

CYSE 301: Cybersecurity Technique and Operations

Assignment M6: Digital Steganography

Task-A: [10 points]

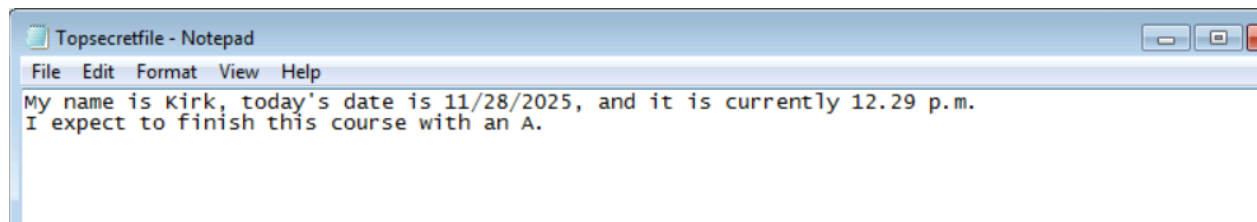
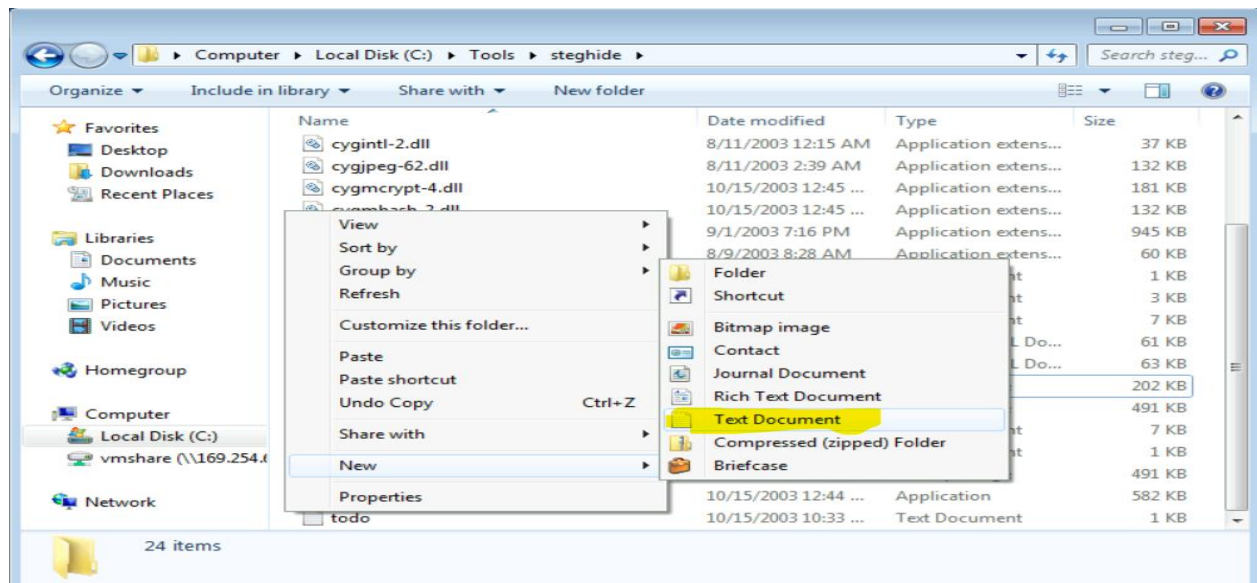
Explain what steganography is and how it differs from cryptography?

- Steganography is hiding a secret message within a regular message to conceal the secret message. It differs from cryptography because it does not involve changing or scrambling the secret message itself through a cryptographic algorithm, rather it requires the message to be embedded within another file, such as an image. Steganography is sort of like hiding a message “in plain sight” because people who do not know where to look for the hidden contents are typically unaware of the secrets hidden within the file.

Task B : Lab Preparation:

1. [10 Points] Create a text file containing the answers to the following questions:

- What are your name and current date and timestamp?
- What is your expected grade in this course?



2. [40 Points] Complete the following tasks using steghide command:

- Use **steghide** to hide this text file in the cover image, " Monarch.bmp.", which you can find in Windows7 under VMShare folder--> Lab-Resources--> Module 6.
- Use your **Midas ID** (all lowercase) as "YourName.bmp" for example "**svatsa.bmp**" as the name of the STEGO file.
- Use your own **UIN** (for example, **01000123**) as the password.

```
C:\Tools\steghide>steghide embed -ef Topsecretfile.txt -cf Monarch.bmp -sf kturn
.bmp
Enter passphrase: 01292256
Re-Enter passphrase:
embedding "Topsecretfile.txt" in "Monarch.bmp"... done
writing stego file "kturn.bmp"... done
C:\Tools\steghide>
```

- The stego file was named kturn.bmp and the password was set as my UIN, 01292256, as shown in the screenshot above.

- List the contents of the current directory/folder to verify if the stego file is created or not.

```
C:\Tools\steghide>dir
Volume in drive C has no label.
Volume Serial Number is 70C4-E2E4

Directory of C:\Tools\steghide

11/28/2025  04:38 PM    <DIR>          .
11/28/2025  04:38 PM    <DIR>          ..
10/15/2003  09:32 AM           25,122  about-nls.txt
10/15/2003  09:32 AM             608    bugs.txt
10/15/2003  09:33 AM          18,318  copying.txt
10/15/2003  09:33 AM             912    credits.txt
10/15/2003  11:44 AM         980,992  cygiconv-2.dll
08/10/2003  11:15 PM          37,888  cygintl-2.dll
08/11/2003  01:39 AM         134,656  cygjpeg-62.dll
10/15/2003  11:45 AM         185,344  cygmcrypt-4.dll
10/15/2003  11:45 AM         134,656  cygmhash-2.dll
09/01/2003  06:16 PM         967,522  cygwin1.dll
08/09/2003  07:28 AM          61,440  cygz.dll
11/20/2025  06:41 PM             16  extractedfile.txt
10/15/2003  09:33 AM             2,079  history.txt
11/28/2025  04:38 PM         206,154  kturn.bmp
10/15/2003  09:33 AM          6,841  LEAME.txt
08/23/2017  10:44 AM    <DIR>          locale
10/15/2003  09:34 AM          61,507  manual.pdf
10/15/2003  09:34 AM          63,678  manual_es.pdf
12/04/2017  03:47 AM         206,154  Monarch.bmp
08/11/2017  05:17 AM         502,554  octopus.bmp
10/15/2003  09:33 AM           6,506  README.txt
11/20/2025  06:32 PM             16  secretfile.txt
11/20/2025  06:37 PM         502,554  silly.bmp
10/15/2003  11:44 AM         595,968  steghide.exe
10/15/2003  09:33 AM             814  todo.txt
11/28/2025  04:29 PM             118  Topsecretfile.txt
                25 File(s)          4,702,417 bytes
                 3 Dir(s)    33,041,678,336 bytes free

C:\Tools\steghide>
```

3. [20 Points] Extract the secret message by executing steghide command and save in a file named "extracted_YourName.txt".

```
C:\Tools\steghide>steghide extract -sf kturn.bmp -xf extracted_kturn.txt
Enter passphrase:
wrote extracted data to "extracted_kturn.txt".
C:\Tools\steghide>
```

4. [10 Points] Execute the command to list the contents of the current directory in CMD to verify whether the extracted textfile with secret message has been extracted or not.

You should see textfile there because it was hidden in the image file and appeared after extracting the image file in the previous step.

```
C:\Tools\steghide>dir
Volume in drive C has no label.
Volume Serial Number is 70C4-E2E4

Directory of C:\Tools\steghide

11/28/2025  04:47 PM    <DIR>          .
11/28/2025  04:47 PM    <DIR>          ..
10/15/2003  09:32 AM           25,122  about-nls.txt
10/15/2003  09:32 AM            608    bugs.txt
10/15/2003  09:33 AM          18,318  copying.txt
10/15/2003  09:33 AM           912    credits.txt
10/15/2003  11:44 AM         980,992  cygiconv-2.dll
08/10/2003  11:15 PM         37,888  cygintl-2.dll
08/11/2003  01:39 AM        134,656  cygjpeg-62.dll
10/15/2003  11:45 AM        185,344  cygmcrypt-4.dll
10/15/2003  11:45 AM        134,656  cygmhash-2.dll
09/01/2003  06:16 PM        967,522  cygwin1.dll
08/09/2003  07:28 AM         61,440  cygz.dll
11/20/2025  06:41 PM           16    extractedfile.txt
11/28/2025  04:47 PM          118    extracted_kturn.txt
10/15/2003  09:33 AM          2,079    history.txt
11/28/2025  04:38 PM        206,154  kturn.bmp
10/15/2003  09:33 AM         6,841    LEAME.txt
08/23/2017  10:44 AM    <DIR>          locale
10/15/2003  09:34 AM        61,507    manual.pdf
10/15/2003  09:34 AM        63,678    manual_es.pdf
12/04/2017  03:47 AM        206,154  Monarch.bmp
08/11/2017  05:17 AM        502,554  octopus.bmp
10/15/2003  09:33 AM         6,506    README.txt
11/20/2025  06:32 PM           16    secretfile.txt
11/20/2025  06:37 PM        502,554  silly.bmp
10/15/2003  11:44 AM        595,968  steghide.exe
10/15/2003  09:33 AM           814    todo.txt
11/28/2025  04:29 PM           118    Topsecretfile.txt

                26 File(s)          4,702,535 bytes
                 3 Dir(s)      33,041,674,240 bytes free

C:\Tools\steghide>
```

5. [10 Points] Execute the command to display the contents of the extracted file you revealed.

```
C:\Tools\steghide>type extracted_kturn.txt
My name is Kirk, today's date is 11/28/2025, and it is currently 12.29 p.m.
I expect to finish this course with an A.
C:\Tools\steghide>
```