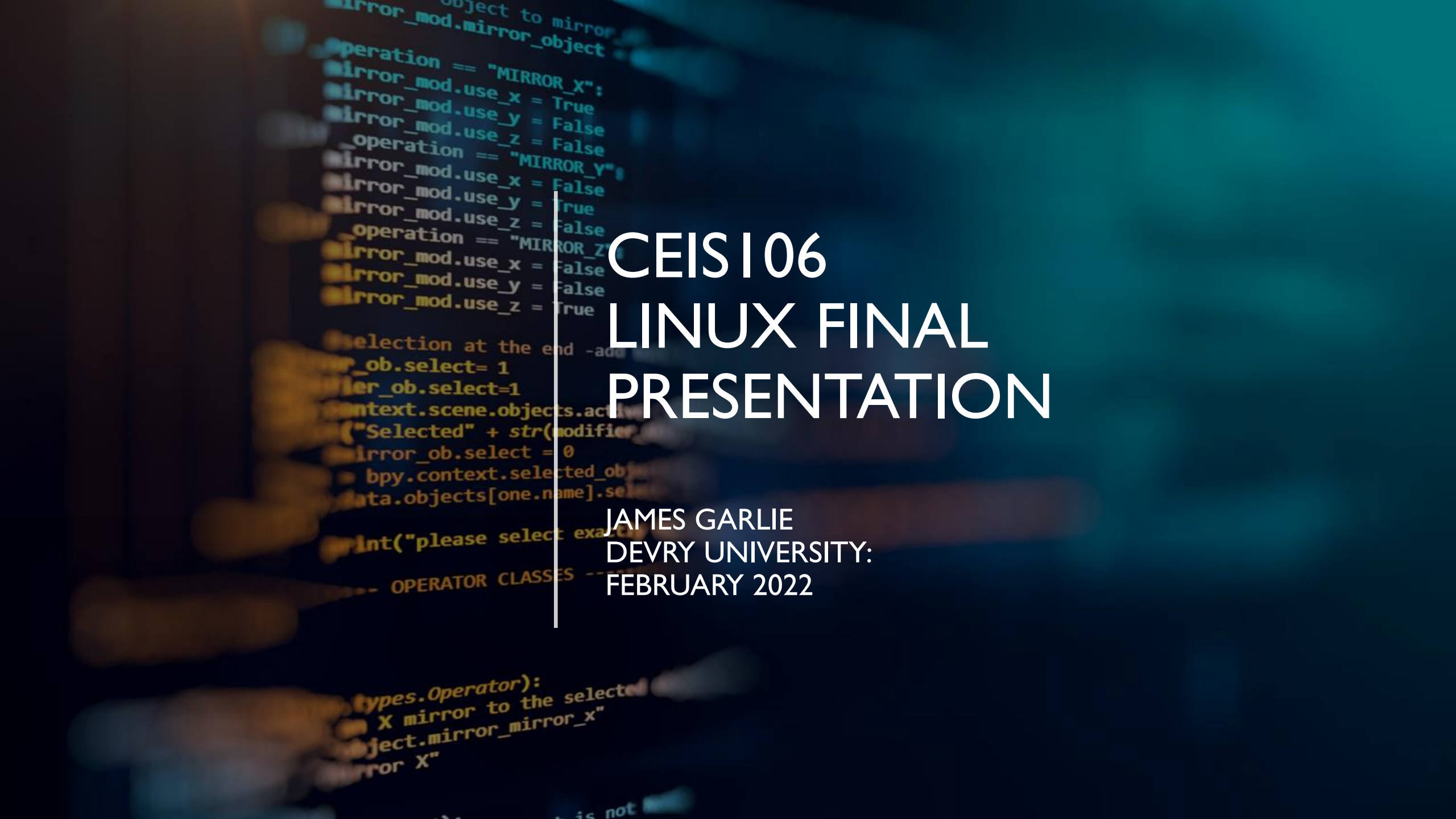
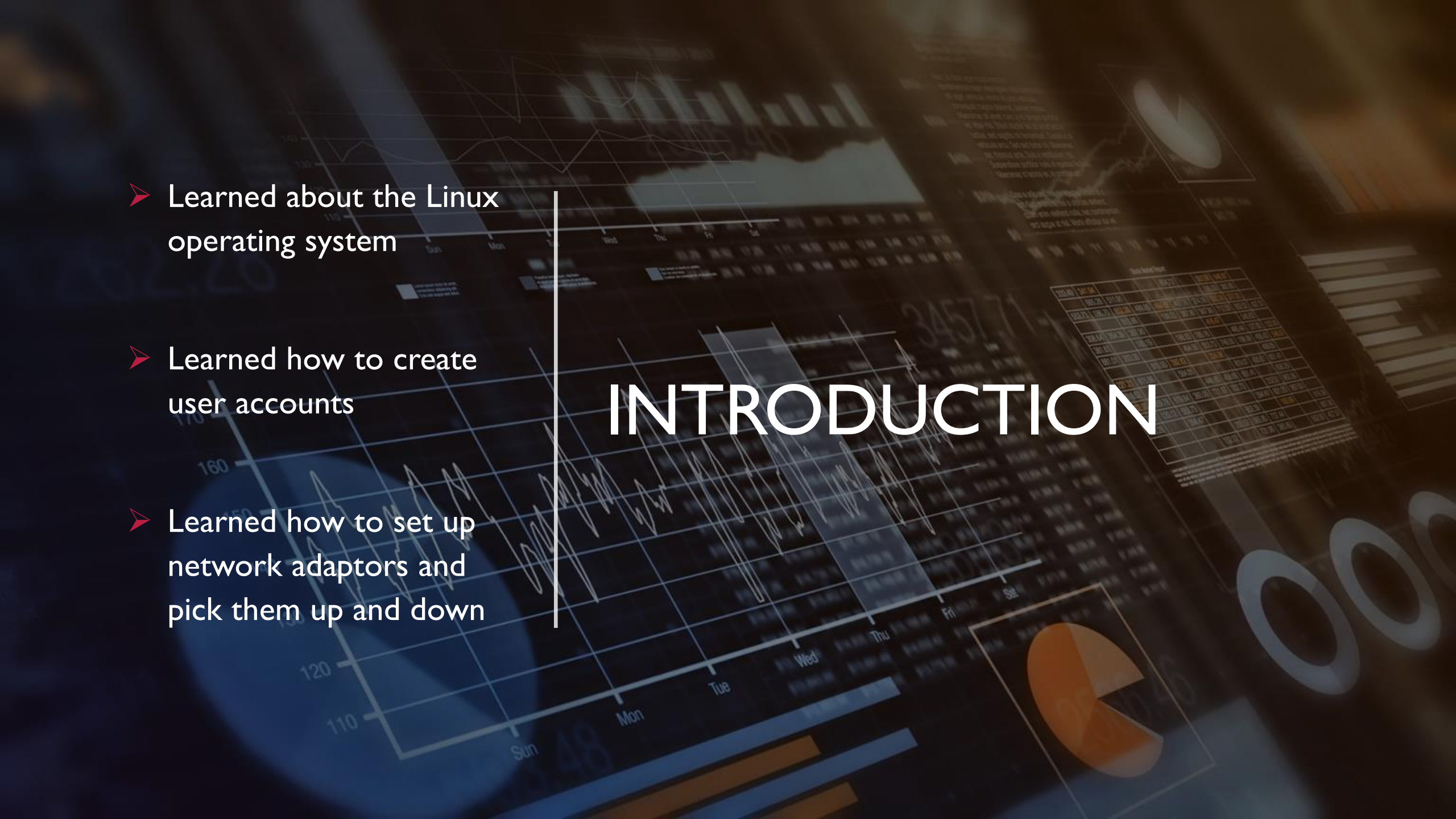


CEIS106 LINUX FINAL PRESENTATION

JAMES GARLIE
DEVRY UNIVERSITY:
FEBRUARY 2022



INTRODUCTION

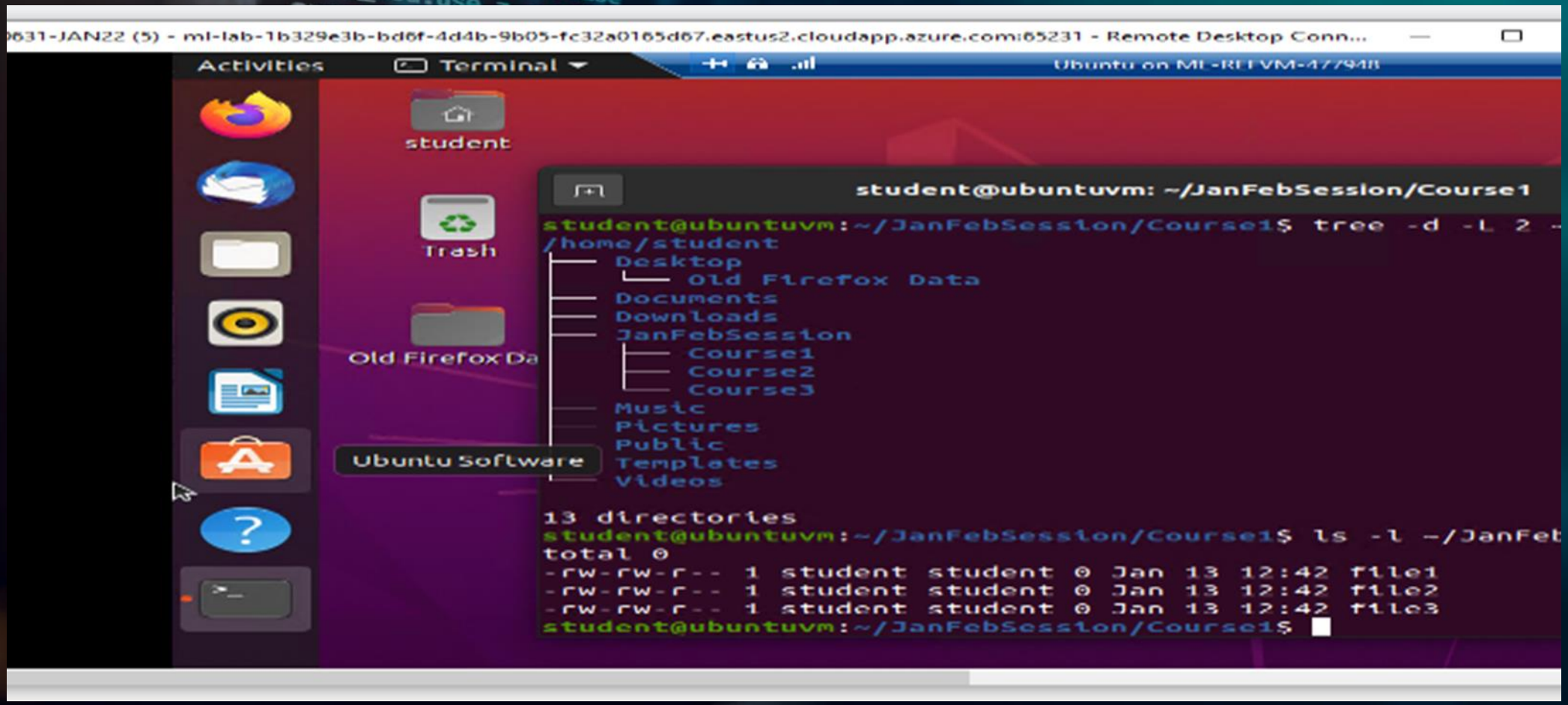
- Learned about the Linux operating system
- Learned how to create user accounts
- Learned how to set up network adaptors and pick them up and down

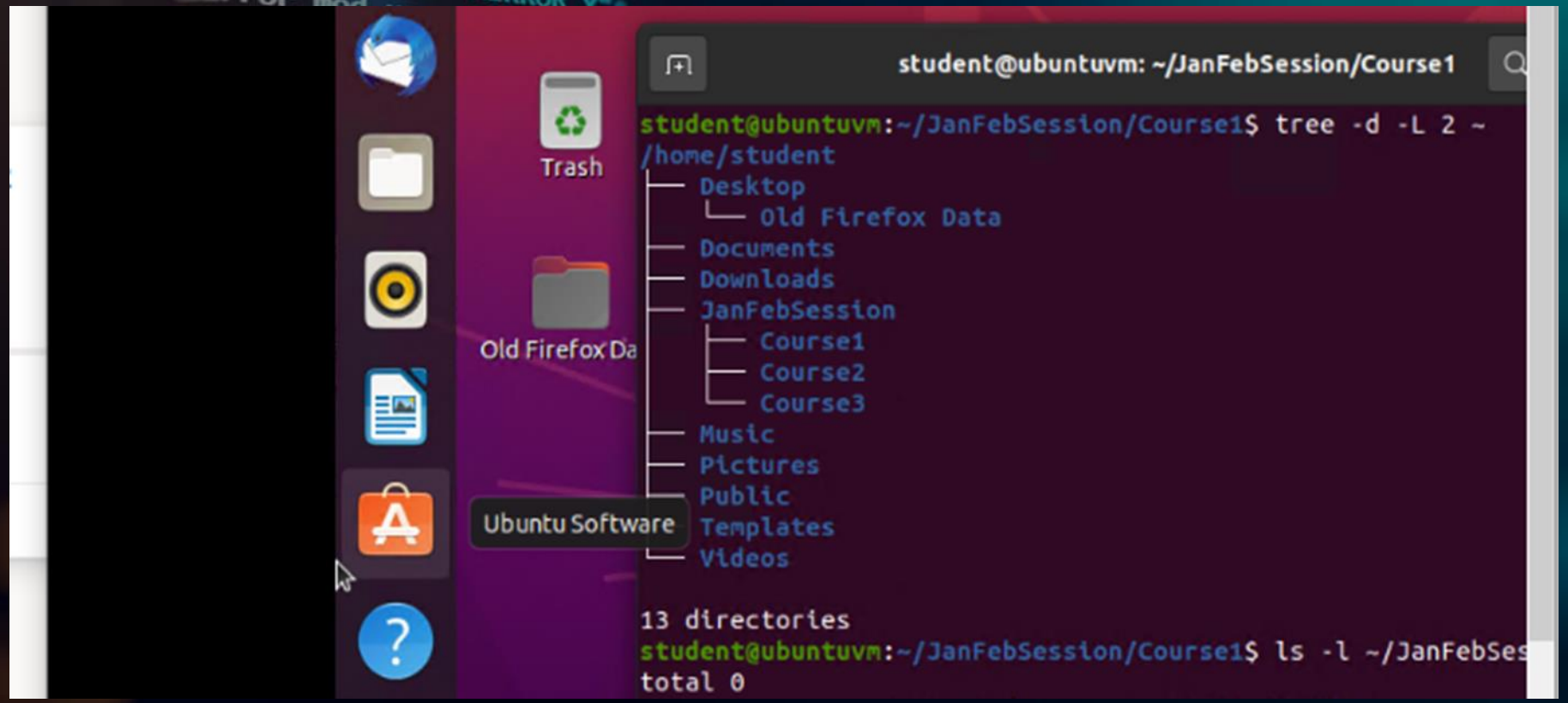
LINUX FILE SYSTEM

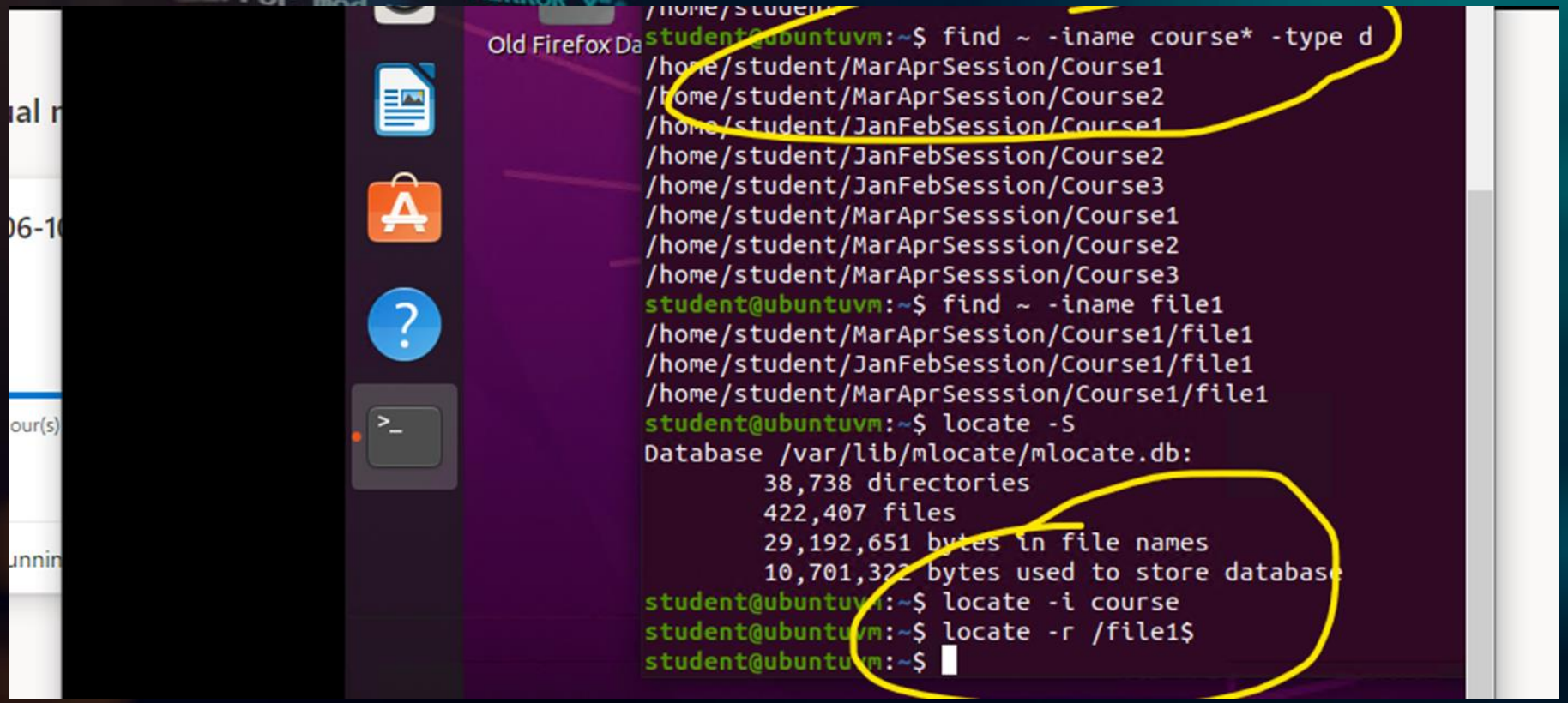
- Created directories or folders and files
- Copied and removed directories or folders and files
- Located directory files

NAVIGATE THE LINUX FILESYSTEM TREE

- 1. What is the *pwd* command an acronym for? What about the *cd* command?
- Print Working Directory
- 2. Explain the differences between a relative path and an absolute/full path in Linux.
- An "Absolute Path" specifies the location from the "Root Directory" whereas a "Relative Path" is related to the current directory; however, using a relative pathway is only feesable when moving around the same directory.
- References:
- 1. Lessons in DeVry Modules
- 2. https://www.geeksforgeeks.org


0631-JAN22 (5) - ml-lab-1b329e3b-bd6f-4d4b-9b05-fc32a0165d67.eastus2.cloudapp.azure.com:65231 - Remote Desktop Conn...
Activities
Terminal
Ubuntu on ML-RELVM-477948
student
Trash
Old Firefox Da
Ubuntu Software
student@ubuntuvm: ~/JanFebSession/Course1
student@ubuntuvm:~/JanFebSession/Course1$ tree -d -L 2 -
/home/student
├── Desktop
│   └── Old Firefox Data
├── Documents
├── Downloads
├── JanFebSession
│   ├── Course1
│   ├── Course2
│   └── Course3
├── Music
├── Pictures
├── Public
├── Templates
└── Videos
13 directories
student@ubuntuvm:~/JanFebSession/Course1$ ls -l ~/JanFeb
total 0
-rw-rw-r-- 1 student student 0 Jan 13 12:42 file1
-rw-rw-r-- 1 student student 0 Jan 13 12:42 file2
-rw-rw-r-- 1 student student 0 Jan 13 12:42 file3
student@ubuntuvm:~/JanFebSession/Course1$


Trash
Old Firefox Da
Ubuntu Software
student@ubuntuvm: ~/JanFebSession/Course1
student@ubuntuvm:~/JanFebSession/Course1$ tree -d -L 2 ~
/home/student
├── Desktop
│   └── Old Firefox Data
├── Documents
├── Downloads
├── JanFebSession
│   ├── Course1
│   ├── Course2
│   └── Course3
├── Music
├── Pictures
├── Public
├── Templates
└── Videos
13 directories
student@ubuntuvm:~/JanFebSession/Course1$ ls -l ~/JanFebSes
total 0


Old Firefox Da
student@ubuntuvm:~$ find ~ -iname course* -type d
/home/student/MarAprSession/Course1
/home/student/MarAprSession/Course2
/home/student/JanFebSession/Course1
/home/student/JanFebSession/Course2
/home/student/JanFebSession/Course3
/home/student/MarAprSesssion/Course1
/home/student/MarAprSesssion/Course2
/home/student/MarAprSesssion/Course3
student@ubuntuvm:~$ find ~ -iname file1
/home/student/MarAprSession/Course1/file1
/home/student/JanFebSession/Course1/file1
/home/student/MarAprSesssion/Course1/file1
student@ubuntuvm:~$ locate -S
Database /var/lib/mlocate/mlocate.db:
38,738 directories
422,407 files
29,192,651 bytes in file names
10,701,322 bytes used to store database
student@ubuntuvm:~$ locate -i course
student@ubuntuvm:~$ locate -r /file1$
student@ubuntuvm:~$

LINUX SHELL SCRIPTS

- Created a shell script
- Changes script file permissions
- Set the PATH variables
- Made the PATH variable permanent

CREATE A SHELL SCRIPT

1. What are the file permissions of the script? rw-rw-r
2. What's the name of the user-defined variable in the script? text
3. Which redirection meta-character is used in the script? What does it do? > redirects output and appends it to a file

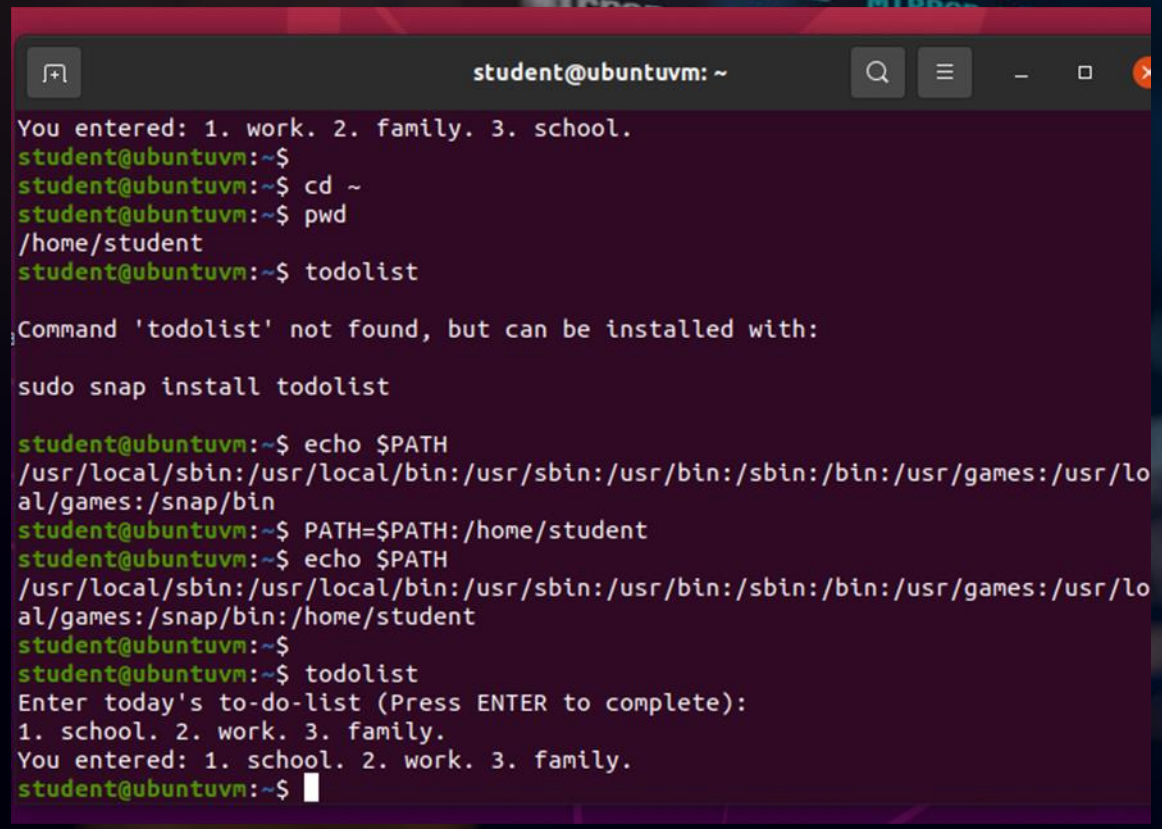
References:

1. Week 3 Project Video
2. Week 3 Project Instructions

```
echo "Today's to-do-list -- $text" >> MyToDoLists
echo "" >> MyToDoLists


student@ubuntuvm:~$ ls -l todolist
-rw-rw-r-- 1 student student 190 Jan 21 13:17 todolist
student@ubuntuvm:~$ bash todolist
Enter today's to-do-list (Press ENTER to complete):
1. family. 2. work. 3. school.
You entered: 1. family. 2. work. 3. school.
student@ubuntuvm:~$ bash todolist
Enter today's to-do-list (Press ENTER to complete):
1. school. 2. family. 3. work.
You entered: 1. school. 2. family. 3. work.
student@ubuntuvm:~$ cat MyToDoLists
Fri 21 Jan 2022 01:21:36 PM EST
Today's to-do-list -- 1. family. 2. work. 3. school.

Fri 21 Jan 2022 01:23:51 PM EST
```

```
student@ubuntuvm:~$ bash todolist
Enter today's to-do-list (Press ENTER to complete):
nano todolist^C
student@ubuntuvm:~$ nano todolist
student@ubuntuvm:~$ cat todolist
#!/bin/bash
echo "Enter today's to-do-list (Press ENTER to complete):"
read text
echo "You entered: $text"
date >> MyToDoLists
echo "Today's to-do-list -- $text" >> MyToDoLists
echo "" >> MyToDoLists


student@ubuntuvm:~$ chmod 755 todolist
student@ubuntuvm:~$ ls -l todolist
-rwxr-xr-x 1 student student 202 Jan 21 13:44 todolist
student@ubuntuvm:~$ ./todolist
```

MAKE THE PATH VARIABLE PERMANENT



RUNNING THE *TODOLIST* SCRIPT BEFORE AND AFTER MAKING THE PATH VARIABLE PERMANENT
A SCREENSHOT OF THE TERMINAL WINDOW

LINUX ADMINISTRATIVE TASK

- Added users and groups in CLI
- Tested users and group settings
- Added users in GUI

. What does the –*m* option in the useradd command do? Answer here: It creates a user account for Mary. And/or "Creates the home Directory."

2. What does the *-3* option in the tail command do? Answer here: Shows the last three lines. tail means "end", and -3 means last three lines

It confirms the new account for Mary and that both your account and Mary's account are members of the "students" group.

3. Which line of the */etc/group* file lists members of the "students" group? Copy it here. Answer here: The last line:

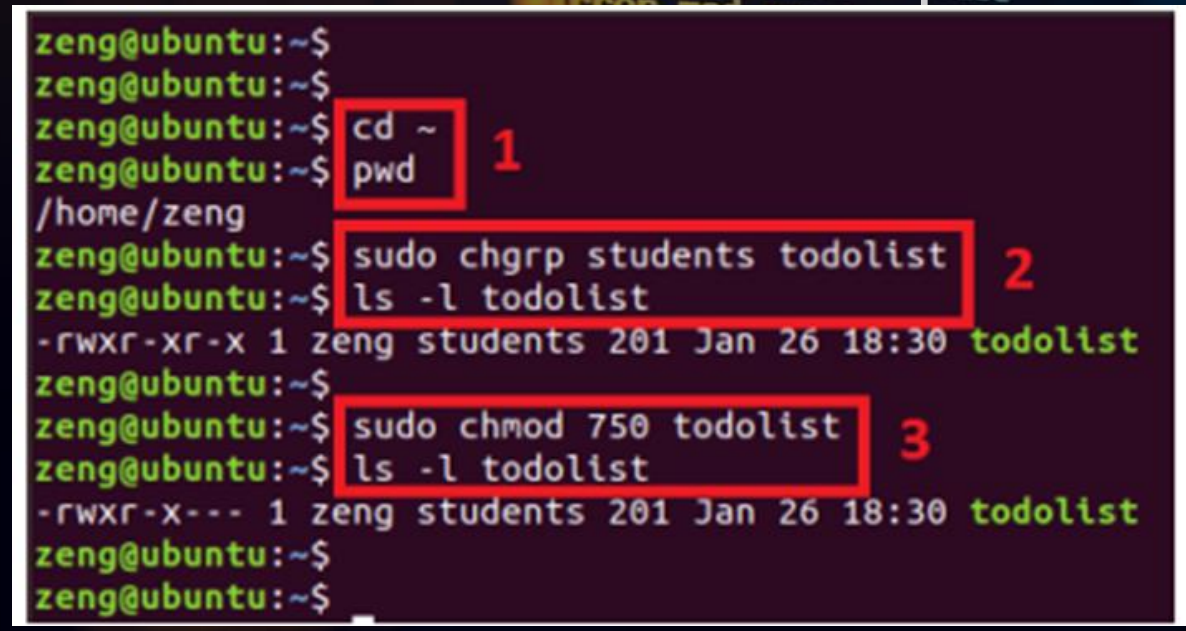
References:

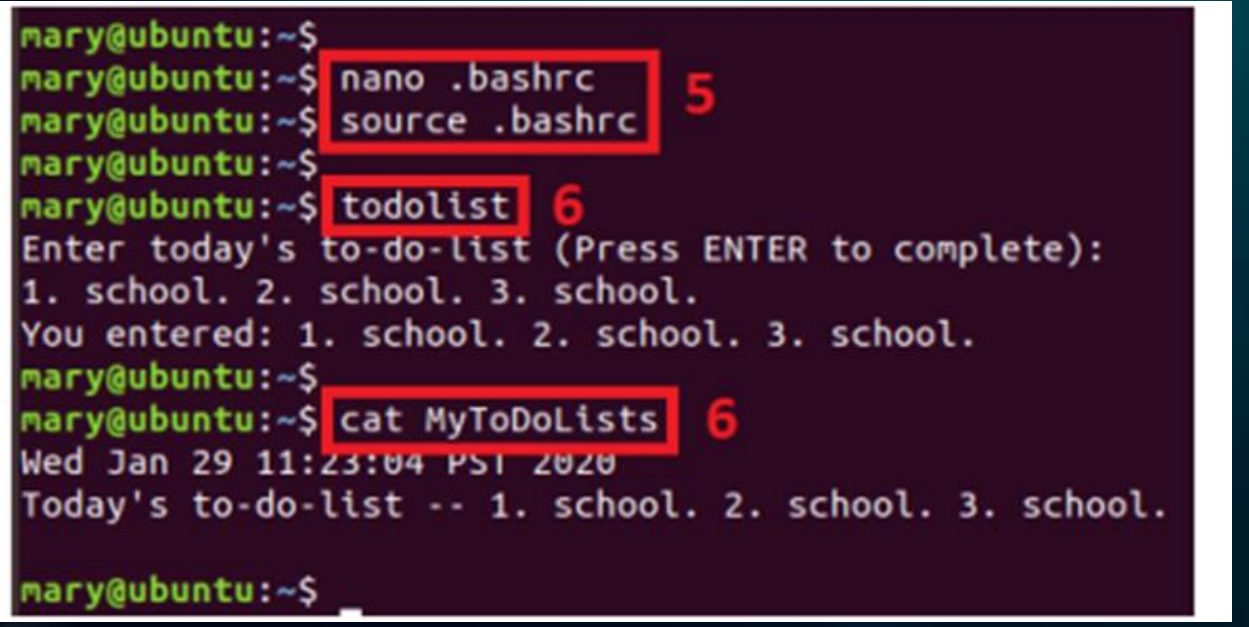
1. Professor Bird
2. Module 4 Project Guide

ADD USERS AND GROUPS IN CLI

TEST USER AND GROUP SETTINGS

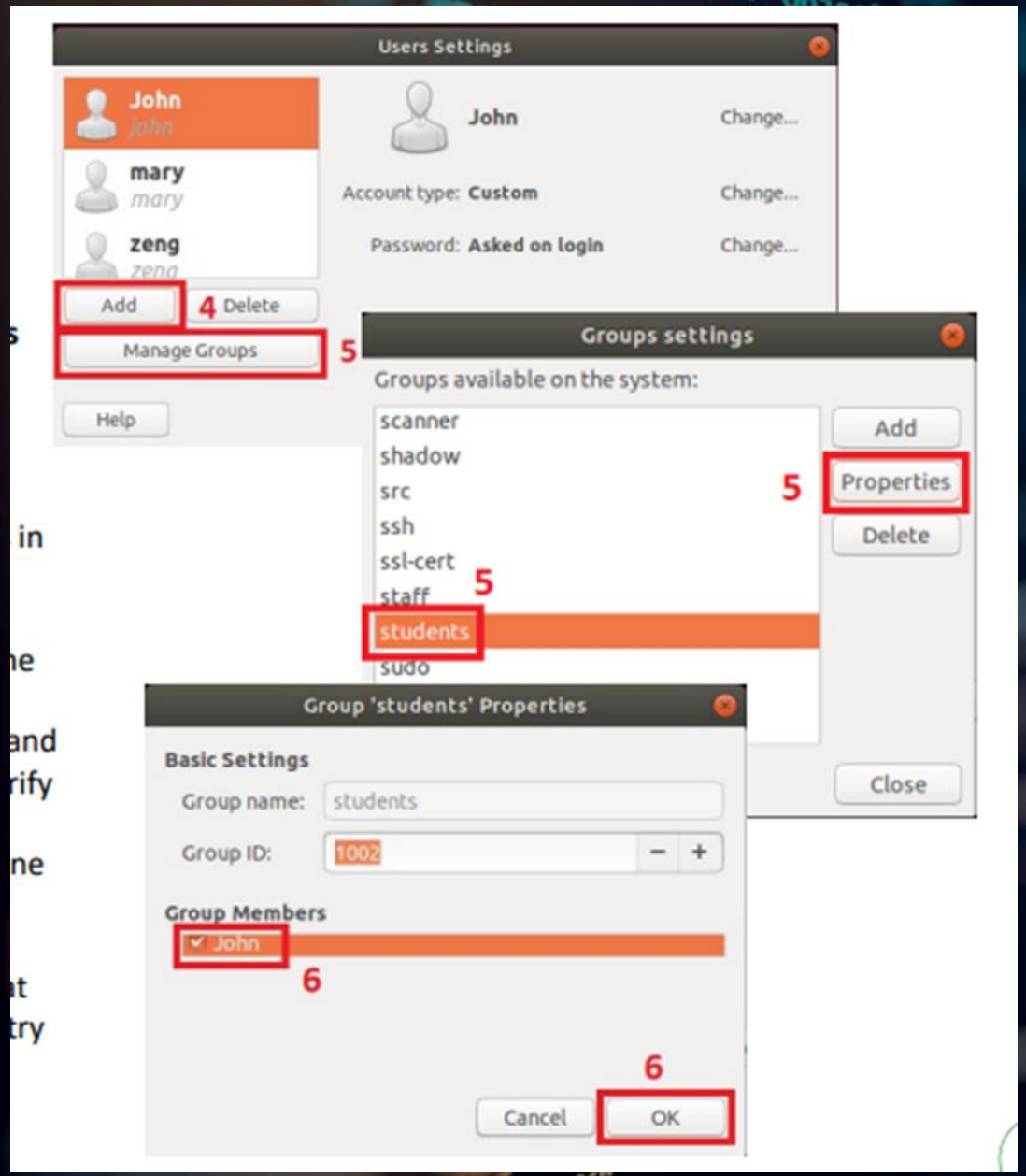
These are screenshots of the output



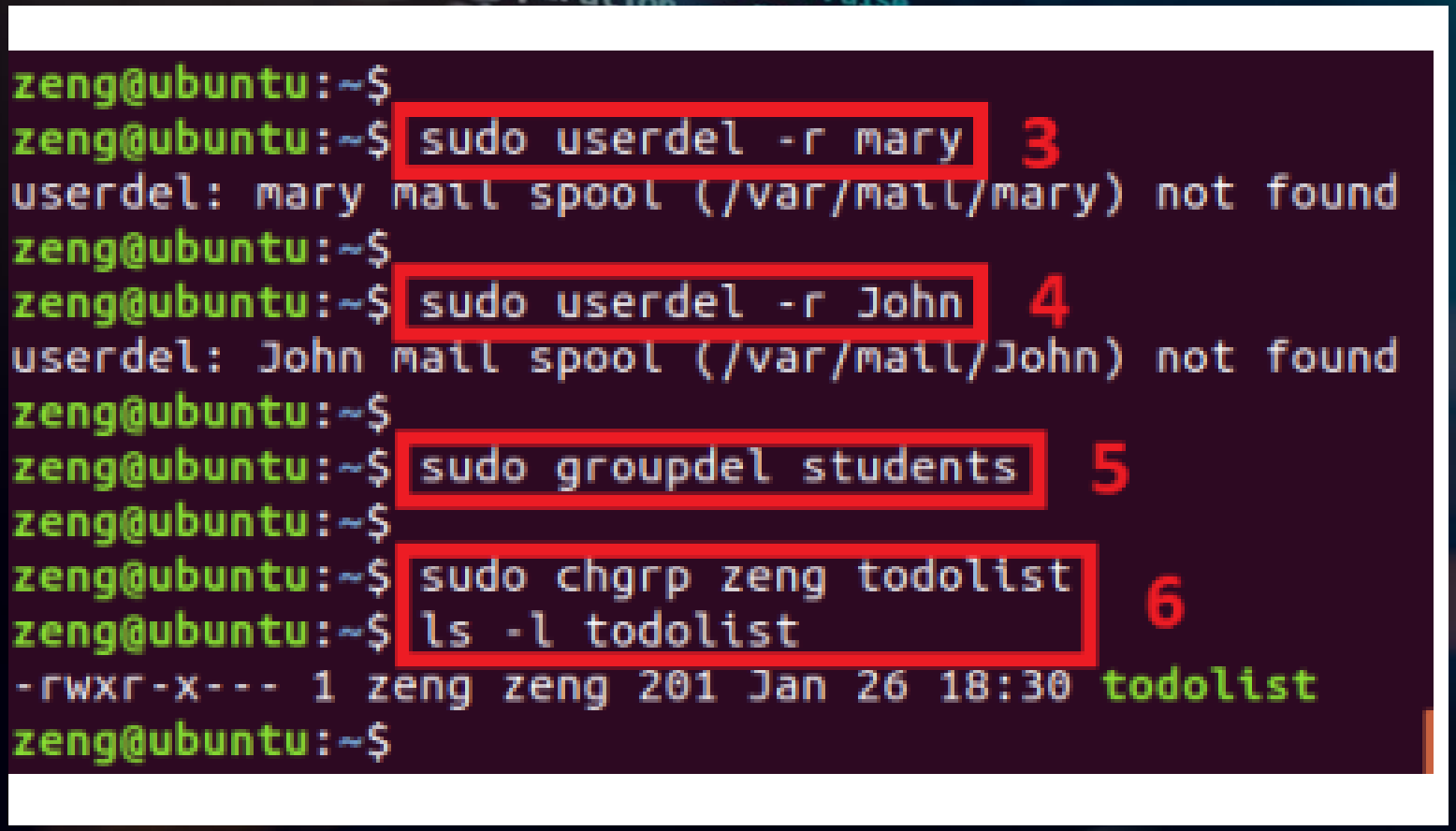


ADD USERS IN GU

A SCREENSHOT OF THE OUTPUT



REMOVE USERS AND GROUPS



A SCREENSHOT OF THE LOG ON PAGE WITH THREE USER ACCOUNTS

NETWORKING

- Discovered host IP configurations
- Managed network interfaces
- Use of network utilities

DISCOVER HOST IP CONFIGURATIONS

1. What is the IP address of your Ubuntu machine?

```
192.168.1.104/24 brd 192.168.1.255
```

2. What is the IP address of its default gateway?

Answer here: `192.168.1.0/24`

3. What is the IP address of its DHCP server?

```
dhcp-server-identifier 192.168.1.1;
```

4. What is the IP address of its DNS server?

Answer here:

```
nameserver 192.168.1.1
```

A screenshot of the output

```
student@ubuntuvm:/var/lib/dhcp$ ping -c 4 192.168.1.1
PING 192.168.1.1 (192.168.1.1) 56(84) bytes of data.
64 bytes from 192.168.1.1: icmp_seq=1 ttl=64 time=0.695 ms
64 bytes from 192.168.1.1: icmp_seq=2 ttl=64 time=0.641 ms
64 bytes from 192.168.1.1: icmp_seq=3 ttl=64 time=0.574 ms
64 bytes from 192.168.1.1: icmp_seq=4 ttl=64 time=0.717 ms

--- 192.168.1.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3067ms
rtt min/avg/max/mdev = 0.574/0.656/0.717/0.055 ms
student@ubuntuvm:/var/lib/dhcp$
```

MANAGE NETWORK INTERFACES

1. Which DHCP message is shown in the output of the **sudo dhclient –v –r eth0** command? [hint: the message name is in uppercase.]

Answer here: <BROADCAST,MULTICAST>

2. Which four DHCP messages are shown in the output of the **sudo dhclient –v eth0** command? [hint: the message names are in uppercase.]

Answer here:

```
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 3 (xid=0x73fb0928)
DHCPOFFER of 192.168.1.105 from 192.168.1.1
DHCPREQUEST for 192.168.1.105 on eth0 to 255.255.255.255 port 67 (xid=0x2809fb73
)
DHCPACK of 192.168.1.105 from 192.168.1.1 (xid=0x73fb0928)
```

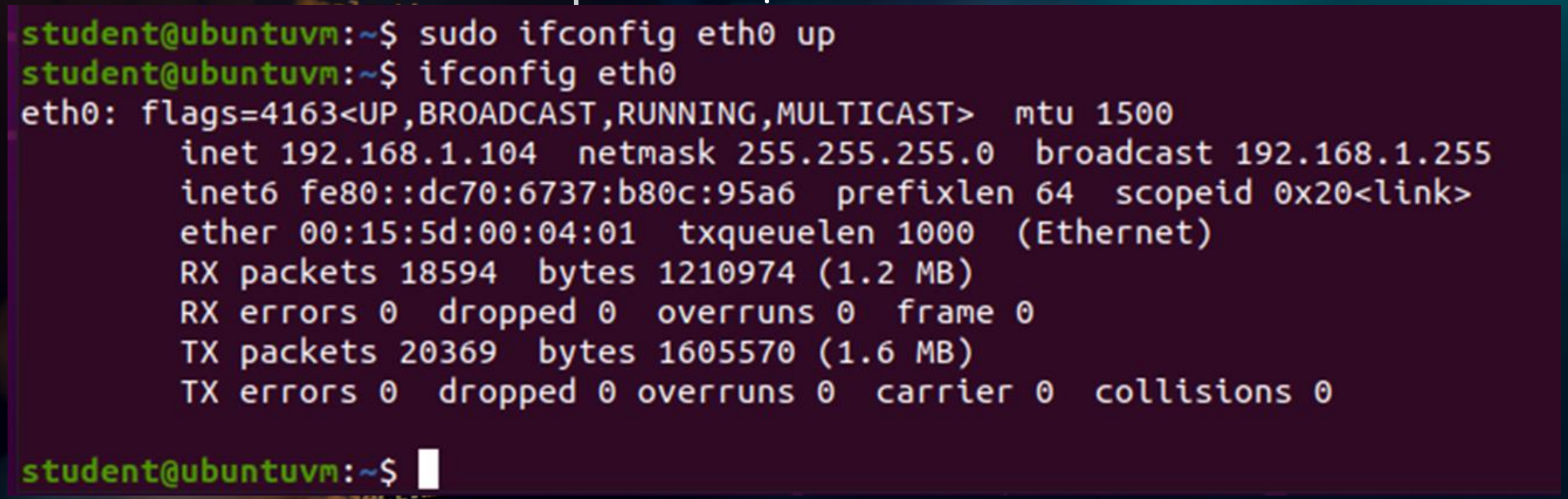
References:

1. Week 5 Project Manual

2. Week 5 Project Video

USE NETWORK UTILITIES

This ia screenshot of the output in Step 5.



SECURITY, TROUBLESHOOTING, PERFORMANCE

- Monitoring the Linux processes
- Monitoring user activities
- Monitoring network band-with usage

MONITOR LINUX PROCESSES

1. What is the default action of the *15 SIGTERM* kill signal?

Answer here: Kill the highlighted process

2. In the System Monitor window, click on *% CPU* to sort the processes by CPU load. Which process shows the highest percentage of CPU usage?

Answer here: gnome-shell

References:

1. Completing the project.

MONITOR USER ACTIVITIES

Issue the **sudo accton on** command to turn on GNC accounting. Run the **sudo updatedb** command. Enter **lastcomm updatedb** to check if the *updatedb* command was executed before. Remember to turn off GNC accounting (**sudo accton off**) after answering the questions.

1. What flag value is displayed in the output?

Answer here: S – means the command was executed by the root (superuser)

2. Why is the name of the user who ran the processes shown as root, not student?

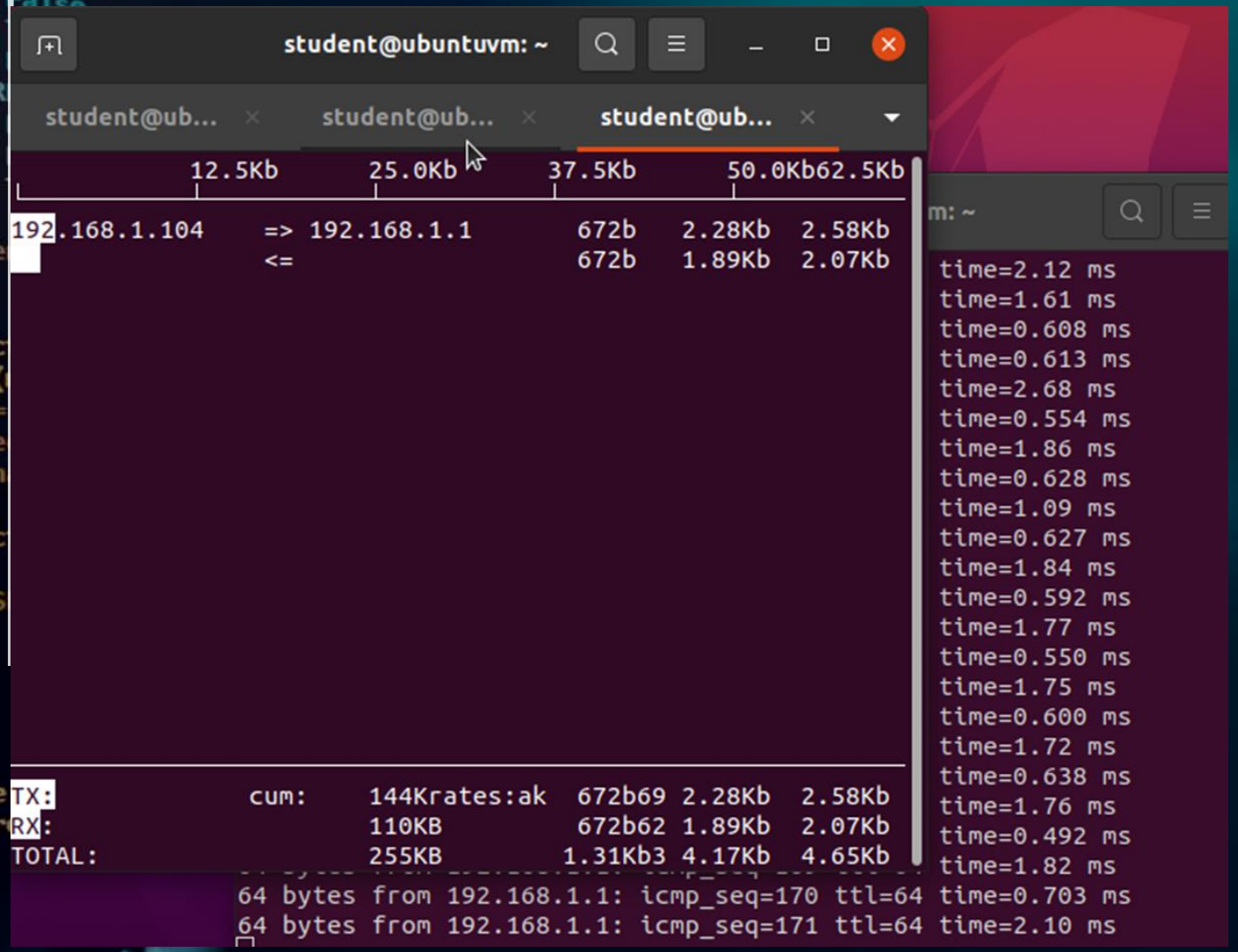
Answer here: We put "sudo" in front of the command, which means "superuser do" and caused the root user (superuser) to execute the command for us

Reference:

1. Watched Project Help Video

MONITOR NETWORK BAND-WIDTH USAGE

A SCREENSHOT OF THE OUTPUT



CHALLENGES

- The network adaptor was not configured correctly
- Low resolution monitor so needed full-screen to see the menu button in Ubuntu
- Laptop needed a full reset because it was operating slowly

CAREER SKILS

- Several career skills were gained in this project:
  - Learned how to use the Linux operating system
  - Learned how to work with the networking protocols
  - Learned several Linux commands
  - Troubleshooting errors as situations were presented
  - Analysis – Reviewing screens and screenshots to understand processes

CONCLUSION

- Linux is an amazing operating system
- Many corporations use Linux for servers (eg. mail servers, web servers)
- This course provided a hands-on learning opportunity to put into practice the topics covered in the use of Linux