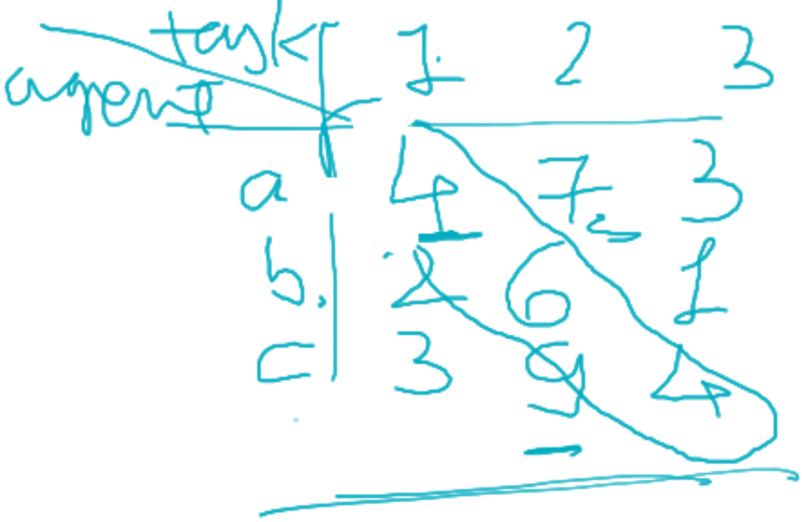
Job Assignment Problem $n > 0$

n Agents/workers/helpers are to be assigned n tasks.

Each agent having exactly one task to perform

If agent i, $1 \leq i \leq n$, is assigned task j, $1 \leq j \leq n$, then the cost of performing this particular task C_{ij}. Given the complete matrix of costs, the problem is to assign agents to tasks (vice versa) so as to minimize the total cost of executing the n tasks.



It shows that every agent has different capability or skill set because of which the cost/efforts taken are varying agent to agent and task to task.

a, 1 → 4

Agent a takes 4 units of cost/effort to complete task 1

(c, 1) → 3

Agent c takes 3 units of cost/effort to complete task 1.

know that about answer
for a given matrix input
minimum cost value will be
always one/single.
But this value might be summed
up from different combinations of
cost values. Hence, multiple such
answers are possible.

Examples :

Job assignment examples:
3
4 7 3
2 6 1
3 9 4
Solution
a-2,b-3,c-1 totaling 7+1+3=11

3
9 3 4
7 8 4
10 5 2
Solution
a-2, b-1, c-3 totaling 3+7+2=12

4
9 2 7 8
6 4 3 7
5 8 1 8
7 6 9 4
Solution
a-2, b-1, c-3, d-4 totaling 2+6+1+4=13

4
11 12 18 40
14 15 13 22
11 17 19 23
17 14 20 28
Solution
a-1, b-3, c-4, d-2 totaling 11+13+23+14=61