

Course: Operations Management
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I will present here an example for 3x3 case: 3 workcenters on 3 locations.

$$D = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 0 & 3 \\ 2 & 3 & 0 \end{bmatrix} \quad T = \begin{bmatrix} 0 & 5 & 8 \\ 5 & 0 & 7 \\ 12 & 8 & 0 \end{bmatrix}$$

for instance:

LAYOUT 1	<u>L1</u>	<u>L2</u>	<u>L3</u>	
	W2	W3	W1	Cost1=10*2+20*3+15*1=95

Then you need to check the layout for the position of the workcenter, for instance in LAYOUT1 W1 is on L3 and W2 is on L1, therefore we need to look for the distance between L3 and L1 in the distance (D) matrix: $D(L3,L1)=2$.

Now we have 3 layouts where W3 is placed at locations L2, L1 and L3. We determine the costs of each layout to see which layout has the minimum costs. In our example the 2nd layout has the lowest costs (85). Therefore we fix the chosen workcenter W3 to location L1.

START of the next round: start with the layout with the minimum costs; in our example this is the layout 2:

LAYOUT 2	<u>L1</u>	<u>L2</u>	<u>L3</u>	
	W3	W2	W1	Cost2=85

STEP 2: basically a repetition of STEP 1, but it starts with the minimum costs layout from above and by selecting a **random** (chosen) workcenter from the **remaining** workcenters (W1 or W2);
for instance W2. In the above layout W2 is on L2, therefore we would like to place W2 also on L3 by switching pair W2-W1, which leaves us with only one more layout:

LAYOUT 4	<u>L1</u>	<u>L2</u>	<u>L3</u>	
	W3	W1	W2	Cost4=10*3+20*1+15*2=80

We determine the costs of the layout to see whether it has lower costs than layout 2 – YES, therefore it is better to fix W2 on L3. W1 is obviously placed on the remaining location, L2.

LAYOUT 2	<u>L1</u>	<u>L2</u>	<u>L3</u>	
	W3	W1	W2	Cost4=80