Stable Matching Report

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Results

Passes tests.

On input `sm-friends.in`, I produce the following matching:

Chandler – Monica, Ross – Phoebe, Joey – Rachel

Implementation details

All preferences are stored in a (c++) vector of vectors of ints, at each person's index storing that person's preferences. The inner vector is of size 2n for both men and women, storing dummy values at every other position. For men the vector, when traversed from index 1 to 2n, gives the man's preference in decreasing order. The women's preferences are inverted, thus yielding her preference to man i at position i in the vector.

All free men are put on a stack, so finding a free man takes $O(1)$ time.

With these data structures, my implementation runs in time $O(n^2)$ on inputs with n men and n women.

The running time $O(n^3)$ is avoided by not doing linear search for free men and inverting the women's preferences.

This is not necessarily a unique solution. The solution is man-optimal and inverting the roles for men and women would give a women-optimal solution.