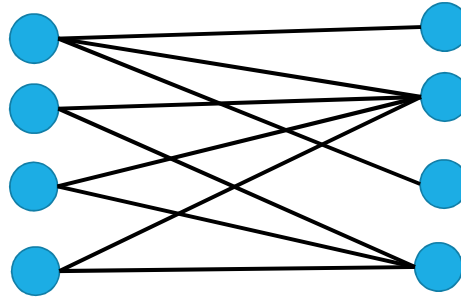# A (possibly) simple problem

Design an algorithm to find a maximum matching on a bipartite graph.

(*hint:* what if the vertices on one side are chores and the other are housemates).

Algorithm for Bipartite Matching

Modify the (undirected) graph G into the network flow graph.

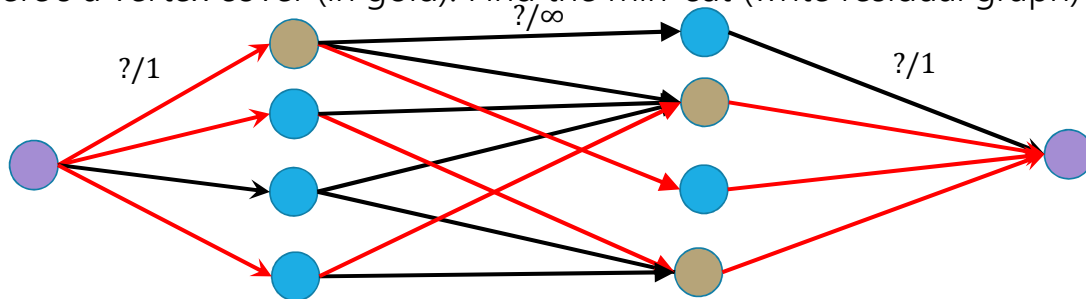Find a maximum flow, taking all edges of G which have flow.

Is it correct?

The set of edges found should be a matching.

There should be no larger matching.

Vertex Cover

Here's a vertex cover (in gold). Find the min-cut (write residual graph)

Vertex Cover

Is $A_T \cup B_S$ **always** a vertex cover? If so, how big is it?

There are 4 potential kinds of edges. Which kind is a problem for the vertex cover? Can they all exist?

A_S to B_S

A_S to B_T

A_T to B_S

A_T to B_T