# CS 335 — Software Development

Object-Oriented Versus Functional Programming

April 6, 2009

# Functional vs OO

```
interface Animal {
    String happyNoise();
    String excitedNoise();
}

class Dog implements Animal {
    String happyNoise() { return "pant pant"; }
    String excitedNoise() { return "bark"; }
}

class Cat implements Animal {
    String happyNoise() { return "purrrrr"; }
    String excitedNoise() { return "meow"; }
}
```

# Functional vs OO

```
class Chicken implements Animal {
    String happyNoise() { return "cluck cluck"; }
    String excitedNoise() { return "cockadoodledoo"; }
}
```

# Functional vs OO

```
interface Animal {
    String happyNoise();
    String excitedNoise();
    String angryNoise();
}

class Dog implements Animal {
    String happyNoise() { return "pant pant"; }
    String excitedNoise() { return "bark"; }
    String angryNoise() { return "grrrrr"; }
}

class Cat implements Animal {
    String happyNoise() { return "purrrrr"; }
    String excitedNoise() { return "meow"; }
    String angryNoise() { return "hissss"; }
}

class Chicken implements Animal {
    String happyNoise() { return "cluck cluck"; }
    String excitedNoise() { return "cockadoodledoo"; }
    String angryNoise() { return "squaaaack"; }
}
```

# Functional vs OO

```
datatype Animal = Dog | Cat ;

fun happyNoise(Dog) = "pant pant"
  | happyNoise(Cat) = "purrrr"

fun excitedNoise(Dog) = "bark"
  | excitedNoise(Cat) = "meow"
```

# Functional vs OO

```
fun angryNoise(Dog) = "grrrrr"
  | angryNoise(Cat) = "hisssss"
```

# Functional vs OO

```
datatype Animal = Dog | Cat | Chicken;

fun happyNoise(Dog) = "pant pant"
    | happyNoise(Cat) = "purrrr"
    | happyNoise(Chicken) = "cluck cluck";


fun excitedNoise(Dog) = "bark"
    | excitedNoise(Cat) = "meow"
    | excitedNoise(Chicken) = "cockadoodledoo";


fun angryNoise(Dog) = "grrrrr"
    | angryNoise(Cat) = "hisssss"
    | angryNoise(Chicken) = "squaaaack";
```

# Functional vs OO

|              | Dog       | Cat    | Chicken        |
|-------------:|:---------:|:------:|:--------------:|
| happyNoise   | pant pant | purrrr | cluck cluck    |
| excitedNoise | bark      | meow   | cockadoodledoo |
| angryNoise   | grrrrr    | hisssss| squaaaaack     |