

Assuming that the following classes have been defined:

```
public class One {
    public void method1() {
        System.out.println("One1");
    }
}

public class Two extends One {
    public void method3() {
        System.out.println("Two3");
    }
}

public class Three extends One {
    public void method2() {
        System.out.println("Three2");
        method1();
    }
}

public class Four extends Three {
    public void method1() {
        System.out.println("Four1");
        super.method1();
    }

    public void method3() {
        System.out.println("Four3");
    }
}
```

And assuming the following variables have been defined:

```
One var1 = new Two();
One var2 = new Three();
One var3 = new Four();
Three var4 = new Four();
Object var5 = new Three();
Object var6 = new One();
```

In the table below, indicate in the right-hand column the output produced by the statement in the left-hand column. If the statement produces more than one line of output, indicate the line breaks with slashes as in "a/b/c" to indicate three lines of output with "a" followed by "b" followed by "c". If the statement causes an error, fill in the right-hand column with either the phrase "compiler error" or "runtime error" to indicate when the error would be detected.

Statement	Output
var1.method1();	_____
var2.method1();	_____
var3.method1();	_____
var4.method1();	_____
var5.method1();	_____
var6.method1();	_____
var4.method2();	_____
var4.method3();	_____
((Two)var1).method2();	_____
((Three)var1).method2();	_____
((Two)var1).method3();	_____
((Four)var2).method1();	_____
((Four)var3).method1();	_____
((Four)var4).method3();	_____
((One)var5).method1();	_____
((Four)var5).method2();	_____
((Three)var5).method2();	_____
((One)var6).method1();	_____
((One)var6).method2();	_____
((Two)var6).method3();	_____

Solution to CSE143X Inheritance Example

1. Inheritance Mystery. The output is as follows.

Statement	Output
var1.method1();	One1
var2.method1();	One1
var3.method1();	Four1/One1
var4.method1();	Four1/One1
var5.method1();	compiler error
var6.method1();	compiler error
var4.method2();	Three2/Four1/One1
var4.method3();	compiler error
((Two)var1).method2();	compiler error
((Three)var1).method2();	runtime error
((Two)var1).method3();	Two3
((Four)var2).method1();	runtime error
((Four)var3).method1();	Four1/One1
((Four)var4).method3();	Four3
((One)var5).method1();	One1
((Four)var5).method2();	runtime error
((Three)var5).method2();	Three2/One1
((One)var6).method1();	One1
((One)var6).method2();	compiler error
((Two)var6).method3();	runtime error