CS 440 Fall 2018 Homework Assignment 1

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1

BFS	DFS	uniform-cost	A*
q = [A]	q = [A]	q = [A]	q = [A]
A, q = [B, C, D]	A, q = [B, C, D]	A, q = [B(3), C(5), D(4)]	A, q = [B(7), C(8), D(8)]
B, q = [C, F]	B, q = [C, F]	B, q = [C(1), F(6)]	B, q = [C(4), F(6)]
C, q = [D, E, F]	C, q = [D, E, F]	C, q = [E(2), D(5), F(5)]	C, q = [E(3), F(5), D(9)]
D, q = [E]	D, q = [E]	E, q = [F(2), D(3)]	E, q = [F(2), D(7)]
F	E, q = [F]	F	F
	F		

2

Cycle, Graph Search, BFS - O(k), the search will alternate by searching one on the left, then on the right, traversing 2*k nodes
Cycle, Graph Search, DFS - O(n), the search will start on the left and have to traverse n - k nodes before getting to k
Cycle, Tree Search, BFS - O(n), since visited nodes are not kept track of, this search will always look at the left node first, operating like a DFS would
Cycle, Graph Search, DFS - O(n), this search will operate the same way graph DFS would since it will look at left neighbor first anyway

IDS, Graph Search, BFS - O(m), the search will alternate between left and right, requiring 4m nodes to be visited
IDS, Graph Search, DFS - O(∞), this search will continue indefinitely into the left
IDS, Tree Search, BFS - O(∞), this search will continue forever into the left since it does not keep track of visited neighbours
IDS, Tree Search, DFS - O(∞), this search will continue forever into the left like graph DFS would