# Bellman-Ford: O(mn)

```
Bellman-Ford(G, s, t)
  Initialize M[i, t] = 0 for i=1,...,n   // base case
  Initialize M[0, v] = ∞ for v≠t         // set distance = ∞ when there is
                                         //   no path
  for i=1,...,n-1
     for all v ∈ V
        M[i,v] = M[i-1, t]               // case 1
        for all (v, w) ∈ E
           if c_vw + M[i-1, w] < M[i, v]  // case 2 (with first hop w)
              M[i,v] = c_vw + M[i-1, w]
              first(v) = w               // to recover the path
           end if
        end for
     end for
  end for
  return M[n-1, s]   // shortest s-t path using at most n-1 edges
```

Note: easy to reduce memory to O(n). See book.