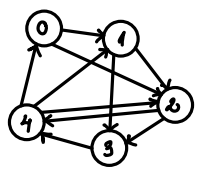


1 Lowest length path between s and t by using backward bfs from t.



dictionary - in

key value  
 0 → {4}  
 1 → {0, 4}  
 2 → {0, 1, 4}  
 3 → {1, 2}  
 4 → {2, 3}

s=1, t=4	x	y	queue: q	visited	dist - dist	meet - dist
initialization			← 4 ←	{4}	key 0 1 2 3 4 value [ ] [ ] [ ] [ ] [0]	key 0 1 2 3 4 value [ ] [ ] [ ] [ ] [ ]
iteration 1	4		← 1 ←			
iteration 1.1		2	← 2 ←	{2, 4}	key 0 1 2 3 4 value [ ] [ ] [1] [ ] [0]	key 0 1 2 3 4 value [ ] [ ] [4] [ ] [ ]
iteration 1.2		3	← 2 3 ←	{2, 3, 4}	key 0 1 2 3 4 value [ ] [ ] [1] [1] [0]	key 0 1 2 3 4 value [ ] [ ] [4] [4] [ ]
iteration 2	2		← 3 ←			
iteration 2.1		0	← 3 0 ←	{0, 2, 3, 4}	key 0 1 2 3 4 value [2] [ ] [1] [ ] [0]	key 0 1 2 3 4 value [2] [ ] [4] [ ] [ ]
iteration 2.2		1	← 3 0 1 ←	{0, 1, 2, 3, 4}	key 0 1 2 3 4 value [2] [2] [1] [1] [0]	key 0 1 2 3 4 value [2] [2] [4] [4] [ ]

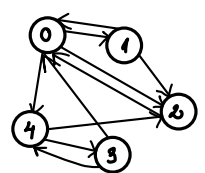
y = 1 = 1 ⇒ STOP

The path is built from meet-dist key value 0 1 2 3 4  
 value [2] [2] [4] [4] [ ] Beginning with s=1.

s=1, meet[1]=2, meet[2]=4=t

path = [1, 2, 4], length = dist[s] = dist[1] = 2

2 Lowest length path between s and t by using backward bfs from t.



dictionary - in

key value  
 0 → {1, 2, 3}  
 1 → {0}  
 2 → {0, 1, 4}  
 3 → {4}  
 4 → {0, 3}

s=2, t=4	x	y	queue: q	visited	dist - dist	meet - dist
initialization			← 4 ←	{4}	key 0 1 2 3 4 value [ ] [ ] [ ] [ ] [0]	key 0 1 2 3 4 value [ ] [ ] [ ] [ ] [ ]
iteration 1	4		← 1 ←			
iteration 1.1		0	← 0 ←	{0, 4}	key 0 1 2 3 4 value [1] [ ] [ ] [ ] [0]	key 0 1 2 3 4 value [4] [ ] [ ] [ ] [ ]
iteration 1.2		3	← 0 3 ←	{0, 3, 4}	key 0 1 2 3 4 value [1] [ ] [ ] [1] [0]	key 0 1 2 3 4 value [4] [ ] [ ] [4] [ ]
iteration 2	0		← 3 ←			
iteration 2.1		1	← 3 1 ←	{0, 1, 3, 4}	key 0 1 2 3 4 value [1] [2] [ ] [ ] [0]	key 0 1 2 3 4 value [4] [0] [ ] [4] [ ]
iteration 2.2		2	← 3 1 2 ←	{0, 1, 2, 3, 4}	key 0 1 2 3 4 value [1] [2] [2] [1] [0]	key 0 1 2 3 4 value [4] [0] [0] [4] [ ]

y = 2 = 2 ⇒ STOP

The path is built from meet-dist key value 0 1 2 3 4  
 value [4] [0] [0] [4] [ ] Beginning with s=2.

s=2, meet[2]=0, meet[0]=4=t

path = [2, 0, 4], length = dist[s] = dist[2] = 2