**Assignment problem:**



 , *j* = 1,2…n

 , *i* = 1,2,…n

 , *i,j* = 1,…n

**Linear programming problem:**

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*S.t*

 , *j* = 1,2,…n

 , *k* = 1,…m ; *j* = 1,2,…n

**Updating Lagrangian multipliers**







Where,  and  are the step size at the nth iterations

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Where,  is an upper bound value of the optimal value LR obtained from the best possible solution found so far and  is a lower bound value of LR at the  iteration.

,  and  are the sub-gradient of the Lagrangian multipliers.





