1. Program 5 Instructions, CS101, Prof. Loftin

Implement the `Diamond` class. The `Diamond` class should contain the following methods:

```
Diamond(int n)   // Constructor, for a Diamond object of side-length n
void printOut()  // Prints the Diamond shape to the screen
```

Your program must work with the following driver file:

```
import java.util.Scanner;
public class DiamondDriver{
  public static void main(String[] args){
    Scanner scan = new Scanner(System.in);
    int sides;
    System.out.print("How many sides? ");
    sides = scan.nextInt();
    Diamond d = new Diamond(sides);
    d.printOut();
  }
}
```

2. Program requirements

Turn in your Diamond class code named `Diamond.java` to Blackboard. Your file must work with the `DiamondDriver.java` driver file above. Only turn in your `Diamond.java` file, not the `DiamondDriver.java` file. You may not change the file `DiamondDriver.java` to get your program to work (all your work must be done in your `Diamond.java` file).

3. Compiling and running your program

Make an exact copy of the `DiamondDriver.java` file above and put it in a directory in your `pegasus` account. In the same directory, write your file `Diamond.java`. To compile, type `javac DiamondDriver.java` at the `pegasus` prompt. Then to run your program, type
`java DiamondDriver`

4. How to do it

Your `Diamond` class should have a `private int` variable storing the number of sides. As mentioned above, your `Diamond` class's interface must include `public` methods listed above as well. You should use loops to implement the output.

5. Sample output

If the user enters 6 for the length of the side, the output should be

```
     *
    ***
   *****
  *******
 *********
***********
 *********
  *******
   *****
    ***
     *
```

6. Extra Credit

Add a `toString` method to your Diamond class. This method should return a `String` object which can then be printed to the screen using the standard `print` or `println` methods. More specifically, your `toString` method should be of the form

```
String toString()  //returns a string rep of the output of the Diamond
```

Your Diamond class should work with the modified driver file

```
import java.util.Scanner;
public class DiamondDriver{
  public static void main(String[] args){
    Scanner scan = new Scanner(System.in);
    int sides;
    System.out.print("How many sides? ");
    sides = scan.nextInt();
    Diamond d = new Diamond(sides);
    d.printOut();
    System.out.print(d);
  }
}
```

(In this case, the output of the `DiamondDriver` program will consist of two Diamonds, one after the other.)

To apply for the extra credit, still just upload your file `Diamond.java` to Blackboard. (Do not hand in two separate files, one for extra credit and one without.)