

Slowsort

Slowsort is a sorting algorithm. It is of humorous nature and not useful. It's based on the principle of *multiply and surrender*, a tongue-in-cheek joke of divide and conquer. It was published in 1986 by Andrei Broder and Jorge Stolfi in their paper *Pessimial Algorithms and Simplicity Analysis*^[1] (a parody of optimal algorithms and complexity analysis).

Algorithm

Slowsort is a recursive algorithm.

An in-place implementation in pseudo code:

```

procedure slowsort(A, i, j)                                // sorts Array A[i],...,A[j]
  if i ≥ j then
    return
  m := ⌊(i+j) / 2⌋
  slowsort(A, i, m)                                         // (1.1)
  slowsort(A, m+1, j)                                       // (1.2)
  if A[j] < A[m] then                                       // (1.3)
    swap A[j] and A[m]
  slowsort(A, i, j-1)                                       // (2)

```

- Sort the first half recursively (1.1)
- Sort the second half recursively (1.2)
- Find the maximum of the whole array by comparing the results of 1.1 and 1.2 and place it at the end of the list (1.3)
- Recursively sort the entire list without the maximum in 1.3 (2).

An implementation in Haskell (purely functional) may look as follows.

```

slowsort :: Ord a => [a] -> [a]
slowsort xs
  | length xs <= 1 = xs
  | otherwise      = slowsort xsnew ++ [max llast rlast]  -- (2)
  where
    l = slowsort $ take m xs  -- (1.1)
    r = slowsort $ drop m xs  -- (1.2)
    llast = last l
    rlast = last r
    xsnew = init l ++ min llast rlast : init r
    m     = fst (divMod (length xs) 2)

```

Complexity

The runtime $T(n)$ for Slowsort is $T(n) = 2T(n/2) + T(n - 1) + 1$. A lower asymptotic bound for $T(n)$ in Landau notation is $\Omega\left(n^{\frac{\log_2(n)}{2+\epsilon}}\right)$ for any $\epsilon > 0$. Slowsort is therefore not in polynomial time.

Even the best case is worse than Bubble sort.

References

1. "CiteSeerX — Pessimal Algorithms and Simplexity Analysis" (<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.116.9158>). *Citeseerx.ist.psu.edu*. Retrieved 2017-07-26.
-

Retrieved from "<https://en.wikipedia.org/w/index.php?title=Slowsort&oldid=931184449>"

This page was last edited on 17 December 2019, at 13:47 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the [Terms of Use](#) and [Privacy Policy](#). Wikipedia® is a registered trademark of the [Wikimedia Foundation, Inc.](#), a non-profit organization.