**Dijkstra’s Algorithm**

**function Dijkstra(*Graph*, *source*):**

**create vertex set *S***

**for each vertex *v* in *Graph*: *// Initialization***

**dist[*v*] ← INFINITY *// Unknown distance from source to v***

**prev[*v*] ← UNDEFINED *// Previous node in optimal path from source***

**add *v* to *S* *// All nodes initially in Q (unvisited nodes)***

**dist[*source*] ← 0 *// Distance from source to source***

**while *S* is not empty & min dist < infinity: *//second part of condition is not  
 //necessary if all nodes are reachable***

***u* ← vertex in *S* with min dist[u] *// Node with the least distance will be   
 // selected first***

**remove *u* from *S***

**for each neighbor *v* of *u*: *// where v is still in Q.***

***alt* ← dist[*u*] + length(*u*, *v*)**

**if *alt* < dist[*v*]: *// A shorter path to v has been found***

**dist[*v*] ← *alt***

**prev[*v*] ← *u***

**return dist[], prev[]**