
FINAL – Part A (Programming Part)

As you may know, the popular social network Facebook™ (Meta Platforms, Inc.) was founded by Mark Zuckerberg and his classmates at Harvard University in 2004. At the time, he was a sophomore studying computer science.

Design and implement an application that maintains the data for a simple social network. Each person in the network should have a profile that contains the person's name, current status, and a list of friends. Your application should allow a user to join the network, leave the network, create a profile, modify the profile, and add friends.

Following are the specifications:

Design a class for representing a person's name (*e.g.* Name) with instance variables for firstname and lastname, one or more constructors, and related getter and setter methods.

Design a class for representing a person's profile (*e.g.* Profile) with instance variables for person's name (*e.g.* private Name profileName;), status (a String), and a list of friends profiles (*e.g.* private AList<Profile> friends;). You may use a list implementation of your choice (*e.g.* an array-based list or a linked list. See Chapter's 10, 11, and 12).

- Have one or more constructors and related getter and setter methods.
- Have a method for adding a friend (*e.g.* addFriend) to the profile list. This method should receive the new friend's profile as an argument.
- Have a method for removing a friend (*e.g.* removeFriend) from the profile list. This method should receive the friend's profile that has to be removed as an argument.
- Have a display method that prints the profile (name, status, and friends).

Design a class for managing the profiles on the social network (*e.g.* ProfileManager). Have an instance variable that refers to a list of all profiles (*e.g.* private AList<Profile> allProfiles;).

- Have a constructor that initializes the profile list to an empty list.
- Have a method for adding a profile to the profile list. The profile to be added should be passed as an argument to this method.
- Have a method for removing a profile from the profile list. The profile to be removed should be passed as an argument to this method.
- Have a method for creating a friendship between two profiles. This method should receive two profiles as arguments. The first profile (argument) should be added as a friend to the second profile and viceversa (*e.g.* by using the addFriend method of the Profile class).
- Have a method for ending a friendship between two profiles. This method should receive two profiles as arguments. The first profile (argument) should be removed as a friend from the second profile and viceversa (*e.g.* by using the removeFriend method of the Profile class).
- Have a display method that prints all the profiles (*e.g.* by using the display method of the Profile)

Design a driver program (*e.g.* FacebookApp) that creates a profile manager, creates profiles, adds profiles to the profile manager, creates friendships, ends friendships, and removes profiles. Be sure to display the profiles and profile manager info after making any updates.

A sample output file is attached.

OPTIONAL

Use a graph data structure to track the friend relationships among members of the network. Add a feature to enable people to see a list of their friends' friends.

OPTIONAL

Add a database layer to the social networking app. Integrating a database layer into a social networking application provides a structured, scalable, and secure way to manage data. Examples: MySQL and MongoDB.

OPTIONAL

Design a GUI version of the above social networking app (*e.g.* using Java Swing).

References:

<https://docs.oracle.com/javase/tutorial/uiswing/>

<https://www.javatpoint.com/java-swing>

Maximum Points: 50

Due Date: 11:59 PM, August 6th, 2024

Submission: Submit your source code (java files) to Canvas