Homework assignment 09

Complete the following programs for this week's homework.

Programming assignments

Triangle class(40 poinsts)

Given the class GeometricObject below, write a subclass Triangle with the following properties:

- Three doubles - side1, side2, and side3 with default values of 1.0 for the lengths of the sides
- A no-arg constructor that creates a default triangle
- A constructor that takes in 3 doubles for sides to create a triangle. **Note:** In triangles, the sum of any 2 sides is greater than the other side. the constructor should check to make sure that is the case and **throw an IllegalArgumentException** if you try to make a triangle that doesn't follow the rule.
- Getters for all 3 sides
- A `getArea()` method that returns the area of the triangle
- A `getPerimeter()` method that returns the perimeter
- A `toString()` method that returns a string description of the triangle like : "Triangle: side 1 = 1.0, side 2 = 1.0, side 3 = 1.0"

Then write a test program that creates an ArrayList of 5 triangle objects. Set each of the following properties to **something other than the default**:

- three sides of the triangle
- the color
- the Boolean value to indicate whether the triangle is filled

You can enter these by hand, no need to ask the user. Wrap them in a try-catch block and make sure that the constructor exception is handled and tells the user if the rule is broken.

The program should then loop through the ArrayList and print out the sides, color and whether each Triangle is filled

```
public class GeometricObject {
    private String color = "white";
    private boolean filled;
```

```java
    private java.util.Date dateCreated;

    /** Construct a default geometric object */
    public GeometricObject(){
        dateCreated = new java.util.Date();
    }

    /** Construct a geometric object with the specified color
     *  and filled value */
    public GeometricObject(String color, boolean filled){
        dateCreated = new java.util.Date();
        this.color = color;
        this.filled = filled;
    }

    /** Return color */
    public String getColor(){
        return color;
    }

    /** Set color */
    public void setColor(String color) {
        this.color = color;
    }

    /** Return filled. Since filled is boolean,
   its getter method is named isFilled */
    public boolean isFilled() {
        return filled;
    }

    /** Set a new filled */
    public void setFilled(boolean filled) {
        this.filled = filled;
    }

    /** Get dateCreated */
    public java.util.Date getDateCreated() {
        return dateCreated;
    }
```
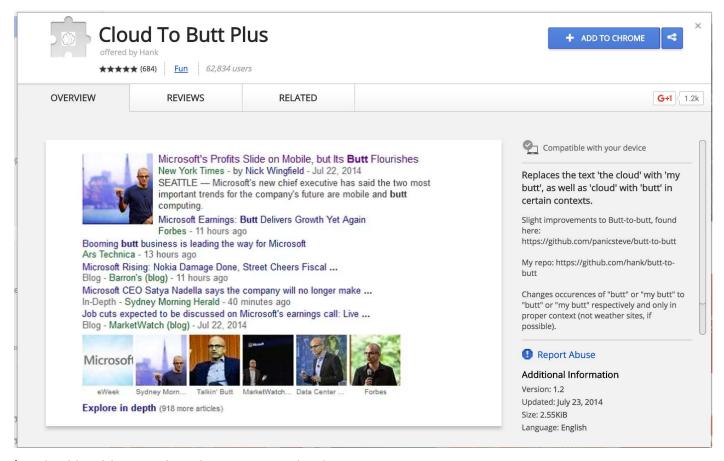
```
    /** Return a string representation of this object */
    public String toString() {
        return "created on " + dateCreated + "\ncolor: " + color +
                " and filled: " + filled;
    }
}
```

Create a new class and copy that in.

Out of Bounds! (20 points)

Write a program that:

- Creates an array of 100 randomly assigned integers (between 0-9)
- Asks the user for an index, then, in a method:
  - If the index is valid, display the value of the index to the user
  - If the index is invalid, throw an ArrayIndexOutOfBoundsException and tell the user what happened.

Cloud to Butt (40 points)

Inspired by this amazing chrome extension here:

(https://chrome.google.com/webstore/detail/cloud-to-butt-plus/apmlngnhgbnjpajelfkmabhkfapgnoai?hl=en)

that replaces occurrence of the words 'the cloud' with 'my butt' and 'cloud' with 'butt', write a program that reads in each line of text from this link: http://cs.nyu.edu/courses/spring16/CSCI-UA.0101-008/assignments/text/cloud_article.txt

and replace every occurrence 'cloud' with 'butt' (or any other word you'd like)

Write each line back out to a text file named butt_article.txt (or whatever word you choose)

Remember that comments and good naming conventions factor into your grade! Don't forget.