Tutorial - 6

Ridhima Gandhi
G
08

Q1

Minimum spanning tree (MST) or minimum weight spanning tree is a subroute of edges of a connected edge weighted undirected graph that connects all the vertices together without any cycles & with minimum possible total edge weight

Applications

(1) Design LAN

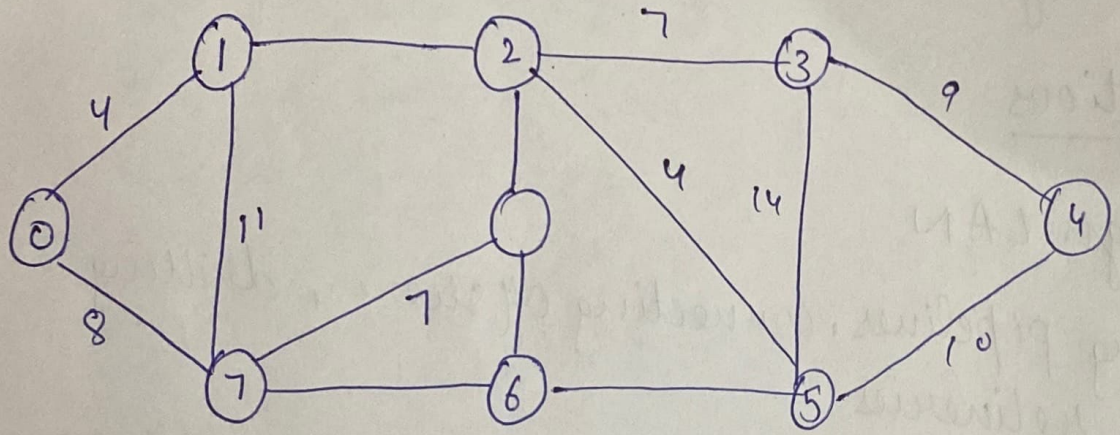
(2) Laying pipelines, connecting offshore, drilling sites, refineries

(3) Construct highways & railroads spanning several cities then we can use MST

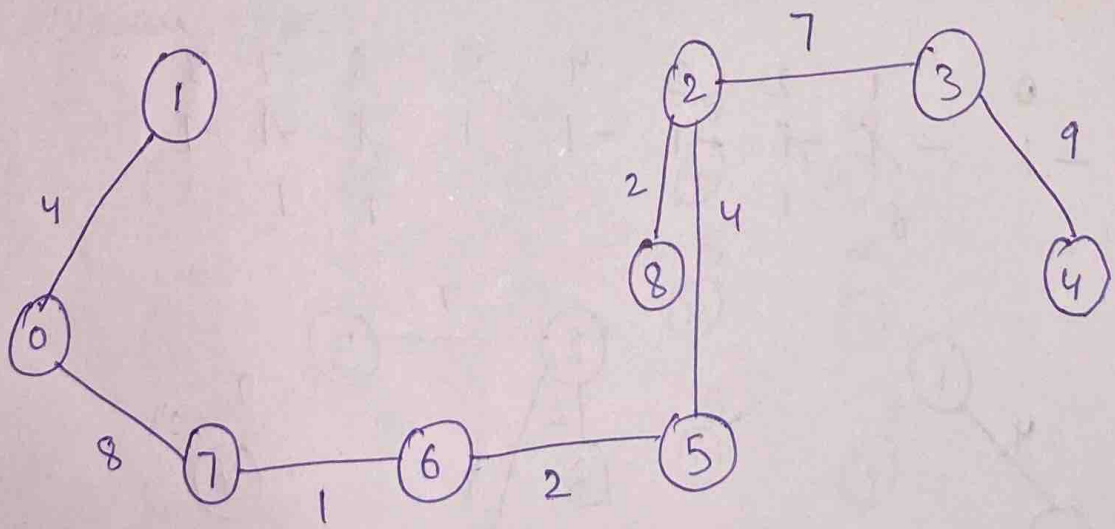
Q2

Prism's Algorithm	Kruskal algorithm	Dijistra's Algorithm	Bellmanford
Time : $O(V+E)\log$	Time : $O\|E\log V\|$	Time : $O(V^2)$	Time $O(VE)$
space : $O(V)$	space : $(O\|V\|)$	space $O(V^2)$	space $O(E)$

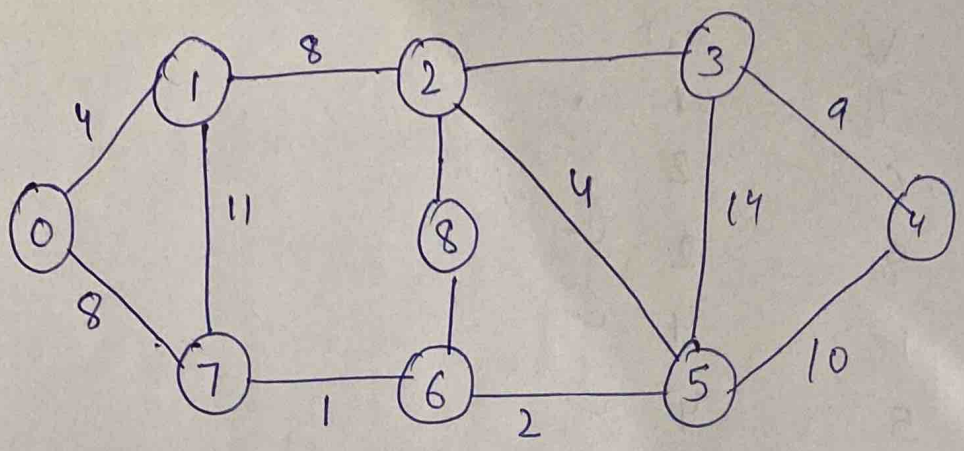
Q3



	V	W	
0	7	1	✓
6	6	2	✓
5	8	2	✓
2	1	4	✓
0	5	4	✓
2	8	6	X
6	3	7	✓
2	8	7	X
7	7	8	✓
0	2	8	X
1	3	9	✓
4	5	10	X
4	7	11	X
0	5	14	X
3			



Q-

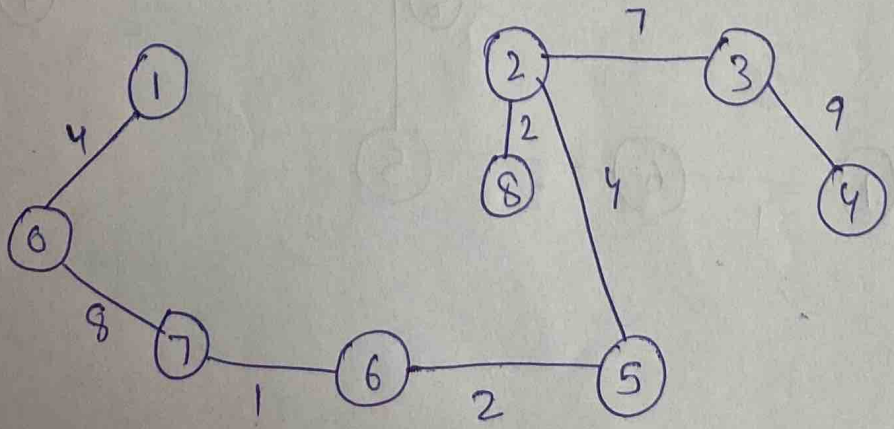


weight

0	1	2	3	4	5	6	7	8
0	∞	∞	∞	∞	∞	∞	∞	∞
~~0~~	4						8	
		8			[1]			
	11		7	4			[2]	
			7	2	1		6	
	4	14	1	10				

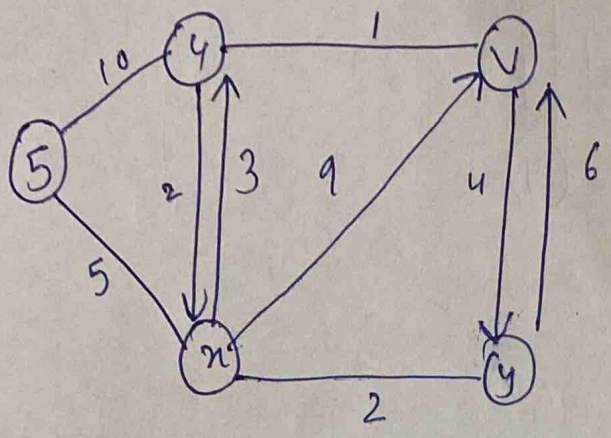
Parent

0	1	2	3	4	5	6	7	8
-1	~~-1~~	~~-1~~	-1	-1	1	~~1~~	~~1~~	-1
	6	1				1	1	



Q5

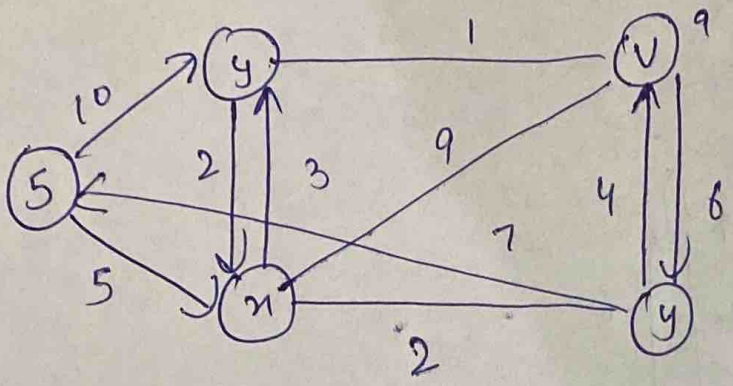
Dijistra Algo



node	shortest distance
t	0
x	5
v	9
y	7

Bellman Ford

	s	t	v	x	y
1st	0	10	∞	5	∞
2nd	0	10	11	5	∞
3rd	0	8	9	5	7
4th	0	8	9	5	2


y
v
s
x
y
10
1
9
2
3
9
4
6
7
5
2