# [2019红帽杯]easyRE writeup

原创

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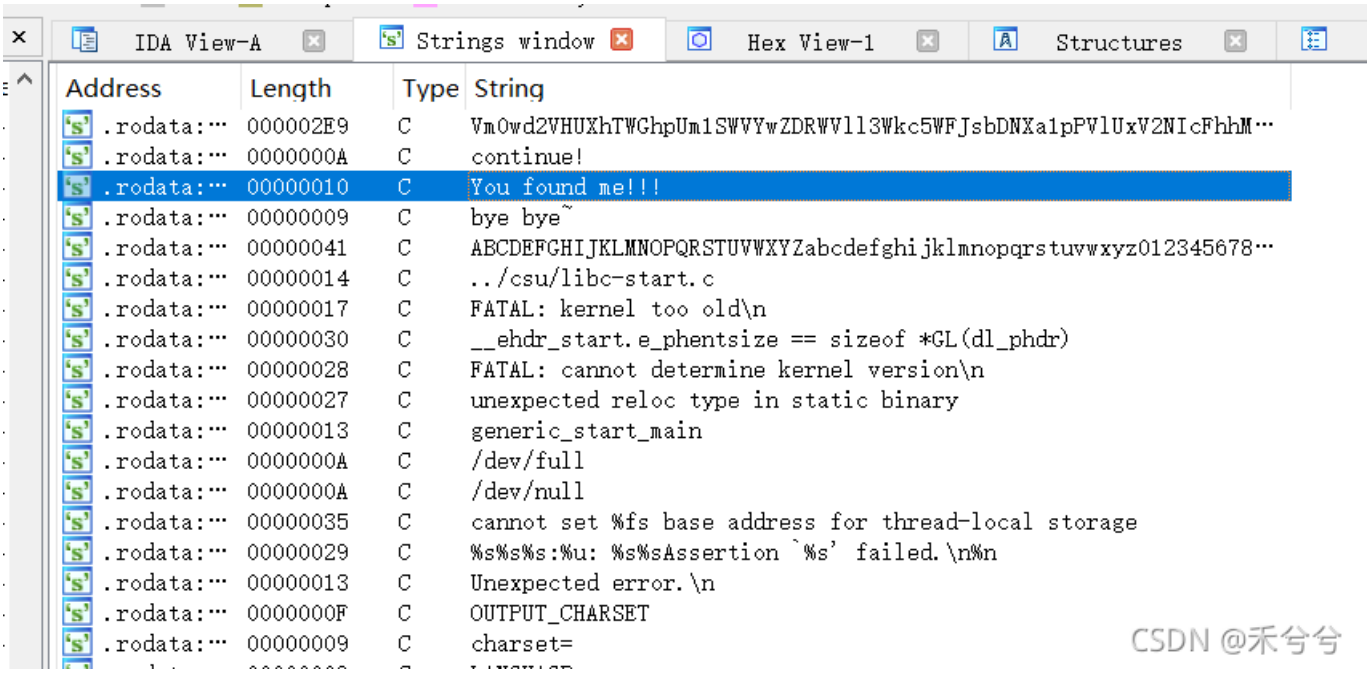
很想挑战难题，发现自己连writeup也看不懂

用64bit的ida打开，查找字符




找到函数：

```
signed __int64 sub_4009C6()
{
  signed __int64 result; // rax
  __int64 v1; // ST10_8
  __int64 v2; // ST18_8
  __int64 v3; // ST20_8
  __int64 v4; // ST28_8
  __int64 v5; // ST30_8
  __int64 v6; // ST38_8
  __int64 v7; // ST40_8
  __int64 v8; // ST48_8
  __int64 v9; // ST50_8
  __int64 v10; // ST58_8
  int i; // [rsp+Ch] [rbp-114h]
  char v12; // [rsp+60h] [rbp-C0h]
  char v13; // [rsp+61h] [rbp-BFh]
  char v14; // [rsp+62h] [rbp-BEh]
  char v15; // [rsp+63h] [rbp-BDh]
  char v16; // [rsp+64h] [rbp-BCh]
  char v17; // [rsp+65h] [rbp-BBh]
  char v18; // [rsp+66h] [rbp-BAh]
  char v19; // [rsp+67h] [rbp-B9h]
```

```
char v20; // [rsp+68h] [rbp-B8h]
char v21; // [rsp+69h] [rbp-B7h]
char v22; // [rsp+6Ah] [rbp-B6h]
char v23; // [rsp+6Bh] [rbp-B5h]
char v24; // [rsp+6Ch] [rbp-B4h]
char v25; // [rsp+6Dh] [rbp-B3h]
char v26; // [rsp+6Eh] [rbp-B2h]
char v27; // [rsp+6Fh] [rbp-B1h]
char v28; // [rsp+70h] [rbp-B0h]
char v29; // [rsp+71h] [rbp-AFh]
char v30; // [rsp+72h] [rbp-AEh]
char v31; // [rsp+73h] [rbp-ADh]
char v32; // [rsp+74h] [rbp-ACh]
char v33; // [rsp+75h] [rbp-ABh]
char v34; // [rsp+76h] [rbp-AAh]
char v35; // [rsp+77h] [rbp-A9h]
char v36; // [rsp+78h] [rbp-A8h]
char v37; // [rsp+79h] [rbp-A7h]
char v38; // [rsp+7Ah] [rbp-A6h]
char v39; // [rsp+7Bh] [rbp-A5h]
char v40; // [rsp+7Ch] [rbp-A4h]
char v41; // [rsp+7Dh] [rbp-A3h]
char v42; // [rsp+7Eh] [rbp-A2h]
char v43; // [rsp+7Fh] [rbp-A1h]
char v44; // [rsp+80h] [rbp-A0h]
char v45; // [rsp+81h] [rbp-9Fh]
char v46; // [rsp+82h] [rbp-9Eh]
char v47; // [rsp+83h] [rbp-9Dh]
char v48[32]; // [rsp+90h] [rbp-90h]
int v49; // [rsp+B0h] [rbp-70h]
char v50; // [rsp+B4h] [rbp-6Ch]
char v51; // [rsp+C0h] [rbp-60h]
char v52; // [rsp+E7h] [rbp-39h]
char v53; // [rsp+100h] [rbp-20h]
unsigned __int64 v54; // [rsp+108h] [rbp-18h]

v54 = __readfsqword(0x28u);
v12 = 73;
v13 = 111;
v14 = 100;
v15 = 108;
v16 = 62;
v17 = 81;
v18 = 110;
v19 = 98;
v20 = 40;
v21 = 111;
v22 = 99;
v23 = 121;
v24 = 127;
v25 = 121;
v26 = 46;
v27 = 105;
v28 = 127;
v29 = 100;
v30 = 96;
v31 = 51;
v32 = 119;
v33 = 125;
v34 = 119;
```

```
v34 = 119;
v35 = 101;
v36 = 107;
v37 = 57;
v38 = 123;
v39 = 105;
v40 = 121;
v41 = 61;
v42 = 126;
v43 = 121;
v44 = 76;
v45 = 64;
v46 = 69;
v47 = 67;
memset(v48, 0, sizeof(v48));
v49 = 0;
v50 = 0;
sub_4406E0(0LL, v48, 37LL);
v50 = 0;
if ( sub_424BA0(v48) == 36 )
{
  for ( i = 0; i < (unsigned __int64)sub_424BA0(v48); ++i )
  {
    if ( (unsigned __int8)(v48[i] ^ i) != *(&v12 + i) )
    {
      result = 4294967294LL;
      goto LABEL_13;
    }
  }
  sub_410CC0("continue!");
  memset(&v51, 0, 0x40uLL);
  v53 = 0;
  sub_4406E0(0LL, &v51, 64LL);
  v52 = 0;
  if ( sub_424BA0(&v51) == 39 )
  {
    v1 = sub_400E44(&v51);
    v2 = sub_400E44(v1);
    v3 = sub_400E44(v2);
    v4 = sub_400E44(v3);
    v5 = sub_400E44(v4);
    v6 = sub_400E44(v5);
    v7 = sub_400E44(v6);
    v8 = sub_400E44(v7);
    v9 = sub_400E44(v8);
    v10 = sub_400E44(v9);
    if ( !(unsigned int)sub_400360(v10, off_6CC090) )
    {
      sub_410CC0("You found me!!!");
      sub_410CC0("bye bye~");
    }
    result = 0LL;
  }
  else
  {
    result = 4294967293LL;
  }
}
else
{
```

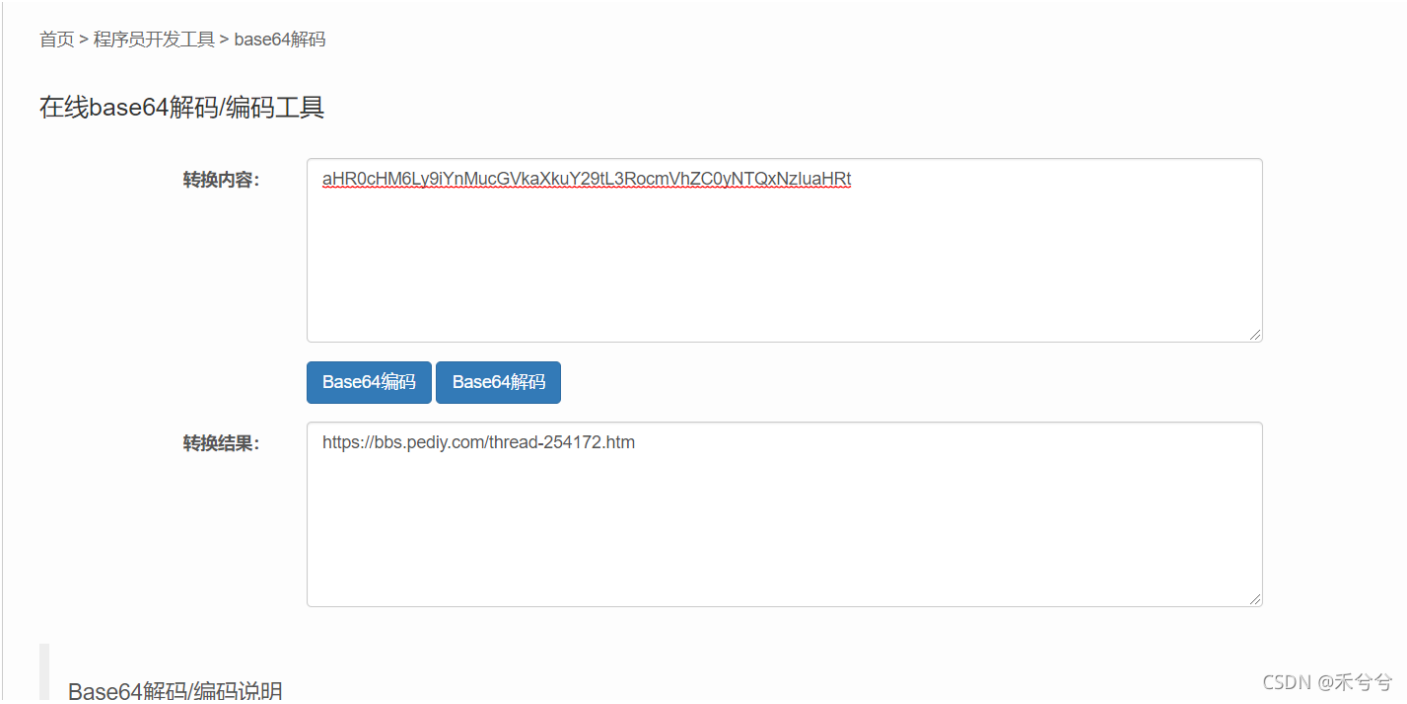
```
    result = 0xFFFFFFFFLL;
  }
LABEL_13:
  if ( __readfsqword(0x28u) != v54 )
    sub_444020();
  return result;
}
```

发现有两个加密的函数，一个是简单的异或，一个是base64的十次加密，密文如下

```
          db    0
          db    0
huxhtwg   db 'Vm0wd2VHUXhTWGhpUm1SWVYwZDRWVll3Wkc5WFJsbDNXa1pPVlUxV2NIcFhhMk0xV'
                                ; DATA XREF: .data:off_6CC090↓o
          db 'mpKS1NHVkdXbFpOYmtKVVZtcEtTMUl5VGtsaVJtUk9ZV3hhZVZadGVHdFRNVTVYVW'
          db '01T2FGSnRVbGhhVjNoaFZWWmtWMXBFVWxSTmJFcElWbTAxVDJGV1NuTlhia0pXWWx'
          db 'ob1dGUnJXbXRXTVZaeVdrWm9hVlpyV1hwV1IzaGhXVmRHVjFOdVVsWmlhMHBZV1ZS'
          db 'R1lWZEdVbFZTYlhSWFRWWndNRlZ0TVc5VWJGcFZWbXR3VjJKSFVYZFdha1pXWlZaT'
          db '2NtRkhhRk5pVjJoWVYxZDBhMVV3TlhOalJscFlZbGhTY1ZsclduZGxiR1J5VmxSR1'
          db 'ZXSlZjRWhaTUZKaFZqSktWVkZZYUZkV1JWcFlWV3BHYTFkWFRrZFRiV3hvVFVoQ1d'
          db 'sWXhaRFJpTWtsM1RVaG9hbEpYYUhOVmJUVkRZekZhY1ZKcmRGTk5Wa3A2VjJ0U1Ex'
          db 'WlhTbFpqUldoYVRVWndkbFpxUmtwbGJVWklZVVprYUdFeGNHOVhXSEJIWkRGS2RGS'
          db 'nJhR2hTYXpWdlZGVm9RMlJzV25STldHUlZUVlpXTlZadE5VOVdiVXBJVld4c1dtSl'
          db 'lUWGhXTUZwell6RmFkRkpzVWxOaVNFSktWa1phVTFFeFduUlRhMlJxVWxad1YxWnR'
          db 'lRXRXTVZaSFVsUnNVVlZVTURrPQ==',0
e         db 'continue!',0        ; DATA XREF: sub_4009C6+1E5↑o
dMe       db 'You found me!!!',0  ; DATA XREF: sub_4009C6+338↑o
          db 'bye bye~',0         ; DATA XREF: sub_4009C6+342↑o
          align 20h
```



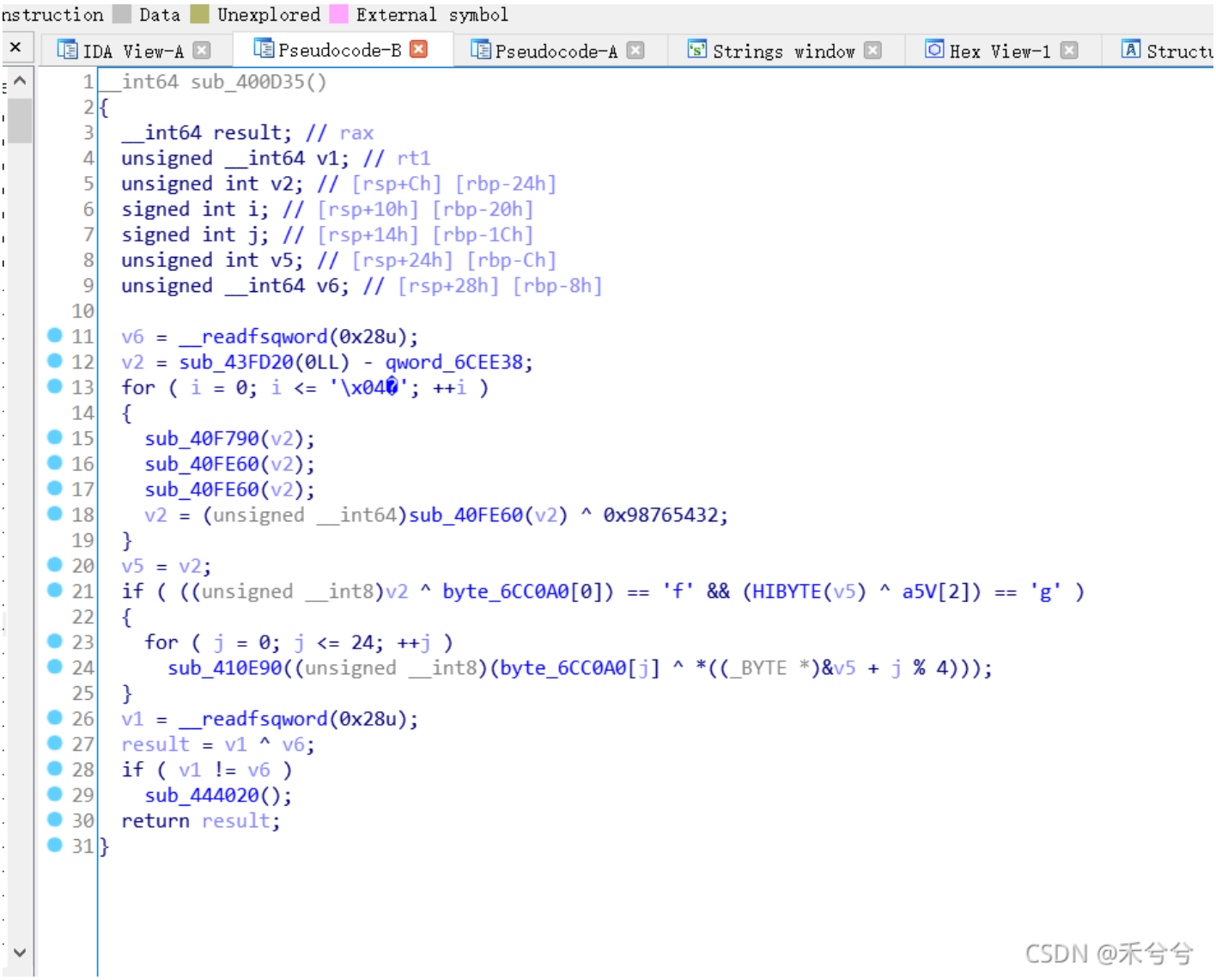
利用工具翻译出看雪的网站，不是flag






解密第一个函数（对数组进行i++的异或）得到提示Info:The first four chars are `flag`

在函数上下寻找，找到了sub_400D35函数，使用"R"键，发现存在有flag的疑似字符




结合之前的提示，我们要找到4个与数组异或得到flag，脚本如下：

```
#include<stdio.h>
int main()
{
   int a[4]={102,108,97,103};
   int b[4];
   int i[25]={0x40, 0x35, 0x20, 0x56, 0x5D, 0x18, 0x22, 0x45, 0x17, 0x2F, 0x24, 0x6E, 0x62, 0x3C, 0x27, 0x5
   int k;
   for(k=0;k<4;k++)
   {
      b[k]=a[k]^i[k];
   }
   for(k=0;k<25;k++)
   {
     i[k]=i[k]^b[k%4];
     printf("%d ",i[k]);
   }
}
```


Form1
十进制串(空格隔开)例如97 98 99转成abc:
102 108 97 103 123 65 99 116 49 118 101 95 68 101 102 101 110 53 101 95 84 101 115 116 125
十进制转ASCII
ASCII转十进制
ASCII:
flag{Act1ve_Defen5e_Test}
十六进制串例如616263转成abc:
十六进制转ASCII
ASCII转十六进制