

# **GUIDE QUICKSORT PROGRAM**

**BY RAFAL MEISEL**

**Date: 06.06.2017**

## 1. Program description:

Application was created to sort numeric data randomly generated or from file. It was used QuickSort algorithm with Algorithmic complexity  $n(\log(n))$ .

In the code are 2 classes: Main (where is main control of program) and Sorting (where actually sorting is happen) and 1 layout: GUI.fxml.

Main class is :

- connecting logic with layout
- controlling buttons and text fields
- show information about finished tasks
- reading file with data and generating random data.

Sorting class is:

- sorting with algorithm (it is on the end of this guide)
- exchange (swap) the data in array list
- saving results to file

GUI layout consists of:

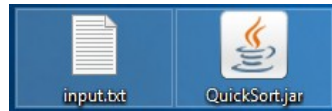
- HBOX and VBOX
- Button control
- Text Fields
- Labels

## 2. Launch program

Application consists of 2 files:

- Input.txt (where are your data)
- QuickSort.jar (executable file)

Before launch application you must be sure that you have these files.

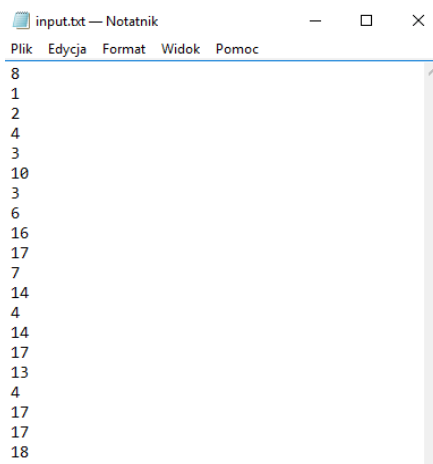


To run application, you need to double-click on QuickSort.jar.  
(Information: in input.txt are already testing data).

After that, you will see main windows of application.

A screenshot of a Java application window titled 'QuickSort'. The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The main content area has a title 'What do you want do:' and two radio buttons. The first radio button is labeled 'Load data from file' and is unselected. The second radio button is labeled 'Give free hand to Artificial Inteligent with your little help' and is selected. Below the radio buttons are three input fields. The first is labeled 'Number of data:' and contains the value '100'. The second is labeled 'From :' and contains the value '0'. The third is labeled 'To:' and contains the value '500'. To the right of each input field is a text label: 'It must be natural number > 0' for the first, 'It must be natural number' for the second, and 'It must be natural number' for the third. Below the input fields is a 'Submit' button.

Example data from input.txt



### 3. Select method to input data:

In program are 2 methods to input data:

- you can modify file "input.txt" by yourself
- you can input parameters and application will generate input data automatically

a) Random generate data

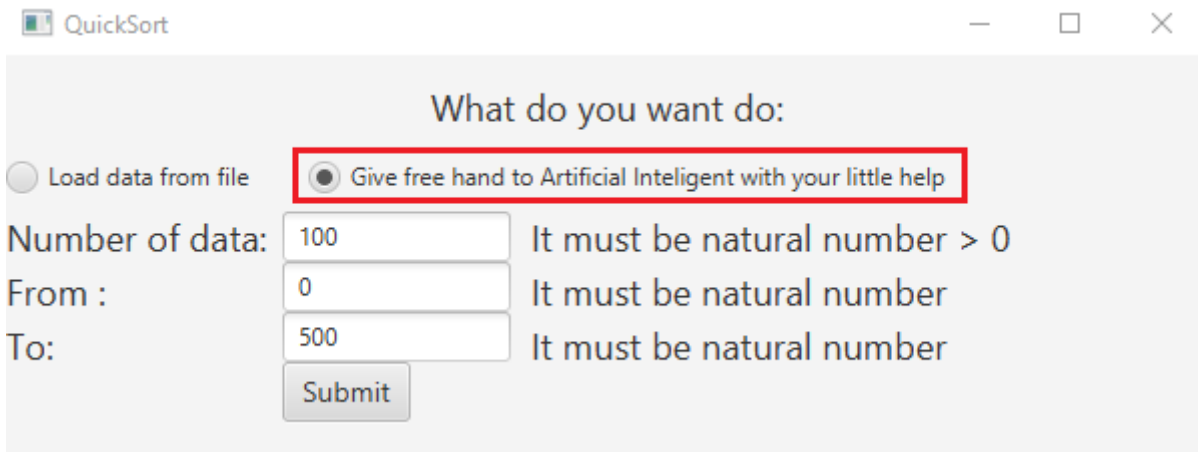
Below is option to generate input data. As parameter you have to give:

Number of data - how many data (numbers) it have to generate

From - lower index of range

To - higher index of range

\*Remember that all values must be natural number!



QuickSort

What do you want do:

☐ Load data from file ☒ Give free hand to Artificial Intelligent with your little help

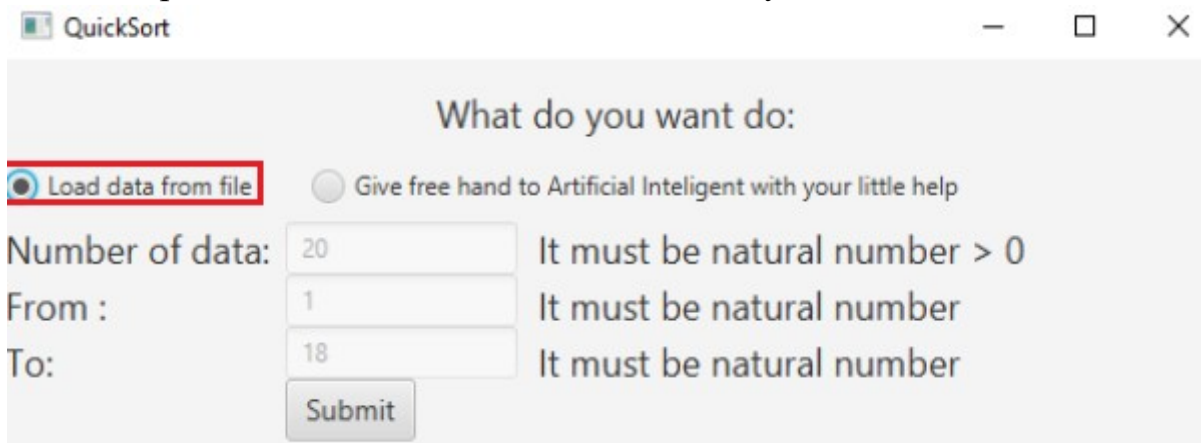
Number of data:  It must be natural number > 0

From :  It must be natural number

To:  It must be natural number

b) Data loaded from file "input.txt"

In second option, application read input file that we prepared earlier. When we choose this option we can see that in all boxes, already are values.



QuickSort

What do you want do:

☒ Load data from file ☐ Give free hand to Artificial Intelligent with your little help

Number of data:  It must be natural number > 0

From :  It must be natural number

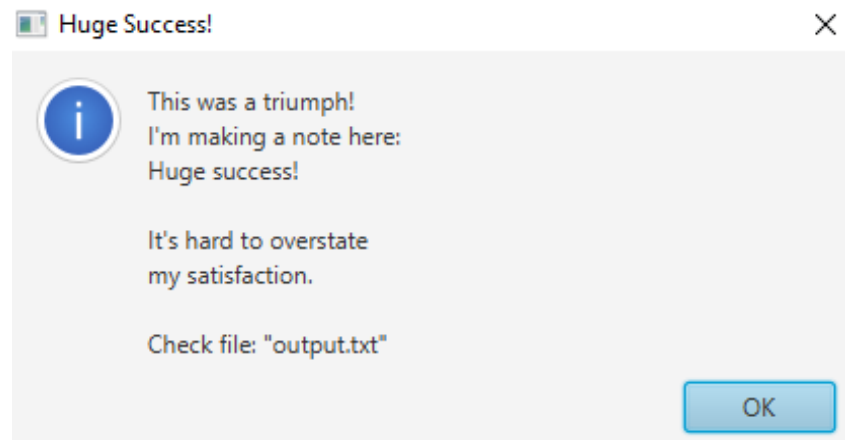
To:  It must be natural number

\*Remember that all data in "input.txt" file have to be one under one (like on the picture in chapter 1 - "Lauch program").

Finally, you should click "Submit" button to sort data with QuickSort algorithm.

## 4.Results:

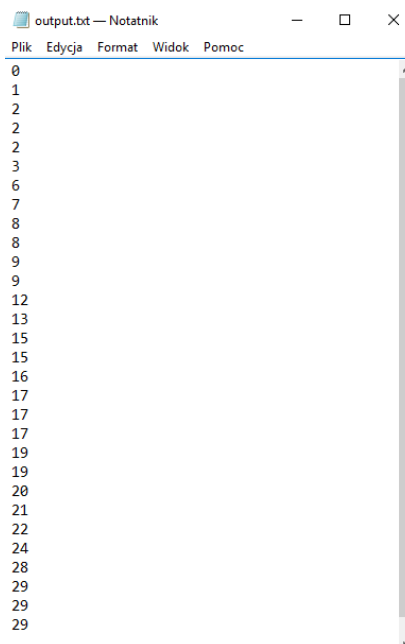
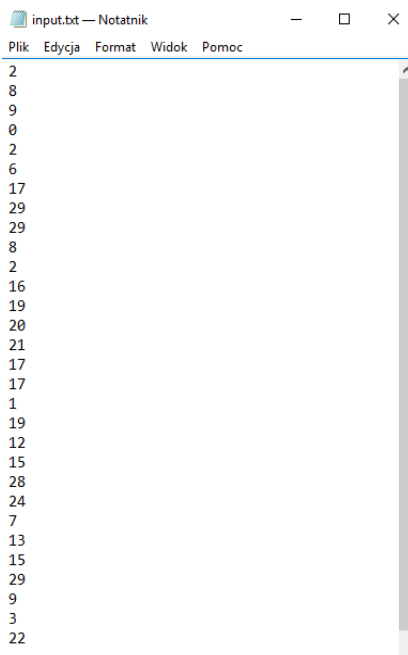
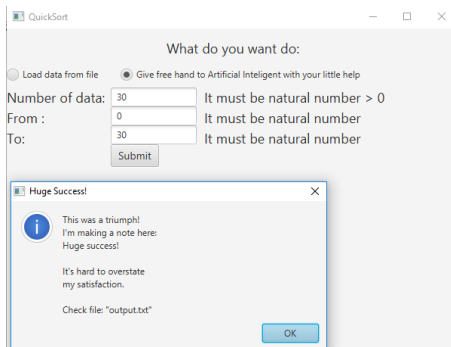
When program finish sorting our data, you get information:



In case that nothing happen - check if you write correct data into text fields or in input file.

If you compare resultats, you can see that program worked properly.

For custom data:



For loaded data:

QuickSort

What do you want do:

☒ Load data from file    ☐ Give free hand to Artificial Inteligent with your little help

Number of data:     It must be natural number > 0

From :     It must be natural number

To:     It must be natural number

Huge Success!

This was a triumph!  
I'm making a note here:  
Huge success!

It's hard to overstate  
my satisfaction.

Check file: "output.txt"

input.txt — Notatnik

Plik   Edycja   Format   Widok   Pomoc

24  
15  
19  
1  
22  
20  
17  
26  
16  
15  
9  
1  
6  
16  
3

output.txt — Notatnik

Plik   Edycja   Format   Widok   Pomoc

1  
1  
3  
6  
9  
15  
15  
16  
16  
17  
19  
20  
22  
24  
26

## 5.Theory:

Application is using QuickSort algorithm. It was implemented in this way:

