

COP 3330: Object-Oriented Programming Summer 2011

WindChill Practice Problem (from Classes In Java – Part 1)

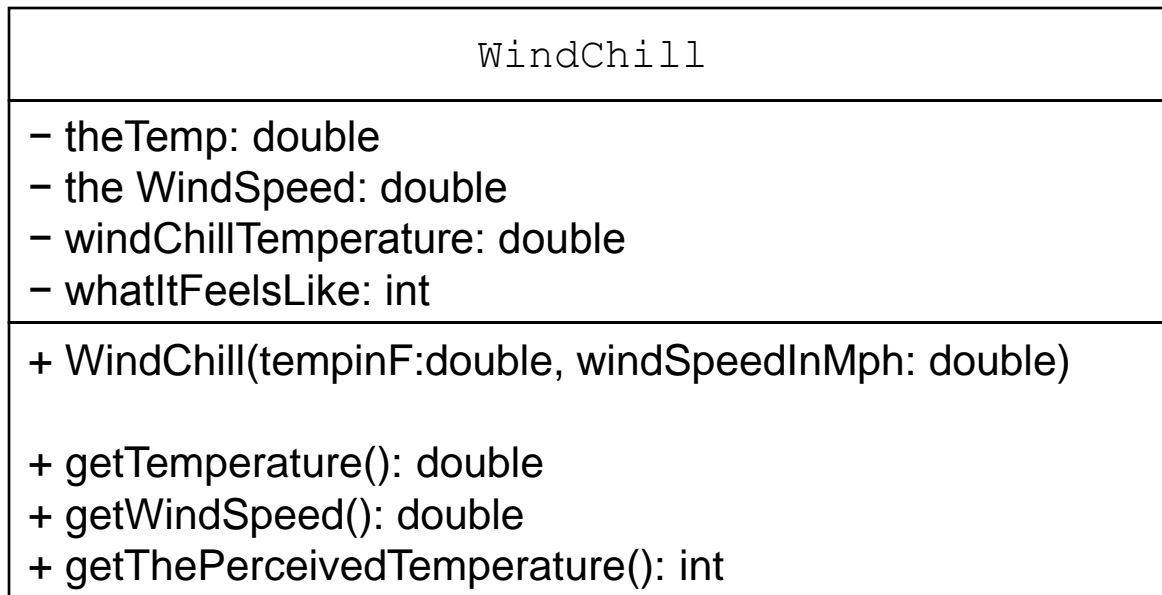
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WindChill Practice Problems

- The WindChill class was already constructed for you. What you were supposed to do was develop a class to use the WindChill class, i.e. a driver class. The UML diagram below is all the information you need in order to be able to use this class. Although you don't need to know how this class is implemented, I've included its code on the next page.



```
public class WindChill {  
  
    private double theTemp;  
    private double theWindSpeed;  
    private double windChillTemperature;  
    private int whatItFeelsLike;  
  
    public WindChill(double tempInF, double windSpeedInMph) {  
        theTemp = tempInF;  
        theWindSpeed = windSpeedInMph;  
    } //end constructor  
  
    public double getTemperature() {  
        return theTemp;  
    } //end getTemperature method  
  
    public double getWindSpeed() {  
        return theWindSpeed;  
    } //end getWindSpeed method  
  
    public int getThePerceivedTemperature() {  
        windChillTemperature = 0.081 * (this.theTemp - 91.4) *  
            (3.71 * Math.sqrt(this.theWindSpeed) + 5.81 - 0.25 *  
                this.theWindSpeed) + 91.4;  
        whatItFeelsLike = (int)windChillTemperature;  
        return whatItFeelsLike;  
    } //end getThePerceivedTemperature method  
  
} //end class WindChill
```

All variables are private instance variables

Every method is a public instance method



WindChill Practice Problems

- Now comes your problem...how to use the WindChill class.
- Step 1: To create a WindChill object to let you know how cold it actually feels, you need to pass the constructor two pieces of information, the current temperature in degrees Fahrenheit and the current wind speed in miles per hour. Your first task would be to get these two values from the user.
- Step 2: Create the WindChill object by invoking the constructor and passing these two pieces of information to it.
- Step 3: Once the WindChill object is created, have it invoke its `getThePerceivedTemperature()` method and print out this result.
- Step 4: You're Done!



```
// class to test the WindChill Class
// MJL June 2011
// this version creates a "dummy object" first, then attempts to reset the
// the attribute values based on the user input
//NOTE - this class contains errors!!!
import java.util.Scanner;

public class UseWindChill2 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        WindChill conditions = new WindChill(0, 0);
        System.out.print("Enter temperature in degrees Fahrenheit: ");
        conditions.theTemp = input.nextDouble();
        System.out.print("Enter the wind speed in mph (double): ");
        conditions.theWindSpeed = input.nextDouble();

        System.out.println("\nThe perceived temperature at " + conditions.theTemp +
            " degrees F \nwith a wind speed of " + conditions.theWindSpeed + " mph is: "
            + conditions.getThePerceivedTemperature() + " degrees F" );
    }
}
```

Why are these errors?

Because these attributes are private and we are not inside the class where they are declared private. Thus, they are not visible from this class.



The UseWindChill class

Correct Version

```

// class to test the WindChill Class
// MJL June 2011
import java.util.Scanner;

public class UseWindChill {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter temperature in degrees Farenheit (double): ");
        double temp = input.nextDouble();
        System.out.print("Enter the wind speed in mph (double): ");
        double wind = input.nextDouble();
        WindChill conditions = new WindChill(temp, wind);
        System.out.println("\nThe perceived temperature at " + conditions.getTemperature() +
            " degrees F \nwith a wind speed of " + conditions.getWindSpeed() + " mph is: "
            + conditions.getThePerceivedTemperature() + " degrees F" );
    }
}

```

Get the necessary values from the user

Create a WindChill object with these attributes

Invoke the methods to get the attribute values and calculate the perceived temperature



