Discussion 1

February 22, 2019

1   Stable Marriage

Lemmas

- The stable marriage algorithm always halts.

- (Improvement Lemma) If man M proposes to woman W on the k-th day, then on every subsequent day W has someone on a string whom she likes at least as much as M.

- The stable marriage algorithm always terminates with a pairing.

- The pairing produced by the algorithm is always stable. i.e. there is no rogue couple in the output.

- The pairing output by the Stable Marriage algorithm is male optimal.

- If a pairing is male optimal, then it is also female pessimal. In particular, the paring output by the Stable Marriage algorithm is female pessimal.