CMS 167: Lab 10 Working with Arrays of Objects and Writing Methods

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In this Lab, we will write methods for the *Picture* class to manipulate the colors of an image.

The *Picture* class inherits from the *SimplePicture* class (“*extends SimplePicture*”) . You will write new methods in the *Picture* class to manipulate the pixels in a *Picture* object.

Find a photo on the web or use one of your own photos. It needs to be a .jpg image file, and it should be relatively small size (less than 800 pixels high and wide) and have a variety of colors.

**The Picture** **Class:**

A picture is composed of pixels. Your methods in the *Picture* class can get the pixels from your image using this method of the *Picture* class, which returns an array of *Pixel* objects:

Pixel [ ] getPixels( )

Thus, your methods might use a statement such as this:

Pixel [ ] pixelArray = getPixels( );

Use *for* loops in your methods to process each pixel in the array.

The *Pixel* class has the following methods for manipulating colors:

|  |  |
| --- | --- |
| int | [**getBlue**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#getBlue())( )  returns the value of blue at this pixel. |
| int | [**getGreen**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#getGreen())( )  returns the value of green at this pixel. |
| int | [**getRed**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#getRed())( )  returns the value of red at this pixel. |
| Color | [**getColor**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#getColor())( ) returns a color object that represents the color at this pixel. |
| void | [**setBlue**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#setBlue(int))( int value ) sets the blue value to *value* |
| void | [**setColor**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#setColor(java.awt.Color))( Color newColor ) sets the pixel color to *newColor.* |
| void | [**setGreen**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#setGreen(int))( int value ) sets the green value to *value* |
| void | [**setRed**](file:///C:\Users\jaanderson\Documents\Course%20Documents\CMS%20167\Turtle%20Classes\doc\Pixel.html#setRed(int))( int value ) sets the red value to *value* |

Remember that to call a method on an object in an array, you use

arrayName[index].methodName( )

For example, to get the red value of the pixel at index *i*, you might write:

int red = pixelArray[i].getRed( );

The methods you need to write are described in the *Picture.java* class.

Write your methods after line 60 in the *Picture*.*java* file, where you see

/////////////////// methods ///////////////////////

**Your Client Program**

Modify the client program, *PictureClient.java,* to use your image file.

After you have written each method, call the method and show the picture.