

- Each user has a collection of users which are called its friends. Note that it is possible that user 'A' is a friend of user 'B' but not vice versa. If a friend unregisters from the system, then that friend must be removed from his friends list.

2. Friends Recommendation

- For already registered users**, show top 'K' recommendations. Recommendation should be done as follows
- A friend should not be recommended. ‘
- All second friends (friends of friends) should be given more preference than all third friends. All third friends should be given more preference than all fourth friends and so on.
- For two friends which are both i^{th} friend, they will be preferred in random order.
- When a new user is registering in the system**, show top 10 recommendations based on some common parameters. The more parameters a user has in common, the more preferred it will be. If two users have the same number of common parameters, then choose randomly.
- If the number of already registered users are less than or equal to 10, then show all the users.
- If the number of already registered users are greater than but the number of users with some common parameters are less than 10, then show all those users with common parameters and then show other users randomly such that they are all 10 in total.
- Let, the number of recommended users be K, now the new registering user would add any X ($\leq k$) users to friends. 'K' along with the list of ID of friends would be given as an input.

3. Check Friendship status

- You will be given an ID of two users A and B and you have to tell whether A is a friend of B or not.
- You have to do this operation **efficiently**, the more efficient this operation will be, the more marks would be given for this part.

C. Evaluation and other comments

- You will be evaluated on how well you have implemented the features and with what complexity (both space and time would be considered).

VIII. FRIENDS RECOMMENDATION SYSTEM

Develop a friends recommendation system like Facebook.

*Assigned to: **Dixit Kumar Garg***

A. Legend

You are fascinated about how Facebook manages to recommend friends which are in most of the cases related to us in some ways. So you decided to come up with your own system to recommend friends. Of-course, it won't be some complex ML stuff!!

B. Specifications

1. User

- Users can register in your system. Each user will have some parameters like name, age, city, etc. Also there must be some unique ID for every user. The ID should be a minimum positive integer which is not currently in use.
- Users can unregister from your system. After a user unregisters from the system, its ID can be used by another user.