

1. Find the median of median in the array

[12, 3, 4, 5, 10, 9, 13, 14, 15]

Sorted array = [3, 4, 5, 9, 10, 12, 13, 14, 15]

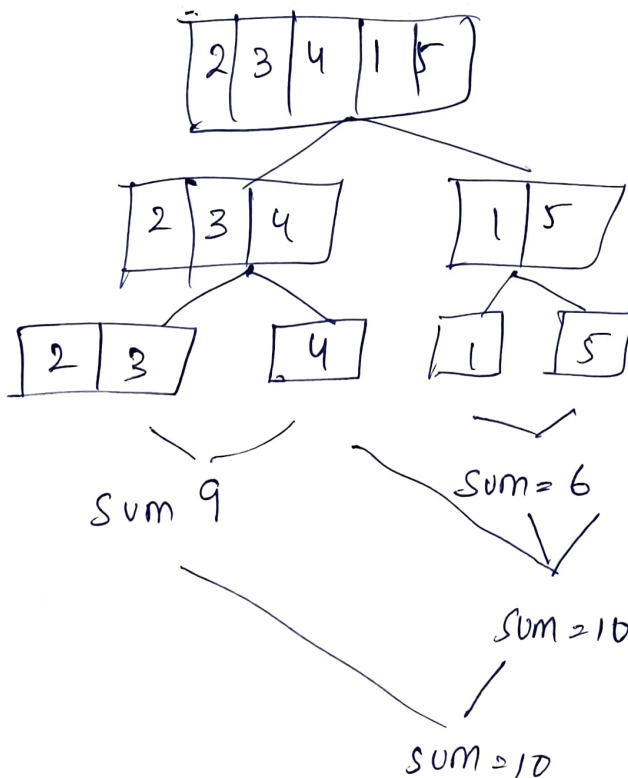
$a[5]$

Median = $a[5] = 10$

Median ≥ 10

2. Find the subset of sum 10 using divide and conquer

[2, 3, 4, 1, 5]



Subsets = 2, 3, 5

Subsets = 4, 1, 5

3. Explain in detail about closest pair algorithm using divide and conquer methodology.

→ Divide the points into two equal halves.

→ Conquer find the closest pair of points in each half.

⇒ Combine distance between the line between the two halves

⇒ find the smallest distance between any pair of points.

⇒ Divide and conquer approach reduces the time complexity to $O(n \log n)$, which is efficient compared to the brute-force approach with $O(n^2)$.