

## Lab Six: Arrays and Loops

### Objective

The objective of this lab is to

- Practice reading code,
- Practice adding to a pre-written class
- Writing methods
- Writing different loops and
- Testing your code.

### What to hand in:

Submit your source code (.java files) to the dropbox no later than 11:59pm the night before your lab section's Lab 7. (Tuesday labs are due the following Monday, Wednesday labs are due the following Tuesday, and Thursday's labs are due the following Wednesday).

- Lab6.java
- Picture.java

**Note:** Late submissions will be penalized at a rate of 20% per weekday.

### Marking Scheme:

Your solution will be assessed based on:

- Following lab specifications
- Commenting
  - Javadoc method comments
  - logic and variables commented
- Compiles
- Matches given output

### Exercises

- Save the Netbeans project lab6.zip
- Open it up in Netbeans.
- Open Picture.java under the media folder in lab6.
- You will see in this code three methods written for you – increaseRed() and decreaseRed() which makes changes in picture's red colour (by 2) and changeRed(double percentage) that changes red based on a percentage.
- You are to do the following in Picture.java:
  1. Write increaseGreen(), decreaseGreen() and changeGreen(double percentage) **using a while loop**
  2. Write increaseBlue(), decreaseBlue() and changeBlue(double percentage) **using a for loop**
  3. Write a method changeColours(double r, double g, double b) where the three parameters indicating percentage change for red, green and blue. Your method should allow these values to be positive (indicating that that color should be increased) or negative (indicating that that color should be decreased). Specifically, percentage change will be a number between -1 (100% reduction) and +1 (100 increase). Your changeColors() method should be written **using a foreach loop**.
- Write code to test ALL your methods.
  1. You will be marked based on the quality of your tests!

### Bonus:

- Add code to:
  - Output the width and height of the picture, and ask the user to input an x, y, width and height that specifies a rectangle within the image
  - Modify **only** the pixels within that rectangle
  - You may modify them in any way you wish, so long as the modification only changes the red, green, blue and alpha values of those pixels.
  - You may modify the pixels' colours individually, or you may use a Color object

### Hints

- Below is what the picture should resemble when the main is run the first time (Since we do not all have the same graphics cards there will be variations)
- -1 is equivalent to a 100% reduction, -.5 is a 50% reduction and so on.
- Testing code goes in the main method in Lab6.java.

### Example Output before and after first run of Lab6.java

