

# Question 1

## Question 1.1

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1: luella@Letranger: ~  
  
pentobi/noble 23.1-1build2 amd64  
  clone of the strategy board game Blokus  
  
petris/noble 1.0.1-11 amd64  
  Peter's Tetris - a Tetris(TM) clone  
  
quadrapassel/noble 1:40.2-1build2 amd64  
  popular Russian game, similar to Tetris  
  
stax/noble 1.37-2build2 amd64  
  collection of puzzle games similar to Tetris Attack  
  
termtris/noble 1.3-1ubuntul amd64  
  Tetris game for ANSI/VT220 terminals  
  
tetrinet-client/noble 0.11+CVS20070911-2.1 amd64  
  textmode client for tetrinet, a multiplayer tetris-like game  
  
tetrinet-server/noble 0.11+CVS20070911-2.1 amd64  
  server for tetrinet, a multiplayer tetris-like game  
  
tetrinetx/noble 1.13.16-15build1 amd64  
  game server for Tetrinet  
  
tint/noble,now 0.07 amd64 [installed]  
  Tetris clone for text based terminal  
  
vim-scripts/noble,noble 20210124.2 all  
  plugins for vim, adding bells and whistles  
  
vitetris/noble 0.59.1-2 amd64  
  Virtual terminal *tris clone  
  
xwelltris/noble 1.0.1-18 amd64  
  3D Tetris like popular game similar to Welltris  
  
luella@Letranger:~$ apt search --names-only tetris  
Sorting... Done  
Full Text Search... Done  
games-tetris/noble,noble 5 all  
  Debian's tetris-like games  
  
vitetris/noble 0.59.1-2 amd64  
  Virtual terminal *tris clone  
  
luella@Letranger:~$
```

## Question 1.2

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Tilix: luella@LeTranger:~ Tilix: luella@LeTranger:~
Q - x Q - x
1:luella@LeTranger:~ 1:luella@LeTranger:~
1:luella@LeTranger:~$ sudo apt show bastet
Package: bastet
Version: 0.43-7build1
Priority: optional
Section: universe/games
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Debian Games Team <pkg-games-devel@lists.alioth.debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 214 kB
Depends: debconf (>= 0.5) | debconf-2.0, libboost-program-options1.83.0 (>= 1.83) | libboost-filesystem1.83.0 (>= 1.83), libgcc-s1 (>= 3.4), libstdc++6 (>= 13.0), libtinfo6 (>= 6)
Homepage: http://fph.altervista.org/prog/bastet.shtml
Download-Size: 75.1 kB
APT-Manual-Installed: yes
APT-Sources: http://us.archive.ubuntu.com/ubuntu noble/universe amd64 Packages
Description: ncurses Tetris clone with a bastard algorithm
  Bastet ("bastard Tetris") is a free clone of Tetris which tries to
  compute how useful blocks are and gives you the worst possible brick.
  Playing bastet can be a painful experience, especially if you usually
  make "canyons" and wait for the long I-shaped block.

2:luella@LeTranger:~$ sudo apt show blockattack
[sudo] password for luella:
Package: blockattack
Version: 2.8.0-1build1
Priority: optional
Section: universe/games
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Debian Games Team <pkg-games-devel@lists.alioth.debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 6,838 kB
Depends: libboost-program-options1.83.0 (>= 1.83.0), libc6 (>= 2.38), libfbm9 (>= 9.1.0+ds1), libgcc-s1 (>= 3.3.1), libphysfs1 (>= 3.0.2), libSDL2-2.0-0 (>= 2.0.0+ds1), libSDL2-image-2.0-0 (>= 2.0.5), libSDL2-mixer-2.0-0 (>= 2.6.0), libSDL2-ttf (>= 2.0.0) (>= 2.0.15), libstdc++6 (>= 13.1)
Homepage: https://blockattack.net/
Download-Size: 6,446 kB
APT-Manual-Installed: yes
APT-Sources: http://us.archive.ubuntu.com/ubuntu noble/universe amd64 Packages
Description: puzzle game inspired by Tetris
  Block Attack is a puzzle/blockfall game inspired by Nintendo's Tetris Attack
  for the Super Nintendo. The game is pretty action packed for a puzzle game :-)

(Reading database ... 213324 files and directories currently installed.)
Preparing to unpack .../0-cuyo-data_2.1.0-1build1_all.deb ...
Unpacking cuyo-data (2.1.0-1build1) ...
Selecting previously unselected package libmad0:amd64.
Preparing to unpack .../1-libmad0_0.15.1b-10.2ubuntu1_amd64.deb ...
Unpacking libmad0:amd64 (0.15.1b-10.2ubuntu1) ...
Selecting previously unselected package libopenal-data.
Preparing to unpack .../2-libopenal-data_1%3a1.23.1-4build1_all.deb ...
Unpacking libopenal-data (1.23.1-4build1) ...
Selecting previously unselected package libsndio7.0:amd64.
Preparing to unpack .../3-libsndio7.0_1.9.0-0.3build3_amd64.deb ...
Unpacking libsndio7.0:amd64 (1.9.0-0.3build3) ...
Selecting previously unselected package libopenal1:amd64.
Preparing to unpack .../4-libopenal1_1%3a1.23.1-4build1_amd64.deb ...
Unpacking libopenal1:amd64 (1:1.23.1-4build1) ...
Selecting previously unselected package libmikmod3:amd64.
Preparing to unpack .../5-libmikmod3_3.3.11.1-7build1_amd64.deb ...
Unpacking libmikmod3:amd64 (3.3.11.1-7build1) ...
Selecting previously unselected package libSDL1.2debian:amd64.
Preparing to unpack .../6-libSDL1.2debian_1.2.68-2_amd64.deb ...
Unpacking libSDL1.2debian:amd64 (1.2.68-2) ...
Selecting previously unselected package libSDL-mixer1.2:amd64.
Preparing to unpack .../7-libSDL-mixer1.2_1.2.12-18_amd64.deb ...
Unpacking libSDL-mixer1.2:amd64 (1.2.12-18) ...
Selecting previously unselected package cuyo.
Preparing to unpack .../8-cuyo_2.1.0-1build1_amd64.deb ...
Unpacking cuyo (2.1.0-1build1) ...
Selecting previously unselected package blockout2.
Preparing to unpack .../9-blockout2_2.5+dfsg1-1build3_amd64.deb ...
Unpacking blockout2 (2.5+dfsg1-1build3) ...
Setting up libSDL1.2debian:amd64 (1.2.68-2) ...
Setting up libopenal1:amd64 (1:1.23.1-4build1) ...
Setting up cuyo-data (2.1.0-1build1) ...
Setting up libsndio7.0:amd64 (1.9.0-0.3build3) ...
Setting up libmikmod3:amd64 (3.3.11.1-7build1) ...
Setting up libSDL-mixer1.2:amd64 (1.2.12-18) ...
Setting up libSDL1.2debian:amd64 (1.2.68-2) ...
Setting up libopenal1:amd64 (1:1.23.1-4build1) ...
Setting up libmikmod3:amd64 (3.3.11.1-7build1) ...
Setting up libSDL-mixer1.2:amd64 (1.2.12-18) ...
Setting up blockout2 (2.5+dfsg1-1build3) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1.ubuntu3) ...
Processing triggers for libc-bin (2.39-0ubuntu8.7) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...

luella@LeTranger:~$ 

```

## Question 1.3

```
1:luella@Letranger:~ ~
Setting up libmad0:amd64 (0.15.1b-10.2ubuntu1) ...
Setting up libopenal-data (1:1.23.1-4build1) ...
Setting up libopenal1:amd64 (1:1.23.1-4build1) ...
Setting up libmikmod3:amd64 (3.3.11.1-7build1) ...
Setting up libsdl-mixer1.2:amd64 (1.2.12-18) ...
Setting up cuyo (2.1.0-1build1) ...
Setting up blockout2 (2.5+dfsg1-1build3) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1.1ubuntu3) ...
Processing triggers for libc-bin (2.39-0ubuntu8.7) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
luella@Letranger:~$ sudo apt remove cuyo
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  cuyo-data libfmt9 libmodplug1 libopusfile0 libphysfs1 libsdl2-image-2.0-0
  libsdl2-mixer-2.0-0 libsdl2-ttf-2.0-0
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  cuyo
0 upgraded, 0 newly installed, 1 to remove and 66 not upgraded.
After this operation, 437 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 214458 files and directories currently installed.)
Removing cuyo (2.1.0-1build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1.1ubuntu3) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
luella@Letranger:~$ sudo apt purge cuyo
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  cuyo-data libfmt9 libmodplug1 libopusfile0 libphysfs1 libsdl2-image-2.0-0
  libsdl2-mixer-2.0-0 libsdl2-ttf-2.0-0
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  cuyo*
0 upgraded, 0 newly installed, 1 to remove and 66 not upgraded.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
(Reading database ... 214450 files and directories currently installed.)
Purging configuration files for cuyo (2.1.0-1build1) ...
luella@Letranger:~$
```

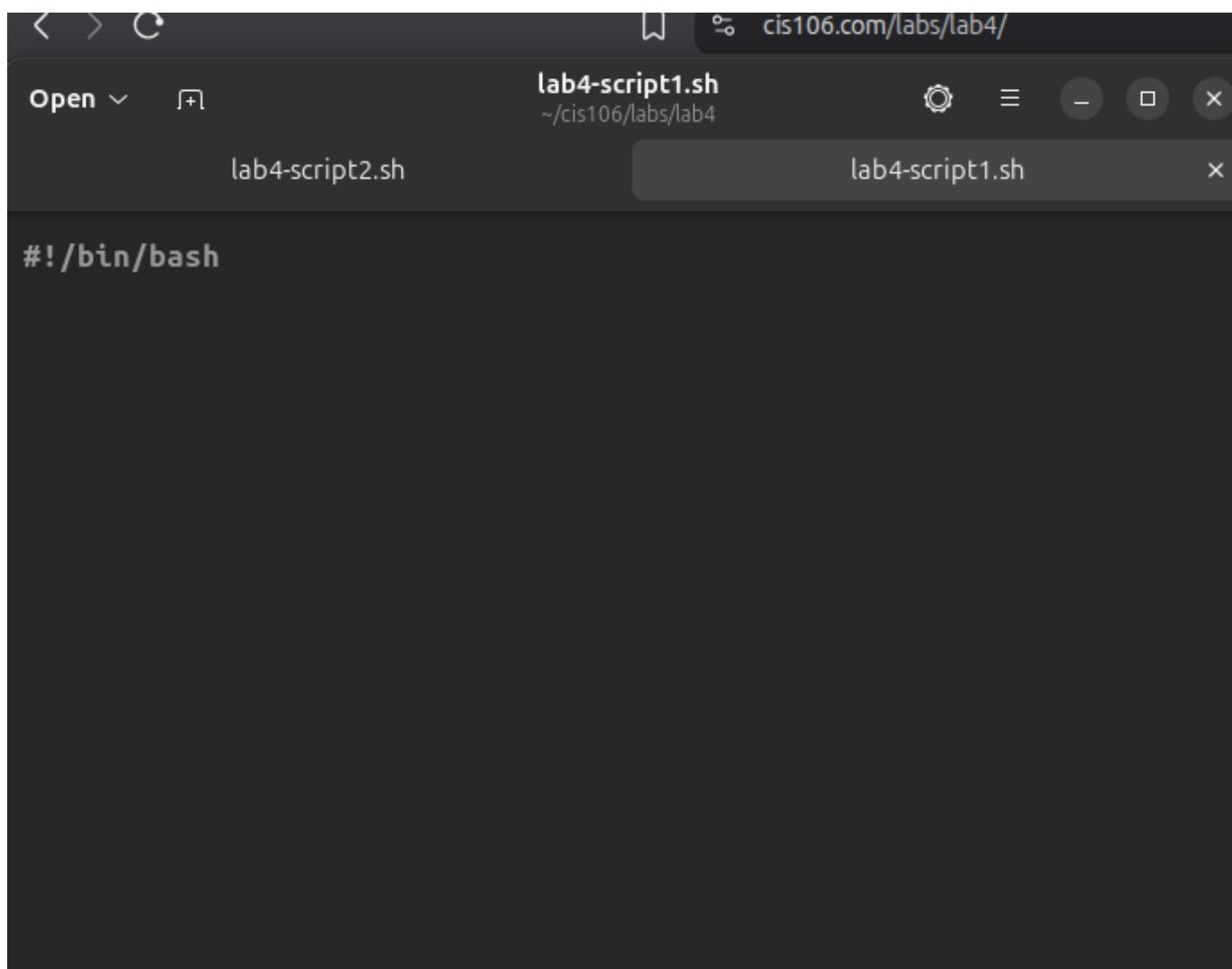
## Question 1.4

```
luella@Letranger:~$ sudo apt clean && sudo apt autoclean && sudo apt autoremove && sudo apt autopurge
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  cuyo-data libfmt9 libmodplug1 libopusfile0 libphysfs1 libsdl2-image-2.0-0
  libsdl2-mixer-2.0-0 libsdl2-ttf-2.0-0
0 upgraded, 0 newly installed, 8 to remove and 66 not upgraded.
After this operation, 7,071 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 214450 files and directories currently installed.)
Removing cuyo-data (2.1.0-1build1) ...
Removing libfmt9:amd64 (9.1.0+ds1-2) ...
Removing libsdl2-mixer-2.0-0:amd64 (2.8.0+dfsg-1build3) ...
Removing libmodplug1:amd64 (1:0.8.9.0-3build1) ...
Removing libopusfile0:amd64 (0.12-4build3) ...
Removing libphysfs1:amd64 (3.0.2-6build2) ...
Removing libsdl2-image-2.0-0:amd64 (2.8.2+dfsg-1build2) ...
Removing libsdl2-ttf-2.0-0:amd64 (2.22.0+dfsg-1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.7) ...
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
0 upgraded, 0 newly installed, 0 to remove and 66 not upgraded.
luella@Letranger:~$
```

## Question 2

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### Question 2.1



The screenshot shows a terminal window with a dark theme. At the top, there are navigation icons: back, forward, and refresh. To the right of the icons, the URL bar displays "cis106.com/labs/lab4/". Below the URL bar, there is a toolbar with icons for "Open", a search bar, and window control buttons (minimize, maximize, close). Two tabs are visible: "lab4-script1.sh" and "lab4-script2.sh". The "lab4-script1.sh" tab is currently selected, indicated by a darker background. The main area of the terminal is empty, showing only the command prompt and the first few characters of the script content.

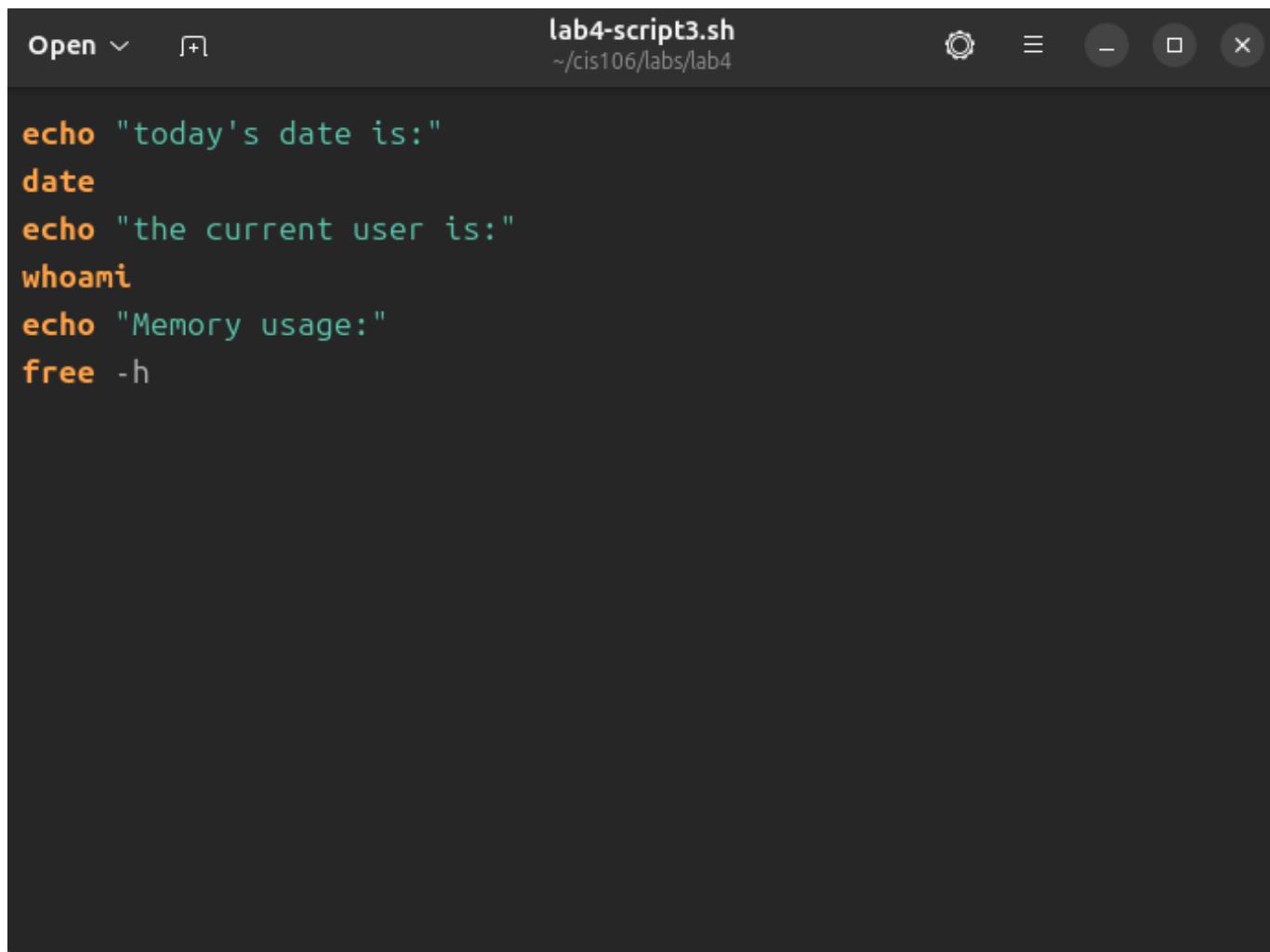
## Question 2.2

The screenshot shows a terminal window with a dark background. At the top, there's a header bar with icons for 'Open' (with a dropdown arrow), a search/magnifying glass icon, the file name 'lab4-script2.sh', its path '~/cis106/labs/lab4', and standard window control buttons for minimize, maximize, and close.

The main area of the terminal contains the following text:

```
#!/bin/bash
echo Hello World
echo -e "\tWhats up"
echo -e "Dude\nthis is awesome!"
```

### Question 2.3



The screenshot shows a terminal window with the following details:

- Title Bar:** lab4-script3.sh  
~/cis106/labs/lab4
- Toolbar:** Open, New, Minimize, Maximize, Close
- Content:** A script containing the following commands:

```
echo "today's date is:"  
date  
echo "the current user is:"  
whoami  
echo "Memory usage:"  
free -h
```

## Question 2.4

The screenshot shows a terminal window titled "Tilix: luella@Letranger: ~". The terminal displays the following text:

```
1: luella@Letranger: ~ ~
luella@Letranger:~$ bash /home/luella/cis106/labs/lab4/lab4-script3.sh
today's date is:
Thu Feb 19 12:43:20 PM EST 2026
the current user is:
luella
Memory usage:
total        used        free      shared  buff/cache   available
Mem:       15Gi     4.6Gi     3.4Gi    671Mi     8.5Gi     10Gi
Swap:      4.0Gi      0B     4.0Gi
luella@Letranger:~$
```

## Question 3 (Challenge Question)

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### Question 3.1

The screenshot shows a terminal window with the title bar "challenge\_lab4.sh" and the path "~/cis106/labs/lab4". The window contains the following shell script:

```
echo
"-----"
figlet System
echo -n -e "DATE UTC:\t" && date +%F%t%r
echo -n -e "HOSTNAME:\t" && hostname
echo -n -e "UPTIME:\t\t" && uptime -p
echo -n -e "USER:\t\t" && uname

figlet Memory
free -h

figlet Disk
df -h
echo
"-----"
```

## Question 3.2

```
1 / 1 + ↻ Tilix: [ ]
```

1: luella@Letranger:~ ~

```
luella@Letranger:~$ bash /home/luella/cis106/labs/lab4/challenge_lab4.sh
```

---

```
DATE UTC: 2026-02-19 01:13:37 PM
HOSTNAME: Letranger
UPTIME: up 19 hours, 56 minutes
USER: Linux
```

---

```
total used free shared buff/cache available
Mem: 15Gi 4.7Gi 3.3Gi 724Mi 8.6Gi 10Gi
Swap: 4.0Gi 0B 4.0Gi
```

---

```
Filesystem Size Used Avail Use% Mounted on
tmpfs 1.6G 2.5M 1.6G 1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv 913G 46G 821G 6% /
tmpfs 7.8G 105M 7.7G 2% /dev/shm
tmpfs 5.0M 8.0K 5.0M 1% /run/lock
efivars 118K 45K 69K 39% /sys/firmware/efi/efivars
/dev/nvme0n1p2 2.0G 215M 1.6G 12% /boot
/dev/nvme0n1p1 1.1G 6.2M 1.1G 1% /boot/efi
tmpfs 1.6G 1.1M 1.6G 1% /run/user/1000
```

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```
luella@Letranger:~$ 
```