a.

Draw a class diagram to show the following Java scenario:

1. One class called Dog

2. Dog has 5 private states; breed (String), age (int), name (string), gender(Boolean) and color(string).

Dog has 5 public behaviors: getBreed, getAge, getName, getGender, getColor. They each return their respective data type.

3. Dog has 5 private behaviors: setBreed, setAge, setName, setGender and setColor.They all have void return type but take a parameter for their respective data type.

(3)

b

Dog class is extends from class named Pet.

Please states the relationship between Dog and Pet and state the definition of this relationship.

(2)

c

State two advantages of the term in part (b).

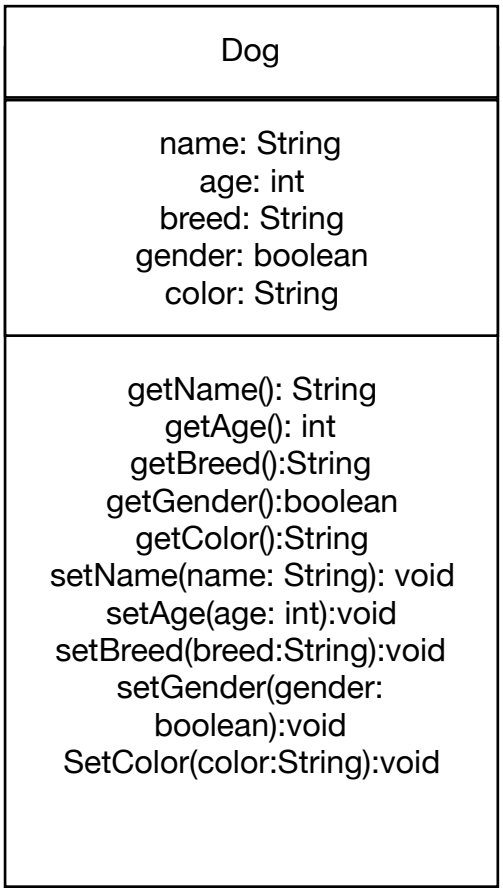
(2)

d

Also, there is a class named Cat extends from class Pet and two classes, which are Poodle and Husky, extends from class Dog. Please draw a diagram to show the relationship between these 5 classes.

(3)

(a)



1 mark for class name
1 mark for private states
1 mark for functions
(b)
inheritance
Process whereby one object acquires the properties (states and behaviors) of another

1 mark for state inheritance
1 mark for the definition
(c)
Minimizing the amount of duplicate code in an application by sharing common code amongst several subclasses.

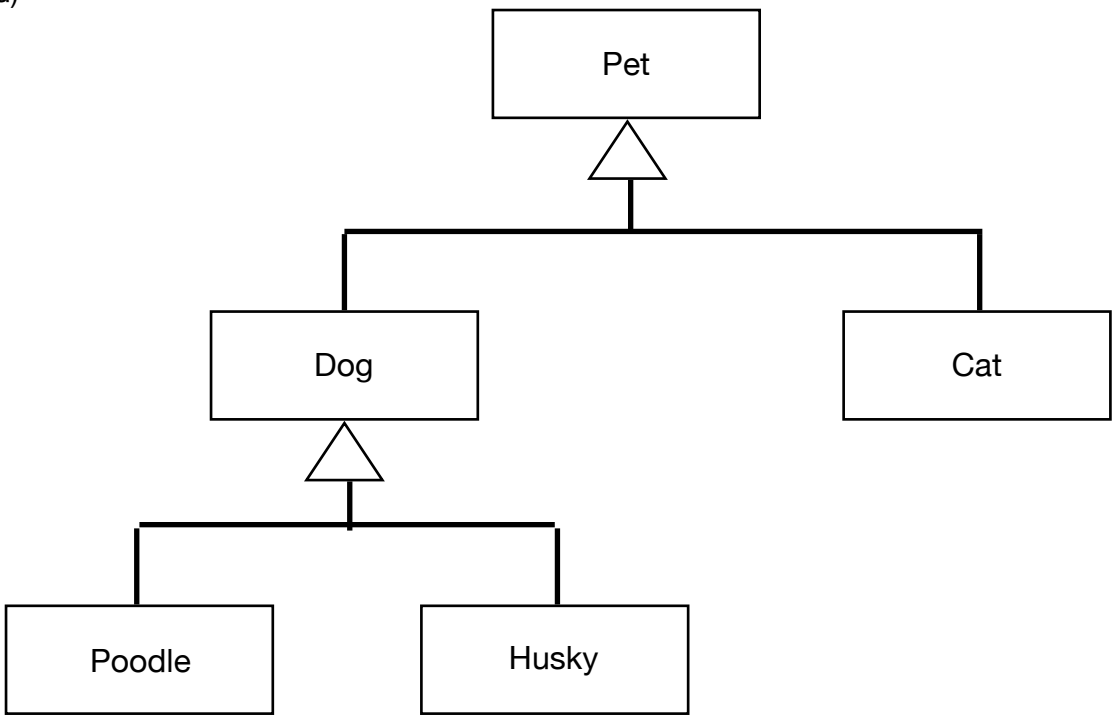
Where equivalent code exists in two related classes, the hierarchy can usually be refactored to move the common code up to a mutual superclass.

This also tends to result in a better organization of code and smaller, simpler compilation units.

Inheritance can also make application code more flexible to change because classes that inherit from a common superclass can be used interchangeably.

2 marks for two points in four advantages.

(d)



one mark for each level with the correct arrow