2021美团高校挑战赛逆向randomWriteup

原创

bin cat 于 2021-12-12 17:29:36 发布 1823 收藏
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记录一次动调

我好没本领

查壳，32位无壳，用ida打开找到主函数

```
.text:004010E0
.text:004010E0 ; __unwind { // __except_handler4
.text:004010E0                 push    ebp
.text:004010E1                 mov     ebp, esp
.text:004010E3                 push    0FFFFFFFEh
.text:004010E5                 push    offset stru_402518
.text:004010EA                 push    offset __except_handler4
.text:004010EF                 mov     eax, large fs:0
.text:004010F5                 push    eax
.text:004010F6                 sub     esp, 8
.text:004010F9                 push    ebx
.text:004010FA                 push    esi
.text:004010FB                 push    edi
.text:004010FC                 mov     eax, ___security_cookie
.text:00401101                 xor     [ebp+ms_exc.registration.ScopeTable], eax
.text:00401104                 xor     eax, ebp
.text:00401106                 push    eax
.text:00401107                 lea     eax, [ebp+ms_exc.registration]
.text:0040110A                 mov     large fs:0, eax
.text:00401110                 mov     [ebp+ms_exc.old_esp], esp
000004E0 004010E0:  main (Synchronized with Hex View-1)
```

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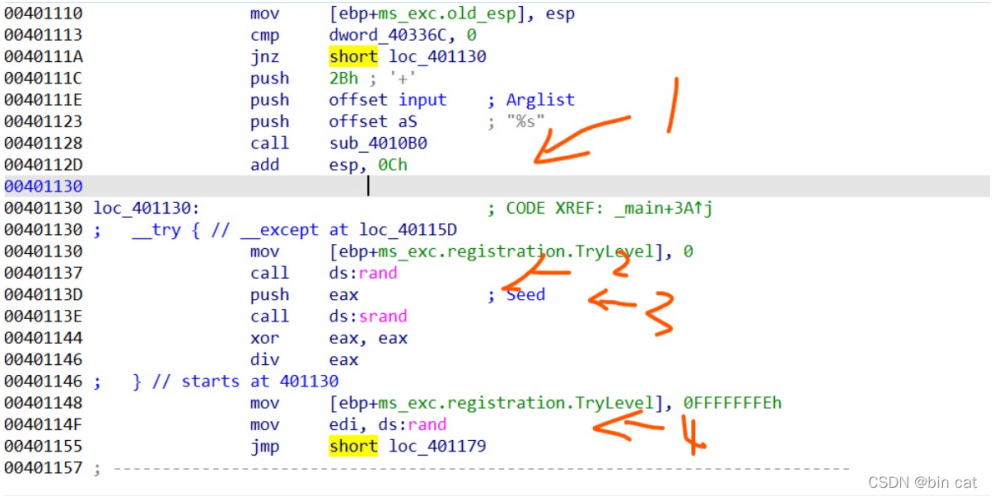
通过伪代码发现主体逻辑在这里



1处输入，2处生成伪随机数，3处种一个随机数种子，4处拿种子生成伪随机数

```
if ( !dword_40336C )
  sub_4010B0(v3, "%s", (char)input);
v4 = rand();
srand(v4);
v5 = dword_40336C;
input[v5] ^= rand();
if ( dword_40336C == 43 )
{
  dword_40336C = 0;
  v6 = 0;
  v7 = 0;
  v8 = 0;
  v9 = 0;
  do
  {
    if ( input[v9] != byte_402138[v8] )
      break;
    v8 = ++v6;
    v7 = v6;
    dword_40336C = v6;
```

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)0000579 main:20 (401179)

显然关键在于v5，通过观察我们可以确定v5就是我们要找的flag

```
v9 = 0;
do
{
  if ( input[v9] != byte_402138[v8] )
    break;
  v8 = ++v6;
  v7 = v6;
  dword_40336C = v6;
  v9 = v6;
}
while ( v6 < 42 );
v10 = "fake input..\n";
if ( v7 == 42 )
  v10 = "congratulation!\n";
sub_401050(v10);
result = 0;
```

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发现有一个判断，意思应该是input[v5]^rand()之后按位和byte_402138比较

展开byte_402138，就是一些16进制数

```
2128 aFakeInput      db 'fake input..',0Ah,0 ; DA
2136                 align 4
2138 ; char byte_402138[44]
2138 byte_402138     db 3Eh                  ; DA
2139                 db 0CDh
213A                 db 0AAh
213B                 db  8Eh
213C                 db  96h
213D                 db  1Fh
213E                 db  89h
213F                 db 0CDh
2140                 db 0DBh
2141                 db 0F1h
2142                 db  70h ; p
2143                 db 0F2h
2144                 db 0A9h
2145                 db  9Ch
2146                 db 0C2h
2147                 db  8Bh
2148                 db 0F2h
2149                 db 0FEh
```

3: .rdata:byte 402138 (Synchronized with Hex View-1) CSDN @bin cat

静态分析找不到什么思路，动调一下

下断点让程序停在0004111C的地方

```
push 2B
push random.43370
push random.42110
call random.410B0
add esp,C
mov dword ptr ss:[ebp-4],0
call dword ptr ds:[<&rand>]
push eax
call dword ptr ds:[<&srand>]
xor eax,eax
div eax
mov dword ptr ss:[ebp-4],FFFFFFFE
mov edi,dword ptr ds:[<&rand>]
jmp random.41179
mov eax,1
ret
mov esp,dword ptr ss:[ebp-18]
mov edi,dword ptr ds:[<&rand>]
call edi
push eax
call dword ptr ds:[<&srand>]
add esp,4
mov dword ptr ss:[ebp-4],FFFFFFFE
mov esi,dword ptr ds:[4336C]
call edi
xor byte ptr ds:[esi+43370],al
mov eax,dword ptr ds:[4336C]
cmp eax,2B
jne random.411FD
mov dword ptr ds:[4336C],0
xor edx,edx
xor ecx,ecx
xor esi,esi
xor eax,eax
nop dword ptr ds:[eax],eax
nop word ptr ds:[eax+eax],ax
mov al,byte ptr ds:[eax+43370]
```

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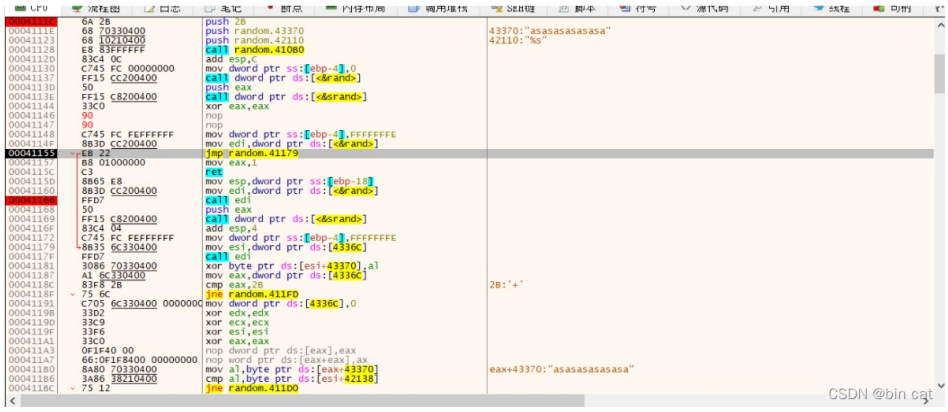
1处有个输入，2处有个对比告诉我们eax寄存器里存的就是我们要对比的，开始动调



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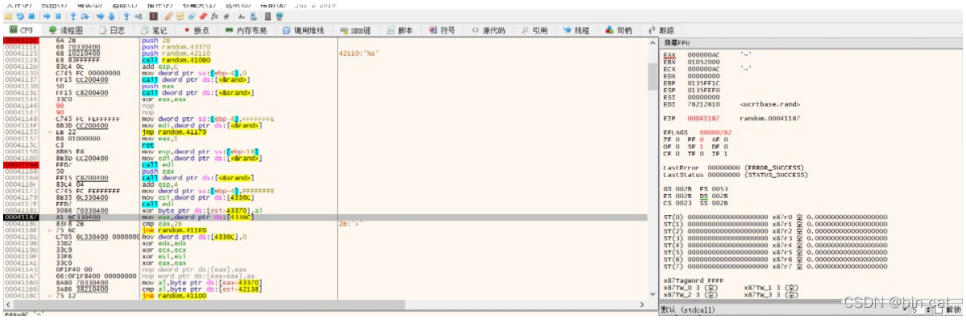
调到这里显示要跳转，继续跟下去



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此时eax给出的是0xAC

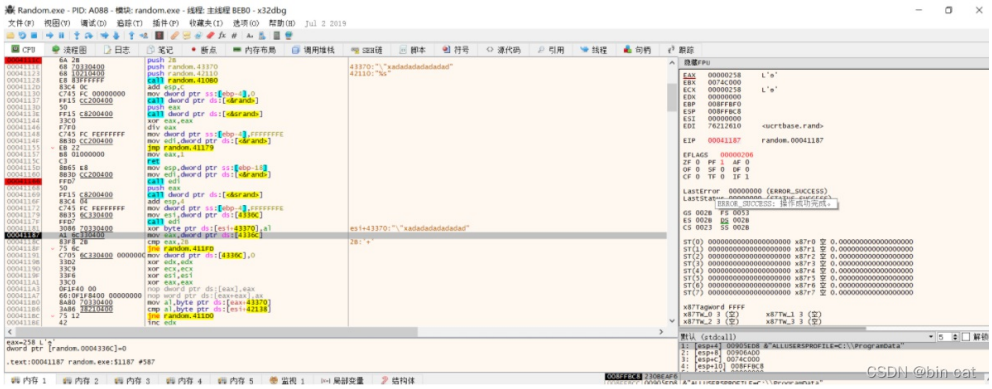
这个显然不符合我们之前的判断要异或出f，eax最后两位应该是58

猜测可能是因为jmp

这其中跳掉了

重新动调

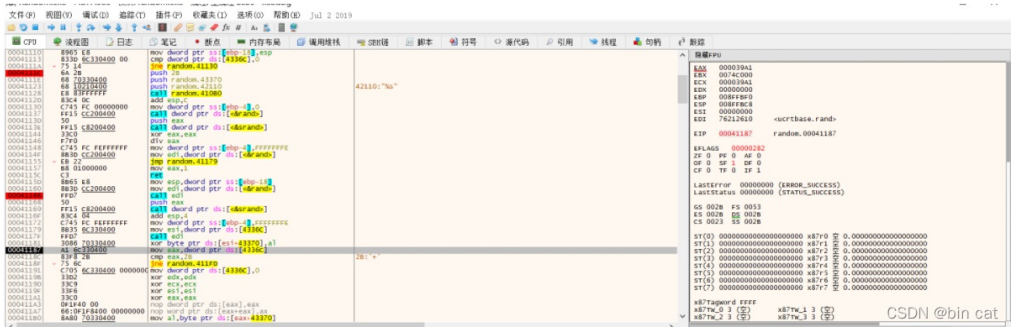
这次直接改eip劫持程序到如图这里



成功

eax显示的是58符合猜想，确实第一位是f

在试试第二位，把程序劫持上去，劫持到00041137的地方



eax显示A1也符合对l的猜想

然后按照我们推出的理论上一个脚本解题就可以了

也可以一位一位推直到“}”出现结束

```
int main()
{
 int i;
 char flag[43]={0x3E,0xCD,0xAA,0x8E,0x96,0x1F,0x89,0xCD,0xDB,0xF1,0x70,0xF2,0xA9,0x9C,0xC2,0x8B,0xF2,0xFE,0
 for(i=0;i<43;i++)
 {
  int x=rand();
  srand(x);
  int w=rand();
  srand(w);
  int v=rand();
  printf("0x%x   0x%x \n",x,v);
  flag[i]^=v;

 }
 printf("%s\n",flag);
// char dd=getchar();
 return 0;
}
```

flag{3e625fe0-fb18-4f87-93c1-1ec217f86796}