Homework #6: Forensics

Honor Pledge: I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

1.1
First I downloaded from
http://supersecure.store:7474/rick.wav
This gave me a file which when opened showed this:

To extract data from this file I ran the command `steghide extract -sf rick.wav`

```
┌──(kali㉿kali)-[~/Downloads]
└─$ steghide extract -sf rick.wav
Enter passphrase:
wrote extracted data to "secret.txt".
```

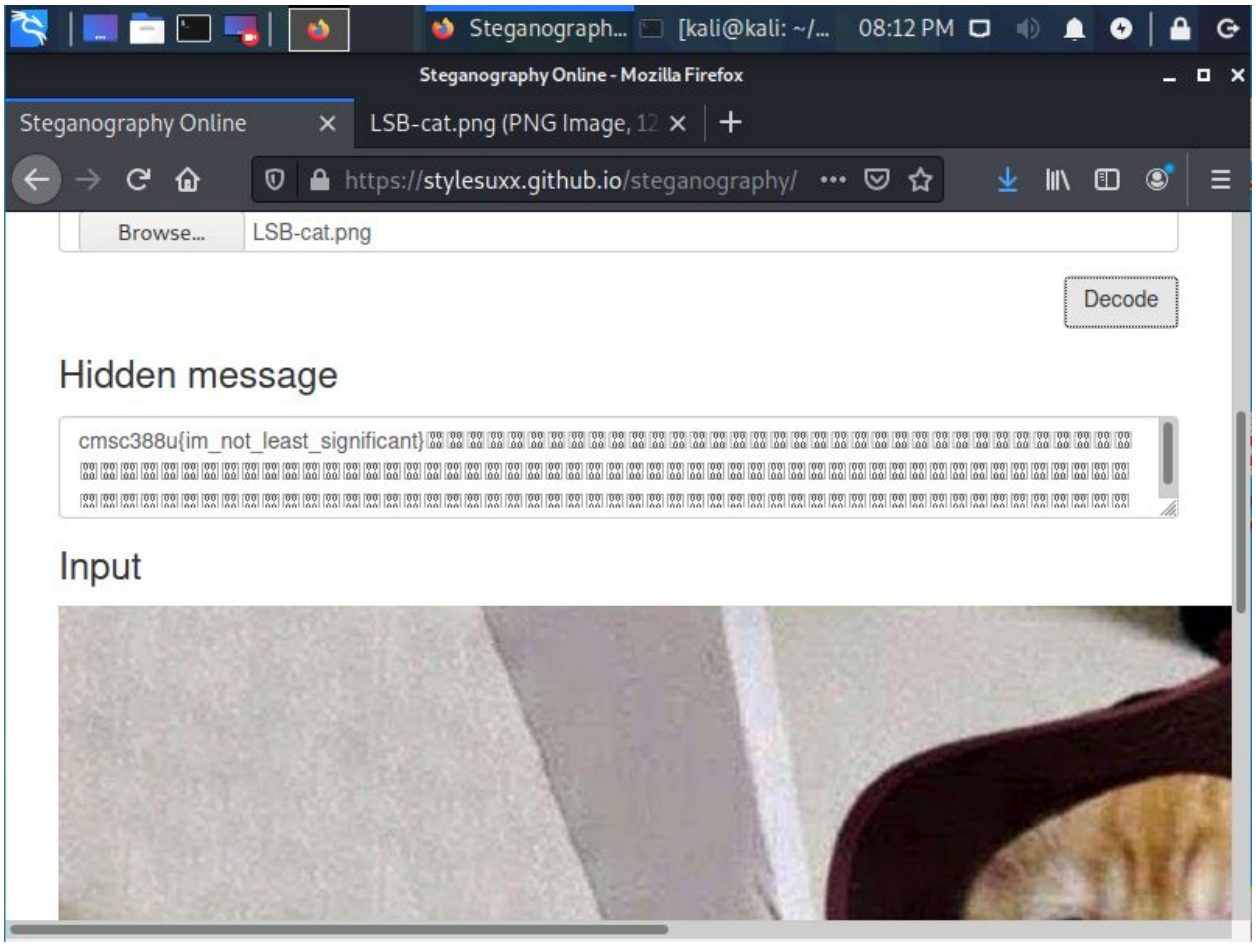
For the passphrase, i simply hit enter. In secret.txt

```
┌──(kali㉿kali)-[~/Downloads]
└─$ ls
1402.1842.pdf             Image.lzma                      rick.wav         uImage
cmsc388u_midterm_answers  mystery_firmware.bin            secret.txt
doggo.jpeg                _mystery_firmware.bin.extracted supersecret.pdf

┌──(kali㉿kali)-[~/Downloads]
└─$ cat secret.txt
cmsc388u{n3ver_g0nna_g1v3_y0u_uP}
```

The flag is
`cmsc388u{n3ver_g0nna_g1v3_y0u_uP}`

1.2
The site, https://stylesuxx.github.io/steganography/ has both encryption and decryption tabs. Downloading the file from http://supersecure.store:7474/LSB-cat.png we can then upload the file and decode it

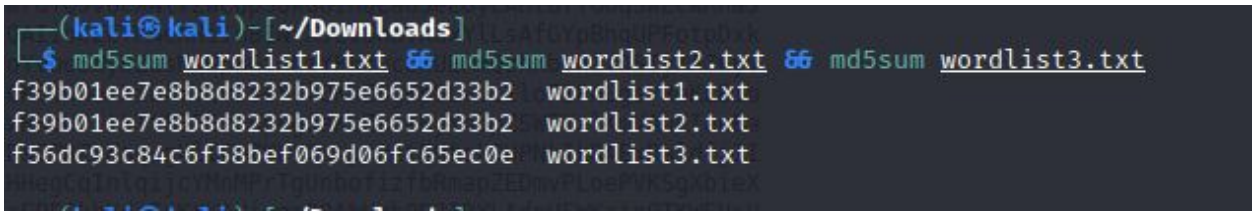


The flag is then
`Cmsc388u{im_not_least_significant}`

2.1

To find the differences in files, we can use the md5 and sha256 hashes to determine which files are the same and which files are different. Using the commands `md5sum` and `sha256sum`

```
md5sum wordlist1.txt && md5sum wordlist2.txt && md5sum
wordlist3.txt
```

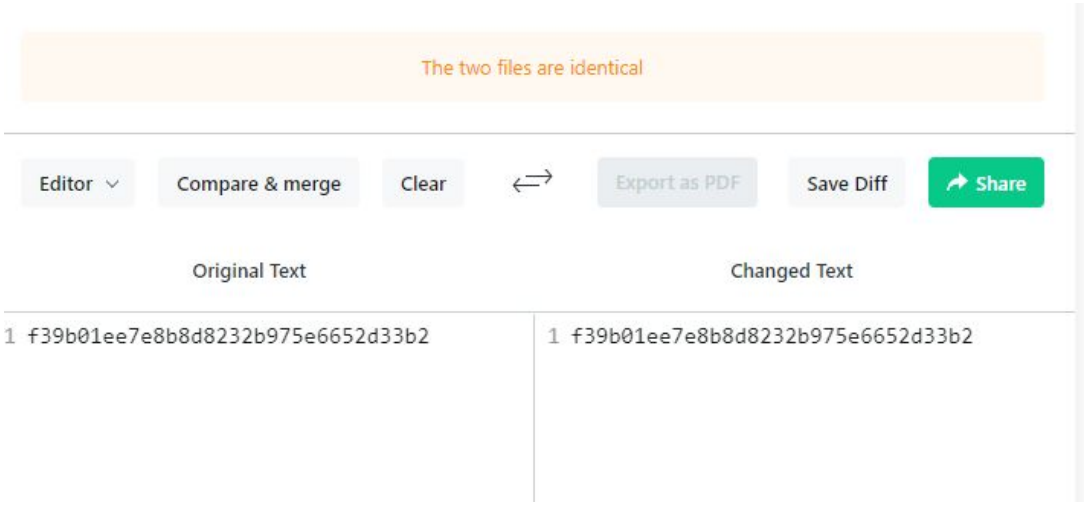


```
sha256sum wordlist1.txt && sha256sum wordlist2.txt && sha256sum wordlist3.txt
```

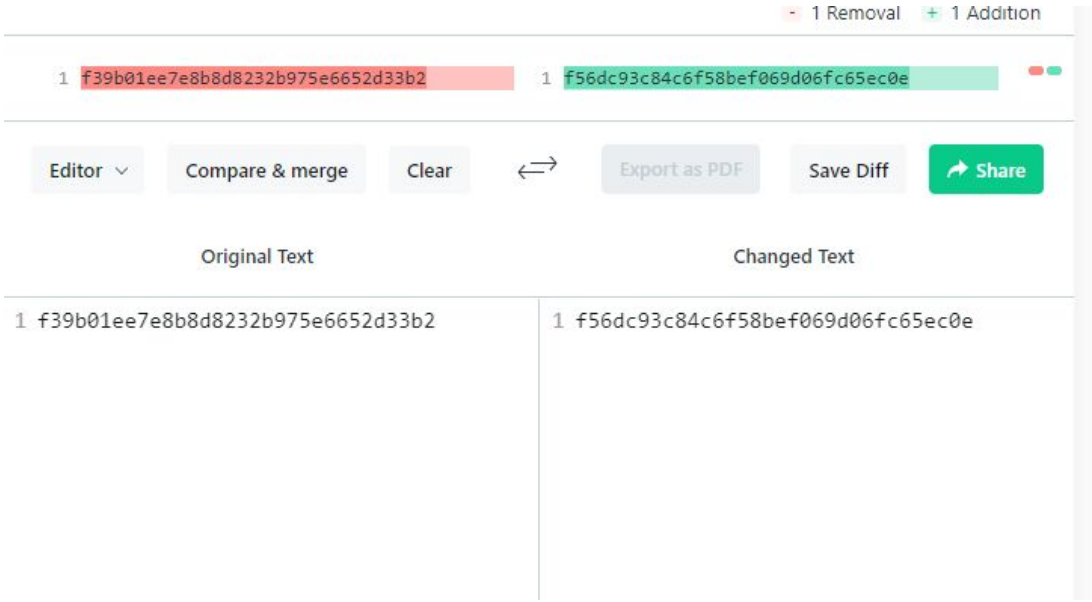
```
┌──(kali㉿kali)-[~/Downloads]
└─$ sha256sum wordlist1.txt && sha256sum wordlist2.txt && sha256sum wordlist3.txt
796f961013cb5fe1ba5059da006570ef072454456850d789b7583cb11460522d  wordlist1.txt
796f961013cb5fe1ba5059da006570ef072454456850d789b7583cb11460522d  wordlist2.txt
f3cffb575bd7031d296dd776525cdc8afa8fc8a1b3b7d3e8c3e5e709be00f62b  wordlist3.txt
```

Using https://www.diffchecker.com/, we can compare the MD5 hashes

Wordlist1.txt and wordlist2.txt

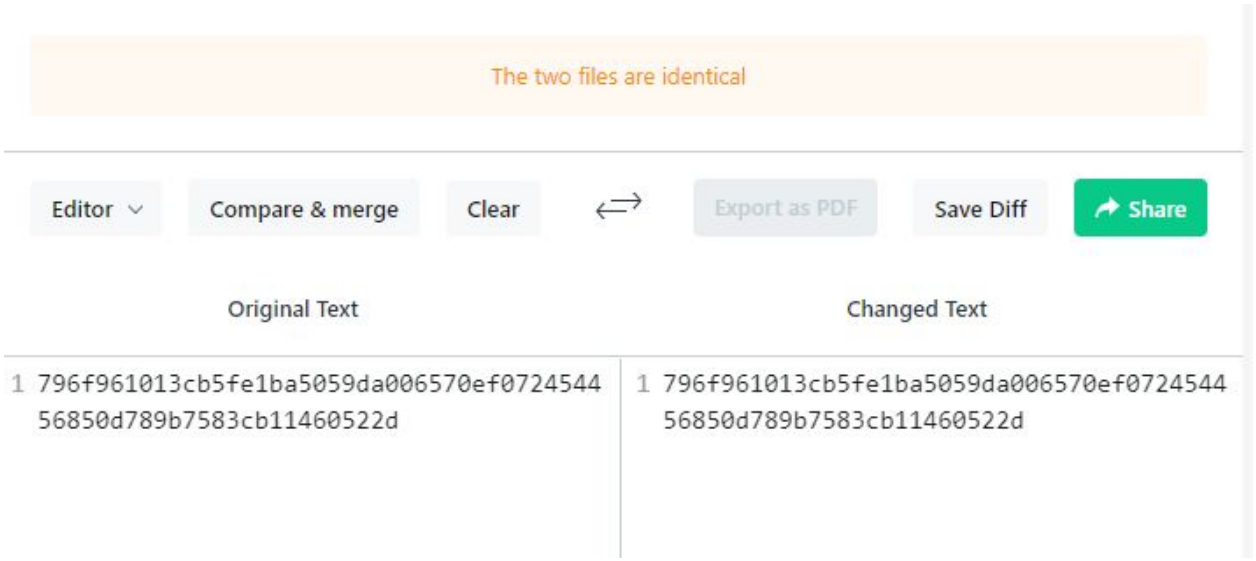


Which are the same, then comparing them to wordlist3.txt yields:

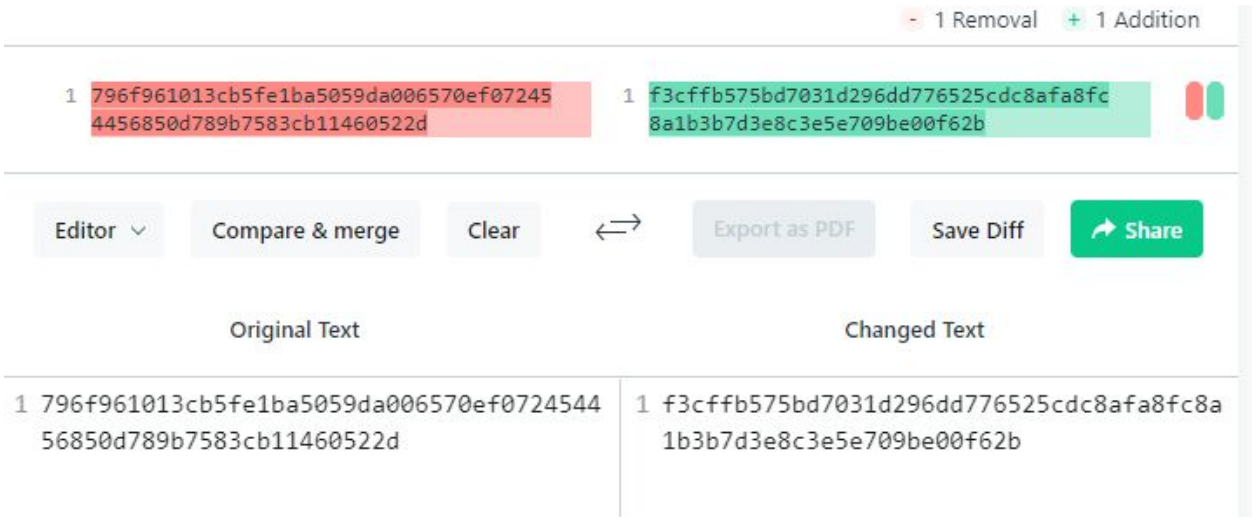


Using https://www.diffchecker.com/, we can compare the SHA256 hashes

Wordlist1.txt and wordlist2.txt



Which are the same, then comparing them to wordlist3.txt yields:



Therefore, using the SHA256 and MD5 hashes, we can determine that the files wordlist1.txt and wordlist2.txt are the same file.

3.1

To get the hash of the smashed_flash.img, I run `sha256sum smashed_flash.img`

```
┌──(kali㉿kali)-[~/Downloads]
└─$ sha256sum smashed_flash.img
06d8da8d8950ce84e0805abc75217411897dd413b6d0b66674768c68720ca9cf  smashed_flash.img
```

Now i can take this output and send it to a .txt and send the given hash to another .txt and run the `diff` command to make sure that they are the same

```
┌──(kali㉿kali)-[~/Downloads]
└─$ echo 06d8da8d8950ce84e0805abc75217411897dd413b6d0b66674768c68720ca9cf > givenSha.txt

┌──(kali㉿kali)-[~/Downloads]
└─$ echo 06d8da8d8950ce84e0805abc75217411897dd413b6d0b66674768c68720ca9cf > foundSha.txt

┌──(kali㉿kali)-[~/Downloads]
└─$ diff givenSha.txt foundSha.txt

┌──(kali㉿kali)-[~/Downloads]
└─$
```

No output means that the files are the same.

3.2

To get the flag in the smased_flash.img, I first need to `mount` the image. To do this, I made a directory by running `mkdir smashed_flash`

```
┌──(kali㉿kali)-[~/Downloads]
└─$ mkdir smashed_flash

┌──(kali㉿kali)-[~/Downloads]
└─$ ls
1402.1842.pdf              Image.lzma                        secret.txt          wordlist1.txt
cmsc388u_midterm_answers   LSB-cat.png                       smashed_flash       wordlist2.txt
doggo.jpeg                 mystery_firmware.bin              smashed_flash.img   wordlist3.txt
foundSha.txt               _mystery_firmware.bin.extracted   supersecret.pdf
givenSha.txt               rick.wav                          uImage
```

Next, I made sure that the directory was actually created, which I circled above.

The next step I need to take is to use `mount.` The command needs root privileges, so it needs to have sudo in front of it.

`sudo mount smashed_flash.img smashed_flash`

This should fill up the directory smashed_flash, which I then cd into and did ls.

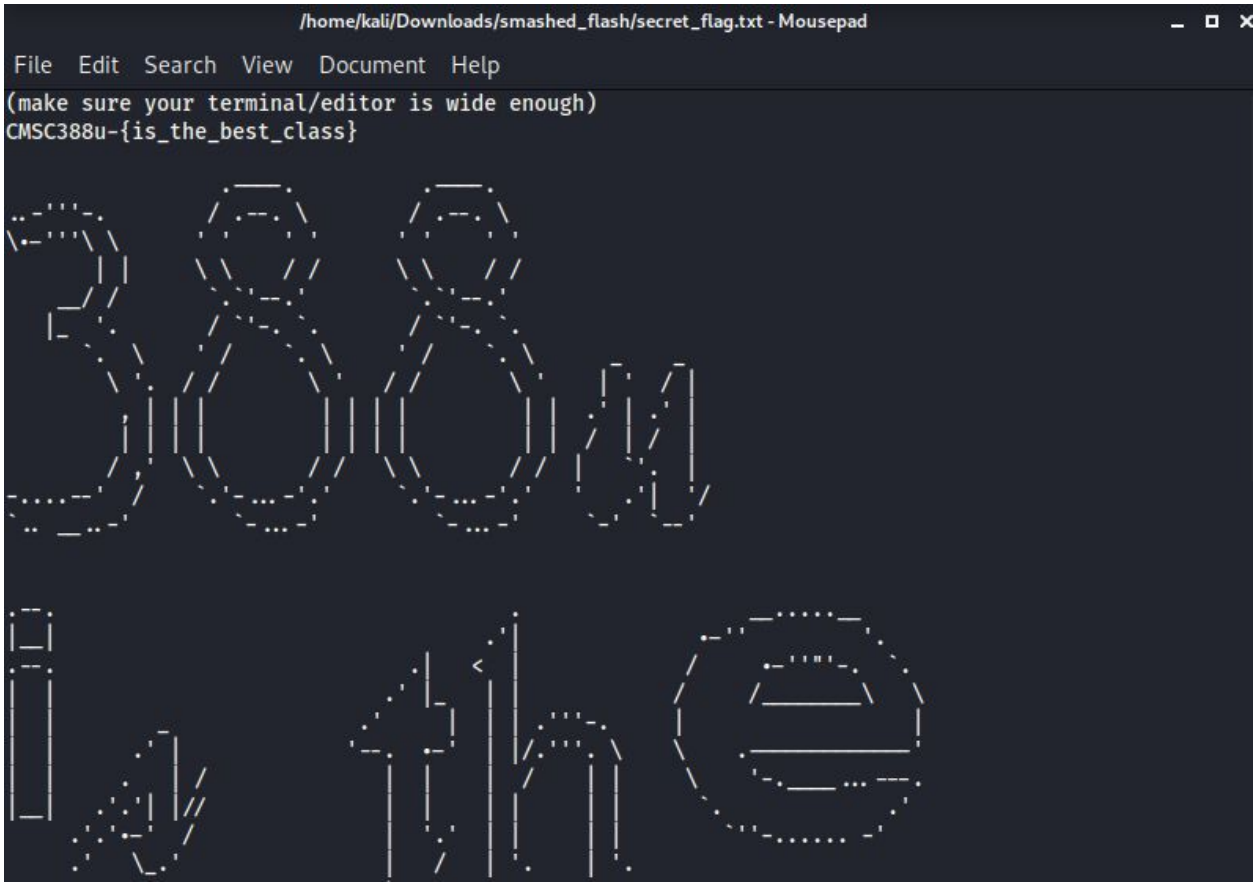
```
┌──(kali㉿kali)-[~/Downloads]
└─$ sudo mount smashed_flash.img smashed_flash
[sudo] password for kali:

┌──(kali㉿kali)-[~/Downloads]
└─$ cd smashed_flash

┌──(kali㉿kali)-[~/Downloads/smashed_flash]
└─$ ls
hackcat1.jpeg  hackcat2.jpeg  secret_flag.txt
```

There are 2 .jpeg files and one .txt file. The two .jpeg files consist of

Which while they are cool, is not what we are looking for. However, the txt file may be fruitful. Opening it up in a text file, we see:



Therefore, the flag is CMSC388u-{is_the_best_class}