

Old Dominion University
CYSE 450: Ethical Hacking and Penetration Testing Fall
2024

Lab 2: Steganography using Steghide

By: Myrna Santiago

Handout Date: October 24, 2024

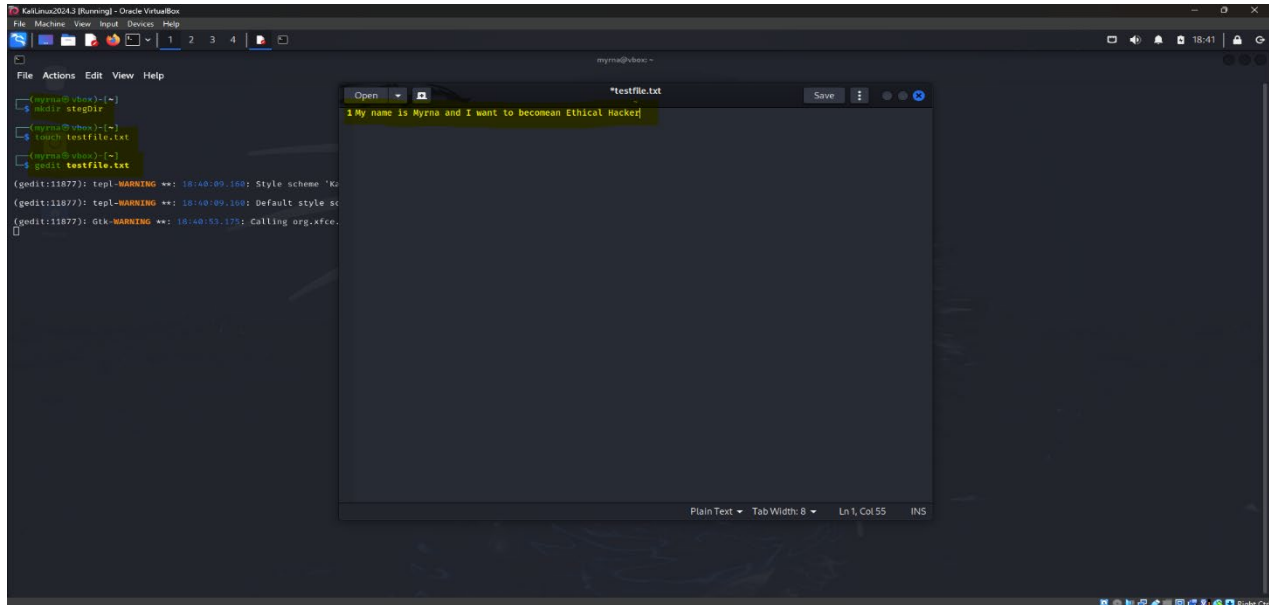
Due Date: October 31, 2024, 11:59 pm

Total Points: 30

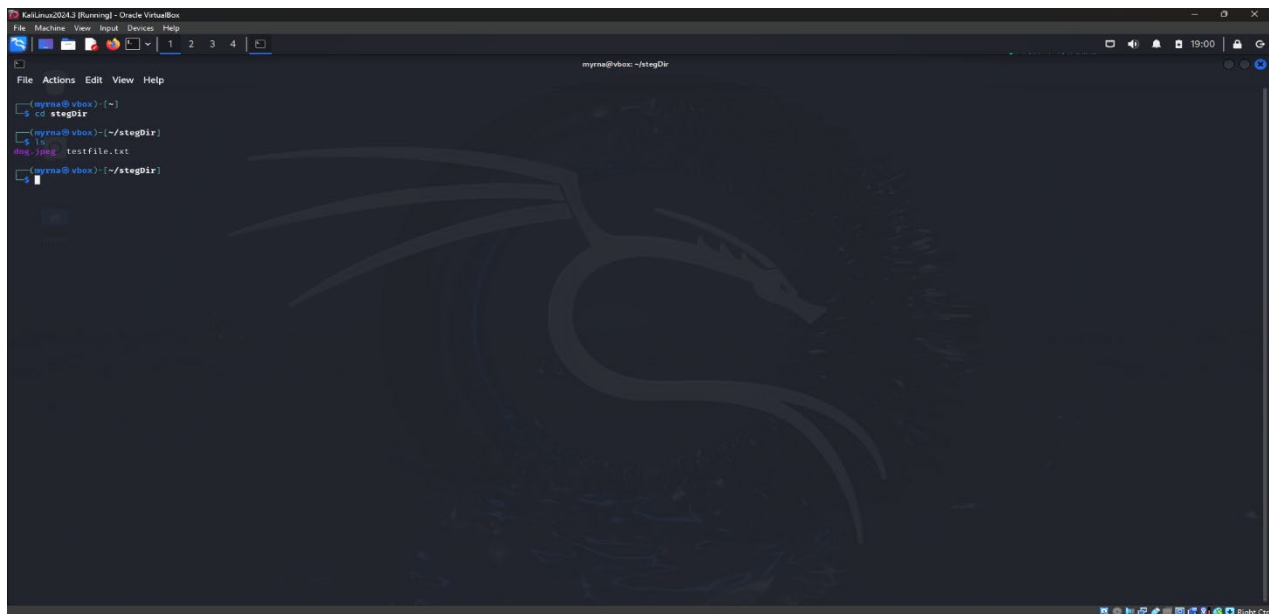
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Tasks

Task 4: Screenshot of secret message

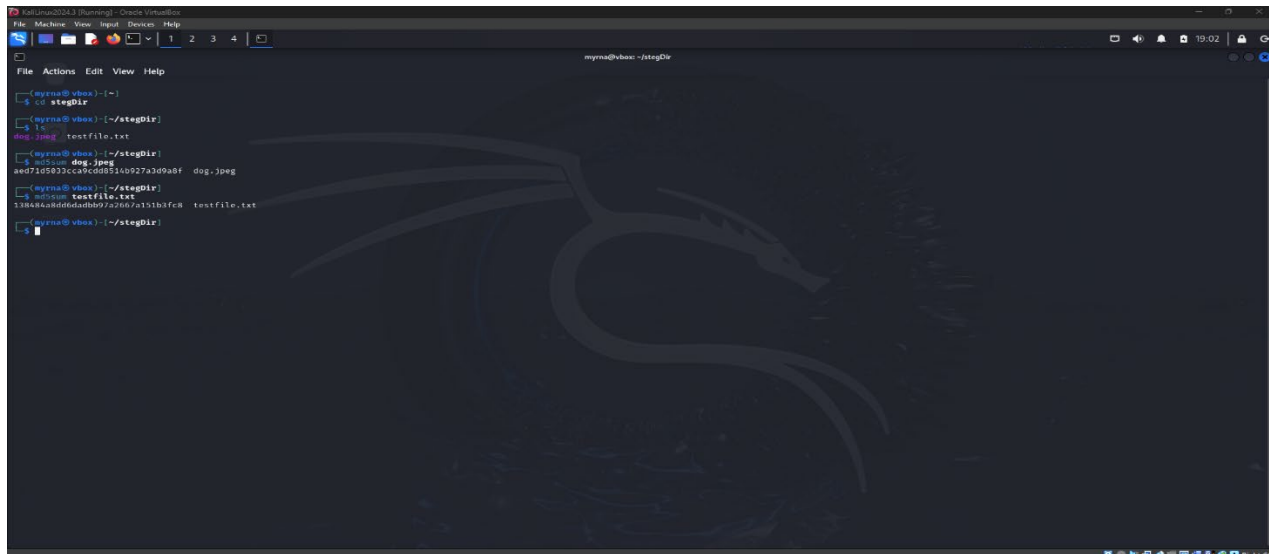


Task 6: Screenshot of stegDir.



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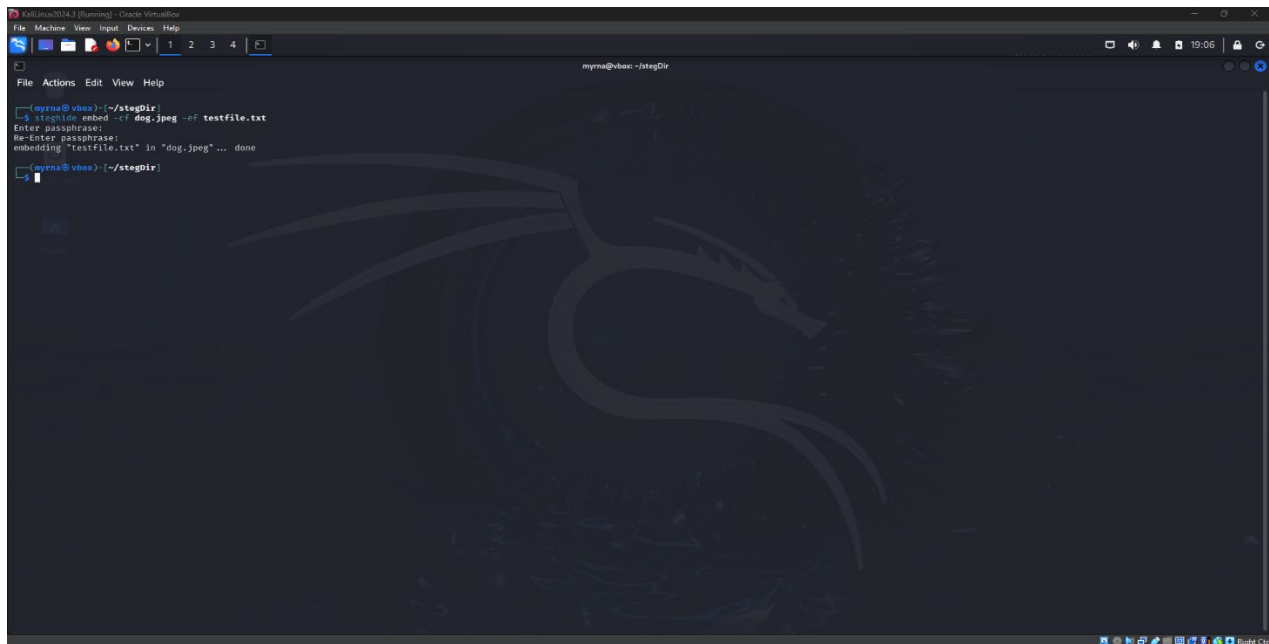
Task 7: Screenshot of md5sum



A screenshot of a Kali Linux terminal window. The terminal shows the following commands and output:

```
myrna@vbox: ~/stegDir
$ cd stegDir
$ ls
dog.jpeg testfile.txt
$ md5sum dog.jpeg
aed71d5833cc9cd851a927a3d9a8f  dog.jpeg
$ md5sum testfile.txt
13b4a8a8ddedc0b07a20a1a151b3fc8  testfile.txt
```

Task 8: Screenshot of embedding command

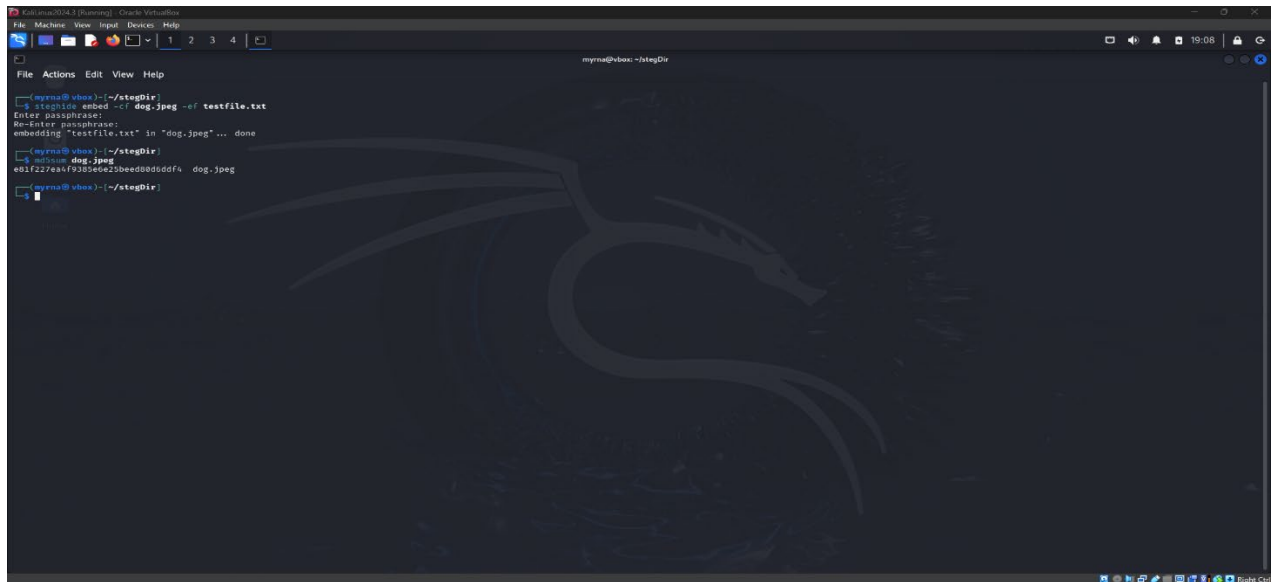


A screenshot of a Kali Linux terminal window. The terminal shows the following commands and output:

```
myrna@vbox: ~/stegDir
$ steghide embed -cf dog.jpeg -ef testfile.txt
Enter passphrase:
Re-Enter passphrase:
embedding "testfile.txt" in "dog.jpeg"... done
```

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Task 9: Screenshot of new dog.jpeg check sum. The checksum in this step is different from task 7.



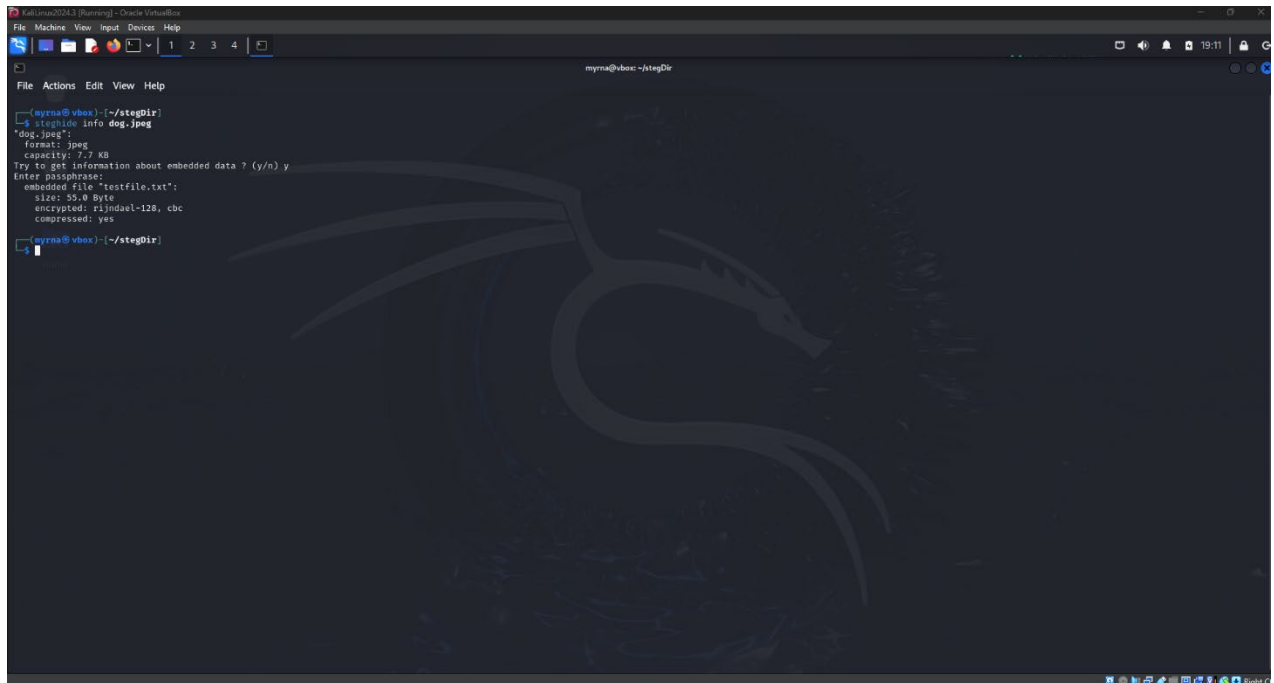
```
Kali Linux 2024.1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1 2 3 4
myrna@vbox: ~/stegDir

myrna@vbox:~/stegDir$ steghide embed -cf dog.jpeg -ef testfile.txt
Enter passphrase:
Re-Enter passphrase:
embedding "testfile.txt" in "dog.jpeg"... done

myrna@vbox:~/stegDir$ md5sum dog.jpeg
e81f227ea4f9385e6e25bed08d8dffa  dog.jpeg

myrna@vbox:~/stegDir$
```

Task 10: Screenshot of steghide information of dog.jpeg



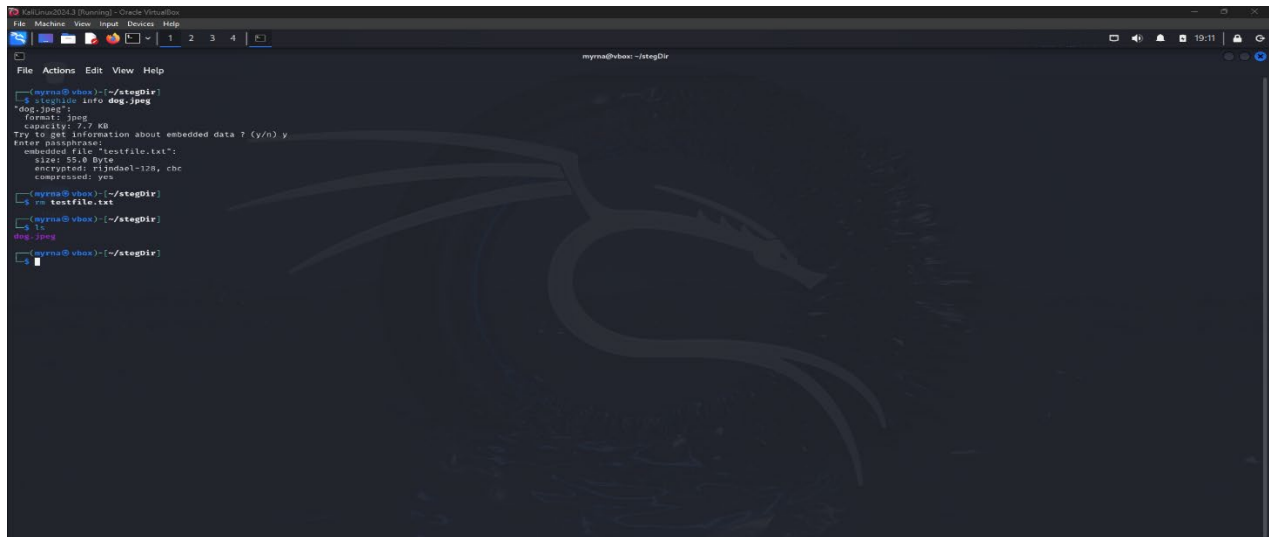
```
Kali Linux 2024.1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1 2 3 4
myrna@vbox: ~/stegDir

myrna@vbox:~/stegDir$ steghide info dog.jpeg
"dog.jpeg":
  format: jpeg
  capacity: 7.7 KB
  Try to get information about embedded data ? (y/n) y
  Enter passphrase:
  embedded file "testfile.txt":
    size: 55.0 Byte
    encrypted: rijndael-128, cbc
    compressed: yes

myrna@vbox:~/stegDir$
```

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Task 11: Screenshot of stegDir after testfile.txt deletion.



```
Kali Linux 2024.3 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
myrna@vbox: ~/stegDir

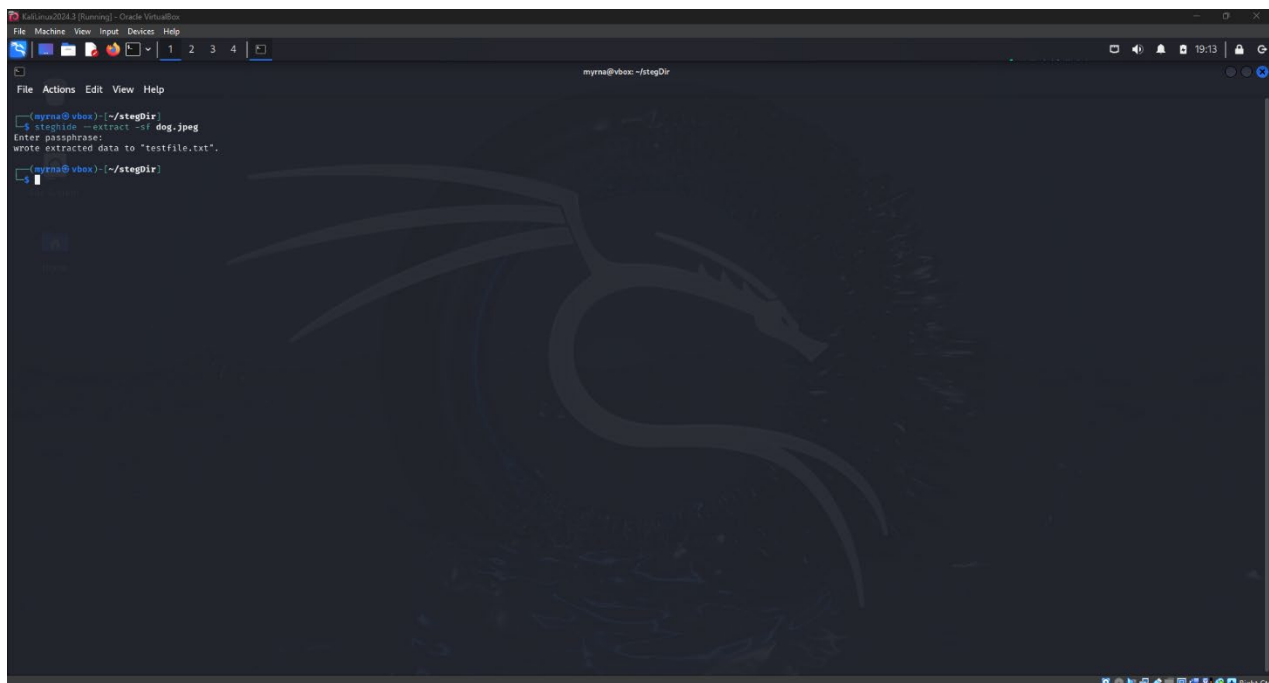
(myrna@vbox)~/stegDir
$ steghide info dog.jpeg
"dog.jpeg"
format: jpeg
capacity: 7.7 KB
Try to get information about embedded data ? (y/n) y
Enter passphrase:
embedded file "testfile.txt":
size: 55.4 Byte
encrypted: rijndael-128, chr
compressed: yes

(myrna@vbox)~/stegDir
$ rm testfile.txt

(myrna@vbox)~/stegDir
$ ls
dog.jpeg

(myrna@vbox)~/stegDir
```

Task 12: Screenshot of testfile.txt extraction from dog.jpeg



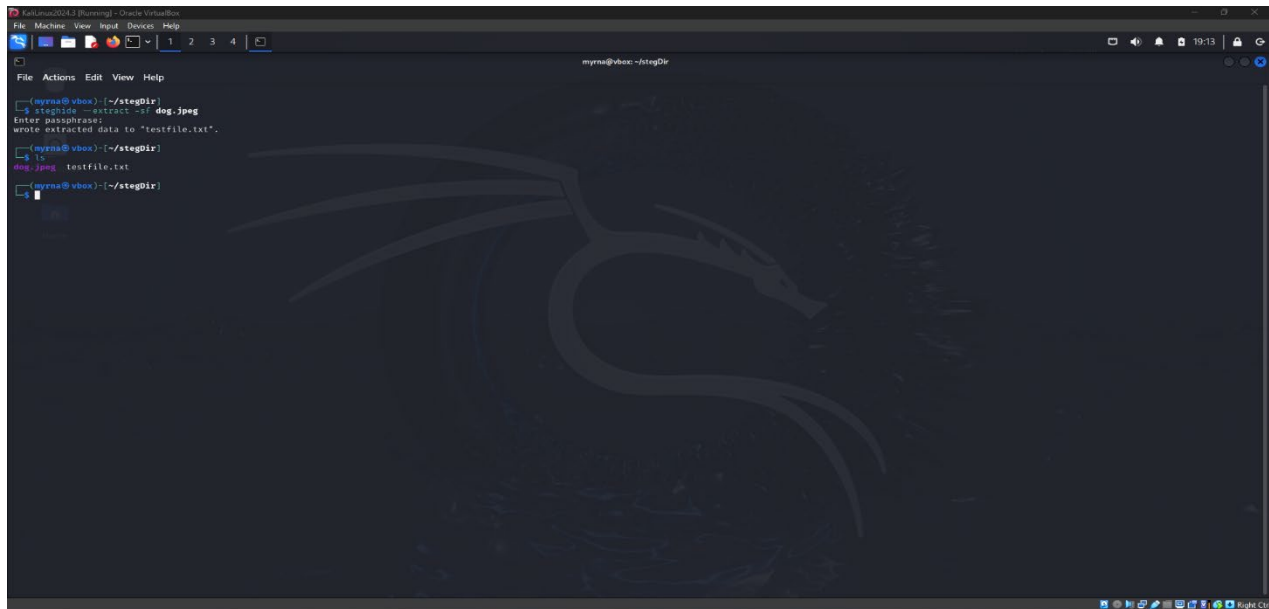
```
Kali Linux 2024.3 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
myrna@vbox: ~/stegDir

(myrna@vbox)~/stegDir
$ steghide --extract -s dog.jpeg
Enter passphrase:
wrote extracted data to "testfile.txt".

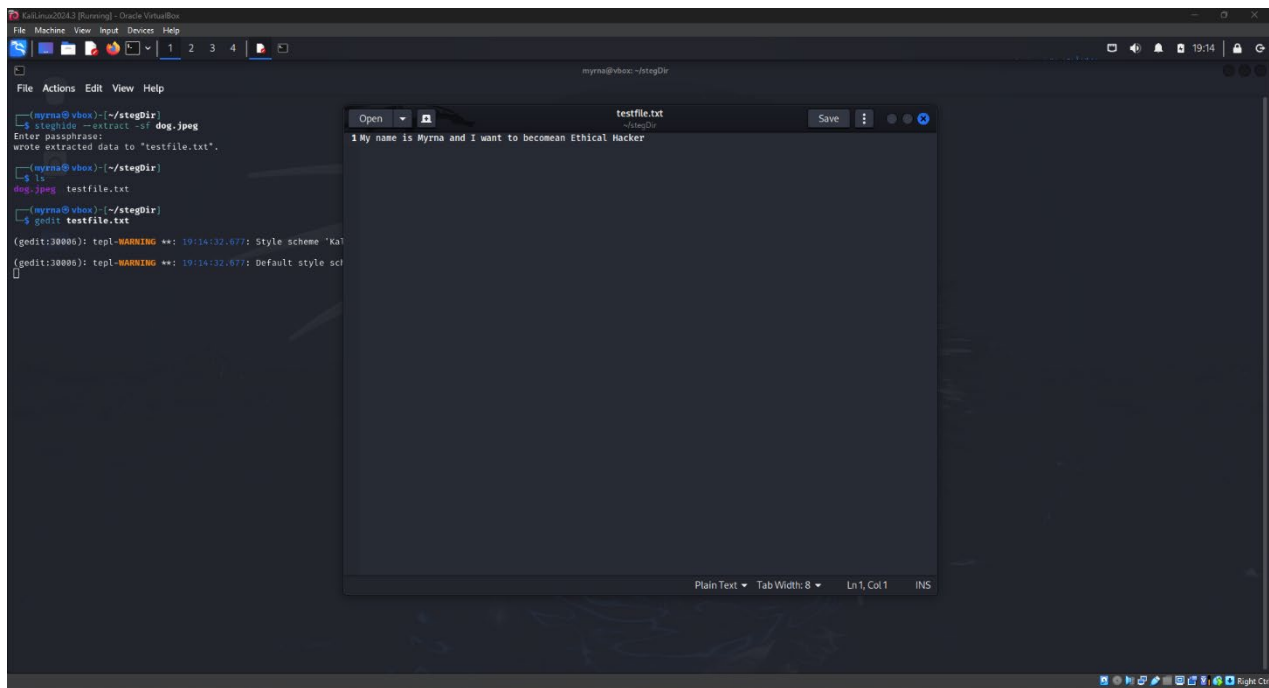
(myrna@vbox)~/stegDir
```

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Task 13: Screenshot of stegDir content after extraction.

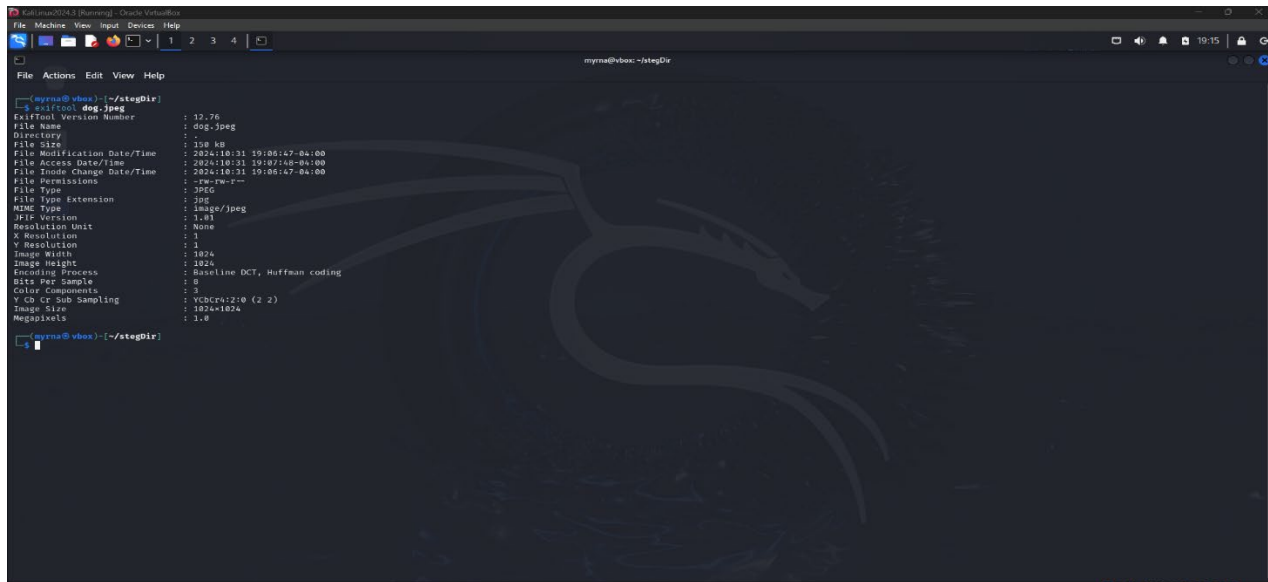


Task 14: Content of testfile.txt after extraction.

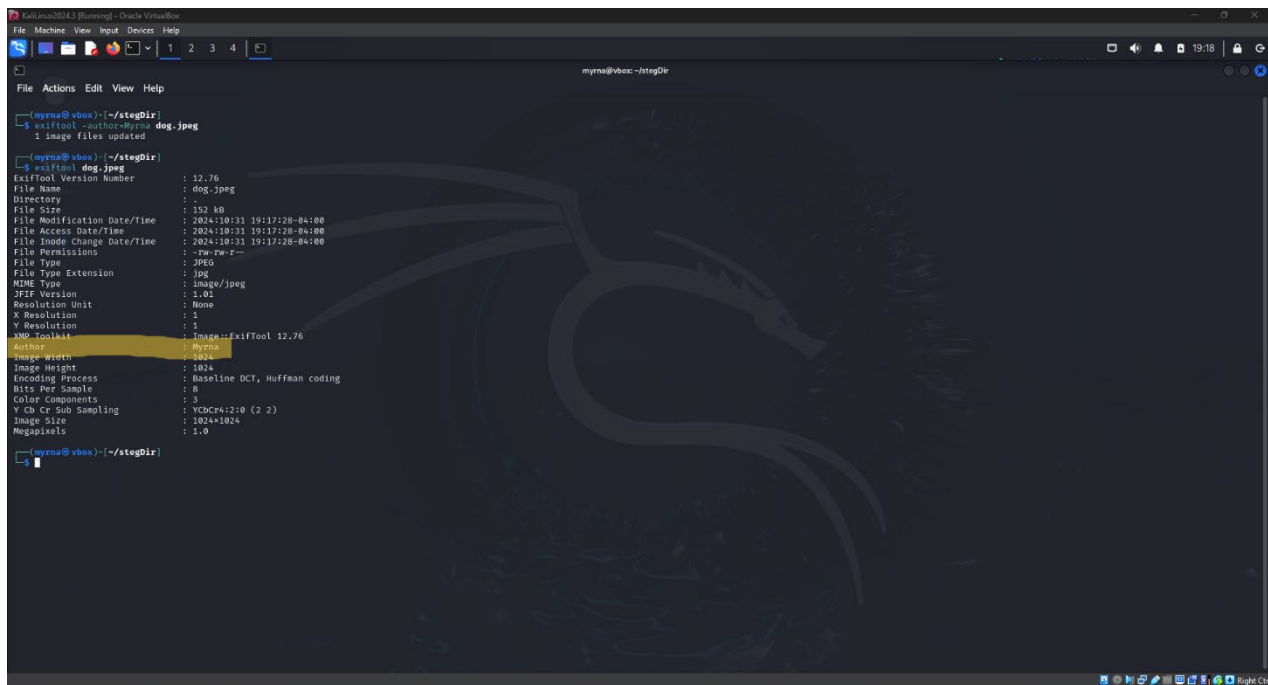


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Task 15: Screenshot of metadata of dog.jpeg

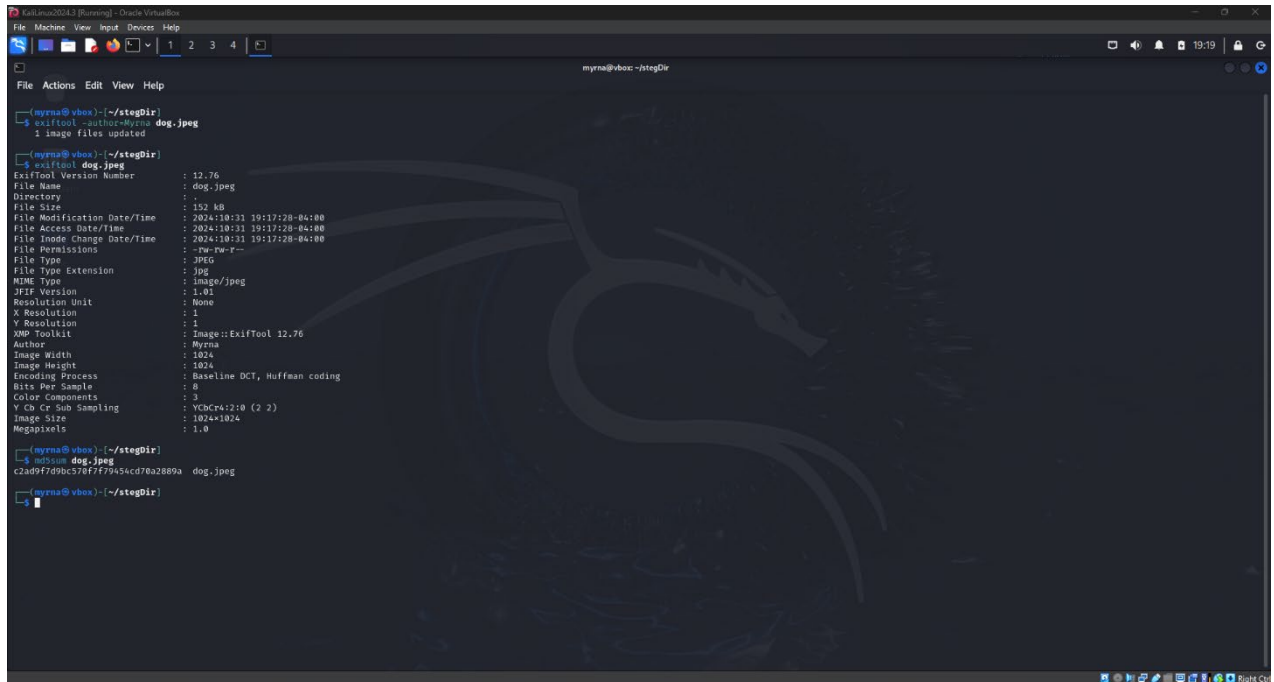


Task 17: Screenshot of metadata after changing author name using exiftool. Now my name is included as the author.



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Task 18: Screenshot of new md5sum. This checksum is different from the original in step 7 and in step 9. All the dog.jpeg checksums are different.



```
Kali Linux 2024.3 [running] - Oracle VM VirtualBox
File Machine View Input Devices Help
myrna@vbox: ~/stegDir

(myrna@vbox)~/stegDir$ exiftool -author=Myrna dog.jpeg
1 image files updated

(myrna@vbox)~/stegDir$ exiftool dog.jpeg
ExifTool Version Number      : 12.76
File Name                    : dog.jpeg
Directory                    : .
File Size                     : 152 kB
File Modification Date/Time   : 2024:10:31 19:17:28-04:00
File Access Date/Time        : 2024:10:31 19:17:28-04:00
File Inode Change Date/Time   : 2024:10:31 19:17:28-04:00
File Permissions              : -rw-rw-r--
File Type                    : JPEG
File Type Extension          : jpg
MIME Type                    : image/jpeg
JFIF Version                  : 1.03
Resolution Unit               : None
X Resolution                  : 1
Y Resolution                  : 1
XMP Toolkit                   : Image::ExifTool 12.76
Author                       : Myrna
Image Width                   : 1024
Image Height                  : 1024
Encoding Process              : Baseline DCT, Huffman coding
Bits Per Sample               : 8
Color Components              : 3
Y Cb Cr Sub Sampling          : YCbCr4:2:2 (2 2)
Image Size                   : 1024x1024
Megapixels                    : 1.0

(myrna@vbox)~/stegDir$ md5sum dog.jpeg
c2ad9f7d9bc378f7f79454cd78a2889a dog.jpeg

(myrna@vbox)~/stegDir$
```