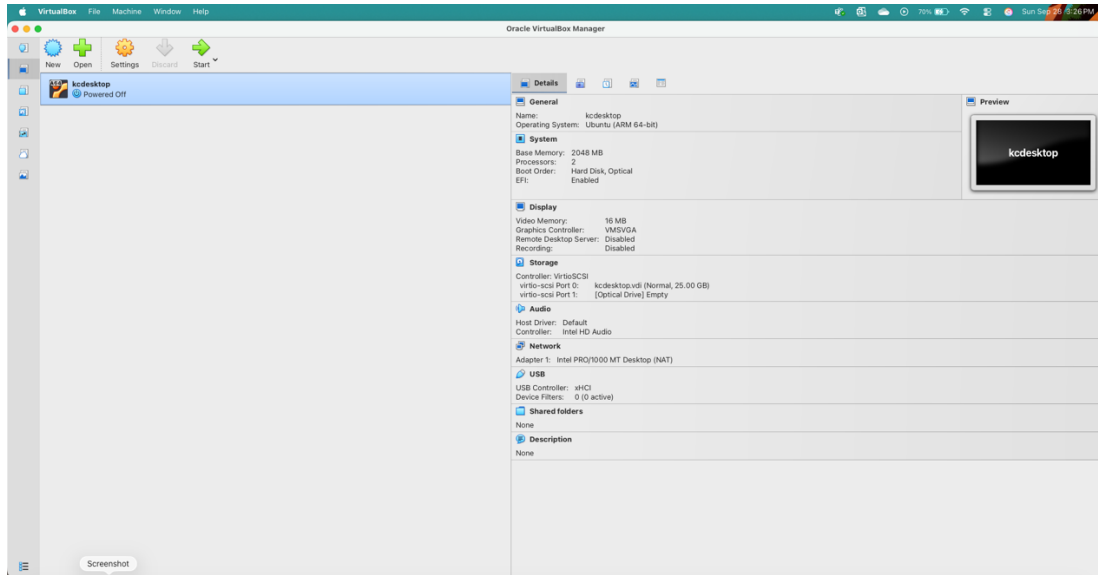


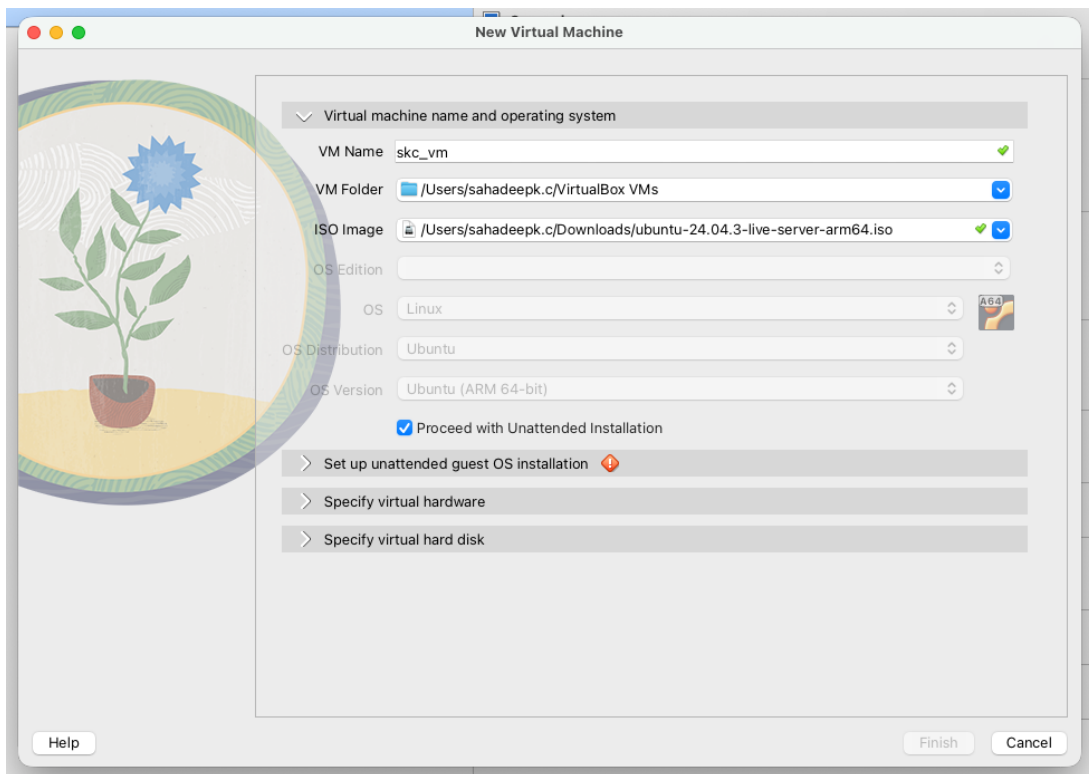
BIA-4650

Assignment-3

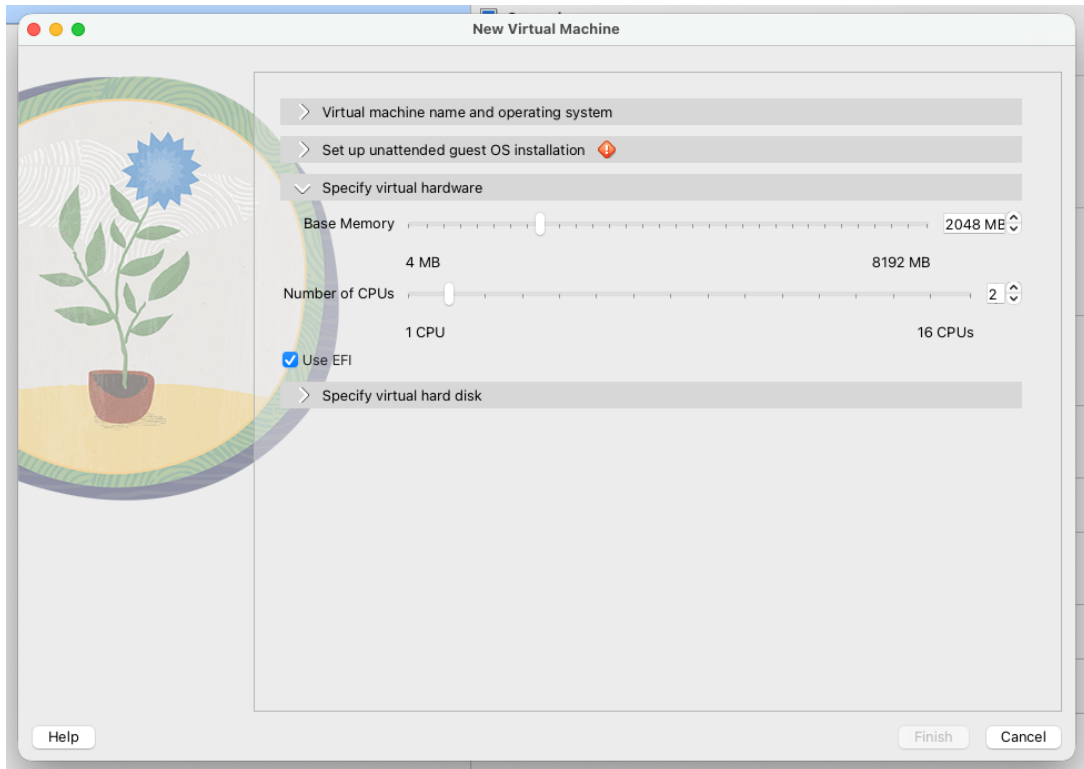
Step-1



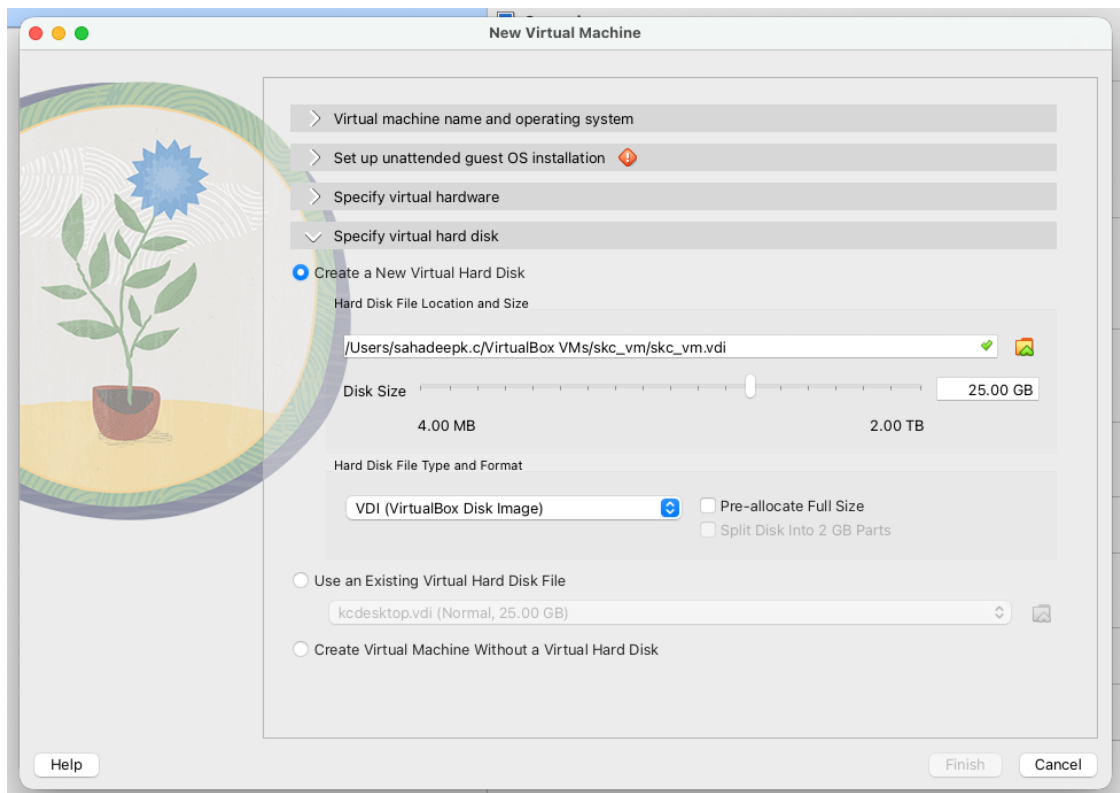
Step-2



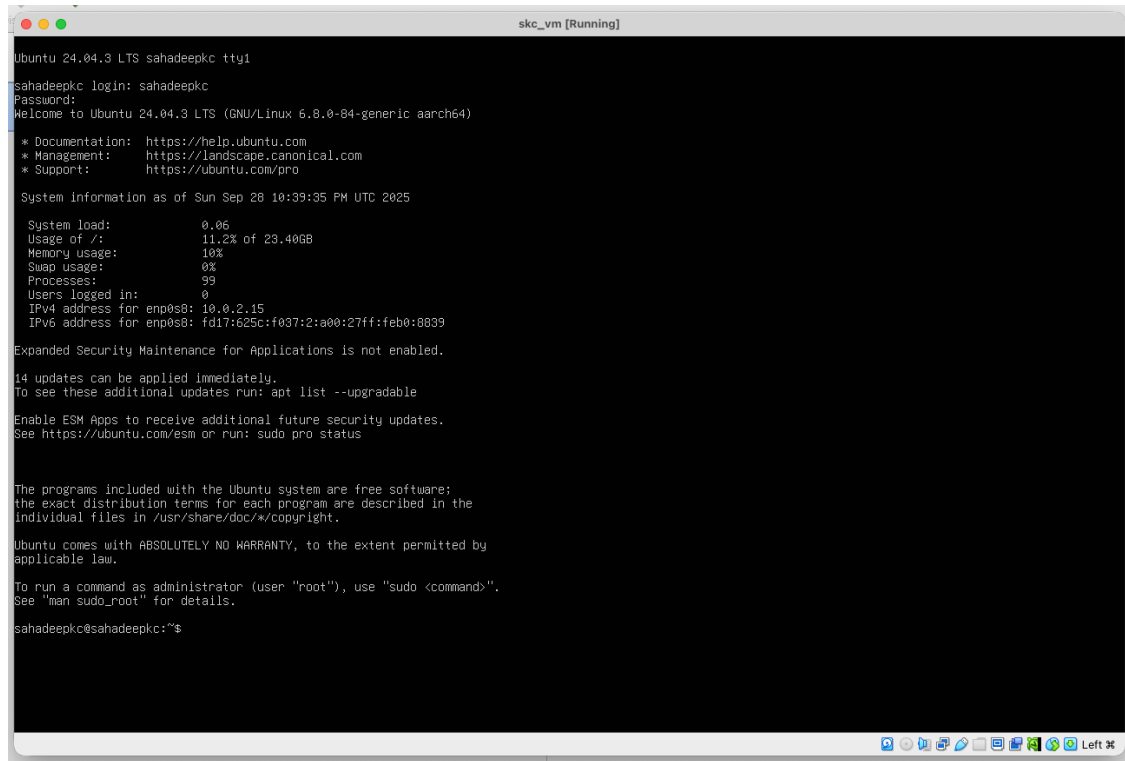
Step-3



Step-4



Step-5



```
skc_vm [Running]
Ubuntu 24.04.3 LTS sahadeepkc tty1
sahadeepkc login: sahadeepkc
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-84-generic aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System Information as of Sun Sep 28 10:39:35 PM UTC 2025

System load:          0.06
Usage of /:           11.2% of 23.4GB
Memory usage:        10%
Swap usage:           0%
Processes:            99
Users logged in:      0
IPv4 address for enp0s8: 10.0.2.15
IPv6 address for enp0s8: fd17:625c:f037:2:a00:27ff:feb0:0039

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

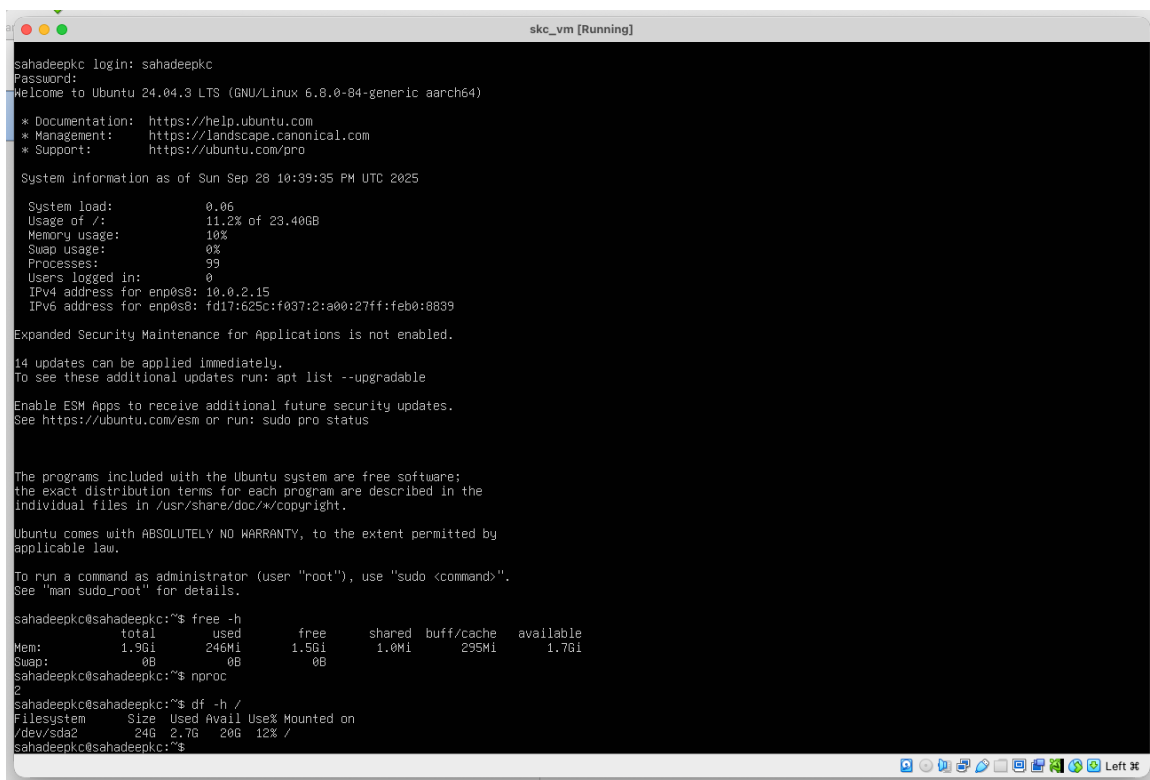
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sahadeepkc@sahadeepkc:~$
```

Step-6



```
skc_vm [Running]
sahadeepkc login: sahadeepkc
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-84-generic aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System Information as of Sun Sep 28 10:39:35 PM UTC 2025

System load:          0.06
Usage of /:           11.2% of 23.4GB
Memory usage:        10%
Swap usage:           0%
Processes:            99
Users logged in:      0
IPv4 address for enp0s8: 10.0.2.15
IPv6 address for enp0s8: fd17:625c:f037:2:a00:27ff:feb0:0039

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

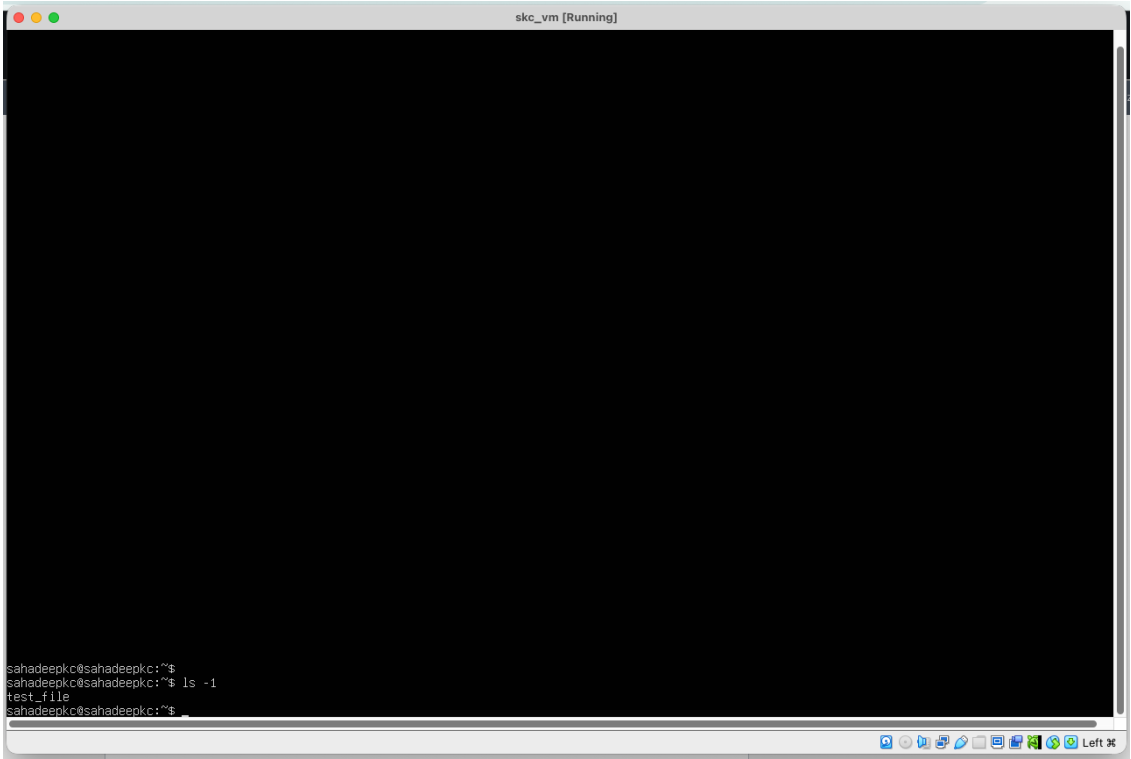
sahadeepkc@sahadeepkc:~$ free -h
              total        used        free      shared  buff/cache   available
Mem:          1.9Gi          246Mi        1.5Gi         1.0Mi        295Mi        1.7Gi
Swap:          0B              0B              0B

sahadeepkc@sahadeepkc:~$ nproc
2

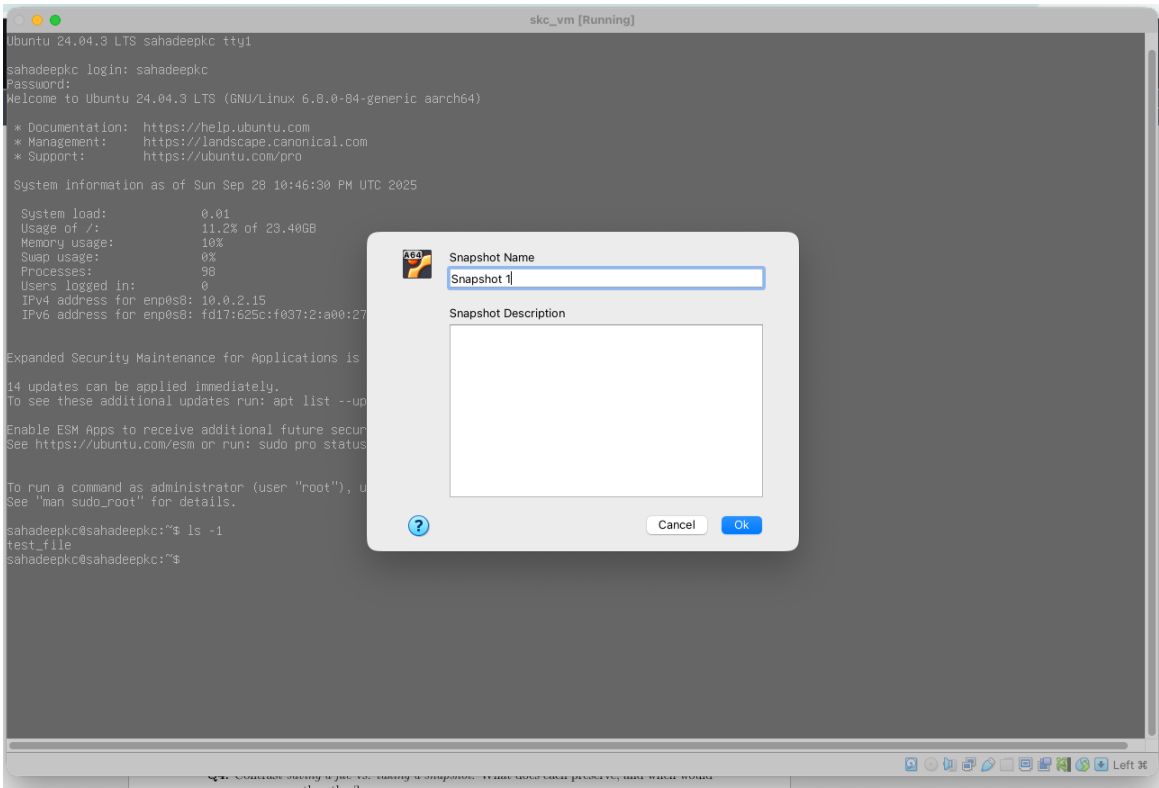
sahadeepkc@sahadeepkc:~$ df -h /
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda2       24G   2.7G   20G  12% /

sahadeepkc@sahadeepkc:~$
```

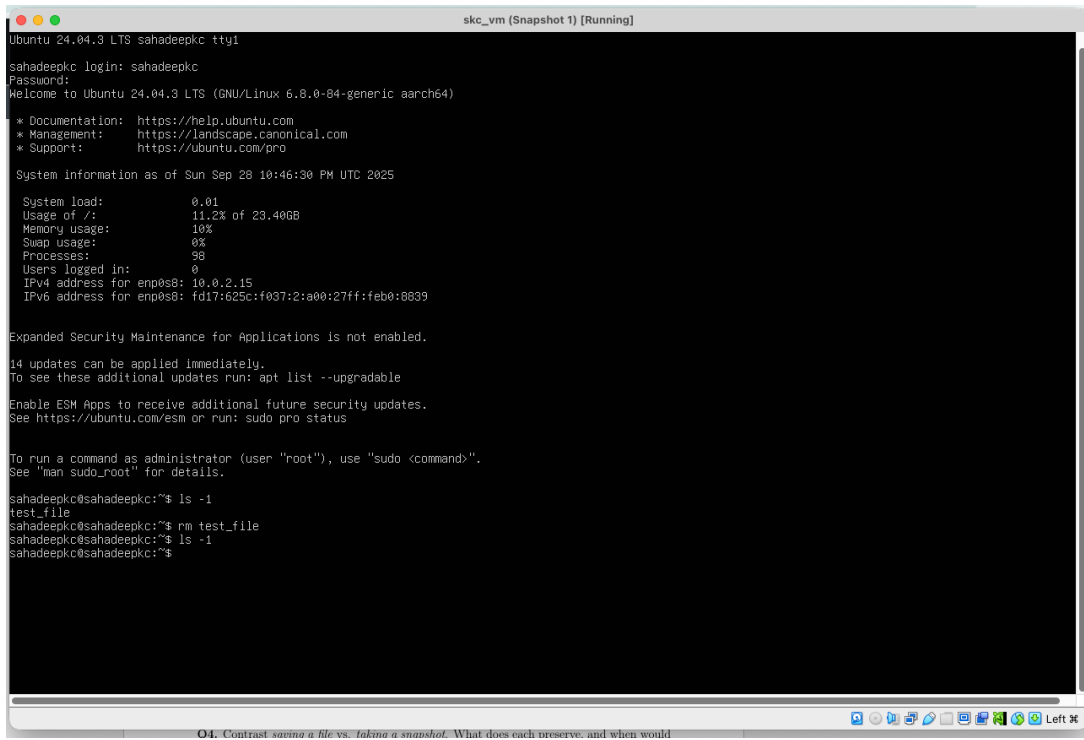
Step-7



Step-8



Step-9



```

skc_vm (Snapshot 1) [Running]
Ubuntu 24.04.3 LTS sahadeepkc tty1
sahadeepkc login: sahadeepkc
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-84-generic aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Sun Sep 28 10:46:30 PM UTC 2025

System load:          0.01
Usage of /:            11.2% of 23.4GB
Memory usage:         10%
Swap usage:           0%
Processes:            98
Users logged in:      0
IPv4 address for enp0s8: 10.0.2.15
IPv6 address for enp0s8: fd17:625c:f037:2:a00:27ff:feb0:8839

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

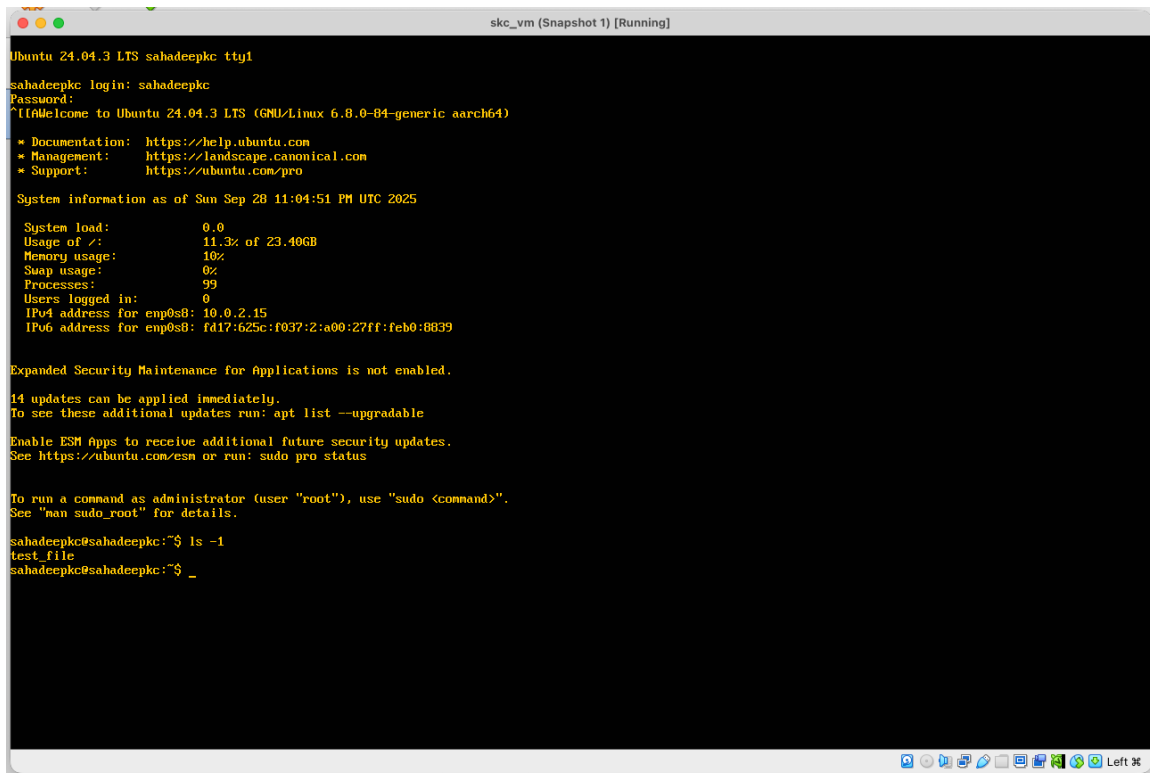
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sahadeepkc@sahadeepkc:~$ ls -l
total 4
-rw-r--r-- 1 sahadeepkc sahadeepkc 0 Sep 28 10:46 test_file
sahadeepkc@sahadeepkc:~$ rm test_file
sahadeepkc@sahadeepkc:~$ ls -l
total 0
sahadeepkc@sahadeepkc:~$

```

04. Contrast saving a file vs. taking a snapshot. What does each preserve, and when would

Step-10



```

skc_vm (Snapshot 1) [Running]
Ubuntu 24.04.3 LTS sahadeepkc tty1
sahadeepkc login: sahadeepkc
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-84-generic aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Sun Sep 28 11:04:51 PM UTC 2025

System load:          0.0
Usage of /:            11.3% of 23.4GB
Memory usage:         10%
Swap usage:           0%
Processes:            99
Users logged in:      0
IPv4 address for enp0s8: 10.0.2.15
IPv6 address for enp0s8: fd17:625c:f037:2:a00:27ff:feb0:8839

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sahadeepkc@sahadeepkc:~$ ls -l
total 4
-rw-r--r-- 1 sahadeepkc sahadeepkc 0 Sep 28 11:04 test_file
sahadeepkc@sahadeepkc:~$ _

```

Reflection Questions:

1. In business terms, how does a snapshot reduce risk and cost during software updates or testing?
 - A snapshot reduces risk and cost by capturing the exact system state before updates or tests. This allows quick rollback if issues arise, minimizing downtime, data loss, and recovery expenses. It also speeds up testing and reduces labor costs, letting businesses update safely without major disruptions.

2. How do resource limits (RAM/CPU) help balance performance and cost in a shared computing environment?
 - They help by preventing a single user or application from overusing resources and slowing down other users. This ensures fair access, maintains consistent performance, and avoids costly overprovisioning of hardware. By allocating only what's needed, businesses keep infrastructure efficient, control expenses, and deliver reliable service to all users.

3. Give one business scenario (e.g., online store during Black Friday) where restoring a snapshot could save time and money.
 - An online retailer during Black Friday pushes a last-minute software update to its checkout system to handle higher traffic. The update unexpectedly causes checkout failures, stopping sales. By restoring a snapshot taken right before the update, the IT team can instantly roll back to a stable version. This saves hours of troubleshooting, prevents lost sales during peak demand, protects customer trust, and avoids the much higher costs of prolonged downtime.

4. Contrast saving a file vs. taking a snapshot. What does each preserve, and when would you use one over the other?
 - Saving a file can help store your progress you have made while working on a specific document whereas taking a snapshot will help restore the point of system state. Retrieving a point of time before a major software update or an application update can be done with a snapshot.
Saving a file when a document is done preparing or saving progress made in one and snapshot to get back to point of any changes that are going to be made.