

Gale-Shapley algorithm (based on treatment in Kleinberg and Tardos's "Algorithm Design"):

STABLE-MARRIAGE( $M, W$ )

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1 initialize all men in  $M$  and women in  $W$  to unengaged
2 while an unengaged man with at least one woman on his preference list remains
3   do choose such a man  $m \in M$ 
4     propose to the next woman  $w \in W$  on his preference list
5     if  $w$  is unengaged
6       then engage  $m$  to  $w$ 
7     elseif  $w$  prefers  $m$  to her fiance  $m'$ 
8       then break engagement of  $m'$  to  $w$ 
9         engage  $m$  to  $w$ 
10      cross  $w$  off of  $m$ 's preference list
11 report the set of engaged pairs as the final matching
```