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**Sorting and Searching Algorithm complexity**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Algorithm*** | ***Time Complexity*** | | | ***Space Complexity*** |
| ***Best*** | ***Average*** | ***Worst*** |
| Linear Search | O(1) | O(n) | O(n) | O(1) |
| Binary Search | O(1) | O(log(n)) | O(log(n)) | O(1) |
| [Quick Sort](https://scanftree.com/Data_Structure/Quick-Sort) | O(n log(n)) | O(n log(n)) | O(n^2) | O(n) |
| [Merge Sort](https://scanftree.com/Data_Structure/Merge-sort) | O(n log(n)) | O(n log(n)) | O(n log(n)) | O(n) |
| [Heap Sort](https://scanftree.com/Data_Structure/Heap-sort) | O(n log(n)) | O(n log(n)) | O(n log(n)) | O(1) |
| [Bubble Sort](https://scanftree.com/Data_Structure/bubble-sort) | O(n) | O(n^2) | O(n^2) | O(1) |
| [Insertion Sort](https://scanftree.com/Data_Structure/Insertion-sort) | O(n) | O(n^2) | O(n^2) | O(1) |
| [Select Sort](https://en.wikipedia.org/wiki/Selection_sort) | O(n^2) | O(n^2) | O(n^2) | O(1) |
| [Bucket Sort](https://scanftree.com/Data_Structure/bucket-Sort) | O(n+k) | O(n+k) | O(n^2) | O(nk) |
| [Radix Sort](https://scanftree.com/Data_Structure/radix-sort) | O(nk) | O(nk) | O(nk) | O(n+k) |

Reduction

Eg) Selection algorithm to find median

Dynamic Programming

Eg) subset-sum problem

Greedy  
Eg) Fractional Knapsack

Linear Programming

Eg) Max flow of directed graph

**Classification of algorithms**

Divide and Conquer

Eg) Merge Sort