Background: The Gale-Shapley Algorithm is useful for providing a single stable matching. The key word is single. One of the drawbacks with this algorithm despite its $O(n^2)$ running-time is that it does not return every possible stable matching.

Objective: Create a program that is able to take an instance of the Stable Matching Problem and return the total number possible stable matches.

Input Format: You must create an input file called "input1.txt". You will then read from the file to obtain the following:

- How many men/women will there be?
- Each preference list for the men.
- Each preference list for the women.
- You will separate numbers in each list with a space (see examples below)

For more understanding see the example #1 below.

- The 4 at the top of the file tells me there are 4 men and 4 women
- There are 8 total lines representing the preference lists
- The first 4 lines are the preference list for the men
- The last 4 lines are the preference list for the women

EXAMPLE #1: Given an input1.txt file of

```
4
1 2 3 4
2 1 3 4
3 4 1 2
4 3 1 2
2 1 3 4
1 2 3 4
4 3 1 2
3 4 1 2
```

Your output should be:

```
4
```

EXAMPLE #2: Given an input1.txt file of

```
2
1 2
1 2
1 2
1 2
```

Your output should be:

```
1
```

Important Note: This project will be computationally intensive since it will have a worst case running time of O(n!). You can use the examples to check your program. I expect your program to be able to handle 10 men and women. If your program fails to hit this mark you will lose points.