CLOUD COMPUTING LAB 4

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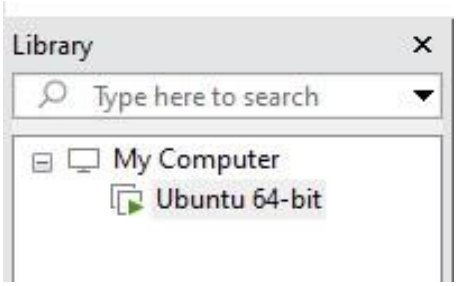
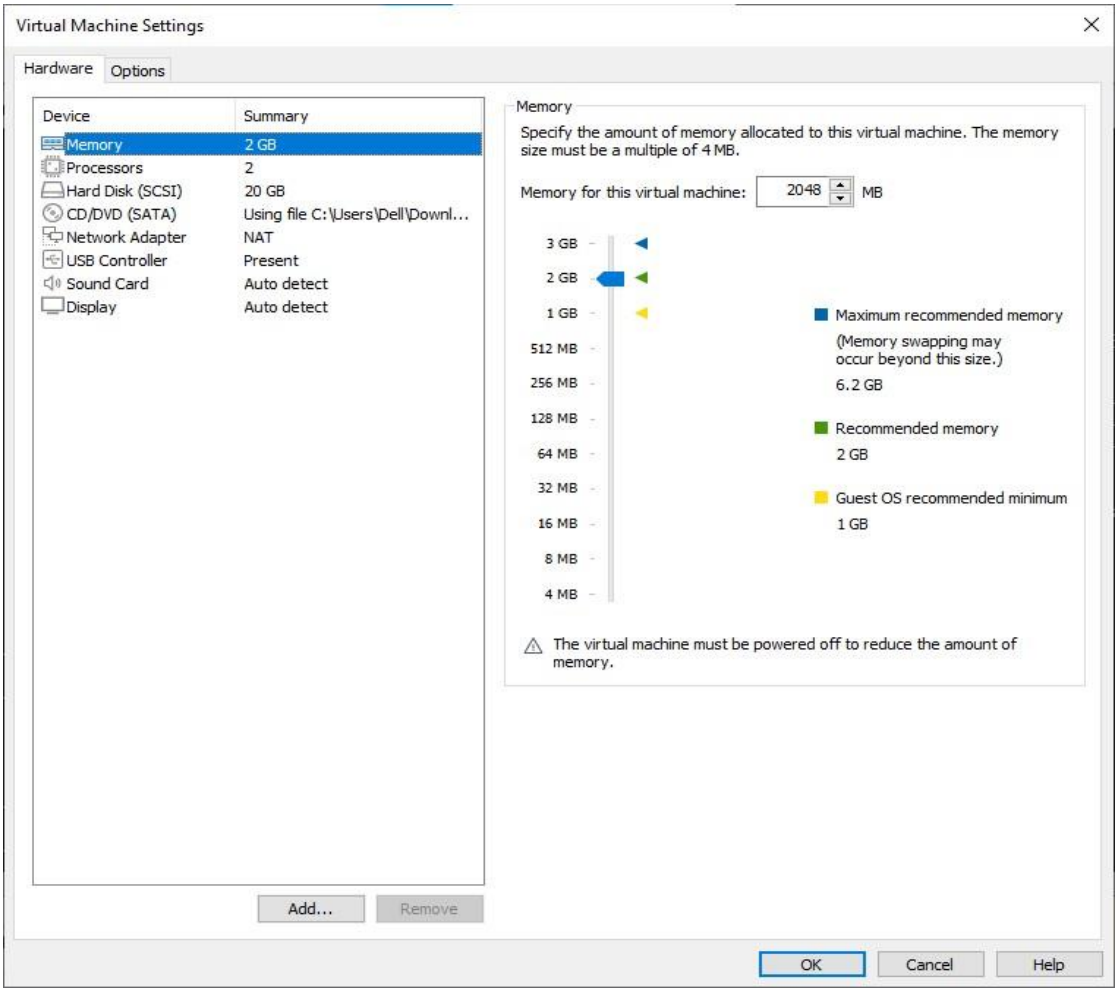
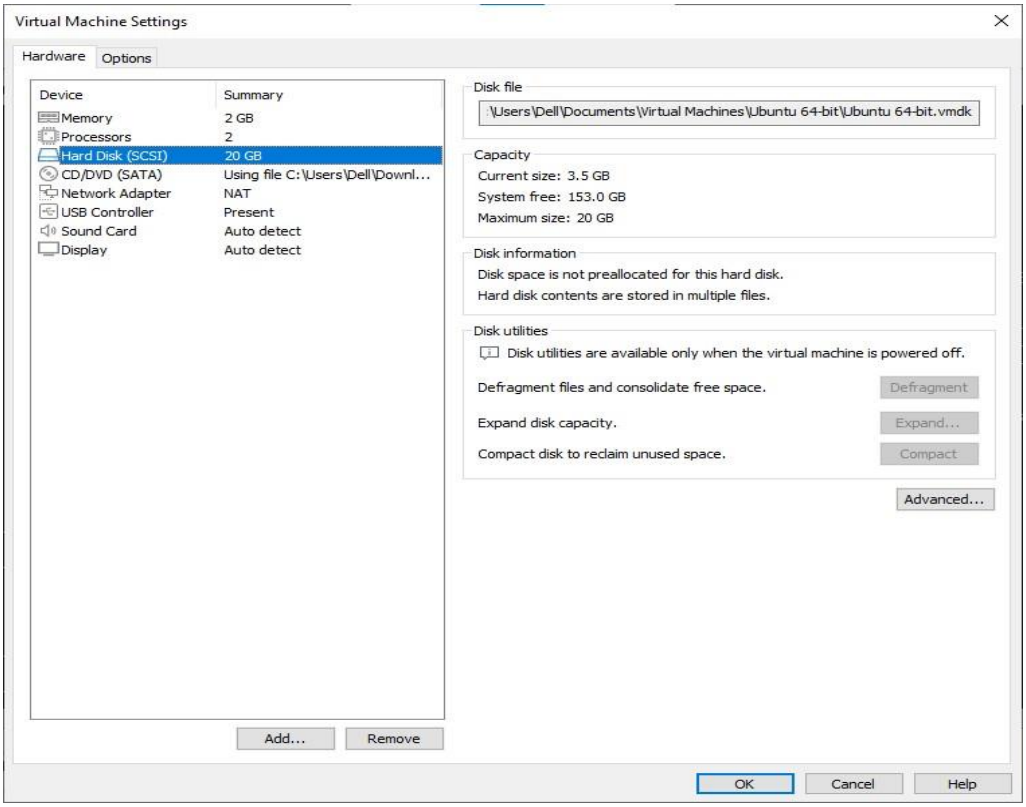
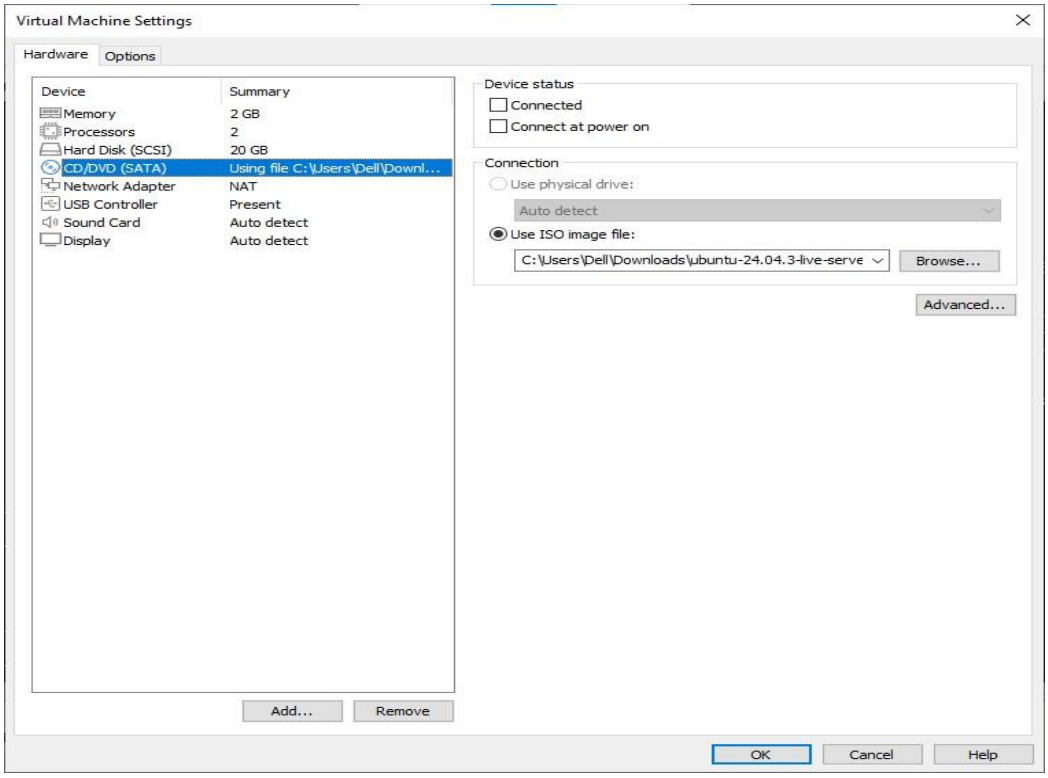
Registration no.: 2023-BSE-035

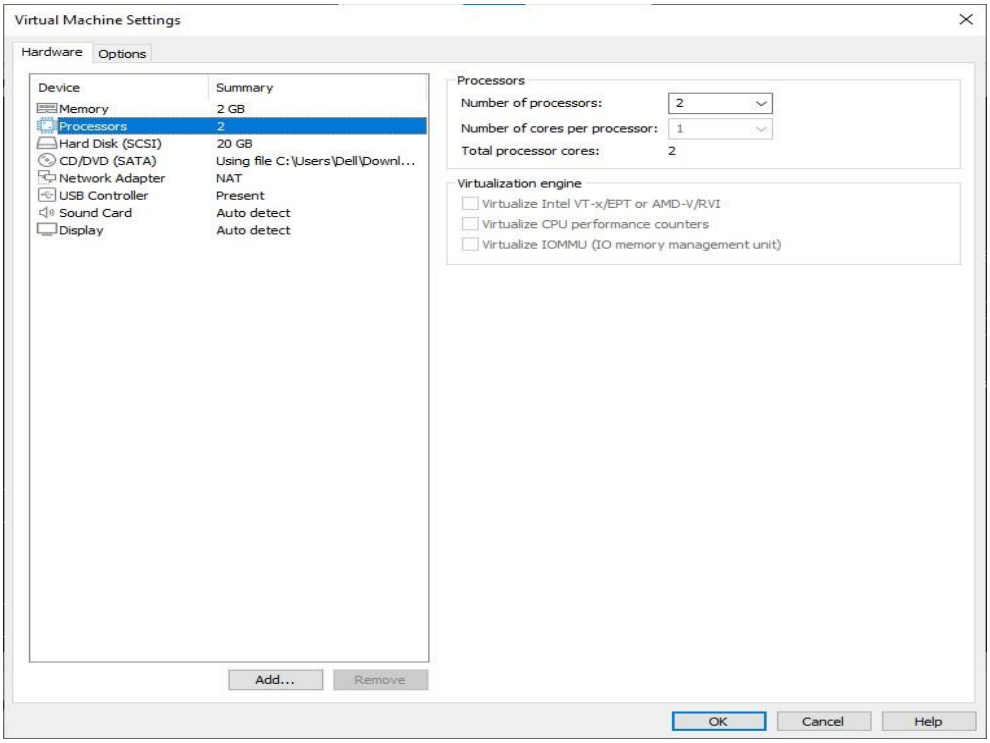
Task 1 Verify VM resources in VMware:

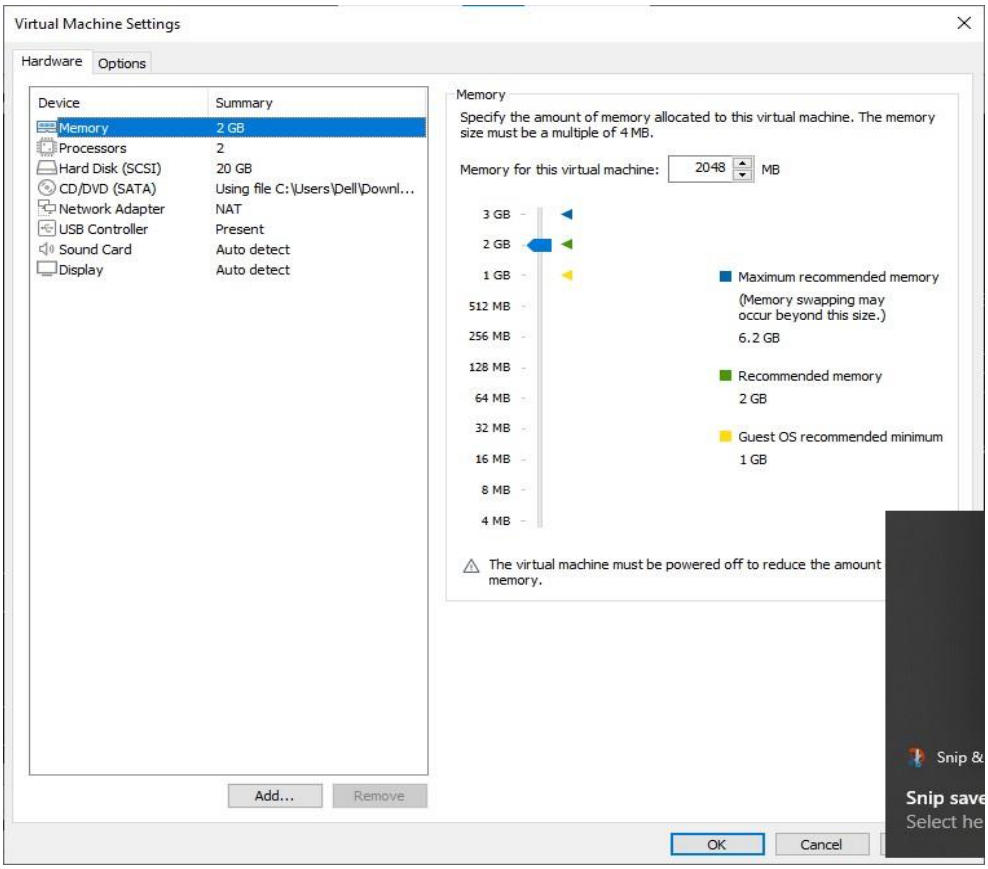





Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
2 GB
Processors
2
Hard Disk (SCSI)
20 GB
CD/DVD (SATA)
Using file C:\Users\Dell\Downl...
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
Disk file
\Users\Dell\Documents\Virtual Machines\Ubuntu 64-bit\Ubuntu 64-bit.vmdk
Capacity
Current size: 3.5 GB
System free: 153.0 GB
Maximum size: 20 GB
Disk information
Disk space is not preallocated for this hard disk.
Hard disk contents are stored in multiple files.
Disk utilities
Disk utilities are available only when the virtual machine is powered off.
Defragment files and consolidate free space.
Defragment
Expand disk capacity.
Expand...
Compact disk to reclaim unused space.
Compact
Advanced...
OK
Cancel
Help


Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
2 GB
Processors
2
Hard Disk (SCSI)
20 GB
CD/DVD (SATA)
Using file C:\Users\Dell\Downl...
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
Device status
Connected
Connect at power on
Connection
Use physical drive:
Auto detect
Use ISO image file:
C:\Users\Dell\Downloads\ubuntu-24.04.3-live-serve
Browse...
Advanced...
OK
Cancel
Help


Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
2 GB
Processors
2
Hard Disk (SCSI)
20 GB
CD/DVD (SATA)
Using file C:\Users\Dell\Downl...
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
Processors
Number of processors:
2
Number of cores per processor:
1
Total processor cores:
2
Virtualization engine
Virtualize Intel VT-x/EPT or AMD-V/RVI
Virtualize CPU performance counters
Virtualize IOMMU (IO memory management unit)
OK
Cancel
Help


Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
2 GB
Processors
2
Hard Disk (SCSI)
20 GB
CD/DVD (SATA)
Using file C:\Users\Dell\Downl...
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
Memory
Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.
Memory for this virtual machine:
2048
MB
3 GB
2 GB
1 GB
512 MB
256 MB
128 MB
64 MB
32 MB
16 MB
8 MB
4 MB
Maximum recommended memory
(Memory swapping may occur beyond this size.)
6.2 GB
Recommended memory
2 GB
Guest OS recommended minimum
1 GB
The virtual machine must be powered off to reduce the amount
memory.
OK
Cancel
Snip &
Snip save
Select he

Task 2 Start VM and SSH from host

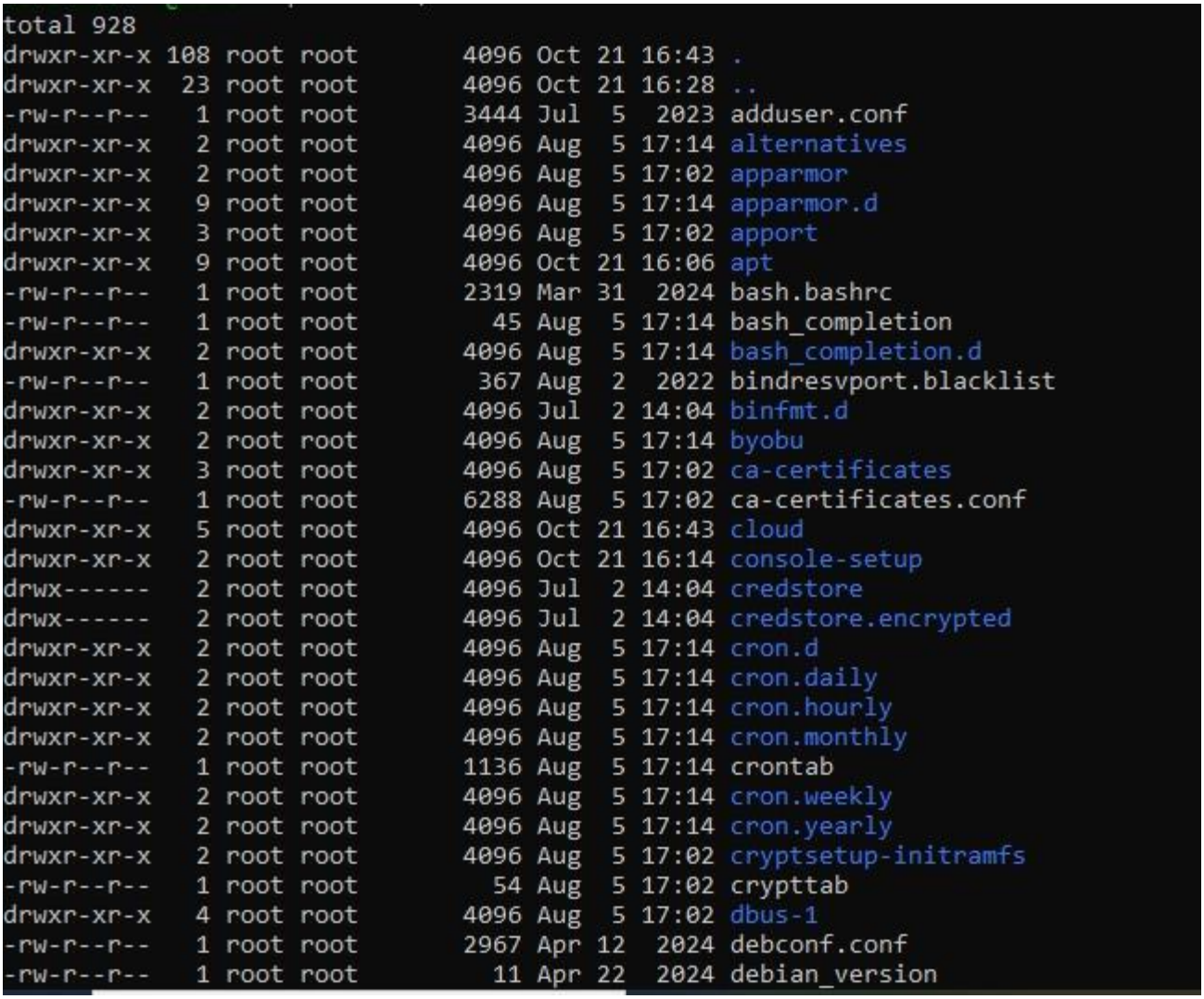
```
    inet6 fe80::20c:29ff:feb8:5e5e/64 scope link
       valid_lft forever preferred_lft forever
ainunnoorrr@ainun:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:b8:5e:5e brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.220.128/24 metric 100 brd 192.168.220.255 scope global dynamic ens33
       valid_lft 1709sec preferred_lft 1709sec
    inet6 fe80::20c:29ff:feb8:5e5e/64 scope link
       valid_lft forever preferred_lft forever
```

```
       valid_lft forever preferred_lft forever
ainunnoorrr@ainun:~$ sudo systemct1 status ssh
[sudo] password for ainunnoorrr:
sudo: systemct1: command not found
ainunnoorrr@ainun:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
     Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)
     Active: active (running) since Tue 2025-10-21 16:46:22 UTC; 1h 17min ago
TriggeredBy: ● ssh.socket
       Docs: man:sshd(8)
             man:sshd_config(5)
    Process: 1496 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 1498 (sshd)
      Tasks: 1 (limit: 2210)
     Memory: 4.0M (peak: 5.0M)
        CPU: 103ms
     CGroup: /system.slice/ssh.service
             └─1498 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Oct 21 16:46:22 ainun systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Oct 21 16:46:22 ainun sshd[1498]: Server listening on 0.0.0.0 port 22.
Oct 21 16:46:22 ainun sshd[1498]: Server listening on :: port 22.
Oct 21 16:46:22 ainun systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
```

```
The authenticity of host '192.168.220.128 (192.168.220.128)' can't be established.
ED25519 key fingerprint is SHA256:BtU2BU/JmpV8ouYmmnmPMqZH6tatshkH83RvH42XUVM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.220.128' (ED25519) to the list of known hosts.
ainunnoorrr@192.168.220.128's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-71-generic x86_64)

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

 System information as of Tue Oct 21 06:07:51 PM UTC 2025

  System load:  0.03              Processes:             223
  Usage of /:   44.6% of 9.75GB   Users logged in:       1
  Memory usage: 15%               IPv4 address for ens33: 192.168.220.128
  Swap usage:   0%
```

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:b8:5e:5e brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.220.128/24 metric 100 brd 192.168.220.255 scope global dynamic ens33
       valid_lft 1102sec preferred_lft 1102sec
    inet6 fe80::20c:29ff:feb8:5e5e/64 scope link
       valid_lft forever preferred_lft forever
```

Task 3 Filesystem shots



```
total 928
drwxr-xr-x 108 root root      4096 Oct 21 16:43 .
drwxr-xr-x  23 root root      4096 Oct 21 16:28 ..
-rw-r--r--   1 root root      3444 Jul  5  2023 adduser.conf
drwxr-xr-x   2 root root      4096 Aug  5 17:14 alternatives
drwxr-xr-x   2 root root      4096 Aug  5 17:02 apparmor
drwxr-xr-x   9 root root      4096 Aug  5 17:14 apparmor.d
drwxr-xr-x   3 root root      4096 Aug  5 17:02 apport
drwxr-xr-x   9 root root      4096 Oct 21 16:06 apt
-rw-r--r--   1 root root      2319 Mar 31  2024 bash.bashrc
-rw-r--r--   1 root root        45 Aug  5 17:14 bash_completion
drwxr-xr-x   2 root root      4096 Aug  5 17:14 bash_completion.d
-rw-r--r--   1 root root       367 Aug  2  2022 bindresvport.blacklist
drwxr-xr-x   2 root root      4096 Jul  2 14:04 binfmt.d
drwxr-xr-x   2 root root      4096 Aug  5 17:14 byobu
drwxr-xr-x   3 root root      4096 Aug  5 17:02 ca-certificates
-rw-r--r--   1 root root      6288 Aug  5 17:02 ca-certificates.conf
drwxr-xr-x   5 root root      4096 Oct 21 16:43 cloud
drwxr-xr-x   2 root root      4096 Oct 21 16:14 console-setup
drwx------   2 root root      4096 Jul  2 14:04 credstore
drwx------   2 root root      4096 Jul  2 14:04 credstore.encrypted
drwxr-xr-x   2 root root      4096 Aug  5 17:14 cron.d
drwxr-xr-x   2 root root      4096 Aug  5 17:14 cron.daily
drwxr-xr-x   2 root root      4096 Aug  5 17:14 cron.hourly
drwxr-xr-x   2 root root      4096 Aug  5 17:14 cron.monthly
-rw-r--r--   1 root root      1136 Aug  5 17:14 crontab
drwxr-xr-x   2 root root      4096 Aug  5 17:14 cron.weekly
drwxr-xr-x   2 root root      4096 Aug  5 17:14 cron.yearly
drwxr-xr-x   2 root root      4096 Aug  5 17:02 cryptsetup-initramfs
-rw-r--r--   1 root root        54 Aug  5 17:02 crypttab
drwxr-xr-x   4 root root      4096 Aug  5 17:02 dbus-1
-rw-r--r--   1 root root      2967 Apr 12  2024 debconf.conf
-rw-r--r--   1 root root        11 Apr 22  2024 debian_version
```

```
total 1944668
drwxr-xr-x  23 root root       4096 Oct 21 16:28 .
drwxr-xr-x  23 root root       4096 Oct 21 16:28 ..
lrwxrwxrwx   1 root root          7 Apr 22  2024 bin -> usr/bin
drwxr-xr-x   2 root root       4096 Feb 26  2024 bin.usr-is-merged
drwxr-xr-x   4 root root       4096 Oct 21 16:29 boot
dr-xr-xr-x   2 root root       4096 Aug  5 23:53 cdrom
drwxr-xr-x  20 root root       4120 Oct 21 16:42 dev
drwxr-xr-x 108 root root       4096 Oct 21 16:43 etc
drwxr-xr-x   3 root root       4096 Oct 21 16:42 home
lrwxrwxrwx   1 root root          7 Apr 22  2024 lib -> usr/lib
lrwxrwxrwx   1 root root          9 Apr 22  2024 lib64 -> usr/lib64
drwxr-xr-x   2 root root       4096 Feb 26  2024 lib.usr-is-merged
drwx------   2 root root      16384 Oct 21 16:13 lost+found
drwxr-xr-x   2 root root       4096 Aug  5 16:54 media
drwxr-xr-x   2 root root       4096 Aug  5 16:54 mnt
drwxr-xr-x   2 root root       4096 Aug  5 16:54 opt
dr-xr-xr-x 285 root root          0 Oct 21 16:42 proc
drwx------   3 root root       4096 Oct 21 18:04 root
drwxr-xr-x  29 root root        860 Oct 21 18:07 run
lrwxrwxrwx   1 root root          8 Apr 22  2024 sbin -> usr/sbin
drwxr-xr-x   2 root root       4096 Dec 11  2024 sbin.usr-is-merged
drwxr-xr-x   2 root root       4096 Oct 21 16:43 snap
drwxr-xr-x   2 root root       4096 Aug  5 16:54 srv
-rw-------   1 root root 1991245824 Oct 21 16:28 swap.img
dr-xr-xr-x  13 root root          0 Oct 21 16:42 sys
drwxrwxrwt  15 root root       4096 Oct 21 17:44 tmp
drwxr-xr-x  12 root root       4096 Aug  5 16:54 usr
drwxr-xr-x  13 root root       4096 Oct 21 16:42 var
```

```
total 92
drwxr-xr-x  12 root root  4096 Aug  5 16:54 .
drwxr-xr-x  23 root root  4096 Oct 21 16:28 ..
drwxr-xr-x   2 root root 32768 Oct 21 16:35 bin
drwxr-xr-x   2 root root  4096 Apr 22  2024 games
drwxr-xr-x  33 root root  4096 Oct 21 16:27 include
drwxr-xr-x  78 root root  4096 Oct 21 16:35 lib
drwxr-xr-x   2 root root  4096 Aug  5 17:01 lib64
drwxr-xr-x  11 root root  4096 Oct 21 16:28 libexec
drwxr-xr-x  10 root root  4096 Aug  5 16:54 local
drwxr-xr-x   2 root root 20480 Oct 21 16:41 sbin
drwxr-xr-x 124 root root  4096 Oct 21 16:35 share
drwxr-xr-x   4 root root  4096 Oct 21 16:28 src
```

```
total 60
drwxrwxrwt 15 root root 4096 Oct 21 17:44 .
drwxr-xr-x 23 root root 4096 Oct 21 16:28 ..
drwxrwxrwt  2 root root 4096 Oct 21 16:42 .font-unix
drwxrwxrwt  2 root root 4096 Oct 21 16:42 .ICE-unix
drwx------  2 root root 4096 Oct 21 16:42 snap-private-tmp
drwx------  3 root root 4096 Oct 21 17:44 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-fwupd.service-s4n4ji
drwx------  3 root root 4096 Oct 21 16:43 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-ModemManager.service-GLZZpT
drwx------  3 root root 4096 Oct 21 16:43 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-polkit.service-Dagzc9
drwx------  3 root root 4096 Oct 21 16:43 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-systemd-logind.service-v33W0U
drwx------  3 root root 4096 Oct 21 16:42 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-systemd-resolved.service-AyhbN9
drwx------  3 root root 4096 Oct 21 16:42 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-systemd-timesyncd.service-tYPN2S
drwx------  3 root root 4096 Oct 21 17:44 systemd-private-75e8845d8af64eecb3cc34cfa86702d5-upower.service-rpHpc1
drwx------  2 root root 4096 Oct 21 16:42 vmware-root_818-2957124693
drwxrwxrwt  2 root root 4096 Oct 21 16:42 .X11-unix
drwxrwxrwt  2 root root 4096 Oct 21 16:42 .XIM-unix
ainunnoorrr@ainun:~$
```

```
total 56
drwxr-xr-x 13 root root   4096 Oct 21 16:42 .
drwxr-xr-x 23 root root   4096 Oct 21 16:28 ..
drwxr-xr-x  2 root root   4096 Apr 22  2024 backups
drwxr-xr-x 16 root root   4096 Oct 21 17:44 cache
drwxrwsrwt  2 root root   4096 Aug  5 17:02 crash
drwxr-xr-x 45 root root   4096 Oct 21 17:44 lib
drwxrwsr-x  2 root staff  4096 Apr 22  2024 local
lrwxrwxrwx  1 root root      9 Aug  5 16:54 lock -> /run/lock
drwxrwxr-x 10 root syslog 4096 Oct 21 16:43 log
drwxrwsr-x  2 root mail   4096 Aug  5 16:54 mail
drwxr-xr-x  2 root root   4096 Aug  5 16:54 opt
lrwxrwxrwx  1 root root      4 Aug  5 16:54 run -> /run
drwxr-xr-x  2 root root   4096 May 21 15:46 snap
drwxr-xr-x  4 root root   4096 Aug  5 17:14 spool
drwxrwxrwt  9 root root   4096 Oct 21 17:44 tmp
-rw-r--r--  1 root root    208 Aug  5 16:54 .updated
```

Task 4 Workspace

```
~$ nano ~/answers.md
~$ mkdir -p ~/lab4/workspace/python_project
~$ cd ~/lab4/workspace/python_project
~/lab4/workspace/python_project$ pwd
/lab4/workspace/python_project
~/lab4/workspace/python_project$
```

```
/lab4/workspace/python_project
:~/lab4/workspace/python_project$ nano README.md
:~/lab4/workspace/python_project$
```

```
  GNU nano 7.2                                README.md *
nano main.py        # print("hello lab4")
nano .env           # ENV=lab4
```

```
 1  whoami
 2  pwd
 3  hostname
 4  ip a
 5  ls -la /
 6  ls -la /bin
 7  ls -la/sbin
 8  ls -la /sbin
 9  ls -la /usr
10  ls -la /opt
11  ls -la /etc
12  ls -la /dev
13  ls -la /var
14  ls -la /tmp
15  ls -la ~
16  nano ~/answers.md
17  mkdir -p ~/lab4/workspace/python_project
18  cd ~/lab4/workspace/python_project
19  pwd
20  nano README.md      # Lab 4 README
21  ls -la
22  cp README.md README.copy.md
23  mv README.copy.md README.dev.md
24  rm README.dev.md
25  mkdir -p ~/lab4/workspace/java_app
26  cp -r ~/lab4/workspace/python_project ~/lab4/workspace/java_app_copy
27  ls -la ~/lab4/workspace
28  history
```

Task 5 System info

```
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 58
model name      : Intel(R) Core(TM) i5-3320M CPU @ 2.60GHz
stepping        : 9
microcode       : 0x21
cpu MHz         : 2591.584
cache size      : 3072 KB
physical id     : 0
siblings        : 1
core id         : 0
cpu cores       : 1
apicid          : 0
initial apicid  : 0
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ss syscall
pl xtopology tsc_reliable nonstop_tsc cpuid tsc_known_freq pni pclmulqdq ssse3 cx16 pcid sse4_1 sse4_2 x2apic popcnt tsc_deadli
isor lahf_lm pti ssbd ibrs ibpb stibp fsgsbase tsc_adjust smep arat md_clear flush_l1d arch_capabilitiesbugs           : cpu_m
bypass l1tf mds swapgs itlb_multihit srbds mmio_unknown retbleed bhi
bogomips        : 5183.16
clflush size    : 64
cache_alignment : 64
address sizes   : 45 bits physical, 48 bits virtual
power management:
```

```
address sizes   : 45 bits physical, 48 bits virtual
power management:

processor       : 1
vendor_id       : GenuineIntel
cpu family      : 6
model           : 58
model name      : Intel(R) Core(TM) i5-3320M CPU @ 2.60GHz
stepping        : 9
microcode       : 0x21
cpu MHz         : 2591.584
cache size      : 3072 KB
physical id     : 2
siblings        : 1
core id         : 0
cpu cores       : 1
apicid          : 2
initial apicid  : 2
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx
pl xtopology tsc_reliable nonstop_tsc cpuid tsc_known_freq pni pclmulqdq ssse3 cx16 pcid sse4_1 sse4_
isor lahf_lm pti ssbd ibrs ibpb stibp fsgsbase tsc_adjust smep arat md_clear flush_l1d arch_capabilit
bypass l1tf mds swapgs itlb_multihit srbds mmio_unknown retbleed bhi
bogomips        : 5183.16
clflush size    : 64
cache_alignment : 64
address sizes   : 45 bits physical, 48 bits virtual
power management:
```

```
t /etc/os-release # os-release.png
ps aux             # proce              total        used        free      shared  buff/cache   available
Mem:           1.9Gi       391Mi       1.3Gi       1.3Mi       353Mi       1.5Gi
Swap:          1.9Gi          0B       1.9Gi
```

```
Filesystem                         Size  Used Avail Use% Mounted on
tmpfs                              192M  1.3M  191M   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv  9.8G  4.4G  4.9G  48% /
tmpfs                              960M     0  960M   0% /dev/shm
tmpfs                              5.0M     0  5.0M   0% /run/lock
/dev/sda2                          1.8G  100M  1.6G   7% /boot
tmpfs                              192M   12K  192M   1% /run/user/1000
```

```
PRETTY_NAME="Ubuntu 24.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.3 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
```

```
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.6  22340 13416 ?        Ss   16:38   0:03 /sbin/init
root           2  0.0  0.0      0     0 ?        S    16:38   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        S    16:38   0:00 [pool_workqueue_relearoot          4  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-
u_g]
root           5  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-rcu_p]
root           6  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-slub_]
root           7  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-netns]
root           9  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/0:0H-events_root          10  0.0  0.0      0     0 ?        I    16:38   0:00 [kworker/u2
:0-ext4-root          11  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-mm_pe]
root          12  0.0  0.0      0     0 ?        I    16:38   0:00 [rcu_tasks_kthread]
root          14  0.0  0.0      0     0 ?        I    16:38   0:00 [rcu_tasks_rude_kthreroot          15  0.0  0.0      0     0 ?        I    16:38   0:00 [rcu_tasks_
ace_kthrroot          16  0.0  0.0      0     0 ?        S    16:38   0:00 [ksoftirqd/0]
root          17  0.0  0.0      0     0 ?        I    16:38   0:00 [rcu_preempt]
root          18  0.0  0.0      0     0 ?        S    16:38   0:00 [migration/0]
root          19  0.0  0.0      0     0 ?        S    16:38   0:00 [idle_inject/0]
root          20  0.0  0.0      0     0 ?        S    16:38   0:00 [cpuhp/0]
root          21  0.0  0.0      0     0 ?        S    16:38   0:00 [cpuhp/1]
root          22  0.0  0.0      0     0 ?        S    16:38   0:00 [idle_inject/1]
root          23  0.0  0.0      0     0 ?        S    16:38   0:00 [migration/1]
root          24  0.0  0.0      0     0 ?        S    16:38   0:00 [ksoftirqd/1]
root          29  0.0  0.0      0     0 ?        S    16:38   0:00 [kdevtmpfs]
root          30  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-inet_]
root          32  0.0  0.0      0     0 ?        S    16:38   0:00 [kauditd]
root          34  0.0  0.0      0     0 ?        S    16:38   0:00 [khungtaskd]
root          35  0.0  0.0      0     0 ?        S    16:38   0:00 [oom_reaper]
root          37  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-write]
root          38  0.0  0.0      0     0 ?        S    16:38   0:00 [kcompactd0]
root          39  0.0  0.0      0     0 ?        SN   16:38   0:00 [ksmd]
root          42  0.0  0.0      0     0 ?        SN   16:38   0:00 [khugepaged]
root          43  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-kinte]
root          44  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-kbloc]
root          45  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-blkcg]
```

```
emd/systroot         817  0.0  0.5  50792 11520 ?        Ss   16:38   0:00 /usr/bin/VGAuthServicroot         818  0.2  0.4 239540  8960 ?        Ssl  16:38
bin/vmtoolsd
root         954  0.0  0.0      0     0 ?        I<   16:38   0:00 [kworker/R-cfg80]
systemd+    1042  0.0  0.4  19008  9728 ?        Ss   16:39   0:00 /usr/lib/systemd/systroot        1074  0.0  0.1   4236  2688 ?        Ss   16:39   0:00
n -f -P
message+    1075  0.0  0.2   9776  5376 ?        Ss   16:39   0:00 @dbus-daemon --systempolkitd     1079  0.0  0.4 308164  7936 ?        Ssl  16:39   0:00
it-1/polroot        1090  0.0  0.4  18216  8832 ?        Ss   16:39   0:00 /usr/lib/systemd/systroot        1096  0.0  0.6 468952 13568 ?        Ssl  16:39
libexec/udisks2/syslog      1107  0.0  0.2 222508  5760 ?        Ssl  16:39   0:00 /usr/sbin/rsyslogd -nroot        1150  0.0  1.1 107012 22784 ?        Ss
00 /usr/bin/python3 /usrroot        1191  0.0  0.6 318296 12800 ?        Ssl  16:39   0:00 /usr/sbin/ModemManageroot        1193  0.0  0.2   6944  4736 tty
:39   0:00 /bin/login -p --
root        1394  0.0  0.0      0     0 ?        S    16:39   0:00 [psimon]
ainunno+    1398  0.0  0.5  20096 11136 ?        Ss   16:39   0:00 /usr/lib/systemd/systainunno+    1399  0.0  0.1  21148  3644 ?        S    16:39   0:00
ainunno+    1410  0.0  0.2   8656  5504 tty1     S+   16:39   0:00 -bash
root        1498  0.0  0.4  12020  7936 ?        Ss   16:42   0:00 sshd: /usr/sbin/sshd
root        1499  0.0  0.5  14960 10496 ?        Ss   16:42   0:00 sshd: ainunnoorrr [prainunno+    1555  0.0  0.3  14960  6912 ?        S    16:42   0:00
orrr@ptsainunno+    1556  0.0  0.2   8648  5376 pts/0    Ss+  16:42   0:00 -bash
root        1632  1.0  0.0      0     0 ?        I    17:40   0:31 [kworker/0:0-events]
root        1640  0.0  2.2 595404 43292 ?        Ssl  17:44   0:02 /usr/libexec/fwupd/fwroot        1647  0.0  0.4 314396  8704 ?        Ssl  17:44   0:00
upowerd
root        1671  0.0  0.1  81808  2872 ?        Ss   17:44   0:00 gpg-agent --homedir /root        1696  1.7  0.0      0     0 ?        I    17:48   0:43
mpt_pollroot        1706  0.0  0.0      0     0 ?        I    17:55   0:00 [kworker/u258:0-eventroot        1728  0.0  0.5  14960 10496 ?        Ss   18:05
 ainunnoorrr [prainunno+    1827  0.2  0.3  14960  6976 ?        S    18:05   0:03 sshd: ainunnoorrr@ptsainunno+    1828  0.0  0.2   8648  5504 pts/1    Ss
00 -bash
root        1837  0.0  0.0      0     0 ?        I    18:06   0:00 [kworker/u257:0-eventroot        1838  0.0  0.0      0     0 ?        I    18:06   0:00
:1-eventainunno+    1839  0.2  0.4  14620  8576 pts/1    S+   18:07   0:02 ssh ainunnoorrr@192.1root        1840  0.0  0.5  14968 10624 ?        Ss   18:07
 ainunnoorrr [prainunno+    1897  0.1  0.3  14968  6960 ?        S    18:07   0:01 sshd: ainunnoorrr@ptsainunno+    1898  0.0  0.2   8648  5504 pts/2    Ss
00 -bash
root        1916  0.0  0.0      0     0 ?        I    18:12   0:00 [kworker/u257:1-eventroot        1918  0.0  0.0      0     0 ?        I    18:13   0:00
:2-eventroot        1927  0.0  0.0      0     0 ?        I    18:15   0:00 [kworker/1:2]
root        1934  0.0  0.0      0     0 ?        I    18:18   0:00 [kworker/u257:2-eventroot        1938  0.2  0.0      0     0 ?        I    18:20   0:01
events]
root        1947  1.8  0.0      0     0 ?        I    18:26   0:03 [kworker/1:1-events]
root        1950  0.0  0.0      0     0 ?        I    18:27   0:00 [kworker/u257:3-eventainunno+    1964  300  0.2  10884  4480 pts/2    R+   18:29   0:00
```

Task 6 User audit

```
Sorry, try again.
[sudo] password for ainunnoorrr:
info: Adding user `lab4user' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `lab4user' (1001) ...
```

```
:~/lab4/workspace/python_project$
:~/lab4/workspace/python_project$ getent passwd lab4user
001::/home/lab4user:/bin/bash
:~/lab4/workspace/python_project$ getent passwd lab4user
001::/home/lab4user:/bin/bash
:~/lab4/workspace/python_project$ ls -ld /home/lab4user
user lab4user 4096 Oct 21 18:34 /home/lab4user
:~/lab4/workspace/python_project$
:~/lab4/workspace/python_project$ su - lab4user

 sudo whoami
or lab4user:
n the sudoers file.
 exit

:~/lab4/workspace/python_project$
```

Bonus Task 7 Create a small demo script using an editor and run it

```
  GNU nano 7.2
#!/bin/bash
echo "Lab 4 demo: current user is $(whoami)"
echo "Current time: $(date)"
uptime
free -h
```

```
Current time: Tue Oct 21 06:48:04 PM UTC 2025
 18:48:04 up  2:09,  4 users,  load average: 0.01, 0.02, 0.00
               total        used        free      shared  buff/cache   available
Mem:           1.9Gi       416Mi       1.3Gi       1.3Mi       360Mi       1.5Gi
Swap:          1.9Gi          0B       1.9Gi
```

```
Lab 4 demo: current user is root
Current time: Tue Oct 21 06:48:04 PM UTC 2025
 18:48:04 up  2:09,  4 users,  load average: 0.01, 0.02, 0.00
               total        used        free      shared  buff/cache   available
Mem:           1.9Gi       416Mi       1.3Gi       1.3Mi       360Mi       1.5Gi
Swap:          1.9Gi          0B       1.9Gi
```