ADVANCED DATA STRUCTURES

SUBMITTED BY:

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TOPIC: SOCIAL NETWORK

ABSTRACT:

A project on Graph data structure and algorithm to implement a community network in which we can rank the people of community according to their influence on others.

We can also create groups of people based on common interests and hobbies of its members and remove the members based on their position and activities in the group.

It also suggests friends based on:

- Mutual Friends
- Neighboring people

It also gathers statistics based on the details and their activity on the network.
For e.g.:

1) Age group
2) Number of friends (Extroverts/ Introverts)

SOFTWARE AND HARDWARE USED:

- Intel core i3/i5/i7/i9 processor
- GNU GCC Compiler

PLATFORM USED:

- 64 bit Windows Environment or
- 64 bit Linux Environment

INTRODUCTION:

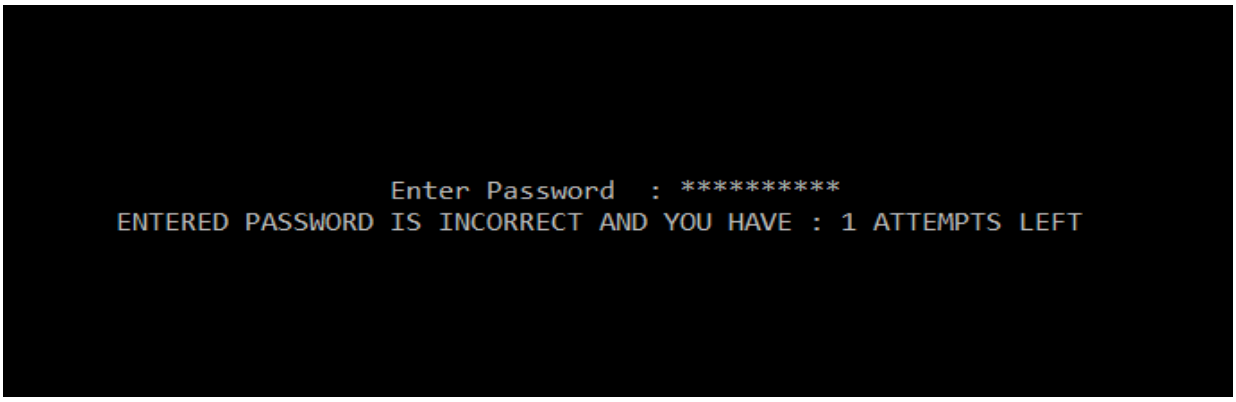
A project on Graph data structure and algorithm to implement a community network in which we can rank the people of community according to their influence on others. Individuals in the community can be removed, added or prioritized based on their effect on the health of community.

This could be a sub part of a full-fledged Social Community projects that involves major operations on a large data set and risks associated with it. This project involves the operations and algorithms that are backbone of a major project like a social networking site.

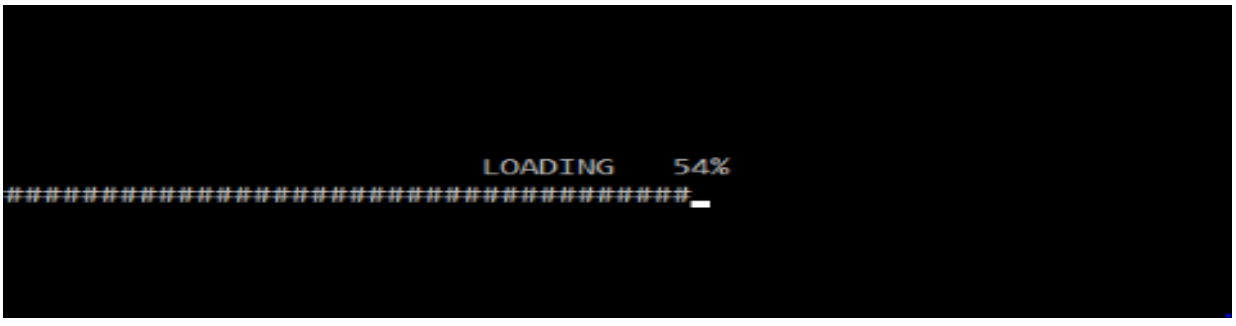
A social network is a social structure made up of a set of social actors (such as individuals or organizations), sets of dyadic ties, and other social interactions between actors. The social network perspective provides a set of methods for analyzing the structure of whole social entities as well as a variety of theories explaining the patterns observed in these structures. The study of these structure uses social network analysis to identify local and global patterns, locate influential entities, and examine network dynamics.

Social networks and the analysis of them is an inherently interdisciplinary academic field which emerged from social psychology, sociology, statistics, and graph theory. Social network analysis is now one of the major paradigms in contemporary sociology and is also employed in a few other social and formal sciences. Together with other complex networks, it forms part of the nascent field of network science.

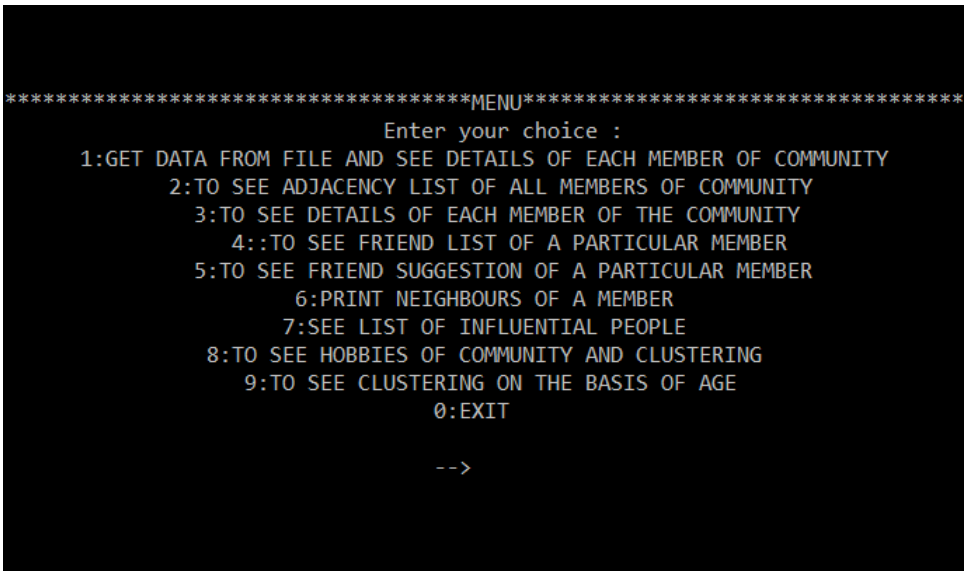
SNAPSHOTS:



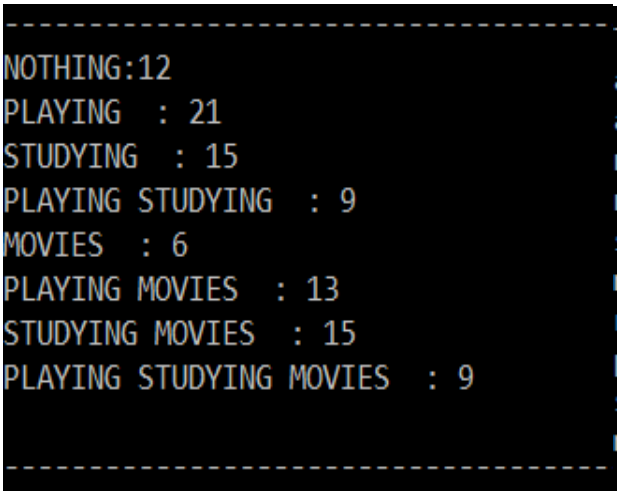
Password Incorrect



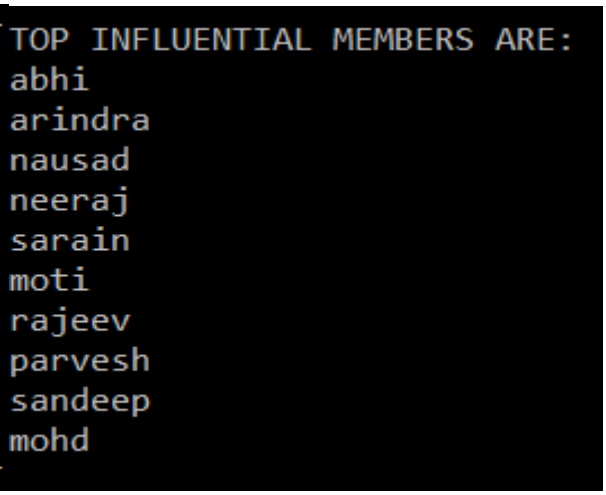
Loading Progress Bar



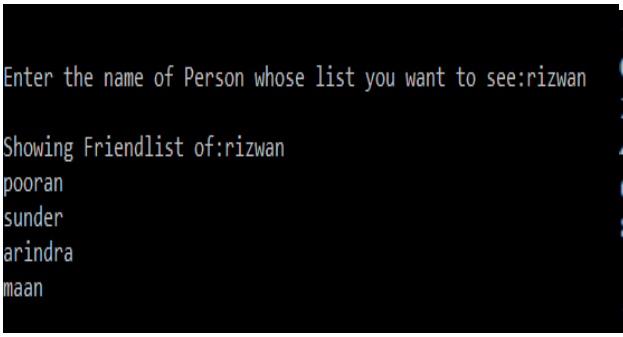
Menu



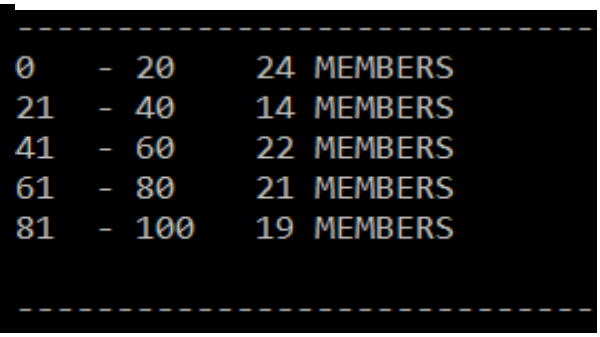
Hobbies



Influential people



Friend List



Age cluster

ALGORITHMS USED:

1.DIJKSTRA'S ALGORITHM:

Dijkstra's algorithm (or Dijkstra's Shortest Path First algorithm, SPF algorithm) is an algorithm for finding the shortest paths between nodes in a graph, which may represent, for example, road networks.

The algorithm exists in many variants; Dijkstra's original variant found the shortest path between two nodes, but a more common variant fixes a single node as the source node and finds shortest paths from the source to all other nodes in graph, producing a shortest-path tree.

2.DEPTH FIRST SEARCH (DFS):

Depth-first search (DFS) is an algorithm for traversing or searching tree or graph data structures. The algorithm starts at the root node (selecting some arbitrary node as the root node in the case of a graph) and explores as far as possible along each branch before backtracking.

3.SUBSET FINDING ALGORTIHMS:

In computer science, the subset sum, difference and other problem is an important decision problem in complexity theory and cryptography. There are several equivalent formulations of the problem.

4.GRAPH CLUSTERING ALGORITHMS:

Through this algorithm we have clustered the members of the community based on their age, hobbies. This involves a series of operations which forms the clusters of members sharing some same data.

5.BIT MASKING ALGORITHM:

It is the technique of manipulating bits in a program for fast calculation of data. It makes the use of bitwise operators, resulting in fast operations. First thing to make sure before using bitmasks for solving a problem is that it must be having small constraints, as solutions which use bit masking generally take up exponential time and memory.

DATA STRUCTURES USED:

1.PRIORITY QUEUE:

In computer science, a priority queue is an abstract data type which is like a regular queue or stack data structure, but where additionally each element has a "priority" associated with it. In a priority queue, an element with high priority is served before an element with low priority. In some implementations, if two elements have the same priority, they are served according to the order in which they were enqueued, while in other implementations, ordering of elements with the same priority is undefined.

2.GRAPHS:

A Graph is a non-linear data structure consisting of nodes and edges. The nodes are sometimes also referred to as vertices and the edges are lines or arcs that connect any two nodes in the graph.

CONCLUSION:

Thus, we have implemented a mini project on Social Network and studied the behavioral pattern of members under observation.