
DIVIDE & CONQUER ALGORITHMS

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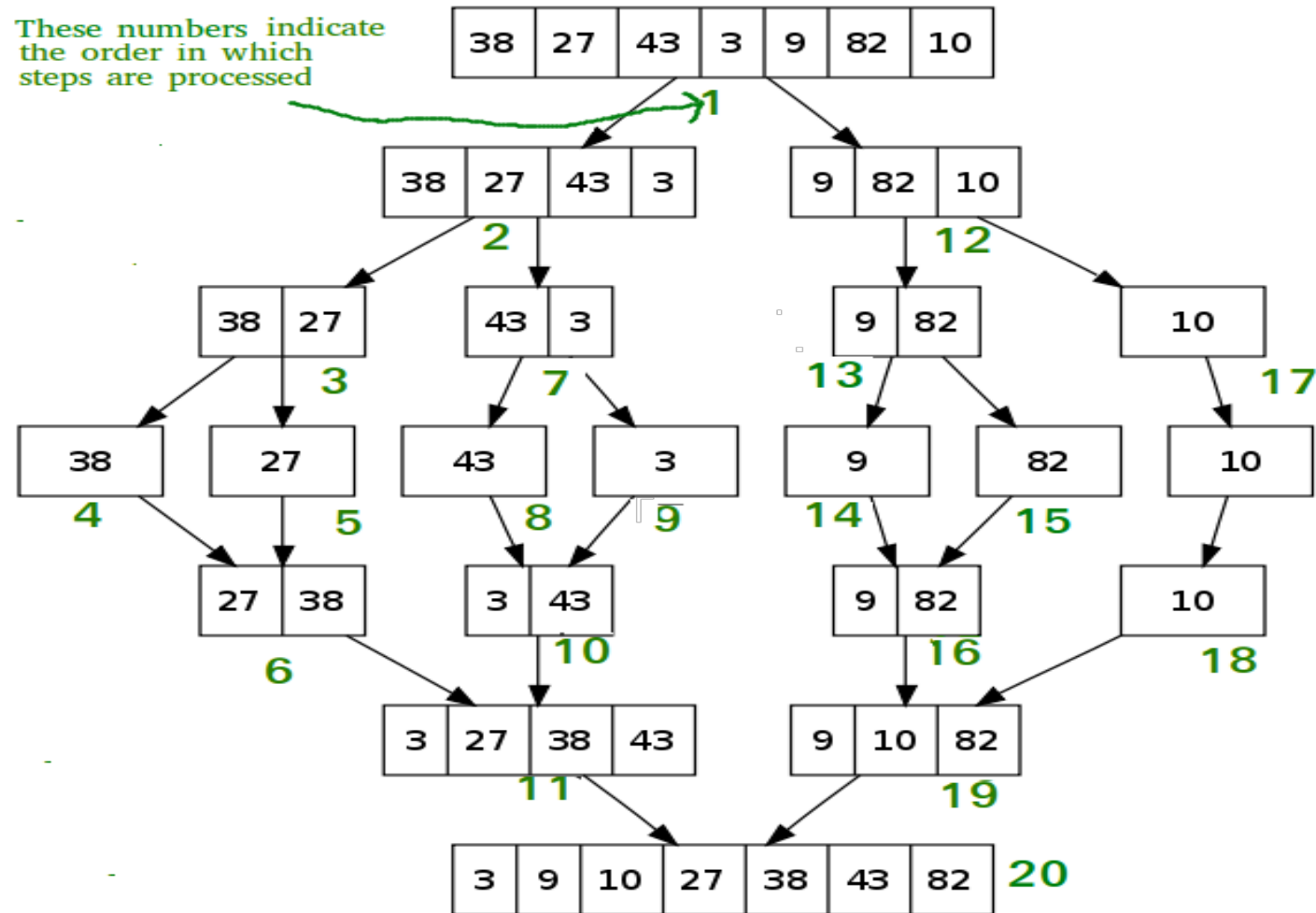
WHAT IS DIVIDE AND CONQUER?

- *Divide and Conquer is an algorithmic paradigm in which the problem is solved using the Divide, Conquer, and Combine strategy.*
 1. **Divide:** This involves dividing the problem into smaller sub-problems.
 2. **Conquer:** Solve sub-problems by calling recursively until solved.
 3. **Combine:** Combine the sub-problems to get the final solution of the whole problem.

SOME STANDARD ALGORITHMS:

1. Binary Search
2. **Merge Sort**
3. Quick Sort
4. Calculate pow(x, n)
5. Karatsuba algorithm for fast multiplication
6. Strassen's Matrix Multiplication
7. Convex Hull (Simple Divide and Conquer Algorithm)
8. Quickhull Algorithm for Convex Hull

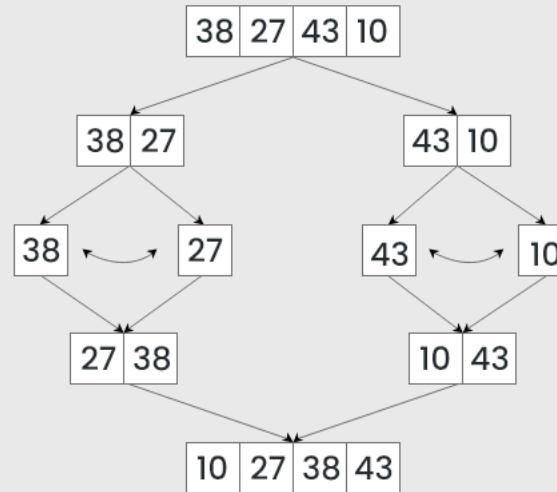
EXAMPLE OF DIVIDE AND CONQUER ALGORITHM



MERGE SORT

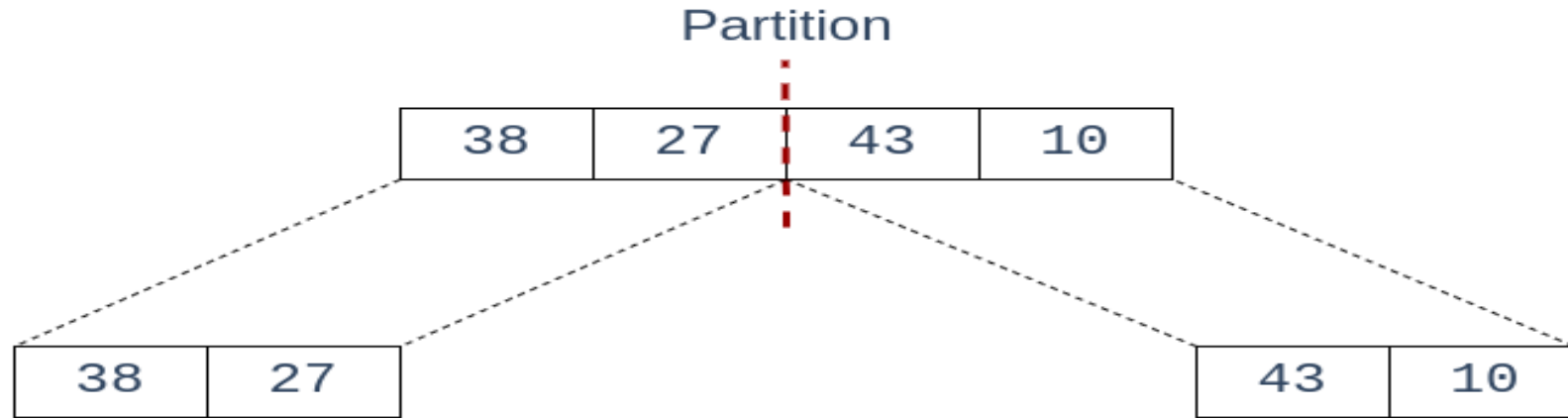
- Defined as a sorting algorithm that works by dividing an array into smaller subarrays, sorting each subarray, and then merging the sorted subarrays back together to form the final sorted array.

Merge Sort Algorithm



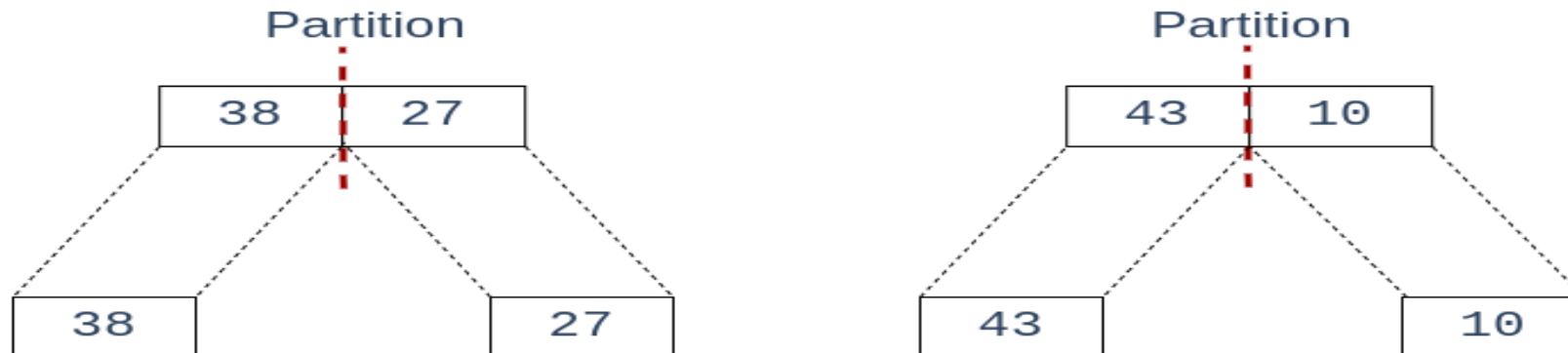
STEP
01

Splitting the Array into two equal halves



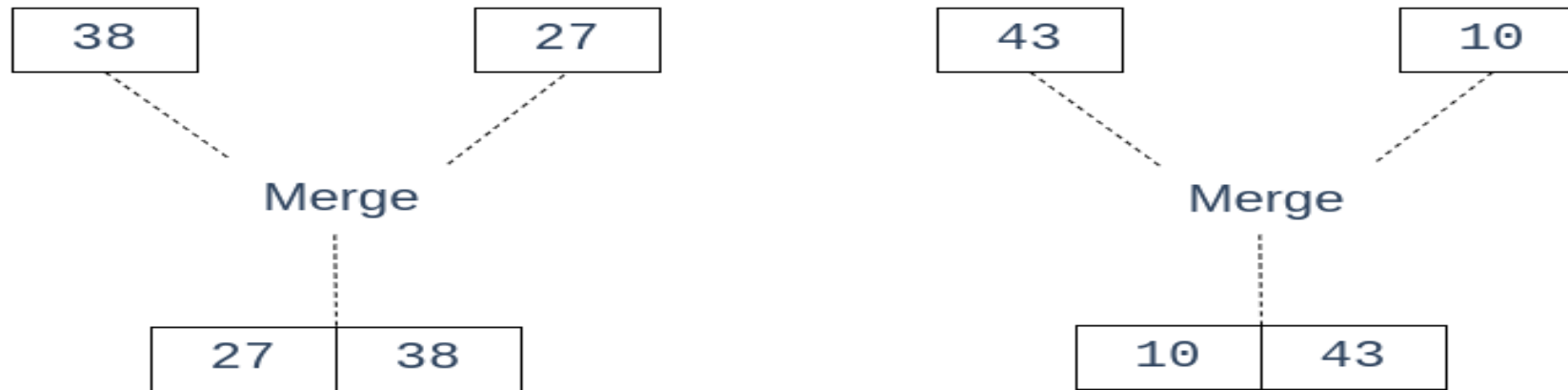
STEP
02

Splitting the subarrays into two halves



STEP
03

Merging unit length cells into sorted subarrays



STEP
04

Merging sorted subarrays into the sorted array

