## Project 3-1: Using OpenPuff Steganography

Estimated Time: 30 minutes

**Objective:** Explore steganography.

**Description**: Unlike cryptography, which scrambles a message so that it cannot be viewed, steganography hides the existence of the data. In this project, you will use OpenPuff to create a hidden message.

- 1. Use your web browser to go to
- **embeddedsw.net/OpenPuff\_Steganography\_Home.html**. (It is not unusual for websites to change the location of where files are stored. If the URL above no longer works, open a search engine and search for "OpenPuff.")
- 2. Click **Manual** to open the OpenPuff manual. Save this file to your computer. Read through the manual to see the different features available. Return to the home page when finished.
- 3. Click **Download binary for Windows/Linux** to download the program. A page will appear asking for payments; however, click the **.ZIP** link to download the program for evaluation without submitting a payment.
- 4. Click **Screenshot** to view a screen capture of OpenPuff. Right-click this image and save it as **OpenPuff\_Screenshot.jpg** on your computer. This will be the carrier file that will contain the secret message.

**Note:** For added security, OpenPuff allows a message to be spread across several carrier files.

- 5. Navigate to the location of the download and uncompress the OpenPuff 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 File Explorer and right-click it.
- 9. Click **Compress to ZIP file** (Windows 11) or click **Send to** and select **Compressed** (**zipped**) **folder** (Windows 10) to create the zip file.
- 10. Navigate to the OpenPuff folder and double-click **OpenPuff.exe**.
- 11. Click Hide.



**Note**: Under Bit selection options, note the wide variety of file types that can be used to hide a message.

- 12. Under (1), create three unrelated passwords and enter them into **Cryptography** (A), (B), and (C). Be sure that the **Scrambing** (C) password is long enough to turn the **Password check** bar from red to green.
- 13. Under (2), locate the message to be hidden. Click **Browse** and navigate to the file **Message.zip**. Click **Open**.
- 14. Under (3), select the carrier file. Click Add and navigate to OpenPuff\_Screenshot.jpg.
- 15. Click Hide Data!.



- 16. Navigate to a different location from 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, I cannot detect anything different.
- 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.
- 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**.

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Name CRC32 <- 0xF77CC87A		
**** End of Report ***		
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- 23. Click **Done** after reading the report.24. Go to the location of the hidden message and you will see **Message.zip**.

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25. Close OpenPuff and close all windows.

Criteria	Meets Requirements	Needs Improvement	Incomplete
Content	The assignment clearly and	The assignment partially	The assignment does not
	comprehensively addresses all	addresses some or all questions	address the questions in the
	questions in the assignment.	in the assignment.	assignment.
	15 points	8 points	0 points
Organization and Clarity	The assignment presents ideas	The assignment presents ideas	The assignment does not
	in a clear manner and with	in a mostly clear manner and	present ideas in a clear manner
	strong organizational structure.	with some organizational	or with a strong organizational
	The assignment includes	structure. The assignment	structure. The assignment
	appropriate content, coverage	includes appropriate content,	includes some appropriate
	of facts, arguments, and	coverage of facts, arguments,	content, but coverage of facts,
	conclusions.	and conclusions.	arguments, and conclusions are
	10 points	7 points	not logically related and
			consistent.
			0 points
Research	The assignment is based upon	The assignment is based upon	The assignment is not based
	appropriate and adequate data	adequate data collection and	upon appropriate data
	collection and analysis of	includes some analysis of	collection and includes no
	results from the activity or	results from the activity or	analysis of results from the
	research from academically	research from academically	activity or research from
	reliable sources.	reliable sources.	academically reliable sources.
	5 points	3 points	0 points
Grammar and Spelling	The assignment has two or	The assignment has three to	The assignment has more than
	fewer grammatical and spelling	five grammatical and spelling	five grammatical and spelling
	errors.	errors.	errors, is incomplete, or is
	5 points	3 points	unintelligible.
			0 points