Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

Assessment type (☑):

☐ Questioning (Oral/Written)
☐ Practical Demonstration
☐ 3rd Party Report
☒ Other – Project/Portfolio (*Part of assessment task 1)*

Assessment Resources:

- PC
- Google
- Computer components PowerPoint
- Linux Virtual Machine

Assessment Instructions:

Instructions to the assessor:
This lab is a part of Assessment Task 2 portfolio, it is a practical lab based on the performance criteria requirements of the unit. Each student should be given a copy of this lab to complete either in class or out of class. As the student completes each section of this lab you should verify, check off and sign off the section (Use this document as the observation checklist). Use the assessor section at the bottom to provide feedback to the student if required.
See the instructions to the student section for the remainder of the instructions.

Instructions to the student:
This lab consists of activities that you perform on the hardware and software nominated concerning preventative maintenance and base level troubleshooting procedures.
There are several short answer questions where you will be asked to research and answer questions relating to these topics. You are encouraged to use the documentation in the resource section to help you work on the requirements.

Time:
Nominally 120 mins

Due date:
This lab is part of assessment 1 and inherits its due date.

Submission instructions:
When the lab is complete, submit the assessment via Blackboard.

Reasonable adjustment:
Should there be difficulty with reading technical manuals relating to disability of language and literacy levels you are encouraged to use online video tutorials similar to the following:

- https://www.youtube.com/watch?v=HBP8_LqBj44

Your Student ID: 20145454	Your Name: Rajib Hossain Khan

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

Lab: Linux System Administration and Security Fundamentals

Objective

In this lab, students will perform essential Linux system administration tasks, including managing processes, installing packages, handling user accounts, setting file permissions, managing services, and using networking commands.

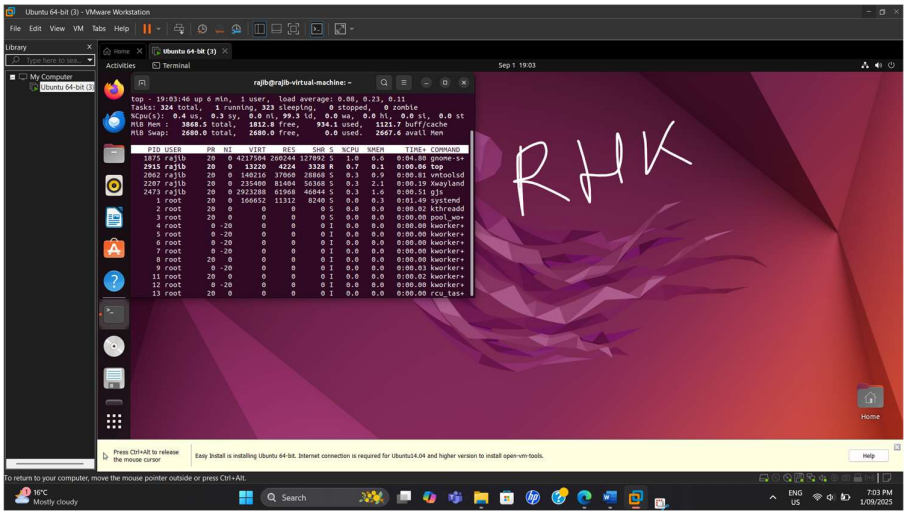
Instructions for Students

Step 1: Managing Processes

1. Open a terminal and use the 'top' command to view running processes.
   - Observe CPU and memory usage.
   - Identify the process ID (PID) of a high-resource-consuming process.
   - Take a screenshot of your top output.

top

Screenshot



2. Use the ps command to list active processes.
   - Run ps aux and ps -ef to explore different output formats.
   - Identify your current user processes using ps -u $USER.

Screenshot

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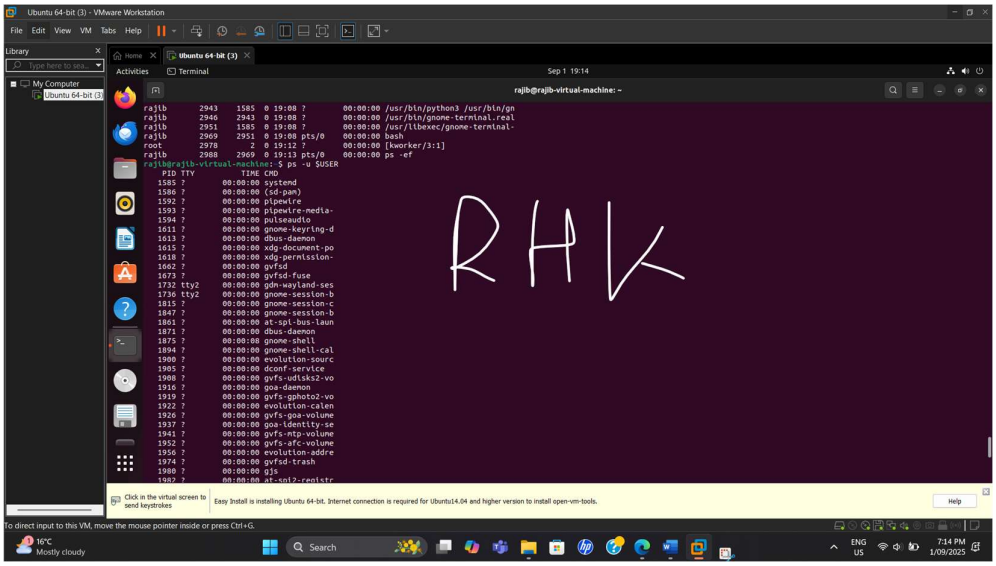
North Metropolitan TAFE

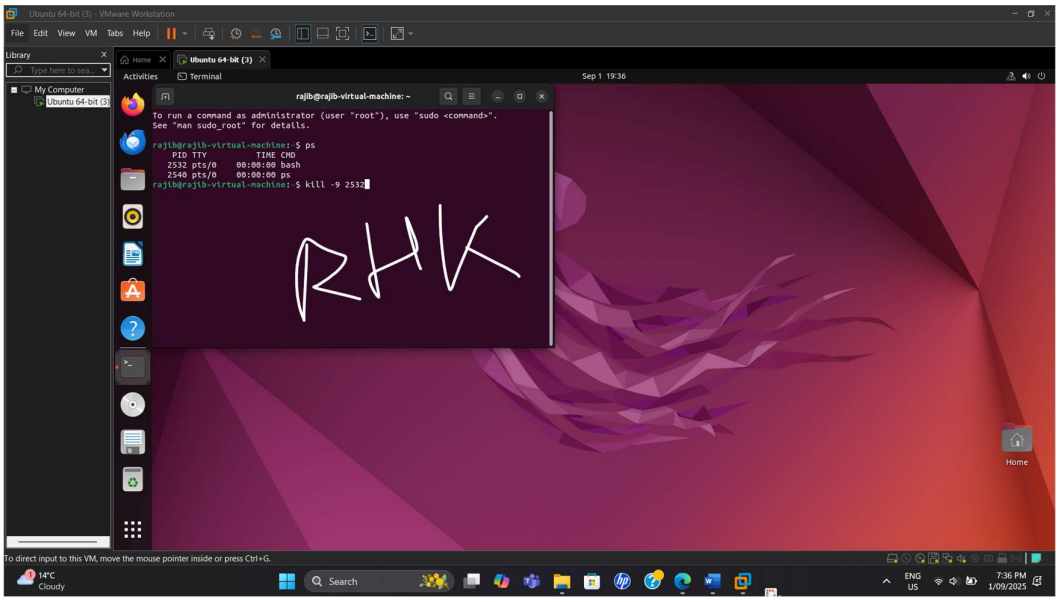
Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points



3. Kill a process using the kill command:
   - Use kill <PID> to terminate a process.
   - Use kill -9 <PID> if a process does not terminate with the default signal.
   - Take a screenshot of the output.

Screenshot



Government of Western Australia
North Metropolitan TAFE

Lab 4

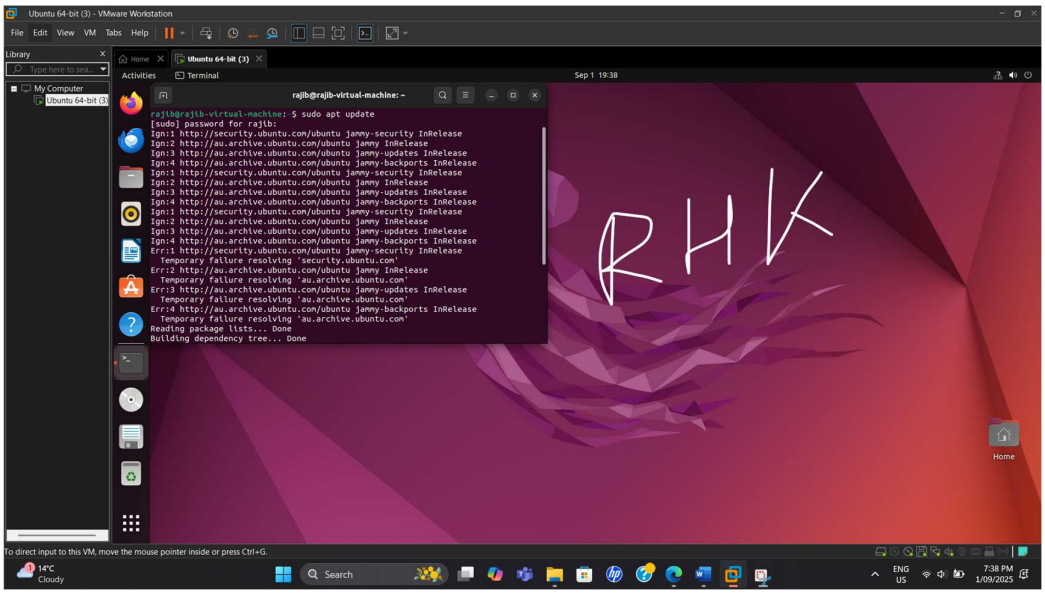
Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

Step 2: Installing Packages

1. Update the package repository:

   sudo apt update

Screenshot



2. Install a new package:
   - Install the htop package (an alternative to top):

     sudo apt install htop -y

   - Take a screenshot of the installation process.

Screenshot

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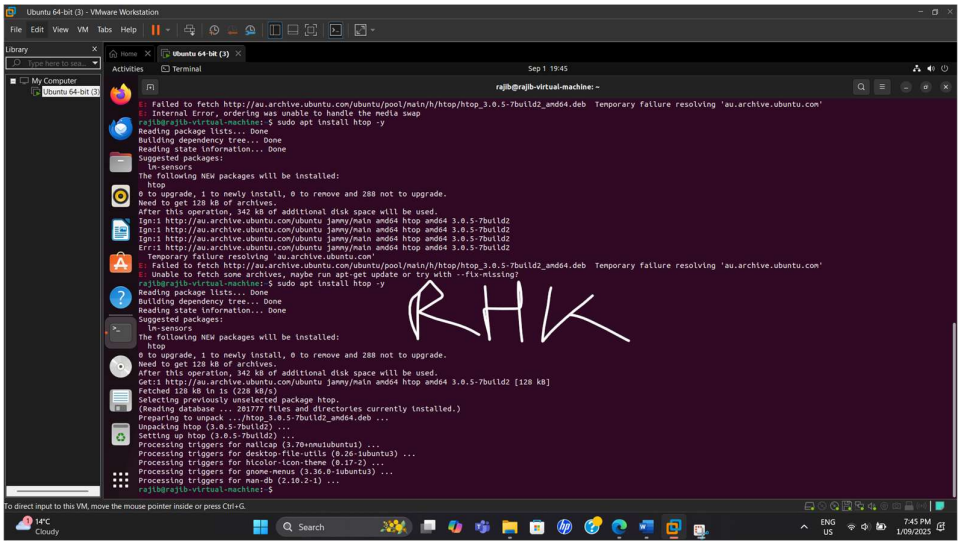
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

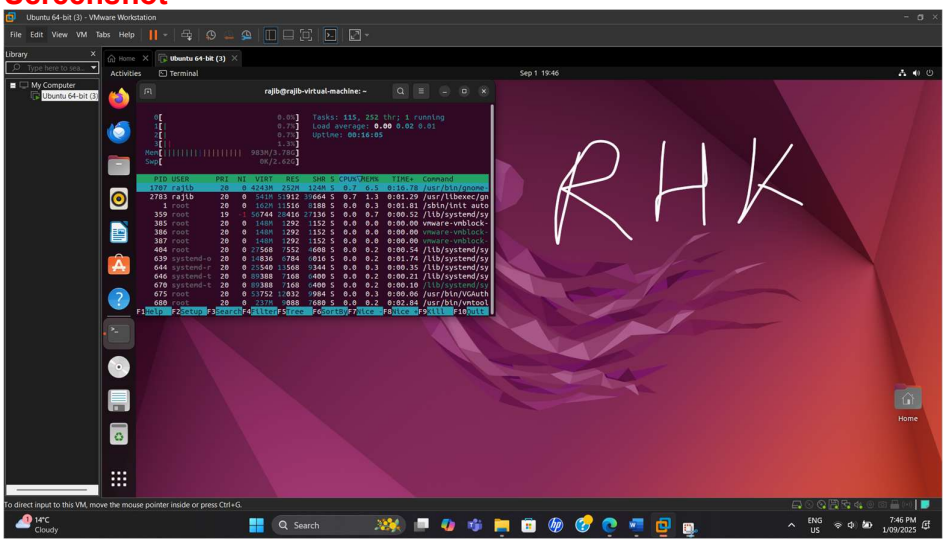


3. Verify the package installation by running:

   htop

   - Take a screenshot of the htop interface.

Screenshot



Step 3: Creating and Managing Users and Groups

Take screenshots of each command output.

1. Create a new user named student1:

   sudo adduser student1

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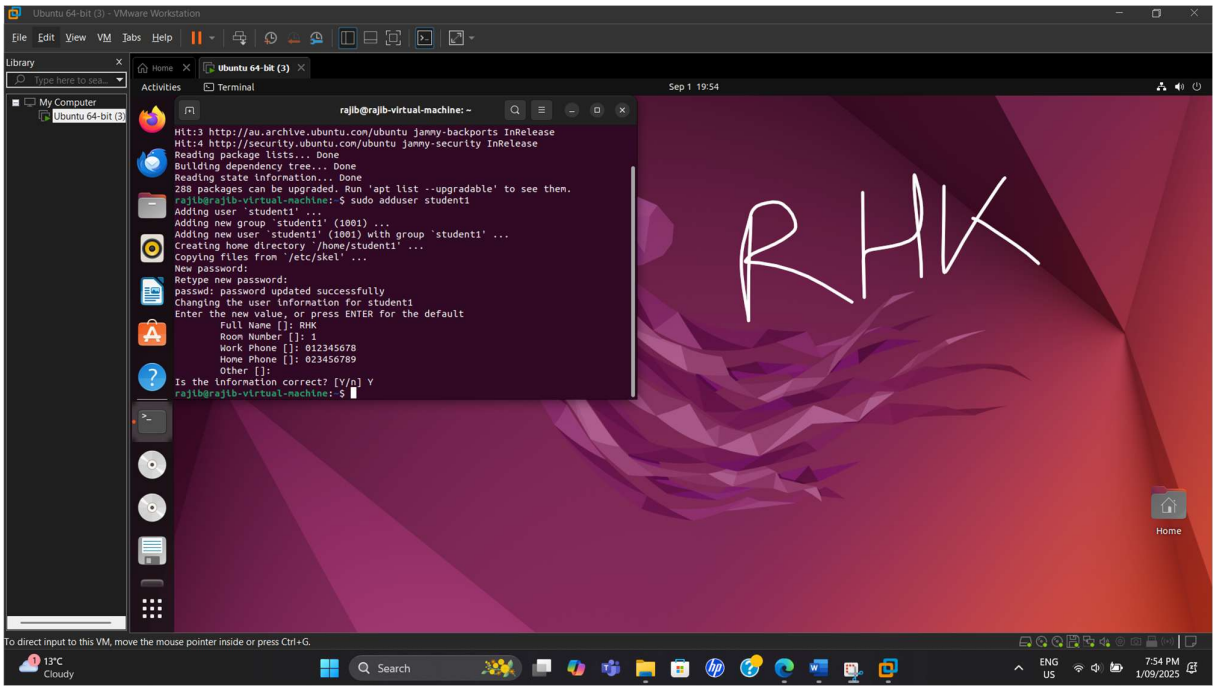
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

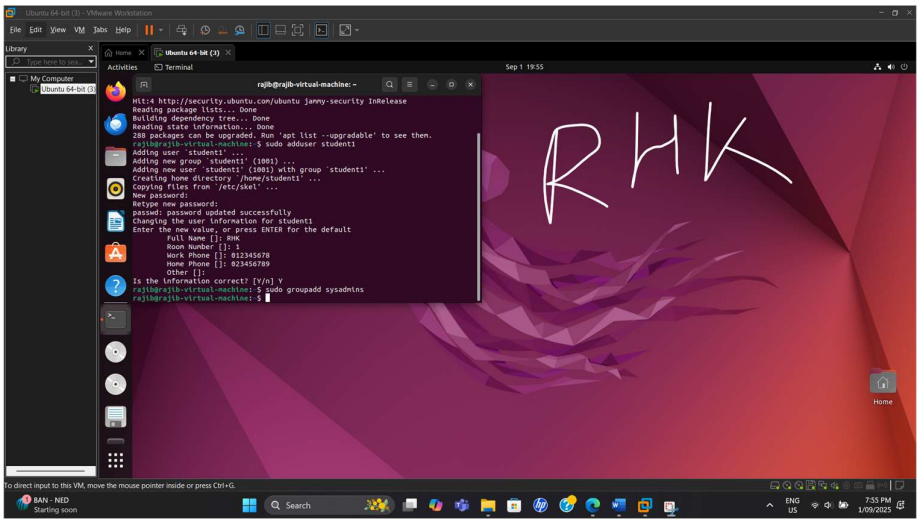
Screenshot



2. Create a group called sysadmins:

   sudo groupadd sysadmins

Screenshot



3. Add student1 to the sysadmins group:

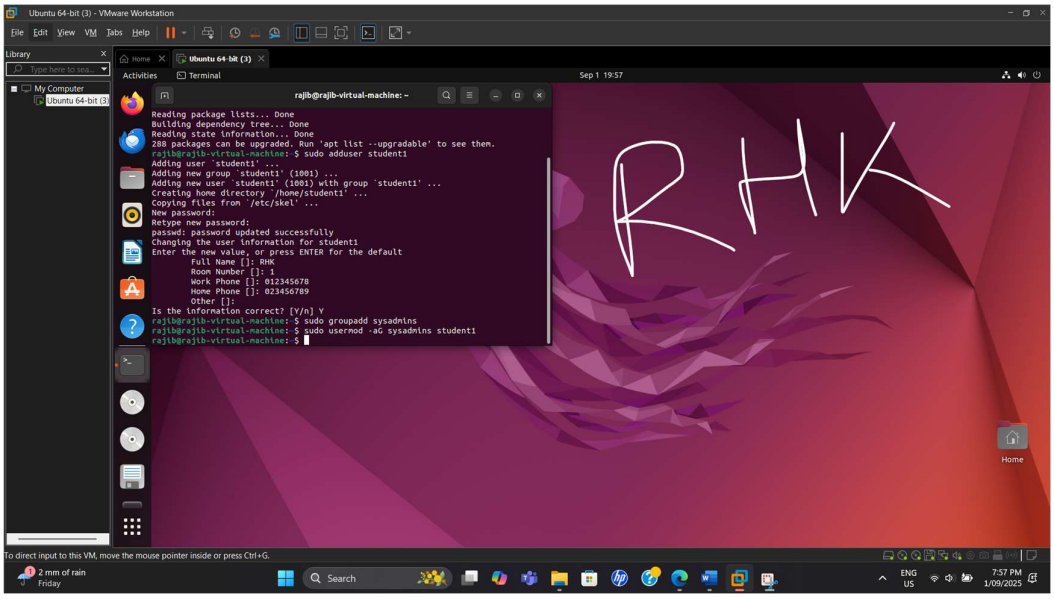
   sudo usermod -aG sysadmins student1

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

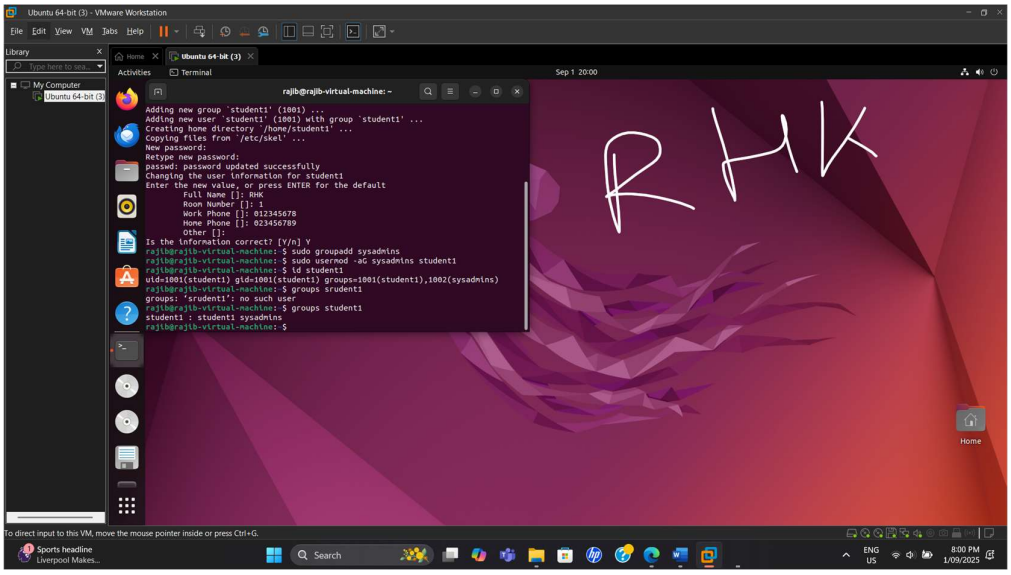
Screenshot



4. Verify the user and group creation:

   id student1
   groups student1

Screenshot



5. Switch to the new user and confirm permissions:

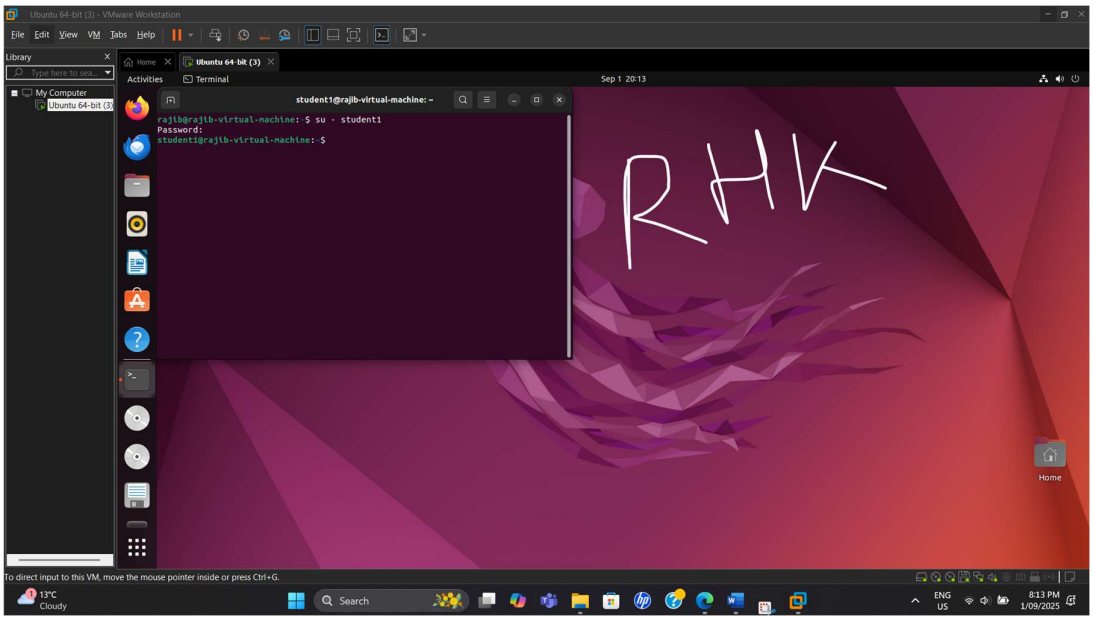
   su - student1

Screenshot

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points



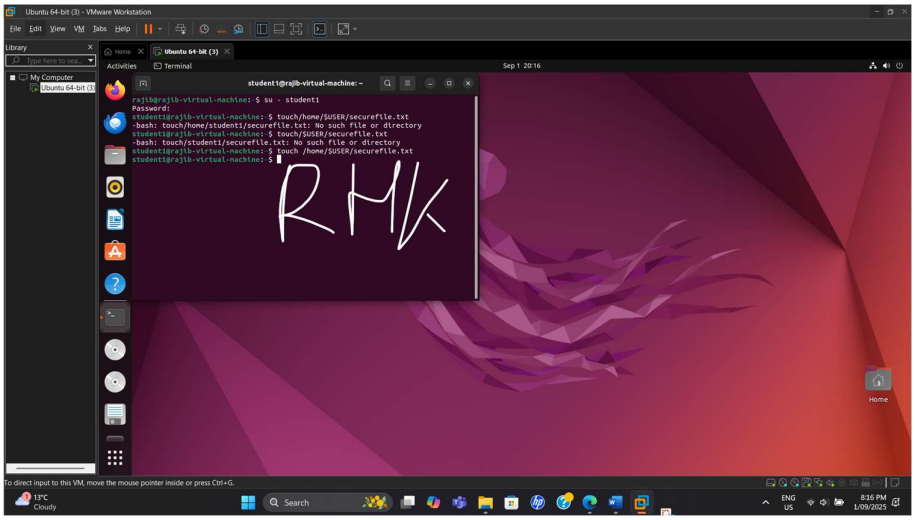
Step 4: Inspecting and Setting File Permissions

Take screenshots of each command output

1. Create a new file and set custom permissions:

   touch /home/$USER/securefile.txt

Screenshot



2. Restrict access to only the owner:

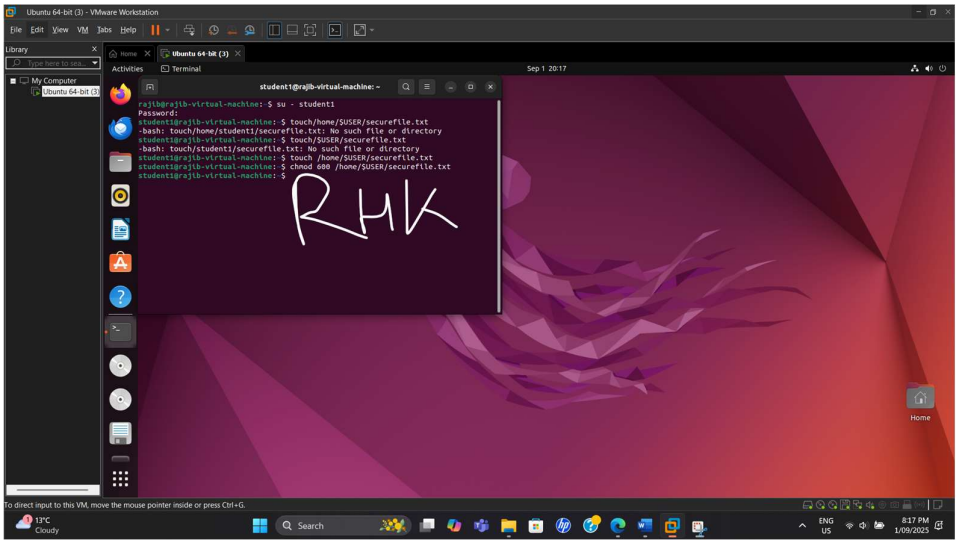
   chmod 600 /home/$USER/securefile.txt

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

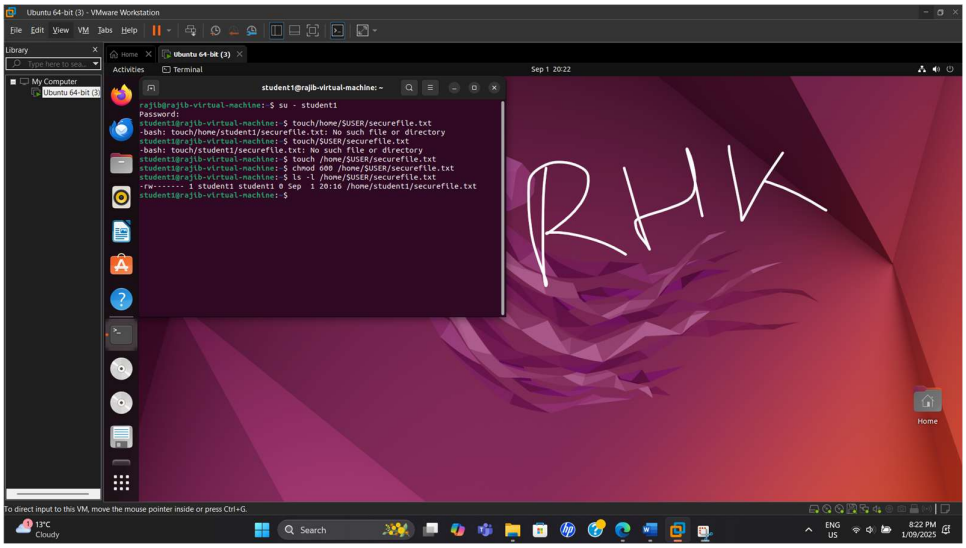
Screenshot



3. Verify permissions:

   ls -l /home/$USER/securefile.txt

Screenshot



4. Change ownership of the file to the sysadmins group:

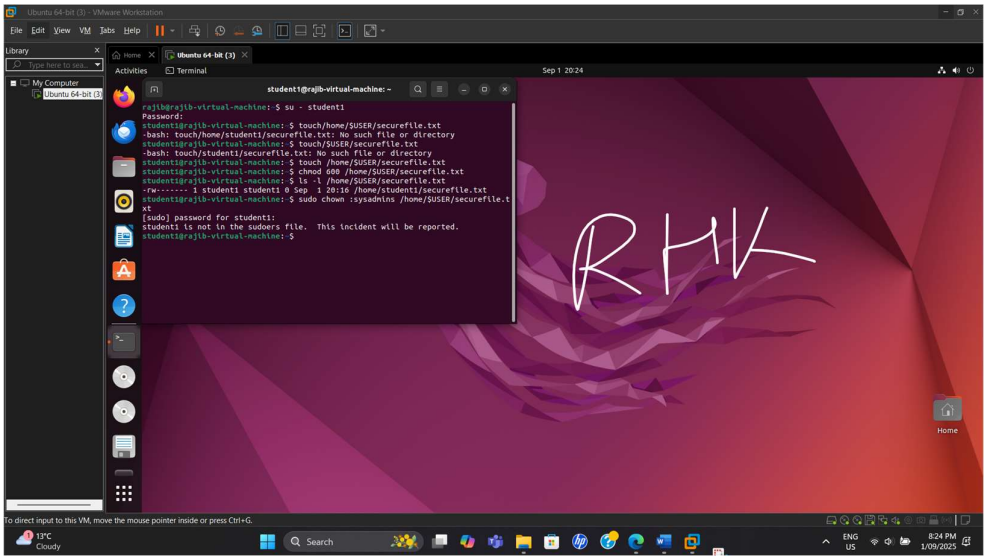
   sudo chown :sysadmins /home/$USER/securefile.txt

Screenshot

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points



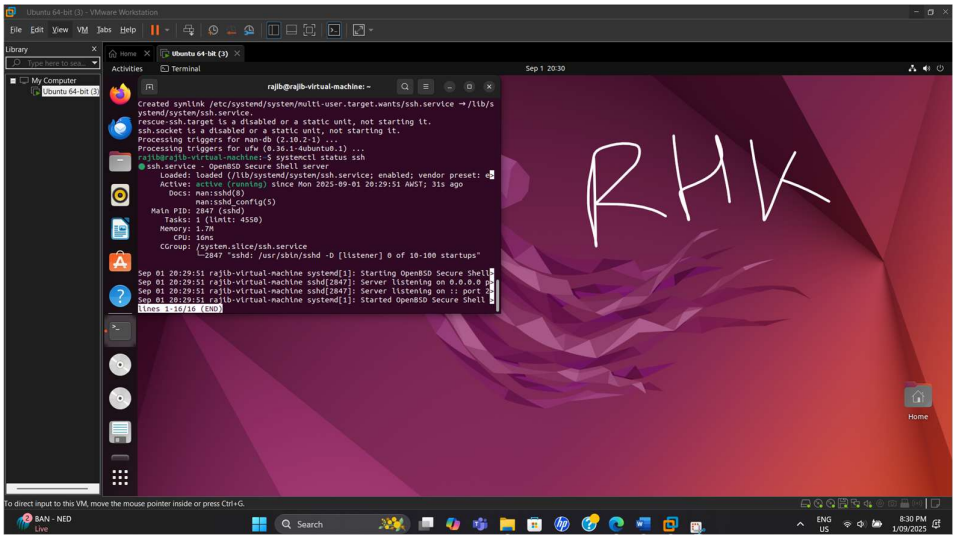
Step 5: Managing and Monitoring Services

Take screenshots of each command output.

1. Check the status of a running service (e.g., SSH):

   systemctl status ssh

Screenshot



2. Stop the service:

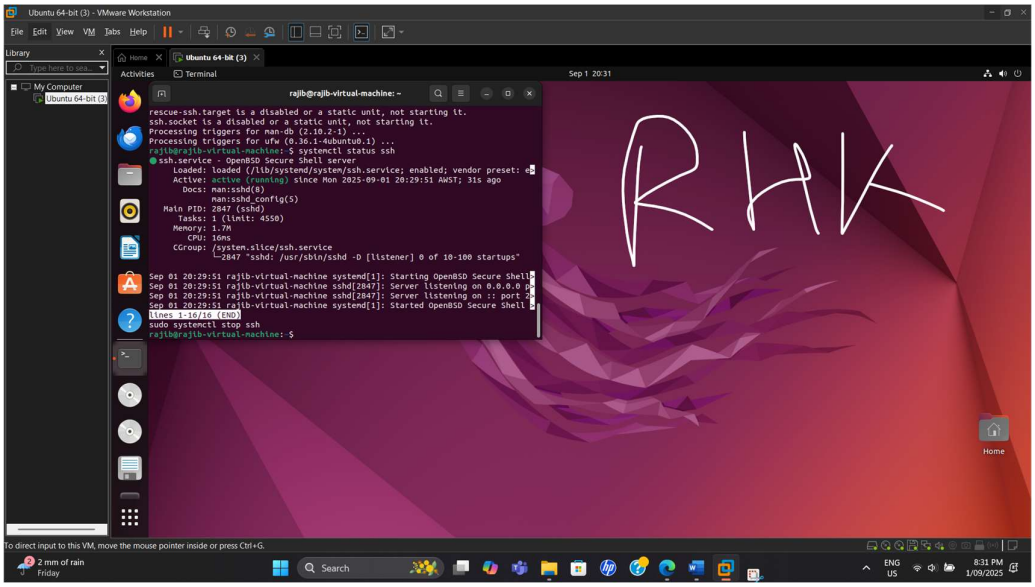
   sudo systemctl stop ssh

Screenshot

Government of Western Australia
North Metropolitan TAFE

Lab 4

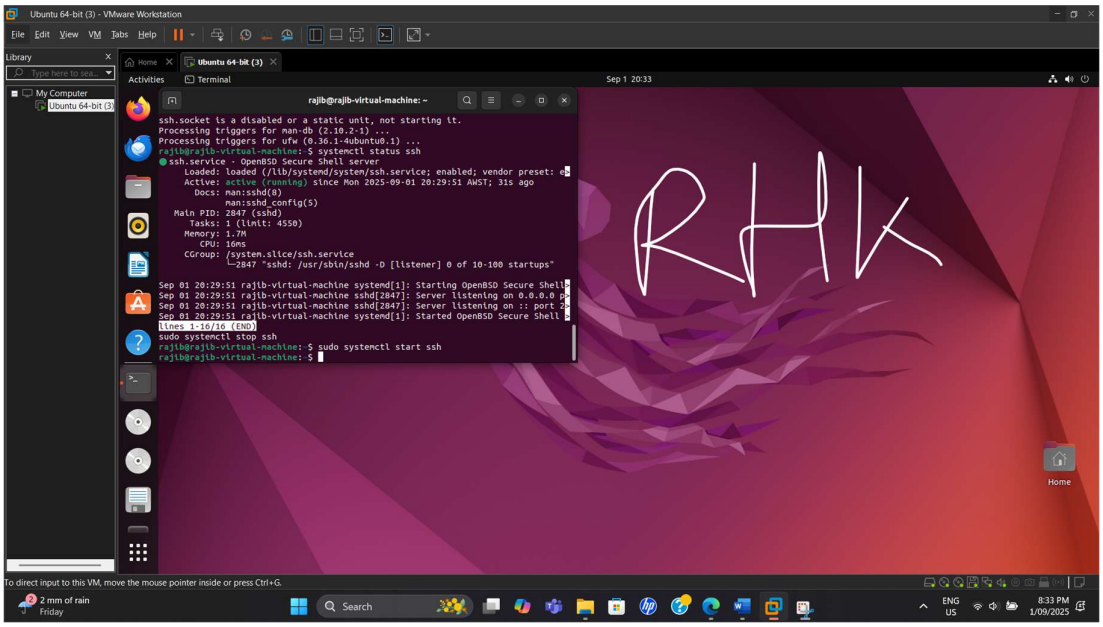
Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points



3. Restart the service:

   sudo systemctl start ssh

Screenshot



4. Disable an unnecessary service (e.g., cups for printers):

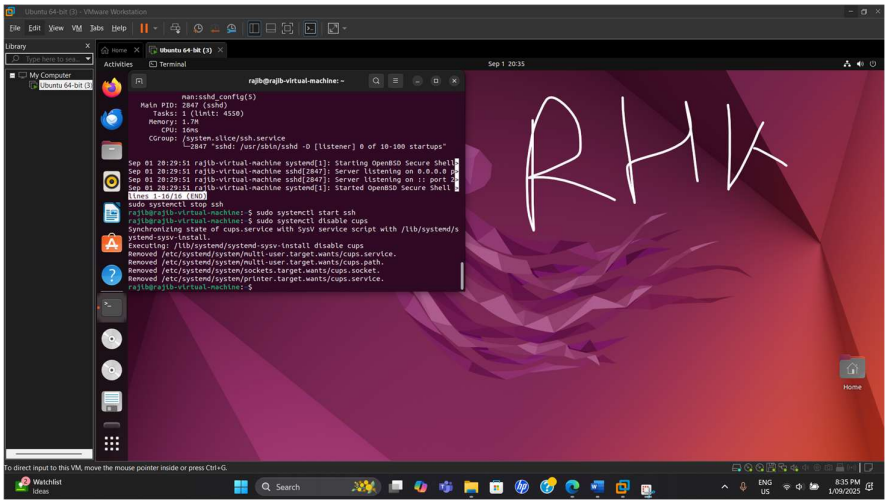
   sudo systemctl disable cups

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

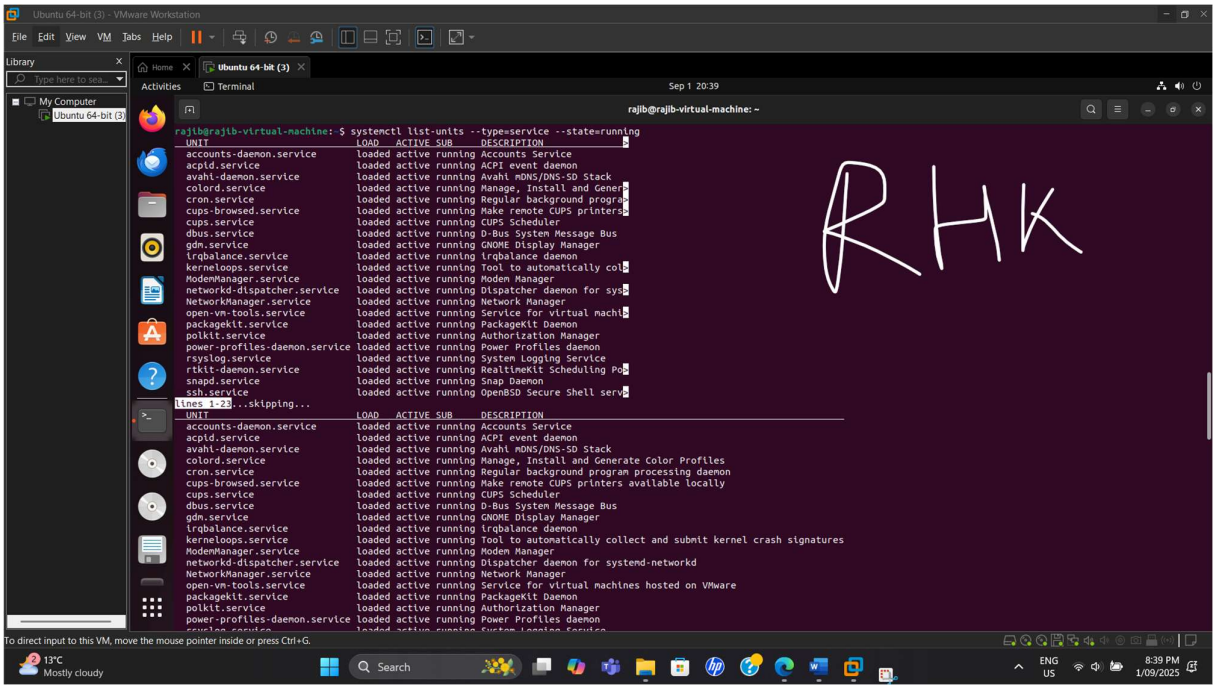
Screenshot



5. Verify service management with:

   systemctl list-units --type=service --state=running

Screenshot



Step 6: Basic Networking Commands

Take screenshots of each command output.

1. Check network configuration:

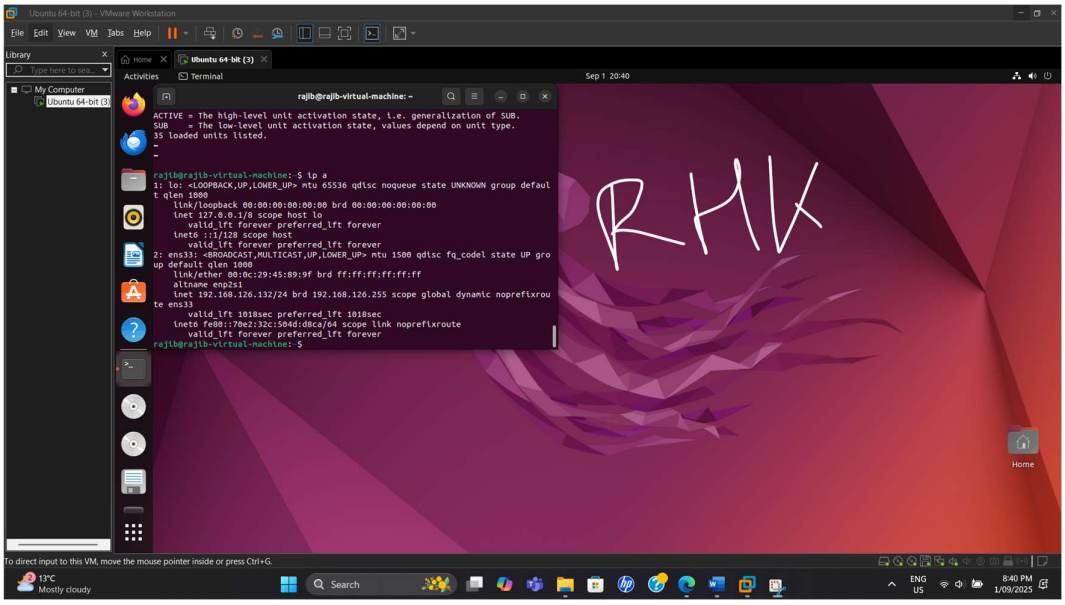
Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

ip a

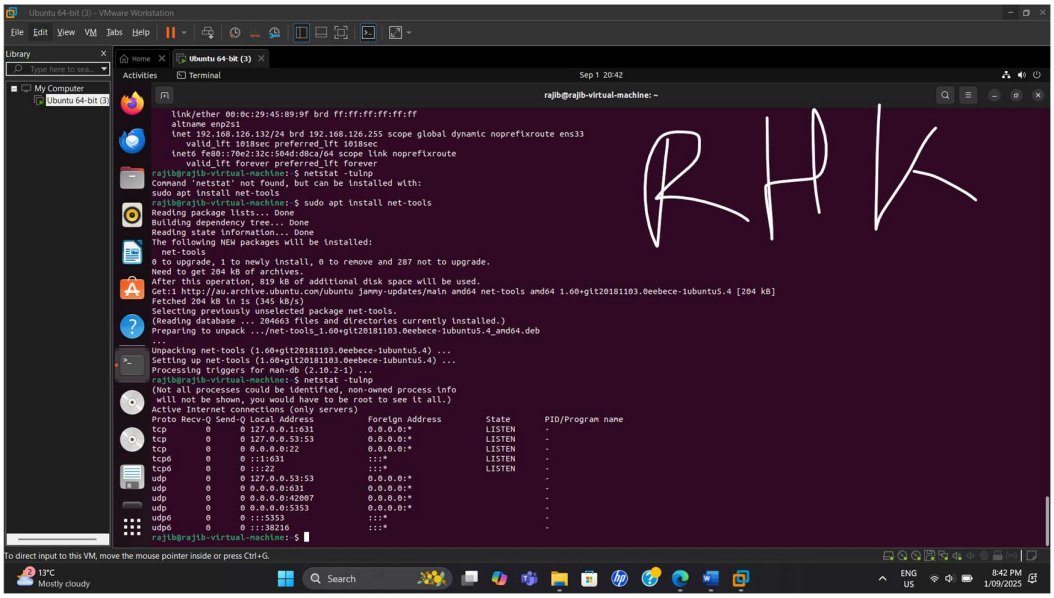
Screenshot



2. Display active network connections:

netstat -tulnp

Screenshot



3. Test connectivity to google.com:

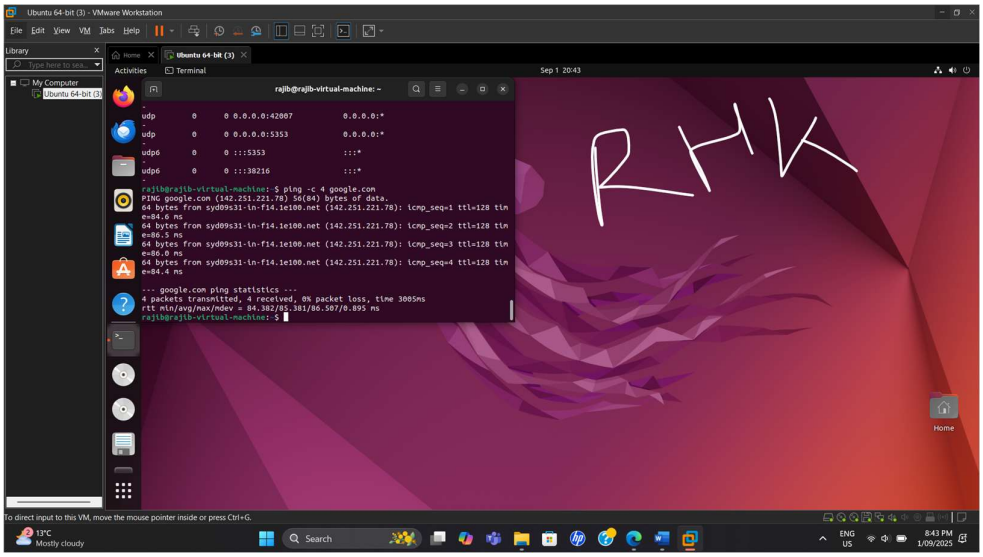
ping -c 4 google.com

Government of Western Australia
North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points

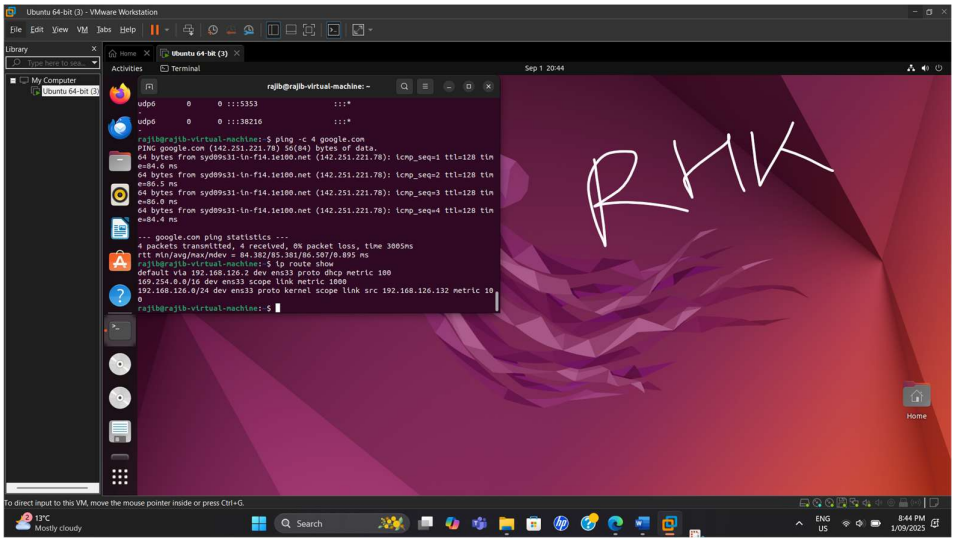
Screenshot



4. Display routing table:

   ip route show

Screenshot



5. Find the IP address of a domain:

   nslookup google.com

Screenshot

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North Metropolitan TAFE

Lab 4

Qualification national code and title	AE780 Transition to Cyber Security Skillset
Unit/s national code/s and title/s	VU23214: Configure and secure networked end points