Project-2: Comparative Analysis of Telnet and SSH Using Wireshark -

1. Kali Linux Hostname / User Configuration:

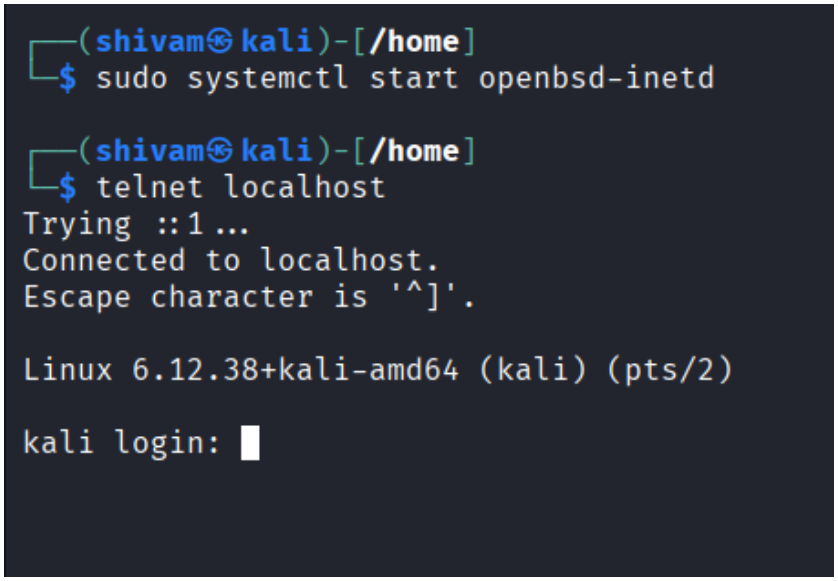
A new user (shivam) was created and user switching was tested to simulate real-world non-root access.

```
┌──(kali㉿kali)-[/home]
└─$ sudo adduser shivam
[sudo] password for kali:
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for shivam
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n]

┌──(kali㉿kali)-[/home]
└─$ sudo su shivam
┌──(shivam㉿kali)-[/home]
└─$ whoami
shivam
```

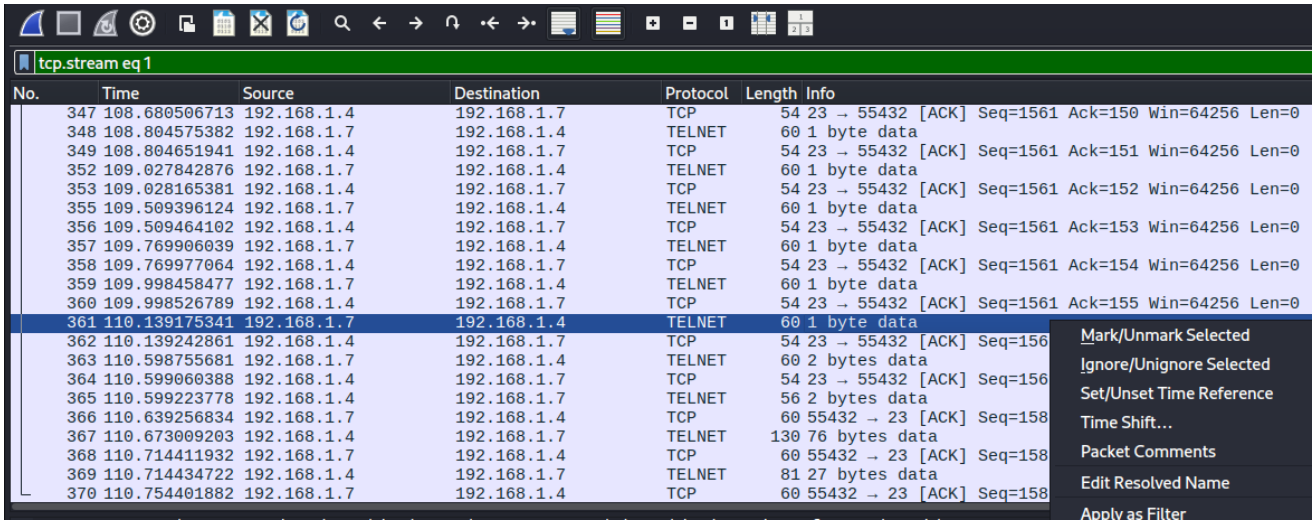
2. Telnet Service Configuration and Activation:

Telnet service was enabled using openbsd-inetd to demonstrate insecure plaintext communication.



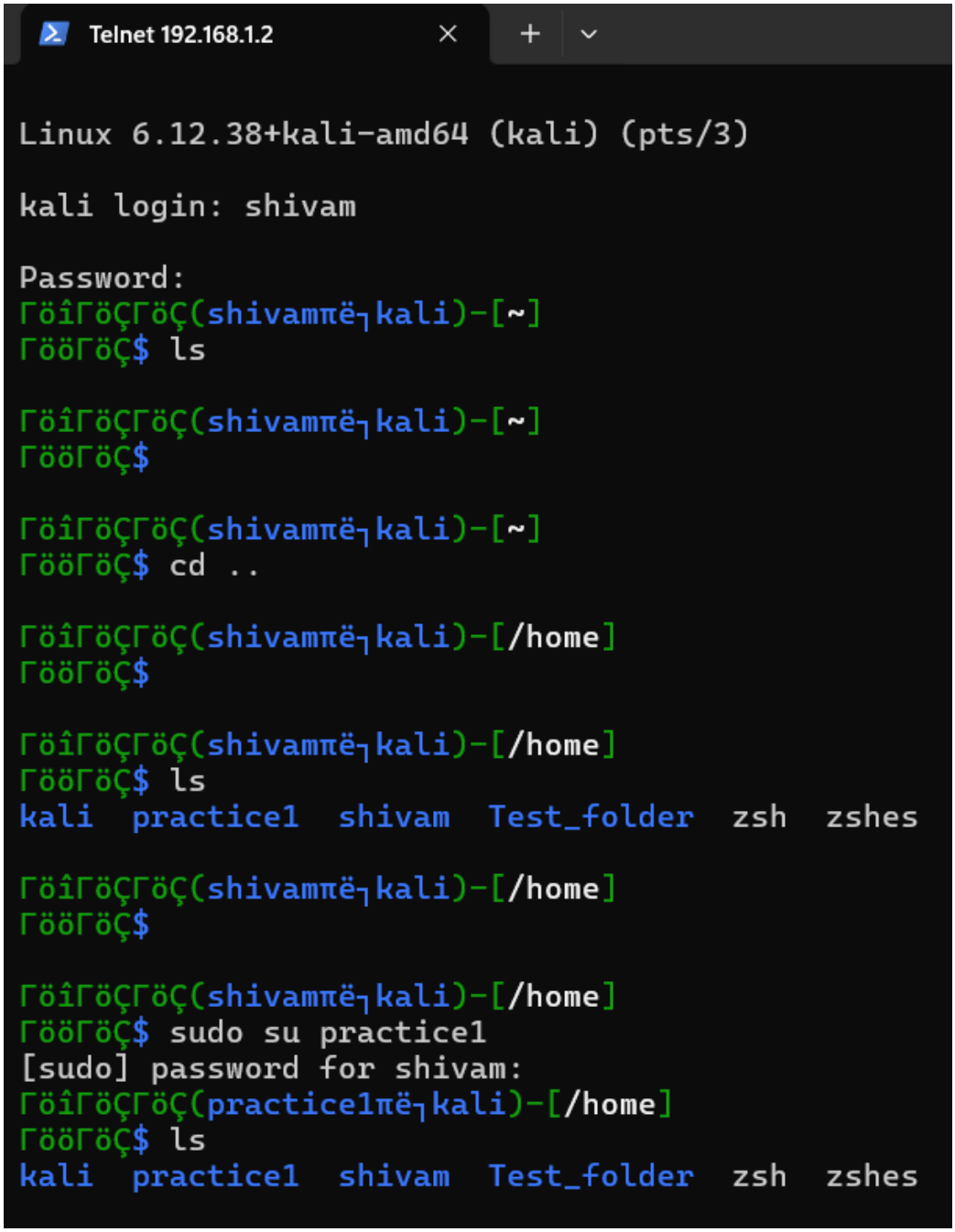
3.Wireshark Capturing Telnet Traffic:

Wireshark was used on Kali Linux to capture Telnet packets on TCP port 23.



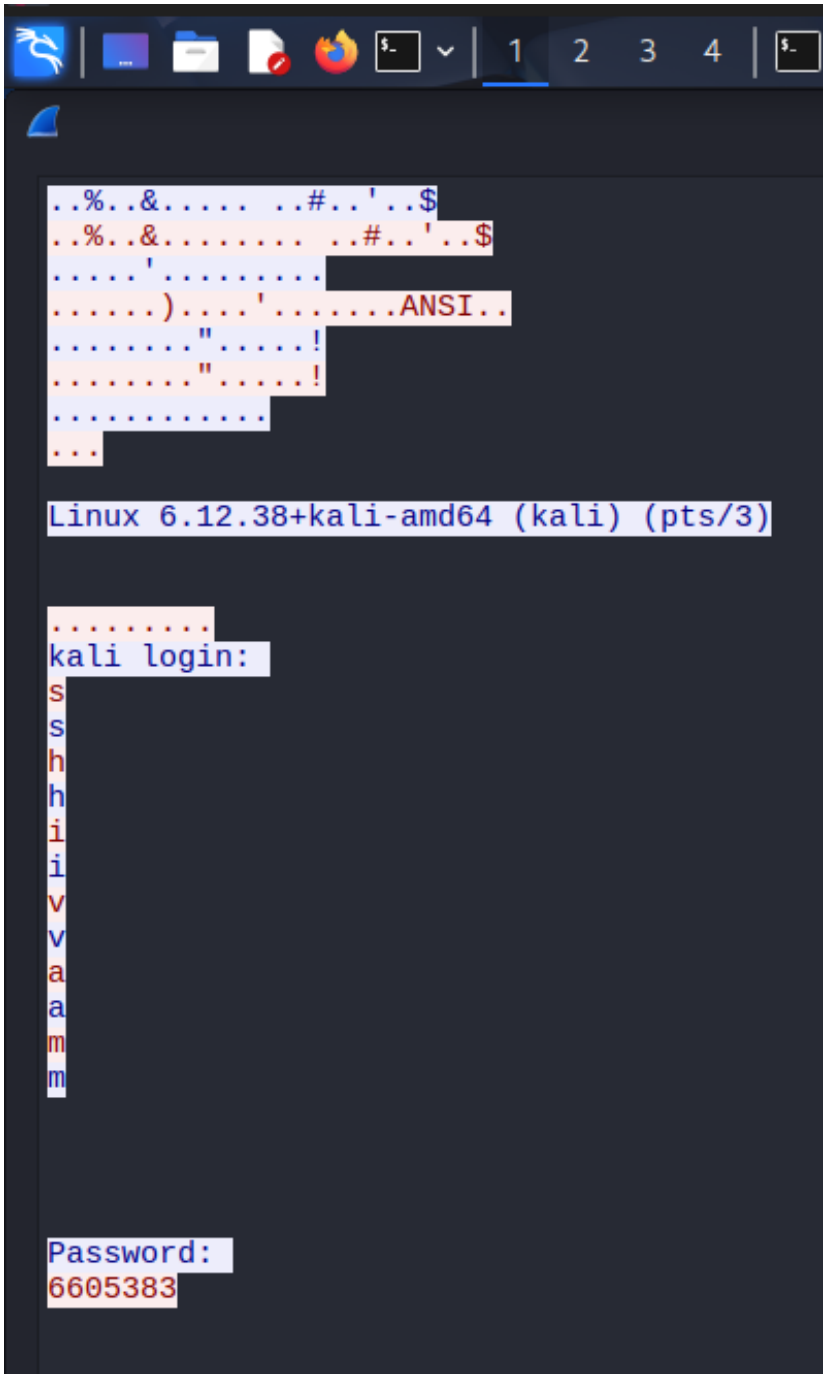
4. Telnet Login and Command Execution:

Telnet login was performed from Windows and commands were executed.



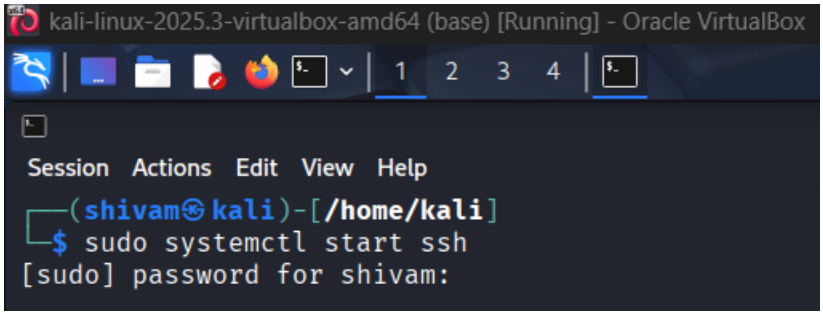
5. Plain-text Credentials Visible in Packets:

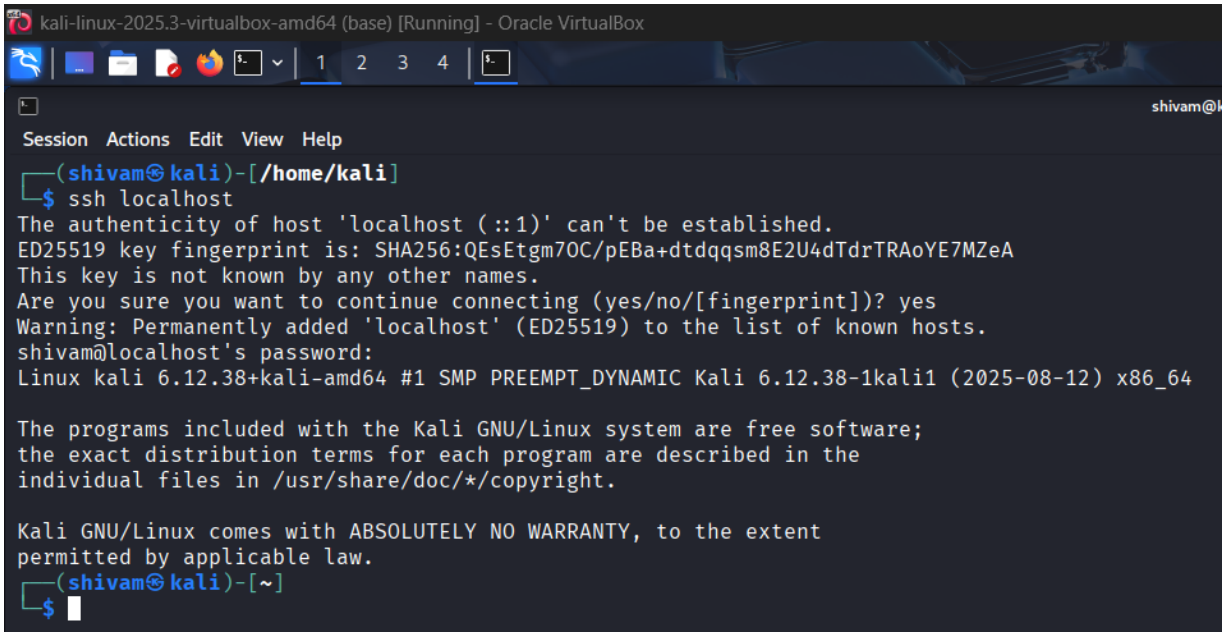
Telnet TCP stream shows username and password in plaintext.



6. SSH Service Configuration and Activation:

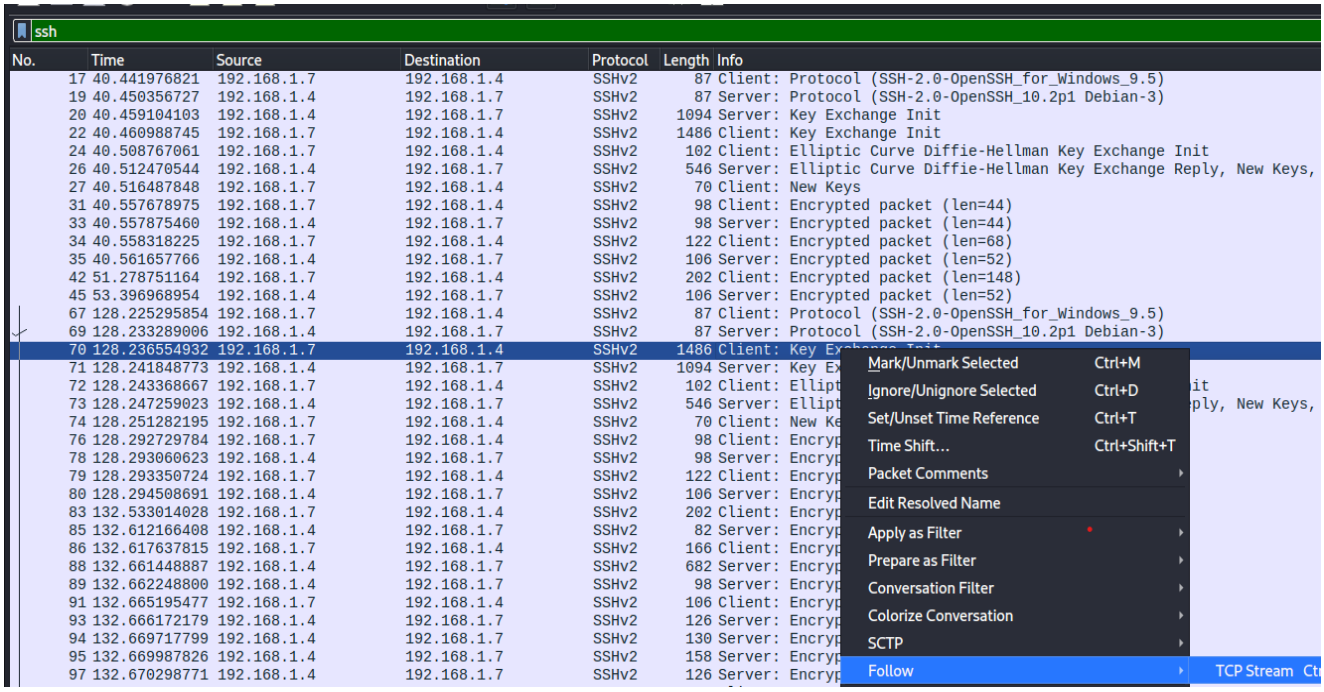
SSH service was verified and started on Kali Linux.





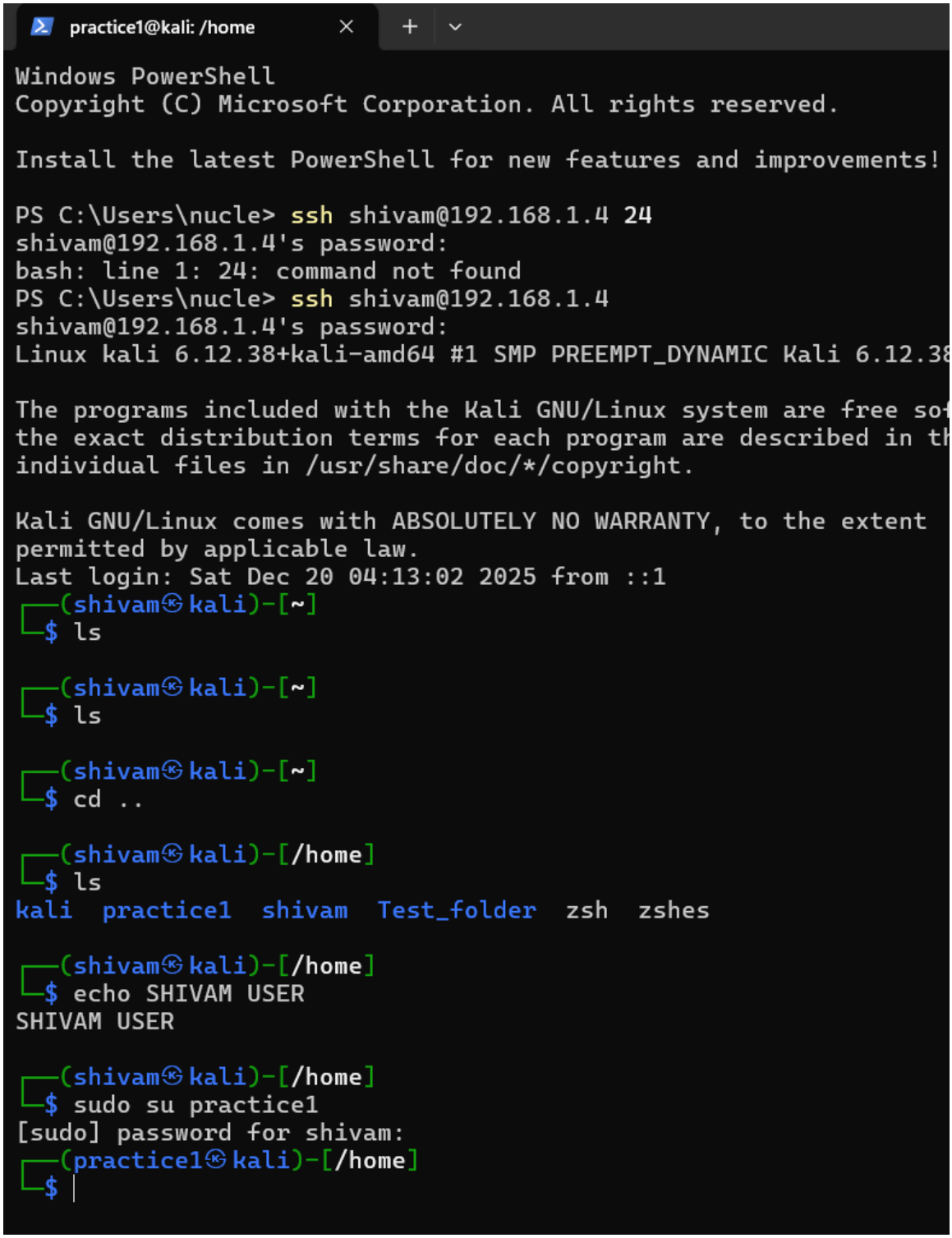
7. Wireshark Capturing SSH Traffic:

Wireshark captured SSH traffic on TCP port 22.



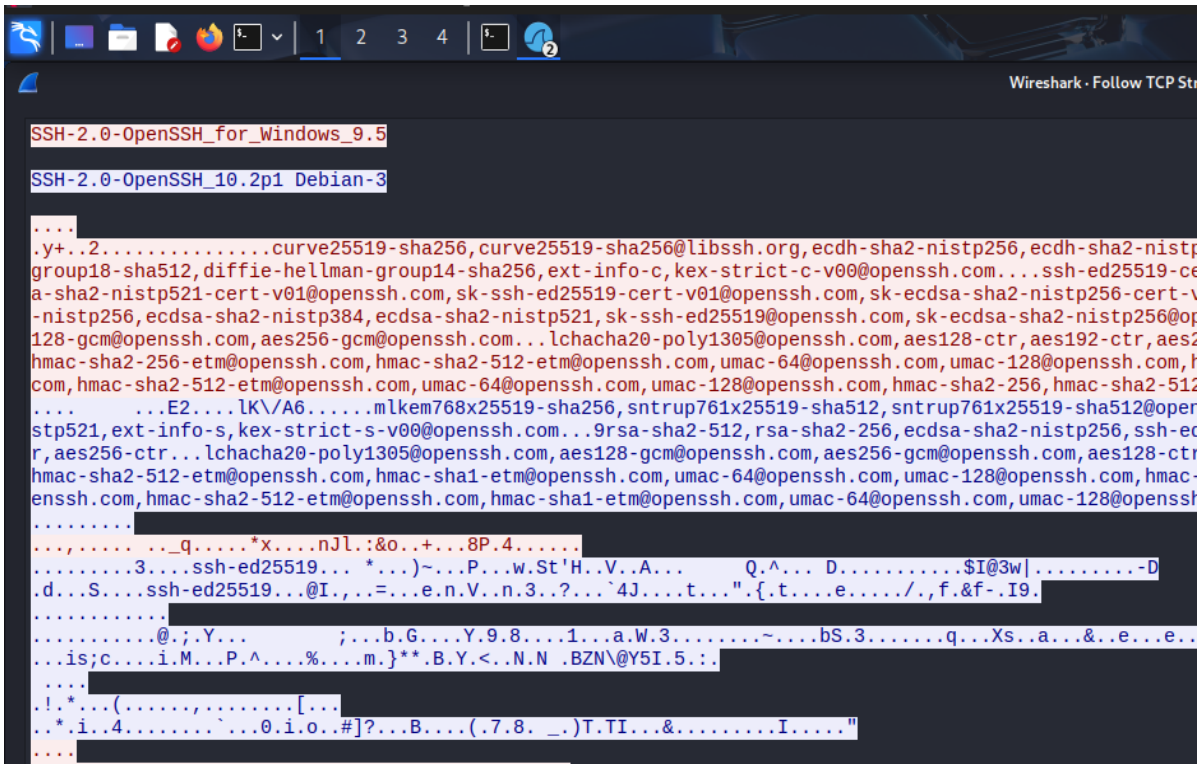
8. SSH Login and Command Execution:

SSH login from Windows to Kali was successful.


practice1@kali: /home
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements!
PS C:\Users\nucle> ssh shivam@192.168.1.4 24
shivam@192.168.1.4's password:
bash: line 1: 24: command not found
PS C:\Users\nucle> ssh shivam@192.168.1.4
shivam@192.168.1.4's password:
Linux kali 6.12.38+kali-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.12.38
The programs included with the Kali GNU/Linux system are free so
the exact distribution terms for each program are described in th
individual files in /usr/share/doc/*/copyright.
Kali GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sat Dec 20 04:13:02 2025 from ::1
(shivam㉿kali)-[~]
$ ls
(shivam㉿kali)-[~]
$ ls
(shivam㉿kali)-[~]
$ cd ..
(shivam㉿kali)-[/home]
$ ls
kali practice1 shivam Test_folder zsh zshes
(shivam㉿kali)-[/home]
$ echo SHIVAM USER
SHIVAM USER
(shivam㉿kali)-[/home]
$ sudo su practice1
[sudo] password for shivam:
(practice1㉿kali)-[/home]
$

9. Encrypted SSH Packets (Unreadable Payload)

SSH TCP stream shows encrypted unreadable payload.



Final Comparison Summary

Telnet transmits credentials in plaintext and is insecure, whereas SSH encrypts all communication, making it safe against packet sniffing attacks.

Telnet runs over TCP port 23 and does not encrypt data. Enabling it intentionally creates an insecure service to demonstrate real-world risks in legacy systems.

Wireshark captures packets at the network interface level. By filtering Telnet traffic, we can clearly observe how data travels without encryption.

User credentials and commands are transmitted directly over the network. This simulates how attackers can sniff sensitive data on unsecured networks.

The visibility of usernames and passwords proves Telnet is insecure. This is a critical vulnerability that violates basic security principles.

SSH replaces Telnet by providing encrypted remote access. It is the industry standard for secure system administration.

Although packets are captured, their content is unreadable. This demonstrates the effectiveness of cryptographic protection.

Even login credentials and commands remain encrypted. This protects users against packet sniffing and man-in-the-middle attacks.

The payload appears as random data due to encryption algorithms. This ensures confidentiality even if traffic is intercepted.

Telnet should never be used in modern networks. SSH is secure, reliable, and resistant to passive network attacks.