

CST8110 - Introduction to Programming

Lab Exercise #3 - Classes

DUE: This lab must be completed and demonstrated no later than June 15th

Write a program that uses methods in a class in Java

1. Write a class called **Box** that **must consist only** of:
 - o Three instance variables - length, width and height (each of type **double**)
 - o One instance variables - input (type **Scanner**) initialized to **System.in**
 - o Default constructor (no-arg) - initialize all three instance variables to 1
 - o Initial constructor - initialize all three instance variables
 - o Copy constructor - copy Box
 - o **inputWidth**, **inputLength**, and **inputHeight** methods that set the instance variables based on user input have not parameters and do not return a value.
 - o a **displayDimensions** method that displays the length X Width X height (separated by "X") and does not return a value.
 - o a **calcVolume** method that has no parameters and calculates the volume of the box
2. Use the supplied test application **BoxTest**. The output **must** be the same as below (other than the colours):

Sample program output: (user input is in red, program display in blue)

```
Default dimensions are 1.0 X 1.0 X 1.0 with volume of 1.0
Initial dimensions are 8.5 X 11.0 X 1.0 with volume of 93.5
Copied dimensions are 8.5 X 11.0 X 1.0 with volume of 93.5
```

Update dimensions

```
Enter length: 1
Enter width: 2
Enter height: 3
Updated dimensions are 1.0 X 2.0 X 3.0 with volume of 6.0
```

Another sample program output

```
Default dimensions are 1.0 X 1.0 X 1.0 with volume of 1.0
Initial dimensions are 8.5 X 11.0 X 1.0 with volume of 93.5
Copied dimensions are 8.5 X 11.0 X 1.0 with volume of 93.5
```

Update dimensions

```
Enter length: 0.5
Enter width: 0.5
Enter height: 0.5
Updated dimensions are 0.5 X 0.5 X 0.5 with volume of 0.125
```