# Data Structures

## Arrays

## Stacks

## Queues

## Linked Lists

## Trees

## Tries

## Graphs

## Hash Tables

## Big-O

|  |  |  |
| --- | --- | --- |
| O(1) | Constant – no loops | Rule 1: Always worst case |
| O(log n) | Logarithmic – searching sorted data | Rule 2: Remove constants |
| O(n) | Linear – for loops and while loops | Rule 3: Different inputs should |
| O(n \* log(n)) | Log Linear – sorting operations | Have different variables. |
| O(n^2) | Quadratic – nested loops | O(n + m) or O(n \* m) |
| O(2^n) | Exponential – recursive algorithms | Rule 4: Drop non-dominant |
| O(n!) | Factorial – a loop for every element | terms |

# Algorithms

## Sorting

## Dynamic Programming

## Depth First Search (DFS)

## Breadth First Search (BFS)

## Recursion

Used for repeating sub-tasks

Key is setting up the base case

# Object Oriented Programming and Patterns

# System Design