MERGE SORT

By Prince Agarwal

[“ Hello World ”]

MERGE SORT

It is a Divide and Conquer Algorithm

- **Based on a idea of breaking down a list into several sub-list**

  Until each sub-list consist of a single elements

- **And Merge those sub-list**

  In such manner,

  Thats results into a sorted list

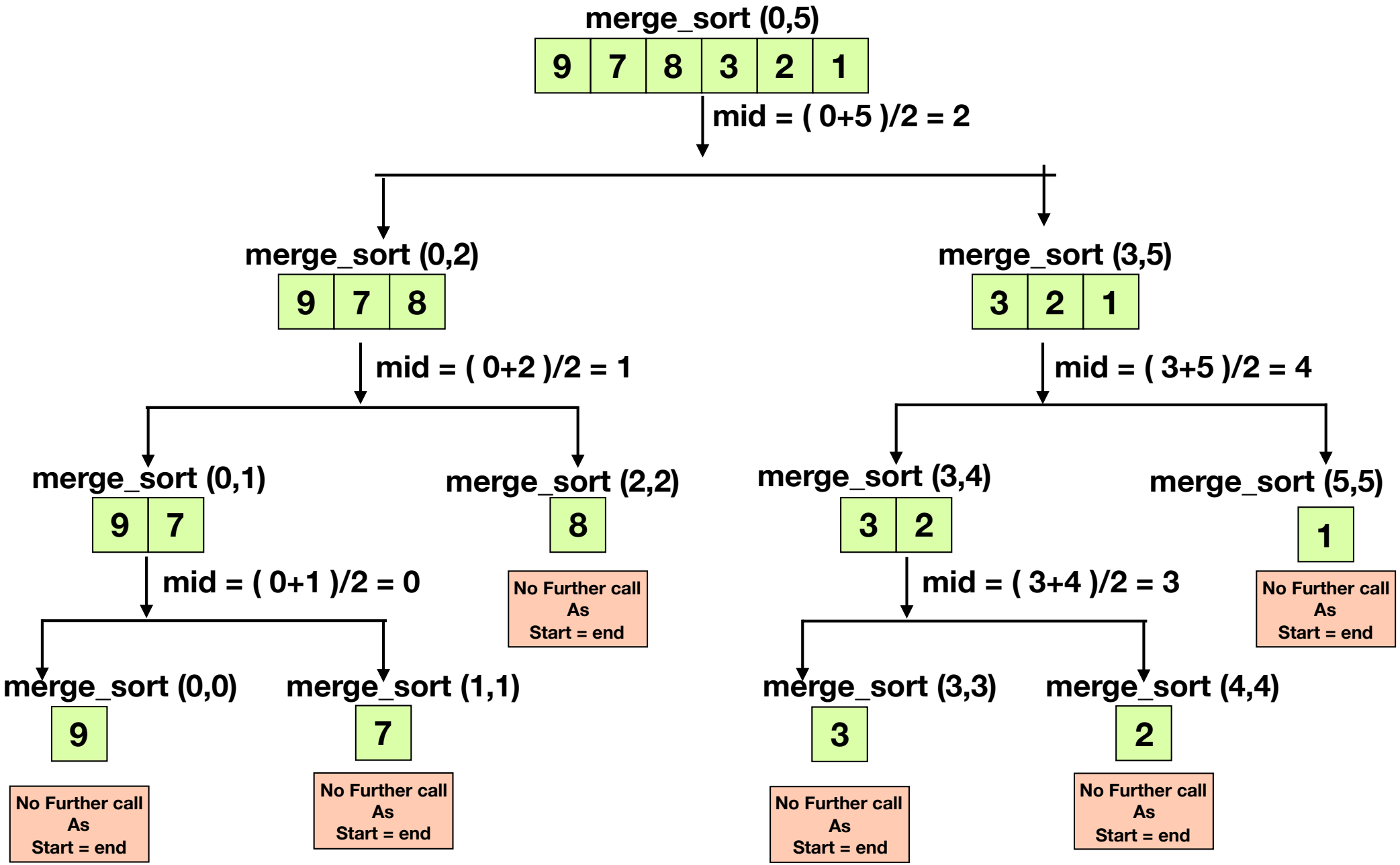
- **We use merge_sort(a , b)** **Function to spilt the array**

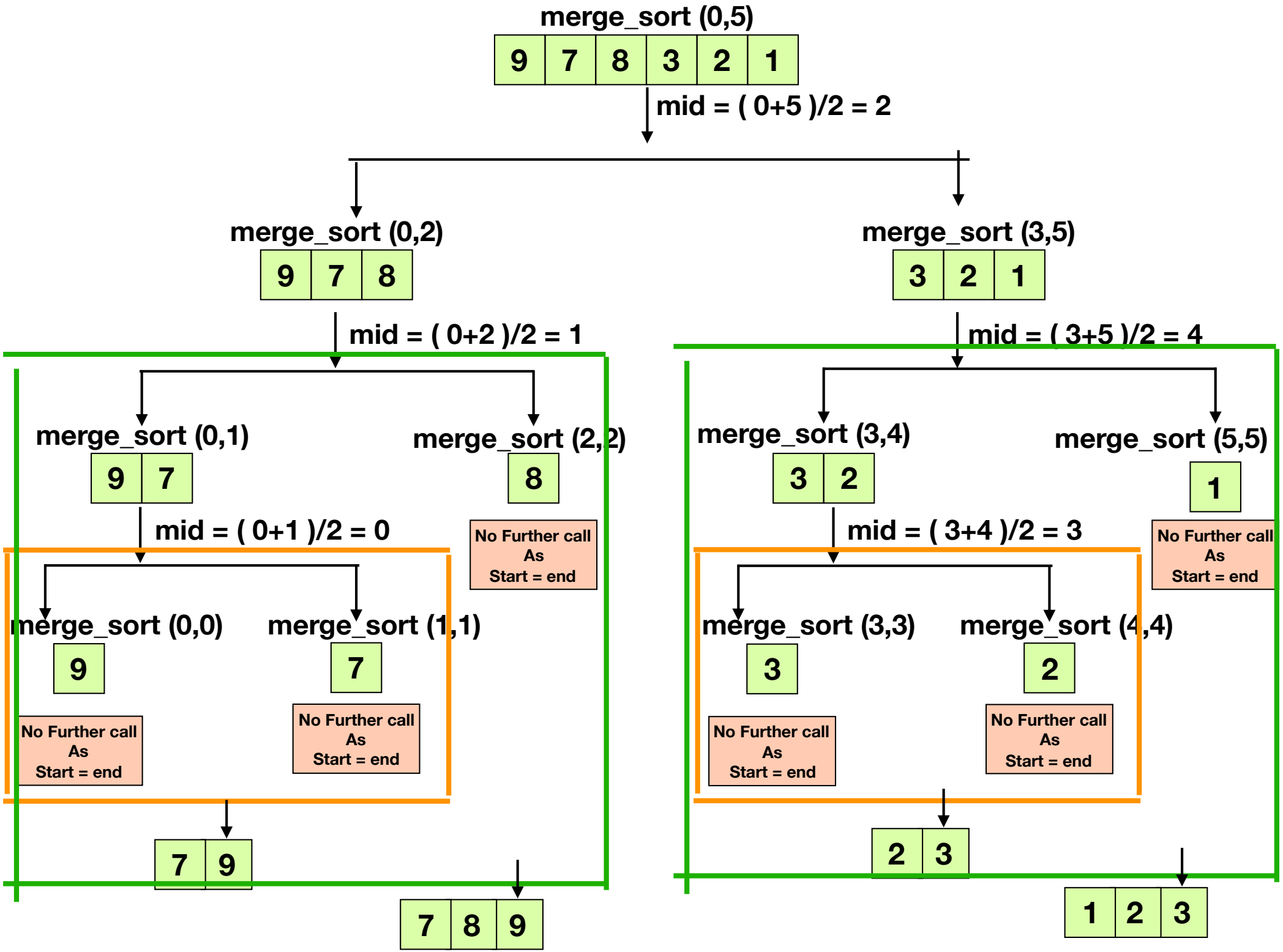
- **We use merge(a , b)** **Function to combine the list**

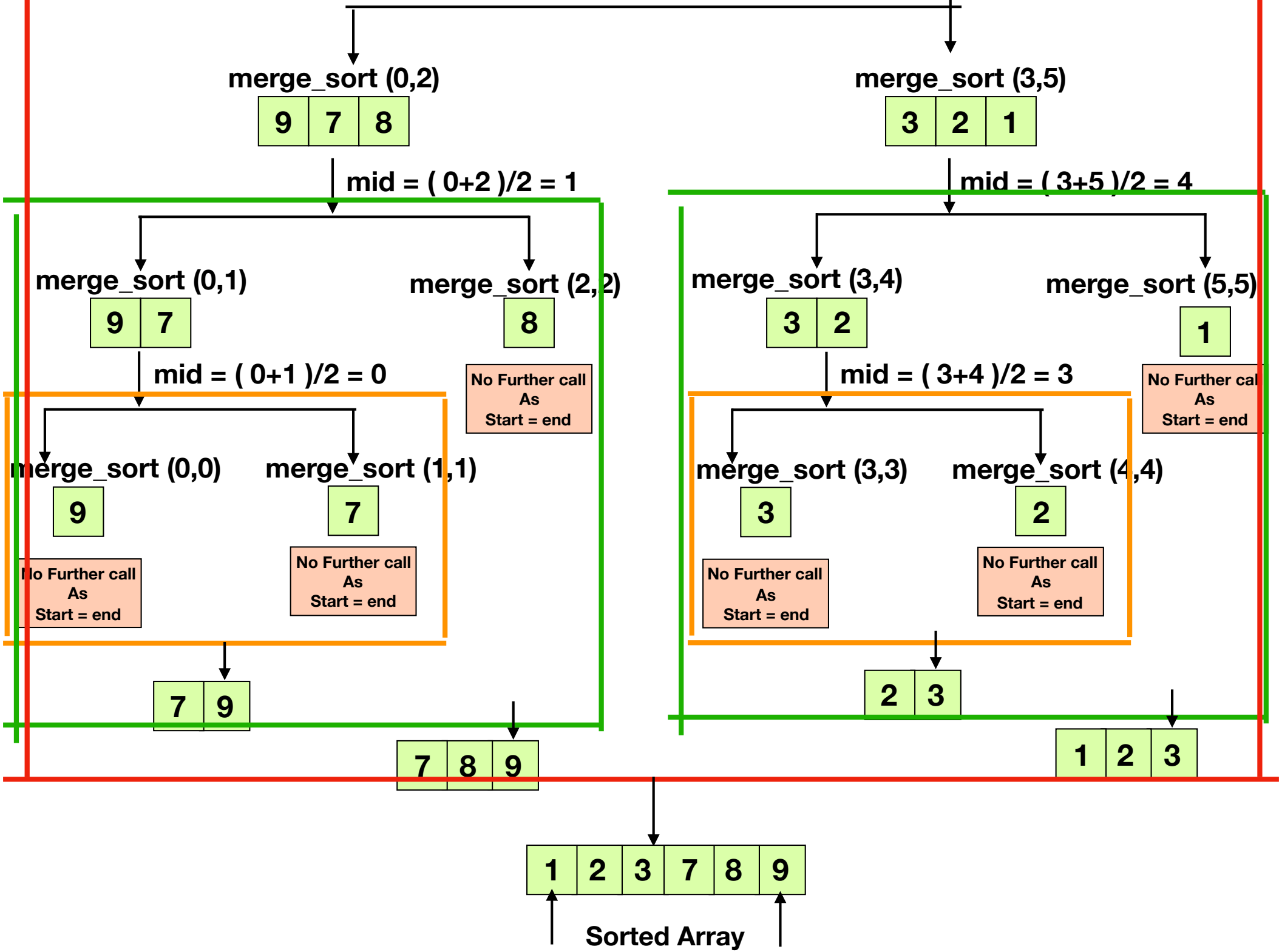
Sort The given Array :-

9	7	8	3	2	1

By using Merge sort


merge_sort (0,5)
9 7 8 3 2 1
mid = (0+5)/2 = 2
merge_sort (0,2)
9 7 8
mid = (0+2)/2 = 1
merge_sort (3,5)
3 2 1
mid = (3+5)/2 = 4
merge_sort (0,1)
9 7
mid = (0+1)/2 = 0
merge_sort (2,2)
8
No Further call As Start = end
merge_sort (3,4)
3 2
mid = (3+4)/2 = 3
merge_sort (5,5)
1
No Further call As Start = end
merge_sort (0,0)
9
No Further call As Start = end
merge_sort (1,1)
7
No Further call As Start = end
merge_sort (3,3)
3
No Further call As Start = end
merge_sort (4,4)
2
No Further call As Start = end


merge_sort (0,5)
9 7 8 3 2 1
mid = (0+5)/2 = 2
merge_sort (0,2)
9 7 8
mid = (0+2)/2 = 1
merge_sort (3,5)
3 2 1
mid = (3+5)/2 = 4
merge_sort (0,1)
9 7
mid = (0+1)/2 = 0
merge_sort (2,2)
8
No Further call As Start = end
merge_sort (0,0)
9
No Further call As Start = end
merge_sort (1,1)
7
No Further call As Start = end
7 9
7 8 9
merge_sort (3,4)
3 2
mid = (3+4)/2 = 3
merge_sort (5,5)
1
No Further call As Start = end
merge_sort (3,3)
3
No Further call As Start = end
merge_sort (4,4)
2
No Further call As Start = end
2 3
1 2 3

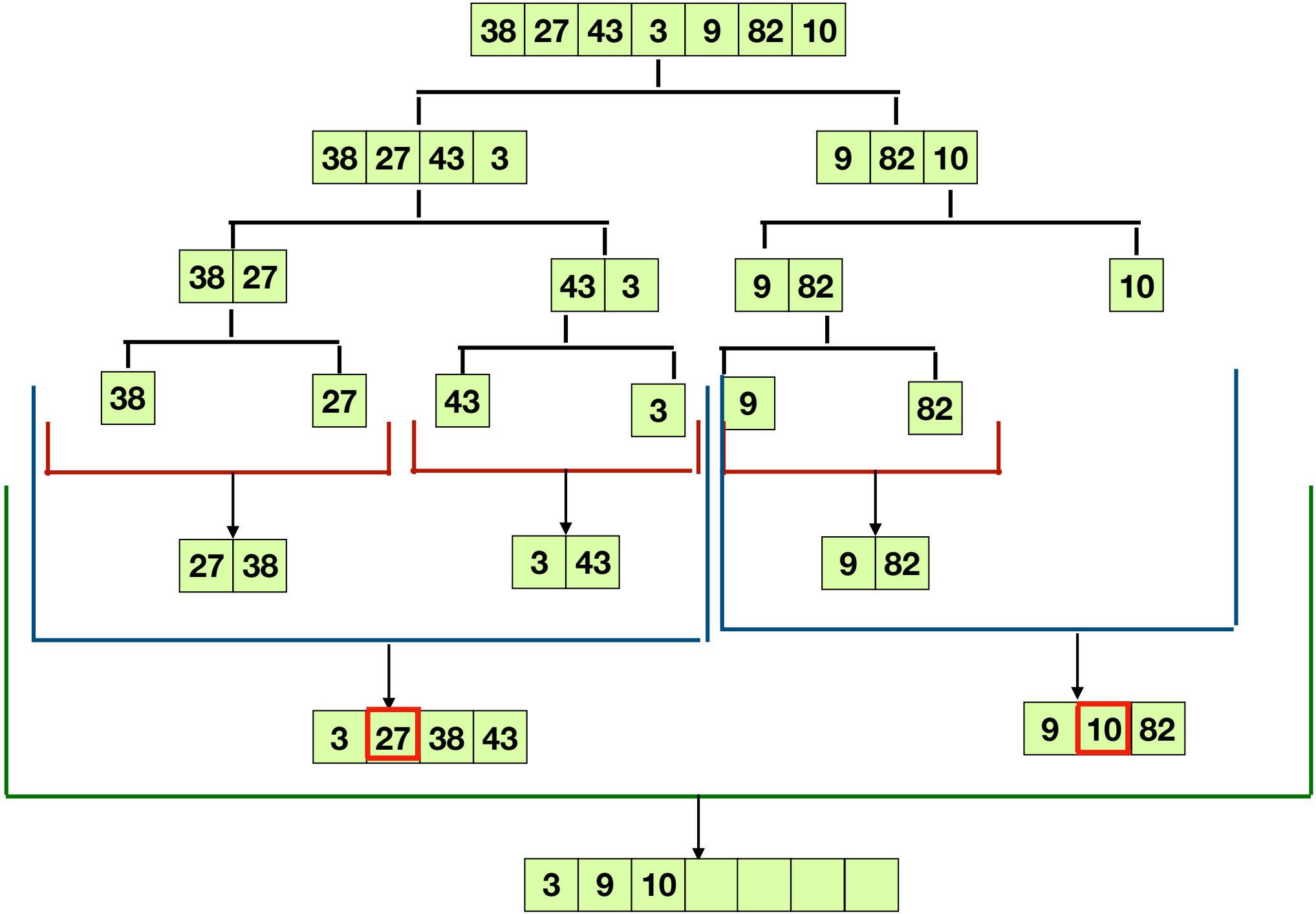

merge_sort (0,2)
9 7 8
mid = (0+2)/2 = 1
merge_sort (0,1)
9 7
merge_sort (2,2)
8
No Further call As Start = end
mid = (0+1)/2 = 0
merge_sort (0,0)
9
No Further call As Start = end
merge_sort (1,1)
7
No Further call As Start = end
7 9
7 8 9
merge_sort (3,5)
3 2 1
mid = (3+5)/2 = 4
merge_sort (3,4)
3 2
mid = (3+4)/2 = 3
merge_sort (3,3)
3
No Further call As Start = end
merge_sort (4,4)
2
No Further call As Start = end
2 3
merge_sort (5,5)
1
No Further cal As Start = end
1 2 3
1 2 3 7 8 9
Sorted Array

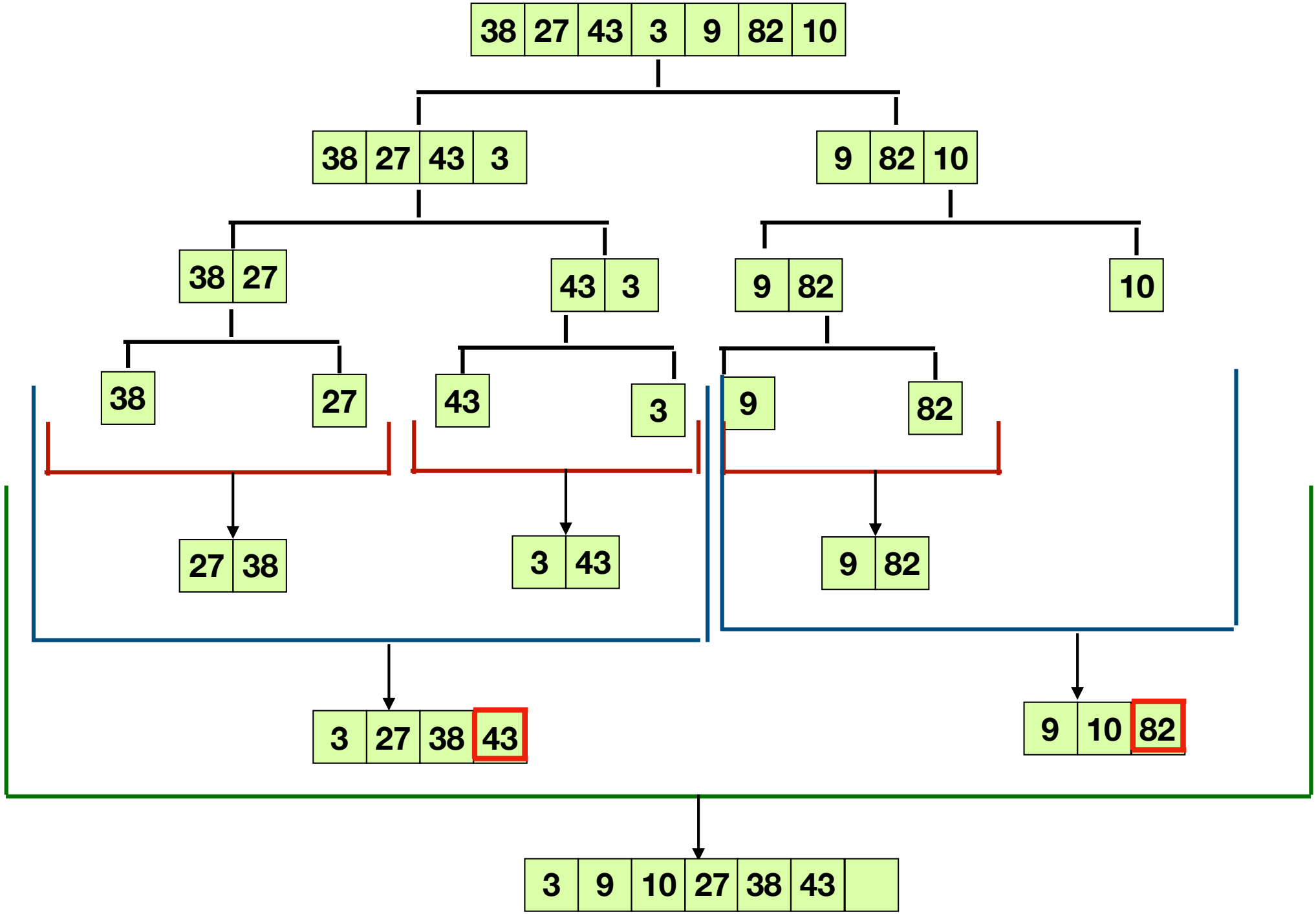
MERGE SORT

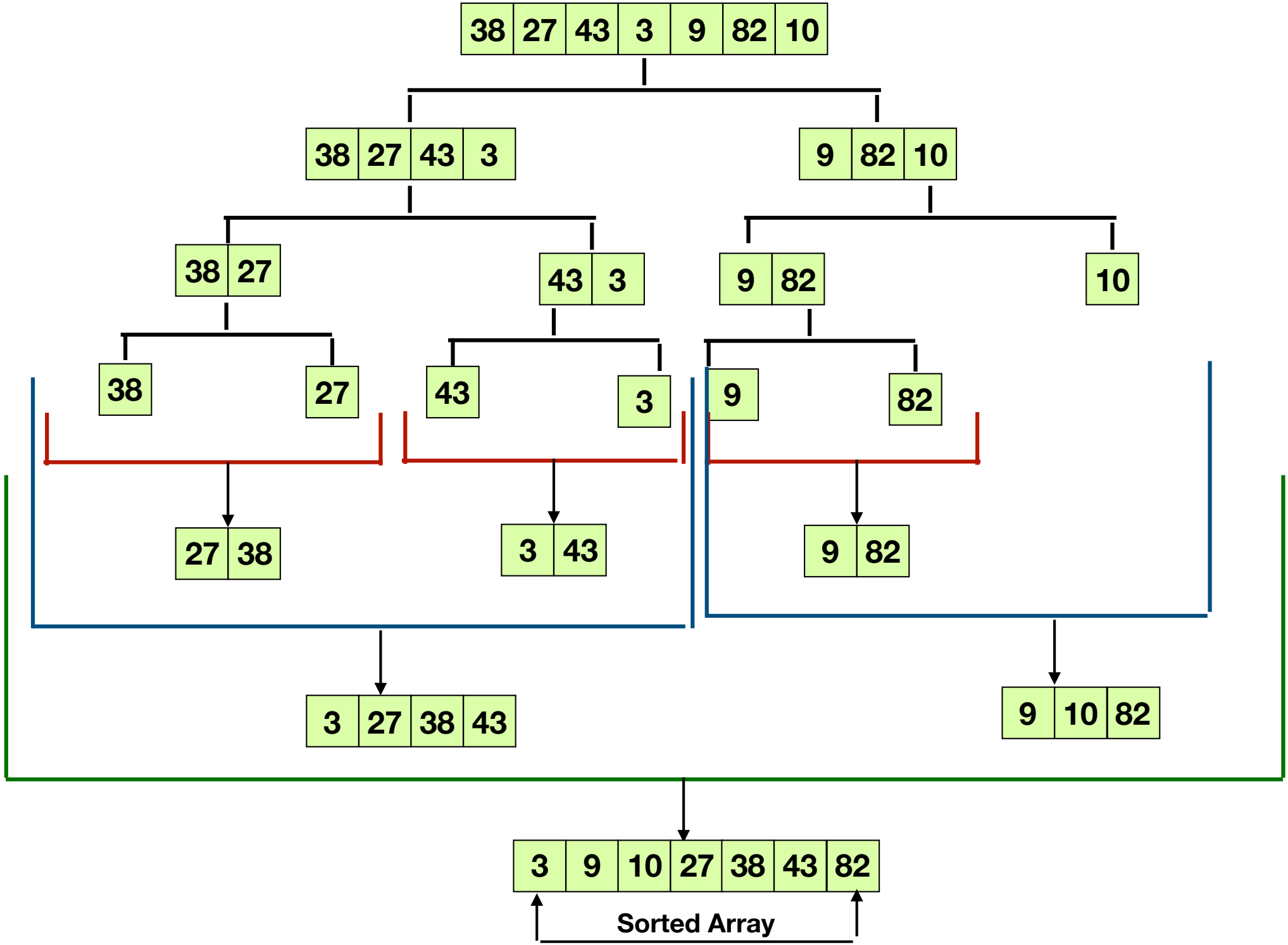
Sort The given Array :-

38	27	43	3	9	82	10

By using Merge sort


38 27 43 3 9 82 10
38 27 43 3
9 82 10
38 27
43 3
9 82
10
38
27
43
3
9
82
27 38
3 43
9 82
3 27 38 43
9 10 82
3 9 10


38 27 43 3 9 82 10
38 27 43 3
9 82 10
38 27
43 3
9 82
10
38
27
43
3
9
82
27 38
3 43
9 82
3 27 38 43
9 10 82
3 9 10 27 38 43


38 27 43 3 9 82 10
38 27 43 3
9 82 10
38 27
43 3
9 82
10
38
27
43
3
9
82
27 38
3 43
9 82
3 27 38 43
9 10 82
3 9 10 27 38 43 82
Sorted Array

MERGE SORT

Time Complexity

Time Complexity = O(N * Log(N))

The List of Size N is divided into Max Log(N) parts

And Merging of Sublist into Single List Takes O(N) Times

Now,

Time Complexity =O (N * (Log(N)) = O(N * Log(N)))

Subscribe, Like & Share

Hello World

“ If you feel any problem then comments in my video
I will reply as soon as possible “

- Prince Agarwal