APCS PictureLab Project 30 points DUE: TUESDAY, APRIL 4

This project is based on College Board's AP Computer Science "Picture Lab"

Each problem is worth 10 points. Grades are computed as follows:

- **Efficiency, Organization, Readability of the code. (5 points)**
  - **Code must be demonstrated to teacher AND uploaded to googleClassroom.**
  - **Code should include comments for "grading readability"**
- **Description of your algorithm. (3 points)**
  - **Description should be uploaded**
  - **Include reference to overall structure of code as well as specific comments and code**
- **Creativity, Presentation of your altered pictures (2 points)**

Follow this model for each uploaded filename: Patel.D – Smith.J – 1.Chromakey

Remember, the more originality, the better the grade!! Lateness is penalized.

1. Chromakey

Write a `chromakey` method that replaces the current pixel color with the color from another picture at the same row and column when the current pixel color is close to a specified color. In many movies, the actors are filmed in front of a green screen and then the green is replaced with a different background using a similar technique.

Use your method to combine a picture of you with a second picture.

The picture in Figure 1 is of Dr. Mark Guzdial of Georgia Tech. Dr. Guzdial is the creator of the Media Computation approach to teaching computing concepts, which has students write programs that manipulate media: pictures, sounds, text, and movies. These labs are based on his work.

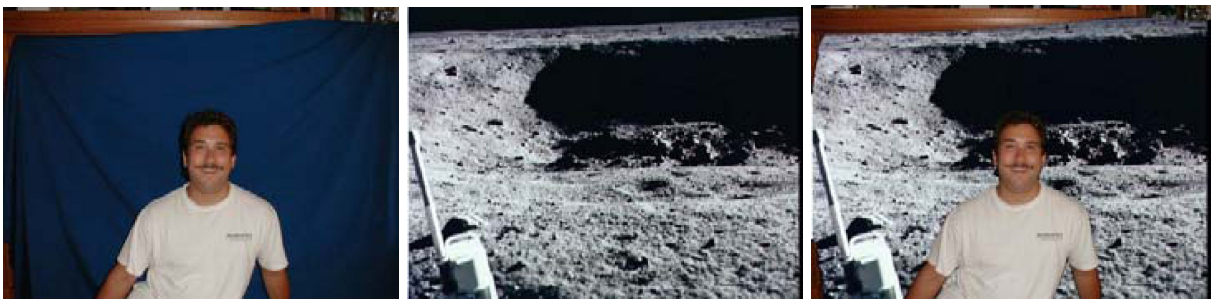

Figure 1: Dr. Guzdial (left), moon (middle), Dr. Guzdial on the moon (right)

2. Steganography

Steganography is the science of hiding information in a picture. You can hide a black and white message inside a color picture by altering pixels that correspond to the message picture.
Write an `encode` method that takes the black and white picture message and changes the current picture to hide the message picture inside of it. Then also write a `decode` method that returns the message picture hidden in the current picture.

Use your methods to hide a secret message in a second picture

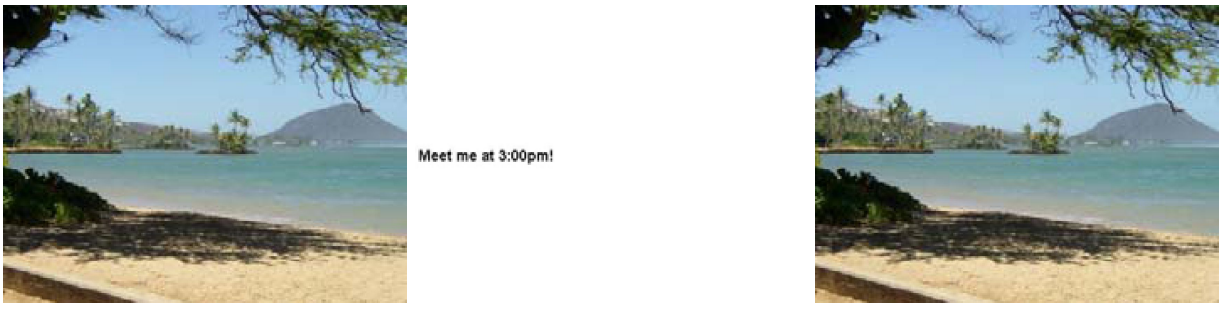

Figure 1: original (left), message (middle), beach with message hidden (right)

3. Custom Method

Write your own method that digitally manipulates a picture.

Directions: Submit a word document Include the following for each project

1. Your code
2. A description of your algorithm
3. All of the images that you used.

Submissions are evaluated using the guidelines of the "General Programming Rubric" (on Classroom), with point values on the rubric adjusted for this particular project.