

Abstract

A successive difference quicksort utilizes an early exit strategy based on the computation of a successive difference of a list to reduce running time of the quicksort algorithm. Our method significantly reduces the number of recursive calls for the unsorted list with the a number of distinct values. The main property of the successive difference method is that the sorted list achieves the minimum successive difference value over the permutation space which can easily be computed as the subtraction of the maximum and the minimum values. For ascending sorted lists, the successive difference of the list will be the difference of the last and the first elements. Our experiments revealed that, for the unsorted lists with the number of repetition below 1%, the successive difference quicksort outperformed previously known quicksort algorithms.