

# CSSE221: Fundamentals of Software Development Honors

## Homework 3 Solutions

### Programming assignment

Finish Ballworlds, as stated in the specification, being sure you have checked in your final, fully documented copy to the repository.

### Written homework to do before week 3 (due before beginning of class next Monday).

As usual, please bring hardcopy for written answers to class to hand in on Monday.

2. Describe the appropriate uses of each of these visibility modifiers: public, protected, and private. (15 Points, 5 Points Each)

#### **SOLUTION:**

Public – any class can see and edit it

Private – access to this is limited to the class where it is declared

Protected – access to this is limited to classes within the same package and inherited classes

3. What is a benefit of creating a class that inherits from another class? (10 Points)

#### **SOLUTION:** Code reuse, abstraction

4. Explain the two meanings of the super keyword. Explain the two meanings of the this keyword. How are they related? (25 Points)

#### **SOLUTION:**

super() – call a constructor of the parent class (can contain parameters for overloaded constructors)

super.method() or super.field – call a method or access a field of the parent class (to avoid calling the one in the current class)

this() – call a different constructor within the class. Allows you to call one constructor from another, used when you have overloaded constructors.

this. – allows you to call a method or access a field in the class that you are currently working from

They are related in that they perform the same operations, but access either the current class or the parent class.

5. If Foo extends Bar, explain the use of each of the following or tell why it is incorrect. (20 Points, 10 Points Each)

a. `Foo f = new Bar();`

**SOLUTION:** Error is thrown because you cannot put an object of type Bar into a label of type Foo because Bar does not have all the necessary members to be of type Foo. Basically, you can't upcast because there is not enough information.

b. `Bar b = new Foo();`

**SOLUTION:** Constructs an object of type Foo and stores it in a label of type Bar

6. Give an original example in which it is appropriate to use polymorphism. Explain why it's appropriate. (30 Points)

Answers will vary

**Reminder that assistants are in Moench F217 during the afternoons and evenings to help you.**