百度杯二月Reverse场CrackMe11writeup

原创

Flying_Fatty 于 2017-02-25 09:21:46 发布 866 收藏
分类专栏： CTF之旅 reverse

这个题是被算法迷惑到的一个题目

首先在IDA中可以看到这两个重要条件：

```
if ( v3 > 20 || 2 * v3 != v4 )
  return 5173;

v6 = *((_BYTE *)&v67 + v5);
if ( (v6 < 97 || v6 > 122) && (v6 < 65 || v6 > 90) )
  return 5173;
```


看到这两个很明显：

A：输入的长度要是36（在OD中能够发现一个定值字符串，长度v3 == 18，那么v4 == 36）

B：输入的字符范围在A-F，0-9共16个字符中

然后就被各种异或算法迷惑，在OD写注释写成了这样：

```
004015C4  .  02D2          add dl,dl
004015C6  .  0FB6C2        movzx eax,dl
004015C9  .  99            cdq
004015CA  .  F7FF          idiv edi                    mod 13
004015CC  .  FEC2          inc dl                      plus 1
004015CE  .  32D1          xor dl,cl                   xor v56
004015D0  .  325424 0F     xor dl,byte ptr ss:[esp+0xF]  xor v49
004015D4  .  80C2 02       add dl,0x2
004015D7  .  325424 0E     xor dl,byte ptr ss:[esp+0xE]  xor v56
004015DB  .  325424 0C     xor dl,byte ptr ss:[esp+0xC]  xor v49
004015DF  .  FEC2          inc dl
004015E1  .  32FA          xor bh,dl                   xor v16
004015E3  .  8A5424 0D     mov dl,byte ptr ss:[esp+0xD]
004015E7  .  80C7 02       add bh,0x2
004015EA  .  32FD          xor bh,ch                   xor v57
004015EC  .  32F9          xor bh,cl                   xor v56
004015EE  .  FEC7          inc bh
004015F0  .  4E            dec esi                     esi == v20
004015F1  .^ 0F85 F9FEFFFF jnz 004014F0                while(v20)
```


但是这样是很难逆向算法的，原因很简单：

A：就算你看懂了算法，也得一个一个的重新计算

B：因为不知道输入，所以从输出套出输入还是需要暴力去做

那么我们可以试着猜想，这个题的本身思路就是暴力做（不然为什么要告诉你长度36，每个字符的范围呢）

分析处理过程，我们知道，18个字符处理成了18个结果

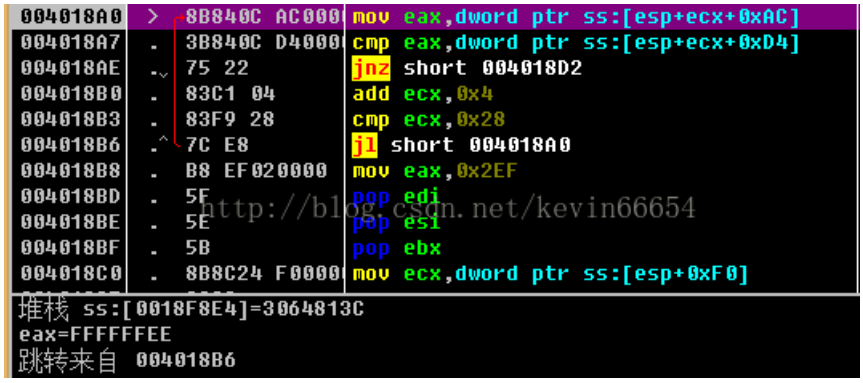
我们输入的36位字符，处理成了18个结果，这两个运算过程相同，而且独立，所以不会相互影响

也就是说：我们不需要知道运算的过程是什么，因为输入和最后比对的值无关，那么：我们可以把00 -- 0xFF的所有结果全部生成，然后加以比对

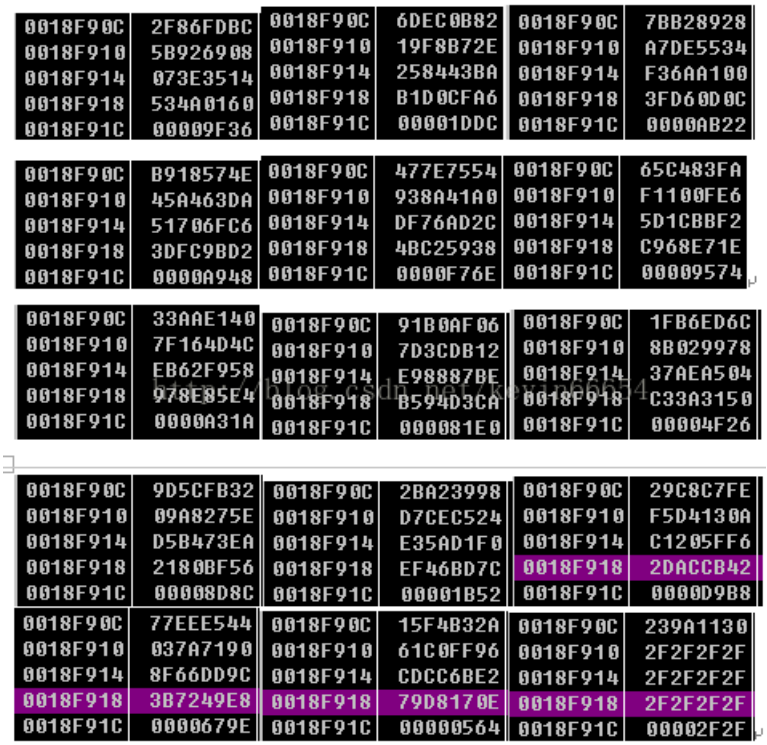
暴力出结果即可

下面是构造过程：

在OD中打开，中断到比较的地方，如图：



在4018A0处下断点，然后构造我们的数据放进去，然后可以得到这样的一个截图：



这就是从00到0xFF的所有数据，那么我们写个程序，然后反向暴力打表就能够出结果了，直接贴我的py代码了

```
s = 'BinGzLFormiChunQiu'
```

```
number = ''
for i in s:
 number += str(hex(ord(i)))[2:]
#print number

s = '7569516E756843696D726F464C7A476E6942'
s = s.decode('hex')[::-1]
#print s,len(s)

for i in range(0,0xfc,18):
 data = ''
 for j in range(0,18):
  if i + j < 0x10:
   data += '0'
   data += str(hex(i+j))[2:]
  else:
   data += str(hex(i+j))[2:]
 data = data.upper()
 #print data[0:8],data[8:16],data[16:24],data[24:32],data[32:36]
 ans = data[6:8] + data[4:6] + data[2:4] + data[0:2]
 ans += data[14:16] + data[12:14] + data[10:12] + data[8:10]
 ans += data[22:24] + data[20:22] + data[18:20] + data[16:18]
 ans += data[30:32] + data[28:30] + data[26:28] + data[24:26]
 ans += data[34:36] + data[32:34]
 #print ans

ans = 'FFFEFDFC' + '00' * 14
#print ans

ans = [0x2f,0x86,0xfd,0xbc,0x5b,0x92,0x69,0x08,0x07,0x3e,0x35,0x14,0x53,0x4a,0x01,0x60,0x9f,0x36,
    0x6d,0xec,0x0b,0x82,0x19,0xf8,0xb7,0x2e,0x25,0x84,0x43,0xba,0xb1,0xd0,0xcf,0xa6,0x1d,0xdc,
    0x7b,0xb2,0x89,0x28,0xa7,0xde,0x55,0x34,0xf3,0x6a,0xa1,0x00,0x3f,0xd6,0x0d,0x0c,0xab,0x22,
    0xb9,0x18,0x57,0x4e,0x45,0xa4,0x63,0xda,0x51,0x70,0x6f,0xc6,0x3d,0xfc,0x9b,0xd2,0xa9,0x48,
    0x47,0x7e,0x75,0x54,0x93,0x8a,0x41,0xa0,0xdf,0x76,0xad,0x2c,0x4b,0xc2,0x59,0x38,0xf7,0x6e,
    0x65,0xc4,0x83,0xfa,0xf1,0x10,0x0f,0xe6,0x5d,0x1c,0xbb,0xf2,0xc9,0x68,0xe7,0x1e,0x95,0x74,
    0x33,0xaa,0xe1,0x40,0x7f,0x16,0x4d,0x4c,0xeb,0x62,0xf9,0x58,0x97,0x8e,0x85,0xe4,0xa3,0x1a,
    0x91,0xb0,0xaf,0x06,0x7d,0x3c,0xdb,0x12,0xe9,0x88,0x87,0xbe,0xb5,0x94,0xd3,0xca,0x81,0xe0,
    0x1f,0xb6,0xed,0x6c,0x8b,0x02,0x99,0x78,0x37,0xae,0xa5,0x04,0xc3,0x3a,0x31,0x50,0x4f,0x26,
    0x9d,0x5c,0xfb,0x32,0x09,0xa8,0x27,0x5e,0xd5,0xb4,0x73,0xea,0x21,0x80,0xbf,0x56,0x8d,0x8c,
    0x2b,0xa2,0x39,0x98,0xd7,0xce,0xc5,0x24,0xe3,0x5a,0xd1,0xf0,0xef,0x46,0xbd,0x7c,0x1b,0x52,
    0x29,0xc8,0xc7,0xfe,0xf5,0xd4,0x13,0x0a,0xc1,0x20,0x5f,0xf6,0x2d,0xac,0xcb,0x42,0xd9,0xb8,
    0x77,0xee,0xe5,0x44,0x03,0x7a,0x71,0x90,0x8f,0x66,0xdd,0x9c,0x3b,0x72,0x49,0xe8,0x67,0x9e,
    0x15,0xf4,0xb3,0x2a,0x61,0xc0,0xff,0x96,0xcd,0xcc,0x6b,0xe2,0x79,0xd8,0x17,0x0e,0x05,0x64,
    0x23,0x9a,0x11,0x30]

def enumerate(num):
 global flag
 for i in range(0,0x100):
  if ans[i] == num:
   print hex(i)
   flag += str(hex(i))[2:]

flag = ''
enumerate(0x3c)
enumerate(0x81)
enumerate(0x64)
enumerate(0x30)

enumerate(0xe8)
```

```
enumerate(0xee)
enumerate(0x0a)
enumerate(0x90)

enumerate(0x20)
enumerate(0x1b)
enumerate(0x46)
enumerate(0x52)

enumerate(0xc8)
enumerate(0x20)
enumerate(0xfe)
enumerate(0xd4)

enumerate(0x8c)
enumerate(0xfe)
print flag.upper()
```