Data Structures Overview

Abstract data types

Abstraction	Implementation (Data structure)
• List	• Dynamic Array • Linked List
• Queue	• Linked List based Queue • Array based Queue • Stack based Queue
• Map	• Tree map • Hash Map / Hash Table

Big O Notation

- Big-O Notation
  - Gives an upper bound of complexity in the worst case, helping to quantify performance as the input size becomes arbitrarily large

n - the size of the input

Constant time	$O(1)$
Logarithmic time	$O(\log(n))$
Linear time	$O(n)$
Linearithmic time	$O(n \log(n))$
Quadratic time	$O(n^2)$
Cubic time	$O(n^3)$
Exponential time	$O(b^n)$, $b > 1$
Factorial time	$O(n!)$