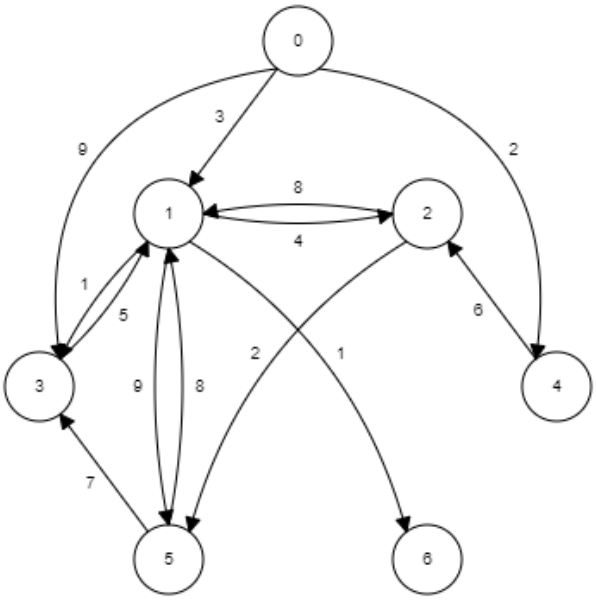
ppl: 1, 2, 5, 10 — 2 ppl go, 1 come back

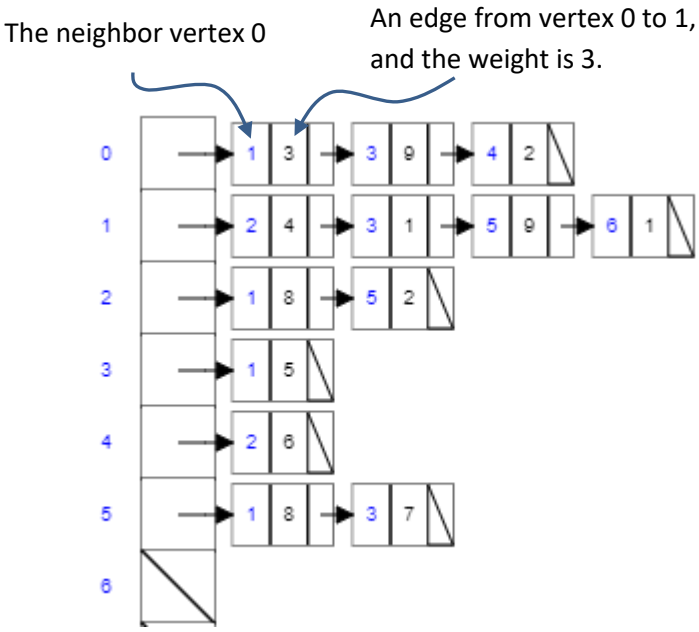
trivial = 19: 1,10 → 2,5 ← 1,2,5 → 2 ← 1,2 → 0
10 + 1 + 5 + 1 + 2 = 19

soln = 17: 1,10 → 5,10 ← 1,5,10 → 1 ← 1,2 → 0
2 + 1 + 10 + 2 + 2 = 17

Data Structure and Algorithm
SSSP Exercise

Here is a graph (left) and its adjacency list (right). In the adjacency list, each node will point to another node with the left entry is the vertex index and the right value is the weight of the edge.





Perform Dijkstra Algorithm of this graph to find all the shortest distance from the node 0. Each of the following table is a priority queue sorted by the shortest estimated distance, δ(0,v).

Node v	δ(0,v)
0	0
1	∞
2	∞
3	∞
4	∞
5	∞
6	∞

Extract 0 →

Node v	δ(0,v)
4	2
1	3
3	9
2	∞
6	∞
5	∞

Extract 4 →

Node v	δ(0,v)
1	3
2	8
3	9
5	∞
6	∞

Extract 1 →

Node v	δ(0,v)
3	4
6	4
2	7
5	12

Extract 3 →

Node v	δ(0,v)
6	4
2	7
5	12

Extract 6 →

Node v	δ(0,v)
2	7
5	12

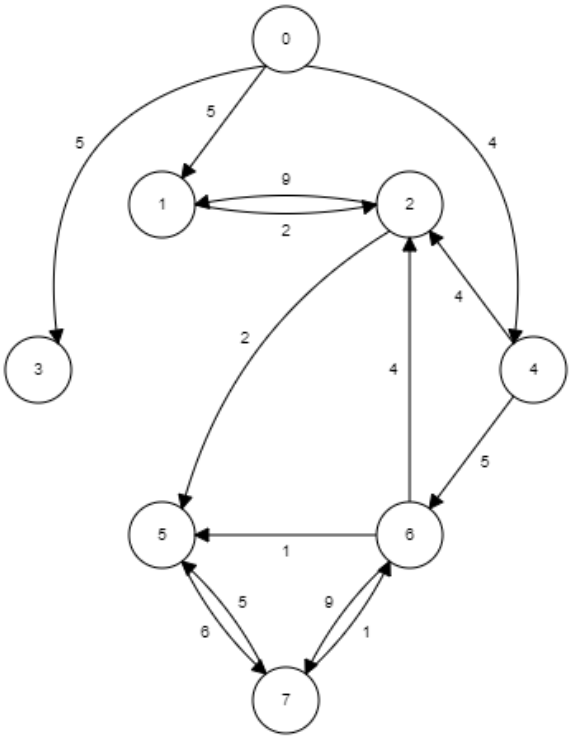
Extract 2 →

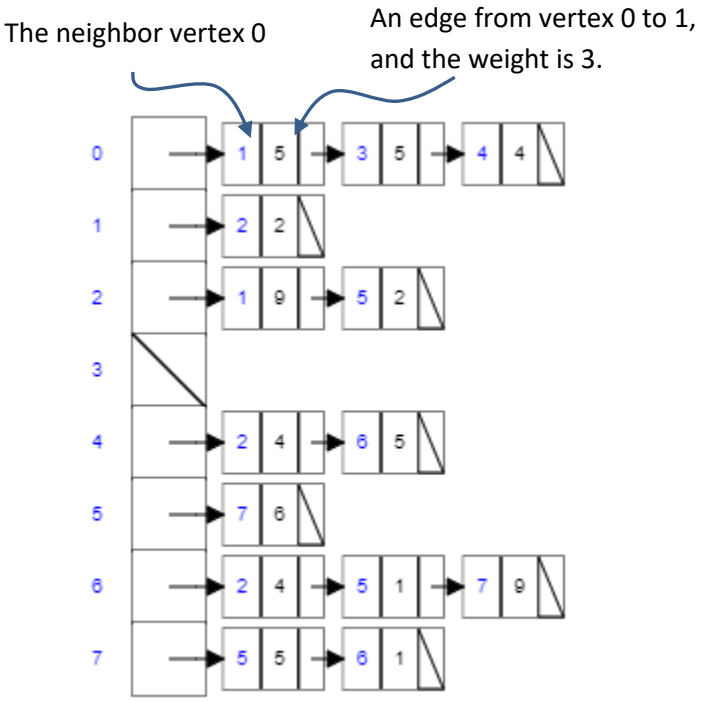
Node v	δ(0,v)
5	9

Extract 5 →

Node v	δ(0,v)

Another Graph for your practice.





Node v	δ(0,v)
0	0
1	∞
2	∞
3	∞
4	∞
5	∞
6	∞

Extract 0 →

Node v	δ(0,v)
4	4
1	5
3	5
2	∞
5	∞
6	∞
7	∞

Extract 4 →

Node v	δ(0,v)
1	5
3	5
2	8
6	9
5	∞
7	∞

Extract 1 →

Node v	δ(0,v)
3	5
2	7
6	9
5	∞
7	∞

Extract 3 →

Node v	δ(0,v)
2	7
6	9
5	∞
7	∞

Extract 2 →

Node v	δ(0,v)
6	9
5	9
7	∞

Extract 6 →

Node v	δ(0,v)
5	9
7	18

Extract 5 →

Node v	δ(0,v)
7	15