



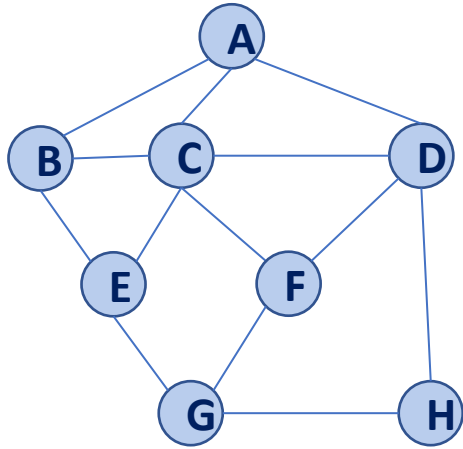
Graph Traversals

Learning Objectives

1. Step through a BFS algorithm



BFS Traversal



d - distance
P - predecessor

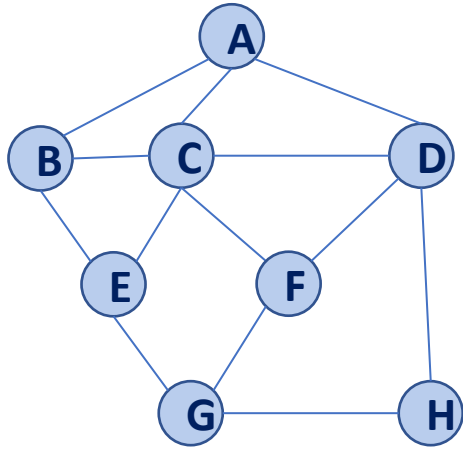
Queue

Front

Back

v	d	P	Adjacent Edges
A			
B			
C			
D			
E			
F			
G			
H			

BFS Traversal



d - distance
P - predecessor

v	d	P	Adjacent Edges
A	0	-	C B D
B			A C E
C			B A D E F
D			A C F H
E			B C G
F			C D G
G			E F H
H			D G

Queue

A

Front

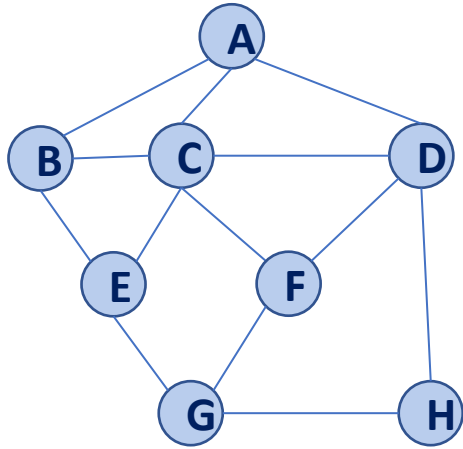
Back



Graph Traversal - BFS from a vertex

14	BFS(G, v):	Node Labels
15	Queue q	- Visited
16	q.enqueue(v)	- Unexplored
17		Edge Labels
18	while !q.empty():	- Discovery
19	v = q.dequeue()	- Cross
20	If (getLabel(v) != VISITED){	- Unexplored
21	setLabel(v, VISITED)	
22	foreach (Vertex w : G.adjacent(v)):	
23	if getLabel(w) == UNEXPLORED:	
24	setLabel(v, w, DISCOVERY)	
25	setLabel(w, VISITED)	
26	q.enqueue(w)	
27	elseif getLabel(v, w) == UNEXPLORED:	
28	setLabel(v, w, CROSS)	
29	}	

BFS Traversal



d - distance
P - predecessor

v	d	P	Adjacent Edges
A	0	-	C B D
B			A C E
C			B A D E F
D			A C F H
E			B C G
F			C D G
G			E F H
H			D G

Queue

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