Lab5-01 – Analysis

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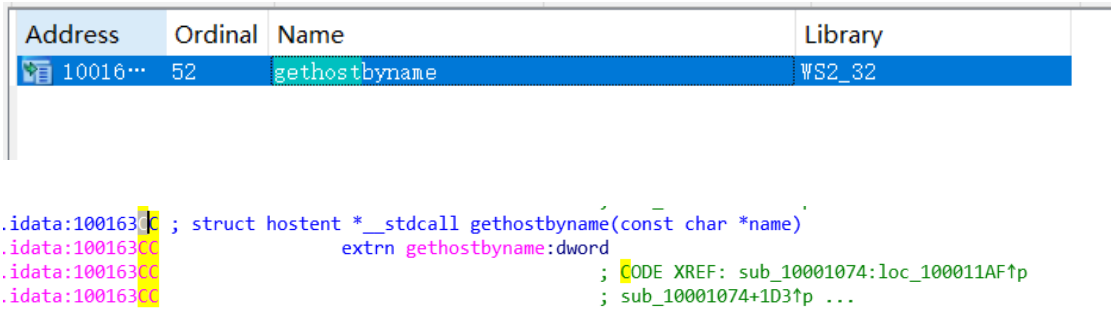
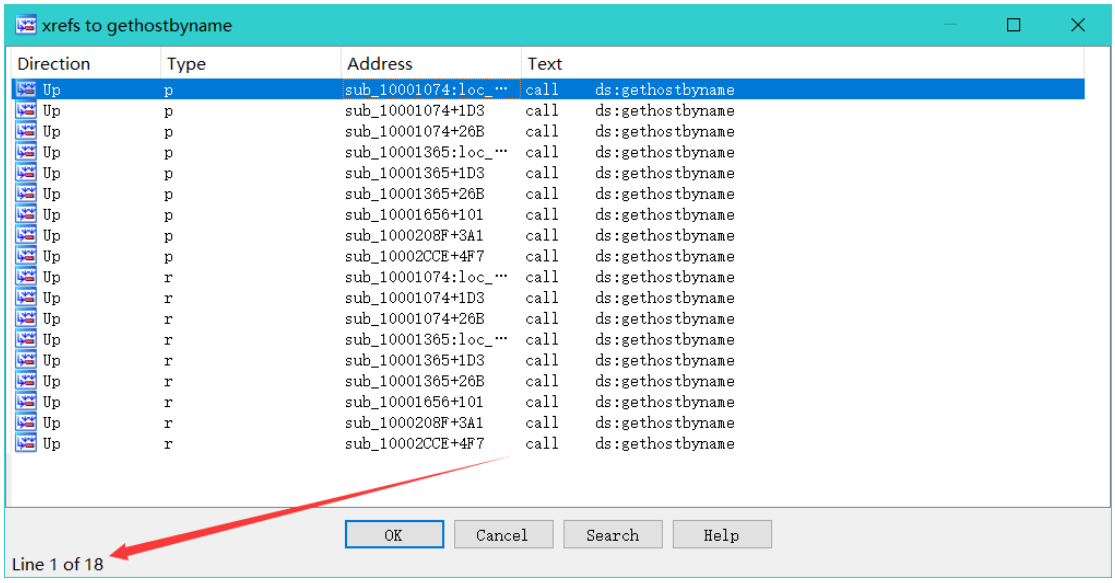
1. DLLMain 的地址为 0x1000D02E

2.

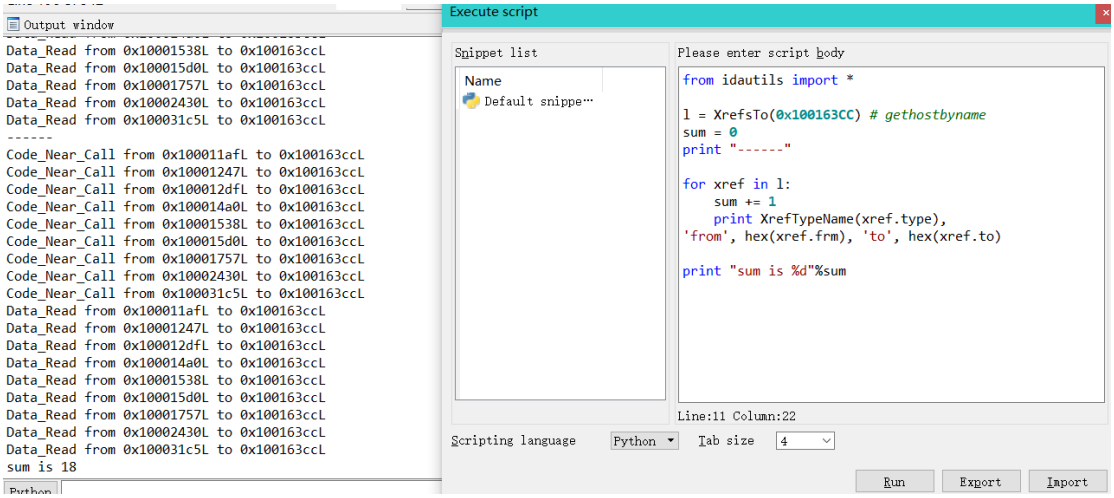


3. 18 个

方法一：快捷键 x



方法二：利用 idapython 编写脚本计数



4. pics.praticalmalwareanalysis.com

```
.data:10019194aThisIsRdoPicsP  db '[This is RDO]pics.praticalmalwareanalysis.com',0
.data:10019194                                         ; DATA XREF: .data:off_10019040↑o
```

5. 24 个局部变量

```
.text:10001656 var_675         = byte ptr -675h
.text:10001656 var_674         = dword ptr -674h
.text:10001656 hModule         = dword ptr -670h
.text:10001656 timeout         = timeval ptr -66Ch
.text:10001656 name            = sockaddr ptr -664h
.text:10001656 var_654         = word ptr -654h
.text:10001656 Dst             = dword ptr -650h
.text:10001656 Str1            = byte ptr -644h
.text:10001656 var_640         = byte ptr -640h
.text:10001656 CommandLine     = byte ptr -63Fh
.text:10001656 Str             = byte ptr -63Dh
.text:10001656 var_638         = byte ptr -638h
.text:10001656 var_637         = byte ptr -637h
.text:10001656 var_544         = byte ptr -544h
.text:10001656 var_50C         = dword ptr -50Ch
.text:10001656 var_500         = byte ptr -500h
.text:10001656 Buf2            = byte ptr -4FCh
.text:10001656 readfds         = fd_set ptr -4BCh
.text:10001656 buf             = byte ptr -3B8h
.text:10001656 var_3B0         = dword ptr -3B0h
.text:10001656 var_1A4         = dword ptr -1A4h
.text:10001656 var_194         = dword ptr -194h
.text:10001656 WSAData         = WSAData ptr -190h
.text:10001656 lpThreadParameter= dword ptr  4
```

6. 1 个参数

```
.text:10001656 ; DWORD __stdcall sub_10001656(LPVOID lpThreadParameter)
.text:10001656 sub_10001656    proc near               ; DATA XREF: DllMain(x,x,x)+C8↓o
```

7.

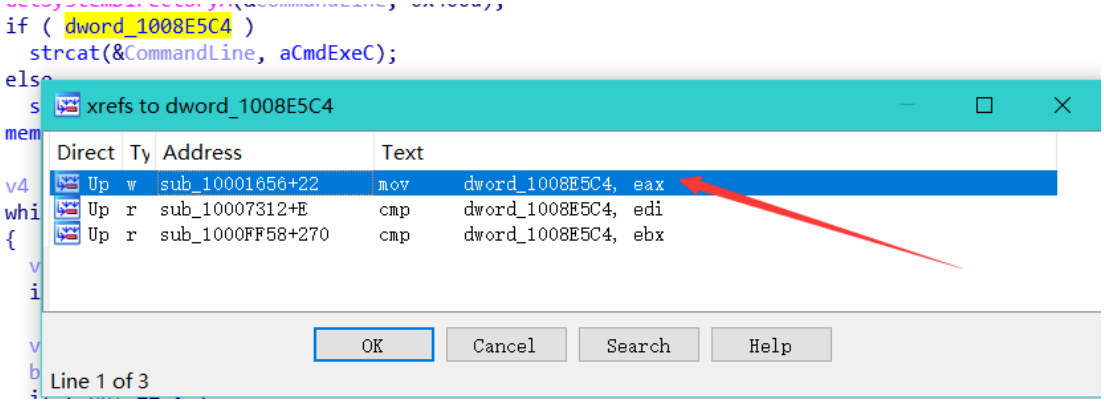
```
xdoors_d:10095B34aCmdExeC       db '\cmd.exe /c ',0     ; DATA XREF: sub_1000FF58+278↑o
xdoors_d:10095B41               align 4
```

8. 调用命令行，接着一个 while 循环，接收远程发来的字符串，并根据接收数据的不同进入相应的处理函数。

```
128           strcat(&CommandLine, aCommandExeC);
129         memset(&Dst, 0, 0xFFu);
130LABEL_8:
131         v4 = 0;
132         while ( 1 )
133         {
134           v5 = recv(s, &buf, 1, 0);
135           if ( v5 == -1 || !v5 )
136             goto LABEL_70;
137           v6 = buf - dword_1008E5D0;
138           buf -= dword_1008E5D0;
139           if ( buf == 8 )
140           {
141             v7 = v4 - 1;
142             *(&Dst + v7) = 0;
143             v4 = v7 - 1;
144           }
145           else
146           {
147             *(&Dst + v4) = v6;
148           }
149           if ( v6 == '\n' || v6 == '\r' )
150             break;
151           if ( v6 != 3 )
```

```
if ( v36 != ':' || strlen(&Dst) != 2 )
{
  if ( !memcmp(&Dst, aEnmagic, 7u) )
  {
    sprintf(&Str, a0x02x, dword_1008E5D0);
    v10 = strlen(&Str);
    sub_100038EE(s, (int)&Str, v10);
  }
  else if ( !memcmp(&Dst, aIdle, 4u) )
  {
    sub_10004CFF(s);
  }
  else if ( !memcmp(&Dst, aUptime, 6u) )
  {
    sub_10004DCA(s);
  }
  else if ( !memcmp(&Dst, aLanguage, 8u) )
  {
    sub_10004E79(s);
  }
  else if ( !memcmp(&Dst, aRobotwork, 9u) )
  {
    sub_100052A2(s);
  }
  else if ( !memcmp(&Dst, aMbase, 5u) )
  {
    sub_10004EE0(s);
  }
  else if ( !memcmp(&Dst, aMhost, 5u) )
  {
    sub_1000523D(s);
```

9. 通过 x 快捷键查看 dword_1008E5C4 的交叉引用，可知 dword_1008E5C4 在函数 sub_10001656+22 处被赋值。



并且 dword_1008E5C4 的值即函数 sub_10003695 的返回值，如下图

```
67    dword_1008E5C4 = sub_10003695();
```

而函数 sub_10003695 实际上是判断电脑的版本号是否为 Microsoft Windows NT 4.0。

```
1 BOOL sub_10003695()
2 {
3   struct _OSVERSIONINFOA VersionInformation; // [esp+0h] [ebp-94h]
4
5   VersionInformation.dwOSVersionInfoSize = 148;
6   GetVersionExA(&VersionInformation);
7   return VersionInformation.dwPlatformId == 2;
8 }
```

10.

```
198             else if ( !memcmp(&Dst, aRobotwork, 9u) )
199             {
200               sub_100052A2(s);
201             }
```

函数 sub_100052A2 的功能就是打开电脑的注册表 SOFTWARE\Microsoft\Windows\CurrentVersion，并获取字段 WorkTime 和 WorkTimes 的值，并发送给远程服务器。

```
27  if ( RegOpenKeyExA(HKEY_LOCAL_MACHINE, aSoftwareMicros, 0, 0xF003Fu, &phkResult) )// 打开注册表
28    return RegCloseKey(phkResult);
29  if ( !RegQueryValueExA(phkResult, aWorktime, 0, &Type, &Data, &cbData) )
30  {
31    v2 = atoi((const char *)&Data);
32    sprintf(&Dest, aRobotWorktimeD, v2);
33    v3 = strlen(&Dest);
34    mysend(s, (int)&Dest, v3);
35  }
36  memset(&Data, 0, 0x200u);
37  if ( !RegQueryValueExA(phkResult, aWorktimes, 0, &Type, &Data, &cbData) )
38  {
39    v4 = atoi((const char *)&Data);
40    sprintf(&Dest, aRobotWorktimes, v4);
41    v5 = strlen(&Dest);
42    mysend(s, (int)&Dest, v5);
43  }
44  return RegCloseKey(phkResult);
45 }
```

11. 获取进程信息

12. API 函数有 memset，GetSystemDefaultLangID

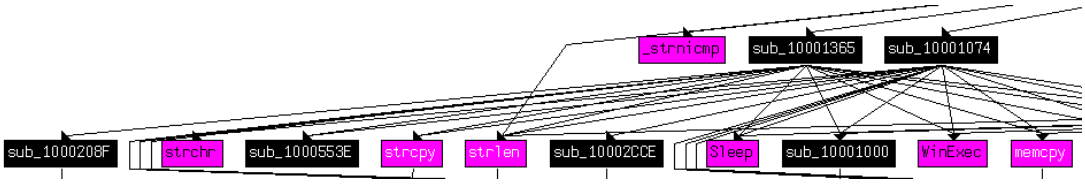
该函数用于获取系统使用的语言的 id，并发送给远程服务器。

13.

两个 strlen 和 strncpy。

第二层有 Sleep，WSAStartup，LoadLibraryA，GetProcAddress，closesocket，socket，WSAGetLastError，gethostbyname，WinExec，atoi，send 等。

通过 View-Graphs-User xrefs chart，设置深度为 2，得到部分结果如下图。



14. Sleep 30 秒

```
122      v14 = atoi(off_10019020[0] + 13);
123      Sleep(1000 * v14);
124    }
```

```
.data:100192ACaThisIsCti30      db '[This is CTI]30',0
```

off_10019020[0]指向的地址为 0x100192AC，加上偏移 13，指向的字符串为“30”，经过 atoi 函数得到数字 30。

15. 2 1 6

```
v6 = socket(2, 1, 6);
```

16. 查询 scoket 函数文档可知，第一个参数 af 的 2 代表 Internet IP Protocol，第二个参数 type 为 1 代表 SOCK_STREAM，第三个参数 protocol 为 6 代表使用的协议是 TCP 协议。

```
push    6               ; protocol
push    1               ; type
push    2               ; af
call    ds:socket
```

```
loc_100016FB:           ; protocol
push    IPPROTO_TCP
push    SOCK_STREAM     ; type
push    AF_INET         ; af
call    ds:socket
mov     edi, eax
cmp     edi, 0FFFFFFFFh
jnz     short loc_10001722
```

17. 在这个恶意程序中没有找到指令 in，如下图，虽然机器码有 0xed，但经过校验没发现指令 in。

```
0x10010c0f
0x10011d88
0x10012b54
0x10012de0
0x10013b9e
0x10013ee9
0x10013f46
0x10014b65
0x10014b91
0x10014dbf
Python>
Python>
Python>
Python>
Python>
Python>
Python>
Python>
Python>
Python>
Python>
```

Execute script

Snippet list

Name

Default snippe…

Please enter script body

```
from idautils import *
from idaapi import *

addr = 0x10010000
for i in range(0x6000):
    if Byte(addr+i) == 0xed:
        print hex(addr+i)
    #print code
```

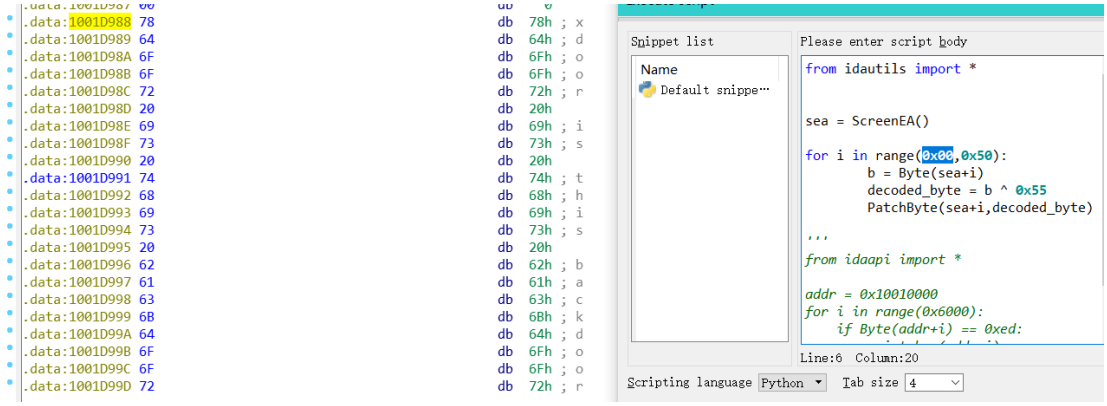
Line:1 Column:23

Scripting language Python Tab size 4

Run Export Import

18. 地址 0x1001D988 处有大量可见字符，毫无意义。

19. 当运行脚本之后，0x1001D988 开始的字符变成有意义的字符串



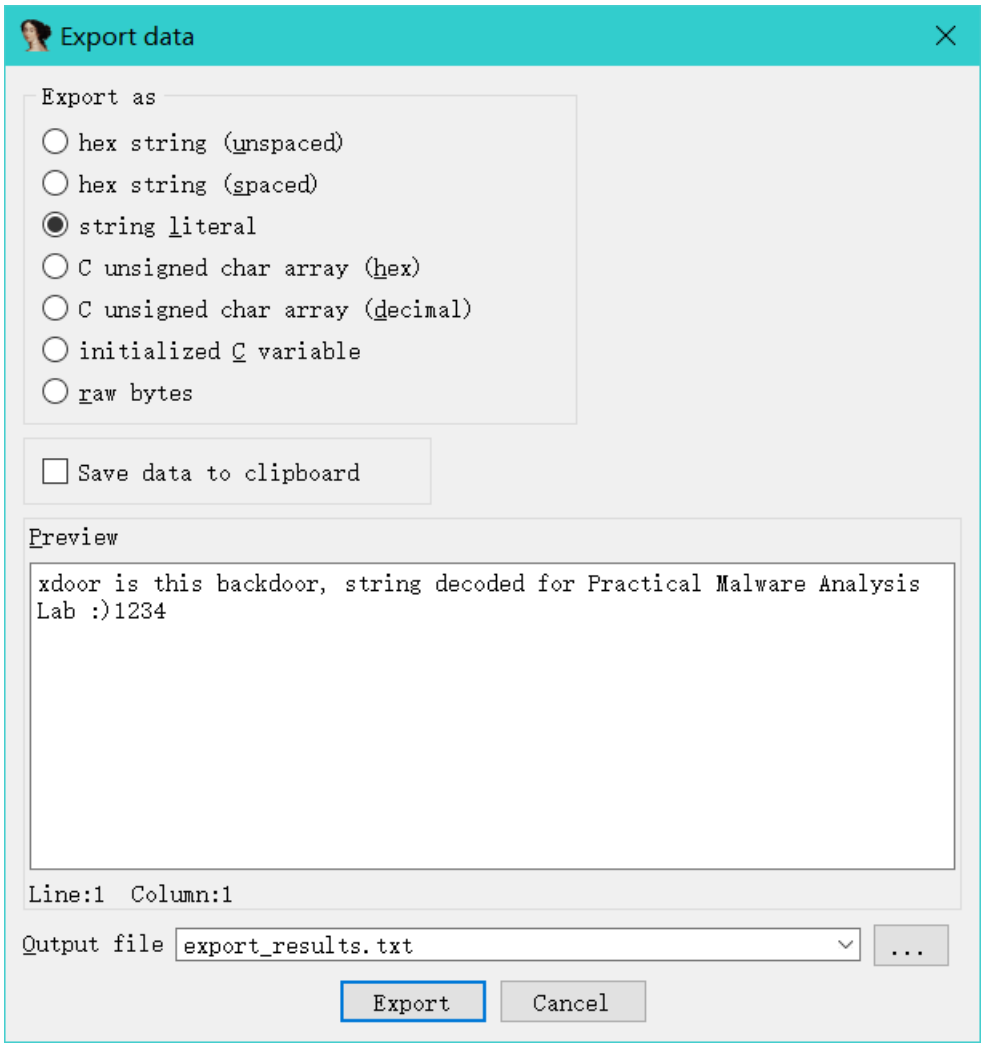
20. ‘’

方法一：idapython 脚本

```
#from idautils import *
s = ''
for i in range(0x1001D988,0x1001D9D8):
    s += chr(Byte(i))
print s
```

```
xdoor is this backdoor, string decoded for Practical Malware Analysis Lab :)1234
xdoor is this backdoor, string decoded for Practical Malware Analysis Lab :)1234
```

方法二：选中需要转换的数据，shift+E



21.

方法一：通过 Alt+F7 加载 py 文件

方法二：shift+F2 打开命令窗口直接执行代码