Weighted Graphs: Take 1

BFS works if the graph is unweighted. Maybe it just works for weighted graphs too?



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Running Time Analysis Dijkstra(Graph G, Vertex source) initialize distances to ∞ , source.dist to 0 mark all vertices unprocessed initialize MPQ as a Min Priority Queue add source at priority 0 while (MPQ is not empty) { u = MPQ.removeMin() foreach(edge (u,v) leaving u){ if(u.dist+weight(u,v) < v.dist){</pre> if(v.dist == ∞) //if v not in MPQ MPQ.insert(v, u.dist+weight(u,v)) else MPQ.decreaseKey(v, u.dist+weight(u,v)) v.dist = u.dist+weight(u,v) v.predecessor = u } } mark u as processed }

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How Do We Find a Topological Ordering? TopologicalSort(Graph G, Vertex source) count how many incoming edges each vertex has Collection toProcess = new Collection() foreach(Vertex v in G){ if (v.edgesRemaining == 0) toProcess.insert(v) } topOrder = new List() while (toProcess is not empty) { u = toProcess.remove() topOrder.insert(u) foreach(edge (u,v) leaving u){ v.edgesRemaining-if(v.edgesRemaining == 0) toProcess.insert(v) } }