Making a purple spot on (a picture of) somebody’s nose

Step 1 Make a directory (folder) for this lab work

Lab05

In the Lab (or other Linux/Unix computer), remind
1. Right after logging in you will be in your home directory.
2. cd CS1201
3. mkdir Lab05
4. cd Lab05

On a computer with a GUI shell
1. From MyComputer or wherever you start at, navigate to and into your CS1201 folder (directory).
2. Request New ... Folder
3. Name or rename the New Folder as Lab05

Step 2

Get a digital portrait, like
http://www.cs.albany.edu/~sdc/CS1201/sdc.JPG
into your Lab05 directory (stop saying folder)

For speed, use the TA’s computer.
Go to http://www.cs.albany.edu/~sdc/CS1201/Fall13PictureGetting/GetPicture.html
Use username cs201 and password imani201

outside the lab, you can right-click your photo to download it. It’s wise to right away
download it into the Lab05 directory you had just made.

In the Lab: Make sure you’re in your Lab05 directory with the pwd command. Noting there is space AND ONE DOT (period) at the end,
give the command below:

```
$ cd /usr/local/depts/cs/geintro/Fall13Photos/*your NetID*/.JPG
```

This means put in your own UA NetID, two lower case letters followed by
some digits 0-9, between the / and the .JPG. So, if your NetID were
ab214365 (which it isn’t), you would type:

```
$ cd /usr/local/depts/cs/geintro/Fall13Photos/ab214365.JPG
```

Step 3

Write a Java application like

```java
import java.awt.Color;
public class PicturePurple {
    public static void main(String[] a) {
        FileChooser.pickMediaPath();
        Picture pRef;
pRef = new Picture(FileChooser.pickAFFile());
Color purple = new Color(175, 0, 175);
//Mixture of medium intensity red with blue is purple.
Pixel pixRef;
pixRef = pRef.getPixel(5, 0);
pixRef.setColor(purple);
pixRef.explore();
}
}
```

Save, Compile, (correct typing mistakes), Run...STOP and: READ Step 4 directions.

Step 4

FileChooser.pickMediaPath(); makes a dialog that ONLY shows FOLDERS. You will NOT SEE any names of files (NO .java, .JPG (digital images) or any other files).
The purpose is for you to pick the Lab04 folder/dir, so the software will get back there when it runs again and again. That will save you time.

FIRST: Get to Lab05 and click Open!

Step 5 before clicking Open

After Step 4, the next dialog will come from FileChooser.pickAFFile();

In this dialog you actually pick the digital image file that you want!

Find the original color of that same Pixel is green.

Step 5 after clicking Open

Two G&G Explorer windows will show. Slide one over so you can see both.

Step 6

In each Explorer, use the Zoom menu to zoom to 500%, the max.

Look for the purple pixel in the top row of one image but not in the other.
(It is close to the left corner, at the very top.) AND
in both Explorer windows, after the X: change the 0 to a 5

You should see something like this

Find, in the other Explorer, the Pixel near the upper left corner whose color is purple.

Step 7

Find out the coordinates of a Pixel near the middle of the nose.

How?
Reset the Zoom back to 100% so you can see the nose.
Click on the middle of the nose.
Zoom in and shift the view to see the nose, close up.
(It’s not ukky; it’s just a picture!)
Step 7

Having noted the coordinates locating a Pixel of the
nose (321, 205)
modify the code to retrieve that Pixel so the next line
recolors it purple!

```java
int XYZ = 32; //copy 4 into the spot named XYZ

//and now: Save, Compile, Run (select the
//same folder and picture) and Zoom in on
the nose, to find the purple spot!
```

Questions (discuss in lab):

- Why must we code **Pixel pixRef**; the first
time?
  - Answer: to command the computer to set up the
    memory for the variable named pixRef.
- Why is it an error to code **Pixel pixRef** a
  second time?
  - Answer: It's useless to make two variables with the
    same name (in the same scope). That's the reason
    for the Java rule against repeated declarations of
    the same name.
- About how many Pixels must be purpled to
  make a clearly visible spot? Experiment in Lab!

A shortcut (used in G&E's code)

When, and ONLY AFTER you can explain why
declaring a variable (code like **int XYZ**; or
**Pixel pixRef**;) is different from storing an initial
value or replacement value in the variable in code like

```java
int XYZ = 32; //borrow a memory spot & name it XYZ
```

you should use the shortcut:

```java
int XYZ = 0; //borrow a memory spot & name it XYZ
```

```java
//and then copy 4 into that spot.
```

Finishing Steps...

The single purple Pixel is virtually invisible.
Add more purpling instructions to make well-
visible splotch. For example, start with code like:

```java
pixRef = pRef.getPixel( 321, 205 );
pixRef.setColor( purple );
pixRef = pRef.getPixel( 321+1, 205 );
pixRef.setColor( purple );
pixRef = pRef.getPixel( 321-1, 205 );
pixRef.setColor( purple );
pixRef = pRef.getPixel( 321, 205+1 );
pixRef.setColor( purple );
pixRef = pRef.getPixel( 321, 205-1 );
pixRef.setColor( purple );
```