Programming Assignment #5

Putting them altogether: Generate a NewsFeed for a member

Due date: May, 3, 2012 2:00PM
URL: http://www.cs.colostate.edu/~cs200

A. Objective

In this assignment, you will build methods to generate a NewsFeed page for the user.

B. Description of Task

In PA2, you built a method to calculate the EdgeRank score for single-member social network application. In this PA, you should extend that method for multiple users using methods built in PA2, 3, and 4. You will add the following methods to the NewsFeed class.

```
LinkedList<Edge> getMultiMemberUnsortedNewsFeed(String viewerID)

LinkedList<Edge> getMultiMemberSortedNewsFeed(LinkedList<Edge>
unsorted)
```

(1) `LinkedList<Edge> getMultiMemberUnsortedNewsFeed(String viewer)`

This method returns a `LinkedList` of `Edges` including the `EdgeRank` scores in the `Edges`. If the item is a wall posting or status change, the `EdgeRank` score should reflect all of the related activities made by the viewer's friends. If the item is comment, visited, or like, your method should first identify which item is the original post followed by current item. Then, your method should collect all of the related items and calculate the EdgeRank score. Please use your method,`getRelatedItems(Item currentItem)` in PA4. Note that the affinity score must be always based on the current ***viewer***.

- Himself/herself: 3 (Edge created by himself or herself)
- Friend: as specified in the ***viewer's*** profile
- Non-friend: 1 (if the edge is created by a person who is not a viewer's friend)

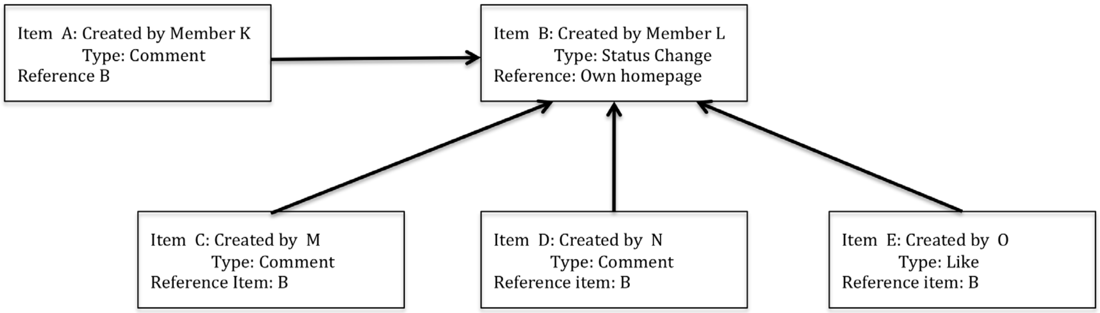

Figure 1. Case B: if the current item is a comment, visit, or like. Result should be Item B, C, D, and E

Figure 1 is from the description of PA4. In this case, your method should consider 5 members.

- **Member K**: himself or herself. Therefore you should apply 3 for the affinity score.
- **Member L**: Since member K could comment on L's posting, obviously K and L are friends. You should apply the affinity score of Member L specified in the Member K's profile.
- **Member M, N, and O**: Although M, N, and O are friends of member L, you should consider whether they are friends of **member K**. If any of them is K's friend, you will need to apply the affinity value specified in K's profile. Otherwise, apply 1.

(2) `LinkedList<Edge> getMultiMemberSortedNewsFeed(LinkedList<Edge> unsorted)`

This method returns a LinkedList of Edges sorted by the EdgeRank score in descending order.

NOTE: You can just rename existing method in PA2, `LinkedList<Edge> getSingleMemberSortedNewsFeed(LinkedList<Edge> unsorted)`.

C. Display the Final Result

You should implement a command-line user interface. PA5.java is the skeleton file of this interface. In PA5.java, you will implement two methods:

```
void printNewsFeed(String viewer, int begin, int count)
void printFullThreadOfNewsFeed(String viewer, int begin, int count)
```

(1) `printNewsFeed(String viewer, int begin, int count)`

Print out the news feed items for viewer. This method should print out only ***wall posting or status change items***. (No comment, visited, or like included) Items should be sorted on the EdgeRank scores in descending order. This method prints items as many as `count` from the `begin`'th item. The first item has an index of 0. If the number of items is smaller than `count`, this method prints only available items. It should follow the format:

```
[itemID] [type] [creator] [messagebody: if it has] [age in minutes] [edge rank score]
```

*Items are separated by **a space**.

(2) printFullThreadOfNewsFeed(String viewer, int begin, int count)
Print out the news feed items including related comments, visited, and like information. Items should be sorted based on their `EdgeRank` score in descending order. The first item has an index of 0. If the number of items is smaller than `count`, this method prints only available items. Output should have the following format:

```
[itemID] [type] [creator] [messagebody: if it has] [age in minutes] [edge rank score]
[10 spaces][itemID] [type] [creator] [messagebody: if it has] [age in minutes]
[10 spaces][itemID] [type] [creator] [messagebody: if it has] [age in minutes]
[10 spaces][itemID] [type] [creator] [messagebody: if it has] [age in minutes]
[itemID] [type] [creator] [messagebody: if it has] [age in minutes] [edge rank score]
[10 spaces][itemID] [type] [creator] [messagebody: if it has] [age in minutes]
[10 spaces][itemID] [type] [creator] [messagebody: if it has] [age in minutes]
[10 spaces][itemID] [type] [creator] [messagebody: if it has] [age in minutes]
..
.
.
```

Items are separated by **a space**.

You can directly use or modify your classes from PA1~ PA4. Add new methods for PA5 based on your design. PA5.java will be provided but please do not change its main() method. Example data will also be provided.

D. Requirements/Test Cases

The test cases listed below are provided to assist you in verifying the correctness of your software. You are also required to test your software with different test cases that you will build yourself. Actual grading will be done by test cases using the same commands; however, the values that the specified input arguments take will be different.

(1) Test case 1

Objective: Print NewsFeeds
Command: java PA5 PA5-exampleData.txt printNewsFeed epyle 0 20
Output:

```
2502 4 epyle Message_for_Object2502 411 234
4681 4 willr Message_for_Objec4681 98 175
2890 4 willr Message_for_Object2890 356 140
1874 4 theodore789 Message_for_Object1874 501 90
1872 4 theodore789 Message_for_Object1872 509 90
1675 4 theodore789 Message_for_Object1675 773 60
1671 4 theodore789 Message_for_Object1671 776 60
2567 4 epyle Message_for_Object2567 401 45
2480 4 epyle Message_for_Object2480 426 45
2469 4 epyle Message_for_Object2469 553 45
1380 4 epyle Message_for_Object1380 623 45
```

(2) Test case 2

Objective: Print NewsFeed Page
Command: java PA5 PA5-exampleData.txt printNewsFeed epyle 8 20

Output:

```
2480 4 epyle Message_for_Object2480 426 45
2469 4 epyle Message_for_Object2469 553 45
1380 4 epyle Message_for_Object1380 623 45
```

(3) Test case 3

Objective: Print NewsFeed Page

Command: java PA5 PA5-exampleData.txt printNewsFeed sinclair 0 20

Output:

```
4681 4 willr Message_for_Objec4681 98 175
2502 4 epyle Message_for_Object2502 411 141
2890 4 willr Message_for_Object2890 356 140
1874 4 theodore789 Message_for_Object1874 501 90
1872 4 theodore789 Message_for_Object1872 509 90
1675 4 theodore789 Message_for_Object1675 773 60
1671 4 theodore789 Message_for_Object1671 776 60
```

(4) Test case 4

Objective: Print NewsFeed Page

Command: java PA5 PA5-exampleData.txt printNewsFeed sinclair 10 10

Output:

This command should not print anything and should not cause any error.

(5) Test case 5

Objective: Print NewsFeed Page

Command: java PA5 PA5-exampleData.txt printNewsFeed eh0721 0 20

Output:

```
1381 4 nhawth Message_for_Object1381 665 93
1899 4 ar3090 Message_for_Object1898 598 90
1191 4 jambs Message_for_Object1191 680 88
2131 4 remerson Message_for_Object2131 311 80
2111 4 remerson Message_for_Object2111 320 80
1291 4 remerson Message_for_Object1291 670 78
1009 4 eh0721 Message_for_Object1008 699 69
1186 4 bettyfriedan Message_for_Object1186 685 69
1010 1 eh0721 Message_for_Object1102 697 36
1004 4 eh0721 Message_for_Object1004 755 30
```

(6) Test case 6

Objective: Print NewsFeed Page

Command: java PA5 PA5-exampleData.txt printNewsFeed eh0721 8 7

Output:

```
1010 1 eh0721 Message_for_Object1102 697 36
1004 4 eh0721 Message_for_Object1004 755 30
```

(7) Test case 7

Objective: Print NewsFeed Page with full threads of items

Command: java PA5 PA5-exampleData.txt printFullThreadOfNewsFeed sinclair 0 20

Output:

```
4681 4 willr Message_for_Objec4681 98 175
2502 4 epyle Message_for_Object2502 411 141
          2630 2 theodore1 Comment_for_Object2630 399
          2631 2 theodore789 Comment_for_Object2631 398
          2600 2 willr Comment_for_Object2600 400
2890 4 willr Message_for_Object2890 356 140
1874 4 theodore789 Message_for_Object1874 501 90
1872 4 theodore789 Message_for_Object1872 509 90
1675 4 theodore789 Message_for_Object1675 773 60
1671 4 theodore789 Message_for_Object1671 776 60
```

(8) Test case 8

Objective: Print NewsFeed Page with full threads of items

Command: java PA5 PA5-exampleData.txt printFullThreadOfNewsFeed epyle 0 20

Output:

```
2502 4 epyle Message_for_Object2502 411 234
          2630 2 theodore1 Comment_for_Object2630 399
          2631 2 theodore789 Comment_for_Object2631 398
          2600 2 willr Comment_for_Object2600 400
4681 4 willr Message_for_Objec4681 98 175
2890 4 willr Message_for_Object2890 356 140
1874 4 theodore789 Message_for_Object1874 501 90
1872 4 theodore789 Message_for_Object1872 509 90
1675 4 theodore789 Message_for_Object1675 773 60
1671 4 theodore789 Message_for_Object1671 776 60
2567 4 epyle Message_for_Object2567 401 45
2480 4 epyle Message_for_Object2480 426 45
2469 4 epyle Message_for_Object2469 553 45
1380 4 epyle Message_for_Object1380 623 45
```

PA5 file, input file, and submission instructions will be posted on the class web site along with this document. **DO NOT MODIFY the main() of PA5.java that has been provided to you.**

E. Grading

This assignment will account for 5% of your final grade. The grading itself will be done on a 50-point scale (50 points from your software).

G. Late Policy

Please check the late policy available from the course web page.