



Design and Analysis  
of Algorithms I

# Data Structures

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## 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"