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A min spanning tree or minimum weight spanning tree is a subset of the edge of connected edge-weight undirected graph that connects all the vertics together without any cycle & with the min possible total edge weight.

Application.

→ Design LAN.

→ Laying pipline connecting offshore drilling sites refinies and consume markets.

Suppose you meant to construct highway or railroad spanning several cities then we can use concept of min spin tree.

2. Time complexity of Prism algo

$O(V\log v + E\log v) = O(E\log v)$

it can be improved $= O(E + \log v)$

Space complexity $\sim O(V)$

Kruskal Alg

$T(C) \rightarrow O(E\log v)$

$S(C) \rightarrow O(\log E)$

classmate

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dijkstra's Algo

$T(C) \rightarrow O((|V| + |E|) \log V)$

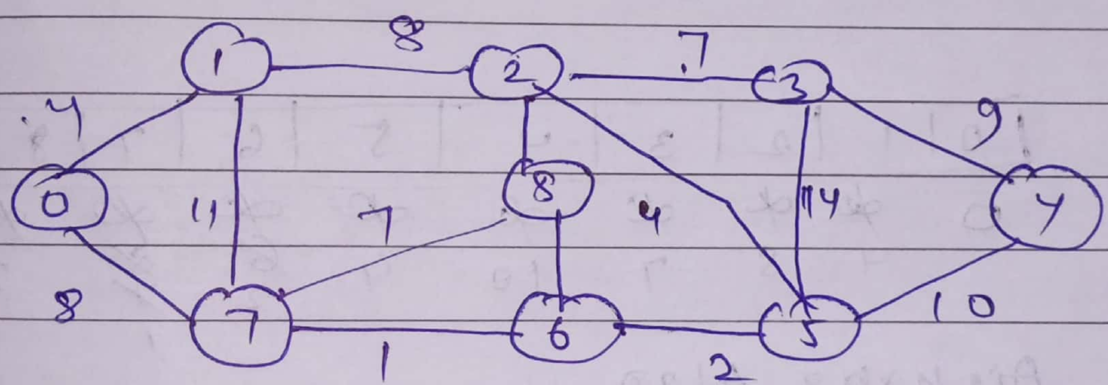
$S(C) \rightarrow O(|V| + |E|)$

Bellman Ford

$T(C) = O(E)$

$S(C) = O(V)$

3. Kruskal Algo



~~4, 2, 2, 4, 4, 6, 7, 7, 8, 8, 76, 28, 65~~

~~28, 10, 86, 78, 23. 07, 12, 34.~~

76 28 65 25 10 86 78 23, 07

12, 34, 45, 17 ; 35

weight of MST = 1 + 2 + 2 + 4 + 4 + 7 + 8 + 9

= 37.

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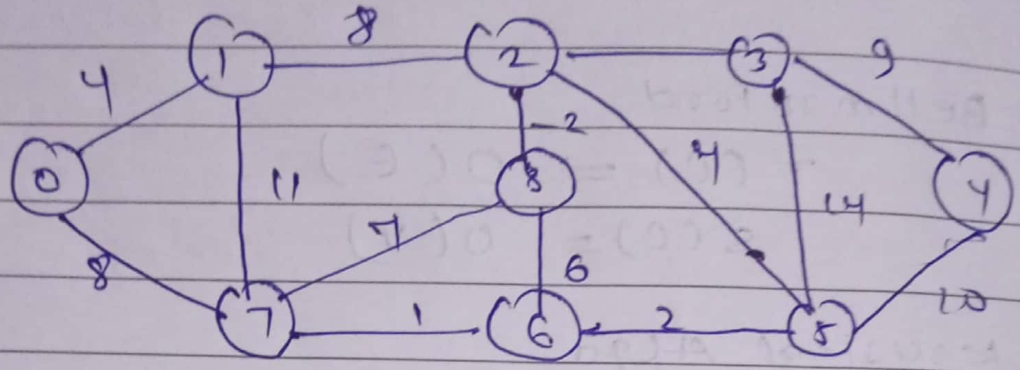
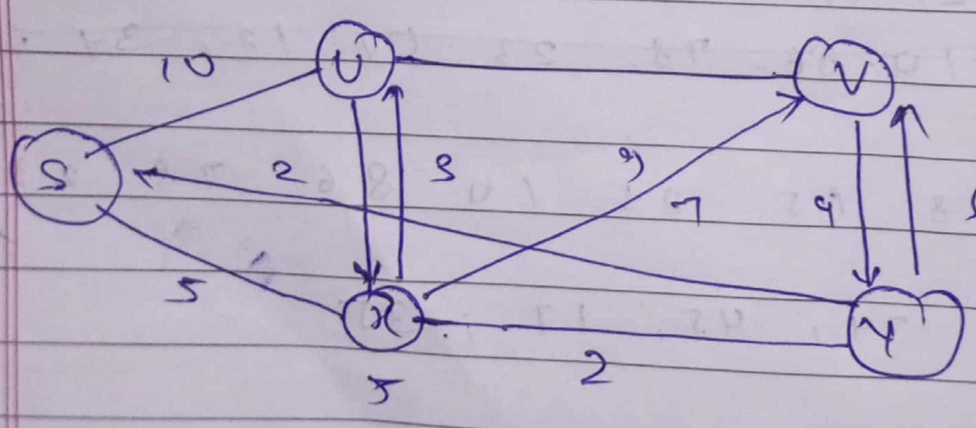
Prism Algo:



0	1	2	3	4	5	6	7	8
0	$\cancel{\infty}$	$\cancel{\infty}$	$\cancel{\infty}$	$\cancel{\infty}$	$\cancel{\infty}$	$\cancel{\infty}$	$\cancel{\infty}$	$\cancel{\infty}$
	4	8	7	10	4	$\cancel{6}$	$\cancel{8}$	2
						2	$\cancel{7}$	
							1	

5 soln: Dijkstra Algo



node	shortest distance from source
u	0
x	5
v	9
y	7

Bellman Ford Algo

	s	u	v	x	y
1st	0	10	∞	5	∞
2nd	0	10	11.1	5	∞
3rd	0	8	9	5	7
4th	0	8	9	5	7