

Lecture 21  
SLA

( 2 0 12 )

19/03/18

	$D_1$	$D_2$	$D_3$	$u_i$
$O_1$	5	5	3	5
$O_2$	0	2	6	8
$O_3$	1	7	2	7
$O_4$	2	4	12	14
	7	9	18	

First calculate  $u_i$ 's &  $v_j$ 's for the allocated cells & then calculate for non-allocated ones

$v_j$	1	4	2
1-0			
3-1=2			

5	2	1
3	0	0
4	0	5
0	2	0

Cost = £ 76/-

⇒ Optimal

$$X = \begin{pmatrix} 5 & 0 & 0 \\ 0 & 2 & 6 \\ 0 & 7 & 0 \\ 2 & 0 & 12 \end{pmatrix}$$

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Penalty				
O <sub>1</sub>	1	5	11	7	6	(1)	5	11	5
O <sub>2</sub>	1	0	6	1	1	(1)	X	X	X
O <sub>3</sub>	6	3	1	10	(3)	10	(3)	10	(4)
	5	8	15	9					
	7	5	3	2					

Step 1: (1) (3) (5) (6) → new

7 5 3 1

(3) (5) (4) (2)

7 5 3 1

(3) (5) (4) (2)

6 5 3 1

(5) (5) (9)

6 5 3 1

(5) (9)

6 5 3 1

(5)

$$X = \begin{pmatrix} 1 & 5 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 6 & 0 & 3 & 1 \end{pmatrix}$$

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	U <sub>i</sub>
O <sub>1</sub>	1	2	3	11	6 = 3
O <sub>2</sub>	3	1	0	7	1 = 8
O <sub>3</sub>	6	5	8	15	10 = 0
	7	5	3	2	

U<sub>j</sub> 5 6 15 9



$$\Delta_{ij} = \begin{array}{|c|c|c|c|} \hline 0 & 0 & -1 & 1 \\ \hline 4 & 2 & -1 & 0 \\ \hline 0 & 2 & 0 & 0 \\ \hline \end{array}$$

we need to remove this -ve.

Min allocation here (i.e., 1) so we subtract 1 & form loop

$$\begin{array}{|c|c|c|c|c|} \hline 1 & 2 & 12 & 6 & 7 \\ \hline -5 & 1 & 2 & 7 & 0 \\ \hline 6 & 5 & 4 & 3 & 9 \\ \hline \end{array}$$

$$\begin{array}{|c|c|c|c|c|} \hline 1 & 2 & 12 & 6 & 7 \\ \hline 4 & 3 & 6 & 0 & 1 \\ \hline 6 & 5 & 8 & 15 & 9 \\ \hline \end{array}$$

7 5 3 2  
5 6 15 9

$$\Delta_{ij} = \begin{array}{|c|c|c|c|} \hline 0 & 0 & -1 & 1 \\ \hline 4 & 2 & 0 & 1 \\ \hline 0 & 2 & 0 & 0 \\ \hline \end{array}$$

Min alloc here

$$\begin{array}{|c|c|c|c|c|} \hline 0 & 2 & 12 & 6 & 7 \\ \hline 4 & 1 & 3 & 6 & 0 \\ \hline 0 & 5 & 6 & 15 & 9 \\ \hline \end{array}$$

$$\begin{array}{|c|c|c|c|c|} \hline 1 & 2 & 12 & 6 & 7 \\ \hline 4 & 3 & 6 & 0 & 1 \\ \hline 6 & 5 & 8 & 15 & 9 \\ \hline \end{array}$$

7 5 3 2  
5 6 15 9

$$\Delta_{ij} = \begin{array}{|c|c|c|c|} \hline 0 & 0 & 0 & 1 \\ \hline 5 & 2 & 0 & 1 \\ \hline 0 & 2 & 0 & 0 \\ \hline \end{array}$$

$$X_2 = \begin{pmatrix} 0 & 5 & 1 & 0 \\ 0 & 0 & 1 & 0 \\ 7 & 0 & 1 & 2 \end{pmatrix}$$

Cost = 100