FIT3158 Note - W6 MODI

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Example is from Transportation Problem | Set 6 (MODI Method - UV Method) - GeeksforGeeks.

▼ More exercises

transportation problem using modi method (optimal solution) Algorithm & Example-1 (atozmath.com)

https://s3-us-west-2.amazonaws.com/secure.notion-static.com/b1dc83fb-f33b-4806-86be-811df28d6a56/Degeneracy__Optimisation_techniques_of_Transportation_Problem.pdf

(3785) Transportation problem [MODI method - U V method with Optimal Solution] kauserwise - YouTube

$V_1=$ $V_2=$ $V_3=$ $V_4=$

u1 =	200 / 3	50 / 1	7	4
u2 =	2	250 / 6	100 / 5	9
u3 =	8	3	250 / 3	150 / 2

$u_i + v_j = C_{ij}$

Let U1=0,
$0 + V1 = 3$ $\underline{V1 = 3}$
$0 + V2 = 1$ $V2 = 1$
$U2 + V2 = 3$ $U2 + 1 = 6$ $\underline{U2 = 5}$
$U2 + V3 = 5$ $5 + V3 = 5$ $\underline{V3 = 0}$
$U3 + V3 = 3$ $U3 + 0 = 3$ $\underline{U3 = 3}$
$U3 + V4 = 2$ $3 + V4 = 2$ $V4 = -1$

1. Let U1 ge 情況下， 搵allocated cells ge U/V value

$V_1=-3$ $V_2=1$ $V_3=0$ $V_4=-1$

$u_1=0$	200 / 3	250 / 1	$0+0-7=-7$ / 7	$0+(-1)-4=-5$ / 4
$u_2=5$	$5+3-2=6$ / 2	50 / 6	100 / 5	$5+(-1)-9=-5$ / 9
$u_3=3$	$3+3-8=-2$ / 8	$3+1-3=1$ / 3	250 / 3	150 / 2

Pij = ui + vj − Cij

2. Add penalty to unallocated cells. We have two unallocated cells in the first row, two in the second row and two in the third row. Lets compute this one by one.

▼ 幾時可以停？

If we get all the penalties value as zero or negative values that mean the optimality is reached and this answer is the final answer. But if we get any positive value means we need to proceed with the sum in the next step.

$V_1=-3$ $V_2=1$ $V_3=0$ $V_4=-1$

$u_1=0$	200 / 3	250 / 1	$0+0-7=-7$ / 7	$0+(-1)-4=-5$ / 4
$u_2=5$	+ $3-2=6$ / 2	50 / 6	100 / 5	$5+(-1)-9=-5$ / 9
$u_3=3$	$3+3-8=-2$ / 8	$3+1-3=1$ / 3	250 / 3	150 / 2

Pij = ui + vj − Cij
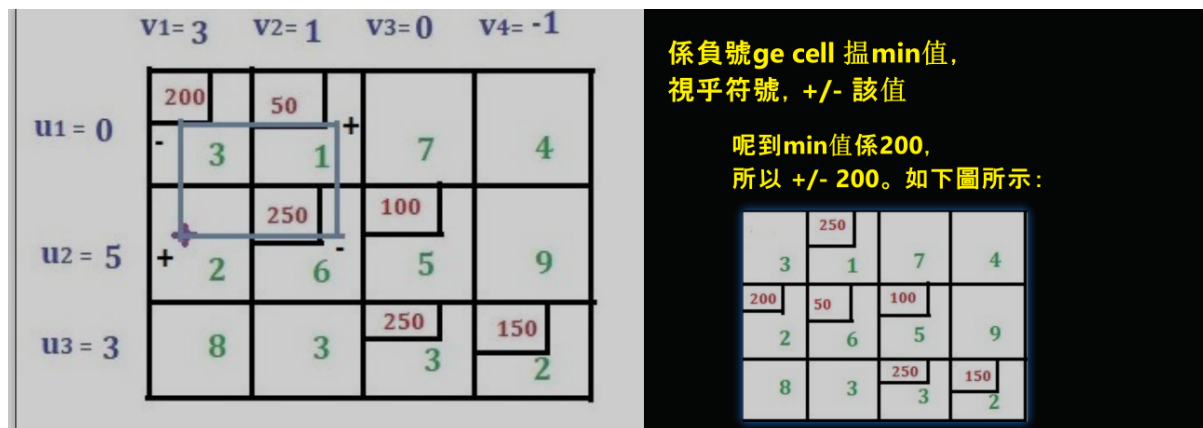
係 penalty 最大值ge cell 到
做個loop

呢到係 C21（6）

Unallocated cell 吾比轉右

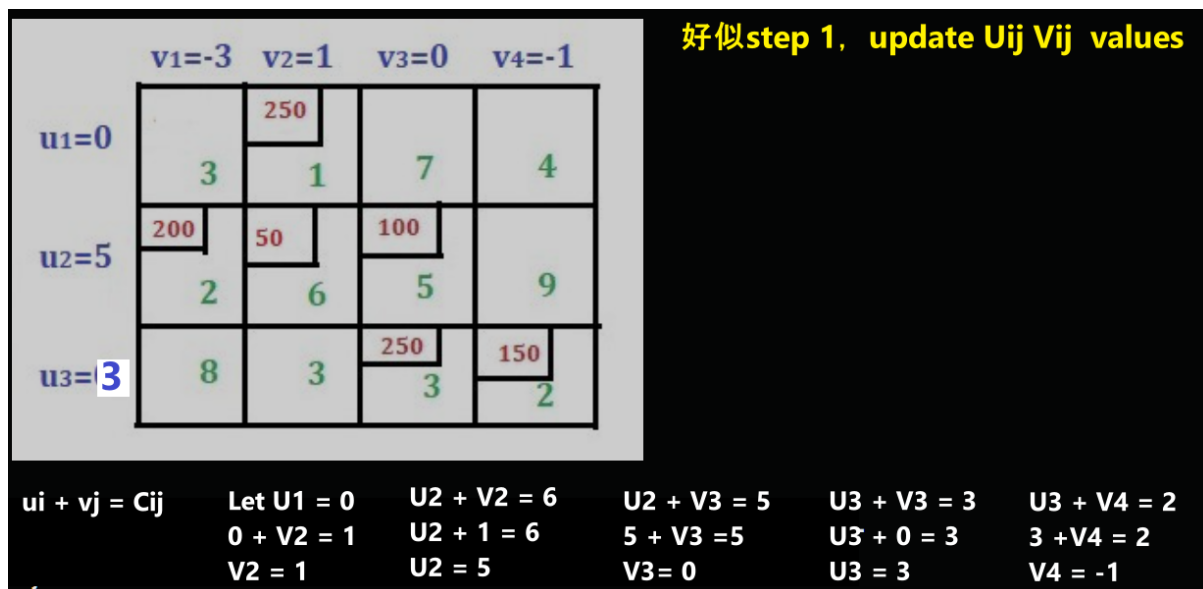Right angle turn is not permitted in unallocated cell.

✗ 吾ok

✓ ok

3. 係pen'a'li'ty 最大值ge cell 加符號， 做個loop。Loop 吾比一開始轉右

Step 4.

Iteration 2

好似step 1, update Uij Vij values

ui + vj = Cij	Let U1 = 0	U2 + V2 = 6	U2 + V3 = 5	U3 + V3 = 3	U3 + V4 = 2
	0 + V2 = 1	U2 + 1 = 6	5 + V3 = 5	U3 + 0 = 3	3 + V4 = 2
	V2 = 1	U2 = 5	V3 = 0	U3 = 3	V4 = -1

係負號ge cell 搵min值,
視乎符號, +/- 該值

呢到min值係200,
所以 +/- 200。如下圖所示:

好似step 1, update Uij Vij values

$$Pij = ui + vj – Cij$$

Like step 2, Add penalty to unallocated cells. We have two unallocated cells in the first row, two in the second row and two in the third row. Lets compute this one by one.

好似step 1, update Uij Vij values

$$Pij = ui + vj – Cij$$

負號cell Min 值為50, 所以+/- 50

Iteration 3

Like step 1, update U and V value

Now, total cost = (250 * 1) + (200 * 2) + (150 * 5) + (50 * 3) + (200 * 3) + (150 * 2) = 2450