

Method Overriding



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by Christine Alvarado, Mia Minnes, and Leo Porter, 2015.

By the end of this video you will be able to...

- Create methods which override from a superclass
- Contrast method overloading and method overriding

What did we want?

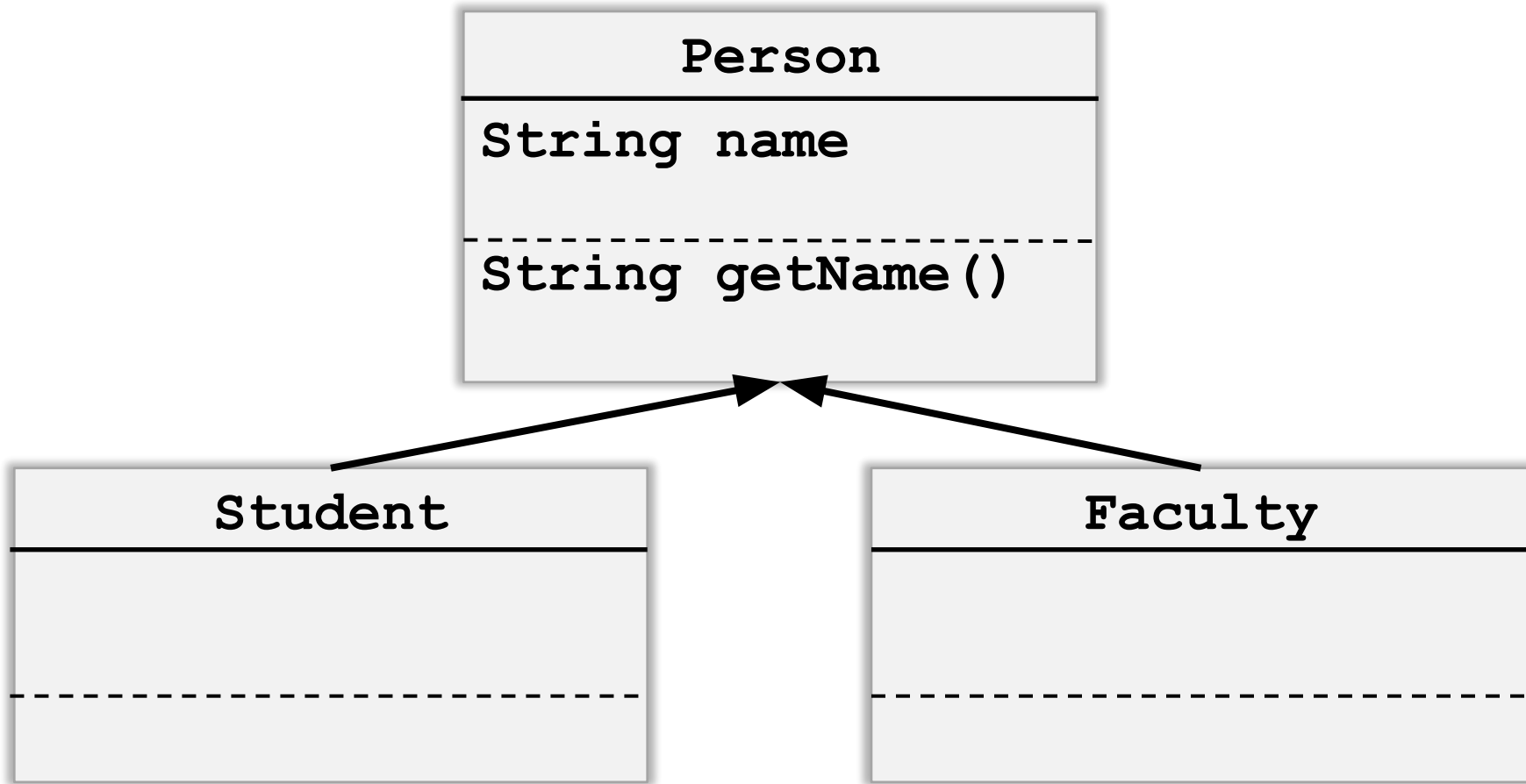
1. Keep common behavior in one class
2. Split different behavior into separate classes
3. Keep all of the objects in a single data structure

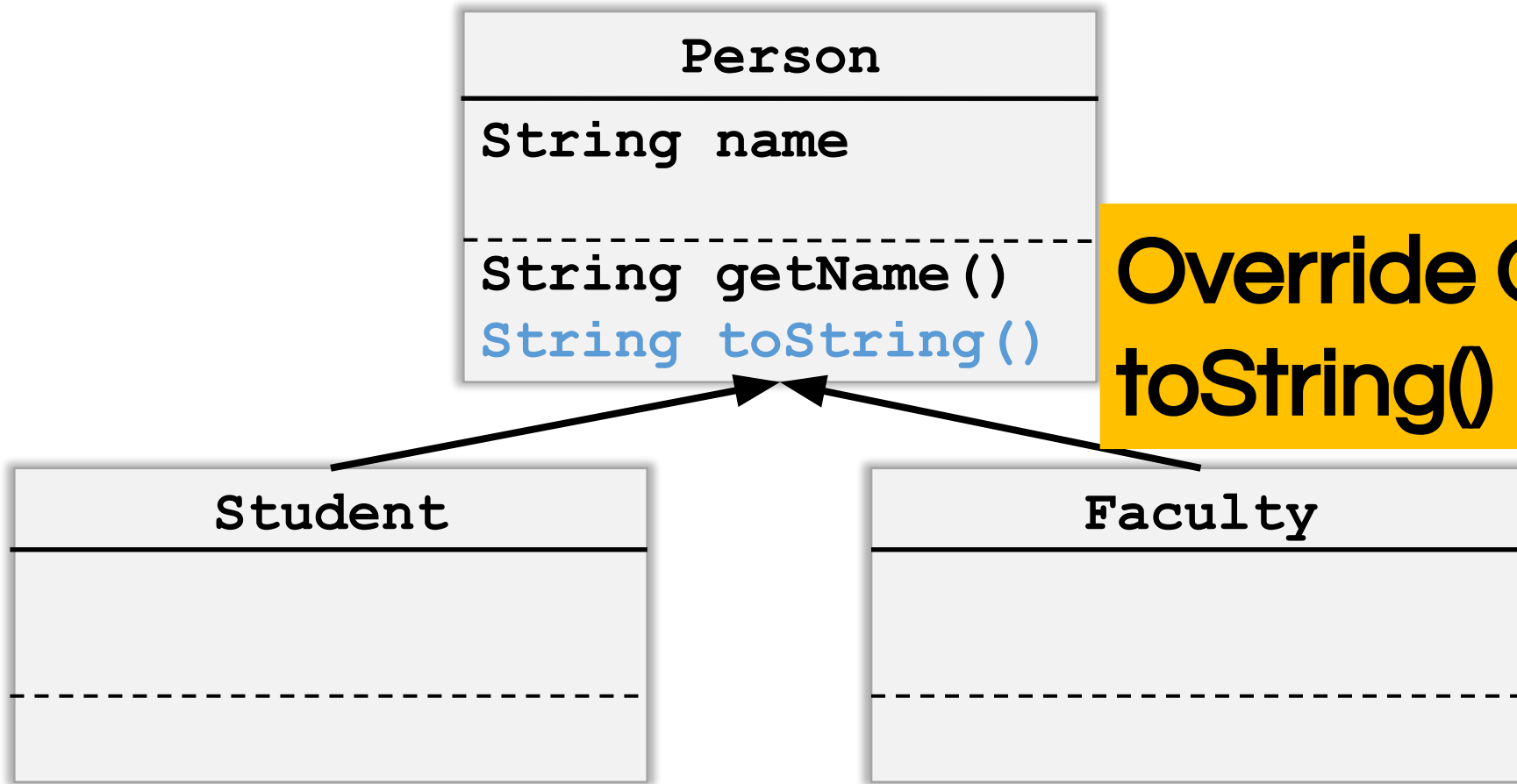
Overloading vs. Overriding

- **Overloading:** **Same class** has same method name with **different** parameters
- **Overriding:** **Subclass** has same method name with the **same parameters** as the superclass

Object class

Modifier and Type	Method and Description
<u>String</u>	<u>toString()</u> Returns a string representation of the object.





**Override Object's
toString() method**

```
public class Person {  
    private String name;  
  
    public String toString() {  
        return this.getName();  
    }  
}
```



```
// assume ctor  
Person p = new Person("Tim");  
System.out.println( p.toString() );
```



**Calls Person's
toString()**

```
// assume ctor  
Person p = new Person("Tim");  
System.out.println( p.toString() );
```

**.toString() is
unnecessary**



```
// assume ctor  
Person p = new Person("Tim");  
System.out.println( p );
```

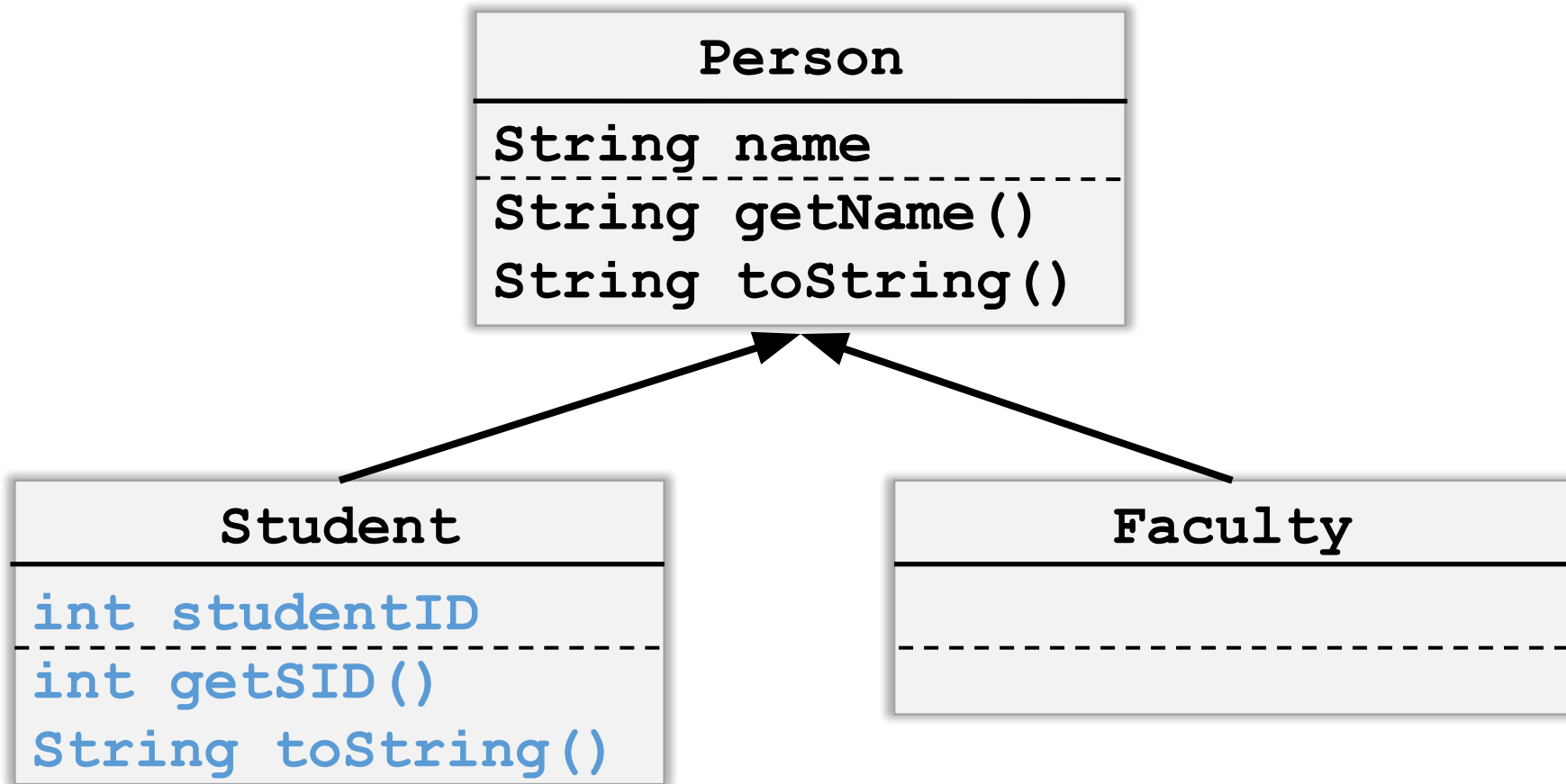


println
Automatically
calls toString()

```
// assume ctor  
Person p = new Person("Tim");  
System.out.println( p );
```

Output

Tim



```
public class Student extends Person {  
    private int studentID;  
  
    public int getSID() {  
        return studentID;  
    }  
  
}
```

```
public class Student extends Person {  
    private int studentID;  
  
    public int getSID() {  
        return studentID;  
    }  
  
}
```

Goal:
SID: Person info

```
public class Student extends Person {  
    private int studentID;  
  
    public int getSID() {  
        return studentID;  
    }  
  
    public String toString() {  
        return this.getSID() + ": " +  
            this.getName();  
    }  
}
```



```
public class Student extends Person {  
    private int studentID;  
  
    public int getSID() {  
        return studentID;  
    }  
  
    public String toString() {  
        return this.getSID() + ": " +  
            this.getName();  
    }  
}
```

**What if Person
changes?**

```
public class Student extends Person {  
    private int studentID;  
  
    public int getSID() {  
        return studentID;  
    }  
  
    public String toString() {  
        return this.getSID() + ": " +  
            super.toString();  
    }  
}
```

**“super” refers to
superclass**

```
// assume ctor  
Student s = new Student("Cara",1234) ;  
System.out.println( s );
```



**Calls Student
toString()**

```
// assume ctor  
Student s = new Student("Cara",1234);  
System.out.println( s );
```

Output

```
1234: Cara
```

```
// assume ctor
```

```
Person s = new Student("Cara",1234);
```

```
System.out.println( s );
```

```
// assume ctor  
Person s = new Student("Cara", 1234);  
System.out.println( s );
```

Output

```
1234: Cara
```

```
// assume ctor  
Person s = new Student("Cara", 1234);  
System.out.println( s );
```

Output

```
1234: Cara
```

Why?
Polymorphism