

1. Normally we expect optimal and correct solution from any algorithm. What are the kind of problems in which even a feasible solution which may not be optimal is also readily accepted and why?
2. There are many drawbacks of the empirical analysis of the solutions of a given problem. Still empirical analysis is being used significantly by individuals and companies. Give the reasons with the sample examples where it is still being practiced.
3. Best case is also called a cheat case, so it is a general belief that it is useless. Give some examples where best case properties can be exploited to run the algorithm faster.
4. Sorting is one of the problems which has been studied and analyzed by many researchers in the literature. What are hidden properties of the numbers given for sorting that are exploited to make the sorting algorithm better.
5. There is a group of algorithms which come under the category of linear sorting algorithms. One of them is counting sort which gives us the final position of elements in the sorted list. Write an algorithm for counting sort.
6. Binary search tree is a binary tree with the additional properties of order introduced in the children of every parent such that left is always less than the parent and right is always greater than the parent. Write an algorithm for finding the predecessor of a node in binary search tree.
7. How a non stable sorting algorithm can be made stable. Give the idea taking into context any existing non stable algorithm.