What You Might Do
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http://techgirls.cs.vt.edu
download (scenario): CreativeImages
Starter Scenario
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How Does Color Vision Work?

- Our retinas use rod cells and cone cells.
- Rods aren’t sensitive to color.
- Cones allow us to see in color.
- Three types of cones.
In computing, we represent **all colors** using a combination of **red**, **green**, and **blue** light

- **Abbreviated**: R G B
- **White**: maximum intensity red, green, and blue
- **Black**: the absence of light = zero red, green, and blue
- All other colors are combinations of different intensities of R, G, and B
Color Exercise

https://www.w3schools.com/colors/colors_rgb.asp
How do Digital Cameras Work?

- There are red, green, and blue filters that capture the amount of each color at a position
  - A part of a grid
- There are many positions
  - picture element or pixel
  - 640 x 480 is low resolution
  - 1600 x 1200 is high resolution
- The more pixels, the better the picture
  - Can enlarge it without it looking grainy
for each pixel

for (Pixel p : pic.getPixels())
{
    // code applied to every
    // pixel in the image
}
Pixel methods

We use numbers from 0 .. 255 to represent intensity

- `getRed`
- `getGreen`
- `getBlue`
- `setRed`
- `setGreen`
- `setBlue`
- `setAlpha`
First try: changing every pixel!

```java
for (Pixel p : pic.getPixels())
{
    p.setGreen(255);
}
```
Activities

- Create `maxRed()` and `maxBlue()` methods and try them out!
- Create a `grayScale()` method. For each pixel:
  - Calculate an **average** of the red, green and blue values for that pixel
  - Set the red, green and blue values for that pixel to be the average
- Experiment with your own ideas for methods!