CS 401 Algorithms
Assignment4
DUE DATE: June 18th 2021

A Social-Network Based Recommendation System for last.fm

In this assignment, you are asked to design and implement a social network-based recommender system for last.fm.

You are given the following dataset (Reference: http://www.lastfm.com):

Dataset: data.zip file contains social networking, tagging, and music artist listening information from a set of 2K users from Last.fm online music system. http://www.last.fm

- There are 1892 users and 17632 artists
- There are 12717 user-friend relations
- There are 92834 user-listened artist relations [user, artist, listeningCount]

Files:

- artists.dat: This file contains information about music artists listened and tagged by the users. url and pictureURL will not be used in the assignment.
  File format: `id \t name \t url \t pictureURL`
- user_artists.dat: This file contains the artists listened by each user. It also provides a listening count for each [user, artist] pair.
  File format: `userID \t artistID \t weight`
- user_friends.dat: These files contain the friend relations between users in the database.
  File format: `userID \t friendID`

Functional Requirements:

- Create a class, called `LastFMRecommender.java`. The class processes the data sets and provides the following public functionalities:
  - `listFriends(int user)`: prints the list of friends of the given user
  - `commonFriends(int user1, int user2)`: prints the user1's friends in common with user2
  - `listArtists(int user1, int user2)`: prints the list of artists listened by both users
  - `listTop10()`: prints the list of top 10 most popular artists listened by all users
  - `recommend10(int user)`: recommends 10 most popular artists listened by the given user and his/her friends.
- Create a Junit test class to test the methods in LastFMRecorder.java

What to submit:

- `LastFMRecommender.java` [please submit other source files if you have any]
- `LastFMRecommenderTest.java`: Junit test class with sample test cases.