Picture Lab - Assignment Questions

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Day 1

1. What is the dominant color of a pixel whose RGB value are (45, 202, 97)? **Green**

2. For a picture whose dimensions are 200 X 620 (row x columns), what are the (r, c) coordinates of the pixel in the upper right corner? **(0,619)**

3. How would a pixel have RGB values of (97, 97, 97) best be described? **Dark Grey**

4. How would a pixel have RGB values of (252, 252, 252) best be described? **Light Grey/White**

5. If all bits in a byte are 1’s, what is its decimal value? Hex value? **255; 0xFF**

6. What are the RGB values for a white pixel? **(255, 255, 255)**

7. What are the RGB values for a black pixel? **(0, 0, 0)**

8. How many bytes does it take in the RGB color model (including the alpha value) to represent a pixel? What java data type is best suited to store such a color. **4; int as it consists of 4 bytes.**

9. How many rows does a 2 megapixel image have if it has 1000 pixels in each row? (A megapixel is a million pixels.) **2000**

10. What are the decimal RGB values for a pure red pixel? **(255, 0, 0)**

11. What are the hex RGB values for a pure blue pixel? **#0000FF**

12. Which of these two pixels having these RGB values is the brightest? (160, 221, 79) (40, 88, 22)

**(160, 221, 79) is the brightest**

1 . If the (r, c) coordinates of the pixel in the bottom right corner of a picture are (52, 76), what are the dimensions of the image?

**77 x 53**

14. For a 1.8 megapixel image with 1500 rows, what are the (r, c) coordinates of the pixel in the lower right corner? **(1499, 1199)**

Day 2

1. Even though creation of the obj with DigitalPicture obj = new Picture(myPic.jpg); is legal, why would it not be possible to accomplish much with obj?

**Digital Picture does not inherit the Picture class or any other class inherited by the Picture class, meaning it can only use methods from its own class. This is not much in comparison to how many methods the Picture object has access to.**

2. Assuming that a no-argument constructor exists for Picture, would the following code compile? DigitalPicture pic = new Picture( );

**Yes.**

3. Assuming that a no-argument constructor exists for SimplePicture, would the following code compile? Picture pic = new SimplePicture( );

**No.**

4. The Picture class has no getPixels2D() method, yet it is legal for an object of type Picture to use

this method. Why?

**The getPixels2D() method is located in the SimplePicture class. Because this class is inherited by the Picture class, a Picture object is able to call this method.**

5. For a pixel array having 36 rows and 22 columns, how many times will the code in the area designated *code area#1* be executed?

for(Pixel[] rowArray ; pixels){

for(Pixel pixObj: rowArray) {

//code area #1

}

}

**792 times.**

6. For a pixel array having 36 rows and 22 columns, how many times will the code in the area designated *code area #1* be executed?

for (int row = 34; row < pixels.length; row++) {

for(int col = 10; col < pixels[0].length; col++) { // code area #1

}

}

**24 times.**

7. Suppose it is desired to modify only a small portion of an image to B&W while leaving the rest of the image intact with its original color. Comment on why it would be inappropriate to use for-each (enhanced) loops.

**For-each enhanced loops go through all elements of a matrix. To modify only a small portion means that only a select amount of the matrix will be modified. This should not be done in for-each enhanced loops but in 2 nested for loops with specified conditions to modify the select part.**