Merge 2 Sorted Array

Symmetry Algorithm:

When we have 2 sorted Array

Arr1 = [1 3 4 7 10 12]

Arr2 = [2 3 6 15]

Our final array will look like

n = 10

[1 2 3 3 4 6 7 10 12 15]

Now if we have to create a Symmetry basically 2 halfs then

[1 2 3 3 4] [6 7 10 12 15]

1 2 3 3 4 | 6 7 10 12 15

we will have 5 elements on left

5 element on right

Note: If len of our imaginary final array is odd, we can assume our left array to have one more value than right half.

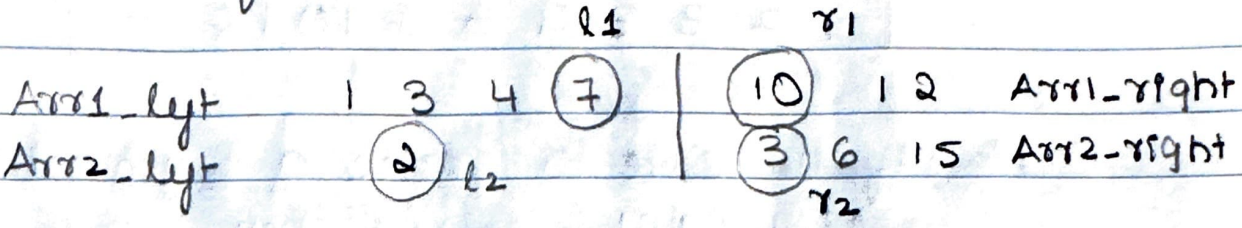
Algorithm:

Step 1: first step would be to identity how many elements need to be on the left half of array.

Step 2: Since we have 2 array. Check how many can we pick from arr1 & how many

Can we pick from arr2 to form lyt side of the array.

Eg: Consider we pick 4 ele from arr1 & 1 elem from arr 2



In order to get a proper sorted final array our $l1 < r2$ and $l2 < r1$

In our Eg: $l1 > r2$, that means we should reduce l1 count, because 7 should really be on right side.

So Ideall condition are.

perfect : $l1 < r2$
$l2 < r1$

If $l1 > r2$: [right = mid - 1]
reduce l1 count → l1 ↓
Increace l2 count → l2 ↑

If $l2 > r1$ [left = mid + 1]
reduce l2 count → l2 ↓
Increase l1 count → l1 ↑