**Graphs Search**

**Document Id 41**

Depth-first search <https://en.wikipedia.org/wiki/Depth-first_search>

Depth-first search finds some path from a source vertex s to a target vertex v

Breadth-first search <https://en.wikipedia.org/wiki/Breadth-first_search>

Used to find the shortest path

BFS and DFS searches on Directed graphs have important properties that help to classify the edges of the graph.

For BFS each edge of the graph either connects two vertices at the same level, goes down exactly one level, or goes up any number of levels.

For DFS, each edge either connects an ancestor to a descendant, a descendant to an ancestor, or one node to a node in a previously visited subtree.

It is not possible to get "forward edges" connecting a node to a subtree visited later than that node.

This allows tests for connectedness (every vertex can reach every other one).