

# Time Complexity

GRAPH PLOT

Divyesh Saglani | Time Complexity | 08/01/2017

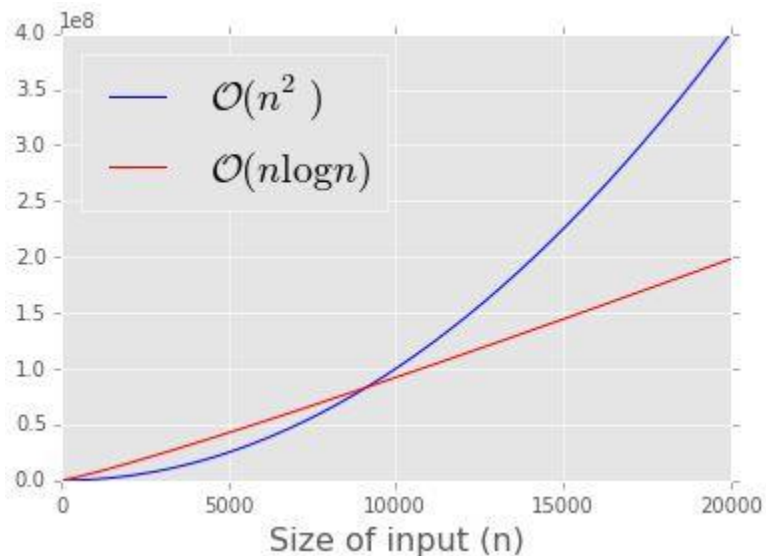
## Why do we need to plot this Graph?

It is very important to know how the time complexity of various algorithms operate. Some of the important algorithms are those of sorting algorithms. There are various sorting algorithms available, but how do we choose the best from them is the most important concept.

- One of the methods is based on time complexity.
- Some sorting algorithms take  $O(n^2)$ , some take  $O(n \log n)$  and the complexities of some algorithms may vary.
- Thus, depending on conditions, we need to choose the sorting algorithm.
- Another factor is based on space complexity.
- Some sorting algorithms require extra space to sort the algorithms, while some require less.

Thus, from the graph we notice that if number of elements are small the worst case for most algorithms will be same but heap sort and quicksort and merge will give better results with  $O(n \log n)$ .

Also from the following graph, we notice that  $O(n^2)$  is less than  $O(n \log n)$  for less number of elements, i.e. even bubble sort can be better than merge sort for some conditions.



## LANGUAGE

We may use any language to do our work. But the best results can be obtained with MATLAB and python.

Even using C++ we can achieve our objective.

I have used python, because I felt more comfortable with it.

