COM498 Algorithms and Data Structures

Challenge 2.1 - Animals and Lions

The `Lion` sub-class

1. In your Animal project develop a sub-class of **`Animal`** called **`Lion`**.
    a. Provide the sub-class with an integer **class variable** to count the number of **`Lion`** objects created.
    b. The sub-class should also have two instance variables

        `age` e.g. 3, 5
        `name` e.g. "Leo", "Simba"

    c. It should also have the following constructor methods:
        - A default constructor method
        - A constructor method which accepts four parameters (two to initialise the inherited properties **`food`** and **`lifeExpectancy`**, and two to initialise the **`Lion`** instance variables **`age`** and **`name`**).
2. Write a method called **`setAge()`** which accepts an integer as a parameter and sets the **`age`** instance variable to this value.
3. Write a **`toString()`** method for the **`Lion`** class to return an appropriate message indicating the age, food it eats and whether or not it has a mane – make use of the **`toString()`** method in the **`Animal`** class.
4. Write a method called **`numberOfLions()`** to return the number of **`Lion`** objects created.

The `TestAnimal` Application class

5. Write an application class called **`TestAnimal`** that will create two **`Lion`** objects called **`myLion1`** and **`myLion2`**. Initialise the properties required with values of your own choice.
6. Make a call to an appropriate method to set the **`age`** of **`MyLion1`** to 3.
7. Print out the details of **`myLion1`** using the **`toString()`** method and the number of Lions created using the **`numberOfLions()`** method.