攻防世界crypto高手题之cr3-what-is-this-encryption

原创

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攻防世界crypto高手题之cr3-what-is-this-encryption

继续开启全栈梦想之逆向之旅~
这题是攻防世界crypto高手题的cr3-what-is-this-encryption

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没有附件，依稀看得出有q、p、e、c，是简单的RSA题目，用我之前积累的RSA脚本CTF-RSA-tool跑一下，。。。跑不出来：
(反复试了好多次，还是报错，我放弃了)

```
1 p=0xa6055ec186de51800ddd6fcbf0192384ff42d707a55f57af4fcfb0d1dc7bd97055e8275cd4b78ec63c5d592f567c66393a061324aa2e6a8d8fc2a910cbee1ed9
2 q=0xfa0f9463ea0a93b929c099320d31c277e0b0dbc65b189ed76124f5a1218f5d91fd0102a4c8de11f28be5e4d0ae91ab319f4537e97ed74bc663e972a4a9119307
3 e=0x6d1fdab4ce3217b3fc32c9ed480a31d067fd57d93a9ab52b472dc393ab7852fbcb11abbebfd6aaae8032db1316dc22d3f7c3d631e24df13ef23d3b381a1c3e04abcc745d402e
4 c=0x7fe1a4f743675d1987d25d38111fae0f78bbea6852cba5beda47db76d119a3efe24cb04b9449f53becd43b0b46e269826a983f832abb53b7a7e24a43ad15378344ed5c20f51e
5 print(e)
6 print(p*q)
7 print(c)
8
```



```
└─$ python2 CTF-RSA-tool/solve.py --verbose -N 113879174898204668645967117693806176653947255938239415762484178439933029039942480992378962821742116042132121384130894271263769392129728556897504506961994039747096980003544238879691641682840243016660565002199580402158485888797811110890373870112239180679080062627348028514800765210824649322666826925080318210799 -e 766297813873972426643116709874317578271441392556392807529834168670310153073520143866486739942179138155817821866364881591859652274493031187833628624358994867175044572336498295631763539498171499977732764355819103705595946395704361205962111489732270775657394676413094269445290065376811474983229889599798990064 1 -c 898013894435695699573984069547075984927639234185685360303235460882787583623310431197364379101176970325948359029005820403943674808298008972319252338077452783893580314042780646333136261493367249458548650414390611494119625092476244194480036048744062822136093417043390251690152562280292002226433434300288280630008
DEBUG: factor N: try past ctf primes
DEBUG: factor N: try Gimmicky Primes method
DEBUG: factor N: try Wiener's attack
DEBUG: Starting new HTTP connection (1): www.factordb.com:80
DEBUG: http://www.factordb.com:80 "GET /index.php?query=113879174898204668645967117693806176653947255938239415762484178439933029039942480992378962821742116042132121384130894271263769392129728556897504506961994039747096980003544238879691641682840243016660565002199580402158485888797811110890373870112239180679080062627348028514800765210824649322666826925080318210799 -e 766297813873972426643116709874317578271441392556392807529834168670310153073520143866486739942179138155817821866364881591859652274493031187833628624358994867175044572336498295631763539498171499977732764355819103705595946395704361205962111489732270775657394676413094269445290065376811474983229889599798990064 1 -c 898013894435695699573984069547075984927639234185685360303235460882787583623310431197364379101176970325948359029005820403943674808298008972319252338077452783893580314042780646333136261493367249458548650414390611494119625092476244194480036048744062822136093417043390251690152562280292002226433434300288280630008
```


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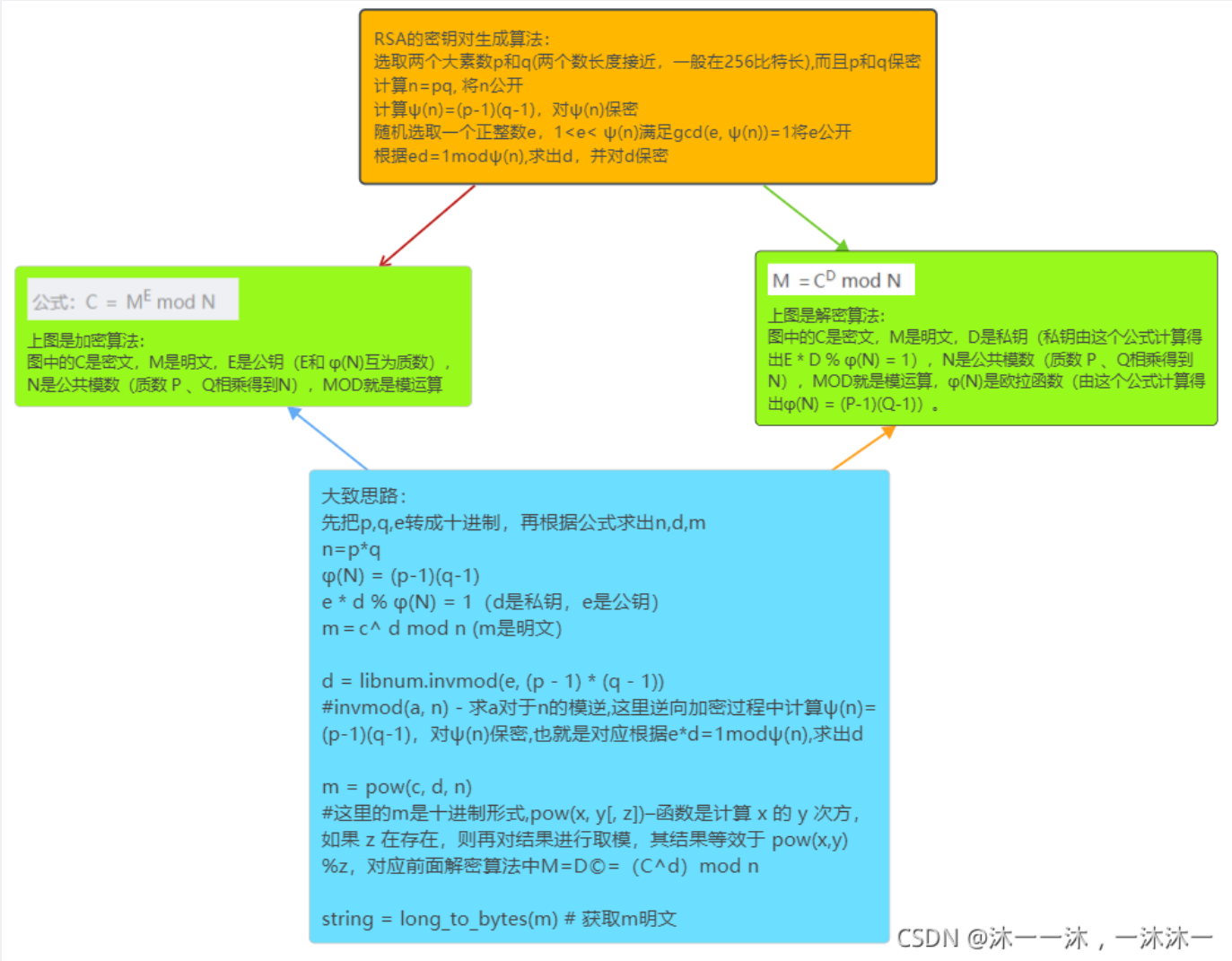
然后在网上查资料中找到一个讲得比较好的脚本和讲解：
借鉴于：

https://www.cnblogs.com/zhengna/p/13501563.html

RSA的密钥对生成算法：



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讲得很透彻了，解密的算法也提供了，附上脚本和我的一点点见解：

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

q = int(
    "0xa6055ec186de51800ddd6fcbf0192384ff42d707a55f57af4fcfb0d1dc7bd97055e8275cd4b78ec63c5d592f567c66393a061324a
a2e6a8d8fc2a910cbee1ed9",
    16)
p = int(
    "0xfa0f9463ea0a93b929c099320d31c277e0b0dbc65b189ed76124f5a1218f5d91fd0102a4c8de11f28be5e4d0ae91ab319f4537e97
ed74bc663e972a4a9119307",
    16)

e = int(
    "0x6d1fdab4ce3217b3fc32c9ed480a31d067fd57d93a9ab52b472dc393ab7852fbcb11abbebfd6aaae8032db1316dc22d3f7c3d631e
24df13ef23d3b381a1c3e04abcc745d402ee3a031ac2718fae63b240837b4f657f29ca4702da9af22a3a019d68904a969ddb01bcf941df70
af042f4fae5cbeb9c2151b324f387e525094c41",
    16)

c = 0x7fe1a4f743675d1987d25d38111fae0f78bbea6852cba5beda47db76d119a3efe24cb04b9449f53becd43b0b46e269826a983f832a
bb53b7a7e24a43ad15378344ed5c20f51e268186d24c76050c1e73647523bd5f91d9b6ad3e86bbf9126588b1dee21e6997372e36c3e74284
7347488918296650 86e0dc523ed23c386bb520

n = q * p

d = libnum.invmod(e, (p - 1) * (q - 1)) #invmod(a, n) - 求a对于n的模逆,这里逆向加密过程中计算ψ(n)=(p-1)(q-1)，对ψ(n)
保密,也就是对应根据ed=1modψ(n),求出d
m = pow(c, d, n)  # pow(x, y[, z])--函数是计算 x 的 y 次方，如果 z 在存在，则再对结果进行取模，其结果等效于 pow(x,y) %z
，对应前面解密算法中M=D(C)=C^d(mod n)
#print(m) #明文的十进制格式
string = long_to_bytes(m)  # m明文，用长字节划范围
print(string.decode())
```

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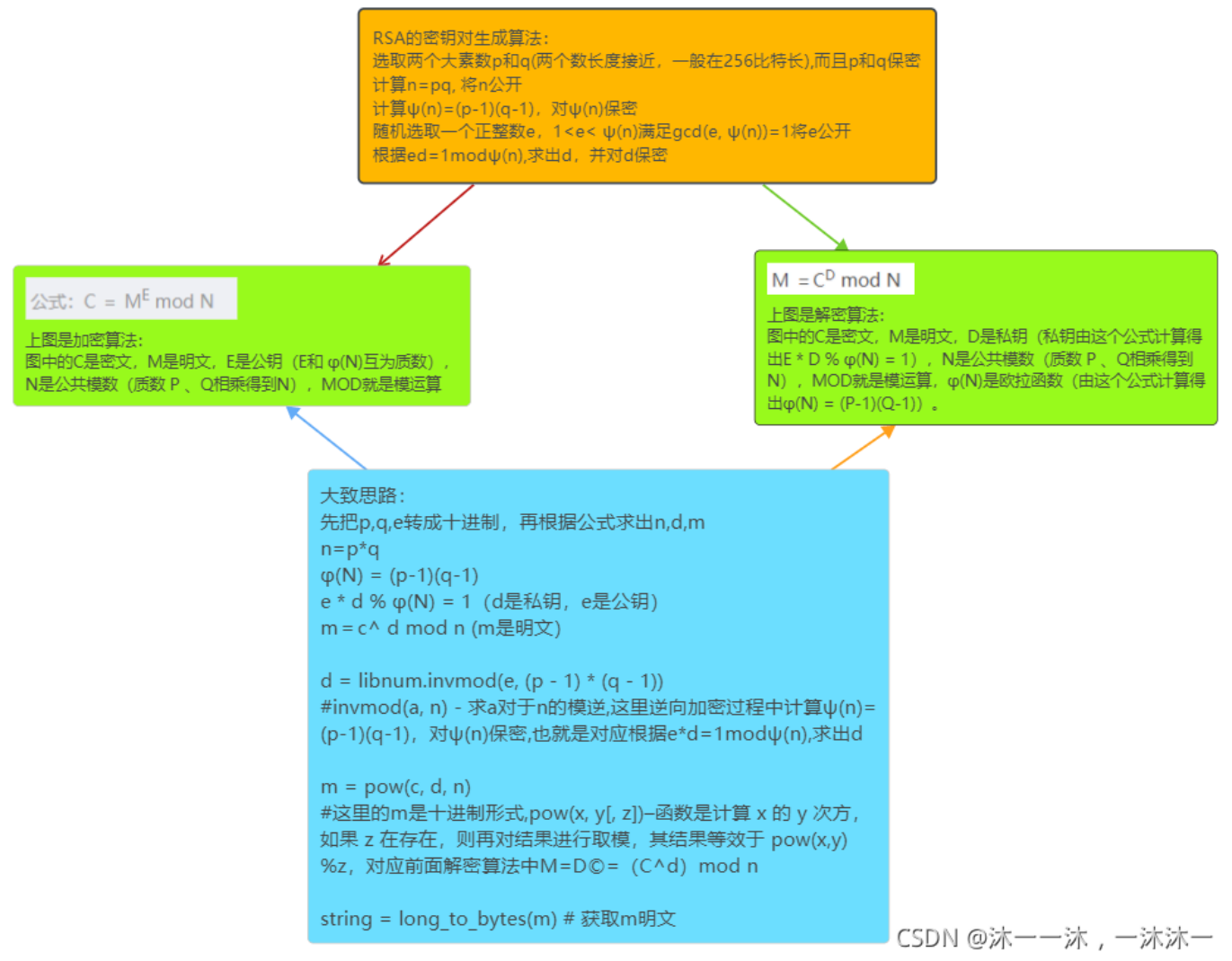
总结：

嗯~没啥好讲的，学了个RSA加密解密基本算法和对脚本有一点点理解吧。

RSA的密钥对生成算法：



解毕！敬礼！