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10/5/25  
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CTEC 445

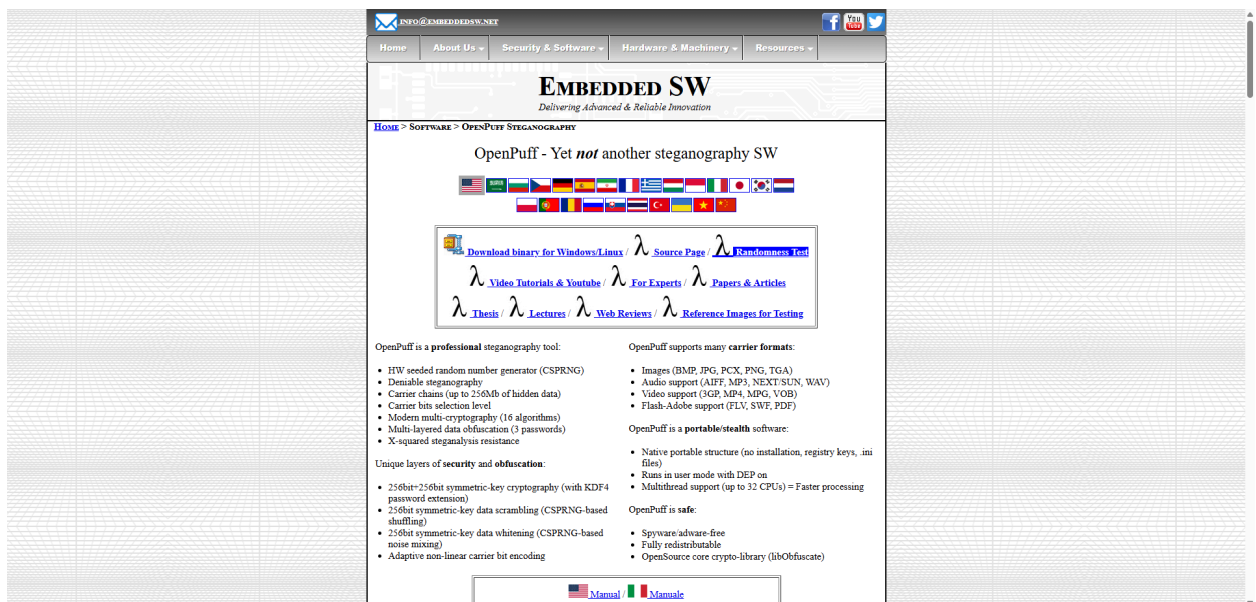
## Assignment: Steganography with OpenPuff - Project 3-1

### Summary

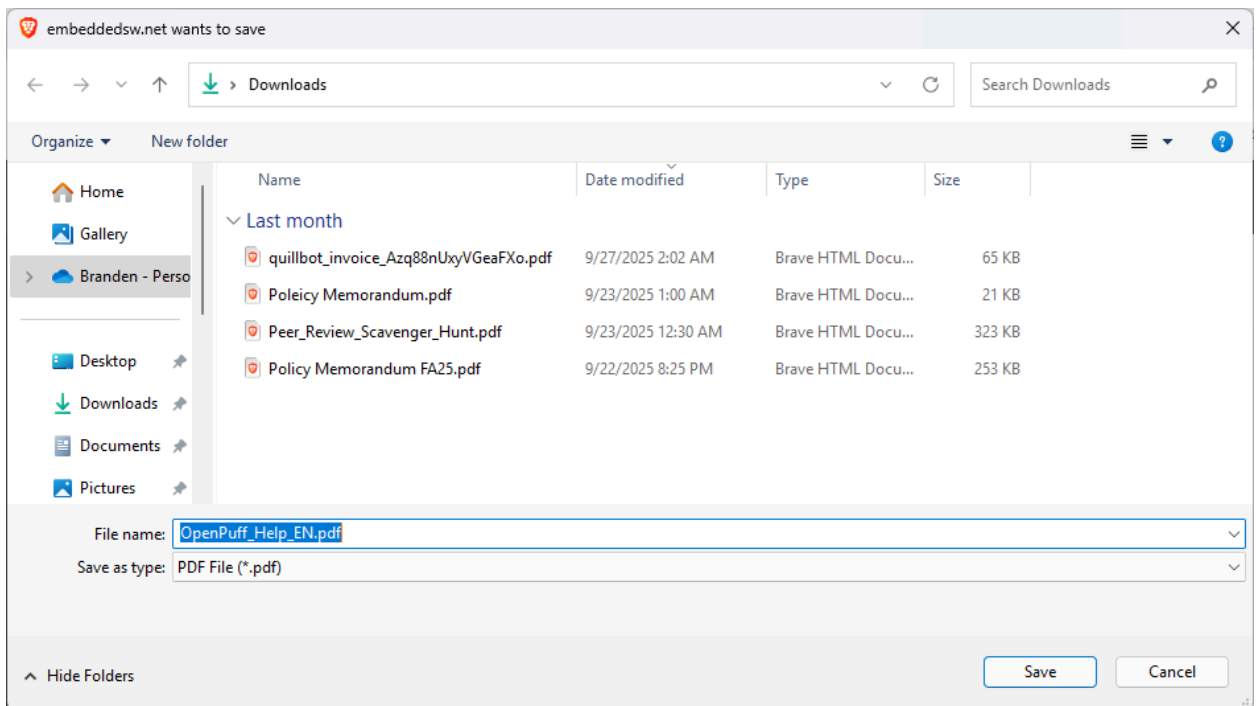
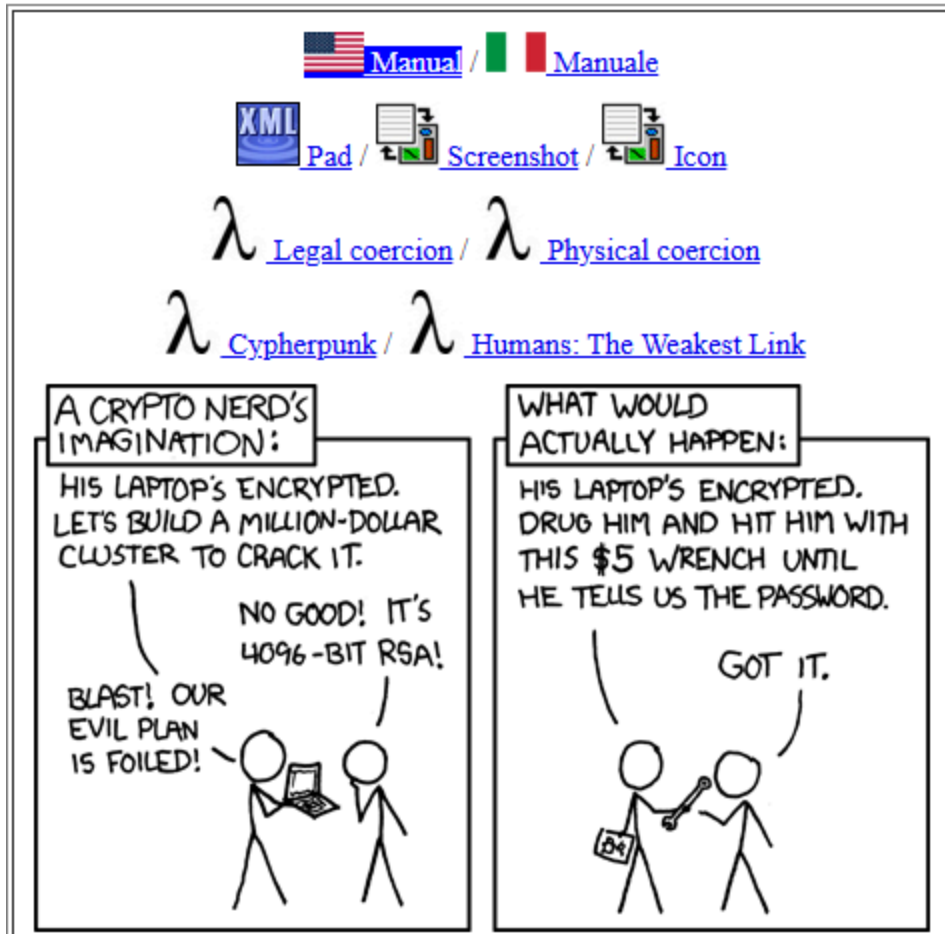
After the openPuff steganography process, my journey was a revelation to me about data security at a very high level. The combined and multi-layered method that involved using three different passwords, compression before encrypting the message, was a great demonstration of how two sciences, steganography and cryptography, unite for attaining total security. At first, I was confused, and I did one detail incorrectly, then I had to redo the whole process several times. This led me to actually understand each step's meaning and its function by reading the instructions more thoroughly. The confirming release of the message eventually paved the way for the concealment of secret data without generating any kind of visual trace on the carrying image.

### Steganography with OpenPuff Process

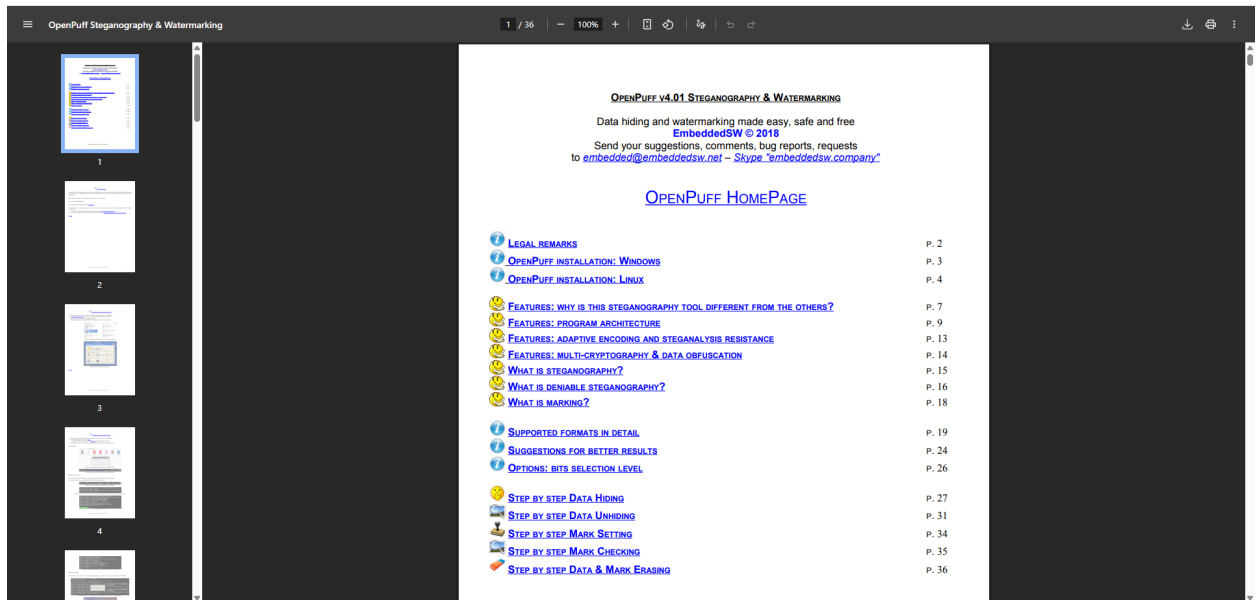
1. Use your web browser to go to [embeddedsd.net/OpenPuff\\_Steganography\\_Home.html](http://embeddedsd.net/OpenPuff_Steganography_Home.html).



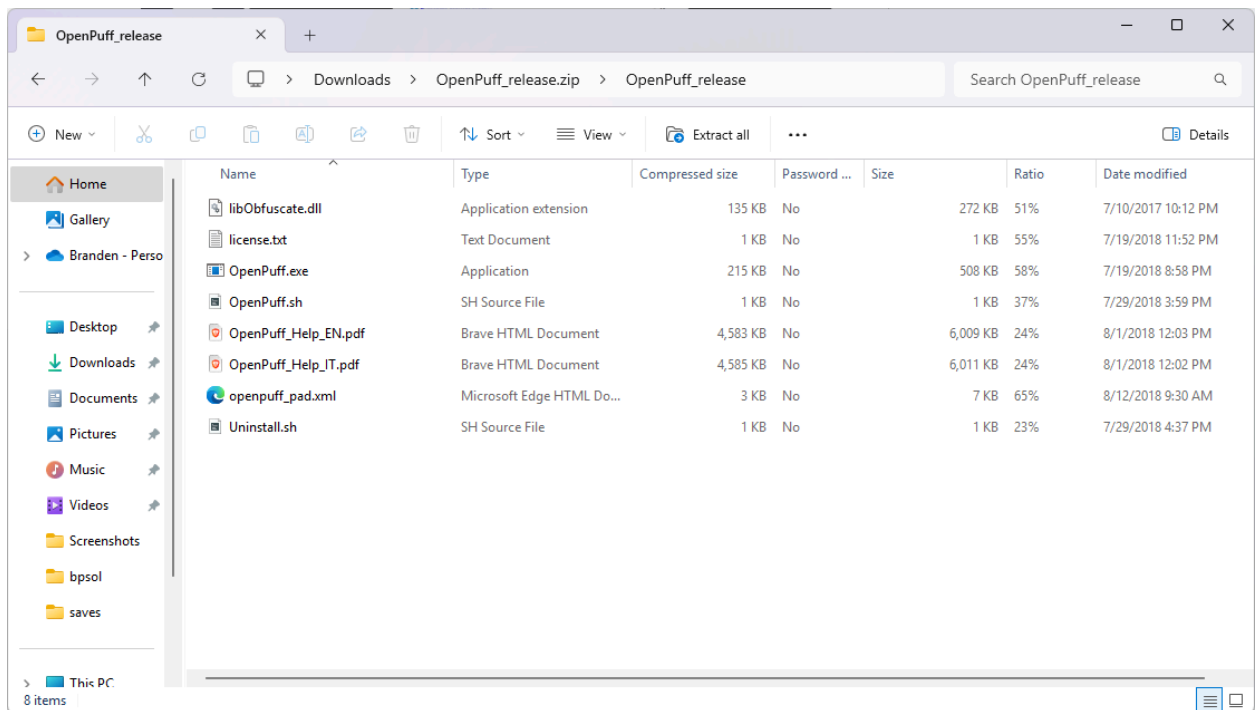
2. Click **Manual** to open the OpenPuff manual. Save this file to your computer. Read through the manual to see the different features available.



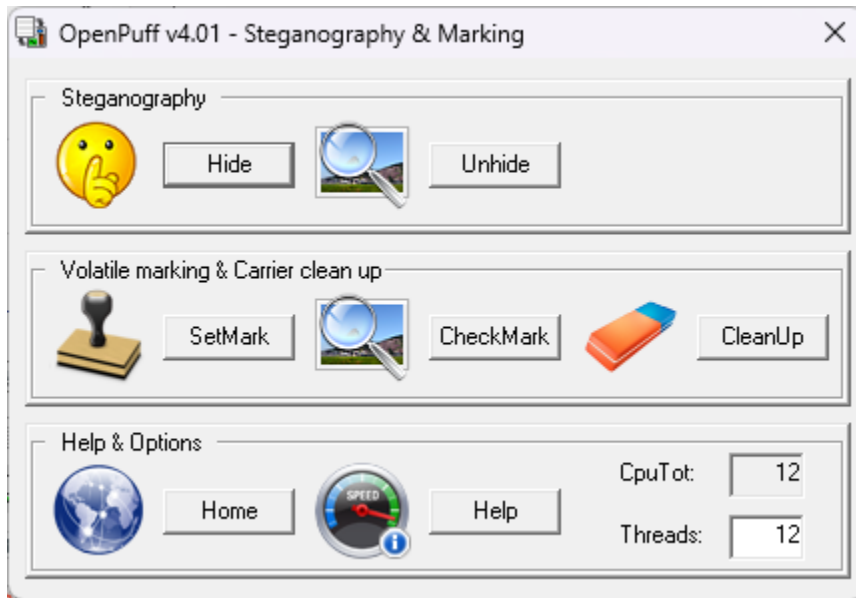
3. Click **OpenPuff** to download the program.



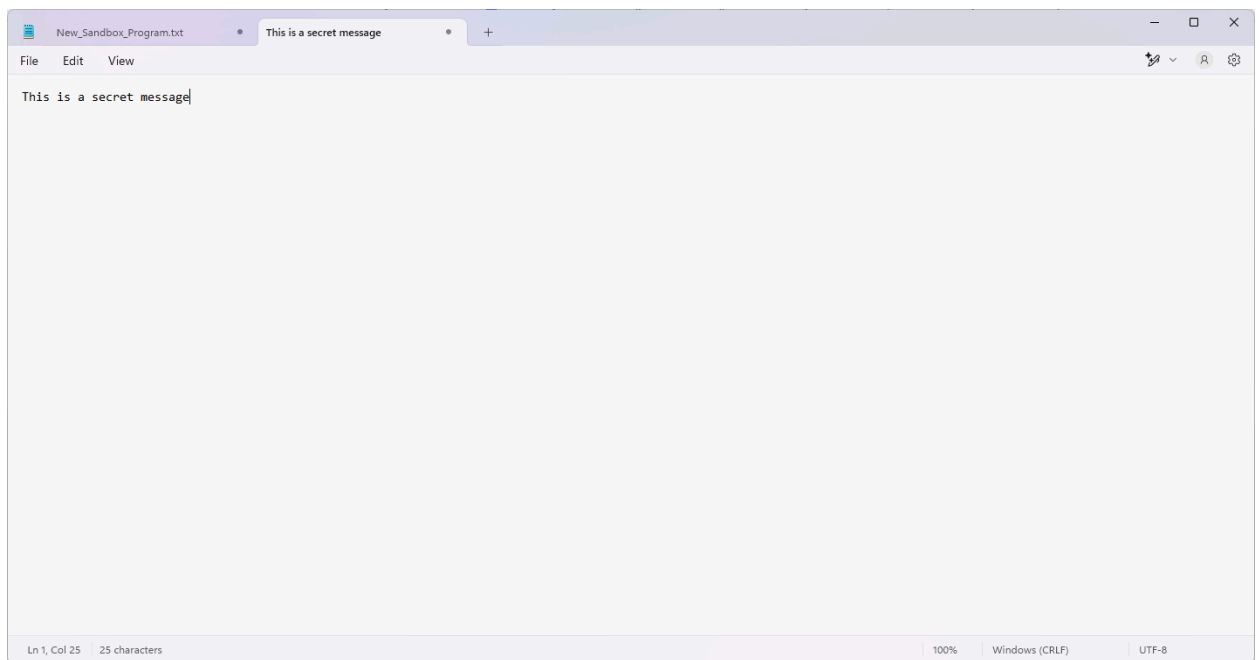
4. Click **Screenshot** to view a screen capture of OpenPuff. Right-click on this image and save this image **OpenPuff\_Screenshot.jpg** to your computer. This will be the carrier file that will contain the secret message.



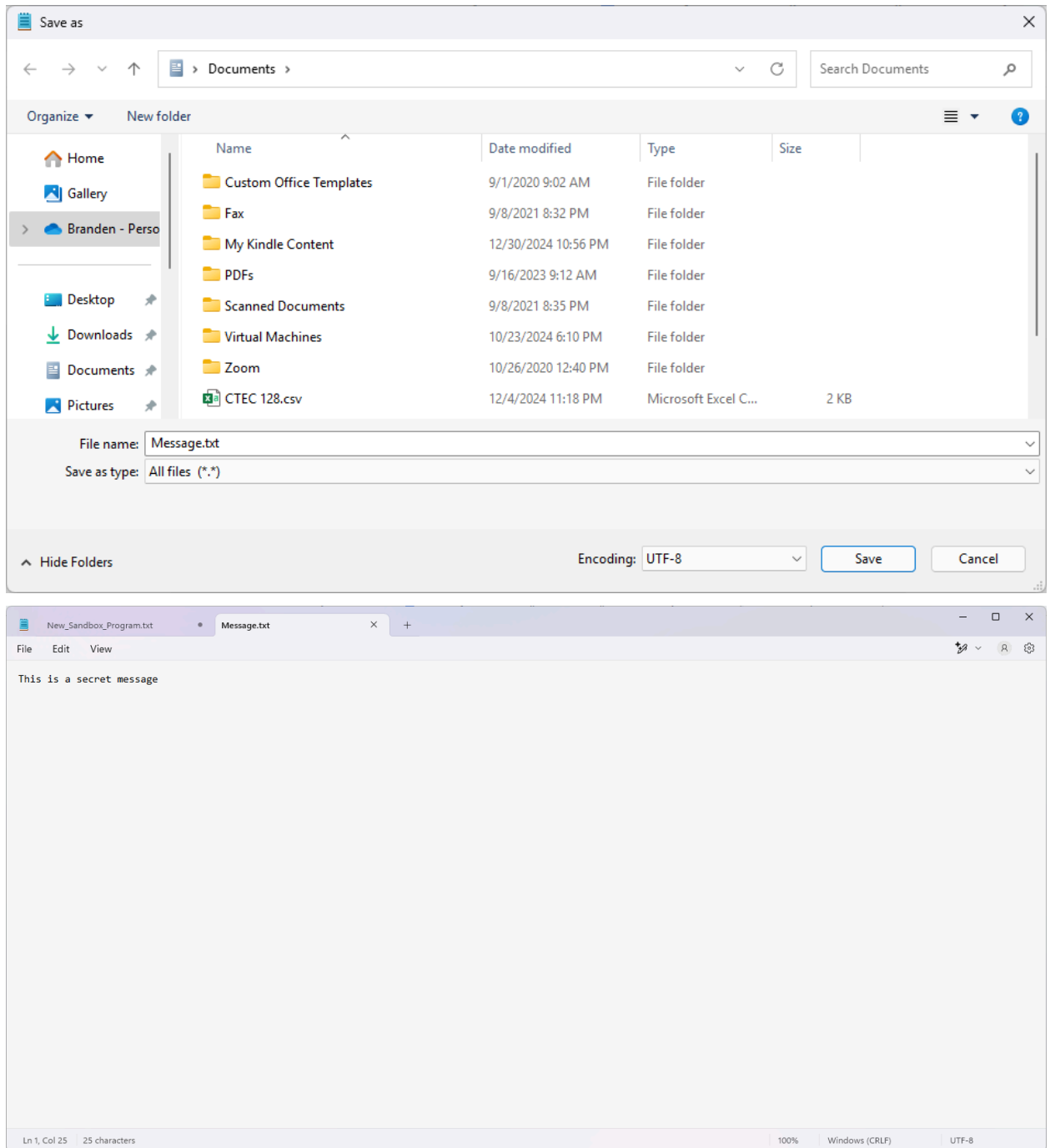
5. Navigate to the location of the download and uncompress the Zip file on your computer.



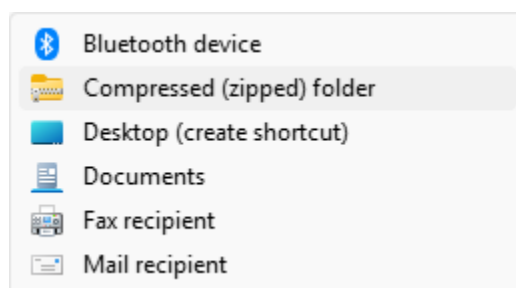
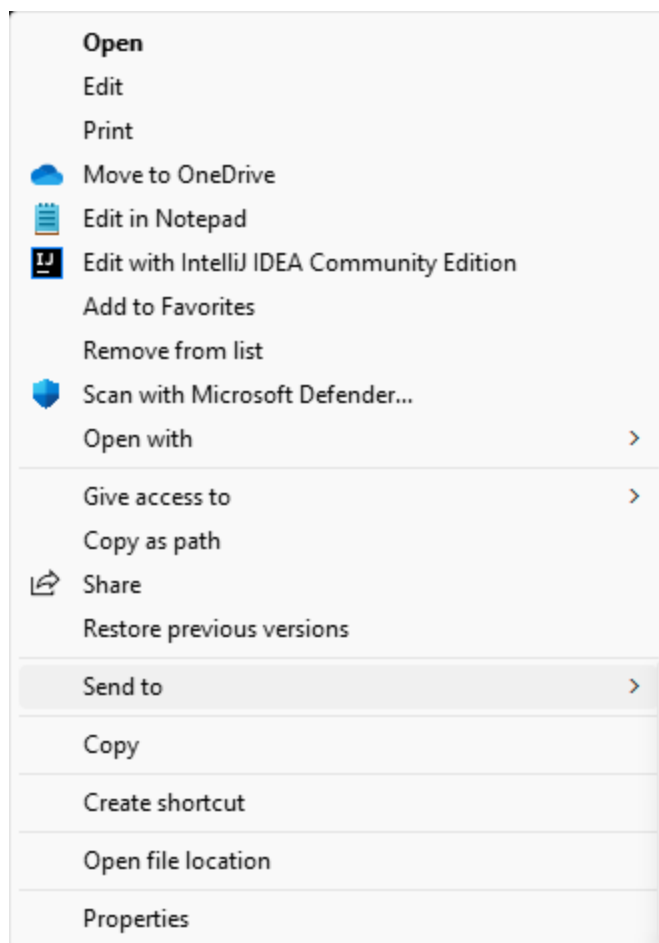
6. Now create the secret message to be hidden. Open Notepad and enter **This is a secret message.**



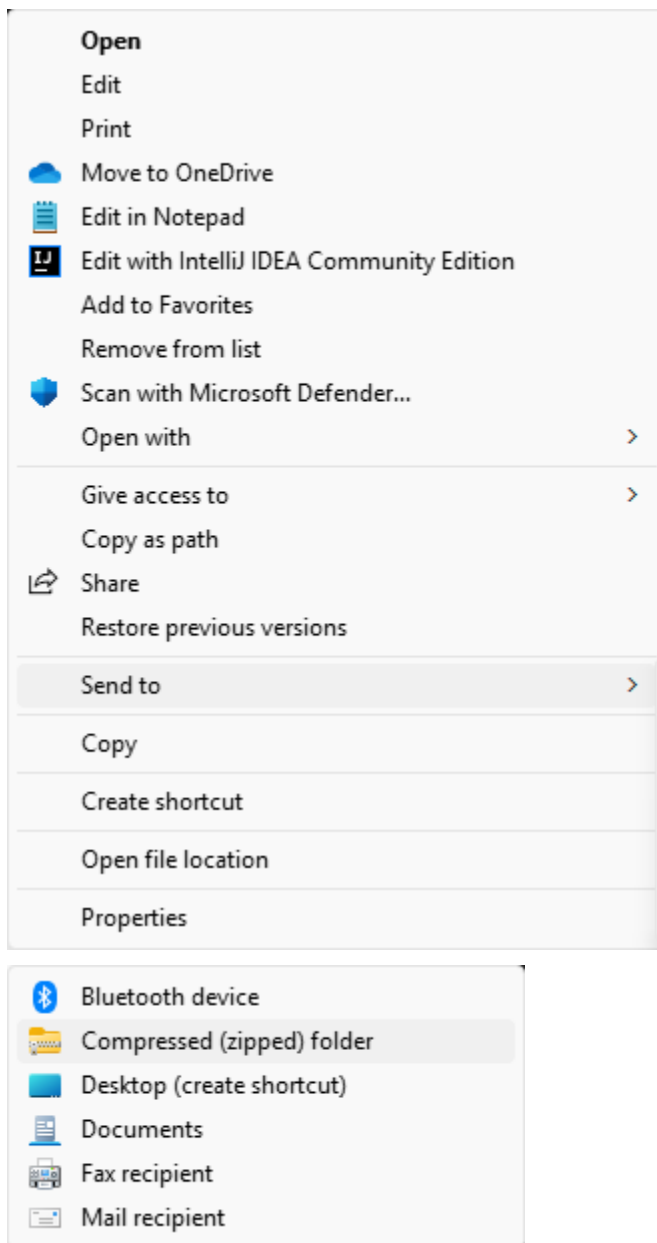
7. Save this file as **Message.txt** and close Notepad.



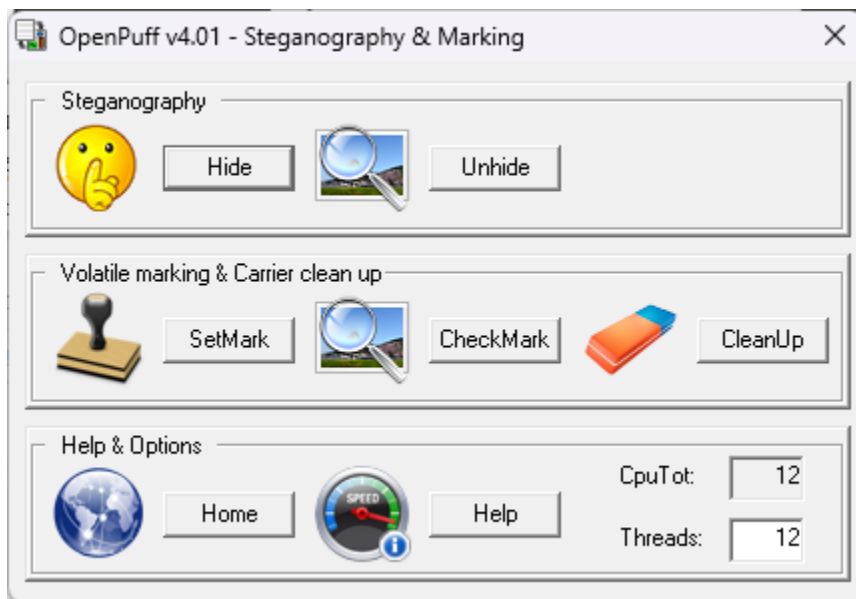
8. Create a Zip file from the **Message** file. Navigate to the location of this file through Windows Explorer and click the right mouse button.



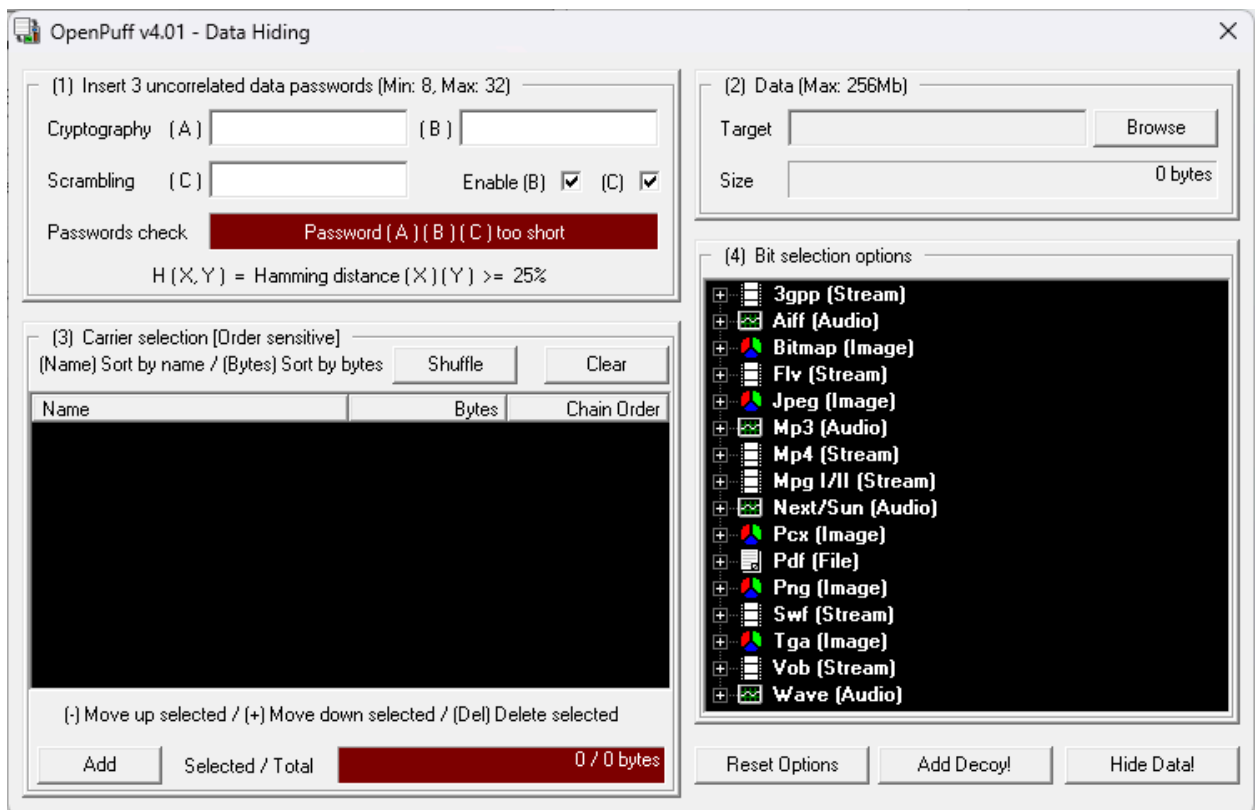
9. Click **Send to** and select **Compressed (zipped) folder** to create the Zip file.



10. Navigate to the OpenPuff directory and double-click **OpenPuff.exe**.



11. Click **Hide**.



12. Under (1) create three unrelated passwords and enter them into **Cryptography (A)**, **(B)**, and **(C)**. Be sure that the **Scrambling (C)** password is long enough to turn the **Password**



check bar from red to green.

OpenPuff v4.01 - Data Hiding

(1) Insert 3 uncorrelated data passwords (Min: 8, Max: 32)

Cryptography (A)  (B)

Scrambling (C)  Enable (B) ☒ (C) ☒

Passwords check H(A, B) H(A, C) H(B, C) = { 30%, 40%, 43% }

H(X, Y) = Hamming distance (X)(Y) >= 25%

(2) Data (Max: 256Mb)

Target  Browse

Size  0 bytes

(3) Carrier selection [Order sensitive]

(Name) Sort by name / (Bytes) Sort by bytes Shuffle Clear

Name	Bytes	Chain Order
------	-------	-------------

(-) Move up selected / (+) Move down selected / (Del) Delete selected

Add Selected / Total 0 / 0 bytes

(4) Bit selection options

- ☒ 3gpp (Stream)
- ☒ Aiff (Audio)
- ☒ Bitmap (Image)
- ☒ Flv (Stream)
- ☒ Jpeg (Image)
- ☒ Mp3 (Audio)
- ☒ Mp4 (Stream)
- ☒ Mpg I/II (Stream)
- ☒ Next/Sun (Audio)
- ☒ Pcx (Image)
- ☒ Pdf (File)
- ☒ Png (Image)
- ☒ Swf (Stream)
- ☒ Tga (Image)
- ☒ Vob (Stream)
- ☒ Wave (Audio)

Reset Options Add Decoy! Hide Data!

13. Under **(2)** locate the message to be hidden. Click **Browse** and navigate to the file **Message.zip**. Click **Open**.

OpenPuff v4.01 - Data Hiding

(1) Insert 3 uncorrelated data passwords (Min: 8, Max: 32)

Cryptography (A) [ ] (B) [ ]

Scrambling (C) [ ] Enable (B) ☒ (C) ☒

Passwords check **H(A, B) H(A, C) H(B, C) = { 30%, 40%, 43% }**

H (X, Y) = Hamming distance (X) (Y) >= 25%

(2) Data (Max: 256Mb)

Target C:\Users\bpso\Documents\Messag [Browse]

Size 10 + name(11) + data(218) bytes

(3) Carrier selection [Order sensitive]

(Name) Sort by name / (Bytes) Sort by bytes [Shuffle] [Clear]

Name	Bytes	Chain Order
------	-------	-------------

(-) Move up selected / (+) Move down selected / (Del) Delete selected

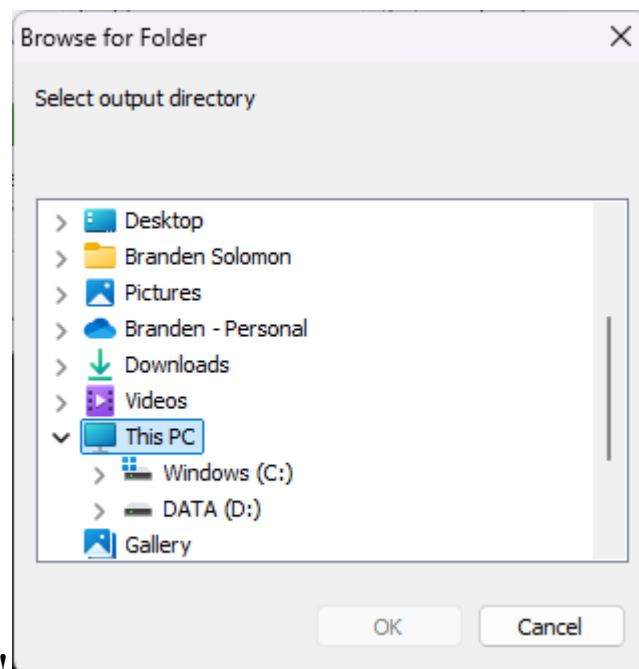
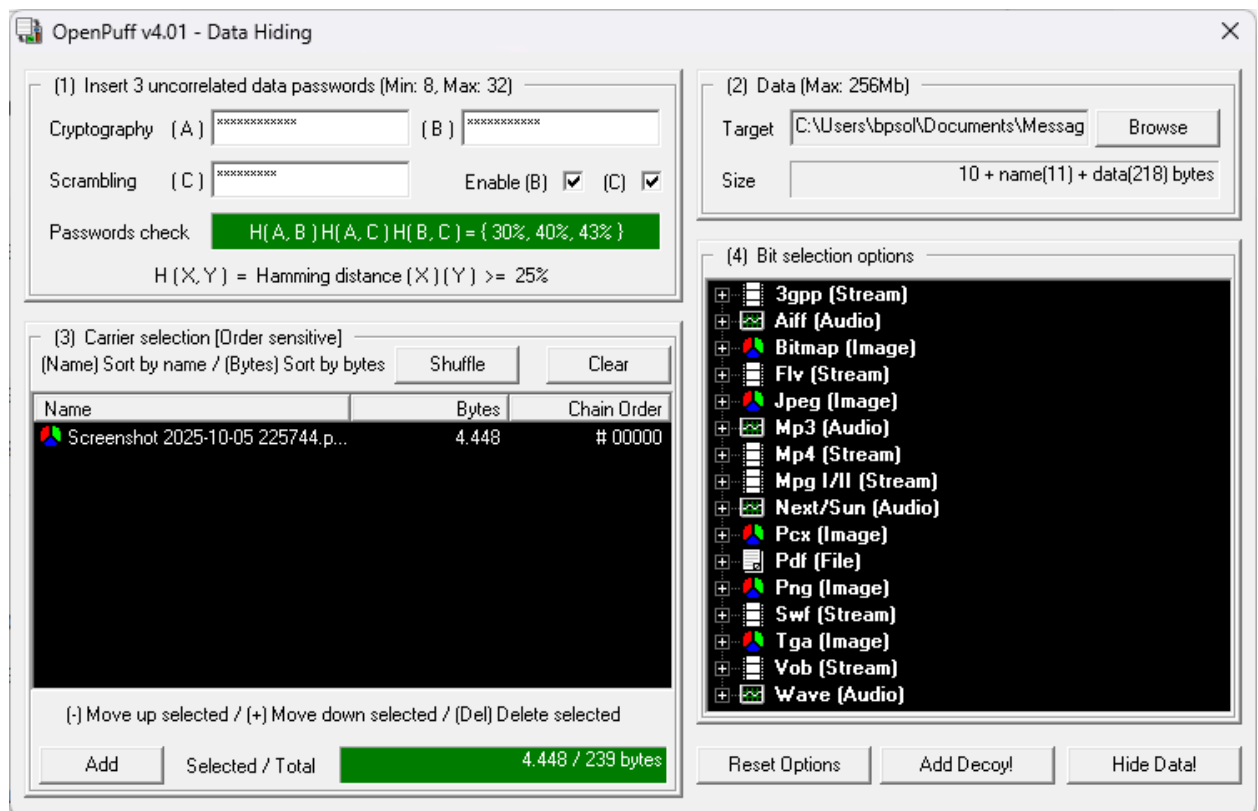
Add Selected / Total 0 / 239 bytes

(4) Bit selection options

- ☒ 3gpp (Stream)
- ☒ Aiff (Audio)
- ☒ Bitmap (Image)
- ☒ Flv (Stream)
- ☒ Jpeg (Image)
- ☒ Mp3 (Audio)
- ☒ Mp4 (Stream)
- ☒ Mpg I/II (Stream)
- ☒ Next/Sun (Audio)
- ☒ Pcx (Image)
- ☒ Pdf (File)
- ☒ Png (Image)
- ☒ Swf (Stream)
- ☒ Tga (Image)
- ☒ Vob (Stream)
- ☒ Wave (Audio)

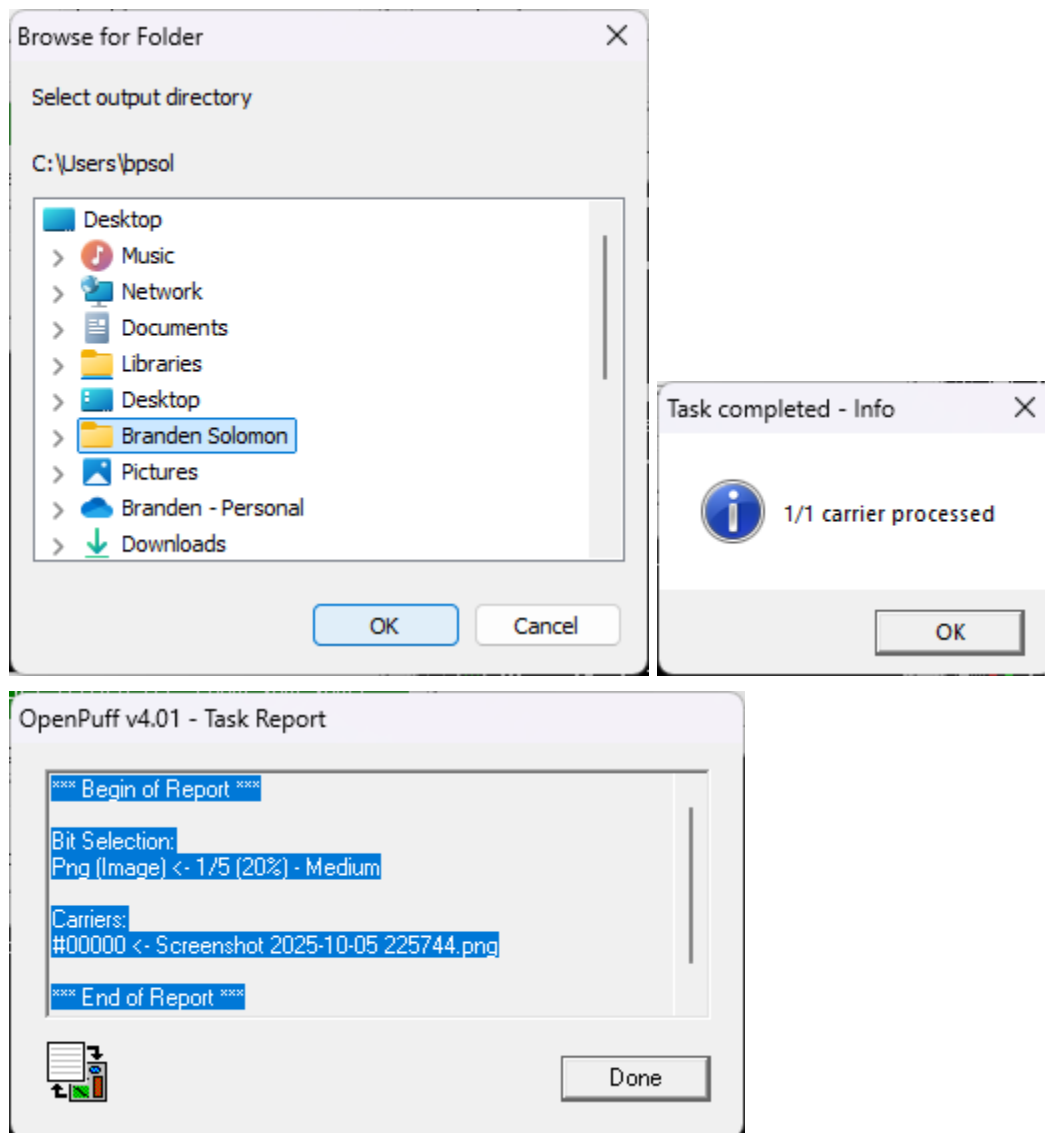
Reset Options Add Decoy! Hide Data!

14. Under **(3)** select the carrier file. Click **Add** and navigate to **OpenPuff\_Screenshot.jpg** as shown in [Figure 3-11](#).



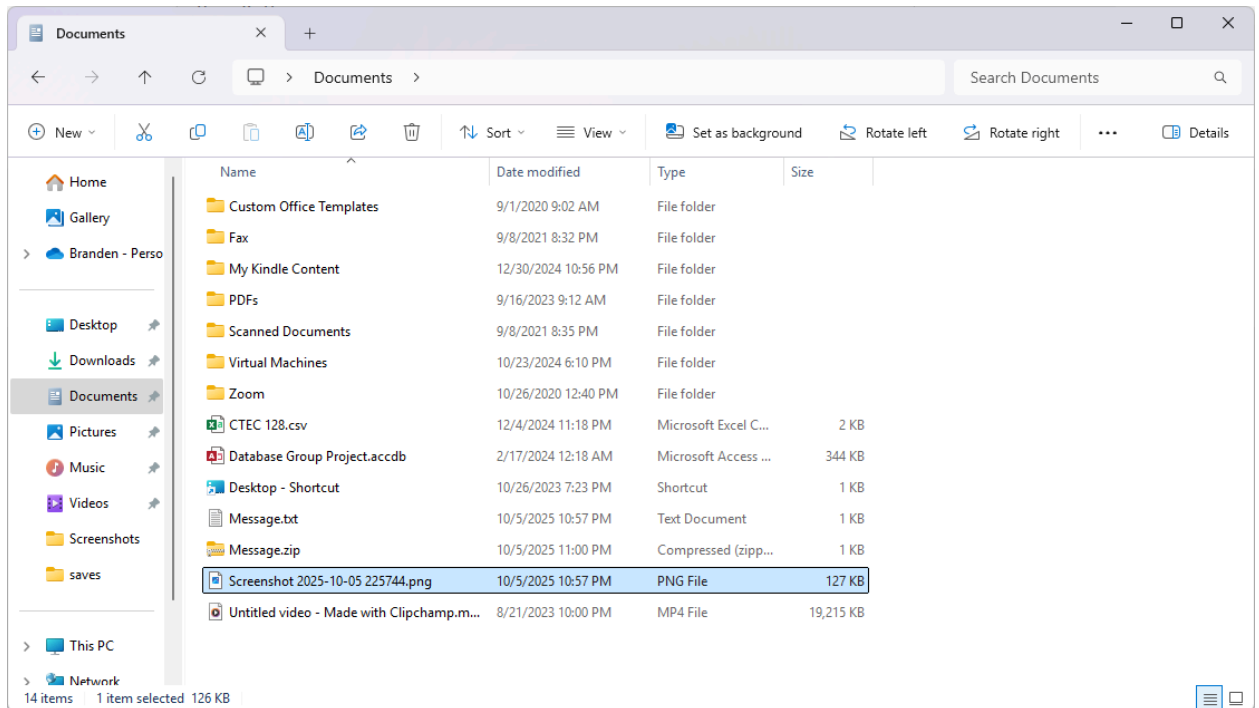
15. Click **Hide Data!**

16. Navigate to a different location than that of the carrier files and click **OK**



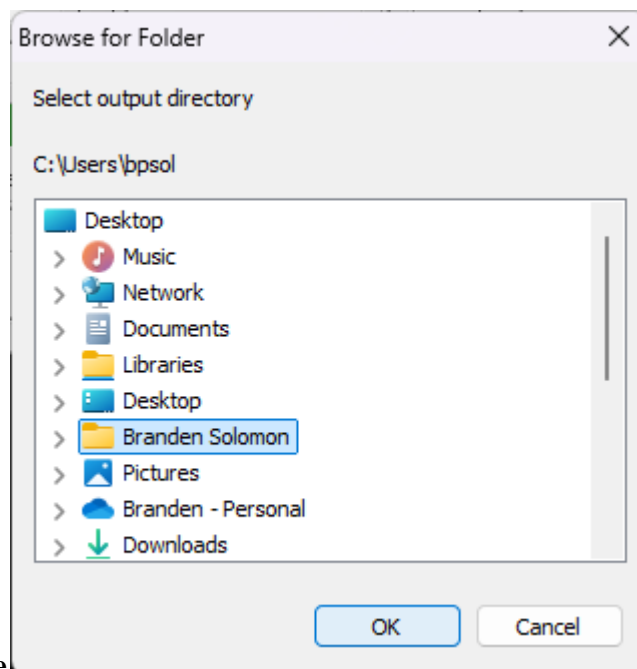
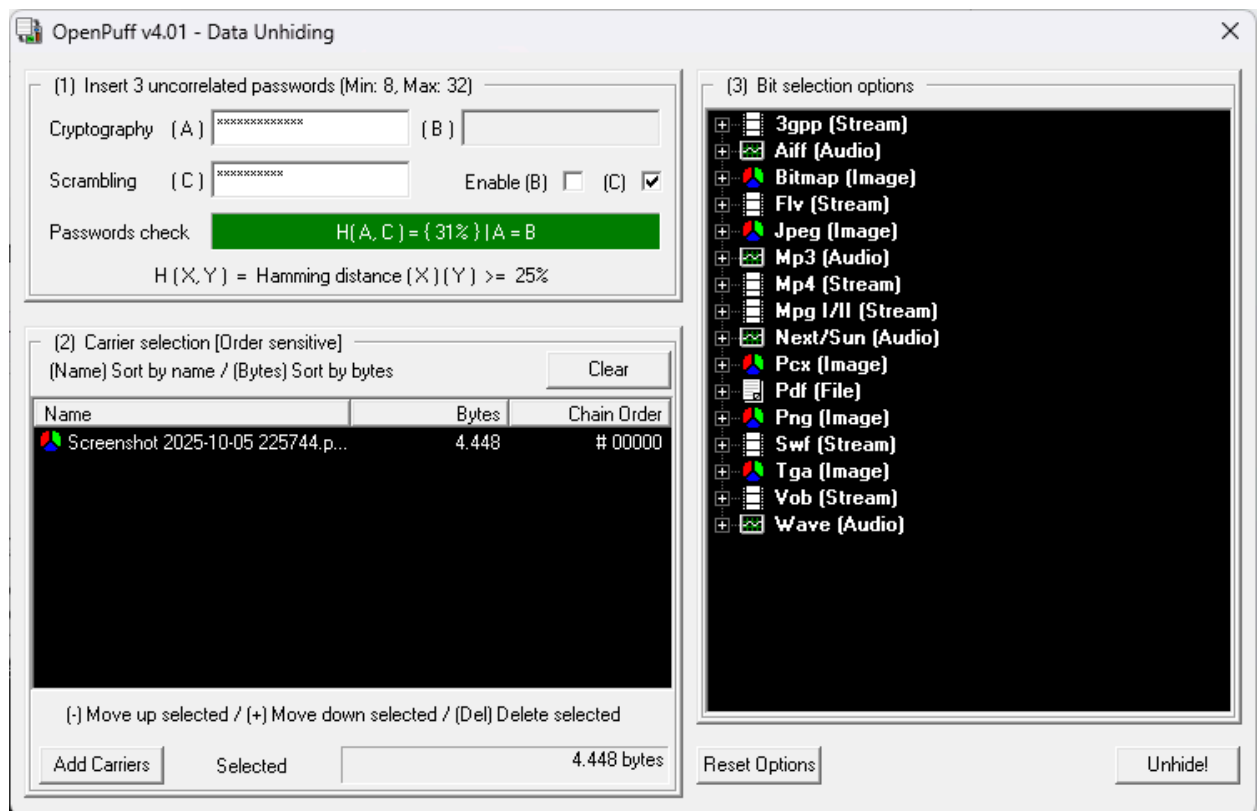
17. After the processing has completed, navigate to the location of the carrier file that contains the message and open the file. Can you detect anything different with the file

now that it contains the message?



No, usually it is not possible to find any difference in the carrier file (the image), which now holds a secret message. This is the result I got when I did the same task.

18. Now uncover the message. Close the OpenPuff Data Hiding screen to return to the main menu



19. Click **Unhide**

## 20. Enter the three passwords

OpenPuff v4.01 - Data Unhiding

(1) Insert 3 uncorrelated passwords (Min: 8, Max: 32)

Cryptography (A)  (B)

Scrambling (C)  Enable (B) ☒ (C) ☒

Passwords check H(A, B) H(A, C) H(B, C) = { 37%, 50%, 33% }

H(X, Y) = Hamming distance (X)(Y) >= 25%

(2) Carrier selection [Order sensitive]

(Name) Sort by name / (Bytes) Sort by bytes Clear

Name	Bytes	Chain Order
------	-------	-------------

(-) Move up selected / (+) Move down selected / (Del) Delete selected

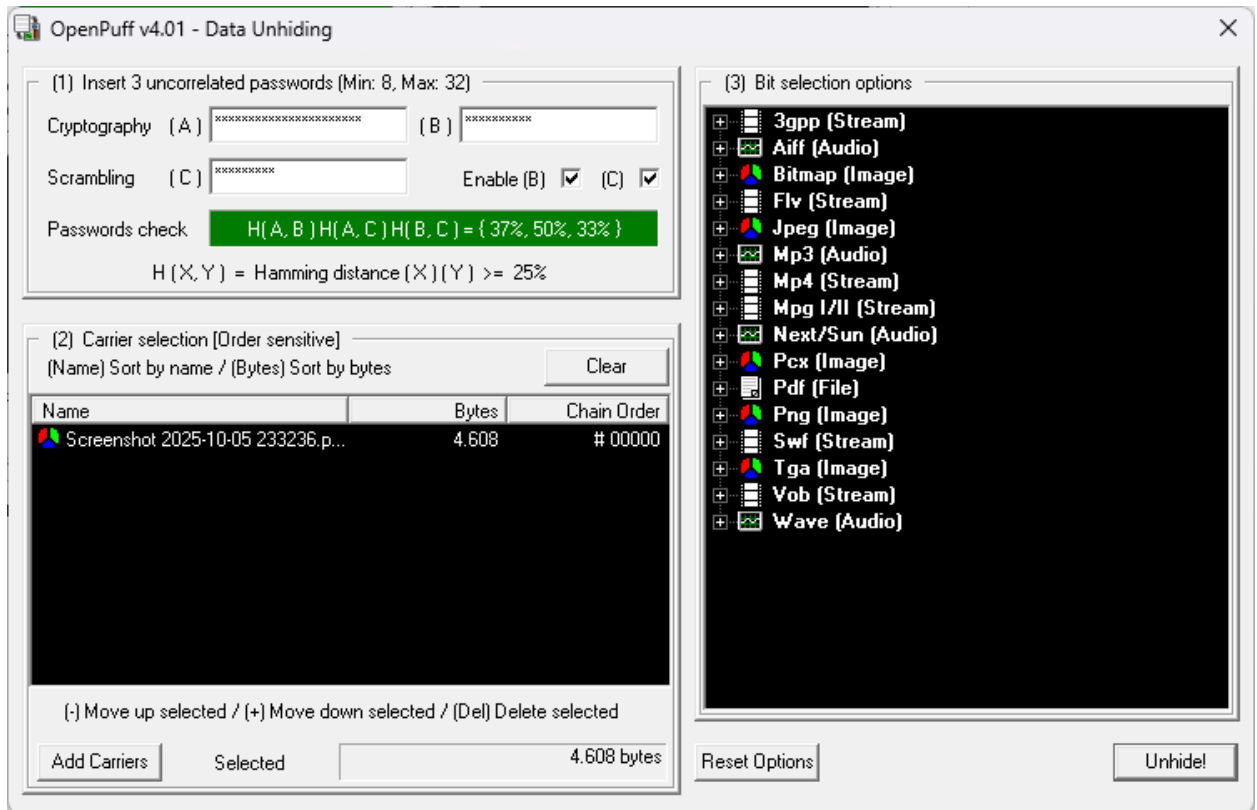
Add Carriers Selected 0 bytes

(3) Bit selection options

- ☒ 3gpp (Stream)
- ☒ Aiff (Audio)
- ☒ Bitmap (Image)
- ☒ Flv (Stream)
- ☒ Jpeg (Image)
- ☒ Mp3 (Audio)
- ☒ Mp4 (Stream)
- ☒ Mpg I/II (Stream)
- ☒ Next/Sun (Audio)
- ☒ Pcx (Image)
- ☒ Pdf (File)
- ☒ Png (Image)
- ☒ Swf (Stream)
- ☒ Tga (Image)
- ☒ Vob (Stream)
- ☒ Wave (Audio)

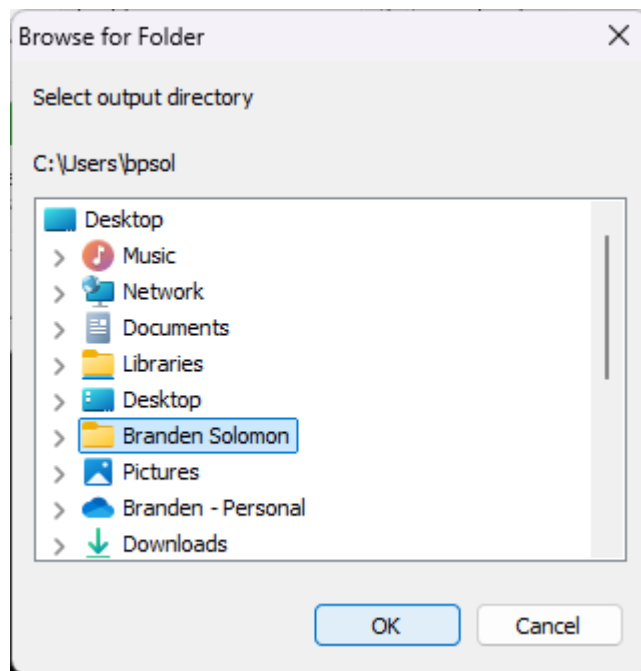
Reset Options Unhide!

21. Click Add Carriers and navigate to the location of Carrier1 that contains the hidden message.

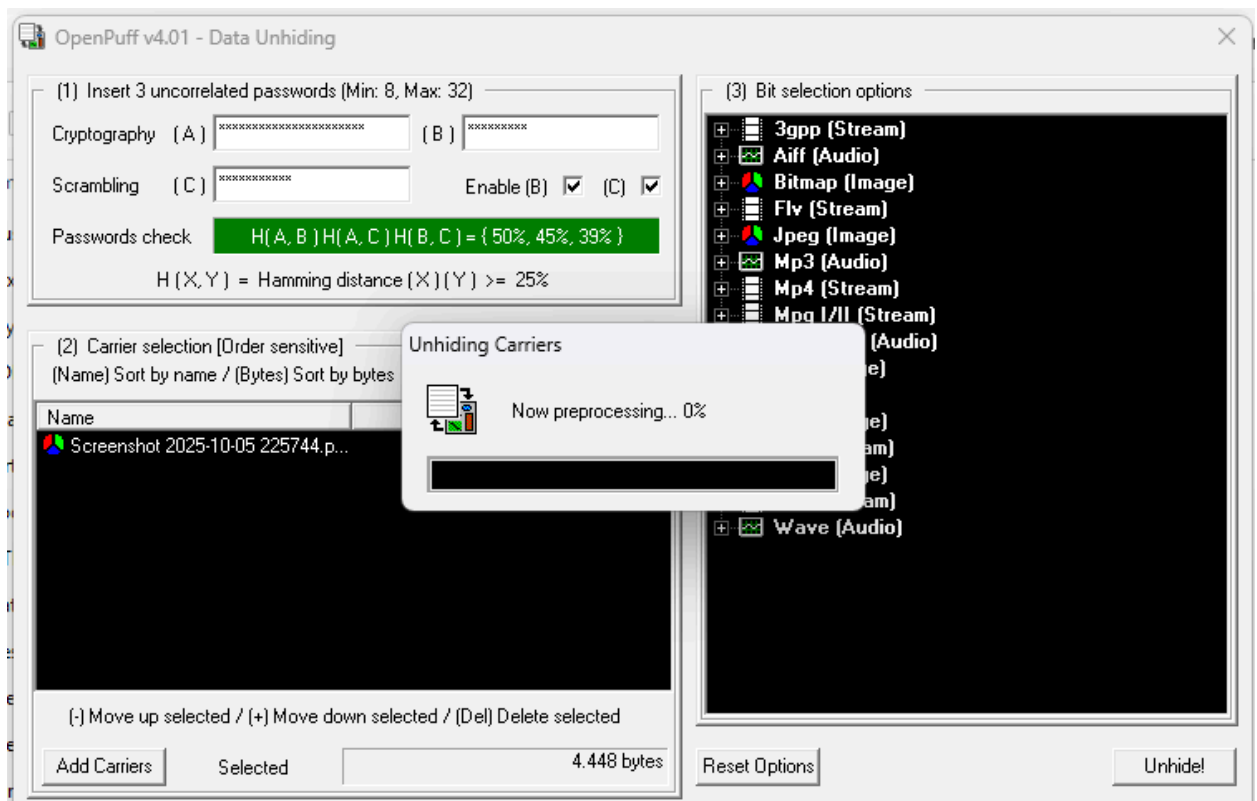




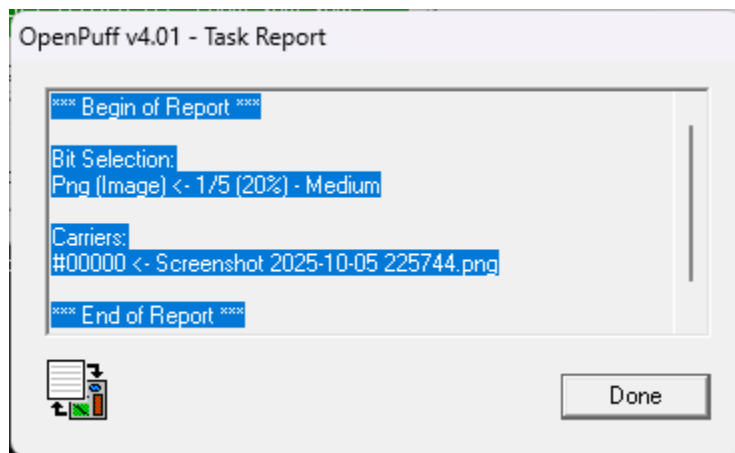
22. Click **Unhide!** and navigate to a location to deposit the hidden message. When it has



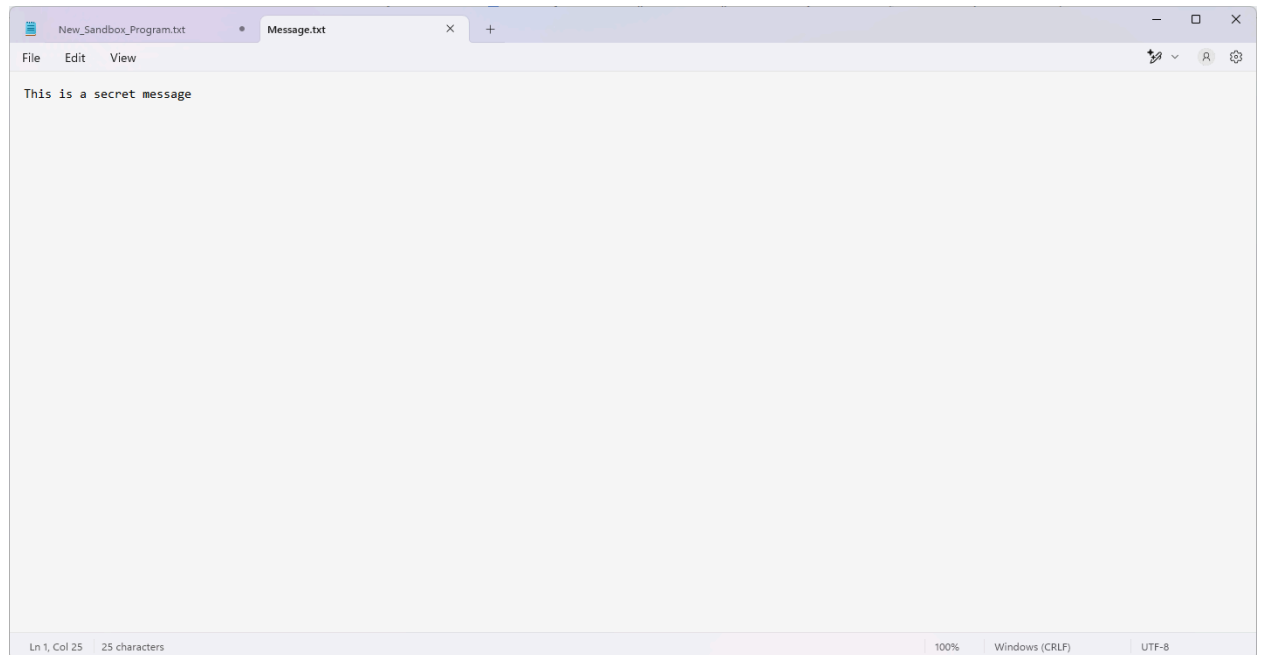
finished processing click **OK**.



23. Click **Done** after reading the report.



24. Go to that location and you will see **Message.zip**.



25. Close OpenPuff and close all windows.

**I closed all the OpenPuff and applications.**