

Lab 15.01

1a,

The screenshot shows a GitHub repository named 'PracticalMalwareAnalysis-Labs' with two open tabs. The left tab displays the command-line output of the 'strings64' tool on the file 'Lab01-1.dll'. The right tab displays the output on 'Chapter_1L\Lab01-01.dll'. Both outputs show the version of the tool (Strings v2.54) and its copyright information (Copyright (C) 1999-2021 Mark Russinovich, Sysinternals - www.sysinternals.com). The results list various memory sections and their corresponding strings, such as 'text', '.rdata', '@.data', '.reloc', 'SUV', 'h8', 'h8', 'L\$xFQh', 'h(`', 'RVF', 'D\$', and '-'.

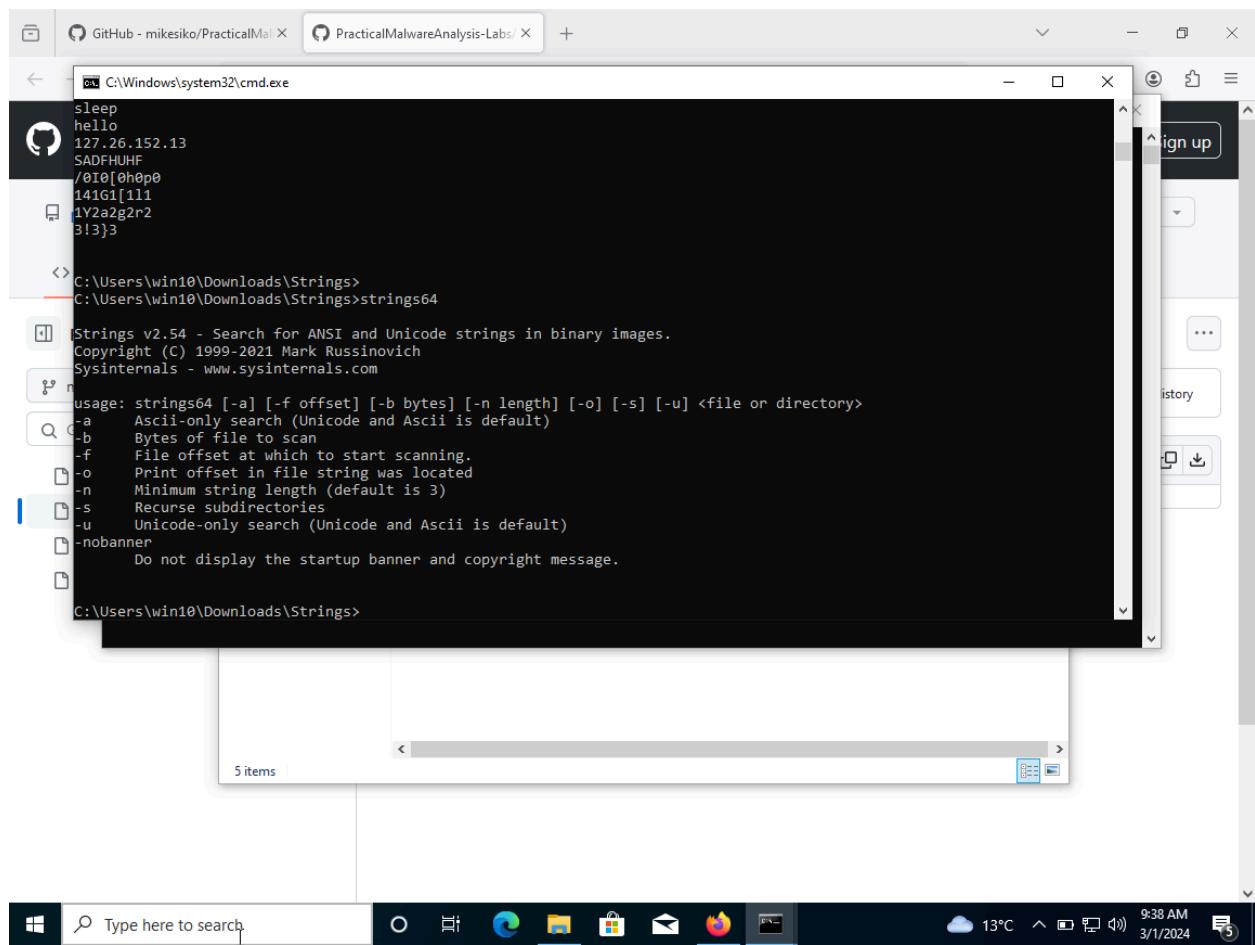
```
C:\Users\win10\Downloads\Strings>strings64 Lab01-1.dll | more
No matching files were found.

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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Sysinternals - www.sysinternals.com

C:\Users\win10\Downloads\Strings>strings64 Chapter_1L\Lab01-01.dll | more
Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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Sysinternals - www.sysinternals.com

!This program cannot be run in DOS mode.
Rich
text
.rdata
@.data
.reloc
SUV
h8'
h8'
L$xFQh
h(`
RVF
D$"
-()
```

1b,



1c,

The screenshot shows a Windows command prompt window titled 'cmd.exe' running in the background of a browser tab for 'GitHub - mikesiko/PracticalMalwareAnalysis-Labs'. The command entered is 'C:\Users\win10\Downloads\Strings>strings64 -n 4 Chapter_1L\Lab01-01.dll | more'. The output of the command is displayed in the window, showing various memory dump sections and their contents. A red arrow points to the '.rdata' section. The browser tab shows a dark-themed interface with a sidebar containing 'sign up', '...', 'history', and download-related buttons.

```
C:\Users\win10\Downloads\Strings>strings64 -n 4 Chapter_1L\Lab01-01.dll | more
Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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Sysinternals - www.sysinternals.com

!This program cannot be run in DOS mode.

Rich
.&text
<>.&rdata
@.data
.reloc
L$0h
I0h
L$4PQj
D$ID
NWVS
U7WPS
u&vWS
^[]
CloseHandle
Sleep
CreateProcessA
CreateMutexA
OpenMutexA
KERNEL32.dll
WS2_32.dll
strcmp
MSVCRT.dll
```

1d,

C:\Windows\system32\cmd.exe

C:\Users\win10\Downloads\Strings>strings64 -n 4 -o Chapter_1L\Lab01-01.dll | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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0077:!This program cannot be run in DOS mode.
0192:Rich
0472:.text
0511:..rdata
0551:@.data
0592:.reloc
4213:\$xQh
4345:IQh`
4489:\$4PQj
4520:D\$D
4929:NWS
4948:u7WPS
4965:u&WVS
5008:^[]
8458:CloseHandle
8472:Sleep
8480>CreateProcessA
8498>CreateMutexA
8514:OpenMutexA
8526:KERNEL32.dll
8540:WS2_32.dll
8554:strncmp
8562:MSVCR7.dll
8576:free

5 items

1e,

Recycle Bin

Firefox

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19045.2006]
(c) Microsoft Corporation. All rights reserved.

C:\Users\win10>cd Downloads\Strings

C:\Users\win10\Downloads\Strings>strings64 -n 4 -o Chapter_1L\Lab01-01.dll > lab01-01.txt

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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C:\Users\win10\Downloads\Strings>notepad lab01-01.txt

C:\Users\win10\Downloads\Strings>
```

lab01-01 - Notepad

File Edit Format View Help

```
4929:NWVS
4948:u7WPS
4965:u&WWS
5008:_[]
8458:CloseHandle
8472:Sleep
8480>CreateProcessA
8498>CreateMutexA
8514:OpenMutexA
8526:KERNEL32.dll
8540:WS2_32.dll
8554:strncmp
8562:MSVCRT.dll
8576:free
8584:_initterm
8596:malloc
8606:_adjust_fdiv
15564:exec
155672:sleep
155680:hello
155688:127.26.152.13
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

Windows Enterprise Evaluation
Windows License valid for 86 days
Build 19041.vb_release.191206-1406

10:08 AM 3/1/2024

2a,

```
C:\Windows\system32\cmd.exe
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab01-01.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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!This program cannot be run in DOS mode.

Richm
.text
` .rdata
@.data
UVWj
@jjj
@jjj
ugh 0@
_ ^][
$UVW
h00@_
_ ^][
$UVW
@jjj
@jjj
h|0@
D$Pj
```

2b, các hàm mở, tìm và chỉnh sửa file là UnmapViewOfFile, MapViewOfFile, FindClose, FindNextFileA, FIndFirstFileA, CopyFileA

2c, các xâu thể hiện loại file mà phần mềm này tìm là KERNEL32.dll và MSVCRT.dll

2d, Xâu được dùng để spoof là C:\windows\system32\kerne132.dll với số 1 thay cho ký tự I. 2 vấn đề khác trong sâu là windows và system32 viết thường. Xâu đúng mà xâu spoof đang cố gắng giả mạo là C:\Windows\System32\kernel32.dll

3a

```
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab01-02.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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Sysinternals - www.sysinternals.com

!This program cannot be run in DOS mode.

Rich
UPX0
UPX1
UPX2
3.04
UPX!
a\`Y
(23h
MalService
sHGL345
http://w
warean
ysisbook.co
om#Int6net Exploit 8FEI
SystemTimeToFile
GetMo
*Waitab'r
Process
```

3b, DLL và hàm để truy cập Internet là WININET.dll là InternetOpenA

3c, UPX là phần mềm nén file executable nâng cao. UPX có thể giảm kích cỡ file từ 50 đến 70%, che dấu code mà không bị phát trong bộ nhớ hoặc trong thời gian chạy. UPX quan trọng trong quá trình phân tích file nhị phân này vì ta có thể giải đóng gói phần mềm để hỗ trợ quá trình dịch ngược

4a,

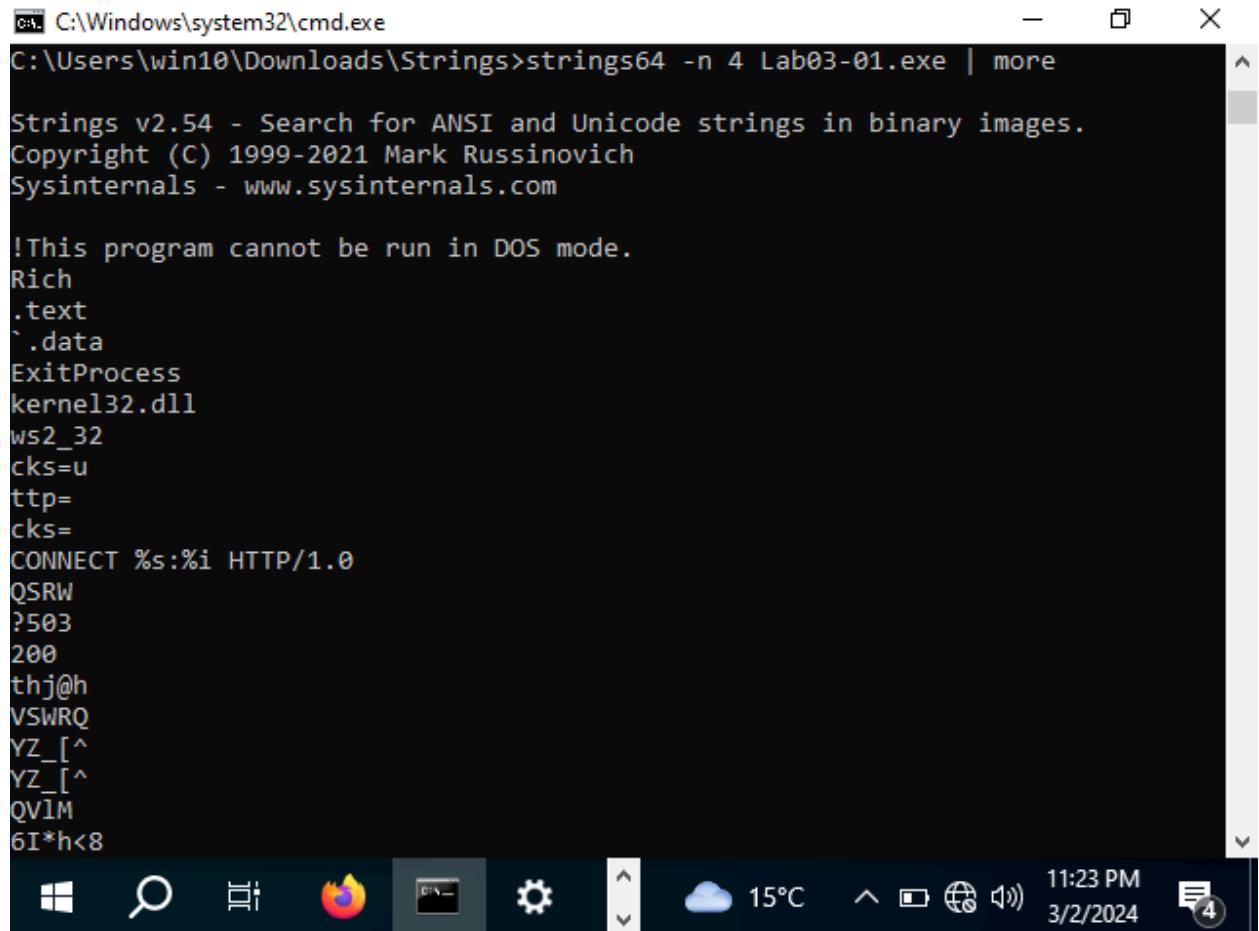
```
C:\Windows\system32\cmd.exe
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab01-03.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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!Windows Program
^.rdata
@.data
KERNEL32.dll
LoadLibraryA
GetProcAddress
":Ll
3Bt>0
VQ(8
2]<,M
P@M^
S>VW
AQ=h
I*G9>
e%N
ole32.vd
Init
FoCr
U!!C
}OLEAUTLA
```

4b, Có ít xâu có giá trị hơn các file nhị phân trước. Điều này thể hiện phần mềm này đã được đóng gói hoàn toàn.

5a,



```
C:\Windows\system32\cmd.exe
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab03-01.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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!This program cannot be run in DOS mode.

Rich
.text
` .data
ExitProcess
kernel32.dll
ws2_32
cks=u
tcp=
cks=
CONNECT %s:%i HTTP/1.0
QSRLW
?503
200
thj@h
VSWRQ
YZ_[^
YZ_[^
QVIM
6I*h<8
```

5b, Địa điểm của registry là : SOFTWARE\Microsoft\Windows\CurrentVersion\Run và
SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer\Shell Folders

5c, FQDN là www.practicalmalwareanalysis.com

5d, Xâu liên quan đến video là VideoDriver

5e, Xâu có thể sử dụng làm tên người dùng mà kẻ tấn công có thể sử dụng là admin

6a,

```
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab03-02.dll | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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Sysinternals - www.sysinternals.com

!This program cannot be run in DOS mode.

Rich
.text
` .rdata
@.data
.reloc
QQSUVW3
Hu4S
PSUV
j@SU
D$ 3
| $%Y
D$$SPh
t%Hht
D$ P
D$$h
D$ P
PhDa
SSSh
```

6b, Xâu là hàm để thao túng dịch vụ là

RegisterServiceCtrlHandlerA, CloseServiceHandle, CreateServiceA, DeleteService, OpenSCManagerA, DeleteService. SetServiceStatus, ServiceMain, UninstallService

6c, Xâu để thao túng Registry là RegSetValueExA, RegCreateKeyA, RegCloseKey, RegQueryValueExA, RegOpenKeyExA,

6d, Xâu liên quan đến hàm thao tác với mạng là InternetReadFile, HttpQueryInfoA, HttpSendRequestA, HttpOpenRequestA, Int như nhlernetConnectA, InternetOpenA, InternetCloseHandle

6e, Tùy chọn được sử dụng trong xâu chứa cmd là /c. Nó đáng nghi vì lựa chọn này cho phép ta thực hiện xâu sau lựa chọn này rồi hủy cmd, khiến cho cmd thực hiện các thao tác được mã độc đề ra rồi hủy cmd để che dấu vết.

6f, Xâu có chữ cái viết hoa, viết thường, số và 1 vài ký tự là

"ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789+/", nó đáng nghi vì nó là tất cả các ký tự trong chuỗi Base64, từ đó ta có thể đoán kẻ tấn công sử dụng Base64 để che dấu thông tin trong mã độc mình.

7a,

```
C:\Users\win10\Downloads\Strings>
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab03-03.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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Sysinternals - www.sysinternals.com

!This program cannot be run in DOS mode.

Rich
.text
` .rdata
@.data
.rsrc
jjjj
h@P@
hXP@
hdP@
hLP@
Ph0P@
GIt#
YYh P@
t9UW
?=t"U
QQS3
PSSW
```

7b, Chương trình có báo lỗi là không thể khởi tạo heap cũng như nhiều chức năng cơ bản của hệ điều hành gặp lỗi để rồi Microsoft Visual C++ Runtime Library gặp lỗi Runtime. Thêm nữa trong phần báo lỗi thì ta có thể thấy input có chứa nhiều xâu gồm nhiều chữ A được lặp lại, từ đó ta có thể đoán là chương trình này muốn làm tràn heap để thực hiện các chương trình được đóng gói ở sau các xâu A.

8a,

```
C:\Windows\system32\cmd.exe
C:\Users\win10\Downloads\Strings>
C:\Users\win10\Downloads\Strings>
C:\Users\win10\Downloads\Strings>strings64 -n 4 Lab03-04.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
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!This program cannot be run in DOS mode.

6KRich
.text
` .rdata
@.data
jjjj
SVWh
SVWh
SVWh
jjjjjj
jjjjjj
SVWh?
YYh(
SUVW
_ ^][
QSVW
t7)E
^[_3

Windows PowerShell
File Explorer
Task View
Edge
Settings
6:20 AM
Đèn... 3/3/2024
```

8b, Xâu cho thấy tùy chọn cmd là /c

8c, Xâu cho thấy chương trình sẽ xóa một cái gì đó là cmd.exe /c del

8d, Xâu kìm hãm đầu ra là >> NULL

8e, Xâu thể hiện các lựa chọn menu kẻ tấn công có thể chọn là NOTHING, DOWNLOAD ,UPLOAD, SLEEP

Lab 15.02

1a,

C:\Windows\System32\cmd.exe

```
Microsoft Windows [Version 10.0.19045.4046]
(c) Microsoft Corporation. All rights reserved.

C:\Users\win10\Downloads\upx-4.2.2-win64>upx -o Unpacked_Lab01-02.exe -d La
b01-02.exe
          Ultimate Packer for eXecutables
          Copyright (C) 1996 - 2024
UPX 4.2.2      Markus Oberhumer, Laszlo Molnar & John Reiser    Jan 3rd 20
24

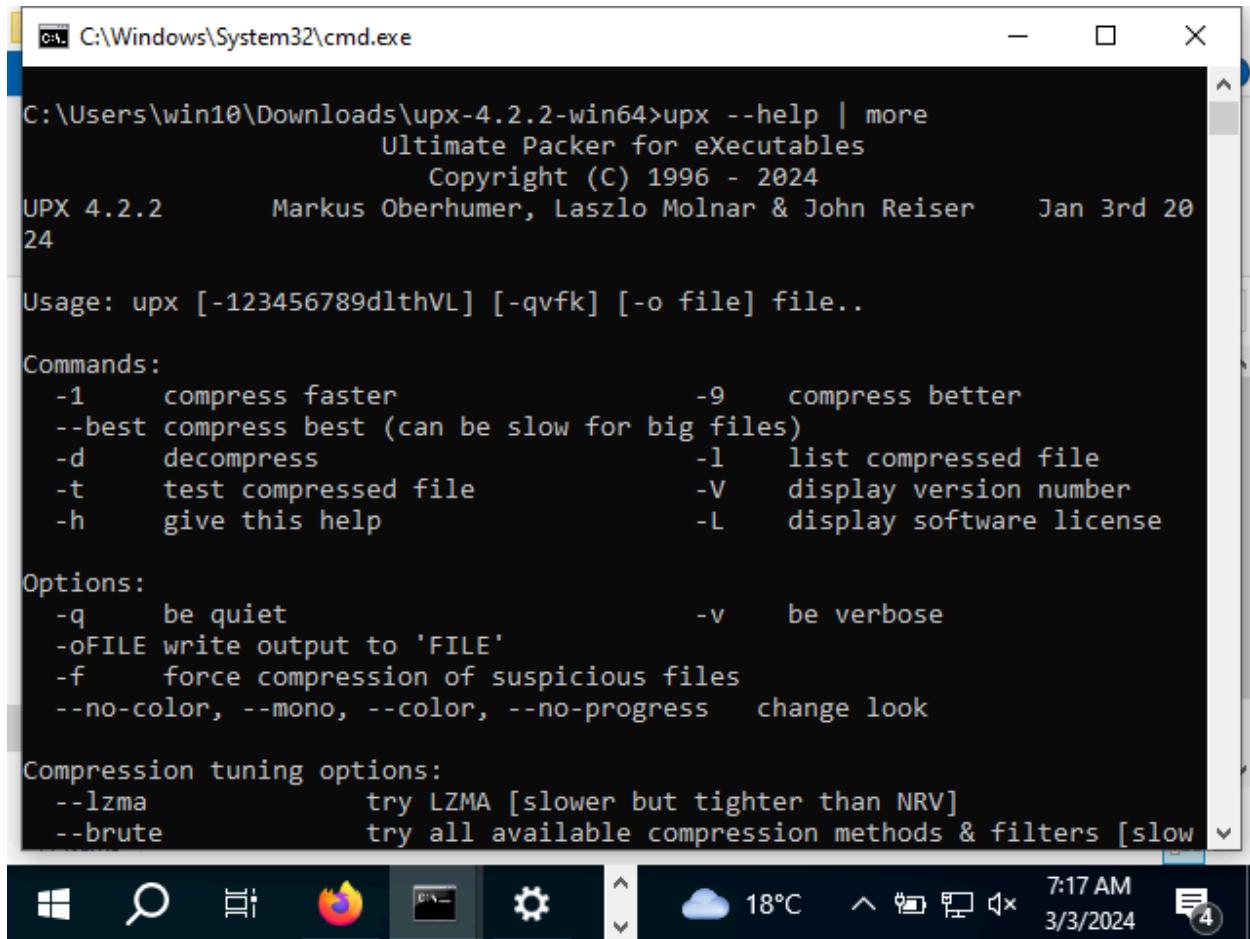
      File size        Ratio        Format        Name
-----  -----  -----
  16384 <-    3072    18.75%    win32/pe    Unpacked_Lab01-02.exe

Unpacked 1 file.

C:\Users\win10\Downloads\upx-4.2.2-win64>
```

The screenshot shows a Windows 10 desktop environment. A Command Prompt window is open in the foreground, displaying the output of the UPX unpacking process. The taskbar at the bottom features the Start button, a search icon, pinned icons for File Explorer, Mozilla Firefox, and File History, a system settings gear icon, and a weather widget showing 18°C and a cloud icon. The date and time are also visible on the taskbar.

1b,



C:\Windows\System32\cmd.exe

```
C:\Users\win10\Downloads\upx-4.2.2-win64>upx --help | more
      Ultimate Packer for eXecutables
      Copyright (C) 1996 - 2024
UPX 4.2.2          Markus Oberhumer, Laszlo Molnar & John Reiser    Jan 3rd 20
24

Usage: upx [-123456789dlthVL] [-qvfk] [-o file] file..

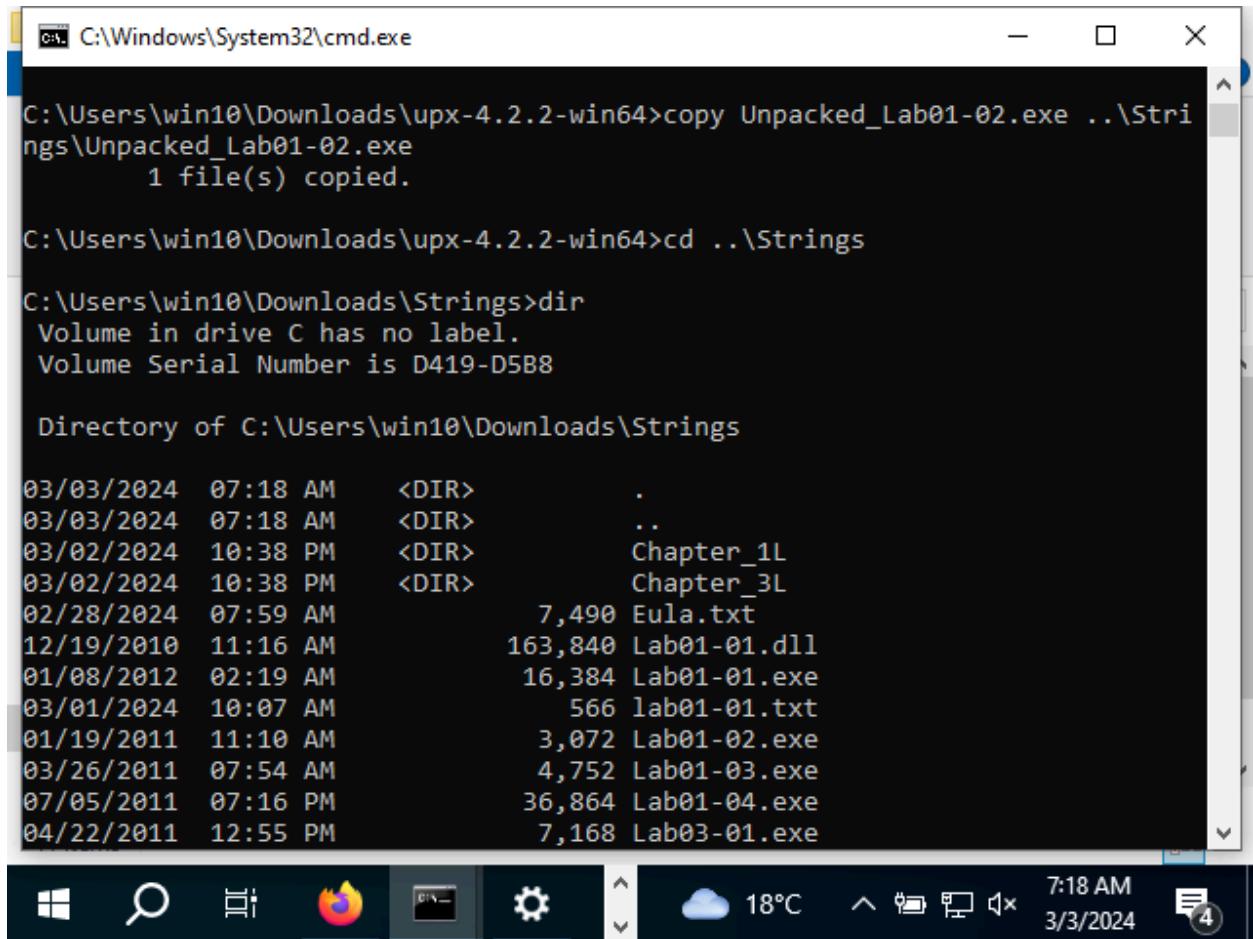
Commands:
  -1      compress faster           -9      compress better
  --best  compress best (can be slow for big files)
  -d      decompress               -l      list compressed file
  -t      test compressed file     -V      display version number
  -h      give this help           -L      display software license

Options:
  -q      be quiet                 -v      be verbose
  -oFILE write output to 'FILE'
  -f      force compression of suspicious files
  --no-color, --mono, --color, --no-progress  change look

Compression tuning options:
  --lzma            try LZMA [slower but tighter than NRV]
  --brute           try all available compression methods & filters [slow]
```

Windows taskbar icons: Start, Search, Task View, Firefox, File Explorer, Settings, Cloud, 18°C, 7:17 AM, 3/3/2024, Notifications (4).

1c,



C:\Windows\System32\cmd.exe

```
C:\Users\win10\Downloads\upx-4.2.2-win64>copy Unpacked_Lab01-02.exe ..\Strings\Unpacked_Lab01-02.exe
    1 file(s) copied.

C:\Users\win10\Downloads\upx-4.2.2-win64>cd ..\Strings

C:\Users\win10\Downloads\Strings>dir
Volume in drive C has no label.
Volume Serial Number is D419-D5B8

Directory of C:\Users\win10\Downloads\Strings

03/03/2024  07:18 AM      <DIR>        .
03/03/2024  07:18 AM      <DIR>        ..
03/02/2024  10:38 PM      <DIR>        Chapter_1L
03/02/2024  10:38 PM      <DIR>        Chapter_3L
02/28/2024  07:59 AM            7,490 Eula.txt
12/19/2010  11:16 AM       163,840 Lab01-01.dll
01/08/2012  02:19 AM        16,384 Lab01-01.exe
03/01/2024  10:07 AM          566 lab01-01.txt
01/19/2011  11:10 AM        3,072 Lab01-02.exe
03/26/2011  07:54 AM        4,752 Lab01-03.exe
07/05/2011  07:16 PM       36,864 Lab01-04.exe
04/22/2011  12:55 PM        7,168 Lab03-01.exe
```


2a,

A screenshot of a Windows desktop environment. At the top is a command prompt window titled 'cmd' with the path 'C:\Windows\System32\cmd.exe'. The window displays the output of the command 'strings64 Unpacked_Lab01-02.exe | more'. The output shows various memory addresses and strings, including file paths like 'C:\Users\win10\Downloads\Strings>' and strings such as 'Strings v2.54 - Search for ANSI and Unicode strings in binary images.', 'Copyright (C) 1999-2021 Mark Russinovich', 'Sysinternals - www.sysinternals.com', and numerous assembly-like labels and symbols. Below the command prompt is a standard Windows taskbar with icons for Start, Search, Task View, File Explorer, and Mozilla Firefox. The taskbar also shows the date and time as '7:19 AM 3/3/2024'.

```
C:\Windows\System32\cmd.exe
        4 Dir(s)  5,110,018,048 bytes free

C:\Users\win10\Downloads\Strings>strings64 Unpacked_Lab01-02.exe | more

Strings v2.54 - Search for ANSI and Unicode strings in binary images.
Copyright (C) 1999-2021 Mark Russinovich
Sysinternals - www.sysinternals.com

!This program cannot be run in DOS mode.

Rich
.text
` .rdata
@.data
@jj
h(0@
    @
Vh(0@
    , @
@jjjj
L$,j
@jjj
@jjj
T$
$ @
( @
```

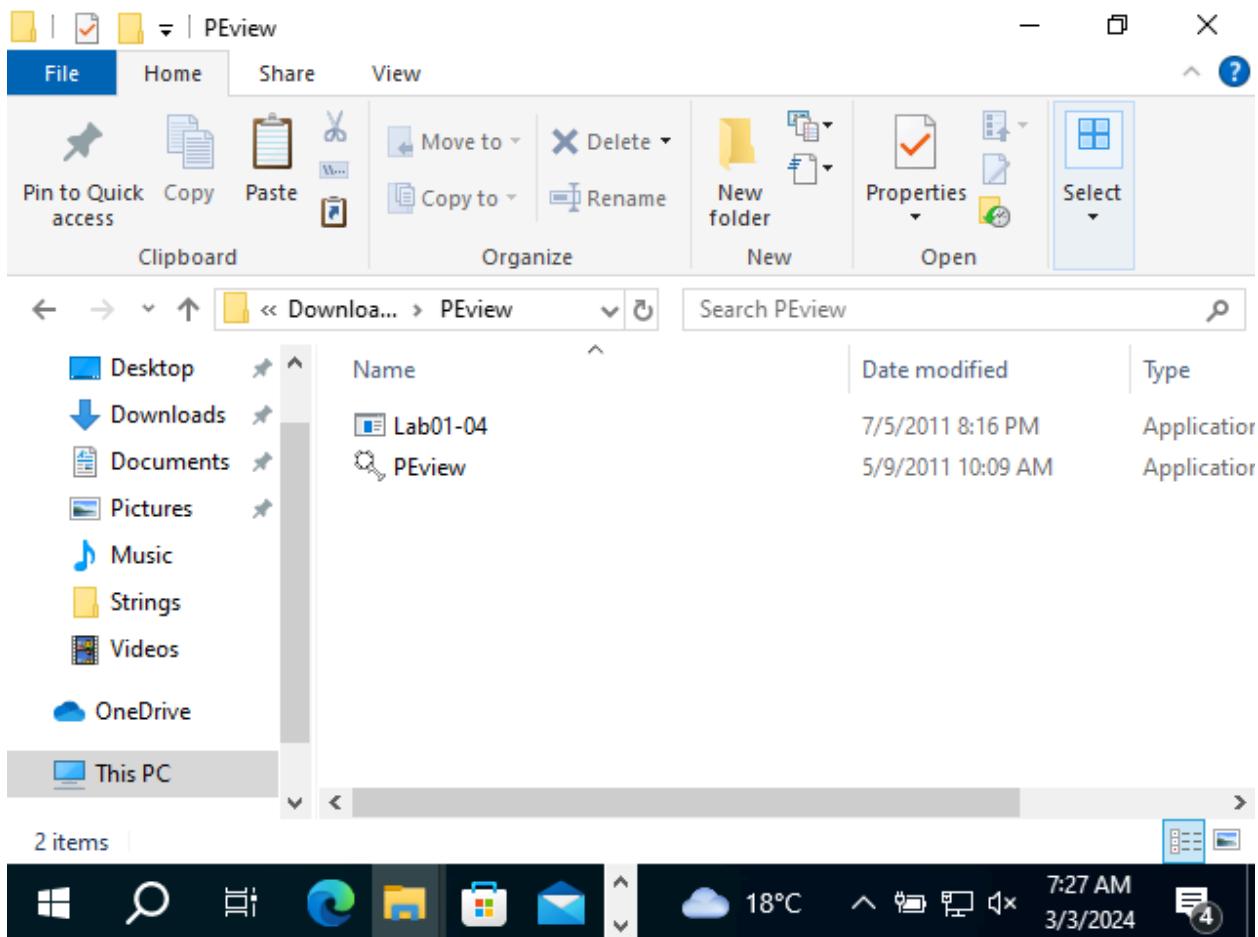
2b, URL hiện lên là <http://www.malwareanalysisbook.com>

2c, Một số hàm liên quan đến URL là InternetOpenUrlA và InternetOpenA

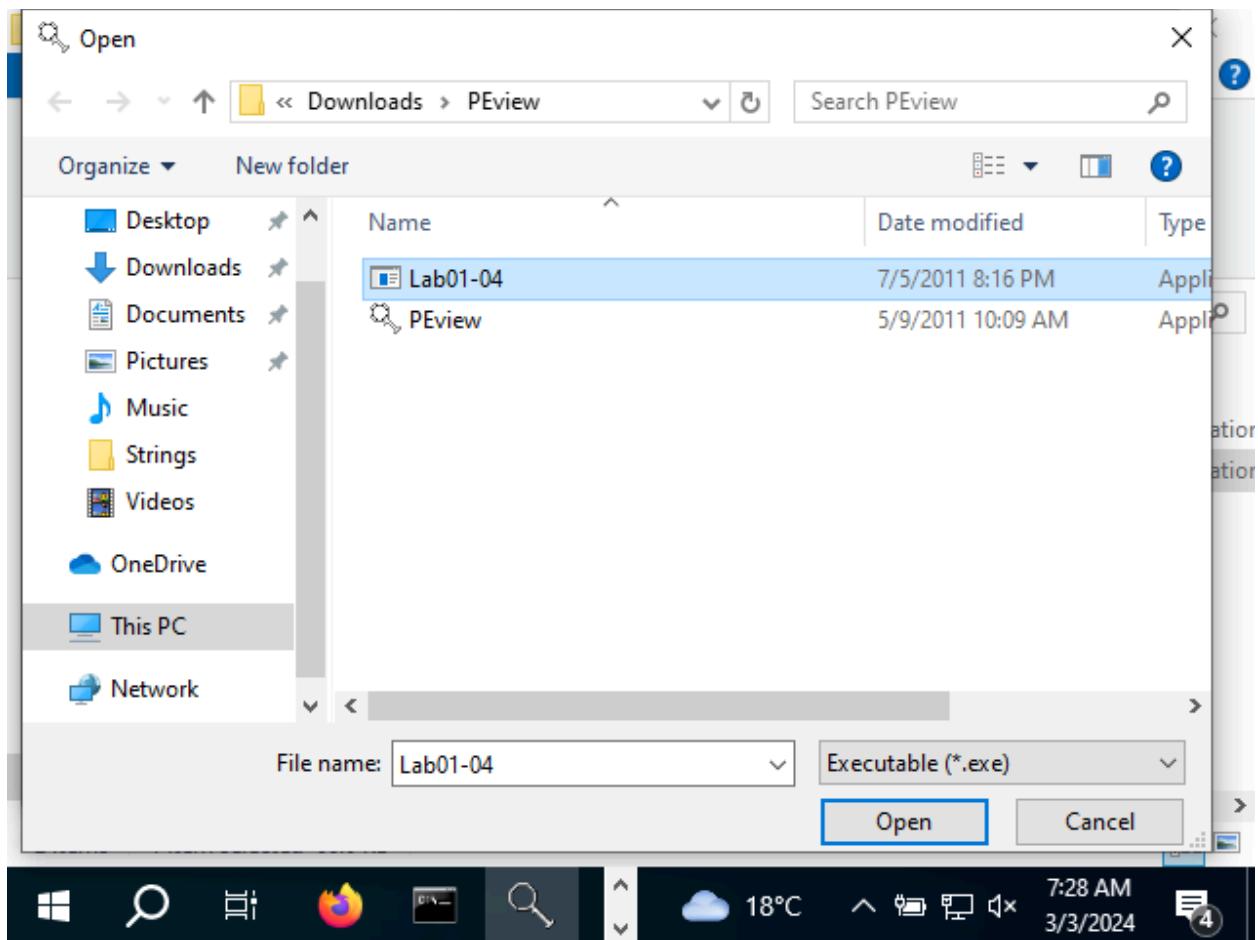
2d, DLL mà các hàm này đến từ WININET.dll

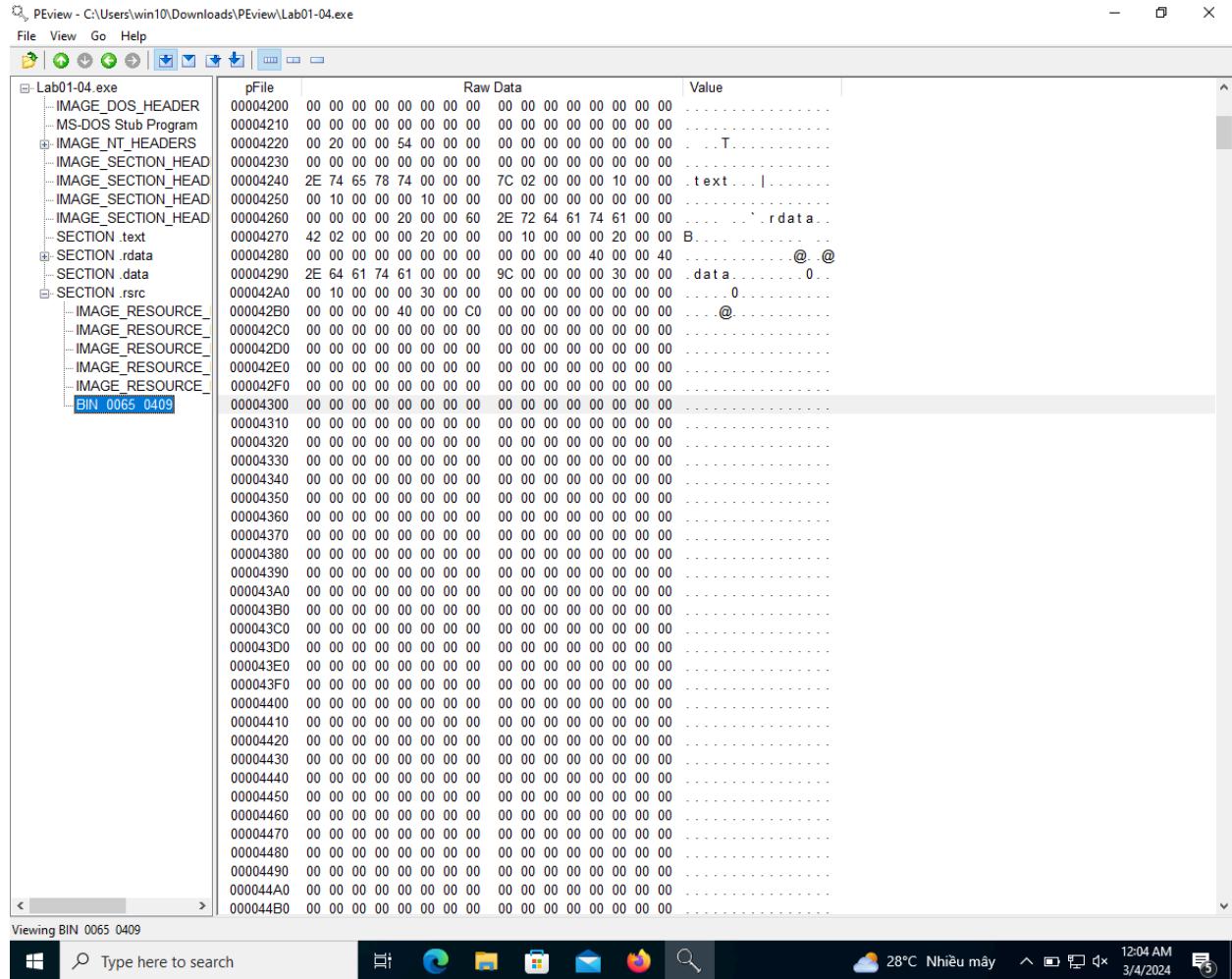
Lab 15.03

1a,



1b & c,





1e,

PEView - C:\Users\win10\Downloads\PEview\Lab01-04.exe

File View Go Help

Lab01-04.exe

File	Raw Data	Value
IMAGE_DOS_HEADER	00004060 4D 5A 90 00 03 00 00 00 04 00 00 00 FF FF 00 00 MZ@.....
MS-DOS Stub Program	00004070 B8 00 00 00 00 00 00 00 40 00 00 00 00 00 00 00@.....
IMAGE_NT_HEADERS	00004080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_SECTION_HEAD	00004090 00 00 00 00 00 00 00 00 00 00 00 E8 00 00 00
IMAGE_SECTION_HEAD	000040A0 0E 1F BA 0E 00 B4 09 CD 21 B8 01 4C CD 21 54 68!..L..!Th
IMAGE_SECTION_HEAD	000040B0 69 73 20 70 72 6F 67 72 61 6D 20 63 61 6E 6E 6F	is program canno
IMAGE_SECTION_HEAD	000040C0 74 20 62 65 20 72 75 6E 20 69 6E 20 44 4F 53 20	t be run in DOS
SECTION_text	000040D0 6D 6F 64 65 2E 0D 00 0A 24 00 00 00 00 00 mode \$\$.....
SECTION .rdata	000040E0 3B C6 02 89 7F A7 6C DA 7F A7 6C DA 7F A7 6C DAI..I..I..
SECTION .data	000040F0 97 B8 66 DA 74 A7 6C DA FC BB 62 DA 7E A7 6C DA	f.t.l..b..~.I.
SECTION_rsrc	00004100 97 B8 68 DA 7D A7 6C DA 7F A7 6C DA 7C A7 6C DAh.{.l..I..I..I..
IMAGE_RESOURCE_	00004110 7F A7 6D DA 6C A7 6C DA 1D B8 7F DA 7C A7 6C DAm.l.l..I..I..I..
IMAGE_RESOURCE_	00004120 97 B8 7A DA 7D A7 6C DA 52 69 63 68 7F A7 6C DAz.{.l.Rich .I..
IMAGE_RESOURCE_	00004130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00004140 00 00 00 00 00 00 00 00 50 45 00 00 4C 01 03 00	PE..L..
IMAGE_RESOURCE_	00004150 FB 97 69 4D 00 00 00 00 00 00 00 00 E0 00 0F 01	iM.....
BIN 0065 0409	0B 01 06 00 00 10 00 00 00 20 00 00 00 00 00 00
	00004170 32 11 00 00 00 10 00 00 00 20 00 00 00 40 00 2.....@.
	00004180 00 10 00 00 00 10 00 00 04 00 00 00 00 00 00 00
	00004190 04 00 00 00 00 00 00 00 00 40 00 00 10 00 00	@.....
	000041A0 00 00 00 00 02 00 00 00 00 00 10 00 00 10 00 00
	000041B0 00 00 10 00 00 10 00 00 00 00 00 00 10 00 00 00
	000041C0 00 00 00 00 00 00 00 00 64 20 00 00 50 00 00 00	d ..P..
	000041D0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000041E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000041F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00004200 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00004210 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00004220 00 20 00 00 54 00 00 00 00 00 00 00 00 00 00 00	T.....
	00004230 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00004240 2E 74 65 78 74 00 00 00 7C 02 00 00 00 10 00 00	text..
	00004250 00 10 00 00 00 10 00 00 00 00 00 00 00 00 00 00
	00004260 00 00 00 00 20 00 00 60 2E 72 64 61 74 61 00 00`..rdata..
	00004270 42 02 00 00 00 20 00 00 00 10 00 00 00 20 00 00 B.....
	00004280 00 00 00 00 00 00 00 00 00 00 00 40 00 00 40 00@..@..
	00004290 2E 64 61 74 61 00 00 00 9C 00 00 00 30 00 00	data.....0..
	000042A0 00 10 00 00 00 30 00 00 00 00 00 00 00 00 00 000.....
	000042B0 00 00 00 00 40 00 00 C0 00 00 00 00 00 00 00 00@.....
	000042C0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000042D0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000042E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000042F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00004300 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00004310 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Viewing BIN 0065 0409

Windows Taskbar: Type here to search, File Explorer, Mail, Firefox, Search icon, Weather (28°C), Date (3/4/2024), Time (12:07 AM)

1f,

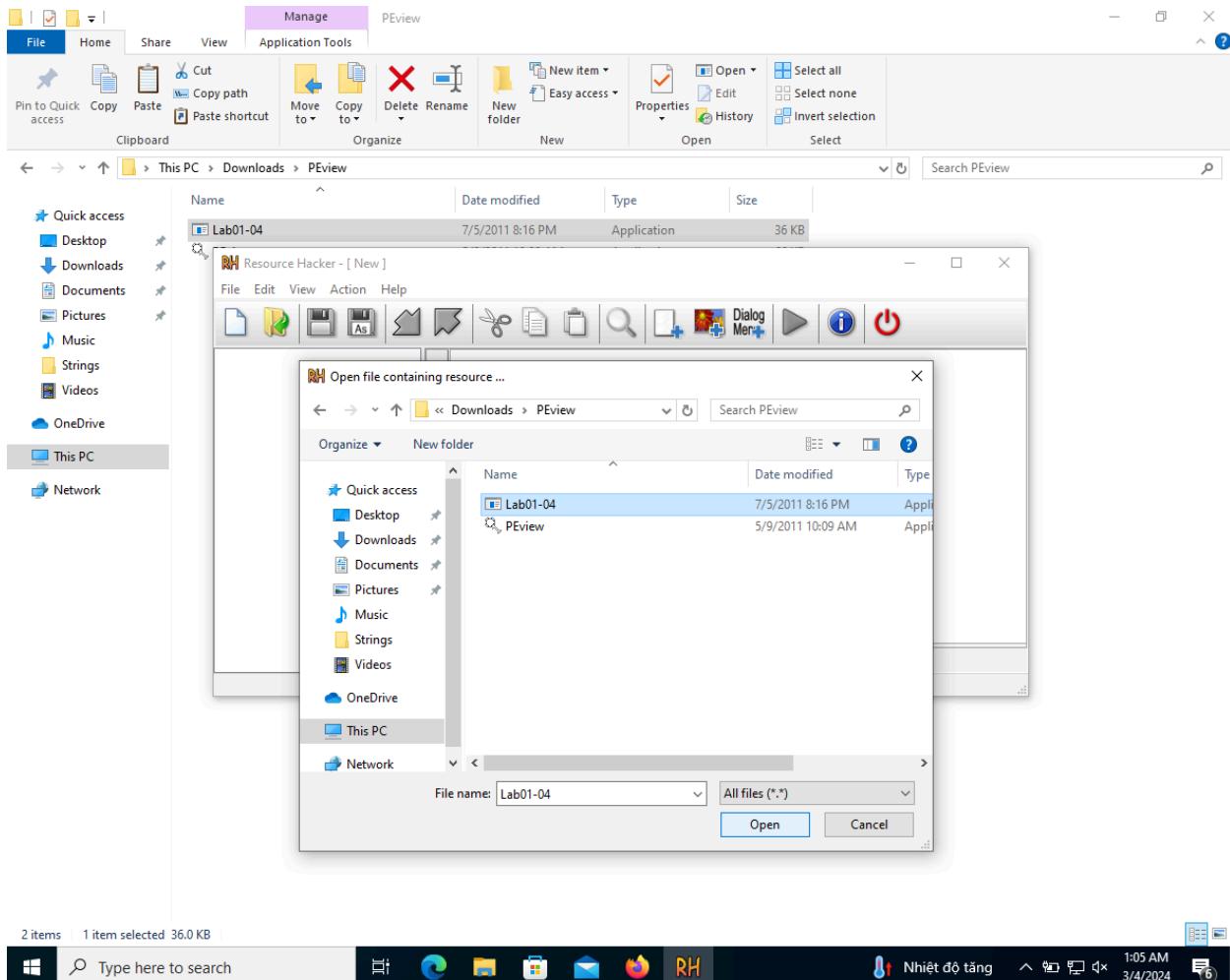
PEview - C:\Users\win10\Downloads\PEview\Lab01-04.exe

File View Go Help

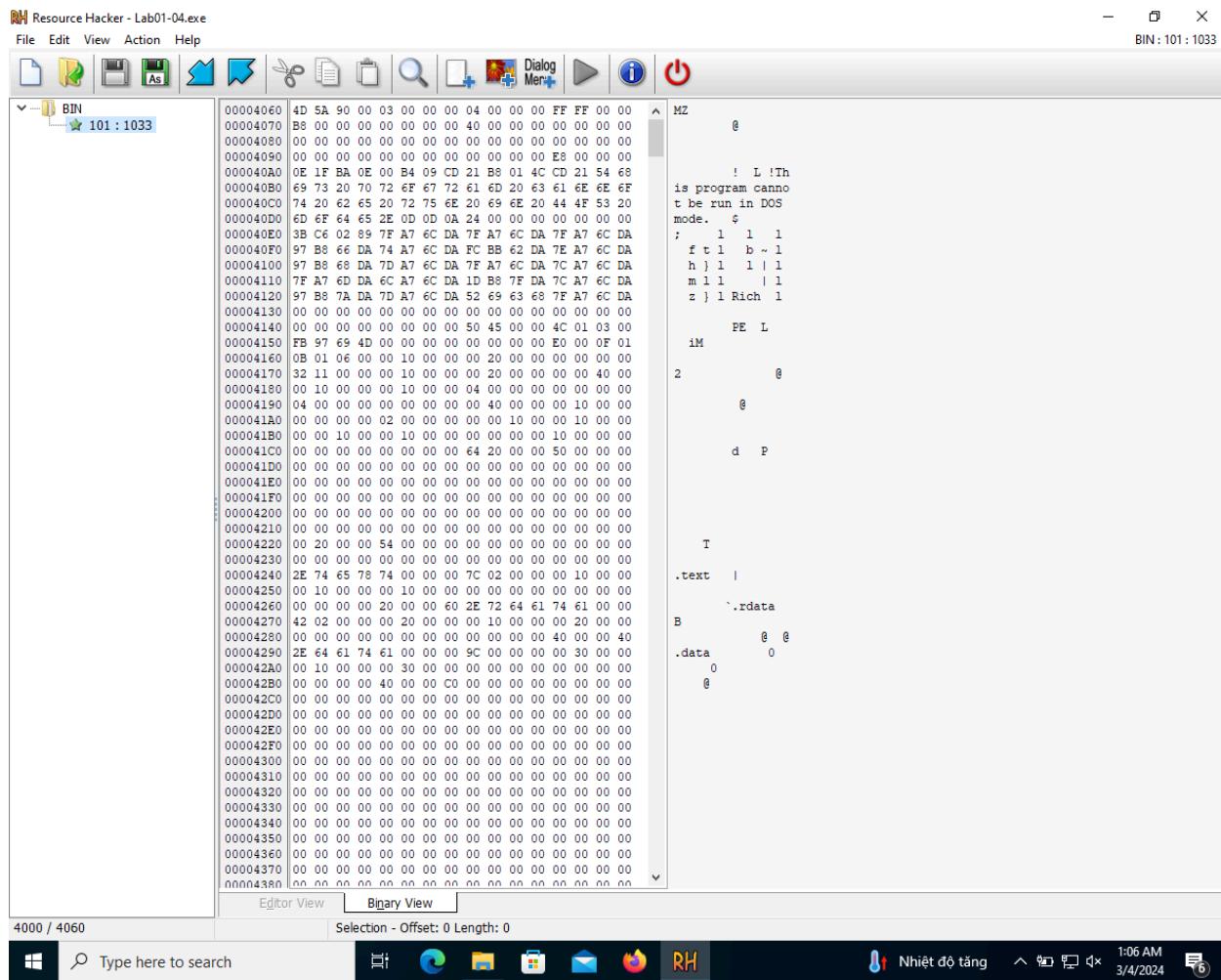
Lab01-04.exe

pFile	Raw Data	Value
IMAGE_DOS_HEADER	00006F30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
MS-DOS Stub Program	00006F40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_NT_HEADERS	00006F50 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_SECTION_HEAD	00006F60 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_SECTION_HEAD	00006F70 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_SECTION_HEAD	00006F80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_SECTION_HEAD	00006F90 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
SECTION_text	00006FA0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
SECTION .rdata	00006FB0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
SECTION .data	00006FC0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
SECTION .rsrc	00006FD0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00006FE0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00006FF0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00007000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00007010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00007020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_RESOURCE_	00007030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
BIN 0065 0409	00007040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007070 5C 77 69 6E 75 70 2E 65 78 65 00 00 25 73 25 73 \winup.exe.%\$%	\winup.exe.%\$%
	00007080 00 00 00 00 5C 73 79 73 74 65 6D 33 32 5C 77 75\system32\wu\system32\wu
	00007090 70 64 6D 67 72 64 2E 65 78 65 00 00 25 73 25 73 pdmgrd.exe.%\$%	pdmgrd.exe.%\$%
	000070A0 00 00 00 00 68 74 74 70 3A 2F 77 77 77 2E 70 http://www.p	http://www.p
	000070B0 72 61 63 74 69 63 61 6C 6D 61 6C 77 61 72 65 61 racticalmalwarea	racticalmalwarea
	000070C0 6E 61 6C 79 73 69 73 2E 63 6F 6D 2F 75 70 64 61 nalysis.com/upda	nalysis.com/upda
	000070D0 74 65 72 2E 65 78 65 00 01 00 00 00 00 00 00 00 ter.exe.....	ter.exe.....
	000070E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000070F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007140 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007150 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007160 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007170 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007180 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	00007190 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000071A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000071B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000071C0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000071D0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	000071E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

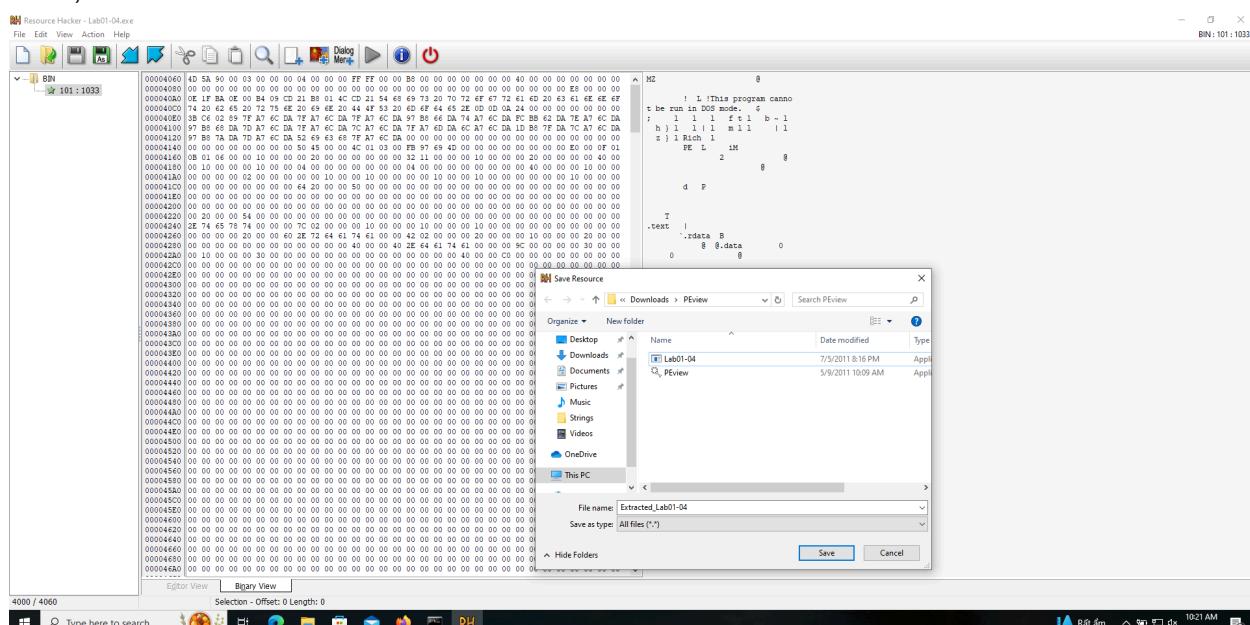
2a&b,



2c,



2d&e,



3a,

PEView - C:\Users\win10\Downloads\PEview\Extracted_Lab01-04.exe

File View Go Help

pFile	Raw Data	Value
Extracted_Lab01-04.exe	4D 5A 90 00 03 00 00 00 04 00 00 00 FF FF 00 00	MZ.....
IMAGE_DOS_HEADER	B8 00 00 00 00 00 00 00 40 00 00 00 00 00 00 00@.....
MS-DOS Stub Program	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_NT_HEADERS	00000020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
IMAGE_SECTION_HEAD	00000030 00 00 00 00 00 00 00 00 00 00 00 E8 00 00 00 00
IMAGE_SECTION_HEAD	00000040 0E 1F BA 0E 00 B4 09 CD 21 B8 01 4C CD 21 54 68!..L..!Th
IMAGE_SECTION_HEAD	69 73 20 70 72 6F 67 72 61 6D 20 63 61 6E 6E 6F	is program canno
SECTION .text	00000050 69 73 20 70 72 6F 67 72 61 6D 20 63 61 6E 6E 6F	t be run in DOS
SECTION .rdata	00000060 74 20 62 65 20 72 75 6E 20 69 6E 20 44 4F 53 20	mode....\$.....
SECTION .data	00000070 6D 6F 64 65 2E 0D 0D 0A 24 00 00 00 00 00 00 00
	00000080 3B C6 02 89 7F A7 6C DA 7F A7 6C DA 7F A7 6C DA	;...,.I.,.I.,.I.
	00000090 97 B8 66 DA 74 A7 6C DA FC BB 62 DA 7E A7 6C DA	..f.t.l..b..~.I.
	000000A0 97 B8 68 DA 7D A7 6C DA 7F A7 6C DA 7C A7 6C DA	.h.}.I.,.I.,.I.
	000000B0 7F A7 6D DA 6C A7 6C DA 1D B8 7F DA 7C A7 6C DA	.m.I.I.,.I.,.I.
000000C0	97 B8 7A DA 7D A7 6C DA 52 69 63 68 7F A7 6C DA	.z.}.I.Rich.I.
000000D0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000000E0	00 00 00 00 00 00 00 00 50 45 00 00 4C 01 03 00PE..L..
000000F0	FB 97 69 4D 00 00 00 00 00 00 00 E0 00 0F 01iM.....
00000100	0B 01 06 00 00 10 00 00 00 20 00 00 00 00 00 00
00000110	32 11 00 00 00 10 00 00 00 20 00 00 00 40 00 2.....@.
00000120	00 10 00 00 00 10 00 00 04 00 00 00 00 00 00 00
00000130	04 00 00 00 00 00 00 00 00 40 00 00 10 00 00 00@.....
00000140	00 00 00 00 02 00 00 00 00 00 10 00 00 10 00 00
00000150	00 00 10 00 00 00 10 00 00 00 00 00 00 00 00 00
00000160	00 00 00 00 00 00 00 00 64 20 00 00 50 00 00 00d..P..
00000170	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000180	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000190	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000001A0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000001B0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000001C0	00 20 00 00 54 00 00 00 00 00 00 00 00 00 00 00T.....
000001D0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000001E0	2E 74 65 78 74 00 00 00 7C 02 00 00 00 10 00 00text..
000001F0	00 10 00 00 00 10 00 00 00 00 00 00 00 00 00 00
00000200	00 00 00 00 20 00 00 60 2E 72 64 61 74 61 00 00`..rdata..
00000210	42 02 00 00 00 20 00 00 00 10 00 00 00 20 00 00	B.....
00000220	00 00 00 00 00 00 00 00 00 00 00 40 00 00 40 00@..@.....
00000230	2E 64 61 74 61 00 00 00 9C 00 00 00 30 00 00 00data.....0..
00000240	00 10 00 00 00 30 00 00 00 00 00 00 00 00 00 000.....
00000250	00 00 00 00 40 00 00 C0 00 00 00 00 00 00 00 00@.....
00000260	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000270	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000280	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000290	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000002A0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000002B0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Viewing Extracted_Lab01-04.exe

Windows Taskbar icons: File Explorer, Edge, File Manager, Mail, Firefox, Search bar, Cloud, Weather (28°C), Notifications (Many), Date/Time (1:06 AM, 3/4/2024)

3b,

PEView - C:\Users\win10\Downloads\PEview\Extracted_Lab01-04.exe

File View Go Help

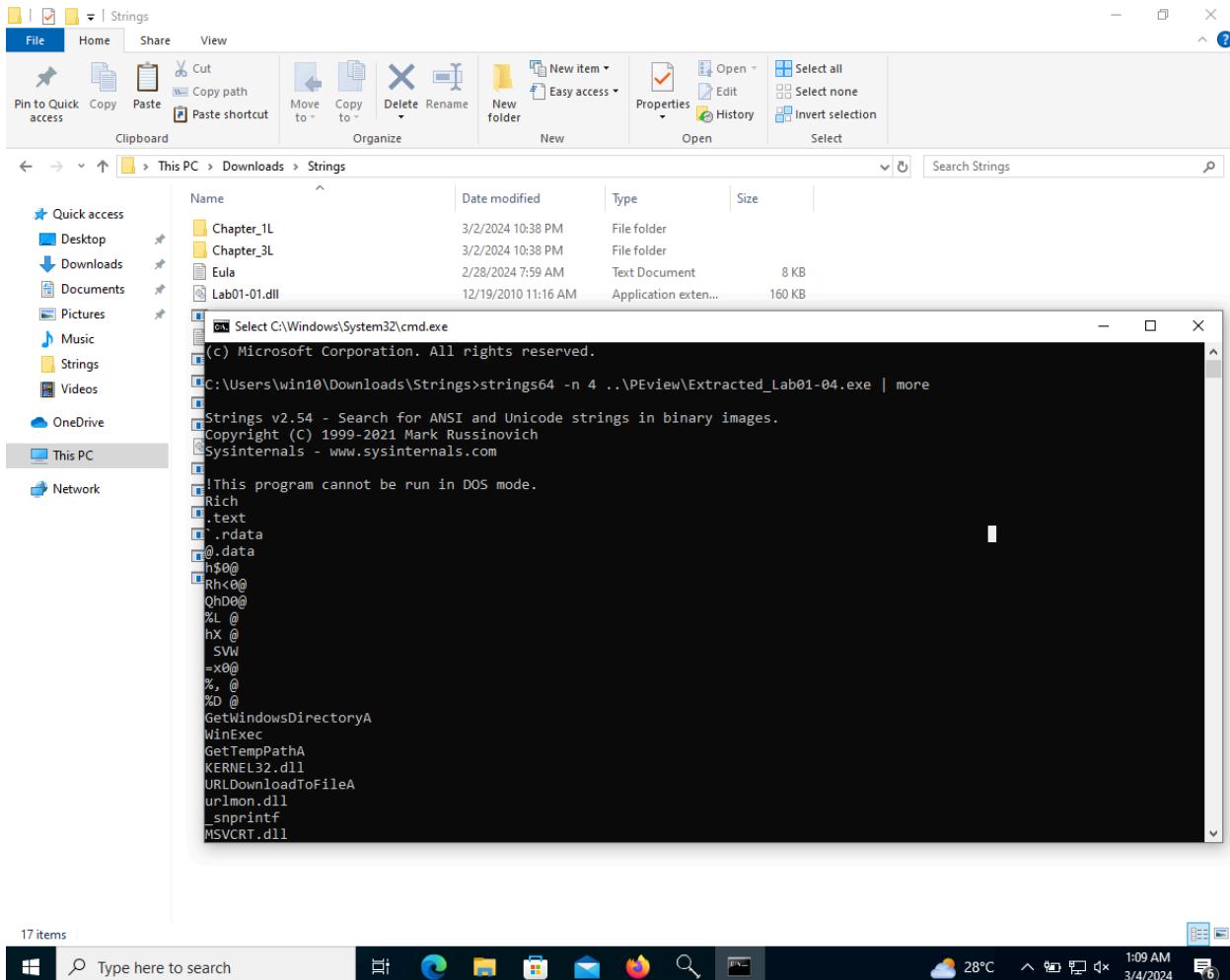
pFile	Data	Description	Value
Extracted_Lab01-04.exe	000020B4	Hint/Name RVA	02D3 WinExec
IMAGE_DOS_HEADER	00002120	Hint/Name RVA	0165 GetTempPathA
MS-DOS Stub Program	000020B8	Hint/Name RVA	017D GetWindowsDirectoryA
IMAGE_NT_HEADERS	000020BC	Hint/Name RVA	KERNEL32.dll
IMAGE_SECTION_HEAD	000020C0	End of Imports	
IMAGE_SECTION_HEAD	000020C4	Hint/Name RVA	00B7 _controlfp
IMAGE_SECTION_HEAD	000020C8	Hint/Name RVA	01AE _snprintf
SECTION .text	000020CC	Hint/Name RVA	00D3 _exit
SECTION .rdata	000020D0	Hint/Name RVA	0048 _XcptFilter
IMPORT Address Tabl	000020D4	Hint/Name RVA	0249 exit
IMPORT Directory Tab	000020D8	Hint/Name RVA	0064 __p__initenv
IMPORT Name Table	000020DC	Hint/Name RVA	0058 __getmainargs
IMPORT Hints/Names	000021B0	Hint/Name RVA	
SECTION .data	000020E0	Hint/Name RVA	010F __initterm
	000020E4	Hint/Name RVA	0083 __setusermatherr
	000020E8	Hint/Name RVA	009D __adjust_fdiv
	000020EC	Hint/Name RVA	006A __p__commode
	000020F0	Hint/Name RVA	006F __p__fmode
	000020F4	Hint/Name RVA	0081 __set_app_type
	000020F8	Hint/Name RVA	00CA __except_handler3
	000020FC	End of Imports	MSVCRT.dll
	00002100	Hint/Name RVA	003E URLDownloadToFileA
	00002104	End of Imports	urlmon.dll

Viewing IMPORT Name Table

Type here to search

28°C Nhiều mây 1:08 AM 3/4/2024

4a,



4b, Xâu liên quan đến URL đáng chú ý là <http://www.practicalmalwareanalysis.com/updater.exe>
 4c, Xâu liên quan đến quá trình cập nhật là \winup.exe, \system32\wupdmgd.exe,
<http://www.practicalmalwareanalysis.com/updater.exe>

Lab 15.04:

1a&b,

VirusTotal - File - 58898bd42c5... +

https://www.virustotal.com/gui/file/58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47

54 security vendors and 1 sandbox flagged this file as malicious

Community Score 54 / 72

Lab01-01.exe

Size 16.00 KB | Last Analysis Date 3 hours ago | EXE

DETECTION DETAILS RELATIONS BEHAVIOR COMMUNITY 30+

Join the VT Community and enjoy additional community insights and crowdsourced detections, plus an API key to automate checks.

Popular threat label: trojan.ulise/aenjaris Threat categories: trojan Family labels: ulise, aenjaris, kkbov

Security vendor	Threat detection	Analysis provider	Malware family
AhnLab-V3	Trojan/Win32.Agent.C957604	Alibaba	Trojan:Win32/Aenjaris.2be749b4
ALYac	Trojan.Agent.16384SS	Antiy-AVL	Trojan/Win32.TSGeneric
Arcabit	Trojan.Ulise.D1BC1E	Avast	Win32:Malware-gen
AVG	Win32:Malware-gen	Avira (no cloud)	TR/Agent.kkbov
BitDefender	Gen:Variant.Ulise.113694	Bkav Pro	W32.Common.4C83E082
ClamAV	Win.Malware.Agent-6342616-0	CrowdStrike Falcon	Win/malicious_confidence_100% (W)
Cybereason	Malicious.c1bd36	Cylance	Unsafe

Type here to search 28°C 1:24 AM 3/4/2024

1c,

The screenshot shows a Windows desktop environment. At the top, there is a taskbar with the Start button, a search bar containing "Type here to search", and several pinned icons for File Explorer, Edge, File History, Mail, and Firefox. The system tray shows the date and time as "3/4/2024 1:50 AM", the temperature as "28°C", and battery status. Above the taskbar, a browser window is open to the VirusTotal website (<https://www.virustotal.com/gui/file/58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47>). The page displays basic properties of the file, including MD5, SHA-1, SHA-256, Vhash, Authentihash, Imphash, Rich PE header hash, SSDeep, TLSH, File type (Win32 EXE), Magic, TrID, DetectItEasy, File size (16.00 KB), and PEID packer (Microsoft Visual C++). It also shows a history section with creation and submission dates, and a names section listing various file names. A blue circular icon with a white arrow is visible on the right side of the screen.

VirusTotal - File - 58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47

Join the VT Community and enjoy additional community insights and crowdsourced detections, plus an API key to automate checks.

Basic properties

MD5	bb7425b82141a1c0f7d60e5106676bb1
SHA-1	9dcce39ac1bd36d877fdb0025ee88fdaff0627cdb
SHA-256	58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47
Vhash	014036151d1bza0f=z
Authentihash	094eed7fcf959fd9ba704d5fe0b965b7bbb6ca09d302870935dc0508d940ba2c
Imphash	2b5f75aa75c57ed7c68f7be490d63605
Rich PE header hash	6a52cc2e068dfbf8f2b4715556fd89a66
SSDeep	96:1t6YCuDzp17S5eVIV2cFL+3lznx9+NNoyn:v6Y7117S5ercZ+FznxcNNNoyn
TLSH	T17C72B44376E51CBEF281B6429293FC927DE060476F2EE78731A46D432893793CABD
File type	Win32 EXE executable windows win32 pe peexe
Magic	PE32 executable (console) Intel 80386, for MS Windows
TrID	Microsoft Visual C++ compiled executable (generic) (38.4%) Win32 Dynamic Link Library (generic) (15.3%) Win16 NE...
DetectItEasy	PE32 Compiler: EP:Microsoft Visual C/C++ (6.0 (1720-9782)) [EXE32] Compiler: Microsoft Visual C/C++ (12.00.8168) [...]
File size	16.00 KB (16384 bytes)
PEID packer	Microsoft Visual C++

History

Creation Time	2010-12-19 16:16:19 UTC
First Seen In The Wild	2012-01-08 02:19:06 UTC
First Submission	2012-02-16 07:31:54 UTC
Last Submission	2024-03-04 09:02:24 UTC
Last Analysis	2024-03-04 05:34:36 UTC

Names

- Lab01-01.exe
- Practical Malware Analysis Lab 01-01.exe_
- Unconfirmed 830366.crdownload
- LAB01-01.EXE

1d,

VirusTotal - File - 58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47

Activity Summary

Detections: 1 MALWARE

IDS Rules: NOT FOUND

Dropped Files: 300 OTHER, 1 TEXT, 1 SQUASHFS, 1 PE_EXE, 1 SEVENZIP

Mitre Signatures: 2 LOW, 52 INFO

Sigma Rules: NOT FOUND

Network comms: 32 DNS, 158 IP

Behavior Tags: checks-disk-space, checks-user-input, detect-debug-environment, idle, long-sleeps, sets-process-name, unknown-behaviour

Dynamic Analysis Sandbox Detections: The sandbox ReaQta-Hive flags this file as: MALWARE

MITRE ATT&CK Tactics and Techniques:

- + Execution TA0002
- + Persistence TA0003
- + Privilege Escalation TA0004
- + Defense Evasion TA0005
- + Credential Access TA0006
- + Discovery TA0007
- + Collection TA0009
- + Command and Control TA0011

Type here to search

28°C 1:52 AM 3/4/2024

1e,

The screenshot shows a browser window displaying the VirusTotal analysis page for file hash 58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47. The page includes a header with a VirusTotal logo, a search bar, and links for 'Sign in' and 'Sign up'. A banner at the top encourages joining the community. Below this, there are two main sections: 'Contained in Graphs (17)' and 'Voting details (194)'. The 'Contained in Graphs' section lists 17 items, each with a user icon, name, and timestamp. The 'Voting details' section shows a grid of 194 entries, each with a user icon, name, timestamp, and a green '+1' or red '-1' vote indicator. The Windows taskbar at the bottom includes icons for File Explorer, Edge, File Manager, Mail, and Firefox, along with system status indicators like battery level, temperature, and date/time.

Contained in Graphs (17)

User	File Name	Timestamp	Action
AnalystHana	Lab01-01.exe	2024-02-07 15:40:12	
currantejwani	Copy of Untitled graph1	2023-06-20 17:43:41	
bpt_crows	CSEC 202 - Lab01	2022-09-15 02:55:56	
SajidMajeed	LAB01-01.exe	2022-02-21 16:48:10	
Chairn	001	2022-02-04 22:56:52	
wilberth.perez	prueba	2022-01-29 09:15:00	
CR450_AYED	Untitled graph0	2021-12-05 05:26:29	
RuwaYafa	Lab1-1	2021-10-28 23:10:03	
RuwaYafa	Ass lab1.dll graph	2021-10-27 16:33:30	
cdubbs	Untitled graph1	2021-10-26 13:15:30	

Voting details (194)

User	Name	Timestamp	Vote
Fockywolf	+1	18 days ago	
fixgram	-1	1 month ago	
Q29tcGlsZXJfZXJy	+1	3 months ago	
wavy42	+1	5 months ago	
parthmistri	-1	9 months ago	
laurafuna	-1	11 months ago	

2a,

VirusTotal - File - 58898bd42c5l

<https://www.virustotal.com/gui/file/58898bd42c5bd3bf9b1389f0eee5b39cd59180e8370eb9ea838a0b327bd6fe47>

Mike Hunt

Graph Summary

10+ execution parents

10+ contacted ips

3 bundled files

10+ dropped files

10+ contacted domains

5 pe resource parents

Type here to search

28°C 1:59 AM 3/4/2024

Virus Total - File - 58898bd42c5l

Untitled graph by CrescentCell

Please, introduce 3 or more characters to perform a search in the graph

Basic Properties

Type	Win32 EXE
Size	16.00 kB
First Seen	2012-02-16 07:31:54
Last Seen	2024-03-04 09:40:40
Submissions	16326
File Name	Lab01-01.exe

Relations

Collections	1
Contacted domains	14
Contacted ips	48
Dropped files	359
Execution parents	48

VT Graph Collection - PML001

API requests 10

Documentation API Send feedback

3a,

VirusTotal - File - b183bd6414c5123465075d76d2413c999d569492fb543acbc29690b4b745bdf2

File distributed by Microsoft

b183bd6414c5123465075d76d2413c999d569492fb543acbc296...
CALC.EXE

Size: 25.50 KB | Last Analysis Date: 12 days ago | EXE

Community Score: 0/72

DETECTION DETAILS RELATIONS BEHAVIOR COMMUNITY 8

Crowdsourced YARA rules

⚠️ Matches rule INDICATOR_SUSPICIOUS_Stomped_PECCompilation_Timestamp_InTheFuture from ruleset indicator_suspicious at https://github.com/ditekshen/detection by ditekSHen
↳ Detect executables with stamped PE compilation timestamp that is greater than local current time

Security vendors' analysis

	Do you want to automate checks?		
Acronis (Static ML)	Undetected	AhnLab-V3	Undetected
Alibaba	Undetected	ALYac	Undetected
Antiy-AVL	Undetected	Arcabit	Undetected
Avast	Undetected	AVG	Undetected
Avira (no cloud)	Undetected	Baidu	Undetected
BitDefender	Undetected	BitDefenderTheta	Undetected
Bkav Pro	Undetected	ClamAV	Undetected

3b, 0/72 vendor coi calc.exe là độc hại

4a,

VirusTotal - File - 22dd59c8a41... +

https://www.virustotal.com/gui/file/22dd59c8a41bb6fc7c23cf9c354a606641ee04e852bbdd0398bac848e8e92ead

No security vendors and no sandboxes flagged this file as malicious

22dd59c8a41bb6fc7c23cf9c354a606641ee04e852bbdd0398bac848e8e92ead
njwjjw jwn.txt

Size: 3 B | Last Analysis Date: 3 minutes ago | JS

Community Score: 0 / 53

Detection Details Relations Community

Security vendors' analysis

				Do you want to automate checks?
Acronis (Static ML)	Undetected	AhnLab-V3	Undetected	
ALYac	Undetected	Antiy-AVL	Undetected	
Avast	Undetected	AVG	Undetected	
Avira (no cloud)	Undetected	Baidu	Undetected	
BitDefenderTheta	Undetected	Bkav Pro	Undetected	
ClamAV	Undetected	CMC	Undetected	
Cynet	Undetected	eScan	Undetected	
ESET-NOD32	Undetected	Fortinet	Undetected	
Google	Undetected	Gridinsoft (no cloud)	Undetected	
Ikarus	Undetected	Jiangmin	Undetected	

Type here to search

28°C 2:29 AM 3/4/2024

4b,

VirusTotal - File - 22dd59c8a41bb6fc7c23cf9c354a606641ee04e852bbdd0398bac848e8e92ead

DETECTION DETAILS RELATIONS COMMUNITY

Basic properties

MD5	4ad35edfc7beb97ebbebb35ac572edcf7
SHA-1	b580ba1b67f12c4795557dabb55d947cd2c145fc
SHA-256	22dd59c8a41bb6fc7c23cf9c354a606641ee04e852bbdd0398bac848e8e92ead
Vhash	9eecb7db59d16c80417c72d1ef1f4fb1
SSDeep	3:dd
File type	JavaScript <small>source javascript js</small>
Magic	ASCII text, with no line terminators
File size	3 B (3 bytes)

History

First Submission	2024-03-04 10:26:50 UTC
Last Submission	2024-03-04 10:26:50 UTC
Last Analysis	2024-03-04 10:26:50 UTC

Names

njwjjw jwn.txt
rdb.csv
PIDListHALDEX.csv
loan.csv

Windows Taskbar:

- VirusTotal
- Community
- Tools
- Premium Services
- Documentation

Type here to search

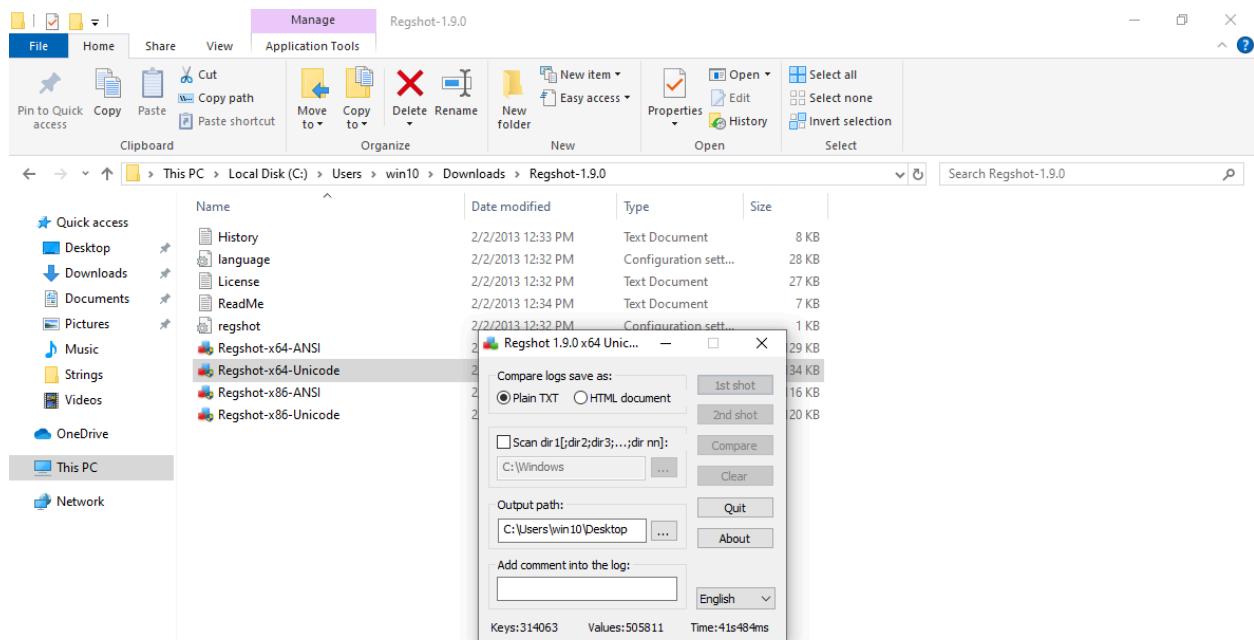
Cloud 28°C 2:30 AM 3/4/2024

5c,

The screenshot shows a Windows desktop environment. At the top is a Microsoft Edge browser window displaying the VirusTotal analysis for file cd4387f252ad8a80230ebc4f81d2d9e64f730e6840ded94e469ab2891788f420. The page includes sections for 'Basic properties' (MD5, SHA-1, SHA-256, SSDEEP, TrID, File size), 'History' (First Submission, Last Submission, Last Analysis), and 'Names' (a list of file names including abc.txt, jonathansweissman.txt, nguyenducloc.txt, hoa.txt, Step 5 txt file.txt, skhanh.txt, prof.txt, quoan.txt, htung.txt, 21021539.txt). Below the browser is the Windows taskbar, which includes the Start button, a search bar, pinned icons for File Explorer, Edge, File History, Mail, and Firefox, and system status icons for weather (28°C), battery, signal, and date/time (2:32 AM, 3/4/2024).

Lab 15.05

1a,



9 items | 1 item selected 133 KB



1b&c,

Settings

Home

Find a setting

Personalization

- Background
- Colors
- Lock screen
- Themes
- Fonts
- Start
- Taskbar

Background

Background

Picture

Choose your picture

Browse

Choose a fit

Fill

Related Settings

High contrast settings

Sync your settings

Help from the web

Getting new wallpapers every day from Microsoft

Changing your lock screen background

Changing my desktop background

Showing desktop icons

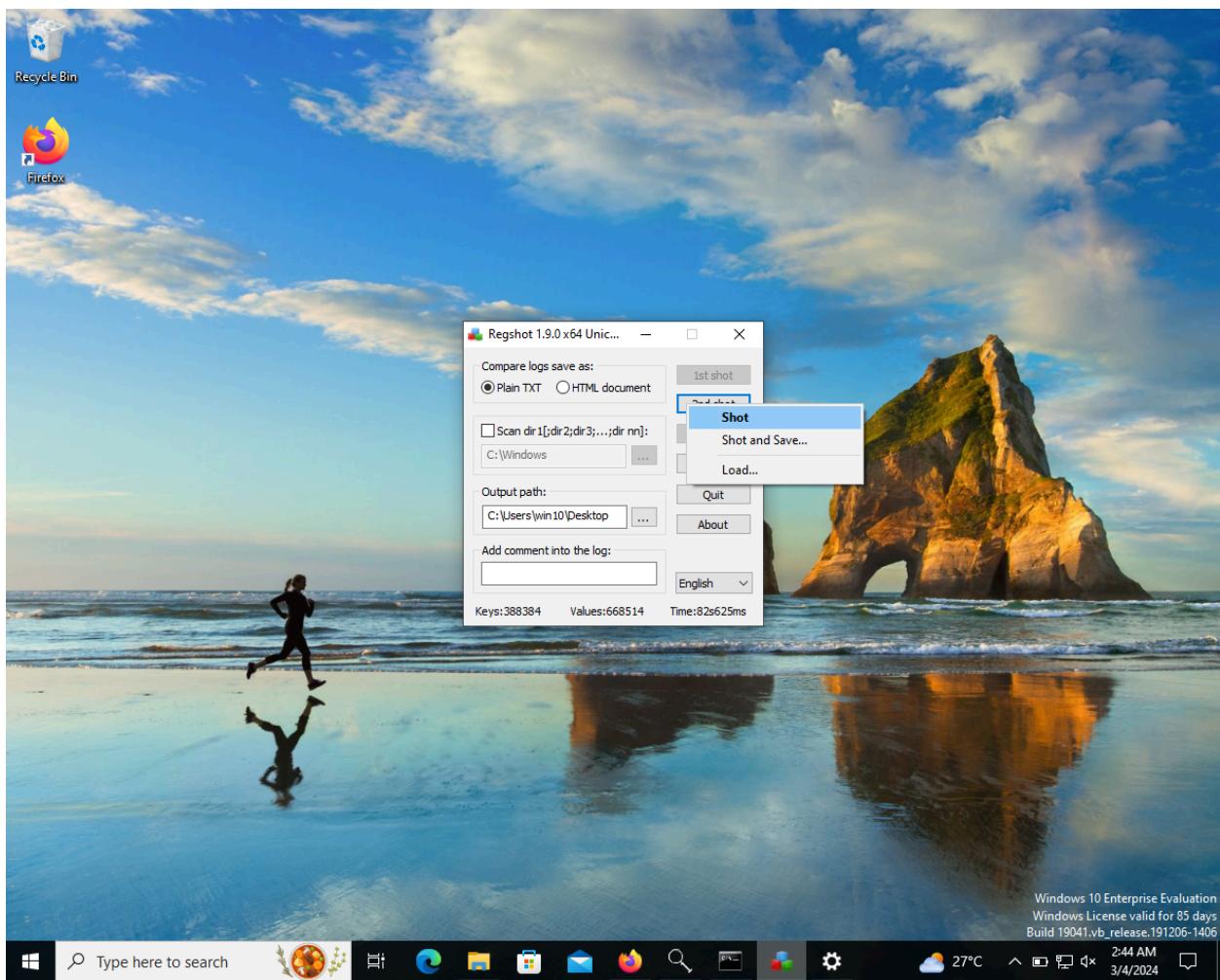
Get help

Give feedback

Type here to search

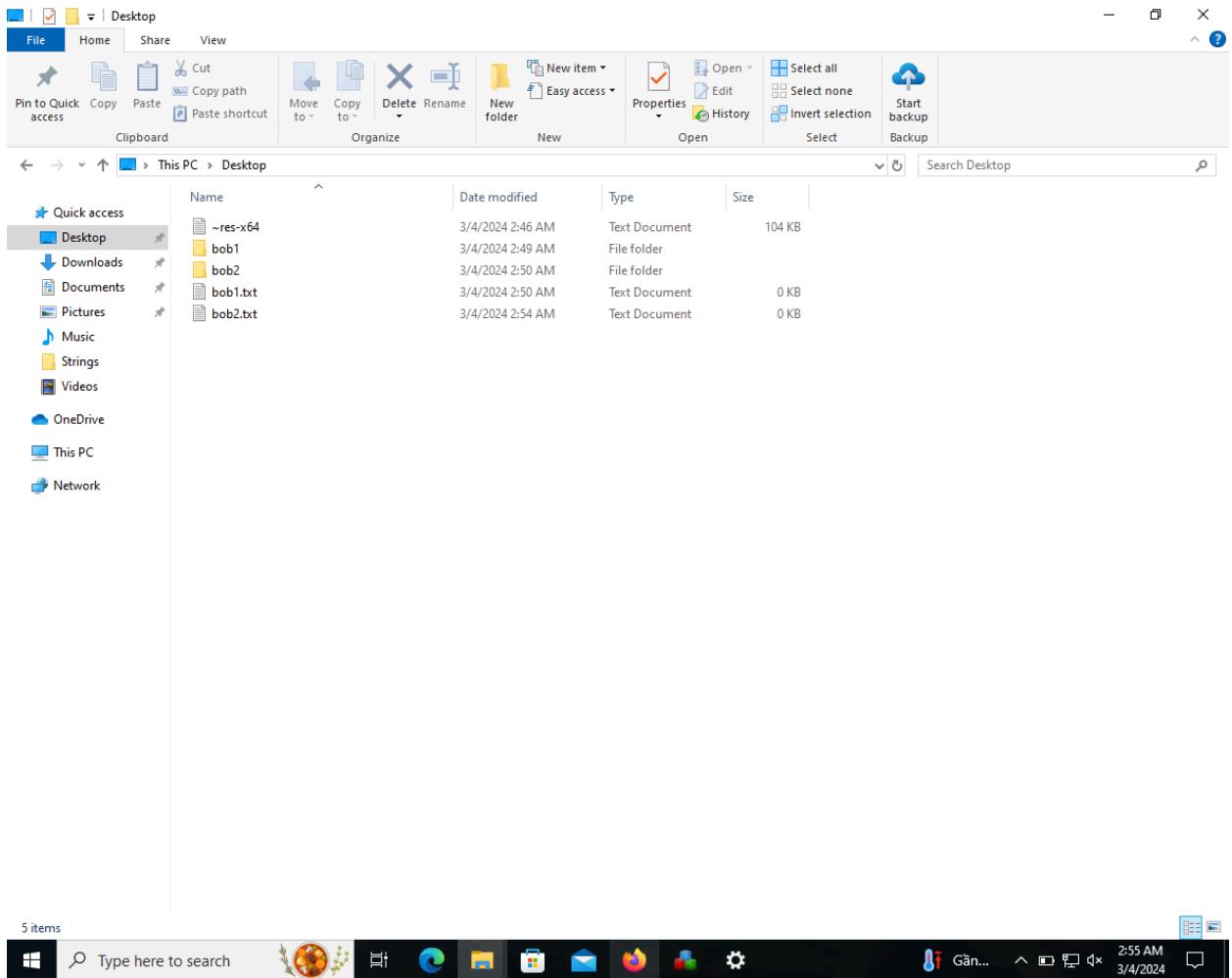
27°C 2:44 AM 3/4/2024

1d,

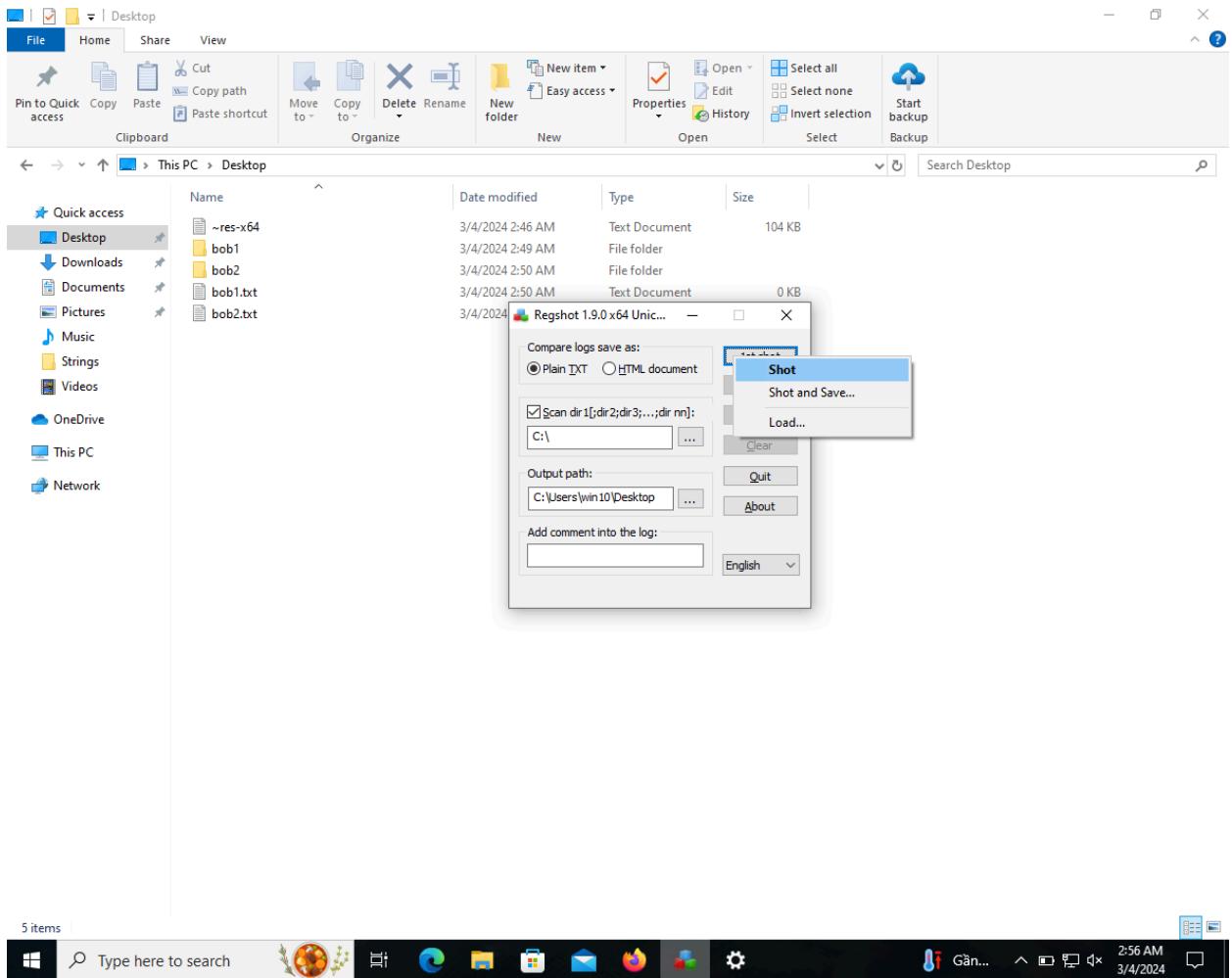


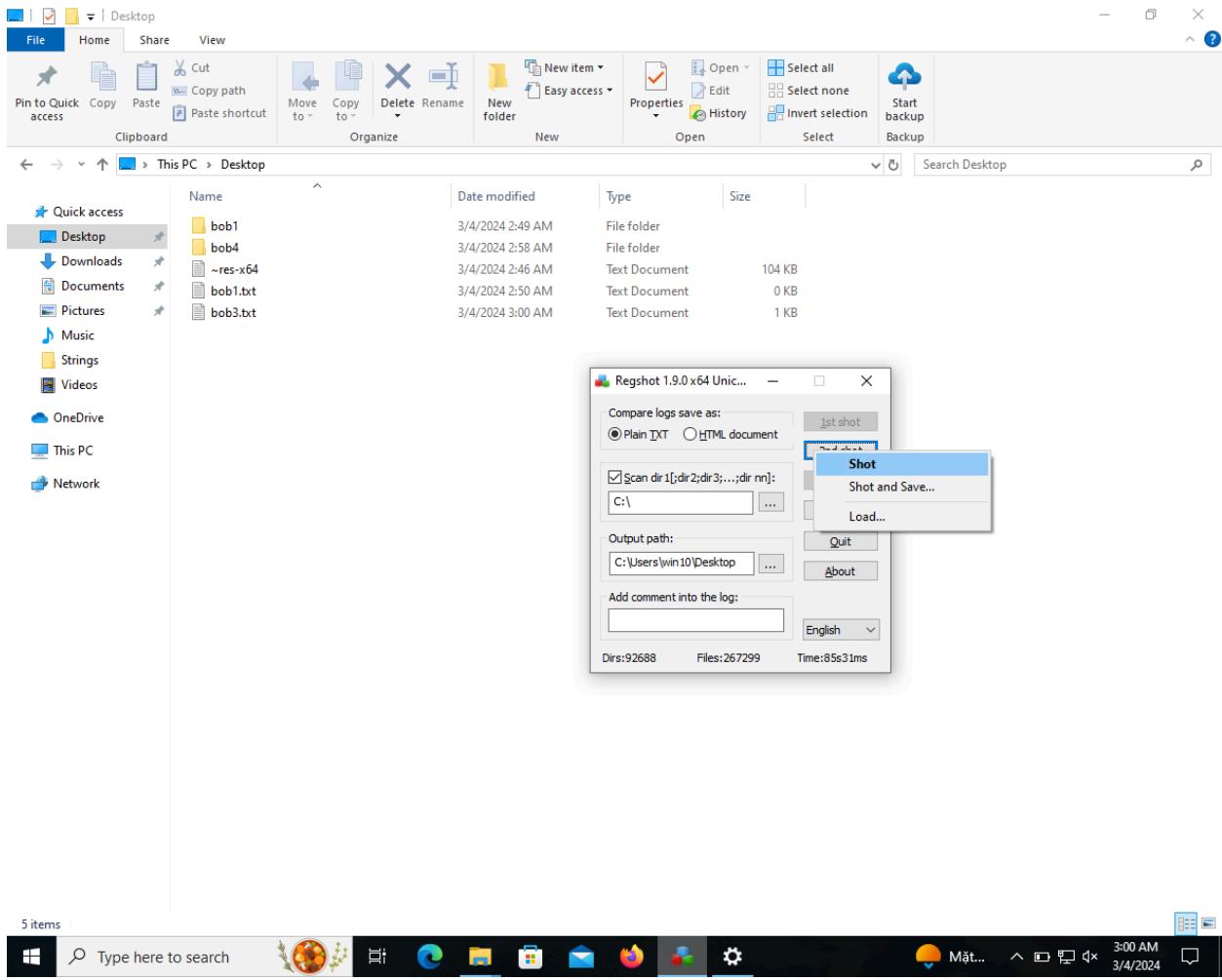
1e&f,

2a-f,



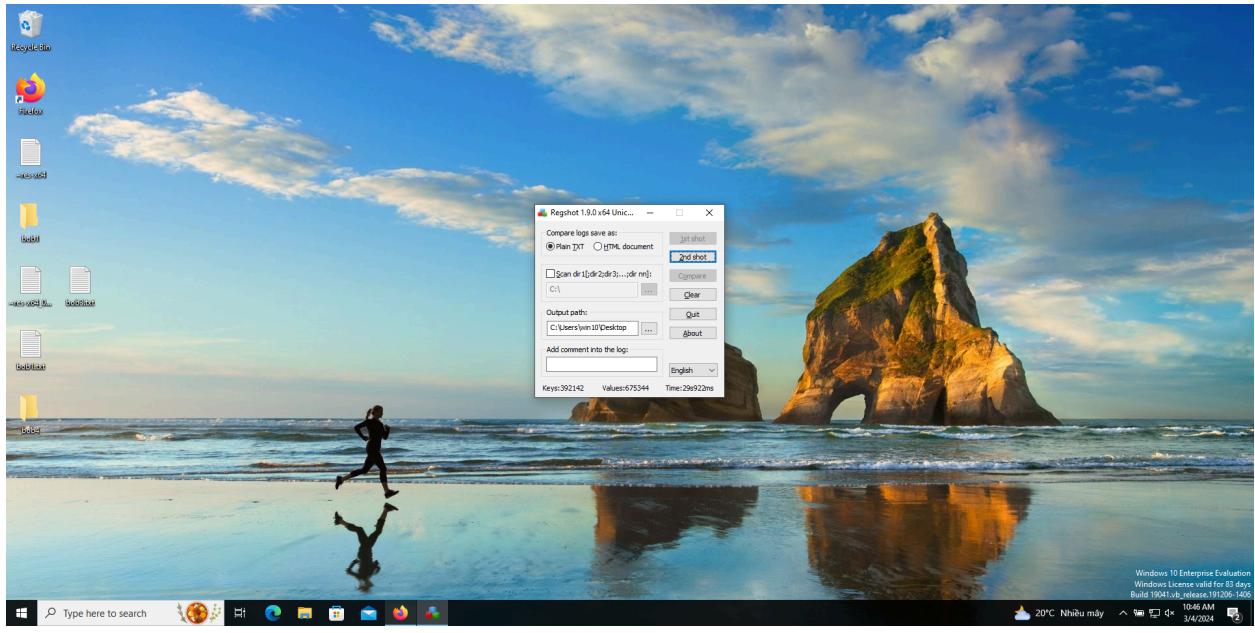
2g-l,



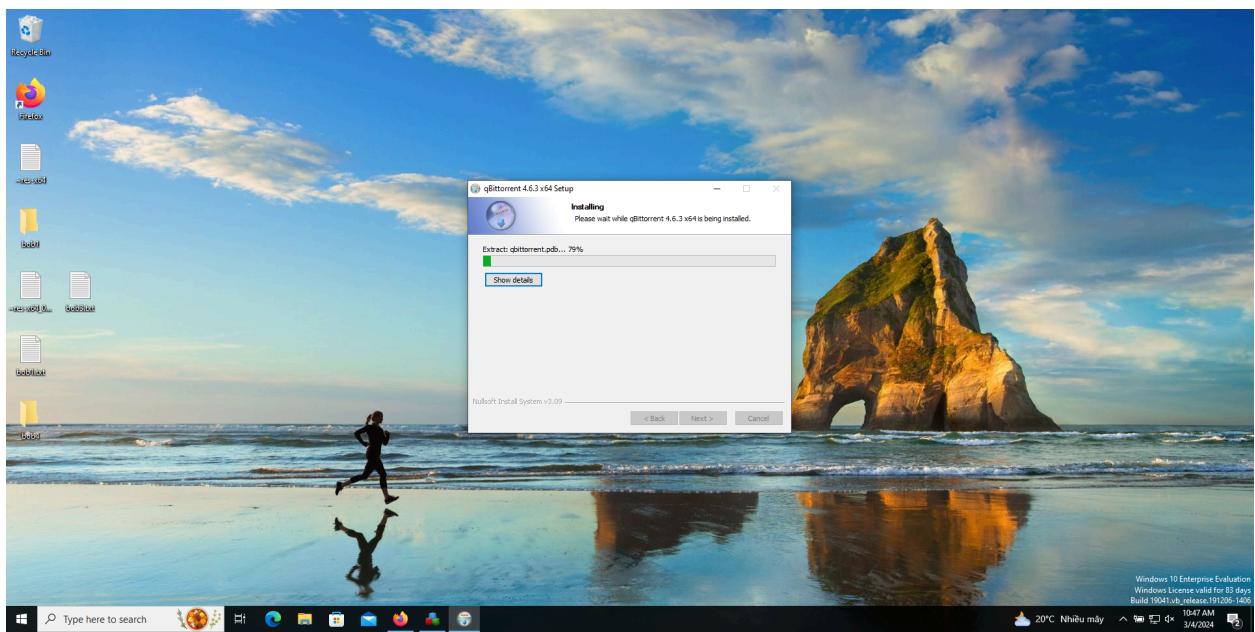


5m,

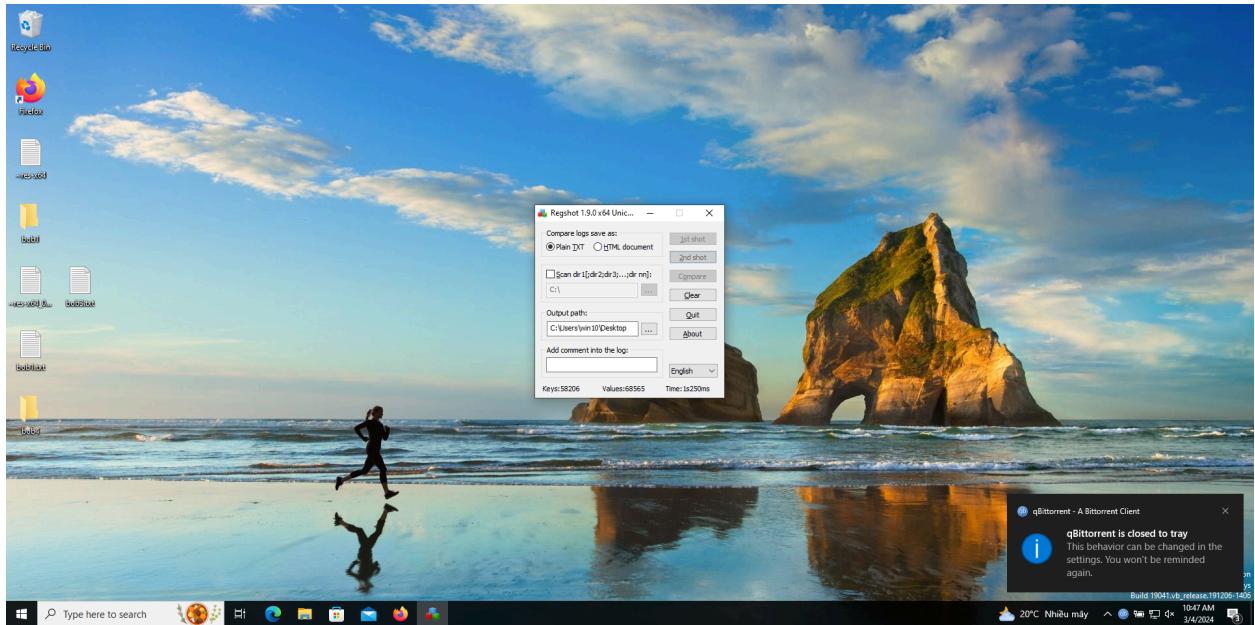
3a,



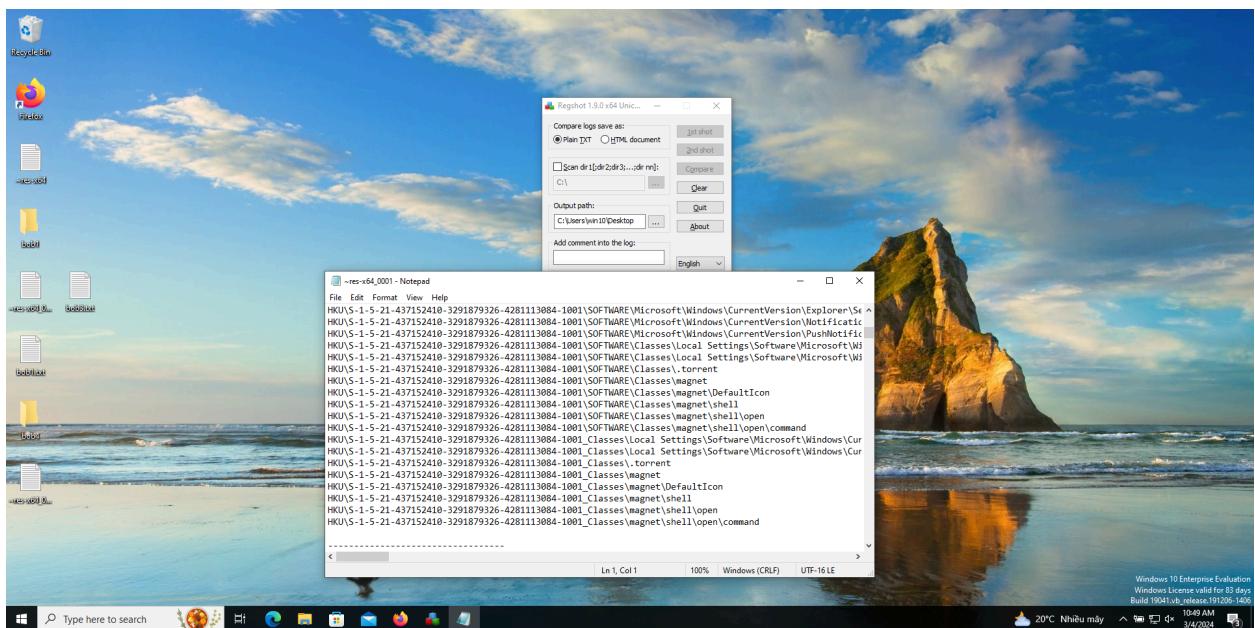
3b,



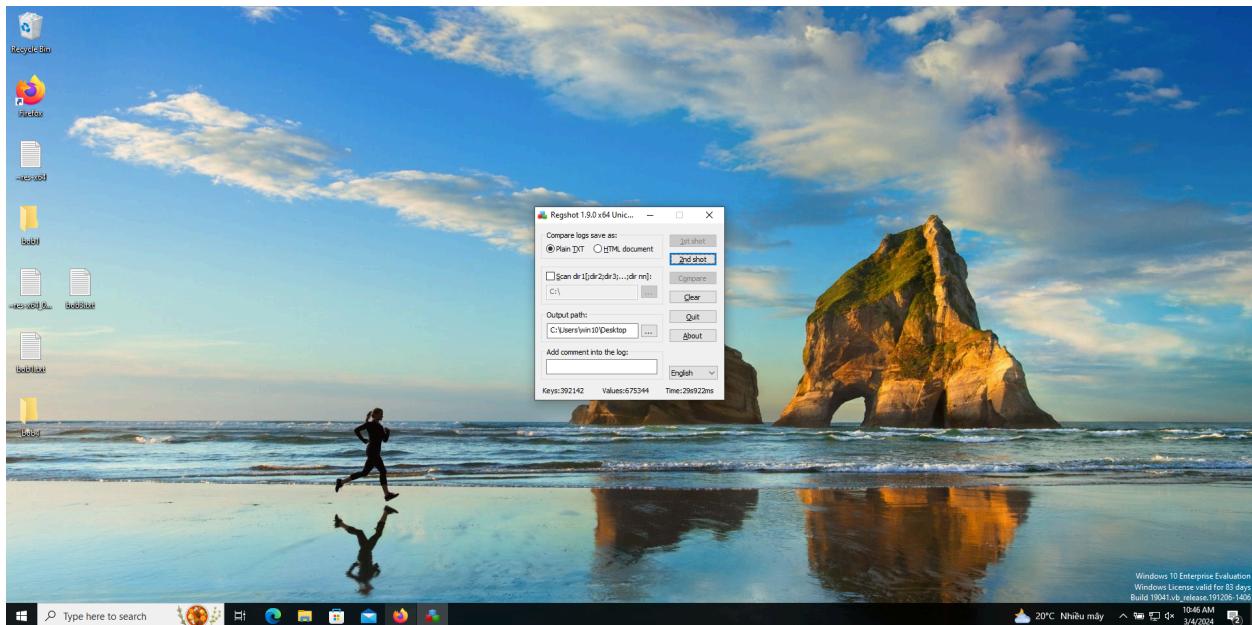
3c,



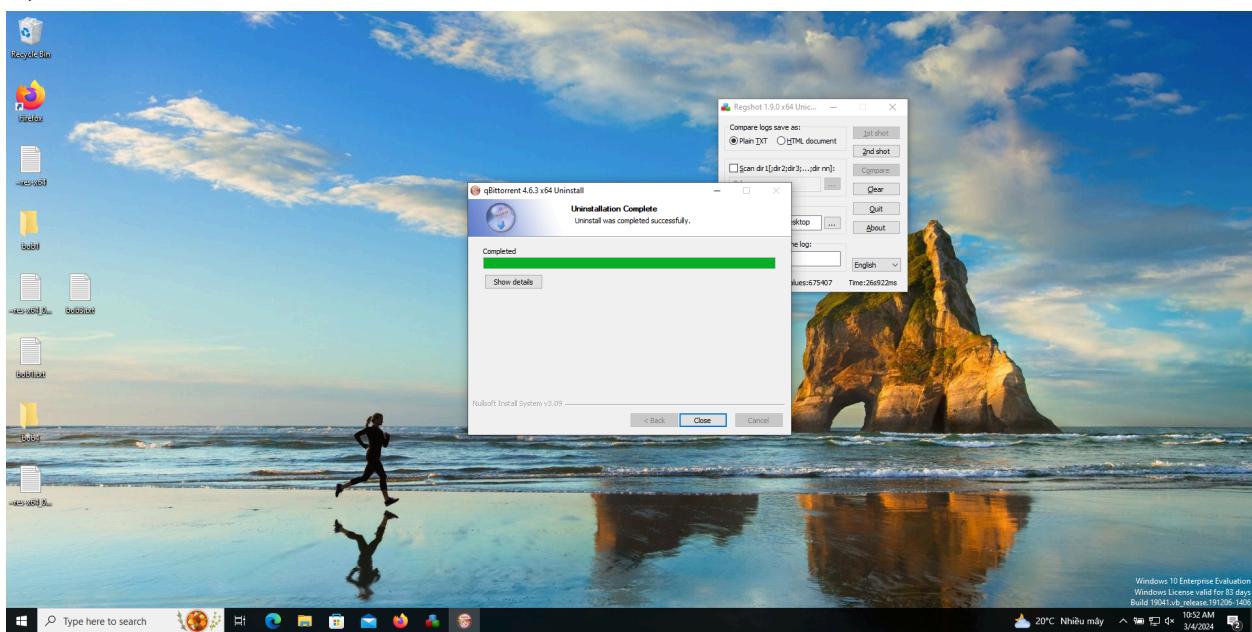
3d,



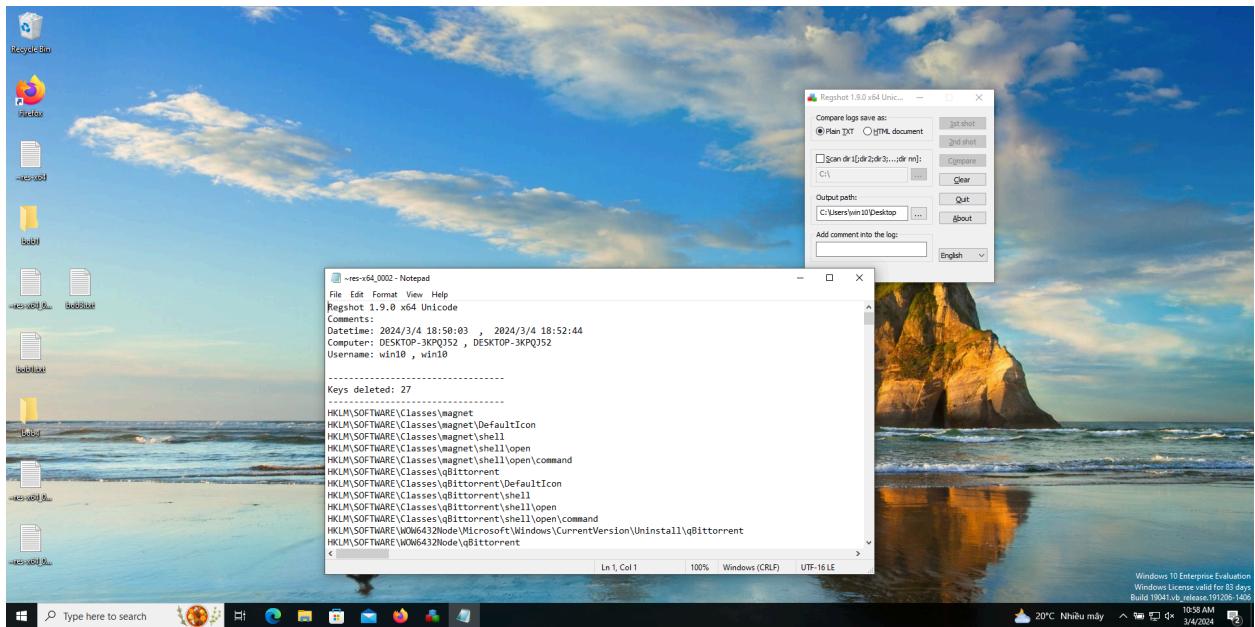
3e,



3f,

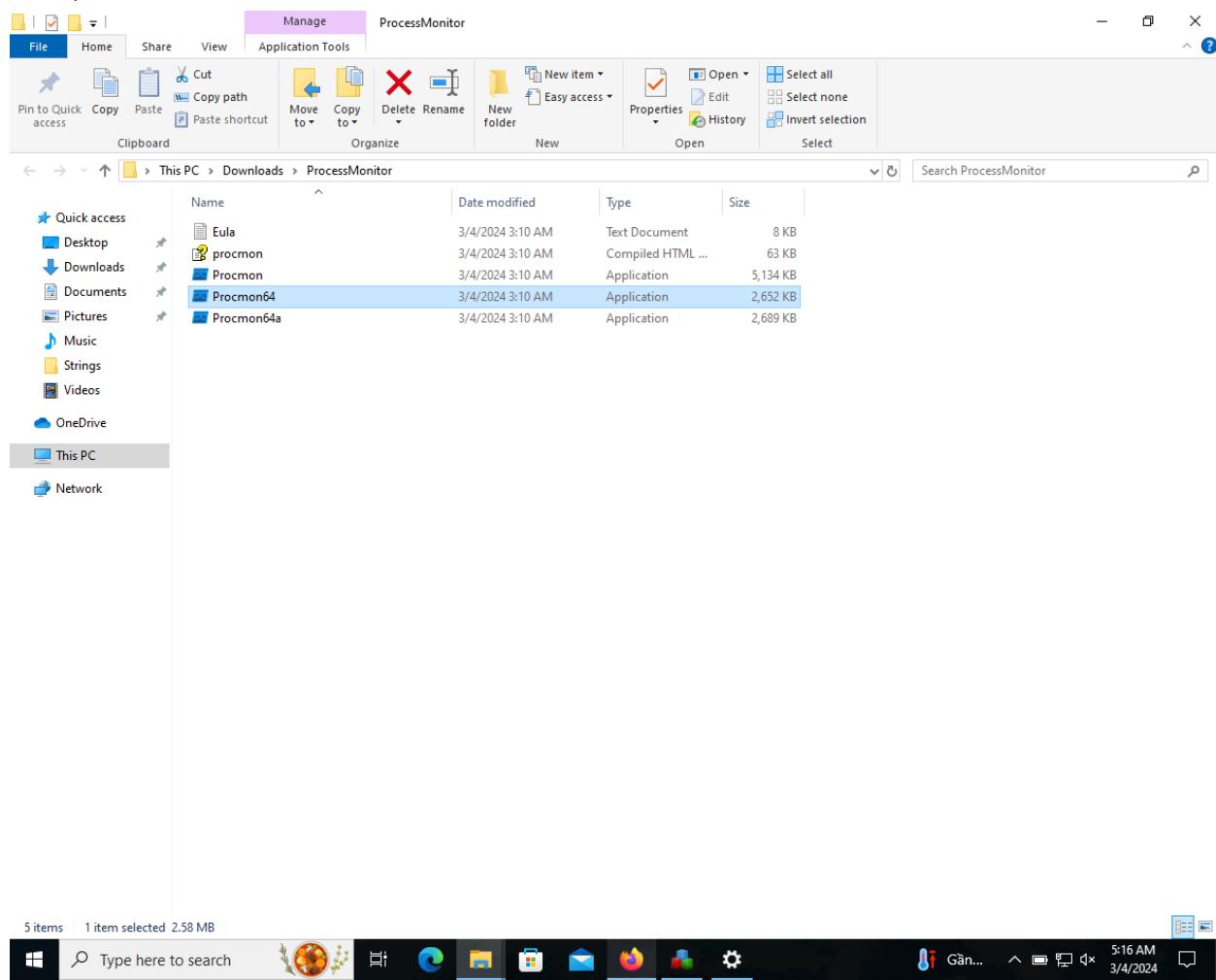


3g & h,



Lab 15.06:

1a&b,



1c&d,

Process Monitor - Sysinternals: www.sysinternals.com

File Edit Event Filter Tools Options Help

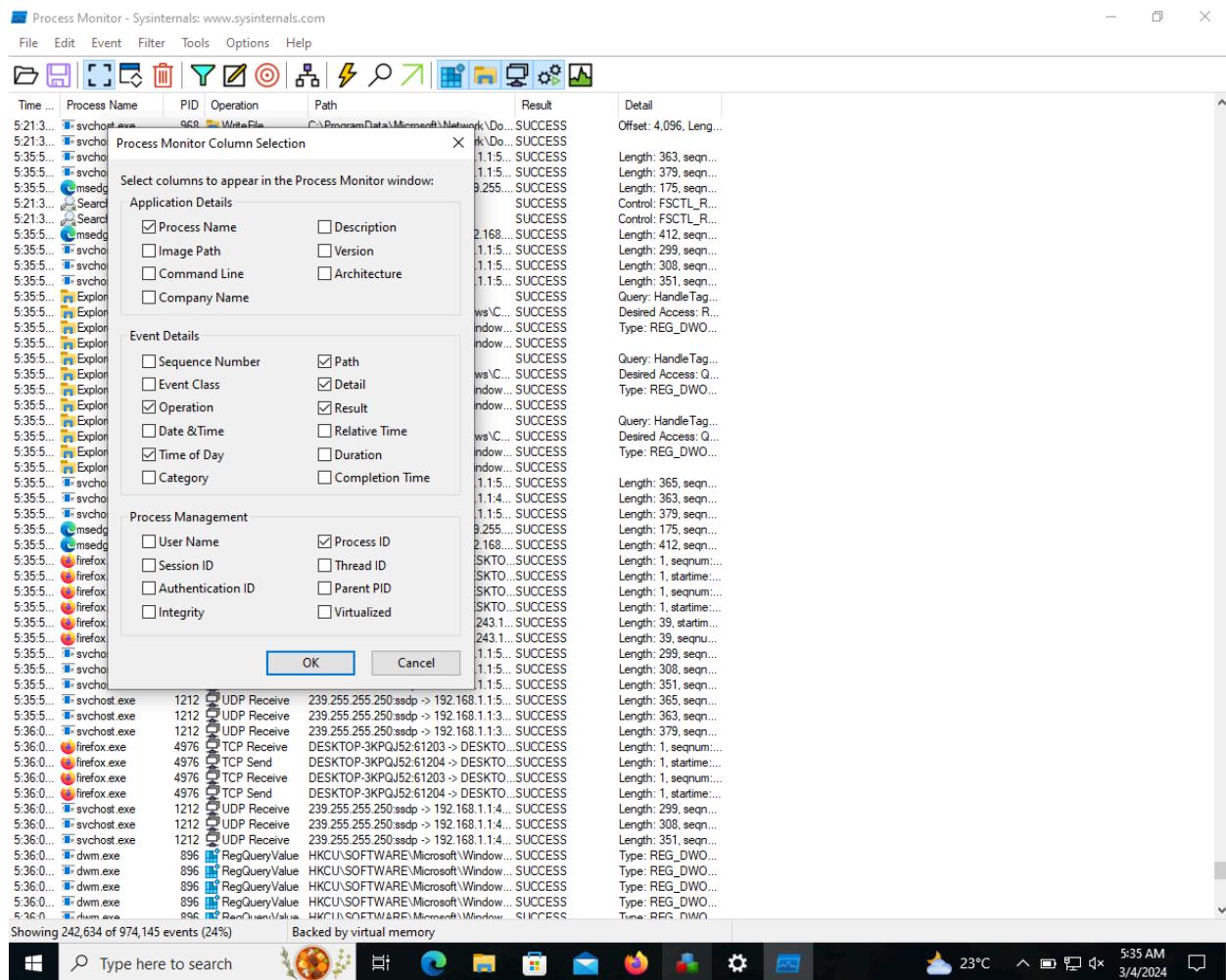
Time ... Process Name PID Operation Path Result Detail

Time ...	Process Name	PID	Operation	Path	Result	Detail
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 4,017,664, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,964,416, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,931,648, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\windows.storage.dll	SUCCESS	Offset: 7,058,944, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,915,264, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,710,976, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\dui70.dll	SUCCESS	Offset: 1,637,888, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,898,880, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,690,496, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\dui70.dll	SUCCESS	Offset: 1,617,408, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\explorer.exe	SUCCESS	Offset: 3,674,112, ...
5:17:0...	svchost.exe	772	ReadFile	C:\Windows\System32\ResourcePolicy.dll	SUCCESS	Offset: 132,608, Le...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\UIAnimation.dll	SUCCESS	Offset: 212,480, Le...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\dui70.dll	SUCCESS	Offset: 1,601,024, ...
5:17:0...	svchost.exe	772	ReadFile	C:\Windows\System32\ResourcePolicy.dll	SUCCESS	Offset: 119,296, Le...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\UIAnimation.dll	SUCCESS	Offset: 197,632, Le...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Desired Access: Q...
5:17:0...	Explorer.EXE	1304	RegCloseKey	HKEY_CURRENT_USER	SUCCESS	
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER	SUCCESS	Desired Access: Q...
5:17:0...	Explorer.EXE	1304	RegCloseKey	HKEY_CURRENT_USER	SUCCESS	Desired Access: Q...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER	SUCCESS	Desired Access: Q...
5:17:0...	Explorer.EXE	1304	RegCloseKey	HKEY_CURRENT_USER	SUCCESS	Desired Access: Q...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Query: Name
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Query: HandleTag...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Query: HandleTag...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\Software\Classes\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegOpenKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegCloseKey	HKEY_CURRENT_USER	SUCCESS	Desired Access: Q...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Query: Name
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Query: HandleTag...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes	SUCCESS	Query: HandleTag...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\Software\Classes\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	Explorer.EXE	1304	RegQueryKey	HKEY_CURRENT_USER\CLSID\{56AD4C5D-B908-4F85...	NAME NOT FOUND	Desired Access: R...
5:17:0...	svchost.exe	772	RegQueryKey	HKEY_CURRENT_USER\System\GameConfigStore	SUCCESS	Query: Cached, Su...
5:17:0...	svchost.exe	772	RegQueryValue	HKEY_CURRENT_USER\System\GameConfigStore\Game...	NAME NOT FOUND	Length: 16
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\dui70.dll	SUCCESS	Offset: 1,584,640, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\twinui.dll	SUCCESS	Offset: 6,095,872, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\dui70.dll	SUCCESS	Offset: 1,242,112, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\twinui.dll	SUCCESS	Offset: 5,985,280, ...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\duser.dll	SUCCESS	Offset: 536,576, Le...
5:17:0...	Explorer.EXE	1304	ReadFile	C:\Windows\System32\twinui.dll	SUCCESS	Offset: 5,923,840, ...
5:17:0...	Explorerv.FXE	1204	ReadFile	C:\Windows\System32\kuser.dll	SUCCESS	Offset: 574,298, Le...

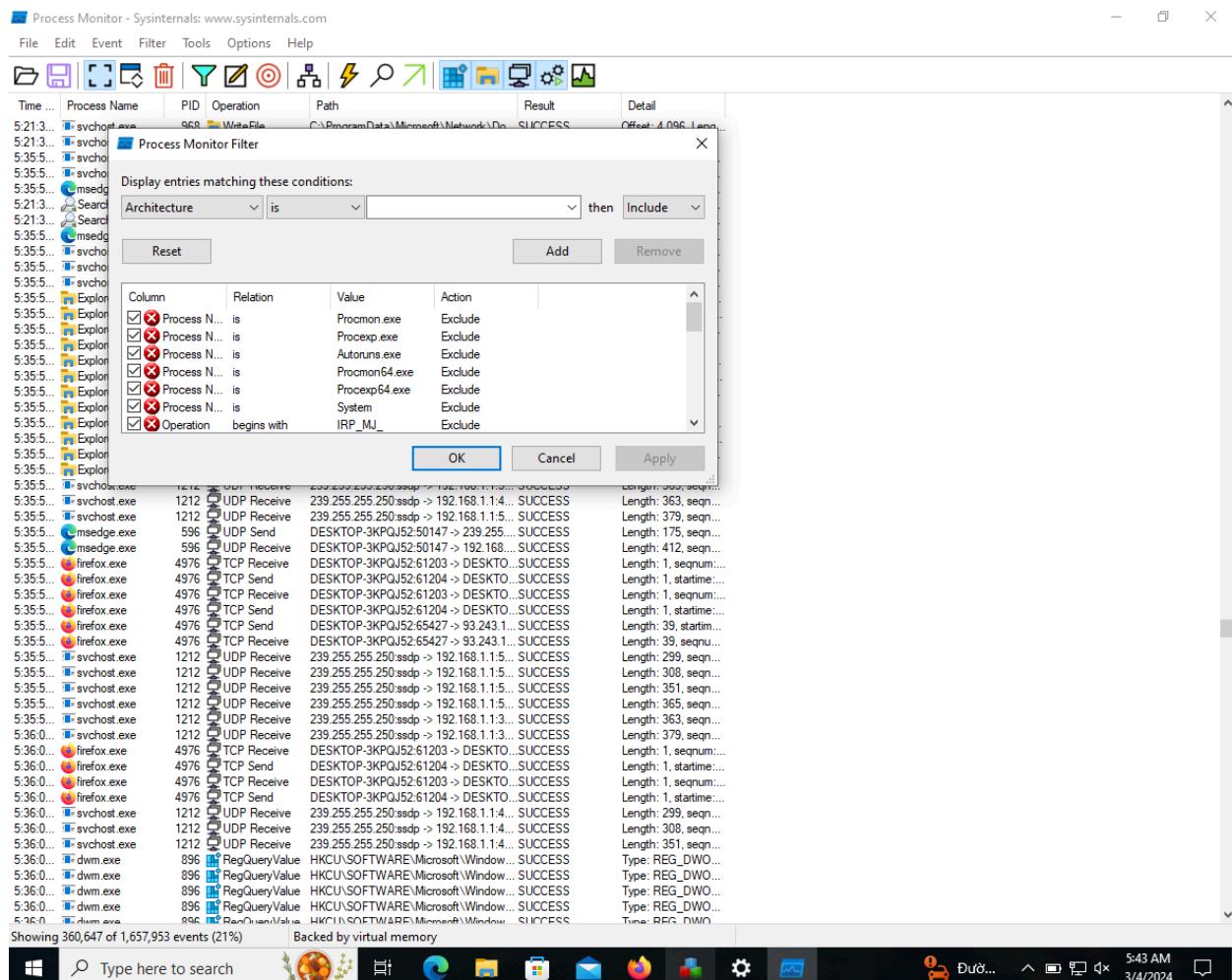
Showing 59,401 of 282,175 events (21%) Backed by virtual memory

Windows Type here to search 24°C 5:17 AM 3/4/2024

1e,



2a&b&c,



2d, Bộ lọc là “Event Class is Registry then Include”. Bộ lọc này được chọn để kiểm tra xem có thay đổi nào trong Registry và theo dõi hoạt động bất thường liên quan đến Registry

2e, 3 bộ lọc được sử dụng là “Event Class is Registry then Include”, “Architecture is 65 bit then Include” và “Date & Time more than 3/4/2024 6:00:00 AM then Exclude”. Bộ lọc này được sử dụng khi ta biết máy bị tấn công vào ngày 4/3/2024 6h sáng và mục tiêu sử dụng kiến trúc 64 bit thì ta lần tìm sự kiện trước đó với các tiến trình 64 bit và kiểm tra Event Class là Registry Lab 15.07:

1a,

1b,

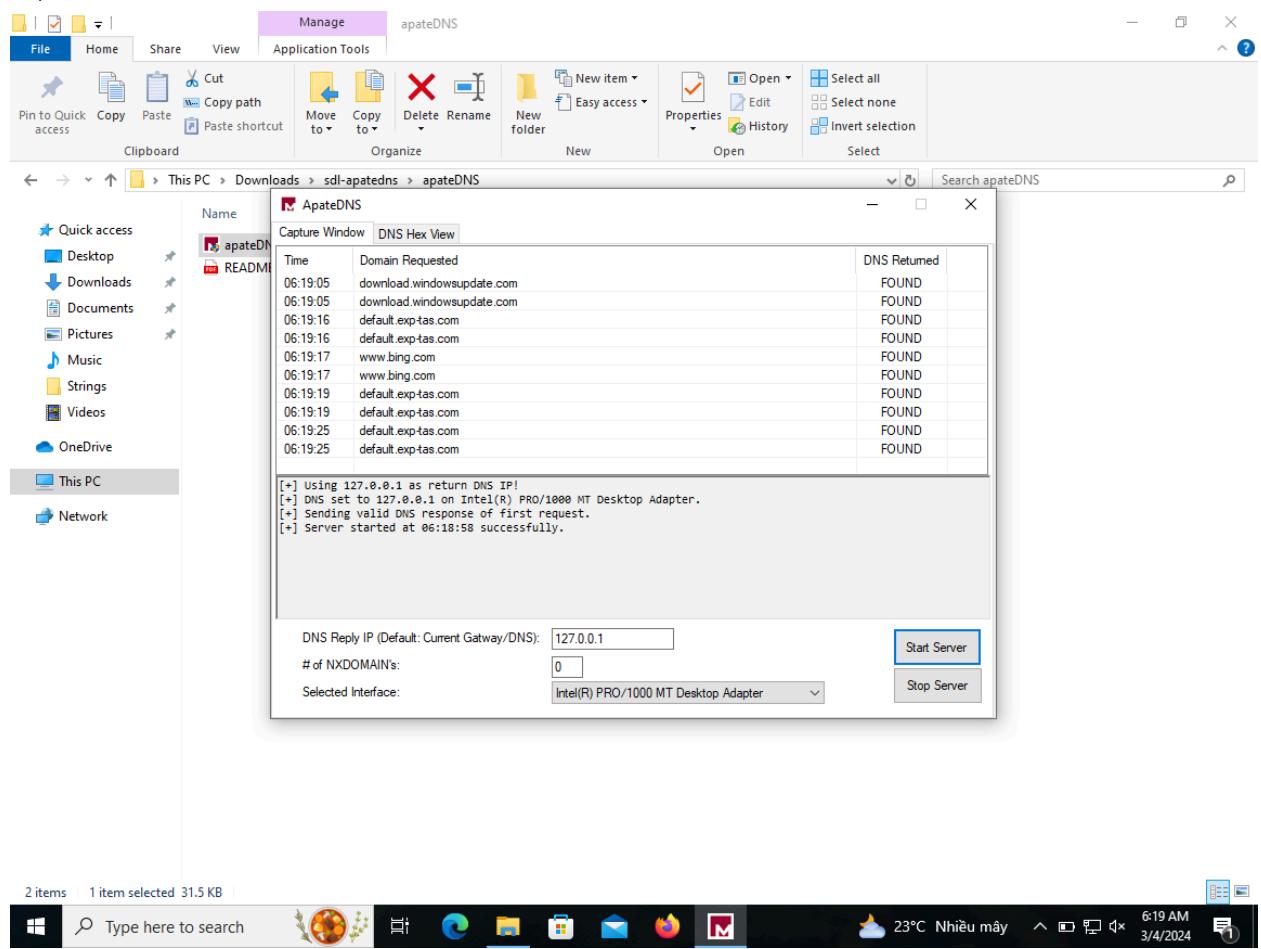
```
C:\Windows\system32\cmd.exe
NetBIOS over Tcpip. . . . . : Enabled

C:\Users\win10>netstat -an | more

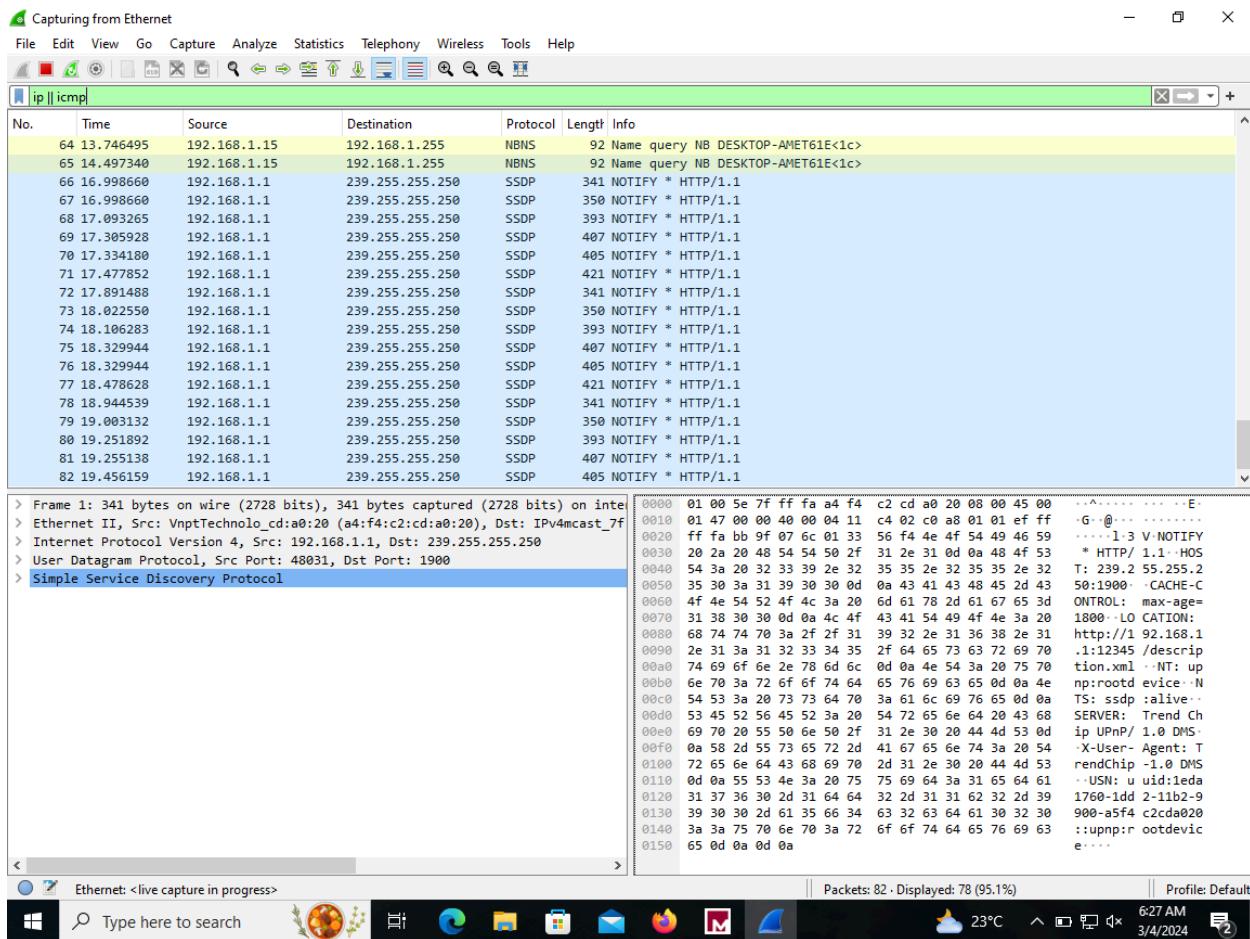
Active Connections

 Proto  Local Address          Foreign Address        State
 TCP    0.0.0.0:135             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:445             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:58040            0.0.0.0:0            LISTENING
 TCP    0.0.0.0:5357             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:49664             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:49665             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:49666             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:49667             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:49668             0.0.0.0:0            LISTENING
 TCP    0.0.0.0:49669             0.0.0.0:0            LISTENING
 TCP    127.0.0.1:61203           127.0.0.1:61204      ESTABLISHED
 TCP    127.0.0.1:61204           127.0.0.1:61203      ESTABLISHED
 TCP    127.0.0.1:61205           127.0.0.1:61206      ESTABLISHED
 TCP    127.0.0.1:61206           127.0.0.1:61205      ESTABLISHED
 TCP    192.168.1.16:139           0.0.0.0:0            LISTENING
 TCP    192.168.1.16:49512          74.125.34.46:443    TIME_WAIT
 TCP    192.168.1.16:49588          194.16.57.101:443   TIME_WAIT
 TCP    192.168.1.16:49612          142.250.207.65:443  TIME_WAIT
 TCP    192.168.1.16:49614          142.250.207.66:443  TIME_WAIT
 TCP    192.168.1.16:49616          216.239.34.21:443   TIME_WAIT
 TCP    192.168.1.16:49617          142.250.66.131:443   TIME_WAIT
 TCP    192.168.1.16:49618          142.251.220.14:443   TIME_WAIT
 TCP    192.168.1.16:49619          216.58.203.72:443   TIME_WAIT
 TCP    192.168.1.16:49620          142.250.66.131:443   TIME_WAIT
 TCP    192.168.1.16:49621          142.250.204.35:443   TIME_WAIT
 TCP    192.168.1.16:49622          172.217.27.35:443   TIME_WAIT
 TCP    192.168.1.16:49631          52.182.143.210:443  TIME_WAIT
 TCP    192.168.1.16:49633          113.171.13.87:80    TIME_WAIT
 TCP    192.168.1.16:49634          23.49.184.198:80    TIME_WAIT
 TCP    192.168.1.16:49637          8.8.4.4:443         TIME_WAIT
 TCP    192.168.1.16:49639          204.79.197.239:443  TIME_WAIT
 TCP    192.168.1.16:49641          13.89.178.27:443   TIME_WAIT
 TCP    192.168.1.16:65405          20.198.118.190:443  ESTABLISHED
 TCP    192.168.1.16:65428          34.107.243.93:443  ESTABLISHED
 TCP    [::]:135                  [::]:0            LISTENING
 TCP    [::]:445                  [::]:0            LISTENING
 TCP    [::]:5357                 [::]:0            LISTENING
 TCP    [::]:49664                 [::]:0            LISTENING
 TCP    [::]:49665                 [::]:0            LISTENING
 TCP    [::]:49666                 [::]:0            LISTENING
 TCP    [::]:49667                 [::]:0            LISTENING
 TCP    [::]:49668                 [::]:0            LISTENING
 TCP    [::]:49669                 [::]:0            LISTENING
 UDP    0.0.0.0:3702              *.*             LISTENING
 UDP    0.0.0.0:3702              *.*             LISTENING
 UDP    0.0.0.0:3702              *.*             LISTENING
 UDP    0.0.0.0:3702              *.*             LISTENING
 UDP    0.0.0.0:5050              *.*             LISTENING
```

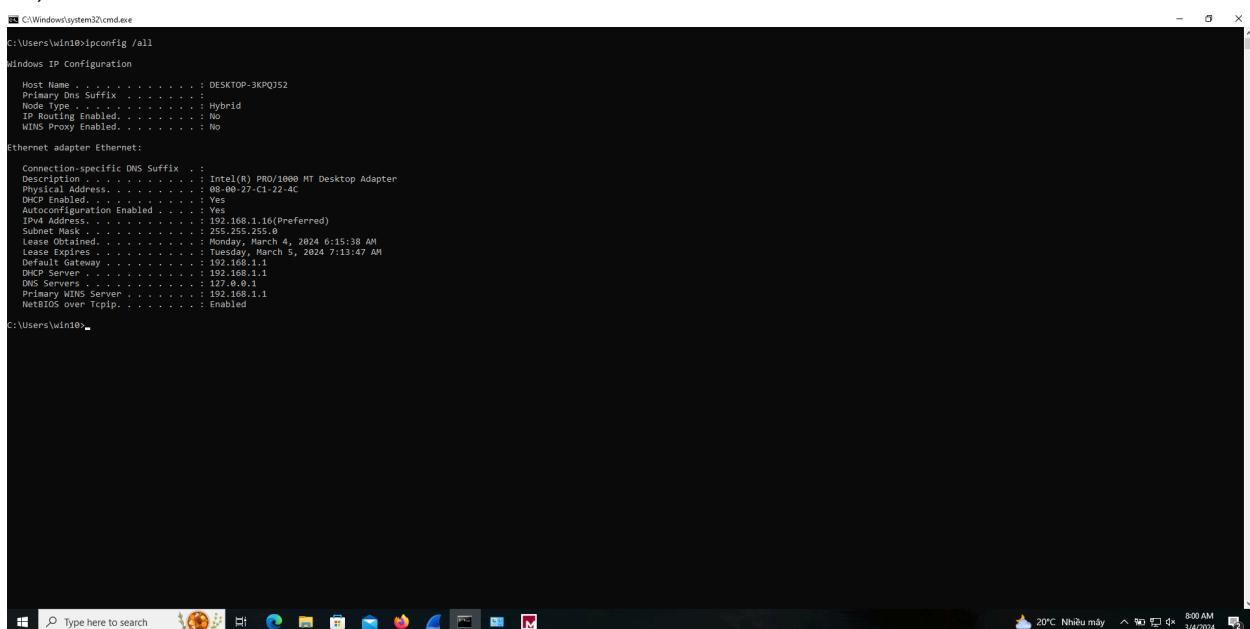
1c,

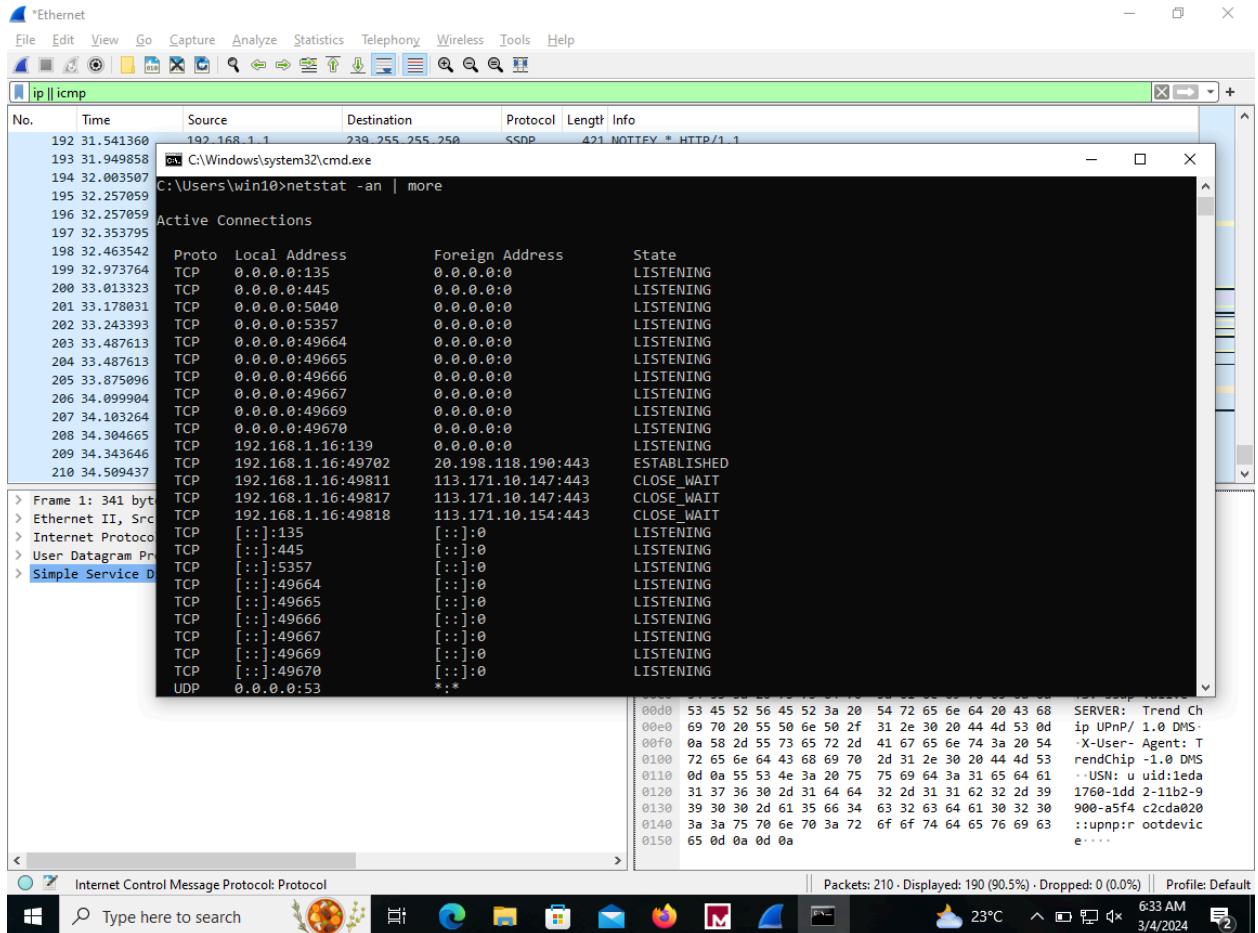


2a,

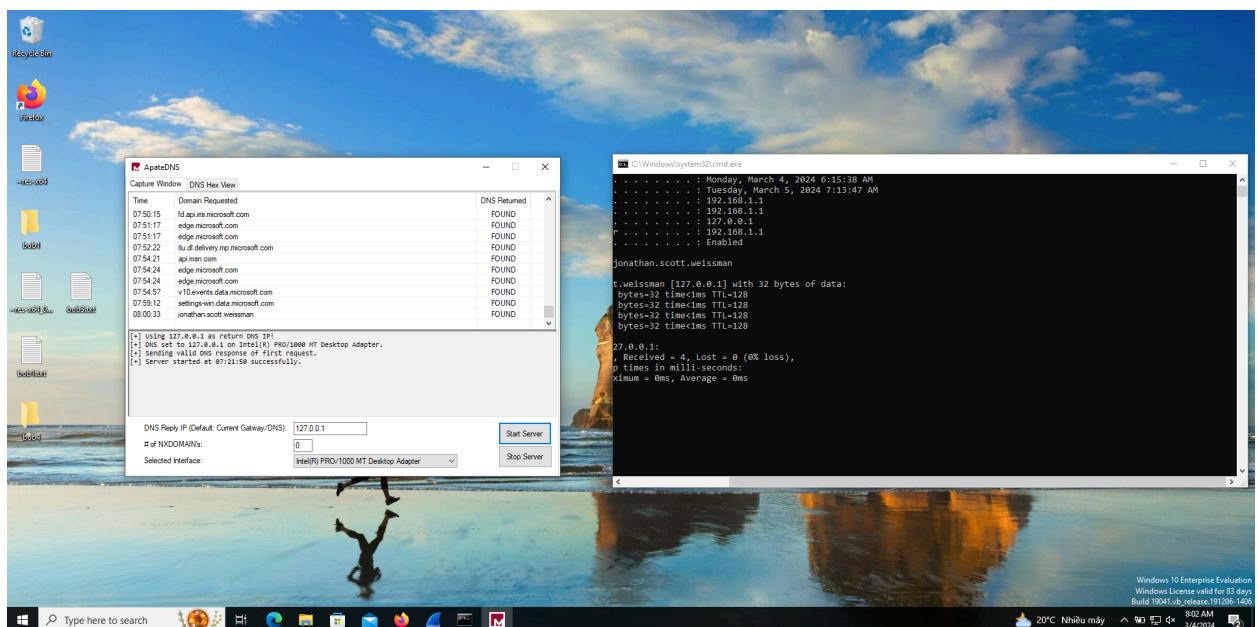


2b,

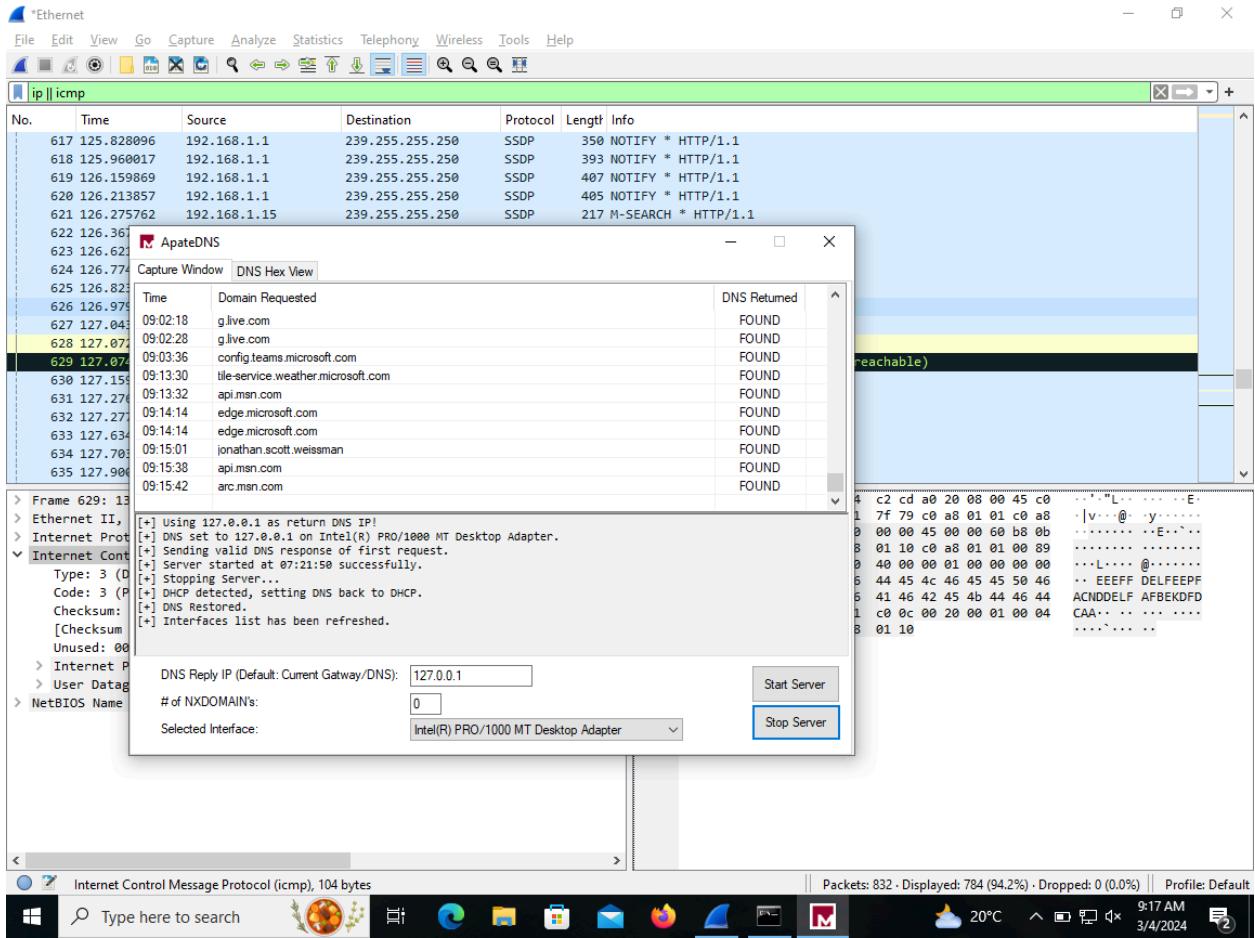


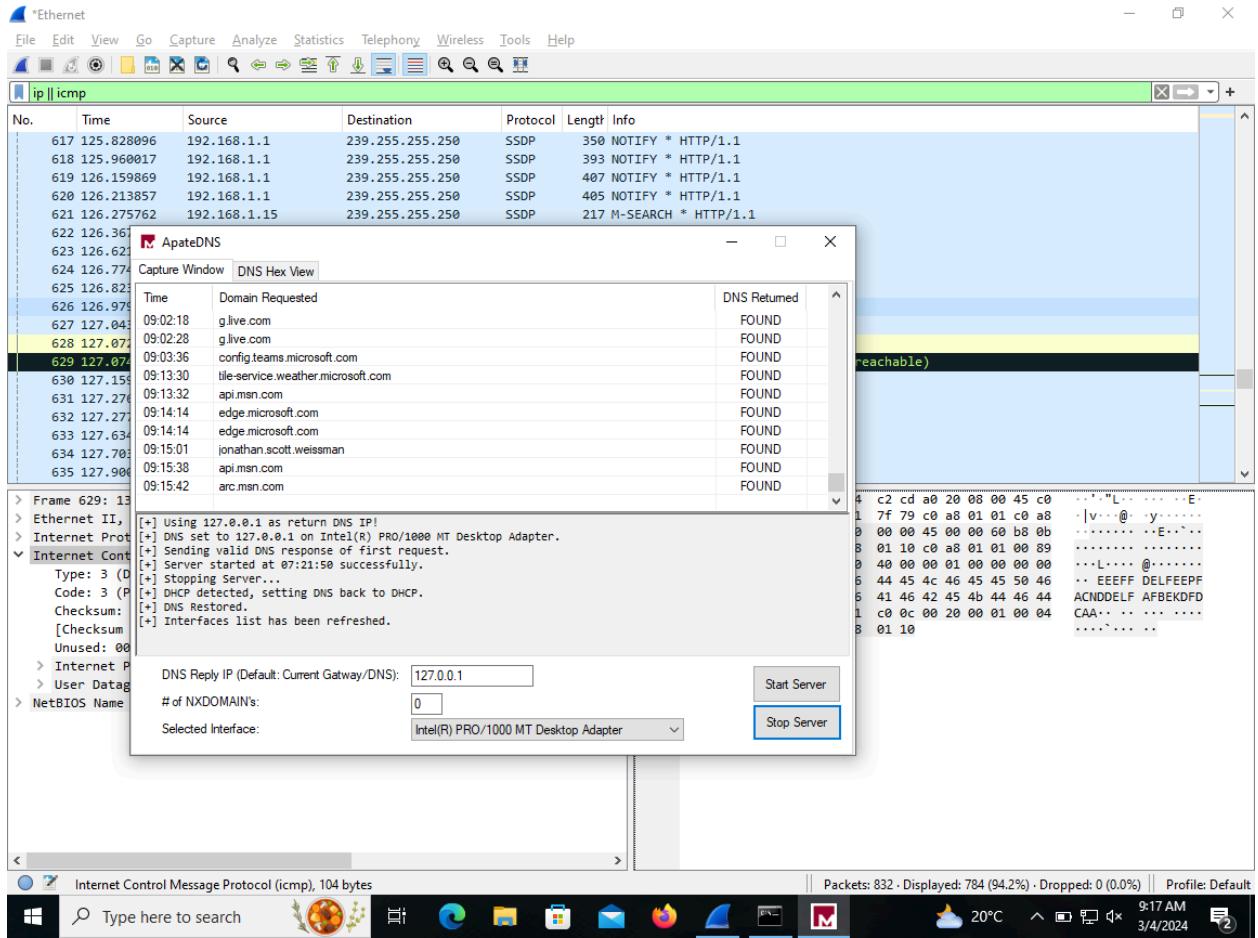


3a,

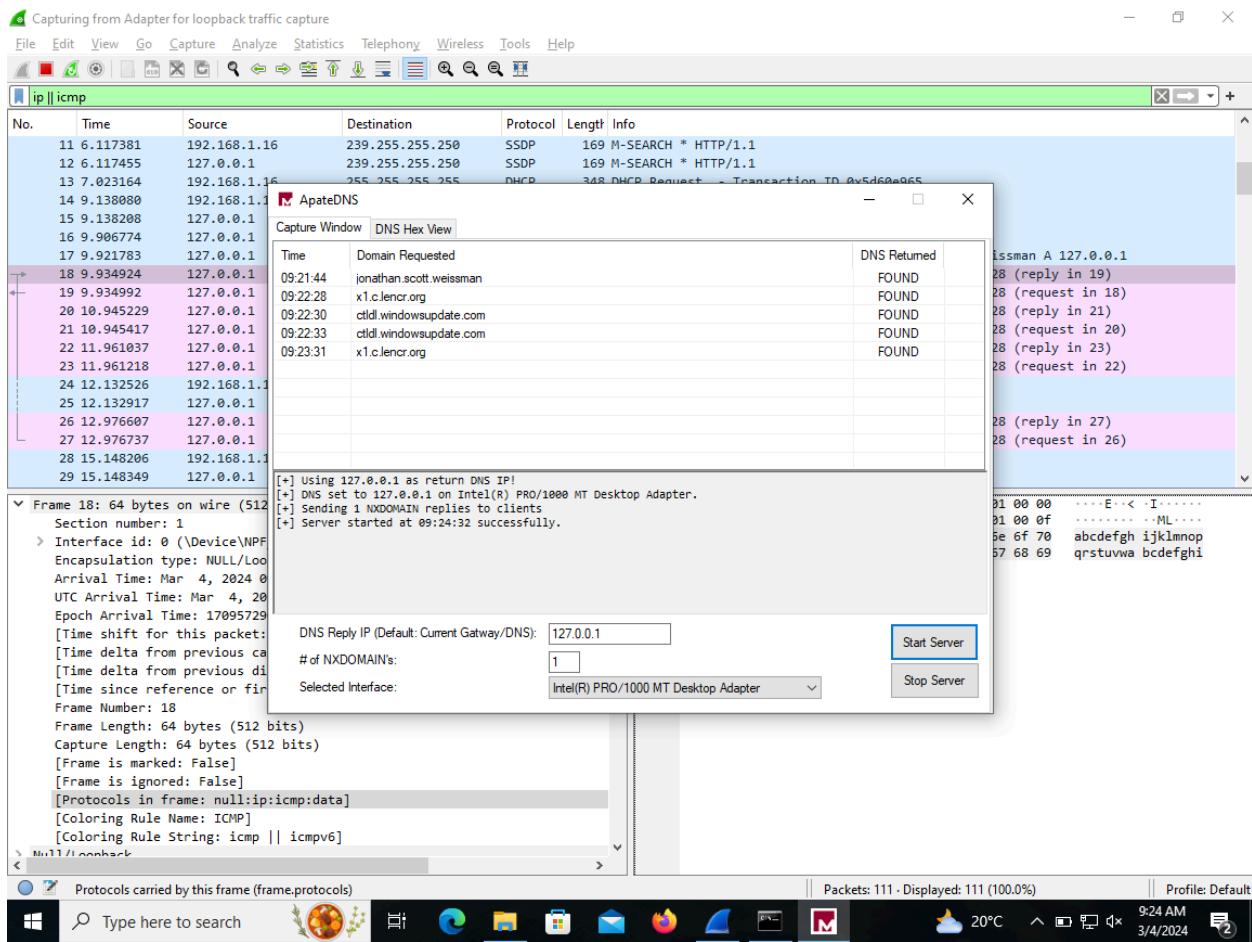


3b,

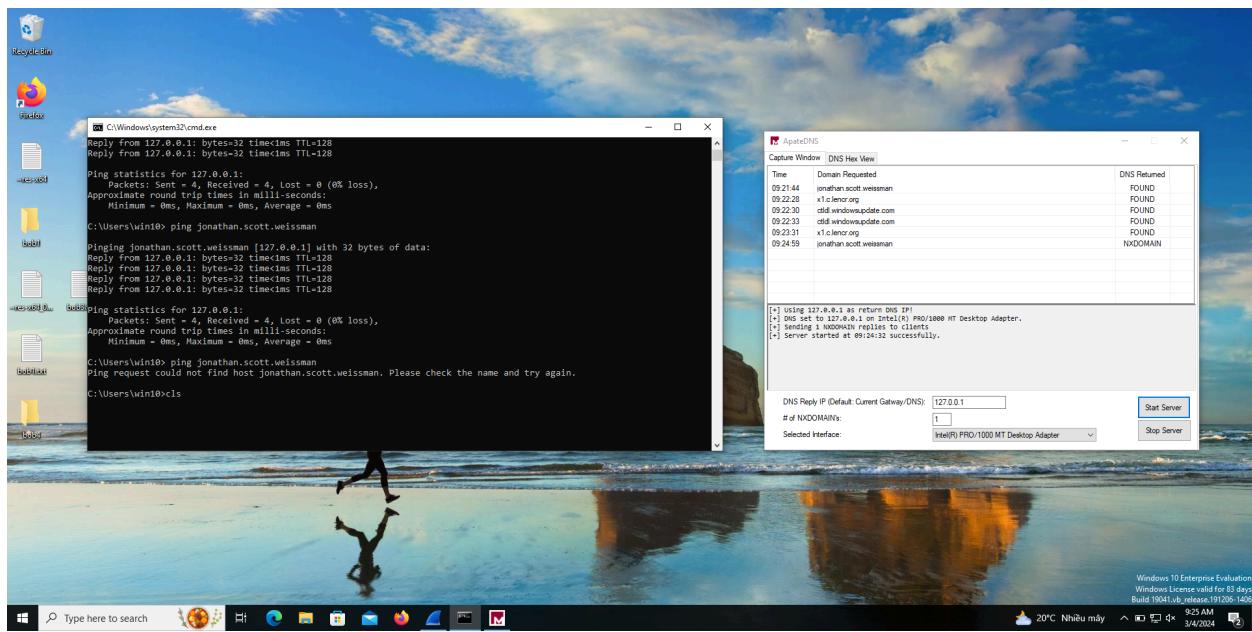




4a,



4b,



4c,

