

Striving for Efficiency in Algorithms: Sorting

Notes to the instructor

The project is designed for a junior level Data Structures and Algorithms course. It is based on the paper by R. Sedgwick "Implementing Quicksort Programs". In the paper Sedgwick presents "a practical study of how to implement the Quicksort sorting algorithm and its best variants on real computers". The paper contains the original version of Quicksort and its modification, which as Sedgwick says combines the most effective improvements to Quicksort. The main idea of the project is to experimentally verify results of Sedgwick by implementing the algorithms and comparing their running times.

The project allows students to learn and practice Quicksort, insertion sort, recursive thinking, using implicit stack data structure to remove recursion, computing running times of algorithms, etc. The project is divided into three parts. Each part contains a reading assignment and a list of tasks.