Least cost method

The Least Cost Method is **another method used to obtain the initial feasible solution for the transportation problem**. Here, the allocation begins with the cell which has the minimum cost. The lower cost cells are chosen over the higher-cost cell with the objective to have the least cost of transportation.

	Warehouse P	Warehouse Q	Warehouse R	Warehouse S	Source
Plant A	**5**	**1**	**3**	**3**	**34**
Plant B	**3**	**3**	**5**	**4**	**15**
Plant C	**6**	**4**	**4**	**3**	**12**
Plant D	**4**	**1**	**4**	**2**	**19**
Demand	**21**	**25**	**17**	**17**	

Step-1**: Check given problem is balanced transportation problem or un balanced transportation problem.**

For balanced transportation problem, sum of demand should equal to sum of supply

For given problem,

Total Demand = 21 + 25 + 17 +17 = 80

Total Supply = 34 + 15 + 12 +19 = 80

So balanced transportation problem.

Cost Matrix

5	**1**	**3**	**3**
3	**3**	**5**	**4**
6	**4**	**4**	**3**
4	**1**	**4**	**2**

Find the least cost in cost matrix .

C (1, 2) = 1

C (4, 2) = 1

Select any cell out of C(1,2) or C(4,2)

I have selected C(1,2) .

Demand of ware house Q = 25

Supply of plant A = 34

So allocate 25 unit to C(1, 2)

	Warehouse P	Warehouse Q	Warehouse R	Warehouse S	Source
Plant A	5	1 (25)	3	3	34 (9)
Plant B	3	3	5	4	15
Plant C	6	4	4	3	12
Plant D	4	1	4	2	19
Demand	21	25 (0)	17	17	

Next least cost matrix C (4, 4) = 2

Demand of ware house S = 17

Supply of plant D = 19

Allocate 17 unit to C (4, 4)

	Warehouse P	Warehouse Q	Warehouse R	Warehouse S	Source
Plant A	5	1 (25)	3(9)	3	34 (9) (0)
Plant B	3	3	5	4	15
Plant C	6	4	4	3	12
Plant D	4	1	4	2(17)	19 (2)
Demand	21	25 (0)	17 (8)	17 (0)	

Next least cost matrix C (1, 3) and C(2 ,1)

Select any one of them. I have selected C (1, 3)

Demand of warehouse R = 17

Remaining Supply of plant A =9

So allocate 9 unit to cell C (1, 3)

	Warehouse P	Warehouse Q	Warehouse R	Warehouse S	Source
Plant A	5	1 (25)	3(9)	3	34 (9) (0)
Plant B	3(15)	3	5	4	15 (0)
Plant C	6	4	4	3	12
Plant D	4	1	4	2(17)	19 (2)
Demand	21	25 (0)	17 (8)	17 (0)	

Next least cost cell is C (2,1) = 3

Demand of ware house P = 21

Supply of plant B = 15

Allocate C (2,1) = 15

	Warehouse P	Warehouse Q	Warehouse R	Warehouse S	Source
Plant A	5	1 (25)	3(9)	3	34 (9) (0)
Plant B	3(15)	3	5	4	15 (0)
Plant C	6(4)	4	4 (8)	3	12 (4) (0)
Plant D	4 (2)	1	4	2(17)	19 (2) (0)
Demand	21 (6)(4)(0)	25 (0)	17 (8) (0)	17 (0)	

Cost = 1 x 25 + 3 x 9 + 3 x 15 + 6 x 4 + 4 x 8 +4 x 2 + 2 x 17

= 195