INFOECO COOKBOOK | "DO" EXERCISE

GLITCHED IMAGE ENCODINGS

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OVERVIEW

In this exercise, you will open up an image file in the online hex editor, HexEd.it, and manipulate the image data as text. You will then save that text as an image file and see what your textual manipulations have done to the image data. The results may surprise you!

This exercise mirrors the work presented in the "Watch" section of this module, so for further assistance, be sure to watch that video before trying what is listed below.

DIRECTIONS

1) Select an image file *that you don't mind getting destroyed* (this is very important). To fully ensure that you don't lose something precious, make a copy of the image, and work from the copy. You may also select one of the sample images we have provided in the module.

   ○ Note: In terms of file format, we recommend (small) TIFs for this exercise because the type of file compression lends itself to exciting outcomes, but others prefer JPGs. We have found that the lossy compression algorithms that are a necessary part of the JPEG image file format mean that the bitstream must be uncompressed before rendering, and so our incursions can more easily simply break the file rather than glitch them—but the choice is up to you!

2) Navigate to the online hexadecimal text editor HexEd.it (https://hexed.it/). In HexEdit, first click "Open File," navigate to your copied image file, then click "Open."

   ○ Note: Hex Editors are a type of application that reads in files byte by byte and then displays those bits in hexidecimal notation. Some also render these bytes as text for reference, but in all cases you are given the opportunity to manipulate the bytes directly.

3) Start editing the image. A word of caution: editing the header can break the file format, so to make the art we want to make, we scroll down, maybe halfway through the file where the bulk of the image data is encoded (for TIFF and JPEG file formats anyway) to make our edits.

   ○ Note: The early bytes in most image file formats contain a bunch of descriptive header information, including the file signature but also often descriptive EXIF header information—sometimes, you can read some of this in the text rendering of the bytes visible in the right hand column offered by HexEd.it.

4) Continue editing the image by removing some of the data or adding more text to the data. For example, you could cut/copy and paste the last Tweet you saw into the middle of the file.

- To remove data: Select information from the central columns containing the pairs of hexidecimal numbers. Press "delete" or right-click the selection and choose "Delete selected bytes."

- To insert other text data: Copy text to your clipboard and then press "Ctrl-V" to paste it into the image's bitstream. HexEd.it will ask you how you wish to insert the clipboard data, and you can simply select whether you "insert" or "overwrite." Either choice will work, but will change your image in different ways. Maybe try it once one way, and once the other!

- To duplicate sections of data: Select a section of bytes, right-click somewhere else in the file, and choose "Insert selected bytes here" (or press "Ctrl+Ins").

5) Make a few more edits and see what happens. The more changes you make (especially at the top and the bottom of the data) the more likely it becomes that you'll break the legibility of the file completely, and image renderers won't be able produce anything at all. If this happens you can just go back and try again, so don't worry too much.

6) Click "Save as," name the file to something else…and see what you made!

7) Try this as many ways as you like to see how different parts of the data affect different parts of the image.