



LAB 4

GIỚI THIỆU VỀ SHELL VÀ CÁC LỆNH CƠ BẢN

Họ tên và MSSV: Quách Minh Hón – B2110078

Nhóm học phân: 05

- Các sinh viên bị phát hiện sao chép bài của nhau sẽ nhận 0đ cho tất cả bài thực hành của môn này.
- Bài nộp phải ở dạng PDF. Tên file PDF đặt theo cấu trúc “MSSV_Lab1_HoTen”. Ví dụ, SV có MSSV là B1234 và Họ tên là “Nguyễn Văn A”; tên file sẽ đặt như sau “B1234_Lab1_NguyenVanA”.
- **Yêu cầu:** SV cần có máy cài đặt hệ điều hành Ubuntu và đặt tên máy là **UbuntuMSSV** (với MSSV là Mã số sinh viên của SV).
- **Hướng dẫn cách trình bày:** đối với từng câu hỏi, SV cung cấp lệnh/script để giải quyết bài toán, sau đó chụp màn hình kết quả test ở máy ảo và dán vào file trả lời.
 - Yêu cầu khi chụp hình: cần phải thấy được tên máy **UbuntuMSSV**, lệnh sử dụng và kết quả rõ ràng.
 - Sau đây là ví dụ mẫu để minh họa. Trong ví dụ này máy của sử dụng tên là *Ubuntu20043*, còn khi SV làm bài thì tên máy của SV bắt buộc phải là **UbuntuMSSV**.

Bài 1:

```
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Sep 21 21:13
ubuntub2110078@UbuntuB2110078: ~
ubuntub2110078@UbuntuB2110078:~$ ps u
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
ubuntub+      769  0.0  0.3 171408  6144 tty2      Ssl+  20:44    0:00 /usr/libexec/g
ubuntub+      777  0.0  0.7 232064 15616 tty2      Sl+   20:44    0:00 /usr/libexec/g
ubuntub+     1594  0.0  0.2  20296  5120 pts/0    Ss    20:45    0:00 bash
ubuntub+     1820  0.0  0.1  21692  3328 pts/0    R+    21:13    0:00 ps u
```

UbuntuB2110078 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

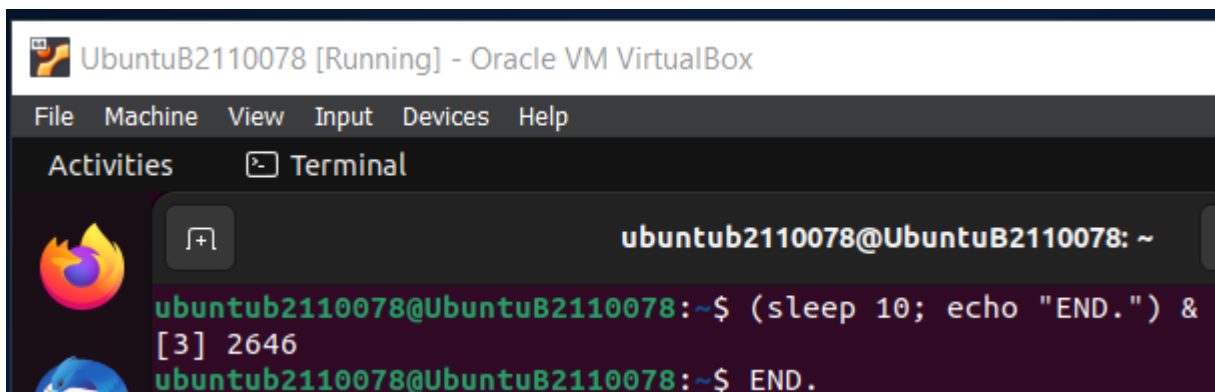
Activities Terminal

ubuntub2110078@UbuntuB2110078: ~

```
ubuntub2110078@UbuntuB2110078:~$ ps -e
```

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	slub_flushwq
6	?	00:00:00	netns
8	?	00:00:00	kworker/0:0H-kblockd
10	?	00:00:00	mm_percpu_wq
11	?	00:00:00	rcu_tasks_kthread
12	?	00:00:00	rcu_tasks_rude_kthread
13	?	00:00:00	rcu_tasks_trace_kthread
14	?	00:00:00	ksoftirqd/0
15	?	00:00:00	rcu_preempt
16	?	00:00:00	migration/0
17	?	00:00:00	idle_inject/0
19	?	00:00:00	cpuhp/0
20	?	00:00:00	kdevtmpfs
21	?	00:00:00	inet_frag_wq
22	?	00:00:00	kauditd
23	?	00:00:00	khungtaskd
24	?	00:00:00	oom_reaper
27	?	00:00:00	writeback
28	?	00:00:00	kcompactd0
29	?	00:00:00	ksmd
30	?	00:00:00	khugepaged
31	?	00:00:00	kintegrityd
32	?	00:00:00	kblockd
33	?	00:00:00	blkcg_punt_bio
34	?	00:00:00	tpm_dev_wq
35	?	00:00:00	ata_sff
36	?	00:00:00	md
37	?	00:00:00	edac-poller
38	?	00:00:00	devfreq_wq
39	?	00:00:00	watchdogd
41	?	00:00:00	kswapd0
42	?	00:00:00	ecryptfs-kthread
43	?	00:00:00	kthrotld

Bài 4:



UbuntuB2110078 [Running] - Oracle VM VirtualBox

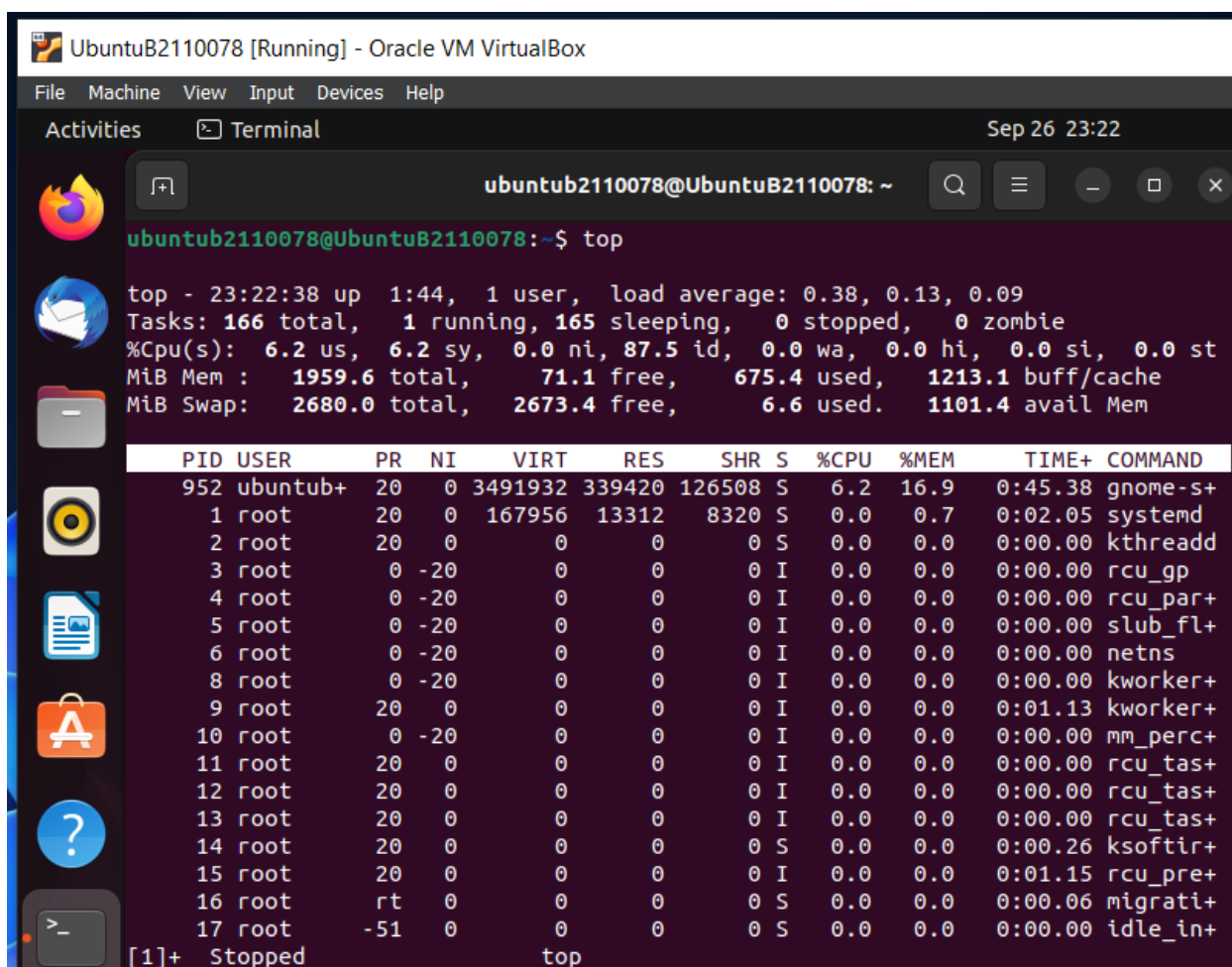
File Machine View Input Devices Help

Activities Terminal

ubuntub2110078@UbuntuB2110078: ~

```
ubuntub2110078@UbuntuB2110078:~$ (sleep 10; echo "END.") &
[3] 2646
ubuntub2110078@UbuntuB2110078:~$ END.
```

Bài 5:



UbuntuB2110078 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Sep 26 23:22

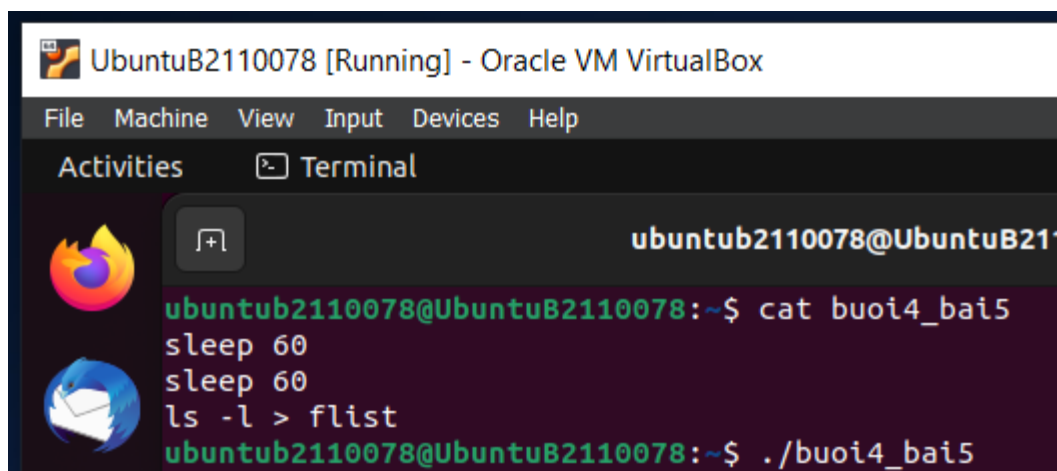
ubuntub2110078@UbuntuB2110078: ~

```
ubuntub2110078@UbuntuB2110078:~$ top

top - 23:22:38 up 1:44, 1 user, load average: 0.38, 0.13, 0.09
Tasks: 166 total, 1 running, 165 sleeping, 0 stopped, 0 zombie
%Cpu(s): 6.2 us, 6.2 sy, 0.0 ni, 87.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1959.6 total, 71.1 free, 675.4 used, 1213.1 buff/cache
MiB Swap: 2680.0 total, 2673.4 free, 6.6 used. 1101.4 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
  952 ubuntu+  20   0 3491932 339420 126508 S   6.2   16.9   0:45.38 gnome-s+
    1 root      20   0  167956  13312   8320 S   0.0    0.7   0:02.05 systemd
    2 root      20   0     0     0     0 S   0.0    0.0   0:00.00 kthreadd
    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_par+
    5 root       0 -20     0     0     0 I   0.0    0.0   0:00.00 slub_fl+
    6 root       0 -20     0     0     0 I   0.0    0.0   0:00.00 netns
    8 root       0 -20     0     0     0 I   0.0    0.0   0:00.00 kworker+
    9 root      20   0     0     0     0 I   0.0    0.0   0:01.13 kworker+
   10 root       0 -20     0     0     0 I   0.0    0.0   0:00.00 mm_perc+
   11 root      20   0     0     0     0 I   0.0    0.0   0:00.00 rcu_tas+
   12 root      20   0     0     0     0 I   0.0    0.0   0:00.00 rcu_tas+
   13 root      20   0     0     0     0 I   0.0    0.0   0:00.00 rcu_tas+
   14 root      20   0     0     0     0 S   0.0    0.0   0:00.26 ksoftir+
   15 root      20   0     0     0     0 I   0.0    0.0   0:01.15 rcu_pre+
   16 root      rt   0     0     0     0 S   0.0    0.0   0:00.06 migrati+
   17 root     -51   0     0     0     0 S   0.0    0.0   0:00.00 idle_in+

[1]+  Stopped                  top
```

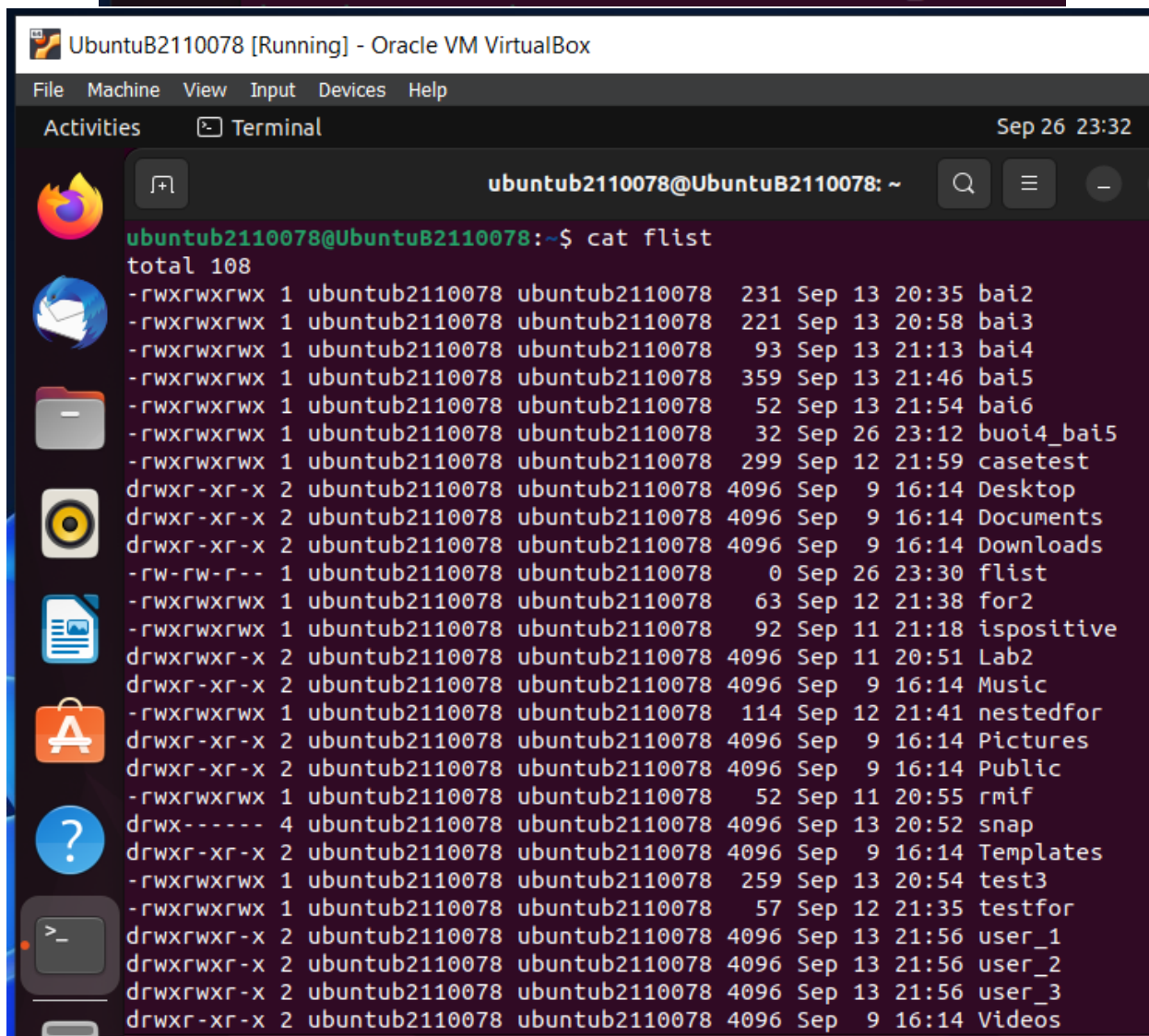


UbuntuB2110078 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal

```
ubuntub2110078@UbuntuB2110078:~$ cat buoi4_bai5
sleep 60
sleep 60
ls -l > flist
ubuntub2110078@UbuntuB2110078:~$ ./buoi4_bai5
```



UbuntuB2110078 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Sep 26 23:32

```
ubuntub2110078@UbuntuB2110078:~$ cat flist
total 108
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 231 Sep 13 20:35 bai2
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 221 Sep 13 20:58 bai3
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 93 Sep 13 21:13 bai4
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 359 Sep 13 21:46 bai5
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 52 Sep 13 21:54 bai6
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 32 Sep 26 23:12 buoi4_bai5
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 299 Sep 12 21:59 casetest
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Desktop
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Documents
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Downloads
-rw-rw-r-- 1 ubuntub2110078 ubuntub2110078 0 Sep 26 23:30 flist
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 63 Sep 12 21:38 for2
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 92 Sep 11 21:18 ispositive
drwxrwxr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 11 20:51 Lab2
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Music
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 114 Sep 12 21:41 nestedfor
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Pictures
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Public
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 52 Sep 11 20:55 rmif
drwx----- 4 ubuntub2110078 ubuntub2110078 4096 Sep 13 20:52 snap
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Templates
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 259 Sep 13 20:54 test3
-rwxrwxrwx 1 ubuntub2110078 ubuntub2110078 57 Sep 12 21:35 testfor
drwxrwxr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 13 21:56 user_1
drwxrwxr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 13 21:56 user_2
drwxrwxr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 13 21:56 user_3
drwxr-xr-x 2 ubuntub2110078 ubuntub2110078 4096 Sep 9 16:14 Videos
```

```

UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
ubuntub2110078@UbuntuB2110078:~$ ./buoi4_bai5 &
[3] 2670
ubuntub2110078@UbuntuB2110078:~$ jobs -l
[1]- 2667 Stopped (signal) top
[2]+ 2668 Stopped ./buoi4_bai5
[3] 2670 Running ./buoi4_bai5 &
ubuntub2110078@UbuntuB2110078:~$ kill 2670
[3] Terminated ./buoi4_bai5
ubuntub2110078@UbuntuB2110078:~$ jobs -l
[1]- 2667 Stopped (signal) top
[2]+ 2668 Stopped ./buoi4_bai5
```

Bài 6:

```

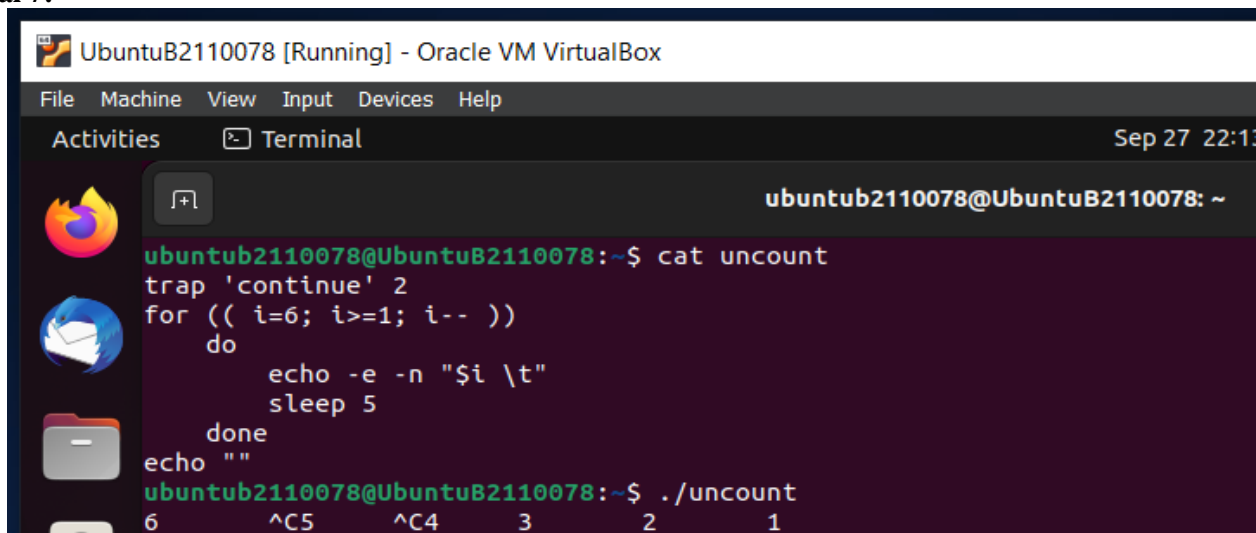
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
ubuntub2110078@UbuntuB2110078: ~
ubuntub2110078@UbuntuB2110078:~$ ps aux | less

```

```

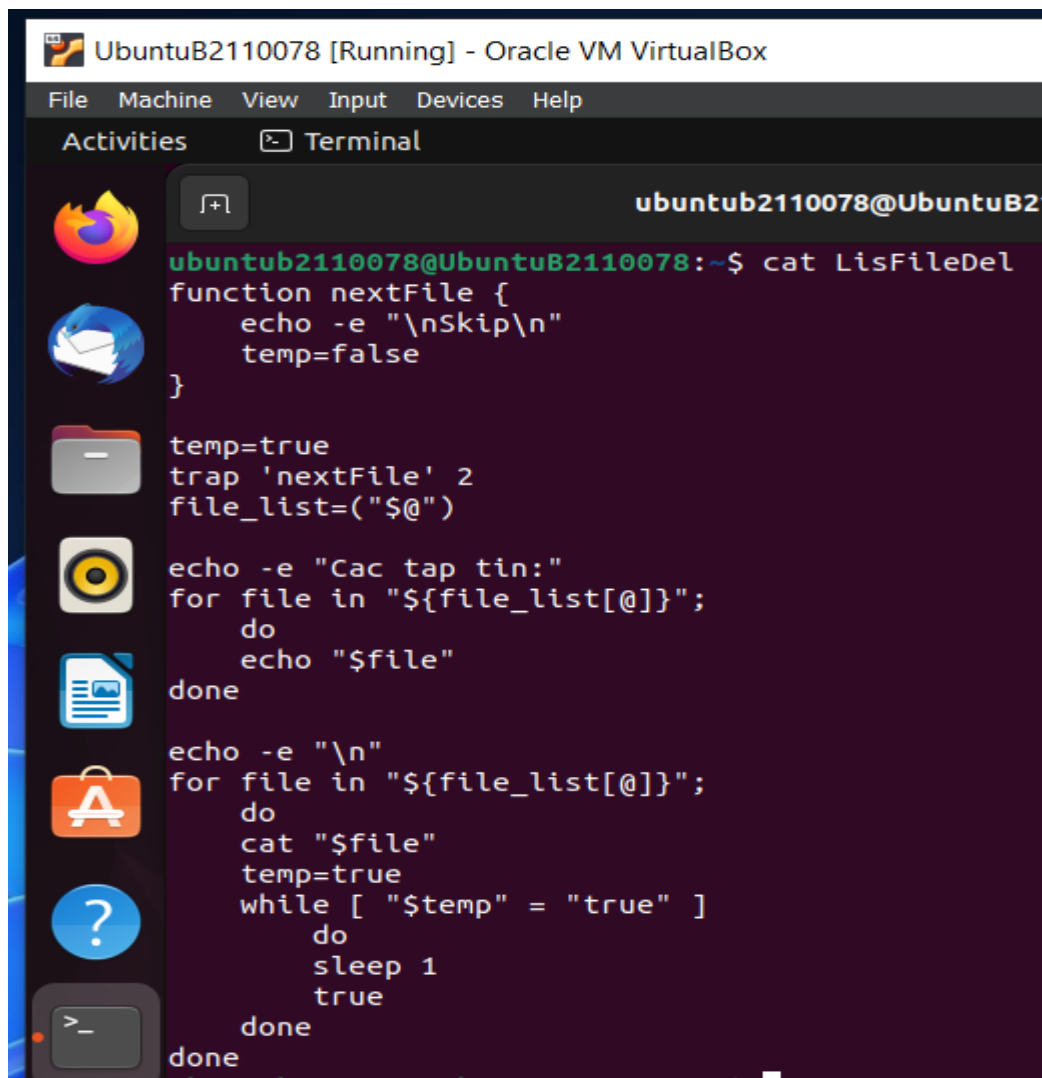
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
ubuntub2110078@UbuntuB2110078: ~
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1   0.2   0.5 166780 11892 ?        Ss   21:47   0:01 /sbin/init splash
root         2   0.0   0.0      0     0 ?        S    21:47   0:00 [kthreadd]
root         3   0.0   0.0      0     0 ?        I<   21:47   0:00 [rcu_gp]
root         4   0.0   0.0      0     0 ?        I<   21:47   0:00 [rcu_par_gp]
root         5   0.0   0.0      0     0 ?        I<   21:47   0:00 [slub_flushwq]
root         6   0.0   0.0      0     0 ?        I<   21:47   0:00 [netns]
root         8   0.0   0.0      0     0 ?        I<   21:47   0:00 [kworker/0:0H-kblockd]
root         9   0.1   0.0      0     0 ?        I    21:47   0:00 [kworker/u2:0-events_unbound]
root        10   0.0   0.0      0     0 ?        I<   21:47   0:00 [mm_percpu_wq]
root        11   0.0   0.0      0     0 ?        I    21:47   0:00 [rcu_tasks_kthread]
root        12   0.0   0.0      0     0 ?        I    21:47   0:00 [rcu_tasks_rude_kthread]
root        13   0.0   0.0      0     0 ?        I    21:47   0:00 [rcu_tasks_trace_kthread]
root        14   0.0   0.0      0     0 ?        S    21:47   0:00 [ksoftirqd/0]
root        15   0.0   0.0      0     0 ?        I    21:47   0:00 [rcu_preempt]
root        16   0.0   0.0      0     0 ?        S    21:47   0:00 [migration/0]
root        17   0.0   0.0      0     0 ?        S    21:47   0:00 [idle_inject/0]
root        18   0.0   0.0      0     0 ?        I    21:47   0:00 [kworker/0:1-events]
root        19   0.0   0.0      0     0 ?        S    21:47   0:00 [cpuhp/0]
root        20   0.0   0.0      0     0 ?        S    21:47   0:00 [kdevtmpfs]
root        21   0.0   0.0      0     0 ?        I<   21:47   0:00 [inet_frag_wq]
root        22   0.0   0.0      0     0 ?        S    21:47   0:00 [kauditd]
root        23   0.0   0.0      0     0 ?        S    21:47   0:00 [khungtaskd]
```


Bài 7:

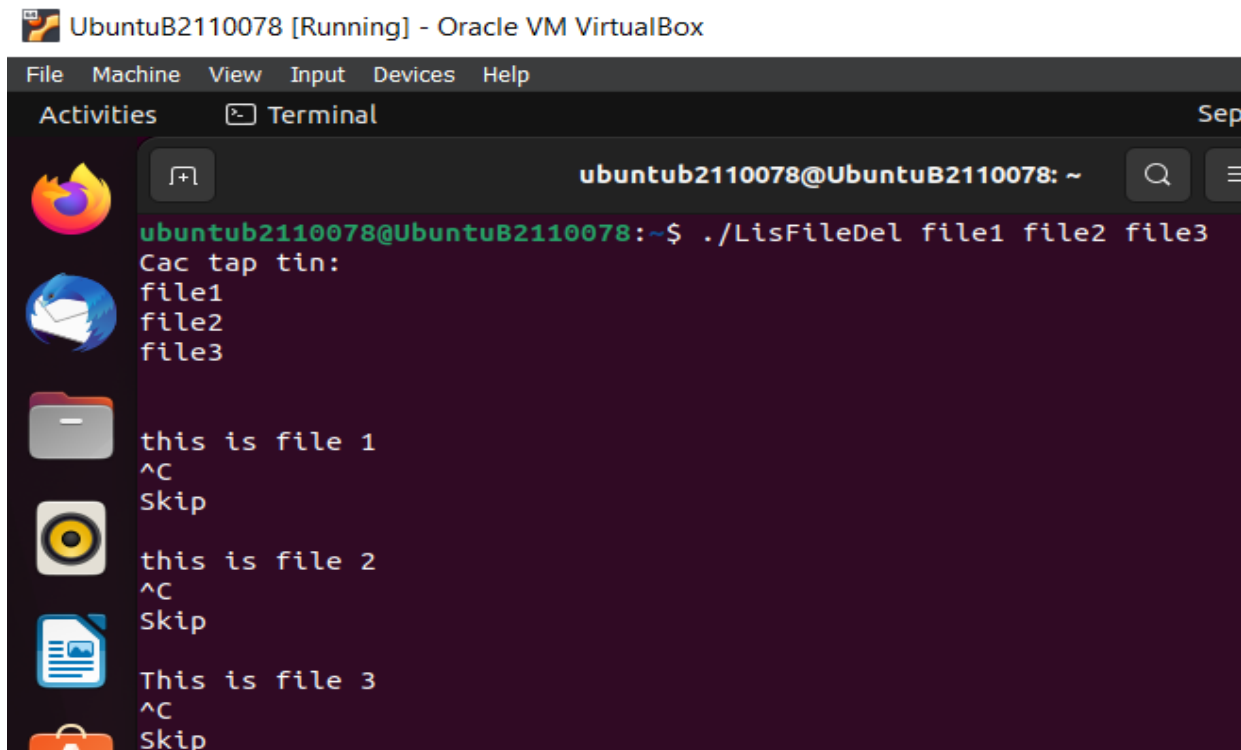


```
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Sep 27 22:11
ubuntub2110078@UbuntuB2110078: ~
ubuntub2110078@UbuntuB2110078:~$ cat uncount
trap 'continue' 2
for (( i=6; i>=1; i-- ))
do
    echo -e -n "$i \t"
    sleep 5
done
echo ""
ubuntub2110078@UbuntuB2110078:~$ ./uncount
6      ^C5      ^C4      3      2      1
```

Bài 11:



```
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
ubuntub2110078@UbuntuB2110078: ~
ubuntub2110078@UbuntuB2110078:~$ cat LisFileDel
function nextFile {
    echo -e "\nSkip\n"
    temp=false
}
temp=true
trap 'nextFile' 2
file_list=("$@")
echo -e "Cac tap tin:"
for file in "${file_list[@]}";
do
    echo "$file"
done
echo -e "\n"
for file in "${file_list[@]}";
do
    cat "$file"
    temp=true
    while [ "$temp" = "true" ]
    do
        sleep 1
        true
    done
done
```



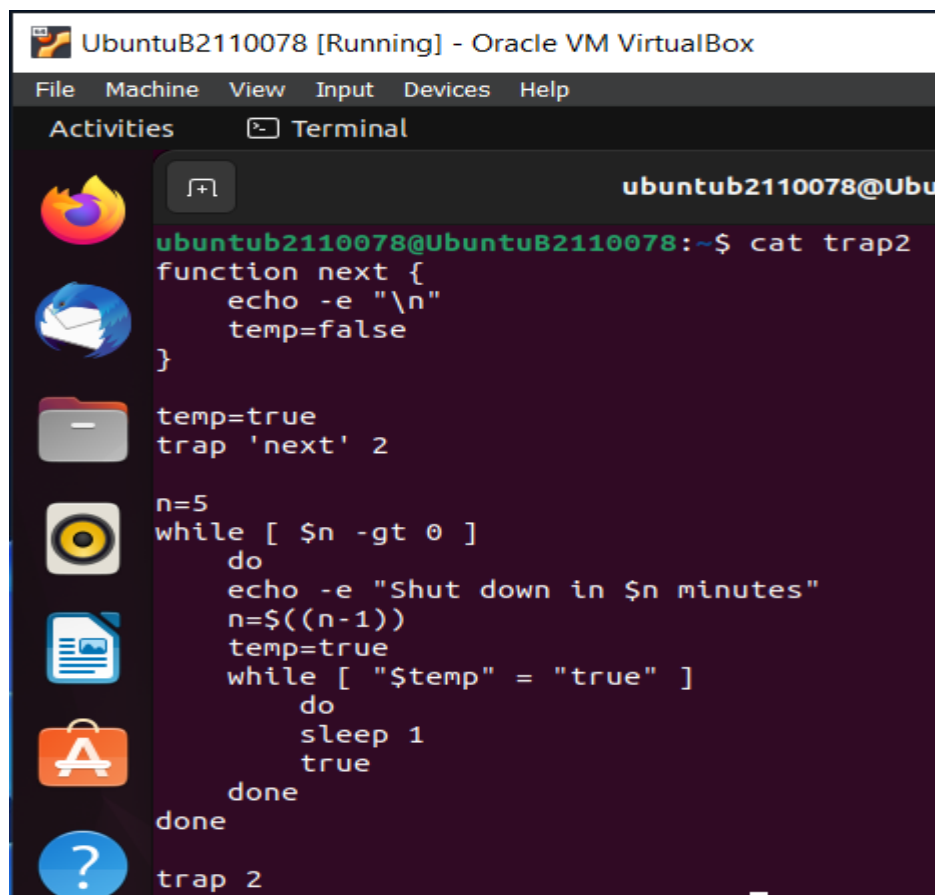
```
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
ubuntub2110078@UbuntuB2110078: ~
ubuntub2110078@UbuntuB2110078:~$ ./LisFileDel file1 file2 file3
Cac tap tin:
file1
file2
file3

this is file 1
^C
Skip

this is file 2
^C
Skip

This is file 3
^C
Skip
```

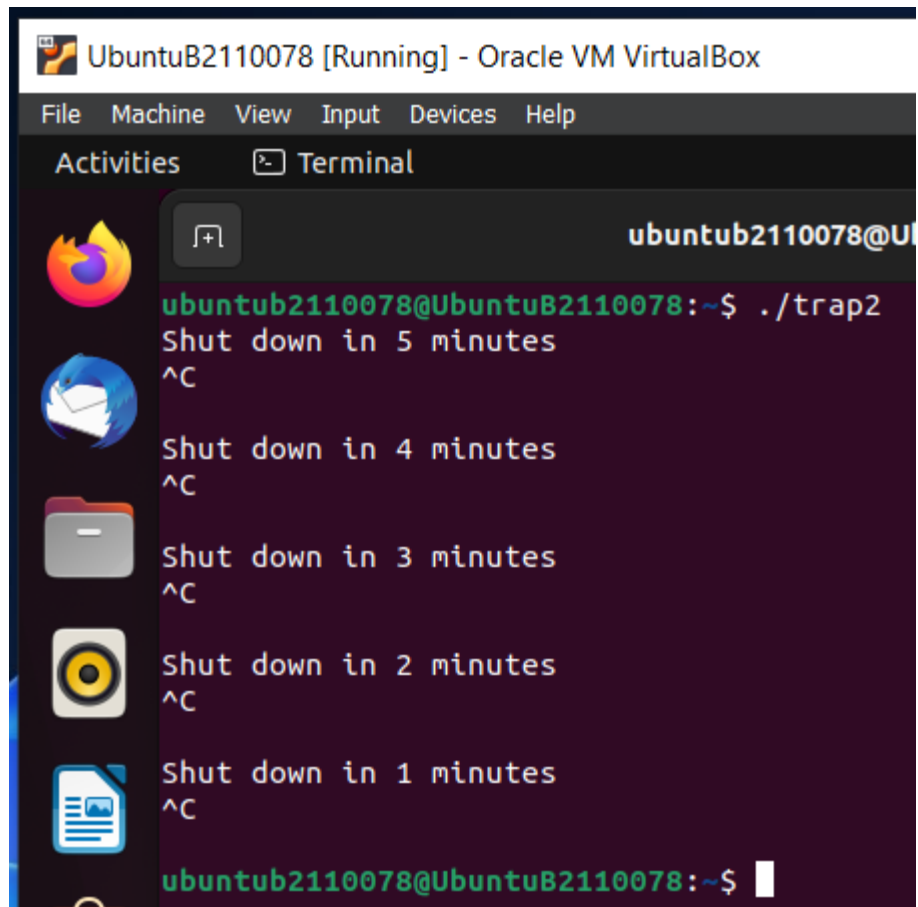
Bài 12:



```
UbuntuB2110078 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
ubuntub2110078@UbuntuB2110078: ~
ubuntub2110078@UbuntuB2110078:~$ cat trap2
function next {
    echo -e "\n"
    temp=false
}

temp=true
trap 'next' 2

n=5
while [ $n -gt 0 ]
do
    echo -e "Shut down in $n minutes"
    n=$((n-1))
    temp=true
    while [ "$temp" = "true" ]
    do
        sleep 1
        true
    done
done
trap 2
```



The screenshot shows a terminal window titled "UbuntuB2110078 [Running] - Oracle VM VirtualBox". The terminal has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". Below the menu bar is a toolbar with "Activities" and "Terminal" buttons. The terminal output shows a script running that counts down from 5 minutes to 1 minute. The prompt is "ubuntub2110078@UbuntuB2110078:~\$".

```
ubuntub2110078@UbuntuB2110078:~$ ./trap2
Shut down in 5 minutes
^C
Shut down in 4 minutes
^C
Shut down in 3 minutes
^C
Shut down in 2 minutes
^C
Shut down in 1 minutes
^C
ubuntub2110078@UbuntuB2110078:~$
```