Justin Shearson (jrs330)

EECS 349

Due 10-29-2019

Homework 3: Part 1

Question 2 Writeup

The algorithm used appears to perform XOR operations with the input name to output a corresponding serial number. The input serial number is then directly compared with the output from the XOR operation. The name appears to be converted to its equivalent hex value and a sum is calculated from the hex values. The sum of the hex representation of the name is then XOR'd with 5678h to get a value of 22437. The resulting value is then XOR'd with 1234h to get the serial number of 17809. The computed serial number is then compared with the input serial number to check that they are equal.
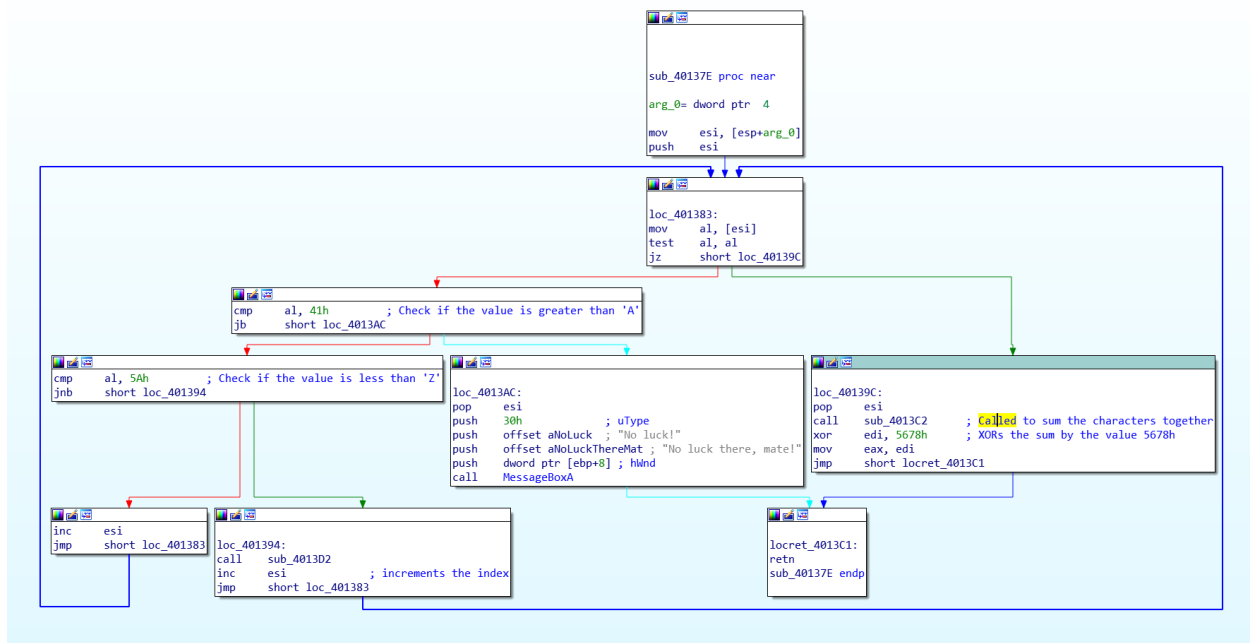

Figure 1: function used to sum the characters and perform the first XOR operation (5678h)

```
sub_4013D8 proc near

arg_0= dword ptr  4

xor     eax, eax
xor     edi, edi
xor     ebx, ebx
mov     esi, [esp+arg_0]


loc_4013E2:
mov     al, 0Ah
mov     bl, [esi]
test    bl, bl
jz      short loc_4013F5


sub     bl, 30h
imul    edi, eax
add     edi, ebx
inc     esi
jmp     short loc_4013E2


loc_4013F5:                 ; Second XOR to compute the serial number
xor     edi, 1234h
mov     ebx, edi
retn
sub_4013D8 endp
```
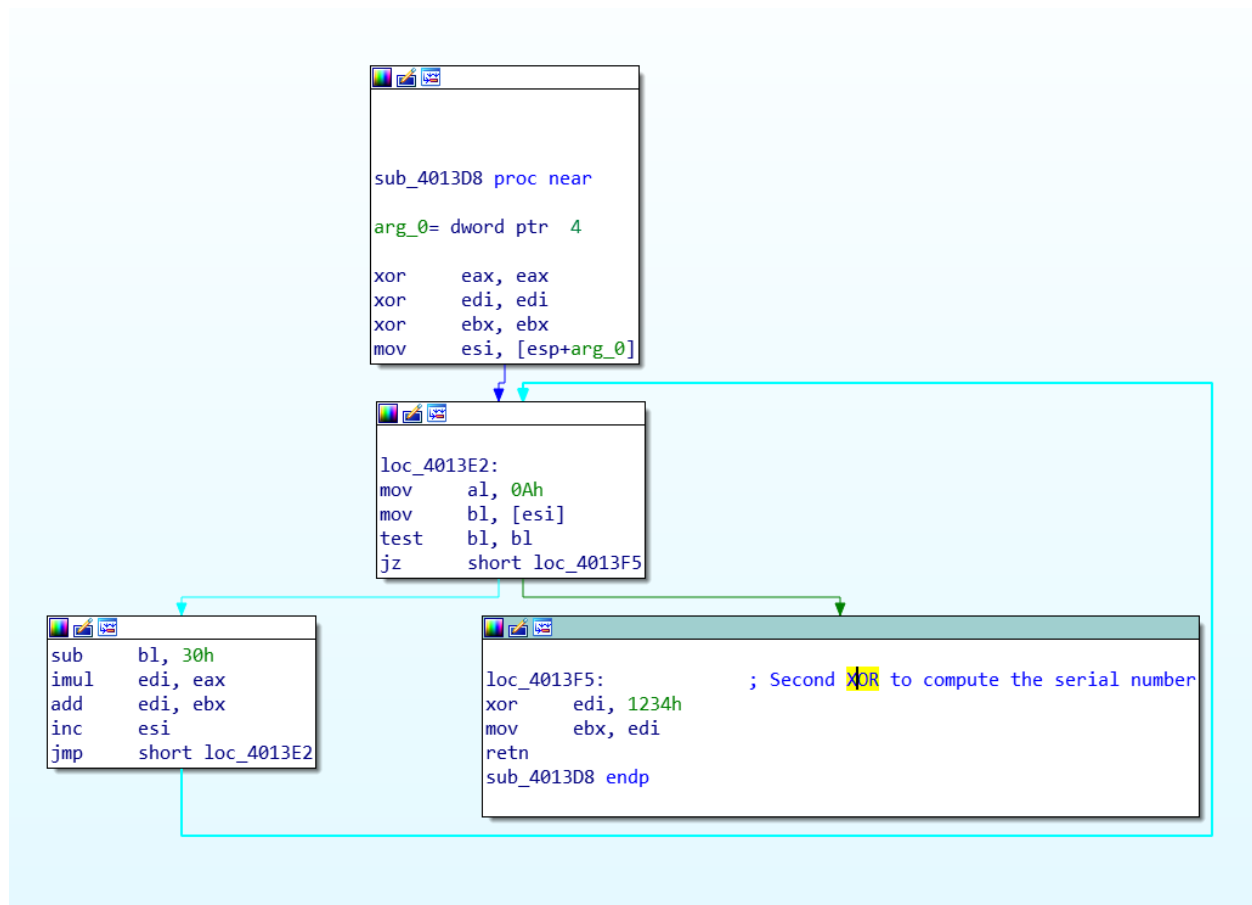
Figure 2: Second function used to perform the second XOR operation (1234h)