CSP450 NAA Project 1B

Submitted to
Mr. Scott Apted

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PSA: This is a fourth-semester course, and by this stage, you are expected to complete this lab independently. You may reference this material as a guide, but under no circumstances should you submit it as your work. Doing so is considered academic misconduct.

Let me be clear: I will know if this is copied and used improperly. Academic dishonesty is taken seriously, and I won't hesitate to report violations. I've worked hard to earn my credentials, and I expect you to show the same commitment to your education.

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Project Overview

This document provides a comprehensive guide to configuring trunking via one Aruba 6300 and one Aruba 2530 Switch. The 6300 switch functions as a Layer 3 switch, whereas the 2500 switch operates as a Layer 2 switch. This project can be completed with two 6300s, although the configuration will need to be different. With this topology, we have two PCs. PC1 and PC2 must reside within their VLANs and receive an IP via DHCP pools. Successful implementation will allow the virtual machines to communicate via ICMP and enable secure SSH access using key pairs. Lastly, each member must install and configure an Apache webpage. This webpage must display your name and Seneca ID, and each member must be able to access the webpage via the IP received from the DHCP server.

Keyword definition for this project is as outlined

DHCP (Dynamic Host Configuration Protocol):

- DHCP automates the assignment of IP addresses and other network configuration parameters to network devices (hosts), simplifying network administration.

VLANs (Virtual Local Area Networks):

- VLANs logically segment a physical network, allowing devices connected to different switches or ports to communicate as if they were on the same network, or isolating them as needed. This improves network organization, security, and performance.

IP Routing:

- IP routing is the process of forwarding data packets between different networks. Routers use routing tables to determine the optimal path for data to travel, enabling communication across interconnected networks.

SSH (Secure Shell):

- SSH is a cryptographic network protocol that enables secure remote access and communication over an insecure network. It provides authentication, confidentiality, and data integrity.

Key Pairs (Public/Private Keys):

- Public/private keys are used for secure authentication and data encryption/decryption. The public key encrypts or verifies; the private key decrypts or signs.

Link aggregation

- Link aggregation is a technical technique that allows users to combine multiple Ethernet links into a single logical link. This link enables the network to become stronger and more reliable as the two connections become a theoretical single connection. Moreover, this increases the speed between the two switches.

Apache Web Server

- Apache HTTP web server can be installed on any Linux machine and gives users the ability to display a page via your localhost/index.html. Moreover, Apache is open source, cross-platform, Modular, and Reliable.

Determining the Subnet for this Project

The subnet for this project, as defined within the project 1B diagram, is as follows: 172.20.x.?/25. Within this subnet, X is the unique student ID number you provided. When you find your number, this helps you determine the subnet, although it does not determine the rest of the IP. It is not as easy as replacing X with your number and continuing with the project. In light of this, let's take a look at an example of how to determine the subnet using each unique number within the group.

For example, we can use James's unique number of 25.

Let's break down some things we already know.

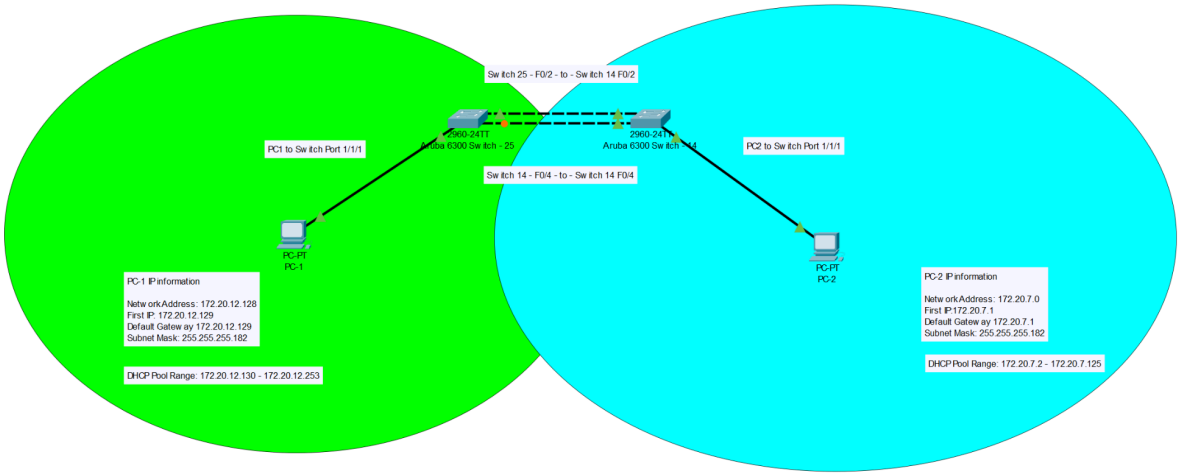
1. We know our unique number is 25
2. We know that from our 172.20 subnet, we have a total of 10 bits to work with, and the 172.20 is fixed and takes up a total of 16 bits

With this information, we can determine our 10-bit representation of our unique ID, which is 25. With this in mind, let's convert our number 25 into binary, which can be represented in the format 0000011001.

Based on this information, we can examine this problem from an IP address standpoint. We know that each section of an IP address contains 8 bits rather than the 10 we had to work with previously. In that case, we can section it off as 8 bits. This can be represented as 110.0100000.
.
In that case, for James's subnet with the student ID of 25, we can determine that the first IP address is 172.120.12.128 /25

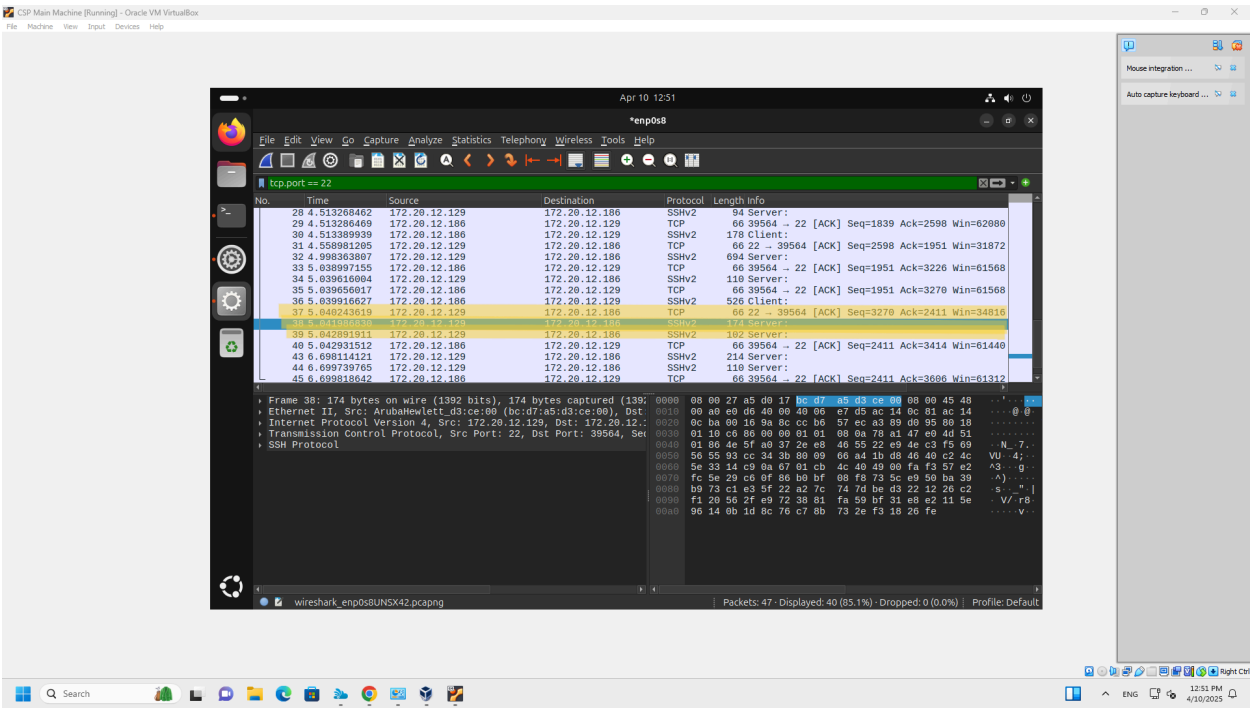
Moreover, if we follow the same rules listed above for Radin's unique number of 14, we get 172.20.7.0

Network Topology

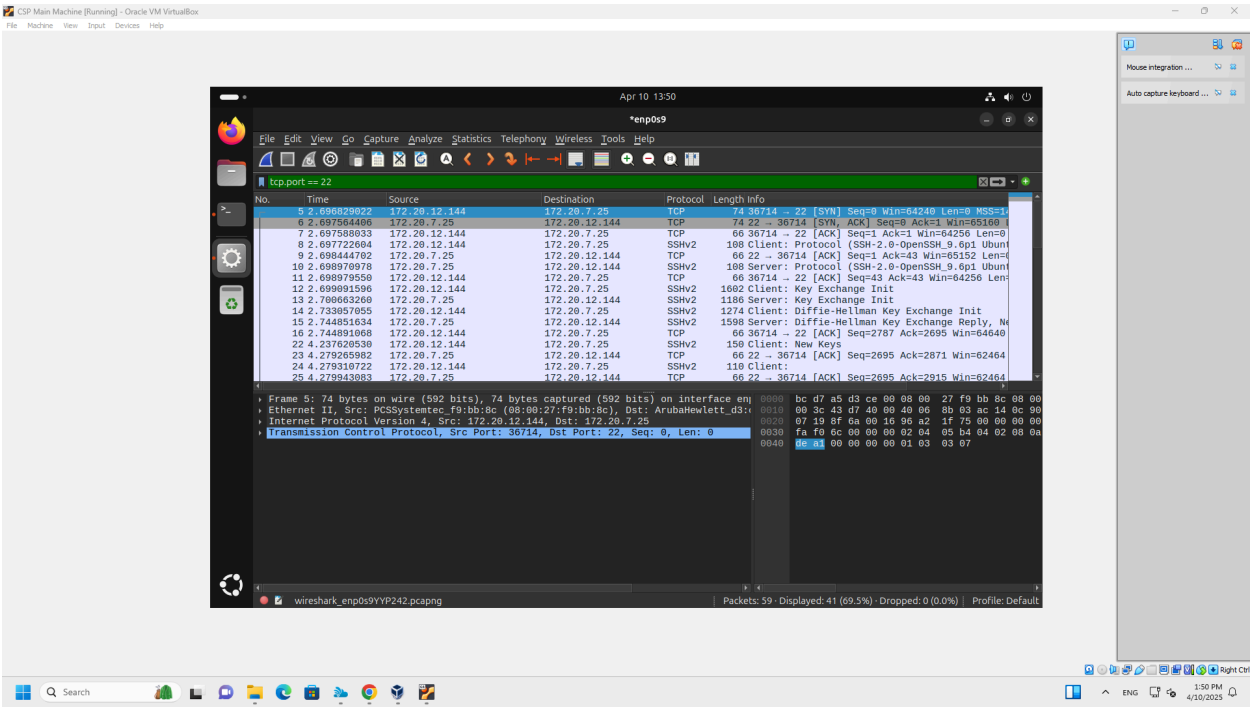


Student A Screenshots Wireshark

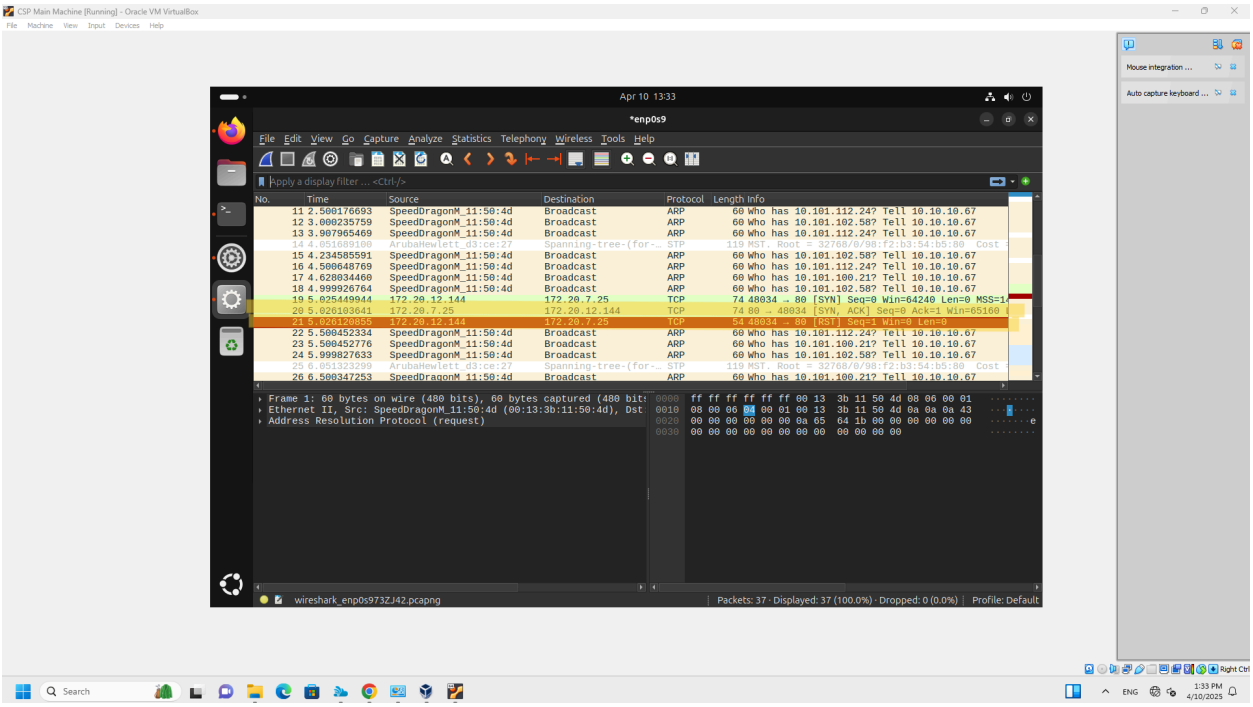
SSH Request from Ubuntu VM to Switch 6300



SSH request from Ubuntu VM to Partner_s Ubuntu VM James to Radin

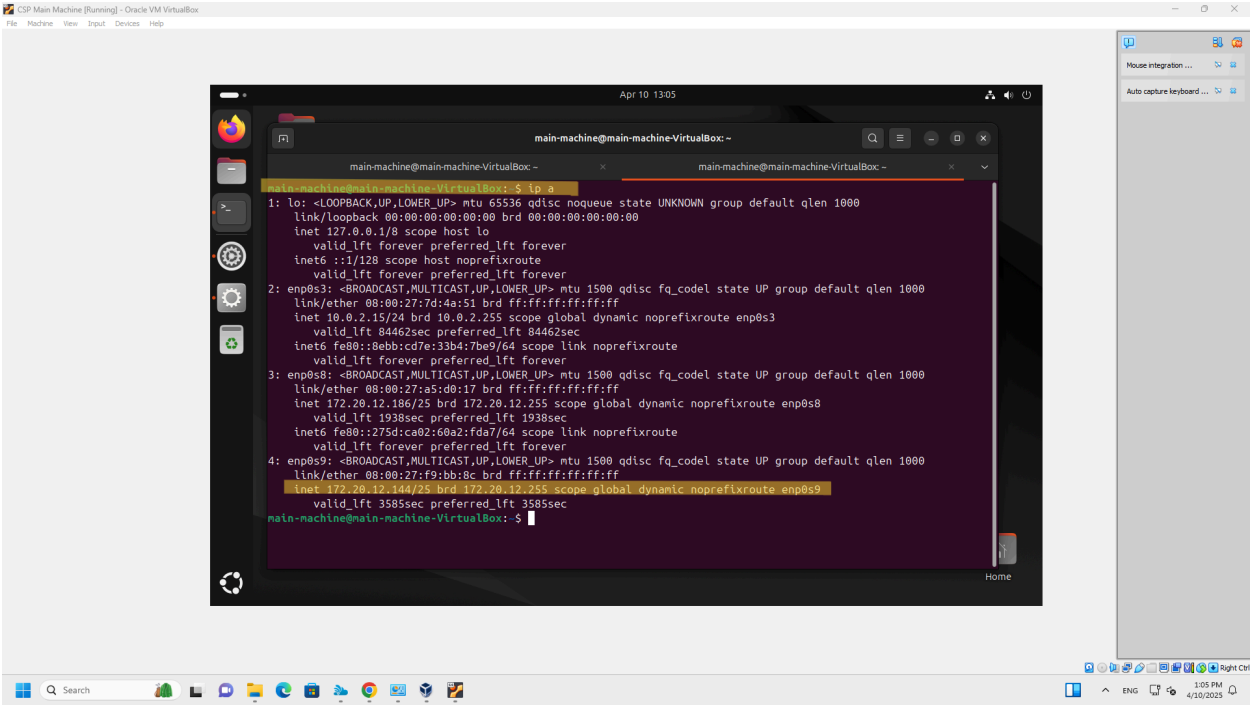


HTTP request to partners Apache Server

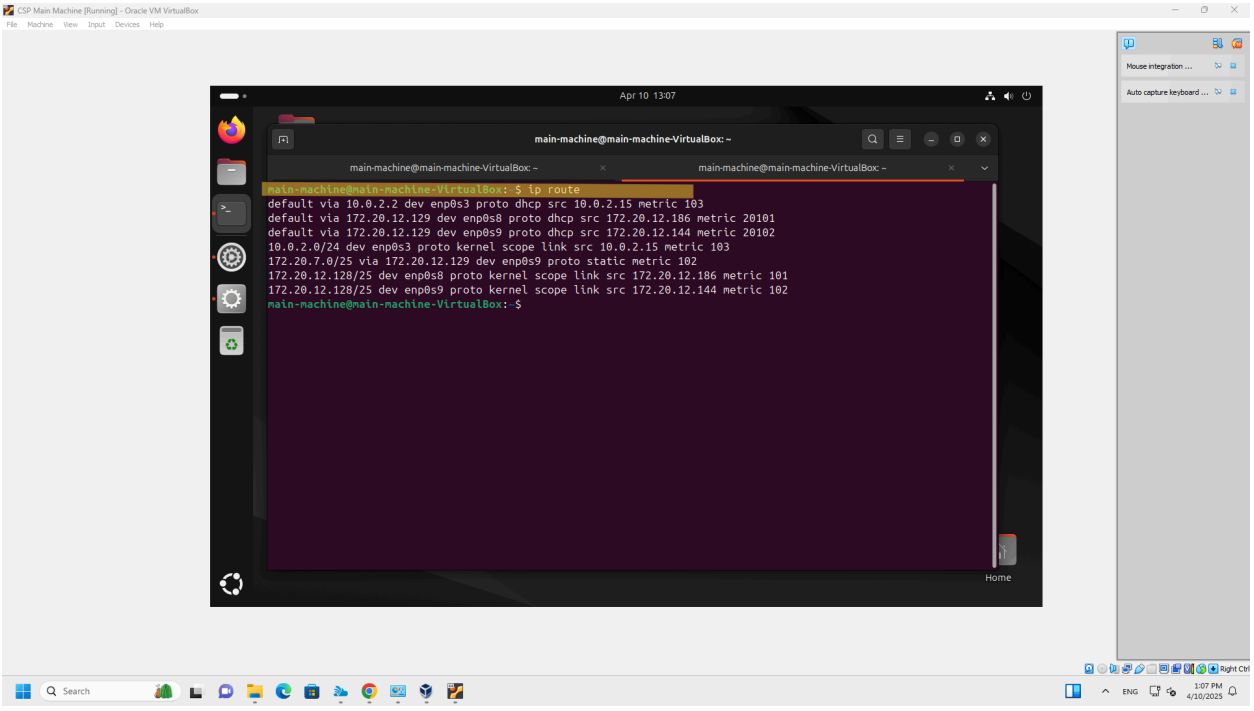


Student A Screenshots From Ubuntu VM

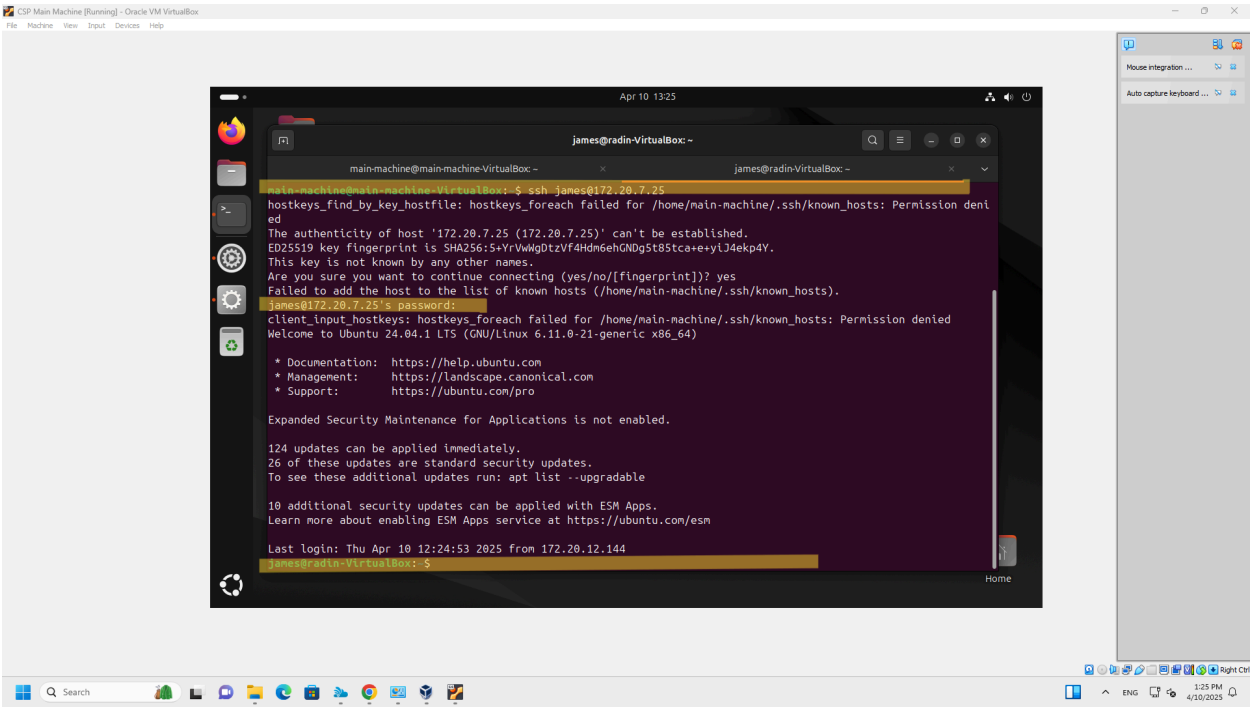
IP a



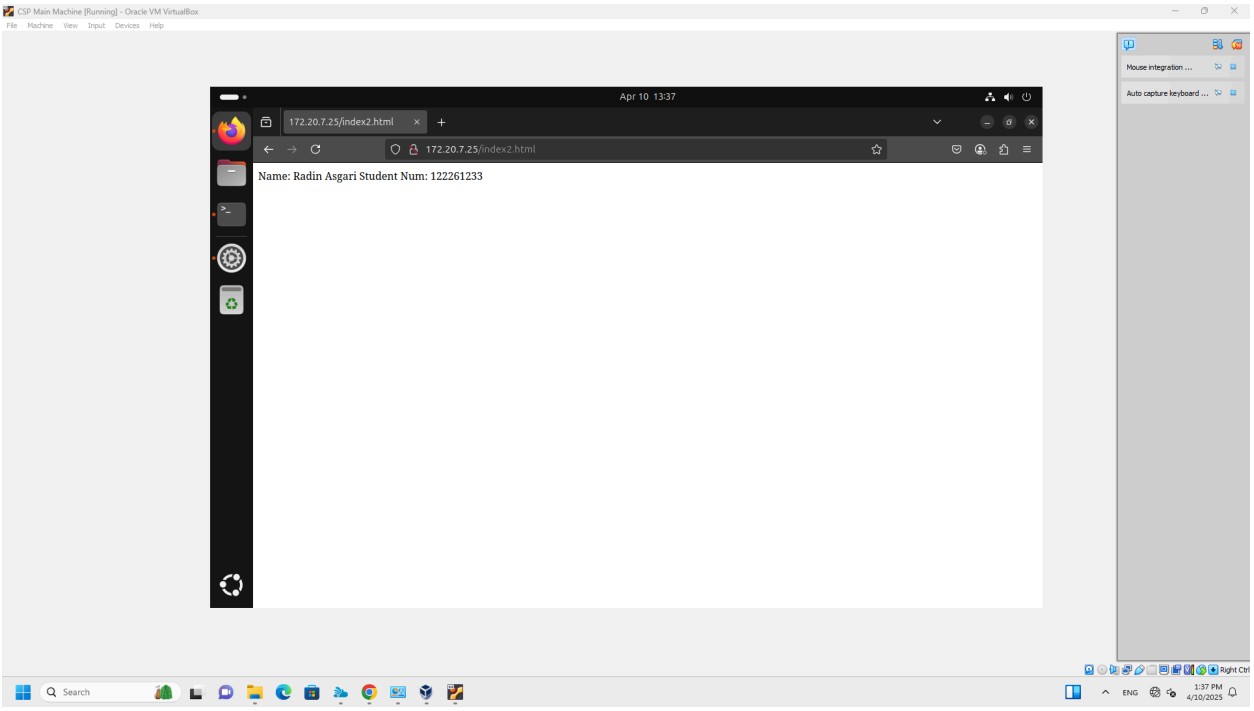
IP Route



SSH Result

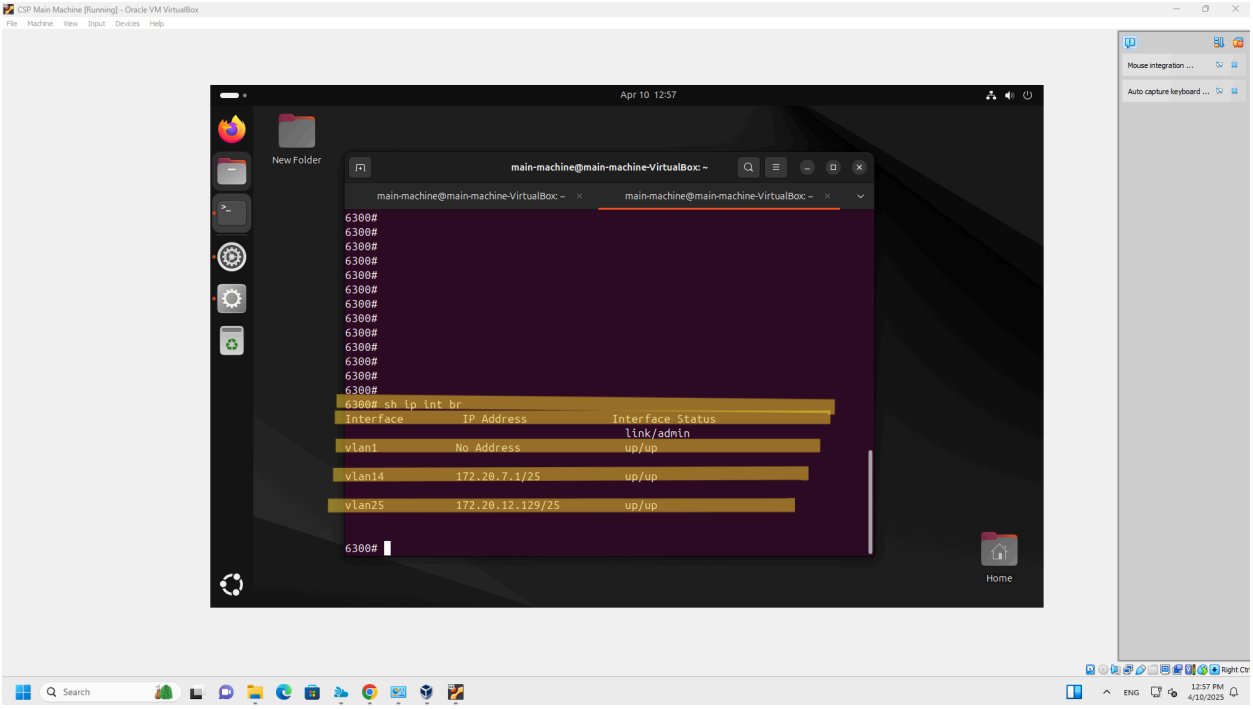


Partners HTTP Webpage

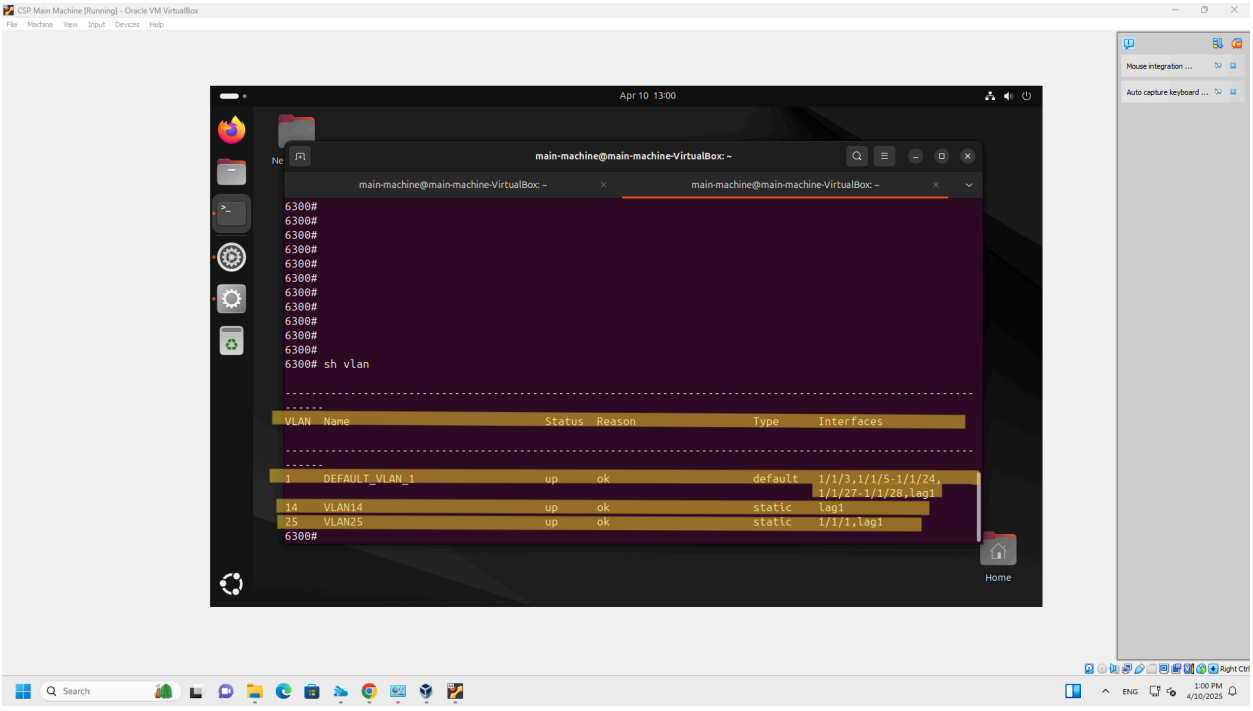


6300 Switch Configurations

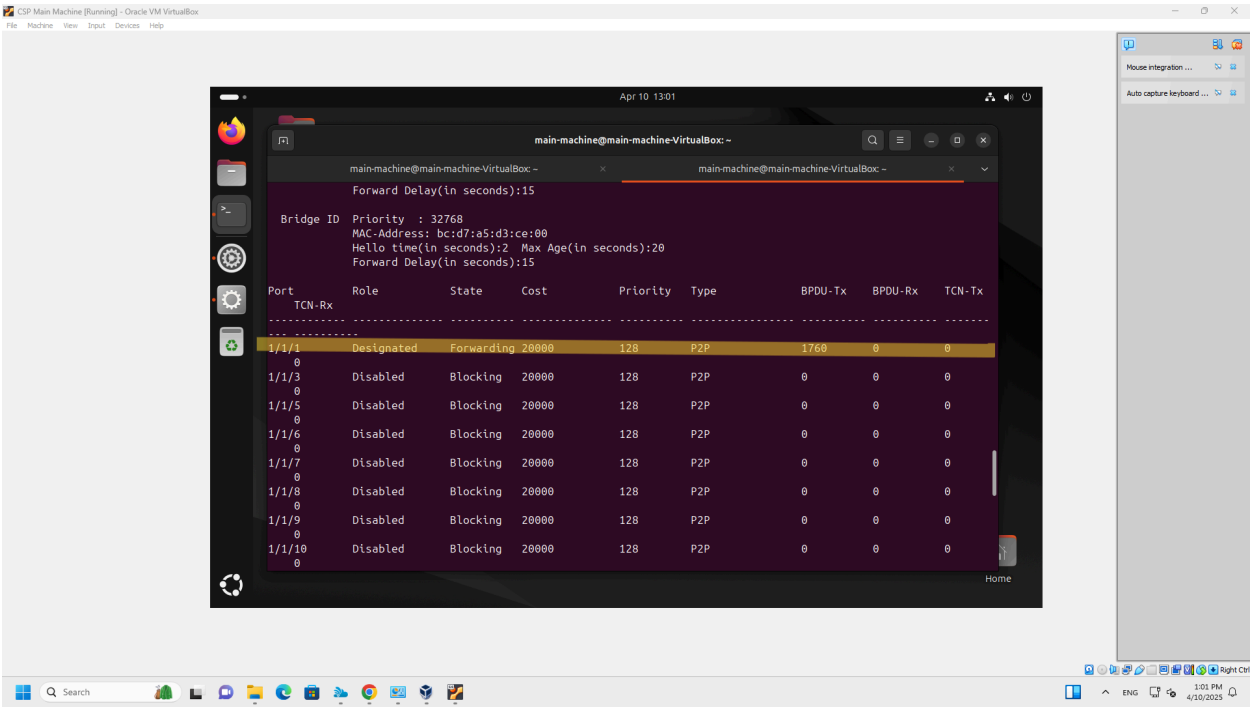
sh ip int br



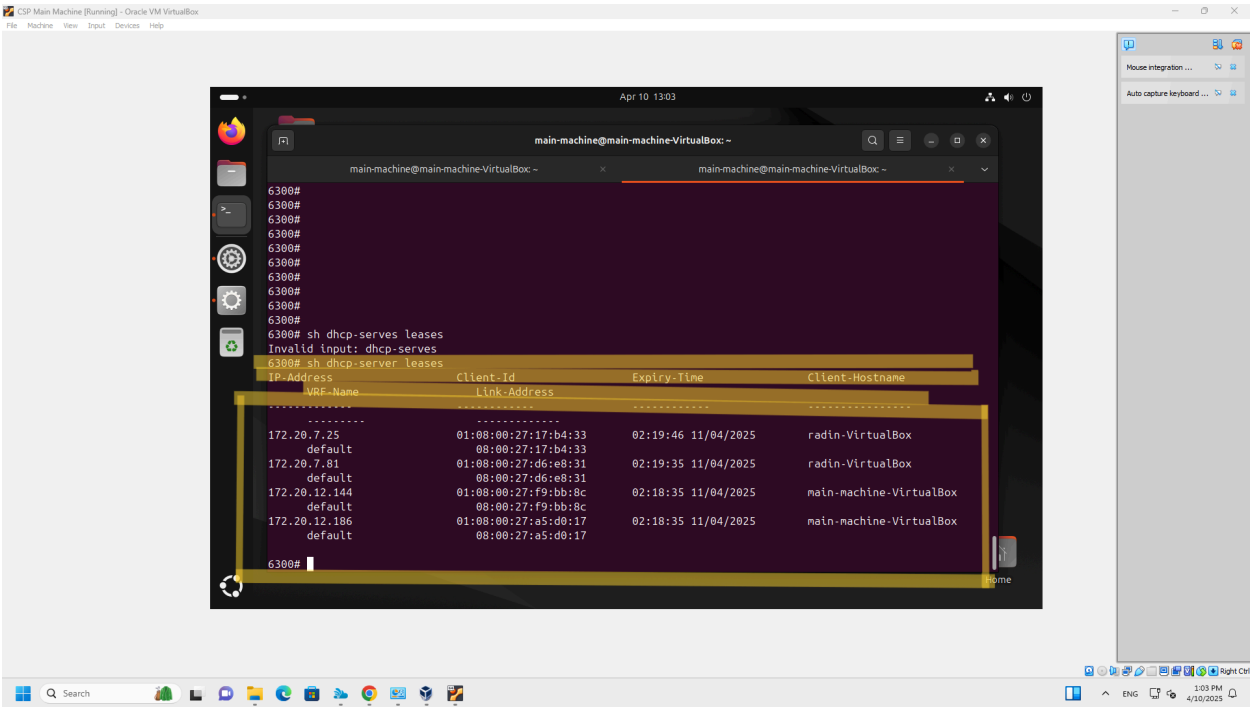
sh vlan



sh spanning-tree

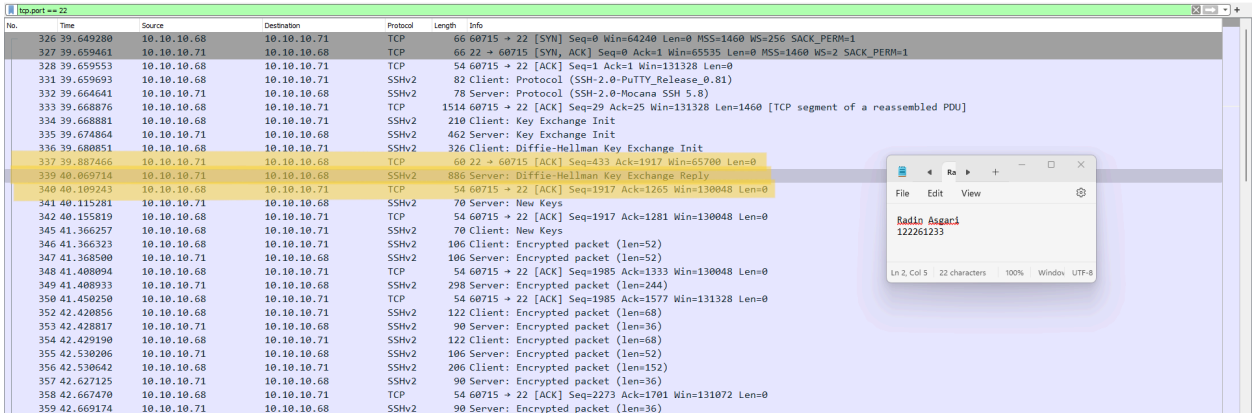


sh dhcp-server leases

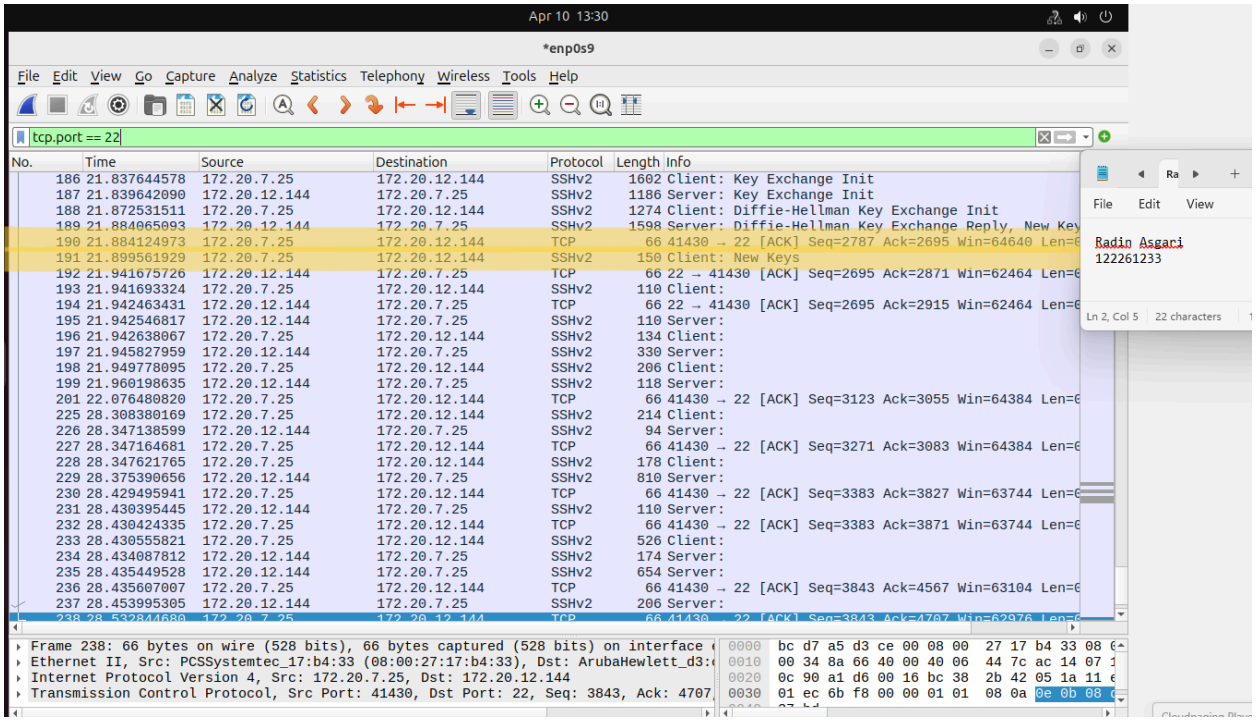


Student B Screenshots Wireshark

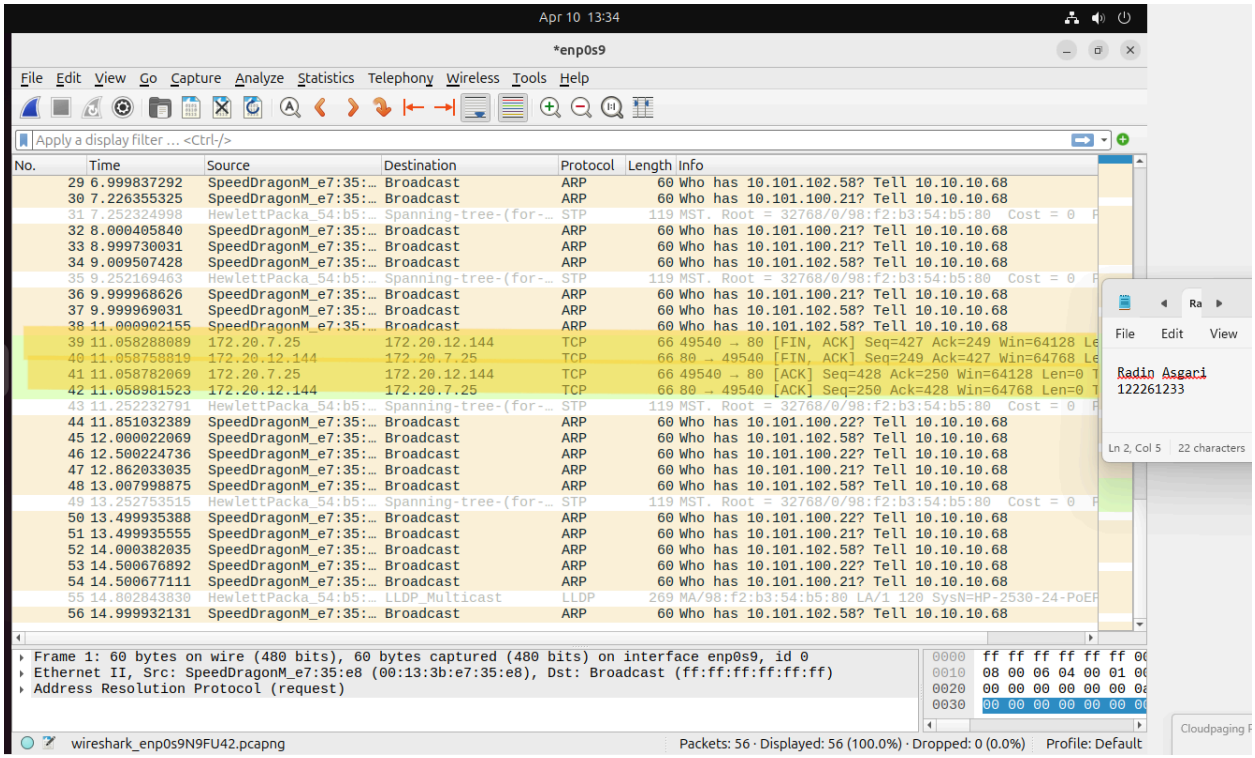
SSH Request from Ubuntu VM to Switch 2530



SSH request from Ubuntu VM to Partners Ubuntu VM Radin to James

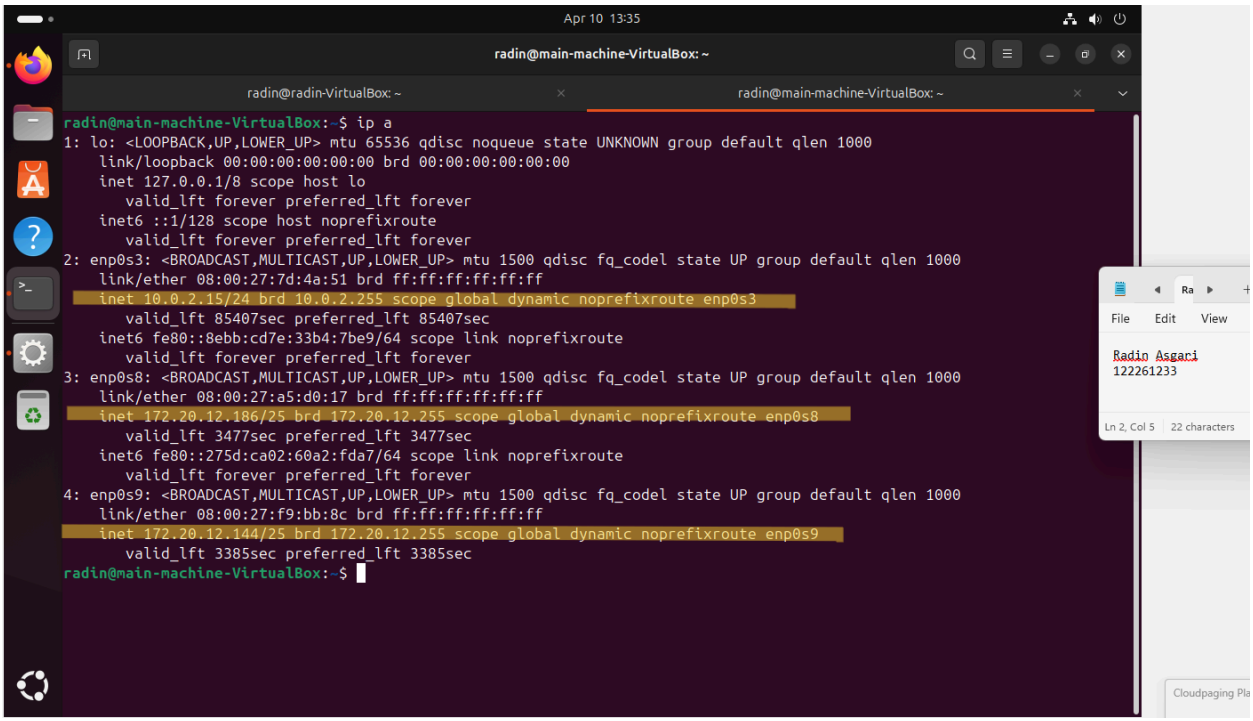


HTTP request to partners Apache Server

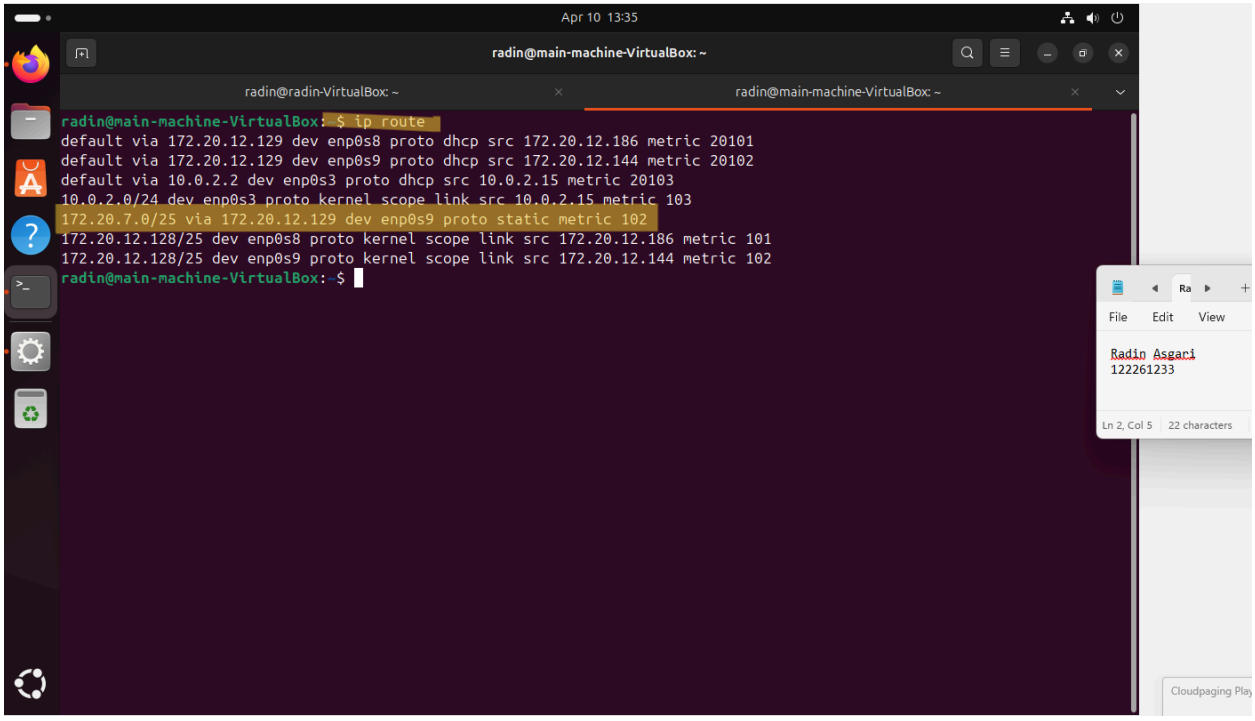


Student B Screenshots From Ubuntu VM

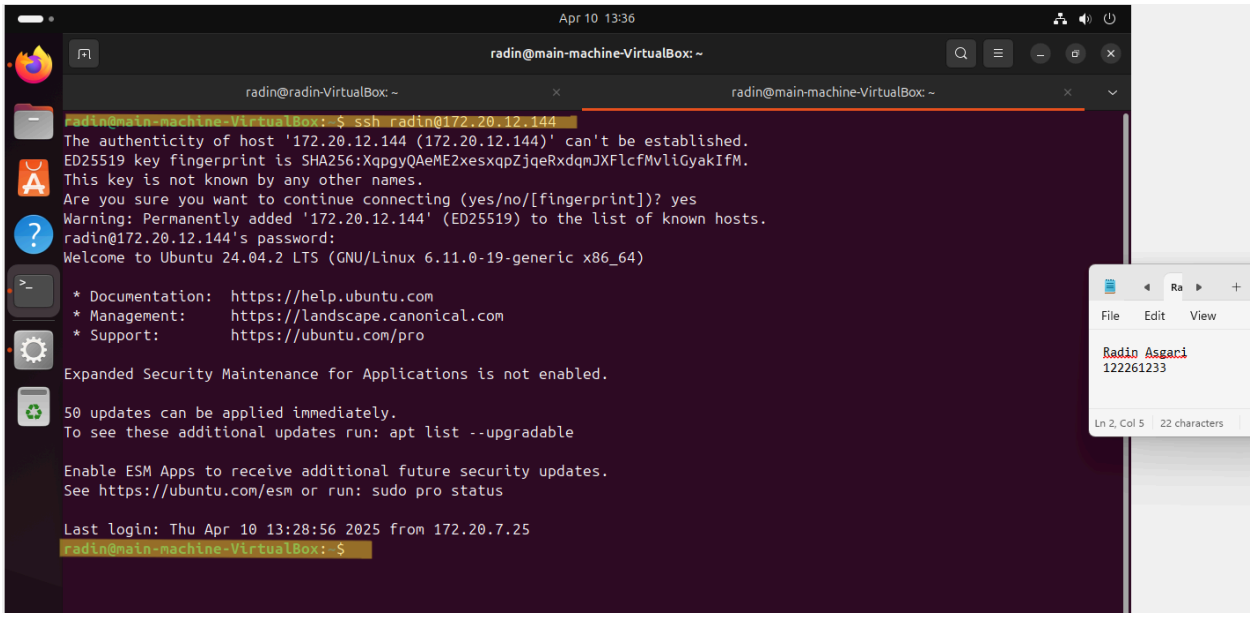
ip a



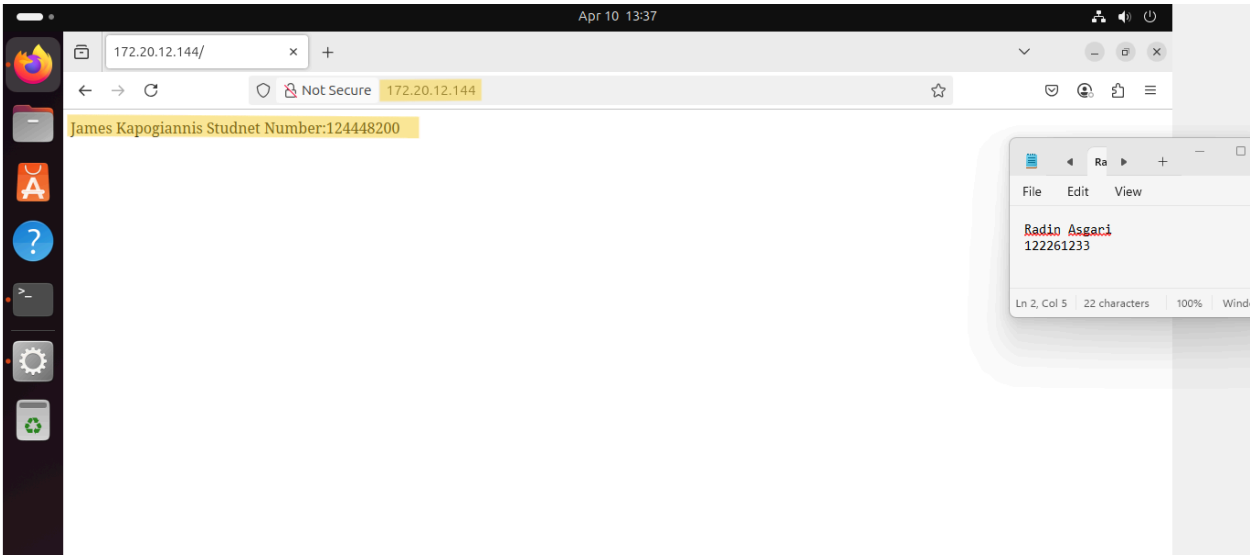
ip route



SSH Request

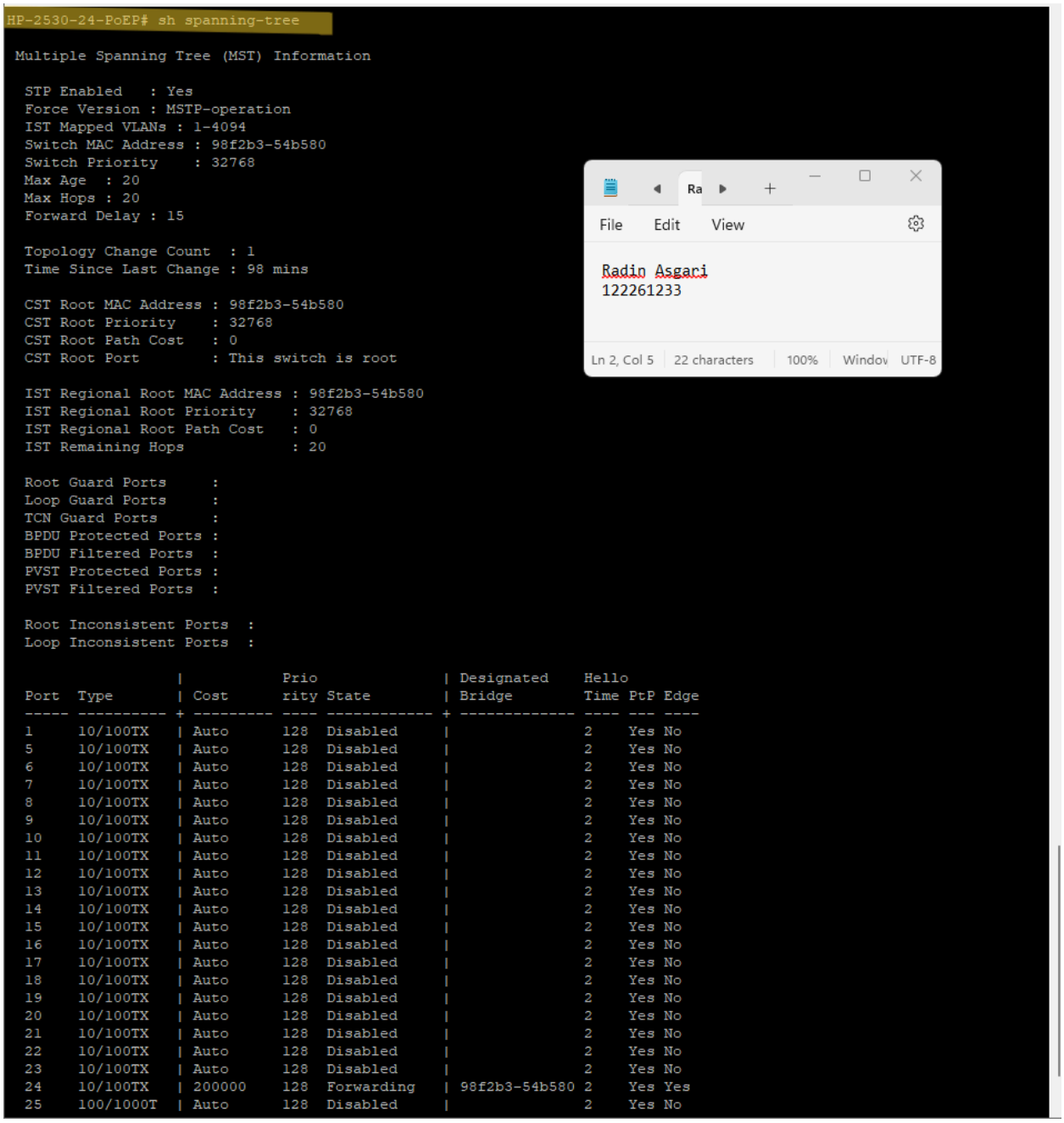


Partners HTTP Webpage



Student B Screenshots 2560 Switch

sh spanning-tree



```
HP-2530-24-PoEP# sh spanning-tree

Multiple Spanning Tree (MST) Information

 STP Enabled   : Yes
 Force Version : MSTP-operation
 IST Mapped VLANs : 1-4094
 Switch MAC Address : 98f2b3-54b580
 Switch Priority    : 32768
 Max Age  : 20
 Max Hops : 20
 Forward Delay : 15

 Topology Change Count  : 1
 Time Since Last Change : 98 mins

 CST Root MAC Address : 98f2b3-54b580
 CST Root Priority    : 32768
 CST Root Path Cost   : 0
 CST Root Port        : This switch is root

 IST Regional Root MAC Address : 98f2b3-54b580
 IST Regional Root Priority    : 32768
 IST Regional Root Path Cost   : 0
 IST Remaining Hops            : 20

 Root Guard Ports     :
 Loop Guard Ports     :
 TCN Guard Ports      :
 BPDU Protected Ports :
 BPDU Filtered Ports  :
 PVST Protected Ports :
 PVST Filtered Ports  :

 Root Inconsistent Ports  :
 Loop Inconsistent Ports  :

                 |          Prio              | Designated    Hello
 Port  Type      | Cost     rity State        | Bridge        Time PtP Edge
 ----- ---------- + -------- ---- ------------ + ------------- ---- --- ----
 1     10/100TX  | Auto     128  Disabled     |               2    Yes No
 5     10/100TX  | Auto     128  Disabled     |               2    Yes No
 6     10/100TX  | Auto     128  Disabled     |               2    Yes No
 7     10/100TX  | Auto     128  Disabled     |               2    Yes No
 8     10/100TX  | Auto     128  Disabled     |               2    Yes No
 9     10/100TX  | Auto     128  Disabled     |               2    Yes No
 10    10/100TX  | Auto     128  Disabled     |               2    Yes No
 11    10/100TX  | Auto     128  Disabled     |               2    Yes No
 12    10/100TX  | Auto     128  Disabled     |               2    Yes No
 13    10/100TX  | Auto     128  Disabled     |               2    Yes No
 14    10/100TX  | Auto     128  Disabled     |               2    Yes No
 15    10/100TX  | Auto     128  Disabled     |               2    Yes No
 16    10/100TX  | Auto     128  Disabled     |               2    Yes No
 17    10/100TX  | Auto     128  Disabled     |               2    Yes No
 18    10/100TX  | Auto     128  Disabled     |               2    Yes No
 19    10/100TX  | Auto     128  Disabled     |               2    Yes No
 20    10/100TX  | Auto     128  Disabled     |               2    Yes No
 21    10/100TX  | Auto     128  Disabled     |               2    Yes No
 22    10/100TX  | Auto     128  Disabled     |               2    Yes No
 23    10/100TX  | Auto     128  Disabled     |               2    Yes No
 24    10/100TX  | 200000   128  Forwarding   | 98f2b3-54b580 2    Yes Yes
 25    100/1000T | Auto     128  Disabled     |               2    Yes No
```

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Ra
File  Edit  View

Radin Asgari
122261233

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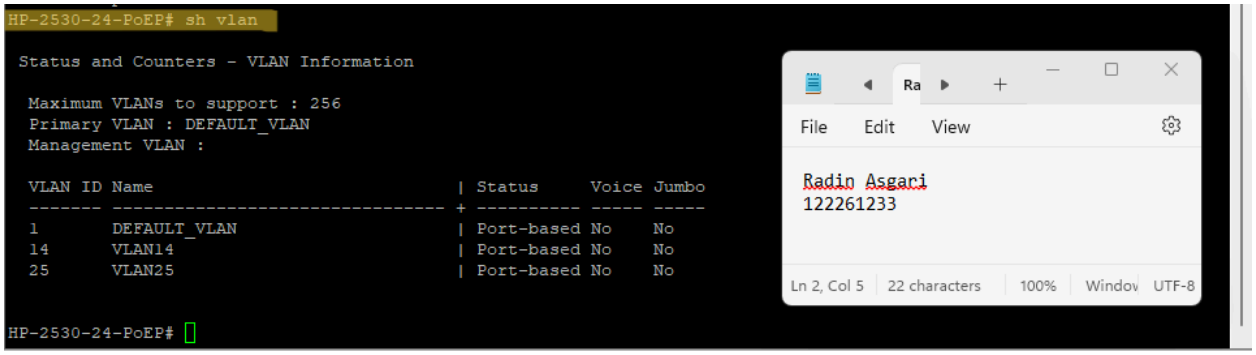
sh vlan


HP-2530-24-PoEP# sh vlan
Status and Counters - VLAN Information
Maximum VLANs to support : 256
Primary VLAN : DEFAULT_VLAN
Management VLAN :
VLAN ID Name | Status Voice Jumbo
1 DEFAULT_VLAN | Port-based No No
14 VLAN14 | Port-based No No
25 VLAN25 | Port-based No No
HP-2530-24-PoEP#
Ra
File Edit View
Radin Asgari
122261233
Ln 2, Col 5 22 characters 100% Windov UTF-8