CS 260 Fundamentals of the Design and Analysis of Algorithms   **Fall 2016**

HomeWork 6

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In this homework, $build(x, y, c)$ means build a edge from x to y which capacity c. s is the source, t is the sink.
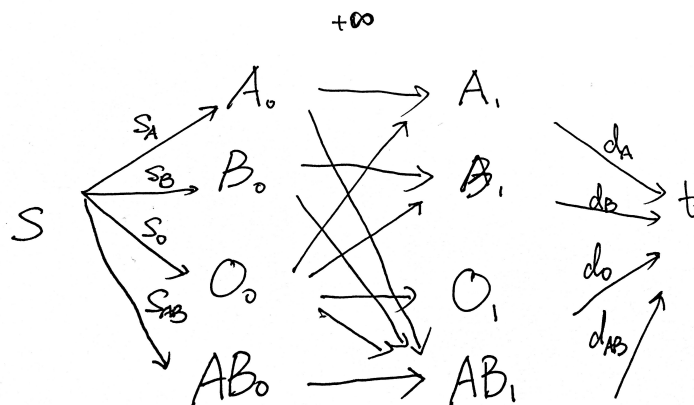
Problem 6 Solution:

Consider a bipartite graph, left part is fixture, right part is switch. For every pair of fixture and switch, draw a line segment between these two point, and test whether it intersects with any boundary segment. If it does not intersect with any boundary then we draw an edge between these two points.

Next, run the bipartite graph matching algorithm. If the result is n then it is possible to make such an arrangement. Otherwise it does not.

Problem 7 Solution:

for every client c_i, $build(s, c_i, 1)$. for every base station b_i $build(b_i, t, L)$. for every pair of client c_i and base station b_j. If c_i can connect to b_j then $build(c_i, b_j, 1)$. Then run the maximum flow algorithm. If the result is same as the number of clients, then all clients can be assigned to a base station.

Problem 8 Solution:

Problem 9 Solution:

Problem 10 Solution:

Problem 11 **Solution:**

Problem 24 **Solution:**