# CS 1120: Media Computation Spring 2018
Assignment 3: Making a better collage

Due: Thursday, March 29, 2018, by 11:59 p.m.

This assignment is worth **50 points**, which accounts for **5.833%** of your final grade.

This assignment is based on lab 7, so to do it, you should first complete the lab. As a reminder, the lab asked you to create a collage using 4 images. In this assignment, you may use the same 4 images, or you may use 4 different images if you like. Your task is to use these 4 images to **create a collage of 8 cropped and transformed images**. So, you will crop each image, and then use the cropped part twice, each time transforming it using a posterizing, grayscale, sunset, and negative effect. Your collage should look similar to this picture:
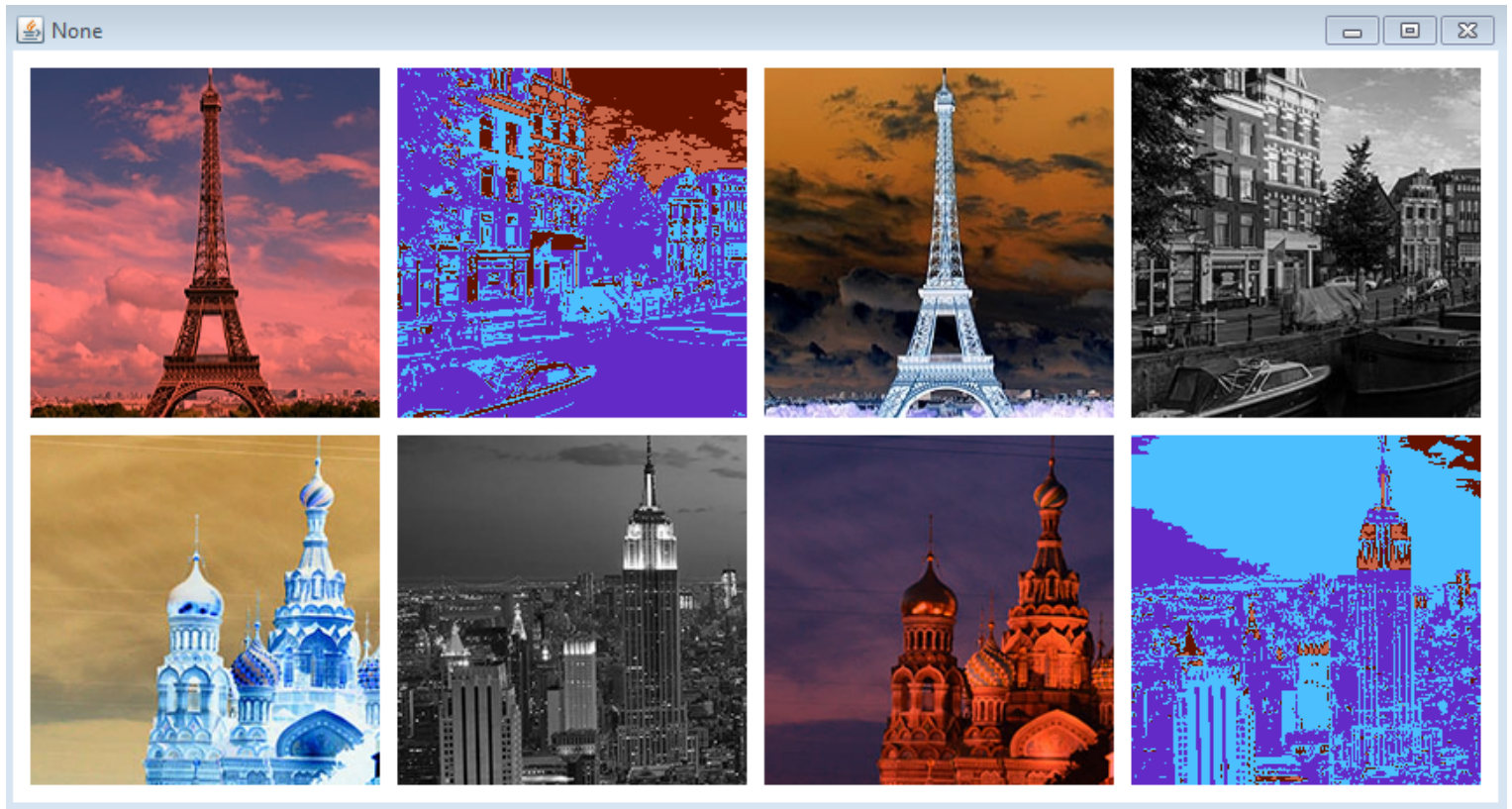
Here's how you do it.

Your solution will consists of several functions. You will reuse most of them - i.e., ***you have wrote those before and don't need to change them.*** Some of them are even available on the course website as notes/code from lectures. Here they are:

copy(source, target, offsetX, offsetY)
Function from lab 7. Copies the source onto the target, using the specified location (offsetX, offsetY). Does NOT return anything (it modifies the target).

crop(picture, offsetX, offsetY, targetWidth, targetHeight)
Function from lab 7. Crops the specified area from the picture and RETURNS the cropped part it as a new picture object.

posterize(picture)
Posterizes the picture using any colors and posterizing approach you like. Does NOT return anything (it modifies the picture).

makeNegative(picture)
Makes a negative of the picture. Does NOT return anything (it modifies the picture).

makeGrayscale(picture)
Makes a grayscale version of the picture using any grayscale approach you like. Does NOT return anything (it modifies the picture).

makeSunset(picture)
Applies a sunset effect to the picture using any approach you like. Does NOT return anything (it modifies the picture).

makeCollage()
Very similar to the function from lab 7. This is the function you call from your command area. It takes no arguments. It returns the new collage.

Here's what it does:
1. Creates 4 picture objects using the 4 source image files.
2. Creates 8 cropped picture objects (i.e., you crop each area twice)
3. Applies each picture effect to any two cropped picture objects (my collage is just one option: I applied sunset and negative to Paris, posterize and grayscale to Amsterdam, negative and sunset to St. Petersburg, and grayscale and posterize to New York)
4. Creates an empty canvas for the collage (I added 10-pixel margins between the images, but that's not a requirement)
5. Copies the 8 cropped objects onto the canvas

So, once you have done lab 7, here's what you need to do in you hw3.py file:
1. copy these functions from lab 7:
   a. copy
   b. crop
   c. makeCollage
2. copy these functions from your previous work
   a. posterize
   b. makeNegative
   c. makeGrayscale
   d. makeSunset
3. modify the makeCollage function so that it:
   a. creates a larger collage using 8 instead of 4 cropped pictures
   b. uses (i.e., calls) each of the 4 effect functions twice.

TIP: to avoid multiple images popping up during the execution of your program, remove the repaint() statements from all the 4 effect fucntions (calling repaint will display the repainted picture - you don't need that; you only need to see the finalized collage)

Submit your work
Submit **hw3.py** to eLearning.