

Given: An array of Bolts and An array of Nuts

Aim: Pairs each Bolts and Nuts

Step 1: Pick a bolt and use it as a pivot and split the Array of Nuts into another three parts, an array of Nuts that are too big, an array of Nuts that are too small and a Nut that just fit. This step have the time complexity of $O(n)$.

Step 2: Pick a nut and use it as a pivot and split the Array of Bolts into another three parts, an array of Bolts that are too big, an array of Bolts that are too small and a Bolt that just fit. This step have the time complexity of $O(n)$.

Step 3: Continue this process with the too small bolt array and with the too small nut array and then also too big bolt array and with the too big nut array. Until the element in both array are matched with each other. This step have the time complexity of $2 * O(n \log(n))$.

Conclusion:

The “double quick sort” can solve the aim in the time complexity of $O(n \log(n))$.