# Dijkstra's Algorithm (SSSP)

## What is Dijkstra's running time?

```
     DijkstraSSSP(G, s):
  6    foreach (Vertex v : G):
  7      d[v] = +inf
  8      p[v] = NULL
  9    d[s] = 0
 10
 11    PriorityQueue Q // min distance, defined by d[v]
 12    Q.buildHeap(G.vertices())
 13    Graph T          // "labeled set"
 14
 15    repeat n times:
 16      Vertex u = Q.removeMin()
 17      T.add(u)
 18      foreach (Vertex v : neighbors of u not in T):
 19        if cost(u, v) + d[u] < d[v]:
 20          d[v] = cost(u, v) + d[u]
 21          p[v] = m
 22
 23    return T
```