

Arbori minimi de acoperire

$G=(V,E)$ graf conex neorientat

$G'=(V,E')$ subgraf al lui G , $E' \subseteq E$, G' - conex, aciclic \Rightarrow arbore, \exists mai multe G' pentru un G dat

Kruskal $O(E \log V)$

$n=8$ $m=13$

x y $cost$

1 4 1 ✓

7 8 2 ✓

5 6 3 ✓

1 2 4 ✓

✗ 2 4 4

5 8 5 ✓

✗ 5 7 6

1 6 7 ✓

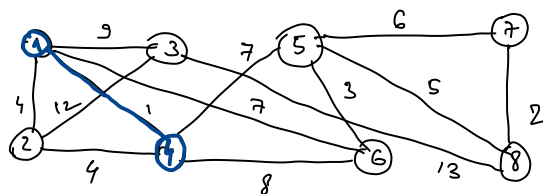
✗ 4 5 7

✗ 4 6 8

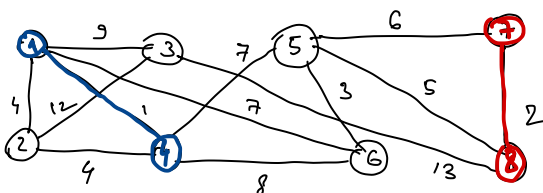
1 3 9 ✓

✗ 2 3 12

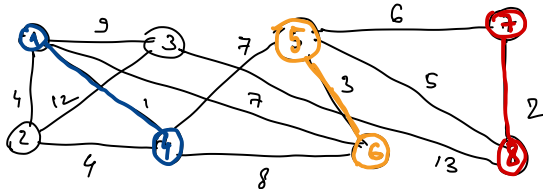
✗ 3 8 13



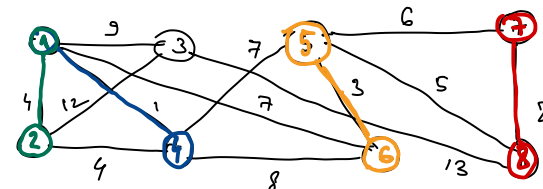
$M = \{(1,4)\}$



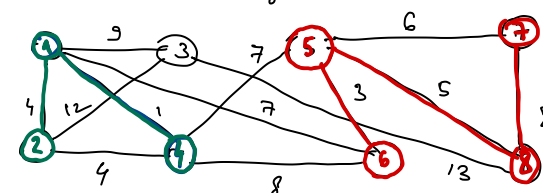
$M = \{(1,4), (7,8)\}$



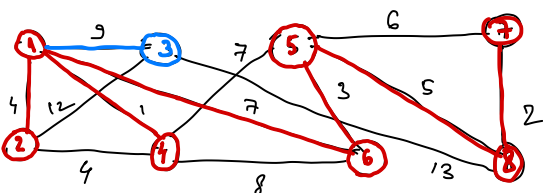
$M = \{(1,4), (7,8), (5,6)\}$



$M = \{(1,4), (7,8), (5,6), (1,2)\}$



$M = \{(1,4), (7,8), (5,6), (1,2), (5,8)\}$



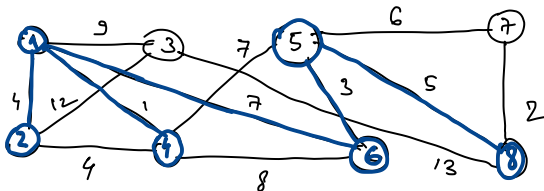
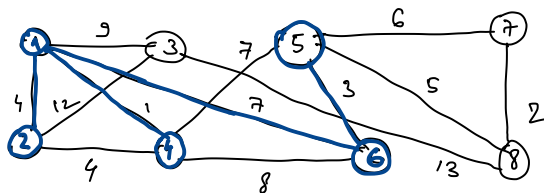
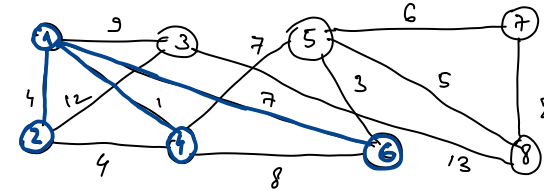
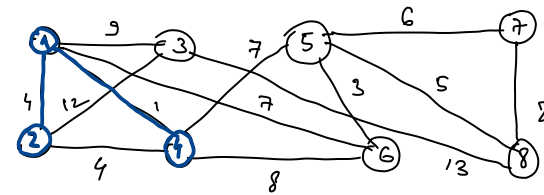
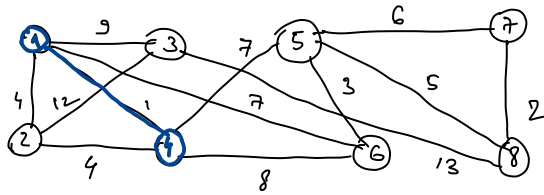
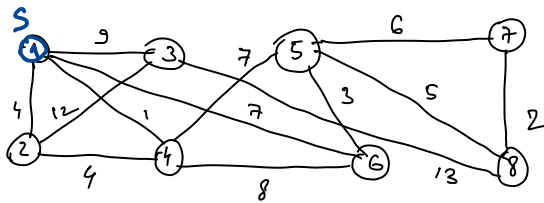
$M = \{(1,4), (7,8), (5,6), (1,2), (5,8), (1,6), (1,3)\}$

$cost = 31$

Flow

$$n = 8 \quad m = 13$$

x	y	cost
1	4	1 ✓
7	8	2
5	6	3
1	2	4
2	4	4
5	8	5
5	7	6
1	6	7
4	5	7
4	6	8
1	3	9
2	3	12
3	8	13



$$H = \{(0,1)\}$$

x=1	d	1	2	3	4	5	6	7	8
	0	4	9	1	∞	7	∞	∞	∞
p	-1	1	1	1	1	-1	1	-1	-1
visited	1	0	0	0	0	0	0	0	0

$$H = \{(4,2), (9,3), (1,4), (7,6)\}$$

x=4	d	1	2	3	4	5	6	7	8
	0	4	9	1	7	7	∞	∞	∞
p	-1	1	1	1	1	4	1	-1	-1
visited	1	0	0	1	0	0	0	0	0

$$H = \{(4,2), (9,3), (7,6), (7,5)\}$$

x=2	d	1	2	3	4	5	6	7	8
	0	4	9	1	7	7	∞	∞	∞
p	-1	1	1	1	1	4	1	-1	-1
visited	1	1	0	1	0	0	0	0	0

$$H = \{(9,3), (7,6), (7,5)\}$$

x=6	d	1	2	3	4	5	6	7	8
	0	4	9	1	3	7	∞	∞	∞
p	-1	1	1	1	1	6	1	-1	-1
visited	1	1	0	1	0	1	0	0	0

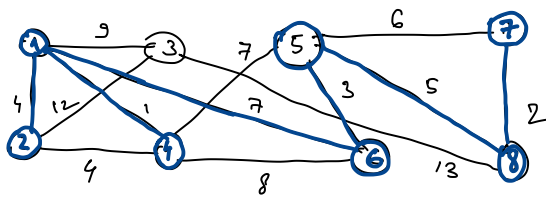
$$H = \{(9,3), (7,5), (3,6)\}$$

x=5	d	1	2	3	4	5	6	7	8
	0	4	9	1	3	3	5	5	5
p	-1	1	1	1	1	6	5	6	5
visited	1	1	0	1	1	1	1	0	0

$$H = \{(9,3), (7,5), (3,6), (5,8), (5,7)\}$$

x=8	d	1	2	3	4	5	6	7	8
	0	4	9	1	3	3	2	5	5
p	-1	1	1	1	1	6	5	8	5
visited	1	1	0	1	1	1	1	0	1

$$H = \{(9,3), (7,5), (5,7), (2,7)\}$$

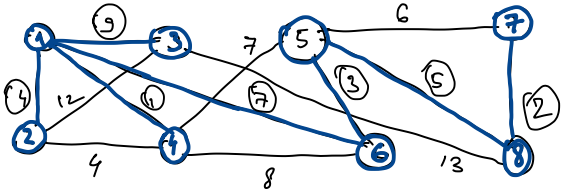


$$H = \{(9,3), (7,5), (5,7)\}$$

$x=7$

d	1	2	3	4	5	6	7	8
	0	4	9	1	3	3	2	5
p	1	2	3	4	5	6	7	8
	-1	1	1	1	6	5	8	5
visited	1	2	3	4	5	6	7	8
	1	1	0	1	1	1	1	1

$$H = \{(9,3), (7,5), (5,7)\}$$



$$\text{cost} = \boxed{4+9+1+7} + \boxed{3} + \boxed{2} + \boxed{5} = \boxed{31}$$

$p=1$ $p=8$ $p=5$

$$H = \{\}$$

$x=3$

d	1	2	3	4	5	6	7	8
	0	4	9	1	3	3	2	5
p	1	2	3	4	5	6	7	8
	-1	1	1	1	6	5	8	5
visited	1	2	3	4	5	6	7	8
	1	1	1	1	1	1	1	1

$$H = \{\}$$