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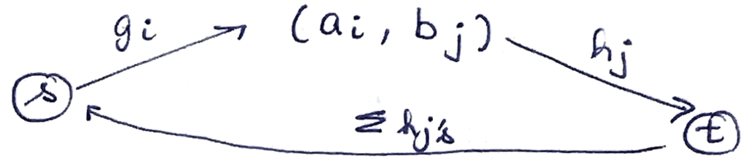
CSCI-570 - SPRING 2018 - HW9

1.)

n families : $a_1, a_2 \ldots a_n$
m tables : $b_1, b_2 \ldots b_m$



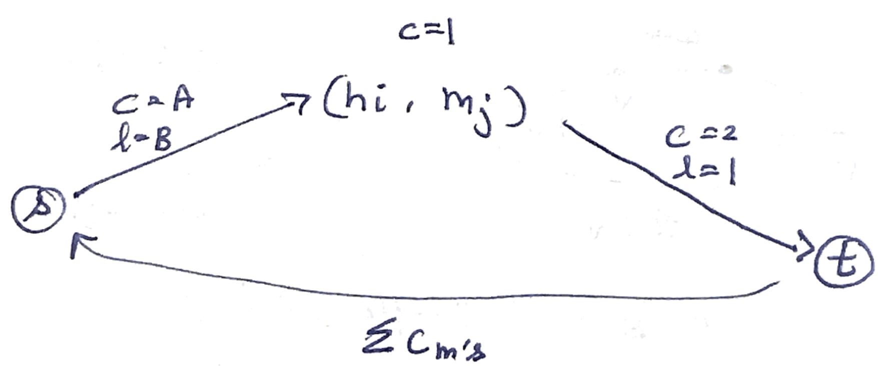
Feasible connection exists, if there exists a s-t flow. Both Capacity and Conservation property is preserved.

Complexity :

$O(n+m)$ nodes
$O(nm)$ edges

} max-flow algorithm

2.)



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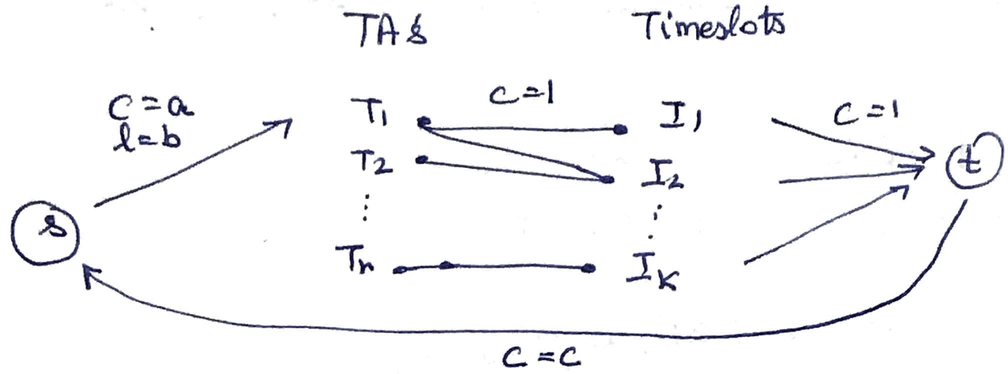
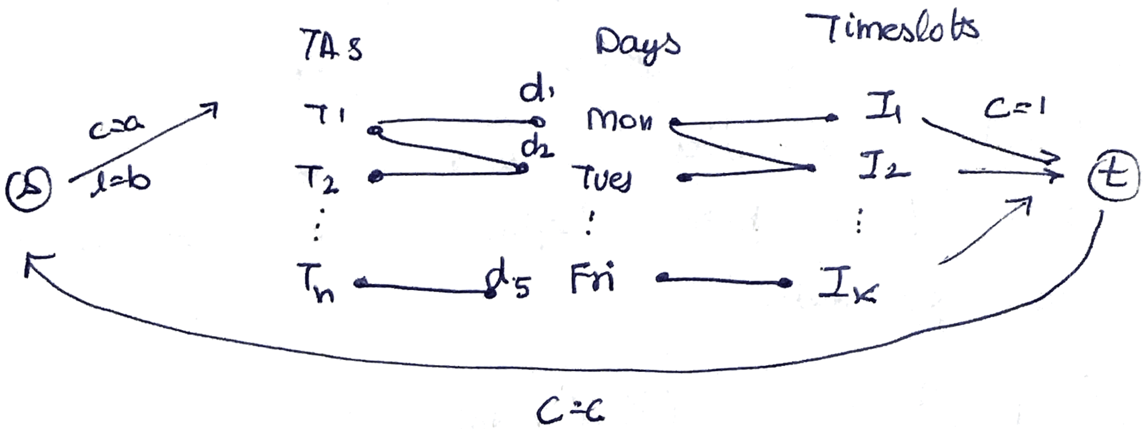
3.) a.)

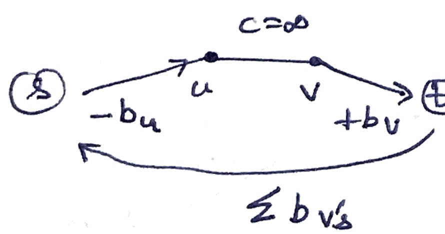


b.)



4.)

$$\text{profit}(A) = \sum_{i \in A} p_i$$



Cut : $(\{s\}, \{P\} \cup \{t\})$

$$C = \sum_{i \in P, p_i > 0} p_i$$

$$c(A', B') = C - \text{profit}(A)$$

If (A', B') is a min cut in G', then the set $A = A' - \{s\}$ is an optimum solution to the Project Selection Problem.