# Oracle Dijkstra's

In some graph G, we are given a sorted list of nodes, sorted by their distances from some start vertex A. Design an *efficient* algorithm to find the shortest paths tree starting from A.

Hint: Your algorithm should be more efficient than Dijkstra's.

**Solution:** This algorithm essentially removes the purpose of the priority queue in normal Dijkstra's. When a node is removed from the PQ normally, this signifies we have found the shortest path from the source to that node, AND that this node is the next closest node to the source that hasn't been visited yet. In a sorted list of nodes, we can simply traverse through the nodes in order. Therefore, our algorithm is simply to run Dijkstra's, but instead of keeping a priority queue we go through our sorted list of nodes in order. Our runtime is O(V+E).