

# Data Structures

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- Linear
  - Array
    - Static Array
      - `class Array`
    - Dynamic Array
      - `class BitArray`
      - `class ArrayList`
      - `class List<T>`
  - Linked List
    - Singly Linked List
    - Doubly Linked List
      - `class LinkedList<T>`
    - Circular Linked List
    - Skip List
  - Stack
    - Array-based Stack
      - `class Stack<T>`
    - Linked List-based Stack
  - Queue
    - Simple Queue
      - `class Queue<T>`
    - Deque (Double-Ended Queue)
      - `class LinkedList<T>`
    - Priority Queue
    - Circular Queue
- Non-Linear
  - Tree
    - Binary Tree
      - Full Binary Tree
      - Complete Binary Tree
      - Perfect Binary Tree
      - Binary Search Tree (BST)
      - AVL Tree
      - Red-Black Tree
      - Heap
        - Min-Heap
        - Max-Heap
    - Trie Tree
      - Prefix Tree
  - Multiway Tree
    - B-Tree

- B+ Tree
- Quadtree
- Octree
- Graph
  - Directed / Undirected
  - Weighted / Unweighted
  - Representation
    - Adjacency Matrix
    - Adjacency List
    - Adjacency Multilist
    - Orthogonal List
  - Special Graphs
    - DAG
    - Tree Graph
    - Bipartite
- Set
  - Hash Set
    - `class HashSet<T>`
  - Sorted Set
    - `class SortedSet<T>`
  - Multiset/Bag
  - Bit Set
- Hash/Dictionary
  - Hash Table
    - `class Dictionary< TKey, TValue >`
  - Sorted Map
    - `class SortedList< TKey, TValue >`
    - `class SortedDictionary< TKey, TValue >`
  - Bi-directional Map
  - MultiMap
- Specialized / Utility
  - Ordered
    - `class OrderedDict`
  - ReadOnly
    - `class ReadOnlyCollection<T>`
    - `class ReadOnlyDictionary< TKey, TValue >`
    - `interface IReadOnlyList<T>`
    - `interface IReadOnlyDictionary< TKey, TValue >`
  - Data Binding
    - `class ObservableCollection<T>`
  - String
    - `class StringCollection`

- class StringDictionary
- Bit Operation
  - class BitArray
  - class BitVector32
- Hybrid
  - class HybridDictionary
  - class NameValueCollection
- Immutable
  - class ImmutableList<T>
  - class ImmutableHashSet<T>
  - class ImmutableDictionary<TKey, TValue>
  - class ImmutableSortedDictionary<TKey, TValue>
- Disjoint Set / Union-Find
- Bloom Filter
- Counting Filter
- Linear Probing Table
- Concurrent
  - class ConcurrentQueue<T>
  - class ConcurrentStack<T>
  - class ConcurrentBag<T>
  - class ConcurrentDictionary<T>
  - class BlockingCollection<T>