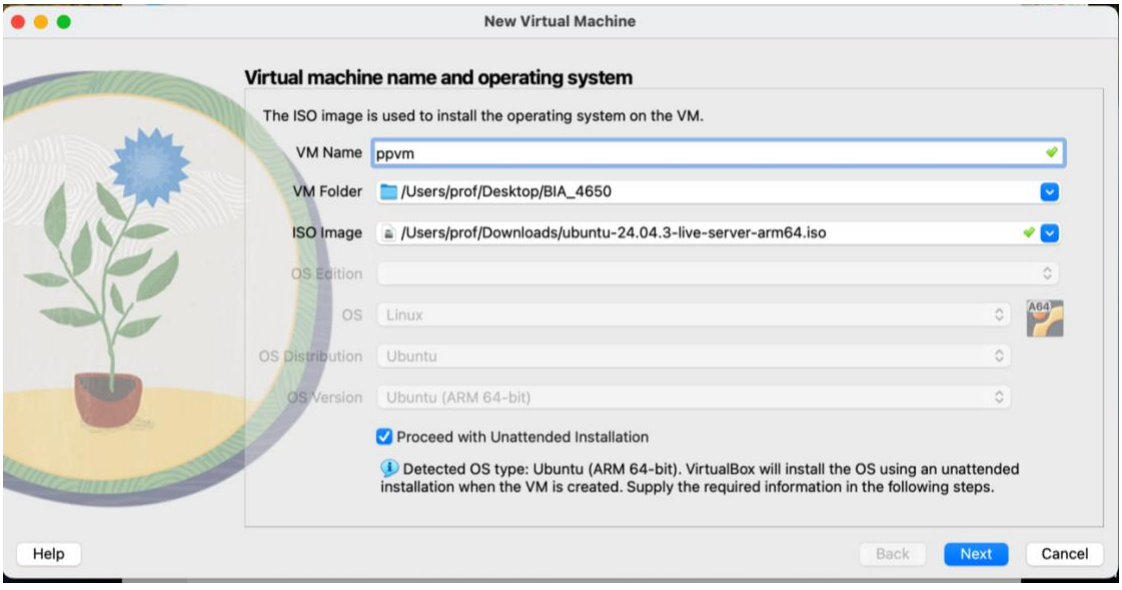
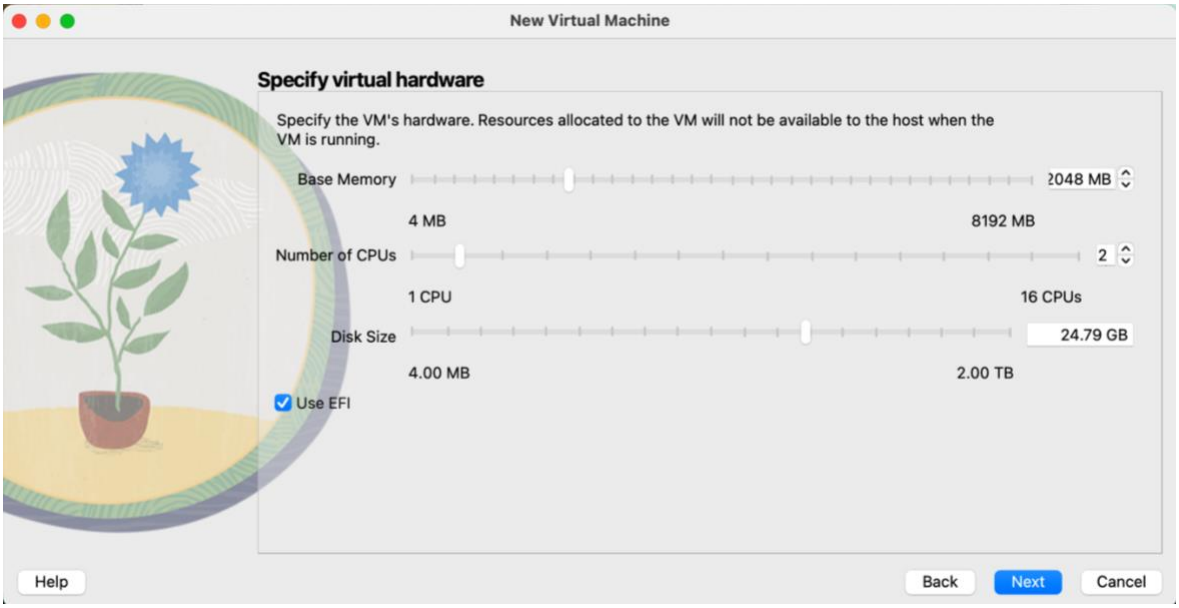
Virtualization Lab Assignment

1. Install VirtualBox

2. Create VM & Attach ISO



3. Allocate Resources



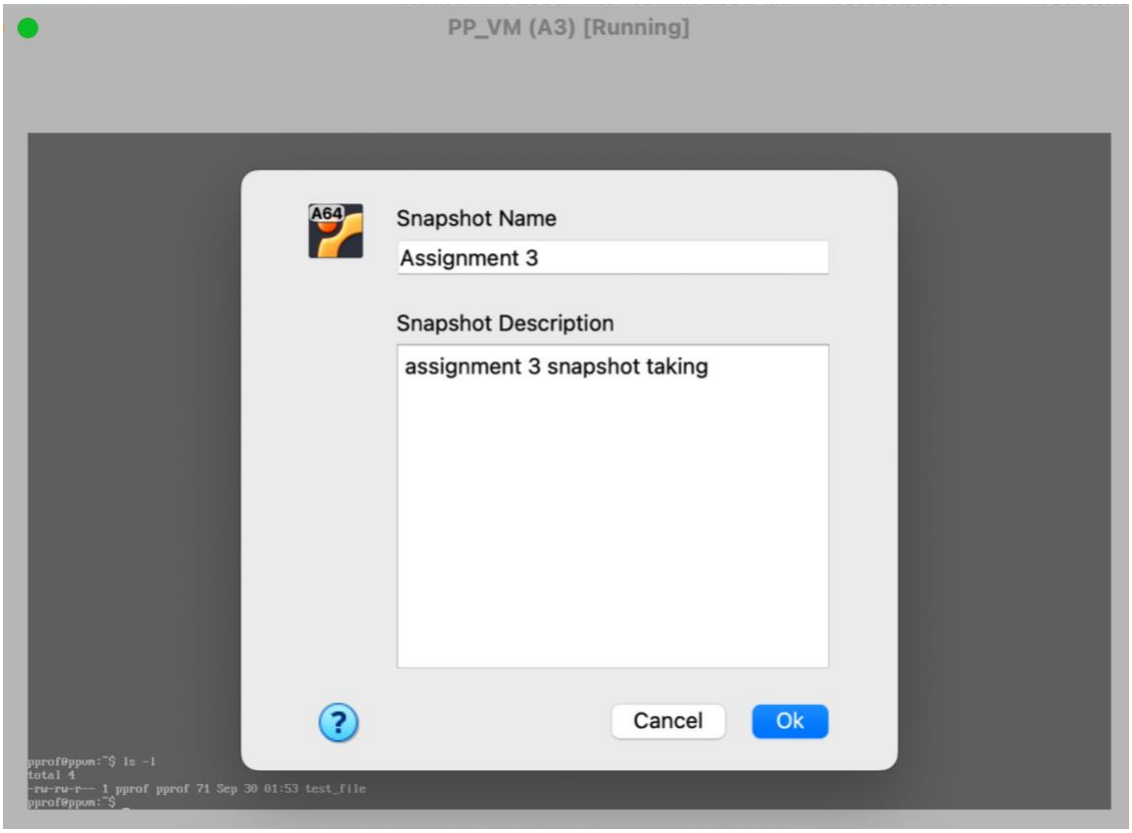
4. Verify VM Resources

```
For more details see free(1).
pprof@ppvm:~$ free -h
               total        used        free      shared  buff/cache   available
Mem:           1.9Gi       245Mi       1.5Gi       1.0Mi       295Mi       1.7Gi
Swap:             0B          0B          0B
pprof@ppvm:~$ nproc
2
pprof@ppvm:~$ df -h /
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda2        24G  2.7G   20G  12% /
pprof@ppvm:~$
```

5. Create a Test File

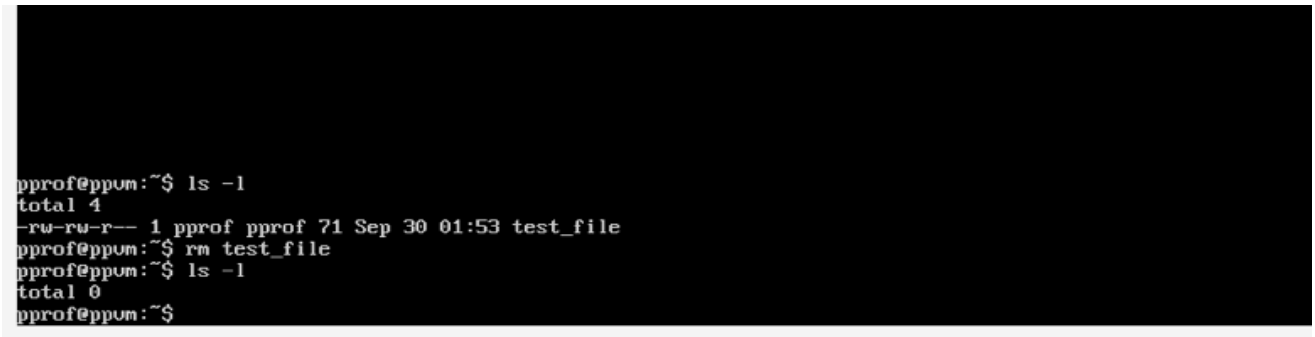
```
pprof@ppvm:~$ ls -l
total 4
-rw-rw-r-- 1 pprof pprof 71 Sep 30 01:53 test_file
pprof@ppvm:~$
```

6. Take a Snapshot

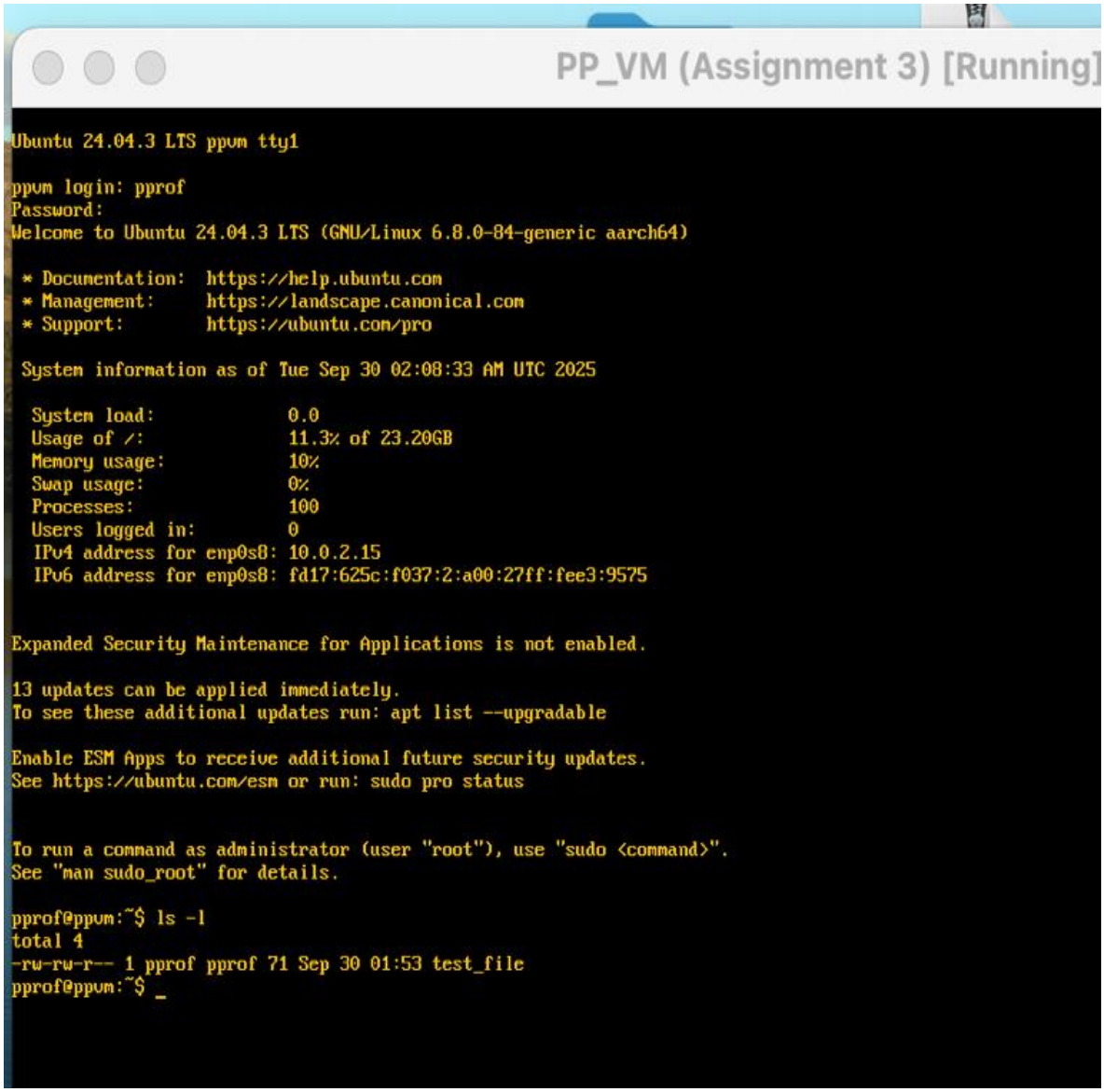


7. Test Snapshot Restore

a) Delete the file and show proof:



b) Restore the snapshot taken



Reflection Questions

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

   Snapshots allow freezing of the working system, usually taken when there are software updates or testing. Instead of starting over, we can reverse within a short time if there is a risk of data corruption. This reduces revenue loss, labor, and outage periods.

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

   Maintaining a good balance of RAM and CPU prevents virtual machine to deprive others of the RAM and CPUs. This can slow down other applications. Having the right resource allocated to the VMs can improve utilization and enhance budget efficiency.

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

   Consider an online store during Black Friday experiences an update in the check-out section. Instead of troubleshooting from scratch, we can easily access the check-out snapshot, resolving the issue under minutes. The issue can be looked into later, saving the business time and money, especially at a crucial moment.

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 will preserve the contents of the document, and taking a snapshot will preserve the entire system, including all the applications, OS settings, etc. Before a crucial update, data migration, or any risk-based task, snapshot should be chosen. For everyday document or normal change, saving the file is preferred.