

2. Claim: At most one man gets his least preferred choice in GS.

Proof: Suppose for a contradiction that in an n man, n woman matching of GS, that K men, such that $K > 1$, end up with their least preferred woman. Consider the state of GS immediately before the first man m to propose to his least preferred woman proposes. We know that of the n women in the matching that m has been rejected by $n-1$ of them. We also know that since women are never unmatched and only match up that those $n-1$ women are matched to $n-1$ men. So when m proposes and is matched to w GS ends in a stable, perfect matching because the last man m and last woman w have been matched. But, since $K > 1$, there are still $K-1$ men to match which is a contradiction. Thus, no more than one man gets matched to his least preferred woman in GS. \square