First:
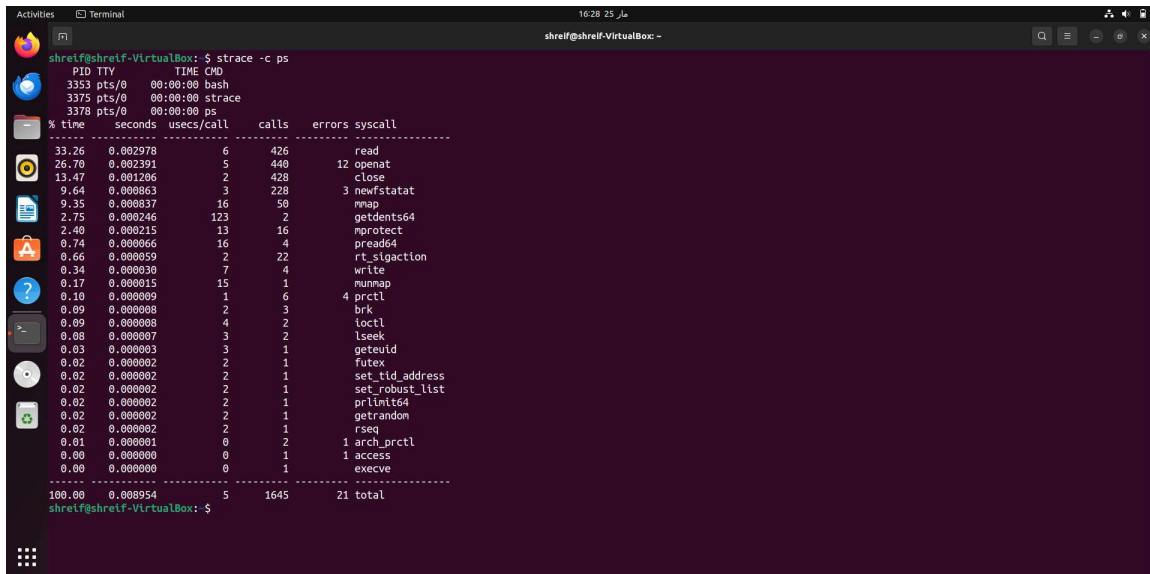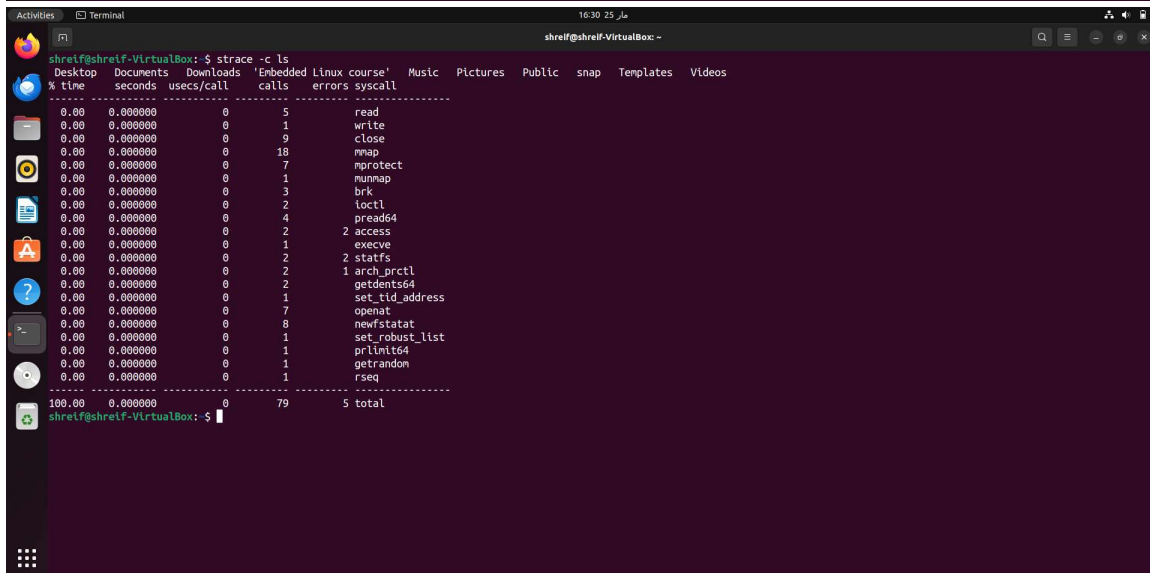
Trace System call for [ps & cd & ls] commands.


```
shreif@shreif-VirtualBox:~$ strace -c ps
    PID TTY          TIME CMD
   3353 pts/0    00:00:00 bash
   3375 pts/0    00:00:00 strace
   3378 pts/0    00:00:00 ps
% time     seconds  usecs/call     calls    errors syscall
------ ----------- ----------- --------- --------- ----------------
 33.26    0.002978           6       426           read
 26.70    0.002391           5       440        12 openat
 13.47    0.001206           2       428           close
  9.64    0.000863           3       228         3 newfstatat
  9.35    0.000837          16        50           mmap
  2.75    0.000246         123         2           getdents64
  2.40    0.000215          13        16           mprotect
  0.74    0.000066          16         4           pread64
  0.66    0.000059           2        22           rt_sigaction
  0.34    0.000030           7         4           write
  0.17    0.000015          15         1           munmap
  0.10    0.000009           1         6         4 prctl
  0.09    0.000008           2         3           brk
  0.09    0.000008           4         2           ioctl
  0.08    0.000007           3         2           lseek
  0.03    0.000003           3         1           geteuid
  0.02    0.000002           2         1           futex
  0.02    0.000002           2         1           set_tid_address
  0.02    0.000002           2         1           set_robust_list
  0.02    0.000002           2         1           prlimit64
  0.02    0.000002           2         1           getrandom
  0.02    0.000002           2         1           rseq
  0.01    0.000001           0         2         1 arch_prctl
  0.00    0.000000           0         1         1 access
  0.00    0.000000           0         1           execve
------ ----------- ----------- --------- --------- ----------------
100.00    0.008954           5      1645        21 total
shreif@shreif-VirtualBox:~$
```



```
shreif@shreif-VirtualBox:~$ strace -c ls
Desktop    Documents   Downloads   'Embedded Linux course'   Music   Pictures   Public   snap   Templates   Videos
% time     seconds  usecs/call     calls    errors syscall
------ ----------- ----------- --------- --------- ----------------
  0.00    0.000000           0         5           read
  0.00    0.000000           0         1           write
  0.00    0.000000           0         9           close
  0.00    0.000000           0        18           mmap
  0.00    0.000000           0         7           mprotect
  0.00    0.000000           0         1           munmap
  0.00    0.000000           0         3           brk
  0.00    0.000000           0         2           ioctl
  0.00    0.000000           0         4           pread64
  0.00    0.000000           0         2         2 access
  0.00    0.000000           0         1           execve
  0.00    0.000000           0         2         2 statfs
  0.00    0.000000           0         2         1 arch_prctl
  0.00    0.000000           0         2           getdents64
  0.00    0.000000           0         1           set_tid_address
  0.00    0.000000           0         7           openat
  0.00    0.000000           0         8           newfstatat
  0.00    0.000000           0         1           set_robust_list
  0.00    0.000000           0         1           prlimit64
  0.00    0.000000           0         1           getrandom
  0.00    0.000000           0         1           rseq
------ ----------- ----------- --------- --------- ----------------
100.00    0.000000           0        79         5 total
shreif@shreif-VirtualBox:~$
```

Second:

extract files of interactions.

Identify all the system calls that have been used.

1) read.   2) openat.   3) close.   4) newfstatat.

5) mmap.   6) getdents64. 7) mprotect.   8) execve.

9) rt_sigaction.   10) write.   11) prctl.   12) pread64.

13) brk.   14) munmap.   15) lseek.   16) ioctl.

17) arch_prctl.   18) access.   19) set_robust_list. 20) getdents64.

21) prlimit64.   22) getrandom. 23) geteuid.   24) futex.

25) set_tid_address. 26) rseq.   27) statfs.

Measure system calls performance in terms of time.