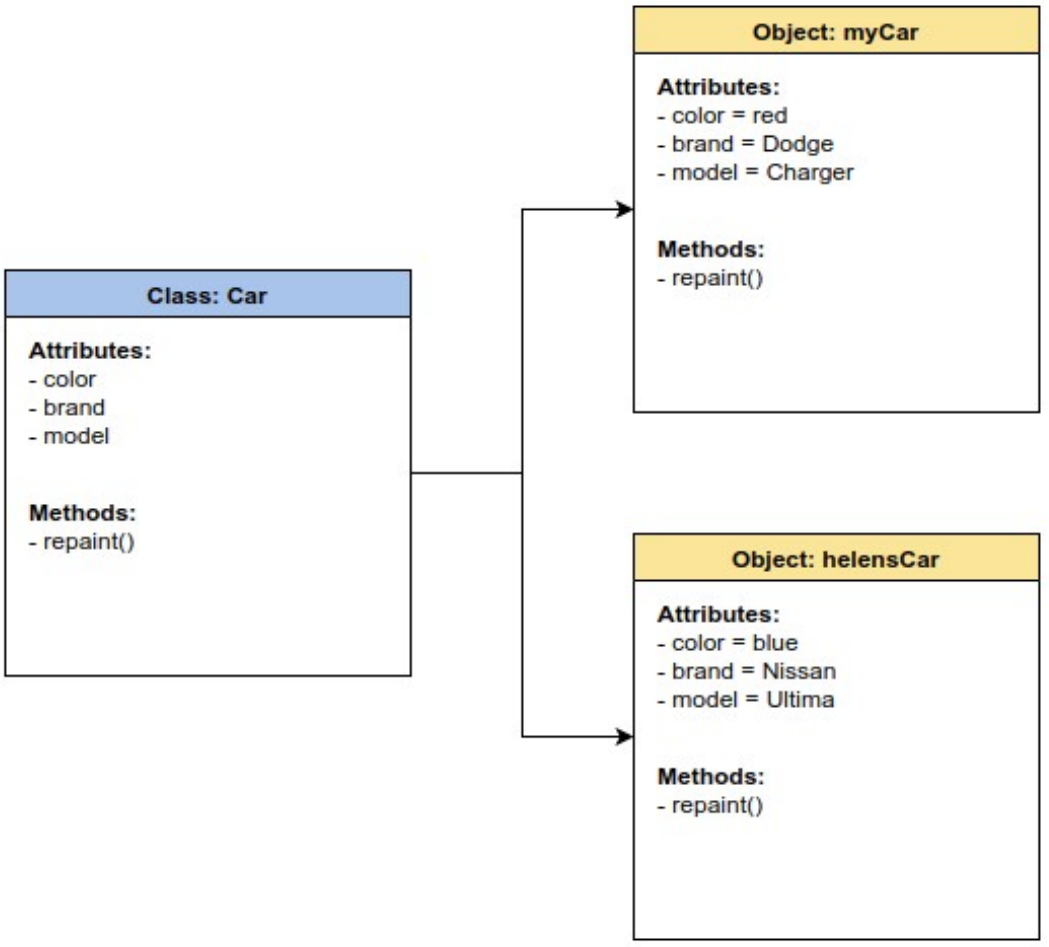
Full Stack Development

Lecture 10: Object Oriented Programming

What is OOP?

- Object Oriented Programming
  - One of the **most** popular programming paradigms
  - Relies on the use of Classes and Objects
  - Allows for greater reusability and encapsulation
  - Easier debugging
  - Modular

Classes


Object: myCar
Attributes:
- color = red
- brand = Dodge
- model = Charger
Methods:
- repaint()
Class: Car
Attributes:
- color
- brand
- model
Methods:
- repaint()
Object: helensCar
Attributes:
- color = blue
- brand = Nissan
- model = Ultima
Methods:
- repaint()

Classes

- Self contained
- Blueprint for more specific instances (think of a recipe)
- Describes attributes of something without defining them
- Defines methods or functions that can be used by any object of the class
- Is a – my motorcycle ‘is a’ vehicle, my dog ‘is an’ animal; vehicle and animal would be the classes

Class Structure

- Name
  - All classes must have a unique name
  - Cannot be duplicated or you will get an error
  - Name-spacing
- Attributes
  - Also called class level variables
  - Can be private, protected, or public
- Methods
  - These are the functions that can be used by the objects of the class
  - These methods utilize the class variables/attributes with the $this keyword
  - Most common and easy ones are set/get methods

Class Structure

- Class Dog extends Animal {

```
    private string $name;
    private string $color;
    private int $age;
    private int $weight;

    private getName(){
      return $this→name;
    }
}
```

Objects

- Individual instance of a class
- Defines the attributes of the class
- Can *utilize* the functions defined by its class
- Is a – my motorcycle ‘is a’ vehicle, my dog ‘is an’ animal; my motorcycle and my dog would be the objects of the classes

Defining Objects

- Objects are stored in variables like any other data
- Sets the individual attributes to its unique needs
- Use the “new” keyword to instantiate objects
- $myDog = new Dog(‘tank’, ‘black’, 1, 25);
- $myDog→getName(); // returns ‘tank’

For more information

- https://www.educative.io/blog/object-oriented-programming
- https://www.w3schools.com/php/php_oop_what_is.asp
- https://www.php.net/manual/en/language.oop5.php