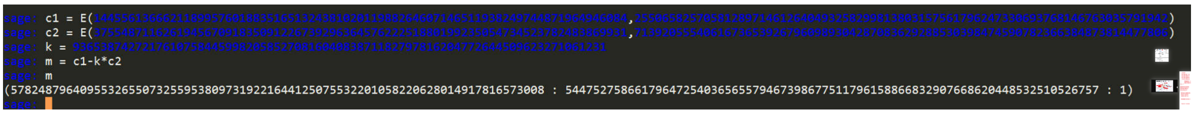
CRYPTO

ECC

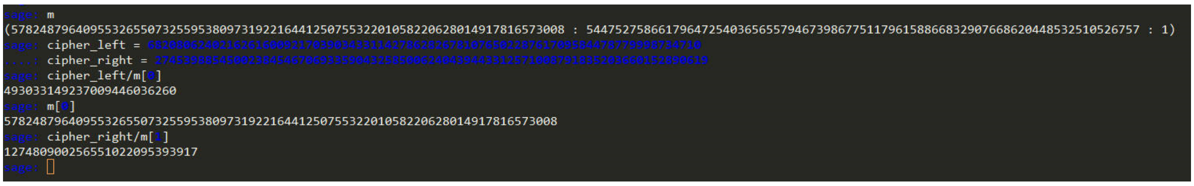
这道题其实主要是要使用一个软件叫SageMath ，当时我刚把软件下好就有人做出来了，，，az

然后就是网上搜一下，很快就出来了，是一个叫椭圆曲线加密的东西。



```
sage: c1 = E(14455613666211899576018835165132438102011988264607146511938249744871964946084,25506582570581289714612640493258299813803157561796247330693768146763035791942)
sage: c2 = E(37554871162619456709183509122673929636457622251880199235054734523782483869931,71392055540616736539267960989304287083629288530398474590782366384873814477806)
sage: k = 93653874272176107584459982058527081604083871182797816204772644509623271061231
sage: m = c1-k*c2
sage: m
(57824879640955326550732559538097319221644125075532201058220628014917816573008 : 54475275866179647254036565579467398677511796158866832907668620448532510526757 : 1)
sage: 
```

根据公式得出m的值



```
sage: m
(57824879640955326550732559538097319221644125075532201058220628014917816573008 : 54475275866179647254036565579467398677511796158866832907668620448532510526757 : 1)
sage: cipher_left = 68208062402162616009217039034331142786282678107650228761709584478779998734710
....: cipher_right = 27453988545002384546706933590432585006240439443312571008791835203660152890619
sage: cipher_left/m[0]
4930331492370094460362 60
sage: m[0]
57824879640955326550732559538097319221644125075532201058220628014917816573008
sage: cipher_right/m[1]
127480900256551022095393917
sage: 
```

再直接可以算出cipher的左右值，，这里注意，这里÷不是简单的数学除法，需要放在软件里用专门的算法去做除法，才可以算出正确的值

最后写两句Python代码就结束了

c2s函数不多讲

PRNG

这个题本质上是一个伪随机的题目，网上找到脚本，直接可以通过算法预测出随机序列，直接放代码，不多讲

```
import gmpy2
from Crypto.Util.number import bytes_to_long, getPrime, long_to_bytes
from random import randrange
from PRNG import PRNG
from libnum import s2n, n2s
from random import Random


def invert_right(m, l, val=''):
    length = 32
    mx = 0xffffffff
    if val == '':
        val = mx
    i, res = 0, 0
    while i * l < length:
        mask = (mx << (length - l) & mx) >> i * l
        tmp = m & mask
        m = m ^ tmp >> l & val
        res += tmp
        i += 1
    return res


def invert_left(m, l, val):
    length = 32
    mx = 0xffffffff
    i, res = 0, 0
    while i * l < length:
        mask = (mx >> (length - l) & mx) << i * l
        tmp = m & mask
        m ^= tmp << l & val
        res |= tmp
        i += 1
    return res


def invert_temper(m):
    m = invert_right(m, 18)
    m = invert_left(m, 15, 4022730752)
    m = invert_left(m, 7, 2636928640)
    m = invert_right(m, 11)
    return m


def clone_mt(record):
    state = [invert_temper(i) for i in record]
    gen = Random()
    gen.setstate((3, tuple(state + [0]), None))
    return gen


prng = [888058162, 3094055443, 1404990361, 1012543603, 448723884, 2580444236,
201608779, 1062995809, 1348787313,
        2980019361, 2245025385, 494977308, 4042503808, 275744301, 406611131,
142226472, 3871761759, 3888795536,
        2617489687, 1220227074, 342928858, 3728958896, 1477077966, 1433151407,
1119405037, 330145973, 3547181160,
        2123007249, 3739964132, 1794129718, 2739743522, 2291585121, 3013727731,
1536788463, 247633572, 408079265,
        3025555185, 1604681922, 2848997116, 3646041955, 1059445774, 2849764176,
2638965889, 1232303180, 759521642,
        2257008531, 3932082254, 1052428413, 4017559916, 3505694223, 1418363972,
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        245251422, 1964323108, 2453472918, 3029032760, 323619451, 2548825339,
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        245705463,
        4173686519, 4100831820, 3599257115, 2274885516, 3954736394, 198254482,
1050449178, 3933150558, 899220021,
        597474632, 1823539097, 3340511318, 2144918682, 2310527451, 264391694,
69923676, 3266017310, 3199627722,
        4035962745, 932969905, 2832951013, 2182887504, 1374919242, 2978944795,
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        4255542321, 804377010, 1286980519, 1980427321, 2893246724, 1745353148,
1406140332, 4101848568, 3227434698,
        1869729934, 2638181242, 1270111849, 2387910792, 3411542702, 2793303435,
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        1043274549, 144911746, 2312236858, 780373658, 1527499811, 3402753408,
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        3102913460, 4098715316, 154916530, 2890197932, 1441566957, 2368779800,
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        316480679, 603893066, 2121889912, 4208763743, 3098334580, 721958838,
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        2276817394, 981553190, 246940442, 1069231974, 3275216531, 58945988,
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        1660331651, 958648594, 305711662, 75621441, 548447557, 2473842353,
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        815198061,
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        364292705, 3802247898, 3122264959, 186651829, 2789447523, 797964681,
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        2298656231, 3446738535, 290996369, 3020977553, 849241175, 3469792522,
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        2672368219, 1983461371, 3579663373, 1969195060, 225618775, 653511251,
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        1503462948, 3017762189, 263481701, 1754772485, 869168639, 604192231,
498759780, 2602535702, 3346756344,
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1968629992, 2854677838, 2381566661,
        3144829468, 519547510, 3058642603, 3944140819, 1248923220, 1050321901,
3218172519, 376999645, 184187381,
        3837095155, 3363256702, 751966993, 3419533016, 4028456468, 1156797460]

result = [3437104340, 508103176, 1635844121, 878522509, 1923790547, 1727955782,
1371509208, 3182873539, 156878129,
          1757777801, 1472806960, 3486450735, 2307527058, 2950814692,
1817110380, 372493821, 729662950, 2366747255,
            774823385, 387513980, 1444397883]

g = clone_mt(prng[:624])
random_dict = []
for i in range(7000):
    random_dict.append(g.getrandbits(32))

# print(s2n("hgam") ^ 3437104340)
for i in range(len(random_dict)):
    if s2n("hgam") ^ 3437104340 == random_dict[i]:
        print(i)
        jiemi = random_dict[i:i + 21]
        s = []
        flag = ''
        for i in range(len(result)):
            s.append(result[i] ^ jiemi[i])
            flag += str(n2s(result[i] ^ jiemi[i]))
        print(flag.replace("b'", "").replace("'",""))
```
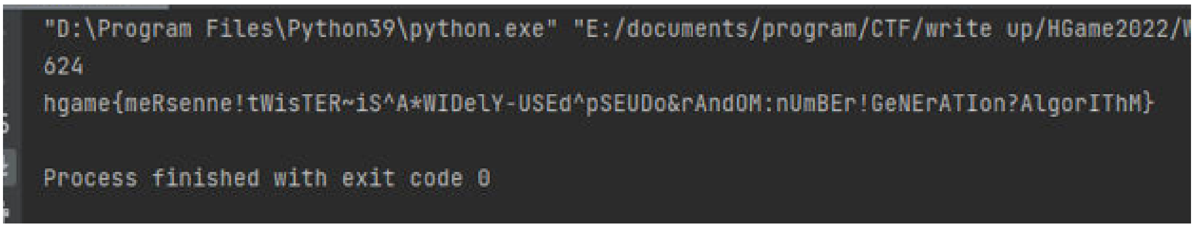



```
"D:\Program Files\Python39\python.exe" "E:/documents/program/CTF/write up/HGame2022/
624
hgame{meRsenne!tWisTER~iS^A*WIDelY-USEd^pSEUDo&rAndOM:nUmBEr!GeNErATIon?AlgorIThM}

Process finished with exit code 0
```

Misc

CTF好难啊

这道题我没做出来，但是还是想吐槽一下，，

这题是让我比较难受的，因为我从一开始看的一道题目到最后都没有做出来，，花了我不下8 9个小时了

这道题其实还算是简单的，毕竟是最多人做出来的Misc，最后输在了空间想象能力上

题目就是给了一个压缩包，然后我想着去分离文件嘛，结果分离出来了一个压缩包和一个.png图片

然后通过apng的软件分离出来了两张图片，不用想直接盲水印，出来了压缩包密码(此处耗费5天时间)

然后是4张图片，我硬是拼了2天，没拼出来，，无数次认为题目附件有问题，，，但是最终还是我自己的问题，，

主要问题是卡在注册点上了，我一直以为就那一种解法，然后就跳不出思维定势了，，究其原因还是空间想想能力不足，唉，，痛失450分。。。

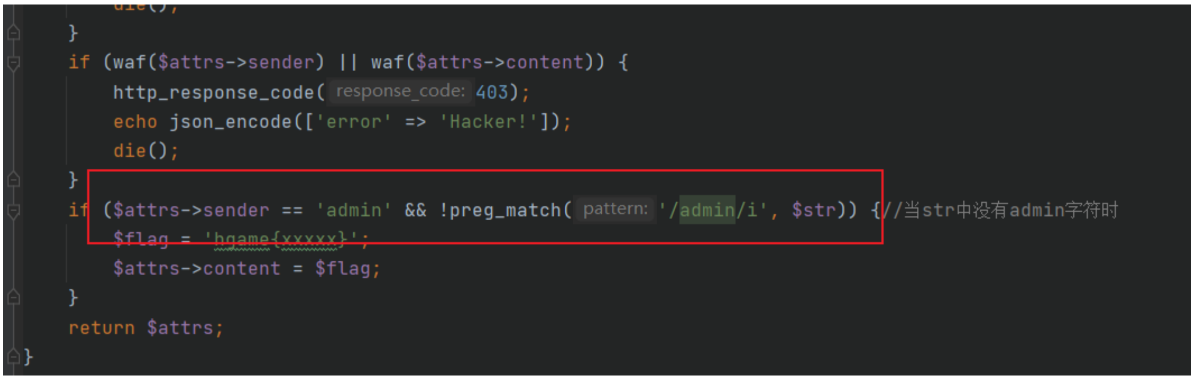
Web

这周Web我也是属于摆烂了的，主要是时间被上面的那个Misc题全耗光了，，

只完成了一个比较简单的

Comment

在网站目录可以看到源码，提炼了一下信息，发现主要是要绕过这个：



```
        die();
    }
    if (waf($attrs->sender) || waf($attrs->content)) {
        http_response_code( response_code: 403);
        echo json_encode(['error' => 'Hacker!']);
        die();
    }
    if ($attrs->sender == 'admin' && !preg_match( pattern: '/admin/i', $str)) {//当str中没有admin字符时
        $flag = 'hgame{xxxxx}';
        $attrs->content = $flag;
    }
    return $attrs;
}
```

这里判断了$attrs中的sender要等于admin，但是str正则中不能出现admin，emmm

尝试了很多绕过方法，但是都以失败告终

1：不能用SQL注入，因为使用了ORM模板

2：preg_match('/admin/i', $str) 这个正则可以说是PHP中最严格的正则了，我网上搜了很多方法都不行

3： ==有弱类型，但是不能用于绕过字符串

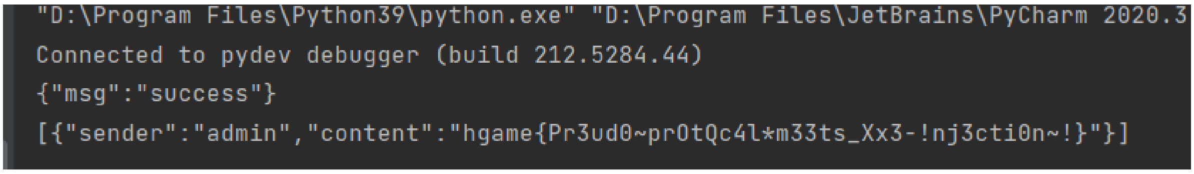
emm后来提示说要用到php伪协议，，这，，

去查呗，结果又搞了半天，还是搞不出来，

就当我打算放弃时，突然想试试这个：

```
<comment><sender>a<sender>d</sender>dmin</sender><content><sender>hahah</sender></content></comment>
```

就是在sender中嵌套sender，结果真给我成功了？



```
"D:\Program Files\Python39\python.exe" "D:\Program Files\JetBrains\PyCharm 2020.3
Connected to pydev debugger (build 212.5284.44)
{"msg":"success"}
[{"sender":"admin","content":"hgame{Pr3ud0~pr0tQc4l*m33ts_Xx3-!nj3cti0n~!}"}]
```

？？？

emmm说好的要用到伪协议的呢？可能是用到了我没察觉到吧！

也可能这是一个非预期，，如果是的话，官方爸爸看到了别忘了来加点分(doge)