MP-1 HOME ASSIGNMENT-3

1. Three jobs are to be assigned to three contractors. The estimated time to complete the job by any of the contractor is given in the following table. What must be allocation so that the time taken to complete all jobs is always minimum.

	Contractors		
Job	1	2	3
A	5	3	2
B	----	2	5
C	3	2	0

190031187
Radhakrishna

CO3 - Home Assignment

1.

	1	2	3
A	5	3	2
B	–	2	5
C	3	2	0

Apply Row operation

	1	2	3
A	3	1	0
B	–	0	3
C	3	2	0

Apply column operation

	1	2	3
A	0	1	0
B	–	0	3
C	0	2	0

Apply Assigment Operation

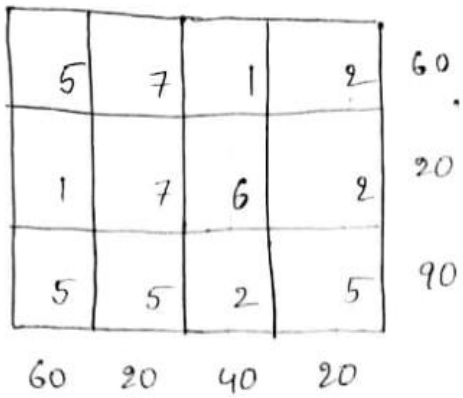
	1	2	3
A	[0]	1	~~0~~
B	–	[0]	3
C	~~0~~	2	[0]

∴ Job A is assigned to 1
Job B is assigned to 2
Job C is assigned to 3

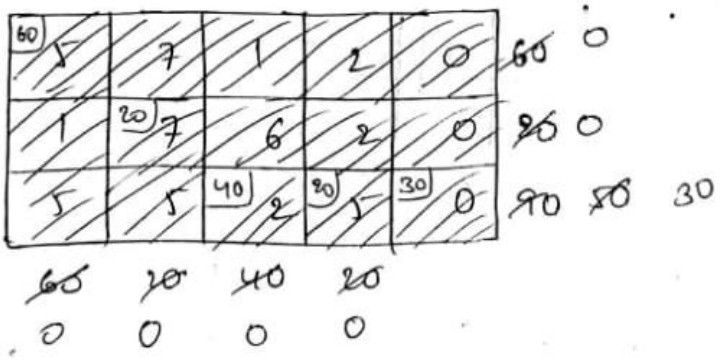
2. Find the best way of transporting the material from the godowns to the factories so that the cost of transportation is always minimum. The entry in each of the cell indicates the unit shipment cost from godown to the factory.Obtain the initial solution by using NW corner rule.

	Godown				
Factory	1	2	3	4	Supply
1	5	7	1	2	60
2	1	7	6	2	20
3	5	5	2	5	90
Demand	60	20	40	20	

2.



Actually it is not balanced To make it balanced we will add dummy column

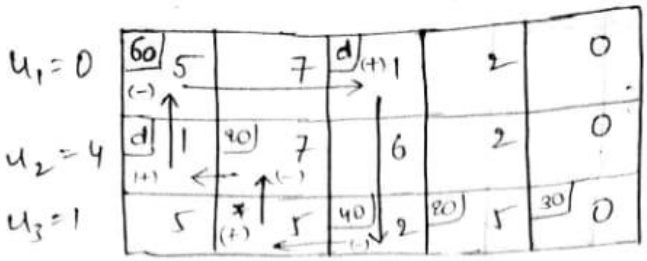


Now According to North West rule

$60*5 + 20*7 + 40*2 + 20*5 + 30*0$

$300 + 140 + 80 + 100$

620



$V_1 = 5 \quad V_2 = 11 \quad V_3 = 1 \quad V_4 = 4 \quad V_5 = 1$

$P_{12} = 0 + 11 - 7 = 4$

$P_{14} = 0 + 4 - 2 = 2$

$P_{15} = 0 - 1 + 0 = -1$

$P_{23} = -4 + 1 - 6 = -9$

$P_{24} = -4 + 4 - 2 = -2$

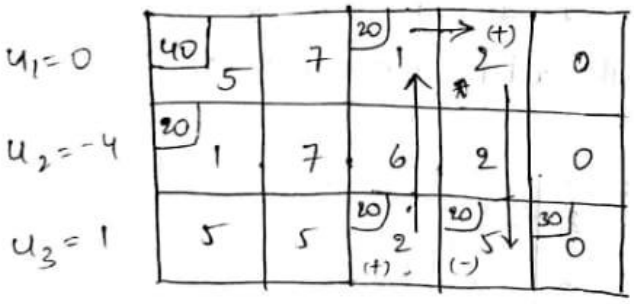
$P_{25} = -4 - 1 - 0 = -5$

$P_{31} = 1 + 5 - 5 = 1$

$P_{32} = 1 + 11 - 5 = (7)$

$\min \{ \theta - 20, \theta - 60, \theta - 40 \} = 0$

$\theta = 20$



$V_1 = 5 \quad V_2 = 4 \quad V_3 = 1 \quad V_4 = 4 \quad V_5 = -1$

$P_{12} = 0 + 4 - 7 = -3$

$P_{14} = 0 + 4 - 2 = (2)$

$P_{15} = 0 - 1 + 0 = -1$

$P_{22} = 0 - 4 + 4 - 7 = -7$

$P_{23} = -4 + 1 - 6 = -9$

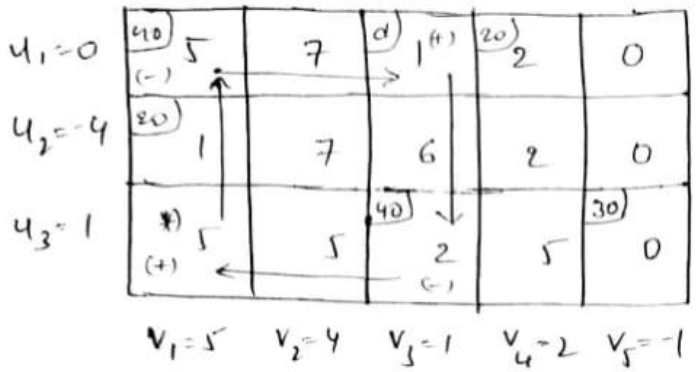
$P_{24} = -4 + 4 - 2 = -2$

$P_{25} = -4 - 1 + 0 = -5$

$P_{31} = 1 + 5 - 5 = 1$

$\min \{ \theta - 20, \theta - 20 \} = 0$

$\theta = 20$



$P_{12} = 0+4-7 = -3$ $P_{24} = -4+2-2 = -4$

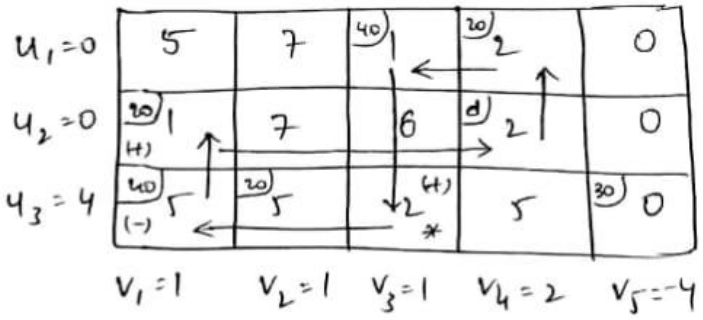
$P_{15} = 0-1+0 = -1$ $P_{25} = -4-1+0 = -5$

$P_{22} = -4+4-7 = -7$ $P_{31} = 1+5-5 = (1)$

$P_{23} = -4+1-6 = -9$ $P_{34} = 1+2-5 = -2$

$\min\{\theta-40, \theta-40\} = 0$

$\theta = 40$



$P_{11} = 0+1-5 = -4$ $P_{23} = 0+1-6 = -5$

$P_{12} = 0+1-7 = -6$ $P_{25} = 0-4+0 = -4$

$P_{15} = 0-4+0 = -4$ $P_{33} = 4+1-2 = (3)$

$P_{22} = 0+1-7 = -6$ $P_{34} = 4+2-5 = 1$

Dummy cell is selected. so stop the procedure for current selected dummy cell