r.   ☰   Start Here   Teams   AI Roadmaps   Login   Sign Up

Data Structures & Algorithms Roadmap

Step by step guide to learn Data Structures and Algorithms in 2024
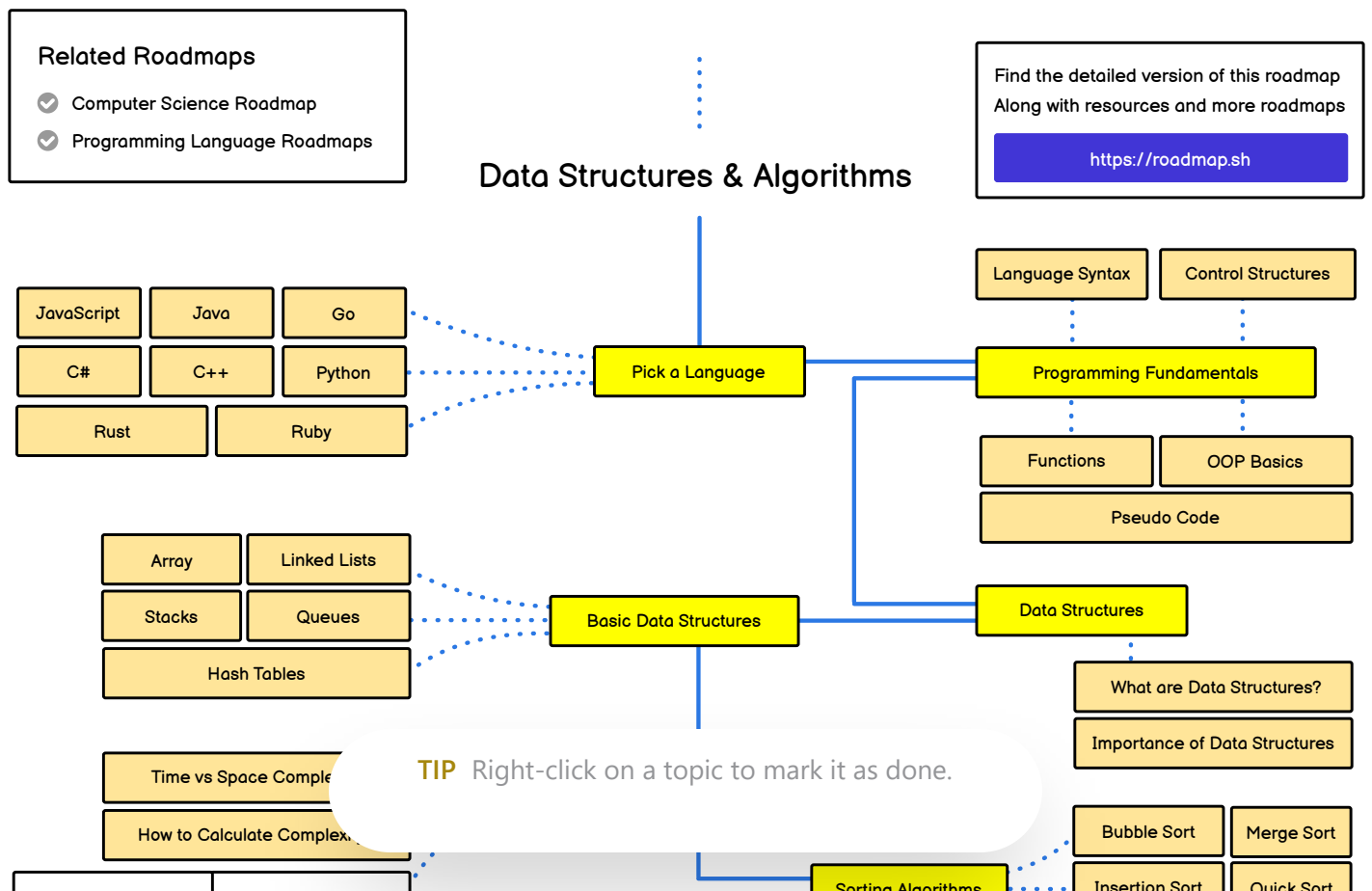
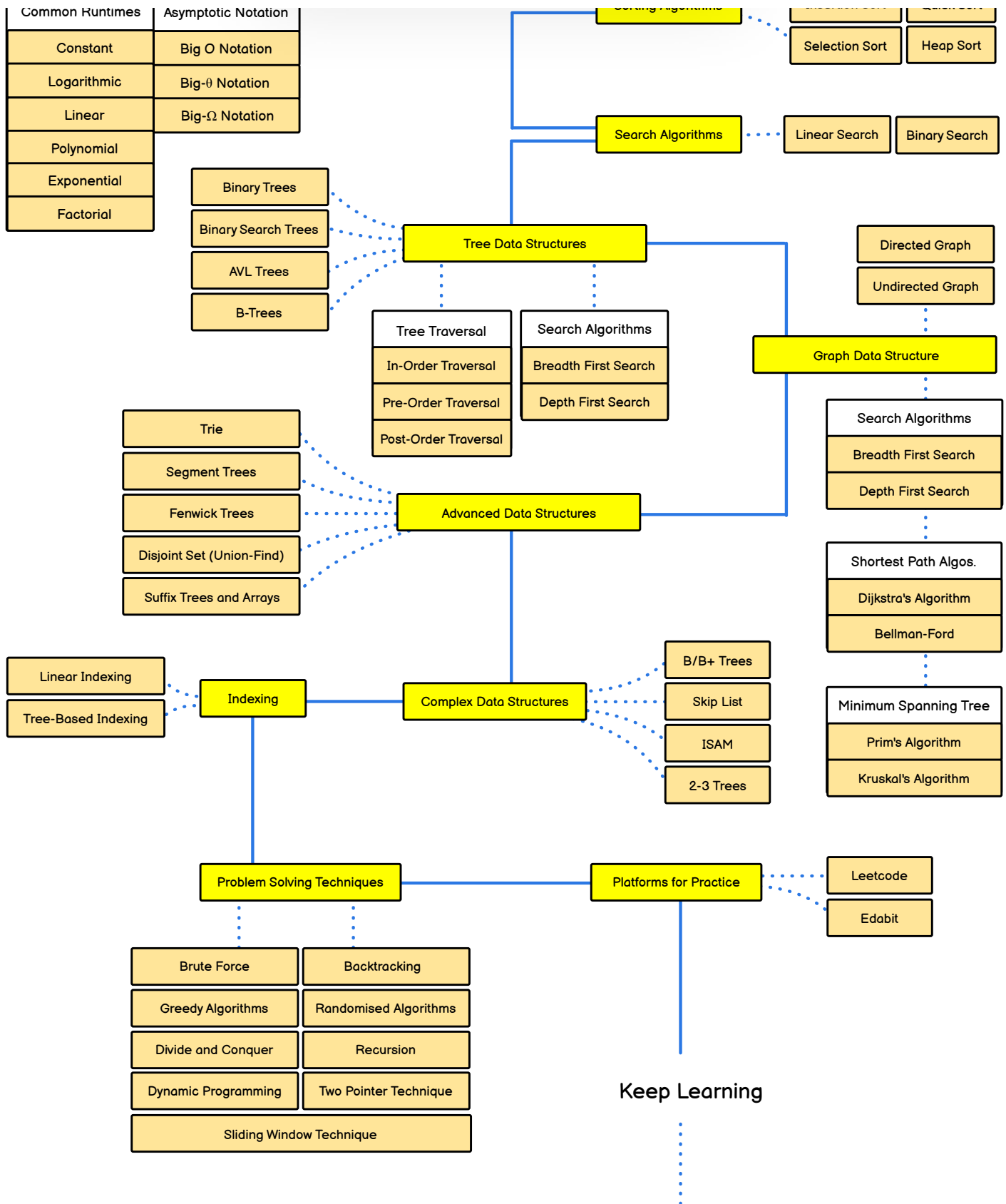← All Roadmaps   ⌁ Share   ⬇ Download   Suggest Changes

0% DONE   0 of 99 Done   ❓ Track Progress

TIP Right-click on a topic to mark it as done.
Learn more.

Related Roadmaps

- ✓ Computer Science Roadmap
- ✓ Programming Language Roadmaps

Data Structures & Algorithms

Find the detailed version of this roadmap
Along with resources and more roadmaps

https://roadmap.sh

JavaScript	Java	Go
C#	C++	Python
Rust	Ruby

Pick a Language

| Language Syntax | Control Structures |

Programming Fundamentals

| Functions | OOP Basics |
| Pseudo Code |

| Array | Linked Lists |
| Stacks | Queues |
| Hash Tables |

Basic Data Structures

Data Structures

What are Data Structures?

Importance of Data Structures

| Time vs Space Comple... |
| How to Calculate Complex... |

TIP Right-click on a topic to mark it as done.

| Bubble Sort | Merge Sort |
Sorting Algorithms
| Insertion Sort | Quick Sort |

Common Runtimes	Asymptotic Notation
Constant	Big O Notation
Logarithmic	Big-θ Notation
Linear	Big-Ω Notation
Polynomial	
Exponential	
Factorial	

Sorting Algorithms

Insertion Sort	Quick Sort
Selection Sort	Heap Sort

Search Algorithms

Linear Search	Binary Search

Tree Data Structures

- Binary Trees
- Binary Search Trees
- AVL Trees
- B-Trees

Tree Traversal	Search Algorithms
In-Order Traversal	Breadth First Search
Pre-Order Traversal	Depth First Search
Post-Order Traversal	

Graph Data Structure

- Directed Graph
- Undirected Graph

Search Algorithms
Breadth First Search
Depth First Search

Shortest Path Algos.
Dijkstra's Algorithm
Bellman-Ford

Minimum Spanning Tree
Prim's Algorithm
Kruskal's Algorithm

Advanced Data Structures

- Trie
- Segment Trees
- Fenwick Trees
- Disjoint Set (Union-Find)
- Suffix Trees and Arrays

Indexing

- Linear Indexing
- Tree-Based Indexing

Complex Data Structures

- B/B+ Trees
- Skip List
- ISAM
- 2-3 Trees

Problem Solving Techniques

Brute Force	Backtracking
Greedy Algorithms	Randomised Algorithms
Divide and Conquer	Recursion
Dynamic Programming	Two Pointer Technique
Sliding Window Technique	

Platforms for Practice

- Leetcode
- Edabit

Keep Learning

TIP Right-click on a topic to mark it as done.

📖 **Related Roadmaps**   **All Roadmaps →**

Computer Science	Curriculum with free resources for a self-taught developer.
Python	Step by step guide to becoming a Python Developer in 2024

Join the Community

roadmap.sh is the **6th most starred project on GitHub** and is visited by hundreds of thousands of developers every month.

TIP Right-click on a topic to mark it as done.

Rank 6th out of 28M!	+75k every month	+1.5k every month
281K	**+1M**	**22K**
GitHub Stars	Registered Users	Discord Members
★ Star us on GitHub Help us reach #1	👥 Register yourself Commit to your growth	🎮 Join on Discord Join the community

Roadmaps   Best Practices   Guides   Videos   FAQs   YouTube

roadmap.sh by Kamran

Community created roadmaps, articles, resources and journeys to help you choose your path and grow in your career.

© roadmap.sh · Terms · Privacy · ✉ ▶
X

THENEWSTACK

The leading DevOps resource for Kubernetes, cloud-native computing, and the latest in at-scale development, deployment, and management.

DevOps · Kubernetes · Cloud-Native

TIP Right-click on a topic to mark it as done.