Basic Algorithms, Assignment 1

Due, Tuesday, Sept 11

Instructor: Prof. Joel Spencer
Office: wwh829
Email: `spencer@cs.nyu.edu`
Phone: x83219
Office Hours: TO BE ANNOUNCED
Course website:
`www.cs.nyu.edu/cs/faculty/spencer/basicalg/index.html`
or go to Prof. Spencer's home page (under CS faculty) and look for pointer.

1. Consider the Gale-Shapley algorithm with n men and n women. Suppose each man has a different woman first on his list. Describe how the algorithm will work. How many times will the WHILE loop be employed?

2. With $n = 4$ select random permutations for each man and each woman as your data and then run the Gale-Shapley algorithm by hand, giving the intermediate positions until reaching the final matching.

3. Construct an example with $n = 5$ in which man 1 proposes to all women $1, 2, 3, 4, 5$ and in which women $1, 2, 3, 4$ initially accept his proposal and later jilt him and in which woman 5 accepts his proposal and is his final mate.

4. Page 22, Exercise 1

5. Page 22, Exercise 2

No one has yet programmed a computer to be of two minds about
a hard problem, or to burst out laughing, but that may come.
– Lewis Thomas