

Course Review

Note Title

12/11/2007

Graphs

Graph Representations

Adjacency List

Adjacency Matrix

Given a small graph, you should be able to illustrate these

Choose which is appropriate for an application

Graph Algs

Single Source Shortest Path Algs

Common use:

vertex \leftrightarrow state in world

edge \leftrightarrow action that moves
you between states

directed vs undirected
weighted vs unweighted

See when you can model a problem as a shortest path problem

Unweighted - BFS starting

$O(n+m)$ at source (if there's a goal you can stop when you discover a path)

weighted -

Fibonacci Dijkstra's alg - No negative weight edges are allowed
 $O(n \log n + m)$

Minimum Spanning Tree

Prim's + Kruskal's Alg

Depth First Search

topological sort

in-place dfs + use in

garbage collection (Mark + Sweep)