

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

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1: procedure STABLE-MARRIAGE( $M, W$ )
2:   initialize all men in  $M$  and women in  $W$  to unengaged
3:   while an unengaged with at least one woman on his preference list remains do
4:     choose such a man  $m \in M$ 
5:     propose to the next woman  $w \in W$  on his preference list
6:     if  $w$  is unengaged then
7:       engage  $m$  to  $w$ 
8:     else if  $w$  prefers  $m$  to her fiancé  $m'$  then
9:       break engagement of  $m'$  to  $w$ 
10:    engage  $m$  to  $w$ 
11:   end if
12:   cross  $w$  off  $m$ 's preference list
13: end while
14: report the set of engaged pairs as the final matching
15: end procedure
```