code decoded

data structures

graph

A graph is a non-linear data structure that consists of

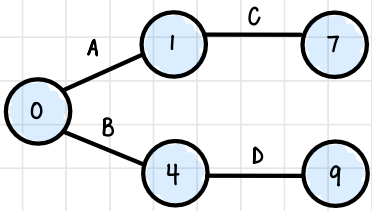
① Nodes or vertices

② Edges, arcs that connect two Nodes

$G = (V, E)$

$V = \{0, 1, 4, 7, 9\}$

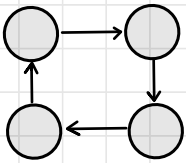
$E = \{A, B, C, D\}$



Good for representing links or relationships

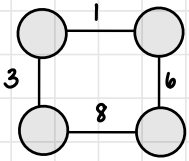
- Computer Networks
- Social Networks
- Geography

Directed graph



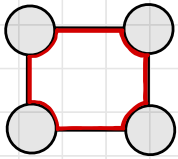
edges point one direction

Weighted graph



edges have a weight

Cyclic graph



graph contains a series of nodes that connects back to itself.

Breadth-First Search

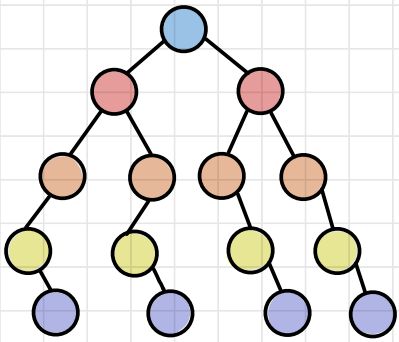
Traverse the graph by visiting all nodes one edge away, two edges away, etc.

Implementation utilizes a queue data structure

Implemented with iteration

Must store pointers → memory intensive

Finds the shortest path in the process



Depth-First Search

Traverse the graph by going down a path until it cannot go further

Move back up to the next unvisited node

Implementation utilizes a stack data structure

Implemented with Recursion