Time and Space Complexity

Analysis of Algorithms (Background)

**What is meant by Algorithm Analysis?**

Algorithm analysis is an important part of computational complexity theory, which provides theoretical estimation for the required resources of an algorithm to solve a specific computational problem. Analysis of algorithms is the determination of the amount of time and space resources required to execute it.

## Why Analysis of Algorithms is important?

* To predict the behaviour of an algorithm without implementing it on a specific computer.
* It is much more convenient to have simple measures for the efficiency of an algorithm than to implement the algorithm and test the efficiency every time a certain parameter in the underlying computer system changes.
* It is impossible to predict the exact behaviour of an algorithm. There are too many influencing factors.
* The analysis is thus only an approximation; it is not perfect.
* More importantly, by analysing different algorithms, we can compare them to determine the best one for our purpose.

**Types of Algorithm Analysis:**

1. Best case
2. Worst case
3. Average case