Abstract

Insertion sort gives a time complexity of $O(n)$ for the best case. In the worst case where the input is in the descending order fashion, the time complexity is $O(n^2)$. In the case of arrays, shifting takes $O(n^2)$ while in the case of linked lists comparison comes to $O(n^2)$. Here a new way of sorting for the worst case problem is proposed by using arrays as data structure and taking more space. $2n$ spaces is taken where $n$ is the number of elements and starts the
insertion from (n-1)th location of the array. In this proposed technique the time complexity is O(nlogn) as compared to O(n^2) in the worst case.

References

- Mark Allen Weiss, Data Structures and Algorithm Analysis in C++: Pearson Addison-Wesley, 2006
- Michael A. Bender, "Insertion Sort is O(nlogn)," Third International Conference on Fun With Algorithms (FUN), Pages 16-23, 2004

Index Terms

Computer Science
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Keywords

Insertion Sort  Time Complexity  Space Complexity.