COMP 1600 Fall 2025

Lab 13: Bright Ideas

Due by the end of class

The goal of this lab is to make a tool that can do a simple adjustment of the brightness of an image, making it either darker or lighter.

Specification

Create a project called `Lab13`. Add a `Brightness` class (with a `main()` method) as well as a `Picture` class. Delete everything inside the `Picture` class and paste in the code from **Picture.java**.

Input

Inside of the `main()` method in the `Brightness` class, prompt the user to enter the name of the image file to work with. Read in this `String` and create a new `Picture` object using the file name in the constructor.

Then, prompt the user for a brightness level between 0 and 5 and read in this value as a `double`.

Brightness

Create two nested for-loops that iterate through every pixel in the image (just like a 2D array, except that you have to use the `get()` method with an `x` and a `y` parameter to get a pixel at a particular location).

Get the `Color` value for each pixel. Then, extract the red, green, and blue values from the `Color` object using the `getRed()`, `getGreen()`, and `getBlue()` methods.

Multiply the red, green, and blue values by the brightness value entered by the user. If any of them are larger than 255, set them to 255. For example, if the user entered a brightness value of 1.6, the image will get brighter (values less than 1 will make it darker). So, a pixel with R, G, and B values of (35, 200, 18) would become (56, 255, 28).

Finally, once the new red, green, and blue values have been computed, set the current pixel to a new `Color` made from the updated red, green, and blue values, rounded to the nearest integer using `Math.round()`. You can create the `Color` using a constructor. Then, you can set the pixel value to that `Color` using the `set()` method.

Output

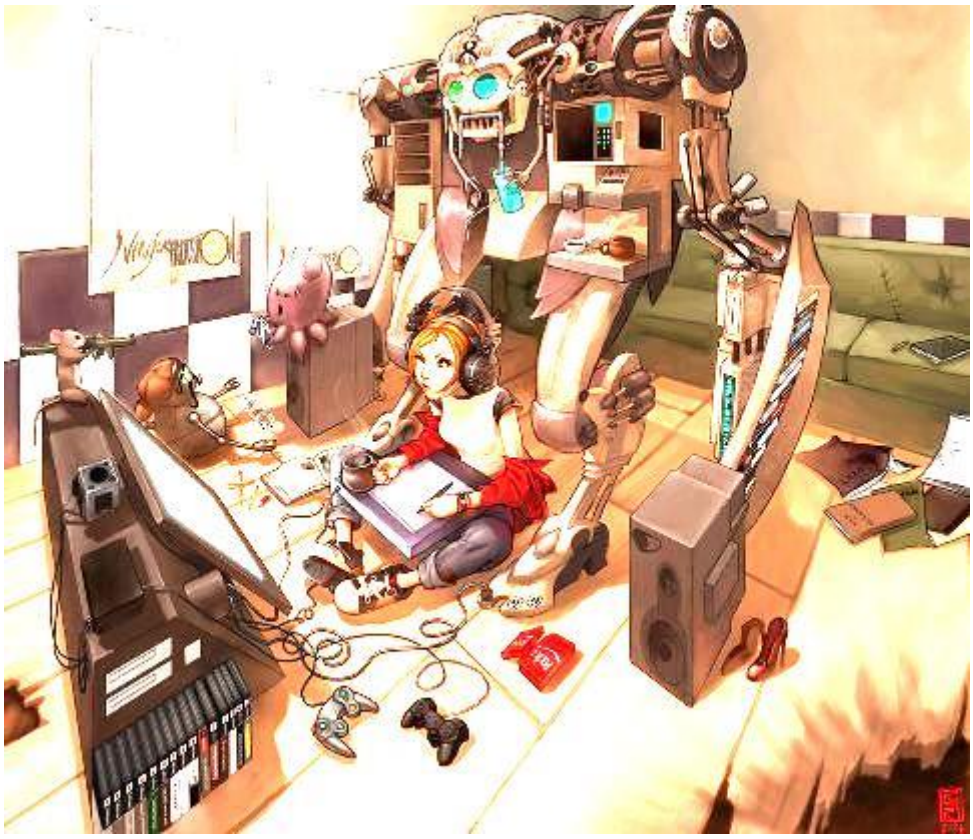
After updating all the pixels in the for loops, call the `show()` method once to show the image with adjusted brightness.

Here is an example of the user editing the image `workstation.jpg` and changing it to a brightness of 2.6. Please try to match the output formatting exactly.

```
What picture would you like to edit? workstation.jpg
How bright do you want your image? (0-5) 2.6
```

Below is the image before editing:

Below is the image after editing:



You can download the original image by right-clicking **here** and saving the target or the link. Alternatively, you should be able to download any image ending in .jpg or .png from the Internet and use that for testing.

Turn In

Turn in your code by uploading `Brightness.java` from the `Lab13\src` folder wherever you created your project to **Brightspace**. **Do not** upload the entire project. The `Picture.java` file is unnecessary. I only want the `Brightness.java` file.

All work must be done individually. Never look at someone else's code. Please refer to the course policies if you have any questions about academic integrity. If you have trouble with the assignment, I am always available for assistance.