

Stable Matching Report

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Results

Our implementation produces the expected results on all of the input-output file pairs. We tested all of them through the shell script provided.

Implementation details

We are parsing the input from the file and splitting them on men preferences and women preferences.

Both men and women preferences are stored in 2-Dimensional Integer matrix to make search time $O(1)$. With the same purpose in mind, we have used Arrays throughout the whole implementation.

We have created a matrix named ranking to keep track of the women preferences. The indices of rows and columns represents the women and men respectively, and the data stored in the matrix is how high they rank from the woman's perspective. This way when a man proposes to a woman who is already engaged we only have to check two elements $O(1)$, instead of doing a linear search which is $O(n)$.

We used Stack to keep track of unmatched men. In the current array we are storing the matches indexed by the women ID and simultaneously in result array we are storing the same matches but this time indexed by the men's ID.

With these data structures, our implementation runs in time $O(n^2)$