

# Big Data Assignment I

This report outlines the setup of a Linux-based environment within a Windows system. The process included creating a virtual machine and configuring it to satisfy the specified requirements: at least 3 CPU cores, 4 GB of RAM, and 25 GB of storage.

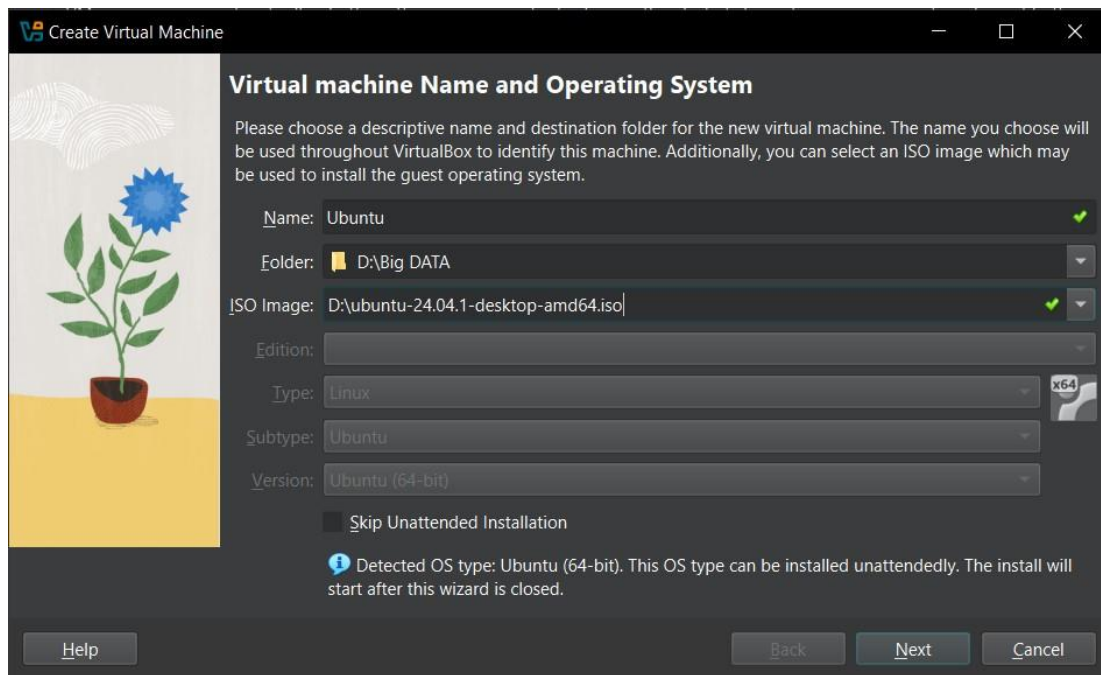
The process first started with the selection of VirtualBox as the virtualization software, chosen over alternatives like VMware Workstation. The required resources, including the VirtualBox application and the Ubuntu ISO file (64-bit), were downloaded next. A virtual machine was then created and configured to align with the specified requirements. Afterward, the Ubuntu operating system was installed, and the virtual environment was initialized.

To confirm the system configuration, Linux commands such as: *'lscpu'* was used to check the CPU details, *'free'* was used to check memory and *'df'* was used to check storage.

## Steps to create Virtual Machine in VirtualBox

The steps taken are as follows:

1. Download softwares:
  - a. Oracle VM VirtualBox to create a virtual machine
  - b. Ubuntu ISO file
2. Install VirtualBox
3. Open VirtualBox and click 'New' to install Ubuntu.
  - a. Choose name, folder to install and ISO image file.



b. Add Username and Password.

**Unattended Guest OS Install Setup**

You can configure the unattended guest OS install by modifying username, password, and hostname. Additionally you can enable guest additions install. For Microsoft Windows guests it is possible to provide a product key.

**Username and Password**

Username: Raman ✓

Password:  ✓

Repeat Password:  ✓

**Additional Options**

Product Key: #####-#####-#####-#####-#####

Hostname: Ubuntu ✓

Domain Name: myguest.virtualbox.org ✓

☐ Install in Background

**Guest Additions**

Guest Additions ISO: D:\VirtualBox\VBBoxGuestAdditions.iso

Help Back Next Cancel

c. Configure Virtual Machine hardware.

**Hardware**

You can modify virtual machine's hardware by changing amount of RAM and virtual CPU count. Enabling EFI is also possible.

Base Memory: 4096 MB

4 MB 8192 MB

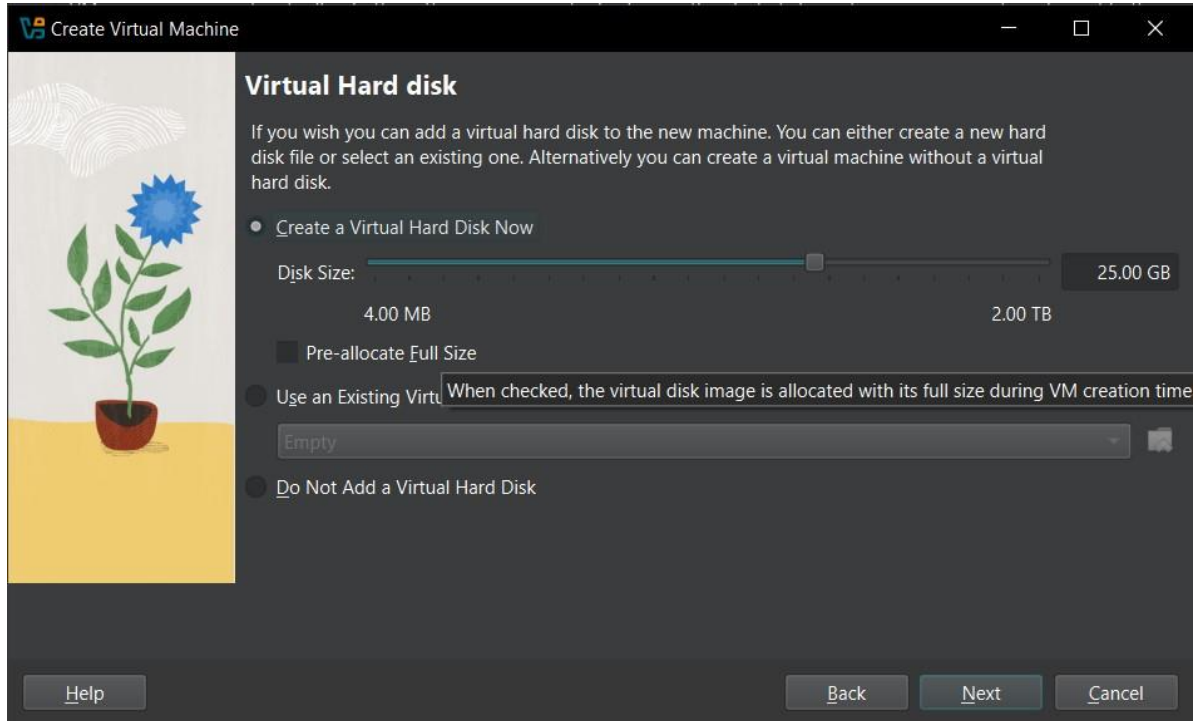
Processors: 3

1 CPU 8 CPUs

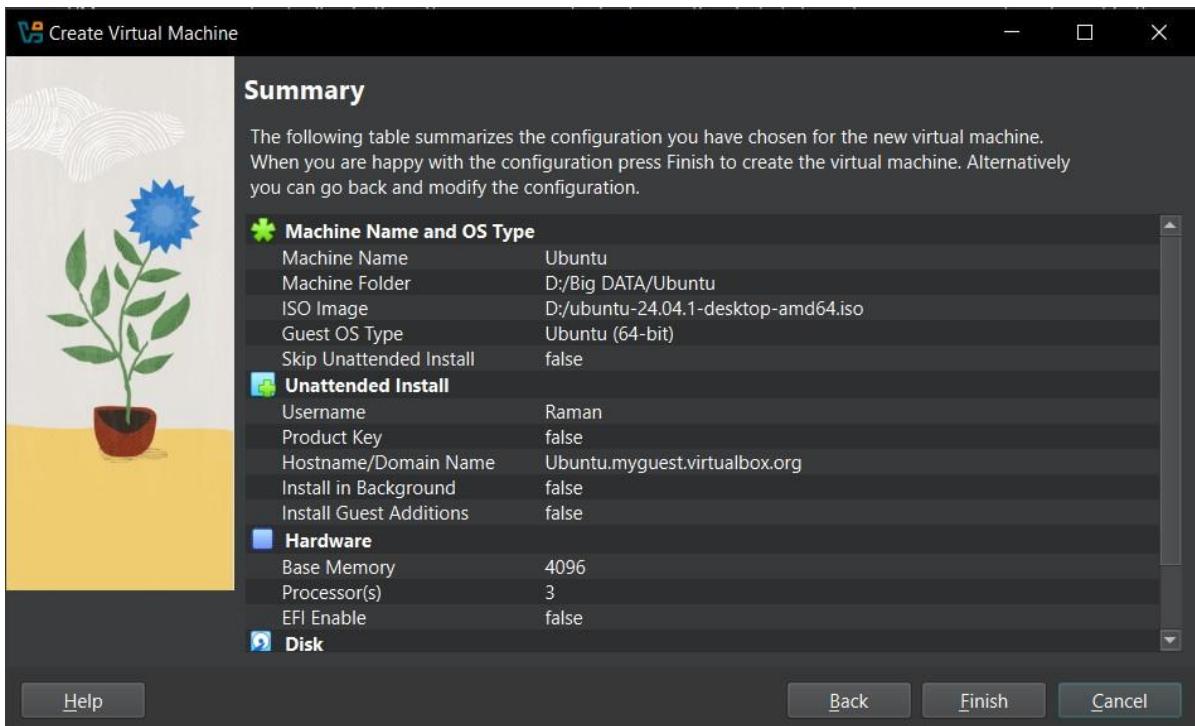
☐ Enable EFI (special OSes only)

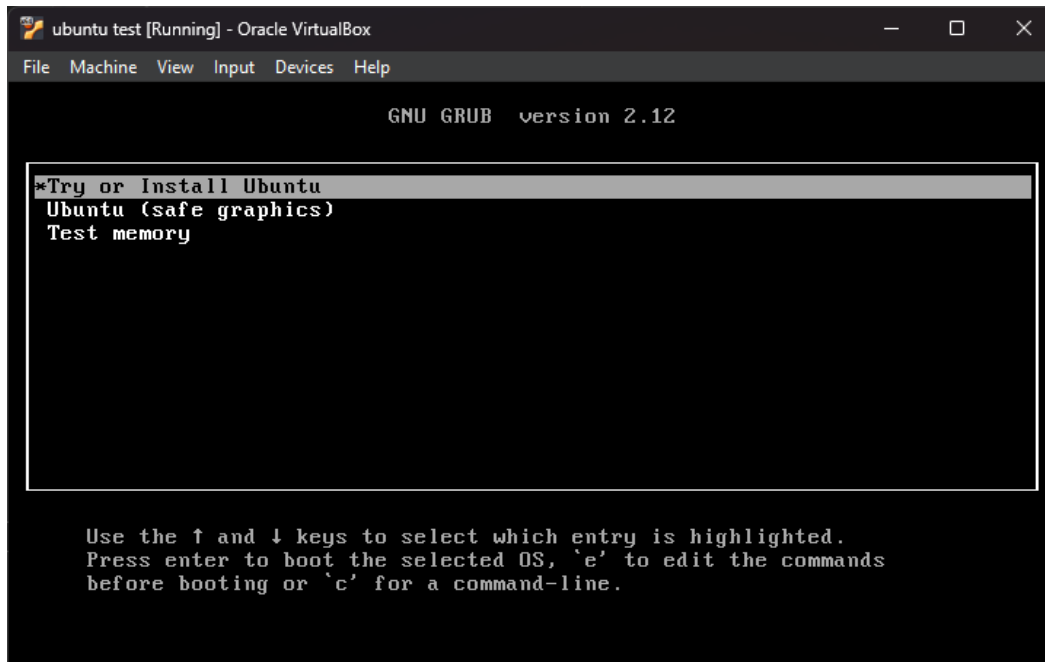
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- d. Create a virtual hard disk.

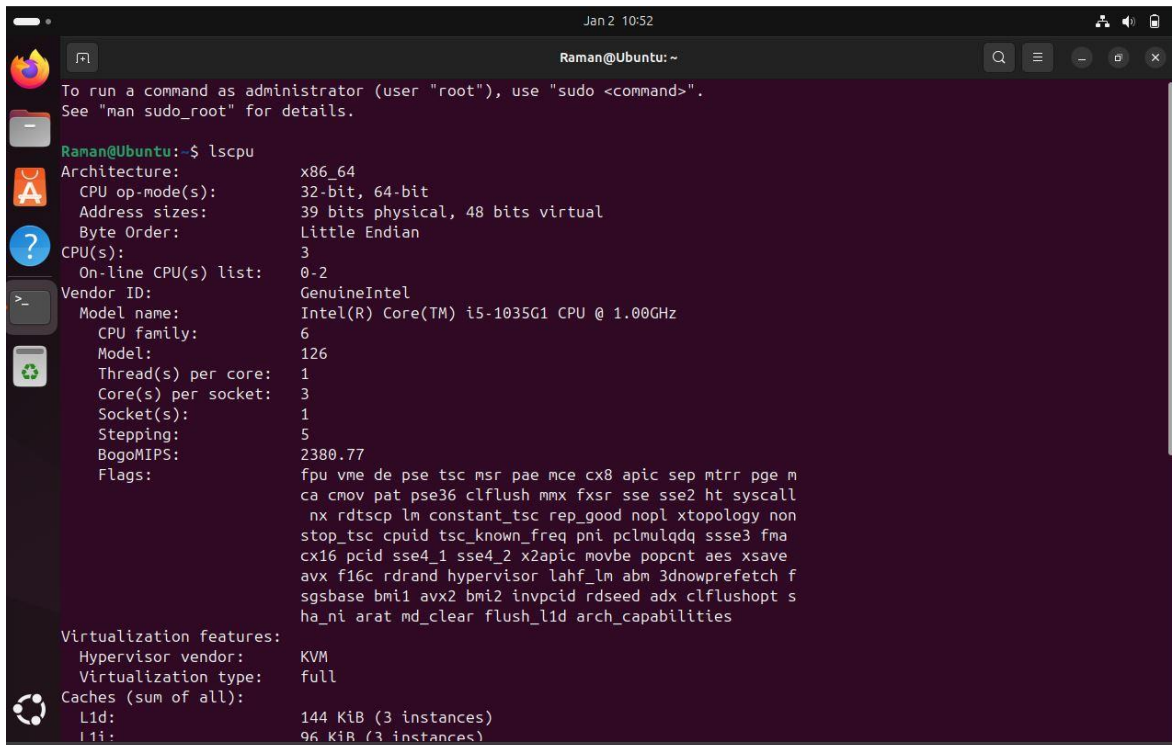


- e. Finalize the configuration and install Ubuntu.





4. After installation is complete verify system specifications using commands like:
  - a. `'lscpu'` to check the CPU.



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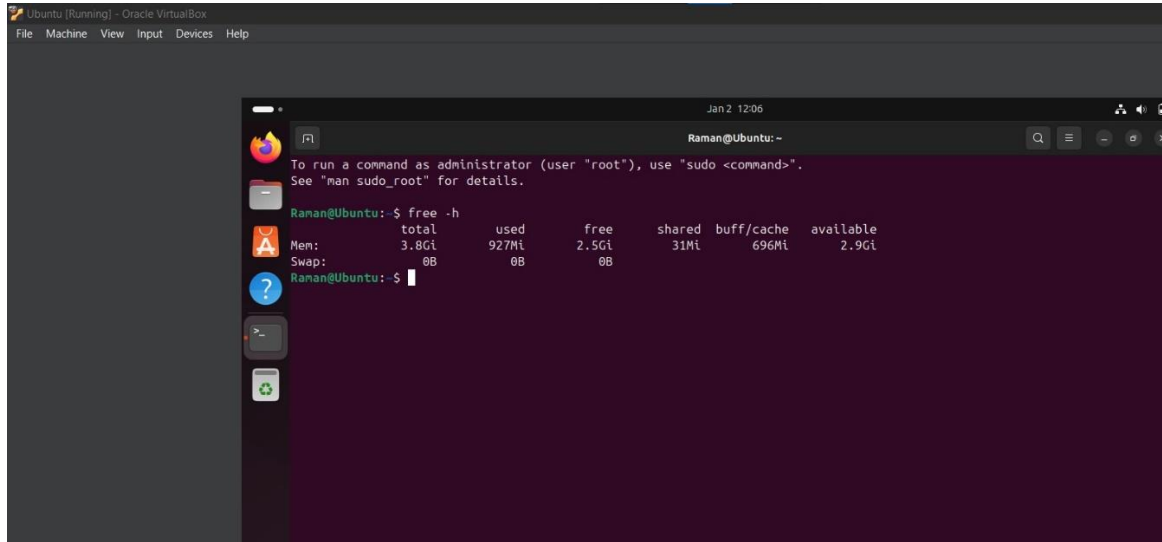
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Raman@Ubuntu:~$ lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         39 bits physical, 48 bits virtual
Byte Order:            Little Endian
CPU(s):                3
On-line CPU(s) list:   0-2
Vendor ID:             GenuineIntel
Model name:            Intel(R) Core(TM) i5-1035G1 CPU @ 1.00GHz
CPU family:            6
Model:                 126
Thread(s) per core:    1
Core(s) per socket:    3
Socket(s):             1
Stepping:              5
BogoMIPS:              2380.77
Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge m
ca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall
nx rdtscp lm constant_tsc rep_good nopt xtopology non
stop_tsc cpuid tsc_known_freq pni pclmulqdq ssse3 fma
cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave
avx f16c rdrand hypervisor lahf_lm abm 3dnowprefetch f
sgsbase bmi1 avx2 bmi2 invpcid rdseed adx clflushopt s
ha_ni arat md_clear flush_l1d arch_capabilities

Virtualization features:
Hypervisor vendor:    KVM
Virtualization type:   full
Caches (sum of all):
L1d:                  144 KiB (3 instances)
L1i:                  96 KiB (3 instances)

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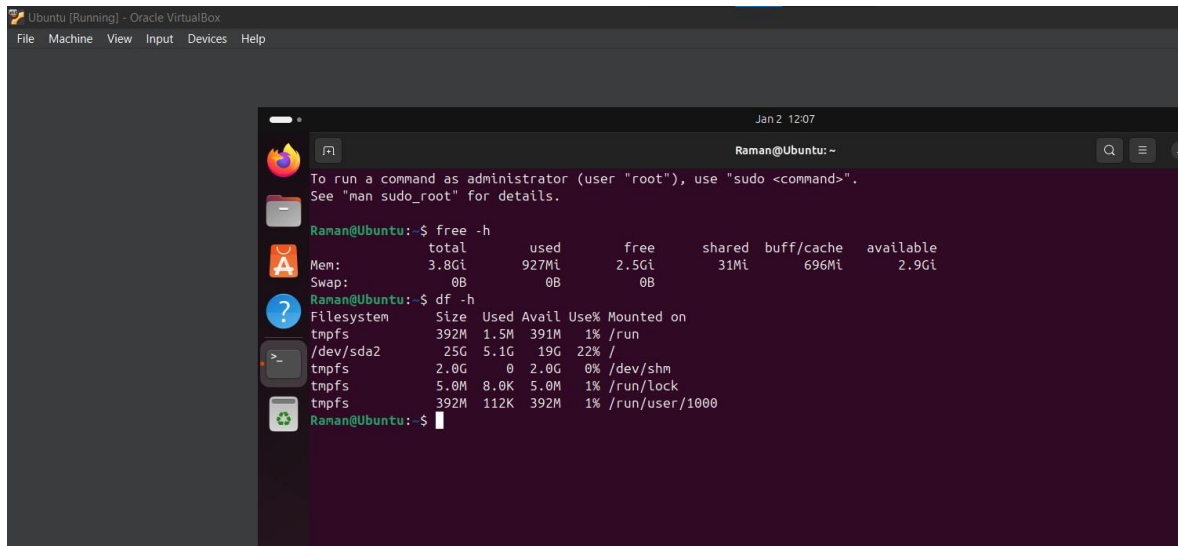
b. 'free' to check memory (RAM).



The screenshot shows a terminal window titled 'Raman@Ubuntu: ~' with a date of Jan 2 12:06. It displays the output of the 'free -h' command, which shows memory usage in human-readable format. The output is as follows:

	total	used	free	shared	buff/cache	available
Mem:	3.8Gi	927Mi	2.5Gi	31Mi	696Mi	2.9Gi
Swap:	0B	0B	0B			

c. 'df' to check storage.



The screenshot shows a terminal window titled 'Raman@Ubuntu: ~' with a date of Jan 2 12:07. It displays the output of the 'df -h' command, which shows disk space usage in human-readable format. The output is as follows:

Filesystem	Size	Used	Avail	Use%	Mounted on
tmpfs	392M	1.5M	391M	1%	/run
/dev/sda2	25G	5.1G	19G	22%	/
tmpfs	2.0G	0	2.0G	0%	/dev/shm
tmpfs	5.0M	8.0K	5.0M	1%	/run/lock
tmpfs	392M	112K	392M	1%	/run/user/1000