

DATA STRUCTURES AND ALGORITHMS

PRACTICE No.9

Exercise

No.1

Points have name and two coordinates (x; y).

Name of the point is a letter (starting from 'A'). Coordinates are random integers [1...10].

Sort 20 points by both coordinates i. e. firstly by **x** and if there are two or more points with the same **x** coordinate, then sort points by **y** coordinate.

No.2

Data set consists of 100 random numbers. Select unique numbers from data set. Implement two different algorithms for problem solving and compare running time of these algorithms.

Exercises

Exercise No.3

Measure the **real (empirical) running time** of the *insertion* sort, *selection* sort and *bubble* sort algorithms and compare with asymptotic evaluation. Use random number generator. Number of the elements $\sim 10^7$.

Homework

No.1

Names and GPS coordinates of the world cities are given in txt file. Select cities from one country (LT) and sort them in ascending order based on:

- Latitude
- Longitude

Use insertion sort and bubble sort. Compare running time of the both algorithms.