

Inheritance

2 Raining Cats and Dogs

Assume that `Animal` and `Cat` are defined as above. What will be printed at each of the indicated lines?

```
1 public class TestAnimals {
2     public static void main(String[] args) {
3         Animal a = new Animal("Pluto", 10);
4         Cat c = new Cat("Garfield", 6);
5         Dog d = new Dog("Fido", 4);
6
7         a.greet();           // (A) _____
8         c.greet();           // (B) _____
9         d.greet();           // (C) _____
10
11        a = c;
12        a.greet();           // (D) _____
13        ((Cat) a).greet();   // (E) _____
14    }
15 }
16
17 public class Dog extends Animal {
18     public Dog(String name, int age) {
19         super(name, age);
20         noise = "Woof!";
21     }
22
23     @Override
24     public void greet() {
25         System.out.println("Dog " + name + " says: " + makeNoise());
26     }
27
28     public void playFetch() {
29         System.out.println("Fetch, " + name + "!");
30     }
31 }
```

Consider what would happen we added the following to the bottom of `main`:

```
a = new Dog("Hieronymus", 10);
d = a;
```

Why would this code produce a compiler error? How could we fix this error?