

Question 2

Using double quick sort. First pick a nut as a pivot split the nuts in three groups: too small, fitting and too large. Then pick a nut from the fitting group and try to screw all the bolts to split in three groups: the bolts are too small, the bolts are fitting and the bolts are too large. Repeating the process of first group of nuts which are too small and first group of bolts which are too large. Then the third group of nuts which are too small and the third of bolts which are too large.

Quick sort's average time complexity is $O(n \log n)$.

For this question, the time complexity $O(n \log n) + O(n \log n) = O(2n \log n) \rightarrow O(n \log n)$