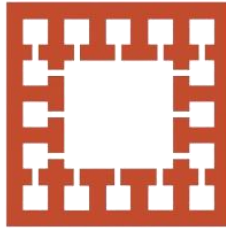


VARENDRA UNIVERSITY



বরেন্দ্র
বিশ্ববিদ্যালয়

Lab Report-2

Monday, 10 October 2022

COURSE TITLE : Operating System And System Programming Lab

COURSE-CODE: CSE-332

SUBMITTED BY

Ahmed Mostakim Fahim

ID: 201311006

SEMESTER: 9th

SECTION: A

BATCH: 23RD

DEPARTMENT OF CSE, VARENDRA UNIVERSITY

SUBMITTED TO

Mst. Rashida Akhtar

Assistant Professor

Computer Science and Engineering

rashida@vu.edu.bd

Ayesha Akter Lima

Lecturer

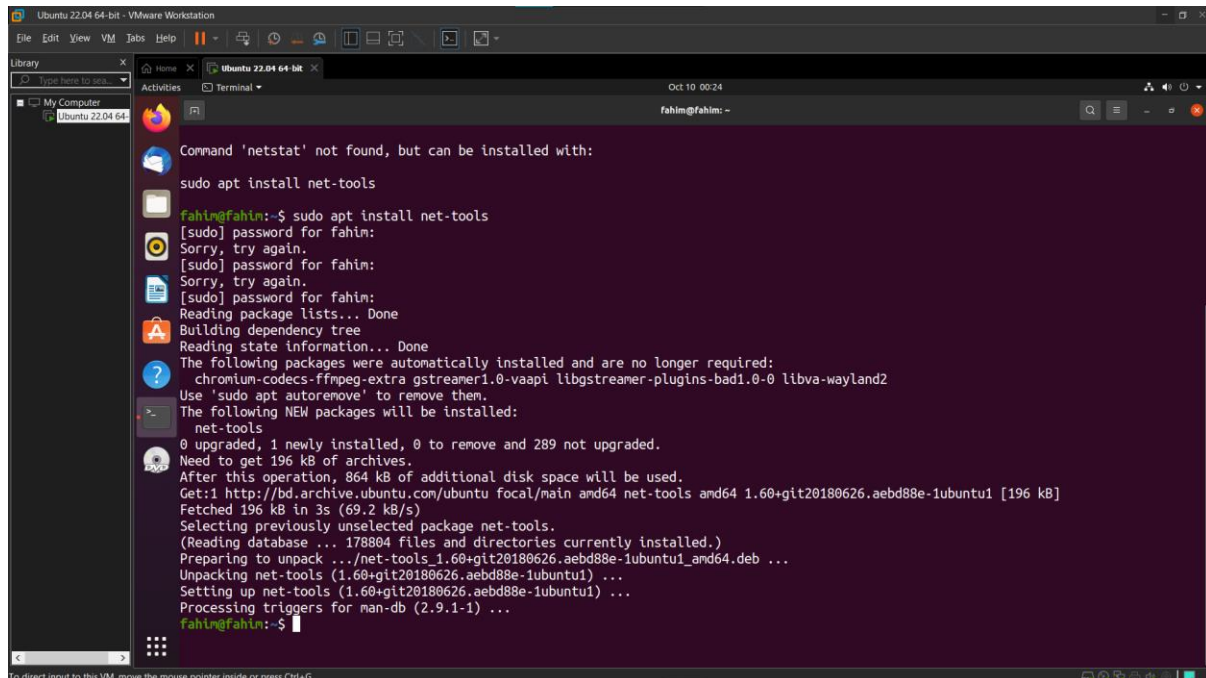
Computer Science and Engineering

lima@vu.edu.bd

Commands: Five New Commands:

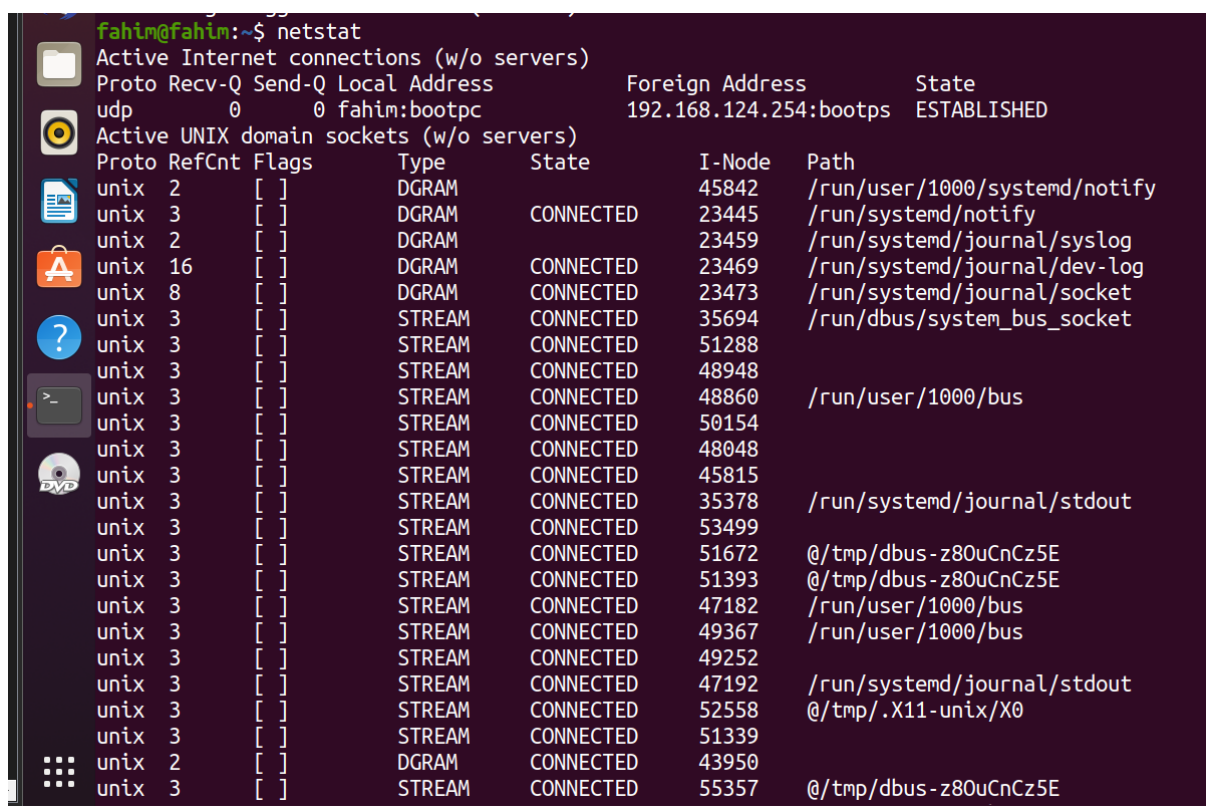
netstat: netstat command displays various network related information such as network connections, routing tables, interface statistics, masquerade connections, multicast memberships etc.

Procedure: sudo apt install net-tools and next run the command “netstat”



```
Command 'netstat' not found, but can be installed with:
sudo apt install net-tools

fahim@fahim:~$ sudo apt install net-tools
[sudo] password for fahim:
Sorry, try again.
[sudo] password for fahim:
Sorry, try again.
[sudo] password for fahim:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 289 not upgraded.
Need to get 196 kB of archives.
After this operation, 864 kB of additional disk space will be used.
Get:1 http://bd.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB]
Fetched 196 kB in 3s (69.2 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 178804 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
fahim@fahim:~$
```



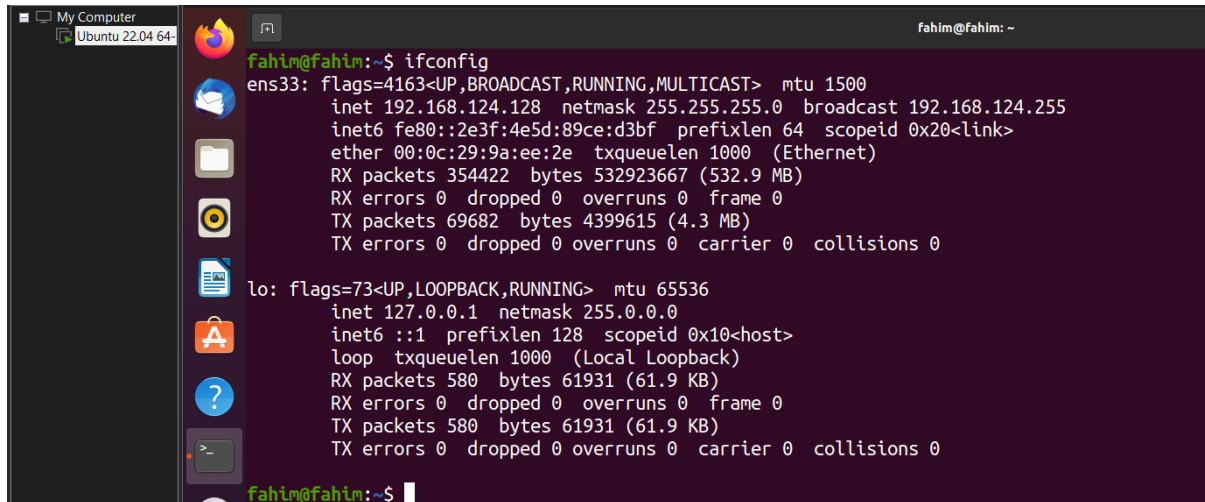
```
fahim@fahim:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 fahim:bootpc           192.168.124.254:bootps  ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node      Path
unix   2      [ ]         DGRAM      CONNECTED    45842       /run/user/1000/systemd/notify
unix   3      [ ]         DGRAM      CONNECTED    23445       /run/systemd/notify
unix   2      [ ]         DGRAM      CONNECTED    23459       /run/systemd/journal/syslog
unix  16      [ ]         DGRAM      CONNECTED    23469       /run/systemd/journal/dev-log
unix   8      [ ]         DGRAM      CONNECTED    23473       /run/systemd/journal/socket
unix   3      [ ]         STREAM     CONNECTED    35694       /run/dbus/system_bus_socket
unix   3      [ ]         STREAM     CONNECTED    51288
unix   3      [ ]         STREAM     CONNECTED    48948
unix   3      [ ]         STREAM     CONNECTED    48860       /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED    50154
unix   3      [ ]         STREAM     CONNECTED    48048
unix   3      [ ]         STREAM     CONNECTED    45815
unix   3      [ ]         STREAM     CONNECTED    35378       /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED    53499
unix   3      [ ]         STREAM     CONNECTED    51672       @/tmp/dbus-z80uCnCz5E
unix   3      [ ]         STREAM     CONNECTED    51393       @/tmp/dbus-z80uCnCz5E
unix   3      [ ]         STREAM     CONNECTED    47182       /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED    49367       /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED    49252
unix   3      [ ]         STREAM     CONNECTED    47192       /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED    52558       @/tmp/.X11-unix/X0
unix   3      [ ]         STREAM     CONNECTED    51339
unix   2      [ ]         DGRAM      CONNECTED    43950
unix   3      [ ]         STREAM     CONNECTED    55357       @/tmp/dbus-z80uCnCz5E
```

Command: ifconfig

ifconfig is used to configure the kernel-resident network interfaces. It is used at boot time to set up interfaces as necessary. After that, it is usually only needed when debugging or when system tuning is needed.

Check Active Network Interfaces.



```
fahim@fahim:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.124.128 netmask 255.255.255.0 broadcast 192.168.124.255
    inet6 fe80::2e3f:4e5d:89ce:d3bf prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:9a:ee:2e txqueuelen 1000 (Ethernet)
    RX packets 354422 bytes 532923667 (532.9 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 69682 bytes 4399615 (4.3 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 580 bytes 61931 (61.9 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 580 bytes 61931 (61.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

fahim@fahim:~$
```

Command pstree:

the pstree command displays the current processes on the system in a tree-like structure.



```
fahim@fahim:~$ pstree
systemd--ModemManager--2*[{ModemManager}]
systemd--NetworkManager--2*[{NetworkManager}]
systemd--VGAuthService
systemd--accounts-daemon--2*[{accounts-daemon}]
systemd--acpid
systemd--avahi-daemon--avahi-daemon
systemd--colord--2*[{colord}]
systemd--cron
systemd--cups-browsed--2*[{cups-browsed}]
systemd--cupsd
systemd--dbus-daemon
systemd--fwupd--4*[{fwupd}]
systemd--gdm3--gdm-session-wor--gdm-x-session--Xorg--{Xorg}
systemd--gdm3--gdm-session-wor--gdm-x-session--gnome-session-b--ssh-agent
systemd--gdm3--gdm-session-wor--gdm-x-session--2*[{gdm-x-session}]
systemd--gdm3--2*[{gdm3}]
systemd--gnome-keyring-d--3*[{gnome-keyring-d}]
systemd--gpg-agent
systemd--irqbalance--{irqbalance}
systemd--2*[kerneloops]
systemd--networkd-dispat
systemd--polkitd--2*[{polkitd}]
systemd--rsyslogd--3*[{rsyslogd}]
systemd--rtkit-daemon--2*[{rtkit-daemon}]
systemd--snapd--12*[{snapd}]
systemd--switcheroo-cont--2*[{switcheroo-cont}]
systemd--systemd--(sd-pam)
```

```

gsd-usb-protect—3*[{gsd-usb-protect}]
gsd-wacom—2*[{gsd-wacom}]
gsd-wwan—3*[{gsd-wwan}]
gsd-xsettings—3*[{gsd-xsettings}]
gvfs-afc-volume—3*[{gvfs-afc-volume}]
gvfs-goa-volume—2*[{gvfs-goa-volume}]
gvfs-gphoto2-vo—2*[{gvfs-gphoto2-vo}]
gvfs-mtp-volume—2*[{gvfs-mtp-volume}]
gvfs-udisks2-vo—3*[{gvfs-udisks2-vo}]
gvfsd—gvfsd-trash—2*[{gvfsd-trash}]
      2*[{gvfsd}]
gvfsd-fuse—5*[{gvfsd-fuse}]
gvfsd-metadata—2*[{gvfsd-metadata}]
ibus-portal—2*[{ibus-portal}]
ibus-x11—2*[{ibus-x11}]
pulseaudio—3*[{pulseaudio}]
seahorse—3*[{seahorse}]
tracker-miner-f—4*[{tracker-miner-f}]
vntoolsd—3*[{vntoolsd}]
xdg-permission—2*[{xdg-permission-}]

systemd-journal
systemd-logind
systemd-resolve
systemd-timesyn—[systemd-timesyn]
systemd-udev
udisksd—4*[{udisksd}]
unattended-upgr—[unattended-upgr]
upowerd—2*[{upowerd}]
vntoolsd—3*[{vntoolsd}]
vmware-vmblock—3*[{vmware-vmblock-}]
whoopsie—2*[{whoopsie}]
wpa_supplicant

fahim@fahim:~$

```

Command top

The top command does much more than simply display Linux processes, but it's a start. Run top at the command line to observe for yourself all the information that this command provides:

For exit: type q.

```

top - 01:03:30 up 56 min, 1 user, load average: 0.17, 0.05, 0.05
Tasks: 275 total, 1 running, 274 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.2 us, 0.0 sy, 0.0 ni, 99.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1941.7 total, 67.7 free, 1036.9 used, 837.1 buff/cache
MiB Swap: 2048.0 total, 1962.3 free, 85.7 used, 742.0 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 648 root        20   0 239796 4332 3328 S   0.3   0.2   0:03.77 vntoolsd
1566 fahim       20   0 4080000 183220 53692 S   0.3   9.2   0:23.94 gnome-shell
2016 fahim      20   0 815072 31676 19124 S   0.3   1.6   0:05.35 gnome-terminal-
4405 root        20   0      0      0      0 I   0.3   0.0   0:00.46 kworker/1:0-events
4484 fahim      20   0 12344 3936 3156 R   0.3   0.2   0:00.74 top
   1 root        20   0 103212 8916 4488 S   0.0   0.4   0:03.21 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_gp
   5 root        0 -20      0      0      0 I   0.0   0.0   0:00.00 netns
   7 root        0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   9 root        0 -20      0      0      0 I   0.0   0.0   0:00.57 kworker/0:1H-events_highpri
  10 root        0 -20      0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
  11 root       20   0      0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_rude_
  12 root       20   0      0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_trace
  13 root       20   0      0      0      0 S   0.0   0.0   0:00.13 ksoftirqd/0
  14 root       20   0      0      0      0 I   0.0   0.0   0:00.50 rcu_sched
  15 root        rt   0      0      0      0 S   0.0   0.0   0:00.01 migration/0
  16 root       -51   0      0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
  18 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
  19 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
  20 root       -51   0      0      0      0 S   0.0   0.0   0:00.00 idle_inject/1
  21 root        rt   0      0      0      0 S   0.0   0.0   0:00.21 migration/1
  22 root       20   0      0      0      0 S   0.0   0.0   0:00.52 ksoftirqd/1
  24 root        0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/1:0H-events_highpri
  25 root       20   0      0      0      0 S   0.0   0.0   0:00.00 kdevtmpfs

```

Command- cal

If a user wants a quick view of the calendar in the Linux terminal, cal is the command for you. By default, the cal command shows the current month calendar as output.

cal command is a calendar command in Linux which is used to see the calendar of a specific month or a whole year.

Syntax:

cal [[month] year]

```
fahim@fahim:~$ cal 5

      5
   January February March
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
  1 2 3      1 2 3 4 5 6 7      1 2 3 4 5 6 7
 4 5 6 7 8 9 10 8 9 10 11 12 13 14 8 9 10 11 12 13 14
11 12 13 14 15 16 17 15 16 17 18 19 20 21 15 16 17 18 19 20 21
18 19 20 21 22 23 24 22 23 24 25 26 27 28 22 23 24 25 26 27 28
25 26 27 28 29 30 31      29 30 31

   April May June
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
      1 2 3 4      1 2      1 2 3 4 5 6
 5 6 7 8 9 10 11 3 4 5 6 7 8 9 7 8 9 10 11 12 13
12 13 14 15 16 17 18 10 11 12 13 14 15 16 14 15 16 17 18 19 20
19 20 21 22 23 24 25 17 18 19 20 21 22 23 21 22 23 24 25 26 27
26 27 28 29 30      24 25 26 27 28 29 30 28 29 30
      31

   July August September
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
      1 2 3 4      1      1 2 3 4 5
 5 6 7 8 9 10 11 2 3 4 5 6 7 8 6 7 8 9 10 11 12
12 13 14 15 16 17 18 9 10 11 12 13 14 15 13 14 15 16 17 18 19
19 20 21 22 23 24 25 16 17 18 19 20 21 22 20 21 22 23 24 25 26
26 27 28 29 30 31 23 24 25 26 27 28 29 27 28 29 30
      30 31

   October November December
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
      1 2 3      1 2 3 4 5 6 7      1 2 3 4 5
 4 5 6 7 8 9 10 8 9 10 11 12 13 14 6 7 8 9 10 11 12
11 12 13 14 15 16 17 15 16 17 18 19 20 21 13 14 15 16 17 18 19
18 19 20 21 22 23 24 22 23 24 25 26 27 28 20 21 22 23 24 25 26
25 26 27 28 29 30 31 29 30      27 28 29 30 31

fahim@fahim:~$
```

```
October November December
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
      1 2 3      1 2 3 4 5 6 7      1 2 3 4 5
 4 5 6 7 8 9 10 8 9 10 11 12 13 14 6 7 8 9 10 11 12
11 12 13 14 15 16 17 15 16 17 18 19 20 21 13 14 15 16 17 18 19
18 19 20 21 22 23 24 22 23 24 25 26 27 28 20 21 22 23 24 25 26
25 26 27 28 29 30 31 29 30      27 28 29 30 31

fahim@fahim:~$
```

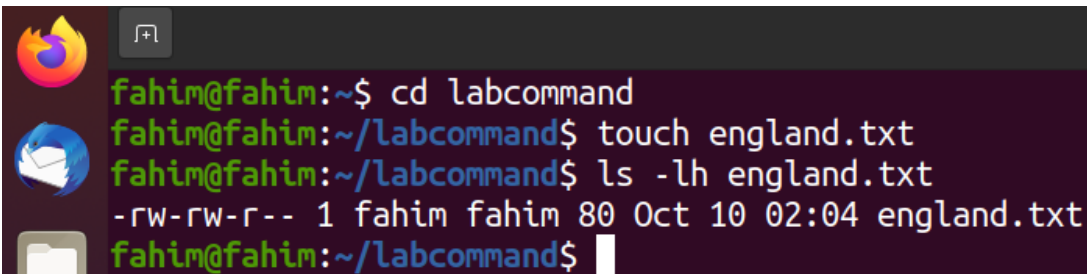
Linux Command from the sheet

```
fahim@fahim:~$ pwd
/home/fahim
fahim@fahim:~$ ls
Desktop Documents Downloads Music oslab Pictures Public Templates Videos
fahim@fahim:~$ ls -a
. .bash_logout .cache Desktop Downloads .local Music .pam_environment .profile .ssh Templates
.. .bashrc .config Documents .gnupg .mozilla oslab Pictures Public .sudo_as_admin_successful Videos
fahim@fahim:~$ mkdir labcommand
fahim@fahim:~$ touch command.txt
fahim@fahim:~$ ls
command.txt Desktop Documents Downloads labcommand Music oslab Pictures Public Templates Videos
fahim@fahim:~$
```

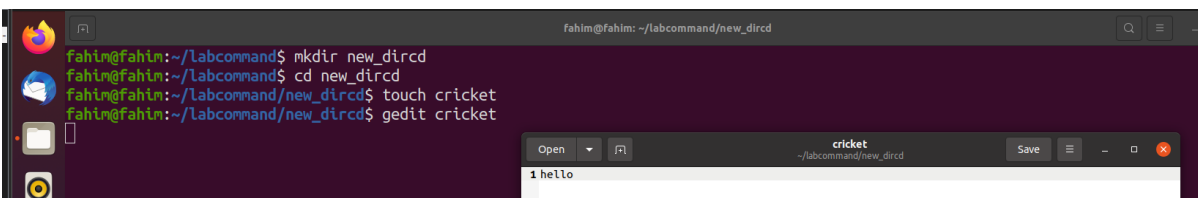
```
fahim@fahim:~/labcommand$ gedit command.txt

command.txt
~/labcommand
Open Save
1 san curran and mark wood strike back in red hot form aussie ballistic opener david warner and
  finisher wade despite clich clash in the middle with mark wood. england beat australia by 8
  runs and take the lead 3 match series 1-0.
2 england 208-6
3 australia 200-9
4 alex hales and jos buttler crunch throws the aussies bowler and jos buttler fall apart in 68
  runs and end of the 132 runs partnership.
```

```
fahim@fahim:~$ ls labcommand
command.txt
fahim@fahim:~$ ls -lh
total 40K
-rw-rw-r-- 1 fahim fahim  0 Oct 10 01:38 command.txt
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Desktop
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Documents
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Downloads
drwxrwxr-x 2 fahim fahim 4.0K Oct 10 01:47 labcommand
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Music
drwxrwxr-x 2 fahim fahim 4.0K Sep 26 02:49 oslab
drwxr-xr-x 2 fahim fahim 4.0K Oct 10 01:53 Pictures
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Public
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Templates
drwxr-xr-x 2 fahim fahim 4.0K Sep 26 02:37 Videos
```



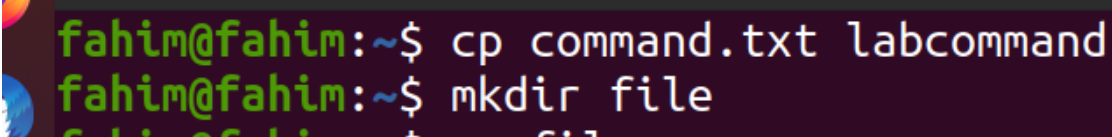
```
fahim@fahim:~$ cd labcommand
fahim@fahim:~/labcommand$ touch england.txt
fahim@fahim:~/labcommand$ ls -lh england.txt
-rw-rw-r-- 1 fahim fahim 80 Oct 10 02:04 england.txt
fahim@fahim:~/labcommand$
```



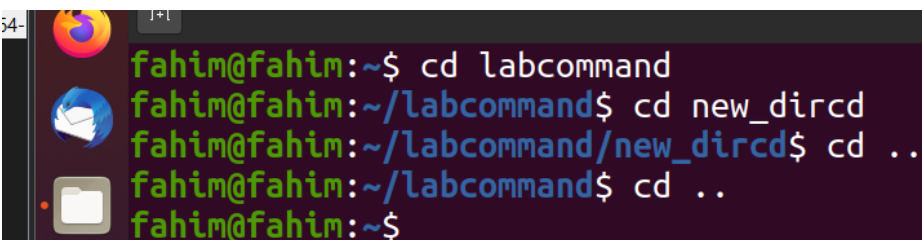
```
fahim@fahim:~/labcommand$ mkdir new_dircd
fahim@fahim:~/labcommand$ cd new_dircd
fahim@fahim:~/labcommand/new_dircd$ touch cricket
fahim@fahim:~/labcommand/new_dircd$ gedit cricket
```

cricket
~/labcommand/new_dircd

```
1 hello
```



```
fahim@fahim:~$ cp command.txt labcommand
fahim@fahim:~$ mkdir file
```



```
fahim@fahim:~$ cd labcommand
fahim@fahim:~/labcommand$ cd new_dircd
fahim@fahim:~/labcommand/new_dircd$ cd ..
fahim@fahim:~/labcommand$ cd ..
fahim@fahim:~$
```



```
fahim@fahim: ~$ cd labcommand
fahim@fahim: ~/labcommand$ ls
command.txt  england.txt  new_dircd
fahim@fahim: ~/labcommand$ touch move
fahim@fahim: ~/labcommand$ ls
command.txt  england.txt  move  new_dircd
fahim@fahim: ~/labcommand$ mv move new_dircd
```

```
fahim@fahim: ~/Documents$ mv folder ~/labcommand$
fahim@fahim: ~/Documents$ cd ..
```

```
command.txt  england.txt  new_dircd
fahim@fahim: ~/labcommand$ touch hello
fahim@fahim: ~/labcommand$ ls
command.txt  england.txt  hello  new_dircd
fahim@fahim: ~/labcommand$ rm hello
fahim@fahim: ~/labcommand$ ls
command.txt  england.txt  new_dircd
fahim@fahim: ~/labcommand$
```

```
fahim@fahim: ~/labcommand$ touch hello
fahim@fahim: ~/labcommand$ ls
command.txt  england.txt  hello  new_dircd
fahim@fahim: ~/labcommand$ rm -r hello
fahim@fahim: ~/labcommand$ ls
command.txt  england.txt  new_dircd
fahim@fahim: ~/labcommand$
```

```
fahim@fahim: ~/labcommand$ cat england.txt
england vs australia 2nd detol t20 on 11 oct in aussies nation capital canberra.
fahim@fahim: ~/labcommand$ head england.txt
england vs australia 2nd detol t20 on 11 oct in aussies nation capital canberra.
fahim@fahim: ~/labcommand$ tail england.txt
england vs australia 2nd detol t20 on 11 oct in aussies nation capital canberra.
fahim@fahim: ~/labcommand$ du -h
12K    ./new_dircd
20K    .
fahim@fahim: ~/labcommand$ du -ah
0       ./command.txt
4.0K    ./england.txt
4.0K    ./new_dircd/cricket
4.0K    ./new_dircd/move
12K     ./new_dircd
20K     .
fahim@fahim: ~/labcommand$
```

```
fahim@fahim: ~/labcommand
fahim@fahim:~/labcommand$ find -name england.txt
./england.txt
fahim@fahim:~/labcommand$ find -name "eng"
fahim@fahim:~/labcommand$ find -name "*land"
fahim@fahim:~/labcommand$ locate england
```

```
Processing triggers for Man-db (2.9.1-1) ...
fahim@fahim:~/labcommand$ locate england.txt
/home/fahim/labcommand/england.txt
```

```
fahim@fahim:~/labcommand$ sort command.txt
fahim@fahim:~/labcommand$ sort -r england.txt
england vs australia 2nd detol t20 on 11 oct in aussies nation capital canberra.
fahim@fahim:~/labcommand$ sort -R england.txt
england vs australia 2nd detol t20 on 11 oct in aussies nation capital canberra.
```

```
fahim@fahim:~/labcommand$ wc england.txt
1 14 80 england.txt
fahim@fahim:~/labcommand$ wc -l england.txt
1 england.txt
fahim@fahim:~/labcommand$ wc -w england.txt
14 england.txt
fahim@fahim:~/labcommand$ wc -c england.txt
80 england.txt
fahim@fahim:~/labcommand$ wc -m england.txt
80 england.txt
```

```
fahim@fahim:~/labcommand$ cut -c 2-5 england.txt
ngla
fahim@fahim:~/labcommand$ gcc england.c
fahim@fahim:~/labcommand$ ./a.out
Hello, World!fahim@fahim:~/labcommand$
```

Copy one directory to another directory

```
fahim@fahim: ~/labcommand
fahim@fahim:~$ cd Desktop
fahim@fahim:~/Desktop$ ls
copy.txt file.txt
fahim@fahim:~/Desktop$ cp file.txt /home/fahim/labcommand
fahim@fahim:~/Desktop$ cd ..
fahim@fahim:~$ cd labcommand
fahim@fahim:~/labcommand$ ls
a.out command.txt england.c england.txt file.txt new_dircd
fahim@fahim:~/labcommand$
```

End.