

Quiz 3

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This quiz does not count towards your grade. It exists to simply gauge your understanding. Treat this as though it were a portion of your midterm or final exam.

1 Stable Marriage Algorithm

For each of the following, prove or disprove the statement. Let TMA be the traditional stable marriage algorithm. Let each instance involve n men and n women.

1. Consider an instance, where preference lists may indicate "equality" between two choices. TMA will still produce stable pairings. (When W is presented with two men where $M_1 = M_2$, W will pick arbitrarily if necessary.)
2. If $n > 2$, $\forall k < n$, it is possible construct an instance that takes TMA exactly k days to terminate.
3. Given TMA takes $k \leq n$ days, there can be no more than $\frac{(n-1)n}{2} - \frac{(n-k)(n-k-1)}{2}$ rejections.