



Escuela Colombiana de Ingeniería Julio Garavito

Redes de Computadores 2025-2

Laboratorio II

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Lab No. 2 - OS Setup, Shell and Network Support Software

Objective

- Continue the installation of base operating systems.
- Understand how network tools operate.
- Learn about operating system administration using Shell programs.

Tools to be used

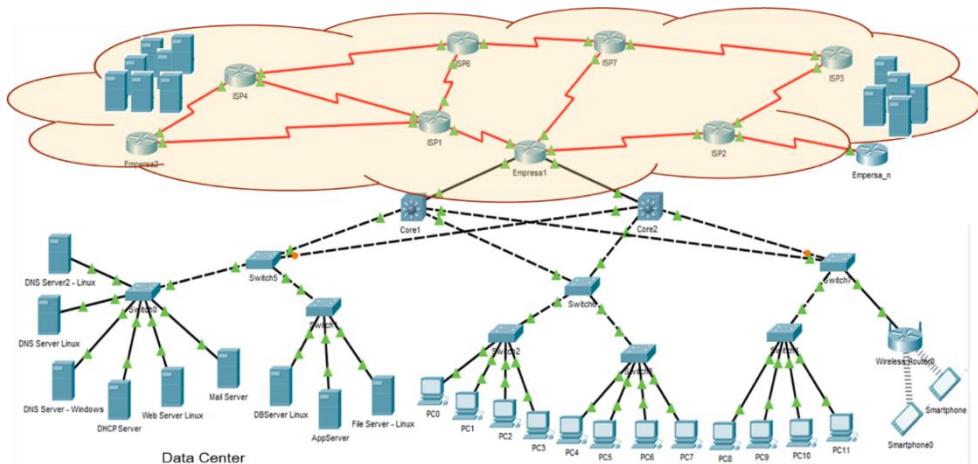
- Computers from the Computer Lab
- Internet access
- Virtualization software
- Operating system images
- Packet tracer
- Wireshark

Introduction

As we have already discussed, a company typically has various IT infrastructure services. These include wired and wireless user workstations and servers (both physical and virtualized), all connected through switches (Layer 2 and Layer 3), wireless devices, and routers that connect the network to the Internet. It is also common to have cloud infrastructures from which resources are provisioned according to the organization's needs.

Among the servers, you may find services such as web hosting, DNS, email, databases, storage, and applications, among others.

Below is a possible configuration:



Experiments

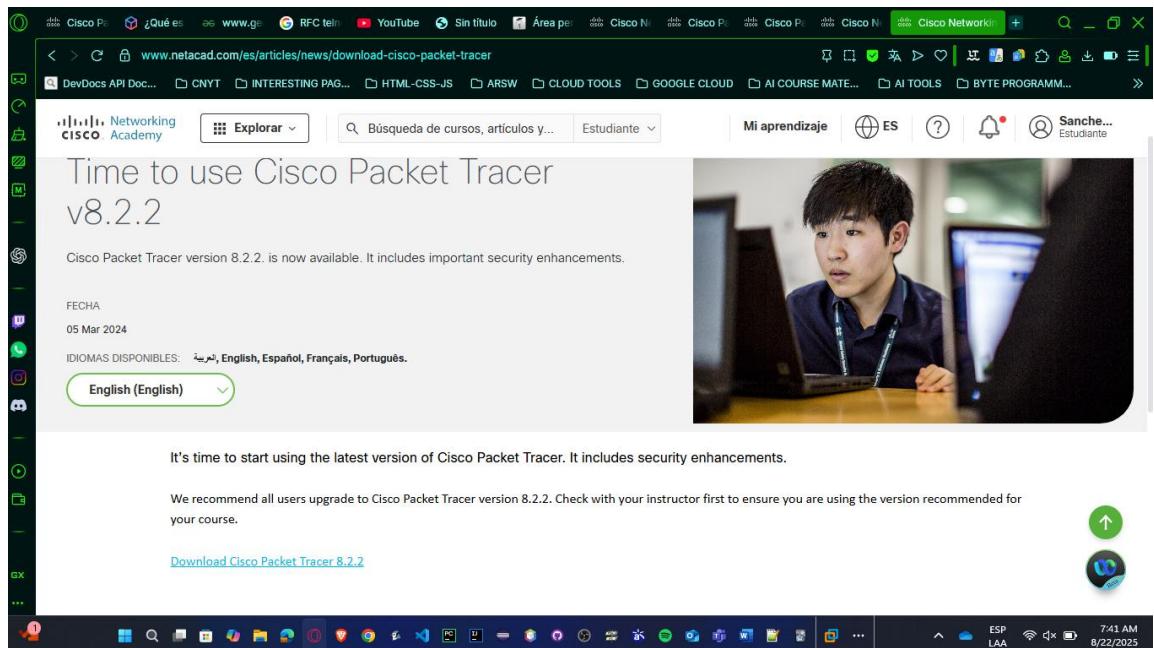
To build a technological infrastructure like the one shown in the previous diagram, you need to have computers and servers, each with an operating system installed. It's also crucial to understand how these systems operate from the perspective of the system administrator, as well as to support automation processes. Below, we present different activities aimed at understanding this structure.

1. Getting to Know Packet Tracer

- Answer the following questions
- 1. What version of Packet Tracer is available on the Cisco platform?

It's currently at version 8.2.2:

<https://www.netacad.com/es/articles/news/download-cisco-packet-tracer>

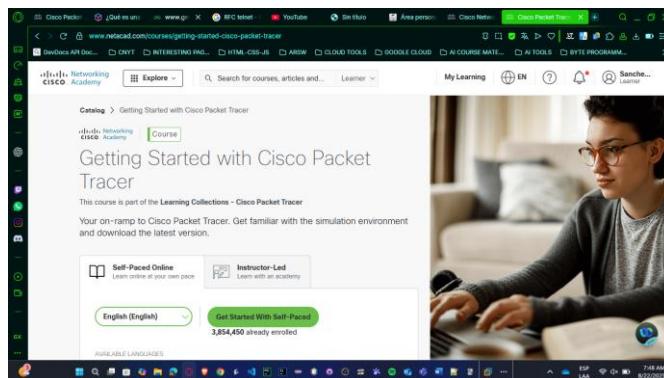


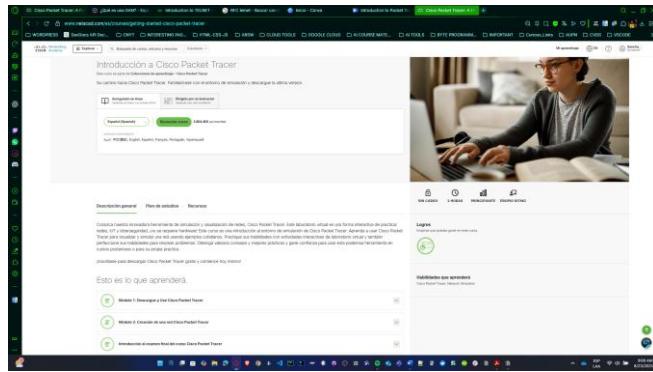
2. Through the Cisco platform, enroll in the "Introduction to Packet Tracer" course (<https://www.netacad.com/courses/packet-tracer/introduction-packet-tracer>). Create a video summarizing the first 4 chapters of the course. Maximum length: 5 minutes.

VIDEO LINK: <https://youtu.be/imZyjLkGtLw>

This short course allowed us to understand what Cisco Packet Tracer is, so we're going to describe the best aspects we took:

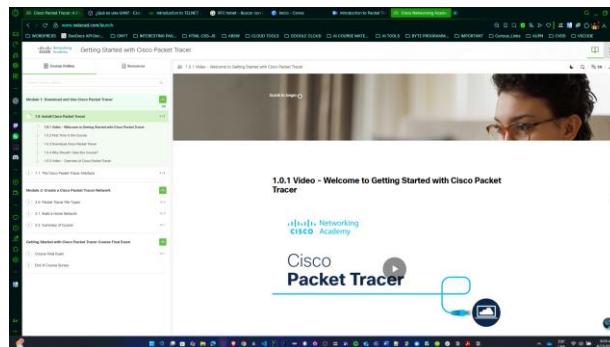
- With Packet Tracer, you can simulate real-world networks using just your computer, whether it's a small home network, an office setup, or even larger enterprise networks.
 - It also includes support for IoT devices and cybersecurity concepts, making it a very versatile tool.
 - The software itself is organized into different tabs that make device configuration easier. For example:
 - ✓ **Physical tab** lets you power devices on or off and install hardware modules.
 - ✓ The **Config tab** provides a graphical interface to configure routers and switches.
 - ✓ **CLI tab** directly, which is the command line interface used in real Cisco devices.
 - ✓ End devices, like PCs, have a **Desktop tab** that gives you access to things like IP configuration, the command prompt, or even a web browser
 - ✓ **Services tab**, where you can configure DHCP, DNS, HTTP, and other server functions.
 - Another important concept in Packet Tracer is the different file types. For example:
 - ✓ **.pkt files** are regular network files that you create and save.
 - ✓ **.pka files** are activity files that usually include instructions and scoring, so you can practice and get feedback.
 - ✓ **.pksz files**, which are special tutorial-based activities that include hints, and finally,
 - ✓ **.pkz files**, which were used in older versions and are mostly deprecated now.
 - Packet Tracer is also used for assessments. Sometimes you'll find **Packet Tracer Media Objects**, which are small exercises embedded in quizzes or exams, and also **Packet Tracer Skills Assessments**, where you demonstrate your ability to configure a network as part of a graded test.
 - In short, Cisco Packet Tracer is not just software - it's a learning environment.
3. Complete the "Introduction to Packet Tracer - PT Basics Quiz" from the course and take a screenshot of your evaluation result. Note: Each student must complete the evaluation individually.
- You need to get into the course by clicking up in “Get-Started With Self-Paced” button. You can find different modules.





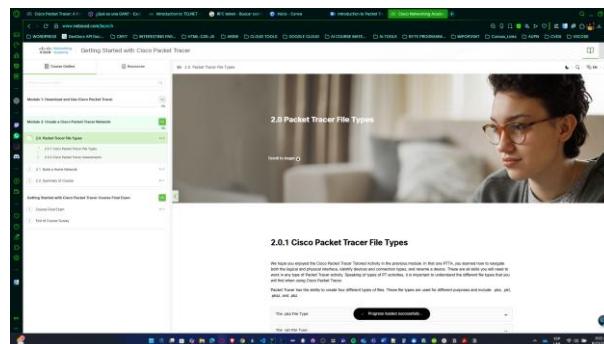
- **First Module - Download and Use Cisco Packet Tracer**

In this module, students learn how to install Packet Tracer and get familiar with both its graphical and command-line interfaces. It explains how to deploy devices, how to use the logical and physical environments, and provides guided activities for practice. Essentially, it serves as an introduction to the software and its basic tools.



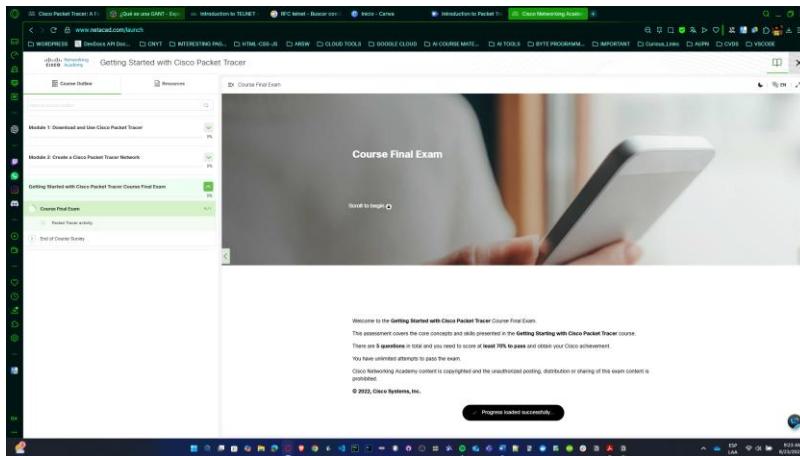
- **Second Module - Create a Cisco Packet Tracer Network**

This module focuses on building simple networks within Packet Tracer. It covers the program's file types, how to create a basic home network, and how to configure devices to communicate with each other. It is more hands-on, emphasizing how real networks are represented and configured inside the simulator.



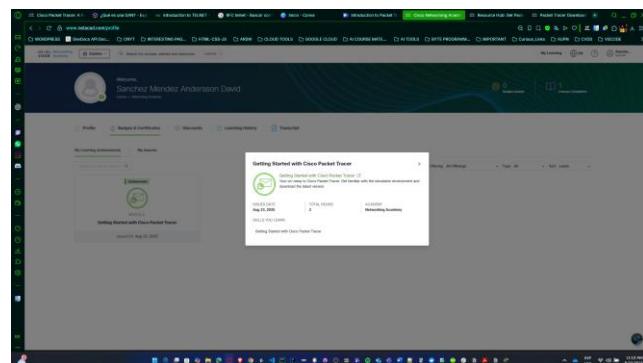
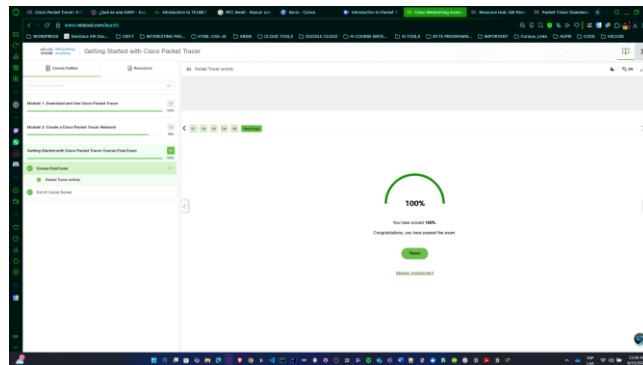
- **Third Module - Getting Started with Cisco Packet Tracer Course Final Exam**

This module contains the final evaluation. It includes an exam to test the knowledge gained in the previous modules and a closing survey. Its purpose is to validate what has been learned and to consolidate the student's overall experience.

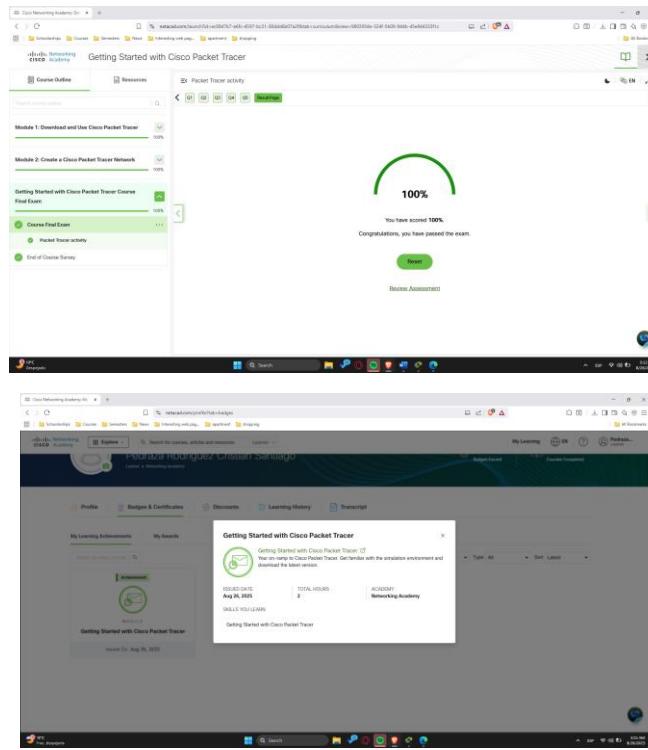


- After we completed the course, this is our screenshot evidence passing the exam and obtaining the badge.

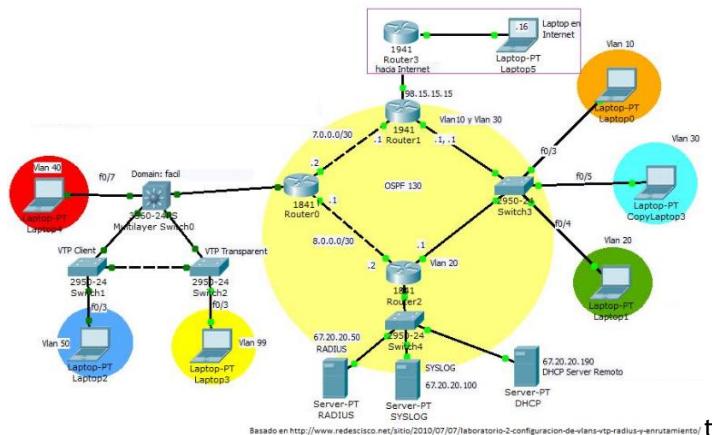
Andersson's SS:



Cristian's SS:

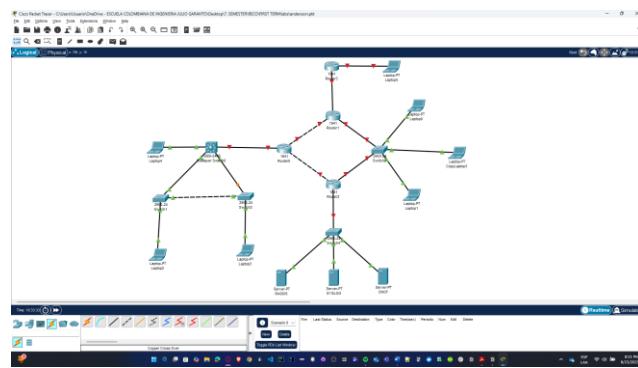


- Using Packet Tracer, each student must create the network diagram presented on the next page.
- Note:
- Do not take into account the colors of the points/rectangles that appear in the links (the links are the connection lines between devices. The colors of these links will become important later, but we will review them at that time).
 - The connections or links presented in the diagram are as follows:

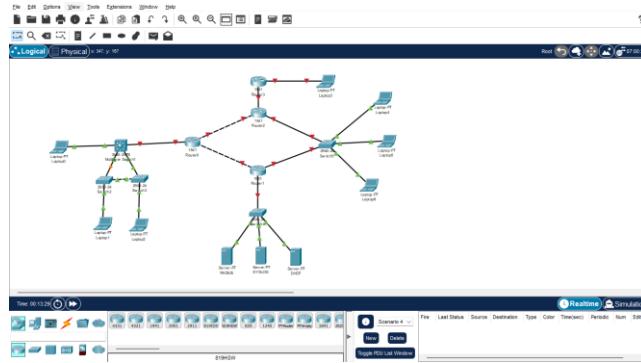


- Black connections correspond to Ethernet cables (Ethernet, FastEthernet, or GigabitEthernet).
 - What do the continuous black connections signify?
→ Represent **active Ethernet links** (the cable is connected correctly and the interface is enabled and operational).
 - What do the discontinuous black connections signify?
→ Represent **inactive or administratively down Ethernet links** (the cable is connected, but the interface is shut down or not yet configured).

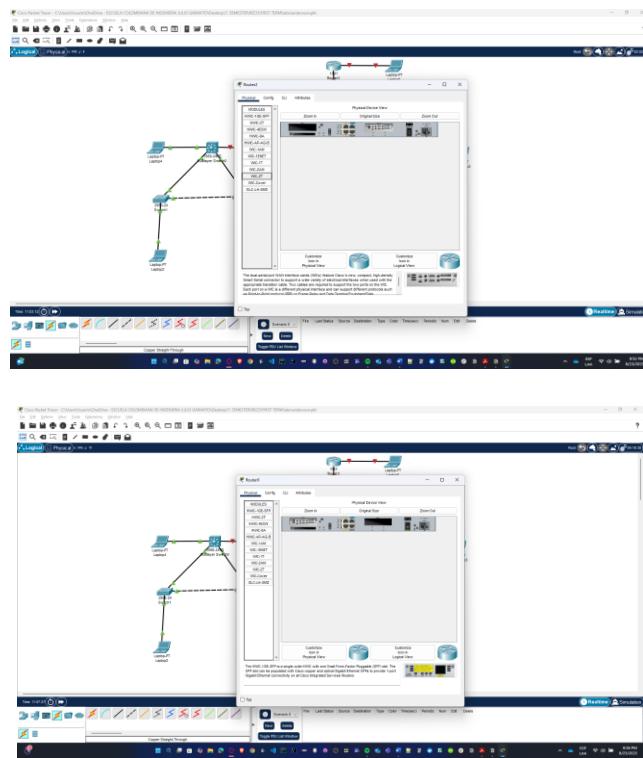
Andersson's network diagram



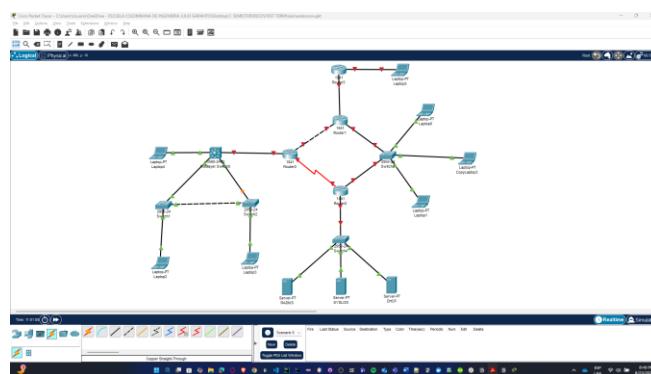
Cristian's network diagram



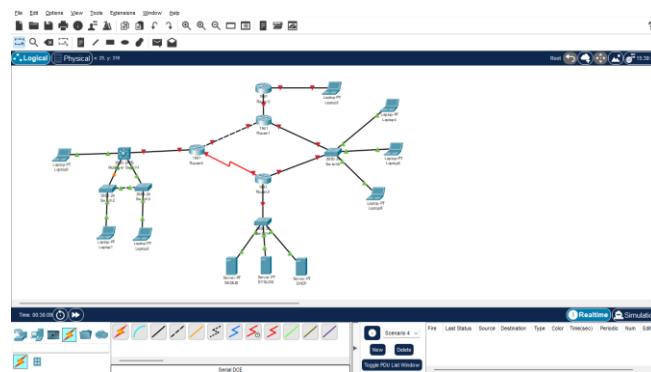
- Change the connection between Router0 and Router2 so that they use a serial cable for the connection (red cables correspond to serial cables—typically used for WAN connections).
 - ✓ When you press router 0 and router 2, you need to drag WIC-2T into slot 0 to be able to add the serial cable if the power is off.



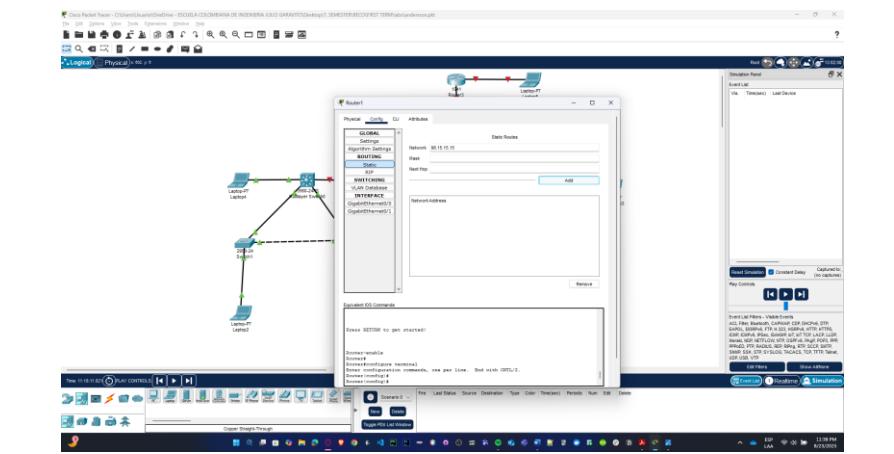
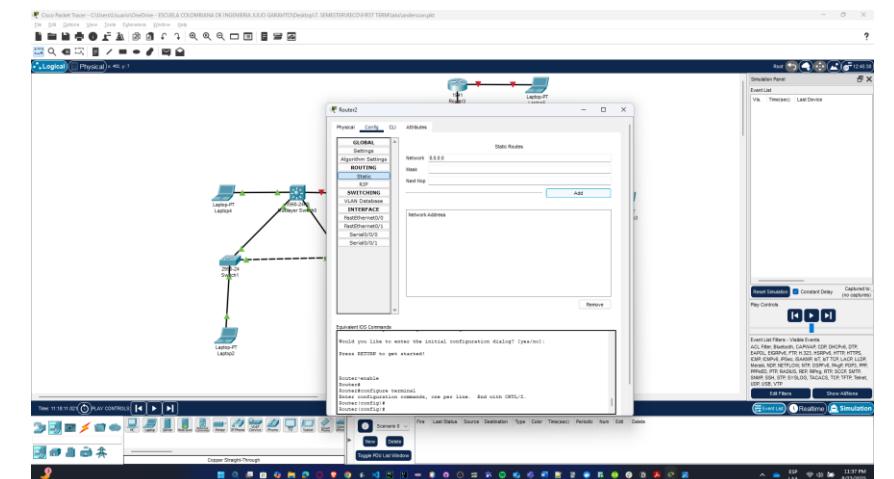
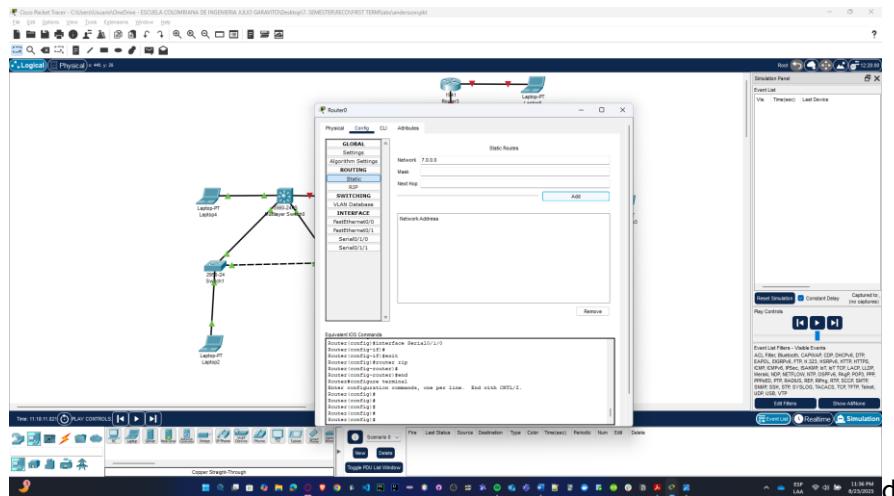
Andersson's network diagram with Serial Cable

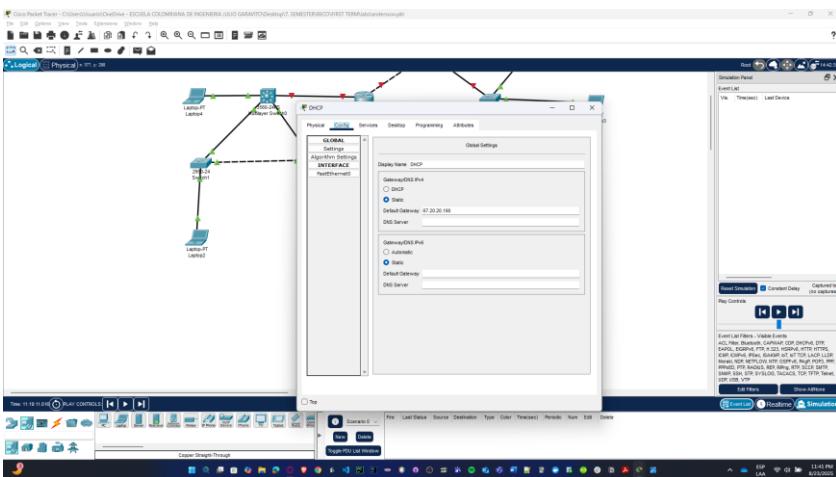
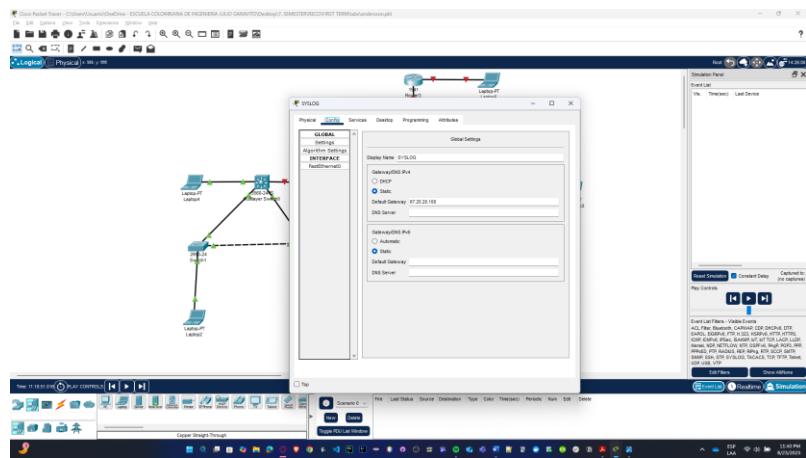
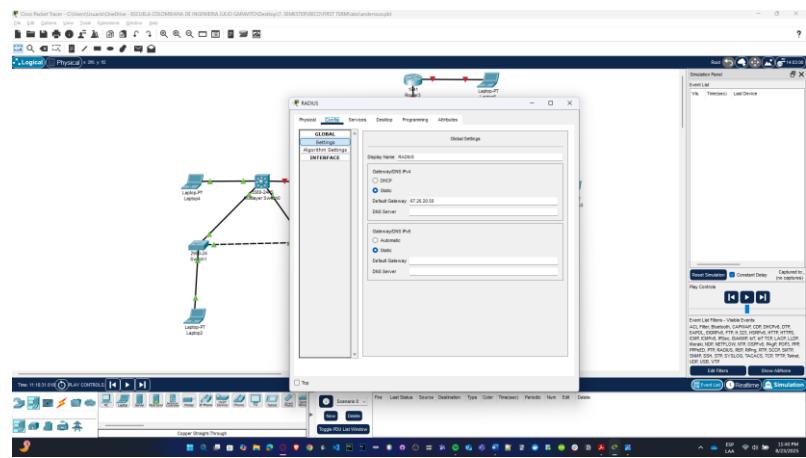


Cristian's network diagram with Serial Cable



- Finally, we configure the IP address assigned in servers, and VLAN, MAN, VTP Client, VTP Transparent for the other different devices.



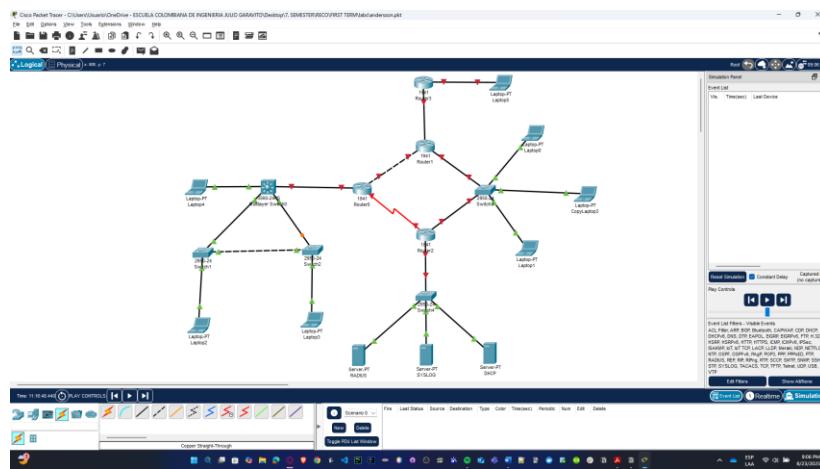


Note: Each student must build and submit the Packet Tracer file with the network.

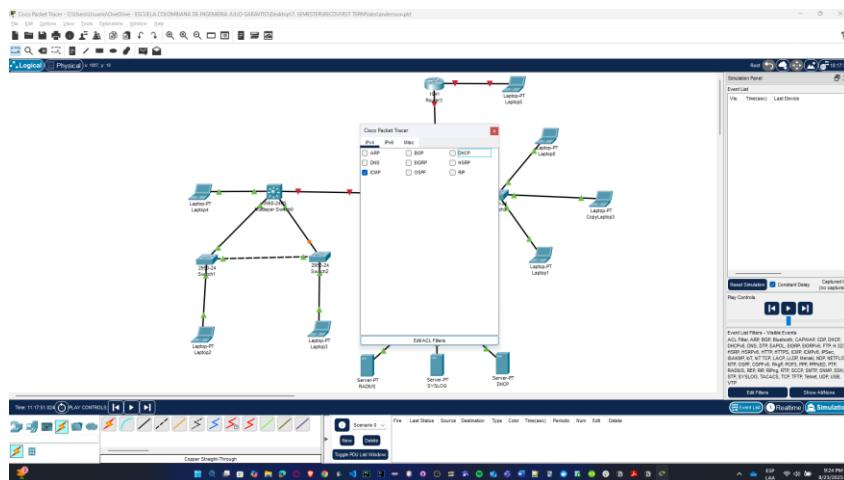
2. Following messages with Packet Tracer

To run the simulation and capture the traffic¹, do the following steps.

- In the far lower right of the PT interface is the toggle between Realtime and Simulation mode. Click on Simulation mode.



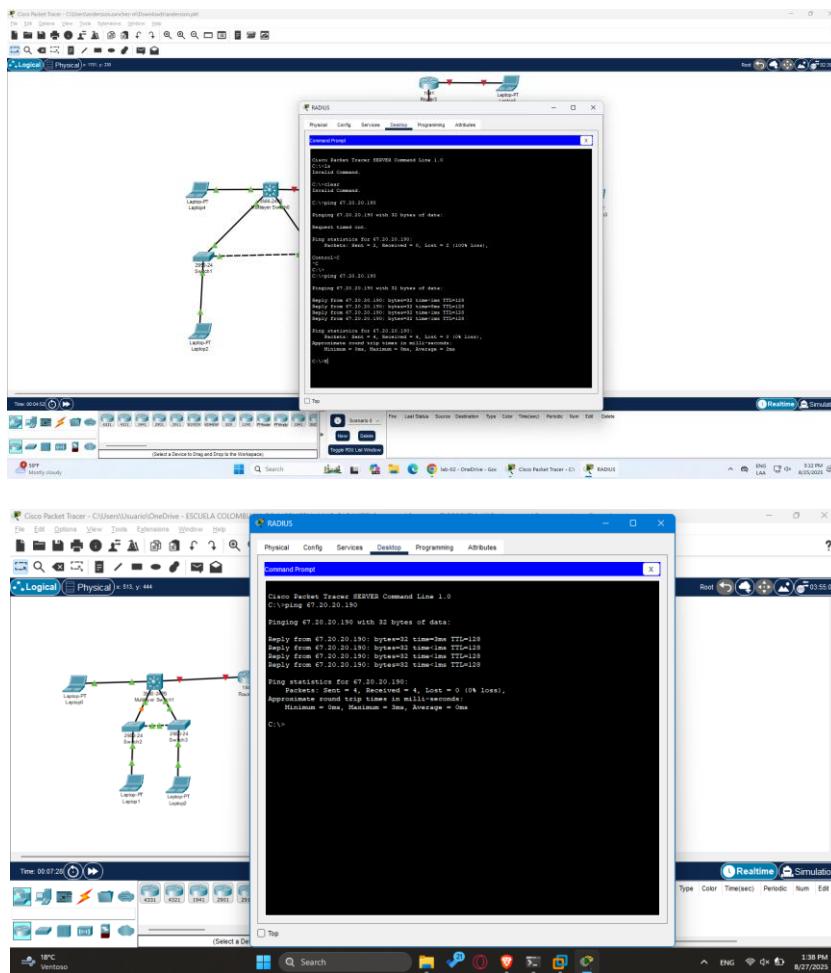
- Click in the Edit filters button and select only ICMP.



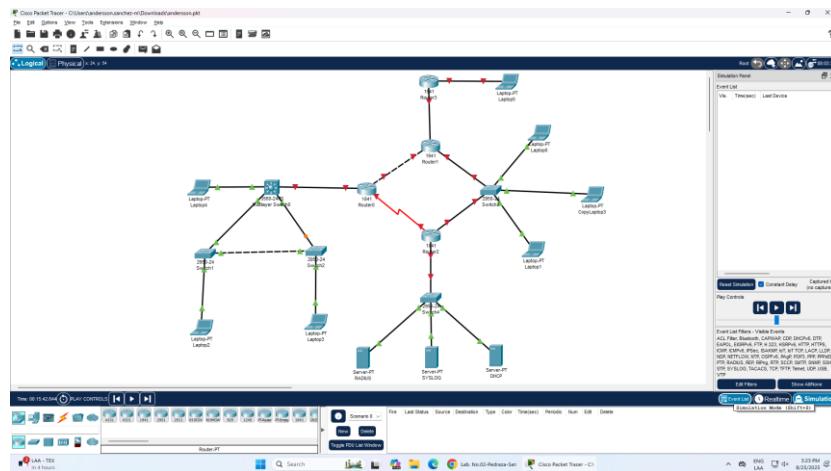
- Click in Server-PT_RADIUS. Choose the Desktop tab. Open the Command Prompt. Enter the command ping IP_SERVER-PT_DHCP). Pressing the Enter key will initiate four ICMP echo requests. Minimize the PC configuration window. Two packets appear in the Event List, the first ICMP echo request and an ARP request needed to resolve the IP address of the server to its hardware MAC address.

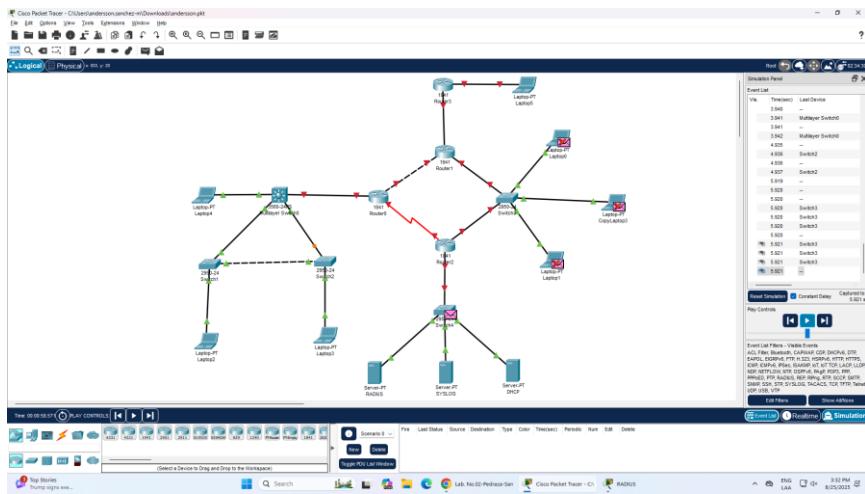
¹ Basado en 2.6.2: Using Packet Tracer to View Protocol Data Units. CCNA1

For this case, we test ping 67.20.20.190 because its the DHCP IP address; after we press ENTER key, four ICMP echo requests were successfully

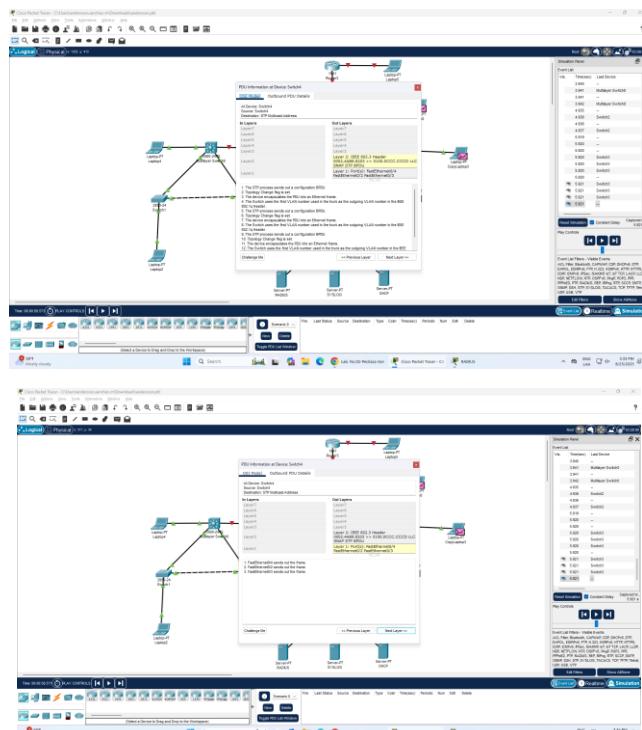


- Click the Auto Capture / Play button to run the simulation and capture events. Click OK when the "No More Events" message is reached.





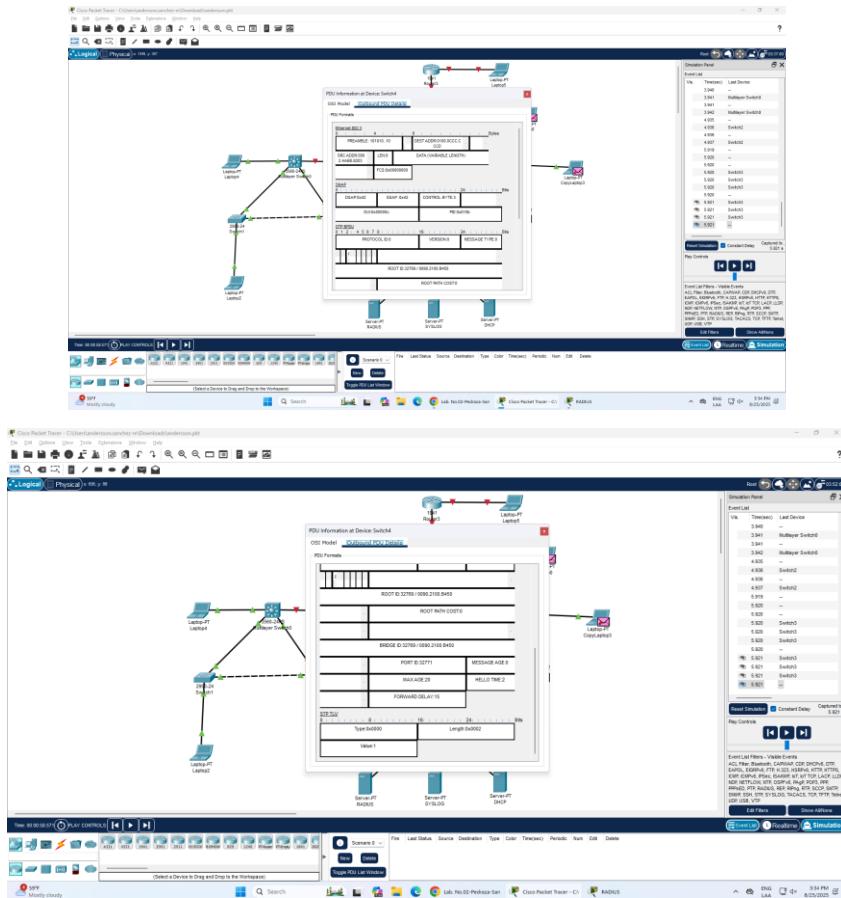
- Now, review the PDUs (Protocol Data Units) by layer (we haven't yet discussed the meaning of each, but note that they exist, and each layer adds information to the user data).
- Selecting a packet and choosing the “Outbound PDU Details” or “Inbound PDU Details” displays how the packet is processed and constructed at each OSI layer.
- Every layer adds specific headers or metadata that support the transmission and delivery of the packet.



- Review the content of the captured packets. Observe how the PDUs of each layer are constructed.

You can see that each layer contributes specific data:

- ✓ **Layer 1 (Physical):** Represents the physical transmission over the network.
- ✓ **Layer 2 (Data Link):** Adds MAC addresses and frame control information (e.g., source/destination MAC, frame check sequence).
- ✓ **Layer 3 (Network):** Adds IP headers with source and destination IP addresses.
- ✓ **Layer 4 (Transport):** Would include port numbers if using TCP/UDP (not always shown for ICMP).
- ✓ **Layer 7 (Application):** Contains the actual ICMP message (e.g., echo request/reply).



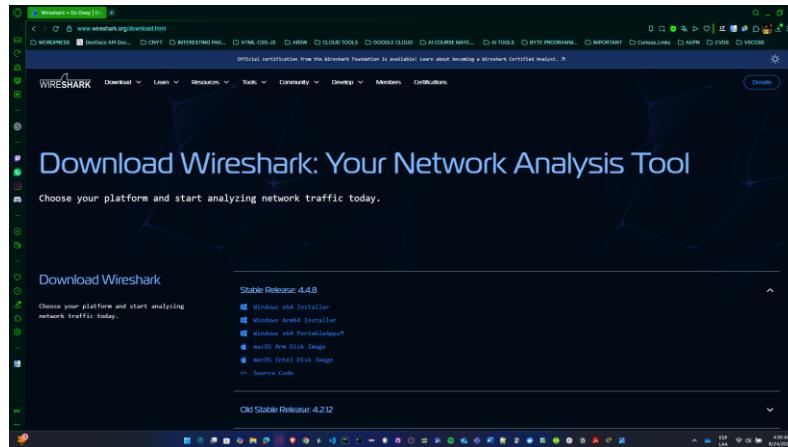
In the real network

Make the following tests using Wireshark tool.

1. Using Wireshark

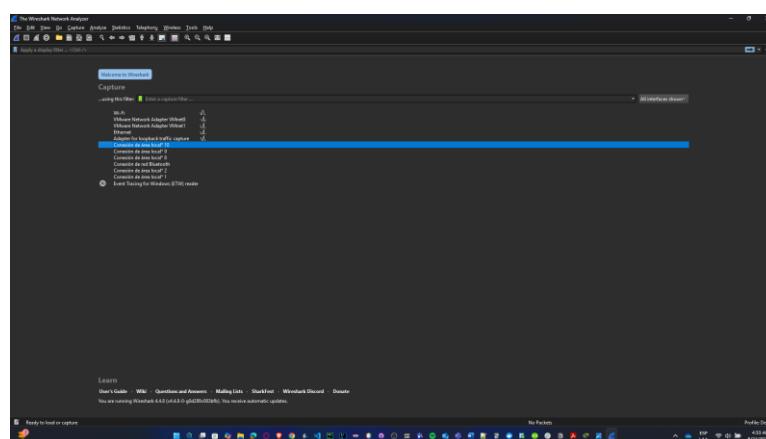
Wireshark is a cross-platform tool used to analyze network packets. We will use it in the course to observe, in real-time, the data passing through the network² and the operation of the various protocols we will study. For that reason:

- Install (if at home) and run Wireshark on the computer you're working on.



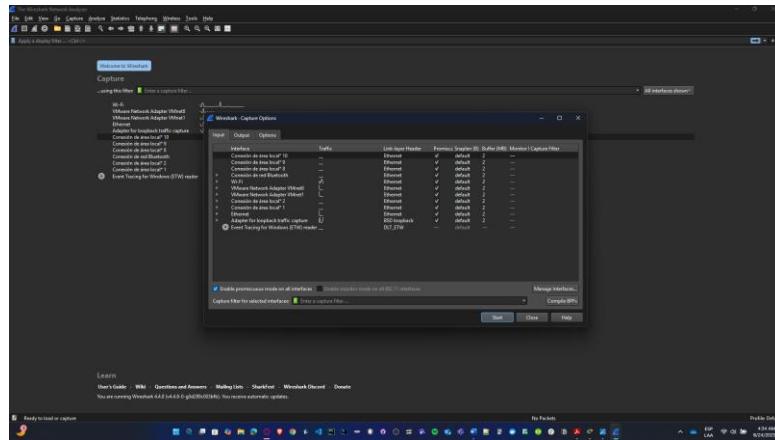
<https://www.wireshark.org/download.html>

- Review videos and documentation on how Wireshark operates. What is Wireshark?
 - ❖ **One-liner:** Wireshark is a cross-platform packet sniffing and protocol analysis tool. It captures frames off a NIC and decodes them all the way up the stack so you can inspect headers, payloads, and timing.
 - ❖ **Why admins use it:** troubleshooting (latency, drops, retransmits), security (suspicious hosts, failed logins), and protocol learning.



² <https://www.welivesecurity.com/la-es/2013/01/28/uso-filtros-wireshark-para-detectar-actividad-maliciosa/>

- What does it mean for the network card to be in promiscuous mode?
 - ❖ **Promiscuous mode:** the NIC hands **every** frame it sees to the OS (not just frames to its own MAC). Required when you want to observe traffic beyond your host on hubs/SPAN/mirrored ports.
 - ❖ **Monitor mode (Wi-Fi only):** capture raw 802.11 management/control/data frames on-air (not the usual 802.3/EAPOL you see after association). Mentioned just to flex knowledge.



- Create a video where you explain the parts of the interface. How to create filters? What are filters used for? Provide examples. The video should be about 5 minutes long.

VIDEO LINK: <https://youtu.be/59lj4c9dbDM>

These are the main parts of the interface:

- ❖ **Top toolbar:** Start/Stop capture, Reload, Capture Options (pick NIC, enable promiscuous).
- ❖ **Display Filter bar:** evaluates **after** capture; super fast BPF-like engine.
- ❖ **Packet List (top pane):** each row = a packet (time, src/dst, protocol, length, info).
- ❖ **Packet Details (middle):** tree of layers (Ethernet ▶ IP ▶ TCP/UDP ▶ App).
- ❖ **Packet Bytes (bottom):** hex + ASCII.
- ❖ **Statistics menu:** Conversations, Endpoints, Protocol Hierarchy, I/O Graphs.
- ❖ **Follow Streams:** right-click TCP/UDP ▶ “Follow ... Stream” to reconstruct flows.

The filters are used for:

- ❖ Captures are noisy. In seconds, you'll have thousands of packets (DNS, ARP, broadcast, HTTP, TLS, etc.). Filters let you isolate just the traffic you care about.

- ❖ There are two types of filters:
 - ✓ **Capture filters** - applied **before** capture, so Wireshark only stores packets that match. Defined using libpcap syntax (like tcpdump). Example: port 80.
 - ✓ **Display filters** - applied **after** capture. They don't affect what's captured, just what's shown. Way more powerful and flexible. Example: http.request.method == "GET".

And you can create filters in this way depending on the type:

- ❖ **Display filters**
 1. Type in the **filter bar** right under the toolbar.
 2. Wireshark autocompletes fields and shows green = valid, red = invalid.
 3. You can **save** a filter (click the bookmark icon).
 4. Example demo steps in video:
 1. Type dns → press enter → only DNS packets remain.
 2. Then try ip.addr == 192.168.1.9 → only packets where either source or destination IP is your PC appear.

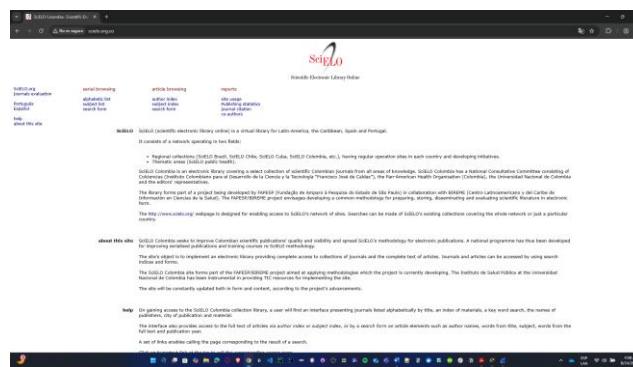
- ❖ **Capture filters**
 1. Go to **Capture Options** (the gear next to the shark fin).
 2. In the field labeled *Capture Filter*, type your filter before you start.
 3. Example: tcp port 443 → only capture HTTPS traffic.
 4. Pro: Keeps file small. Con: If you misfilter, you might lose important packets forever.

And we can simulate or provide some examples like that:

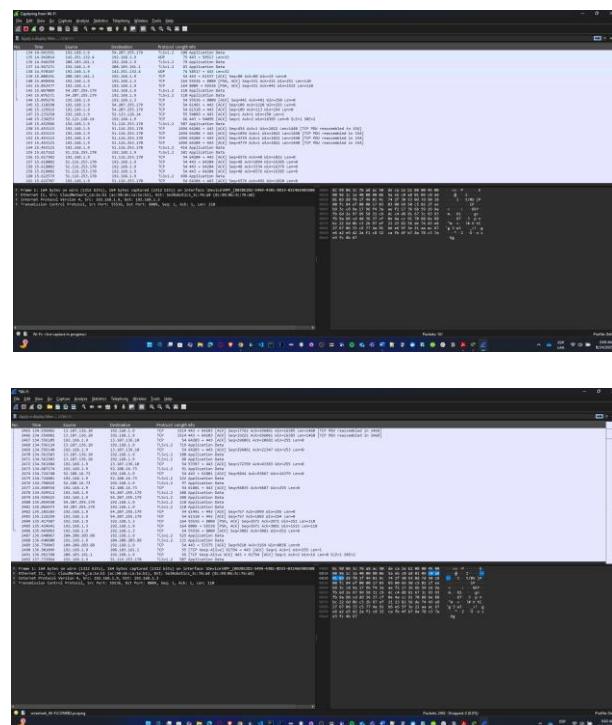
- ❖ http → show all HTTP packets.
- ❖ http.request → show only HTTP requests (GET/POST).
- ❖ http.request.method == "GET" → only GETs.
- ❖ dns → isolate DNS queries/responses.
- ❖ icmp → ping packets only.
- ❖ ip.addr == 192.168.1.9 → show only traffic involving your host.
- ❖ tcp.flags.syn == 1 → only TCP SYN packets (start of handshake).

- ❖ $\text{tcp.port} == 80 \rightarrow$ all TCP traffic over port 80.
- ❖ Combine with logical ops:
 - $\text{dns} \mid\mid \text{http} \rightarrow$ show both DNS and HTTP.
 - $\text{ip.src} == 192.168.1.9 \&\& \text{tcp.port} == 443 \rightarrow$ only HTTPS traffic from your machine.
- Make a web request to the link <http://www.scielo.org.co> and capture the generated traffic. (Open your browser, start the capture with Wireshark, visit the website, and then stop the capture).

- ✓ So, we select Wifi as the network interface type.
- ✓ We open the link in a browser.

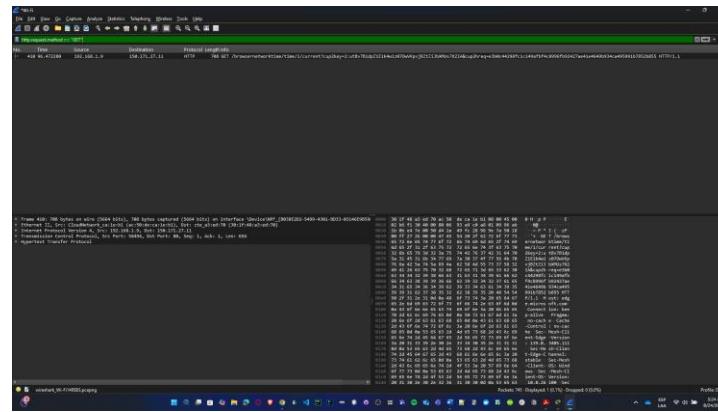


- ✓ This is what we see, then we stop the capture.

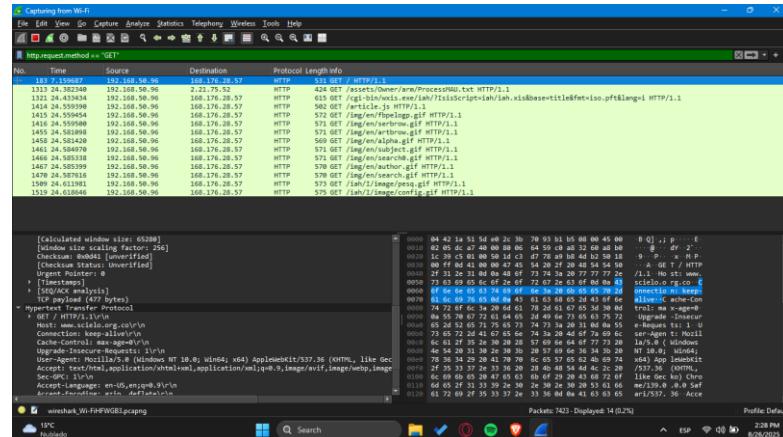
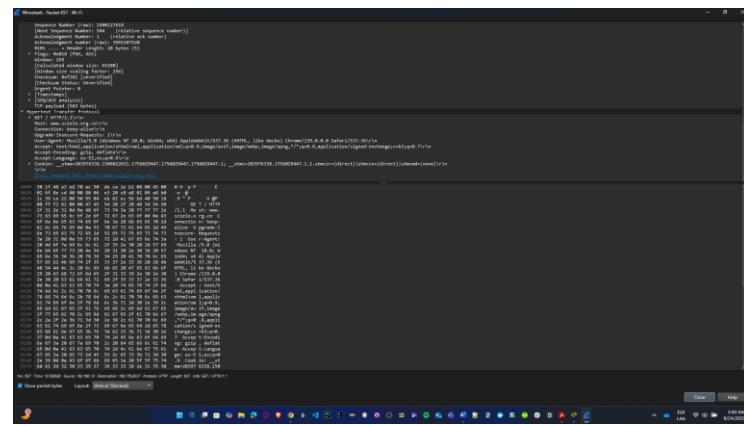


- Analyze the data found in one of the captured packets. Look at the encapsulation each layer performs, review the information visible in different areas of the Wireshark screen, and present screenshots of it. (To make analysis easier, filter and find a captured packet that contains the word "GET").

✓ To obtain GET word, we need to use `http.request.method == "GET"` filter.



✓ To see the packages of the link, we click in the obtained package.



- ✓ So, we can evidence that:

1. Frame (Physical Layer)

- **Wireshark info:** e.g., “Frame: X bytes on wire, X bytes captured.”
- This shows the total size of the packet and confirms it was captured through your Wi-Fi interface.
- At this lowest level, Wireshark displays how many bytes were transmitted, but not the actual bits on the medium.

2. Ethernet (Data Link Layer)

- **Ethernet II Header:**
 - **Source MAC:** the hardware address of your PC’s Wi-Fi card.
 - **Destination MAC:** the next-hop device (your router/gateway).
- The Data Link Layer ensures delivery within the local network segment using **MAC addresses**.

3. Internet Protocol (Network Layer)

- **IPv4 Header:**
 - **Source IP:** your host’s private IP (likely 192.168.x.x).
 - **Destination IP:** the server hosting SciELO (public IP).
 - **Protocol:** TCP (6).
- This layer makes sure the packet travels end-to-end from your PC to the SciELO web server across the internet.

4. Transmission Control Protocol (Transport Layer)

- **TCP Header:**
 - **Source Port:** an ephemeral port chosen by your machine.
 - **Destination Port:** 80 → standard HTTP (unencrypted web traffic).
 - **Flags:** e.g., PSH, ACK → indicating the request is being pushed while acknowledging prior data.
- TCP guarantees reliability by segmenting the data, tracking sequence numbers, and confirming receipt with ACKs.

5. Hypertext Transfer Protocol (Application Layer)

- **Request Line:**
 - GET /path/to/resource HTTP/1.1
- **HTTP Headers (important):**
 - Host: scielo.org → this specifies the website the request is targeting.
 - User-Agent: Mozilla/5.0 ... Chrome/... → identifies the browser and version.
 - Accept-Encoding, Cache-Control, etc. → additional client preferences.
- This layer is the actual content generated by your browser – here we clearly see that the request was made to **SciELO**.

6. Wireshark Interface Walkthrough

- **Top Pane (Packet List):** shows the “GET” request row, with source/destination, protocol = HTTP, and a short description.
- **Middle Pane (Packet Details):** shows the encapsulation tree – Ethernet → IP → TCP → HTTP. Expanding the HTTP section reveals the Host: scielo.org header.
- **Bottom Pane (Packet Bytes):** shows the raw data in **hexadecimal** and ASCII. If you scroll through, you can literally read “GET ... scielo.org” in ASCII.

- Present your findings in a video of no more than 7 minutes.

VIDEO LINK: <https://youtu.be/R9ds-sEa5BQ>

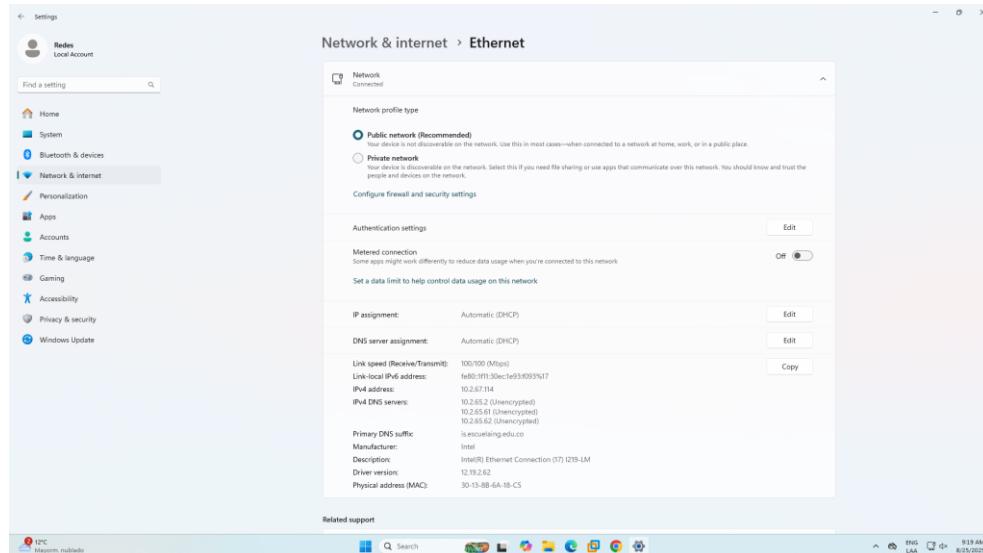
2. Networks cards

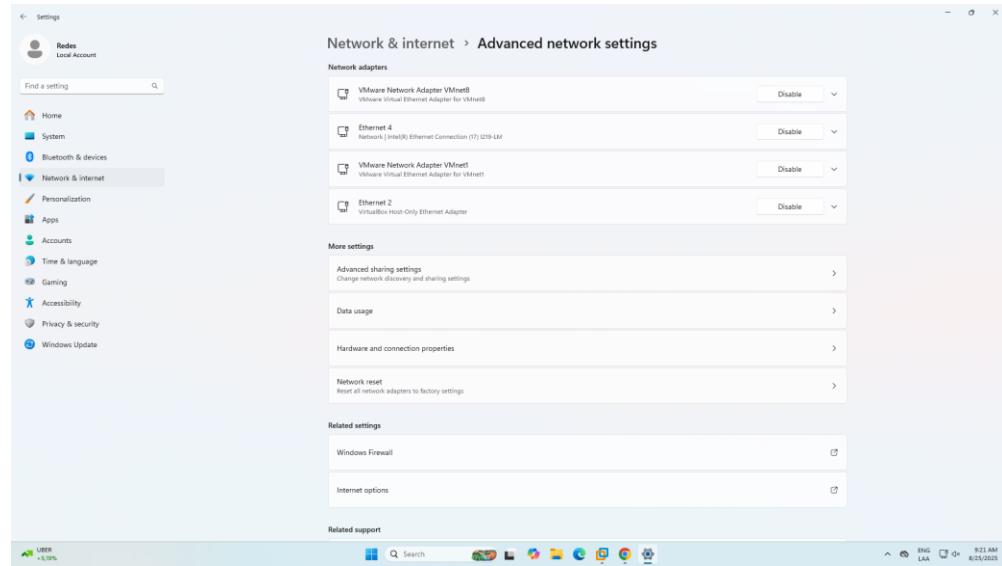
Know the network cards of various devices. To do this, gather information about the network cards of the school computers and at least 3 different devices (computers, laptops, smartphones, tablets, game consoles, etc.) from each member of your work team.

Include information such as vendor, model, speed, MAC Address, IPv4 Address, IPv6 Address, number of bytes transmitted and received. For wireless network cards: Connection speed, SSID.

Now, check the same information for two of your virtual machines and compare the results with the information from the host machines.

SCHOOL COMPUTERS





ANDERSSON'S DEVICES

➤ Personal Computer (ipconfig /all, netstat -e):

```

puTTY in System32 x + v
Administrator: Local system profile took 35ms.

Centro de red y sistema de conexión de área local 1:
Nombre del host: . . . . . DESKTOP-CM9839Q
Descripción física: . . . . . Microsoft Wi-Fi Direct Virtual Adapter
Estado de modo: . . . . . habilitado
Configuración de conexión habilitada: . . . . . Red (Red inalámbrica)
Proxy WINS habilitado: . . . . . no
Administrador de Ethernet (Ethernet):
    Número de IP específico para la conexión: . . . . . VirtualBox Host-only Ethernet Adapter
    Descripción: . . . . . VirtualBox Host-only Ethernet Adapter
    DHCP habilitado: . . . . . si
    Configuración dirección IPv4 local: . . . . . Red (Red inalámbrica en el sistema preferido)
        Dirección IP local: 192.168.1.10
        Subred: 255.255.255.0
        mascara de subred: 255.255.255.0
        Punto de acceso predeterminado: . . . . . 192.168.1.1
        ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
        ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
Administrador de LAN inalámbrica Conexión de área local 1:
Estado de los medios: . . . . . medios desconectados
Descripción física: . . . . . Microsoft Wi-Fi Direct Virtual Adapter
Estado de conexión: . . . . . habilitado
ID de interfaz: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
Configuración de conexión habilitada: . . . . . Red (Red inalámbrica)
Administrador de LAN inalámbrica Conexión de área local 2:
Estado de los medios: . . . . . medios desconectados
Descripción física: . . . . . Microsoft Wi-Fi Direct Virtual Adapter #2
Estado de conexión: . . . . . habilitado
ID de interfaz: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
Configuración de conexión habilitada: . . . . . Red (Red inalámbrica)
Administrador de Ethernet VMware Network Adapter VMnet8:
    Número de IP específico para la conexión: . . . . . VMware Virtual Ethernet Adapter for VMnet8
    Descripción física: . . . . . VMware Virtual Ethernet Adapter for VMnet8
    DHCP habilitado: . . . . . no
    Configuración dirección IPv4 local: . . . . . Red (Red inalámbrica en el sistema preferido)
        Dirección IP local: 192.168.50.2
        Subred: 255.255.255.0
        mascara de subred: 255.255.255.0
        Punto de acceso predeterminado: . . . . . 192.168.50.1
        ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
        ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
Administrador de Ethernet VMware Network Adapter VMnet1:
    Número de IP específico para la conexión: . . . . . VMware Virtual Ethernet Adapter for VMnet1
    Descripción física: . . . . . VMware Virtual Ethernet Adapter for VMnet1
    DHCP habilitado: . . . . . no
    Configuración dirección IPv4 local: . . . . . Red (Red inalámbrica en el sistema preferido)
        Dirección IP local: 192.168.50.1
        Subred: 255.255.255.0
        mascara de subred: 255.255.255.0
        Punto de acceso predeterminado: . . . . . 192.168.50.1
        ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
        ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
Administrador de LAN inalámbrica Wi-Fi:
    Número de IP específico para la conexión: . . . . . Realtek RTL8821CE 802.11ax PCIe Adapter
    Descripción física: . . . . . Realtek RTL8821CE 802.11ax PCIe Adapter
    DHCP habilitado: . . . . . no
    Configuración dirección IPv4 local: . . . . . Red (Red inalámbrica en el sistema preferido)
        Dirección IP local: 192.168.1.10
        Subred: 255.255.255.0
        mascara de subred: 255.255.255.0
        Punto de acceso predeterminado: . . . . . 192.168.1.1
        ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
        ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv4: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81
    DHCP ID de cliente DHCPv6: . . . . . 00-41-00-41-20-CD-AD-0F-AC-58-00-CA-10-81

```

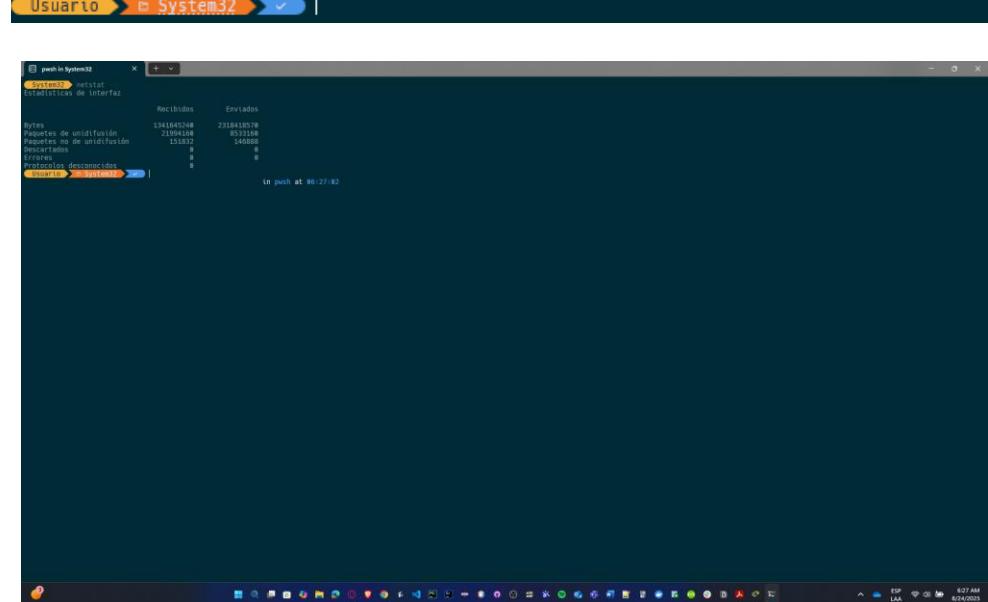
```

Viendo el resultado de la ejecución de la red
    Dirección IPv4 . . . . . : 192.168.1.9(Preferido)
    Máscara de subred . . . . . : 255.255.255.0
    Concesión obtenida . . . . . : Saturday, August 23, 2025 7:26:39 AM
    La concesión expira . . . . . : Sunday, August 24, 2025 7:26:49 PM
    Puerta de enlace predeterminada . . . . . : 192.168.1.1
    Servidor DHCP . . . . . : 192.168.1.1
    IAID DHCPv6 . . . . . : 279728350
    DUID de cliente DHCPv6 . . . . . : 00-01-00-01-2E-CD-AD-0F-AC-50-DE-CA-1E-B1
    Servidores DNS. . . . . . . . : fe80::1%17
                                         192.168.1.1
                                         fe80::1%17
    NetBIOS sobre TCP/IP. . . . . : habilitado

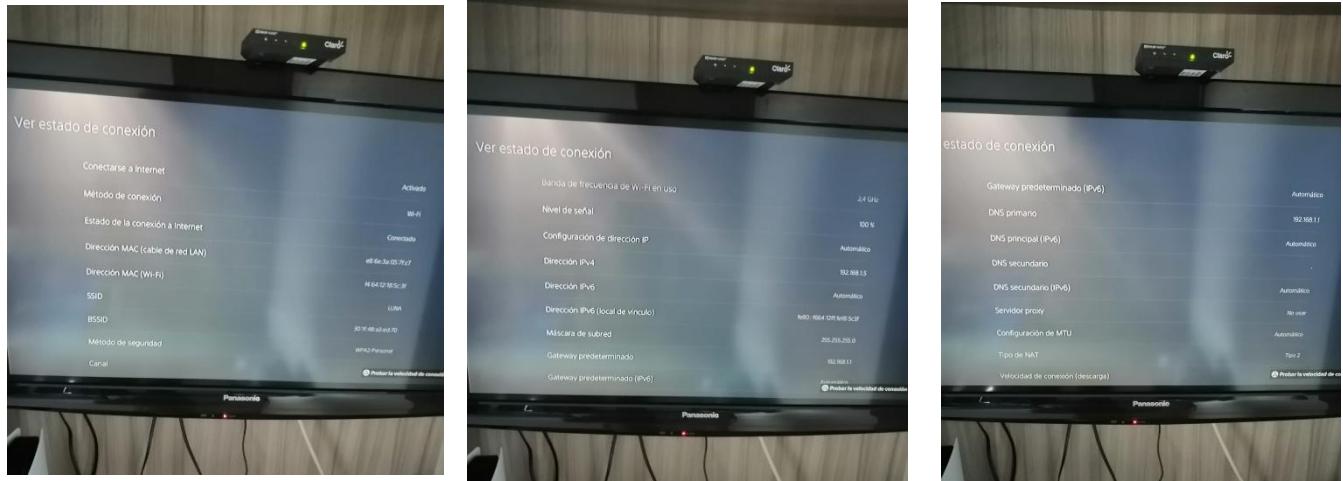
Adaptador de Ethernet Conexión de red Bluetooth:
    Estado de los medios. . . . . . . . . : medios desconectados
    Sufijo DNS específico para la conexión. . . . . : Bluetooth Device (Personal Area Network)
    Descripción . . . . . . . . . . . . . . . : AC-50-DE-CA-1E-B2
    Dirección física. . . . . . . . . . . . . . : AC-50-DE-CA-1E-B2
    DHCP habilitado . . . . . . . . . . . . . . : sí
    Configuración automática habilitada . . . . . : sí

```

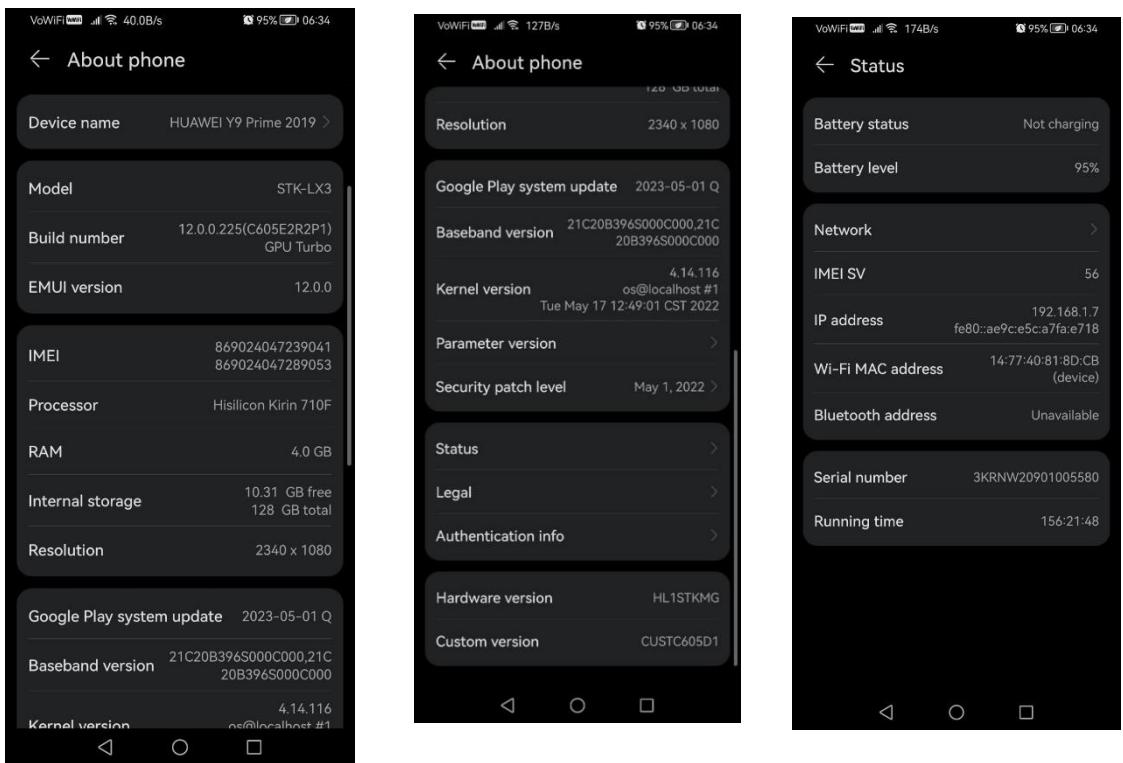
Usuario ➤ e System32 ➤



➤ PS5 Game Console:



➤ **Smartphone:**



CRISTIAN'S DEVICES

➤ **Personal Computer (ipconfig /all):**

```
PS C:\Users\Usuario> ipconfig /all

Windows IP Configuration

Host Name . . . . . : DESKTOP-9ST28LL
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled . . . . . : No
WINS Proxy Enabled . . . . . : No

Wireless LAN adapter Local Area Connection* 9:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . . . . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
Physical Address . . . . . : 2E-3B-70-93-B1-A5
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

Wireless LAN adapter Local Area Connection* 10:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . . . . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address . . . . . : 2E-3B-70-93-B1-B5
DHCP Enabled . . . . . : No
Autoconfiguration Enabled . . . . . : Yes

Ethernet adapter VMware Network Adapter VMnet1:
Connection-specific DNS Suffix . . . . . :
Description . . . . . : VMware Virtual Ethernet Adapter for VMnet1
Physical Address . . . . . : 00-50-56-C0-00-01

C:\Users\Usuario>
```

```

Git bash x Símbolo del sistema x Windows PowerShell x + -
Physical Address . . . . . : 00-50-56-C0-00-01
DHCP Enabled . . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::36eb:e036:60f7:7f07%17(Preferred)
IPv4 Address . . . . . : 192.168.174.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
DHCPv6 IID . . . . . : 234901590
DHCPv6 Client DUID . . . . . : 00-01-00-01-2C-94-8B-E3-2C-3B-70-93-B1-B5
NetBIOS over Tcpip . . . . . : Enabled

Ethernet adapter VMware Network Adapter VMnet8:

Connection-specific DNS Suffix . . . . . :
Description . . . . . : VMware Virtual Ethernet Adapter for VMnet8
Physical Address . . . . . : 00-50-56-C0-00-08
DHCP Enabled . . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::6e8:dbdc:73ff:2649%12(Preferred)
IPv4 Address . . . . . : 192.168.65.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
DHCPv6 IID . . . . . : 302010454
DHCPv6 Client DUID . . . . . : 00-01-00-01-2C-94-8B-E3-2C-3B-70-93-B1-B5
NetBIOS over Tcpip . . . . . : Enabled

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . . . . . :
Description . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
Physical Address . . . . . : 2C-3B-70-93-B1-B5
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

2 19°C Mayorm, nublado Search ESP 6:44 AM 8/28/2025

```

```

Git bash x Símbolo del sistema x Windows PowerShell x + -
DHCPv6 Client DUID . . . . . : 00-01-00-01-2C-94-8B-E3-2C-3B-70-93-B1-B5
NetBIOS over Tcpip . . . . . : Enabled

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . . . . . :
Description . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
Physical Address . . . . . : 2C-3B-70-93-B1-B5
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::9066:d3aa:6fac:2b4b%10(Preferred)
IPv4 Address . . . . . : 192.168.0.6(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained . . . . . : Wednesday, August 27, 2025 6:49:14 PM
Lease Expires . . . . . : Friday, August 29, 2025 6:26:01 AM
Default Gateway . . . . . : fe80::1%10
                           192.168.0.1
DHCP Server . . . . . : 192.168.0.1
DHCPv6 IID . . . . . : 18448176
DHCPv6 Client DUID . . . . . : 00-01-00-01-2C-94-8B-E3-2C-3B-70-93-B1-B5
DNS Servers . . . . . : 192.168.0.1
                           fe80::1%10
NetBIOS over Tcpip . . . . . : Enabled

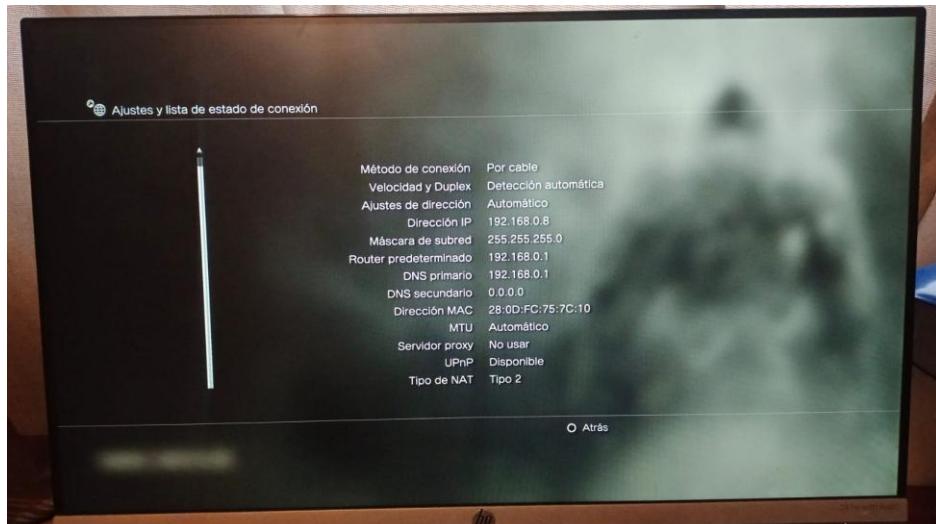
Ethernet adapter Bluetooth Network Connection:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . . . . :
Description . . . . . : Bluetooth Device (Personal Area Network)
Physical Address . . . . . : 2C-3B-70-93-B1-B4
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

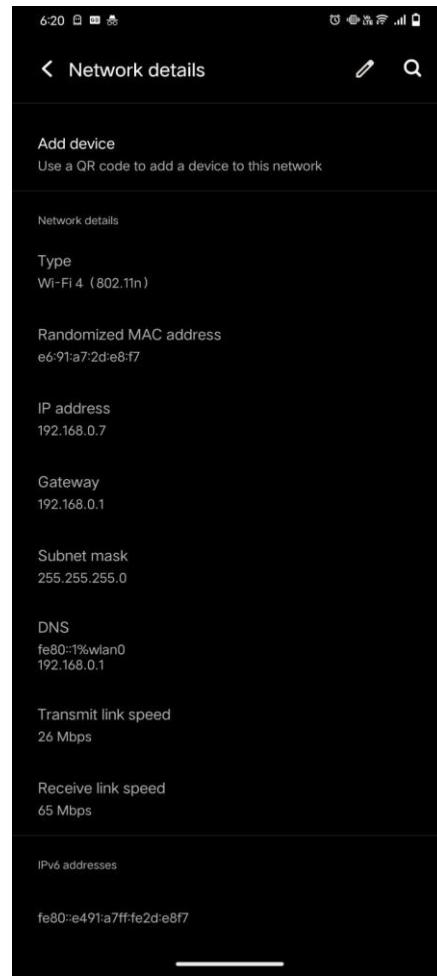
PS C:\Users\Usario> |

```

➤ PS3 Game Console:



➤ **Smartphone:**



VIRTUAL MACHINES

➤ **Slackware (ifconfig -a):**

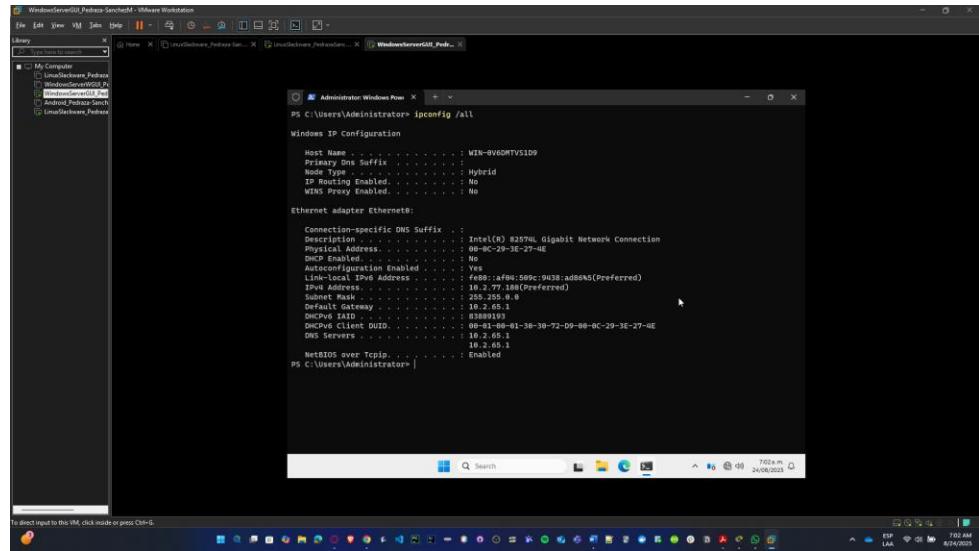
```
Starting xinetd daemon: over/overline/upnpd =+
Starting dhclient daemon: over/overline/dhcpcd -> dhcpcd
Triggering udev rules: over/overline/trigger - action=change
Starting system message bus: over/overline/messagebus -> messagebus
Starting cron daemon: over/overline/cron -> system
Starting Samba DSN daemon: over/overline/smbd
Starting Samba NDS daemon: over/overline/nmbd
Starting OpenSSH SSH daemon: over/overline/sshd
Starting upnpd daemon: over/overline/upnpd
Loading over/overline/ahd-ampng/33b-query-line/latish.map.gz

Welcome to Linux 5.15.19 (64 bit) (tkg)
monitor login: root
Password: 
Linux 5.15.19
cpuinfo: 4 cores, 4 threads, 2.7GHz
meminfo: 1024M total, 1024M used, 0 free
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> metric 0
      link layer: Ethernet port 0x0
      brd ff:ff:ff:ff:ff:ff
      HWaddr 00:0C:29:7F:17:00
      netmask 00:00:00:FF:FF:FF
      broadcast 00:00:00:FF:FF:FF
      media: autoselect
      status: no carrier
      RX packets 0 bytes 0 errors 0 dropped 0 frame 0
      TX packets 0 bytes 0 errors 0 dropped 0 collisions 0
      RX errors 0 dropped 0 overrun 0 carrier 0 collisions 0
      TX errors 0 dropped 0 overrun 0 carrier 0 collisions 0

root@monitor:~#
```

A screenshot of a Slackware terminal window titled "monitor". It shows the output of the "ifconfig -a" command. The terminal displays various network interface statistics, including packet counts, errors, and collision counts for both receive and transmit directions. The background shows the Slackware desktop environment with a file manager window open.

➤ Windows Server with GUI (ipconfig /all):



COMPARATION

As we took account of our host machines, then, we can compare them with VMs. These are some differences:

- **Vendor / Model:**
 - Host: real hardware (Intel, Realtek, Qualcomm, Broadcom, etc.).
 - VM: usually a **virtual adapter** emulated by the hypervisor (e.g., “Intel PRO/1000 MT”, “VMware Virtual Ethernet Adapter”, “Hyper-V Virtual Switch”).
- **MAC Address:**
 - Host: real, burned-in MAC from the manufacturer.
 - VM: hypervisor generates a **virtual MAC** (different from host, even if bridged).
- **IP Addresses:**
 - Host: normal LAN IP from the router.
 - VM: could be the same LAN range (if using **Bridged mode**) or a private NAT/subnet (if using **NAT mode**).
- **Speed:**
 - Host: real adapter speed (100 Mbps, 1 Gbps, Wi-Fi link speed like 433 Mbps, 866 Mbps, etc.).
 - VM: usually shows **1 Gbps** or some fixed virtual speed, regardless of the real physical link.

- **Bytes transmitted/received:**
 - Host: real traffic count.
 - VM: only counts **traffic of that VM**, even though it ultimately goes through the host NIC.
- **Wireless info (SSID, signal):**
 - Host: visible (actual SSID of your Wi-Fi).
 - VM: does **not** see SSID — because the VM only sees the virtual adapter, not the Wi-Fi directly.

Base Software

The infrastructure also requires programs that support the administration of various operating system activities. We will carry out activities to help you understand the operating system and its management.

Before we create the shells in the respective VMs, we install Open SSH service in the machines, because of the need of not to copy manually the shells, just to copy and paste directly from our computer to the VM.

SLACKWARE

```
# Verify if it already exists sshd
which sshd || echo "no sshd found"

# If it's not installed and you have internet and slackpkg configured:
sudo slackpkg update
sudo slackpkg install openssh

# Enable / boot the syslog (Slackware use scripts in /etc/rc.d)
sudo chmod +x /etc/rc.d/rc.sshd
sudo /etc/rc.d/rc.sshd start

# Test:
sudo /etc/rc.d/rc.sshd status # o pgrep sshd
```

```

root@monstar:~# clocking install speech
This appears to be the first time you have run clocking.
Please edit /etc/clocking.conf to set up your needs.
ONE server is at /etc/clocking.conf and run:
  $ clocking update

You can see more information about clocking functions in clocking manpage.
root@monstar:~# clocking update
The file /etc/clocking.conf is located by /etc/clocking.conf
Please edit that file and run again. ONE server clocking
only works with ONE server installed.

root@monstar:~# chmod +x /etc/clocking.conf
root@monstar:~# /etc/clocking.conf
root@monstar:~# rmmod itaconiq
root@monstar:~# modprobe itaconiq
root@monstar:~# rmmod speech
root@monstar:~# modprobe speech
root@monstar:~# rmmod config
root@monstar:~# modprobe config
root@monstar:~#

```

SOLARIS

See the status

svcs ssh

```

root@grup07:~# svcs ssh
STATE        STIME      FMRI
online       11:24:52  svc:/network/ssh:default
root@grup07:~#

```

We must let login to root, so we need to modify a file using command **nano /etc/ssh/sshd_config** by changing **#PermitRootLogin = prohibit-password** to **PermitRootLogin = yes**. Then you need to reset the machine or restart SSH service with **sudo /etc/rc.d/rc.sshd restart**

```

# to pam_authenticate(3PAM).
#PermitEmptyPasswords no

# To disable tunneled clear text passwords, change PasswordAuthentication to no.
#PasswordAuthentication yes

# Are root logins permitted using sshd.
# Note that sshd uses pam_authenticate(3PAM) so the root (or any other) user
# may be denied access by a PAM module regardless of this setting.
# Valid options are yes, without-password, no.
PermitRootLogin yes

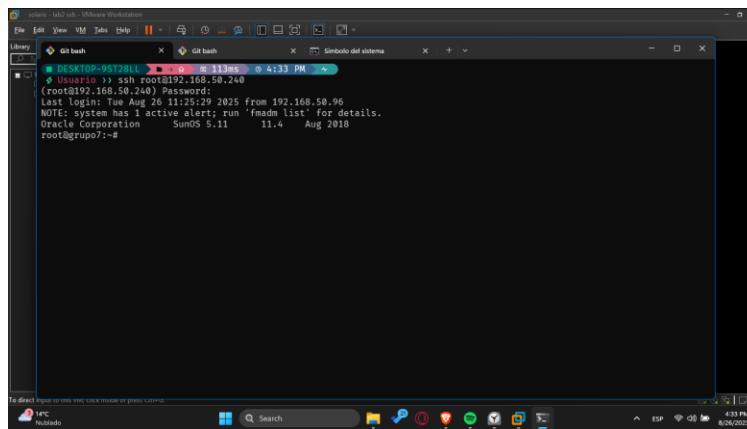
# sftp subsystem
Subsystem    sftp    internal-sftp

# Uncomment if you don't trust ~/.ssh/known_hosts for RhostsRSAAuthentication.
#IgnoreUserKnownHosts yes

# Accept the LANG and LC_* environment variables sent by the client.
AcceptEnv LANG
AcceptEnv LC_*

```

You can access to ssh in any terminal (git bash, cmd, powershell,etc.)



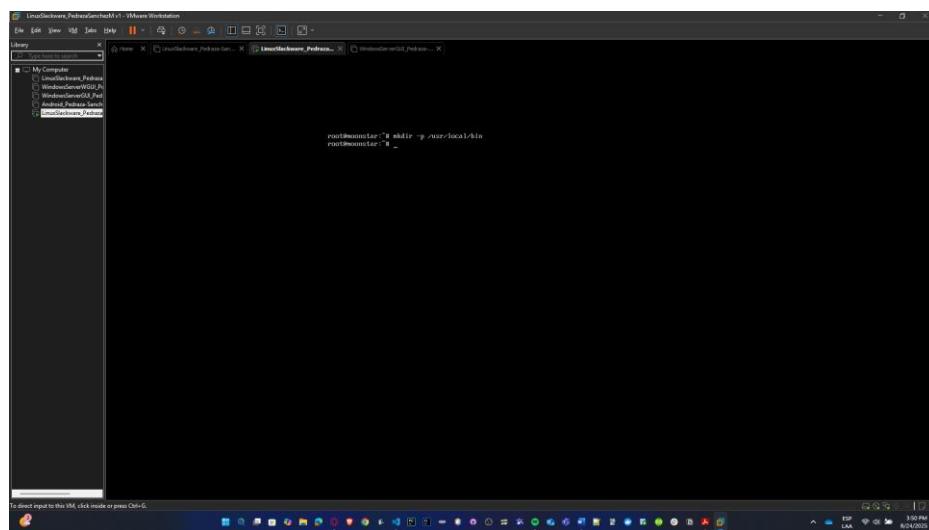
1. Shell programming- Unix

Using a virtual machine with Linux Slackware, Solaris, and CentOS, depending on the number of people in the group, develop the following applications (remember to document your code).

We're going to use this structure to handle file scripts into the VMs.

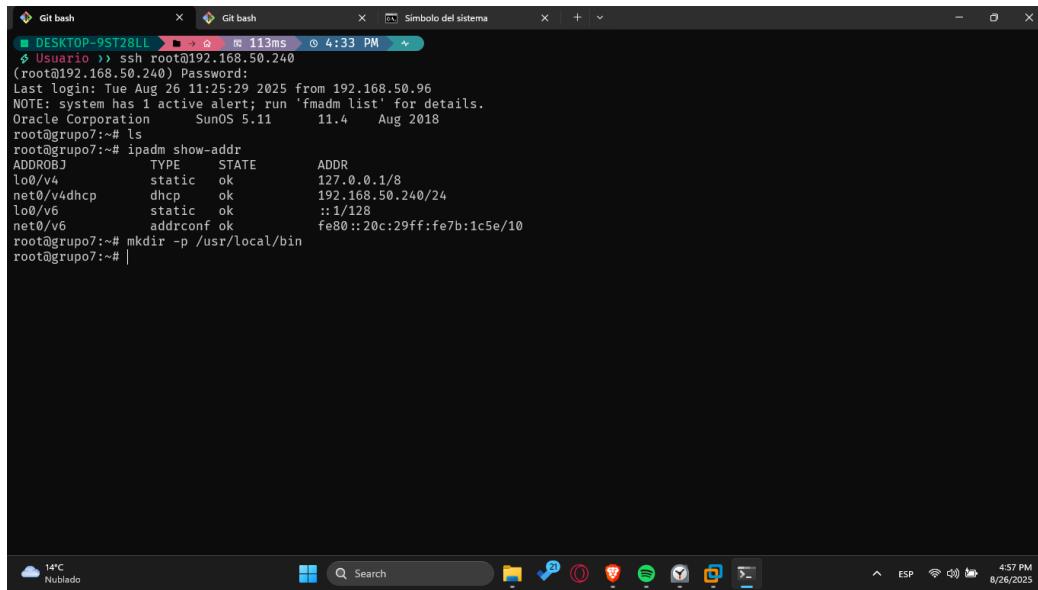
SLACKWARE (it's also valid for Solaris):

- Create the directory: **mkdir -p /usr/local/bin** in root mode
- Connect via WSL terminal to send file scripts to the VM. For example:
scp -r "/mnt/c/Users/Usuario/Downloads/lab-02" root@10.2.77.177:/usr/local/bin/
- Allow permission to file script: **chmod +x /usr/local/bin/filename.sh**
- Test menu.



SOLARIS (it's also valid for Slackware):

- Create the directory: **mkdir -p /usr/local/bin** in root mode
- We should connect by ssh, ssh <root@192.168.50.240>, now you can copy-paste commands easily.



The screenshot shows a Solaris desktop environment with a terminal window open. The terminal window title is "Git bash". The command-line session shows the user connecting via SSH to a Solaris system at 192.168.50.240, logging in as root, and then creating a directory named "bin" in the "/usr/local" path. The terminal also displays network configuration information from the "ipadm show-addr" command.

```
DESKTOP-9ST28LL 113ms 4:33 PM
Usuario >> ssh root@192.168.50.240
(root@192.168.50.240) Password:
Last login: Tue Aug 26 11:25:29 2025 from 192.168.50.96
NOTE: system has 1 active alert; run 'fmadm list' for details.
Oracle Corporation SunOS 5.11      11.4     Aug 2018
root@grupo7:~# ls
root@grupo7:~# ipadm show-addr
ADDROBJ          TYPE    STATE      ADDR
lo0/v4           static  ok        127.0.0.1/8
net0/v4dhcp      dhcp    ok        192.168.50.240/24
lo0/v8           static  ok        ::1/128
net0/v6           addrconf ok        fe80::20c:29ff:fe7b:1c5e/10
root@grupo7:~# mkdir -p /usr/local/bin
root@grupo7:~#
```

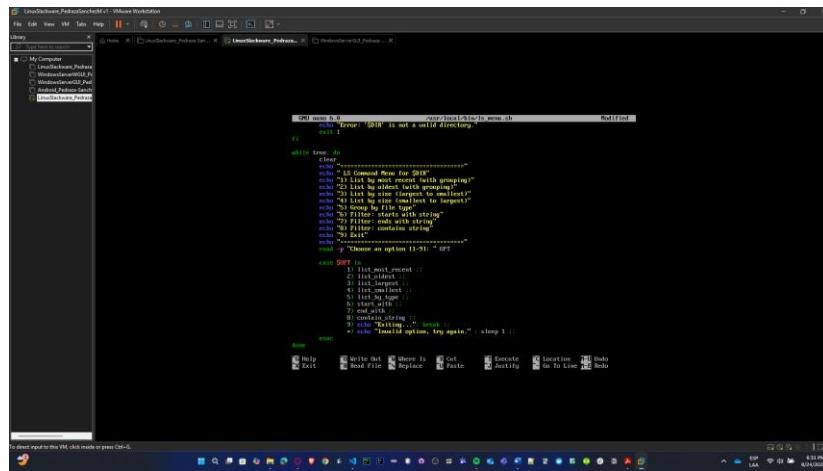
ls Command

- Create a Shell script to list the files in a directory, including hidden ones, with the following options:
 - Sort by various parameters and group by quantity:
 - Most recent (must state how many files share the same date).
 - Oldest (must state how many files share the same date).
 - Largest to smallest size (must state how many files share the same size).
 - Smallest to largest size (must state how many files share the same size).
 - File type (File/Directory) (must state how many files share the same type).
 - Additional conditions: Only within the given directory or its subdirectories.
 - Start with a given string.
 - End with a given string.
 - Contain a given string.

After asking for the directory, create a menu with the options mentioned. The script should stay in the menu until the user decides to exit. The script should clear the screen before showing the results, and if the results are too extensive, it should paginate them.

SLACKWARE:

- ✓ **Save:** nano /usr/local/bin/ls_menu.sh



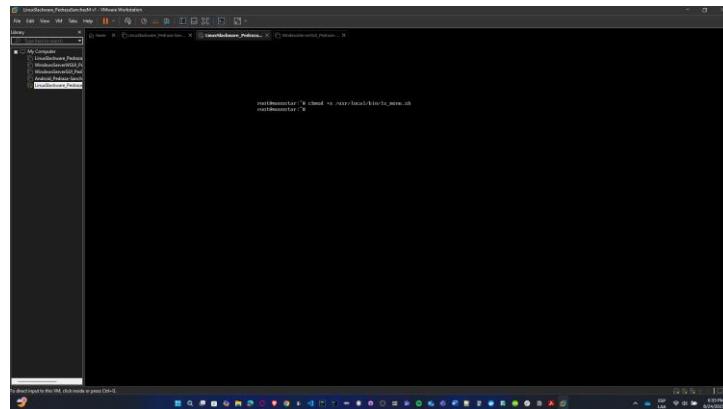
```
GNU nano 4.0  /usr/local/bin/ls_menu.sh  NoEditor

#!/bin/sh
# Error: '$DIR' is not a valid directory.
exit 1

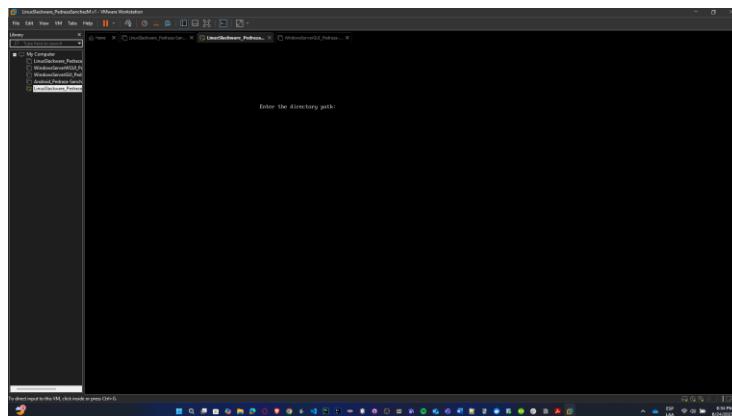
while true; do
    echo "-----"
    echo "1) List by most recent (with prompting)"
    echo "2) List by size (largest to smallest)"
    echo "3) List by file type"
    echo "4) Filter: ends with string"
    echo "5) Filter: starts with string"
    echo "6) Exit"
    echo "-----"
    read -p "Choose an option (1-5): " OPT
done

case $OPT in
    1) ls -t;;
    2) ls -S;;
    3) ls -t -S;;
    4) read -p "Enter string: " str
       ls -t | grep str;;
    5) read -p "Enter string: " str
       ls -t | grep ^str;;
    6) break;;
esac
done
```

- ✓ **Exec:** chmod +x /usr/local/bin/ls_menu.sh



- ✓ **Run:** /usr/local/bin/ls_menu.sh



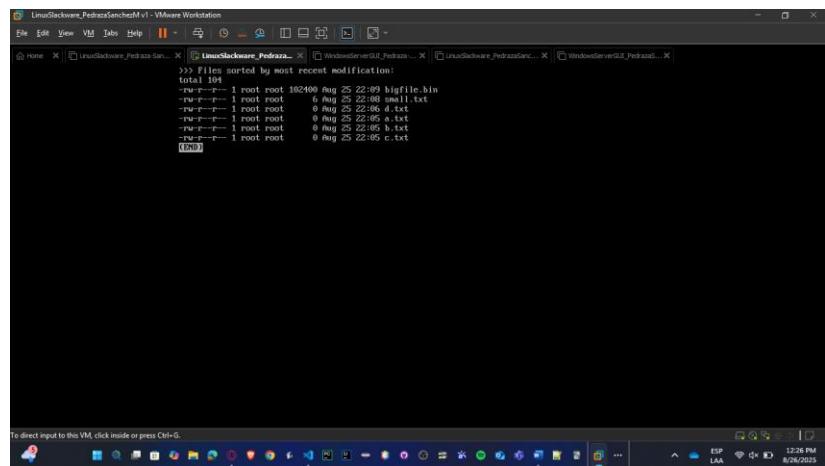
✓ **Tests:**

1) **Most recent files test:**

```
mkdir -p /tmp/testls  
cd /tmp/testls  
touch a.txt b.txt c.txt  
sleep 2  
touch d.txt  
/usr/local/bin/ls_menu.sh
```

Select option 1 (**Most recent**).

Expected: d.txt should appear first, and the grouping by date should show how many files share the same modification date.



The screenshot shows a terminal window titled "LinuxStackware_PedrozaSanchezM v1 - VMware Workstation". The command "ls" was run, resulting in the following output:

```
>>> ls  
total 104  
-rw-r--r-- 1 root root 102400 Aug 25 22:09 bigfile.bin  
-rw-r--r-- 1 root root 6 Aug 25 22:08 small1.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:08 a.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:05 a.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:05 b.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:05 c.txt  
(END)
```

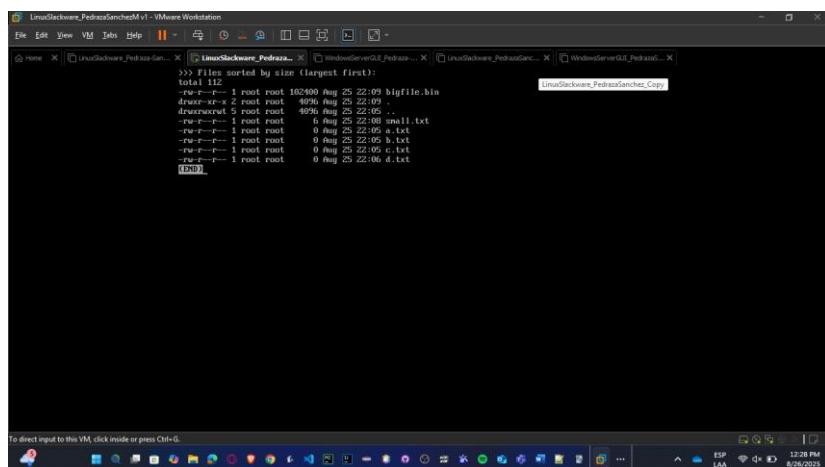
2) **Size-based test:**

```
echo "hello" > small.txt  
dd if=/dev/zero of=bigfile.bin bs=1K count=100 # 100KB file  
/usr/local/bin/ls_menu.sh
```

Select option

3 (**Largest to smallest**).

Expected: bigfile.bin appears at the top, then small.txt.



The screenshot shows a terminal window titled "LinuxStackware_PedrozaSanchezM v1 - VMware Workstation". The command "ls" was run, resulting in the following output:

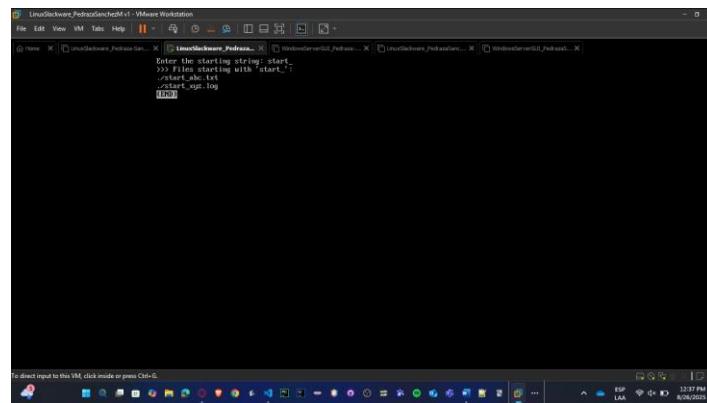
```
>>> ls  
total 112  
drwxr-xr-x 2 root root 4096 Aug 25 22:09 bigfile.bin  
drwxr-xr-x 5 root root 4096 Aug 25 22:09 .  
-rw-r--r-- 1 root root 6 Aug 25 22:08 small1.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:05 a.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:05 b.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:05 c.txt  
-rw-r--r-- 1 root root 0 Aug 25 22:06 4.txt  
(END)
```

3) Filter test (starts with):

```
touch start_abc.txt start_xyz.log notstart.txt  
/usr/local/bin/ls_menu.sh
```

Select option 6 (Starts with string) and enter start_.

Expected: only start_abc.txt and start_xyz.log appear.



SOLARIS:

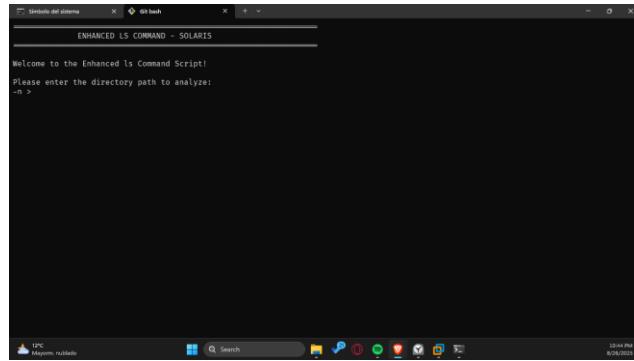
- ✓ **Save:** nano /usr/local/bin/ls_menu.sh

```
#!/bin/sh  
#####  
# File Search or Viewing Commands Script for Solaris  
# Author: Solaris Advanced file search and viewing utilities  
# Author: Solaris Programming Project  
# Date: $(date)  
# Version: 1.0  
#  
# Features:  
# - Search for files by name/partial name  
# - Search for words in files with line numbers and counts  
# - Combined file and word search  
# - Count lines in files  
# - Sort lines in files  
# - Show first n lines of files  
# - Show last n lines of files  
#####  
# Function: display_header  
# Description: Shows the script title and clears screen  
#####  
display_header() {  
    clear  
    echo "_____  
    echo "      FILE SEARCH AND VIEWING COMMANDS - SOLARIS"  
    echo "_____  
    echo ""  
}  
Get Help     Write Out   Where Is   Cut Text  Justify  Cur Pos  Go To Line  Undo  Redo  Mark Text  Copy Text  
Exit        Read File   Replace   Uncut Text To Spell
```

- ✓ **Exec:** chmod +x /usr/local/bin/ls_menu.sh

```
root@grup07:~# mkdir -p /usr/local/bin  
root@grup07:~# nano /usr/local/bin/ls_menu.sh  
root@grup07:~# nano /usr/local/bin/ls_menu.sh  
root@grup07:~# nano /usr/local/bin/ls_menu.sh  
root@grup07:~# chmod +x /usr/local/bin/ls_menu.sh  
root@grup07:~|
```

- ✓ Run: /usr/local/bin/ls_menu.sh



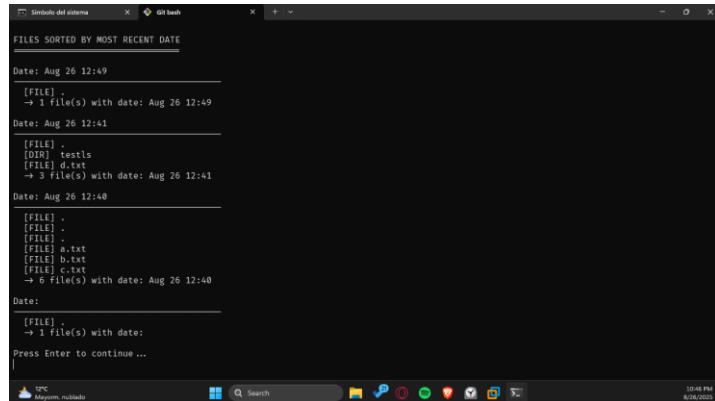
✓ Tests:

1. Most recent files test:

```
mkdir -p /tmp/testls  
cd /tmp/testls  
touch a.txt b.txt c.txt  
sleep 2  
touch d.txt  
/usr/local/bin/ls_menu.sh
```

Select option 1 (Most recent).

Expected: d.txt should appear first, and the grouping by date should show how many files share the same modification date.



2. Size-based test:

```
echo "hello" > small.txt  
/tmp/testls# dd if=/dev/zero of=bigfile.bin bs=1024 count=100 #  
100KB file  
/usr/local/bin/ls_menu.sh
```

Select option 3

```

>>> Files sorted by size (largest first):
total 102400
-rw-r--r-- 1 root root 102400 Aug 29 22:09 bigfile.bin
drwxr-xr-x 5 root root 4096 Aug 29 22:05 .
drwxr-xr-x 1 root root 0 Aug 29 22:05 ..
-rw-r--r-- 1 root root 6 Aug 29 22:00 small1.txt
-rw-r--r-- 1 root root 0 Aug 29 22:05 b.txt
-rw-r--r-- 1 root root 0 Aug 29 22:05 c.txt
-rw-r--r-- 1 root root 0 Aug 29 22:05 d.txt
(emptydir)

```

3. Largest to smallest):

Expected: bigfile.bin appears at the top, then small.txt.

```

ENHANCED LS COMMAND - SOLARIS
_____
FILES SORTED BY SIZE (LARGEST TO SMALLEST)
_____
Size: 102400 bytes
[FILE] bigfile.bin
→ 1 file(s) with size: 102400 bytes
Size: 6 bytes
[FILE] small.txt
→ 1 file(s) with size: 6 bytes
Size: 0 bytes (directories)
[DIR] testls
[FIL] a.txt
[FIL] b.txt
[FIL] c.txt
[FIL] d.txt
→ 5 item(s) with size: 0 bytes (directories)
Press Enter to continue ...

```

4. Filter test (starts with):

`touch start_abc.txt start_xyz.log notstart.txt`

`/usr/local/bin/ls_menu.sh`

Select option 6 (Starts with string) and enter start_.

Expected: only start_abc.txt and start_xyz.log appear.

```

Símbolo del sistema x Git bash x + -
ENHANCED LS COMMAND - SOLARIS
_____
MAIN MENU
_____
Current directory: /tmp/testls
Include subdirectories: yes
Active filter: Files that start with 'start_'
_____
SORTING OPTIONS:
  1) Sort by Most Recent Date
  2) Sort by Oldest Date
  3) Sort by Size (Largest to Smallest)
  4) Sort by Size (Smallest to Largest)
  5) Group by Type (Files/Directories)
_____
FILTER OPTIONS:
  6) Filter by files that START with string
  7) Filter by files that END with string
  8) Filter by files that CONTAIN string
  9) Clear current filter
_____
SETTINGS:
  s) Change directory
  d) Toggle subdirectory inclusion
  q) Quit
  -n Select an option:

```

And now, once the filter is activated, we use 1

```

ENHANCED LS COMMAND - SOLARIS
FILES SORTED BY MOST RECENT DATE

Date: Aug 26 12:59
[FILE] start_abc.txt
[FILE] start_wxy.log
-> 2 file(s) with Date: Aug 26 12:59

Press Enter to continue ...

```

File Search or Viewing Commands

- Create a Shell script that, through a menu (the menu will only exit when the user indicates so), allows the user to:
 - Search for a file/part of a file by specifying a path and file name/part of the name. Output the locations and names of the files, followed by the number of times the file was found.
 - Search for a word/part of a word in a given file. Output the found words and the lines where they were found, followed by the number of repetitions.
 - Search for a file/part of a file in a given path, and when found, search for a word/part of a word. For each found file, show the line where the word was found, followed by the total number of repetitions.
 - Count the number of lines in a file.
 - Show the first n lines of a given file.
 - Show the last n lines of a given file.

SLACKWARE:

✓ **Save:** nano /usr/local/bin/file_search_menu.sh

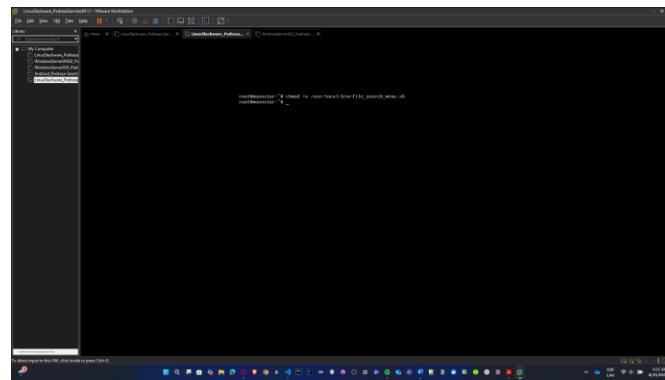
```

#!/bin/sh
# Enter the number of lines of FILE
# 01 Show the last $1 lines of FILE
# 02 Show the first $1 lines of FILE
# 03 Search for word in FILE
# 04 Search for word and then word inside it
# 05 Show first # lines
# 06 Show last # lines
# 07 Exit
# 08 Help Program
# 09 Clear
# 10 File Search and Viewing Menu
# 11 Search for file by name
# 12 Search file and then word inside it
# 13 Show first # lines
# 14 Show last # lines
# 15 Exit
# 16 Help option, try again.
# 17 Show help option, try again.
# 18 Show help option, try again.
# 19 Show help option, try again.
# 20 Show help option, try again.
# 21 Show help option, try again.
# 22 Show help option, try again.
# 23 Show help option, try again.
# 24 Show help option, try again.

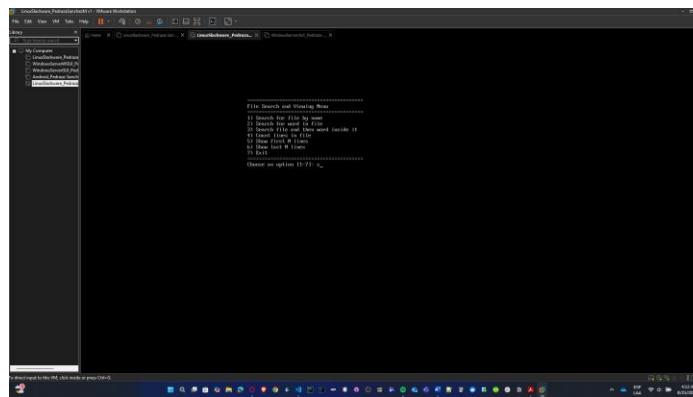
read -p "Choose an option (1-21) : " OPT
case $OPT in
    01) ./file_search_menu.sh $1;;
    02) ./file_search_menu.sh -1 $1;;
    03) ./file_search_menu.sh $1;;
    04) ./file_search_menu.sh $1;;
    05) ./file_search_menu.sh $1;;
    06) ./file_search_menu.sh -1 $1;;
    07) exit 1;;
    08) ./file_search_menu.sh;;
    09) clear;;
    10) ./file_search_menu.sh;;
    11) ./file_search_menu.sh $1;;
    12) ./file_search_menu.sh $1;;
    13) ./file_search_menu.sh $1;;
    14) ./file_search_menu.sh -1 $1;;
    15) ./file_search_menu.sh $1;;
    16) ./file_search_menu.sh;;
    17) ./file_search_menu.sh;;
    18) ./file_search_menu.sh;;
    19) ./file_search_menu.sh;;
    20) ./file_search_menu.sh;;
    21) ./file_search_menu.sh;;
    22) ./file_search_menu.sh;;
    23) ./file_search_menu.sh;;
    24) ./file_search_menu.sh;;
esac
done

```

- ✓ Exec: chmod +x /usr/local/bin/file_search_menu.sh



- ✓ Run: /usr/local/bin/file_search_menu.sh

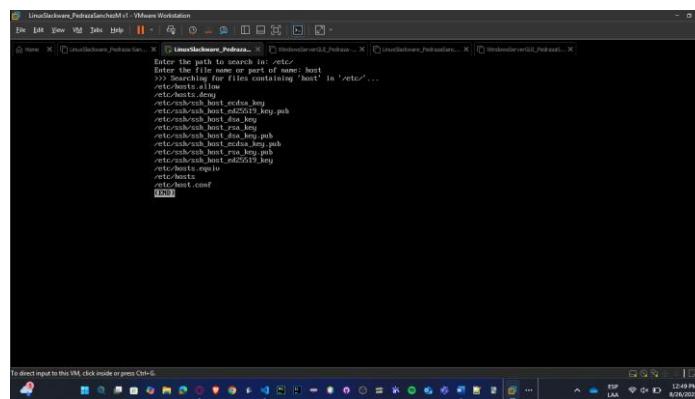


- ✓ Tests:

1) Search for an existent file:

```
./file_search_menu.sh
# In the menu, select "1. Search for a file by name"
# Enter: /etc/hosts
```

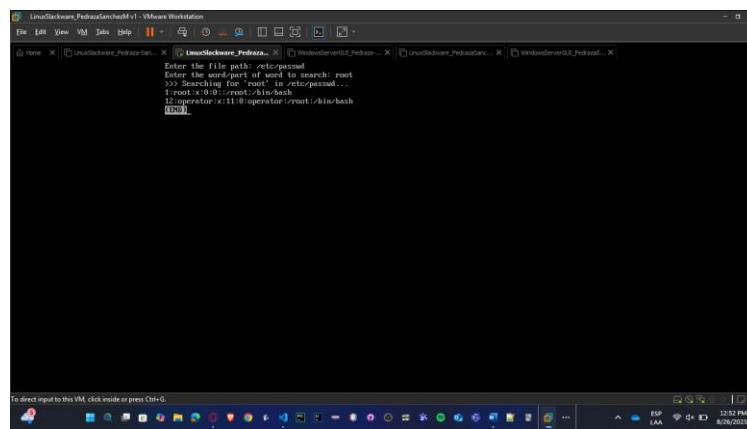
Expected: complete route for existent file



2) Search inside a directory:

```
./file_search_menu.sh  
# Select "2. Search for a string inside files"  
# Enter word: root  
# Enter directory: /etc/passwd
```

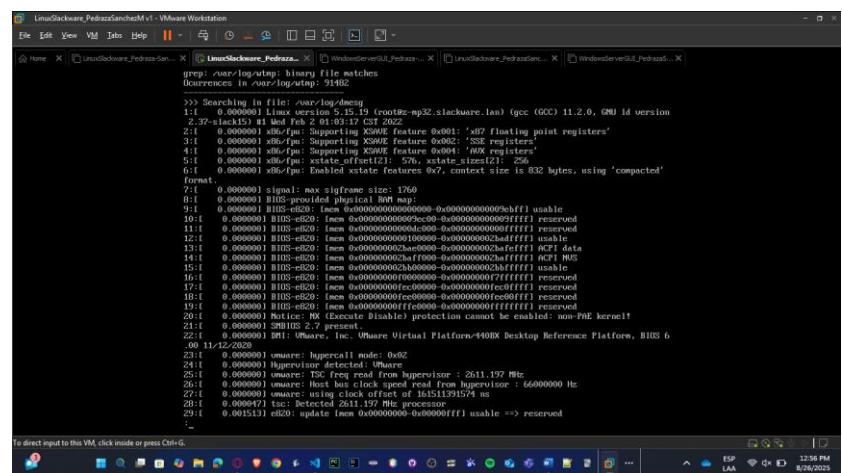
Expected: various lines with configurations that include "root".



3) List modified files recently:

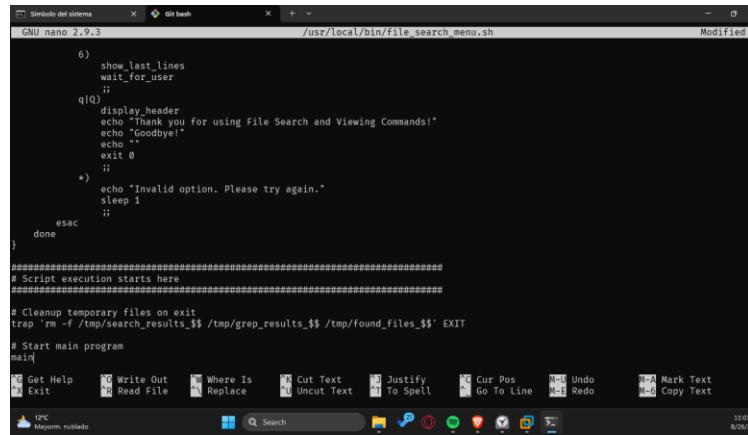
```
./file_search_menu.sh  
# Select "3. Show recently modified files"  
# Enter directory: /var/log
```

Expected: files list in /var/log ordered by modified date



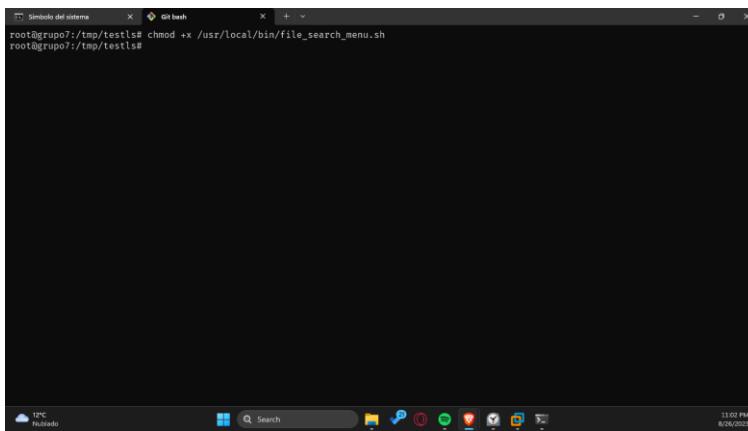
SOLARIS:

- ✓ **Save:** nano /usr/local/bin/file_search_menu.sh



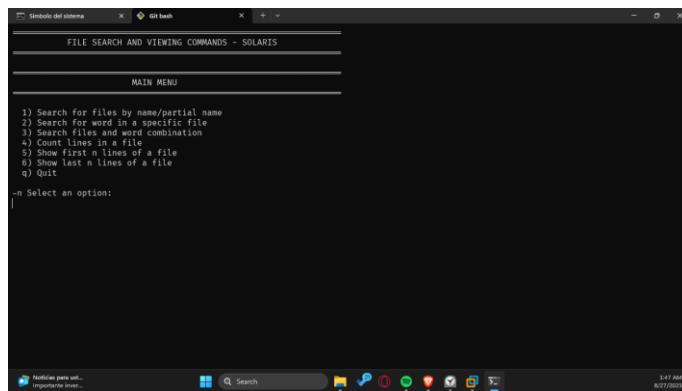
```
GNU nano 2.9.3 /usr/local/bin/file_search_menu.sh Modified
6)
    show_last_lines
    wait_for_user
;;
q|Q|
    display_header
    echo "Thank you for using File Search and Viewing Commands!"
    echo "Goodbye!"
    echo ""
    exit 0
;;
*) 
    echo "Invalid option. Please try again."
    sleep 1
;;
done
}
#####
# Script execution starts here
#####
# Cleanup temporary files on exit
trap 'rm -f /tmp/search_results_$$ /tmp/grep_results_$$ /tmp/found_files_$$' EXIT
# Start main program
main()
{
    Get_Help
    Write_Out
    Where_Is
    Cut_Text
    Justify
    Cur_Pos
    Undo
    Redo
    Mark_Text
    Exit
    Read_Out
    Replace
    Uncut_Text
    To_Spell
    Go_To_Line
}
#####
# Main program starts here
main
```

- ✓ **Exec:** chmod +x /usr/local/bin/file_search_menu.sh



```
root@grupo7:/tmp/testls# chmod +x /usr/local/bin/file_search_menu.sh
root@grupo7:/tmp/testls#
```

- ✓ **Run:** /usr/local/bin/file_search_menu.sh



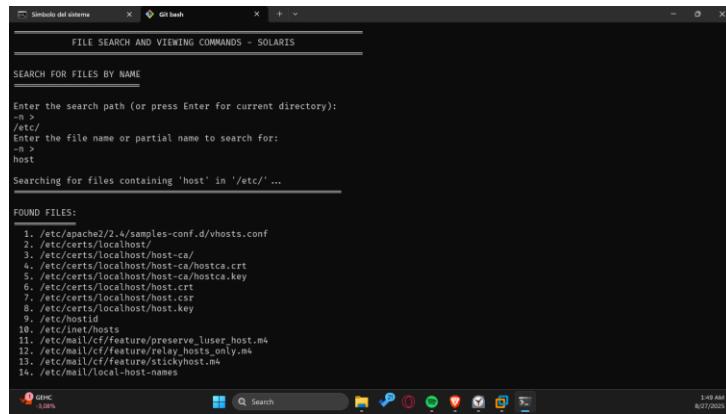
```
FILE SEARCH AND VIEWING COMMANDS - SOLARIS
MAIN MENU
1) Search for files by name/partial name
2) Search for word in a specific file
3) Search files and word combination
4) Count lines in a file
5) Show first n lines of a file
6) Show last n lines of a file
q) Quit
-n Select an option:
|
```

✓ **Tests:**

1. Search for an existent file:

```
./file_search_menu.sh  
# In the menu, select "1. Search for a file by name"  
# Enter: /etc/hosts
```

Expected: complete route for existent file

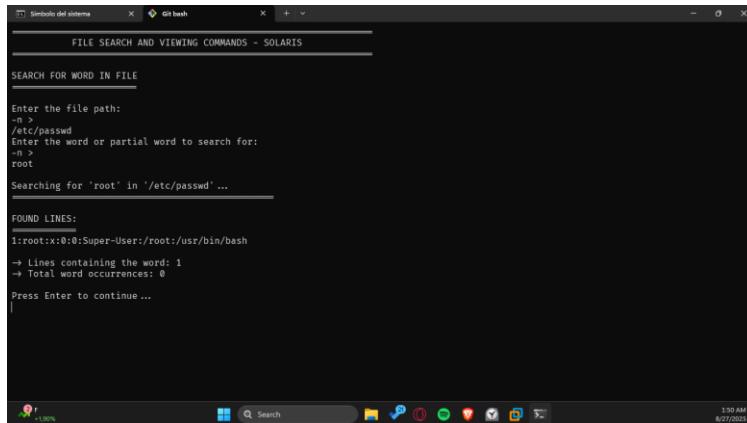


```
SEARCH FOR FILES BY NAME  
  
Enter the search path (or press Enter for current directory):  
-n  
/etc/  
Enter the file name or partial name to search for:  
-n >  
host  
Searching for files containing 'host' in '/etc/' ...  
  
FOUND FILES:  
1. /etc/apache2/2.4/samples-conf.d/hosts.conf  
2. /etc/certs/localhost  
3. /etc/certs/localhost/host-ca/  
4. /etc/certs/localhost/host-ca/hosts.ca.crt  
5. /etc/certs/localhost/host-ca/hosts.ca.key  
6. /etc/certs/localhost/host.crt  
7. /etc/certs/localhost/host.csr  
8. /etc/certs/localhost/host.key  
9. /etc/hostid  
10. /etc/inet.getHosts  
11. /etc/mail/cf/features/preserve_liner_host.m4  
12. /etc/mail/cf/features/use/relay_hosts_only.m4  
13. /etc/mail/cf/features/stickyhost.m4  
14. /etc/mail/local-host-names
```

2. Search inside a directory:

```
./file_search_menu.sh  
# Select "2. Search for a string inside files"  
# Enter word: root  
# Enter directory: /etc/passwd
```

Expected: various lines with configurations that include "root".



```
SEARCH FOR WORD IN FILE  
  
Enter the file path:  
-n >  
/etc/passwd  
Enter the word or partial word to search for:  
-n >  
root  
Searching for 'root' in '/etc/passwd' ...  
  
FOUND LINES:  
1:root:x:0:0:Super-User:/root:/usr/bin/bash  
→ Lines containing the word: 1  
→ Total word occurrences: 0  
Press Enter to continue ...
```

3. List modified files recently:

```
./file_search_menu.sh
# Select "3. Show recently modified files"
# Enter directory: /var/log
```

Expected: files list in /var/log ordered by modified date

```
SEARCH FILES AND WORD COMBINATION

Enter the search path (or press Enter for current directory):
/var/log
Enter the file name pattern to search for:
log
Enter the word to search for inside the files:
in
log
Searching for 'log' in files matching 'log' in '/var/log' ...

FILE: /var/log/install/install.log
1:2005-08-16 08:55:24,957 InstallationLogger INFO    *** START ***
2:2005-08-16 08:55:24,957 InstallationLogger INFO    Unable to read disk layout of:
C7t0d0b; valid=None; devpath=/pc11sd,197080/sd0,0; devId=sd1, sdn0000:29c2:1d2cf1f693ccfc5bc4b26; wwn=None; propDevType=disk; keyBootDisk=false; label=None; isDedicated=false; whole_d
isk=false; isRaw=false; isCrypted=false;
3:2005-08-16 08:55:24,957 InstallationLogger INFO    Going to perform final validation of desired target
4:2005-08-16 08:55:24,957 InstallationLogger INFO    Selected NIC: net0
5:2005-08-16 08:55:24,957 InstallationLogger.sysconfig INFO    Selected NIC: net0
6:2005-08-16 08:56:34,428 InstallationLogger.INFO    Configuring NIC as: dhcp
7:2005-08-16 09:03:20,999 InstallationLogger.INFO    Following configuration is used for installation: [u'Software: Oracle
Solaris 11.4 x64', 'Root Pool Disk: 20480 tscs', ...] Computer name 'group0' , ip ' ' , Network: ' ', a DHCP Configuration: net0/v4

```

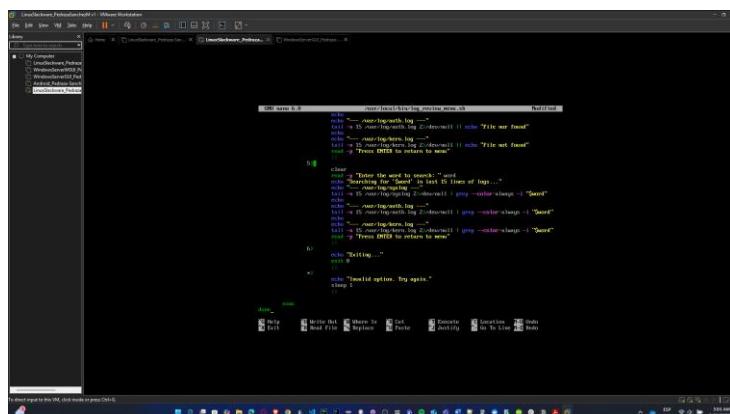
Log Review

Write a Shell program to:

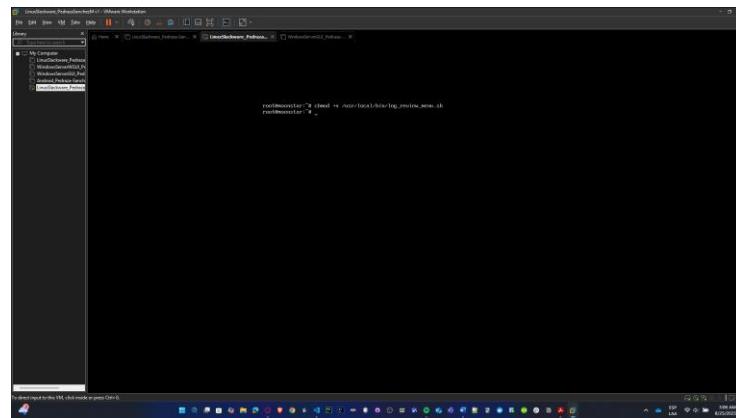
- What are logs?
- What types of logs are found in the operating systems you installed?
- What is syslog? What is this standard? Do the logs found in your operating systems follow this standard?
- Clean the screen
- Allow, via a menu, to perform the following activities:
 - Show the last 15 lines from three log files that contain general system activity data.
 - From those 15 lines, show the ones that contain a specific word.

SLACKWARE:

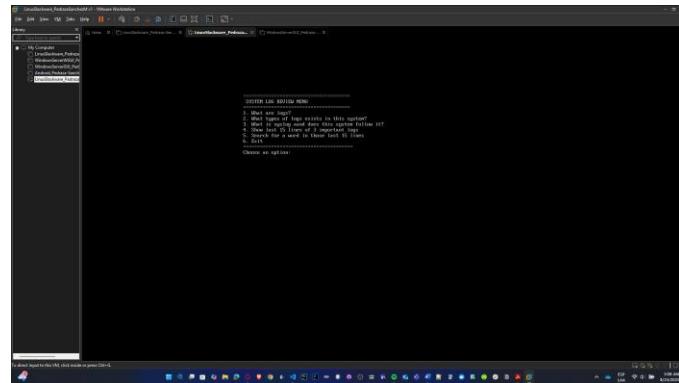
✓ Save: nano /usr/local/bin/log_review_menu.sh



- ✓ Exec: chmod +x /usr/local/bin/ log_review_menu.sh



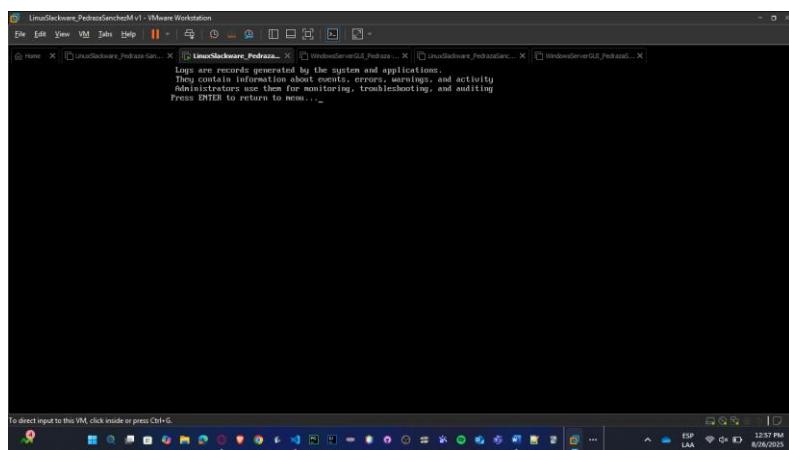
- ✓ Run: /usr/local/bin/ log_review_menu.sh

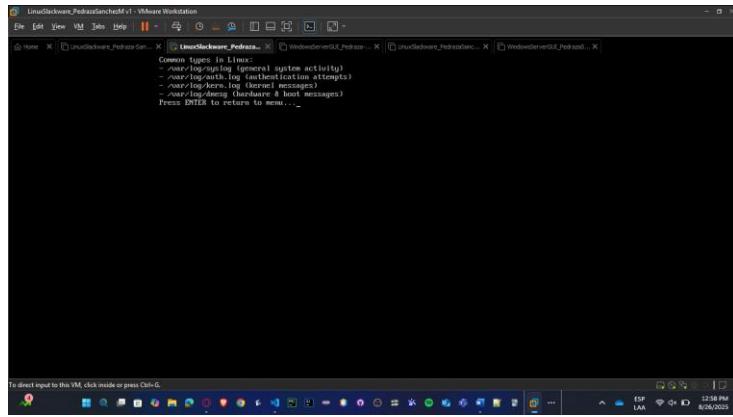


✓ Tests:

1. Run the script and check the menu appears:
/usr/local/bin/log_review_menu.sh

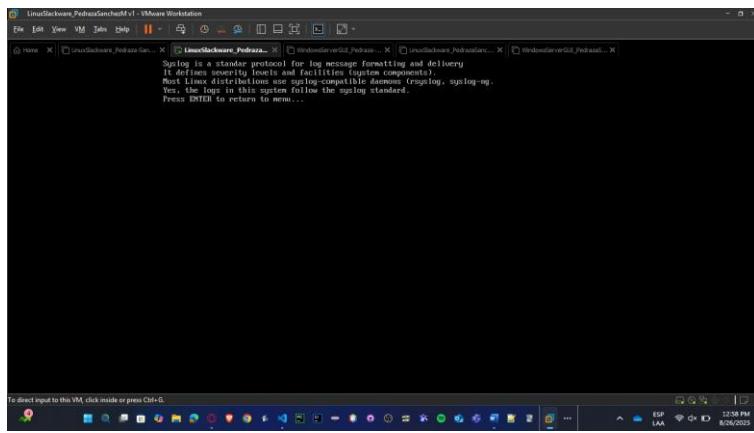
You should see the options (1, 2, 3, etc.) printed on screen.





```
LinuxStackware_PedrasSanchezM1 - VMware Workstation
File Edit View VM Help ||| X Home X LinuxStackware_Pedras... X WindowsServerGU... X LinuxStackware_Pedras... X WindowsServerGU... X
Common types in Linux:
> /var/log/auth.log (authentication activity)
> /var/log/auth.log (authentication attempts)
> /var/log/kern.log (kernel messages)
> /var/log/syslog (messages & boot messages)
Press ENTER to return to menu...
```

To direct input to this VM, click inside or press Ctrl+G.

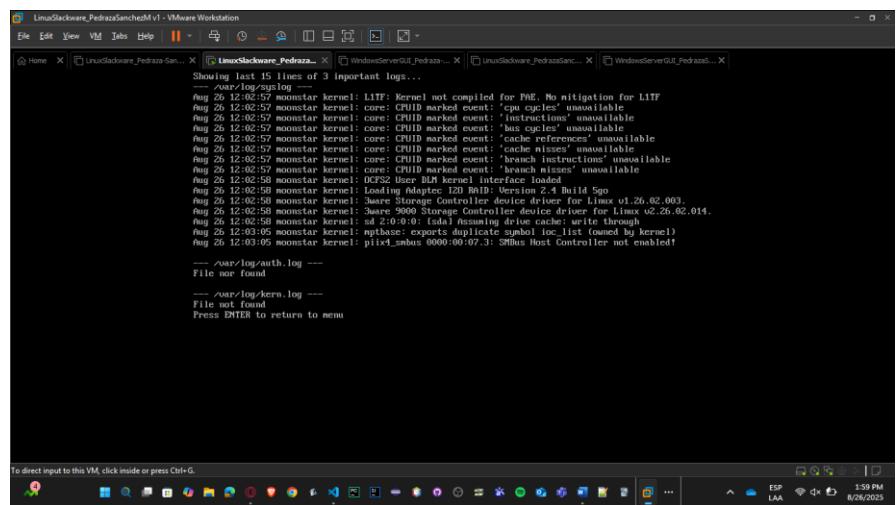


```
LinuxStackware_PedrasSanchezM1 - VMware Workstation
File Edit View VM Help ||| X Home X LinuxStackware_Pedras... X WindowsServerGU... X LinuxStackware_Pedras... X WindowsServerGU... X
Systlog is a standard protocol for log message formatting and delivery
It is used by many different components
Most Linux distributions use syslog-compatible daemons: rsyslog, syslog-ng.
Yes, the logs in this system follow the syslog standard.
Press ENTER to return to menu...
```

To direct input to this VM, click inside or press Ctrl+G.

2. Select option 4 to show last 15 lines of 3 important logs:

It should display content from /var/log/auth.log (or say “file not found” if the log doesn’t exist on the distro).



```
LinuxStackware_PedrasSanchezM1 - VMware Workstation
File Edit View VM Help ||| X Home X LinuxStackware_Pedras... X WindowsServerGU... X LinuxStackware_Pedras... X WindowsServerGU... X
Showing last 15 lines of 3 important logs...
--- /var/log/syslog ---
Aug 26 12:02:57 moonstar kernel: L1TF: Kernel not compiled for PM. No mitigation for L1TF
Aug 26 12:02:57 moonstar kernel: core: CUUID marked event: 'cpu cycles' unavailable
Aug 26 12:02:57 moonstar kernel: core: CUUID marked event: 'bus cycles' unavailable
Aug 26 12:02:57 moonstar kernel: core: CUUID marked event: 'bus references' unavailable
Aug 26 12:02:57 moonstar kernel: core: CUUID marked event: 'branch instructions' unavailable
Aug 26 12:02:57 moonstar kernel: core: CUUID marked event: 'branch misses' unavailable
Aug 26 12:02:58 moonstar kernel: OCFS2 User DLM kernel interface loaded
Aug 26 12:02:58 moonstar kernel: 3ware 9000 Storage Controller device driver for Linux v2.26.02.003
Aug 26 12:02:58 moonstar kernel: 3ware 9000 Storage Controller device driver for Linux v2.26.02.014
Aug 26 12:02:58 moonstar kernel: sd 2:0:0:0: [ada1] scanning drive cache: write through
Aug 26 12:03:05 moonstar kernel: npthbase exports duplicate symbol (cyclic)
Aug 26 12:03:05 moonstar kernel: pinctl: maxm 0000:00:07.0: SMBus host Controller not enabled!
```

```
--- /var/log/auth.log ---
File not found
```

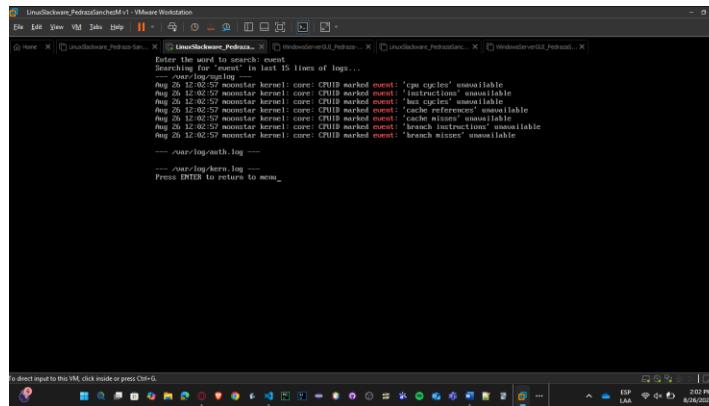
```
--- /var/log/kern.log ---
File not found
Press ENTER to return to menu...
```

To direct input to this VM, click inside or press Ctrl+G.

3. Select option 5 to search for a word in those 15 lines:

Search for the word ‘event’ in those 15 lines.

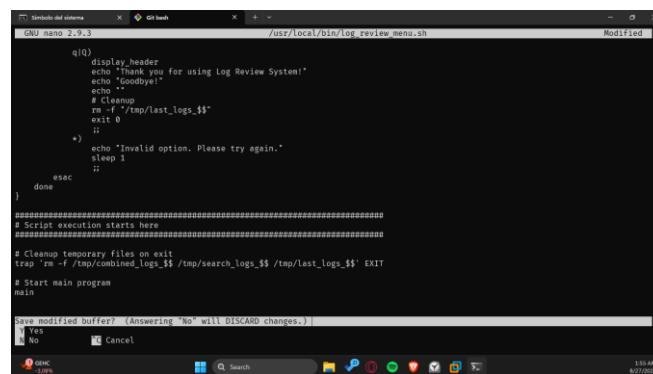
It should return only the lines with that word.



The screenshot shows a terminal window titled "LinuxStackware_PedroazorancheM1 - VMware Workstation". It displays the command "grep event /var/log/messages" followed by 15 lines of kernel log entries containing the word "event". The terminal window has a dark background with white text. The desktop environment includes a taskbar with icons for various applications like a browser, file manager, and system tools. The status bar at the bottom right shows the date and time as "202 PM 8/17/2023".

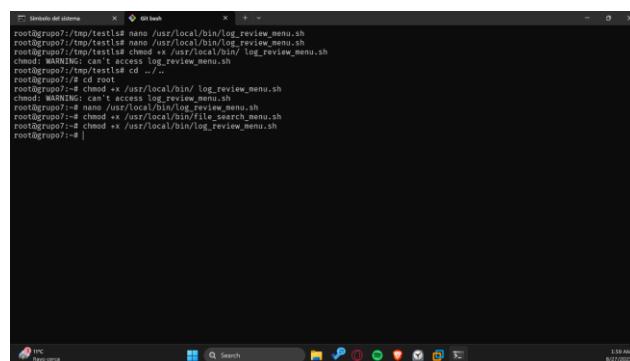
SOLARIS:

- ✓ **Save:** nano /usr/local/bin/log_review_menu.sh



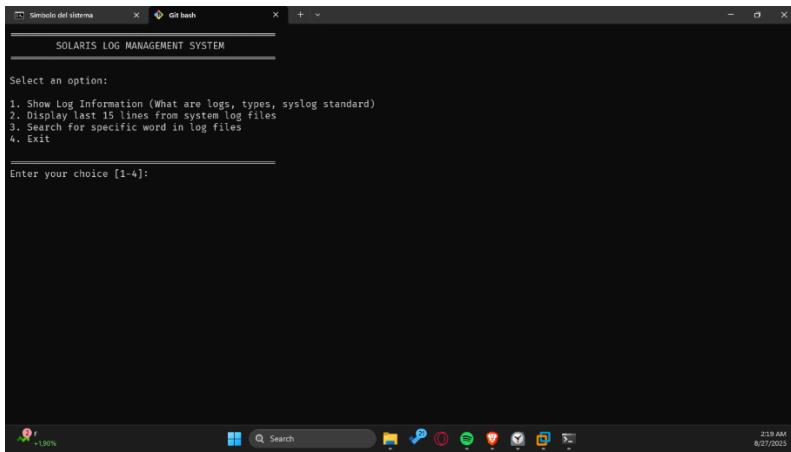
The screenshot shows a terminal window titled "Sistema del sistema" with the command "nano /usr/local/bin/log_review_menu.sh". The screen displays a shell script with various functions and logic. A modal dialog box is open, asking "Save modified buffer? (Answering 'No' will DISCARD changes.)" with options "Yes", "No", and "Cancel". The "Yes" button is highlighted. The terminal window has a dark background with white text. The desktop environment includes a taskbar with icons for various applications. The status bar at the bottom right shows the date and time as "1:59 AM 8/17/2023".

- ✓ **Exec:** chmod +x /usr/local/bin/ log_review_menu.sh



The screenshot shows a terminal window titled "Sistema del sistema" with the command "root@grup07:/tmp/test\$ chmod +x /usr/local/bin/log_review_menu.sh". The screen displays the output of the chmod command, showing a warning message about permissions and the successful execution. The terminal window has a dark background with white text. The desktop environment includes a taskbar with icons for various applications. The status bar at the bottom right shows the date and time as "1:59 AM 8/17/2023".

- ✓ Run: /usr/local/bin/log_review_menu.sh



✓ Tests:

- 1) Run the script and check the menu appears:
`/usr/local/bin/log_review_menu.sh`

You should see the options (1, 2, 3, etc.) printed on screen.

```

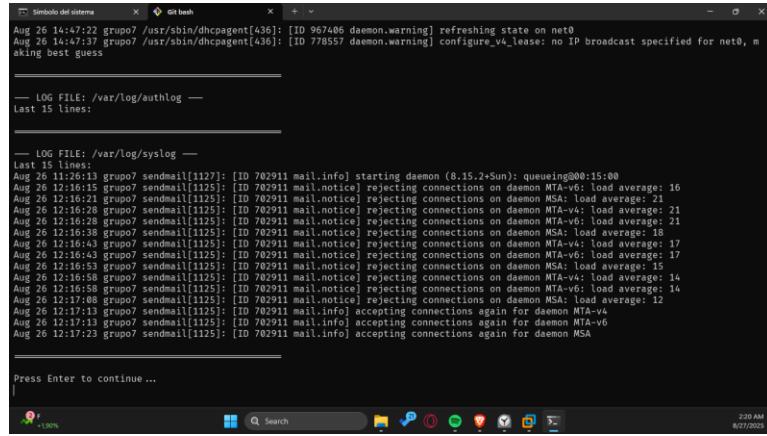
Símbolo del sistema x Git bash x + -
LOG REVIEW SYSTEM - SOLARIS
UNDERSTANDING SYSTEM LOGS
WHAT ARE LOGS?
System logs are files that record events, activities, and messages generated by the operating system, applications, and services. They are essential for:
* System monitoring and troubleshooting
* Security auditing and forensics
* Performance analysis
* Compliance and regulatory requirements
TYPE OF LOG IN SOLARIS:
* /var/log/syslog - General system messages
* /var/log/messages - Kernel and system messages
* /var/log/authlog - Authentication and authorization
* /var/adm/messages - System administration messages
* /var/adm/sulog - Su command usage
* /var/adm/utmp - User login/logout attempts
* /var/adm/utmx - User login/logout history
* /var/adm/utmx - Currently logged users
WHAT IS SYSLOG?
Syslog is a standard protocol and format for logging system messages. It was originally developed for Unix systems and is now RFC 3164 standard.
Uso de la terminal
En sesión: 13 hora...
2:00 PM
8/27/2023

Símbolo del sistema x Git bash x + -
* /var/adm/utmx - Currently logged users
WHAT IS SYSLOG?
Syslog is a standard protocol and format for logging system messages. It was originally developed for Unix systems and is now RFC 3164 standard.
SYSLOG STANDARD FEATURES:
* Standard levels (Emergency, Alert, Critical, Error, Warning, Notice, Info, Debug)
* Facility codes (kernel, mail, daemon, auth, syslog, etc.)
* Timestamp format
* Hostname identification
* Process identification
SOLARIS LOG COMPLIANCE:
Solaris follows the syslog standard with some extensions:
* Uses traditional syslog format in /var/log and /var/adm
* Enhanced with Service Management Facility (SMF) logs
* Integrates with Solaris audit system
* Supports remote syslog forwarding
COMMON LOG LOCATIONS IN SOLARIS:
Checking available log files on this system ...
* /var/log/syslog (Size: 5.2K)
X /var/log/messages (Not found)
* /var/log/authlog (Size: 0)
* /var/adm/messages (Size: 116K)
* /var/adm/sulog (Size: 35)
* /var/adm/login (Not found)
Press Enter to continue ...
Uso de la terminal
8/27/2023

```

2) Select option 4 to show last 15 lines of 3 important logs:

It should display content from /var/log/auth.log (or say “file not found” if the log doesn’t exist on the distro).

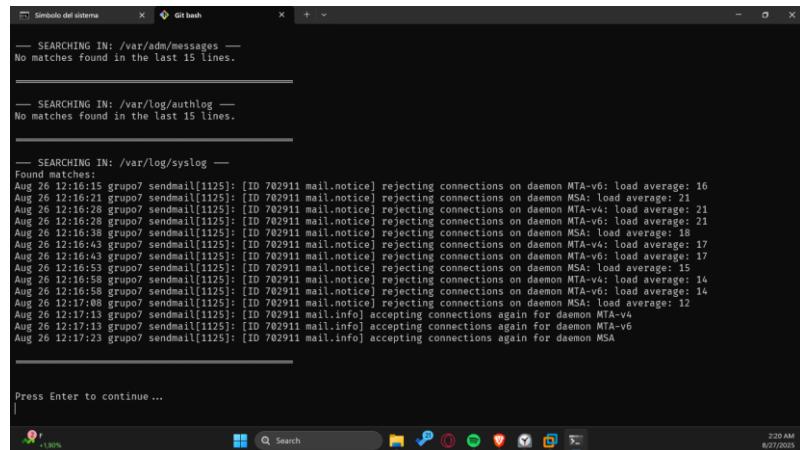


```
— LOG FILE: /var/log/authlog —
Last 15 lines:
Aug 26 14:47:22 grupo7 /usr/sbin/dhcpcagent[436]: [ID 967406 daemon.warning] refreshing state on net0
Aug 26 14:47:37 grupo7 /usr/sbin/dhcpcagent[436]: [ID 778557 daemon.warning] configure_v4_lease: no IP broadcast specified for net0, making best guess
_____
— LOG FILE: /var/log/syslog —
Last 15 lines:
Aug 26 12:16:13 grupo7 sendmail[1127]: [ID 702911 mail.info] starting daemon (8.15.2-Sun); queueing=000:15:00
Aug 26 12:16:15 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 16
Aug 26 12:16:21 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MSA; load average: 21
Aug 26 12:16:28 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v4; load average: 21
Aug 26 12:16:35 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 18
Aug 26 12:16:42 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v4; load average: 17
Aug 26 12:16:49 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 17
Aug 26 12:16:53 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MSA; load average: 15
Aug 26 12:16:58 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v4; load average: 14
Aug 26 12:17:05 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 14
Aug 26 12:17:13 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MTA-v4
Aug 26 12:17:13 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MTA-v6
Aug 26 12:17:23 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MSA
_____
Press Enter to continue...
```

3) Select option 3 to search for a word in those 15 lines:

Search for the word connection’ in those 15 lines.

It should return only the lines with that word.



```
— SEARCHING IN: /var/adm/messages —
No matches found in the last 15 lines.
_____
— SEARCHING IN: /var/log/authlog —
No matches found in the last 15 lines.
_____
— SEARCHING IN: /var/log/syslog —
Found matches:
Aug 26 12:16:15 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 16
Aug 26 12:16:21 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MSA; load average: 21
Aug 26 12:16:28 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v4; load average: 21
Aug 26 12:16:35 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 18
Aug 26 12:16:42 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v4; load average: 17
Aug 26 12:16:49 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 17
Aug 26 12:16:53 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MSA; load average: 15
Aug 26 12:16:58 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v4; load average: 14
Aug 26 12:17:05 grupo7 sendmail[1125]: [ID 702911 mail.notice] rejecting connections on daemon MTA-v6; load average: 14
Aug 26 12:17:08 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MTA-v4
Aug 26 12:17:13 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MTA-v6
Aug 26 12:17:13 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MSA
Aug 26 12:17:23 grupo7 sendmail[1125]: [ID 702911 mail.info] accepting connections again for daemon MSA
_____
Press Enter to continue...
```

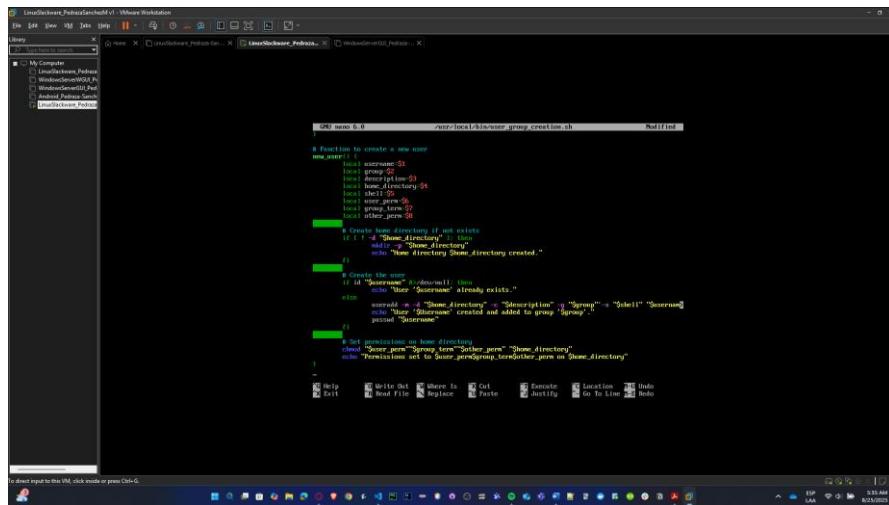
User Creation

Write a Shell program to implement the creation of users, groups, and permissions from the previous lab. Request all necessary information in the command line. The style should be like:

```
newuser name group description directory shell user_permission  
group_permission other_permission  
newgroup group_name group_ID
```

SLACKWARE:

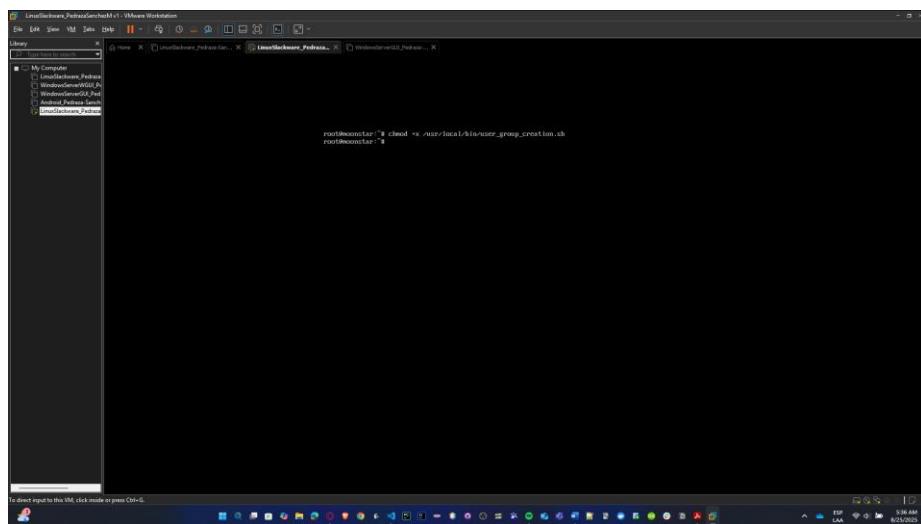
- ✓ Save: nano /usr/local/bin/ user_group_creation.sh



The screenshot shows a terminal window titled "GNOME Terminal" with the command "nano /usr/local/bin/user_group_creation.sh". The script content is as follows:

```
a function to create a new user  
new_user() {  
    local user=$1  
    local group=$2  
    local desc=$3  
    local home_directory=$4  
    local shell=$5  
    local uid=$6  
    local user_id=$7  
  
    # Create home directory if not exists  
    if [ ! -d "$home_directory" ]; then  
        echo "Home directory $home_directory created."  
    fi  
  
    # Create the user  
    if id "$username" >> /dev/null; then  
        echo "User $username already exists."  
    else  
        useradd -m -g "$group" -d "$home_directory" -c "$desc" -s "$shell" "$username"  
        echo "User $username created and added to group '$group'."  
    fi  
  
    # Set permission on home directory  
    chmod "user perm" "$group perm" "$home_directory"  
    echo "Permissions set to user_group, umask 022 on $home_directory"  
}  
  
# Direct input to this VM, click inside or press Ctrl-G.
```

- ✓ Exec: chmod +x /usr/local/bin/ user_group_creation.sh



The screenshot shows a terminal window titled "GNOME Terminal" with the command "chmod +x /usr/local/bin/user_group_creation.sh". The output shows the command was successful.

```
root@monstar:~# chmod +x /usr/local/bin/user_group_creation.sh  
root@monstar:~#
```

- ✓ Run: /usr/local/bin/ user_group_creation.sh

```

Linux Slackware_PedrasSaneado v1 - VMware Workstation
File Edit View VIM Help ||| 
[1] * Linux Slackware_PedrasSaneado... [2] * WindowsServerG1_Pedras... [3] * Unslackware_PedrasSaneado... [4] * WindowsServerG1_Pedras...
root@monstar:~# /usr/local/bin/user_group_creation.sh newgroup group_name group_ID
/usr/local/bin/user_group_creation.sh newuser username group "description" home_directory shell user
r_grep group_name other_pgm
root@monstar:~# -

```

To direct input to this VM, click inside or press Ctrl+G.

2:56 PM 8/26/2025

- ✓ Tests:

Make sure:

```
chmod +x /usr/local/bin/user_group_creation.sh
mkdir -p /usuarios
```

1. Create groups

```
/usr/local/bin/user_group_creation.sh newgroup finance
1001
```

```
/usr/local/bin/user_group_creation.sh newgroup business
1002
```

Expected: Confirm the group creation with commands: **grep finance /etc/group** and **grep /etc/group business**.

```

Linux Slackware_PedrasSaneado v1 - VMware Workstation
File Edit View VIM Help ||| 
[1] * Linux Slackware_PedrasSaneado... [2] * WindowsServerG1_Finance... [3] * Unslackware_PedrasSaneado... [4] * WindowsServerG1_Finance...
root@monstar:~# /usr/local/bin/user_group_creation.sh new_group finance 1010
Group 'Finance' already exists.
root@monstar:~# /usr/local/bin/user_group_creation.sh new_group business 1011
Group 'business' created with GID 1011.
root@monstar:~# grep Finance /etc/group
root@monstar:~# grep business /etc/group
business:x:1011:
root@monstar:~# -

```

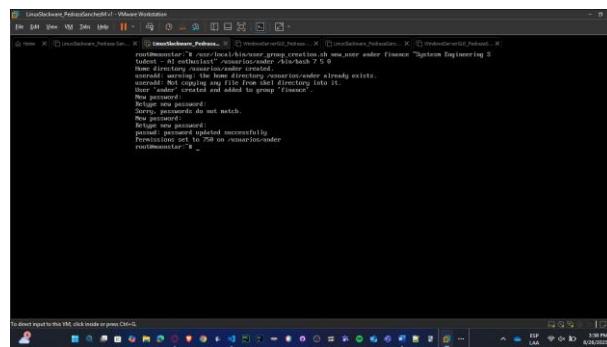
To direct input to this VM, click inside or press Ctrl+G.

3:29 PM 8/26/2025

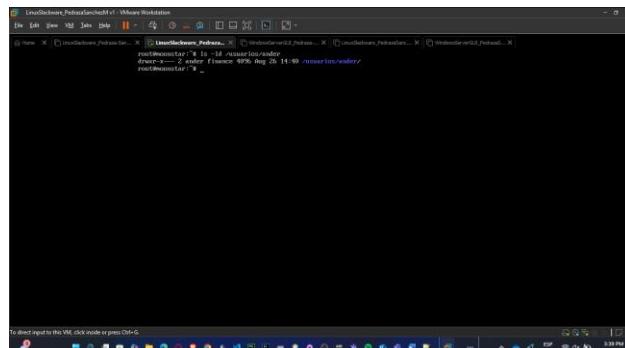
2. Create ander user

```
/usr/local/bin/user_group_creation.sh newuser ander  
finance "Systems Engineering student - AI enthusiast"  
/usuarios/ander /bin/bash 7 5 0
```

Expected: Andersson's directory created, and confirm it with command ls -ld /usuarios/ander



The screenshot shows a terminal window titled 'UbuntuServer_ProtectedShell1 - VMware Workstation'. The user is running the command '/usr/local/bin/user_group_creation.sh newuser ander'. The output indicates that the user 'ander' was successfully created in the 'finance' group, with a home directory at '/usuarios/ander'. It also shows that the user's password was set to 'password'.

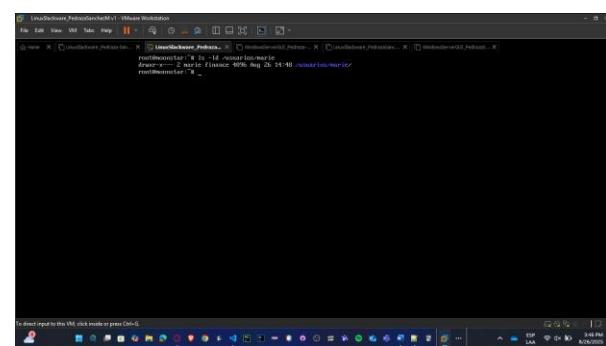


The screenshot shows a terminal window titled 'UbuntuServer_ProtectedShell1 - VMware Workstation'. The user runs 'ls -ld /usuarios/ander' to verify the user's directory. The output shows a single entry for the 'ander' directory with permissions 750.

3. Create Marie user in business group

```
/usr/local/bin/user_group_creation.sh newuser marie  
business "IT Support Specialist - Database management"  
/usuarios/marie /bin/bash 7 5 0
```

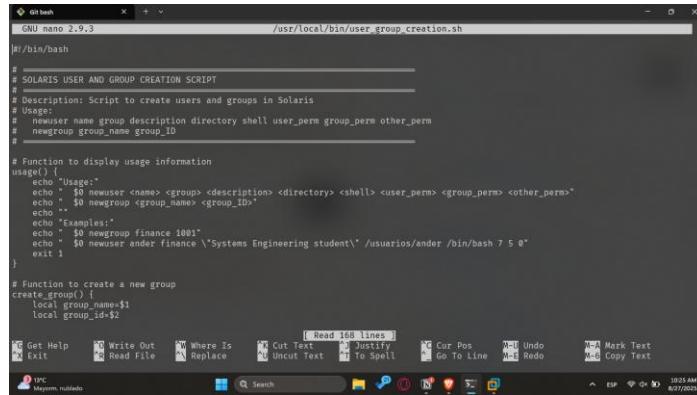
Expected: User created with home /usuarios/elena with permissions 750



The screenshot shows a terminal window titled 'UbuntuServer_ProtectedShell1 - VMware Workstation'. The user runs '/usr/local/bin/user_group_creation.sh newuser marie'. The output shows that the user 'marie' was successfully created in the 'business' group, with a home directory at '/usuarios/elena'. It also shows that the user's password was set to 'password'.

SOLARIS:

- ✓ Save: nano /usr/local/bin/user_group_creation.sh



```
GNU nano 2.9.3 /usr/local/bin/user_group_creation.sh
#!/bin/bash

# SOLARIS USER AND GROUP CREATION SCRIPT
#
# Description: Script to create users and groups in Solaris
# Usage:
# newuser name group_description directory shell user_perm group_perm other_perm
# newgroup group_name group_ID

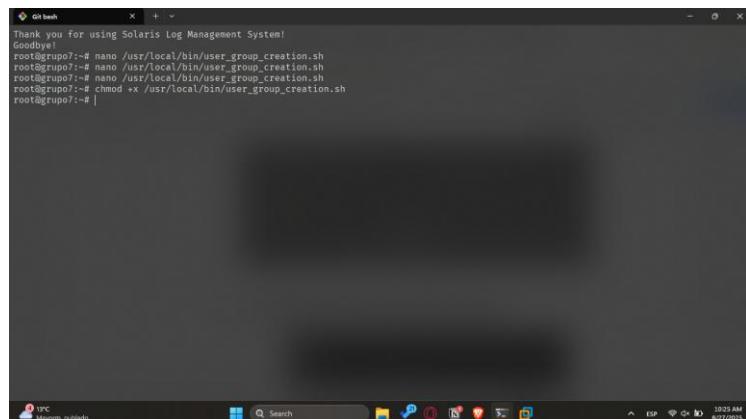
# Function to display usage information
usage() {
    echo "Usage:"
    echo "  $0 newuser <name> <group> <description> <directory> <shell> <user_perm> <group_perm> <other_perm>"
    echo "  $0 newgroup <group_name> <group_ID>"
    echo "Examples:"
    echo "  $0 newgroup finance 100"
    echo "  $0 newuser ander finance 'Systems Engineering student' /usuarios/ander /bin/bash 7 5 0"
    exit 1
}

# Function to create a new group
create_group() {
    local group_name=$1
    local group_id=$2

    [ Read 168 lines ]
    Get Help Write Out Where Is Cut Text Justify Cur Pos Undo Exit Replace Read File To Spell Go To Line Redo Mark Text
    IPC Mayores nulos...
    Search ESP 10:05 AM 8/27/2025

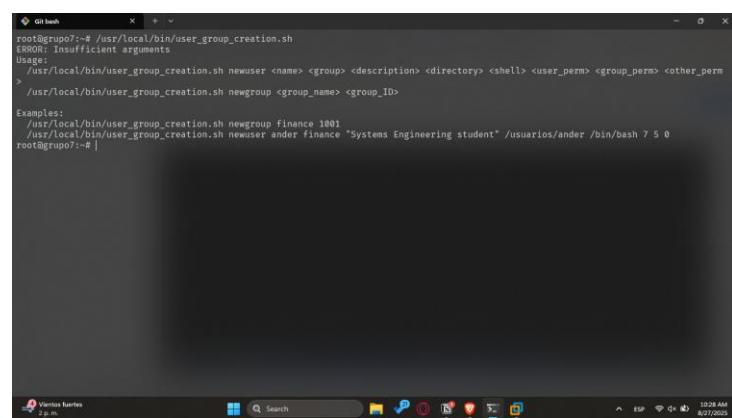
```

- ✓ Exec: chmod +x /usr/local/bin/user_group_creation.sh



```
Thank you for using Solaris Log Management System!
Goodbye!
root@grupo7:~# nano /usr/local/bin/user_group_creation.sh
root@grupo7:~# nano /usr/local/bin/user_group_creation.sh
root@grupo7:~# nano /usr/local/bin/user_group_creation.sh
root@grupo7:~# nano /usr/local/bin/user_group_creation.sh
root@grupo7:~# chmod +x /usr/local/bin/user_group_creation.sh
root@grupo7:~#
```

- ✓ Run: /usr/local/bin/user_group_creation.sh



```
root@grupo7:~# /usr/local/bin/user_group_creation.sh
/usr/local/bin/user_group_creation.sh: Insufficient arguments
Usage:
  /usr/local/bin/user_group_creation.sh newuser <name> <group> <description> <directory> <shell> <user_perm> <group_perm> <other_perm>
  /usr/local/bin/user_group_creation.sh newgroup <group_name> <group_ID>

Examples:
  /usr/local/bin/user_group_creation.sh newgroup finance 100
  /usr/local/bin/user_group_creation.sh newuser ander finance 'Systems Engineering student' /usuarios/ander /bin/bash 7 5 0
root@grupo7:~#
```

✓ Tests:

Make sure:

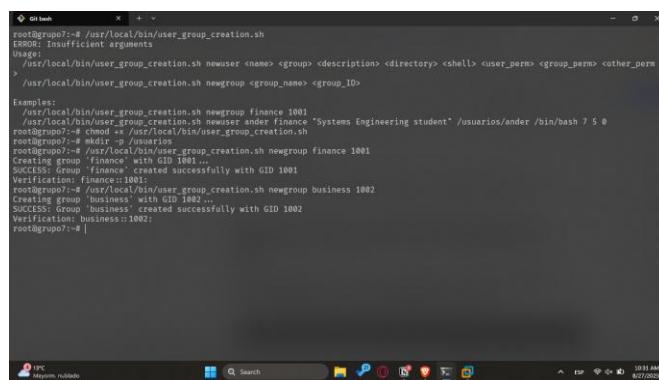
```
chmod +x /usr/local/bin/user_group_creation.sh  
mkdir -p /usuarios
```

1) Create groups

```
/usr/local/bin/user_group_creation.sh newgroup finance  
1001
```

```
/usr/local/bin/user_group_creation.sh newgroup business  
1002
```

Expected: Confirm the group creation with commands: **grep finance /etc/group** and **grep /etc/group business**.

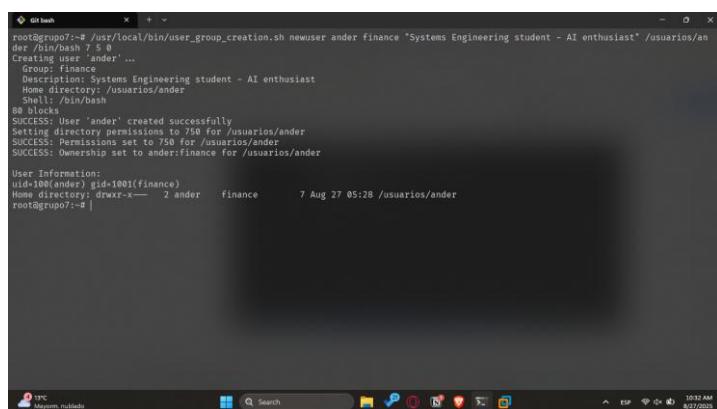


```
root@grupo7:~# /usr/local/bin/user_group_creation.sh  
Usage: /usr/local/bin/user_group_creation.sh newuser <name> <group> <description> <directory> <shell> <user_perm> <group_perm> <other_perm>  
> /usr/local/bin/user_group_creation.sh newgroup <group_name> <group_ID>  
Examples:  
/usr/local/bin/user_group_creation.sh newgroup finance 1001  
/usr/local/bin/user_group_creation.sh newuser ander finance "Systems Engineering student" /usuarios/ander /bin/bash 7 5 0  
root@grupo7:~# chmod +x /usr/local/bin/user_group_creation.sh  
root@grupo7:~# ./user_group_creation.sh newgroup finance 1001  
root@grupo7:~# ./user_group_creation.sh newgroup business 1002  
Creating group 'finance' with GID 1001...  
SUCCESS: Group 'finance' created successfully with GID 1001  
Verification: finance::1001:  
root@grupo7:~# ./user_group_creation.sh newuser ander finance "Systems Engineering student - AI enthusiast"  
Creating user 'ander' with UID 1001...  
SUCCESS: User 'ander' created successfully  
Setting directory permissions to 750 for /usuarios/ander  
SUCCESS: Permissions set to 750 for /usuarios/ander  
Setting shell permissions to /bin/bash for /usuarios/ander  
SUCCESS: Permissions set to /bin/bash for /usuarios/ander  
Verification: ander::1001:  
root@grupo7:~# |
```

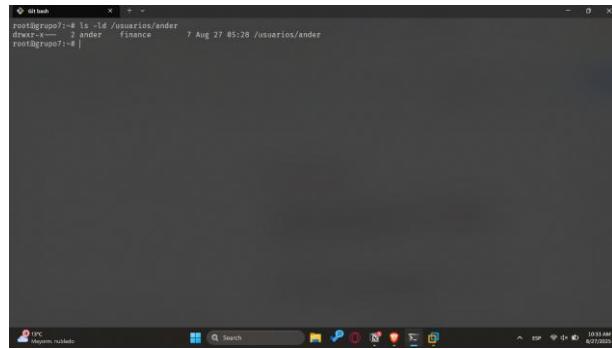
2) Create ander user

```
/usr/local/bin/user_group_creation.sh newuser ander  
finance "Systems Engineering student - AI enthusiast"  
/usuarios/ander /bin/bash 7 5 0
```

Expected: Andersson's directory created, and confirm it with command **ls -ld /usuarios/ander**



```
root@grupo7:~# ./user_group_creation.sh newuser ander finance "Systems Engineering student - AI enthusiast" /usuarios/ander /bin/bash 7 5 0  
Creating user 'ander' with UID 1001...  
SUCCESS: User 'ander' created successfully  
Setting directory permissions to 750 for /usuarios/ander  
SUCCESS: Permissions set to 750 for /usuarios/ander  
Setting shell permissions to /bin/bash for /usuarios/ander  
SUCCESS: Permissions set to /bin/bash for /usuarios/ander  
User Information:  
uid=1001(ander) gid=1001(finance)  
Home directory: drwxr-x--- 2 ander finance 7 Aug 27 05:28 /usuarios/ander  
root@grupo7:~# |
```

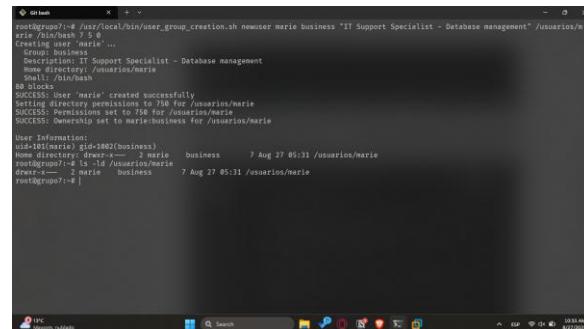


```
root@grupo7:~# ls -ld /usuarios/ander
drwxr-x--- 2 ander  finance 7 Aug 27 05:28 /usuarios/ander
root@grupo7:~#
```

3) Create Marie user in business group

```
/usr/local/bin/user_group_creation.sh newuser marie  
business "IT Support Specialist - Database management"  
/usuarios/marie /bin/bash 7 5 0
```

Expected: User created with home /usuarios/elena with permissions 750



```
root@grupo7:~# /usr/local/bin/user_group_creation.sh newuser marie business "IT Support Specialist - Database management" /usuarios/marie
User 'marie' created successfully
Setting directory permissions to 750 for /usuarios/marie
Success: ownership set to root:business for /usuarios/marie
Success: ownership set to marie:business for /usuarios/marie

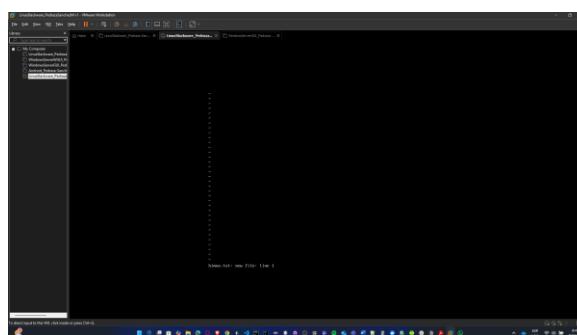
User Information:
uid=101(marie) gid=1002(business)
root@grupo7:~# ls -ld /usuarios/marie
drwxr-x--- 2 marie  business 7 Aug 27 05:31 /usuarios/marie
root@grupo7:~#
```

NOTE: Show your professor the execution of your programs.

2. VI Editor in Linux/Unix

- Use the VI editor to create a file. Indicate the commands used.

We use the command **vi himno.txt** to open vi and create a file.



- Type the following text and document the commands used. Note: Each line in the text should correspond to one line in the editor, meaning you must press ENTER at the end of each line.

To enter Insert Mode and type the text inside vi, press: **i**
This puts you in *Insert mode*. Then type:

HIMNO DE LA ESCUELA

Press **ENTER** at the end of the line.

(Each line you type, press ENTER at the end to start the next line.)

When done, press **ESC** to return to *Command mode*.

HIMNO DE LA ESCUELA

Estudiante, maestro la conquista

Será hacer con amor nuestra labor

Cultores del espíritu humanista

Unidad de intelecto y corazón.

Escuela de ingenio es nuestra casa

Libro abierto a nuestra universidad

Aquí perdura mientras todo pasa

Cimiento de la fe y la integridad.

Ofrecemos la mano al que tropieza

La hidalguía del diálogo al rival

Ofrecemos la duda y la certeza

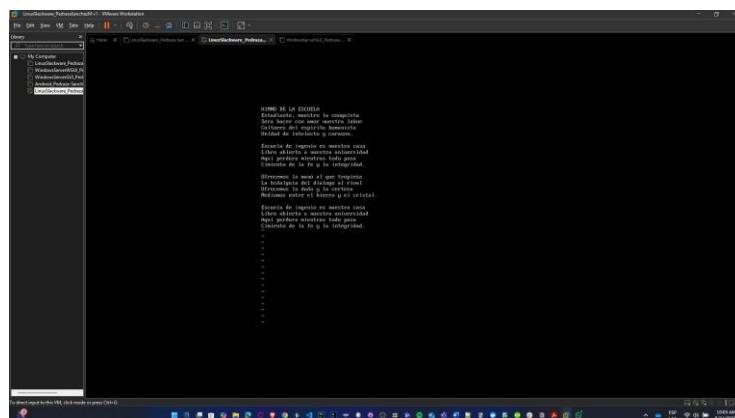
Mediamos entre el hierro y el cristal.

Escuela de ingenio es nuestra casa

Libro abierto a nuestra universidad

Aquí perdura mientras todo pasa

Cimiento de la fe y la integridad.



```
HIMNO DE LA ESCUELA
Estimado -a -oriente -a compatria
Séa bendito con amor sincero labor
Cada uno de los que hoy nos enseñan
Unidad de intelecto y corazón.

Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

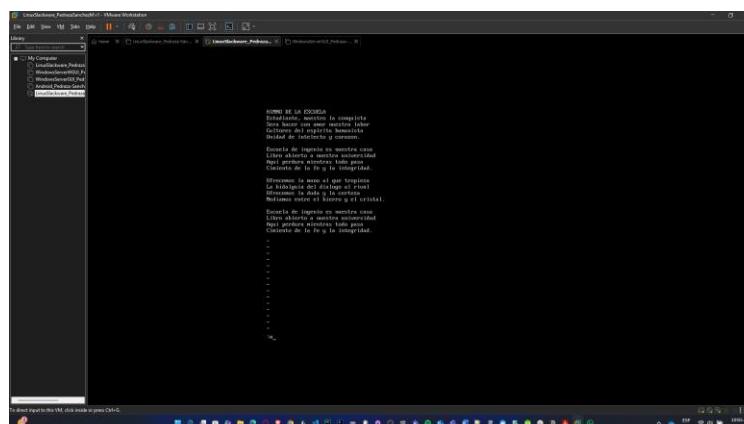
Difusamente la enseñanza que imparte
Difusamente la idea y la certeza
Difusamente la fe y la integridad.
Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

Difusamente la enseñanza que imparte
Difusamente la idea y la certeza
Difusamente la fe y la integridad.
Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

Difusamente la enseñanza que imparte
Difusamente la idea y la certeza
Difusamente la fe y la integridad.
```

- **Save the work without exiting the editor**

Use the command :w



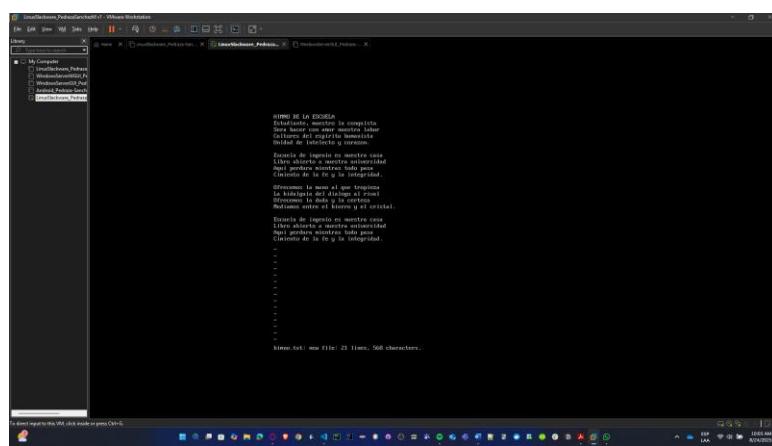
```
HIMNO DE LA ESCUELA
Estimado -a -oriente -a compatria
Séa bendito con amor sincero labor
Cada uno de los que hoy nos enseñan
Unidad de intelecto y corazón.

Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

Difusamente la enseñanza que imparte
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Difusamente la idea y la certeza
Difusamente la fe y la integridad.
```



```
HIMNO DE LA ESCUELA
Estimado -a -oriente -a compatria
Séa bendito con amor sincero labor
Cada uno de los que hoy nos enseñan
Unidad de intelecto y corazón.

Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

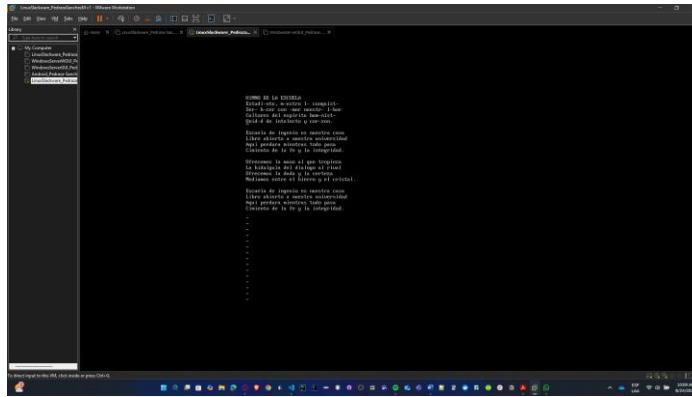
Difusamente la enseñanza que imparte
Difusamente la idea y la certeza
Difusamente la fe y la integridad.
Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

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Difusamente la idea y la certeza
Difusamente la fe y la integridad.
Escuela de ingenio en nuestra casa
Libre abierta a nuestra universidad
Muy perdurable memoria, todo para
Nuestro progreso y bienestar.

Difusamente la enseñanza que imparte
Difusamente la idea y la certeza
Difusamente la fe y la integridad.
```

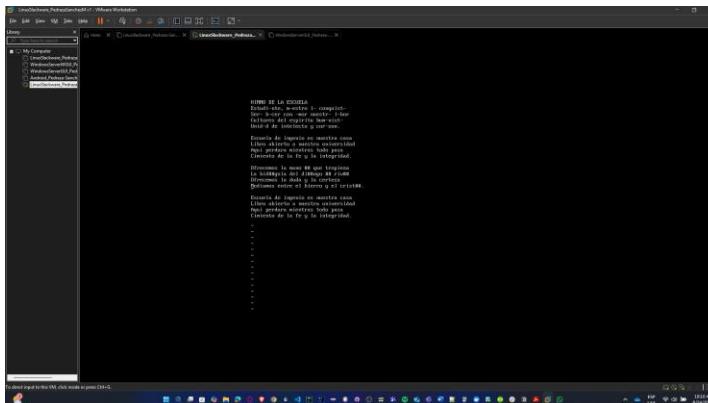
- Replace all the 'a' characters in the first paragraph with a hyphen (-).

Use the command :1,5s/a/-/g



- Replace all instances of the word "al" in the entire text with the symbol ##.

Use the command :%s/al/##/g



- What command can be used to delete a word in VI?

In command mode, position cursor over the word and type: dw

- Delete the last 4 lines of the document with a single command.

Use the command :.-3,\$d

From the current line (.) minus 3 to the last line (\$), delete.

If you are at the last line, it deletes the last 4.

Alternative simpler :\$-3,\$d

```

SAPIEN DE LA SABIDURIA
Estudié todo, o estuve li- completamente
en la biblioteca, para que no me
golpeara el espíritu hermético,
ni la mente se me corrompiera.

Escuela de ingeniería en nuestras casas
Libro abierto a nuestra universidad
Libro abierto a la fe y a la integridad.
Elemento de la fe y la integridad.

Escuela de ingeniería en nuestras casas
Libro abierto a nuestra universidad
Libro abierto a la fe y la integridad.
Elemento de la fe y la integridad.

.
.
.
.
.
.
```

- Undo the previous command.

Use the command u

```

SAPIEN DE LA SABIDURIA
Estudié todo, o estuve li- completamente
en la biblioteca, para que no me
golpeara el espíritu hermético,
ni la mente se me corrompiera.

Escuela de ingeniería en nuestras casas
Libro abierto a nuestra universidad
Libro abierto a la fe y la integridad.
Elemento de la fe y la integridad.

Escuela de ingeniería en nuestras casas
Libro abierto a nuestra universidad
Libro abierto a la fe y la integridad.
Elemento de la fe y la integridad.

.
.
.
.
.
.
```

- Change the last line of the document to uppercase.

Use the command :\$!tr 'a-z' 'A-Z'

```

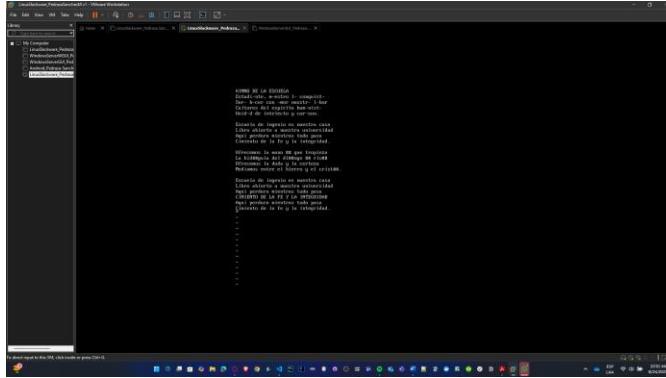
SAPIEN DE LA SABIDURIA
Estudié todo, o estuve li- completamente
en la biblioteca, para que no me
golpeara el espíritu hermético,
ni la mente se me corrompiera.

Escuela de ingeniería en nuestras casas
Libro abierto a nuestra universidad
Libro abierto a la fe y la integridad.
Elemento de la fe y la integridad.

Escuela de ingeniería en nuestras casas
Libro abierto a nuestra universidad
Libro abierto a la fe y la integridad.
ELEMENTO DE LA FE Y LA INTEGRIDAD
.
.
.
.
.
.
```

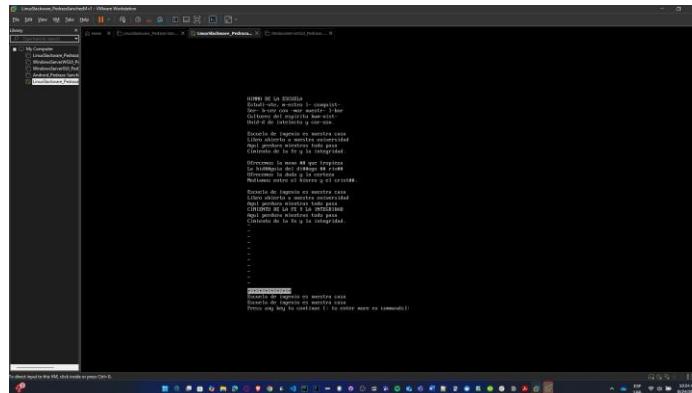
- Copy the last 2 lines of the second paragraph to the end of the file.

Second paragraph is lines 7-10 → copy lines 9-10 to the end :9,10t\$
(t\$ = copy to end of file)



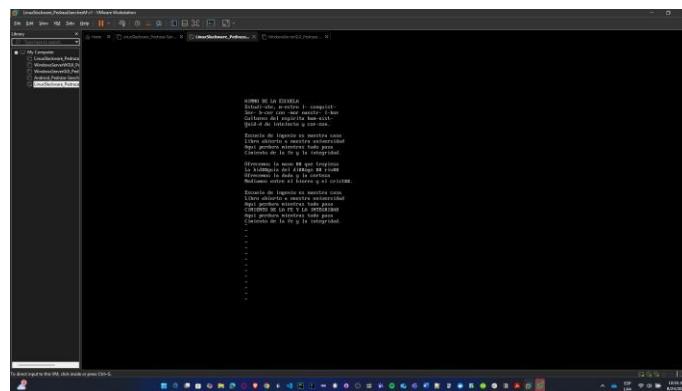
- Search for the word "Escuela" within the text.

Use the command **g/Escuela/p**



- Go to line 5 using a command.

Use the command :5

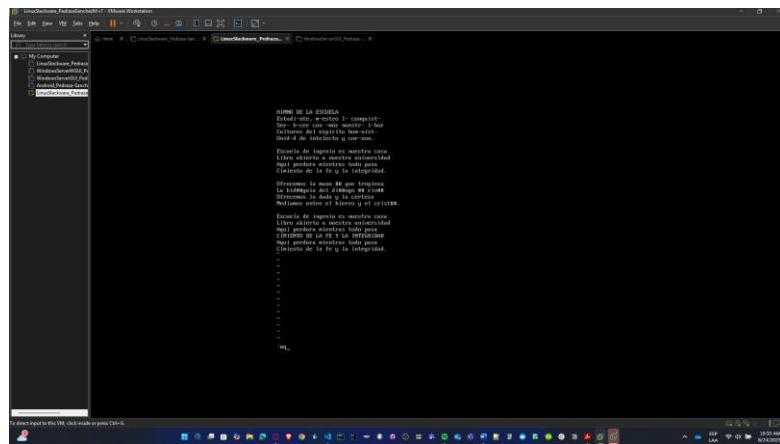


- Create a summary box with common VI commands.

Action	Command
Insert mode	i
Save	:w
Save & quit	:wq
Quit without saving	:q!
Delete word	dw
Delete line	dd
Undo	u
Redo	Ctrl + r
Copy (yank) line	yy
Paste	p
Replace char under cursor	r<char>
Search forward	/word
Go to line N	:N
Uppercase whole line	gUU

- Save the work and exit the editor.

Use the command :wq



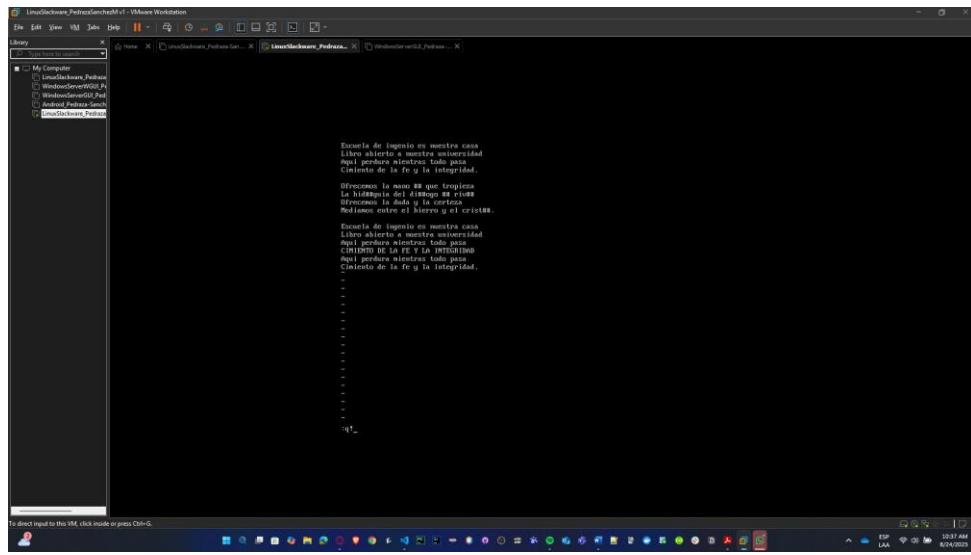
- Re-enter and delete the first 5 lines.

Use the command **vi himno.txt**

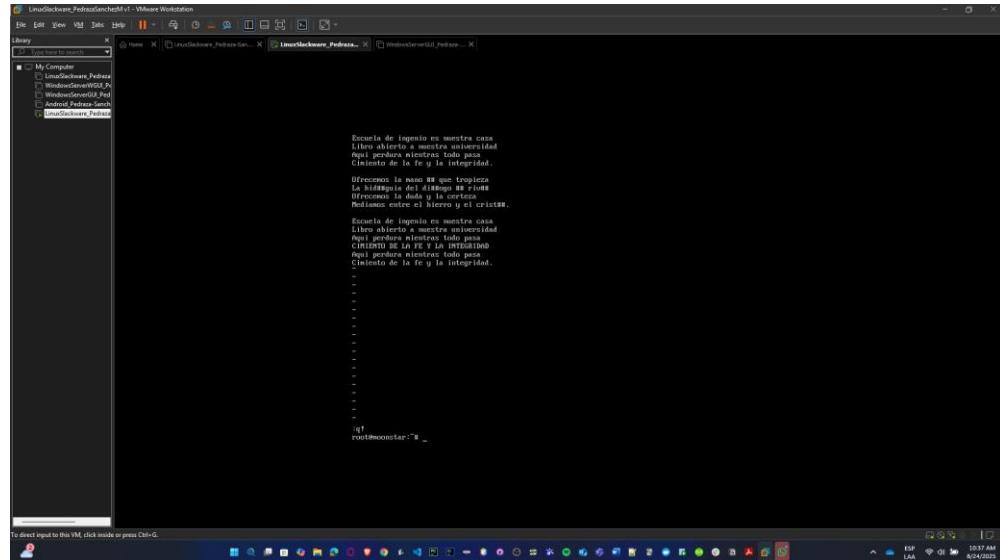
Inside vi :1,5d

- Exit the file without saving.

Use the command :q!



The screenshot shows a terminal window titled "UbuntuServer_PedroGarciachild1" running in VMware Workstation. The terminal displays a poem in Spanish. At the bottom of the screen, the command ":q!" is being typed. The status bar at the bottom indicates "To direct input to this VM, click inside or press Ctrl-G."



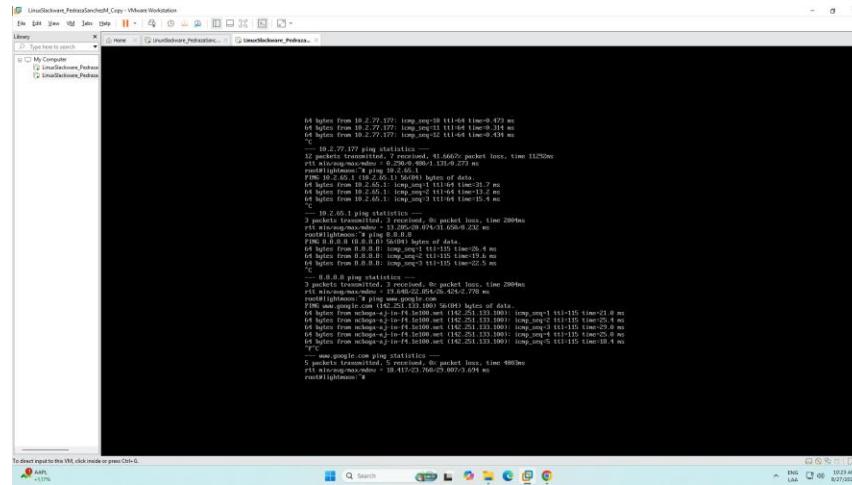
The screenshot shows a terminal window titled "UbuntuServer_PedroGarciachild1" running in VMware Workstation. The terminal displays the same poem in Spanish as the previous screenshot. The command ":q!" has been fully typed and is visible at the bottom of the terminal window. The status bar at the bottom indicates "To direct input to this VM, click inside or press Ctrl-G."

3. Machine Generation

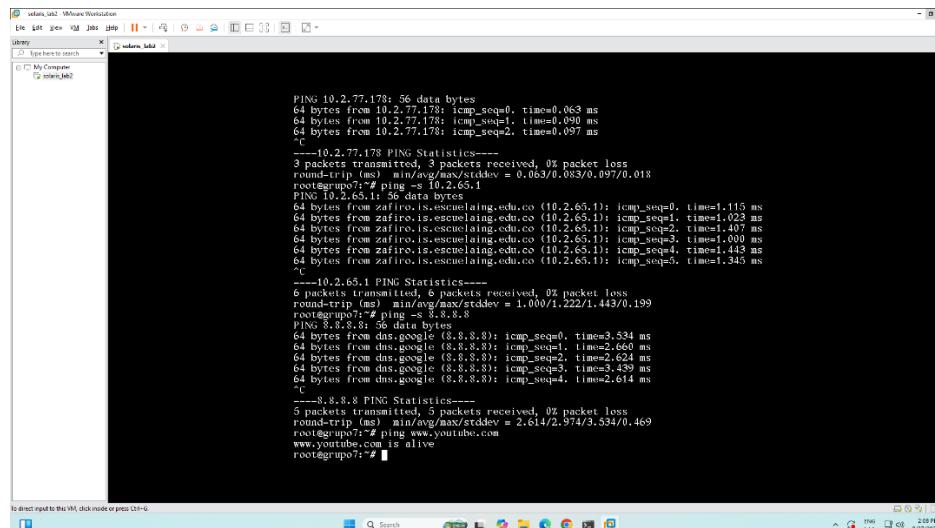
For the semester project, you will need 2 virtual machines of each installed operating system, except for Windows Server without GUI and Android. Generate the new machines and verify that they can see each other and access the internet.

Tests to verify the new VMs are correctly generated with access to Internet

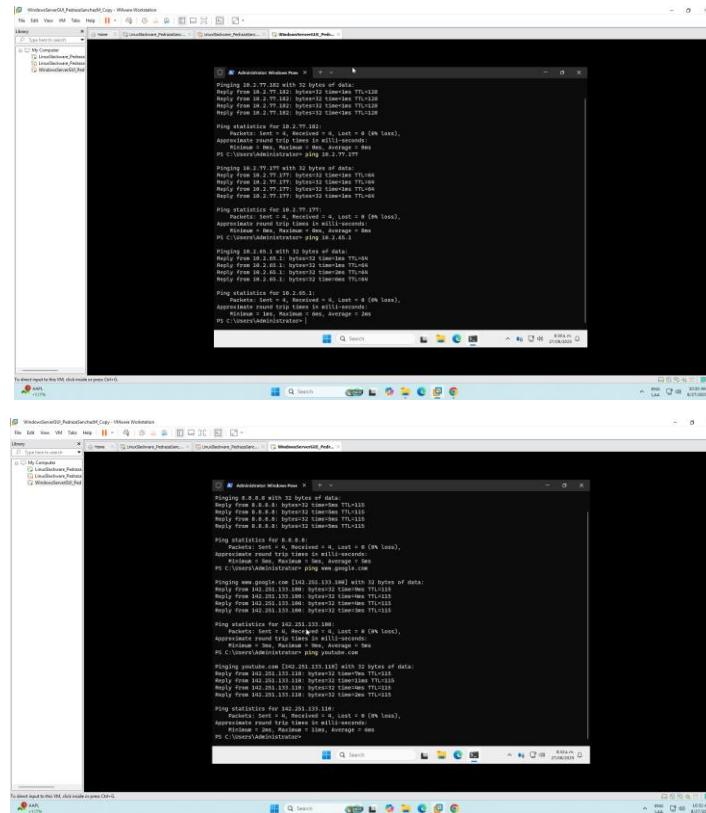
SLACKWARE with IP 10.2.77.176:



SOLARIS with IP 10.2.77.178:



WINDOWS SERVER WITH GUI with IP 10.2.77.182:



4. File Sharing

One of the key services in an enterprise environment is shared file systems, where employees can save and share files with their workgroup. using SMB/Samba, enabling file sharing between the three operating systems (Linux Slackware, Solaris, Windows, and CentOS for groups of 3 students).

It's important to know in a more detailed way what's Samba and what's their characteristics:

Samba is an open-source software suite that implements the SMB/CIFS protocol family – the same file-and-printer sharing protocol that Windows uses. In practical terms, Samba lets your Linux machine behave like a Windows file server: Windows, Linux and Solaris clients can mount shares, list folders, and read/write files with user authentication and file permissions.

As the key characteristics we can mention:

- **Protocol bridge:** Samba speaks SMB/CIFS (Windows language) and maps it to POSIX files and users on the Unix side. That's how a Windows PC sees a Linux folder as a network drive.
- **Authentication modes:** It can authenticate users in several ways (local Samba user database, system users, or integrated with AD). For a lab, security = user with tdbsam is simplest and secure enough.

- **Permissions mapping:** Samba respects Unix file ownership and permissions; you control access with Unix groups and file modes. Samba can also force a group on created files to keep collaboration clean.
- **SMB versions:** Modern Samba supports SMB2/SMB3. Avoid SMB1 unless forced by legacy clients – SMB1 is insecure.
- **Services involved:** smbd serves files/printers; nmbd handles NetBIOS name resolution (only needed for legacy browsing); winbind is used for AD integration (not needed for a simple lab).
- **Logs & debugging:** Samba writes per-client logs (you can raise log level to debug problems). testparm checks smb.conf syntax.

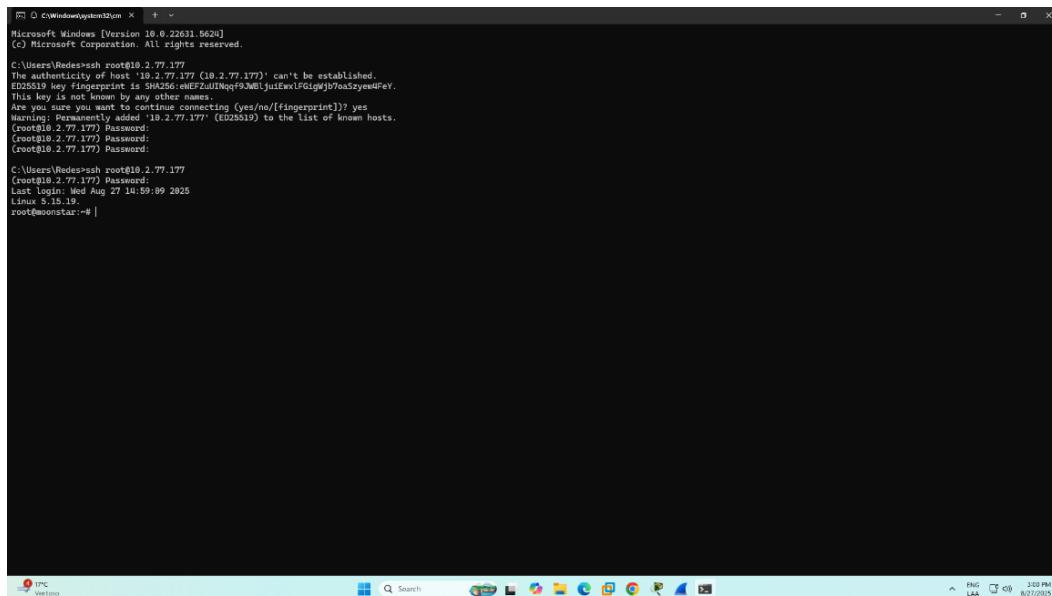
Now, we can detail the step-to-step SMB installation.

We will start with Samba installation in Solaris because it'll be the way to share files in the other two VMs, so Slackware and Windows with GUI are clients that can see Solaris files.

0 – Preconditions & notes

- You need **root** privileges.
- Pick a server IP or hostname and make sure clients can reach it (ping <IP>).
- It's recommended to use ssh service to connect the VM because of the need to not copy manually the commands, just as simple as copy and paste.

1 – SSH Service Installation (mentioned before depending on the VM)



```

C:\Users\Redes>ssh root@10.2.77.177
Microsoft Windows [Version 10.0.22631.5624]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Redes>ssh root@10.2.77.177
The authenticity of host '10.2.77.177 (10.2.77.177)' can't be established.
ED25519 key fingerprint is SHA256:eNEZuJhNqfqf93MbjLuiExWxLFGlgbjD9as5zye4dEY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[Fingerprint])? yes
Warning: Permanently added '10.2.77.177' (ED25519) to the list of known hosts.
(root@10.2.77.177) Password:
(root@10.2.77.177) Password:
(root@10.2.77.177) Password:
C:\Users\Redes>ssh root@10.2.77.177
(root@10.2.77.177) Password:
Last login: Wed Aug 27 14:59:09 2025
Linux 5.15.19.
root@moonstar:~#

```

2 – Install Samba package in Solaris

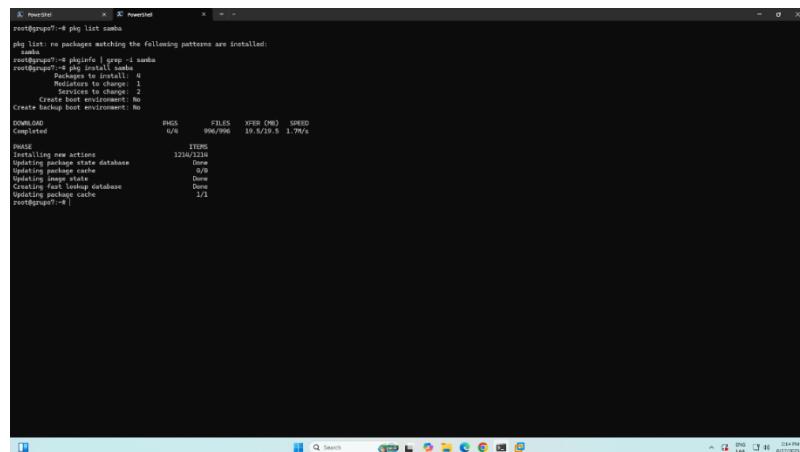
1. Install Samba on Solaris

First, we must check if Samba is already installed:

```
pkg list samba # or  
pkginfo | grep -i samba
```

If not installed, install it:

```
pkg install samba
```



```
[root@group7 ~]# pkg list samba  
pkg list: no packages matching the following patterns are installed:  
samba  
root@group7:~# pkg install samba  
root@group7:~# Packages to install: 0  
    Packages to change: 1  
        Services to change: 2  
        Create backup boot environment: No  
Create backup boot environment: No  
DOWNLOAD          PHNS      FILES   XFER (MB) SPEED  
Completed         0/0      0/0      0/0      0.00/s  
PHNS  
Installing new actions           1/100  
Updating package state database 1/214/100  
Updating package state          2/214  
Updating image state            3/214  
Creating and closing database   4/214  
Updating package cache          5/214  
root@group7:~#
```

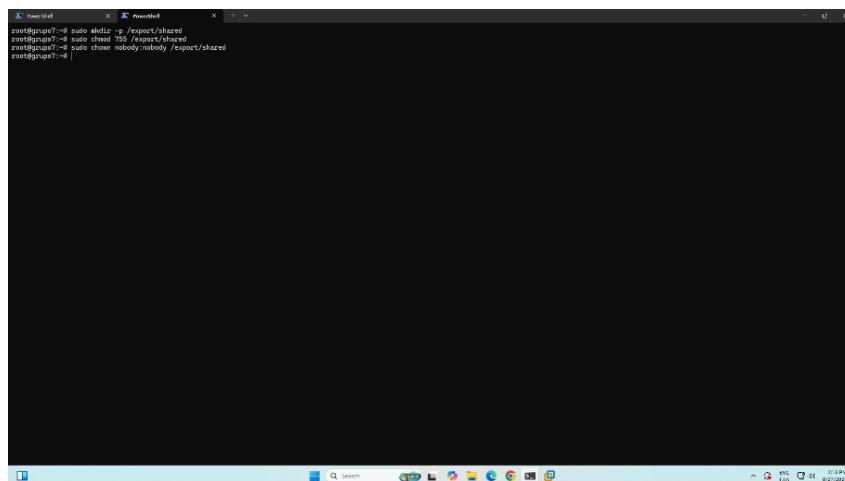
2. Create Shared Directory

Create a directory to share:

```
sudo mkdir -p /export/shared
```

```
sudo chmod 755 /export/shared
```

```
sudo chown nobody:nobody /export/shared
```



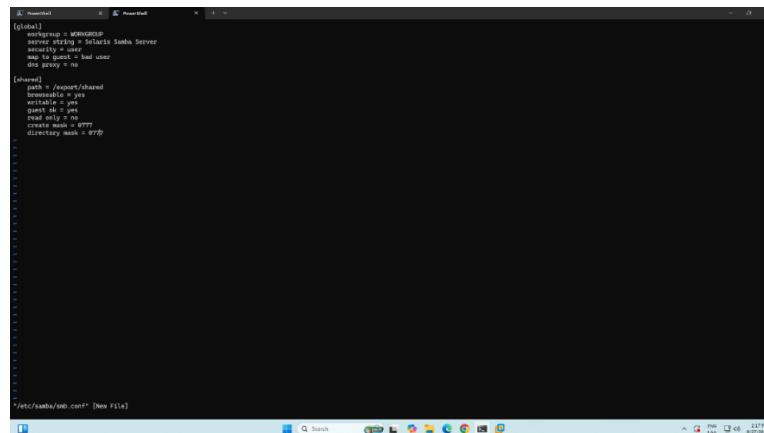
```
[root@group7 ~]# sudo mkdir -p /export/shared  
[root@group7 ~]# sudo chmod 755 /export/shared  
[root@group7 ~]# sudo chown nobody:nobody /export/shared  
[root@group7 ~]#
```

3. Configure Samba

Edit the Samba configuration file (you can use vi editor or nano or cat):

```
[global]
workgroup = WORKGROUP
server string = Solaris Samba Server
security = user
map to guest = bad user
dns proxy = no
```

```
[shared]
path = /export/shared
browseable = yes
writable = yes
guest ok = yes
read only = no
create mask = 0777
directory mask = 0775
```



```
[global]
workgroup = WORKGROUP
server string = Solaris Samba Server
security = user
map to guest = bad user
dns proxy = no

[shared]
path = /export/shared
browseable = yes
writable = yes
guest ok = yes
read only = no
create mask = 0777
directory mask = 0775
```

4. Create Samba Users

Add system users and Samba users:

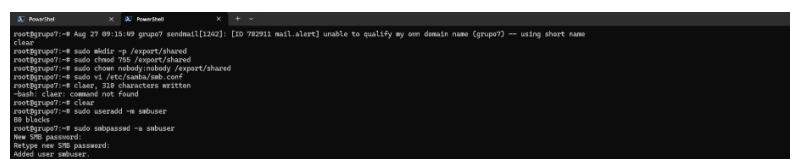
```
# Create a system user
```

```
sudo useradd -m smbuser
```

```
# Add user to Samba
```

```
sudo smbpasswd -a smbuser
```

```
# Enter password when prompted
```



```
root@grup07:~# Aug 27 09:15:49 grup07 sendmail[1102]: [ID 792991 mail.alert] unable to qualify my own domain name (grup07) -- using short name
root@grup07:~# sudo adduser -m /export/shared
root@grup07:~# sudo chmod 775 /export/shared
root@grup07:~# sudo chown root:root /export/shared
root@grup07:~# sudo vi /etc/samba/smb.conf
root@grup07:~# clear; 238 characters written
root@grup07:~# sudo smbpasswd -a smbuser
root@grup07:~# sudo smbpasswd -a smbuser
88 blocks
root@grup07:~# sudo smbpasswd -a smbuser
New SMB password:
Retype new SMB password:
Added user smbuser.
```

5. Start Samba Services

Enable and start Samba services:

```
# For Solaris 11
```

```
sudo svcadm enable samba
```

```
root@grup07:~# sudo svcadm enable samba
root@grup07:~# svcs -xv samba
exec pattern 'saplisten' doesn't match any instances
STATE          STIME      PRIO
STOPPED        9:19:24  PRI
root@grup07:~# svcs -xv samba
STATE          STIME      PRIO
online         9:19:24  svc:/network/samba:default
Load smb config files from /etc/samba/smb.conf
rlimit_max: increasing rlimit_max (256) to minimum Windows limit (16384)
rlimit_max: increasing rlimit_max (256) to minimum Windows limit (16384)
loaded services file OK
Server role: ROLE_STANDALONE

Press enter to see a dump of your service definitions

[global]
dns proxy = No
max users = 100
security = User
server string = Solaris Samba Server
idmap config * : backend = tdb

[shared]
create mask = 0777
directory mask = 0777
guest ok = Yes
path = /export/shared
read only = No

root@grup07:~# netstat -an | grep :445
root@grup07:~# netstat -an | grep :139
root@grup07:~# sudo smbclient -L localhost
Enter 'smbpasswd'/'root's password:
```

6. Configure firewall

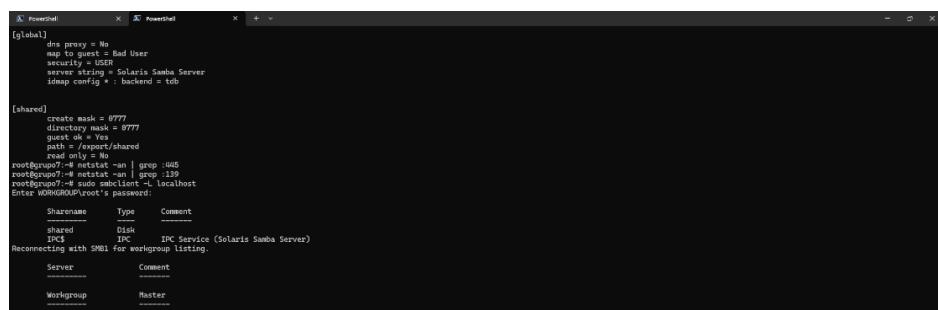
For this case, it's not necessary to open ports to run the firewall

7. Test the Configuration

Check if Samba is running:

```
sudo smbclient -L localhost
```

```
testparm # Test configuration file
```



The screenshot shows a PowerShell window with two tabs: 'Global' and 'PowerShell'. The 'Global' tab displays the Samba configuration with parameters like dns proxy = No, security = USER, and server string = Solaris Samba Server. The 'PowerShell' tab shows the output of the 'testparm' command, which includes the Samba configuration and a table of shared resources. The table has columns for Sharename, Type, and Comment. It lists a shared folder named 'shared' with type 'Disk' and comment 'IPC Service (Solaris Samba Server)'. Below the table, it says 'Reconnecting with SMB1 for workgroup listing'.

Sharename	Type	Comment
shared	Disk	IPC Service (Solaris Samba Server)

8. Troubleshooting

If you have issues:

```
# Check Samba status
svcs -xv samba
```

```
# Check logs
tail -f /var/samba/log/smbd.log
```

```
# Check network configuration
ifconfig -a
netstat -an | grep :445
```

```
# Check if Samba processes are running
ps -ef | grep smbd
ps -ef | grep nmbd
```

```
root@grupo7:~# ifconfig
lo0: flags=10000000000000000000000000000000 loopback,loopback,running,multicast,IPv4,virtual> mtu 8232 index 1
    inet 127.0.0.1 netmask fffff0000
net0: flags=10000000000000000000000000000000 loopback,running,multicast,IPv4,physrunning> mtu 1500 index 2
    inet 10.2.77.178 netmask ffff0000 broadcast 10.2.255.255
        ether 0:c:29:c6:a2:5
lo0: flags=10000000000000000000000000000000 loopback,loopback,running,multicast,IPv6,virtual> mtu 8252 index 1
    inet6 ::1/128
net6: flags=10000000000000000000000000000000 loopback,loopback,running,multicast,dhcp,IPv6,physrunning> mtu 1500 index 2
    inet6 fe80::2c:29ff:fecc:a2b6/10
        ether 0:c:29:c6:a2:6
```

9. Quick Test Files

Create some test files in the shared directory:

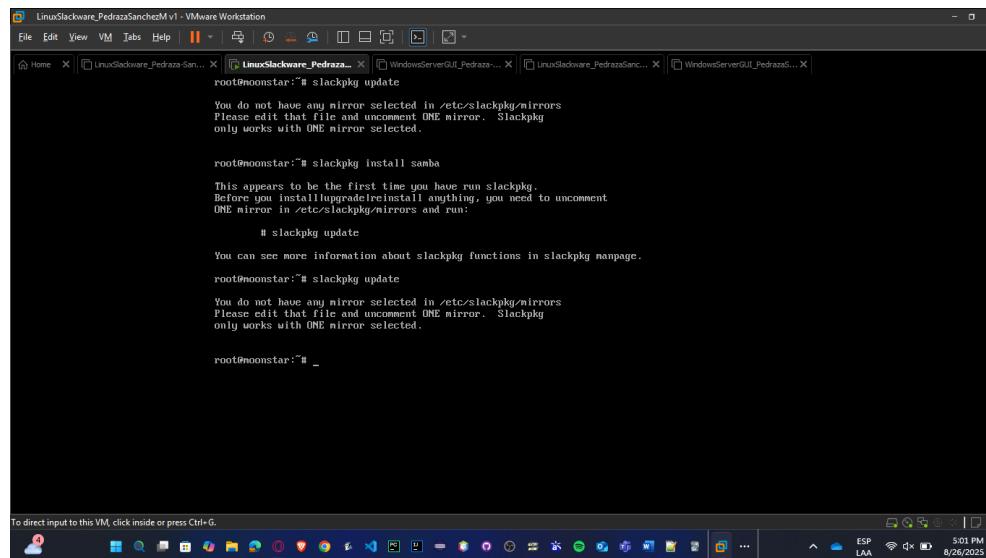
```
sudo touch /export/shared/test-from-solaris.txt
echo "Hello from Solaris!" | sudo tee /export/shared/readme.txt
sudo ls -la /export/shared/
```

```
root@grupo7:~# sudo touch /export/shared/test-from-solaris.txt
root@grupo7:~# echo "Hello from Solaris Samba!" | sudo tee /export/shared/readme.txt
Hello from Solaris Samba!
root@grupo7:~# sudo ls -la /export/shared/
total 9
drwxr-xr-x  2 nobody  nobody   4 Aug 27 09:23 .
drwxr-xr-x  4 root    sys      4 Aug 27 09:23 ..
-rw-r--r--  1 root    root    16 Aug 27 09:23 readme.txt
-rw-r--r--  1 root    root     8 Aug 27 09:23 test-from-solaris.txt
root@grupo7:~#
```

3 – Install Samba package in Slackware to see the Solaris shared folder

1. Update and install samba package:

```
slackpkg update
slackpkg install samba
```



You need to solve a problem related to the lack of mirror selected in /etc/slackpkg/mirrors, so you must uncomment one URL to install samba; this is the process to do:

➤ **Edit the mirrors file**

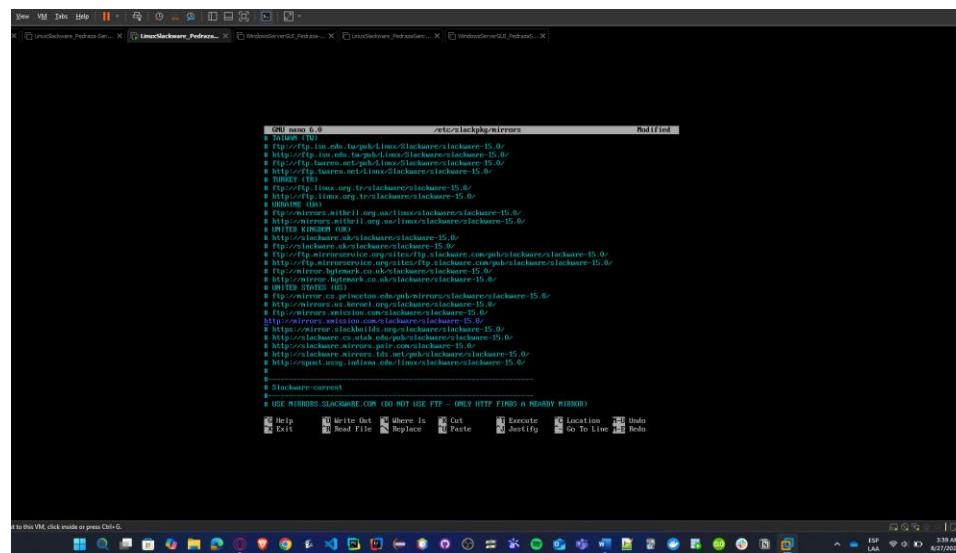
```
nano /etc/slackpkg/mirrors
```

You'll see a long list of mirrors grouped by version (Slackware 15.0, Slackware64 15.0, Slackware-current, etc.).

Now uncomment it (remove the # in **one** of them):

```
http://mirrors.xmission.com/slackware/slackware-15.0/ USA Server
```

Save and exit (Ctrl+O, Enter, Ctrl+X in nano).



➤ **Skip GPG verification:**

```
# Check current GPG setting  
grep CHECKGPG /etc/slackpkg/slackpkg.conf
```

```
# If it shows "on", disable it:  
sudo sed -i 's/CHECKGPG=on/CHECKGPG=off/' /etc/slackpkg/slackpkg.conf
```

```
# Verify the change  
grep CHECKGPG /etc/slackpkg/slackpkg.conf
```

➤ **Install diff command:**

```
# Look for diffutils package  
slackpkg search diff  
slackpkg install diffutils
```

```

T: C:\Windows\system32\cmd.exe X - V
2025-08-27 15:09:26 - http://mirrors.vacation.com/slackware/slackware-15.8/extra/PACKAGES.TXT
Resolving mirrors.vacation.com (mirrors.vacation.com) [198.69.22.13] via FPN:::c03c160d
Connecting to mirrors.vacation.com (mirrors.vacation.com)[198.69.22.13]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10590 (10KiB) [text/plain]
Saving to: '/tmp/slackpkg_CDv32/extra-PACKAGES.TXT'

/tmp/slackpkg_CDv32/extra-PACKAGES.TXT 100%[=====] 40.07K --=0.8/s in 0.1s

2025-08-27 15:09:26 (382 MB/s) - '/tmp/slackpkg_CDv32/extra-PACKAGES.TXT' saved [10590/10590]

Download: http://mirrors.vacation.com/slackware/slackware-15.8/pasture/PACKAGES.TXT...
--2025-08-27 15:09:30-- http://mirrors.vacation.com/slackware/slackware-15.8/pasture/PACKAGES.TXT
Resolving mirrors.vacation.com (mirrors.vacation.com) [198.69.22.13] via FPN:::c03c160d
Connecting to mirrors.vacation.com (mirrors.vacation.com)[198.69.22.13]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10590 (10KiB) [text/plain]
Saving to: '/tmp/slackpkg_CDv32/pasture-PACKAGES.TXT'

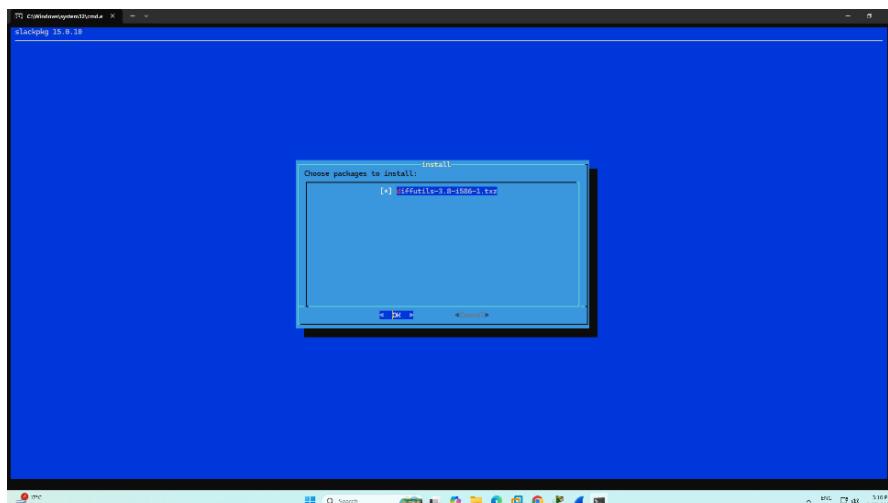
/tmp/slackpkg_CDv32/pasture-PACKAGES.TXT 100%[=====] 2.13K --=0.8/s in 2s

Download: http://mirrors.vacation.com/slackware/slackware-15.8/testing/PACKAGES.TXT...
--2025-08-27 15:09:30-- http://mirrors.vacation.com/slackware/slackware-15.8/testing/PACKAGES.TXT
Resolving mirrors.vacation.com (mirrors.vacation.com) [198.69.22.13] via FPN:::c03c160d
Connecting to mirrors.vacation.com (mirrors.vacation.com)[198.69.22.13]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10590 (10KiB) [text/plain]
Saving to: '/tmp/slackpkg_CDv32/testing-PACKAGES.TXT'

/tmp/slackpkg_CDv32/testing-PACKAGES.TXT 100%[=====] 11.30K --=0.8/s in 9s

Formatting lists to slackpkg style...
  Package List: using CHECKSUMS.md5 as source
  Package descriptions
Looking for diff in package list. Please wait... DONE
The list below shows all packages with name matching "diff".
[uninstalled] - diffutils-1.6-1586-3
[uninstalled] - diffutils-3.8-1586-1
[uninstalled] - libltdl-2.2.1-1586-1
You can search specific files using "slackpkg file-search file".
root@monstar:~#

```



```

T: C:\Windows\system32\cmd.exe X - V
2025-08-27 15:10:01 - Downloading http://mirrors.vacation.com/slackware/slackware-15.8/slackware/ap/diffutils-3.8-1586-1.txz...
--2025-08-27 15:10:01-- http://mirrors.vacation.com/slackware/slackware-15.8/slackware/ap/diffutils-3.8-1586-1.txz
Resolving mirrors.vacation.com (mirrors.vacation.com) [198.69.22.13] via FPN:::c03c160d
Connecting to mirrors.vacation.com (mirrors.vacation.com)[198.69.22.13]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 368232 (368KiB) [application/octet-stream]
Saving to: '/var/cache/packages/.slackware/ap/diffutils-3.8-1586-1.txz'

/var/cache/packages/.slackware/ap/diffutils-3.8-15 100%[=====] 359.60K 6660KB/s in 0.5s

2025-08-27 15:10:01 (666 KB/s) - '/var/cache/packages/.slackware/ap/diffutils-3.8-1586-1.txz' saved [368232/368232]

Package diffutils-3.8-1586-1.txz is already in cache - not downloading
  Package diffutils-3.8-1586-1.txz
  Verifying package diffutils-3.8-1586-1.txz.
  Installing package diffutils-3.8-1586-1.txz.
  Uninstalling package diffutils-3.8-1586-1.txz.
  diffutils (finds differences between files)
  The GNU diff utility finds differences between files. A major use
  is for this package is to make source code patches.
  Executing install script for diffutils-3.8-1586-1.txz.
  Package diffutils-3.8-1586-1.txz installed.
  Searching for NEW configuration files...
    No .new files found.
root@monstar:~|

```

- Repeat the first two commands, and you will see everything is working now, so you can install samba package.

slackpkg update

slackpkg install samba

```

HTTP Not...
2025-05-27 16:44:47-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/tmp/slackpkg_49866/packages/PATCHTEST.hz'

2025-05-27 16:44:47-- /tmp/slackpkg_49866/packages/PATCHTEST.hz:1000000 => /tmp/slackpkg_49866/packages/PATCHTEST.hz [downloaded 22225879/22225879]
0%
```



```

HTTP Not...
2025-05-27 16:45:11-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.symbols.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/tmp/slackpkg_49866/packages/PATCHTEST.hz'

2025-05-27 16:45:11-- /tmp/slackpkg_49866/packages/PATCHTEST.hz:1000000 => /tmp/slackpkg_49866/packages/PATCHTEST.hz [downloaded 22225879/22225879]
0%
```



```

HTTP Not...
2025-05-27 16:45:14-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/tmp/slackpkg_49866/packages/PATCHTEST.hz'

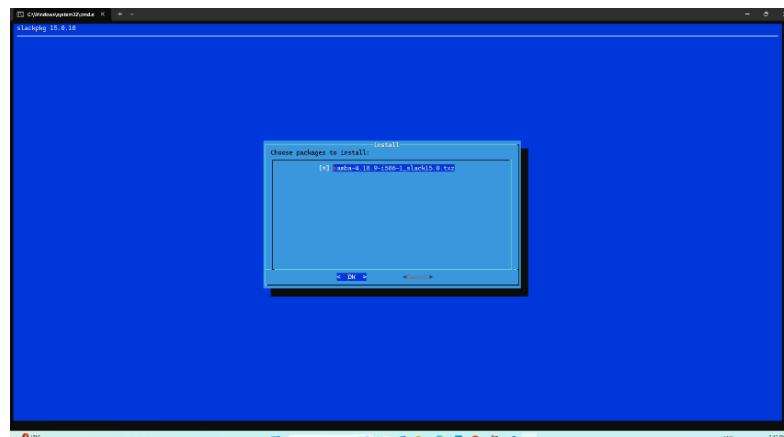
2025-05-27 16:45:14-- /tmp/slackpkg_49866/packages/PATCHTEST.hz:1000000 => /tmp/slackpkg_49866/packages/PATCHTEST.hz [downloaded 22225879/22225879]
0%
```



```

HTTP Not...
2025-05-27 16:45:14-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.symbols.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/tmp/slackpkg_49866/packages/PATCHTEST.hz'

2025-05-27 16:45:14-- /tmp/slackpkg_49866/packages/PATCHTEST.hz:1000000 => /tmp/slackpkg_49866/packages/PATCHTEST.hz [downloaded 22225879/22225879]
0%
```



```

HTTP Not...
2025-05-27 16:47:22-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.symbols.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz'

2025-05-27 16:47:22-- /var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz:1000000 => /var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz [downloaded 1000000/1000000]
0%
```



```

HTTP Not...
2025-05-27 16:47:27-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.symbols.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz'

2025-05-27 16:47:27-- /var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz:1000000 => /var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz [downloaded 1000000/1000000]
0%
```



```

HTTP Not...
2025-05-27 16:47:30-- http://cnewsravel.silicon.com/slacksrc/slacksrc-15.0-patches.symbols.tar.gz
Resolving cnewsravel.silicon.com (cnewsravel.silicon.com)... 198.69.22.13, 64/PTP (eth0)
Connecting to cnewsravel.silicon.com (cnewsravel.silicon.com)|198.69.22.13|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1000000 [text/html]
Saving to: '/var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz'

2025-05-27 16:47:30-- /var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz:1000000 => /var/cache/packager/packages/packages/slacksrc-15.0-patches.symbols.tar.gz [downloaded 1000000/1000000]
0%
```

```

Package: samba-4.10.9-i586-1_slack15.0.txz
  Downloading http://mirrors.xmission.com/slackware/slackware-15.0//patches/packages/samba-4.10.9-i586-1_slack15.0.txz...
2015-08-27 15:15:10 [  1]  http://mirrors.xmission.com/slackware/slackware-15.0//patches/packages/samba-4.10.9-i586-1_slack15.0.txz
  Verifying http://mirrors.xmission.com/slackware/slackware-15.0//patches/packages/samba-4.10.9-i586-1_slack15.0.txz
  Connecting to mirrors.xmission.com [mirrors.xmission.com] [198.60.22.13]:80... connected
Length: 1779528 (1.6M) [application/octet-stream]
Saving to: //var/cache/packages//slackware/packages/samba-4.10.9-i586-1_slack15.0.txz

[1779528 bytes/s] 13.1M 1.0000/s in 11s

//var/cache/packages//slackware/packages/samba-4.10.9-i586-1_slack15.0.txz' saved [1779528/1779528]

Package samba-4.10.9-i586-1_slack15.0.txz is already in cache - not downloading
Installing samba-4.10.9-i586-1_slack15.0.txz
Verifying samba-4.10.9-i586-1_slack15.0.txz
Installing package samba-4.10.9-i586-1_slack15.0.txz
# samba (CIFS file and print server)
# Samba is a CIFS file and print server. For CIFS clients, it allows
# them to access files and printers on a Samba host available to CIFS
# clients (such as Microsoft Windows)
# If you have any Windows 4 file servers, you may be able to replace them
# by supplementing them with Samba. One of Samba's big strengths is
# that it can run on Linux, so you can use it to tie together your Linux hosts and
# Windows PC clients.
Executing install script for samba-4.10.9-i586-1_slack15.0.txz.
Package samba-4.10.9-i586-1_slack15.0.txz installed.
Searching for dependencies...
# new files found
root@roonstar:~|

```

- Then verify:

`smbd -version`

2. Install missing libraries to run command smbclient

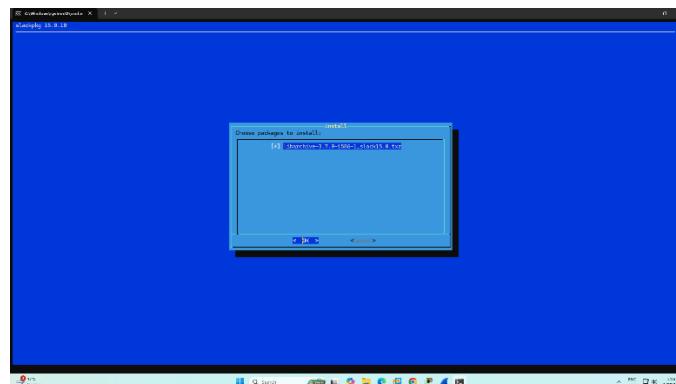
- To know all missing libraries at once

```
# Check what libraries smbclient needs
ldd /usr/bin/smbclient | grep "not found"
```

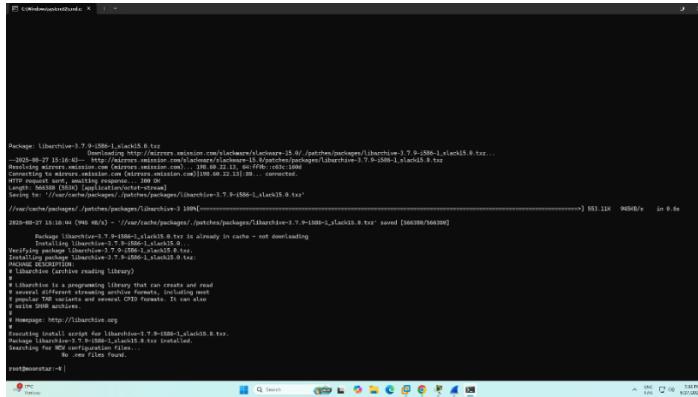
```
# Install ICU (International Components for Unicode)
slackpkg search icu
slackpkg install icu4c
```

- After that, we will be able to know what libraries we need to install.

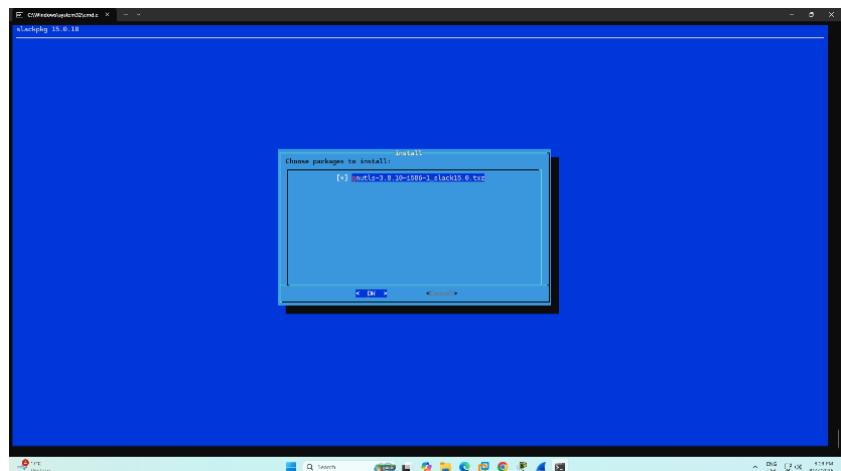
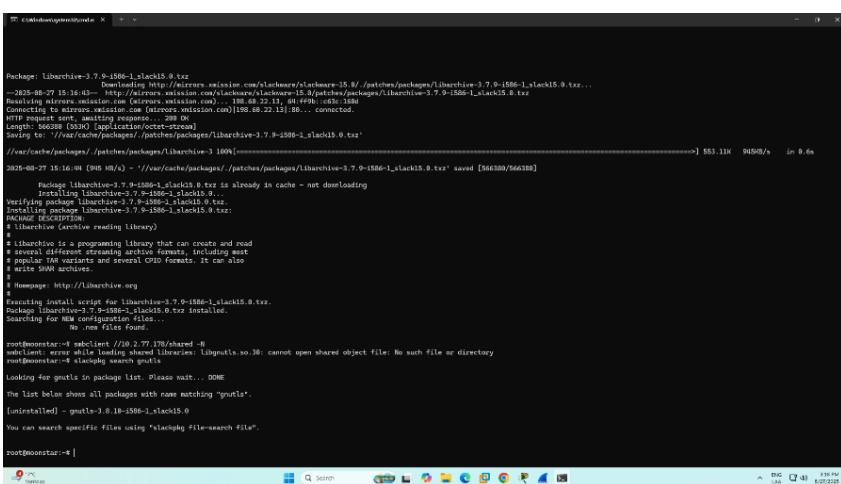
```
# Search for libarchive packages
slackpkg search libarchive
```



```
# Install libarchive
slackpkg install libarchive
```



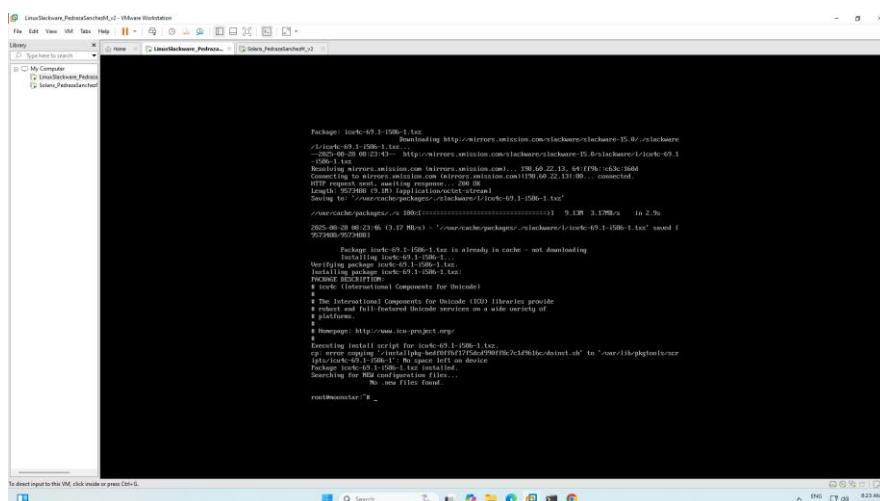
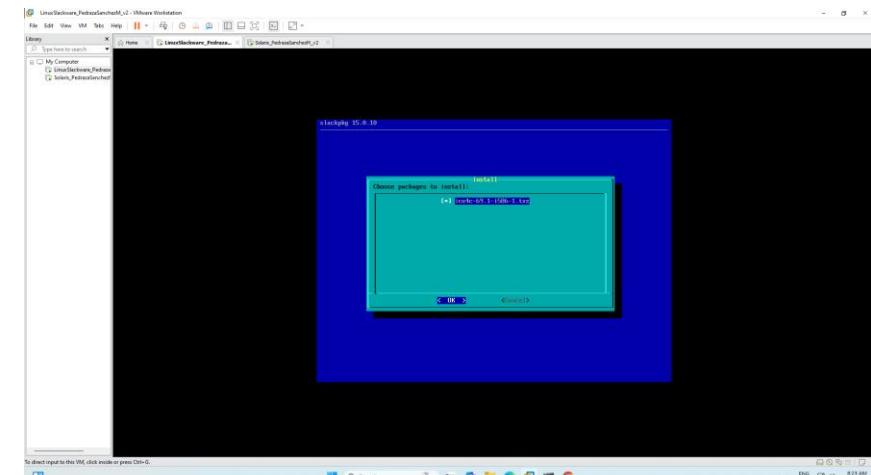
```
# Search for gnutls packages
slackpkg search gnutls
```



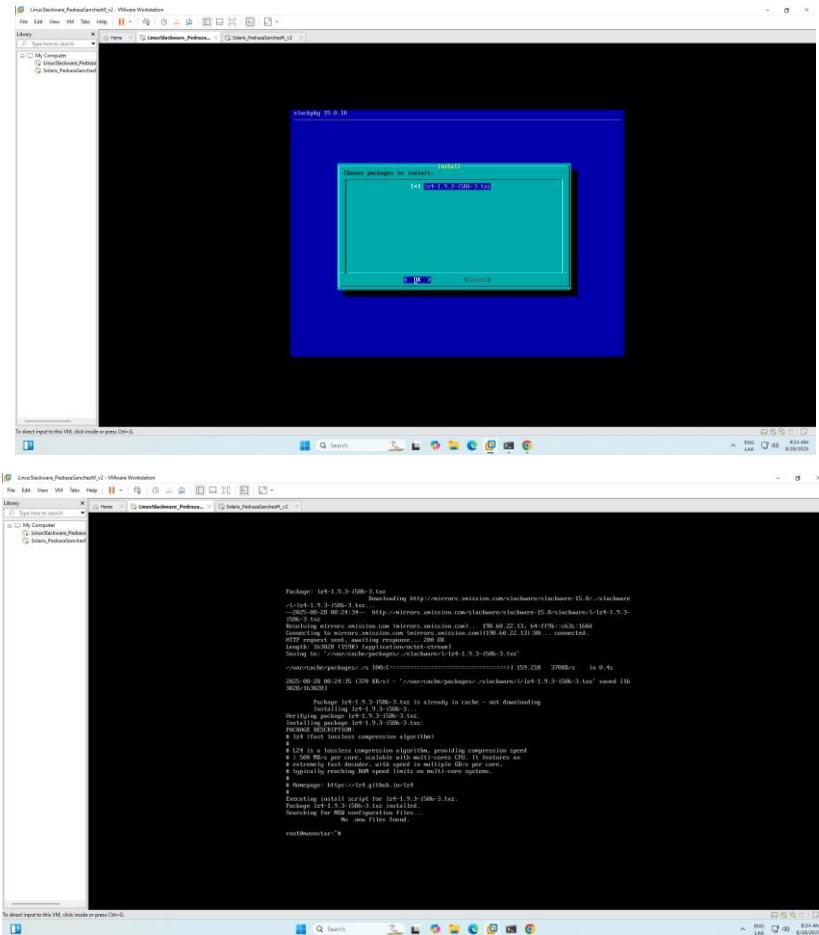
```
# Install gnutls  
slackpkg install gnutls
```

```
Package: gnutls-3.10-1506-1_slack10.tz  
2010-09-27 11:12:27 [19.19.19.19] - Downloading http://mirrors.misteria.com/slackware/slackware-10.8-/pathcache/packages/gnutls-3.10-1506-1_slack10.tz...  
Resolving mirrors.misteria.com (http://mirrors.misteria.com)... 100.66.22.13 (91.1ms)  
HTTP request sent, awaiting response... 200 OK  
Length: 1000000 (957K) [application/x-tar]  
Saving to: /var/cache/package/_pathcache/packages/gnutls-3.10-1506-1_slack10.tz'  
  
/var/cache/package/_pathcache/packages/gnutls-3.10-1506-1_slack10.tz' [100% 2.19MB/s in 1.2s]  
  
2010-09-27 11:18:50 [19.19.19.19] - [mirrors.misteria.com] /var/cache/package/_pathcache/packages/gnutls-3.10-1506-1_slack10.tz' saved [882286/882306]  
  
Package gnutls-3.10-1506-1_slack10.tz is already in cache - not downloading  
Extracting package gnutls-3.10-1506-1_slack10.tz...  
Installing package gnutls-3.10-1506-1_slack10.tz...  
# gnutls_minimal_group_size=1024  
# gnutls_minimal_iv_size=1024  
# This is a TLS (Transport Layer Security) 1.0 and 1.1, Secure Sockets  
# Layer (SSL) 3.0 and 3.1, and Transport Layer Security  
# (TLS) 1.0 and 1.1, secure communication protocol.  
# It uses public key infrastructure (PKI), certificates and digital signatures  
# to provide security, identity, integrity, and message integrity.  
# Homepage: http://www.gnu.org/software/gnutls/  
  
Executing install script for gnutls-3.10-1506-1_slack10.tz...  
No files found for this package.  
Selecting for HCL configuration files.  
Selecting for HCL new files found.  
  
root@misteria:~#
```

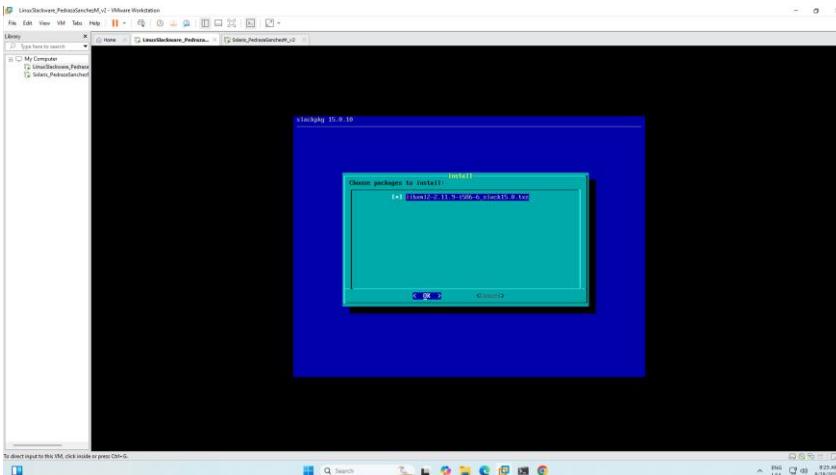
```
# Install ICU libraries  
slackpkg install icu4c
```

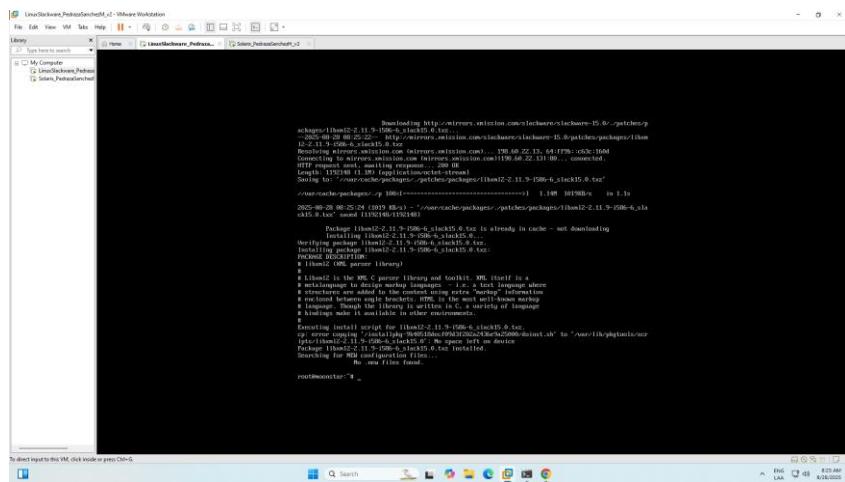


```
# Install LZ4 compression library  
slackpkg install lz4
```

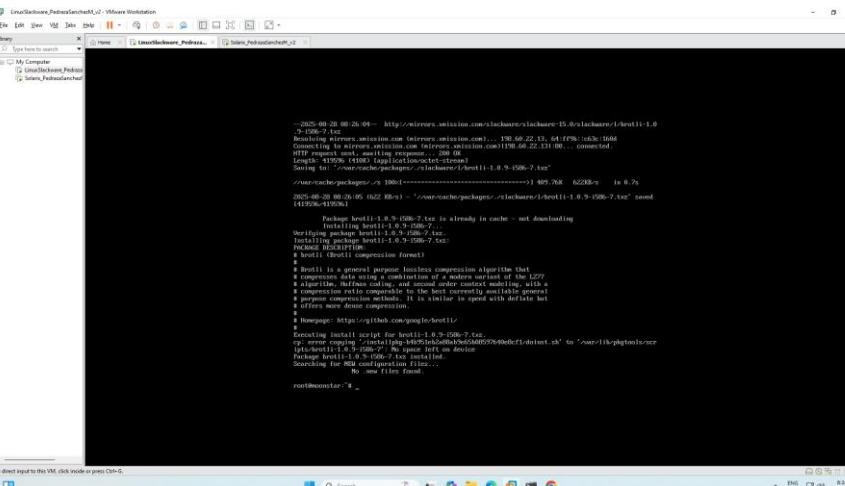
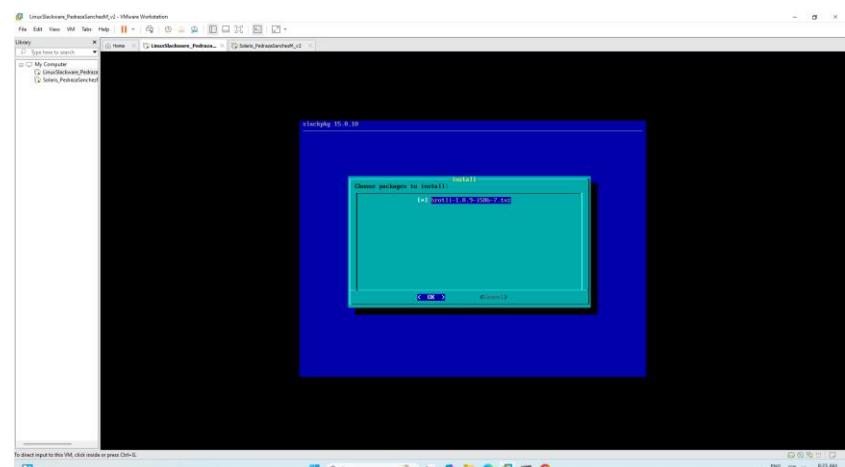


```
# Install libxml2  
slackpkg install libxml2
```

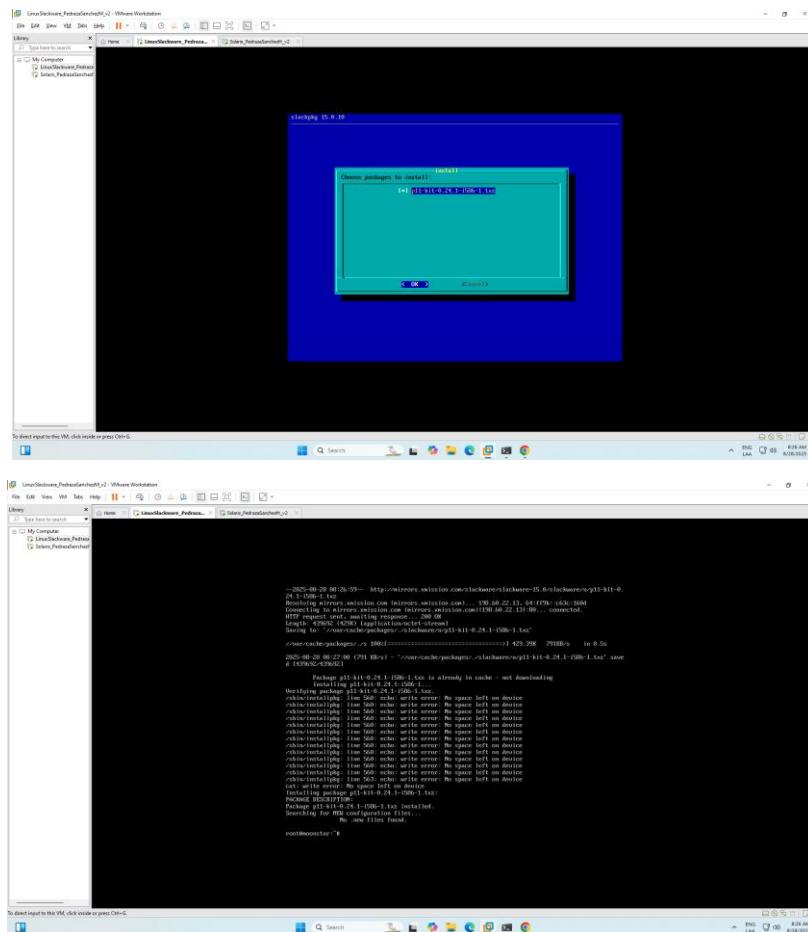




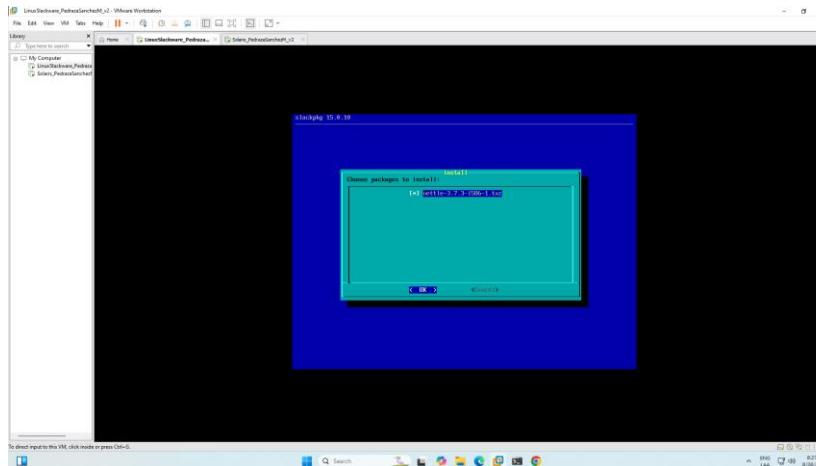
```
# Install Brotli compression libraries  
slackpkg search brotli  
slackpkg install brotli
```



```
# Install p11-kit (PKCS#11 toolkit)
slackpkg search p11-kit
slackpkg install p11-kit
```



```
# Install Nettle cryptographic library
slackpkg search nettle
slackpkg install nettle
```



```

[root@monitor ~]# slackpkg search jansson
[root@monitor ~]# slackpkg install jansson

```

Output of the terminal:

```

[root@monitor ~]# slackpkg search jansson
[root@monitor ~]# slackpkg install jansson

```

```

# Install Jansson JSON library
slackpkg search jansson
slackpkg install jansson

```

```

[root@monitor ~]# slackpkg search jansson
[root@monitor ~]# slackpkg install jansson

```

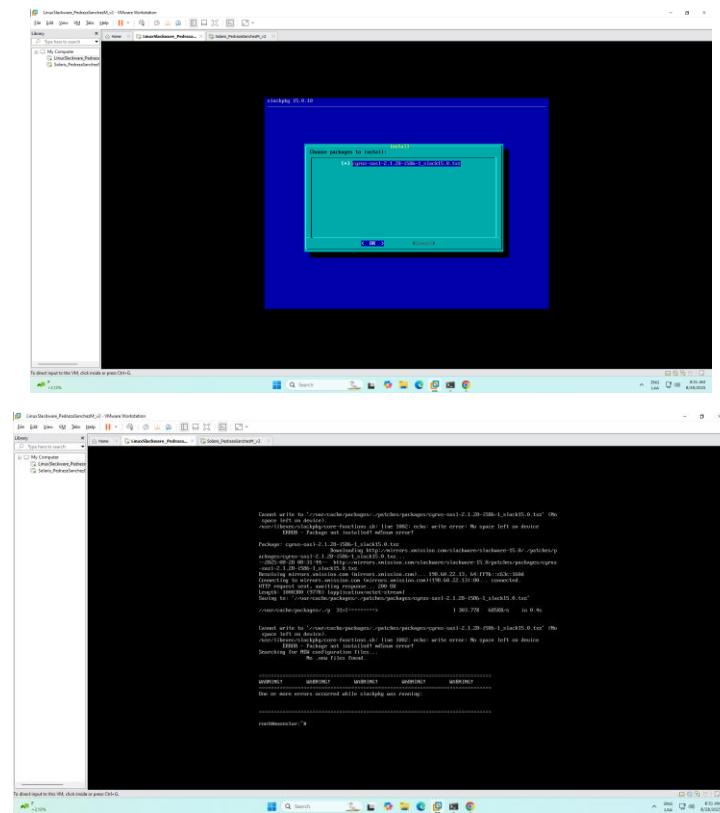
Output of the terminal:

```

[root@monitor ~]# slackpkg search jansson
[root@monitor ~]# slackpkg install jansson

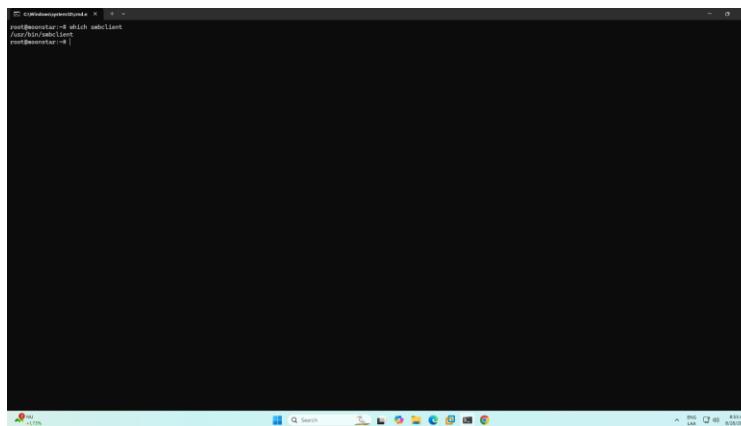
```

```
# Install SASL authentication library  
slackpkg search sasl  
slackpkg install cyrus-sasl
```

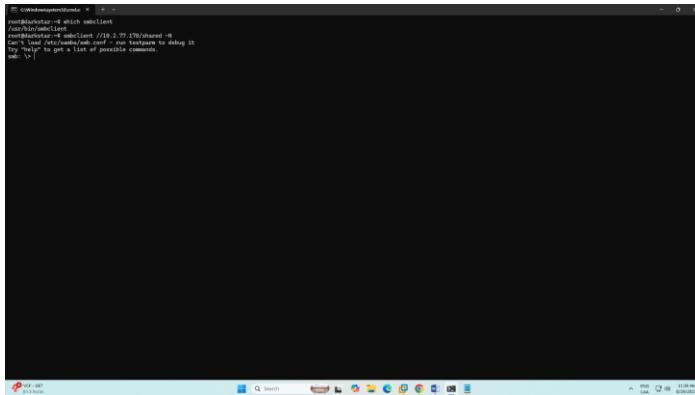


3. Test command smbclient

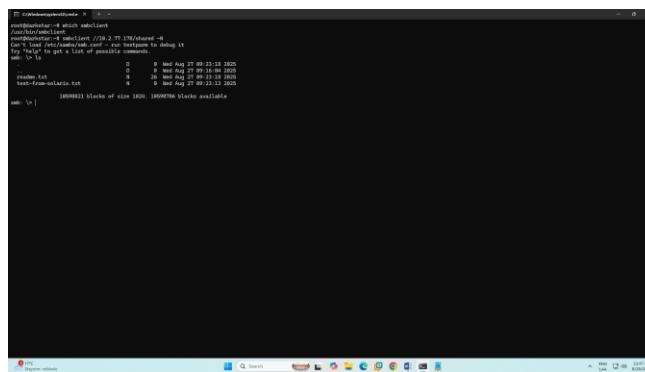
```
# Test if smbclient is now available  
which smbclient
```



```
# Test connection to the Solaris Samba server  
smbclient //10.2.77.178/shared -N (-N indicates to enter without smbuser password)
```



Once we are in smb client, we use **ls** command to see Solaris files



We provide another example to test SMB:

```
# Download a file to test
```

```
get readme.txt
```

```
# Create and upload a test file
```

```
!echo "Hello from Slackware!" > /tmp/slackware-test.txt
```

```
put /tmp/slackware-test.txt slackware-message.txt
```

```
# List files again to see your new file
```

```
ls
```

```
# Exit smbclient
```

```
exit
```

```

cd /var/nfsroot/shared
ls -l
total 128
drwxr-xr-x 2 root root 4096 Aug 29 09:23 .
drwxr-xr-x 2 root root 4096 Aug 29 09:23 ..
-rw-r--r-- 1 root root 20 Aug 29 09:23 election-message.txt
-rw-r--r-- 1 root root 20 Aug 29 09:23 reader.txt
-rw-r--r-- 1 root root 20 Aug 29 09:23 test-from-solaris.txt

1000000 blocks of size 3200. 1000000 blocks available

```

You can also enter with smbuser, and you will see the same shared files.

```

cd /var/nfsroot/shared
ls -l
total 128
drwxr-xr-x 2 root root 4096 Aug 29 09:31:37 .
drwxr-xr-x 2 root root 4096 Aug 29 09:31:37 ..
-rw-r--r-- 1 root root 20 Aug 29 09:31:37 election-message.txt
-rw-r--r-- 1 root root 20 Aug 29 09:31:37 reader.txt
-rw-r--r-- 1 root root 20 Aug 29 09:31:37 test-from-solaris.txt

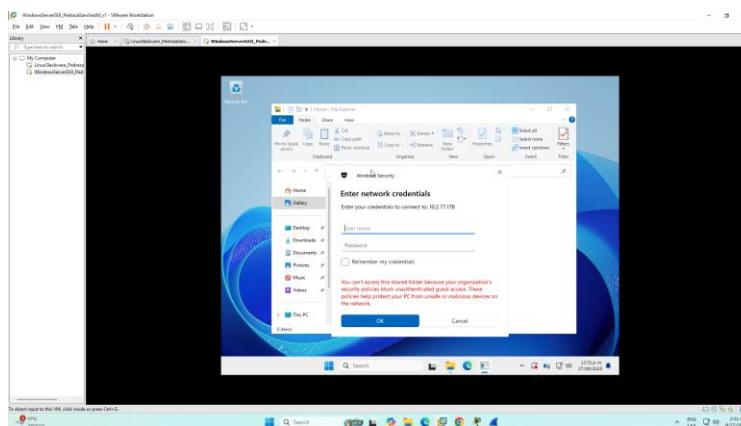
1000000 blocks of size 3200. 1000000 blocks available

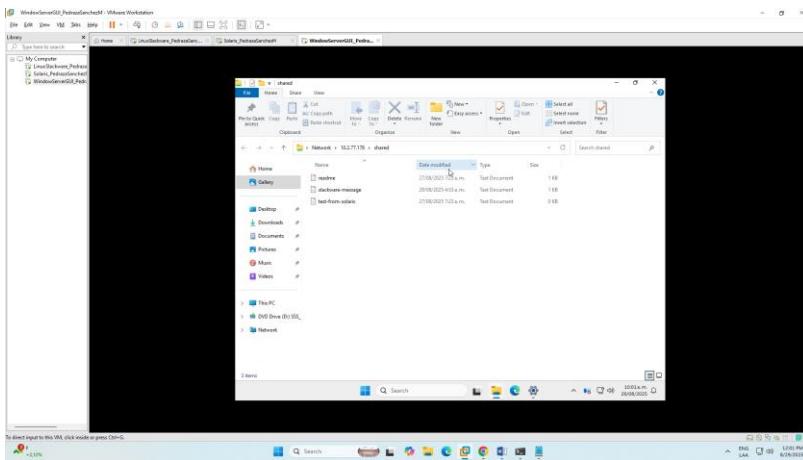
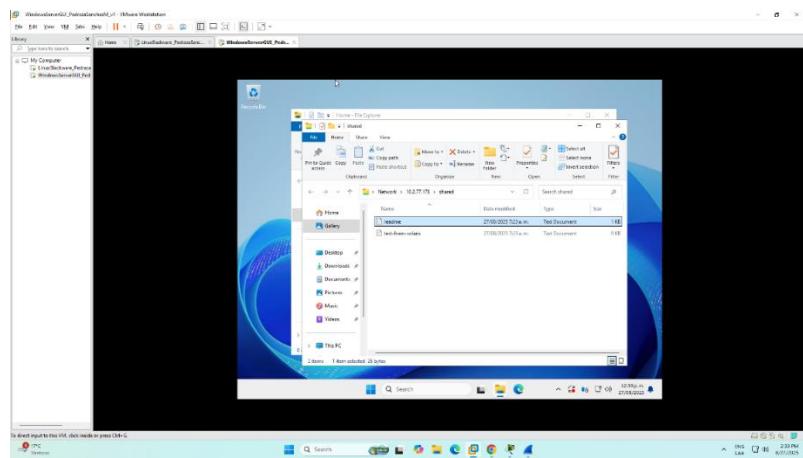
```

4 - Solaris shared folder in Windows GUI machine:

- In File Explorer address bar: \\<SLACKWARE_IP>\shared
- When prompted, provide smbuser and the SMB password you assigned.
- If Windows rejects the connection, use \\<IP>\shared instead of hostname and check Windows SMB client Network security policy if SMB2/3 issues appear.

For this case, you can see the shared folder was added to the machine correctly





5. Bibliography

- <https://www.wireshark.org/docs>
- <https://www.netacad.com/cisco-packet-tracer>
- <https://products.vmssoftware.com/samba>
- <https://www.openssh.com>
- <https://www.redhat.com/en/blog/introduction-vi-editor>
- <https://www.whatsupgold.com/es/blog/que-es-un-servidor-syslog-y-como-funciona>