

// Muhammad Ammar

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⑤ (b). Time Complexity of Quick Sort

Quick Sort is the fastest sorting algorithm in its class. Its Complexity analysis is :

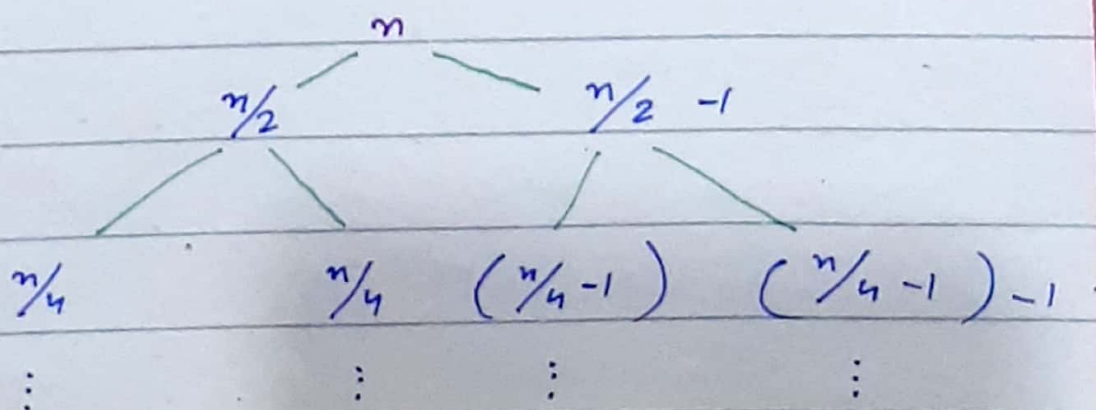
\hookrightarrow Average Case $O(n \cdot \log n)$

\hookrightarrow Best Case $O(n \cdot \log n)$

\hookrightarrow Worst Case $O(n^2)$

• Best & Average Case

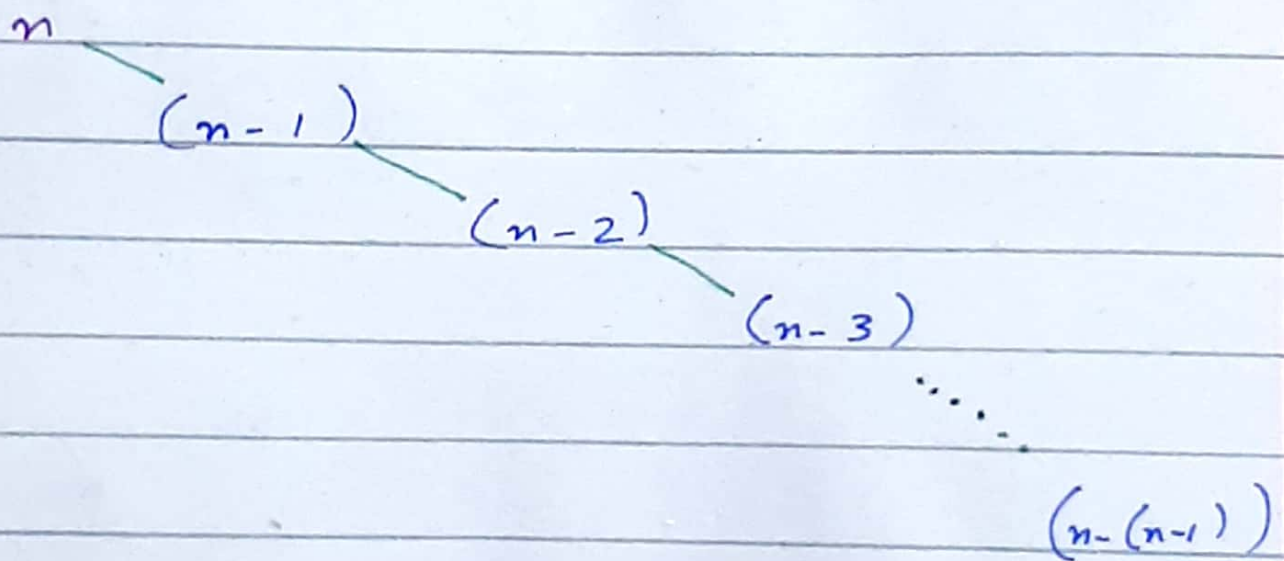
Quick Sort Algorithm divides the problem / Array into two parts or sections in each iteration, until the Array is of size = 1.



Hence, it results in $O(n \log n)$ complexity, as it also merges the Arrays at the End.

- Worst Case

In worst case scenario, we have the sorting situation like this ;



Since, the Array is sorted like a linear sorting algorithms, and proceeds till the [Sub-Array] = 1.

Hence, it gets the complexity of $O(n^2)$, as Merging also takes place at the end, at each level.