Breadth-First Search

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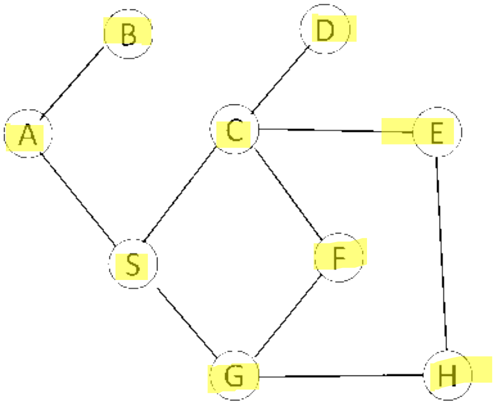

BFS visits all vertices adjacent to a vertex before going forward by level.
BFS uses queue to keep track the status of nodes

Queue Status (first in first out)

H D	F D	E D	D D	G D	C D	S D	B D

Last First

Output (visited nodes): A B S C G D E F

Notes:

- *For the purpose of demonstration, we will follow the alphabet order when deciding which one should be first to select.*
- *To dequeue, instead of erasing a node, I marked D next to it so it would help to follow.*

1. We start at node A, highlight A, and place node A in output as visited.
2. Node A connects to nodes B and S; enqueue B and S and marked as visited.
3. Check the queue status, next node is B. Update the pointer to node B; we dequeue node B (marked as D).
4. Check the queue status, next node is S. Update the pointer to node S; we dequeue node S (marked as D).
5. Node S connects to node C and G; enqueue C and G; marked as visited.
6. Top of the queue is node C; update the pointer to node C; dequeue C;
7. Node C has three nodes D, E, F; enqueue D, E, F and marked as visited.
8. Top of the queue is now node G; update the pointer to node G; dequeue G.
9. Node G connects to node H; enqueue H, and marked as visited.
10. Node D is top of queue; D connects to C; but C already visited, dequeue D.
11. Node E is top of queue; E connects to C, H already visited, dequeue E.
12. Node F is top of queue; F connects to C, G already visited, dequeue F.
13. Node H is top of queue; H connects to E, G already visited, dequeue H.

The search ends when the queue status is empty.