CS61B Week 4: Inheritance

Write the necessary classes for the code below to compile and produce the given output.

```
OUTPUT:
Fido wolfs down the food! Woof!
Spot sniffs the food and lumbers away... Woof!
Bertha sniffs the food and lumbers away... Meow!
Kitty kitty kitty wolfs down the food! Meow!

CODE:
class TestAnimals {
    public static void main(String[] args) {
        Dog d0 = new Dog("Fido", 7);
        Dog d1 = new Dog("Spot", 11);
        Cat c0 = new Cat("Bertha", 23);
        Cat c1 = new Cat("Kitty kitty kitty", 2);
        Animal[] animals = {d0, d1, c0, c1};
        feed(animals);
    }

    public static void feed(Animal[] animals) {
        for (Animal a : animals) {
            if (a.getAge() < 10) {
                System.out.print(a.getName() + " wolfs down the food! ");
            } else {
                System.out.print(a.getName() + " sniffs the food and lumbers away... ");
            }
            a.makeSound();
        }
    }
}
```

```
abstract class Animal {
    String _name;
    int _age;

    Animal(String name, int age) {
        _name = name;
        _age = age;
    }

    String getName() {
        return _name;
    }

    int getAge() {
        return _age;
    }

    abstract void makeSound();
}

class Dog extends Animal {
    void makeSound() {
        System.out.println("Woof!");
    }
}

class Cat extends Animal {
    void makeSound() {
        System.out.println("Meow!");
    }
}
```

Sample ~~Interview~~ Midterm Question of the Week:
The following program compiles correctly. What does the main program (in D) print?

```
class A {
    int z = 2;
    void f() { this.g(); }
    void g() { System.out.printf("A:%d%n", z); }
    int h() { return z; }
}

class B extends A {
    int z = 15;
    void g() { System.out.printf("h:%d z:%d%n", h(), z); }
}

class C extends A {
    int z = 42;
    void f() { this.g(); }
}

class D {
    public static void main (String[] args) {
        A c1 = new C();
        C c2 = new C();
        A b1 = new B();
        B b2 = new B();
        System.out.println("Before modification");
        c1.f(); c2.f(); b1.f(); b2.f();
        c1.z = 23;
        c2.z = 25;
        b1.z = 47;
        b2.z = 49;
        System.out.println("After modification");
        c1.f(); c2.f(); b1.f(); b2.f();
    }
}
```

```
Before modification
A:2
A:2
h:2 z:15
h:2 z:15
After modification
A:23
A:2
h:47 z:15
h:2 z:49
```