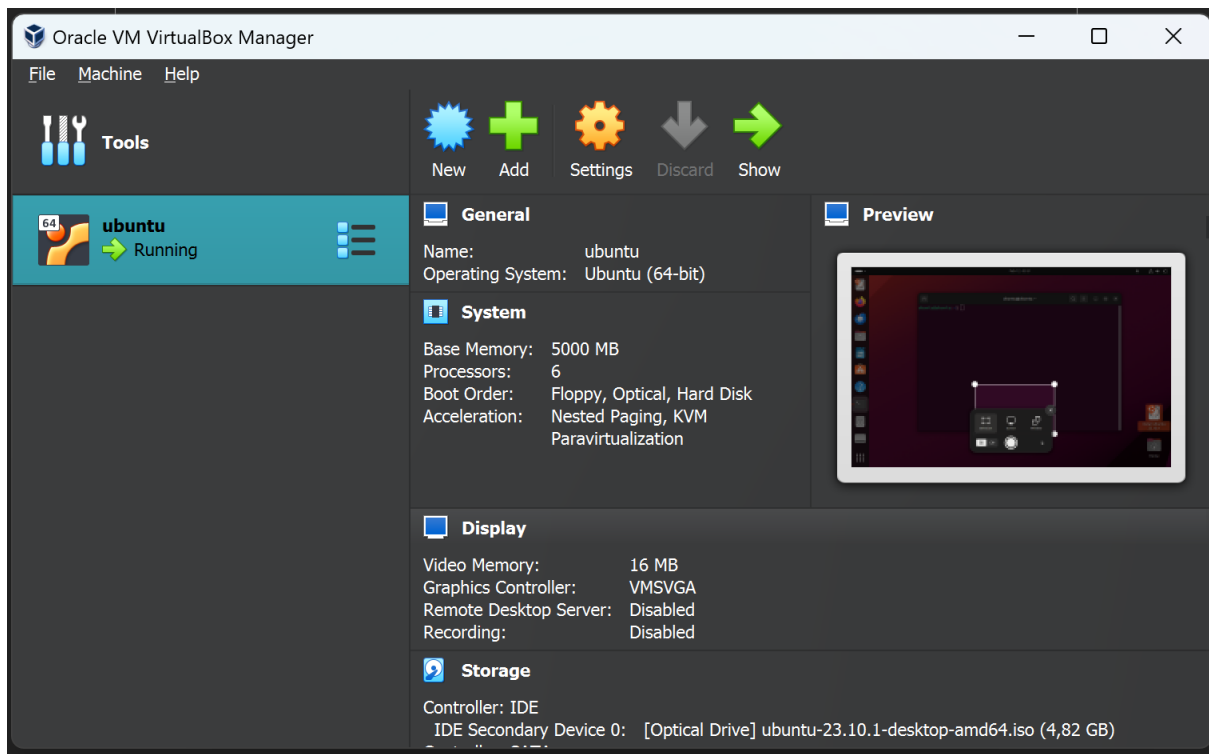
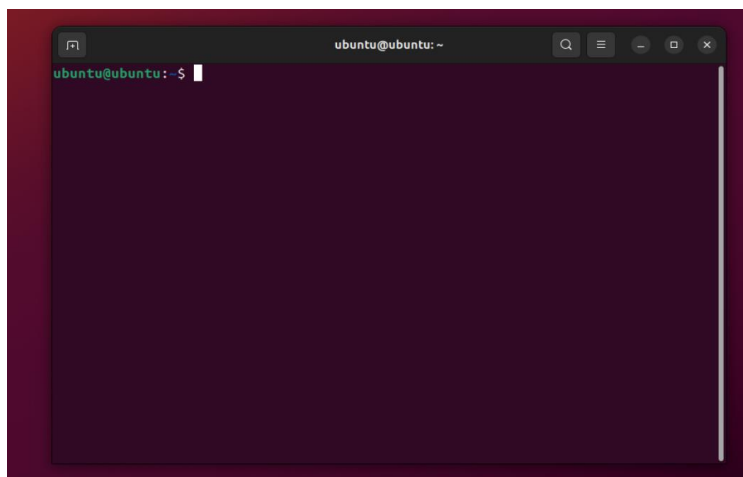
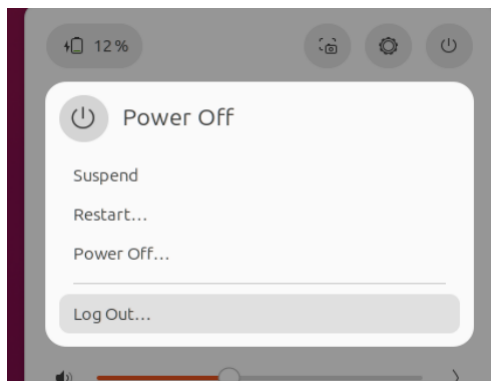


## Task 1:



## Task 2:



## Task 3:

### 1. **man** ls

```
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 speci-
  fied.

  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

  --block-size=SIZE
      with -l, scale sizes by SIZE when printing them; e.g.,
      '--block-size=M'; see SIZE format below

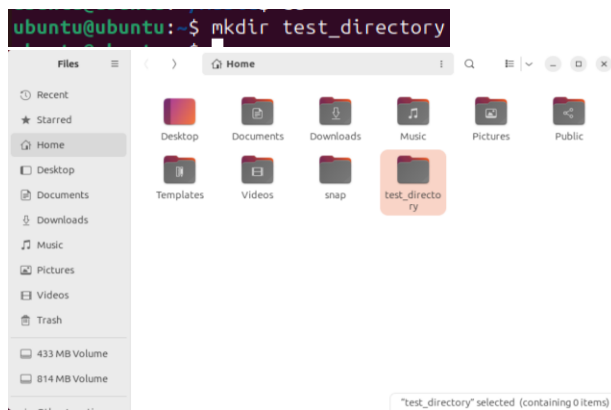
  -B, --ignore-backups
      do not list implied . and ..

Manual page ls(1) line 1 (press h for help or q to quit)
```

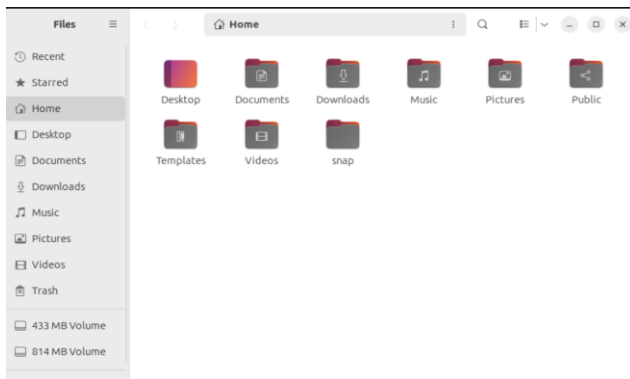
### 2. **cd** Music

```
ubuntu@ubuntu:~$ cd Music
ubuntu@ubuntu:~/Music$
```

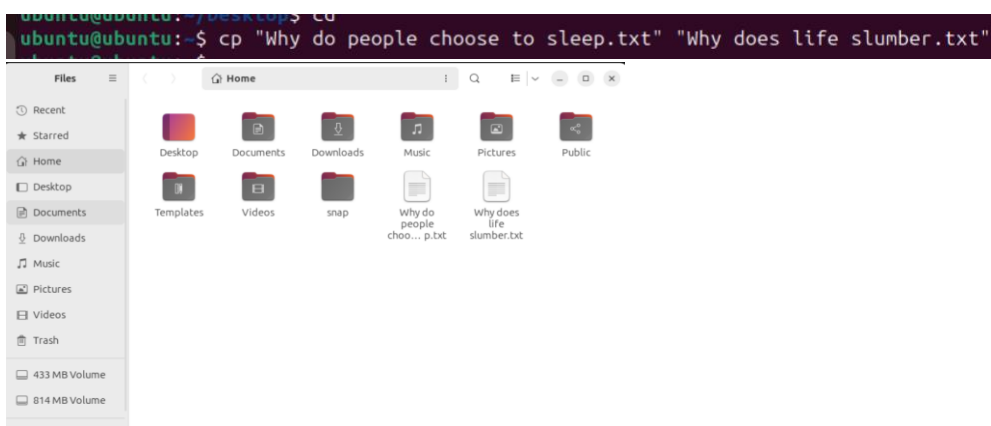
### 3. **mkdir** test\_directory



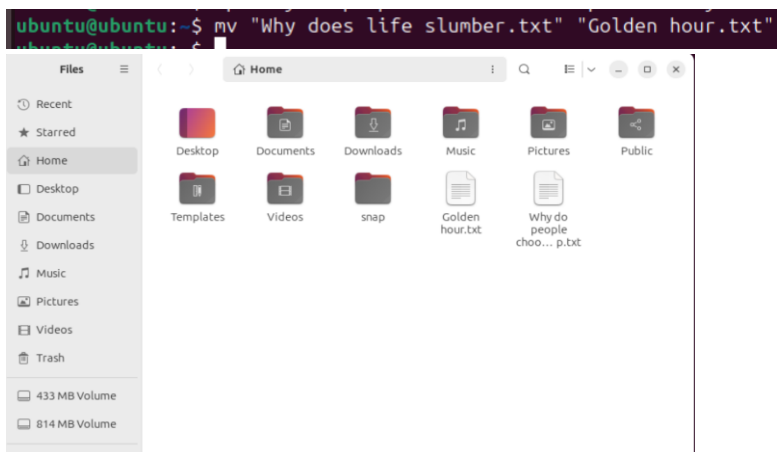
### 4. **rm -r** test\_directory



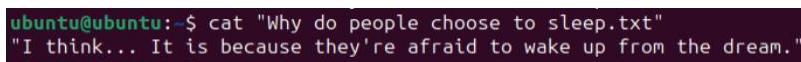
5. **cp** “Why do people choose to sleep.txt” “Why does life slumber.txt”



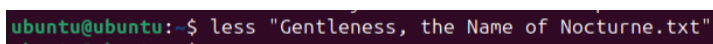
6. **mv** “Why does life slumber.txt” “Golden hour.txt”



7. **cat** “Why do people choose to sleep.txt”



8. **less** “Gentleness, the Song of Nocturne.txt”



```

ubuntu@ubuntu:~$ cat "Why do people choose to sleep.txt"
Have you heard this song? It's called If I Can Stop One Heart From Breaking, by Robin. Her songs are played in the dreamland from time to time as the Harmony Festival is drawing close. This spot is the closest place to the sky in the dream escape. It's far away from the hustle and bustle of the city and free from the bickering among the dreams. You can feel the moment - the scenery, the people, and the dreams - without being disturbed by anyone... How beautiful... Time is frozen at this golden hour, this golden dream shared by the Fool from the Tavern and the Menokeeper from the Garden of Recollection, the wandering Ranger and the IPC ambassador, the Astral Express Nameless... and me. Everyone falls asleep here equally, regardless of our different agendas... I'm sorry, I really am a stowaway. My hometown was destroyed a long time ago. It was probably the doing of the Legion or the Swarm... I'm an interstellar refugee, just like many of the Penacony locals. The Harmony accepts everyone, including wanderers from afar. The Family takes them in, but they... don't belong here. In this splendid metropolis, some have a dream called Penacony, but some have dreams... that are no different from reality, even though everyone who comes here harbors the same motive in the beginning. And it's likewise for me. I have a wish I want to achieve so badly in the real world, but I can't. So, I want to give it a shot here... Entropy Loss Syndrome. Have you heard of this term? It's a strange condition. Those suffering from it will experience an irreversible chronic dissociation of their physical structure. This means they will slowly fade away, and the process is barely noticeable to others... You can still run, jump, and talk as usual. Everything seems normal, but then you'll start doing everything slightly slower than others... And then even slower than that, until the lines between your body and the entire world become blurry. You won't be able to tell reality from dreams because they all have been shattered. So, how could I possibly resist it... I mean can you imagine it? I can actually free myself from the icy medical cabin in this dream... I can forget about all the doctor's advice. I can listen, and see, and touch, and think, and understand whatever I want with my body. So, although this world isn't real, this experience is priceless... Just like this moment. I'm sorry. For certain reasons, there are things I can't reveal to you yet. But there are also things you should know. I am, in fact, after the Watchmaker's Legacy, but that doesn't mean we have to go our separate ways and be enemies. But at least... I hope things won't turn out that way. In my dream, I saw a scorched earth, and a new sapling emerging from it. It bloomed against the morning sun, and whispered to me. I still remember the question on the invitation letter - Why does life slumber? You see, everything is possible in this land of dreams. The nightmarish past will disperse and fade away like bubbles in water, and the future that you don't want to face will never come. Why do people choose to sleep? I think... It is because they're afraid to wake up from the dream.
(END)

```

## 9. nano "Why do people choose to sleep.txt"

```

ubuntu@ubuntu:~$ nano "Why do people choose to sleep.txt"

```

```

GNU nano 7.2 why do people choose to sleep.txt
I think... It is because they're afraid to wake up from the dream.

```

^G Help ^O Write Out ^M Where Is | Read 1 line | ^T Execute ^C Location ^U Undo  
 ^X Exit ^R Read File ^J Replace | Cut | ^D Justify ^\_ Go To Line ^B Redo

## 10. apt install firefox / sudo apt install firefox

```

ubuntu@ubuntu:~$ apt install firefox
E: Could not open lock file /var/lib/dpkg/lock-frontent - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontent), are you root?
ubuntu@ubuntu:~$ sudo apt install firefox
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
firefox is already the newest version (1:1snap1-0ubuntu3).
firefox set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 244 not upgraded.

```

## Task 4:

### 1. ps aux

```
ubuntu@ubuntu:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.1  0.3 170872 14728 ?        Ss   14:26   0:07 /sbin/init --- splash
root         2  0.0  0.0      0     0 ?        S    14:26   0:00 [kthreadd]
root         3  0.0  0.0      0     0 ?        I<   14:26   0:00 [rcu_gp]
root         4  0.0  0.0      0     0 ?        I<   14:26   0:00 [rcu_par_gp]
root         5  0.0  0.0      0     0 ?        I<   14:26   0:00 [slub_flushwq]
root         6  0.0  0.0      0     0 ?        I<   14:26   0:00 [netns]
root         8  0.0  0.0      0     0 ?        I<   14:26   0:00 [kworker/0:0H-kblockd]
root        11  0.0  0.0      0     0 ?        I<   14:26   0:00 [mm_percpu_wq]
root        12  0.0  0.0      0     0 ?        I    14:26   0:00 [rcu_tasks_kthread]
root        13  0.0  0.0      0     0 ?        I    14:26   0:00 [rcu_tasks_rude_kthread]
root        14  0.0  0.0      0     0 ?        I    14:26   0:00 [rcu_tasks_trace_kthread]
root        15  0.0  0.0      0     0 ?        S    14:26   0:00 [ksoftirqd/0]
root        16  0.0  0.0      0     0 ?        I    14:26   0:06 [rcu_preempt]
root        17  0.0  0.0      0     0 ?        S    14:26   0:00 [migration/0]
root        18  0.0  0.0      0     0 ?        S    14:26   0:00 [idle_inject/0]
root        19  0.0  0.0      0     0 ?        S    14:26   0:00 [cpuhp/0]
root        20  0.0  0.0      0     0 ?        S    14:26   0:00 [cpuhp/1]
root        21  0.0  0.0      0     0 ?        S    14:26   0:00 [idle_inject/1]
root        22  0.0  0.0      0     0 ?        S    14:26   0:00 [migration/1]
root        23  0.0  0.0      0     0 ?        S    14:26   0:00 [ksoftirqd/1]
root        26  0.0  0.0      0     0 ?        S    14:26   0:00 [cpuhp/2]
root        27  0.0  0.0      0     0 ?        S    14:26   0:00 [idle_inject/2]
root        28  0.0  0.0      0     0 ?        S    14:26   0:00 [migration/2]
root        29  0.0  0.0      0     0 ?        S    14:26   0:00 [ksoftirqd/2]
root        31  0.0  0.0      0     0 ?        I<   14:26   0:00 [kworker/2:0H-kblockd]
root        32  0.0  0.0      0     0 ?        S    14:26   0:00 [cpuhp/3]
root        33  0.0  0.0      0     0 ?        S    14:26   0:00 [idle_inject/3]
root        34  0.0  0.0      0     0 ?        S    14:26   0:00 [migration/3]
root        35  0.0  0.0      0     0 ?        S    14:26   0:00 [ksoftirqd/3]
root        38  0.0  0.0      0     0 ?        S    14:26   0:00 [cpuhp/4]
root        39  0.0  0.0      0     0 ?        S    14:26   0:00 [idle_inject/4]
root        40  0.0  0.0      0     0 ?        S    14:26   0:00 [migration/4]
```

### 2. ps aux | grep firefox

```
ubuntu@ubuntu:~$ ps aux | grep firefox
ubuntu      9537 50.0  0.0 18316 2176 pts/0    S+   16:27   0:00 grep --color=auto firefox
```

### 3. pstree

```
ubuntu@ubuntu:~$ pstree
systemd--ModemManager--3*[{ModemManager}]
systemd--NetworkManager--3*[{NetworkManager}]
systemd--accounts-daemon--3*[{accounts-daemon}]
systemd--avahi-daemon--avahi-daemon
systemd--colord--3*[{colord}]
systemd--cron
systemd--cups-browsed--3*[{cups-browsed}]
systemd--cupsd
systemd--dbus-daemon
systemd--fwupd--5*[{fwupd}]
systemd--gdm3--gdm-session-wor--gdm-x-session--Xorg--{Xorg}
systemd--gdm3--gdm-session-wor--gdm-x-session--gnome-session-b--3*[{gnome-session-b}]
systemd--gdm3--gdm-session-wor--gdm-x-session--3*[{gdm-x-session}]
systemd--gpg-agent
systemd--irqbalance--{irqbalance}
systemd--2*[kerneloops]
systemd--polkitd--3*[{polkitd}]
systemd--power-profiles--3*[{power-profiles-}]
systemd--rsyslogd--3*[{rsyslogd}]
systemd--rtkit-daemon--2*[{rtkit-daemon}]
systemd--snapd--12*[{snapd}]
systemd--subiquity-serve--python3.10--4*[{python3.10}]
systemd--switcheroo-cont--3*[{switcheroo-cont}]
systemd--systemd--(sd-pam)
systemd--systemd--at-spi-bus-laun--dbus-daemon
systemd--systemd--at-spi-bus-laun--4*[{at-spi-bus-laun}]
systemd--systemd--at-spi2-registr--3*[{at-spi2-registr}]
systemd--systemd--dbus-daemon
systemd--systemd--dconf-service--3*[{dconf-service}]
systemd--systemd--evolution-addre--6*[{evolution-addre}]
systemd--systemd--evolution-calen--9*[{evolution-calen}]
```

## 4. top / htop

```
top - 16:28:42 up 2:02, 2 users, load average: 0.12, 0.19, 0.47
Tasks: 242 total, 1 running, 241 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.3 us, 1.1 sy, 0.0 ni, 98.6 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 4787.9 total, 451.3 free, 1766.3 used, 3121.0 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used, 3021.6 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2294	ubuntu	20	0	348240	112828	68812	S	5.0	2.3	7:02.35	Xorg
2739	ubuntu	20	0	5209352	365760	146380	S	2.4	7.5	10:23.19	gnome-shell
5373	ubuntu	20	0	783052	56376	44628	S	1.8	1.1	0:12.19	gnome-terminal-
16	root	20	0	0	0	0	I	0.3	0.0	0:06.84	rcu_preempt
2622	ubuntu	20	0	462884	77100	59424	S	0.3	1.6	0:01.16	snapd-desktop-i
5924	root	20	0	0	0	0	I	0.3	0.0	0:00.47	kworker/5:0-mm_percpu_wq
8981	root	20	0	0	0	0	I	0.3	0.0	0:00.27	kworker/2:2-events
1	root	20	0	170872	14728	9224	S	0.0	0.3	0:07.33	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.11	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	slub_flushwq
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/0:0H-kblockd
11	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_percpu_wq
12	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthread
13	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude_kthread
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace_kthread
15	root	20	0	0	0	0	S	0.0	0.0	0:00.28	ksoftirqd/0
17	root	rt	0	0	0	0	S	0.0	0.0	0:00.35	migration/0
18	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/0
19	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
20	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/1
21	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/1
22	root	rt	0	0	0	0	S	0.0	0.0	0:00.71	migration/1
23	root	20	0	0	0	0	S	0.0	0.0	0:00.97	ksoftirqd/1
26	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/2

ubuntu@ubuntu: ~

0% 3% 0.0%  
1% 4% 0.7%  
2% 5% 0.6%

Mem[ ] 1.20G/4.68G Tasks: 120, 448 thr, 124 kthr; 1 running  
Swp[ ] 0K/0K Load average: 0.16 0.19 0.45  
Uptime: 02:03:14

Main	T/O	PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
		2739	ubuntu	20	0	5095M	357M	142M	S	3.3	7.5	10:26.62	/usr/bin/gnome-shell
		9685	ubuntu	20	0	20512	4864	3456	R	2.0	0.1	0:00.33	htop
		2294	ubuntu	20	0	340M	110M	68812	S	0.7	2.3	7:05.32	/usr/lib/xorg/Xorg vt2 -displayfd 3 -auth /run/user/
		2782	ubuntu	20	0	5095M	357M	142M	S	0.7	7.5	1:18.90	/usr/bin/gnome-shell
		2783	ubuntu	20	0	5095M	357M	142M	S	0.7	7.5	1:23.61	/usr/bin/gnome-shell
		1	root	20	0	166M	14728	9224	S	0.0	0.3	0:07.34	/sbin/init --- splash
		955	root	19	-1	50352	13304	11940	S	0.0	0.3	0:01.98	/lib/systemd/systemd-journald
		997	root	20	0	29652	7944	4508	S	0.0	0.2	0:03.79	/lib/systemd/systemd-udev
		1260	systemd-oo	20	0	17068	7424	6656	S	0.0	0.2	0:09.03	/lib/systemd/systemd-oomd
		1263	systemd-re	20	0	21268	12672	10624	S	0.0	0.3	0:01.24	/lib/systemd/systemd-resolved
		1264	systemd-ti	20	0	90556	7680	6912	S	0.0	0.2	0:00.27	/lib/systemd/systemd-timesyncd
		1275	systemd-ti	20	0	90556	7680	6912	S	0.0	0.2	0:00.04	/lib/systemd/systemd-timesyncd
		1505	avahi	20	0	8568	4096	3840	S	0.0	0.1	0:00.88	avahi-daemon: running [ubuntu.local]
		1506	messagebus	20	0	11952	6272	4224	S	0.0	0.1	0:05.14	dbus-daemon --system --address=systemd: --nofork --
		1510	root	20	0	82852	3968	3712	S	0.0	0.1	5:23.85	/usr/sbin/irqbalance --foreground
		1512	root	20	0	82852	3968	3712	S	0.0	0.1	0:00.00	/usr/sbin/irqbalance --foreground
		1513	polkitd	20	0	303M	10144	7376	S	0.0	0.2	0:01.58	/usr/lib/polkit-1/polkitd --no-debug
		1517	root	20	0	314M	7040	6528	S	0.0	0.1	0:00.16	/usr/libexec/power-profiles-daemon
		1520	root	20	0	2089M	34592	20864	S	0.0	0.7	0:25.01	/usr/lib/snapd/snapd
		1523	root	20	0	314M	7108	6468	S	0.0	0.1	0:00.92	/usr/libexec/accounts-daemon
		1531	root	20	0	10456	2560	2432	S	0.0	0.1	0:00.15	/usr/sbin/cron -f -P
		1532	root	20	0	311M	6528	6016	S	0.0	0.1	0:00.20	/usr/libexec/switcheroo-control
		1533	root	20	0	314M	7040	6528	S	0.0	0.1	0:00.00	/usr/libexec/power-profiles-daemon

F1:help F2:Setup F3:Search F4:Filter F5:Tree F6:SortBy F7:Nice F8:Nice F9:Kill F10:Quit



## Task 5:

### Debugging:

```
ubuntu@ubuntu:~$ gdb my_program
GNU gdb (Ubuntu 14.0.50.20230907-0ubuntu1) 14.0.50.20230907-git
Copyright (C) 2023 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://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.
Type "show copying" and "show warranty" for details.
This GDB was configured as "x86_64-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<https://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
  <http://www.gnu.org/software/gdb/documentation/>.
--Type <RET> for more, q to quit, c to continue without paging--
```

Everything else is in the repository

