

## Exercises on the stable marriage theorem, 2015-09-18

1. Perform the Gale-Shapley algorithm on the following set of men and women with the men as the proposers. (names abbreviated by first letter)

| Men    | Preferences |
|--------|-------------|
| Amir   | S>T>U>V     |
| Bengt  | S>V>U>T     |
| Ceasar | S>U>T>V     |
| David  | U>V>T>S     |

| Women    | Preferences |
|----------|-------------|
| Susanne  | D>A>B>C     |
| Tana     | A>D>C>B     |
| Ursula   | C>D>B>A     |
| Virginia | A>C>D>B     |

2. Determine a list of four men and four women (each ranking all the four people of the opposite sex) where no one obtains his or her first choice, regardless of which sex proposes.
3. Prove that if the men propose then at most one of the men gets his last choice (assuming that everyone has ranked everyone of the opposite sex).