

I ILLINOIS

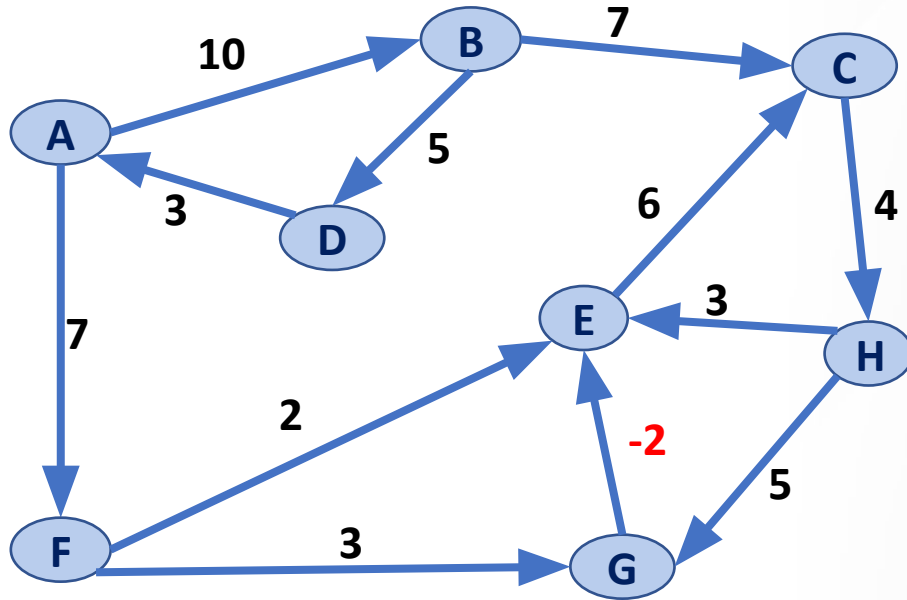
Modified Dijkstra's Algorithm

Learning Objectives

1. Understand the assumptions and limitations for Dijkstra's
2. Modify Dijkstra's to accommodate these assumptions



Example

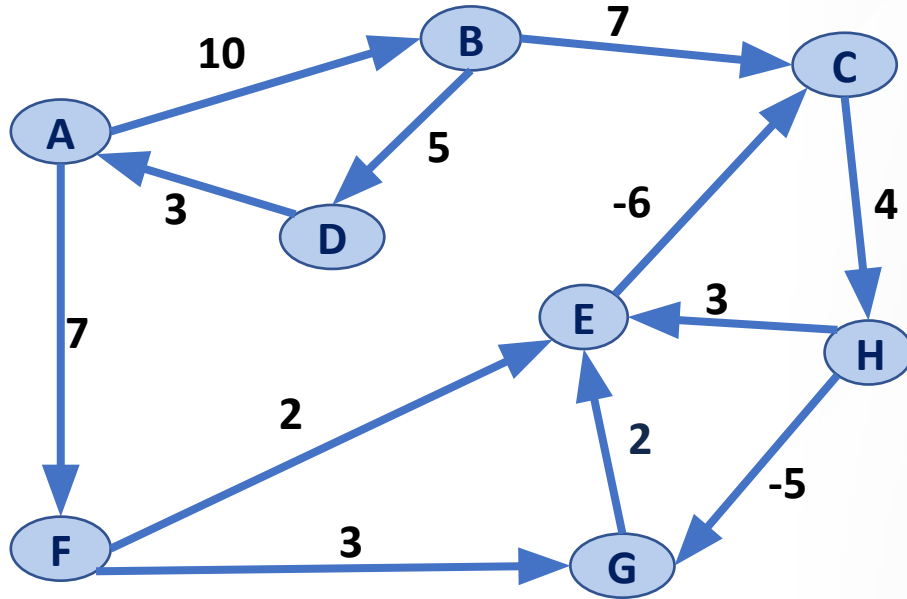


Modified Dijkstra's Algorithm

```
1 DijkstraSSSP(G, s):
2   foreach (Vertex v : G):
3     d[v] = +inf
4     p[v] = NULL
5   d[s] = 0
6
7   PriorityQueue Q // min distance, defined by d[v]
8   Q.buildHeap(G.vertices())
9   Graph T      // "labeled set"
10
11  repeat until Q.empty() times:
12    Vertex u = Q.removeMin()
13    foreach (Vertex v : neighbors of u):
14      if cost(u, v) + d[u] < d[v]:
15        d[v] = cost(u, v) + d[u]
16        p[v] = u
17        Q.push(v)
18
19  return T
```



Example



Example

