

## Inheritance and Polymorphism worksheet

What is printed in Zoo?

```
public class Animal {
    public void speak() {
        System.out.println("silence");
    }
}

public class Bird extends Animal {
    public void speak() {
        System.out.println("twitter");
    }
}

public class Cat extends Mammal {
    public void speak() {
        System.out.println("meow");
    }
    public void purr() {
        System.out.println("purrrrrr");
    }
}

public class Dog extends Mammal {
    public void speak() {
        System.out.println("woof");
    }
    public void bark() {
        System.out.println("woof");
    }
}

public class Mammal extends Animal {
    public void speak() {
        System.out.println("can't speak");
    }
    public void bark(){
        System.out.println("can't bark");
    }
}
```

```
public class Zoo {
    public static void main (String args[]){
        Dog d = new Dog();
        d.speak(); _____
        d.bark(); _____
        Cat c = new Cat();
        c.speak(); _____
        c.purr(); _____
        Bird b = new Bird();
        b.speak(); _____
        Mammal m = new Mammal();
        m.speak(); _____
        m.bark(); _____
        Animal a = new Animal();
        a.speak(); _____
        Mammal m2 = d;
        m2.bark(); _____
        m2.speak(); _____
        Animal a1 = d;
        a1.speak(); _____
        ((Dog)a1).bark(); _____
        Mammal m3 = c;
        m3.speak(); _____
        Animal a2 = b;
        a2.speak(); _____

        ArrayList<Animal> bunch = new
            ArrayList<Animal>();
        bunch.add(b);
        bunch.add(c);
        bunch.add(d);
        // polymorphism
        for (int i = 0; i < 3; i++) {
            Animal ai = bunch.get(i);
            ai.speak();
        }
    }
}
```

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