# Subclasses and Inheritance

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## github-classClassroom Assignment

* [Acceptance Link](https://classroom.github.com/a/RkHIfJUw)

Example of inheritance

class Animal {

  public String name;

}

class Dog extends Animal {

  public String owner;

}

## laptop computer01

1. Create a class called Shape with a private int instance variable numberOfSides and corresponding getter and setter methods.
2. Create a class called Square that extends Shape. Add a private int instance variable sideLength and corresponding getter and setter methods. Also add methods getArea() and getPerimeter() to calculate and return the area and perimeter of a square respectively.
3. Create a class called Circle that extends Shape. Add a private int instance variable radius and corresponding getter and setter methods. Also add methods getArea() an getPerimeter()` to calculate and return the area and circumference of a circle respectively.
4. In the Main class, create objects of both Square and Circle classes and print out the area and perimeter/circumference.

## laptop computer02

1. Create a class called Vehicle with the following properties:
   * make (String)
   * model (String)
   * year (int)
   * speed (int)

* Use a constructor to set the values of the properties.

1. And the following methods:
   * accelerate() - this method should increase the speed by 10
   * decelerate() - this method should decrease the speed by 10
   * getSpeed() - this method should return the current speed of the vehicle
   * getMake() - this method should return the make of the vehicle
   * getModel() - this method should return the model of the vehicle
   * getYear() - this method should return the year of the vehicle
2. Create a subclass called Car that inherits from the Vehicle class and has the following properties:
   * numDoors (int)

* Use a constructor to set the values.

1. And the following methods:
   * getNumDoors() - this method should return the number of doors in the car
2. Create another subclass called Truck that also inherits from the Vehicle class and has the following properties:
   * numAxles (int)

* Use a constructor to set the values.

1. And the following methods:
   * getNumAxles() - this method should return the number of axles in the truck
2. In the main method, create an instance of the Car class and set its make, model, year, speed, and number of doors. Then, call the accelerate() and decelerate() methods several times and print the current speed of the car after each call, use a for-loop for example.
3. Create another instance of the Truck class and set its make, model, year, speed, and number of axles. Then, call the accelerate() and decelerate() methods several times and print the current speed of the truck after each call, use a for-loop for example.

## laptop computer03

1. Create a base class named Hardware that contains a String instance variable named manufacturer and a String instance variable named model representing the manufacturer and the model of the hardware component. Use a constructor to set the values of the properties.
2. Create a subclass named CPU that extends the Hardware class. The CPU class should contain a double instance variable named speed representing the speed of the CPU in GHz.  Use a constructor to set the values of the properties.
3. Create a subclass named GPU that extends the Hardware class. The GPU class should contain a double instance variable named memory representing the memory of the GPU in GB.

* Use a constructor to set the values of the properties.

1. Create a subclass named RAM that extends the Hardware class. The RAM class should contain a double instance variable named capacity representing the capacity of the RAM in GB.

* Use a constructor to set the values of the properties.

1. Create a subclass named Storage that extends the Hardware class. The Storage class should contain a double instance variable named capacity representing the capacity of the storage device in GB.

* Use a constructor to set the values of the properties.

1. Create a class named Computer that contains an instance of CPU, an instance of GPU, an instance of RAM, and an instance of Storage.

* Use a constructor to set the values of the instances.

1. In the Computer class, create a method named getTotalMemory that returns the sum of the memory of the GPU and the capacity of the RAM as a double.
2. In the Computer class, create a method named getTotalCapacity that returns the sum of the capacity of the storage device and the capacity of the RAM as a double.
3. Create a class named ComputerDriver with a main method that creates an instance of the Computer class, sets the manufacturer, model, speed, memory, and capacity for each hardware component, and prints the getTotalMemory and getTotalCapacity values.

Example output:

Total memory: 16.0 GB

Total capacity: 2048.0 GB

## trophyBonus 1

Points: **3**

Use you implementation in laptop computer03 as starting point and let the user define the computer

1. Ask the user for the CPU details.
2. Ask the user for the GPU details.
3. Ask the user for the RAM details
4. Ask the user for the Storage details
5. Implement a toString() method for each class.
6. Implement a toString() method in the Computer class that will display the whole computer configuration.