KENOBI

> Welcome to my writeup where I am gonna be pwning the **Kenobi** machine from **TryHackMe**. This challenge has two flags, and our goal is to capture both. Let's get started!

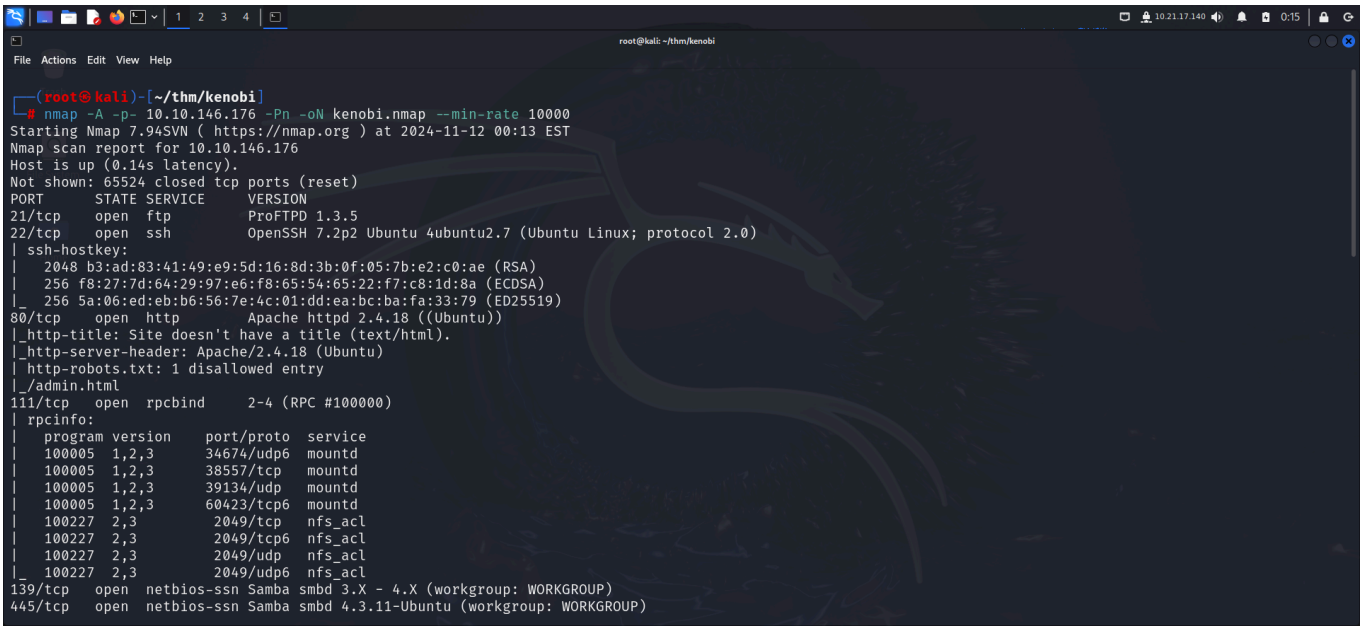
GETTING STARTED

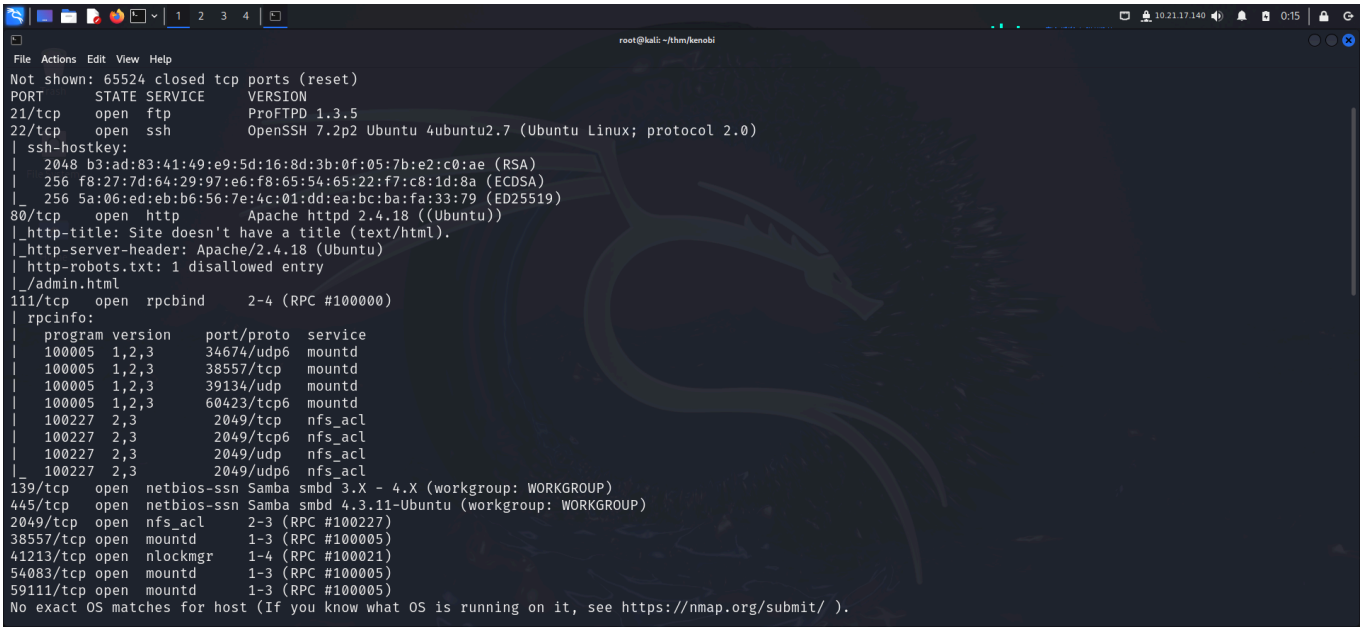
To access the challenge, click on the link given below:
https://tryhackme.com/r/room/kenobi

> **Note**
>
> This writeup documents the steps that successfully led to pwnage of the machine. It does not include the dead-end steps encountered during the process (which were numerous). This is just my take on pwning the machine and you are welcome to choose a different path.

RECONNAISSANCE

I performed an **nmap** aggressive scan to find open ports and the services running on it.





The scan revealed various services like **ftp**, **ssh**, **http**, **smb** and **nfs** to be running on the system.

INITIAL ACCESS

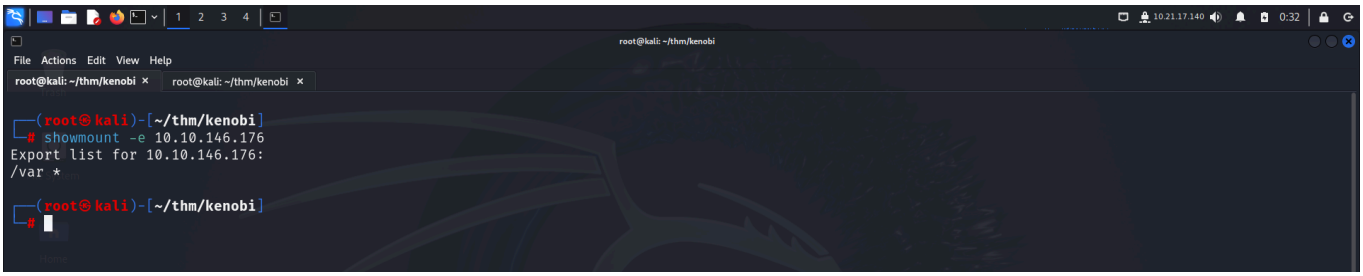
Since the target had an **smb** server, I performed enumeration using **nmap** and listed the shares present on the target.

I connected to the **anonymous** share and downloaded a file called **log.txt**

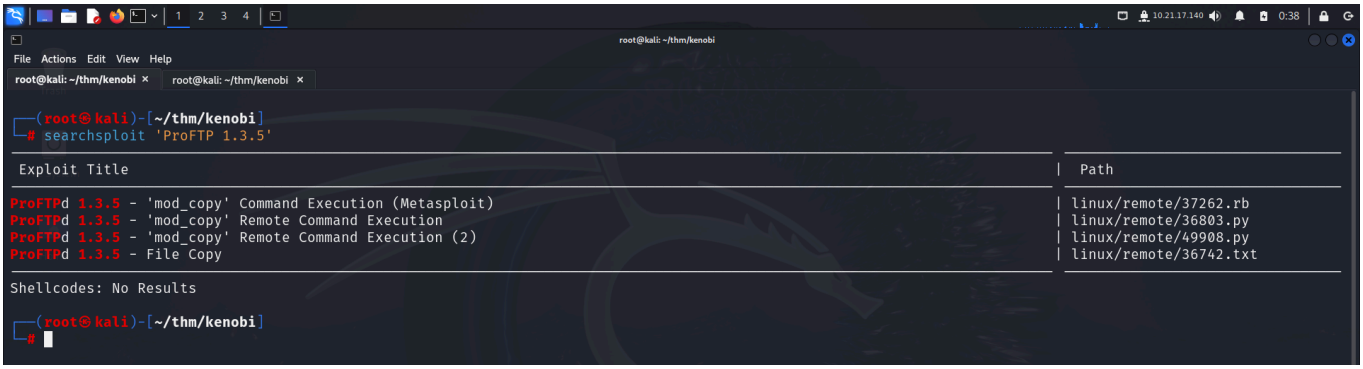
```
smbclient //10.10.146.176/anonymous
ls
get log.txt log.txt
```

The logs file revealed interesting information like a user, path to their ssh key etc.

I then checked the directory that was shared by the target over **nfs**



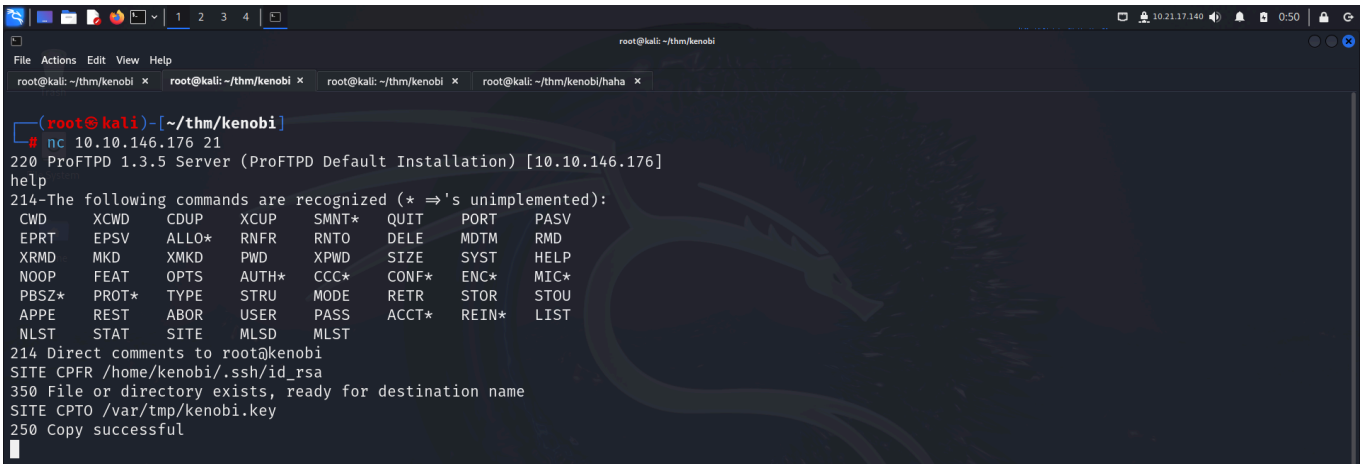
I then searched **exploit-db** for exploits related to the **ftp** version running on the target.



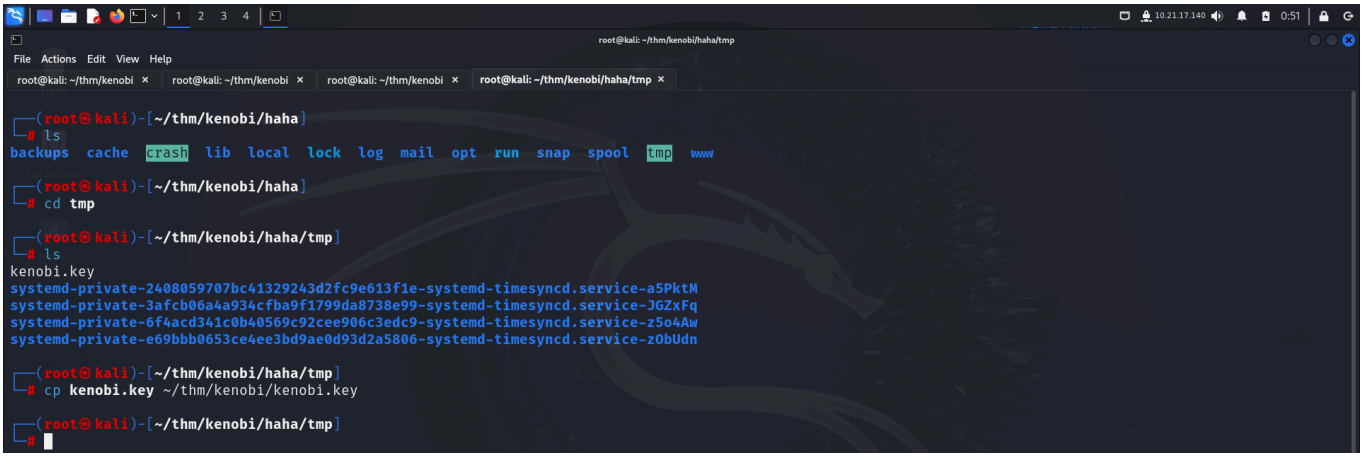
I downloaded the exploit information on my system and analyzed it.

The file revealed that the **ftp** version running on the target allowed unauthenticated clients to copy files and paste files within the system. Since I had discovered the `/var` folder to be mounted over **nfs**, I created a directory and mounted it to the server so that I could access the files inside `/var` directory.

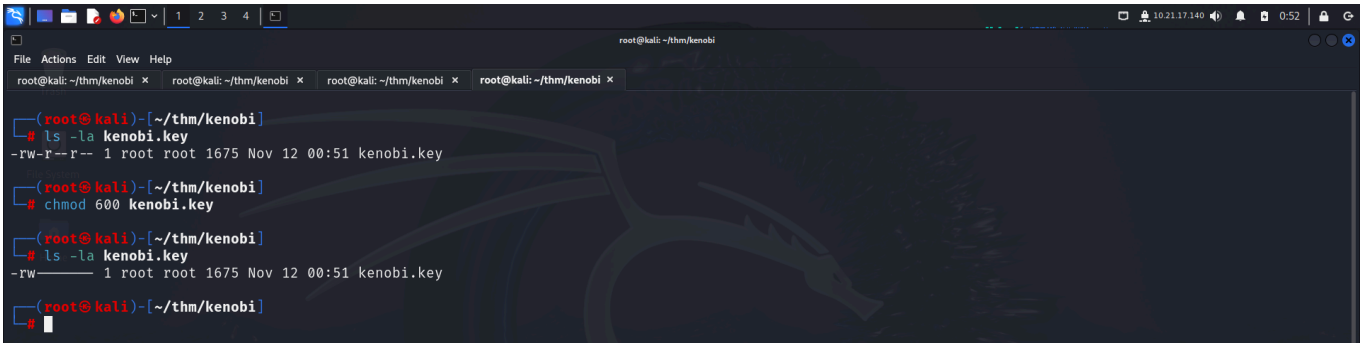
After that, I followed the instructions given in the POC. I connected to the **ftp** server using **nc** and used the `SITE CPFR` to copy **kenobi's** private key and `SITE CPTO` to paste it in the `/var/tmp` directory.

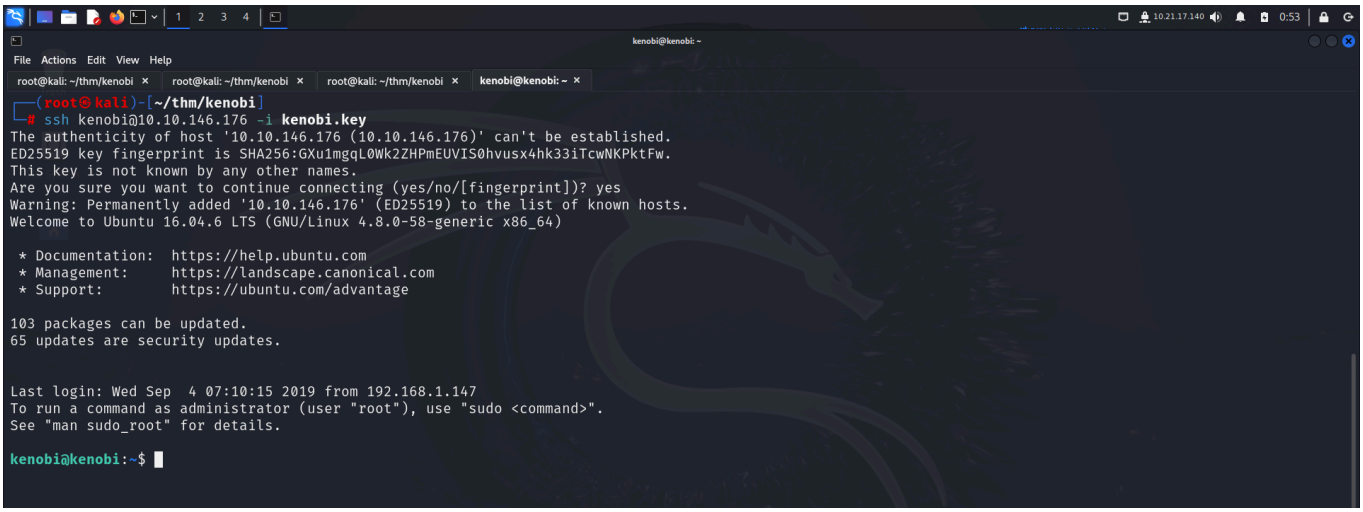


I then copied the private key onto my system from the **nfs** mounted directory.

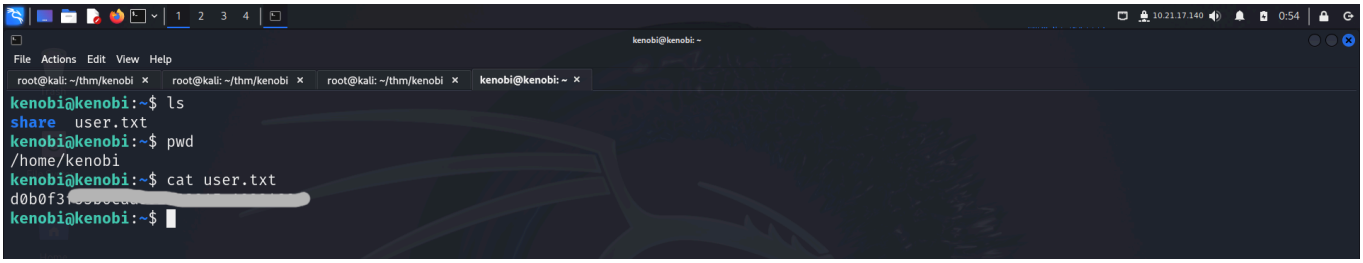


I fixed the file permission and logged into the target as **kenobi** via **ssh**.





I then captured *user.txt* from `/home/kenobi`.

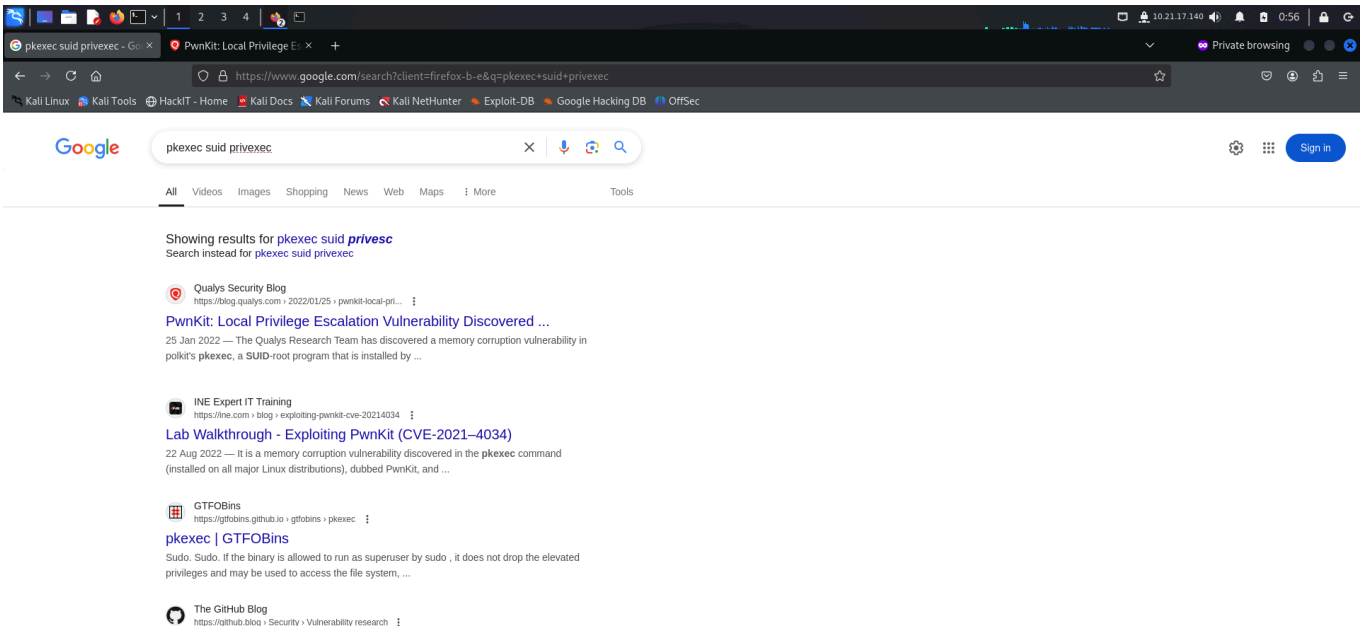


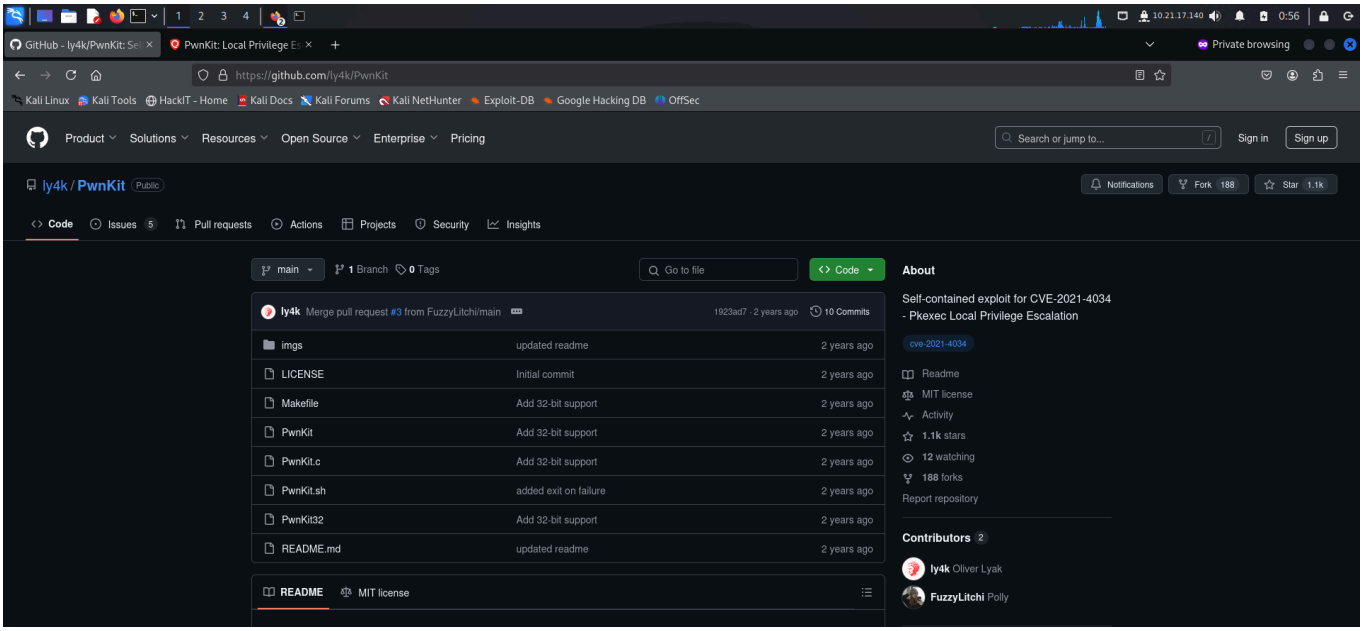
PRIVILEGE ESCALATION : EXPLOITING PKEXEC

I listed binaries with **suid** bits using the following command:

```
find / -user root -perm -u=s -ls 2>/dev/null
```

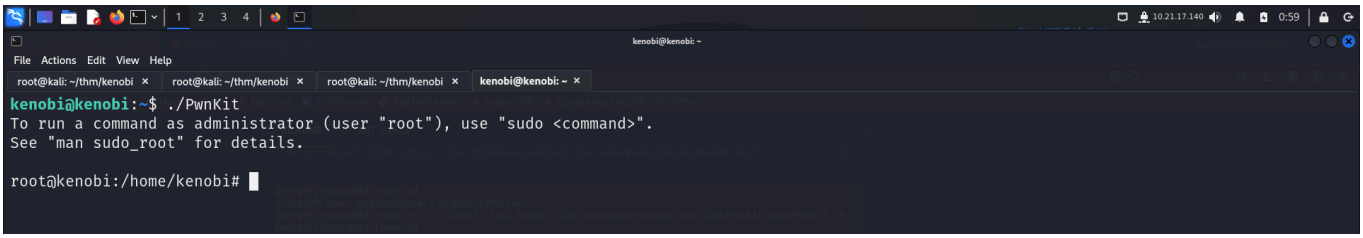
Here I found **pkexec**. Since I had faced exploited this binary in the past, I googled the **pwnkit exploit**.



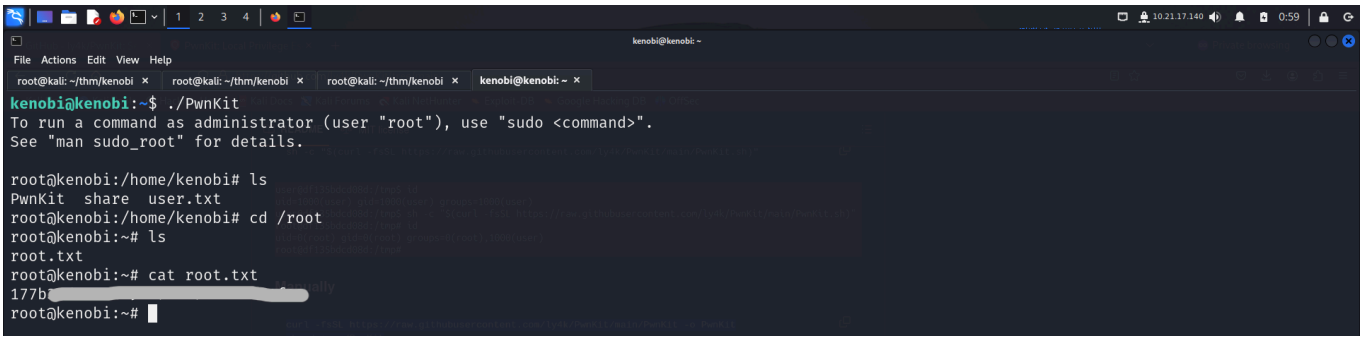


From the **github** repo, I downloaded it onto my system and transferred it to the target.

Upon executing the exploit, I got **root** access.

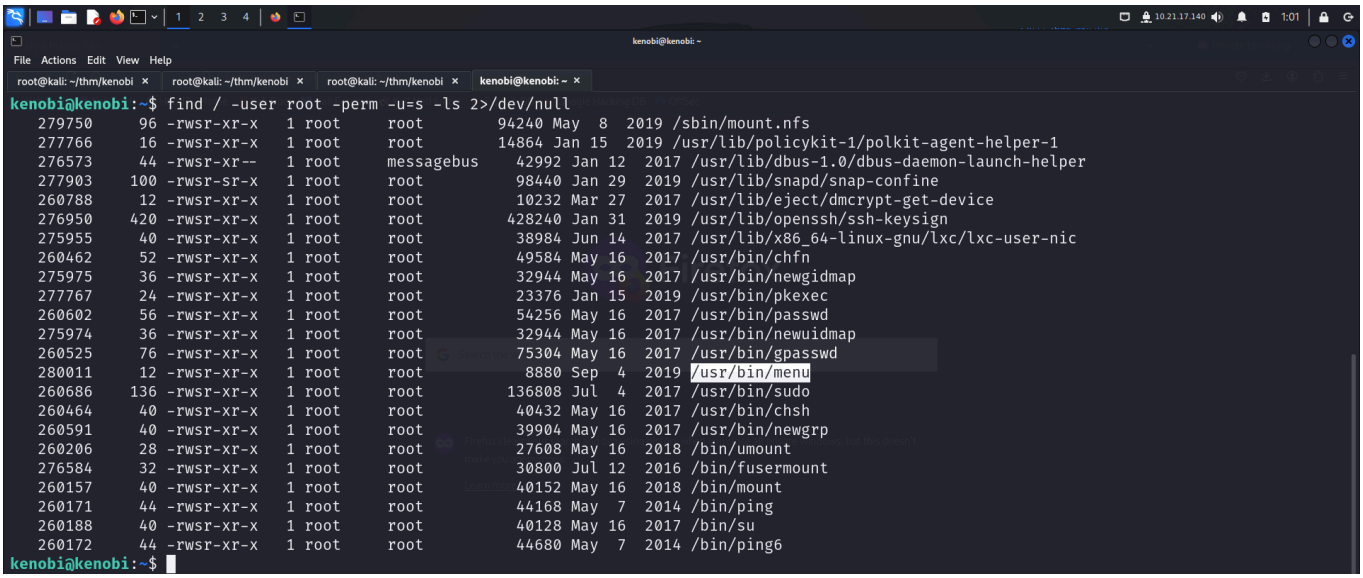


I navigated to the `/root` directory and captured the final flag.

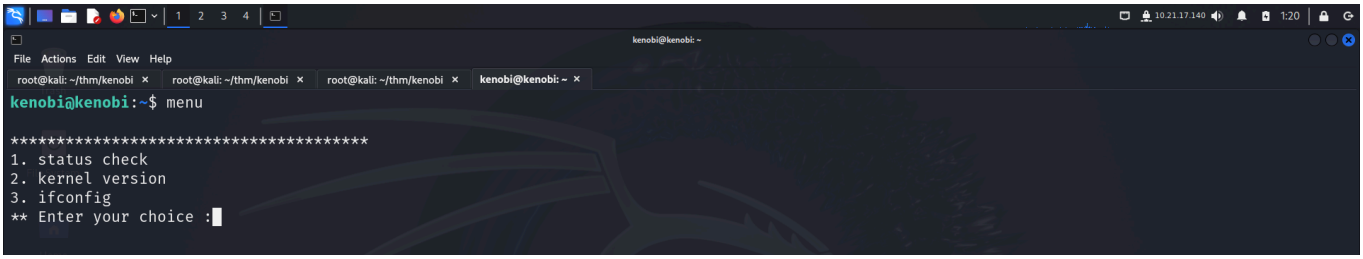


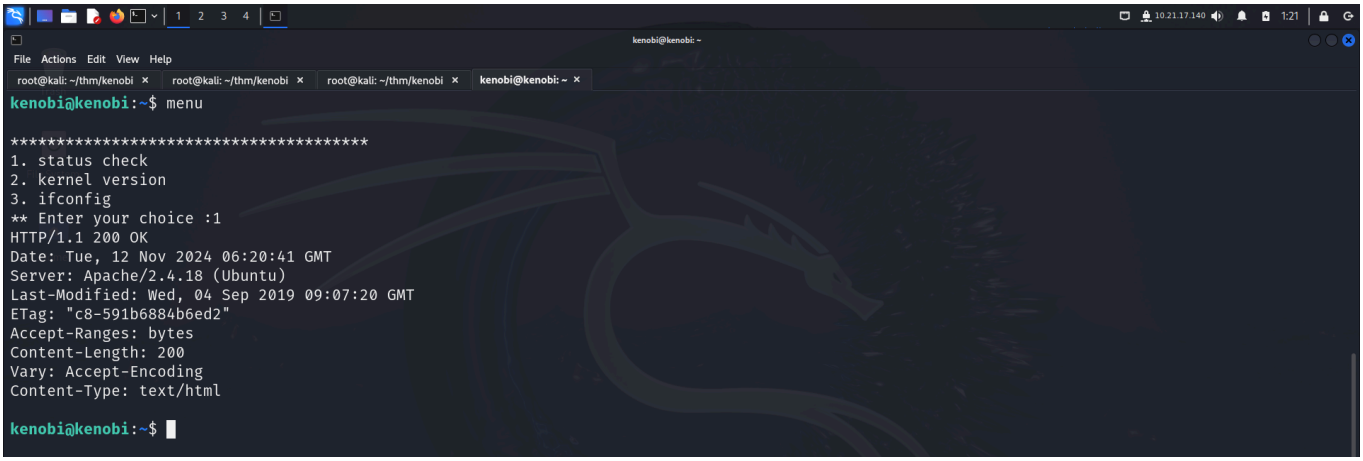
PRIVILEGE ESCALATION : EXPLOITING SUID BIT ON CUSTOM PROGRAM

I looked for binaries with **suid** bit and found a custom binary called **menu**.

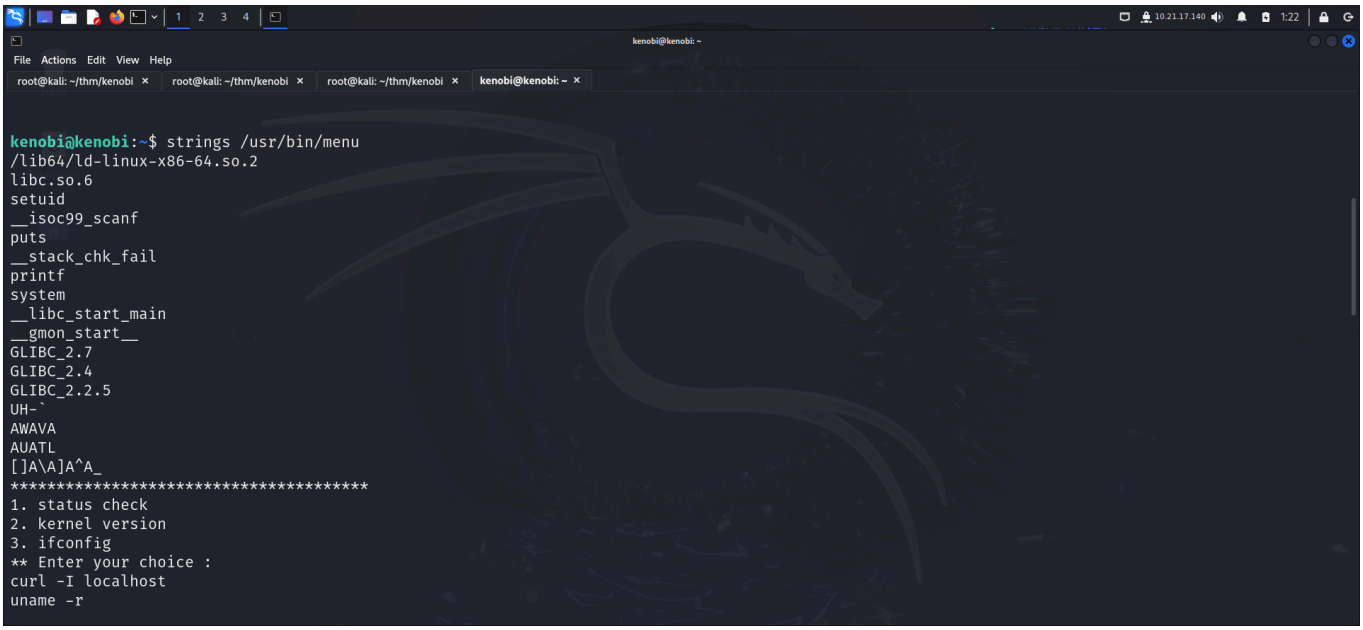


I executed the command to see what it does.

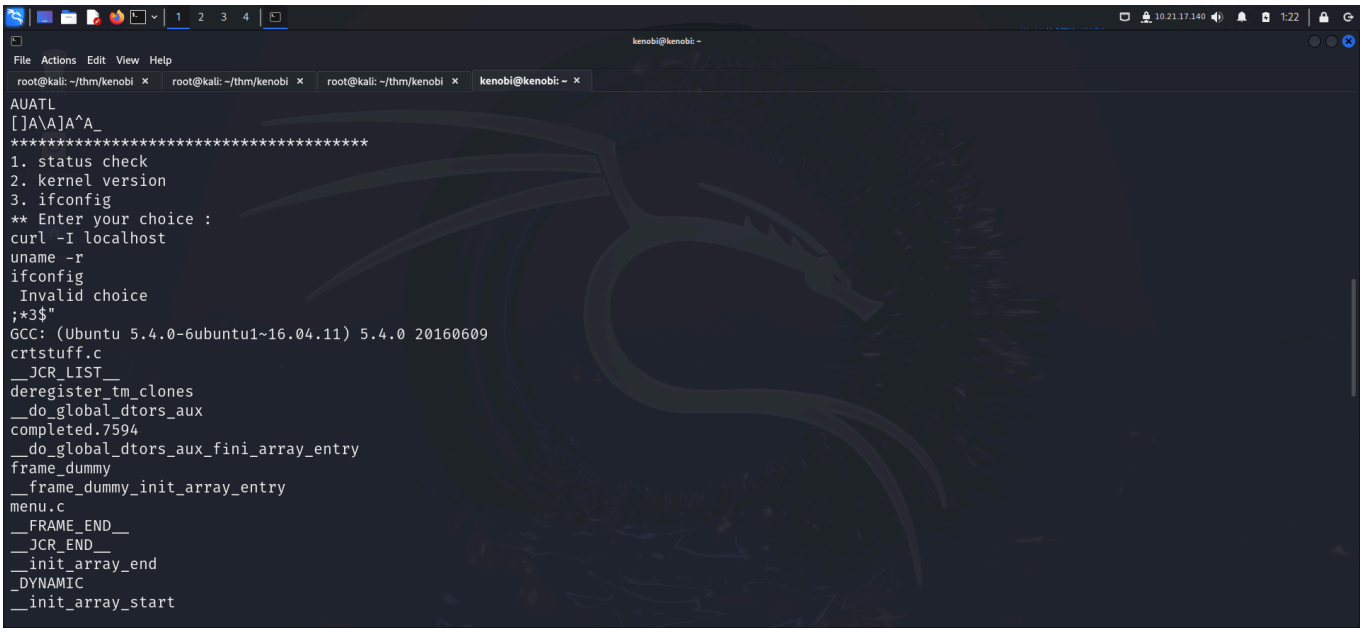




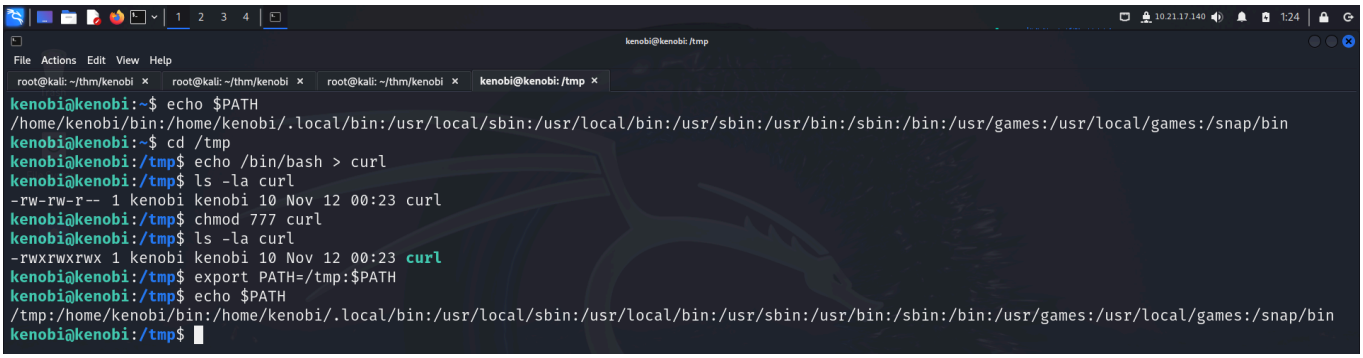
This binary seemed to execute system commands like `ifconfig`, `curl`, `uname` etc in the backend. So I used **strings** to analyze the strings present in the binaries.



Here I found that based on the option selected by the user, it directly execute the system command without providing a complete path to the binary.



I could leverage this vulnerability to modify the system path and become a root user. So, I created a custom binary called **curl** and added it at the start of the **PATH** variable. Hence, if I would execute that particular command through the **menu** binary, I would get **root** access.



I executed the **status check** option and got **root** access.

CONCLUSION

Here's a brief summary of how I pwned **kenobi**:

- The **nmap** scan revealed **ssh, ftp, smb, nfs** and **http** service running on the target.
- Here's how I used them to get initial access:
  - **smb** server had a share that allowed anonymous access. Through this, I got a log file that revealed user and their **ssh** key path.
  - **ftp** server was vulnerable and allowed unauthenticated users to copy and paste files within the system.
  - **nfs** server had the `/var` directory mounted.
  - The **ftp** vulnerability was exploited to copy **kenobi's** private key to the directory mounted over **nfs**.
  - This private key was used to then log in as **kenobi**
- I then captured the first flag from **kenobi's** home directory.
- I then listed the binaries with **suid** bits and found 2 ways to become root:
  - I could exploit **pkexec** using **pwnkit** and get **root** access.
  - I could exploit the custom binary with **suid** bit that executed system commands without specifying the complete path to it.
- Finally I captured the final flag from `/root` directory.

That's it from my side!
Happy Hacking :)