Brief Announcement:
Distributed Almost Stable Marriage

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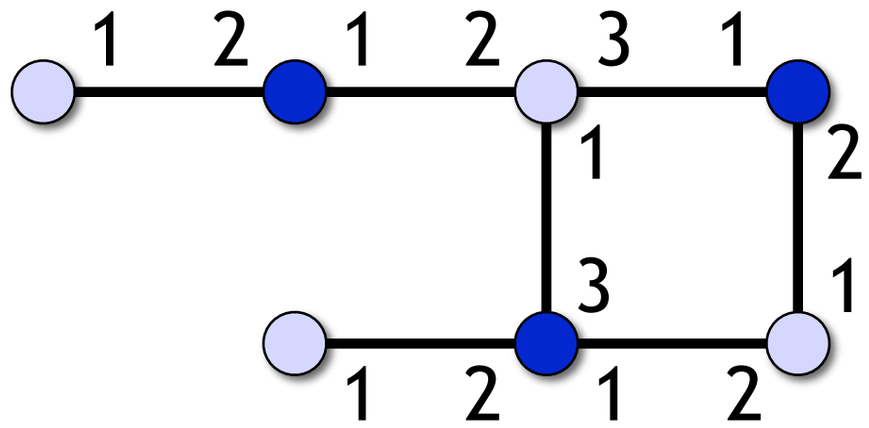
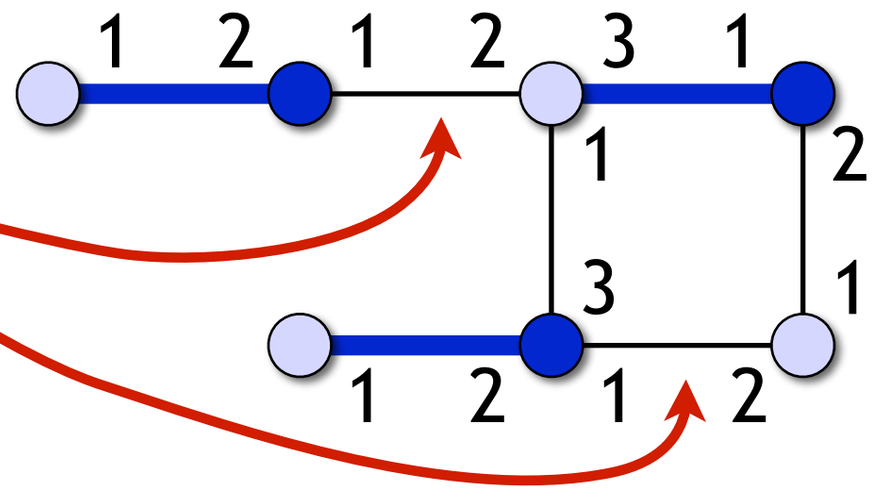
Given: bipartite communication graph, 2-coloured nodes, matching preferences

(1 = most preferred partner)



Task: find a **matching** without *unstable edges*

(both endpoints prefer each other to their current partners)



Fast distributed algorithms?

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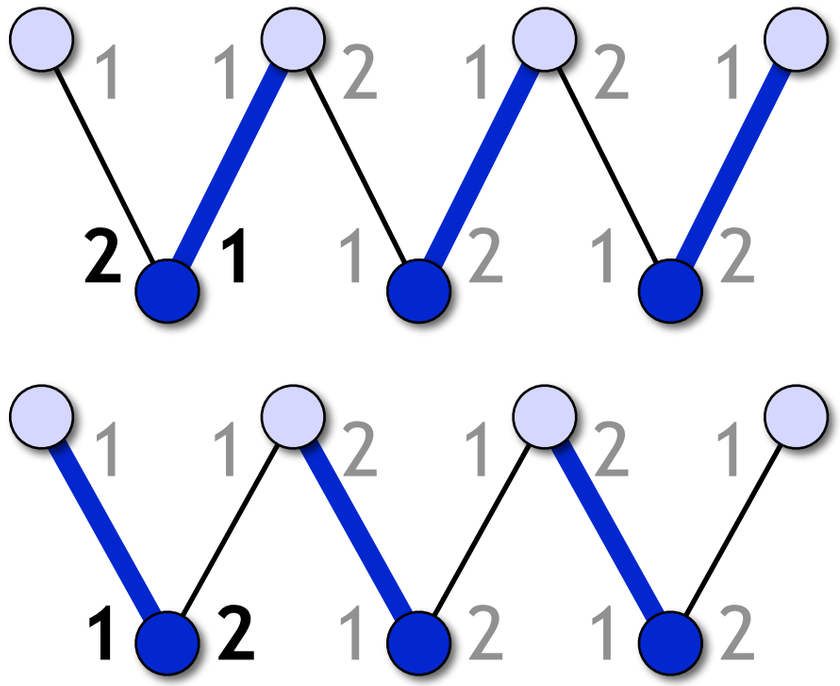
Unfortunately:

- Stable matchings are *unstable* — minor local changes in input may require global changes in output
- Any algorithm requires $\Omega(n)$ rounds



Good news:

- It is possible to find *almost* stable matchings very fast!
- Matching with fraction ε of unstable edges in $O(\Delta^2/\varepsilon)$ rounds
- Strictly *local* algorithm: running time independent of n