Comp 8505 Computer Systems Technology September 2016

Data Communication Applications

Assignment #2

Due: October 10, 1000 hrs. You may work in groups of two.

Objective: To become familiar with Steganography and to design a simple LSB stego application.

Your Mission:

Study the tools provided to you during class and then go through the links for the image and graphics APIs. Note that you are not required to implement your own (unless you wish to) APIs for the graphics and image processing part. Once you have familiarized yourself with the available libraries and APIs, select the language, platform, and the libraries/API you will use to design and implement your application.

The basic application will be command-line (bonus marks for UIs), with the appropriate switches to perform the various functions. The two main functions will be the embedding (hide) and the extraction functions. The filenames of the cover image, secret image, and output file will also be specified as part of the command line invocation of the program.

Constraints:

- The image format for your application will be BMP. You will be awarded bonus marks for implementing other file formats.
- Provide a help function that will display all of the switches and command line arguments for your application.
- You are required to implement encryption (any cipher of your choice) as part of your application.
- Note that you will require 8 bytes in the cover image to hide a single byte of the secret image. Other data that will also need to be hidden is the filename, including the extension. This means that you will have calculate the file sizes of both images and ascertain that the cover file is large enough to hold all of the secret image data.
- Structure your application to have at least three separate modules as follows (names are arbitrary):

  dcstego.x – the main function that will contain the general functionality such as parsing command line arguments, checking file sizes, file formats, etc.

  dcimage.x - this module will contain all of the functions for the image processing and manipulation.

  dcutils.x - this module will contain the two main functions for hiding and extracting the data.

- Depending on your platform and language you will also have to provide a means of building the application (makefile, project, etc) and a set of instructions.

- As part of your testing experiment with different cover images (large sections of solid colors, lots of colors, etc) to see if the stego image reveals any obvious artifacts.

- You are required to show all the data supporting the success (or lack thereof) of your data embedding scheme in your test document.

To Be Submitted Electronically:

- Submit a zip file containing all the code and documents as described below in the sharein folder for this course under "**Assignment #2**". Make sure the document is encrypted with your public key.
- Submit a complete, zipped package that includes your report, tools that you used, and any supporting data (dumps, etc), and references.
- Hand in complete and well-documented design work and documents in PDF format.
- Also provide all your code **listings** and an **executable.**

Assignment #2 Evaluation:

Design & Documentation:	/ 15
Testing and Supporting Data:	/ 25
User Manual:	/ 10
Functionality:	/ 50
Total:	/ 100