Compute Minimal Spanning Tree (MST) using Kruskal's Algorithm (1)
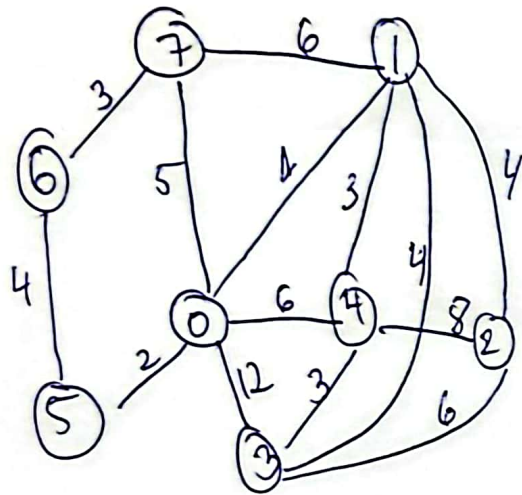

Execution Table:

| Iterations	Edges considered	cost	Union-Find (Find)	-"- (Union)	Current MST	Total Cost
1	(0,1)	1	$f(0)=0$ $f(1)=1$	$u(0,1)$	(0,1)	1
2	(0,5)	2	$f(0)=0, f(5)=5$	$u(0,5)$	(0,5)	3
3	(4,1)	3	$f(4)=4, f(1)=0$	$u(4,0)$	(4,1)	6
4	(3,4)	3	$f(3)=3, f(4)=0$	$u(3,0)$	(3,4)	9
5	(6,7)	3	$f(6)=6, f(7)=7$	$u(6,7)$	(6,7)	12
6	(1,2)	4	$f(1)=0, f(2)=2$	$u(0,2)$	(1,2)	16
7	(5,6)	4	$f(5)=0, f(6)=6$	$u(0,6)$	(5,6)	20
8	(7,0)	5	$f(7)=0, f(0)=0$	None	No	20
9	(4,0)	6	$f(4)=0, f(0)=0$	None	No	20
10	(1,7)	6	$f(1)=0, f(7)=0$	None	No	20
11	(3,2)	6	$f(3)=0, f(2)=0$	None	No	20
12	(2,4)	8	$f(2)=0, f(4)=0$	None	No	20
13	(3,0)	12	$f(3)=0, f(0)=0$	None	No	20

Conclusion:

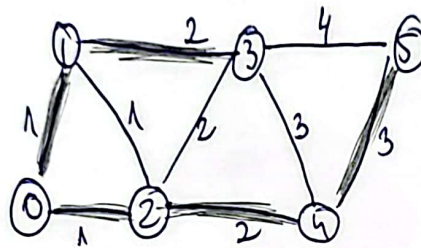In the end, the MST includes the edges (0,1); (0,5); (4,1); (3,4); (6,7); (1,2) and (5,6) with a total cost of 20.

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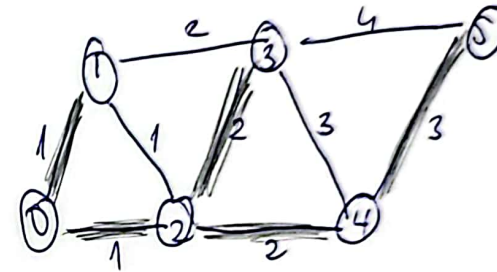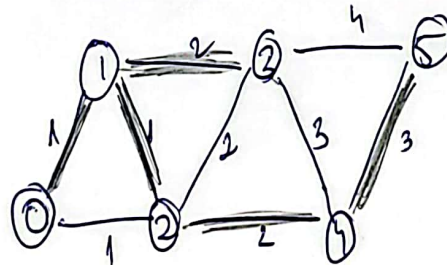# Find all the minimum spanning trees

Initial Graph:
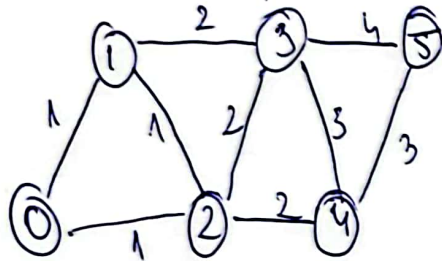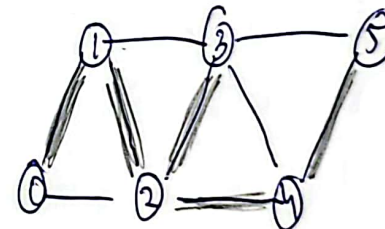

MST 1: total cost=20

MST 2: total cost=20

MST 3: total cost=20

MST 4: total cost=20

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