

CPSC 1181 - Lab 2 [50 marks]

Objectives:

- Implement a class and instantiate objects
- Explain how programming instructions are executed when several classes are involved
- Describe the following terms: variable scope, instance variable/attribute, constructor, accessor/getter, mutator/setter

Submission:

- Zip up your Dog.java and submit it to D2L.
- Unzipped submissions or submissions containing .class files will be automatically given ZERO

Exercise 1 [15 marks]

Create a class called Dog that simulates a dog a person might own.

Each Dog should have a name, a breed, a sex (an enum with values of male and female), and an age.

Create the constructor so that it accepts 4 parameters, i.e., name, breed, sex, and age.

Create the getters and setters necessary for the instance data of this class. Create a toString method that returns a string summary of the Dog object.

Create a method to compute the age of the Dog in “human years”. For example, if a dog is one year old, we say he is like a 7 year old person. If a dog is two years old, he is like a 14 year old person. Etc.

Exercise 2 [5 marks]

Create a static variable to keep track of the total number of Dogs ever created.

Create a getter called getTotalDogs to access this data.

Remember to increment this variable whenever a new Dog is created.

Create a method called resetTotalDogs that resets the static variable back to 0.

Exercise 3 [5 marks]

Create a method called `mate` that accepts a Dog object and a name as parameters. The Dog passed as a parameter is to be mated with this current dog object. The method should check that the two dogs are able to be mated and then return a new Dog object with the following specifications:

- Its name should be the name passed as a parameter
- Its breed should be a combination of the two parent's breeds, unless the parents are the same breed.
- Its sex should be randomly assigned as male or female

If two animals cannot be mated, the method should return null.

Exercise 4 [6 marks]

Create a program that creates 3 Dog objects and prints their toStrings. Then each dog should attempt to be mated to each other dog, and print the results of the mating.

Exercise 5 [10 marks]

Download and run the provided unit tests. Ensure your program passes all tests. **Do not modify the test file. Modifying the test file will result in a grade of 0/10**

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Style and Conventions: 4 marks
JavaDoc Documentation: 5 marks

Exercise 1:

+2 instance data
+2 enum
+3 constructor
+4 getters/setters
+2 getHumanAge
+2 toString

Exercise 2:

+2 for variable + proper increment thereof
+1.5 for getter
+1.5 for reset

Exercise 3:

+1 method signature
+1 assign breed
+1 assign sex
+1 create object
+1 return correctly

Exercise 4:

+3 create dogs
+1.5 mate dogs
+1.5 print results

Exercise 5:

10 marks total
-1 mark for each test that fails, to a minimum of 0/10.