Operating System

Lab Report

Lab 06

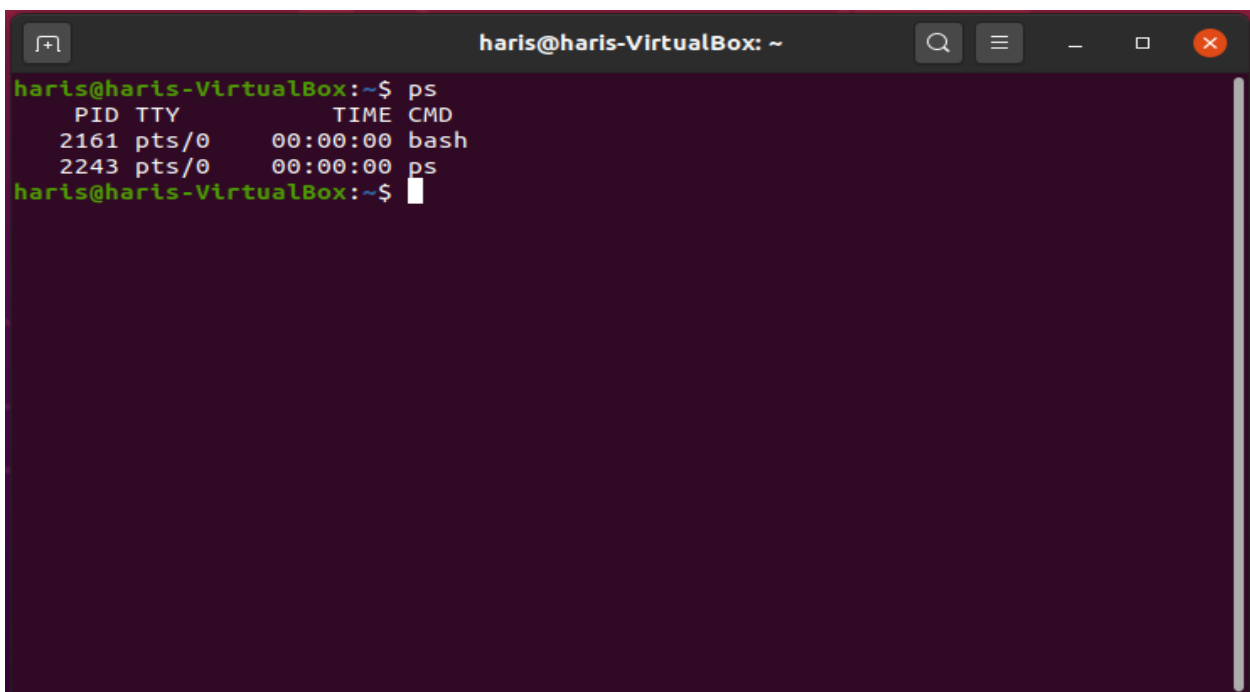| Group Members Name & Reg #:	**Muhammad Haris Irfan** (FA18-BCE-090)
Class	Operating System (**BCE-5B**)
Instructor's Name	Sir Wasif

In Lab Tasks

Question 1: Activity 1:

This activity is related to process monitoring in Linux

1. Display all the process in current shell

2. Display every active process in the system

3. Provide a full-format listing of process owned by you

4. Display a full-format listing of processes owned by user ubuntu

5. Display a process with id 1

6. Display the dynamic view of the current processes in the system and set the refresh interval 0.5 second

7. Display the dynamic view of the processes owned by user with id 999 (or name ubuntu)

8. Start the gedit program in background and then bring it foreground

9. Suspend the gedit program

10. Resume the gedit program

Solution:

1) The Terminal Output is given below,

2) The Terminal Output is given below,

```
haris@haris-VirtualBox: ~                              Q  ≡  —  □  ✕

haris@haris-VirtualBox:~$ ps -A
    PID TTY          TIME CMD
      1 ?        00:00:01 systemd
      2 ?        00:00:00 kthreadd
      3 ?        00:00:00 rcu_gp
      4 ?        00:00:00 rcu_par_gp
      5 ?        00:00:00 kworker/0:0-events
      6 ?        00:00:00 kworker/0:0H-kblockd
      7 ?        00:00:00 kworker/0:1-events
      8 ?        00:00:00 kworker/u2:0-events_unbound
      9 ?        00:00:00 mm_percpu_wq
     10 ?        00:00:00 ksoftirqd/0
     11 ?        00:00:00 rcu_sched
     12 ?        00:00:00 migration/0
     13 ?        00:00:00 idle_inject/0
     14 ?        00:00:00 cpuhp/0
     15 ?        00:00:00 kdevtmpfs
     16 ?        00:00:00 netns
     17 ?        00:00:00 rcu_tasks_kthre
     18 ?        00:00:00 kauditd
     19 ?        00:00:00 khungtaskd
     20 ?        00:00:00 oom_reaper
     21 ?        00:00:00 writeback
     22 ?        00:00:00 kcompactd0
```

3) The Terminal Output is given below,

```
haris@haris-VirtualBox: ~                              Q  ≡  —  □  ✕

haris@haris-VirtualBox:~$ ps -lx
F   UID     PID    PPID PRI  NI    VSZ    RSS WCHAN   STAT TTY       TIME COMMAND
4   1000    1192       1  20   0  24900  15732 ep_pol Ss   ?         0:00 /lib/sy
5   1000    1194    1192  20   0 103356   3428 -       S    ?         0:00 (sd-pam
0   1000    1200    1192   9 -11 1155028 18788 poll_s S<sl ?         0:00 /usr/bi
0   1000    1204    1192  39   - 520304 24456 poll_s SNsl ?         0:00 /usr/li
1   1000    1205       1  20   0 249148   7752 -       Sl   ?         0:00 /usr/bi
0   1000    1209    1192  20   0  12668   9772 ep_pol Ss   ?         0:00 /usr/bi
0   1000    1211    1192  20   0 248660   7996 poll_s Ssl  ?         0:00 /usr/li
0   1000    1218    1192  20   0 382056   8328 futex_ Sl   ?         0:00 /usr/li
0   1000    1234    1192  20   0 326380  11268 poll_s Ssl  ?         0:00 /usr/li
0   1000    1242    1192  20   0 325688   8924 poll_s Ssl  ?         0:00 /usr/li
4   1000    1248    1170  20   0 172964   6692 poll_s Ssl+ tty2      0:00 /usr/li
0   1000    1250    1192  20   0 249108   9016 poll_s Ssl  ?         0:00 /usr/li
0   1000    1254    1192  20   0 767264  56988 poll_s SLl  ?         0:00 /usr/li
4   1000    1256    1248  20   0 224616  56104 ep_pol Sl+  tty2      0:01 /usr/li
0   1000    1263    1192  20   0 327568  11604 poll_s Sl   ?         0:00 /usr/li
0   1000    1270    1192  20   0 244660   6460 poll_s Ssl  ?         0:00 /usr/li
0   1000    1274    1192  20   0 246936   7148 poll_s Ssl  ?         0:00 /usr/li
0   1000    1294    1248  20   0 199872  15676 poll_s Sl+  tty2      0:00 /usr/li
0   1000    1349    1192  20   0 248856   7620 -       Sl   ?         0:00 /usr/bi
1   1000    1375    1294  20   0   6032    460 -       Ss   ?         0:00 /usr/bi
1   1000    1392       1  20   0 323748   9332 poll_s Ssl  ?         0:00 /usr/bi
0   1000    1400    1392  20   0 175516   9048 poll_s Sl   ?         0:00 /usr/li
```

4) The Terminal Output is given below,

```
haris@haris-VirtualBox: ~                    Q  ≡  _  □  ⊗

haris@haris-VirtualBox:~$ ps -lu haris
F S   UID      PID    PPID  C PRI  NI ADDR SZ WCHAN   TTY          TIME CMD
4 S   1000     1192      1  0  80   0 -   6225 ep_pol ?        00:00:00 systemd
5 S   1000     1194   1192  0  80   0 -  25839 -      ?        00:00:00 (sd-pam)
0 S   1000     1200   1192  0  69 -11 - 288757 poll_s ?        00:00:00 pulseaudio
0 S   1000     1204   1192  0  99   - - 130076 poll_s ?        00:00:00 tracker-mi
1 S   1000     1205      1  0  80   0 -  62287 -      ?        00:00:00 gnome-keyr
0 S   1000     1209   1192  0  80   0 -   3167 ep_pol ?        00:00:00 dbus-daemo
0 S   1000     1211   1192  0  80   0 -  62165 poll_s ?        00:00:00 gvfsd
0 S   1000     1218   1192  0  80   0 -  95514 futex_ ?        00:00:00 gvfsd-fuse
0 S   1000     1234   1192  0  80   0 -  81595 poll_s ?        00:00:00 gvfs-udisk
0 S   1000     1242   1192  0  80   0 -  81422 poll_s ?        00:00:00 gvfs-afc-v
4 S   1000     1248   1170  0  80   0 -  43241 poll_s tty2     00:00:00 gdm-x-sess
0 S   1000     1250   1192  0  80   0 -  62277 poll_s ?        00:00:00 gvfs-goa-v
0 S   1000     1254   1192  0  80   0 - 191816 poll_s ?        00:00:00 goa-daemon
4 S   1000     1256   1248  0  80   0 -  56154 ep_pol tty2     00:00:02 Xorg
0 S   1000     1263   1192  0  80   0 -  81892 poll_s ?        00:00:00 goa-identi
0 S   1000     1270   1192  0  80   0 -  61165 poll_s ?        00:00:00 gvfs-mtp-v
0 S   1000     1274   1192  0  80   0 -  61734 poll_s ?        00:00:00 gvfs-gphot
0 S   1000     1294   1248  0  80   0 -  49968 poll_s tty2     00:00:00 gnome-sess
0 S   1000     1349   1192  0  80   0 -  62214 -      ?        00:00:00 gnome-keyr
1 S   1000     1375   1294  0  80   0 -   1508 -      ?        00:00:00 ssh-agent
1 S   1000     1392      1  0  80   0 -  80937 poll_s ?        00:00:00 ibus-daemo
0 S   1000     1400   1392  0  80   0 -  43879 poll_s ?        00:00:00 ibus-memco
```

5) The Terminal Output is given below,

```
haris@haris-VirtualBox: ~                    Q  ≡  _  □  ⊗

haris@haris-VirtualBox:~$ ps -lp 1
F S   UID      PID    PPID  C PRI  NI ADDR SZ WCHAN   TTY          TIME CMD
4 S     0        1      0  0  80   0 -  25492 -      ?        00:00:01 systemd
haris@haris-VirtualBox:~$
```
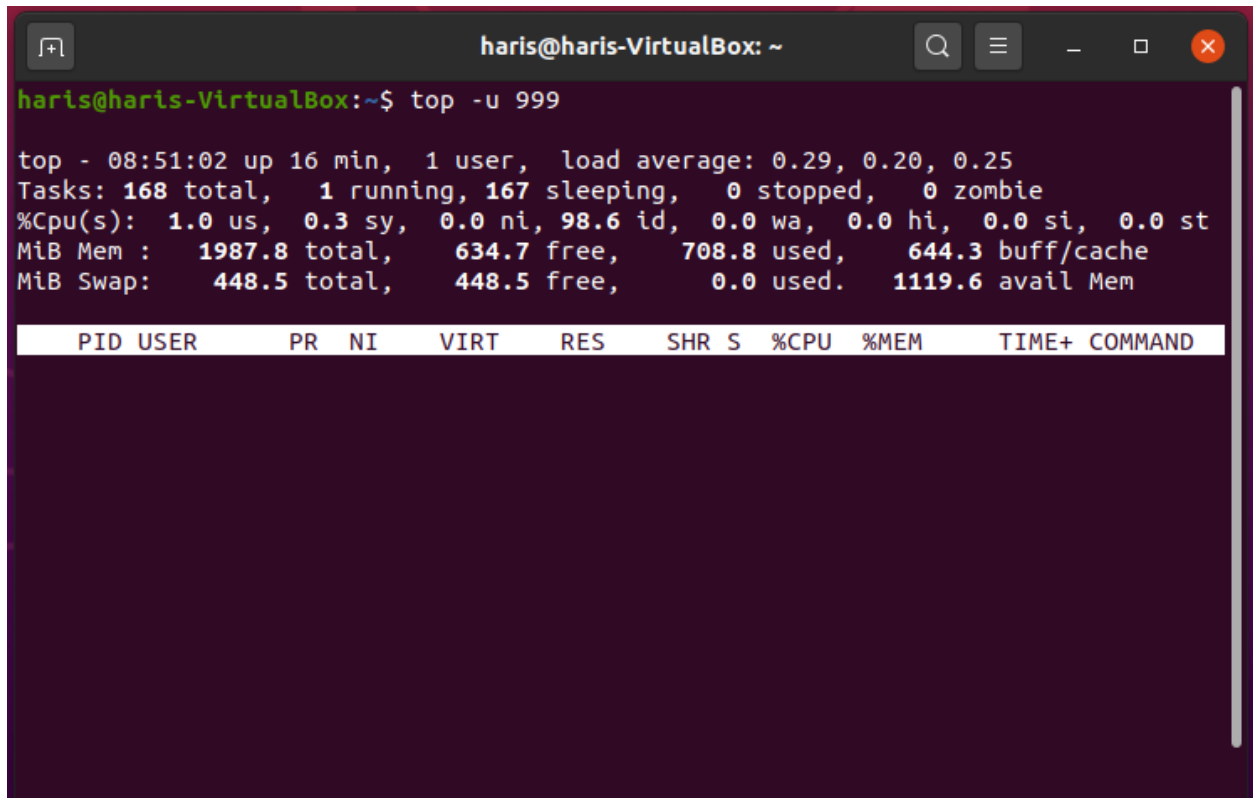
6) The Terminal Output is given below,

7) The Terminal Output is given below,
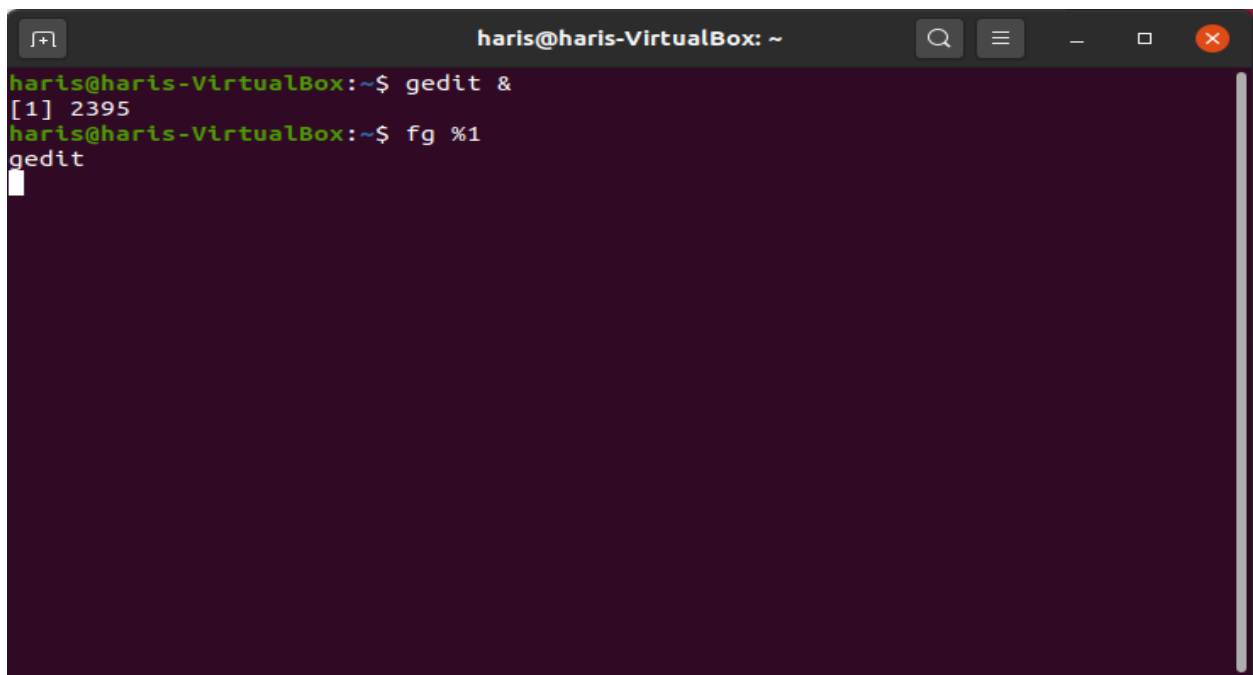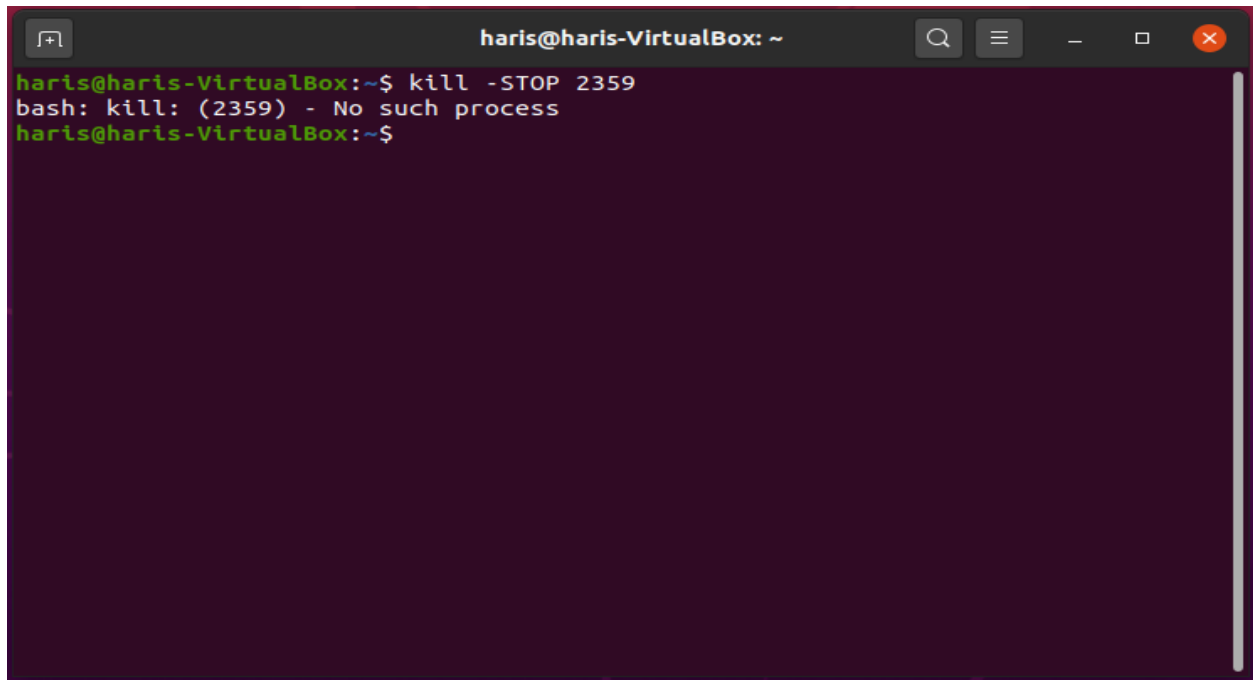
```
haris@haris-VirtualBox:~$ top -u 999

top - 08:51:02 up 16 min,  1 user,  load average: 0.29, 0.20, 0.25
Tasks: 168 total,   1 running, 167 sleeping,   0 stopped,   0 zombie
%Cpu(s):  1.0 us,  0.3 sy,  0.0 ni, 98.6 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   1987.8 total,    634.7 free,    708.8 used,    644.3 buff/cache
MiB Swap:    448.5 total,    448.5 free,      0.0 used.   1119.6 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
```

8) The Terminal Output is given below,

```
haris@haris-VirtualBox:~$ gedit &
[1] 2395
haris@haris-VirtualBox:~$ fg %1
gedit
```
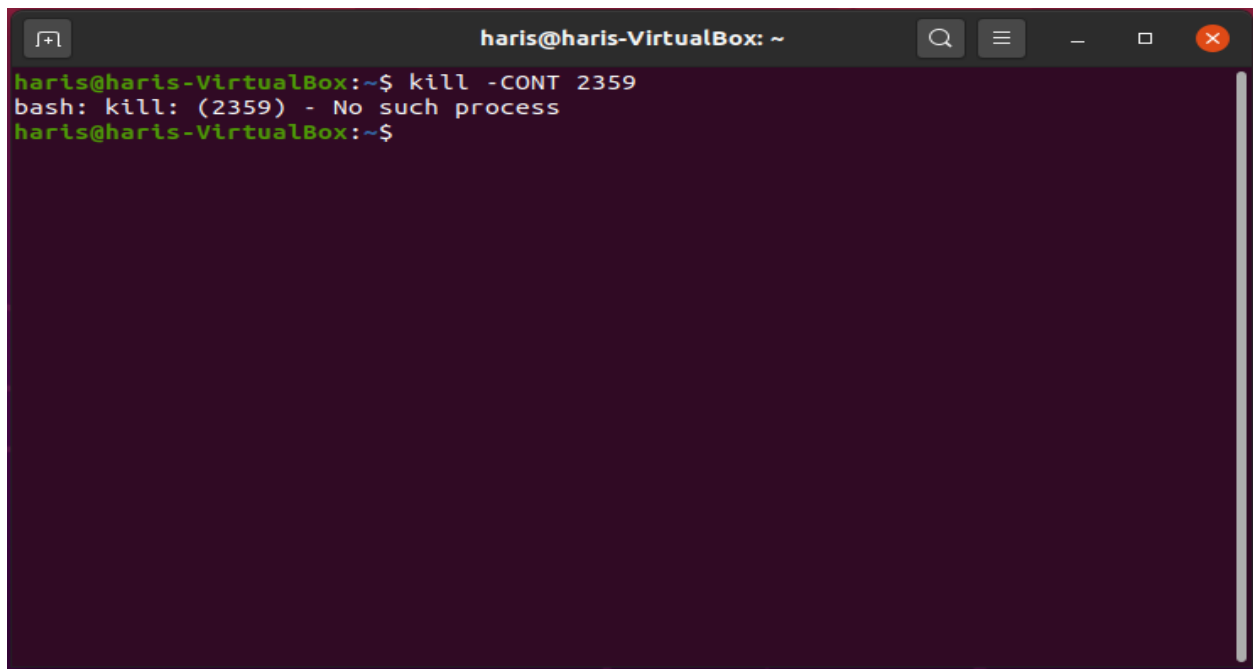
9) The Terminal Output is given below,

```
haris@haris-VirtualBox:~$ kill -STOP 2359
bash: kill: (2359) - No such process
haris@haris-VirtualBox:~$
```

10) The Terminal Output is given below,

```
haris@haris-VirtualBox:~$ kill -CONT 2359
bash: kill: (2359) - No such process
haris@haris-VirtualBox:~$
```

Question 2:   Activity 2:

Perform the following tasks
1. Start the gedit program with priority 90
2. Reset the priority of gedit to 65

Solution:

1) The Terminal Output is given below,


```
haris@haris-VirtualBox:~$ nice -n 10 gedit &
[1] 11529
haris@haris-VirtualBox:~$ ps -l
F S   UID     PID    PPID  C PRI  NI ADDR SZ WCHAN   TTY          TIME CMD
0 S   1000    2386   2375  0  80   0 -   4896 do_wai pts/0    00:00:00 bash
0 S   1000   11529   2386  4  90  10 - 207304 poll_s pts/0    00:00:00 gedit
0 R   1000   11853   2386  0  80   0 -   5091 -      pts/0    00:00:00 ps
haris@haris-VirtualBox:~$ 
```

2) The Terminal Output is given below,

```
haris@haris-VirtualBox:~$ sudo renice -n -15 -p 11529
[sudo] password for haris:
11529 (process ID) old priority 10, new priority -15
haris@haris-VirtualBox:~$ ps -l
F S   UID    PID   PPID  C PRI  NI ADDR SZ WCHAN   TTY          TIME CMD
0 S   1000   2386   2375  0  80   0 -   4896 do_wai pts/0    00:00:00 bash
0 S   1000  11529   2386  0  65 -15 - 207304 poll_s pts/0    00:00:00 gedit
0 R   1000  14213   2386  0  80   0 -   5091 -      pts/0    00:00:00 ps
haris@haris-VirtualBox:~$
```
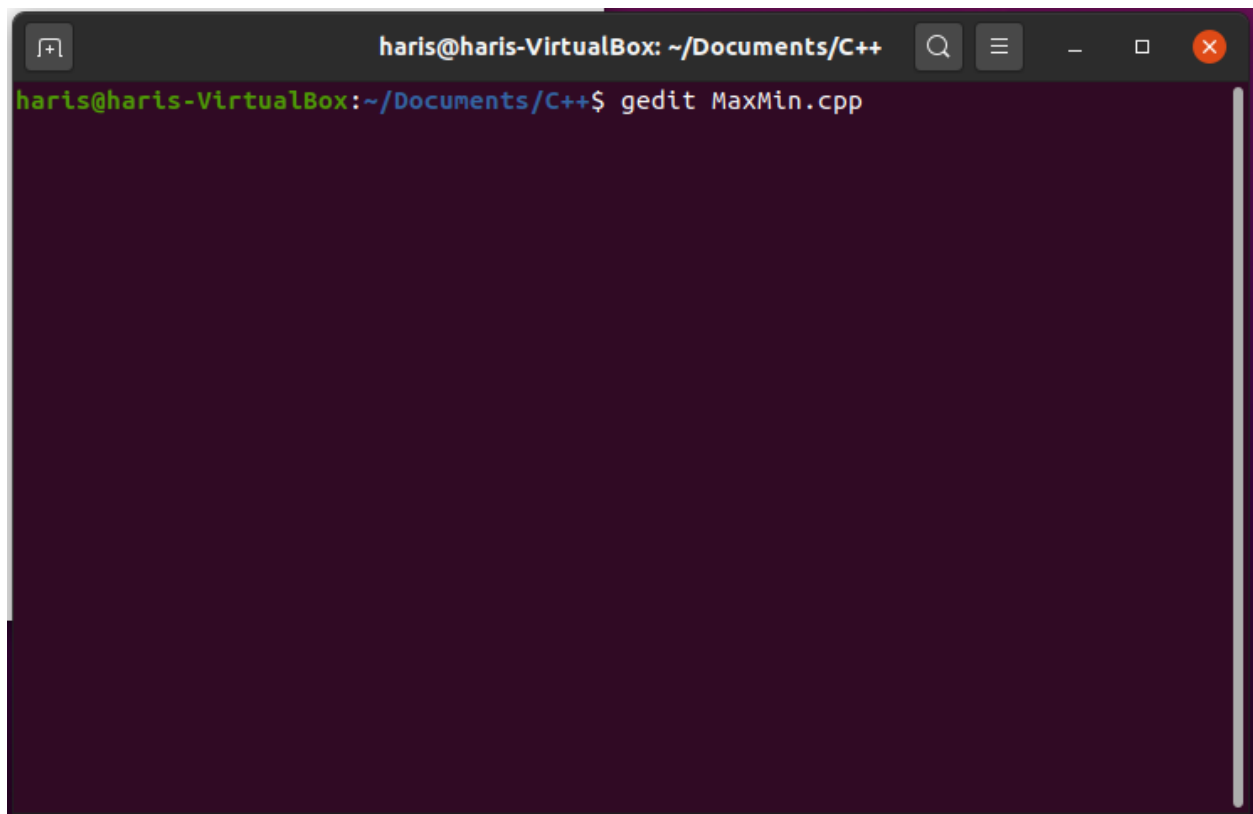
Question 3: Activity 3:

Write a program in C++ that find the maximum and minimum number from an array.

Solution:

```cpp
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6
7 int array[5]={10,2,13,55,22};
8 int min,max,i;
9
10
11 min=array[0];
12
13 for(i=0;i<5;i++)
14 {
15
16 if(min> array[i])
17 min=array[i];
18
19 }
20
21 max=array[0];
22
23 for(i=0;i<5;i++)
24 {
25
26 if(max < array[i])
27 max=array[i];
28
29 }
30
31 cout<< "Maximum Number of Array:"<<max<<endl;
32 cout<< "Minimum Number of Array:"<<min<<endl;
33 }
34
```
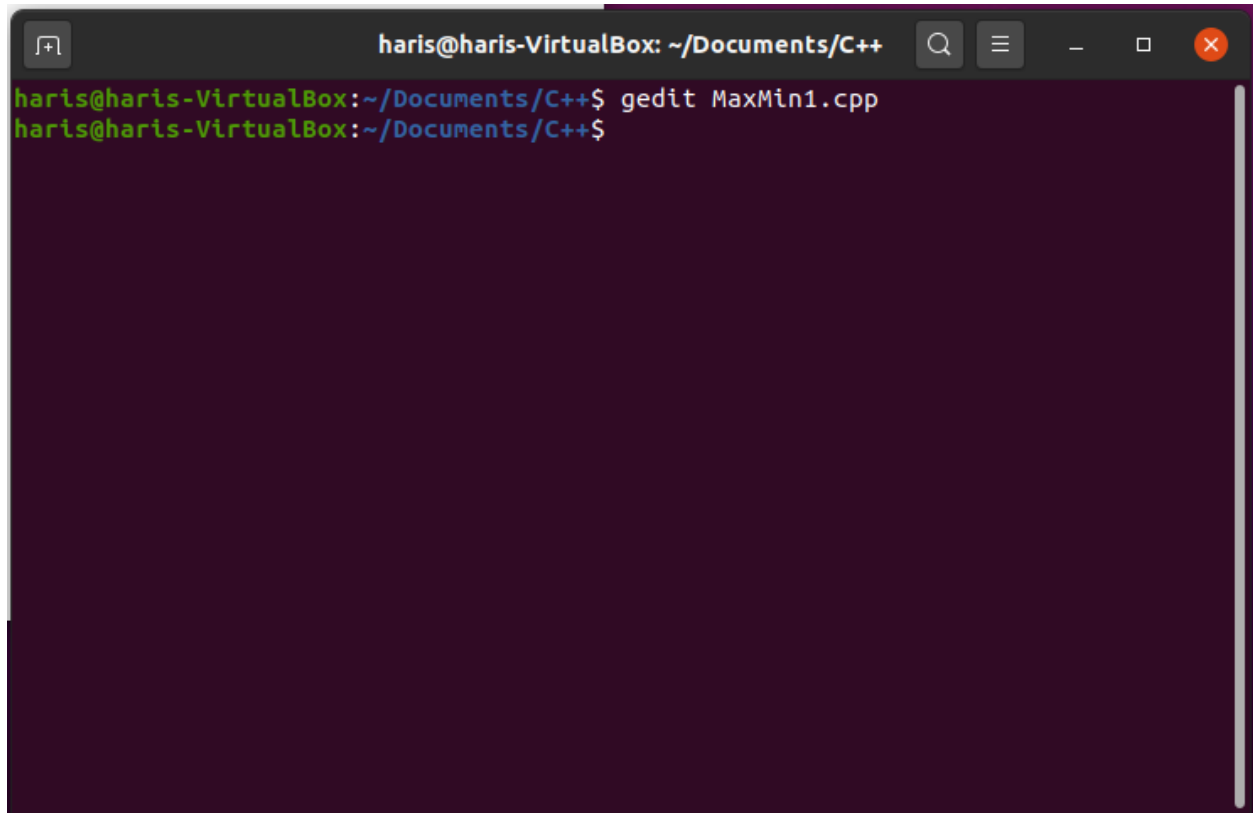
haris@haris-VirtualBox: ~/Documents/C++

```
haris@haris-VirtualBox:~/Documents/C++$ g++ MaxMin.cpp -o MaxMin
haris@haris-VirtualBox:~/Documents/C++$ ./MaxMin
Maximum Number of Array:55
Minimum Number of Array:2
haris@haris-VirtualBox:~/Documents/C++$
```

Question 4:   Activity 4:

Change the above program such that it accepts the input at command-line.

Solution:

```cpp
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6 |
7 int array[5];
8 int min,max,i,n;
9 n=5;   //size of array is 5
10
11 cout<<"Enter the 5 Elements in array?"
12
13 for(i=0;i<n;i++)
14 {
15 cin >> array[i];
16 }
17
18 min=array[0];
19
20 for(i=0;i<n;i++)
21 {
22
23 if(min> array[i])
24 min=array[i];
25
26 }
27
28 max=array[0];
29
30 for(i=0;i<n;i++)
31 {
32
33 if(max < array[i])
34 max=array[i];
35
36 }
37
38 cout<< "Maximum Number of Array:"<<max<<endl;
```

File   Machine   View   Input   Devices   Help   Ubuntu   1   ▼   INS

```
haris@haris-VirtualBox: ~/Documents/C++

haris@haris-VirtualBox:~/Documents/C++$ g++ MaxMin1.cpp -o MaxMin1
haris@haris-VirtualBox:~/Documents/C++$ ./MaxMin1
Enter the 5 Elements in array?22
34
1
457
223
Maximum Number of Array:457
Minimum Number of Array:1
haris@haris-VirtualBox:~/Documents/C++$
```

_____THE END_____