



Design and Analysis
of Algorithms I

Data Structures

Introduction

Data Structures

Point : organize data so that it can be accessed quickly and usefully.

Examples : lists, stacks, queues, heaps, search trees, hash tables, bloom filters, union-find, etc.

Why so Many ? : different data structures support different sets of operations => suitable for different types of tasks.

Rule of Thumb : choose the “minimal” data structure that supports all the operations that you need.

Taking It To The Next Level

Level 0

- “what’s a data structure ?”

Level 1

- cocktail party-level literacy

Level 2

- “this problem calls out for a heap”

Level 3

- “I only use data structures that I create myself”