Lesson 5: Lossy Compression and File Formats

Lossy Compression

- When? → mostly for visual or audio where the loss in precision is undetectable to human eyes and ears

Quick Discovery: Lossy Text Compression

- Go to the Lossy Text Compression App – App Lab
- Answer the following questions:
  - What is happening in the app?
  - Should this "count" as text compression? Why or why not?
  - What do you think "lossy" refers to?

Lossless vs. Lossy Compression

- What we did a few lessons ago was "lossless" compression because in doing the compression, and in reconstructing the original text, nothing was lost; every character that was part of the original text could be recovered.

- "Lossy" compression – "useless" or less-than-totally necessary information is thrown out in order to reduce the size of the data

  - The example we did is not perfect is sp, soup or sap?

Jigsaw Research

- We will use the File Formats Rapid Research – Worksheet

- I'm going to divide you into file format types

- Fill in the column for your type

Share out…

- We are going to share our results and fill out the rest of this form

More file types…

- BMP image format is basically the image encoding format used in a previous lesson

- The GIF image format and ZIP compression scheme are versions of the text compression scheme we used as well.

- In the case of GIF, it uses a dictionary of up to 255 different colors and each pixel is stored as small number that refers to the dictionary

- The bit layouts of BMP and GIF should be understandable for students.

Wrap-up:

- Have you ever heard of any other file type that you were curious about. What were those?

- All of these are specialized file formats in which some person or group decided how to organize (and in some (and in some cases, compress) the bits that make up the file type. There is nothing magical about them.

Fun Fact:

The file extension you often see on a file (for example: myPhoto.jpg) is really just an indicator to the computer of how the underlying bits are organized, so the computer can interpret them. If you change the name of the file to myPhoto.gif, that does not magically change the underlying bits; all you've done is confuse the computer. It won't be able to open the file because it will attempt to interpret the file as a GIF when really the bits are in JPG format.