CMPT 435 - Spring 2019 - Rocco Piccirillo

Assignment Three – LaTeX Graphs, Graphs, and more Graphs

Rocco Piccirillo
Rocco.Piccirillo1@Marist.edu

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0.1 Depth First Search

We initially start at the root node. The worst case is O(V + E) because we would be traversing all of the graphs points with all of their connected edges. Or, we would could also say O(V) because we would just be traversing all of the vertices without any repetition. When searching depth first we go to the lowest first and keep looking for the lowest value going as deep as you can.

0.2 Breadth First Search

BFS is basically the same as Depth First Search except, we are using a queue and not a stack. Another difference is the order we visit the nodes. We go level by level to search. Breadth first search takes about O(V + E) when there is a vertex set named V and and edge set named E. This is also the worst case scenario. It initially takes O(V) time to initialize the distance and predecessor for each vertex which is Θ(V). Each vertex gets visited one time at max, each vertex gets en-queued at most one time.

0.3 Binary Search Tree

The worst possible run time of Binary Search Time is O(n). This would happen if the tree if not balanced and we basically just search till the absolute end of earth to find. If this the case with our search, most definitely not but it is always good to share. If by chance, the tree is balanced it takes about O(logn) time. Think of each point in the search tree as nodes with next values pointing to whatever is attached to that specific point.