object, arrays, functions

DAY 9
review: objects are specific instances of a class. methods are actions an object can perform.
Why did we do all this stuff in the first place (why object-oriented)?

• modularity -> code reuse
• information hiding -> safety when coding
• extensibility -> won’t cause disturbance

BUT
• hard to develop
• problems are procedural
• cumbersome
principles of object-oriented programming: inheritance

```
class Animal:
    brain = true;
    legs = 0;

class Human:
    legs = 2;

class Pet:
    legs = 4;
    fleas = 0;

class Dog:
    fleas = 8;

class Cat:
    fleas = 4;
```
principles of object-oriented programming: encapsulation
principles of object-oriented programming: polymorphism
On the last episode of Bouncing Ball...

- inefficient
- hard to read
- if you’re repeating, there’s something to automate
Make an array of 20 BouncingBalls and initialize.
//Main BouncingBall Program

//Declared
BouncingBall myBall;

//Initializes
void setup() {
    size (600,600);
    smooth();
    myBall = new BouncingBall (400,400);
}

//Functionality
void draw () {
    background (0);
    for (int i = 0; i < 20; i++){
        BouncingBallCollection[i].run();
    }
}
//Main BouncingBall Program

//Declared
BouncingBall[] BouncingBallCollection = new BouncingBall[100];

//Initializes
void setup() {
  size(600,600);
  smooth();
  for (int i = 0; i < BouncingBallCollection.length; i++) { //-----ADJUSTED HERE
    BouncingBallCollection[i] = new BouncingBall(random(0, width), random(0, height));
  }
}

//Functionality
void draw() {
  background(0);
  for (int i = 0; i < BouncingBallCollection.length; i++) { //-----ADJUSTED HERE
    BouncingBallCollection[i].run();
  }
}
an example with inheritance: Spin, SpinArm, SpinSpots.
real world programming is done with object-oriented code.

Random International  
“You Fade to Light” in Openframeworks
Exercises (for fun)

• Make an array of 500 BouncingBalls with random colors by changing arguments to the constructor.

• Make other shapes that extends Spin with different sizes and speeds using inheritance.
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