CS161: Introduction to Computer Science Homework Assignment 5

Due: 2/22 by 11:59pm

Pair of Dice	

In this week's assignment, you will write a class whose instance variables themselves have class type. In particular, this assignment asks you to write a Java class called PairOfDice that represents a pair of dice.

You can use the Die class that we discussed in class to implement PairOfDice.

While I encourage you to write a separate class with a main method to test your PairOfDice class, it is not required for this assignment.

— Programming Questions ———

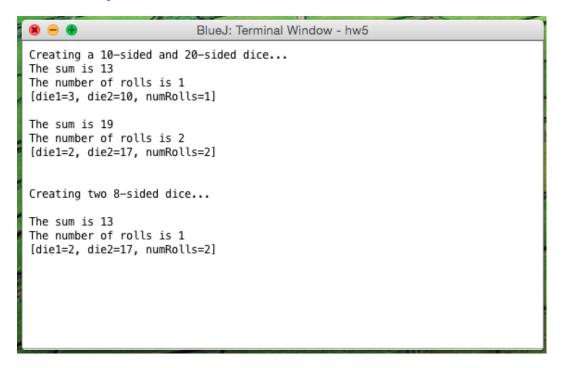
Open BlueJ and create a new project named hw5.

- 1. Create a new Java class named Die. This class should represent a single die. I recommend you use the code posted on the course webpage for the date 2/8.
 - The only difference between your \mathtt{Die} class and the one on the course webpage is that your \mathtt{Die} class should represent a dice with n sides. That is, your \mathtt{Die} class should be more general than the one discussed in class. Modify the constructor to take a single \mathtt{int} parameter representing the number of sides of the die. You will also need to modify the instance variables.
- 2. Once you've finished the Die class, create a new Java class named PairOfDice. This class should represent a pair of dice! Your class should have the following methods,
 - A constructor that takes no parameter. This constructor should create two 6-sided dice.
 - A constructor that takes a single int parameter representing the number of sides for both dice.
 - A constructor that takes two int parameters representing the number of sides for both dice respectively. In this case, the dice can have a different number of sides.
 - The class isn't much good unless we can roll our pair of dice, so we'll need a roll method that rolls them both and returns the sum of both dice.
 - You should add an accessor method called getNumRolls that returns the number of times we've rolled the dice.
 - Add a toString method that builds and returns a string representing the state of the object. Your string should display the face values for both dice along with the number of times the dice have been rolled.
- 3. Finally, comment your code appropriately. A block comment should be placed before the class with your name and a description of the class. Place block comments before each of the methods in the PairOfDice class. Use inline comments (//) for any code you think needs additional explanation.

Below is an example of how you might use your PairOfDice class:

```
public static void main(String[] args){
    // Create a 10-sided die and a 20-sided die
   System.out.println("Creating a 10-sided and 20-sided dice...");
   PairOfDice pair = new PairOfDice(10, 20);
   // Roll the pair of dice
    int sum = pair.roll();
    int rolls = pair.getNumRolls();
   System.out.println("The sum is " + sum);
   System.out.println("The number of rolls is " + rolls);
   System.out.println(pair);
   // Roll them again
   sum = pair.roll();
   rolls = pair.getNumRolls();
   System.out.println("\nThe sum is " + sum);
   System.out.println("The number of rolls is " + rolls);
   System.out.println(pair);
   // Create two 8-sided die
   System.out.println("\n\nCreating two 8-sided dice...");
   PairOfDice pair2 = new PairOfDice(8);
    sum = pair2.roll();
   rolls = pair2.getNumRolls();
   System.out.println("\nThe sum is " + sum);
   System.out.println("The number of rolls is " + rolls);
   System.out.println(pair);
}
```

Here is what would be printed to the screen:



Submitting your lab assignment

Submit your hw5 folder with your Die and PairOfDice class inside. If you wrote a third class with a main method to test your PairOfDice class, feel free to include that as well.

Don't forget to rename your folder before zipping it and submitting it to Moodle.