Data structures project, Instructions manual

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1 Running the program

The program requires Java Runtime Environment version 7.

The packaged program `ConvexHull.jar` can be found in the project subfolder `jar`. The program can be run on command line by typing (in the jar folder):

```
java -jar ConvexHull.jar
```

The program asks all required arguments which can be typed in the command line.

The program can also be run by adding the arguments after the main command:

```
java -jar ConvexHull.jar arg1 arg2 arg3 ...
```

Basic test material can be found in the project subfolder `testmaterial`.

2 Arguments

The program accepts the arguments in the following order:

1. input filename

   The location of the input file. Accepts points file formatted with one point per line, x-coordinate first followed by whitespace and y-coordinate, for example *Octave* output.

2. `at` or `noat`

   Chooser for Akl-Toussaint heuristic. `at` to use and `noat` to not use the heuristic.

3. integer

   The number of iterations to run the main algorithm for (not Akl-Toussaint).

4. `gift`, `quick` or `graham`

   Chooser for the main algorithm. `gift` to use Gift wrapping algorithm, `quick` to use QuickHull algorithm or `graham` to use Graham scan algorithm.

5. output filename or `print`

   The location of the output file, will be overwritten or `print` to print hull points to console.

6. `yes` or `no`

   `yes` to draw with black background. `no` to draw with white background.

7. `draw` or `nodraw`

   `draw` to show graphical output of the points. `nodraw` to skip graphical output.

3 Example run

```
user@localhost:~/jar$ java -jar ConvexHull.jar
../testmaterial/test100 at 100 quick print yes nodraw

Points read from file: ../testmaterial/test100
Input: a list of 100 points.


Using Akl-Toussaint heuristic.
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Akl-Toussaint heuristic removed 89 nodes.
Akl-Toussaint heuristic ran in 1ms.

Using QuickHull algorithm.

100 iterations.
Total run time: 11.0 ms.
Average run time: 0.11 ms.
Output: a list of 11 points.

Printing hull points to console (x y).
-1.187863496743761 2.295679969813418
-0.4306985997200181 2.141215375336973
0.6889983525066655 1.605248823316989
1.856457253218937 0.8404406772993155
2.050621638328523 0.508194457316787
2.638621913585121 -1.575950443795056
0.4117650626370341 -2.869145785655391
-1.000108998272335 -1.972846564433562
-1.612219329446485 -1.527331902358966
-2.014959422427117 -1.226536673500165
-2.278175791373962 1.894395038709398

Drawing with awesome colours!

Not drawing points on screen.
```