Exercise 11

Assignment 1 – Single exceptions

a) In this task, you are going to trigger a runtime exception by writing a simple program that is dividing a number by 0.
For example int x = 5/0;
Observe first what is happening when you run the program.
Your first task is to handle the exception yourself by using try-catch and catch the exception as a general exception (hint: Exception e).

b) Change the try catch from handling a general Exception to the ArithmeticException. Add a code fragment that divides a number by 0 **inside the catch block** and see what happens.

Assignment 2 – Multiple exceptions

a) Use the following code provided below. Try the following values and study which exceptions are caught: 0, 4, character, no value
What can you observe?

```
import javax.swing.*;

public class MultipleException {

    public static void main(String[] args) {

        // Enter the following values and see what exception is caught.
        //    0, 4, character, <no value>
        try {

            String value = JOptionPane.showInputDialog(null, "Enter value:");

            // Non-numerica value will result an NumberFormatException
            int divisor = Integer.parseInt(value);

            // If the divisor is 0, it will result in ArithmetricException
            System.out.println(3/divisor);

        } catch (NumberFormatException nfe){
            System.out.println("Exception caught by this program: Enter numeric
value.");
        } catch (ArithmeticException exc) {
            System.out.println("Exception caught by this program: Divisor was 0.");
        }
        System.out.println("After exception.");
    }

}
```

b) Extend the code below with a try-catch block that catches when the index of the list is out of bound (ArrayIndexOutOfBoundsException). Note: Exception is triggered with the +1 in for (int i = 0; i < (SIZE + 1) ; i++). Where you should add your code is marked with //TODO.

c) Add a finally block to the code below. The finally block should close the print writer out if not null and print put a message that it was done. If null it should print a

message that there is no print writer object. Where you should add your code is marked with //TODO

```
import java.io.*;
import java.util.Vector;

public class ListOfNumbers {
    private Vector v;
    private static final int SIZE = 10;

    public ListOfNumbers() {
        v = new Vector(SIZE);
        for (int i = 0; i < SIZE; i++)
            v.addElement(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 + 1) ; i++)
                System.out.println("Value at: " + i + " = " + v.elementAt(i));

        }
            //TODO: Catch ArrayIndexOutOfBoundsException here!
         catch (IOException e) {
            System.out.println("Caught IOException: " + e.getMessage());
        }
         //TODO: Add finally here that closes the print writer if not null or
doesn't do anything if not print writer is open!

        }
    }
```

d) Test your solution with the following code:

```
public class TestListOfNumbers {
    public static void main(String[] args) {
        ListOfNumbers list = new ListOfNumbers();
        list.writeList();
    }
}
```