

20220207-CTF-MISC-第11题--- base64隐写--附带脚本

原创

qq_51550750



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[攻防世界 - MISC新手区 - 第11题 - base64隐写](#)

难度系数： ★★★★★ 5.0

题目来源：[olympicCTF](#)

题目描述：菜狗经过几天的学习，终于发现了如来十三掌最后一步的精髓

题目场景：暂无

题目附件：[附件1](#)

题目已答对

分享wp点赞赚金币哦

[马上去写](#)

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下载之后解压，是stego.txt

stego.txt

a2eb7ceaf5ab49f7acb33de2e7eed74a.zip

打开stego.txt

stego.txt

```
U3RlZ2Fub2dyYXBoeSBpcyB0aGUgYXJ0IGFuZCBzY2llbmNlIG9m
IHdyaXRpbmcgaGlkZGVuIG1lc3NhZ2VzIGluIHN1Y2ggYSB3YXKgdGhhCBubyBvbmv=
LCBhcGFydCBmcn9tIHRoZSBzzW5kZXIgYW5kIGludGVuZGVkIHZlY2lwaWVudCwgc3VzcGU=
Y3RzIHRoZSBleGlzdGVuY2Ugb2YgdGhlIG1lc3M=
YwdllCBhIGZvcm0gb2Ygc2VjdXJpdHkgdGhyb3VnaCBvYnjdXJpdHkuIFS=
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dmVzWQgb3IgcHJvdGVjdgVkiIiwgYW5kIGdyYXBoZWluIG1lYW5pbmcgInRvIHc=
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IGFkdmFudGFnZSBvZiBzdGVnYW5vZ3JhcGh5LCBvdmyIGNy
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```

cyBtYXkgaw5jbHVkZSBzdGVnYW5vZ3JhcGhpYyBjb2RpbmcaW5zaZ==
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ZSwgcHJvZ3JhbSBvcibwcm90b2NvbC4gTWkaWEg

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显然是base64编码之后的结果，base64解码，我还百度翻译了一下，也没什么发现。

The screenshot shows the Baidu Translate app interface. At the top, there are language selection dropdowns for "English" to "中文(简体)" and a "通用领域" (General) button. The main content area displays the following text:

Steganography is the art and science of writing hidden messages in such a way that no one, apart from the sender and intended recipient, suspects the existence of the message, a form of security through obscurity. The word steganography is of Greek origin and means "concealed writing" from the Greek words steganos meaning "covered or protected", and graphein meaning "to write". The first recorded use of the term was in 1499 by Johannes Trithemius in his Steganographia, a treatise on cryptography and steganography.

Below this, a red warning message reads: "翻译字数限制为5000字，“s p”及其后面没有被翻译!"

The translated Chinese text is as follows:

隐写术是信息的艺术和科学
以这样一种方式写隐藏的信息
，除了发送者和预期接收者之外
这就是混乱的存在
年龄，一种通过默默无闻获得的安全感。T
隐写术这个词起源于希腊语，意思是“concea”
led书写“源自希腊语单词steganos意为”co
“被保护或保护的”，其含义是“对w”

At the bottom right of the app interface, there are buttons for "试试文档翻译" (Try Document Translation), "划译" (Handwritten Translation), and "CSDN @qq_51550750".

于是想办法，因为没有MISC的基础，就去看了WP，知道是base64隐写。于是查阅资料了解了一下。

base64隐写的原理

(1) 起因：

俄罗斯有个叫 Olympic_ctf 的 CTF，在 2014 年有道 misc 题是关于 Base64 的隐写题。

大意就是给了你一段字符串，让你找 flag。

这里放上字符串，便于读者实验

U3R1Z2Fub2dyYXBoeSBpcyB0aGUgYXJ0IGFuZCBzY21lbnN1IG9m
IHdyaXRpbmcgaGlkZGVuIG11c3NhZ2VzIGluIHN1Y2ggYSB3YXkgdGhhCBubyBvbmr=

LCBhcGFydCBmcm9tIHRoZSBzW5kZXIGYw5kIGludGVuZGVkIHZlY21waWVudCwg3VzcGU=

Y3RzIHRoZSBleGlzdGVuY2Ugb2YgdGh1IG11c3M=

Ywd1LCBhIGZvcm0gb2Ygc2VjdXJpdHkgdGhyb3VnaCBvYnNjdXJpdHkuIFS=

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IERpY2tpbnNvbiwg2VudCpbmZvcm1hdGlvbiB0byBhY2NvbW1vZGF0aW9=
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cHRpdmUgYnkgdGh1IE5vcnRoIEtvcvbm5uIEluIG90aGVyIHBob3Rv
cyBwcmVzZW50ZWQgdG8gdGh1IFVTLCBjcmV3IG1lbWJ1cnMgZ2F2ZSAidGh1IGZpbmdlciIgdG8g
dGh1IHVuc3VzcGVjdgLuzyB0b3J0aCBLb3J1Yw5zLCBpb1BhbiBhdHrlbXB0IHRvIE==
ZG1zY3J1ZG10IHNob3d1ZCB0aGVtIHNtaQ==
bGluZyBhbmQgY29tZm9ydgF1bGUuDQoNCi0tDQpodHRwOi8vZW4ud21raXB1ZG1hLm9yZw==
L3dpa2kvU3R1Z2Fub2dyYXBoeQ0K

(2) 复习base64编码

Base64 Encoder/Decoder

BASE64 是一种编码方式, 是一种可逆的编码方式.

编码后的数据是一个字符串, 包含的字符为: A-Za-z0-9+/-

共 64 个字符: $26 + 26 + 10 + 1 + 1 = 64$

其实是 65 个字符, = 是填充字符.

64 个字符需要 6 位二进制来表示

$$2^5=32$$

$$2^6=64$$

表示成数值为 0~63.

索引	对应字符	索引	对应字符	索引	对应字符	索引	对应字符
0	A	17	R	34	i	51	z
1	B	18	S	35	j	52	0
2	C	19	T	36	k	53	1
3	D	20	U	37	l	54	2
4	E	21	V	38	m	55	3
5	F	22	W	39	n	56	4
6	G	23	X	40	o	57	5
7	H	24	Y	41	p	58	6
8	I	25	Z	42	q	59	7
9	J	26	a	43	r	60	8
10	K	27	b	44	s	61	9
11	L	28	c	45	t	62	+
12	M	29	d	46	u	63	/
13	N	30	e	47	v		
14	O	31	f	48	w		
15	P	32	g	49	x		
16	Q	33	h	50	y		

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比如, 字符串"Rascals"经过 Base64 编码后变为"UmFzY2Fscw=="

ASCII二进制表示	R	a	s	c	a	l	s	为了凑足一个字节，再补4个0 0000 0000	补了两个0之后，还得补6个0 00 000000
六个为一组	010100	100110	000101	110011	011000	110110	000101	101100 011100	11(0000)
转为十进制	20	38	5	51	24	54	5	44	28 48
查表	U	m	F	z	Y	2 F	s	c	w

上面的图，完整展示了为什么转化后面会多出两个=，原因是后面补了两个000000

概括来说，出现等号是因为：

需在原数据二进制值后面添加零，使其字节数是 6 的倍数。

然后，在编码后的字符串后面添加 1 个或 2 个等号"="，表示所添加的零值字节数。

按照上面的逻辑，同理：

长度为 3 个字节的数据经过 Base64 编码后就变为 4 个字节 38=64

(3) base64 隐写原理

从Base64编码的原理可得Base64解码的过程：

丢掉末尾的所有‘=’；

每个字符查表转换为对应的6位索引，得到一串二进制字符串；

从头开始，每次取8位转换为对应的ASCII字符，如果不足8位则丢弃。

以上面刚才用到的例子：

字符串 "Rascals" 经过 Base64 编码后变为 "UmFzY2Fscw=="

做解析：

UmFzY2Fscw== 首先丢掉末尾的==，得到UmFzY2Fscw

然后 每个字符查表转换为对应的6位索引

后面的完整过程如下：

1	U	m	F	z	Y	2	F	s	c	w
2	20	38	5	51	24	54	5	44	28	48
3	010100	100110	000101	110011	011000	110110	000101	101100	011100	110000
4	01010010	01100001	01110011	01100011		01100001	01101100		01110011	0000
5	最后的 4个0 去掉									
6	01010010	01100001	01110011	01100011		01100001	01101100		01110011	
7	转化成ASCII:									
8	R	a	s	c	a	l	s			
9	CSDN @qq_51550750									
10										
11										
12										

在解码的过程中，会有部分数据被丢弃（即不会影响解码结果），这些数据正是我们在编码过程中补的0

也就是说，如果我们在编码过程中不全用0填充，而是用其他的数据填充，仍然可以正常编码解码，因此这些位置可以用于隐写。

解开隐写的方法就是将这些不影响解码结果的位提取出来组成二进制串，然后转换成ASCII字符串。

(4) base64隐写脚本（解密）

python脚本：

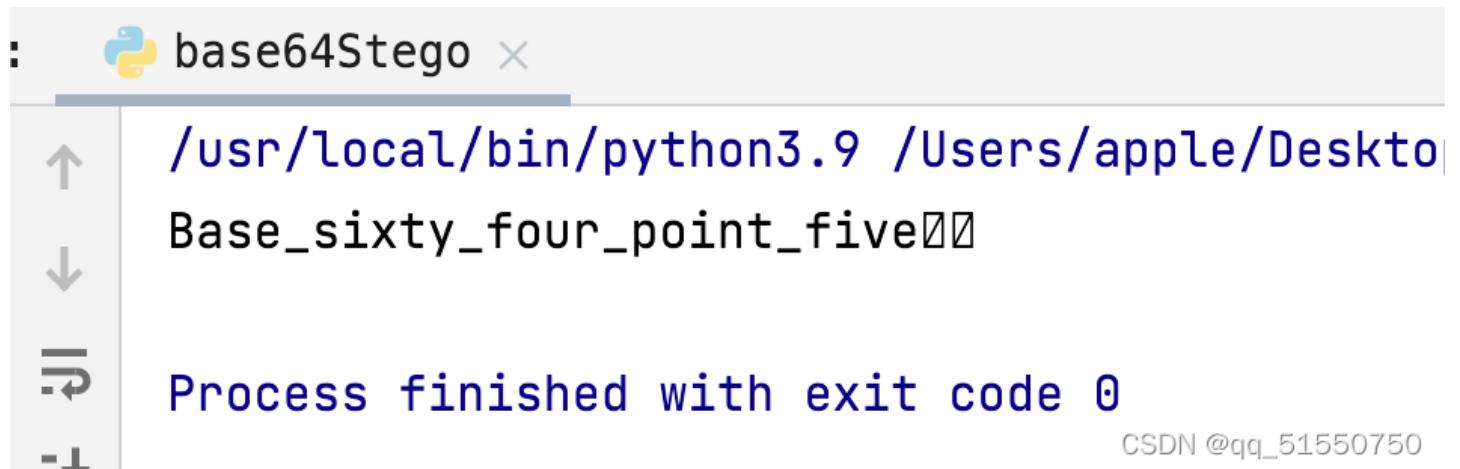
```
d= '''U3R1Z2Fub2dyYXBoeSBpcyB0aGUgYXJ0IGFuZCBzY21lbnN1IG9m  
IHdyaXRpbmcgaGlkZGVuIG1lc3NhZ2VzIGluIHN1Y2ggYSB3YXkgdGhhCBubyBvbmV=  
LCBhcGFydCBmc9tIHRoZSBzzW5kZXigYW5kIGludGVuZGVkIHN1Y21wawVudCwg3VzcGU=  
Y3RzIHRoZSBleGlzdGVuY2Ugb2YgdGh1IG1lc3M=  
Ywd1LCBhIGZvcm0gb2Ygc2VjdXjpdHkgdGhyb3VnaCBvYnNjdXjpdHkuIFS=  
aGUgd29yZCBzdGVnYW5vZ3JhcGh5IG1zIG9mIEdyZWVrIG9yaWdpbiBhbmqgbWVhbnMgImNvbmn1YW==  
bGVkIHdyaXRpbmcIGZyb20gdGh1IEdyZWVrIHdvcnRzIHN0ZWhbm9zIG11YW5pbmcgImNv  
dmVyZWQgb3IgcHJvdGVjdgVkiIwgYW5kIGdyYXBoZWluIG11YW5pbmcgInRvIHc=  
cm10ZSIuIFRoZSBmaXJzdCBzYWNvcmRlZCB1c2Ugb2YgdGh1IHR1cm0gd2FzIGluIDE00TkgYnkgSm9o  
YW5uZXMGVHJpdGhlbw1cyBpbiBoaXMgU3R1Z2Fub2dyYXBoaWEsIGEgdHJ1YV==  
dGlzzSBvbiBjcnlwG9ncmFwaHkgYW5kIHN0ZWhbm9ncmFwaHkgZG1zz8==  
dw1zzWQgYXMGYSBib29rIG9uIG1hZ21jLiBHZW5lcmFsbHksIG1lc3P=  
YWdlcyB3aWxsIGFwcGVhciB0byBiZSBzb21ldGhpbmCGZwxzTogaW1hZ2VzLCBhcnRp  
Y2x1cywgc2hvcHBpbmcgbGlzdHMsIG9yIHNvbWUgb3R=  
aGVyIGNvdmVydGV4dCBhbmsQsIGNsYXNzaWnhbGx5LCB0aGUgAglkZGVuIG1lc3NhZ2UgbWF5IGj1IGluIGludmm=  
c21ibGugaW5rIGJ1dHdlZw4gdGh1IHZpc21ibGugbGluzXmgb2YgYSBwcm12YXR1IGxl4NCg0KVGH1  
IGFkdmFudGFnZSBvZiBzdGVnYW5vZ3JhcGh5LCBvdmVyIGNy  
eXB0b2dyYXBoeSBhbG9uZSsgaXMgdGhhCBtzXnzYwd1cyBkbyBub3QgYXR0cmFjdBhdHR1bnRpb25=  
IHRvIHRoZW1zzWx2ZXMuIFBsYWlubHkgdmlzaWjsZSB1bmNyeXB0ZWQgbWVzc2FnZXOxbm8gbWF0dGVyIF==  
aG93IhvuyNj1YwthYmx1l3dpbGwgYXJvdXN1IHn=  
dXNwaWNpb24sIGFuZCBtYXkgaW4gdGh1bXN1bHZlcyBzSBpbmNyaW1pbmF0aW5nIP==  
aW4gY291bnRyaWVzIHDoZXJ1IGVuY3J5cHRpb24gaXMgaWxsZWhbmC4gVGh1cmVm3J1LH==  
IHdoZXJ1YXMgY3J5cHRvZ3JhcGh5IHBByb3R1Y3RzIHRoZSBjb250ZW50cyBvZj==  
IGEgbWVzc2FnZSwg3R1Z2Fub2dyYXBoeSBjYW4gYmUgc2FpZCB0byBwcm90ZWn0IGj=br/>b3RoIG1lc3NhZ2VzIGFuZCBjb21tdW5pY2F0aW5nIHBhcnRpZXMuDQoN10ZWhbm9ncmFwaHkgaw5jbHW=  
ZGVzIHRoZSBjb25jZWfsbWudCBvziBpbmZvcm1hdGvbib3aXRoaw4gY29t  
cHV0ZXIgZmlsZXMuIEluIGRpZ210YWwgc3R1Z2Fub2dyYXBoeSwgZwx1Y3Ryb25pYyBjb21tdW5pY2F0aW9u  
cyBtYXkgaW5jBhvKzsBzdGVnYW5vZ3JhcGhpYyBjb2RpbmcgaW5zaZ==  
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ZSwgcHJvZ3JhbSBvciBwcm90b2NvbC4gTWVkaWEg  
ZmlsZXMGYXJ1IGlkZWFsIGZvciBzdGVnYW5vZ3JhcGhpYyB0cmFuc21pc3Npb+=  
biBiZWNhdXN1IG9mIHRoZWlyIGxhcmdlIHNpemUuIEFzIB==  
YSBzaW1wbUGzXhhbXBsZSwgYSBzZw5kZXigbWlnaHQgc3RhcnQgd210aCBh  
biBpbm5vY3VvdXMgaW1hZ2UgZmlsZSBhbmqYwRqdXN0IHRoZSBjb2xvcibvZiBldmVyeSAxMDB0aCBwaXhlBCD=  
dG8gY29ycmVzcG9uZCB0byBhIGx1dHrlciBpbib0aGUgYwxaGFizXQsIGF=  
IGNoYW5nZSBzbyBzdWJ0bGUgdGhhCBzb21l251IG5vdCBzcvGjaWZpY2FsbHkgbG9va2luZyBm  
b3IgaXQgaXMgdw5saWt1bHkgdG8gbm90aWn1IG10Lg0KDQpUaGU=br/>IGZpcnN0IHDJ1Y29yZGVkIHN1Y2ggYXMGYSBkb2N1bWVudCBmaWx1LCBpbWFnZSBmaWx=  
YWN1ZCBiYWNrIHRvIDQ0MCBCQyB3aGVuIEh1cm9kb3R1cyBtZw50aW9ucyB0d28gZXhhbXBsZXMgb+=  
ZiBzdGVnYW5vZ3JhcGh5IGluIFRoZSBiaXN0b3JpZXMgb2Yg  
SGVyb2RvdHVzLiBEZW1hcmF0dXMgc2VudCBhIHdhe5pbmcgYJvdXQgYSB=  
Zm9ydgjh21pbmcgYXR0YWNrIHRvIEdyZWVjZSBieSB3  
cm10aW5nIG10IGRpcmVjdGx5IG9uIHRoZSB3b29kZW4gYmFja2luZyBvZiBhIHdheCB0YWjsZXQgYmVm  
b3J1IGFwcGx5aw5nIG10cyBzZWz2F4IHN1cmZhY2UuIFdheCB0YWjsZXZrIHd1cmUgaW4gY29tbW9uIHDVzZV=  
IHRoZW4gYXMGcmV1c2FibGUgd3JpdGluZyBzdXjmYWN1cywgc29tZXRpbWX=  
cyB1c2VKIGZvciBzaG9ydgbbmQuIEFub3RoZXiGw5jaWVudCBleGFtcGx1IGlzIHRoYXQgb9==  
ZiBtaXN0aWFldXMsIHDobyBzaG9ydgbbmQuIEFub3RoZXiGw5jaWVudCBleGFtcGx1IGlzIHRoYXQgb9==  
bGF2ZSBhbmqgdGF0dG9vZWQgYSBtZxNzYwd1IG9uIG10LBBzRnlciBoaXMgaGFpcib0YWQgZ5==  
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Ymx1dHM6IGluIGFuY211bnOgR3J1ZWN1LCBwZW9wbGUgd3JvdGUgbW=
```

c3NhZ2VzIG9uIHRoZSB3b29kLCB0aGVuIGNvdmVyZWQgaXQgd2l0aCB3YXggdXBvbiB3aGljaCBhbipbm5vY2Vu
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Lg0KKiBiawRkZW4gbWVzc2FnZXMb24gbWVzc2VuZ2VjJ3MgYm9keTogYwxzbyB1c2VkiGluIGFuY211bt==
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ZiBhIG11c3NhZ2UgdGF0dG9vZWQgb24gYSBzbGF2ZSdzIHNoYXZ1ZCBoZWFKLCBaoWRkZW4gYnkcdGh1
IGdyb3d0aCBvZiBaoXMgaGFpciwgYW5kIGV4cG9zZWQgYnkcd2hhdm1uZyBaoXMgaGVhZM==
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2/2
dXQgUGVyc21hbiBpbnZh21vb1BwbGFucy4gVGh=
aXMgbW0aG9kIGhhcyBvYnZpb3VzIGRyYXdiYWNrcyz=
IHNIY2ggYXMgZGvsYX11ZCB0cmFuc21pc3Npb24gd2hpbgUgd2FpdGluZyBmb3IgdGh1IHP=
bGF2ZSdzIGHhaX1gdG8gZ3JvdywgYW5kIHRoZSBByZXN0cm1jdGlvbnMgb3==
biB0aGUgbnVtYmVtIGFuZCBzaXplIG9mIG11c3M=
Ywd1cyB0aGF0IGNhbiB1ZSB1bmNvZGVkIG9uZSBwZXJzb24=
J3Mgc2NhbHAuDQoqIEluIFdXSUksIHRoZSBGcmVuY2ggUmVzaXN0YW5jZSBzzW50IHNVbWUgbWVzc2FnZXMd2==
cm10dGvuIG9uIHRoZSBiYWNrccyBvZiBjB3VyaWVycyD=
dXNpbmcgaW52aXNpYmxlIGluay4NCiogSGlkZGVuIG11c3NhZ2VzIG9uIHBhcGVyIHdy
aXR0ZW4gaW4gc2VjcmV0IGlu3MsIHVuZGVyIG90aGVyIG11c3NhZ2Vz
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dGh1b1Brbml0dGvkIGludG8gYSBwaWVjZSBvZiBjB90aGluZyB3K=
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bw1udXR1LLCBhCHByb3hpWF0ZWx5IGx1c3MgdGhhbiB0aGUgc216ZSBvZiB0aGUgcGVyaW9kIHBByb2R=
dWNI1ZCBieSBhIHR5cGV3cm10ZXIuIFdXSUkgbW1jcm9kb3RzIG51ZWR1ZCB0byB1ZSB1bWJ1ZGR1ZB==
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aG1zIHdchyByZWzsZWN0aXZ1IGFuZCB0aHVzIGRldGvjdGFibGUG
Ynkdm1ld2luZyBhZ2FpbnN0IGdsYW5jaW5nIGxpZ2h0LBBbHR1cm5hdG12ZSB0ZWnobmlxdWvzIGluY2x1ZGVk
IGluc2VydGluzyBtaWNYb2RvdHMgaW50byBzbG10cyBjdXQgaW50byB0aGUgZWRnZSBvZv==
IHBvc3QgY2FyZHMuDQoqIER1cm1uZyBxb3JzZCBXYXigSUksIGEgc3B5IGZvc1B=
SmFwYW4gaW4gTmV3IFlvcmsgQ210eSwgVmVsdmFsZWW=
IERpY2tpbnNvbiwgc2VudCBpbmZvcm1hdGlvbiB0byBhY2NvbW1vZGF0aW9=
biBhZGRyZXNzZXMgaW4gbmV1dHjhCBTb3V0aCBBbWVyaWO=
YS4gU2h1IHdchyBhIGR1Yw1ciBpb1k2xscywgYW5kIG==
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IHRvIHN0aXAuIFRoZSBzdGVnb3RleHQgd2FzIHRoZSBkb2xsIG9yZGVycywd2hpbgUgdGh1
IGNvbmn1Yw1lZCAicGxhaW50Zxh0IiB3YXMaXrzZwxiGvuY2+=
ZGVkIGFuZCBnYXZ1IGluZm9ybWF0aW9uIGFib3V0IHN0aXAgbW92ZW11bnRzLF==
IGV0Yy4gSGVYIGNhc2UgYmVjYW11IHNvbW3aGF0IGZh
bw91cyBhbmqgc2h1IGJ1Y2FtZSBrbm93biBhcyB0aGX=
IERvbGwgV29tYW4uDQoqIENvbGQgV2FyIGNvdW50
ZXItcHJvcGFnYW5kYS4gSW4gMTk20CwgY3J1dyBtZW1iZW==
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aXNvbmnVcyBieSB0b3J0aCBLb3J1YswgY29tbXvuaWNhdGVkIGluIHNpZ25=

IGxhbmd1Ywd1IGR1cm1uZyBzdGFnZWQgcGhvdG8gb3Bwb3J0
dw5pdG11cywgaw5mb3JtaW5nIHRoZSBVbml0ZWQgU3RhGvzIHRoZXkg
d2VyzSBub3QgZGVmZWN0b3JzIGJ1dCByYXRoZXIgd2VyZSBiZwluZyBoZWxkIGNh
cHRpdUmYnkgdGh1IE5vcnRoIEtvcmVhbnMuIEluIG90aGVyIHBob3RV
cyBwcmVzZW50ZWQgdG8gdGh1IFVTLCBjcmV3IG11bWJlcMgZ2F2ZSAidGh1IGZpbmdlciIgdG8g
dGh1IHVuc3VzcGVjdGluZyB0b3J0aCBLb3J1Yw5zLCBpb1BhbiBhdHR1bXB0IHRvIE==
ZG1zY3J1ZG10IHRoZrvcyB0aGF0IHNob3d1ZCB0aGVtIHNtaQ==
bg1uZyBhbmqgY29tZm9ydGF1bGUuDQoNCi0tDQpodHRwOi8vZW4ud2lraXB1ZG1hLm9yZw==
L3dpa2kvU3R1Z2Fub2dyYXBoeQ0K ''''
e=d.splitlines()
binstr=""
base64="ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789+/"

```
for i in e :
    if i.find("==")>0:
        temp=bin((base64.find(i[-3])&15))[2:]
        #取倒数第3个字符，在base64找到对应的索引数（就是编码数），取低4位，再转换为二进制字符
        binstr=binstr + "0"*(4-len(temp))+temp #二进制字符补高位0后，连接字符到binstr
    elif i.find("=")>0:
        temp=bin((base64.find(i[-2])&3))[2:] #取倒数第2个字符，在base64找到对应的索引数（就是编码数），取低2位，再转换为二进制字符
        binstr=binstr + "0"*(2-len(temp))+temp #二进制字符补高位0后，连接字符到binstr
    str=""
for i in range(0,len(binstr),8):
    str=str+chr(int(binstr[i:i+8],2)) #从左到右，每取8位转换为ascii字符，连接字符到字符串
print(str) #结果是 Base_sixty_four_point_five转换为
```

输出：



```
: base64Stego ×
/usr/local/bin/python3.9 /Users/apple/Desktop/Base_sixty_four_point_five[]

Process finished with exit code 0
CSDN @qq_51550750
```

得到flag就是flag{Base_sixty_four_point_five}

总结

base64隐写解密，以后碰到直接用脚本，先成为脚本小子（小白没办法）