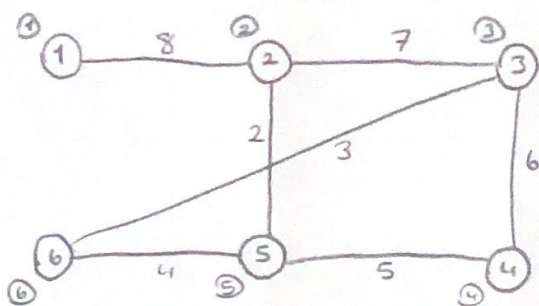


Greedy Algorithm (Counter Example)



Greedy algorithm picks the two most populated districts (nodes/vertices) and builds the two hospitals there. However, that doesn't give the optimal solution.

Distances

	1	2	3	4	5	6
1	0	8	15	15	10	14
2	8	0	7	7	2	6
3	15	7	0	6	7	3
4	15	7	6	0	5	9
5	10	2	7	5	0	4
6	14	6	3	9	4	0

Multiplying by
node weight

	1	2	3	4	5	6	Sum of rows
1	0	8	15	15	10	14	→ 62
2	16	0	14	14	4	12	→ 60
3	45	21	0	18	21	9	→ 114
4	60	28	24	0	20	36	→ 168
5	50	10	35	25	0	20	→ 140
6	84	36	18	54	24	0	→ 216

Greedy algorithm would choose the nodes 5 and 6 because they had the most weight out of all. However, to get the optimal solution, we need to build the hospitals on the 1th and 6th districts so that the total cost is as low as possible. Therefore, Greedy algorithm does not solve this problem correctly.