1. Suppose you have a class \texttt{Cat} defined as shown below. Fill in the code for the indicated methods, following guidelines given through comments.

public class Cat
{
    // instance variables
    String name;
    int age;
    int lives; // number of lives remaining

    // constructor: takes a String as parameter and creates a
    public Cat (String x)
    {
        name = x;
        age = 0;
        lives = 9; // cats start out with 9 lives
    }

    // birthday(): if the cat is still alive (has at least one
    // life left), increases age by 1; otherwise does nothing
    // WRITE METHOD DEFINITION HERE: *************************

    // death(): decreases the number of lives by 1; no effect
    // on dead cats (i.e., cats with 0 lives).
    // ********* assume this is already implemented *********

    // getAge(): returns the cat’s age
    // ********* assume this is already implemented *********

    // getLives(): returns the cat’s remaining lives
    // ********* assume this is already implemented *********

    // toString()
    // WRITE METHOD DEFINITION HERE: **************************
}
2) Suppose you are writing a **driver class** that uses the `Cat` class. Answer the questions below by writing code fragments for this driver class.

a) Write some code to instantiate an object of the `Cat` class with name “Luca” and assign it to a variable named `myProfsCat`

b) Suppose you have already declared and initialized three variables `cat1`, `cat2`, and `cat3` that refer to `Cat` objects. Let’s pretend that two years have gone by… So their ages need to increase. Meanwhile, `cat3` has done something stupid and loses a life. Write some code that uses the `birthday()` and `death()` methods to model this situation.

c) Write some code to print the sum total of the lives of `cat1`, `cat2`, and `cat3`. 
1. Suppose you have a class `Car` defined as shown below. Fill in the code for the missing methods, following guidelines given through comments.

```java
public class Car {
    // instance variables
    String manufacturer;
    String model;
    int year;
    double price;

    // constructor
    public Car(String x, String y, int z, double w) {
        manufacturer = x;
        model = y;
        year = z;
        price = w;
    }

    // constructor: another version of the constructor, without
    // parameters for year, or price; sets these to default
    // values (2013 and 0, respectively).

    // toString()

    // getPrice()

    }
```
2) Suppose you are writing a **driver class** that uses the *Car* class. Answer the questions below by writing code fragments for this driver class.

a) Write some code to instantiate an object of the *Car* class (using the second constructor) and to assign this object to a variable named `obscureObjectOfDesire`. Use this information for the car: manufactured by Jaguar, model name “XF Supercharged.”

b) Suppose you have already declared and initialized three variables `car1`, `car2`, and `car3` that refer to *Car* objects. Write some code to find the average of the car prices and assign it into a variable named `priceAvg`.

e) Write some code to reduce the price of `car2` by $5000. (So, for example, if the current price is $30000, it should be reduced to $25000.) Use the accessor and mutator methods.
1. Suppose you have a class `Cat` defined as shown below. Fill in the code for the missing methods, following guidelines given through comments.

```java
public class Cat {
    // instance variables
    private String name;
    private int age;
    private int lives; // number of lives remaining

    // constructor
    public Cat(String x, int y) {
        name = x;
        age = y;
        lives = 9; // start with 9 lives
    }

    // age accessor

    // age mutator

    // toString()
}
```
2) Suppose you are writing a **driver class** that uses the Cat class. Answer the questions below by writing code fragments for this driver class.

a) Write some code to instantiate an object of the Cat class, named “Luca”, aged 5, and assign it to a variable named `myProfsCat`

b) Write some code to print the information about `myProfsCat`

c) Suppose you have already declared and initialized three variables `cat1`, `cat2`, and `cat3` that refer to Cat objects. Write some code to calculate and print the average of the ages of `cat1`, `cat2`, and `cat3`.
1. Suppose you have a class `Car` defined as shown below. Fill in the code for the missing methods, following guidelines given through comments.

```java
public class Car {
    // instance variables
    String manufacturer;
    String model;
    int year;
    double price;

    // constructor
    public Car(String x, String y, int z, double w) {
        manufacturer = x;
        model = y;
        year = z;
        price = w;
    }

    // price mutator

    // price accessor

    // toString()
}
```
2) Suppose you are writing a **driver class** that uses the **Car** class. Answer the questions below by writing code fragments for this driver class.

a) Write some code to instantiate an object of the **Car** class and to assign this object to a variable named `obscureObjectOfDesire`. Use this information for the car: manufactured by Jaguar, model name “XF Supercharged,” year 2013, and price $68,100.

b) Write some code to print the information about `obscureObjectOfDesire`

c) Suppose you have already declared and initialized three variables `car1`, `car2`, and `car3` that refer to **Car** objects. Write some code to calculate and print the average price of these cars.

d) Write some code to set the price of `car1` to $25,000.