Reading Material

# ALGORITHM ANALYSIS AND DESIGN CONCEPTS

## Algorithm Analysis

**Table of Contents**



### 3. Algorithm Analysis

In this section, we will look at some selected algorithms and understand their performance characteristics.

### 3.1 Analysis of Searching algorithm - Linear Search

The linear search algorithm is applied to an unordered set of elements.

Let us conduct a worst-case analysis of this algorithm - in this case, the search element is either at the last position or is not present in the array. The total number of searches required in this scenario is n, where n is the total number of elements. If initialization and assignment operations take a constant time, k, the worst-case complexity would be a summation of this number k and the time taken for n searches.

Hence the worst-case complexity is T(n) which is equal to $O(n+k) = O(n)$

### 3.2 Analysis of Searching algorithm - Binary Search

A binary search algorithm is applied only on a sorted list of items. Low and high are two indexes used, which are initialized to one and N, respectively, and S stores the item to be searched.





‹ qsort() Library Function Demo (/?q=MULNCourseBook/listDetailedCBLearningContents/178099/cidb/full/view/153784/431550/431535/39731)