



Termination:

- OBS 1: Men always go down their List
- OBS 2: Women go up - They trade up.

Alg terminates after n^2 proposals
 All men never propose twice to the same woman

Correctness: Perfect matching is output.

Pf by contradiction. Assume n men/women
 $\Rightarrow \exists$ a man Y is not matched.
 \Rightarrow All women rejected Y .
 All women must be matched

Because women only trade up.
 n women have match
 but only $n-1$ men have matches
 contradiction

Correctness: Stable

Pf. By contradiction. ^{woman} \nearrow \nearrow man
 There is unstable pair A, Z

Case 1: Z never proposed to A
 Z goes down the list
 Z is matched to someone better than A

Contradiction X

Case 2: Z is rejected by A
 A trades up
 She is with a better man
 $A-Z$ not unstable Contradiction X