

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. "Intuition Practice" might be tricky; watch out for subtleties. "Proofs" will be challenging to start; develop an arsenal of *approaches* to starting a problem.

1 Intuition Practice

The following questions apply to a modified Stable Marriage Algorithm ("MSMA"). In MSMA, n_c candidates are applying to n_s schools, where each college maintains a waitlist for and accepts x_i candidates. We know $\sum_{i=0}^{n_s} x_i = n_c$ and that all other facets of the Stable Marriage Algorithm are preserved. Write down only "True" or "False". Do not justify your answers.

1. MSMA is college-optimal and student-pessimal.
2. MSMA always yields a stable pairing.
3. Let us define w_k to be the number of students college w has on the waitlist on day k . On arbitrary days i, j such that $i < j$, $w_i > w_j$.
4. MSMA is guaranteed to terminate in $\leq n_s$ days.
5. It is possible for all colleges to end up with the last x_i students on its preference list.