

# Data Structures Placement Material

Book: *Data Structures and Algorithm Analysis in C++*, 4<sup>th</sup> Edition by Mark Weiss. Mark Weiss, 2013 (ISBN 9780132847377)

## Chapters Covered

### Chapter 2 - Algorithm Analysis

- 2.1 Mathematical Background
- 2.2 Model
- 2.3 What to Analyze
- 2.4 Running Time Calculations

### Chapter 4 - Trees

- 4.1 Preliminaries
- 4.2 Binary Trees
- 4.3 The Search Tree ADT—Binary Search Trees
- 4.4 AVL Trees
- 4.5 Splay Trees
- 4.6 Tree Traversals (Revisited)
- 4.7 B-Trees

### Chapter 5 - Hashing

- 5.1 General Idea
- 5.2 Hash Function
- 5.3 Separate Chaining
- 5.4 Hash Tables Without Linked Lists
- 5.5 Rehashing

### Chapter 6 - Priority Queues (Heaps)

- 6.1 Model
- 6.2 Simple Implementations
- 6.3 Binary Heap
- 6.4 Applications of Priority Queues
- 6.5 *d*-Heaps
- 6.6 Leftist Heaps
- 6.7 Skew Heaps
- 6.8 Binomial Queues

### Chapter 7 - Sorting

- 7.1 Preliminaries
- 7.2 Insertion Sort
- 7.3 A Lower Bound for Simple Sorting Algorithms

7.4 Shellsort

7.5 Heapsort

7.6 Mergesort

7.7 Quicksort

### **Chapter 8 - The Disjoint Set Class**

8.1 Equivalence Relations

8.2 The Dynamic Equivalence Problem

8.3 Basic Data Structure

8.4 Smart Union Algorithms

8.5 Path Compression

8.6 Worst Case for Union-by-Rank and Path Compression

8.7 An Application

### **Chapter 9 - Graph Algorithms**

9.1 Definitions

9.2 Topological Sort

9.3 Shortest-Path Algorithms

9.4 Network Flow Problems

9.5 Minimum Spanning Tree

9.6 Applications of Depth-First Search

### **Video's**

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