



CSE 215L: Programming language II Lab

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Sec: 05

Lab - 09 [Classes And Objects], Summer-2020

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Objective:

- To demonstrate how to define classes and objects
- To access objects via object reference variables
- To access an object's data and methods using the object member access operator (.)
- To define private data fields with appropriate getter and setter methods

A UML class diagram is a picture of

- the classes in an OO system
- their fields and methods
- connections between the classes that interact or inherit from each other

Rectangle
- width : int - length : int
+ Rectangle (w : int, l : int) + getArea (r : Rectangle) : double

Student
- name: String - id: int - <u>totalStudents: int</u>
getID(): int ~ getEmail(): String

visibility

+ public

protected

- private

~ package (default)

• underline static methods

• omit return_type on constructors and when return type is void

Task: Implement the following class and test its methods

Box
- width : double - height : double - depth : double
+ Box() + Box(len : double) + Box(width : double, height : double, depth : double) + Box(Box box) + getWidth() : double + getHeight() : double + getDepth() : double + setWidth(width : double) : void + setHeight(height : double) : void + setDepth(depth : double) : void + setDim(width : double, height : double, depth : double) : void + equalTo(Box o) : boolean + volume() : double + toString() : String

Now create a Test Driver for the Box class and test all its methods.

```
// Returns a String description of Box instance
public String toString() {
    return "Box[width=" + width + ",height=" + height + ",depth=" + depth + "];"
}
```

In your TestBox class, you can get a description of a Box instance via:

```
Box box1 = new Box();
```

```
// Test constructors and toString()
```

```
System.out.println(box1.toString()); // Explicitly calling toString()
```

```
System.out.println(box1);           // Implicit call to box1.toString()
```

```
// Test → volume(), equalTo(), setDim() and toString() methods
```