Personal note on

Introduction of Complexity

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Introduction

In computer science, **complexity** refers to the measure of the resources required for an algorithm to solve a problem. Typically the resources are: Time and Memory. Let's know about their definitions:

1. Time Complexity:

   The amount of time an algorithm/program takes to complete to execute, can be defined as time complexity.[How runtime grows when the input size grows]. It is often expressed using Big-O notation, which provides an upper bound on the runtime (e.g.,O(n), O(n^2), O(logn)).

Asymptotic Analysis:

In what proportion does the number of operations increase when input size grows. It is expressed with Big O notation.

2. Space Complexity:

   The amount of memory space an algorithm/program takes to complete to execute, can be defined as time complexity. It is also expressed using Big-O notation.

Why Complexity Analysis?

- Compare different algorithms to choose the most efficient one.
- Optimize programs to handle larger dataset and run faster.
- Identify potential performance bottlenecks of a system/program.