

# Thinking Critically about Your Program

A Prelude to Debugging

# Previously: Recoloring the Blue Devil

```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    pp.setRed(255);  
}  
print(bb);
```



```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    pp.setRed(255);  
    pp.setGreen(255);  
}  
print(bb);
```



# What about a Green Devil?

```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    //What goes here?  
}  
print(bb);
```



- Green devil:
  - Red = 0, Green = 255, Blue = 100

# What about a Green Devil?

```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    pp.setRed(0);  
    pp.setGreen(255);  
    pp.setBlue(100);  
}  
print(bb);
```



- All pixels are green now...

# What about a Green Devil?

```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    pp.setGreen(255);  
    pp.setBlue(100);  
}  
print(bb);
```



- Foreground: correct, Background: yellow
- Need a conditional (`if`)
  - If it is blue, then set it to green...



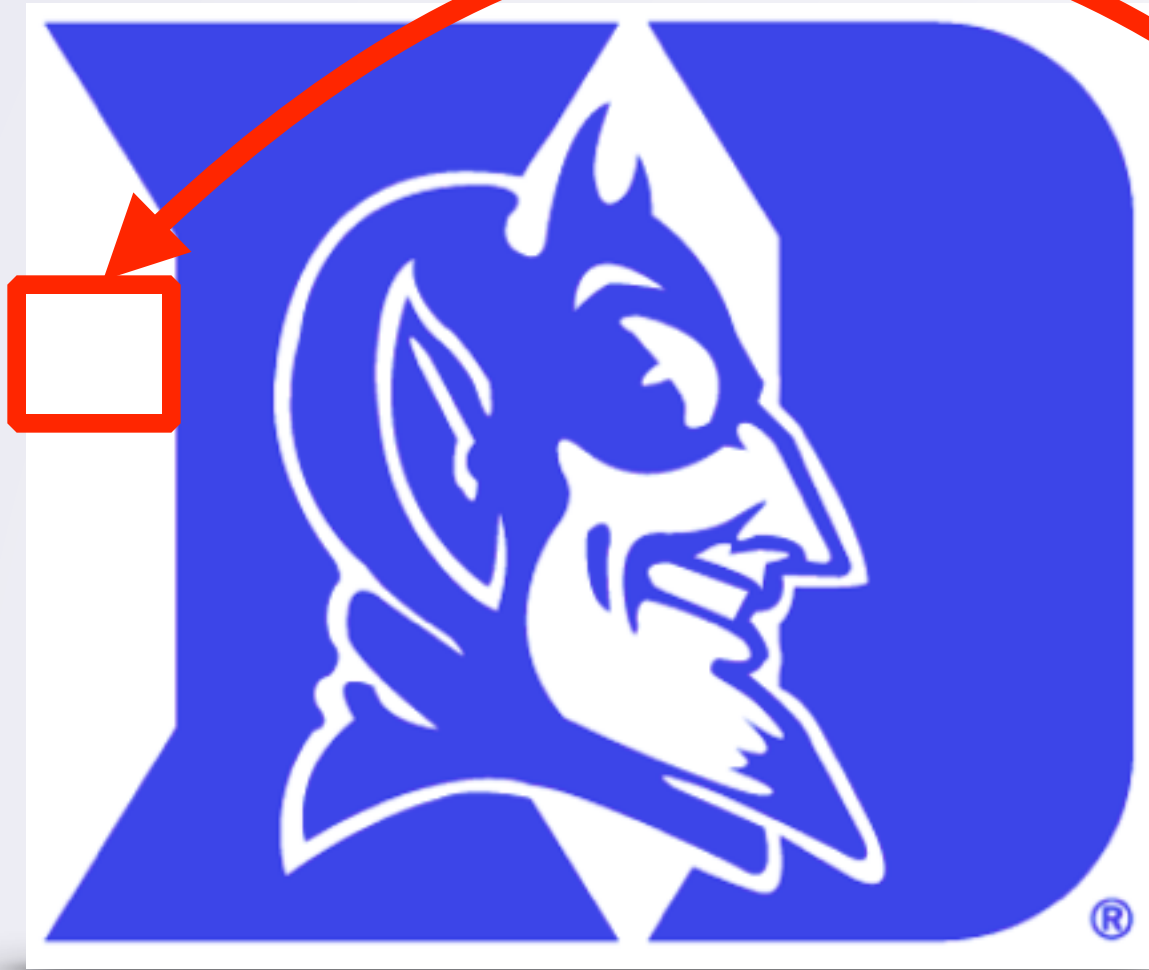
# What about a Green Devil?

```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    if (pixel.getBlue() == 255) {  
        pixel.setRed(0);  
        pixel.setGreen(255);  
        pixel.setBlue(100);  
    }  
}  
print(bb);
```



- Not what we wanted...

# Think It Through...



White:    Green:  
R = 255   R = 0  
G = 255   G = 255  
**B = 255** B = 100



```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    if(pixel.getBlue() == 255) {  
        pixel.setRed(0);  
        pixel.setGreen(255);  
        pixel.setBlue(100);  
    }  
}  
print(bb);
```

# Think It Through...



Blue:  
R = 45  
G = 39  
**B = 225**



```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    if(pixel.getBlue() == 255) {  
        pixel.setRed(0);  
        pixel.setGreen(255);  
        pixel.setBlue(100);  
    }  
}  
print(bb);
```



# Think It Through...



Blue:

R = 45

G = 39

B = 225

White:

R = 255

G = 255

B = 255

- Need condition that distinguishes
  - red < 200, green < 150, blue != 255

# What about a Green Devil?

```
var bb = new SimpleImage("duke_blue_devil.png");  
for (var pp of bb.values()) {  
    if(pixel.getRed() < 200) {  
        pixel.setRed(0);  
        pixel.setGreen(255);  
        pixel.setBlue(100);  
    }  
}  
print(bb);
```



- Perfect!
- Better: plan first