Stable Matching Report

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Results

Our implementation produces the expected results on all input-output file pairs. However, some files have different format. For instance, the lines in the files from the book do not interleave (women – man line), throwing ClastCastException. Once the lines is fixed the implementation produces the expected result.

On input sm-bbt-in.txt, we produce the following matching:
Sheldon–Amy, Rajesh–Priya, Howard–Bernadette, Leonard–Penny.

Implementation details

Groom and Bride classes were created in order to encapsulate the choices and the operations for men and women.

A static Stack is used in order to store the number of free men resulting in constant allocation and removal.
Each groom instance encapsulates: his choices into a final array, a counter N indicating the index of the bride to propose and a boolean array indicating if the groom is engaged.

Each bride instance encapsulates: his current fiancé in a Groom variable, and her choices into a map that maps each groom (by id) to his rank for constant test.

The choice of a free man is constant. When a man proposes to a woman, she decides whether to reject him or not in constant time (map). Thus, according to Algorithms Design, Kleinberg & Tardos p.7 the G-S algorithm terminates after at most n^2 iterations of the while loop.