

# Graph Algorithms - GeeksforGeeks

**Source:** <https://www.geeksforgeeks.org/graph-data-structure-and-algorithms/>

Courses Tutorials Practice Jobs DSA Tutorial Interview Questions Quizzes Must Do Advanced DSA System Design Aptitude Puzzles Interview Corner DSA Python Technical Scripter 2026 Explore DSA Fundamentals Logic Building Problems Analysis of Algorithms Data Structures Array Data Structure String in Data Structure Hashing in Data Structure Linked List Data Structure Stack Data Structure Queue Data Structure Tree Data Structure Graph Data Structure Trie Data Structure Algorithms Searching Algorithms Sorting Algorithms Introduction to Recursion Greedy Algorithms Tutorial Graph Algorithms Dynamic Programming or DP Bitwise Algorithms Advanced Segment Tree Binary Indexed Tree or Fenwick Tree Square Root (Sqrt) Decomposition Algorithm Binary Lifting Geometry Interview Preparation Interview Corner GfG160 Practice Problem GeeksforGeeks Practice - Leading Online Coding Platform Problem of The Day - Develop the Habit of Coding DSA Course 90% Refund Graph Algorithms Last Updated : 26 Jan, 2026 Graph is a non-linear data structure like tree data structure . A Graph is composed of a set of vertices( V ) and a set of edges( E ). The vertices are connected with each other through edges. The limitation of tree is, it can only represent hierarchical data. For situations where nodes or vertices are randomly connected with each other, we use Graph. Example situations where we use graph data structure are, a social network, a computer network, a network of locations used in GPS and many more examples where different nodes or vertices are connected without any hierachic or constraint on structure. The following images show different types of graphs that see when solving graph problems. Basics Graph Representations BFS and DFS Breadth First Traversal Depth First Traversal BFS vs DFS Rotten Tomatoes Islands in a Graph Flood Fill Check for Bipartite Word Ladder Snakes and Ladder Water Jug problem Pacific Atlantic Water Flow Shortest Path in Binary Matrix Clone a Graph Transitive Closure Cycles Cycle in a Directed Graph Cycle in an undirected graph Cycle in a graph using colors Negative cycle in a Graph Cycles of length n Clone a Directed Acyclic Graph Disjoint Set Data Structure Shortest Path Dijkstra's shortest path Bellman–Ford Floyd Warshall Johnson's algorithm Shortest Path in Directed Acyclic Graph Dial's Algorithm Multistage Graph (Shortest Path) Shortest path in an unweighted graph Minimum mean weight cycle algorithm Shortest Path in a Binary Graph Minimum weight cycle D'Esopo-Pape Algorithm Minimum Spanning Tree Prim's Minimum Spanning Tree (MST) Kruskal's Minimum Spanning Tree Prim's vs Kruskal's algorithm for MST Applications of Minimum Spanning Tree Minimum cost to connect all cities Total Spanning Trees Minimum Product Spanning Tree Reverse Delete Algorithm for Minimum Spanning Tree Boruvka's Algorithm for Minimum Spanning Tree Topological Sorting Topological Sorting All topological sorts of a Directed Acyclic Graph Kahn's Algorithm for Topological Sorting Maximum edges that can be added to DAG so that it remains DAG Longest Path in a Directed Acyclic Graph Topological Sort of a graph using departure time of vertex Find Itinerary from a given list of tickets Connectivity in Graph Articulation Points (or Cut Vertices) in a Graph Biconnected Components Bridges in a graph Eulerian path and circuit Fleury's Algorithm for printing Eulerian Path or Circuit Strongly Connected Components Count walks with exactly k edges Euler Circuit in a Directed Graph Shortest chain to reach the target word An array of strings can be chained to form a circle Tarjan's Algorithm for strongly connected Components Seven Bridges of Königsberg Dynamic Connectivity Maximum Flow in Graph Max Flow Problem Introduction Ford-Fulkerson Algorithm for Max Flow Maximum edge disjoint paths Minimum s-t cut in a flow network Maximum Bipartite Matching Channel Assignment Problem Introduction to Push Relabel Algorithm Karger's Algorithm Dinic's algorithm for Maximum Flow Some must do Problems Largest region in Boolean Matrix Count Trees in a forest A Peterson Graph Problem Clone an Undirected Graph Graph Coloring Traveling Salesman Problem (TSP) Erdos Renyl Model (for generating Random Graphs) Chinese Postman or Route Inspection Hierholzer's Algorithm for directed graph Bipartite or Not Snake and Ladder Problem Boggle (All Words in a Board) Hopcroft Karp Algorithm for Maximum Matching Graph from given degrees of all vertices Universal Sink Number of sinks in a graph Two Clique Problem If you are looking for difficulty-wise list of problems, please refer to Graph Data Structure . Some Quizzes Graph Traversal Graph Shortest Path Graph Minimum Spanning Tree Graph Quick Links : Shortest path questions Practice Graphs DSA Tutorial Comment Article Tags: Article Tags: Graph DSA