Day 8

OOP and Classes

Morning Routine : YOU (object)

You’re a HUMAN (class). You have some properties like hair color and clothing. You’re have the ability to do things (functions). Objects are just like you, with properties and the ability to do things.

Human data

- Hometown
- Eye color
- Height
- Age
- Favorite anime

Human functions

- Attend Bootcamp
- Ride the subway
- Buy overpriced smoothies
- Pet dogs

Pseudo Code Exercise!

Now you know, the properties of an object are variables and the things an object can do are functions.

- Turn to your neighbor.
- Take turns writing a piece of code with each other as objects.
- What class are they in?
- Give your partner attributes and a function!

5 minutes each - 10 minutes total!

Data (Global Variables):

- Rabbit color.
- Rabbit x location.
- Rabbit y location.
- Rabbit x speed.

Setup:

- Initialize Rabbit color.
- Initialize Rabbit location to starting point.
- Initialize Rabbit speed.

Draw:

- Fill background.
- Display Rabbit at location with color.
- Increment Rabbit's location by speed.

```
color c = color(255);
float x = 0;
float y = 100;
float speed = 1;

void setup() {
  size(200,200);
}

void draw() {
  background(0);
  move();
  display();
}

void move() {
  x = x + speed;
  if (x > width) {
    x = 0;
  }
}

void display() {
  fill(c);
  ellipse(x,y,30,10);
}
```

Python

```
class Dog:
    kind = 'canine'
    def __init__(self, name, fur):
        self.name = name
        self.fur = fur
jakeDog = Dog("jakeDog", "Jake", "yellow")
jerDog = Dog("jerDog", Jermaine, "yellow")
```

Now as an Object ~

The variables still exist but they now live inside of the Rabbit object and are defined in the Rabbit class.

```
//Declare an object
Rabbit bunny;
//Initialize object
void setup()  {
  bunny = new Rabbit();
}

void draw()  {
  background(255);
//Call methods on object
  bunny.hop();
  bunny.display();
}
```

What Classes Need:

Name - Constructor - Data - Functionality

Constructor

A constructor is the **setup()** for your object.

```
Class Bike{
     float xpos;
     float ypos;
     float xSpeed;
     color frameColor;

     Bike(){
          xSpeed = 5.0;
          xpos = 100;
          ypos = 10;
          frameColor = (0, 0, 150);
          }
}
```

Methods

Using an object involves calling functions that are built into that object.

A Human can play Pokémon Go, a Rabbit can hop, a Dog can bark

```
variableName.objectFunction(Function Arguments);

student.says(“This is awesome!”)
```

Pass a Parameter

```
Class SailorScout;

SailorScout moon;
SailorScout mars;

Color yellow = color(200, 200, 0);

void setup(){
     moon = new SailorScout(yellow);
     mars = new SailorScout(0);
}
Class SailorScout(){
     color hairColor;

     SailorScout(color tempHairColor){
          hairColor = tempHairColor;
     }
}
```

LET’S CODE!

Highlighter Homework!

Take a packet from one of the piles

Identify the different classes in the code with different colored of markers (etc)

Go through all the pages and connect the classes to their calls with the appropriate colors.

Bring your color coded packet to class tomorrow