Northern Michigan University (Marquette Co, MI)
CS 444-01-25F: Parallel And Distributed Processing

Program 7
Due: Wednesday 3 December 2021 9:00 A.M. EST

Stable Marriage

Create a folder called "PG7" in the top level of your CS444-01-25F folder. Place all files pertaining to this assignment into the top level of your PG7 folder. Place a (possibly empty) file called "DONE" into this folder when you are ready to have your programs graded. The only files you need to turn in are the .cc and .h files. Please don't turn in any files other than these!!

Given *n* men and *n* women, and a preference list each person has for the members of the opposite sex, you are to compute a set of stable marriages: if any person prefers someone else to the one s/he is married to, that person prefers his/her own partner to the first person. Thus, in theory, affairs will never happen.

You will need 2*n*+1 processes. One for each of the people and one for the matchmaker. The matchmaker will read the input file and send each process its appropriate preference list found in the input file. The matches will be made in parallel and the matchmaker will be informed of the marriages. The matchmaker will then print out the married couples.

The input file will be formatted as follows:
The first line will contain *n*, indicating the number of people.
Then will follow *n* male names, each on its line.
Then *n* female names, each on its own line.
Then will follow *n* preference lists, one for each man in the order in which they appeared.
Then *n* more preference lists, for the women.
The preference lists will consist of *n* integers separated by spaces. (1 indicates the first name, 2 indicates the second name, etc.)

For example:

```
3
Abner
Bill
Charlie
Xena
Yolanda
Zelda
3 1 2
2 3 1
```

3 2 1
1 2 3
1 2 3
1 2 3

This indicates that Abner prefers Zelda to Xena and Xena to Yolanda. Each woman in this example prefers Abner to Bill and Bill to Charlie.

The output would look something like

Abner and Zelda are married.
Bill and Yolanda are married.
Charlie and Xena are married.

The output doesn't have to look exactly like this. Certainly, I don't care in which order the couples are printed.