FRIENDS RECOMMENDATION SYSTEM

DSA MINI PROJECT

GROUP 7

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ACKNOWLEDGMENT

On the very onset of this report , we would like to extend my sincere and heartfelt gratitude to everyone who has helped us in this endeavour. Without their active guidance, help, cooperation and encouragement, we would not have made headway in this project on Friends Recommendation System.

We are ineffably grateful for our TA, **Dixit Kumar Garg**, for his constant guidance, support and encouragement. This project would not have been successful without you sir.

We would also like to thank our professors, Professor Ravi Kiran and Professor Sujit Prakash Gujar and all the course TAs for presenting us with an opportunity to work on this project.

OVERVIEW

Our goal was to develop a friend recommendation system similar to facebook.

Users can register in our system. Each user has some parameters like name, city name, hobbies and birthday details. There is some unique ID for every user. Users can unregister from the system. Each user has a collection of users which are called its friends. Our system then lets the user choose from a menu and functions accordingly.

PROGRAM DETAILS

The following are the data structures we have used in our project :

- Dynamic Array of user nodes
- Adjacency list (with edges stored in a dynamic array)
- Priority Queue
- Stack
- Queue

The following are the algorithms we have used in our project :

- Breadth-First Search
- Dijkstra
- Binary Search

The following are the time complexities of the different parts of our project :

- Binary Search : O(logn)
- Dijkstra : O(ElogV + V)
- BFS : O(V + E)
- Friends Recommendation System (Hobbies) : O(2048) (constant time)

The following are the different components in our project :

- Storing the data of users in a dynamic array.
- Registering users and storing their details. Also asking the user for a password, encrypting it and storing it.
- Giving every user a code based on the set of hobbies they choose.
- Recommending new users(without any friends), other users with common hobbies.
- Implementing BFS for recommending users(who are not their friend) to users who have at least one friend.
- When two user IDs are entered, it gives output such that if they are friends of each other or not and also displays their mutual friends and things they share in common.

The following is the division of work :

- **Shavak Kansal (2020101023)**
  Priority Queue, Dijkstra Algorithm, User Friendship Status, Graph Functions , BinarySearch implemented in User Friendship Status , Resize Graph of User Nodes, Debugging, RemoveFriend function, LookUpUser with respect to current user, Display details of certain user, Delete user function, add friend function.

- **Venika Sruthi (2020101072)**
  Recommendation of friends (using linked list and permutation), User Function, Documentation, Debugging, ReadMe, Stack.
- **Shivangi Agarwal (2020113011)**
  User Structure, Encryption of password, User Login function, Resize Array, Input-Output, Heapsort (and heapify), Binary Search, Report, Readme
- **Venneti Sri Satya Vinay (2020101066)**
  Breadth-First Search Algorithm, Queue
- **Manaswini Tharigopula (2020113015)**
  Report.

LINK TO GITHUB REPOSITORY

https://github.com/Ag-Shivangi/DSA_MiniProject_7.git