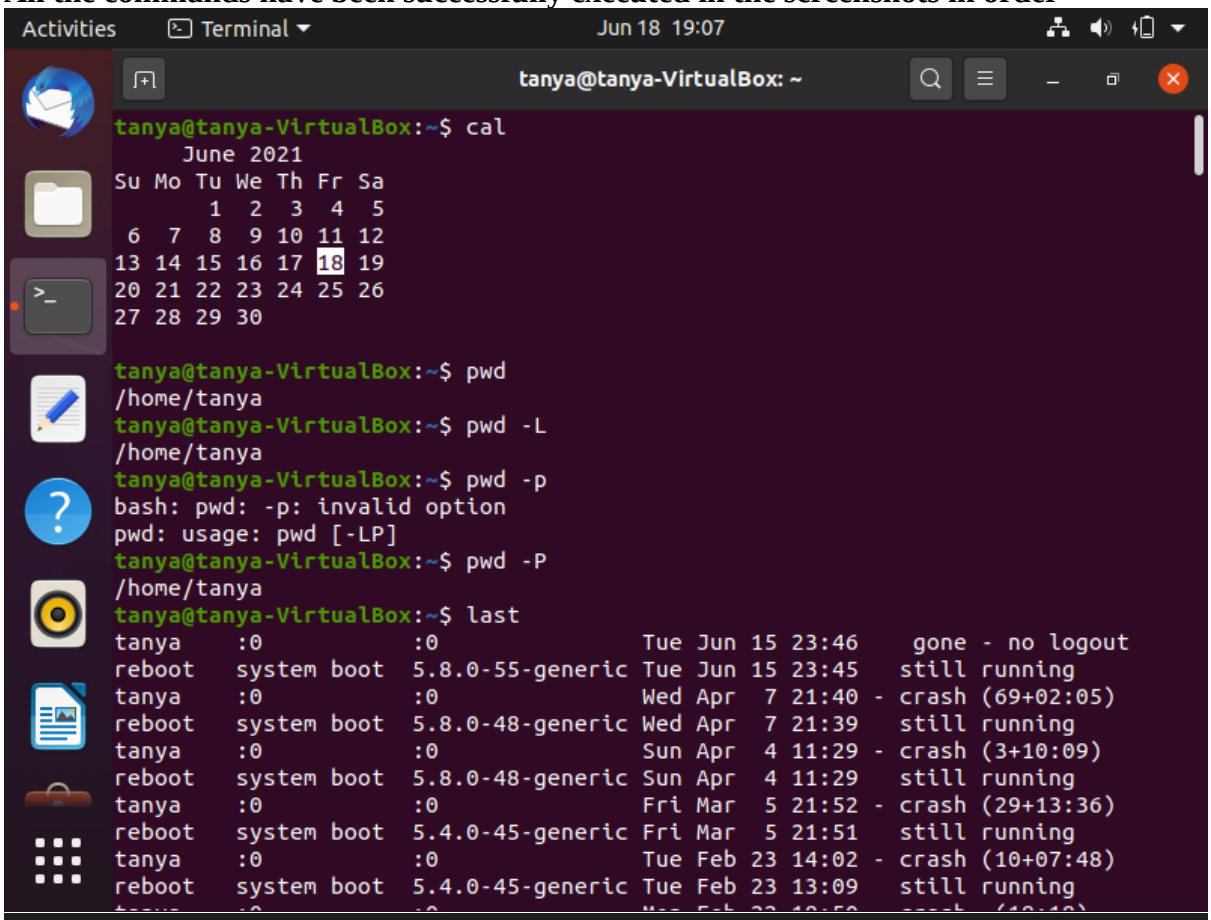
Cat command can suppress repeated empty lines in output
**$cat -n filename**: To view contents of a file preceding with line numbers.

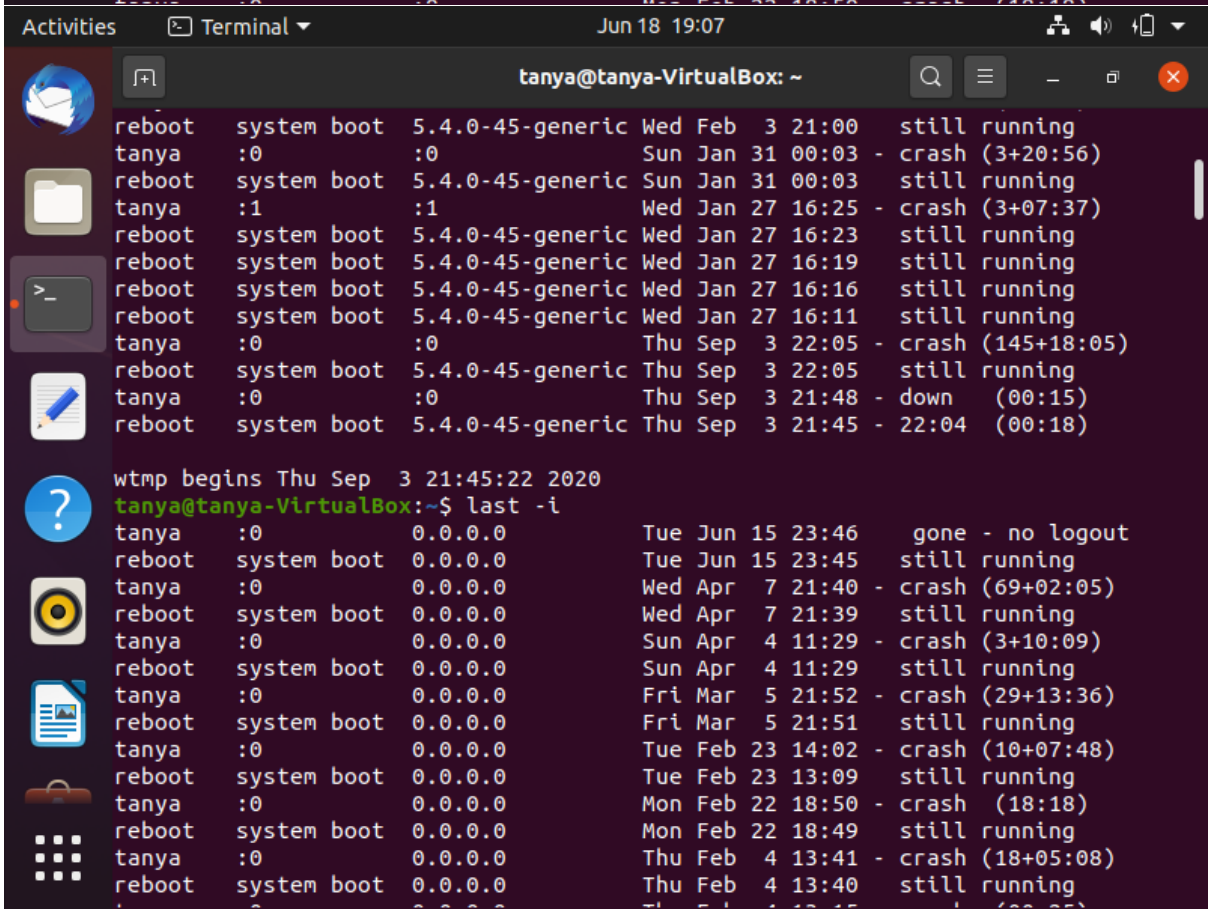
j)
man – view manual pages for Unix commands
man [man options] [[section] page ...] ...
**man -f smail**

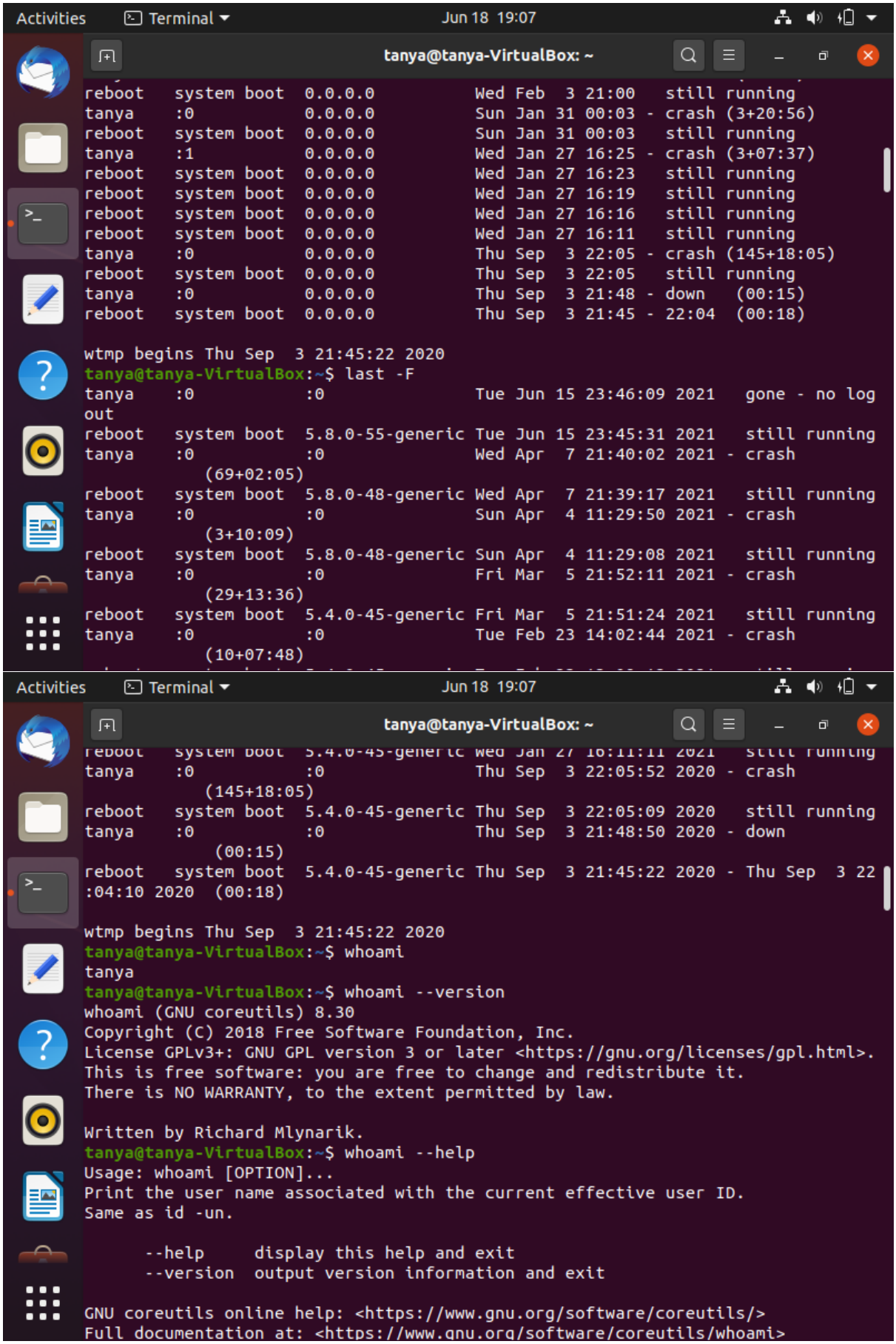
- Lookup the manual pages referenced by smail and print out the
- short descriptions of any found. Equivalent to whatis smail.

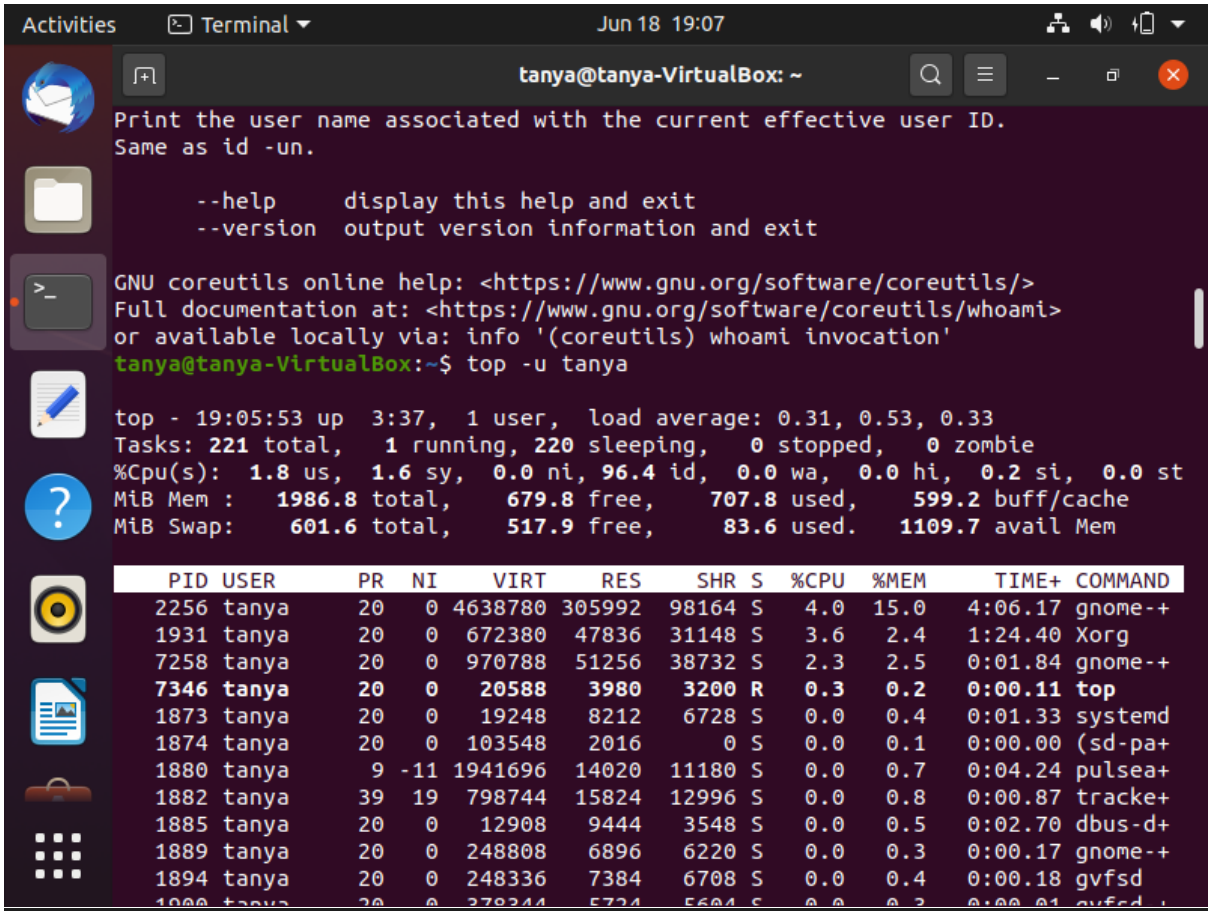
**man -k printf –** Searces the short descriptions and manual page names for the keyword printf as regular expression. Prints out any matches.

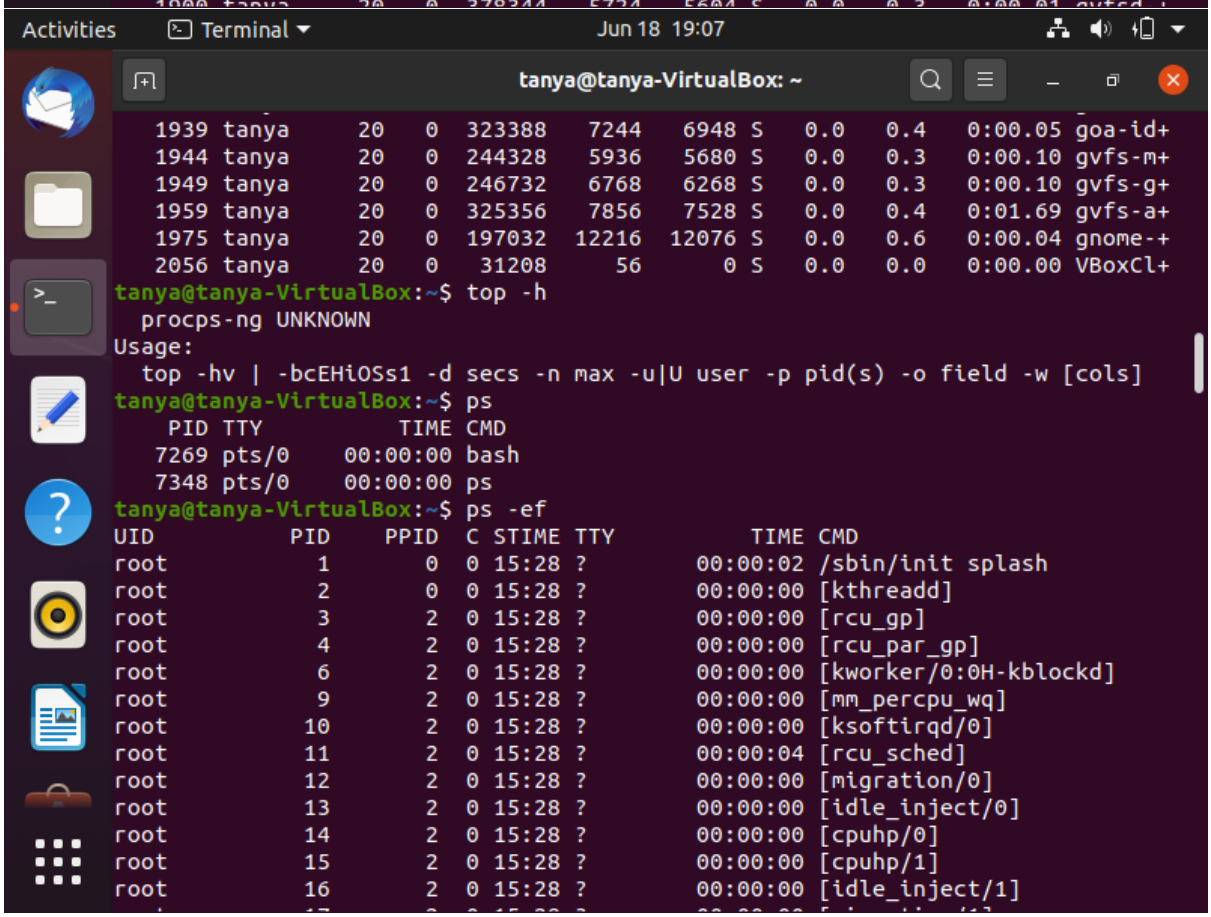
**All the commands have been successfully executed in the screenshots in order**

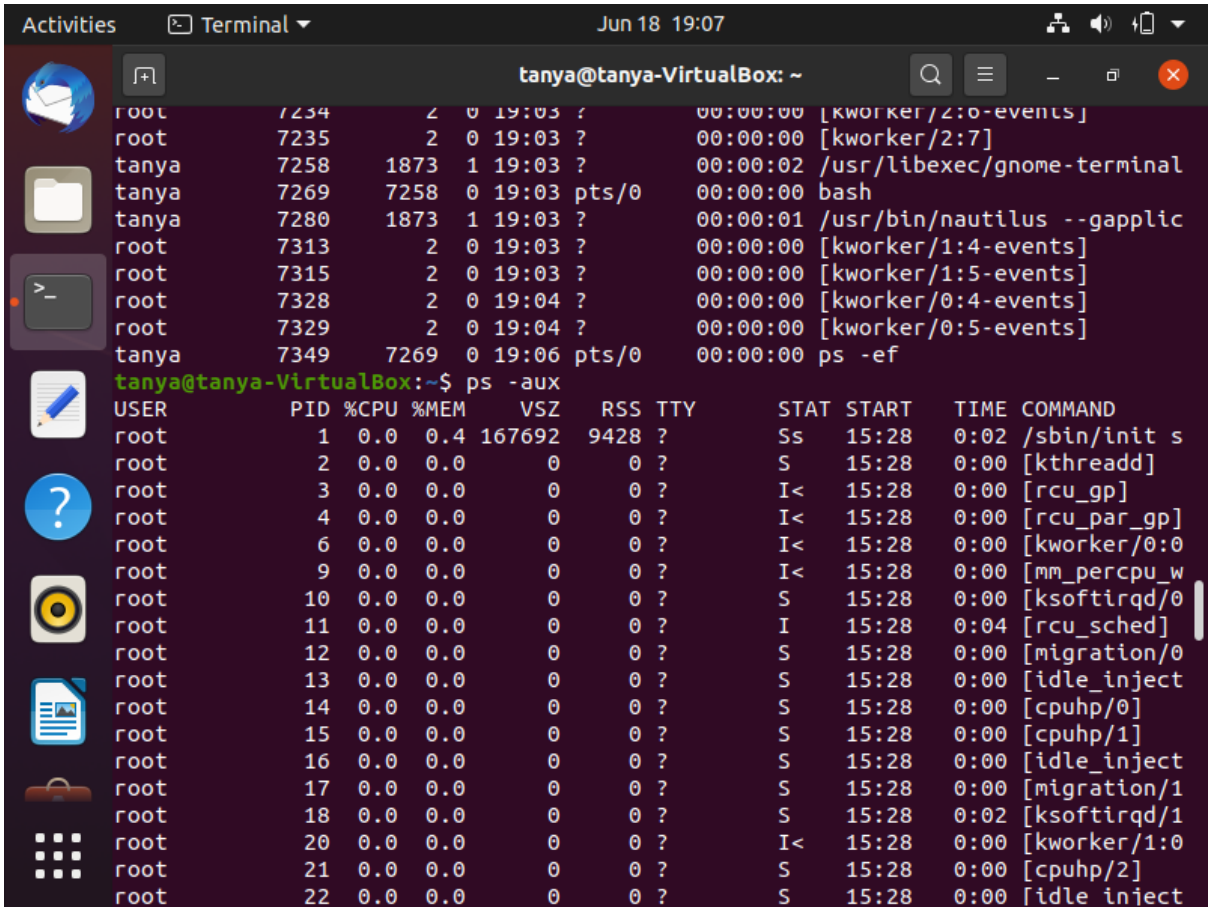


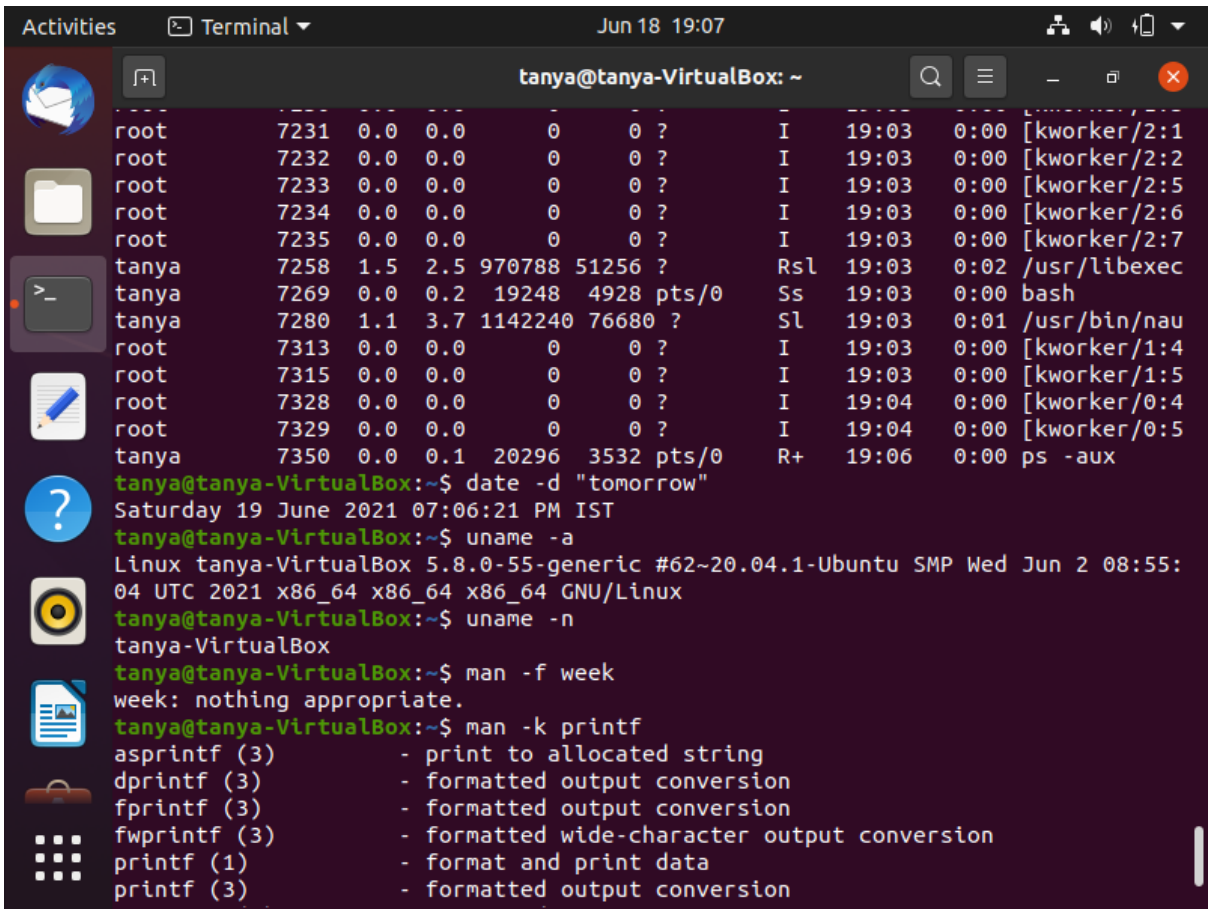



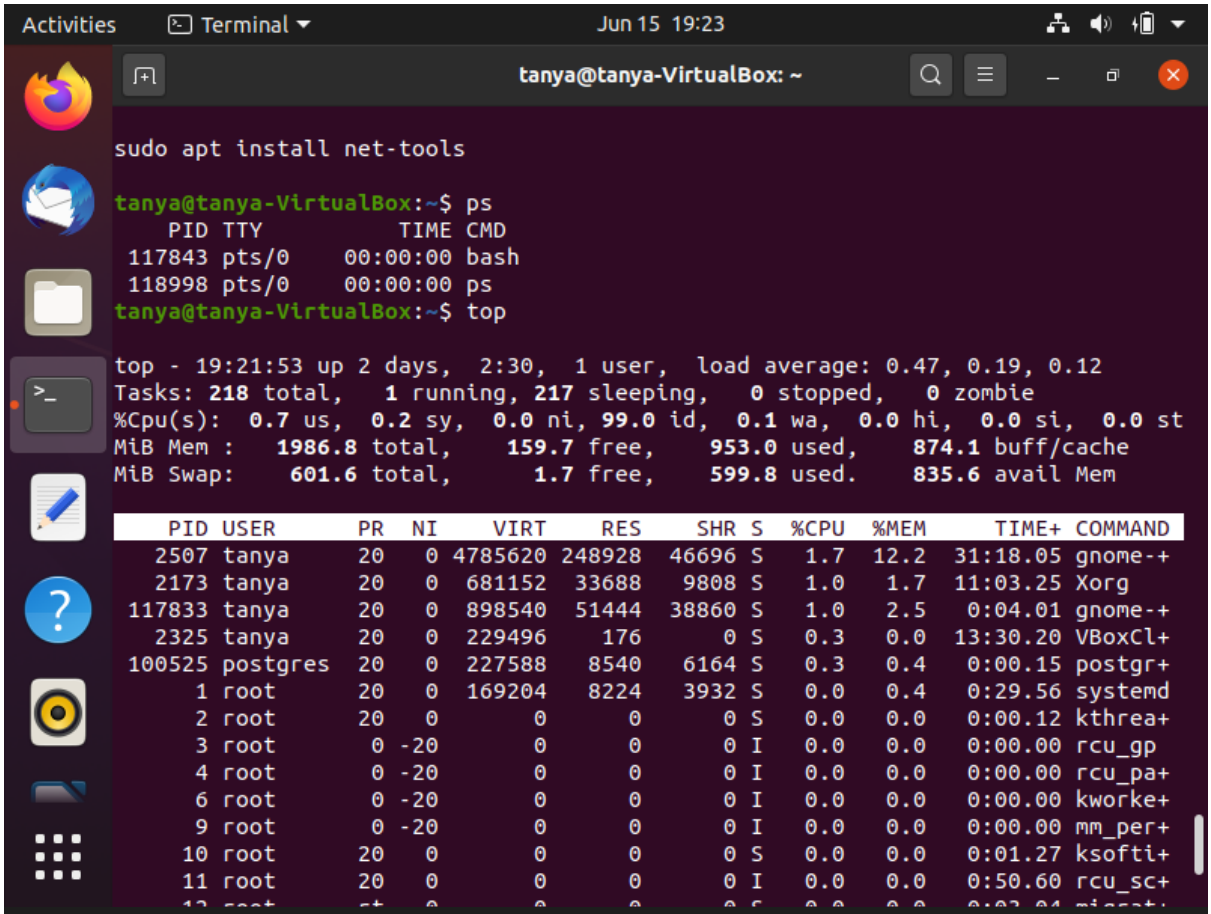

Activities
Terminal
Jun 18 19:07
tanya@tanya-VirtualBox: ~
reboot system boot 0.0.0.0 Wed Feb 3 21:00 still running
tanya :0 0.0.0.0 Sun Jan 31 00:03 - crash (3+20:56)
reboot system boot 0.0.0.0 Sun Jan 31 00:03 still running
tanya :1 0.0.0.0 Wed Jan 27 16:25 - crash (3+07:37)
reboot system boot 0.0.0.0 Wed Jan 27 16:23 still running
reboot system boot 0.0.0.0 Wed Jan 27 16:19 still running
reboot system boot 0.0.0.0 Wed Jan 27 16:16 still running
reboot system boot 0.0.0.0 Wed Jan 27 16:11 still running
tanya :0 0.0.0.0 Thu Sep 3 22:05 - crash (145+18:05)
reboot system boot 0.0.0.0 Thu Sep 3 22:05 still running
tanya :0 0.0.0.0 Thu Sep 3 21:48 - down (00:15)
reboot system boot 0.0.0.0 Thu Sep 3 21:45 - 22:04 (00:18)
wtmp begins Thu Sep 3 21:45:22 2020
tanya@tanya-VirtualBox:~$ last -F
tanya :0 :0 Tue Jun 15 23:46:09 2021 gone - no log out
reboot system boot 5.8.0-55-generic Tue Jun 15 23:45:31 2021 still running
tanya :0 :0 Wed Apr 7 21:40:02 2021 - crash (69+02:05)
reboot system boot 5.8.0-48-generic Wed Apr 7 21:39:17 2021 still running
tanya :0 :0 Sun Apr 4 11:29:50 2021 - crash (3+10:09)
reboot system boot 5.8.0-48-generic Sun Apr 4 11:29:08 2021 still running
tanya :0 :0 Fri Mar 5 21:52:11 2021 - crash (29+13:36)
reboot system boot 5.4.0-45-generic Fri Mar 5 21:51:24 2021 still running
tanya :0 :0 Tue Feb 23 14:02:44 2021 - crash (10+07:48)
Activities
Terminal
Jun 18 19:07
tanya@tanya-VirtualBox: ~
tanya :0 :0 Thu Sep 3 22:05:52 2020 - crash (145+18:05)
reboot system boot 5.4.0-45-generic Thu Sep 3 22:05:09 2020 still running
tanya :0 :0 Thu Sep 3 21:48:50 2020 - down (00:15)
reboot system boot 5.4.0-45-generic Thu Sep 3 21:45:22 2020 - Thu Sep 3 22:04:10 2020 (00:18)
wtmp begins Thu Sep 3 21:45:22 2020
tanya@tanya-VirtualBox:~$ whoami
tanya
tanya@tanya-VirtualBox:~$ whoami --version
whoami (GNU coreutils) 8.30
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
Written by Richard Mlynarik.
tanya@tanya-VirtualBox:~$ whoami --help
Usage: whoami [OPTION]...
Print the user name associated with the current effective user ID.
Same as id -un.
--help display this help and exit
--version output version information and exit
GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
Full documentation at: <https://www.gnu.org/software/coreutils/whoami>

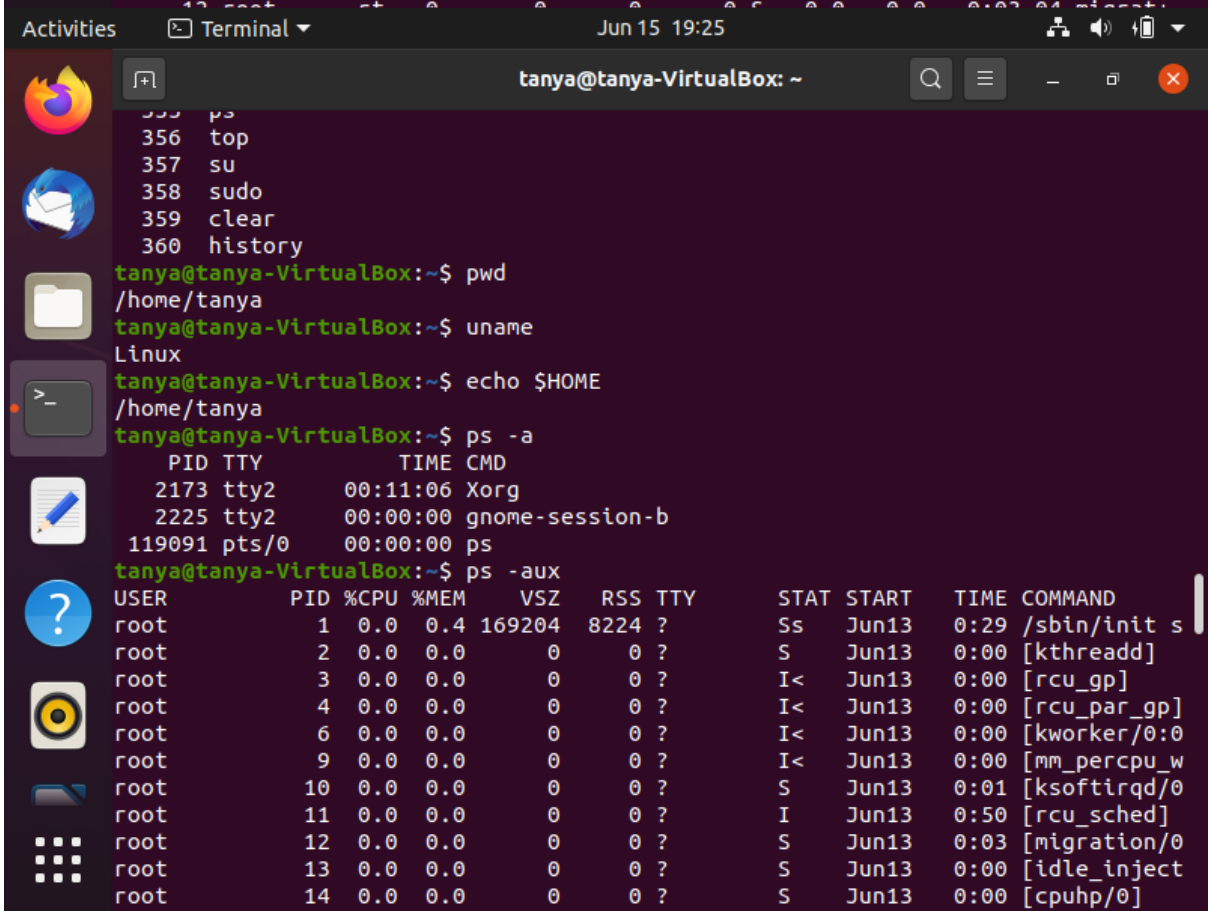

Activities
Terminal
Jun 18 19:07
tanya@tanya-VirtualBox: ~
Print the user name associated with the current effective user ID.
Same as id -un.
--help display this help and exit
--version output version information and exit
GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
Full documentation at: <https://www.gnu.org/software/coreutils/whoami>
or available locally via: info '(coreutils) whoami invocation'
tanya@tanya-VirtualBox:~$ top -u tanya
top - 19:05:53 up 3:37, 1 user, load average: 0.31, 0.53, 0.33
Tasks: 221 total, 1 running, 220 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.8 us, 1.6 sy, 0.0 ni, 96.4 id, 0.0 wa, 0.0 hi, 0.2 si, 0.0 st
MiB Mem : 1986.8 total, 679.8 free, 707.8 used, 599.2 buff/cache
MiB Swap: 601.6 total, 517.9 free, 83.6 used. 1109.7 avail Mem
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
2256 tanya 20 0 4638780 305992 98164 S 4.0 15.0 4:06.17 gnome-+
1931 tanya 20 0 672380 47836 31148 S 3.6 2.4 1:24.40 Xorg
7258 tanya 20 0 970788 51256 38732 S 2.3 2.5 0:01.84 gnome-+
7346 tanya 20 0 20588 3980 3200 R 0.3 0.2 0:00.11 top
1873 tanya 20 0 19248 8212 6728 S 0.0 0.4 0:01.33 systemd
1874 tanya 20 0 103548 2016 0 S 0.0 0.1 0:00.00 (sd-pa+
1880 tanya 9 -11 1941696 14020 11180 S 0.0 0.7 0:04.24 pulsea+
1882 tanya 39 19 798744 15824 12996 S 0.0 0.8 0:00.87 tracke+
1885 tanya 20 0 12908 9444 3548 S 0.0 0.5 0:02.70 dbus-d+
1889 tanya 20 0 248808 6896 6220 S 0.0 0.3 0:00.17 gnome-+
1894 tanya 20 0 248336 7384 6708 S 0.0 0.4 0:00.18 gvfsd

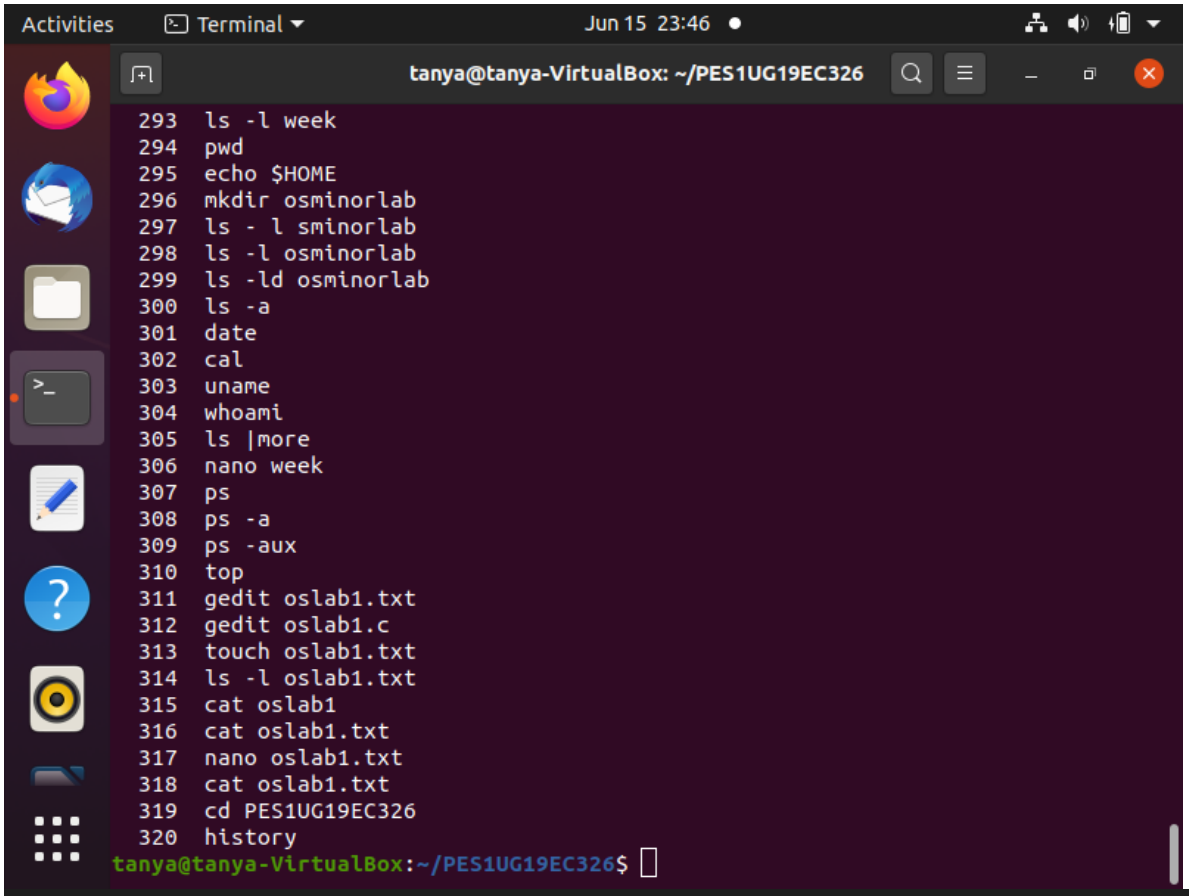

Activities
Terminal
Jun 18 19:07
tanya@tanya-VirtualBox: ~
1939 tanya 20 0 323388 7244 6948 S 0.0 0.4 0:00.05 goa-id+
1944 tanya 20 0 244328 5936 5680 S 0.0 0.3 0:00.10 gvfs-m+
1949 tanya 20 0 246732 6768 6268 S 0.0 0.3 0:00.10 gvfs-g+
1959 tanya 20 0 325356 7856 7528 S 0.0 0.4 0:01.69 gvfs-a+
1975 tanya 20 0 197032 12216 12076 S 0.0 0.6 0:00.04 gnome-+
2056 tanya 20 0 31208 56 0 S 0.0 0.0 0:00.00 VBoxCl+
tanya@tanya-VirtualBox:~$ top -h
procps-ng UNKNOWN
Usage:
top -hv | -bcEHiOSs1 -d secs -n max -u|U user -p pid(s) -o field -w [cols]
tanya@tanya-VirtualBox:~$ ps
PID TTY TIME CMD
7269 pts/0 00:00:00 bash
7348 pts/0 00:00:00 ps
tanya@tanya-VirtualBox:~$ ps -ef
UID PID PPID C STIME TTY TIME CMD
root 1 0 0 15:28 ? 00:00:02 /sbin/init splash
root 2 0 0 15:28 ? 00:00:00 [kthreadd]
root 3 2 0 15:28 ? 00:00:00 [rcu_gp]
root 4 2 0 15:28 ? 00:00:00 [rcu_par_gp]
root 6 2 0 15:28 ? 00:00:00 [kworker/0:0H-kblockd]
root 9 2 0 15:28 ? 00:00:00 [mm_percpu_wq]
root 10 2 0 15:28 ? 00:00:00 [ksoftirqd/0]
root 11 2 0 15:28 ? 00:00:04 [rcu_sched]
root 12 2 0 15:28 ? 00:00:00 [migration/0]
root 13 2 0 15:28 ? 00:00:00 [idle_inject/0]
root 14 2 0 15:28 ? 00:00:00 [cpuhp/0]
root 15 2 0 15:28 ? 00:00:00 [cpuhp/1]
root 16 2 0 15:28 ? 00:00:00 [idle_inject/1]

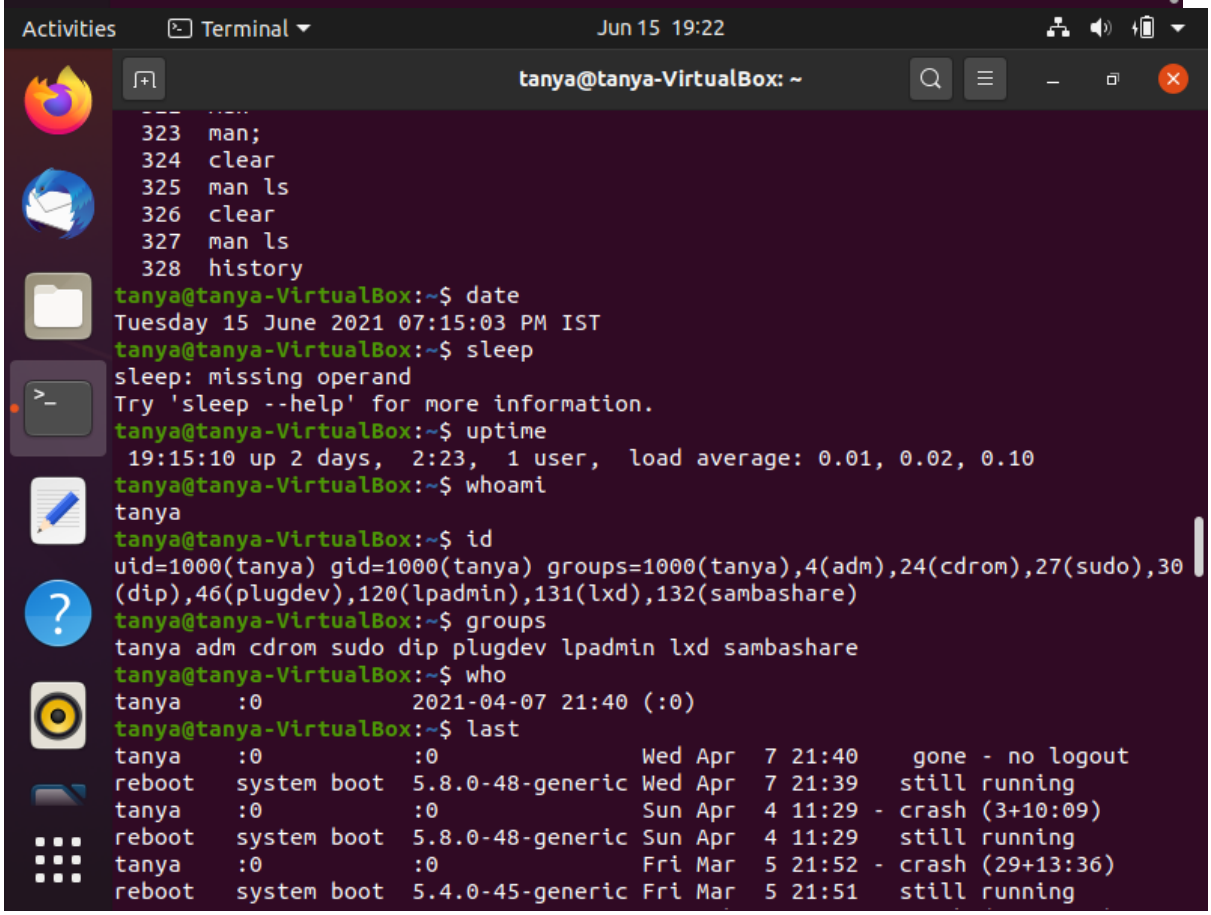

Activities
Terminal
Jun 18 19:07
tanya@tanya-VirtualBox: ~
root 7234 2 0 19:03 ? 00:00:00 [kworker/2:6-events]
root 7235 2 0 19:03 ? 00:00:00 [kworker/2:7]
tanya 7258 1873 1 19:03 ? 00:00:02 /usr/libexec/gnome-terminal
tanya 7269 7258 0 19:03 pts/0 00:00:00 bash
tanya 7280 1873 1 19:03 ? 00:00:01 /usr/bin/nautilus --gapplic
root 7313 2 0 19:03 ? 00:00:00 [kworker/1:4-events]
root 7315 2 0 19:03 ? 00:00:00 [kworker/1:5-events]
root 7328 2 0 19:04 ? 00:00:00 [kworker/0:4-events]
root 7329 2 0 19:04 ? 00:00:00 [kworker/0:5-events]
tanya 7349 7269 0 19:06 pts/0 00:00:00 ps -ef
tanya@tanya-VirtualBox:~$ ps -aux
USER PID %CPU %MEM VSZ RSS TTY STAT START TIME COMMAND
root 1 0.0 0.4 167692 9428 ? Ss 15:28 0:02 /sbin/init s
root 2 0.0 0.0 0 0 ? S 15:28 0:00 [kthreadd]
root 3 0.0 0.0 0 0 ? I< 15:28 0:00 [rcu_gp]
root 4 0.0 0.0 0 0 ? I< 15:28 0:00 [rcu_par_gp]
root 6 0.0 0.0 0 0 ? I< 15:28 0:00 [kworker/0:0
root 9 0.0 0.0 0 0 ? I< 15:28 0:00 [mm_percpu_w
root 10 0.0 0.0 0 0 ? S 15:28 0:00 [ksoftirqd/0
root 11 0.0 0.0 0 0 ? I 15:28 0:04 [rcu_sched]
root 12 0.0 0.0 0 0 ? S 15:28 0:00 [migration/0
root 13 0.0 0.0 0 0 ? S 15:28 0:00 [idle_inject
root 14 0.0 0.0 0 0 ? S 15:28 0:00 [cpuhp/0]
root 15 0.0 0.0 0 0 ? S 15:28 0:00 [cpuhp/1]
root 16 0.0 0.0 0 0 ? S 15:28 0:00 [idle_inject
root 17 0.0 0.0 0 0 ? S 15:28 0:00 [migration/1
root 18 0.0 0.0 0 0 ? S 15:28 0:02 [ksoftirqd/1
root 20 0.0 0.0 0 0 ? I< 15:28 0:00 [kworker/1:0
root 21 0.0 0.0 0 0 ? S 15:28 0:00 [cpuhp/2]
root 22 0.0 0.0 0 0 ? S 15:28 0:00 [idle_inject

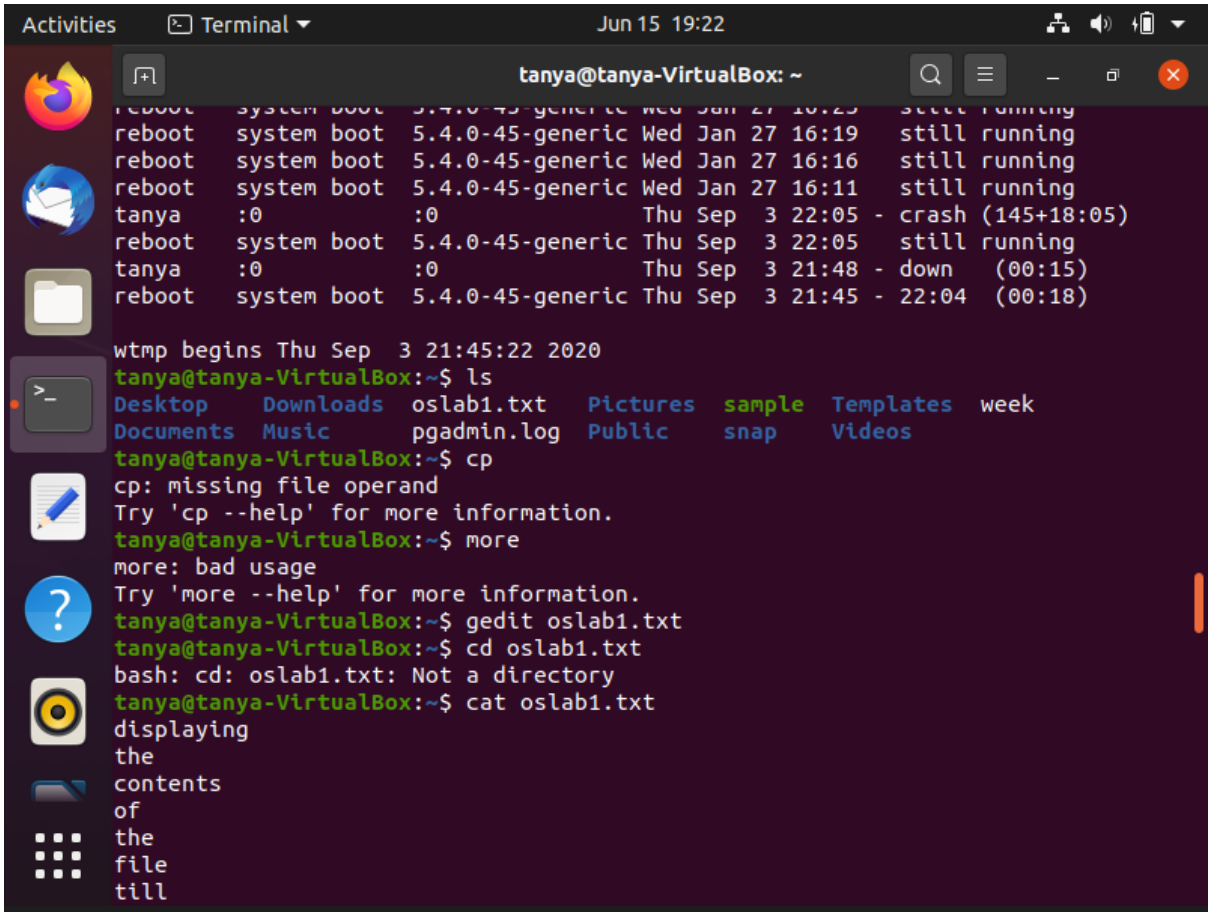

Activities
Terminal
Jun 18 19:07
tanya@tanya-VirtualBox: ~
root 7231 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/2:1
root 7232 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/2:2
root 7233 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/2:5
root 7234 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/2:6
root 7235 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/2:7
tanya 7258 1.5 2.5 970788 51256 ? Rsl 19:03 0:02 /usr/libexec
tanya 7269 0.0 0.2 19248 4928 pts/0 Ss 19:03 0:00 bash
tanya 7280 1.1 3.7 1142240 76680 ? Sl 19:03 0:01 /usr/bin/nau
root 7313 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/1:4
root 7315 0.0 0.0 0 0 ? I 19:03 0:00 [kworker/1:5
root 7328 0.0 0.0 0 0 ? I 19:04 0:00 [kworker/0:4
root 7329 0.0 0.0 0 0 ? I 19:04 0:00 [kworker/0:5
tanya 7350 0.0 0.1 20296 3532 pts/0 R+ 19:06 0:00 ps -aux
tanya@tanya-VirtualBox:~$ date -d "tomorrow"
Saturday 19 June 2021 07:06:21 PM IST
tanya@tanya-VirtualBox:~$ uname -a
Linux tanya-VirtualBox 5.8.0-55-generic #62~20.04.1-Ubuntu SMP Wed Jun 2 08:55:
04 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
tanya@tanya-VirtualBox:~$ uname -n
tanya-VirtualBox
tanya@tanya-VirtualBox:~$ man -f week
week: nothing appropriate.
tanya@tanya-VirtualBox:~$ man -k printf
asprintf (3) - print to allocated string
dprintf (3) - formatted output conversion
fprintf (3) - formatted output conversion
fwprintf (3) - formatted wide-character output conversion
printf (1) - format and print data
printf (3) - formatted output conversion

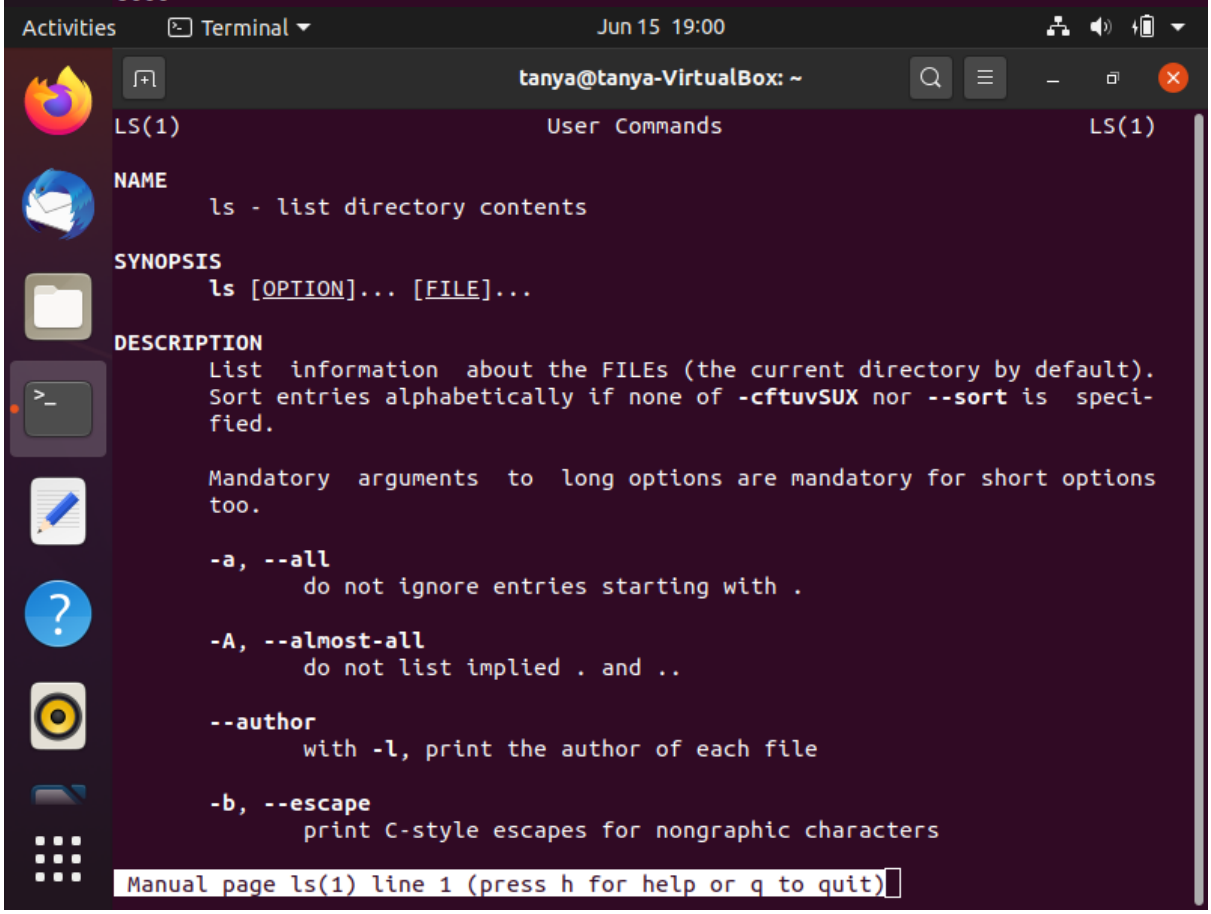

Activities
Terminal
Jun 15 19:23
tanya@tanya-VirtualBox: ~
sudo apt install net-tools
tanya@tanya-VirtualBox:~$ ps
PID TTY TIME CMD
117843 pts/0 00:00:00 bash
118998 pts/0 00:00:00 ps
tanya@tanya-VirtualBox:~$ top
top - 19:21:53 up 2 days, 2:30, 1 user, load average: 0.47, 0.19, 0.12
Tasks: 218 total, 1 running, 217 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.7 us, 0.2 sy, 0.0 ni, 99.0 id, 0.1 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1986.8 total, 159.7 free, 953.0 used, 874.1 buff/cache
MiB Swap: 601.6 total, 1.7 free, 599.8 used. 835.6 avail Mem
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
2507 tanya 20 0 4785620 248928 46696 S 1.7 12.2 31:18.05 gnome-+
2173 tanya 20 0 681152 33688 9808 S 1.0 1.7 11:03.25 Xorg
117833 tanya 20 0 898540 51444 38860 S 1.0 2.5 0:04.01 gnome-+
2325 tanya 20 0 229496 176 0 S 0.3 0.0 13:30.20 VBoxCl+
100525 postgres 20 0 227588 8540 6164 S 0.3 0.4 0:00.15 postgr+
1 root 20 0 169204 8224 3932 S 0.0 0.4 0:29.56 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.12 kthrea+
3 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_gp
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_pa+
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworke+
9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_per+
10 root 20 0 0 0 0 S 0.0 0.0 0:01.27 ksofti+
11 root 20 0 0 0 0 I 0.0 0.0 0:50.60 rcu_sc+

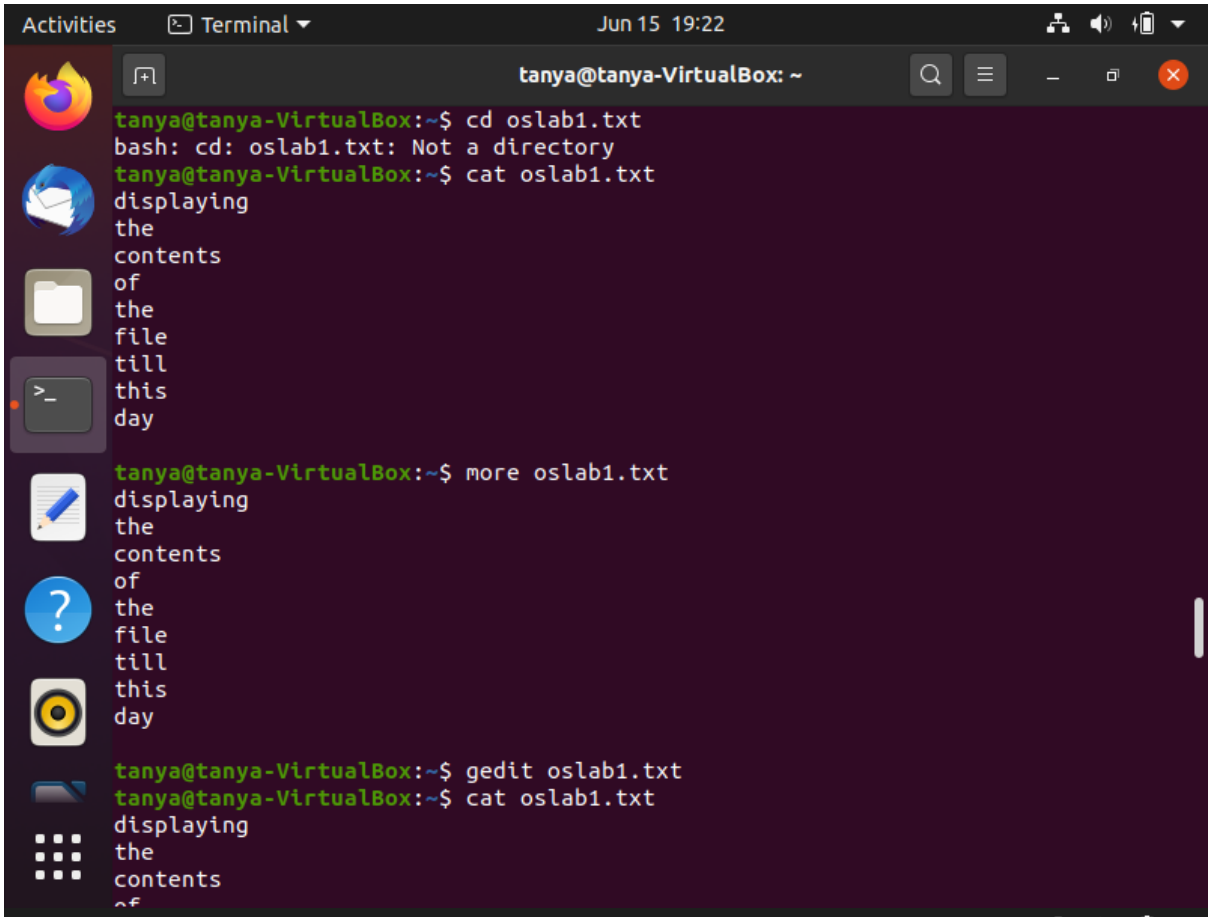

Activities
Terminal
Jun 15 19:25
tanya@tanya-VirtualBox: ~
356 top
357 su
358 sudo
359 clear
360 history
tanya@tanya-VirtualBox:~$ pwd
/home/tanya
tanya@tanya-VirtualBox:~$ uname
Linux
tanya@tanya-VirtualBox:~$ echo $HOME
/home/tanya
tanya@tanya-VirtualBox:~$ ps -a
PID TTY TIME CMD
2173 tty2 00:11:06 Xorg
2225 tty2 00:00:00 gnome-session-b
119091 pts/0 00:00:00 ps
tanya@tanya-VirtualBox:~$ ps -aux
USER PID %CPU %MEM VSZ RSS TTY STAT START TIME COMMAND
root 1 0.0 0.4 169204 8224 ? Ss Jun13 0:29 /sbin/init s
root 2 0.0 0.0 0 0 ? S Jun13 0:00 [kthreadd]
root 3 0.0 0.0 0 0 ? I< Jun13 0:00 [rcu_gp]
root 4 0.0 0.0 0 0 ? I< Jun13 0:00 [rcu_par_gp]
root 6 0.0 0.0 0 0 ? I< Jun13 0:00 [kworker/0:0
root 9 0.0 0.0 0 0 ? I< Jun13 0:00 [mm_percpu_w
root 10 0.0 0.0 0 0 ? S Jun13 0:01 [ksoftirqd/0
root 11 0.0 0.0 0 0 ? I Jun13 0:50 [rcu_sched]
root 12 0.0 0.0 0 0 ? S Jun13 0:03 [migration/0
root 13 0.0 0.0 0 0 ? S Jun13 0:00 [idle_inject
root 14 0.0 0.0 0 0 ? S Jun13 0:00 [cpuhp/0]

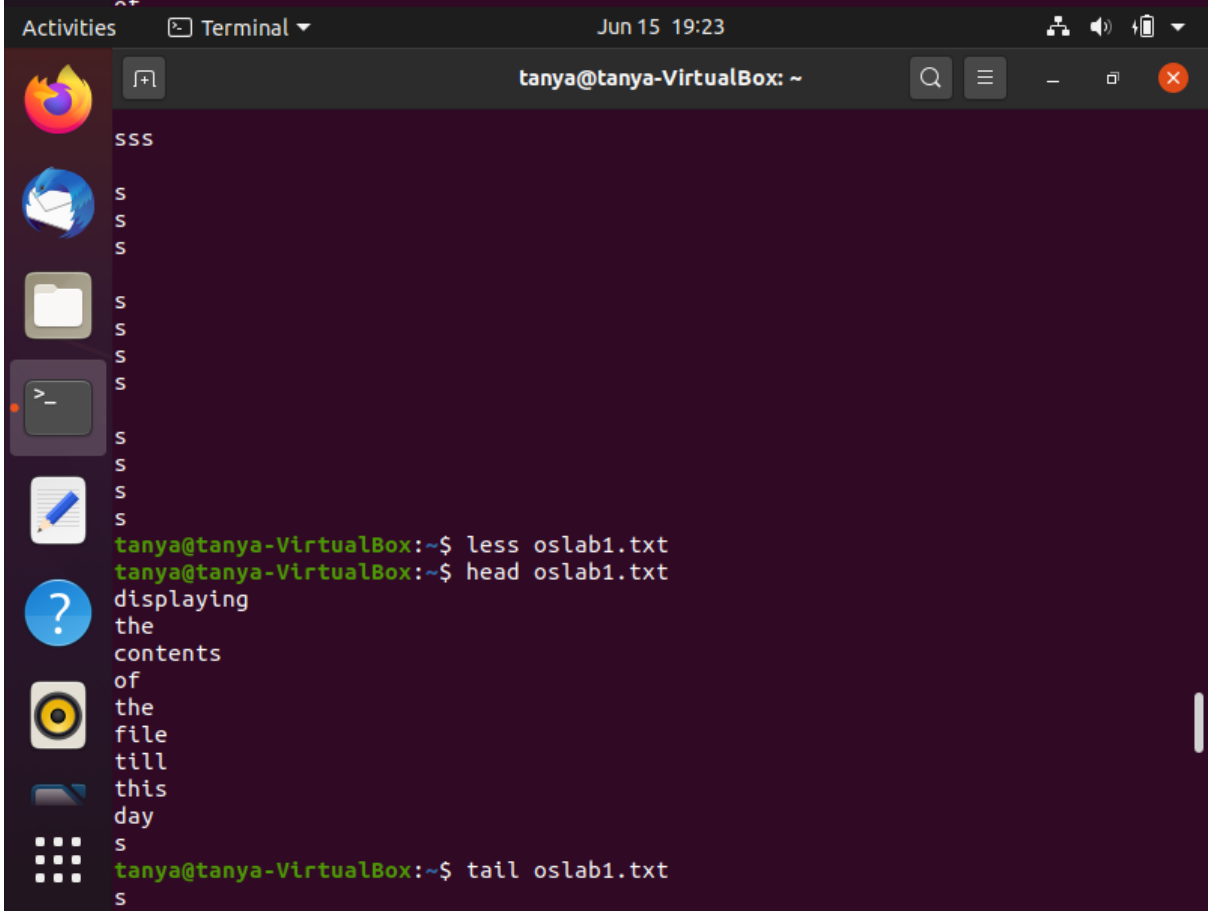

Activities
Terminal
Jun 15 23:46
tanya@tanya-VirtualBox: ~/PES1UG19EC326
293 ls -l week
294 pwd
295 echo $HOME
296 mkdir osminorlab
297 ls - l sminorlab
298 ls -l osminorlab
299 ls -ld osminorlab
300 ls -a
301 date
302 cal
303 uname
304 whoami
305 ls |more
306 nano week
307 ps
308 ps -a
309 ps -aux
310 top
311 gedit oslab1.txt
312 gedit oslab1.c
313 touch oslab1.txt
314 ls -l oslab1.txt
315 cat oslab1
316 cat oslab1.txt
317 nano oslab1.txt
318 cat oslab1.txt
319 cd PES1UG19EC326
320 history
tanya@tanya-VirtualBox:~/PES1UG19EC326$

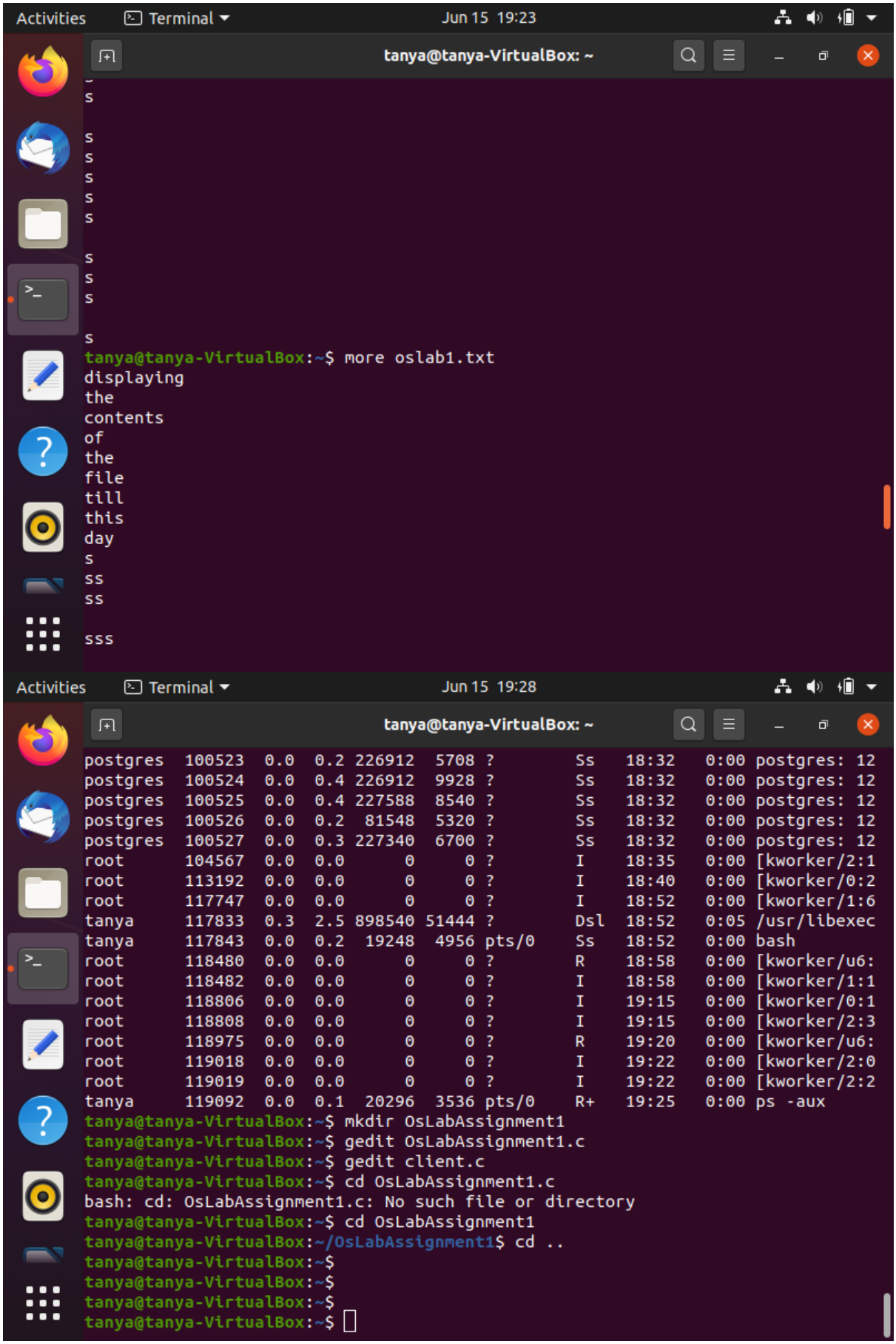

Activities
Terminal
Jun 15 19:22
tanya@tanya-VirtualBox: ~
323 man;
324 clear
325 man ls
326 clear
327 man ls
328 history
tanya@tanya-VirtualBox:~$ date
Tuesday 15 June 2021 07:15:03 PM IST
tanya@tanya-VirtualBox:~$ sleep
sleep: missing operand
Try 'sleep --help' for more information.
tanya@tanya-VirtualBox:~$ uptime
19:15:10 up 2 days, 2:23, 1 user, load average: 0.01, 0.02, 0.10
tanya@tanya-VirtualBox:~$ whoami
tanya
tanya@tanya-VirtualBox:~$ id
uid=1000(tanya) gid=1000(tanya) groups=1000(tanya),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare)
tanya@tanya-VirtualBox:~$ groups
tanya adm cdrom sudo dip plugdev lpadmin lxd sambashare
tanya@tanya-VirtualBox:~$ who
tanya :0 2021-04-07 21:40 (:0)
tanya@tanya-VirtualBox:~$ last
tanya :0 :0 Wed Apr 7 21:40 gone - no logout
reboot system boot 5.8.0-48-generic Wed Apr 7 21:39 still running
tanya :0 :0 Sun Apr 4 11:29 - crash (3+10:09)
reboot system boot 5.8.0-48-generic Sun Apr 4 11:29 still running
tanya :0 :0 Fri Mar 5 21:52 - crash (29+13:36)
reboot system boot 5.4.0-45-generic Fri Mar 5 21:51 still running

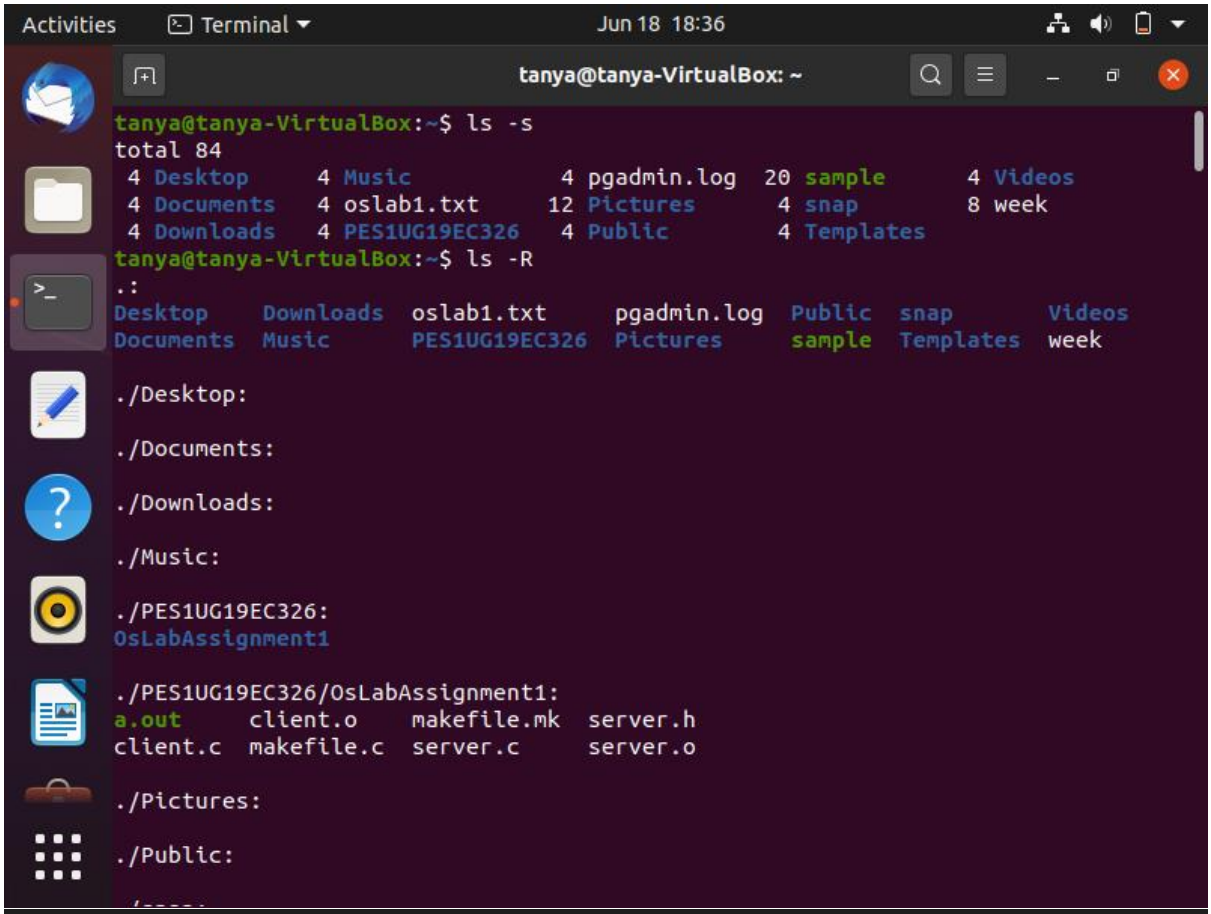

Activities
Terminal
Jun 15 19:22
tanya@tanya-VirtualBox: ~
reboot system boot 5.4.0-45-generic Wed Jan 27 16:19 still running
reboot system boot 5.4.0-45-generic Wed Jan 27 16:16 still running
reboot system boot 5.4.0-45-generic Wed Jan 27 16:11 still running
tanya :0 :0 Thu Sep 3 22:05 - crash (145+18:05)
reboot system boot 5.4.0-45-generic Thu Sep 3 22:05 still running
tanya :0 :0 Thu Sep 3 21:48 - down (00:15)
reboot system boot 5.4.0-45-generic Thu Sep 3 21:45 - 22:04 (00:18)
wtmp begins Thu Sep 3 21:45:22 2020
tanya@tanya-VirtualBox:~$ ls
Desktop Downloads oslab1.txt Pictures sample Templates week
Documents Music pgadmin.log Public snap Videos
tanya@tanya-VirtualBox:~$ cp
cp: missing file operand
Try 'cp --help' for more information.
tanya@tanya-VirtualBox:~$ more
more: bad usage
Try 'more --help' for more information.
tanya@tanya-VirtualBox:~$ gedit oslab1.txt
tanya@tanya-VirtualBox:~$ cd oslab1.txt
bash: cd: oslab1.txt: Not a directory
tanya@tanya-VirtualBox:~$ cat oslab1.txt
displaying
the
contents
of
the
file
till

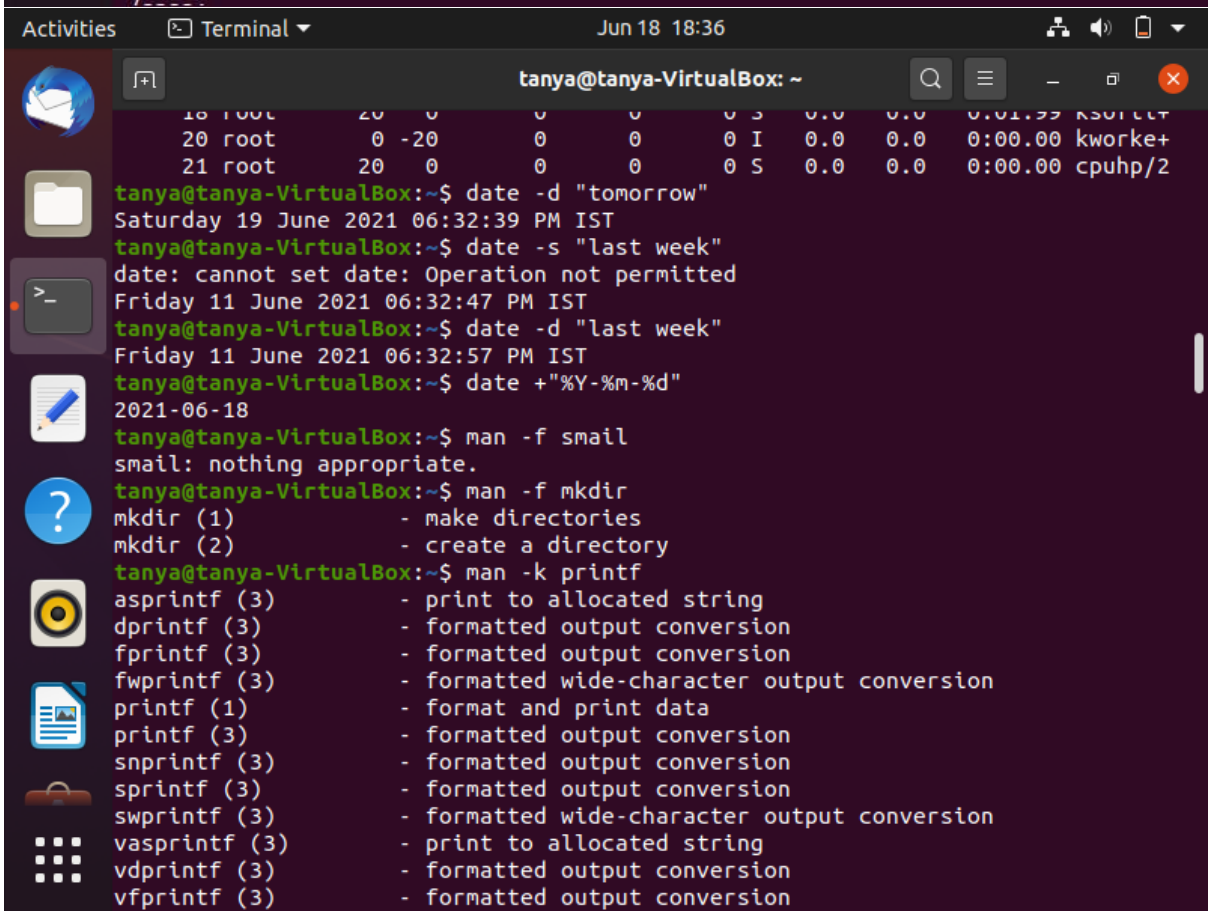

Activities
Terminal
Jun 15 19:00
tanya@tanya-VirtualBox: ~
LS(1) User Commands LS(1)
NAME
ls - list directory contents
SYNOPSIS
ls [OPTION]... [FILE]...
DESCRIPTION
List information about the FILEs (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.
Mandatory arguments to long options are mandatory for short options too.
-a, --all
do not ignore entries starting with .
-A, --almost-all
do not list implied . and ..
--author
with -l, print the author of each file
-b, --escape
print C-style escapes for nongraphic characters
Manual page ls(1) line 1 (press h for help or q to quit)


Activities
Terminal
Jun 15 19:22
tanya@tanya-VirtualBox: ~
tanya@tanya-VirtualBox:~$ cd oslab1.txt
bash: cd: oslab1.txt: Not a directory
tanya@tanya-VirtualBox:~$ cat oslab1.txt
displaying
the
contents
of
the
file
till
this
day
tanya@tanya-VirtualBox:~$ more oslab1.txt
displaying
the
contents
of
the
file
till
this
day
tanya@tanya-VirtualBox:~$ gedit oslab1.txt
tanya@tanya-VirtualBox:~$ cat oslab1.txt
displaying
the
contents


Activities
Terminal
Jun 15 19:23
tanya@tanya-VirtualBox: ~
sss
s
s
s
s
s
s
s
s
s
s
s
tanya@tanya-VirtualBox:~$ less oslab1.txt
tanya@tanya-VirtualBox:~$ head oslab1.txt
displaying
the
contents
of
the
file
till
this
day
s
tanya@tanya-VirtualBox:~$ tail oslab1.txt
s


Activities
Terminal
Jun 15 19:23
tanya@tanya-VirtualBox: ~
s
s
s
s
s
s
s
s
s
s
tanya@tanya-VirtualBox:~$ more oslab1.txt
displaying
the
contents
of
the
file
till
this
day
s
ss
ss
sss
Activities
Terminal
Jun 15 19:28
tanya@tanya-VirtualBox: ~
postgres 100523 0.0 0.2 226912 5708 ? Ss 18:32 0:00 postgres: 12
postgres 100524 0.0 0.4 226912 9928 ? Ss 18:32 0:00 postgres: 12
postgres 100525 0.0 0.4 227588 8540 ? Ss 18:32 0:00 postgres: 12
postgres 100526 0.0 0.2 81548 5320 ? Ss 18:32 0:00 postgres: 12
postgres 100527 0.0 0.3 227340 6700 ? Ss 18:32 0:00 postgres: 12
root 104567 0.0 0.0 0 0 ? I 18:35 0:00 [kworker/2:1
root 113192 0.0 0.0 0 0 ? I 18:40 0:00 [kworker/0:2
root 117747 0.0 0.0 0 0 ? I 18:52 0:00 [kworker/1:6
tanya 117833 0.3 2.5 898540 51444 ? Dsl 18:52 0:05 /usr/libexec
tanya 117843 0.0 0.2 19248 4956 pts/0 Ss 18:52 0:00 bash
root 118480 0.0 0.0 0 0 ? R 18:58 0:00 [kworker/u6:
root 118482 0.0 0.0 0 0 ? I 18:58 0:00 [kworker/1:1
root 118806 0.0 0.0 0 0 ? I 19:15 0:00 [kworker/0:1
root 118808 0.0 0.0 0 0 ? I 19:15 0:00 [kworker/2:3
root 118975 0.0 0.0 0 0 ? R 19:20 0:00 [kworker/u6:
root 119018 0.0 0.0 0 0 ? I 19:22 0:00 [kworker/2:0
root 119019 0.0 0.0 0 0 ? I 19:22 0:00 [kworker/2:2
tanya 119092 0.0 0.1 20296 3536 pts/0 R+ 19:25 0:00 ps -aux
tanya@tanya-VirtualBox:~$ mkdir OsLabAssignment1
tanya@tanya-VirtualBox:~$ gedit OsLabAssignment1.c
tanya@tanya-VirtualBox:~$ gedit client.c
tanya@tanya-VirtualBox:~$ cd OsLabAssignment1.c
bash: cd: OsLabAssignment1.c: No such file or directory
tanya@tanya-VirtualBox:~$ cd OsLabAssignment1
tanya@tanya-VirtualBox:~/OsLabAssignment1$ cd ..
tanya@tanya-VirtualBox:~$
tanya@tanya-VirtualBox:~$
tanya@tanya-VirtualBox:~$
tanya@tanya-VirtualBox:~$


Activities
Terminal
Jun 18 18:36
tanya@tanya-VirtualBox: ~
tanya@tanya-VirtualBox:~$ ls -s
total 84
4 Desktop 4 Music 4 pgadmin.log 20 sample 4 Videos
4 Documents 4 oslab1.txt 12 Pictures 4 snap 8 week
4 Downloads 4 PES1UG19EC326 4 Public 4 Templates
tanya@tanya-VirtualBox:~$ ls -R
.:
Desktop Downloads oslab1.txt pgadmin.log Public snap Videos
Documents Music PES1UG19EC326 Pictures sample Templates week
./Desktop:
./Documents:
./Downloads:
./Music:
./PES1UG19EC326:
OsLabAssignment1
./PES1UG19EC326/OsLabAssignment1:
a.out client.o makefile.mk server.h
client.c makefile.c server.c server.o
./Pictures:
./Public:


Activities
Terminal
Jun 18 18:36
tanya@tanya-VirtualBox: ~
20 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworke+
21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2
tanya@tanya-VirtualBox:~$ date -d "tomorrow"
Saturday 19 June 2021 06:32:39 PM IST
tanya@tanya-VirtualBox:~$ date -s "last week"
date: cannot set date: Operation not permitted
Friday 11 June 2021 06:32:47 PM IST
tanya@tanya-VirtualBox:~$ date -d "last week"
Friday 11 June 2021 06:32:57 PM IST
tanya@tanya-VirtualBox:~$ date +"%Y-%m-%d"
2021-06-18
tanya@tanya-VirtualBox:~$ man -f smail
smail: nothing appropriate.
tanya@tanya-VirtualBox:~$ man -f mkdir
mkdir (1) - make directories
mkdir (2) - create a directory
tanya@tanya-VirtualBox:~$ man -k printf
asprintf (3) - print to allocated string
dprintf (3) - formatted output conversion
fprintf (3) - formatted output conversion
fwprintf (3) - formatted wide-character output conversion
printf (1) - format and print data
printf (3) - formatted output conversion
snprintf (3) - formatted output conversion
sprintf (3) - formatted output conversion
swprintf (3) - formatted wide-character output conversion
vasprintf (3) - print to allocated string
vdprintf (3) - formatted output conversion
vfprintf (3) - formatted output conversion

3)
a)
Makefile is a set of commands (similar to terminal commands) with variable names and targets to create object file and to remove them. In a single makefile, we can create multiple targets to compile and to remove the object, binary files. Can help to compile the program any number of times by using Makefile. Essentially, the makefile is read by the make utility, which understands the projects structure and instructions and then performs and executes the commands stated in the makefile.

b)
No, the Makefile is an example of declarative programming which is sued to automate the software building procedure. Shell scripts are imperative. Makefiles execute are executed as shell commands, but the order in which these commands are run, or whether a given build needs to run them at all, is the value that make provides.
A shell script is an arbitrary collection of Unix shell commands if we put a command in a file, and it is a shell script. A Makefile is a really clever bit of scripting (in its own language to all extents) that compiles an accompanying set of source code into a program. Make uses the shell to execute the commands listed for each dependency but it is distinguished by its ability to use the modification information such as the edit time to select which dependencies to recompile.

c)
The command 'make clean' is typed in the command line to get rid of your object and executable files as sometimes the compiler links or compiles files incorrectly, and the only way to get a fresh start is to remove all the object and executable files. It is usually used to execure a list of commands before the execution of the target dependencies, it is to remove outdates object files and executables before the source code is recompiled.

d)
Make works by inspecting information about files, not their contents. Make works out dependencies between targets and their dependencies, and then looks to see whether the files exist. If they do, it asks the operating system for the time and dates the file was last modified. While compiling a file, the make checks its object file and compares the timestamps. If the source file has a newer timestamp than the object file, then it generates a new object file assuming that the source file has been changed.

e)
CFLAGS is essentially a macro defined in a makefile to specify the options that must be passed to the compiler during the compilation of dependency files create the target file. It is a variable that is most commonly used to add arguments to the compiler. CFLAGS stands for compiler flags. It is the name of environment variables or of Makefile variables that can be set to specify additional switches to be passed to a compiler in the process of building computer software.

f)
-f stands for *file*, --file=*file*, --makefile=*FILE*.

This command specifies to use that particular *file* as a makefile. The make command reads or takes in a makefile and executes the required commands for each target file. By default, it looks for a makefile named “make.file.mk” but can also take a filename as an argument. The filename is provided to the make command utility via the -f option.
-f <filename>.mk
*Make* executes commands in the *makefile* to update one or more target *names*, where *name* is typically a program. If no **-f** option is present, *make* will look for the makefiles *GNUmakefile*, *makefile*, and *Makefile*, in this order. If *makefile* is '-', the standard input is read.