Introduction to Processing

Class #3: 10/3/2007

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To run the following code, just replace everything in *CAPS* with names or numbers.

```
void setup() {

        size( WIDTH_NUMBER, HEIGHT_NUMBER);
        color YOUR_COLOR_NAME;
        YOUR_COLOR_NAME = color (RED_NUMBER, BLUE_NUMBER, GREEN_NUMBER);

        background (YOUR_COLOR_NAME);

}


void draw() {

        rect( X_START, Y_START, WIDTH, HEIGHT );
        ellipse( X_START, Y_START, WIDTH, HEIGHT );

}
```

What are some common colors?

Black:	(0, 0, 0)
White:	(255, 255, 255)
Red:	(255, 0, 0)
Green:	(0, 255, 0)
Blue:	(0, 0, 255)

What are some other useful colors?

Cyan:	(0, 255, 255)
Pink:	(255, 0, 255)
Yellow:	(255, 255, 0)

How do I give my shape a color?

First, establish a new color in the “draw()” method, since commands in the “draw()” method can’t see the colors that you created in the “setup()” method. Then, use the “fill” command **before** you create your shape to set that shape’s color.

```
void draw() {

        color YOUR_COLOR_NAME;
        YOUR_COLOR_NAME = color (RED_NUMBER, BLUE_NUMBER, GREEN_NUMBER);

        fill (YOUR_COLOR_NAME);

        rect( X_START, Y_START, WIDTH, HEIGHT );
        ellipse( X_START, Y_START, WIDTH, HEIGHT );


}
```

You can fill different shapes with different colors:

```
void draw() {

        color YOUR_COLOR_NAME;
        YOUR_COLOR_NAME = color (RED_NUMBER, BLUE_NUMBER, GREEN_NUMBER);
        fill (YOUR_COLOR_NAME);

        rect( X_START, Y_START, WIDTH, HEIGHT );


        color YOUR_COLOR_NAME2;
        YOUR_COLOR_NAME2 = color (RED_NUMBER, BLUE_NUMBER, GREEN_NUMBER);
        fill (YOUR_COLOR_NAME2);

        ellipse( X_START, Y_START, WIDTH, HEIGHT );

}
```

Drawing Lines

How do I draw a line?

To draw a line, you use the command "line" with four arguments:

#1: beginning of line's horizontal distance from top ("x_start")
#2: beginning of line's vertical distance from top ("y_start")
#3: end of line's horizontal distance from top ("x_end")
#4: end of line's vertical distance from top ("y_end")

```
void draw() {

        line( X_START, Y_START, X_END, Y_END);

        …. Your rectangle and ellipse code is still here….

}
```

How do I add color to my line?

Just like with the ellipses and rectangles! If you want to add color, you first define your color and then draw your line. Instead of using "fill", though, we'll use "stroke":

```
void draw() {


        color YOUR_COLOR_NAME3;
        YOUR_COLOR_NAME3 = color (RED_NUMBER, BLUE_NUMBER, GREEN_NUMBER);

        stroke (YOUR_COLOR_NAME3);


        line( X_START, Y_START, X_END, Y_END);


        …. Your rectangle and ellipse code is still here….

}
```

Looking at variables

We've already seen variables, sort of – our "colors" were named pieces of information, which is all that variables are. We're going to learn about some more common types of variables: specifically, Strings and integers (or "int"s.)

We can declare variables like this:

```
String YOUR_STRING_NAME;
int YOUR_INT_NAME;
```

Then we can give those variables information like this:

```
YOUR_STRING_NAME = "some text goes here";
YOUR_INT_NAME = 49483738;                    // this number can be anything you want
                                             // as long as it's not a fraction or a decimal
```

Here's some shorthand for the lines above:

```
String YOUR_STRING_NAME = "some text goes here";
int YOUR_INT_NAME = 49483738;
```

Here's a variable in a "for" statement…. And here's what "for" statements act like:

```
for (int x = 0; x<3; x++) {
        some code here;
}
```

```
int x;
x=0;
some code here;
x=1;
some code here;
x=2;
some code here;
```

We can use "for" statement to run certain sections of code multiple times; we can also use the fact that our variable *x* will increase each time. Here are some possible ways to use that.

```
void setup() {
        size(300,300);
}

void draw() {
        for (int x=0; x<5; x++){
                rect(0, x*20, x*5, 10);
        }
}
```

```
void setup() {
        size(300,300);
}

void draw() {
        color myColor;
        for (int x=0; x<5; x++){
                myColor = color (0, 0, x*50);
                fill(myColor);
                rect(x*40, x*30, 15, 15);
        }
}
```