MERGE SORT ALGORITHM AND IMPLEMENTATION USING VERILOG

WHAT IS MERGE SORT?

Merge sort is a sorting technique based on divide and conquer approach. With worst-case time complexity being O(n log n), it is one of the most respected algorithms. Merge sort first divides the array into equal halves and then combines them in a sorted manner.

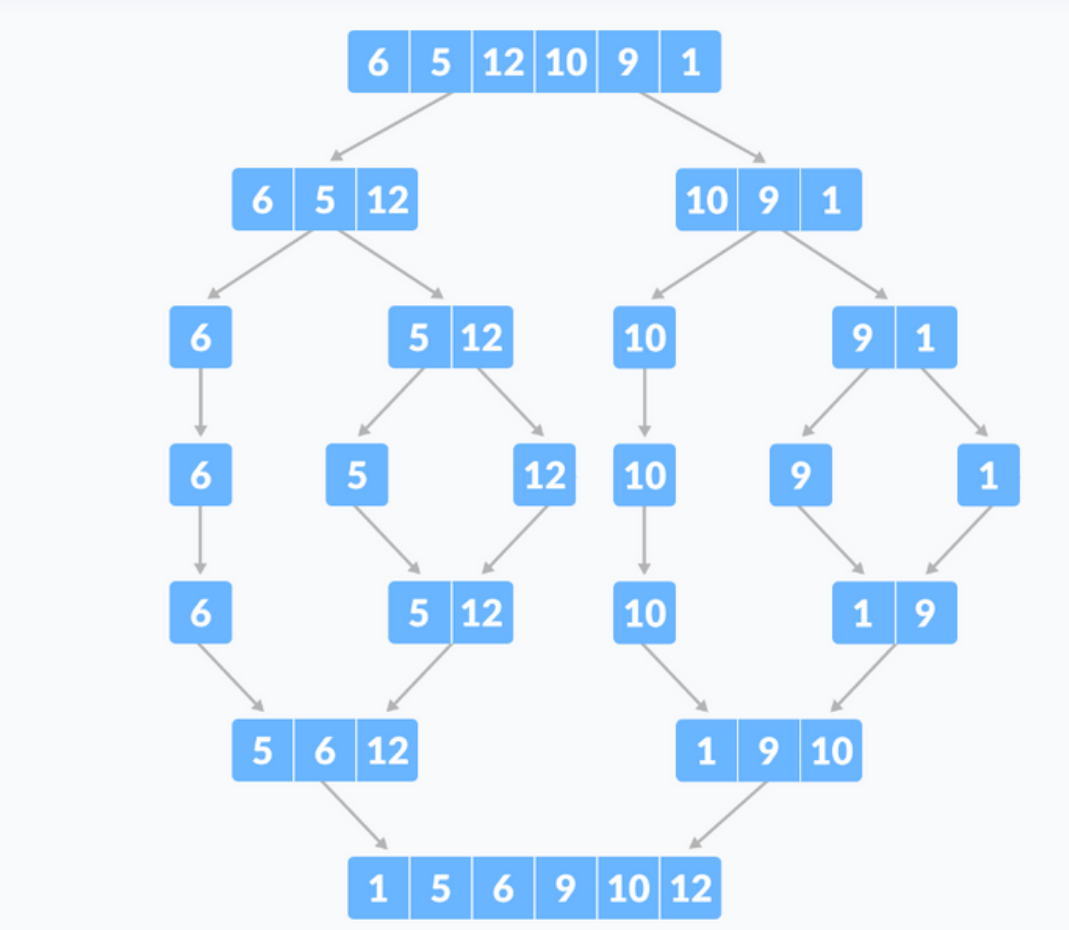
WORKING

Implementation of the merge sort algorithm is a three-step procedure i.e divide, conquer, and combine.

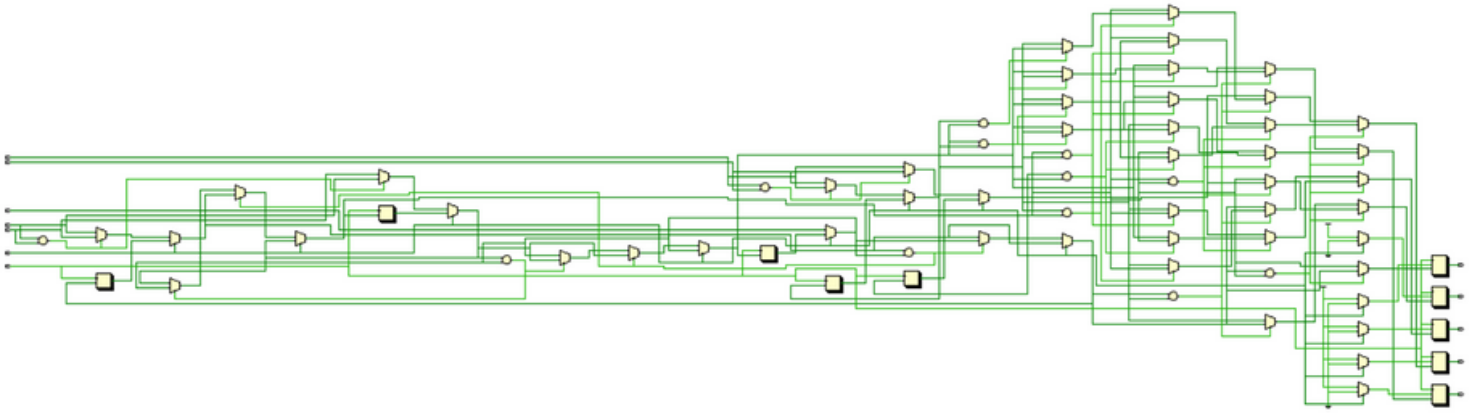
The divide component of the divide-and-conquer approach is the first step. This initial step separates the overall list into two smaller halves. Then, the lists are broken down further until they can no longer be divided, leaving only one element item in each halved list.

The recursive loop in merge sort's second phase is concerned with the list's elements being sorted in a particular order. For this scenario, the initial array is sorted in ascending order.

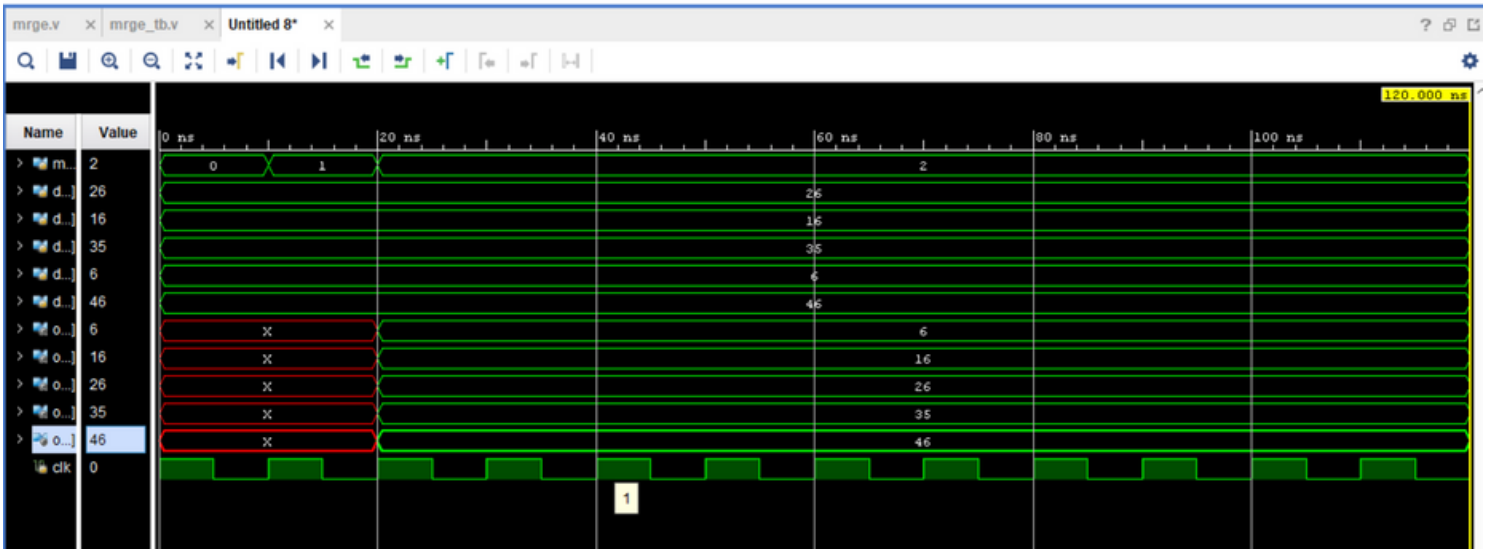
EXAMPLE



RTL SCHEMATIC



SIMULATION WAVEFORMS



Input array: [26,16,35,6,46]
Output array: [6,16,26,35,46]