

Save the Last Dance for Someone Other Than Me

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You're arranging a formal dance evening. n people have signed up to lead and n people to follow. There will be a series of k dances (with $k \leq n$), each of which will match each leader with one follower. However, the same leader and follower will never be paired for more than one dance. (So, every person will dance with k different people across the k dances.) Your job is to create the series of k matchings for the k dances.

As with SMP, you have complete preference lists over the followers for each leader and complete preference lists over the leaders for each follower. (Where leaders and followers in this problem play similar roles to men and women—or vice versa—in SMP.)

1 A First Step

Write pseudocode for a simple algorithm that—given n , the $2n$ preference lists, and k —produces a valid list of k perfect matchings for the dances, **completely ignoring the preferences**.

Hint: create your first matching by pairing l_1 and f_1 , l_2 and f_2 , and so on. How can you adjust these matching to create dance 2, dance 3, ..., dance k .