

CSCE 5580: Computer Network

Project-3

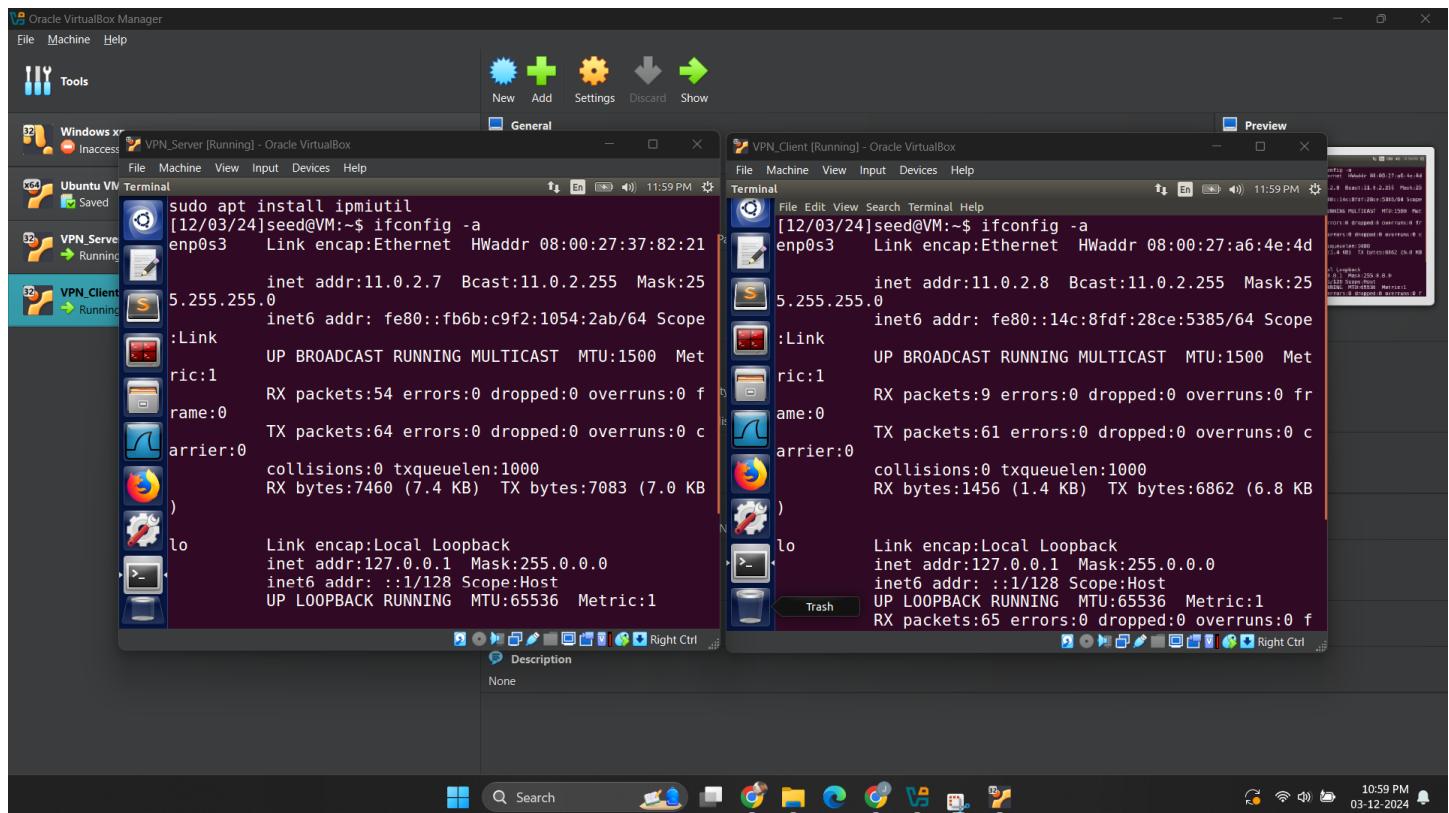
Instructor: Tao Wang

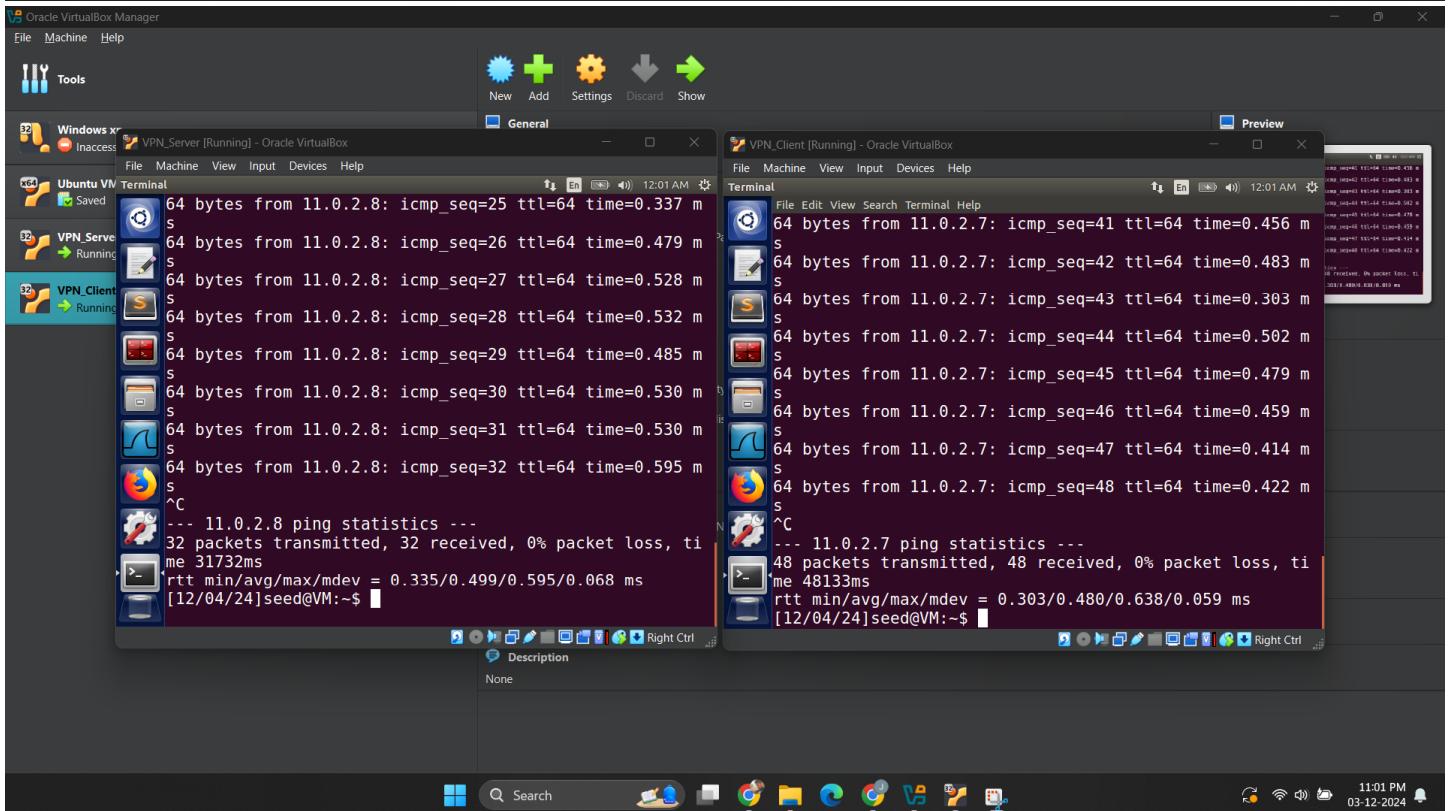
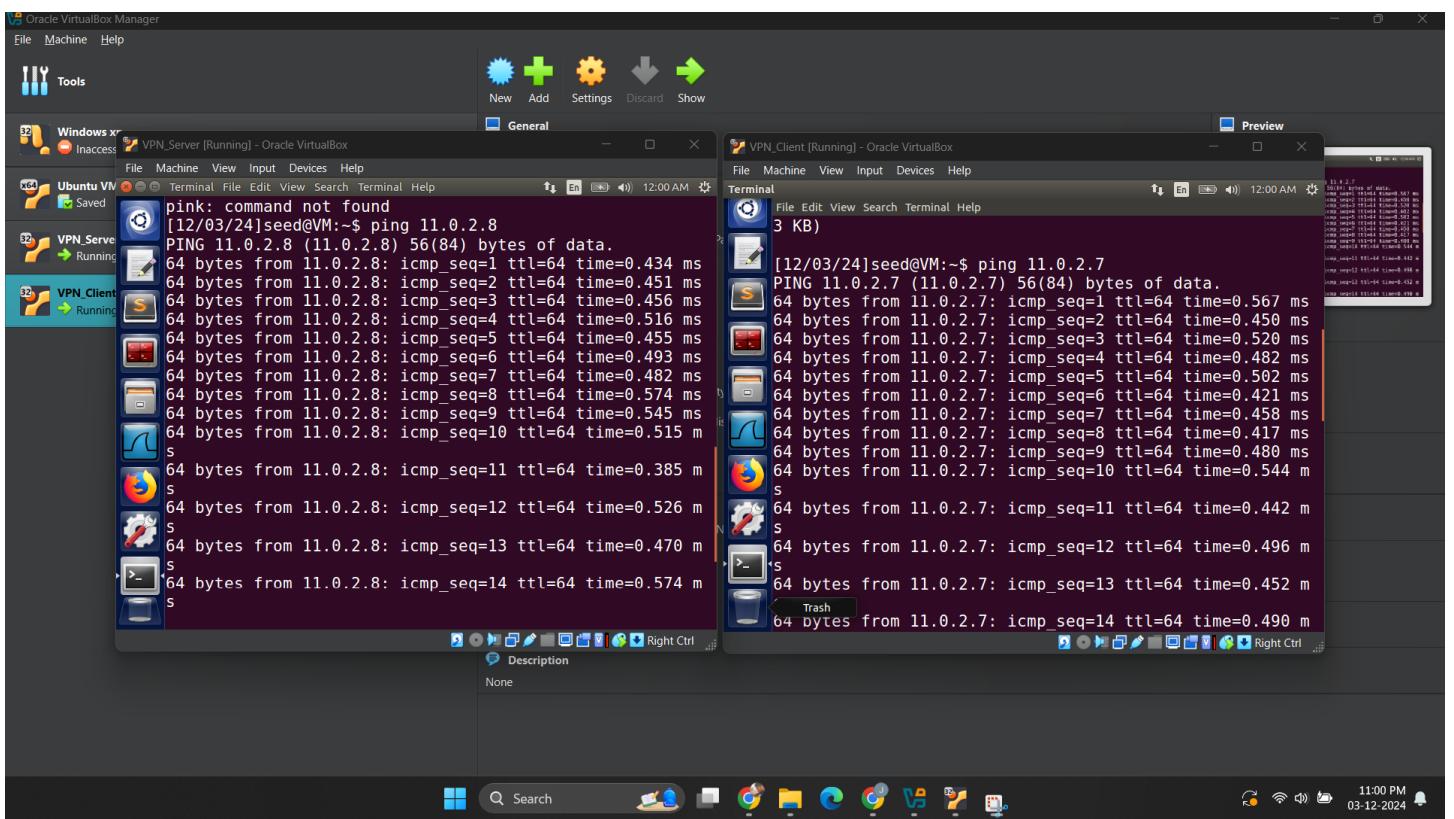
Name: Kishan Kumar Zalavadia

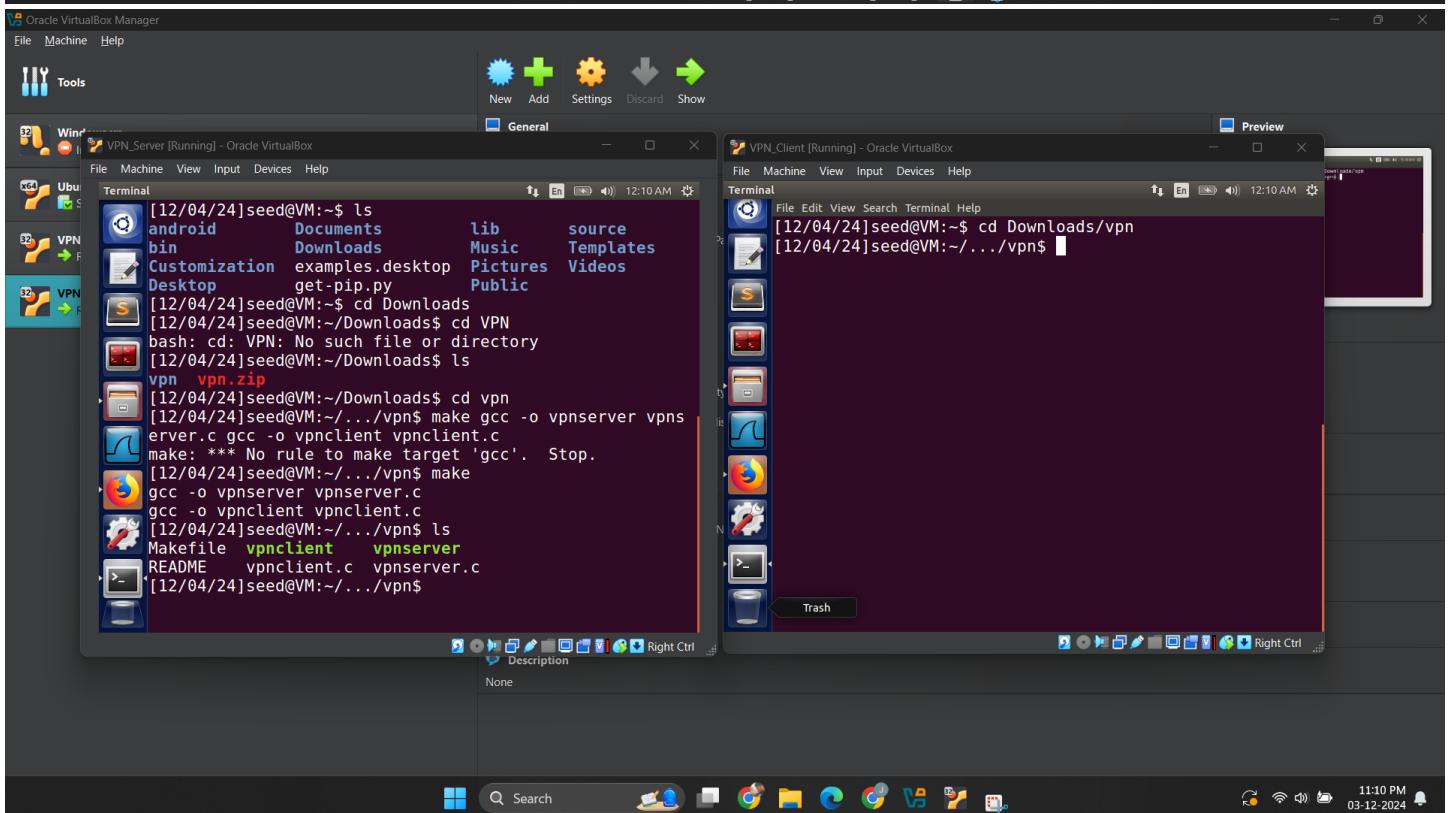
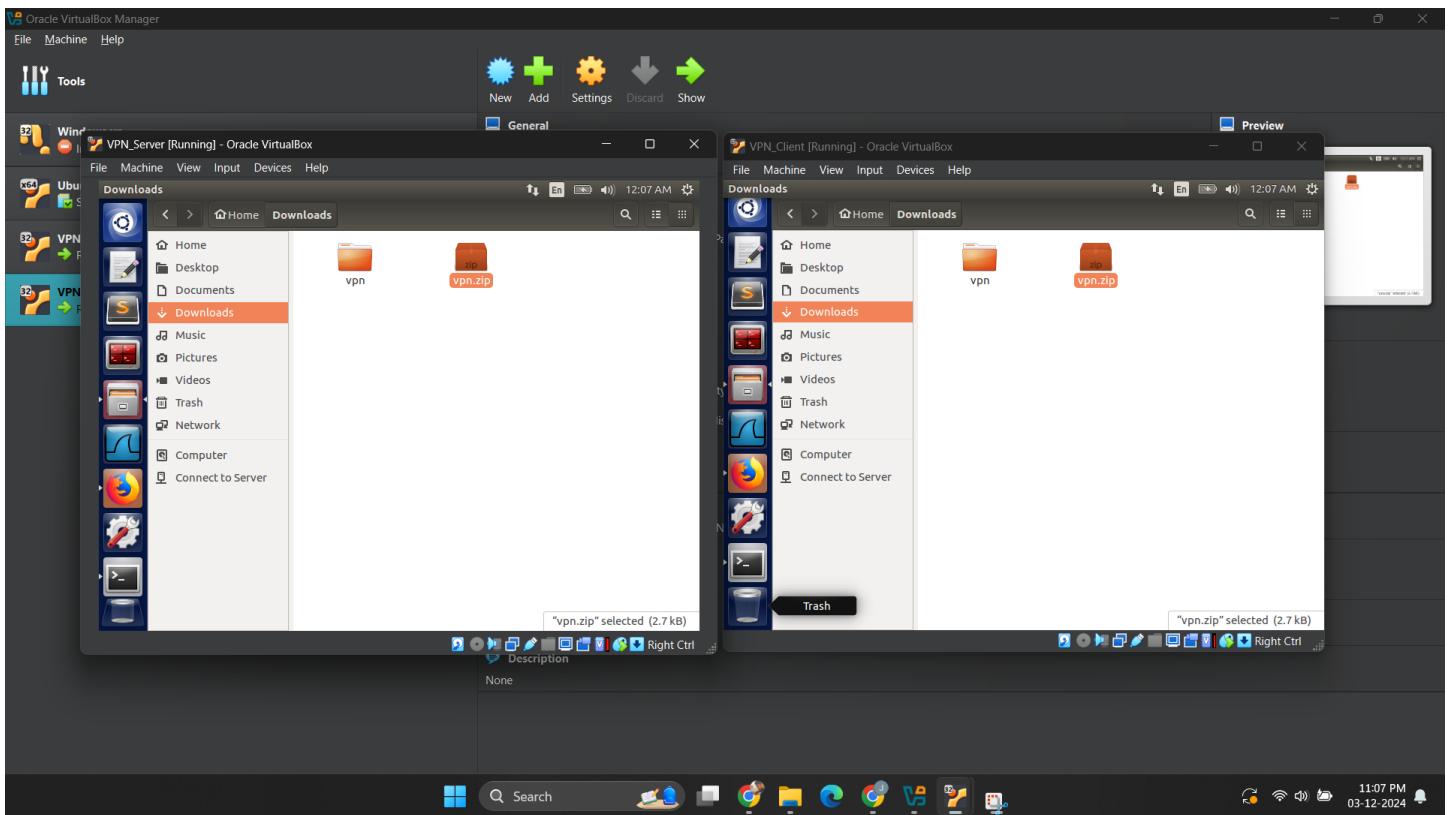
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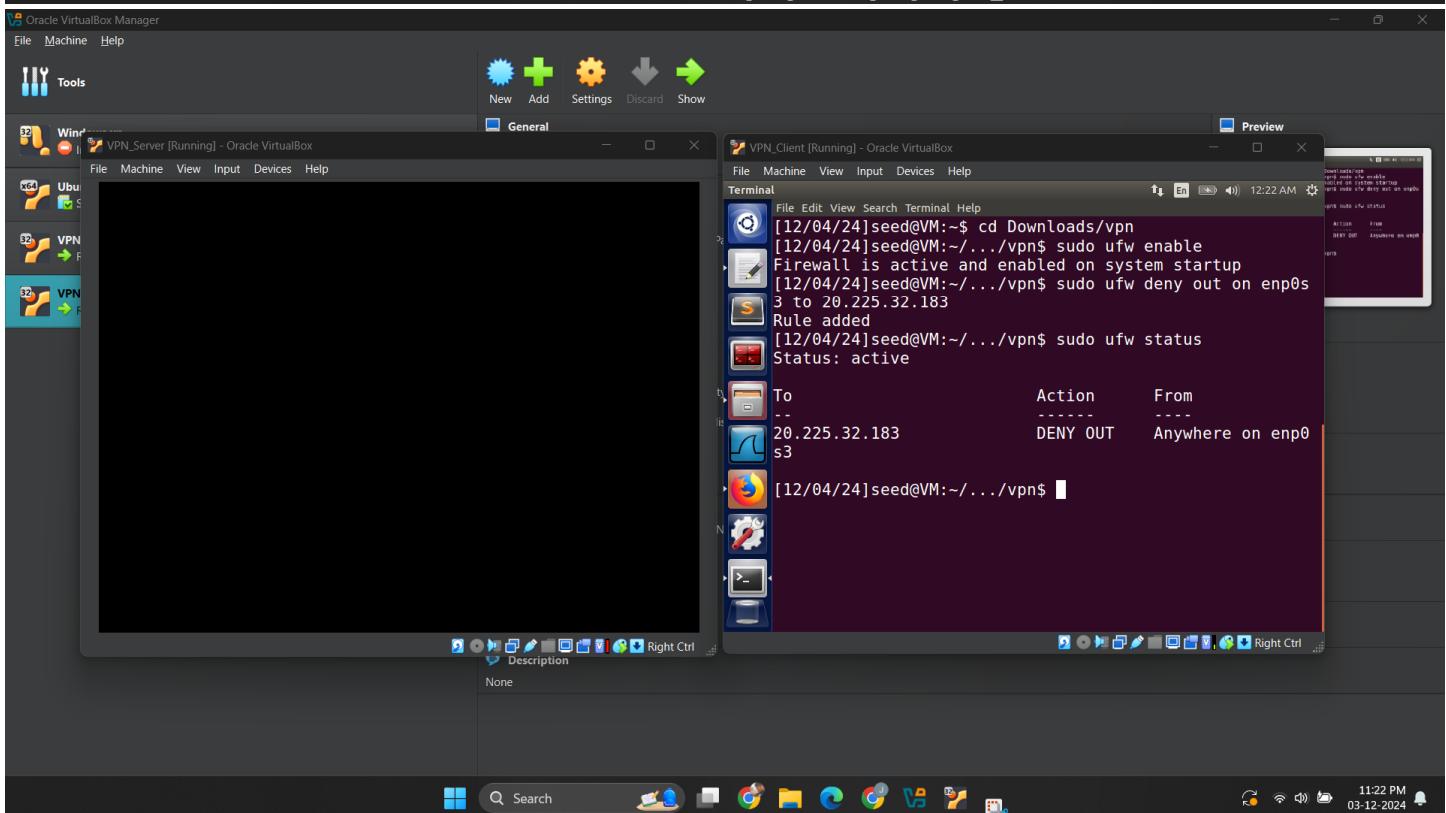
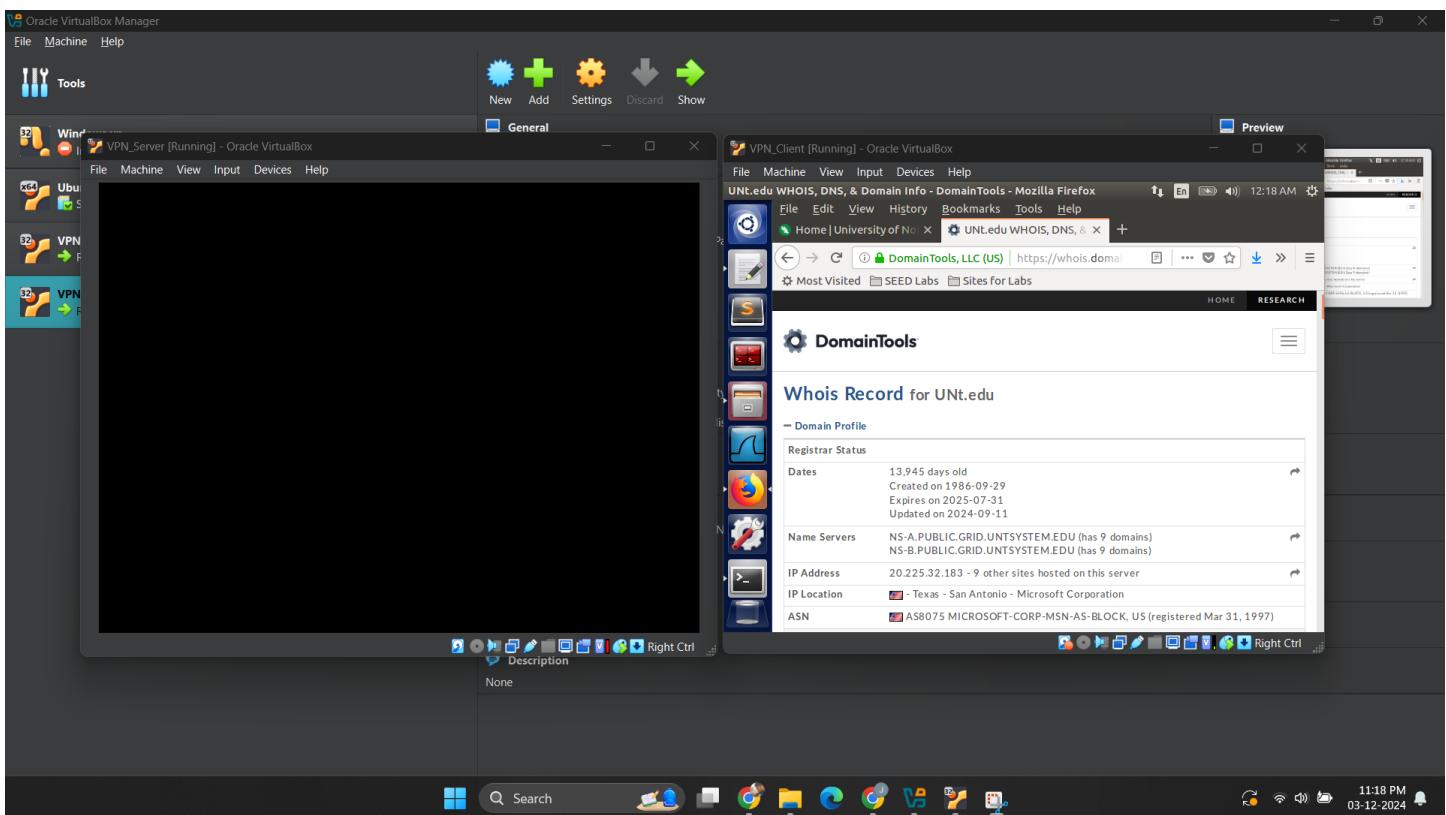
Date: December 04, 2024

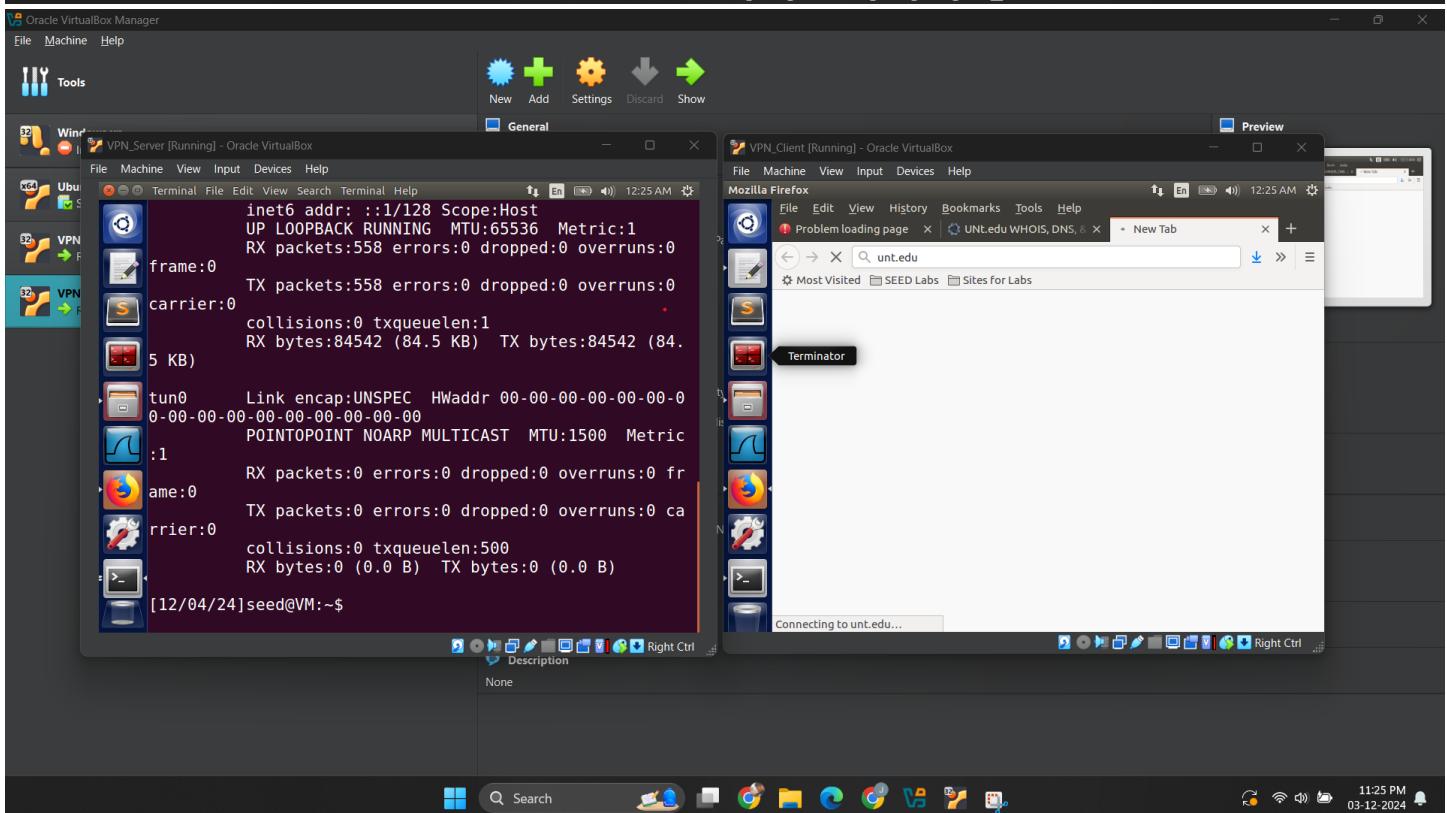
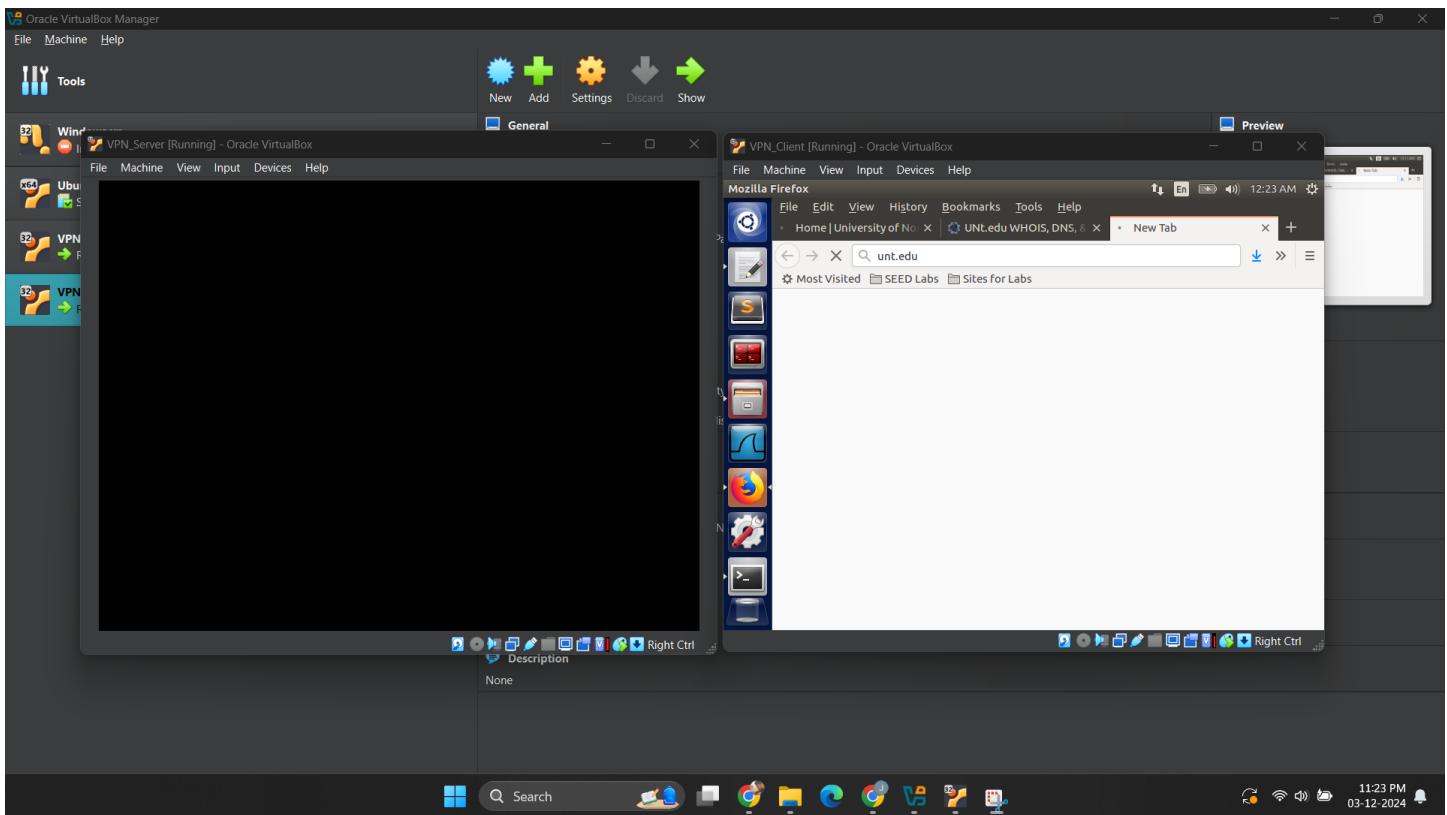
A)

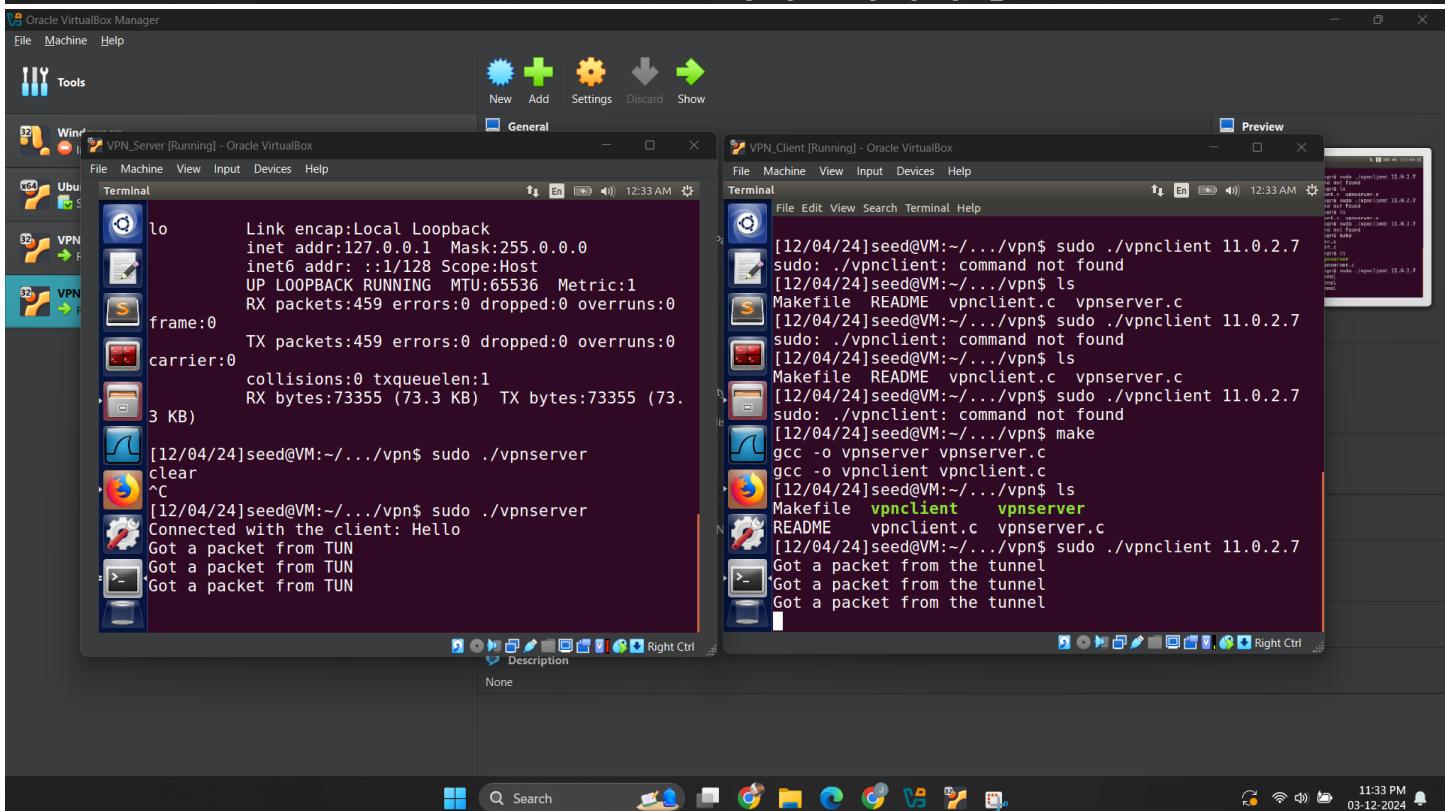
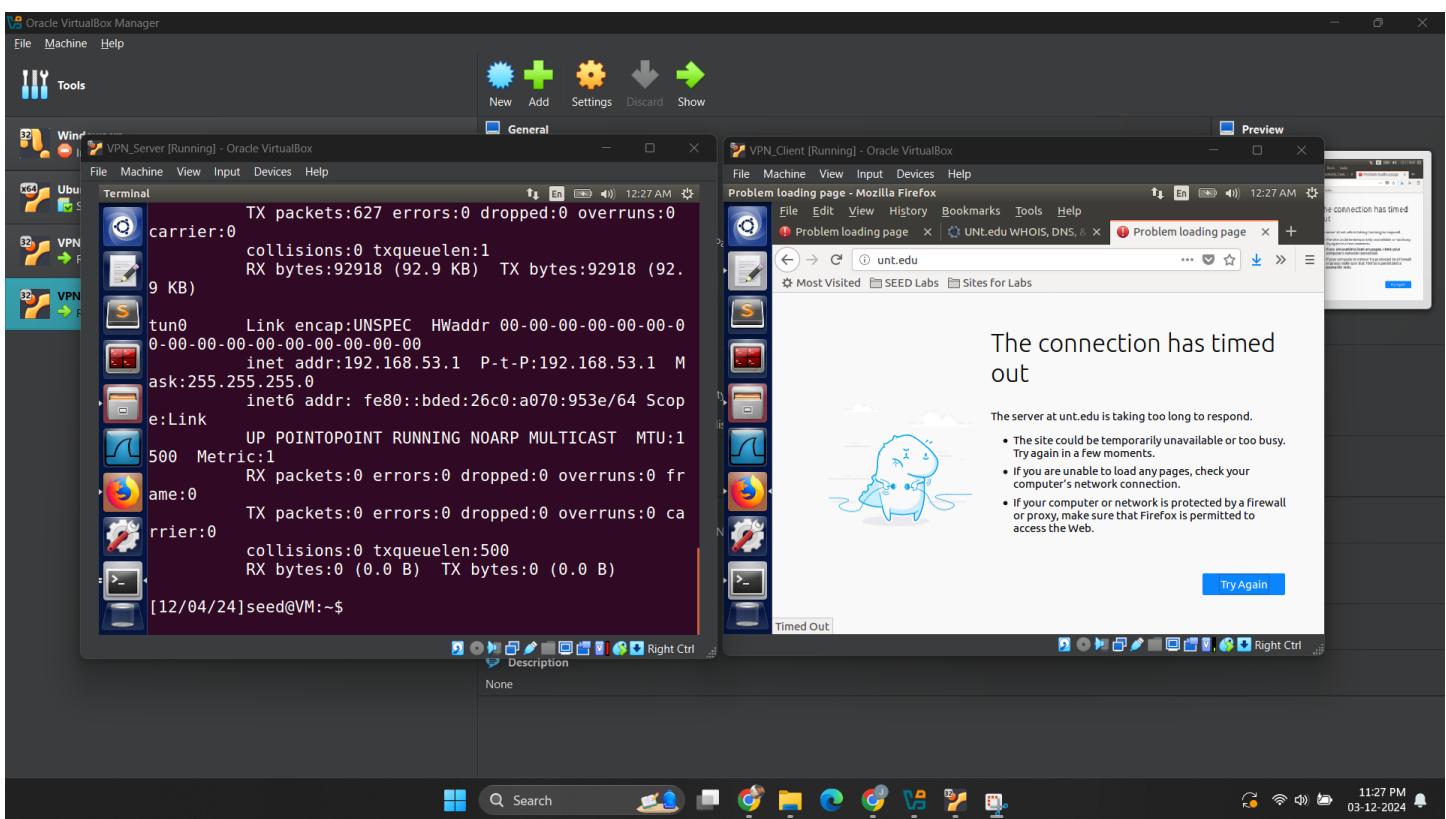


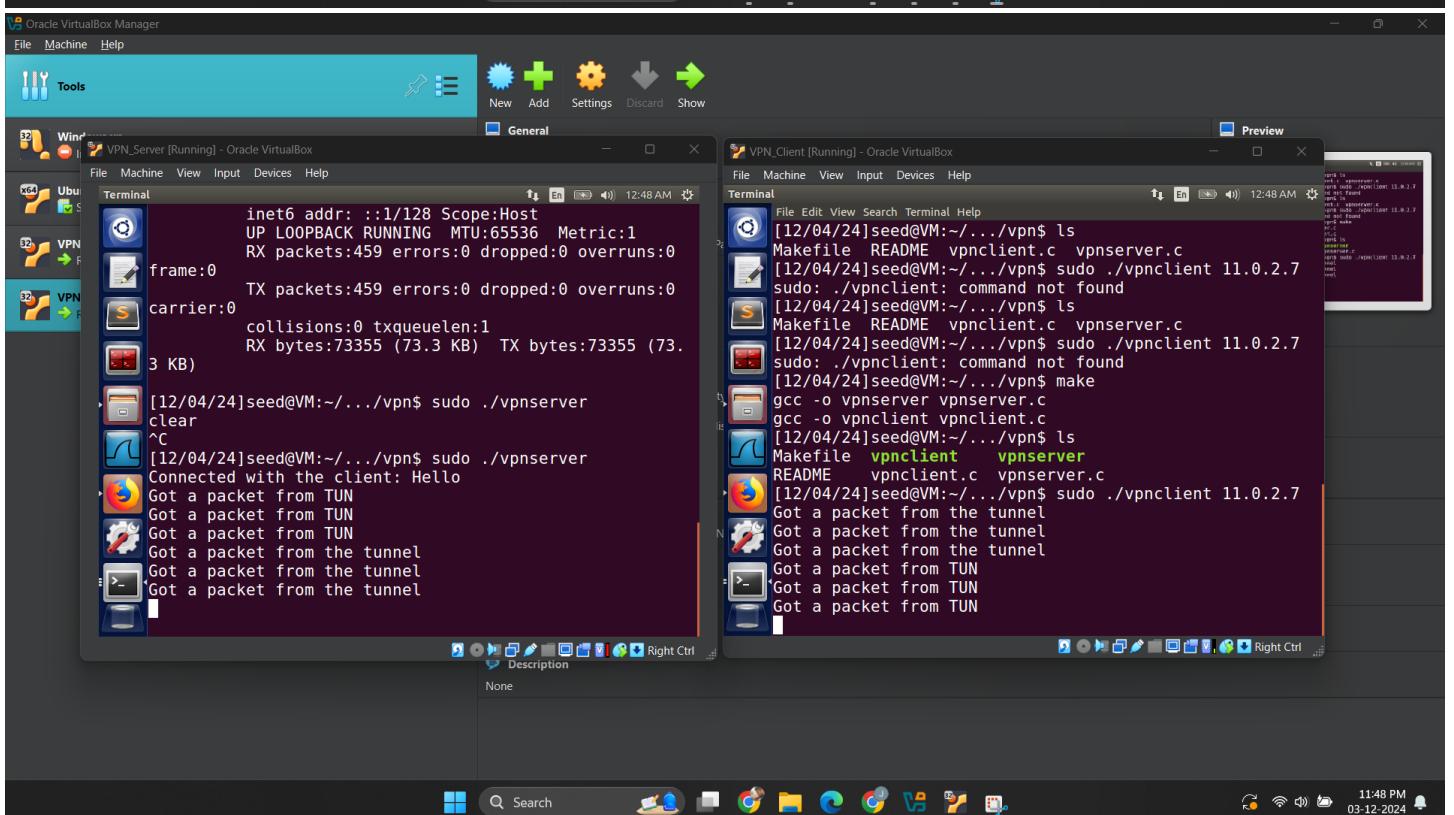
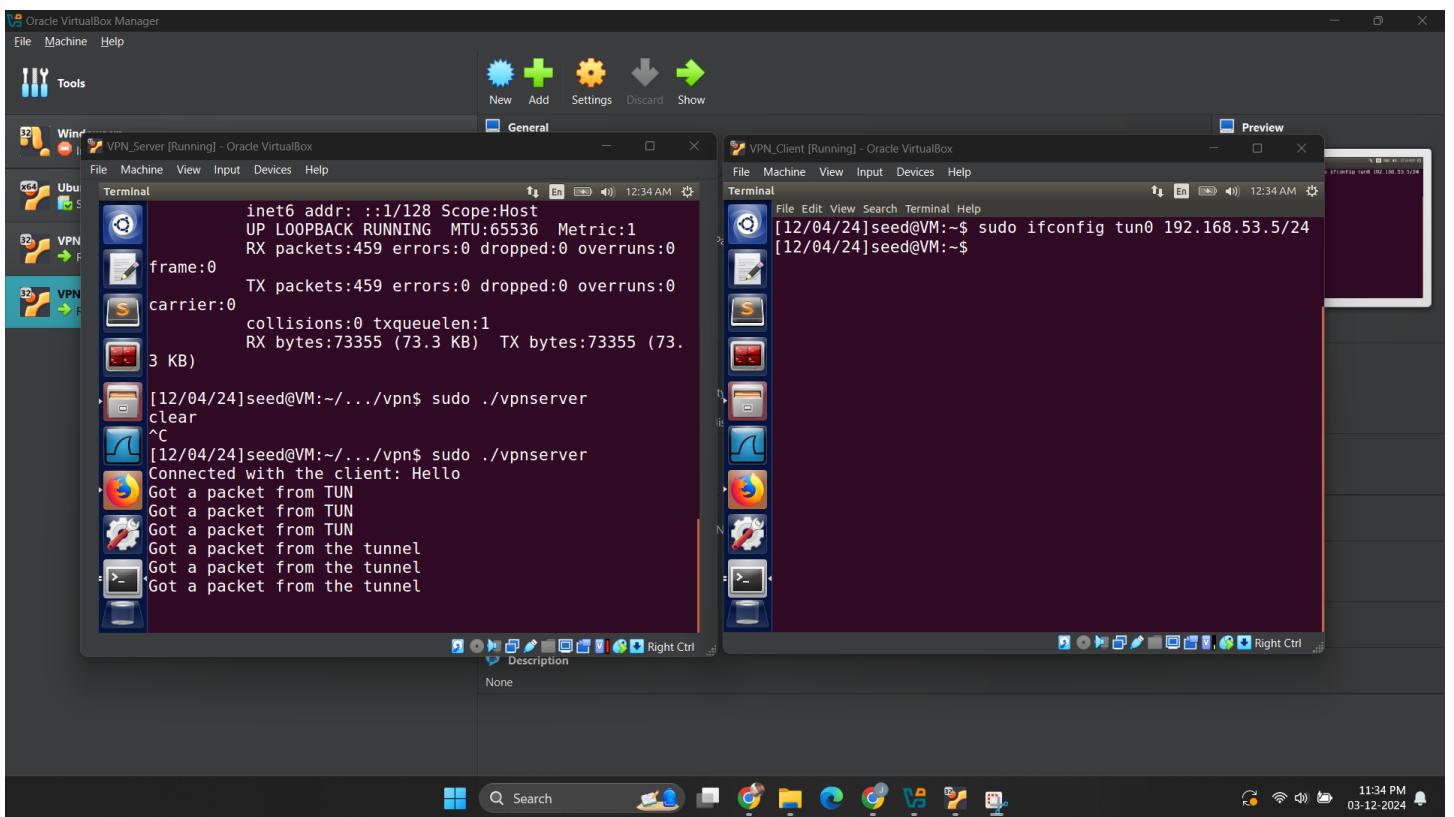


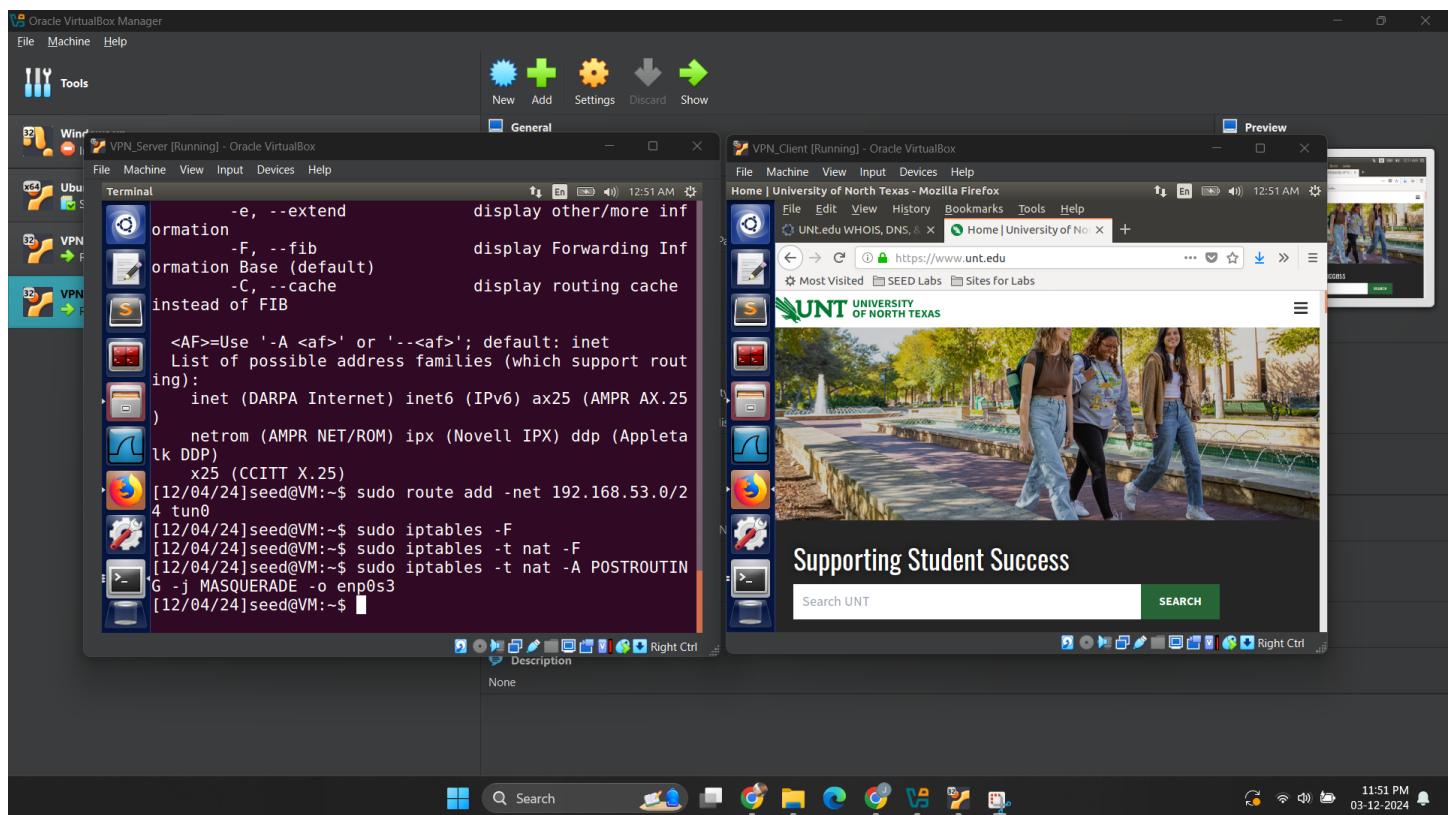


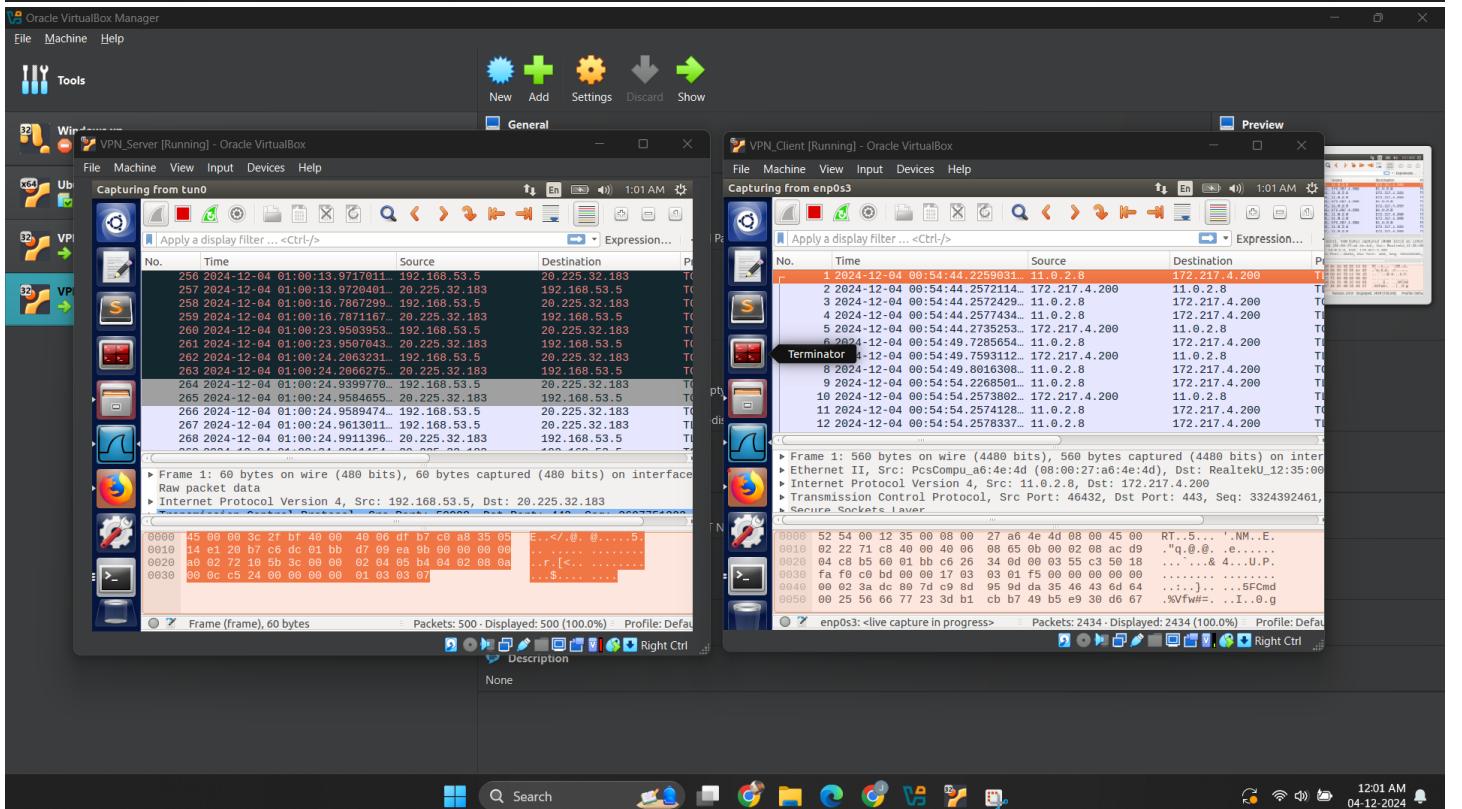
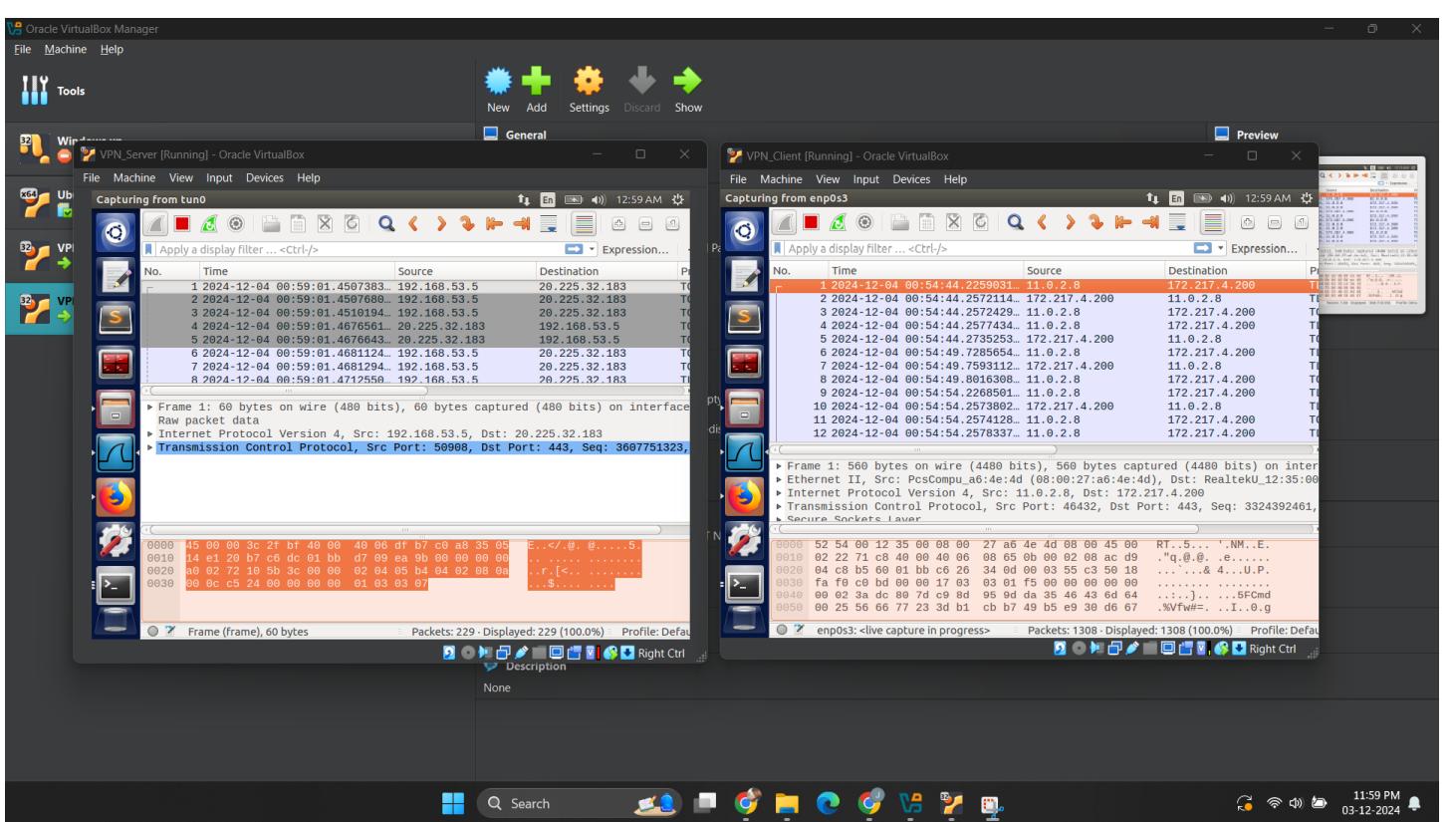


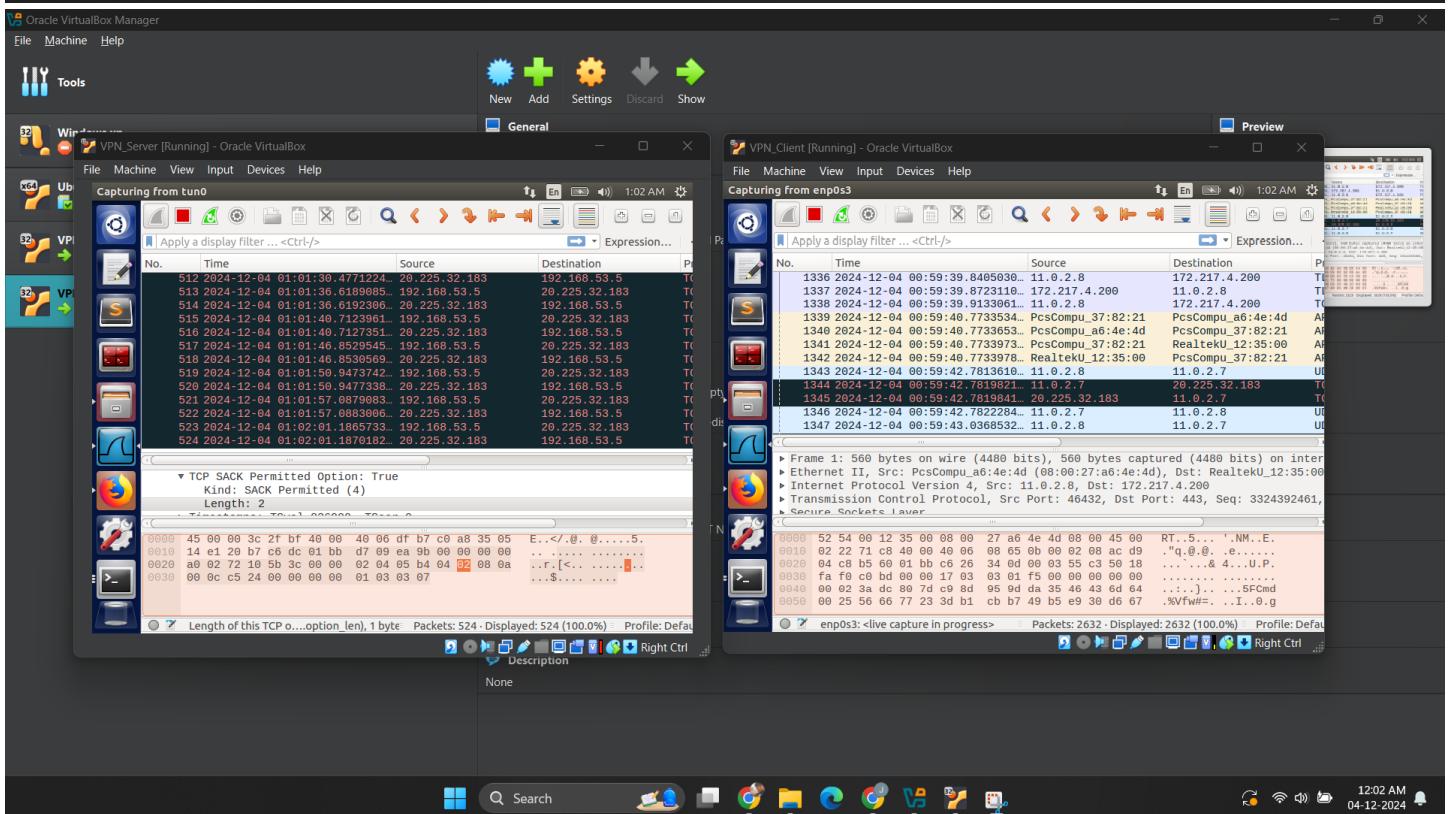
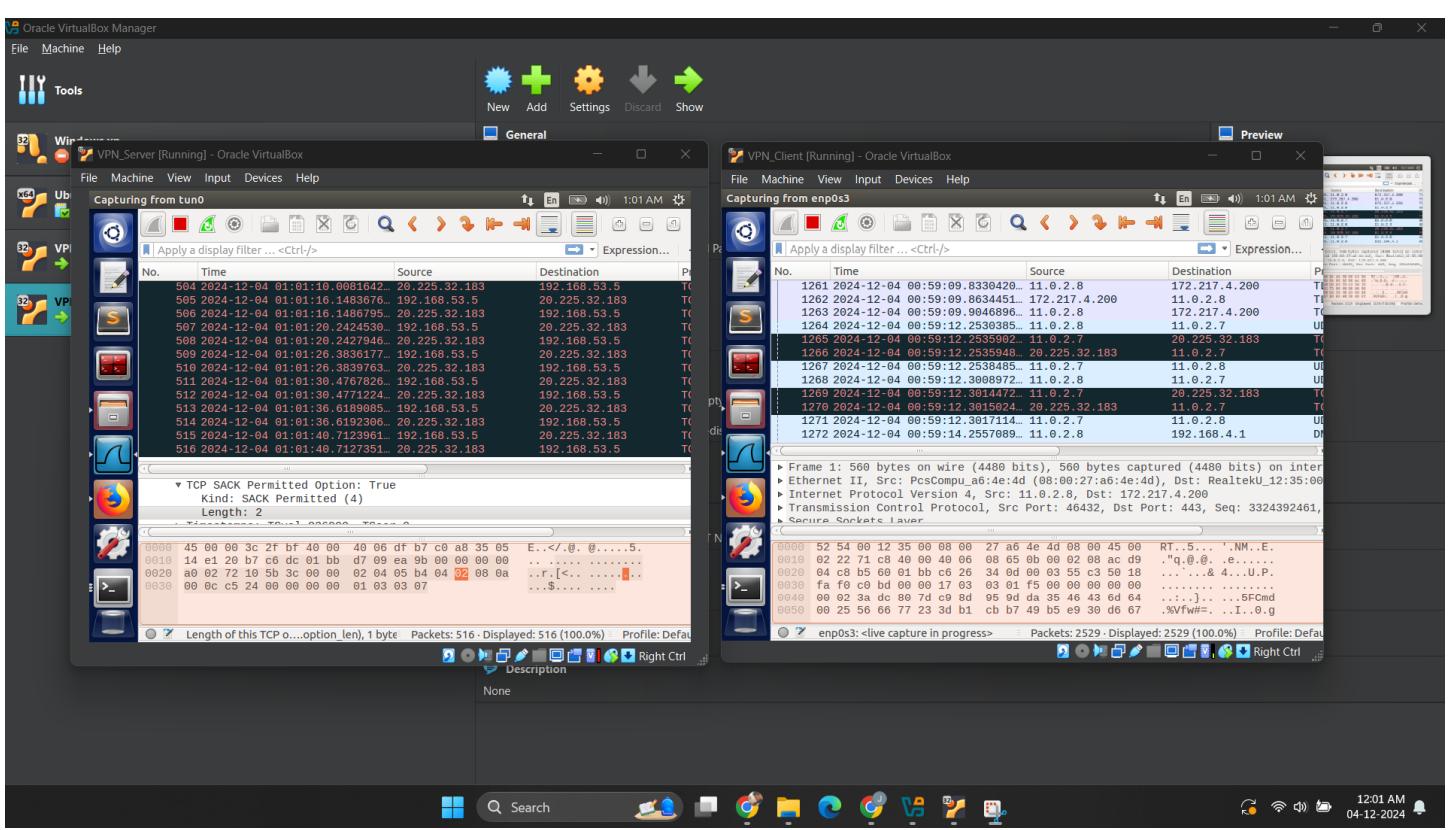


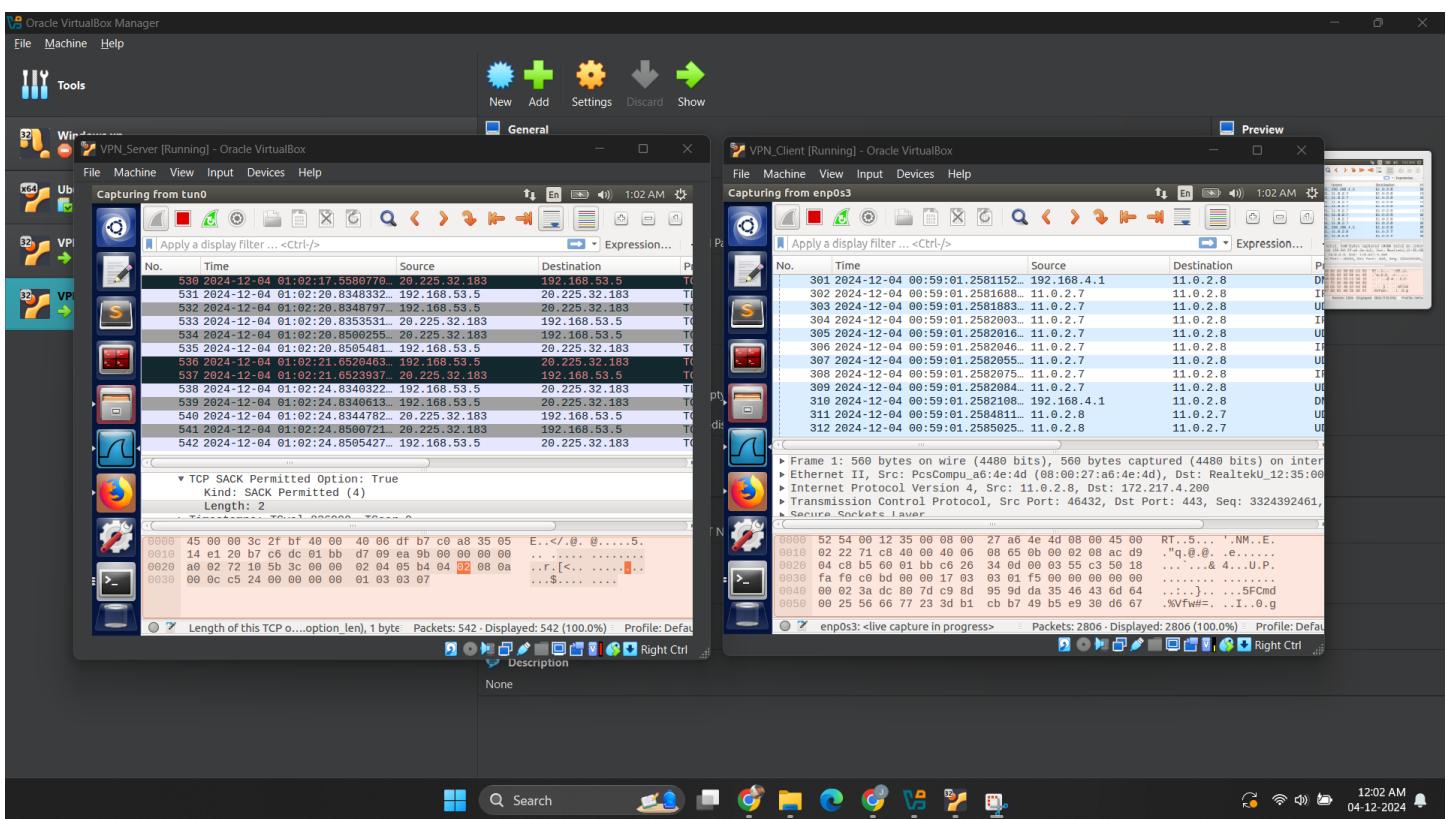












B) Based on the wire shark screenshots above we can observe that VPN tunneling hides an IP packet within another IP packet by encapsulating the original IP packet inside a new IP packet. This can be seen in the screenshots, where the "Ethernet II" frame contains an "Internet Protocol Version 4" packet, which in turn contains a "Transmission Control Protocol" packet. The original IP packet is effectively hidden inside the new IP packet, with the VPN protocol (such as IPsec or OpenVPN) used to encrypt and tunnel the data.

The screenshots show the original IP packet information, such as the source and destination IP addresses, as well as the TCP payload data. However, this original IP packet is now contained within the new IP packet, which has its own source and destination IP addresses corresponding to the VPN endpoints. This allows the original IP traffic to be securely transported through the VPN tunnel, hiding its true origin and destination.

C) The VPN Client can access the webpage blocked by its firewall by routing the traffic through the VPN tunnel. The screenshots show that the VPN Client is connected to a VPN server, which provides a different network path and IP address for the client. This allows the VPN Client to bypass the firewall rules blocking access to the webpage, as the traffic is now coming from the VPN server's IP address instead of the client's original IP address. The VPN tunnel effectively creates a secure, encrypted channel that circumvents the firewall's restrictions, enabling the VPN Client to access the otherwise blocked webpage.