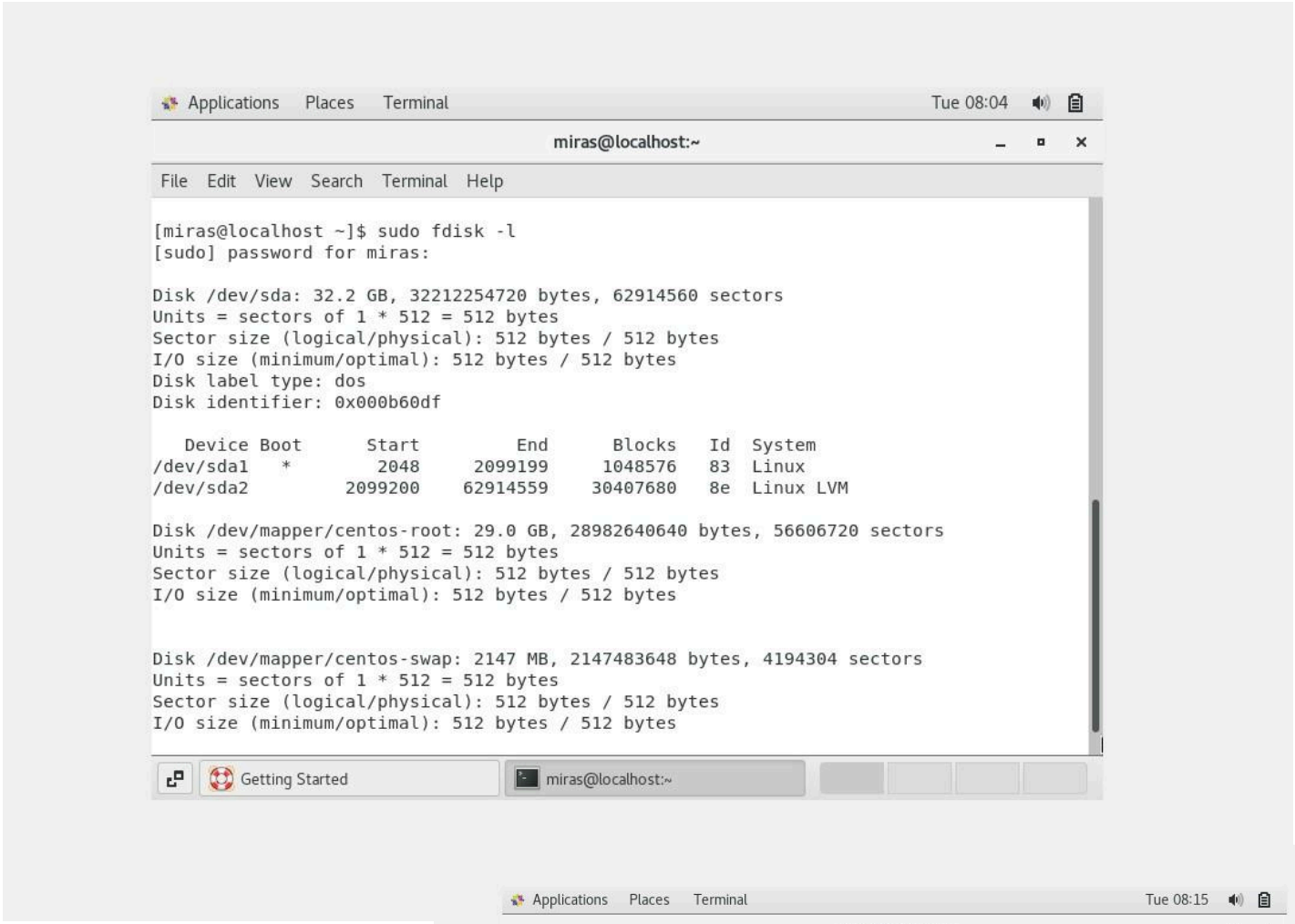
Berikov Miras
Linux Assignment 3

Chapter 13. Basic Storage Partitioning

1) Identify the Disk

fdisk -l



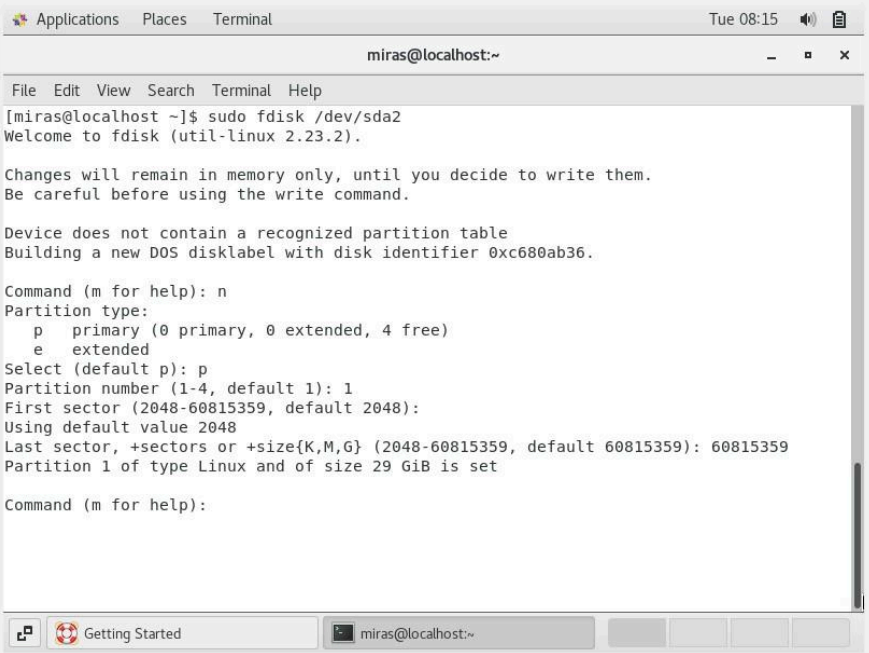
2) Select a Partitioning Tool - fdisk

3) Launch the Partitioning Tool

fdisk /dev/sda2

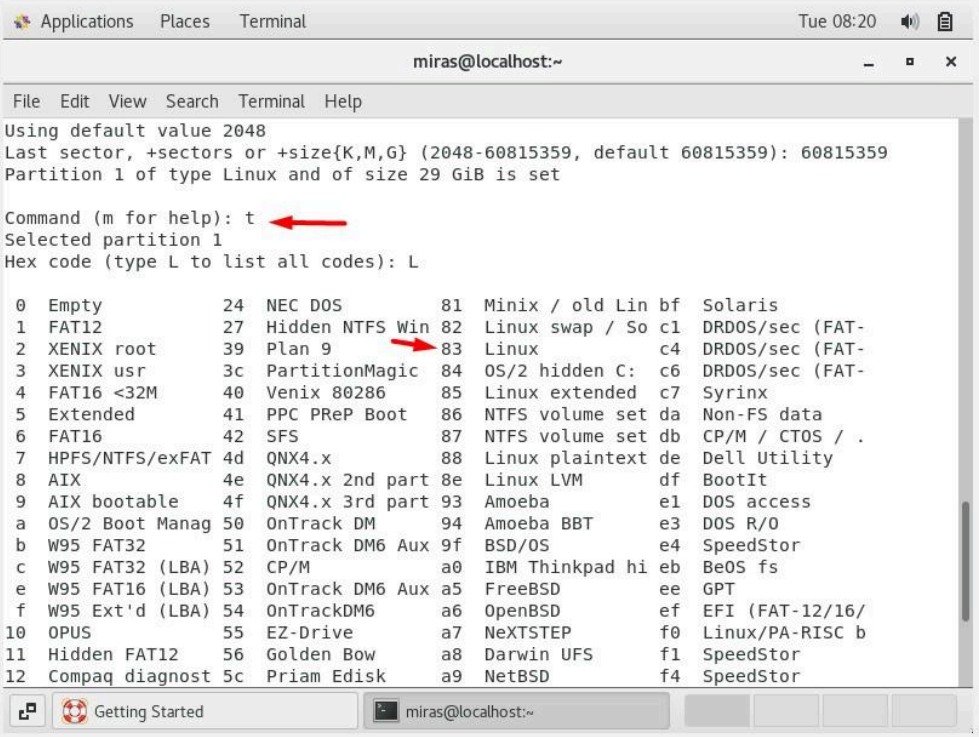
4) Create Partitions

Typing "**n**" and then choosing defaults to create a partition



5) Set Partition Types

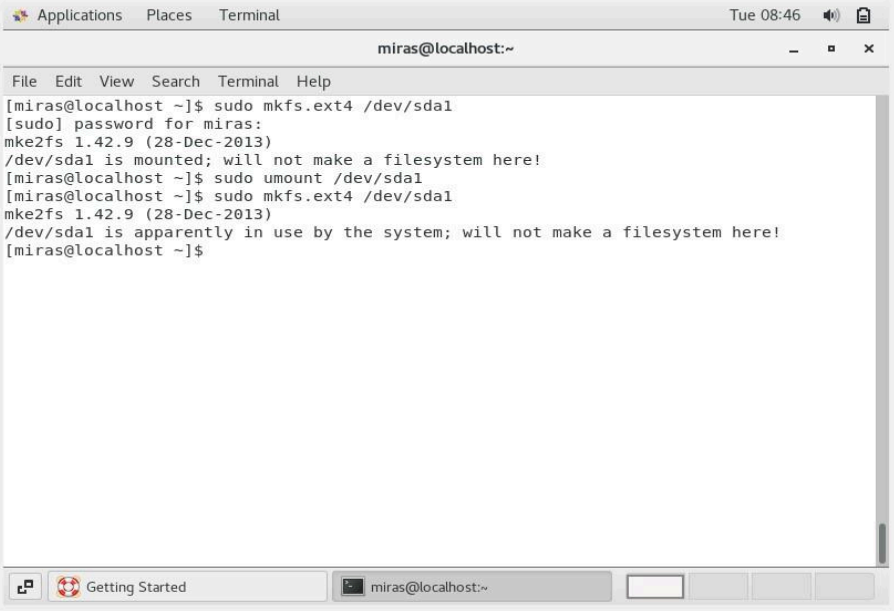
typing "**t**" and entering hex code 83 for linux type



6) Format Partitions

mkfs.ext4 /dev/sda1

umount /dev/sda1

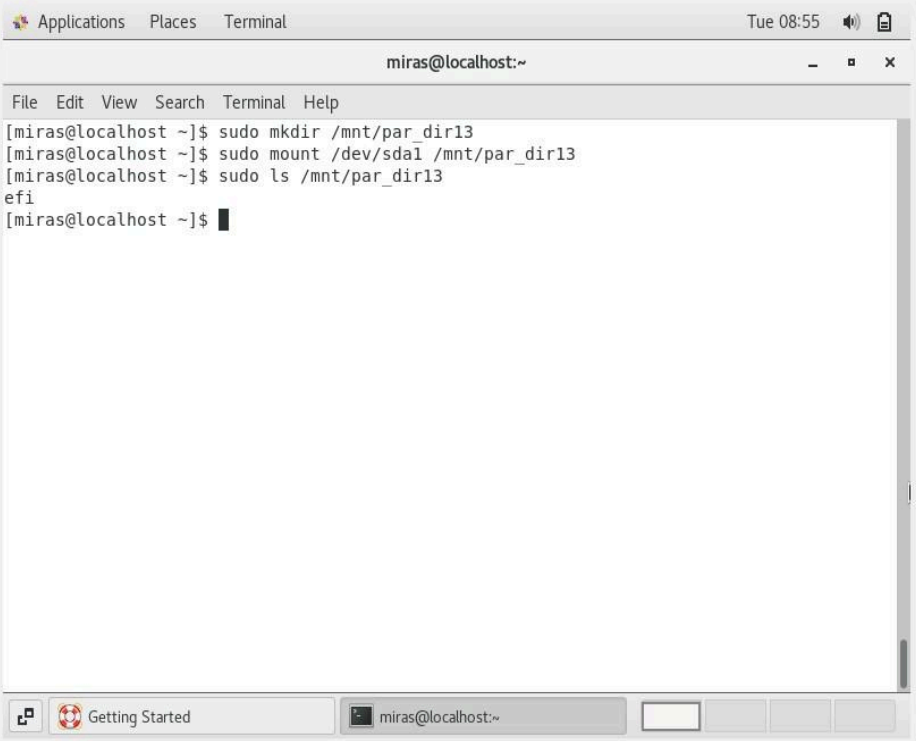


7) Mount Partitions

sudo mkdir /mnt/par_dir13

sudo mount /dev/sda1 /mnt/par_dir13

sudo ls /mnt/part_dir13

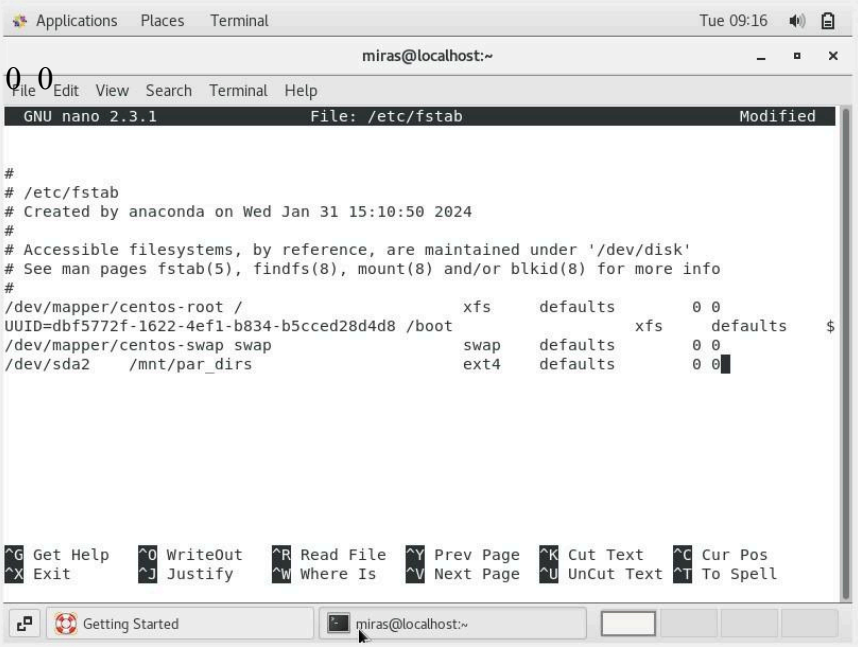


8) Configure Automatic Mounting

sudo mkdir /mnt/par_dirs

sudo nano /etc/fstab

/dev/sda2 /mnt/par_dirs ext4 defaults 0 0

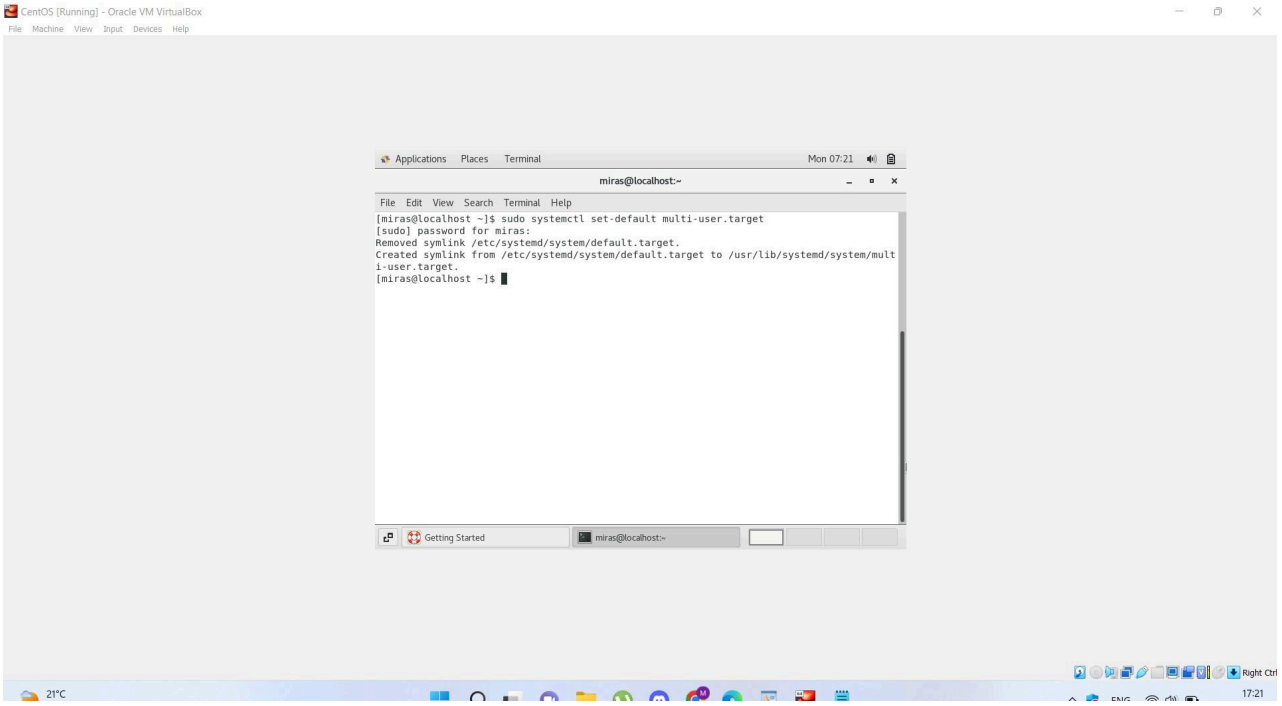


Chapter 12. System Initialization, Message Logging, and System Tuning

1) System Initialization (init/systemd)

Configure the default runlevel or target for system boot.

sudo systemctl set-default multi-user.target



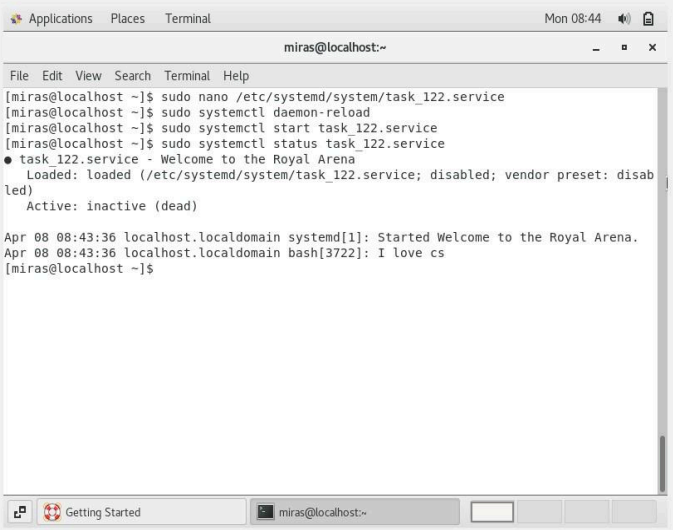
Create a custom systemd service unit file for a specific application or task

sudo nano /etc/systemd/system/task_122.service

sudo systemctl daemon-reload

sudo systemctl start task_122.service

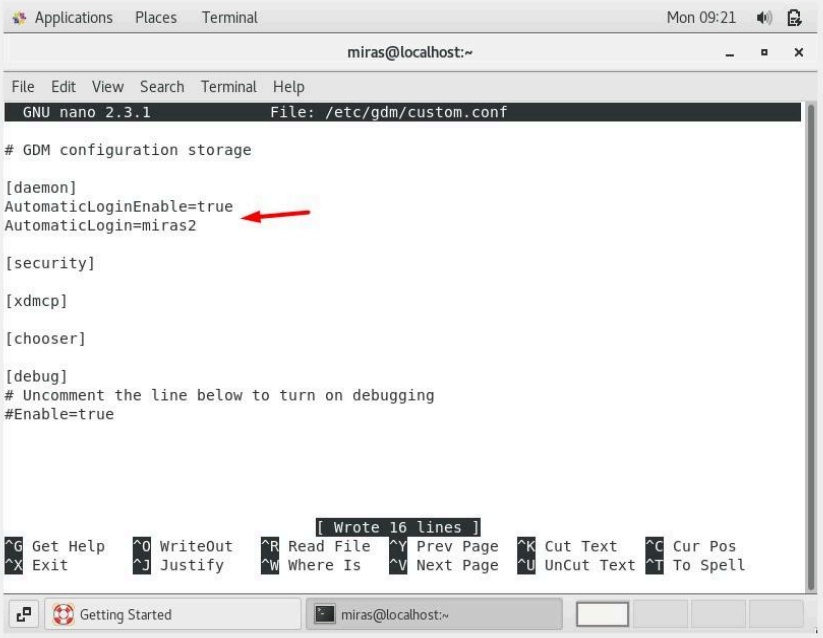
sudo systemctl status task_122.service



Set up automatic login for a specific user at system startup

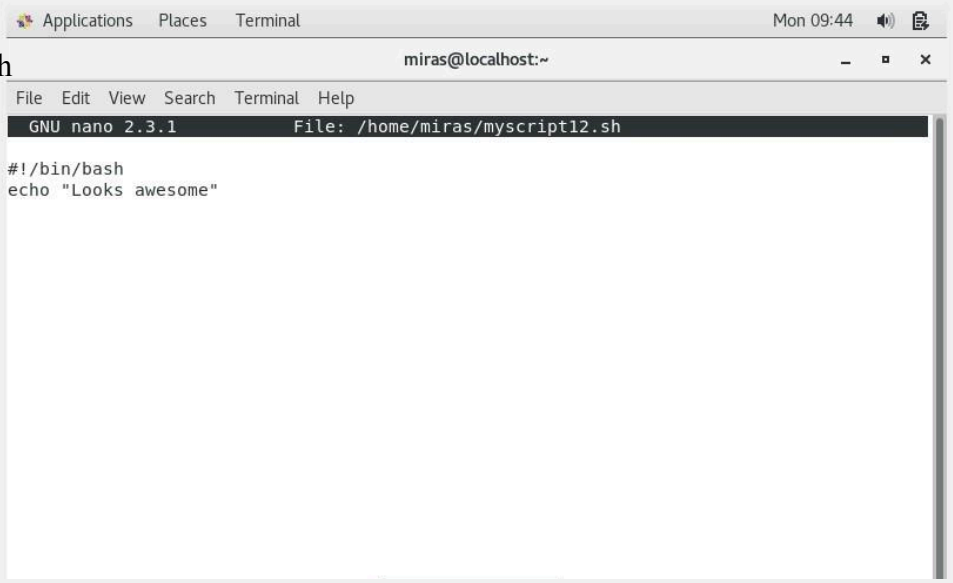
sudo nano /etc/gdm/custom.conf

AutomaticLoginEnable=true
AutomaticLogin=miras2

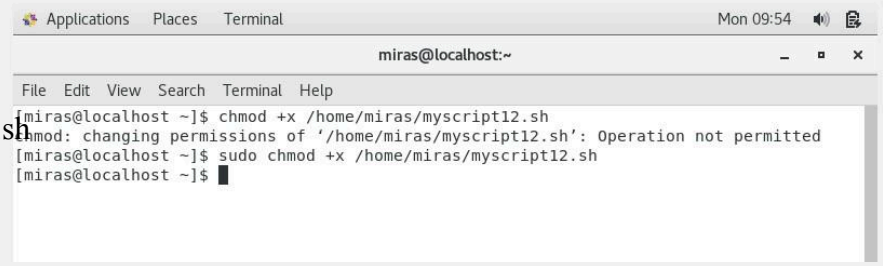


Configure the system to run a script or command at boot time using systemd

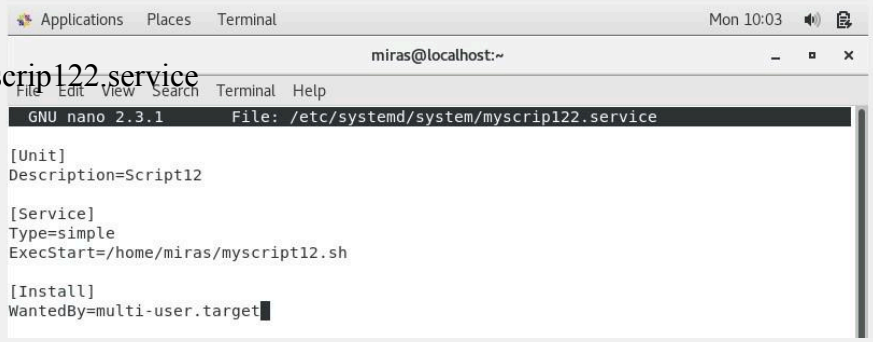
sudo nano /home/miras/myscript12.sh



sudo chmod +x /home/miras/myscript12.sh

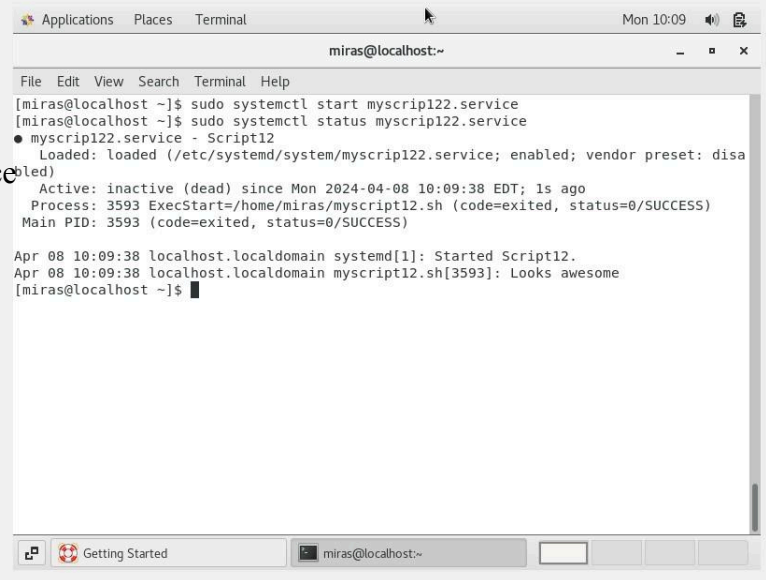


sudo nano /etc/systemd/system/myscrip122.service



sudo systemctl start myscrip122.service

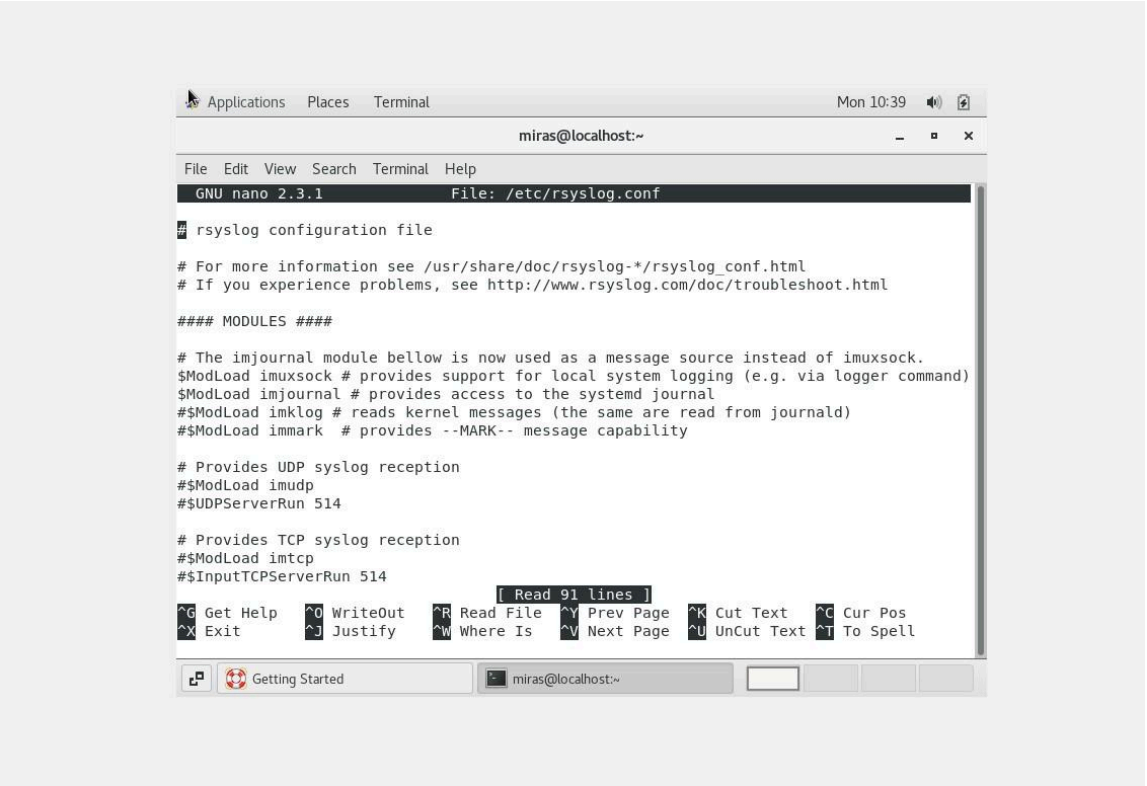
sudo systemctl status myscrip122.service

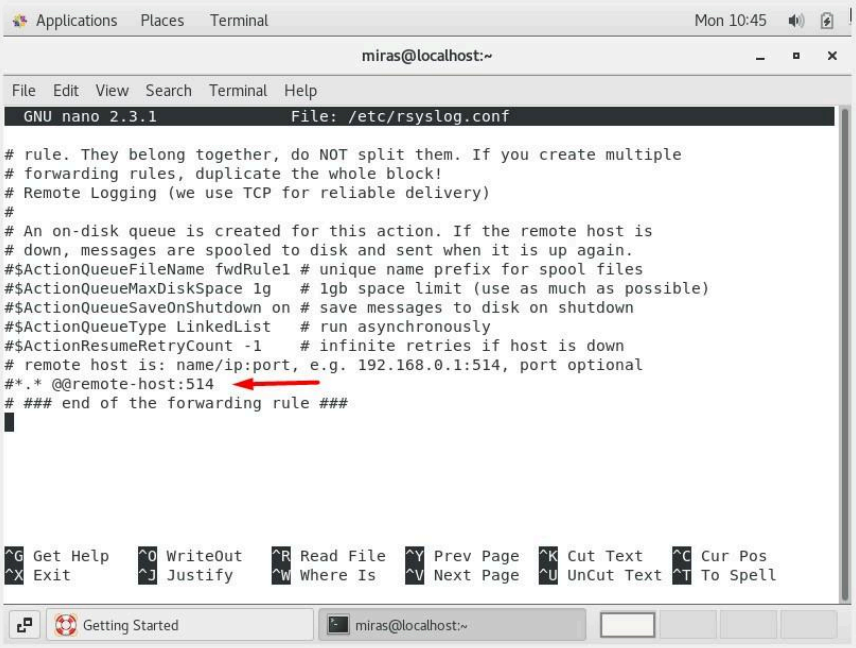


2) Message Logging (syslog/rsyslog)

Configure syslog/rsyslog to log messages to a remote server

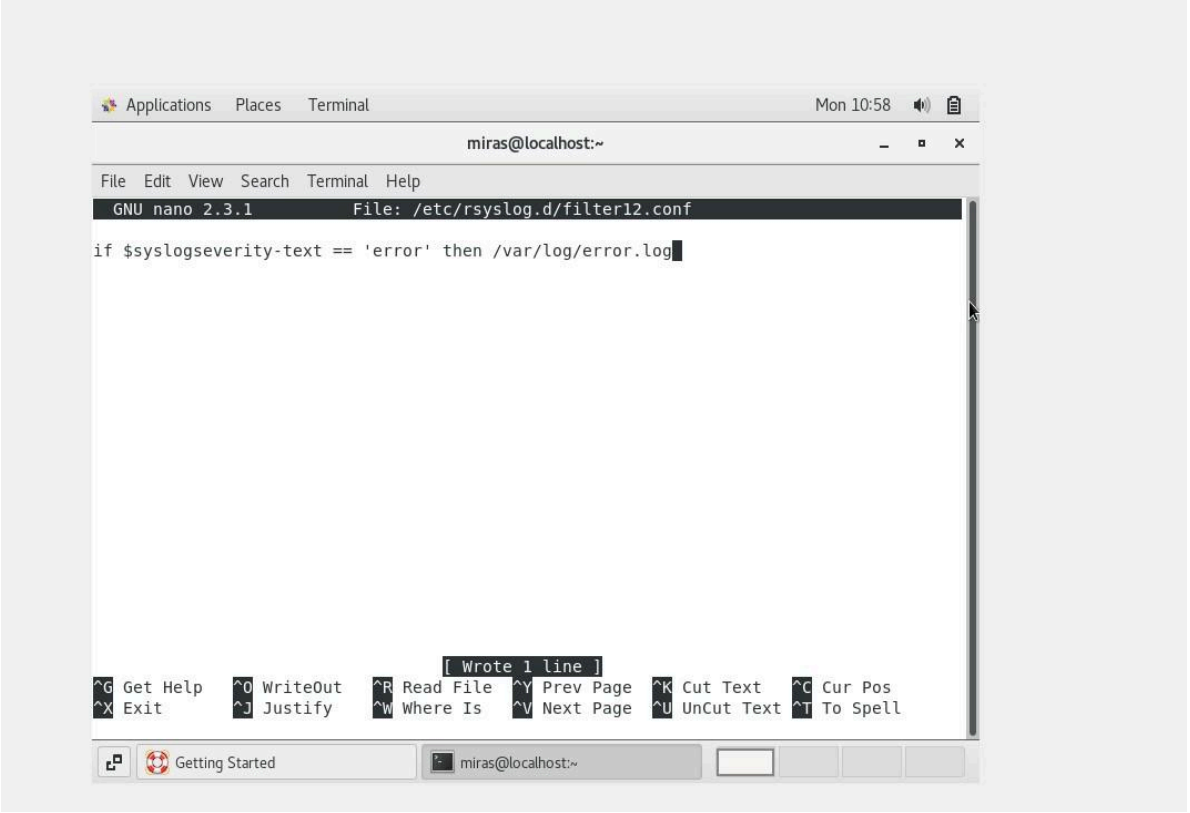
sudo nano /etc/rsyslog.conf





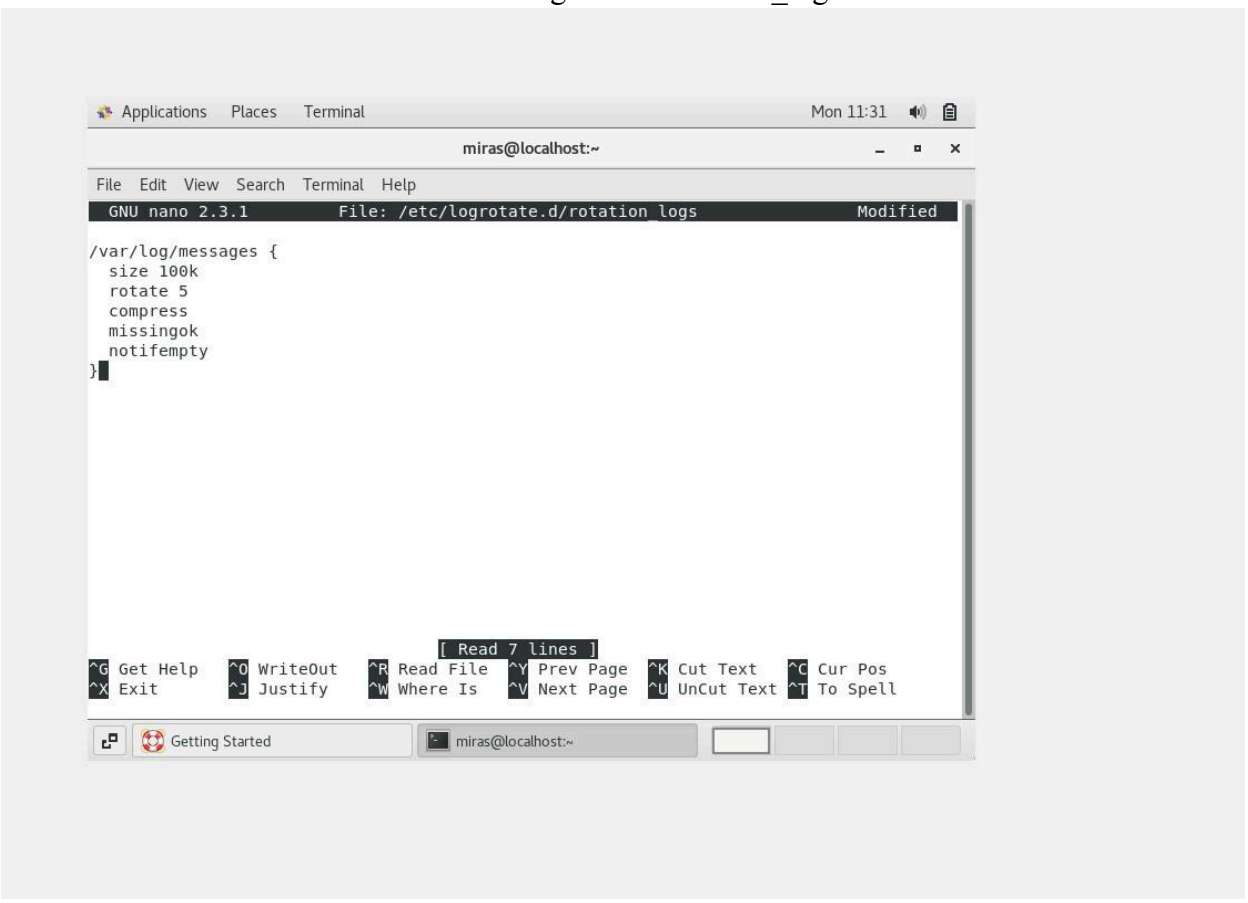
Filter and redirect specific log messages to separate log files

sudo nano /etc/rsyslog.d/filter12.conf
sudo systemctl restart rsyslog



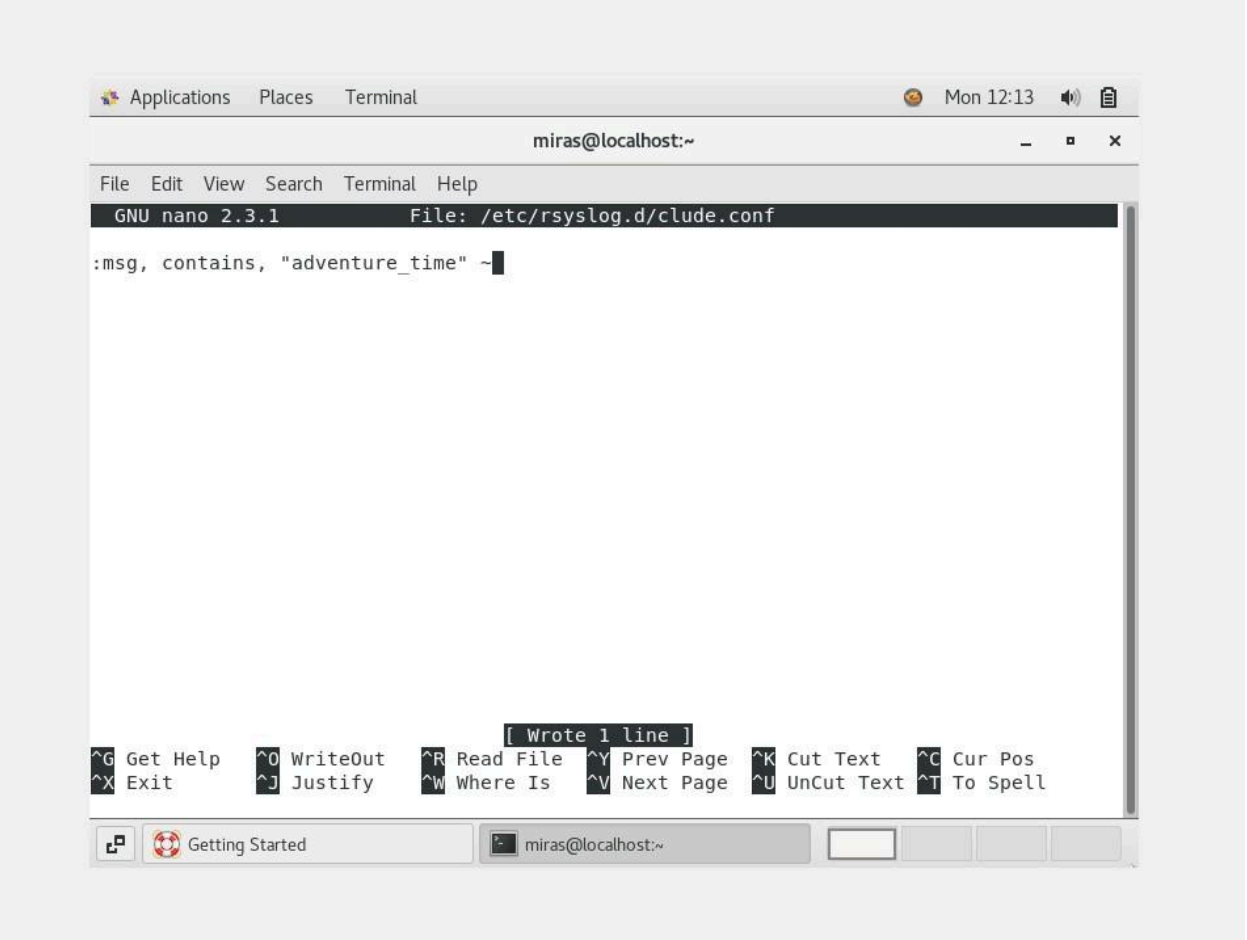
Set up log rotation to manage log file sizes and ensure proper log file maintenance

sudo nano /etc/logrotate.d/rotation_logs



Customize syslog/rsyslog settings to include or exclude specific log messages

sudo nano /etc/rsyslog.d/clude.conf
sudo systemctl restart rsyslog

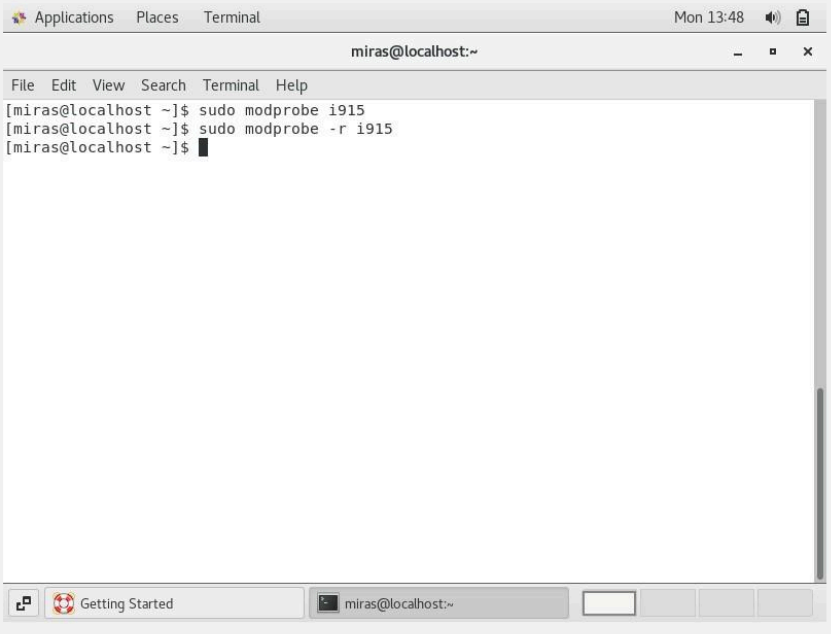


3) Kernel Module Management

Load/unload kernel modules manually

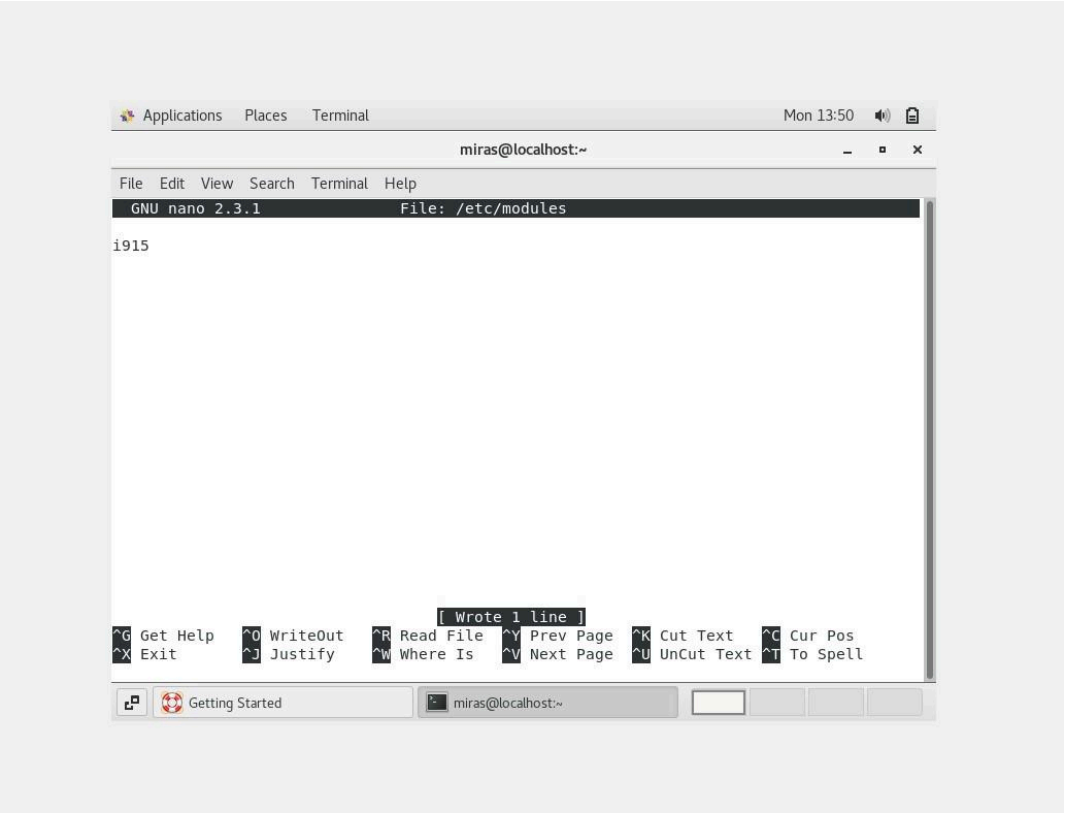
sudo modprobe i915

sudo modprobe -r i915



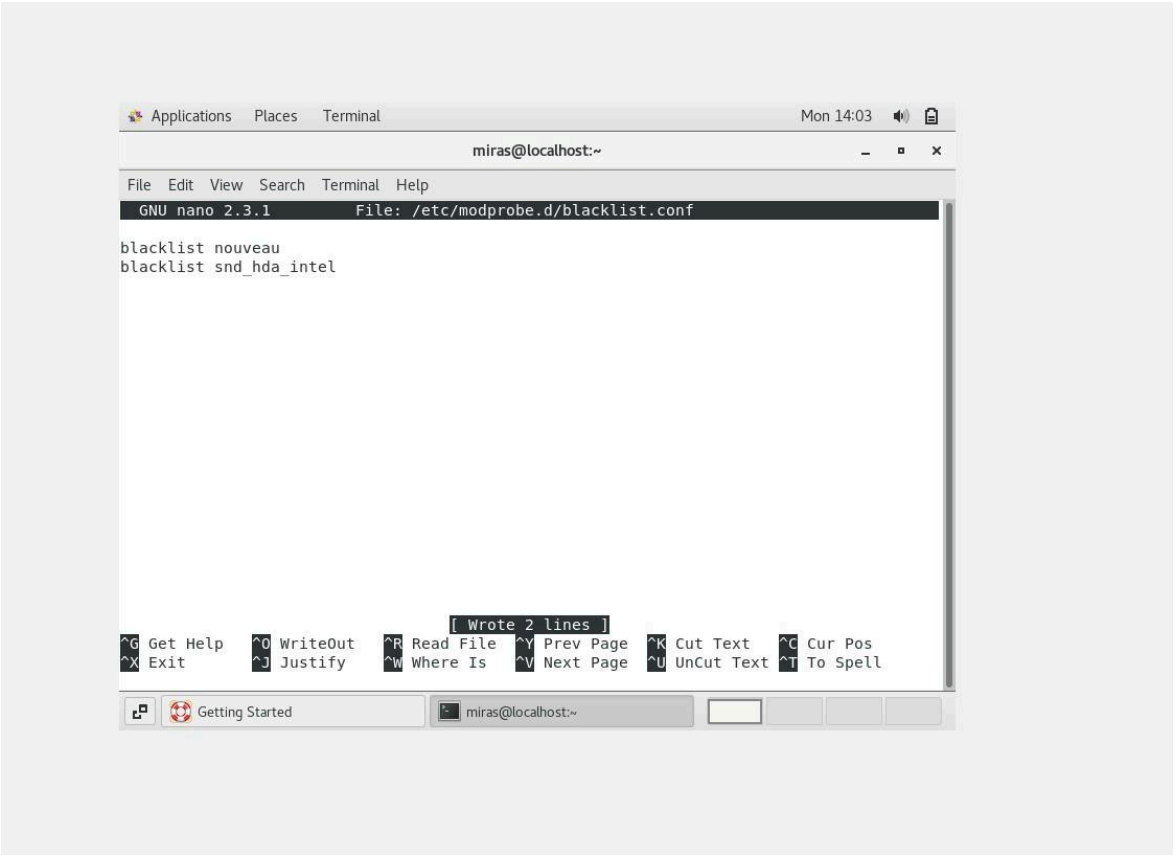
Configure kernel modules to load automatically at boot time

sudo nano /etc/modules



Blacklist kernel modules to prevent them from loading automatically

sudo nano /etc/modprobe.d/blacklist.conf
blacklist nouveau ; blacklist snd_hda_intel



4) Resource Management (CPU, Memory, I/O)

Set CPU affinity for specific processes or groups of processes.

```
taskset -c 2 12345
```

Configure memory limits using cgroups or other mechanisms to control memory usage by specific processes

```
sudo yum install libcgroup-tools

sudo cgcreate -g memory:group12

sudo cgset -r memory.limit_in_bytes=1G group12
```

Tune I/O scheduler settings to optimize disk I/O performance for different workload types

```
sudo cgexec -g memory:group12 sleep 60
```

5) Network Tuning

Adjust network buffer sizes to optimize network performance

```
sudo sysctl -w net.core.rmem_default=262144
sudo sysctl -w net.core.rmem_max=16777216
sudo sysctl -w net.ipv4.tcp_rmem='4096 87380 16777216'
sudo sysctl -p
```

Configure TCP/IP stack parameters, such as TCP window size or congestion control algorithms, to improve network throughput and latency

```
sudo sysctl -w net.ipv4.tcp_window_scaling=1
sudo sysctl -w net.ipv4.tcp_congestion_control=cubic
sudo sysctl -p
```

6) System Tuning

Optimize network settings for better performance, such as adjusting TCP/IP stack parameters

```
sudo sysctl -w net.core.{rmem_default,wmem_default}=262144
sudo sysctl -w net.ipv4.tcp_{rmem_max,wmem_max}=262144
sudo sysctl -w net.ipv4.tcp_{rmem,wmem}="4096 65536 262144"
```

Adjust file system parameters for improved disk I/O performance, such as adjusting the disk scheduler or file system mount options

```
echo "deadline" | sudo tee /sys/block/sdX/queue/scheduler
```

Configure kernel parameters to optimize memory usage, process scheduling, or other system behaviors.

```
sudo sysctl -w vm.swappiness=10
```

Monitor system performance using tools like top, vmstat, or sar, and make appropriate tuning adjustments based on the observed metrics

```
top
```

Implement security-related tuning, such as hardening the system against various types of attacks or vulnerabilities

```
sudo systemctl start firewalld
sudo systemctl enable firewalld
sudo firewall-cmd --add-service=ssh --permanent
sudo firewall-cmd --reload
```