UWyo COSC 2030 Spring 2019

Project: Steganography

Due March 28th at 10:30 a.m.

Background

Steganography is the concealment of data in larger data structures. We use images because their low-order bits can be altered without any discernible difference in the file.

Your assignment in this tean project is the design and partial implementation of an Abstract Data Type for steganography with bit-map (raster) image files. The ADT design calls for explication of the variables or constants, and the routines and functions, involved in image steganography. In other words, if you wanted to produce and sell a complete steganography application, what would it contain?

By the end of this lab, you will have files that contain the following deliverables:

- A written ADT design, where the format is up to you. Make it clear and legible.

  It will hold:

  1. A cover sheet giving the ADT name and brief explanation, and the team name and members, and date.
  2. The data items (pseudocode), given with types.
  3. The operations (pseudocode), given with signatures and invariants.
  4. Description of an example

  Write your design for managers with about the same level of technical expertise as you and your peers.

- Implementation of the two major operations, encode and decode. You can assume a small ".bmp" file consisting of a list of ARGB pixels.

Preparation

There is no initial code or other file except for this document. You are doing this from scratch. Note that many steganography resources, including code, are available on the Web. You may use those (with attribution), but of course, you must adapt those resources to this assignment.

Tasks

1. In your team, work out a schedule and tentative assignments. Write it down, note your language choice, and submit that (in a branch on GitHub) as the README file for your group.

2. For the ADT design, think of the functions and procedures that a steganography client (sender or receiver) might need, and keep track of the variables involved. What are the circumstances? What needs to be specified?

   For example, the encoding process requires two files as input, the image and the message, and generates one image file as output. The decoding process requires one image file as input and yields one message file as output.

   Some of the data elements that must be specified cover the cipher protocol. For example, will the secret message length be fixed and known to both sender and receiver, or will it be a variable embedded at the start of the message?

3. Given the initial design, repeat this sequence of steps until the product is completed.

   1. Code.
   2. Test.
   3. If necessary, revise the design.

Submit through GitHub in the `COSC-2030-SP-2019-Classroom` repository `ProjectSteg`, link forthcoming.