Stable Matching Report

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Results

Our implementation produces the expected results on all input–output file pairs, except `sm-random-500.txt`. Although we do not know why this happens, one theory is that the algorithm produces one stable matching but not necessarily the one specified in the output file.

Implementation details

Both the men's and women's preferences are stored in an ArrayList in the class Person. We can check find a free man who has not proposed to every woman in time O(n), because each man has an ArrayList mapped to him in a HashMap. This ArrayList contains all the women each man has proposed to, and can thus be used to determine if any man has any women left to propose to.

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