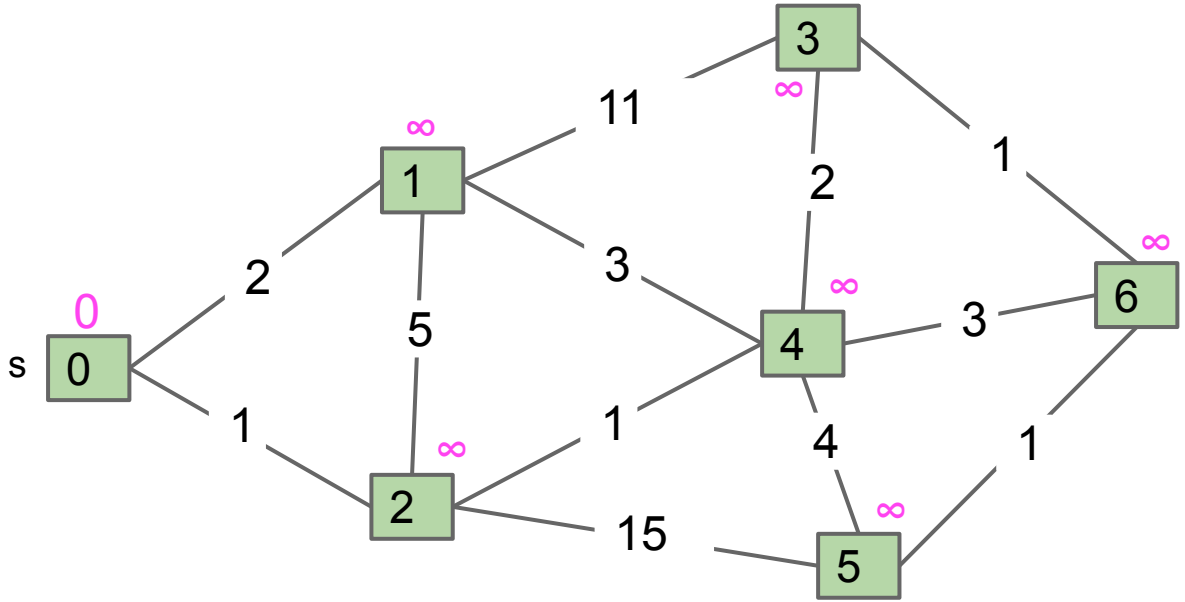
Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0	0	-
1	∞	-
2	∞	-
3	∞	-
4	∞	-
5	∞	-
6	∞	-



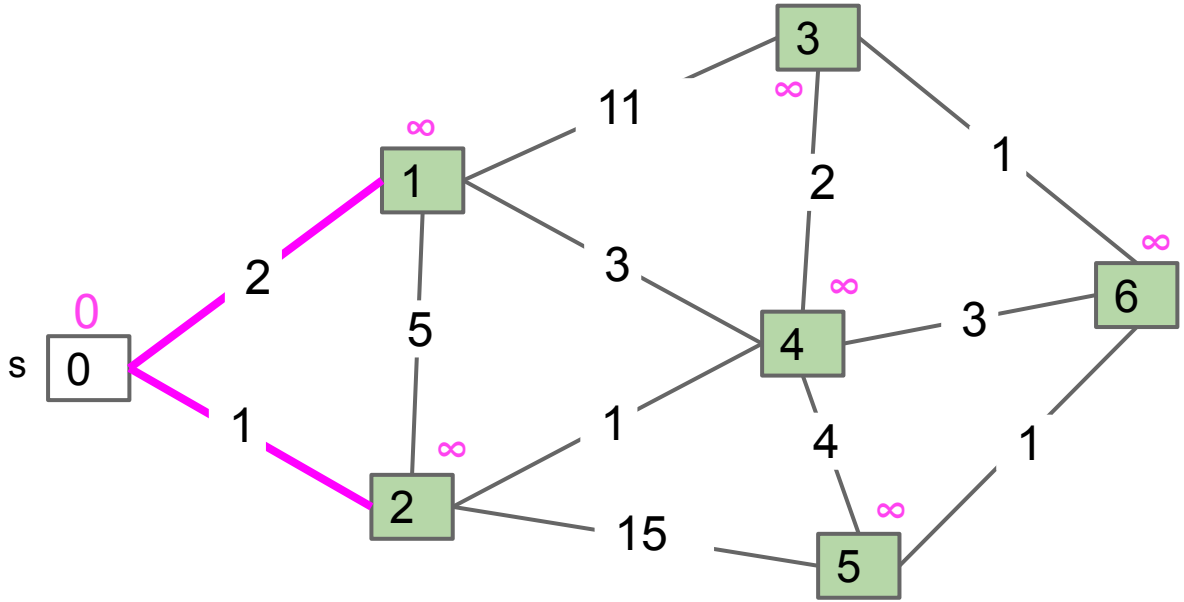
Fringe: [(0: 0), (1: ∞), (2: ∞), (3: ∞), (4: ∞), (5: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0	0	-
1	∞	-
2	∞	-
3	∞	-
4	∞	-
5	∞	-
6	∞	-



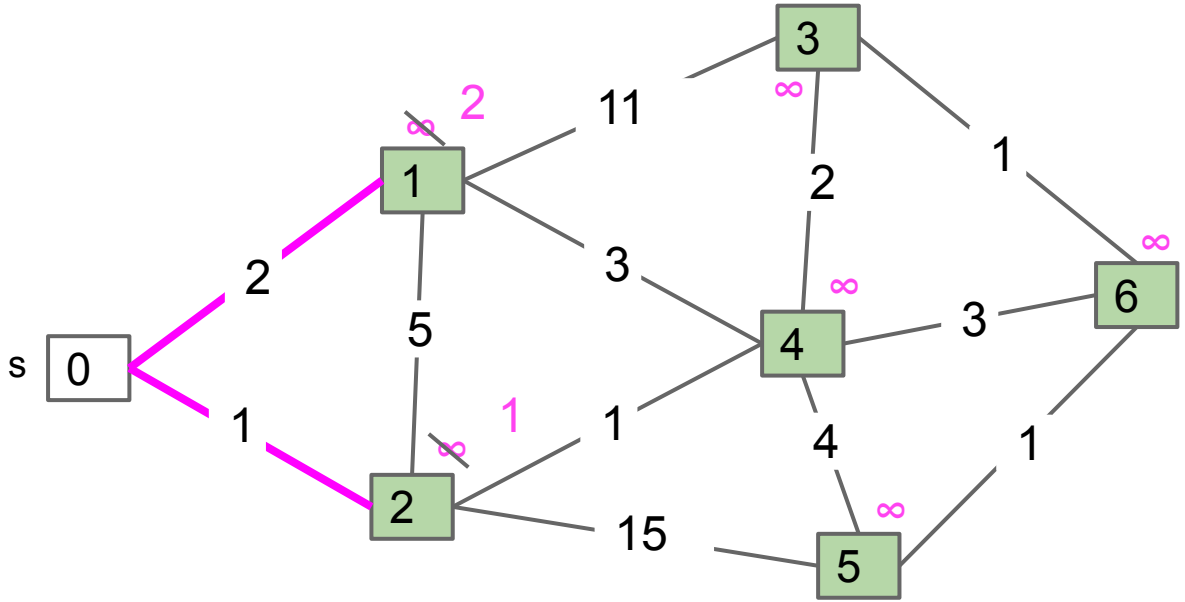
Fringe: [(1: ∞), (2: ∞), (3: ∞), (4: ∞), (5: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2	1	0
3	∞	-
4	∞	-
5	∞	-
6	∞	-



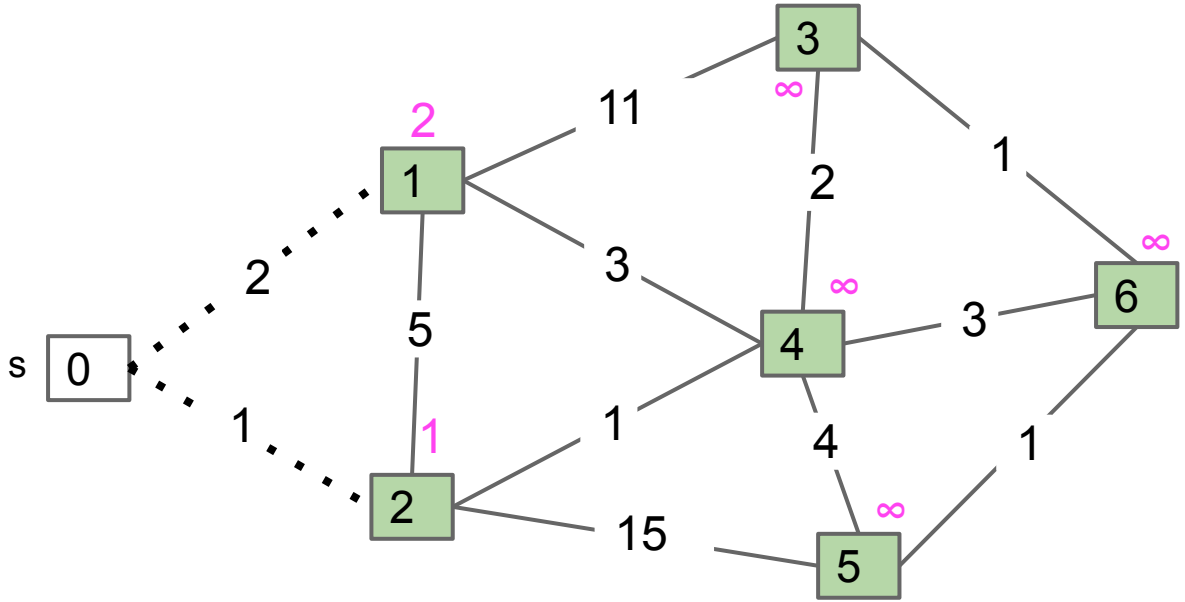
Fringe: [(2: 1), (1: 2), (3: ∞), (4: ∞), (5: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0	0	-
1	2	0
2	1	0
3	∞	-
4	∞	-
5	∞	-
6	∞	-



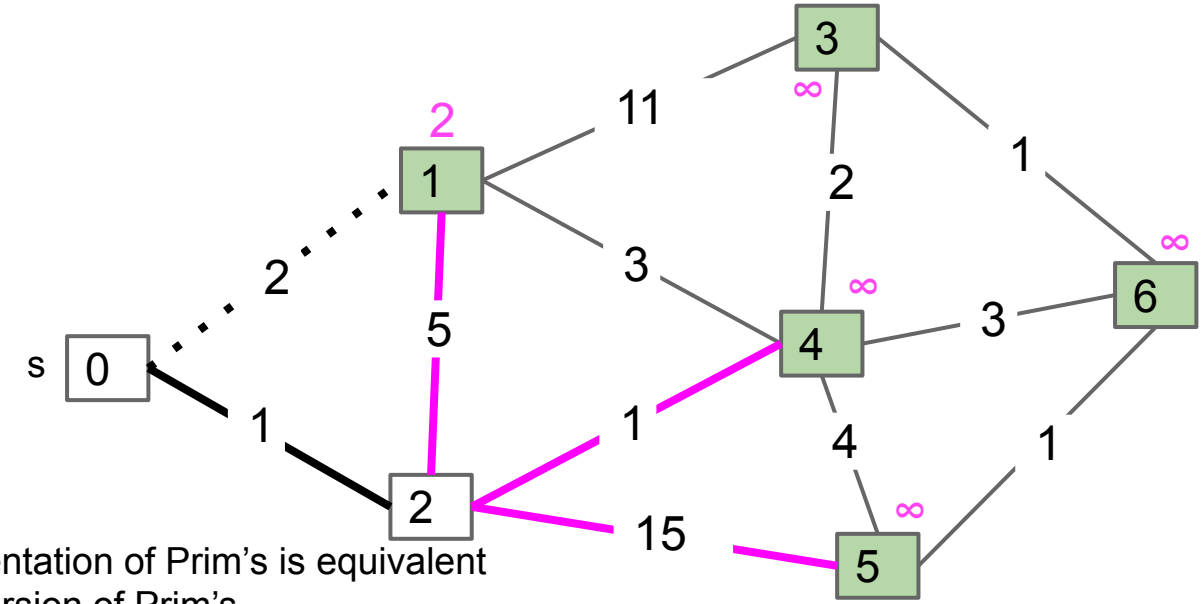
Fringe: [(2: 1), (1: 2), (3: ∞), (4: ∞), (5: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	∞	-
4	∞	-
5	∞	-
6	∞	-



Note: Vertex removal in this implementation of Prim's is equivalent to edge addition in the conceptual version of Prim's.

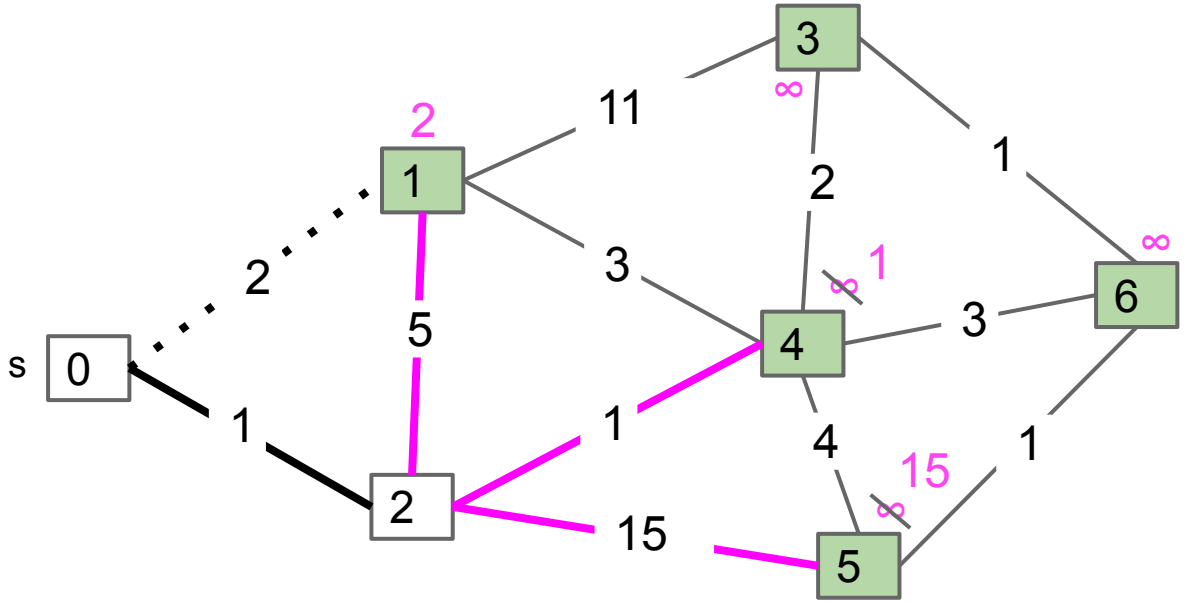
`Fringe: [(1: 2), (3: ∞), (4: ∞), (5: ∞), (6: ∞)]`

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	∞	-
4	1	2
5	15	2
6	∞	-



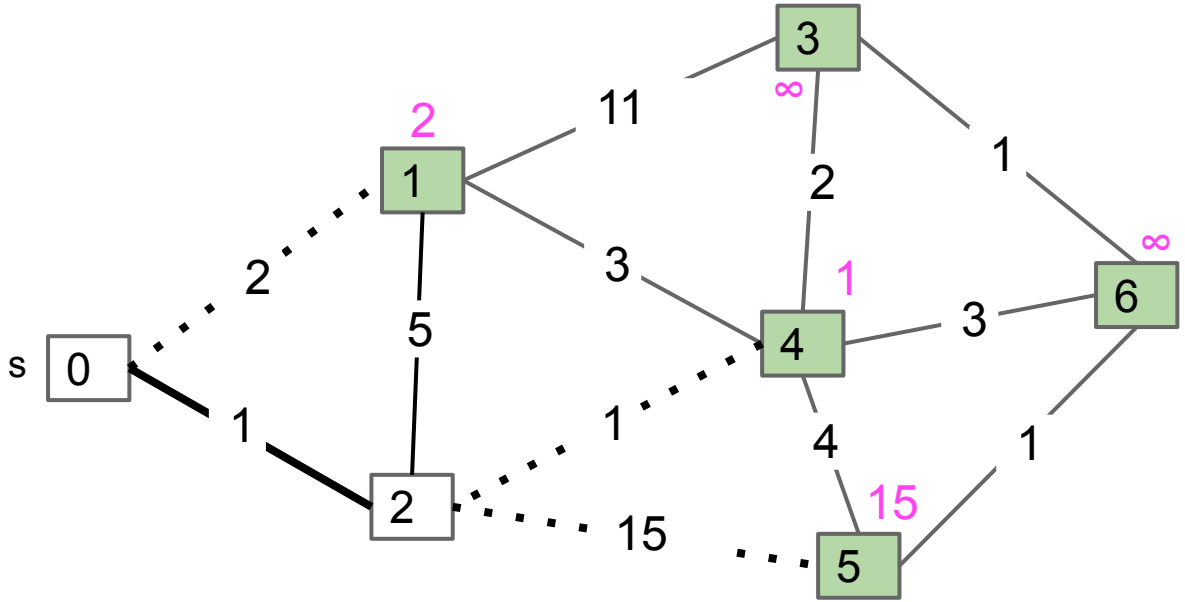
Fringe: [(4: 1), (1: 2), (5: 15), (3: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	∞	-
4	1	2
5	15	2
6	∞	-



Fringe: [(4: 1), (1: 2), (5: 15), (3: ∞), (6: ∞)]

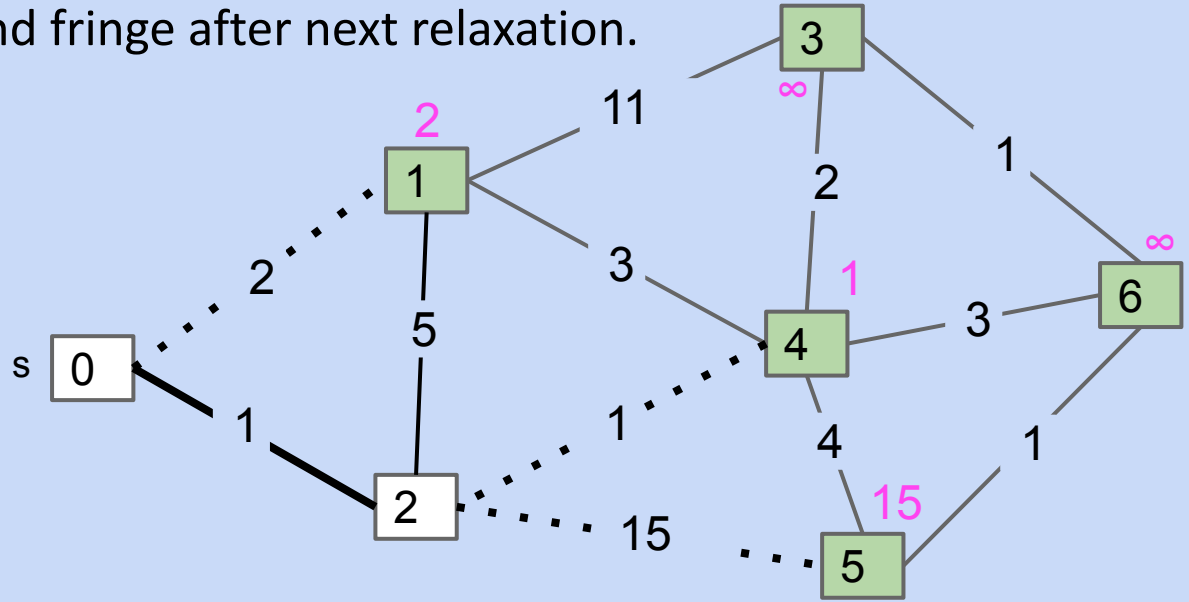
Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

- Show distTo, edgeTo, and fringe after next relaxation.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	∞	-
4	1	2
5	15	2
6	∞	-



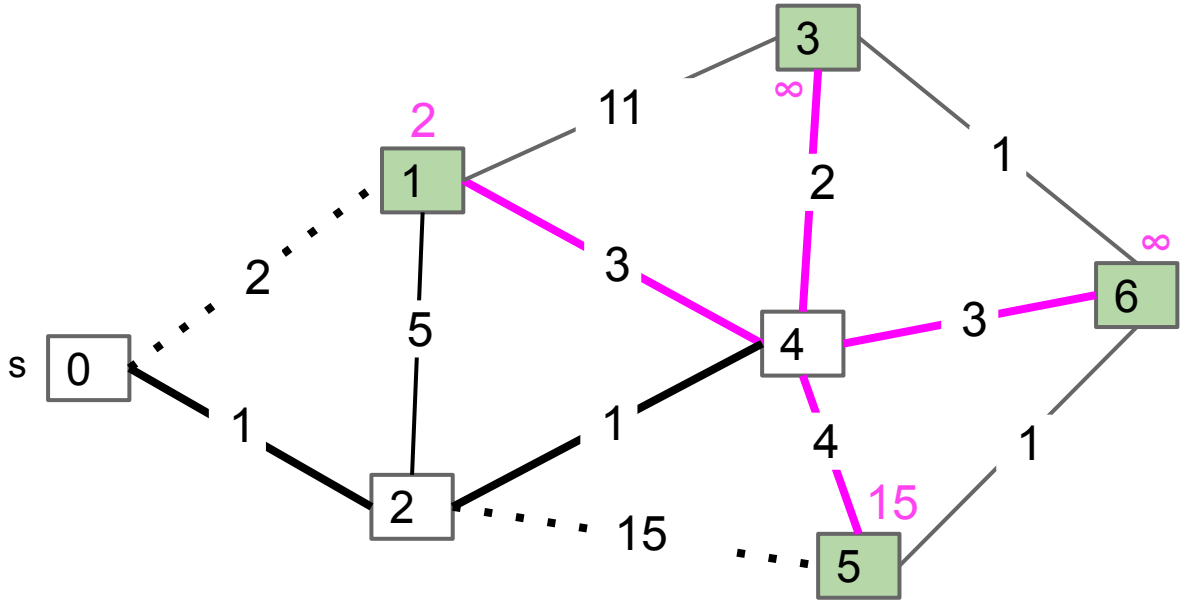
Fringe: [(4: 1), (1: 2), (5: 15), (3: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	∞	-
4		**2**
5	15	2
6	∞	-



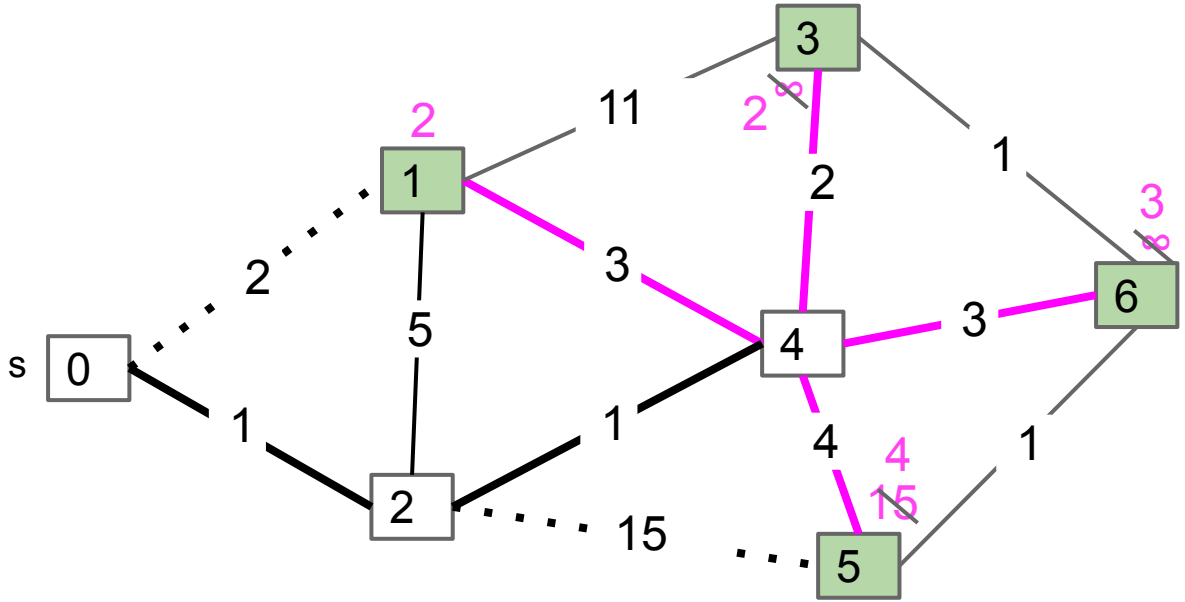
Fringe: [(1: 2), (5: 15), (3: ∞), (6: ∞)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	2	4
4		**2**
5	4	4
6	3	4



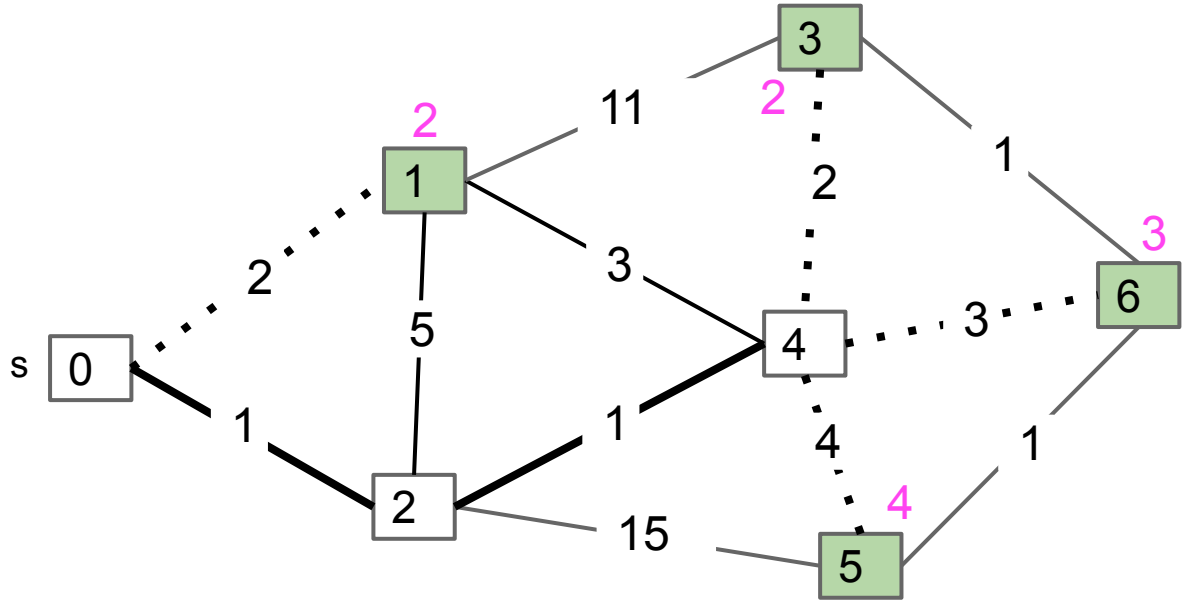
Fringe: [(1: 2), (3: 2), (6: 3), (5: 4)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1	2	0
2		**0**
3	2	4
4		**2**
5	4	4
6	3	4



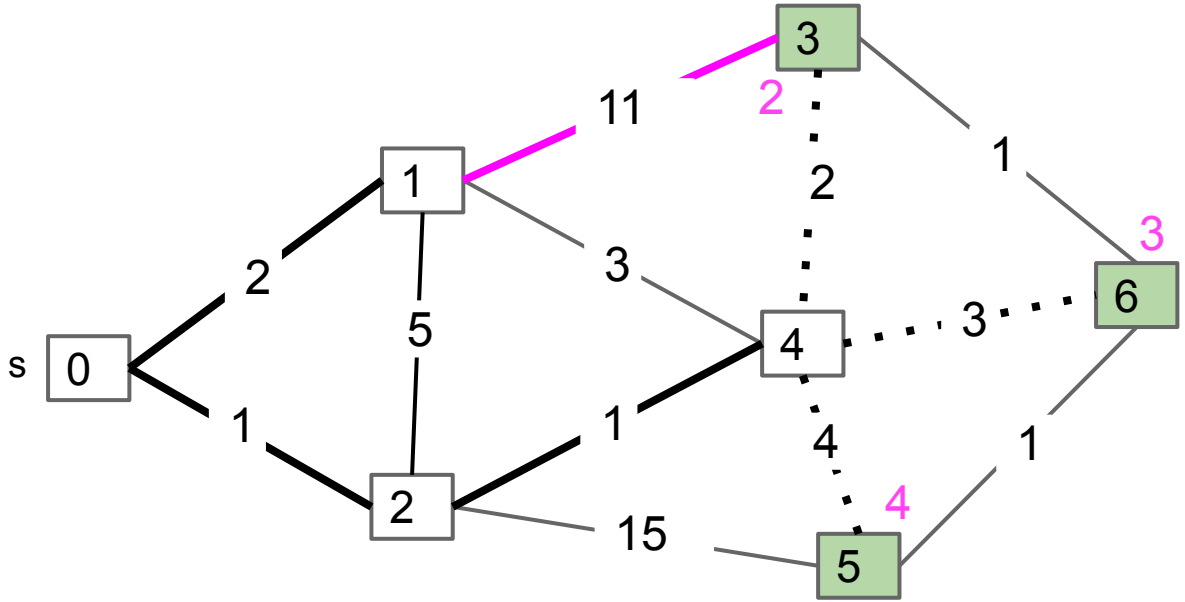
Fringe: [(1: 2), (3: 2), (6: 3), (5: 4)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		**0**
2		**0**
3	2	4
4		**2**
5	4	4
6	3	4



Fringe: [(3: 2), (6: 3), (5: 4)]

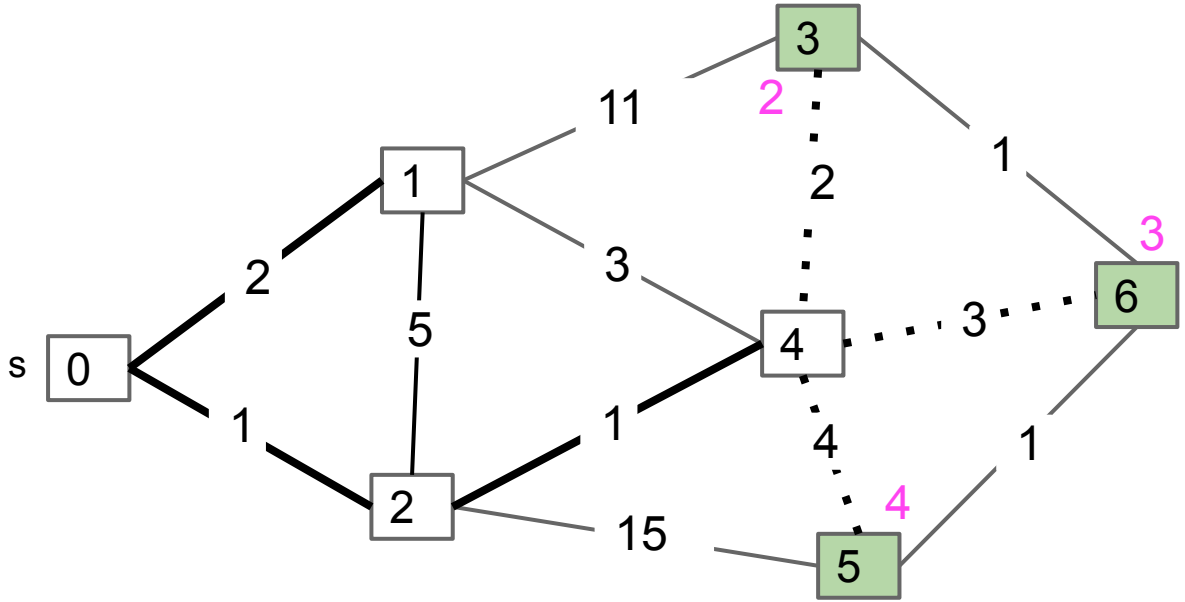
No need to consider edges with weight 5 and 3 since other side is already marked!

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		**0**
2		**0**
3	2	4
4		**2**
5	4	4
6	3	4



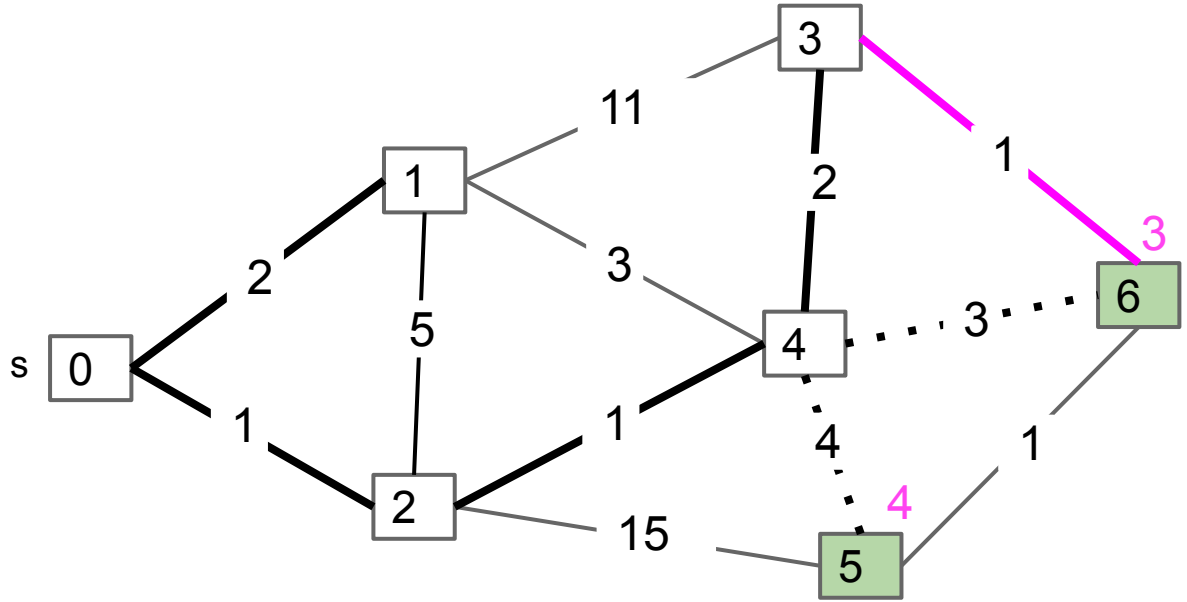
Fringe: [(3: 2), (6: 3), (5: 4)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		**0**
2		**0**
3		**4**
4		**2**
5	4	4
6	3	4



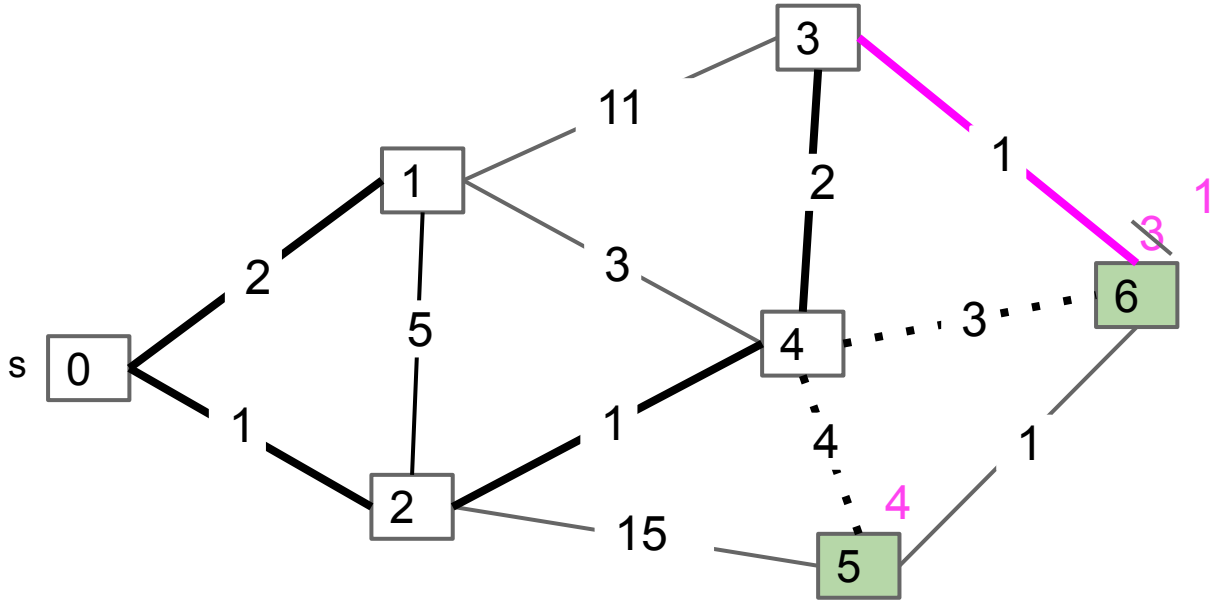
Fringe: [(6: 3), (5: 4)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		**0**
2		**0**
3		**4**
4		**2**
5	4	4
6	1	3



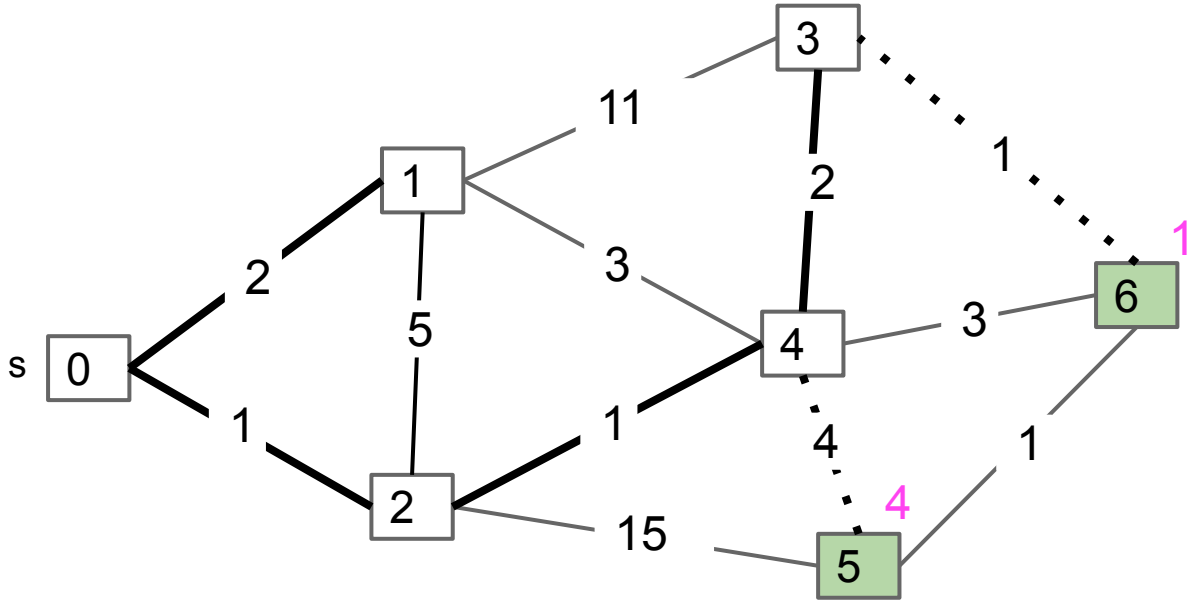
Fringe: [(6: 1), (5: 4)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		**0**
2		**0**
3		**4**
4		**2**
5	4	4
6	1	3



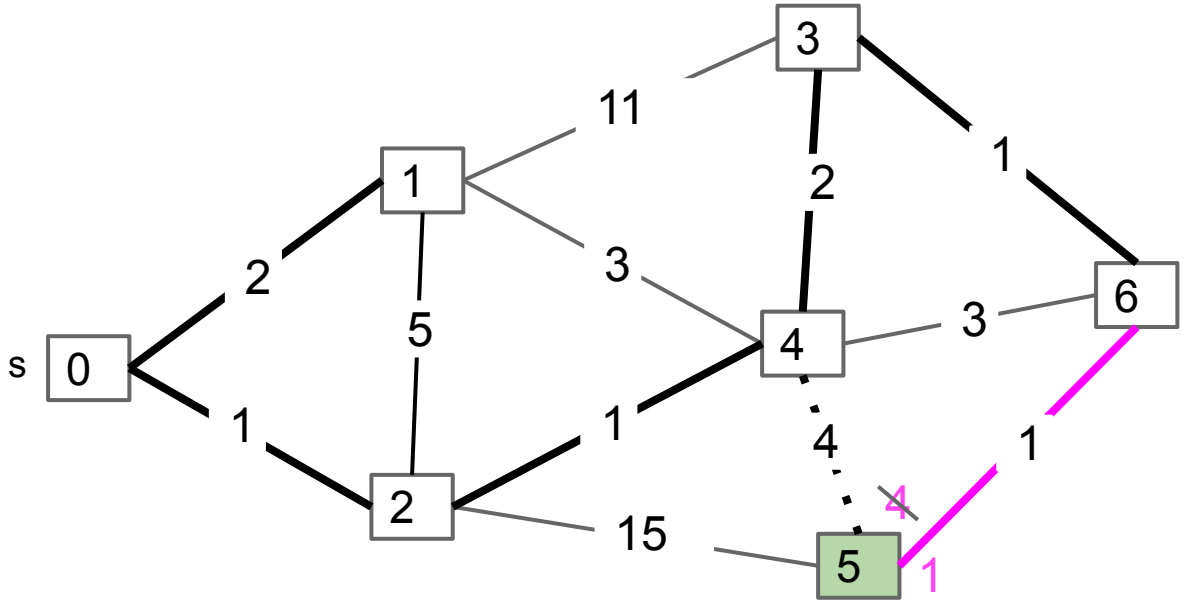
Fringe: [(6: 1), (5: 4)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		0
2		0
3		4
4		2
5	1	6
6		3



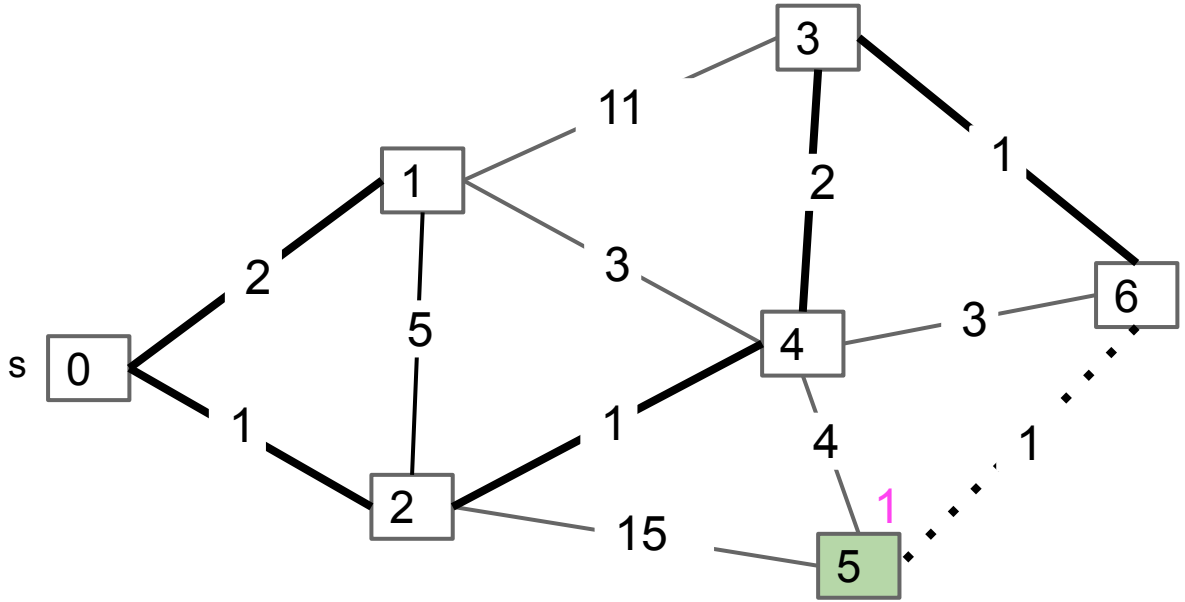
Fringe: [(5: 1)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		**0**
2		**0**
3		**4**
4		**2**
5	1	6
6		**3**



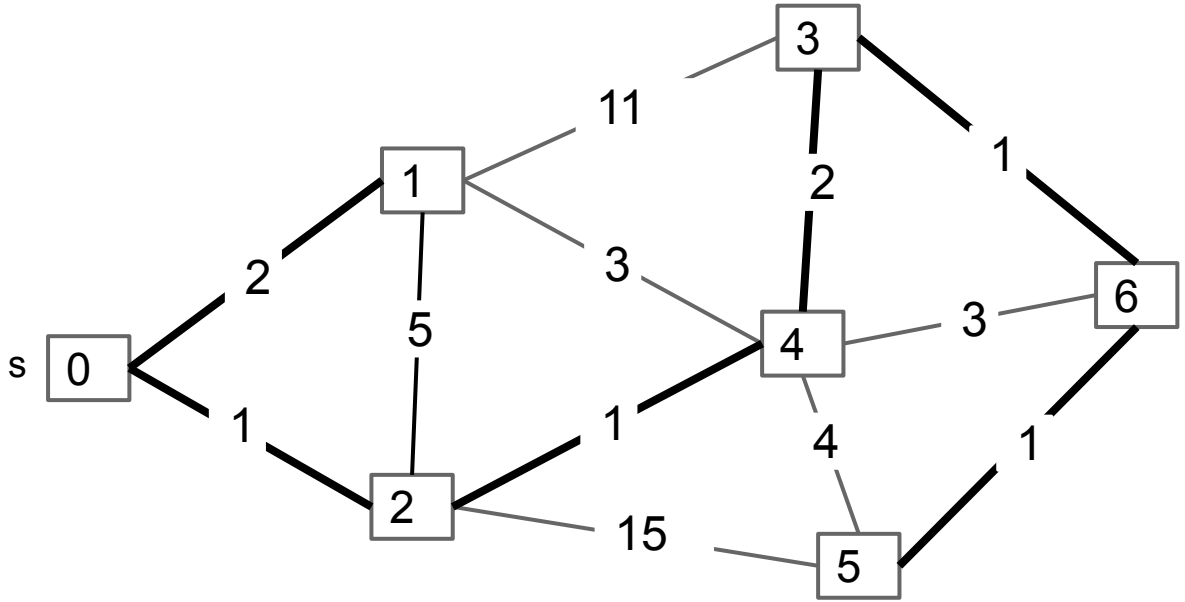
Fringe: [(5: 1)]

Prim's Demo

Insert all vertices into fringe PQ, storing vertices in order of distance from tree.

Repeat: Remove (closest) vertex v from PQ, and relax all edges pointing from v.

#	distTo	edgeTo
0		-
1		0
2		0
3		4
4		2
5		6
6		3



Fringe: []