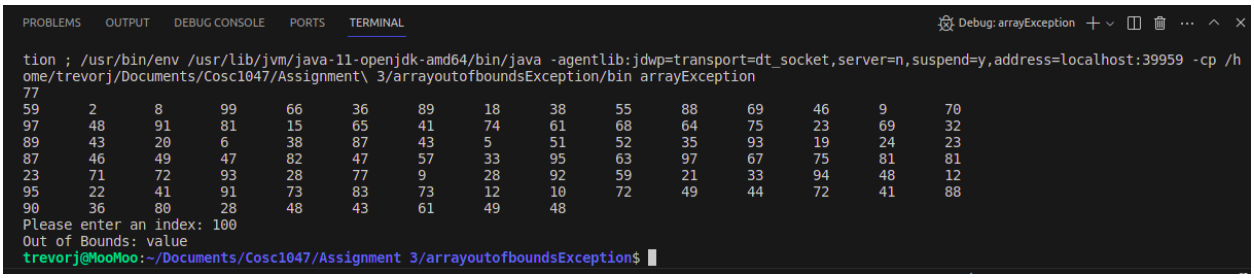
***12.3** (*ArrayIndexOutOfBoundsException*) Write a program that meets the following requirements:

- Creates an array with 100 randomly chosen integers.
- Prompts the user to enter the index of the array, then displays the corresponding element value. If the specified index is out of bounds, display the message "Out of Bounds".

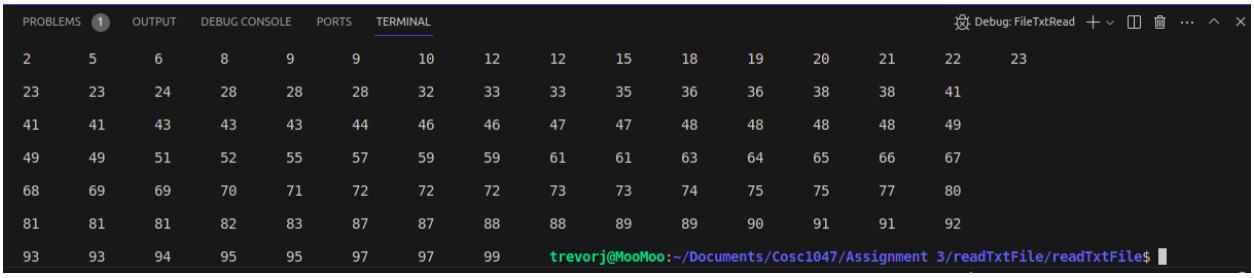



```
import java.util.Scanner;

public class arrayException {

    public static int [] array;
    public static void main(String[] args) throws Exception {
        Scanner input = new Scanner(System.in);
        arrayCreation(); printArray();
        try {
            arrayAccess(input);
        }
        catch (IndexOutOfBoundsException e) {
            throw new Exception("Out of Bounds: value ");
        }
        catch (Exception e) {
            System.out.println("Exception: "+e.getMessage());
        }
```

```
}

public static void arrayCreation() {
   array= new int [100]; int temp;

   for(int i=0; i<100; i++) {
      temp = (int)(Math.random()*100)+1;
      array[i]=temp;
   }
}

public static void printArray() {
   for(int i=0; i<100; i++) {
      System.out.print(array[i]+"\t");
      if(i%15==0) System.out.println( );
   }
}

public static void arrayAccess(Scanner in)  {
   int index=0;
   try{
      System.out.print("\nPlease enter an index: ");
      index = in.nextInt();
      if( index < 0 || index > 99) {
         throw new IndexOutOfBoundsException("Out of Bounds: value "+ index);
      }
   }
   catch (IndexOutOfBoundsException ex) {
      System.out.println("Out of Bounds: value ");
   }
```

```
        finally {
            //System.out.println("The index you chose is "+index + " and the value is
"+array[index]);
        }
    }
}
```

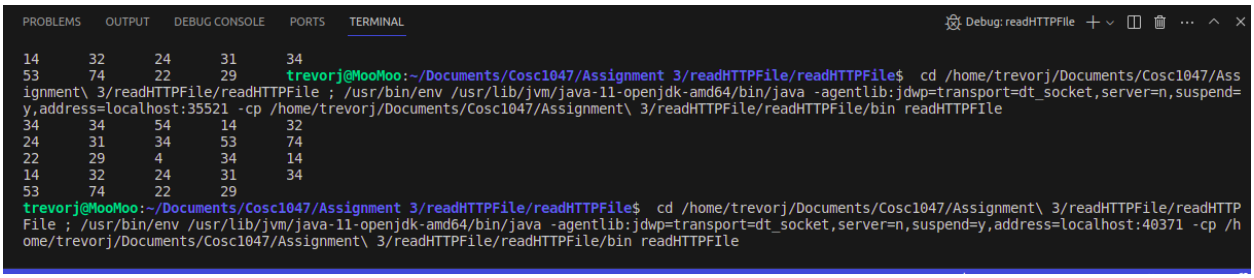
***12.15** (*Write/read data*) Write a program to create a file named **Exercise12_15.txt** if it does not exist. Write 100 integers created randomly into the file using text I/O. Integers are separated by spaces in the file. Read the data back from the file and display the data in increasing order.




```
import java.io.FileReader;
import java.util.ArrayList;
import java.util.Scanner;
import java.util.Collections;

public class FileTxtRead {
    public static void main(String[] args) throws Exception {
        Scanner input  = new Scanner(new
FileReader("/home/trevorj/Documents/Cosc1047/Assignment
3/readTxtFile/readTxtFile/src/list.txt"));
        ArrayList<Integer> l = readFile(input);
        Collections.sort(l);
```

```
        printList(l);

    }

    public static ArrayList<Integer> readFile(Scanner in){
        ArrayList<Integer> list = new ArrayList<Integer>();
        int i = 0;
        while( in.hasNext()){
            list.add(in.nextInt());
            i++;
        }
        return list;
    }

    public static void printList(ArrayList<Integer> list){
        for(int i = 0; i < list.size(); i++){
            System.out.print(list.get(i)+"\t");
            if(i % 15 == 0 && i != 0)
                System.out.println("\n");
        }
    }
}
```

**12.23 (*Process scores in a text file on the Web*) Suppose the text file on the Web http://liveexample.pearsoncmg.com/data/Scores.txt contains an unspecified number of scores separated by spaces. Write a program that reads the scores from the file and displays their total and average.




```
import java.util.ArrayList;

import java.util.Scanner;

import java.net.*;

import java.io.*;


public class readHTTPFIle {


    public static ArrayList<Integer> listFinal,listFinal2;

    public static void main(String[] args) throws Exception {

        URL url = new URL("http://liveexample.pearsoncmg.com/data/Scores.txt");

        BufferedReader input = new BufferedReader(  new
InputStreamReader(url.openStream()));

        Scanner inputScn  = new Scanner(url.openStream());


        listFinal = new ArrayList<Integer>();        listFinal2 = new
ArrayList<Integer>();


        readFile(input);        alternateReadFile(inputScn);


        printList(); printList2();

        input.close(); inputScn.close();


    }


    public static void alternateReadFile(Scanner input){
```

```
    while(input.hasNext()){
        listFinal2.add( input.nextInt());
    }
}

public static void readFile(BufferedReader in){

    try {
        String s;
        do{
            s= in.readLine();
            if(s != null)
                processLine(s);

        }while( s != null);

    }
    catch (IOException e) {
        e.printStackTrace();
    }
}

public static void processLine(String s){
    String [] tokens = s.split(" ");

    for(int i = 0; i < tokens.length; i++){
        listFinal.add(Integer.parseInt(tokens[i]));
    }
}
```

```
    public static void printList(){
        System.out.println( "Buffered read output");
        int total= 0; double average =0;
        for(int i = 0; i < listFinal.size(); i++){
            System.out.print(listFinal.get(i)+"\t");
            total += listFinal.get(i);

            if((i+1)%5 == 0)
                System.out.println( );
        }
        average = total/listFinal.size();
        System.out.println( );
        System.out.println( "Total: "+total+"\tAverage: "+average);
    }

    public static void printList2(){
        System.out.println( "Scanner read output");
        int total= 0; double average =0;
        for(int i = 0; i < listFinal2.size(); i++){
            System.out.print(listFinal2.get(i)+"\t");
            total += listFinal2.get(i);
            if((i+1)%5 == 0)
                System.out.println( );
        }
        average = total/listFinal2.size();
        System.out.println( "\nTotal: "+total+"\tAverage: "+average);
        System.out.println( );
    }
}
```