Contents

Programmer's HandBook

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Graph Theory

1 Types of Graphs

1.1 Undirected Graph

A Undirected graph is a graph in which edges have no orientation. the edge (u,v) is identical to (v,u)

1.2 Directed Graph(Digraph)

A directed graph is a graph in which edges have orientation. for example edge (u,v) is the edge from u to v

1.3 Weighted Graphs

Weighted graphs are graphs in which it's edges contains a certain value attributed to certain value such as cost, distance, quantity, etc...

1.4 Tree

A tree is a an Undirected graph with no cycles. Equivalently it's a connected graph with n nodes and n-1 edges

1.5 Rooted Trees

A rooted tre is a tree with designated roote node where every edge either ponts away from or towards the root node. When edges point away from the root node the graph is called arborescence or out tree and when the edges point towards the roote node the graph is called anti-arborescence.

1.6 Directed Acyclic Graphs(DAGs)

Directed Acyclic Graphs are Directed graphs with no cycles. These graphs are commonly used in representing structure with dependencies. Several efficient algorithms exist to operate on DAGS