Introduction to Java

CS9053 Section I2

Thursday 6 PM – 8:30 PM

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Due: March 11, 2021 11:55 PM

Part I: Exceptions

1. Take the following code, ListOfNumbers.java:

import java.io.\*;

import java.util.List;

import java.util.ArrayList;

public class ListOfNumbers {

    private List<Integer> list;

    private static final int SIZE = 10;

    public ListOfNumbers () {

        list = new ArrayList<Integer>(SIZE);

        for (int i = 0; i < SIZE; i++)

            list.add(new Integer(i));

    }

    public void writeList() {

        PrintWriter out = null;

        try {

            System.out.println("Entering try statement");

            out = new PrintWriter(new FileWriter("outFile.txt"));

            for (int i = 0; i < SIZE; i++)

                out.println("Value at: " + i + " = " + list.get(i));

        } catch (IndexOutOfBoundsException e) {

            System.err.println("Caught IndexOutOfBoundsException: " +

                                 e.getMessage());

        } catch (IOException e) {

            System.err.println("Caught IOException: " + e.getMessage());

        } finally {

            if (out != null) {

                System.out.println("Closing PrintWriter");

                out.close();

            } else {

                System.out.println("PrintWriter not open");

            }

        }

    }

}

Add a readList method to ListOfNumbers.java. This method should read in int values from a file, print each value, and append them to the end of the ArrayList called list. You should catch all appropriate errors. You will read from the text file numberfile.txt.

The writeList method writes out the contents of the ArrayList to outFile.txt.

Modify the following cat method so that it will compile.

public static void cat(String fileName) {

RandomAccessFile input = null;

String line = null;

try {

input = new RandomAccessFile(file, "r");

while ((line = input.readLine()) != null) {

System.out.println(line);

}

return;

} finally {

if (input != null) {

input.close();

}

}

}

Read about the RandomAccessFile class here: https://docs.oracle.com/javase/8/docs/api/java/io/RandomAccessFile.html

1. In the class ReadShapeFile, there is a file called shapes.txt. I’ve opened it on line 21. This has a list of shapes. You’re going to read each line for each shape and call createShape, which will create one of the available shapes, Circle, Rectangle, or Square and returns a GeometricObject, which you will add to the ArrayList called shapeList.

The file has some unavailable shapes. If the shape is unavailable, createShape should throw a ShapeException. You should catch a ShapeException and continue reading the file.

By the end, the side of shapeList should be 20.

Summary:

* Create a ShapeException class
* Implement createShape to return the appropriate shape depending on the string shapeName
* createShape should throw a ShapeException if it is not a Circle, Square, or Rectangle
* A loop should read in the shapes.txt file line-by-line
* If the file cannot be read, you should break out of the loop
* If you get a ShapeException, you should continue reading the file