Design

The purpose of this program is to find the maximum area of file given numbers.

The issues faced were finding a simple algorithm that would work for this purpose. While finding the maximum area is easy, iterating through was a bit confusing.

No UML was specified for this assignment.

To read input from a file:

* If file not available, it should throw an exception
* Add each integer in file to arraylist.

Find the max area

* Make sure the arraylist is not empty and has more than one number so an area can be compared.
* Send arraylist to max area function.
* Calculate max area by iterating through the arraylist and calculating the largest areas.
* Print out max area

*/\*\*  
 \* This program retrieves integers from a .txt file and finds  
 \* the maximum area if they were to form a container  
 \* CPSC 224-02, Spring 2018  
 \* Programming Assignment #3  
 \*  
 \** ***@author*** *Danielle Forrest  
 \** ***@version*** *v1.0 2/7/18  
 \*/***import** java.io.File;  
**import** java.io.FileNotFoundException;  
**import** java.util.ArrayList;  
**import** java.util.Scanner;  
  
**public class** Container {  
 */\*\*  
 \* computes returns the maximum area of containers formed by two lines  
 \** ***@param contArr*** *an arraylist of integers from txt file  
 \** ***@return*** *returns the maximum area of containers formed by two lines  
 \*/* **public static int** maxContainer(ArrayList<Integer> contArr){  
 **int** maxArea = 0;  
 **int** i = 0;  
 **int** j = contArr.size() - 1;  
  
 **while** (i < j) {  
 maxArea = Math.*max*(maxArea, (j - i) \* Math.*min*(contArr.get(i), contArr.get(j)));  
 **if** (contArr.get(i) < contArr.get(j))  
 i++;  
 **else** j--;  
 }  
  
 **return** maxArea;  
 }  
 **public static void** main(String[] args) **throws** FileNotFoundException {  
 ArrayList<Integer> contArr = **new** ArrayList<>();  
 File file = **new** File(**"data.txt"**);  
 Scanner sc = **new** Scanner(file);  
 *//add numbers from file to arraylist* **while** (sc.hasNextInt()) {  
 contArr.add(sc.nextInt());  
 }  
 *//check to see if arraylist has been initialized and has at least two numbers* **if** (contArr == **null** || contArr.size() < 2) {  
 System.***out***.println(**"Error in data file!"**);  
 }**else***//print max area* System.***out***.println(**"The max area is "** + *maxContainer*(contArr));  
 }  
  
  
}

Testing

A screenshot of a cell phone

Description generated with very high confidence

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