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Maximization in Transportation Problem

- There are three factories A, B and C, which supply goods to four dealers D_1, D_2, D_3, and D_4. The production capacities of these factories are 1000, 700 and 900 units per month, respectively. The requirements from the dealers are 900, 800, 500 and 400 units per month, respectively. The per unit return are Rs 8, 7 and 9 at factories A, B and C, respectively. The following table gives the unit transportation costs from the factories to the dealers.

	D_1	D_2	D_3	D_4
A	2	2	2	4
B	3	5	3	2
C	4	3	2	1

Determine the optimum solution to maximize the total returns.

Write the Profit Matrix

	D1	D2	D3	D4
A	8-2=6	8-2=6	8-2=6	8-4=4
B	7-3=4	7-5=2	7-3=4	7-2=5
C	9-4=5	9-3=6	9-2=7	9-1=8

Along with the capacities and requirements, the profit matrix is:

	D1	D2	D3	D4	Capacity
A	6	6	6	4	1000
B	4	2	4	5	700
C	5	6	7	8	900
Requirement	900	800	500	400	

Convert to Minimization Problem

To convert it to a standard transportation problem, we need to write the loss matrix, which is obtained by subtracting all the elements from the highest element, 8.

	D1	D2	D3	D4	Capacity
A	2	2	2	4	1000
B	4	6	4	3	700
C	3	2	1	0	900
Requirement	900	800	500	400	