

Q1. Draw a UML diagram to represent the classes in the **Animals** package.

Q2. Why will the first block of code work, but not the second?

```
ArrayList<Shape> list = new ArrayList<Shape>();  
  
list.add(new Circle(10, 10, 5, Color.BLUE));  
list.add(new Rectangle(10, 5, 3, 6, Color.RED));  
list.get(0).drawFilled();
```

```
ArrayList list = new ArrayList();  
  
list.add(new Circle(10, 10, 5, Color.BLUE));  
list.add(new Dog("Fido"));  
list.get(0).drawFilled();  
list.get(1).makeNoise();
```

Q3. Abstract Classes and Interfaces

Can an abstract class have data members? Can an interface?

Can you include the body of a function in an abstract class? In an interface?

What happens if a subclass does not implement one of the methods in an abstract parent or an interface?

Can you instantiate an object of an abstract type? an interface?