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Reflection (Required)

😞 **Reflection Question #1:** If I had to **explain “steganography” in 3 emojis**, they would be...
(Feel free to put other comments about your experience this unit here, too!)



📷 **Reflection Question #2:** What are the risks of taking images with lots of attached metadata? What are the benefits?

Risk: The metadata may include the geographical location, device information, timeline etc. If anyone can extract those information, it may cause a privacy risk

Benefit: The metadata is useful when someone needs sorting so many images

📣 **Shoutouts:** Share appreciation for anyone who helped you out with this project or made your day a little better!

Required Challenge Screenshots (Required)

NOTE: To complete this project, you will first need to follow the instructions to embed a hidden message (of your choice) in an image file!

Use the answer boxes below to paste in your screenshots from completing the project. Clarifying notes are optional. (If you only have one screenshot file, just put it in each of the boxes.)

Extracting a Hidden Message with Steghide

Screenshot #1: The output of the `steghide info` command's output, showing the hidden file

[Insert Screenshot Here]

```
steghide: could not extract any data with that passphrase!

(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ steghide info salad.jpg
"salad.jpg":
  format: jpeg
  capacity: 267.6 KB
Try to get information about embedded data ? (y/n) y
Enter passphrase:
  embedded file "message2.txt":
    size: 427.0 Byte
    encrypted: rijndael-128, cbc
    compressed: yes

(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$
```

Notes (Optional):

Screenshot #2: The output of the `steghide extract` command

[Insert Screenshot Here]

```
(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ steghide extract -sf salad.jpg -xf embeddedmessage.txt
Enter passphrase:
wrote extracted data to "embeddedmessage.txt".

(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$
```

Notes (Optional):

Screenshot #3: The output of the `cat` command, showing the contents of the extracted file

[Insert Screenshot Here]

```
(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
```

```
$ cat embeddedmessage.txt
```

```
I shot an arrow into the air,  
It fell to earth, I knew not where,  
For, so swiftly it flew, the sight  
Could not follow it in its flight.
```

```
I breathed a song into the air,  
It fell to earth, I knew not where;  
For who has sight so keen and strong,  
That it can follow the flight of song?
```

```
Long, long afterward, in an oak  
I found the arrow, still unbroke;  
And the song, from beginning to end,  
I found again in the heart of a friend.
```

```
(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
```

```
$
```

Notes (Optional):

Stretch Challenge (Optional)

For this stretch challenge, you can include screenshots showing extracting data from a classmate's image file. You can do this 2 times for +2 points each.

Screenshot #1: Screenshot(s) showing extracting data from a classmate's image file

[Insert Screenshot Here]

```
(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ steghide info classmate1.jpg
"classmate1.jpg":
  format: jpeg
  capacity: 4.5 KB
Try to get information about embedded data ? (y/n) y
Enter passphrase:
  embedded file "classmate_message_1.txt":
    size: 39.0 Byte
    encrypted: rijndael-128, cbc
    compressed: yes

(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ steghide extract -sf classmate1.jpg -xf extract_classmate1.txt
Enter passphrase:
wrote extracted data to "extract_classmate1.txt".

(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ cat extract_classmate1.txt
Hey, we have a group assignment today.

(kali㉿kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$
```

Classmate who Created this File:

Notes (Optional):

Screenshot #2: Screenshot(s) showing extracting data from a classmate's image file

[Insert Screenshot Here]

```
kali@kali: ~/home/cyb101-vm-setup-main/Files/unit6
File Actions Edit View Help

(kali@kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ steghide info classmate2.jpg
"classmate2.jpg":
  format: jpeg
  capacity: 371.0 Byte
Try to get information about embedded data ? (y/n) y
Enter passphrase:
  embedded file "classmate_message2.txt":
    size: 43.0 Byte
    encrypted: rijndael-128, cbc
    compressed: yes

(kali@kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ steghide extract -sf classmate2.jpg -xf extract_classmate2.txt
Enter passphrase:
wrote extracted data to "extract_classmate2.txt".

(kali@kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$ cat extract_classmate2.txt
Exam will be easy today!!!      Professor Told

(kali@kali)-[~/home/cyb101-vm-setup-main/Files/unit6]
$
```

Classmate who Created this File:

Notes (Optional):