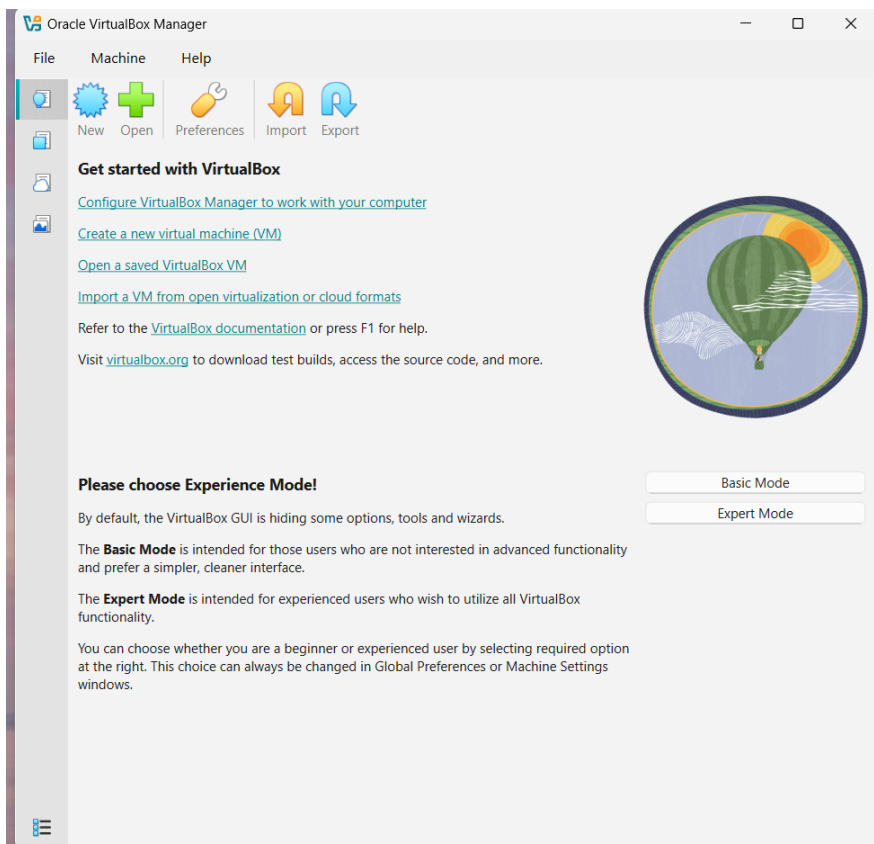
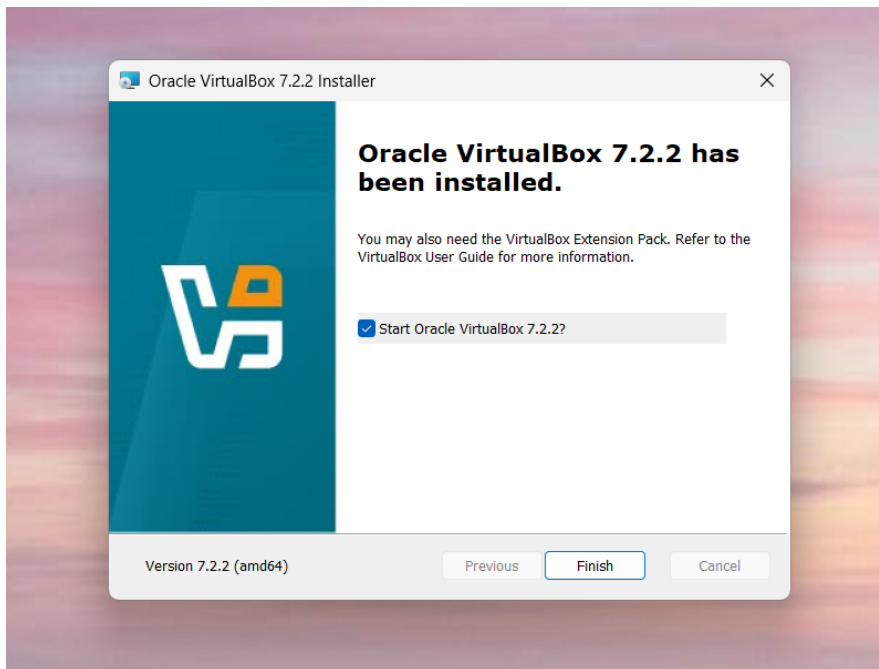
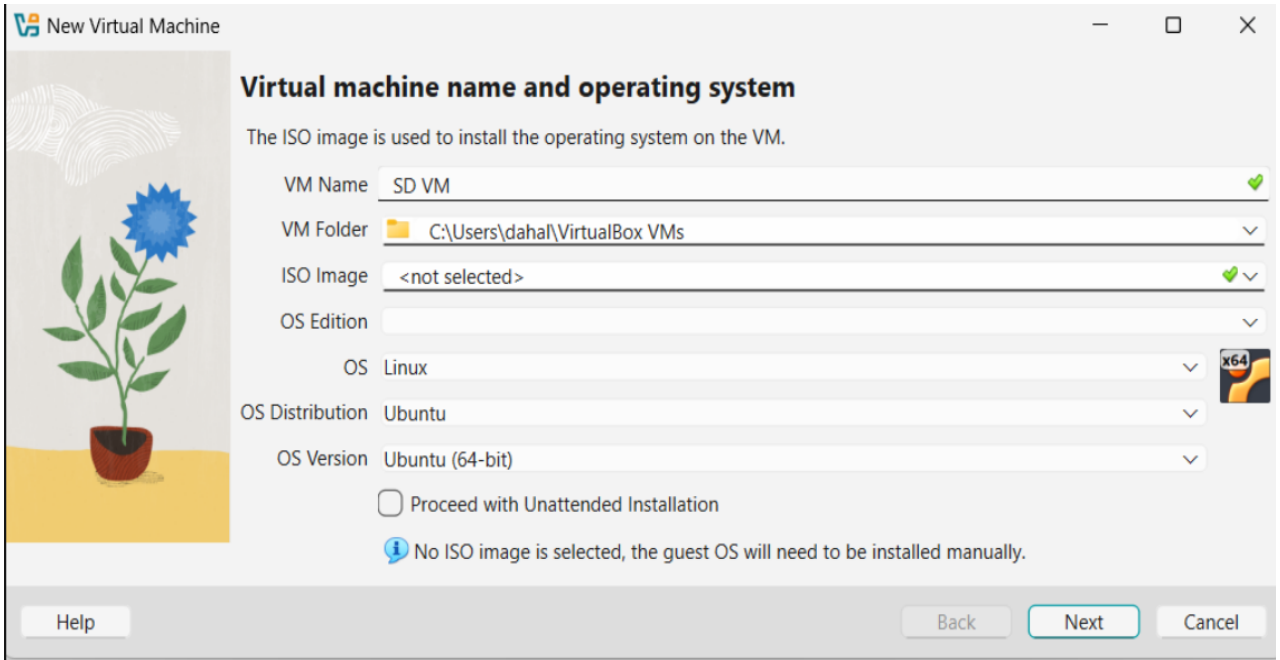


Virtualization Lab Assignment

1) Install VirtualBox



2) Create VM & Attach ISO



The ISO image is used to install the operating system on the VM.

VM Name: SD VM

VM Folder: C:\Users\dahal\VirtualBox VMs

ISO Image: <not selected>


OS Edition:

OS: Linux

OS Distribution: Ubuntu

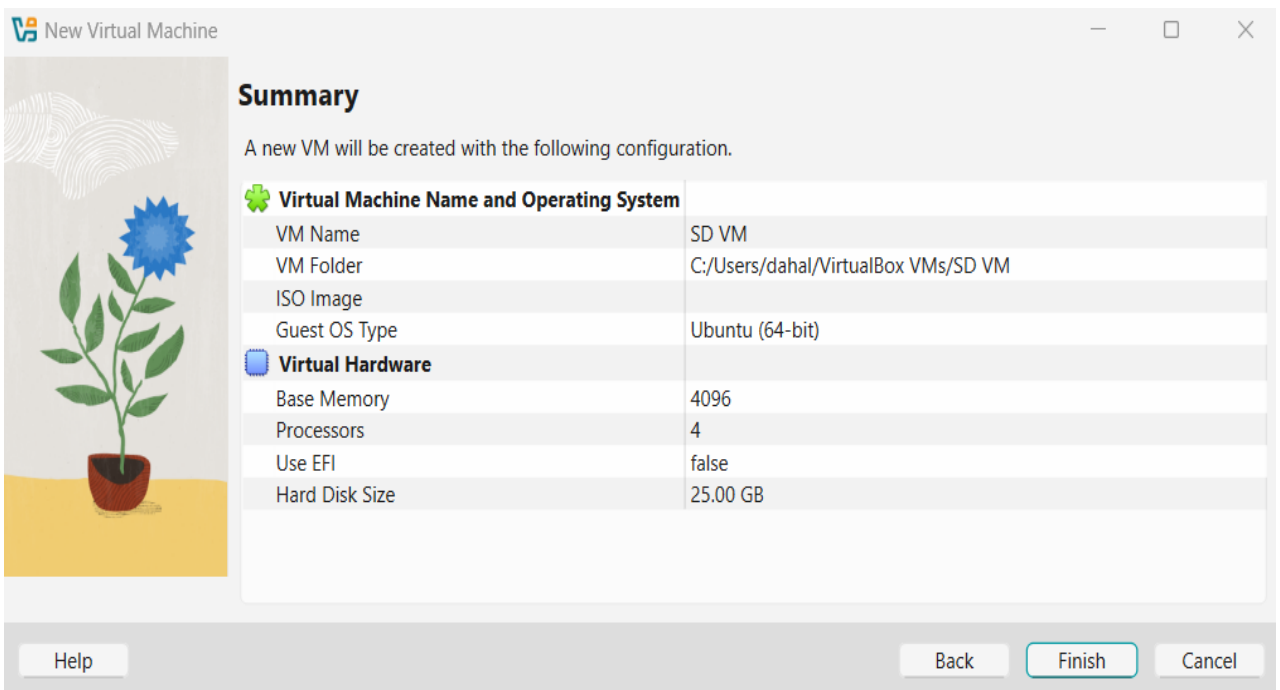
OS Version: Ubuntu (64-bit)

☐ Proceed with Unattended Installation

 No ISO image is selected, the guest OS will need to be installed manually.

Help Back Next Cancel

3) Allocate Resources



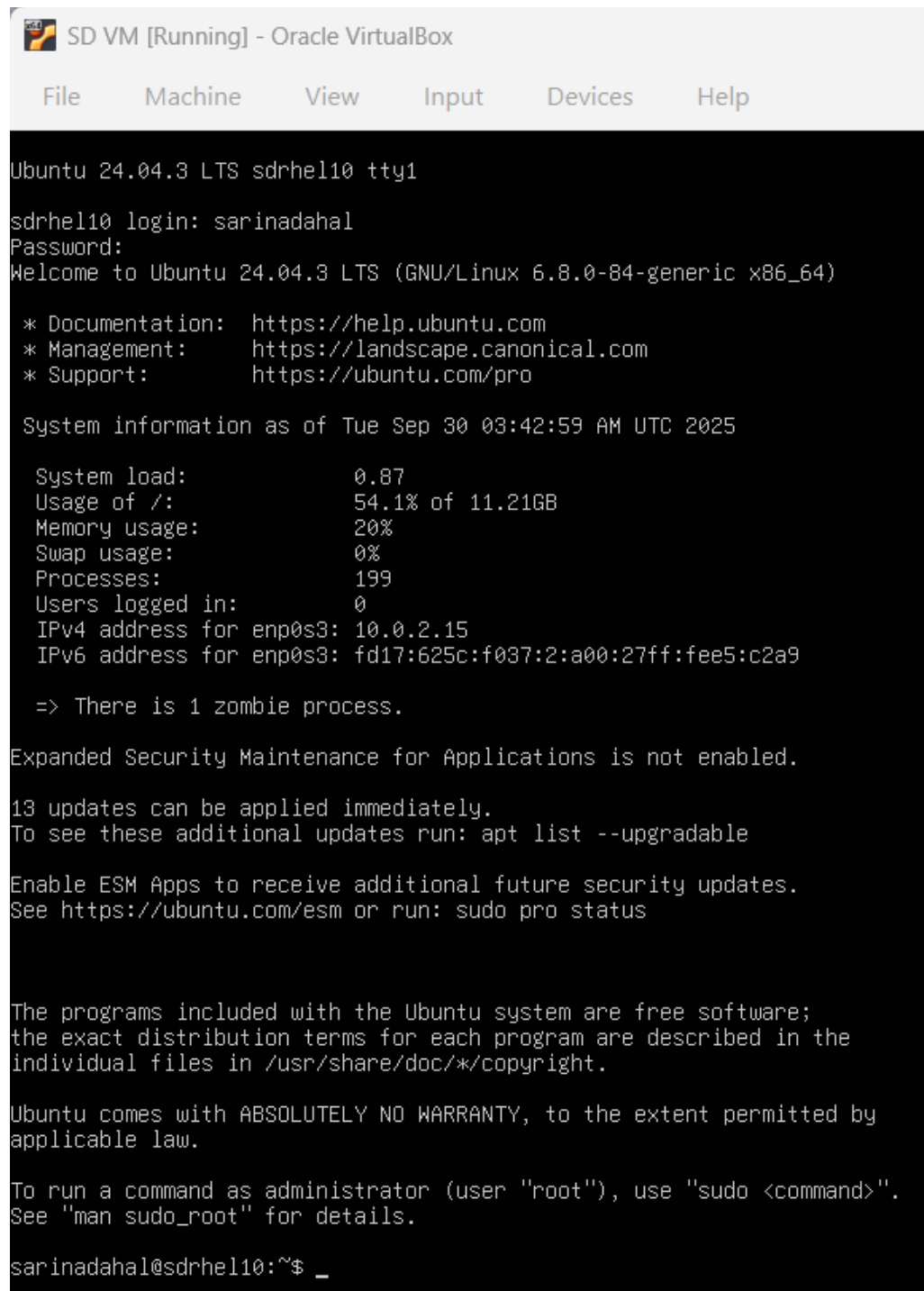
A new VM will be created with the following configuration.

| Virtual Machine Name and Operating System | |
|---|-------------------------------------|
| VM Name | SD VM |
| VM Folder | C:/Users/dahal/VirtualBox VMs/SD VM |
| ISO Image | |
| Guest OS Type | Ubuntu (64-bit) |

| Virtual Hardware | |
|------------------|----------|
| Base Memory | 4096 |
| Processors | 4 |
| Use EFI | false |
| Hard Disk Size | 25.00 GB |

Help Back Finish Cancel

4) Boot VM & Create Login



```
SD VM [Running] - Oracle VirtualBox
File Machine View Input Devices Help

Ubuntu 24.04.3 LTS sdrhel10 tty1

sdrhel10 login: sarinadahal
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-84-generic x86_64)

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

System information as of Tue Sep 30 03:42:59 AM UTC 2025

System load:          0.87
Usage of /:            54.1% of 11.21GB
Memory usage:         20%
Swap usage:           0%
Processes:            199
Users logged in:      0
IPv4 address for enp0s3: 10.0.2.15
IPv6 address for enp0s3: fd17:625c:f037:2:a00:27ff:fee5:c2a9

=> There is 1 zombie process.

Expanded Security Maintenance for Applications is not enabled.

13 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.

sarinadahal@sdrhel10:~$ _
```

5) Verify VM Resources

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

```
sarinadahal@sdrhel10:~$ free -h
              total        used        free      shared  buff/cache   available
Mem:           3.8Gi        974Mi        1.0Gi        1.3Mi        2.1Gi        2.9Gi
Swap:          2.2Gi          0B        2.2Gi

sarinadahal@sdrhel10:~$ nproc
4

sarinadahal@sdrhel10:~$ df -h
Filesystem                Size      Used Avail Use% Mounted on
tmpfs                     392M        1.3M  391M   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv 12G        6.1G   4.6G  58% /
tmpfs                     2.0G          0   2.0G   0% /dev/shm
tmpfs                     5.0M          0   5.0M   0% /run/lock
/dev/sda2                 2.0G       100M    1.7G   6% /boot
shm                        64M          0   64M   0% /var/snap/microk8s/common/run/containerd.io.containerd.grpc.v1.cri/sandboxes/905ca006fe9a71d1ed5b079a2a
df7f3ff17dbdd5e9bad86f65a0f9b5c6993e5a/shm 64M          0   64M   0% /var/snap/microk8s/common/run/containerd.io.containerd.grpc.v1.cri/sandboxes/6e780bef3ef2b719dc1d4165ab
3698c1400060c58137db7955f052488e5a5328/shm 64M          0   64M   0% /var/snap/microk8s/common/run/containerd.io.containerd.grpc.v1.cri/sandboxes/b0097fc143d2697d1ea5404563
d5e9e18aa5c8ef03e977cd80e0481432144d3b/shm 64M          0   64M   0% /var/snap/microk8s/common/run/containerd.io.containerd.grpc.v1.cri/sandboxes/b0097fc143d2697d1ea5404563
tmpfs                     392M       12K   392M   1% /run/user/1000

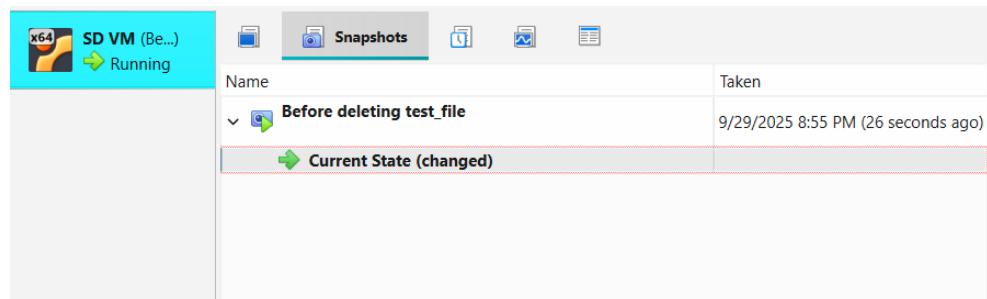
sarinadahal@sdrhel10:~$ df -h /
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/ubuntu--vg-ubuntu--lv 12G        6.1G   4.6G  58% /

sarinadahal@sdrhel10:~$
```

6) Create a Test File

```
sarinadahal@sdrhel10:~$ ls -l
total 4
-rw-rw-r-- 1 sarinadahal sarinadahal 18 Sep 30 03:49 test_file
sarinadahal@sdrhel10:~$
```

7) Take a Snapshot



8) Test Snapshot Restore

```
sarinadahal@sdrhel10:~$ ls -l
total 4
-rw-rw-r-- 1 sarinadahal sarinadahal 18 Sep 30 03:49 test_file
sarinadahal@sdrhel10:~$ rm test_file
sarinadahal@sdrhel10:~$ ls -l
total 0
sarinadahal@sdrhel10:~$

sarinadahal@sdrhel10:~$ ls -l
total 4
-rw-rw-r-- 1 sarinadahal sarinadahal 18 Sep 30 03:49 test_file
```

Reflection Questions

- 1) In business terms, how does a snapshot reduce risk and cost during software updates or testing?**

Answer: A snapshot lowers risk and cost because it lets you go back to a safe point if something goes wrong during updates or testing. Instead of spending hours fixing issues, you can restore the system in minutes. This saves money, time, and keeps the business running without long breaks. It's like having a safety backup for the whole system.

- 2) How do resource limits (RAM/CPU) help balance performance and cost in a shared computing environment?**

Answer: Limits on RAM and CPU help share computer power fairly and save money. If one program or user uses too much, it could slow down everyone else. By setting limits, the system runs smoothly without wasting resources. This way, businesses don't need to buy extra hardware they don't really need.

- 3) Give one business scenario (e.g., online store during Black Friday) where restoring a snapshot could save time and money.**

Answer: An online store during Black Friday might crash if a new update causes problems. Restoring a snapshot would quickly bring the website back to normal. This saves time, avoids long delays, and prevents losing sales. It's faster and cheaper than trying to fix the problem by hand.

- 4) Contrast saving a file vs. taking a snapshot. What does each preserve, and when would you use one over the other?**

Answer: Saving a file only keeps that one file safe, like a document or photo. A snapshot saves the whole computer system, including programs and settings. You save files when you just want your work saved. You take a snapshot when you want to protect the entire system before making big changes.