

Northeastern Illinois University
CS303A, Object-Oriented Programming and Data Structures
Homework 2

Problem 1:

Complete the Clothing class, the class should have the following instance variables, constructor(s) and instance methods:

- An instance variable of type double named price.
- An instance variable of type String named type.
- An instance variable of type String named size.
- A default “no-arg” constructor that sets the price to 29.9, the type to “T-Shirt” and the size to “Medium”.
- An overloaded constructor that takes three parameters and set the instance variables accordingly.
- A method named increasePrice that takes no parameters and returns no value, the method increases the instance variable price by 5.
- An overloaded method increasePrice that takes a double parameter x and returns no value, the method increases the instance variable price by the value of parameter x.
- A method named details which takes no parameters, returns no value, the method prints the Clothing item details in the format shown in the sample output.
- **Your output should look exactly the same as follows:**

Item: T-Shirt
Size: Medium
Price: \$29.9

Item: T-Shirt
Size: Medium
Price: \$34.9

Item: T-Shirt
Size: Medium
Price: \$41.9

Item: Jeans
Size: Small
Price: \$31.2

Item: Jeans
Size: Small
Price: \$41.2

Item: Jeans
Size: Small
Price: \$45.2

Problem 2:

Point
- x: int - y: int
+ Point() + Point(xVal: int, yVal: int) + getX(): int + getY(): int + setpoint(newX: int, newY: int): void + toString(): String + distance(Point pnt): double

Given the UML diagram above, complete the Point class that models a point on a Cartesian plane, the class should have the following instance variables, constructor(s) and instance methods:

- Two private integer instance variables, x and y.
- A “no-arg” constructor that creates a point with the coordinates (0, 0).
- An overloaded constructor that takes two integer parameters xVal and yVal and set the instance variables accordingly.
- A getter method for each instance variable.
- A method named setPoint that takes two integer parameters newX and newY and set the instance variables accordingly.
- A method named toString which takes no parameters, and returns a string with the coordinates of the point within parentheses and comma separated, for example: (2, 5)
- A method named distance which takes one class parameter of type Point, the method returns the distance (a double value) from the (x, y)-

location of the Point object that calls the method to the (x, y)-location of the Point object passed in.

The distance between two point is calculated by the formula:

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Hints:

Use `Math.pow(n, 2)` to raise a number to a power.

Use `Math.sqrt(number)` to find the square root of a number.

- **Your output should look exactly the same as follows:**

```
The distance from (0, 0) to (3, 4) is: 5.0
```

```
P1 new coordinates are:
```

```
x = 1
```

```
y = 4
```

```
P2 new coordinates are:
```

```
x = 2
```

```
y = 3
```

```
The distance from (1, 4) to (2, 3) is: 1.4142135623730951
```

What to turn in:

There should be 2 **.java** files(Clothing.java and Point.java)put all those files into a zip file and name it <YourFirstName_YourLastName>.zip, submit the zip file into the Dropbox on D2L.

How to zip multiple files?

On Windows: Select all the files > right click > Send to > Compressed File

On Mac: Select all the files > Click/Tap with two fingers > Compress Items