Queue

Queue ADT - FIFO

– Elements of some proper type of T - Operations - Feature: First In, First Out – void push(T t) – void pop() – T front() – bool empty() – unsigned int size() – Constructors and destructors

Operation Number	Command	Stack
1	Q.push(Ant)	Ant
2	Q.push(Bee)	Bee
3	Q.push(Cat)	Cat
4	Q.push(Dog)	Dog

> *What if we were to do Q.pop()?*

Operation Number	Command	Stack
1	Q.push(Bee)	Bee
2	Q.push(Cat)	Cat
3	Q.push(Dog)	Dog

Stack Uses

– Buffers – Breadth first search – Simulations – Producer–Consumer Problems

Breadth first search Expanded

– Used to find the shortest path to the start to the goal – Starting from Node start – Visit all neighbors of the node – Stop – if the neighbor is the goal – Otherwise – Visit neighbors two hops away – Repeat until visiting all neighbors

Breadth First Visualized

CONCEPT DIAGRAM

Level 0

A

Mark any node as Starter or Initial ①

Level 1

B → C → D

Explore and traverse un-visited nodes ②
adjacent to starting node

Level 2

E → F → G → H

Mark Node as Completed and move to
next adjacent and
un-visited nodes ③

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