



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 \Rightarrow 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 wrote myself"