Virtualization Lab Assignment

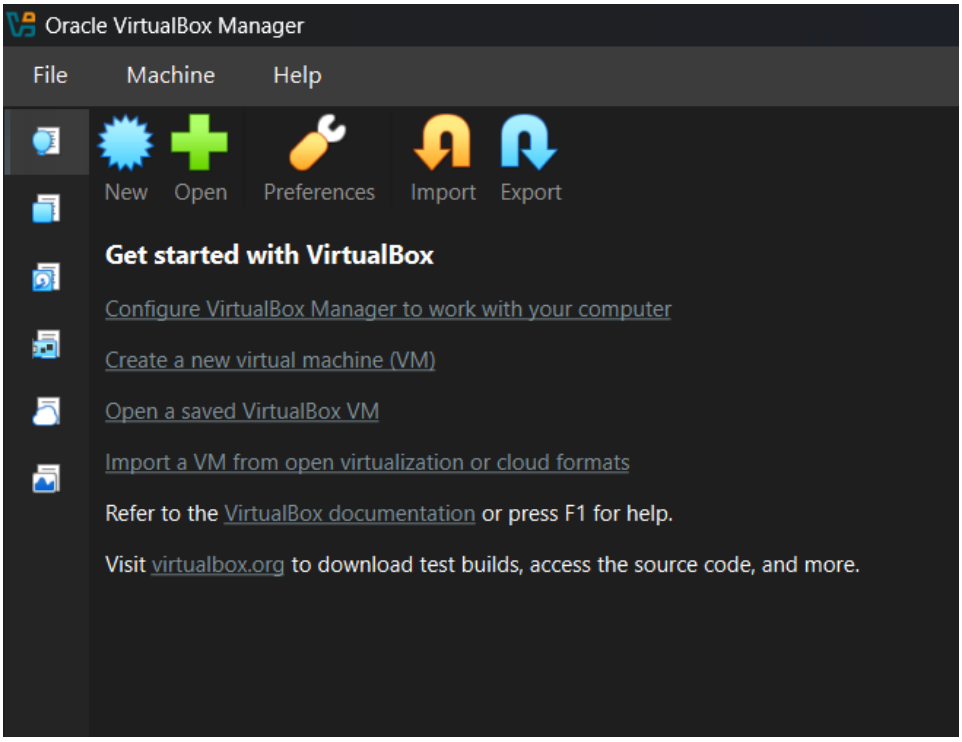
BIA 4650 — University of Idaho, College of Business & Economics

---

Step-by-Step Tasks

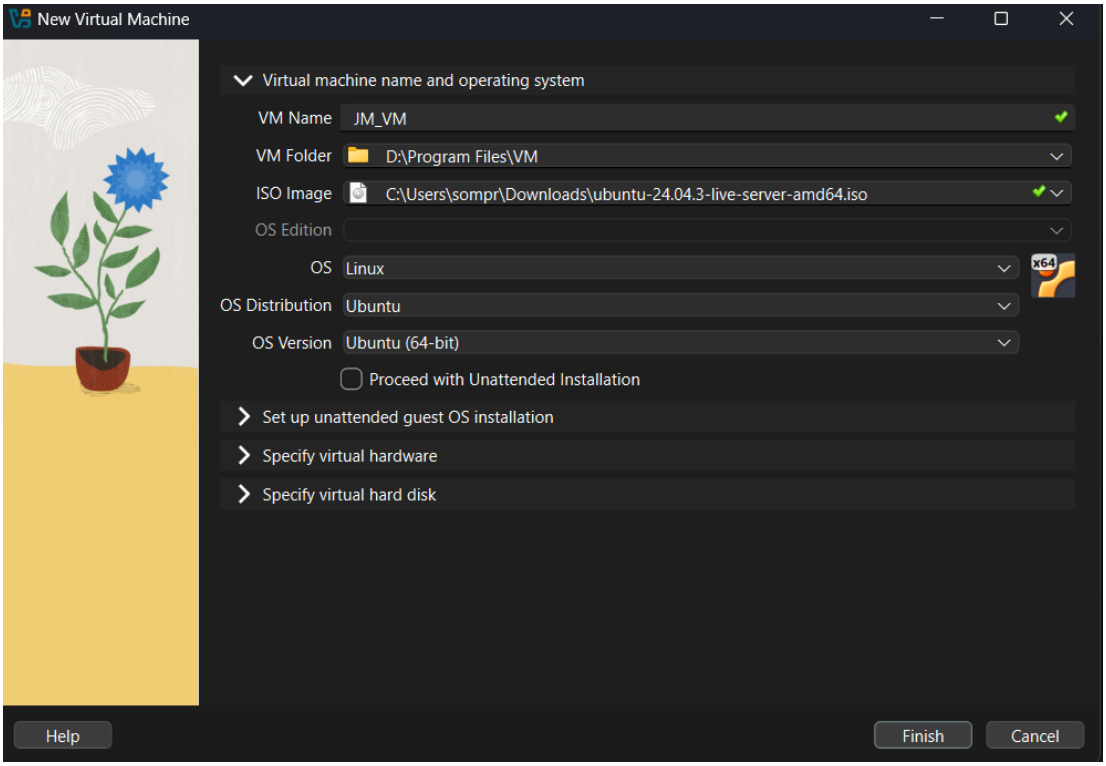
1) Install VirtualBox [Screenshot #1]

Install VirtualBox with default settings. Take a screenshot of the VirtualBox home screen showing it is installed.



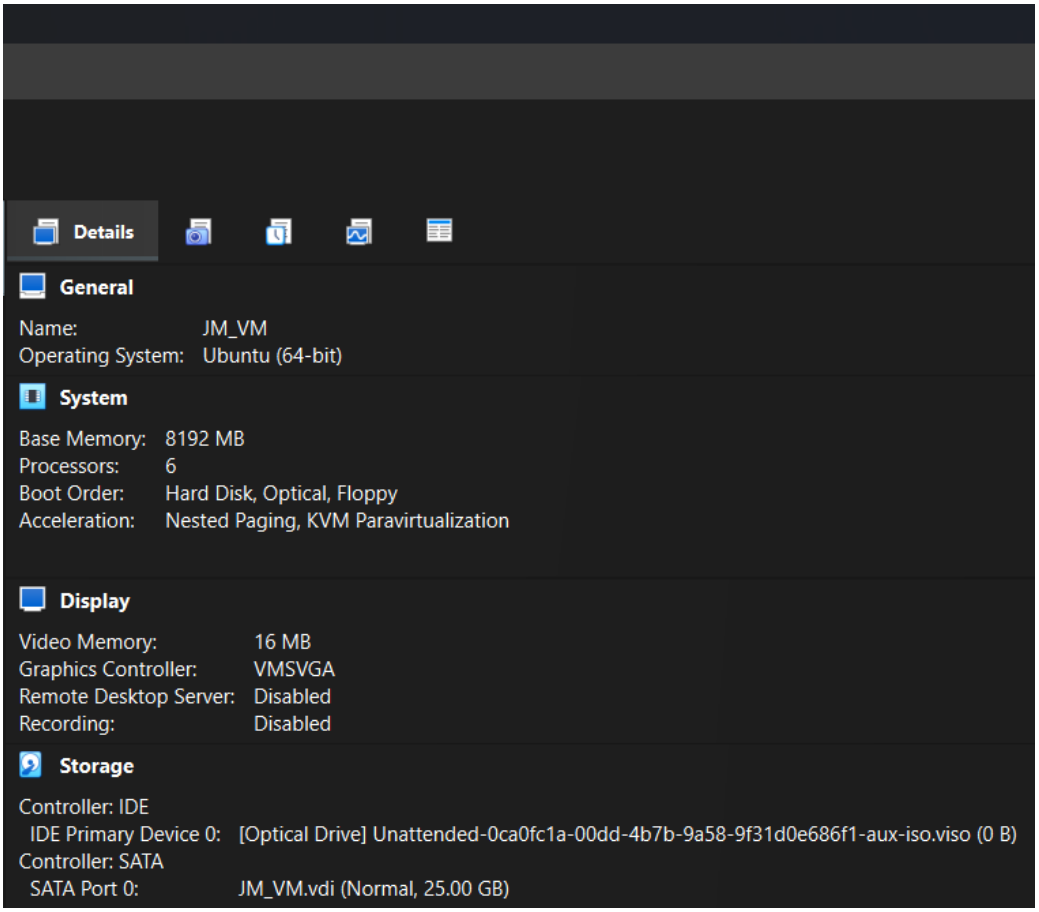
2) Create VM & Attach ISO [Screenshot #2]

Create a new VM named FirstnameInitialLastnameInitial VM. Attach the correct Ubuntu Server ISO (AMD64 for Intel/Windows, ARM64 for Apple Silicon).



3) Allocate Resources [Screenshot #3]

Rule of Thumb: Do not allocate more than 50% of your laptop's RAM or CPU cores. Recommended: Base memory = 2–4 GB, vCPU = 4 (or ≤ 50% of cores), Disk = 25 GB (dynamic). Take a screenshot of the VM settings (Memory, Processors, and Storage).



4) Boot VM & Create Login

Start the VM, follow Ubuntu's guided installation, and create a username/password. Log in after reboot to access the shell.

5) Verify VM Resources [Screenshot #4]

Run all three commands in a single session and take one screenshot showing outputs:

```
free -h          # shows memory available
nproc            # shows number of vCPUs
df -h /          # shows disk usage/size
```

```
mekt6500@JMVM:~$ free -h
               total        used        free      shared  buff/cache   available
Mem:           7.8Gi       434Mi       7.3Gi       1.1Mi       286Mi       7.3Gi
Swap:             0B          0B          0B
mekt6500@JMVM:~$ nproc
6
mekt6500@JMVM:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           795M  1.1M  794M   1% /run
/dev/sda2        25G  2.6G   21G  12% /
tmpfs           3.9G     0  3.9G   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           795M   12K  795M   1% /run/user/1000
mekt6500@JMVM:~$ _
```

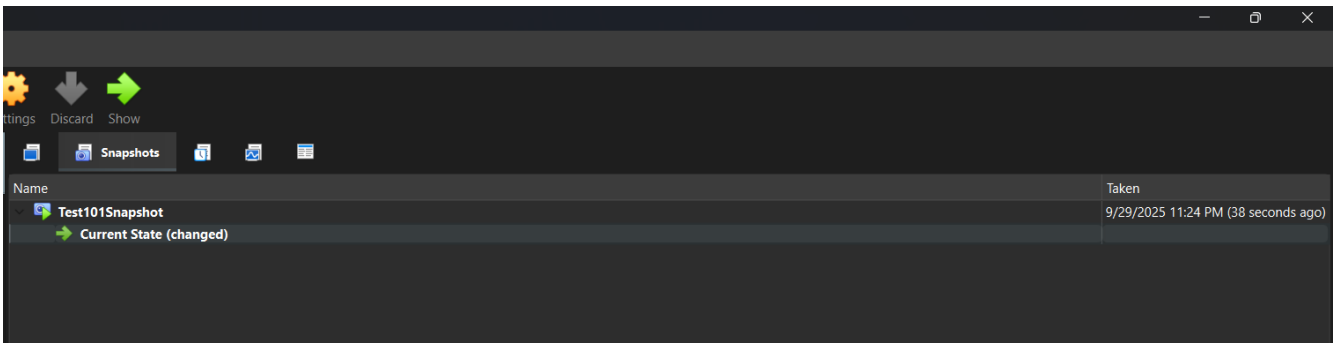
6) Create a Test File [Screenshot #5]

Inside the VM, create a file and verify it exists:
nano test_file
type a sentence, save (Ctrl+O, Enter), exit (Ctrl+X) ls -l
Take a screenshot showing test file in the directory.

```
mekt6500@JMVM:~$ ls -l
total 4
-rw-rw-r-- 1 mekt6500 mekt6500 12 Sep 30 06:22 TEST101
mekt6500@JMVM:~$
```

7) Take a Snapshot [Screenshot #6]

Open the *Snapshots* tab in VirtualBox and take a snapshot named Before deleting test file. Take a screenshot showing the snapshot listed.



8) Test Snapshot Restore [Screenshots #7 and #8]

a) Delete the file and show proof:

rm test_file
ls -l

Take Screenshot #7 showing the file is gone.

```
mekt6500@JMVM:~$ rm TEST101
mekt6500@JMVM:~$ ls -l
total 0
mekt6500@JMVM:~$ _
```

ls

b) Restore the snapshot taken in Step 7. After logging in again, verify:

ls -l

Take Screenshot #8 showing the file has reappeared.

```
mekt6500@JMVM:~$ ls -l
total 4
-rw-rw-r-- 1 mekt6500 mekt6500 12 Sep 30 06:22 TEST101
mekt6500@JMVM:~$ _
```

Reflection Questions (3–6 sentences each)

Q1. In business terms, how does a snapshot reduce risk and cost during software updates or testing?

ANSWER: **A snapshot is another form of backup of the whole system before making changes. If the update goes wrong, you can go back to the old working state. This saves money by avoiding downtime and lowers risk because you don't lose data or have to rebuild everything.**

Q2. How do resource limits (RAM/CPU) help balance performance and cost in a shared computing environment?

ANSWER: **By setting limits, everyone gets fair use of the system, performance stays steady, and the business doesn't waste money on buying extra hardware that isn't needed all the time.**

Q3. Give one business scenario (e.g., online store during Black Friday) where restoring a snapshot could save time and money.

ANSWER: **Imagine an online store on Black Friday. If a new software update breaks the checkout system, the store could lose thousands of dollars per minute. Restoring a snapshot gets the system back online fast, saving sales and keeping customers happy.**

Q4. 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 the changes to that document (like a Word file or spreadsheet). A snapshot saves the whole system, apps, and files. You'd save a file for normal work but take a snapshot before big updates or tests to protect the whole system.**