if statement

- Condition – must be in ( )’s
- Body of if/else
  - 1 statement OR multiple stmts in { }’s
- Relational operators:
  \[==\] \[<\] \[>\] \[\geq\] \[\leq\] \[!=\]
- Logic operators:
  && - means AND
  || - means OR
  !  - means NOT

Example – 2 ifs

```java
int y = 3, x = 6;
if (x > 2)
{
    System.out.println("A");
}
if ((y == 3) && !(x < 3))
{
    System.out.println("B");
}
```
Example 2 - if, else if, else
// Try different values of x and y: 5,3  3,3  2,2
if (x > 4)
{  System.out.println("A");
}
else if ((y == 3) && !(x < 3))
{  System.out.println("B");
}
else
{  System.out.println("C");
}

Null and Objects
Chicken bird = null;  // no memory assigned
// bird = new Chicken("Pia", 5.2, 4.2);
if (bird != null)   // for safety
    bird.eat(2.3);

Don’t reference null objects!

What is an image?
- Lots of pixels
- Each pixel represents a color

Color
- See API page
- In RGB, each color is made up of 3 int
  values representing red, blue and green
- Each int range is 0-255
- Example of four Color variables
  - Color red = new Color(255, 0, 0);
  - Color black = new Color(0,0,0);
  - Color white = new Color(255, 255, 255);
  - Color lightSalmon = new Color(255,160,122);
Color Methods – see API page

- getRed() - gets red integer value
- getBlue() - gets blue integer value
- getGreen() – gets green integer value

To modify the color of a pixel, get the old color and then create a new color that is slightly different.

Example: Change red color a little

```java
public Color transformColor(Color current) {
    int red = current.getRed();
    int blue = current.getBlue();
    int green = current.getGreen();
    return new Color(red + 50, green, blue);
}
```

CAREFUL! This could cause an error!

Classwork today - Images

- Read in an image.
- Modify transformColor method
  - Given a Color, create and return a new Color
  - See API for Color class
  - “Magically” transformation is applied to all pixels in the image
  - Image is transformed to new image
  - Darken darkens the image

Examples

- Image
- Brighten
- Darken
- Negative
Examples

- Image
- Posterize

Examples

- Avg Greyscale
- Weighted Greyscale

Setup

- Main.java - run from here, DO NOT MODIFY
- Modify transformColor method in these classes
  - Brighten.java
  - Darken.java
  - Negative.java
  - Posterize.java
  - GreyScale.java
  - WeightedGreyScale.java
- READ classwork handout for details!

Method transformColor

- This method will describe how to change one color in the image. (this is what you focus on)
- The program will then automatically apply your method to all the pixels in the image (this has been done already for you)