

Dutch Flag Algorithm 2.0 for Quicksort

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Abstract

Dijkstra's Dutch Flag algorithm (DFA) can be used as a member of a quicksort hybrid to deal with, among others, a 'difficult' segment. We first show that the DFA can be wrapped so that this combination (with insertion sort and heapsort) is a 'decent' sorter. Subsequently we describe a different implementation of the DFA with a similar wrapper and compare their performance. Thirdly we show how these 'mini' sorters can be included in a five member hybrid quicksort sorter and we explain their contributions. The combination has $N\log N$ worst case complexity and for constant input it has linear complexity. We compare several of these versions favorably against quicksort versions we found in libraries.

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DF.docx available at <https://authorea.com/users/598391/articles/630985-dutch-flag-algorithm-2-0-for-quicksort>