

GEBZE TECHNICAL UNIVERSITY

**CSE 222
DATA STRUCTURES AND ALGORITHMS**

**HOMEWORK 3
REPORT**

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1. DETAILED SYSTEM REQUIREMENTS

First of all we have to initialize classes Account, Post, Interaction, Message, Like, Comment. Each account have their own followers accounts, following accounts, identification number, must share post, like and comment another accounts posts. Our system have to interact with each classes. This class of course have some limitations for example not every account send message to every account, or blocked accounts does not see the accounts which block himself/herself. Our system must be checks this limitations also. Another limitation about is the login system. If one valid account use the system other accounts process will not be done, system have to avoid this complexity.

In summary our system have to include this specifications:

- Login into at most one account
- Share, view, sending like, sending comment, sending message (with only following), checking inbox and outbox messages
- Log out
- Block any valid user, follow any valid user
- Unblock, uncomment, unlike, unfollow features have to be add to the new version of this homework

3. PROBLEM SOLUTION APPROACH

a) ArrayList Part

For the arraylist, I first read the arraylist functions and decided which functions were ideal for me. I use get(), size(), add(), remove() list functions in arraylist.

b) LinkedList Part

For the LinkedList, I first read the linkedlist functions and decided which functions were ideal for me. I use get(), size(), add(), remove() list functions in linkedlist.

c) LDLinkedList Part

In this part I use my own implementation on add(), remove(), size() for functions, I implement Node<E> class and LDIterator<E> class for implementing the functions,

- I use iterator for adding at the end of the linkedlist in O(1) time one global iterator was always point at the end of the Linkedlist.
- I implemented get() function which takes given index value at O(n) time iterator will always points to the head node at the beginnning.
- I implement lazy deletion strategy on remove function first I work on normal delete function in LDLinkedList then I implement lazy deletion. First I scan marked node, if any marked node will be found in X index, I return that founded index, then I compare marked and new index if they are same then my function returns false, and delete any node from linkedlist, if marked is less than new marked object then first I delete the small index number object and decrease size and high number index by 1,
 - For example ll.delete(3) and ll.delete(1) request send to the program
 - When ll.delete(1) request comes program scans the oldMarked index
 - Scan function return 3 for oldMarkedIndex then compares the index numbers
 - Switches the index numbers for first deleting higher number,
 - Then deletes lower number and decrease size for each deletion.
 - You can see the function in below.

```
@Override
public E remove(int index){
    if(index < 0 || index > size){
        throw new IndexOutOfBoundsException();
    }
    LDIterator<E> iteratorNew = iterator(); // The val
    int tmarked = scanMarked(index);
    if(tmarked != index){
        if(tmarked < index){
            int temp1 = tmarked;
            tmarked = index;
            index = temp1;
        }
        remove(tmarked, index);
        E tempData = head.data;
        if(index == 0)
        {
            // iterator.next();
            head = head.next;
        }
        remove(index, tmarked);
        return tempData;
    }
    return null;
}
```

Time Complexity Analysis

Function/Time	Basic Array exp	a exp	b exp	c exp
sharePost	Worst :O(n) Best: O(1)	Worst :O(n) Best: O(1)	Worst: O(n) Best: O(1)	Worst: O(1) Best: O(1)
like	Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)	Worst :O(n) Best: O(1)
unlike		Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)
comment	Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)	Worst :O(n) Best: O(1)
uncomment		Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)	Worst :O(n*n) Best: O(1)
follow	Worst :O(n) Best: O(1)	Worst :O(n) Best: O(1)	Worst: O(n) Best: O(1)	Worst: O(1) Best: O(1)
unfollow		Worst :O(n) Best: O(1)	Worst: O(n) Best: O(1)	Worst: O(n) Best: O(1)
sendMessage	Worst :O(n+m) Best: O(1)	Worst :O(n+m) Best: O(1)	Worst :O(n+m) Best: O(1)	Worst :O(1+1) Best: O(1)
viewProfile	Worst :O(n+m) Best: O(1)	Worst :O(n+m) Best: O(1)	Worst :O(n+m) Best: O(1)	Worst :O(n+m) Best: O(1)
viewInbox/outbox	Worst :O(1) Best: O(1)	Worst :O(1) Best: O(1)	Worst :O(1) Best: O(1)	Worst :O(1) Best: O(1)
viewInteraction	Worst :O(n*m) Best: O(1)	Worst :O(n*m) Best: O(1)	Worst :O(n*m) Best: O(1)	Worst :O(n*m) Best: O(1)
block	Worst :O(n*m) Best: O(1)	Worst :O(n*m) Best: O(1)	Worst: O(n*m) Best: O(1)	Worst: O(n*n) Best: O(1)
unblock		Worst :O(n+m) Best: O(1)	Worst: O(n+m) Best: O(1)	Worst: O(n+m) Best: O(1)
removeLikeBlock		Worst :O(n*m) Best: O(1)	Worst: O(n*m) Best: O(1)	Worst: O(n*n) Best: O(1)
commentRemoveBlock		Worst :O(n*m) Best: O(1)	Worst: O(n*m) Best: O(1)	Worst: O(n*n) Best: O(1)
getter	Worst :O(1) Best: O(1)	Worst :O(1) Best: O(1)	Worst :O(1) Best: O(1)	Worst :O(1) Best: O(1)

* Each functions self theoretical runtime shows 0.0 ms so I cannot add into the therotical for each function.

Time Comparison for each scenario:

Implementation Type	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Array	11.0ms	7.0ms	5.0ms	
Arraylist	11.0ms	9.0ms	10.0ms	6.0ms
Linkedlist	8.0ms	7.0ms	5.0ms	4.0ms
Ldlinkedlist	7.0ms	8.0ms		

Scenario 4

1. Create 10 accounts
2. sibelgulmez logs in
3. sibelgulmez shares 2 post
 - "I like C but java is not bad."
 - "Love rainy days in Kasimpasa..."
4. sibelgulmez follow gizemsungu and gokhankaya
5. sibelgulmez logs out
6. gokhankaya logs in
7. gokhankaya likes sibelgulmez's Love rainy days post
8. gokhankaya follows sibelgulmez, account10, oguzmutlu
9. gokhankaya give a comment Love rainy days post
10. gokhankaya send message to oguzmutlu
11. gokhankaya logs out
12. sibelgulmez logs in
13. sibelgulmez viewProfile of herself
14. sibelgulmez views interaction about herself
15. sibelgulmez blocks gokhankaya
16. sibelgulmez views profile interaction
17. sibelgulmez unblock gokhankaya
18. sibelgulmez view her profile and interactions

4.TEST CASES

Case -1 Steps

1. Create 3 accounts
2. Reach Profile info without log in (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Profile view process unsuccesfull. Error Message showing up to the user

Result

- **PASS**

Case -2 Steps

1. Create 3 accounts
2. Reach Profile info with log in (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Profile view process succesfull. View profile information

Result

- **PASS**

Case -3 Steps

1. Create 3 accounts
2. Reach Profile info with log in
3. Reach profile with another account without log out current account with different methods (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Profile view process of another account is unsuccesfull. Error message shows up to the user.

Result

- **PASS**

Case -4 Steps

1. Create 3 accounts.
2. login one account.
3. Without logging out, log in another account(s). (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Login process of another account(s) is/are unsuccessful. Error message shows up to the user.

Result

- **PASS**

Case -5 Steps

1. Create 3 accounts.
2. login one account.
3. View each profile
4. Each profile has unique userID
5. Current account see profile herself/himself. (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Each user id must be different. Current logged in user see own profile.

Result

- **PASS**

Case -6 Steps

1. Create 3 accounts.
2. login one account.
3. View each profile
4. Share post (Arraylist/LinkedList/ LDLinkedList)
5. View own posts, logs out (Arraylist/LinkedList/ LDLinkedList)
6. Like and leave a comment to post (Arraylist/LinkedList/ LDLinkedList)
7. View Interaction of post. (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Logged in user have to be share, like, and leave a comment to post and have to see interactions that comes to that post.

Result

- **PASS**

Case -7 Steps

1. Create 3 accounts.
2. login one account.
3. View each profile and follow profile (Arraylist/LinkedList/ LDLinkedList)

Expectation:

- Followed account follower number increase by 1, following account increase by 1

Result

- **PASS**

Case -8 Steps

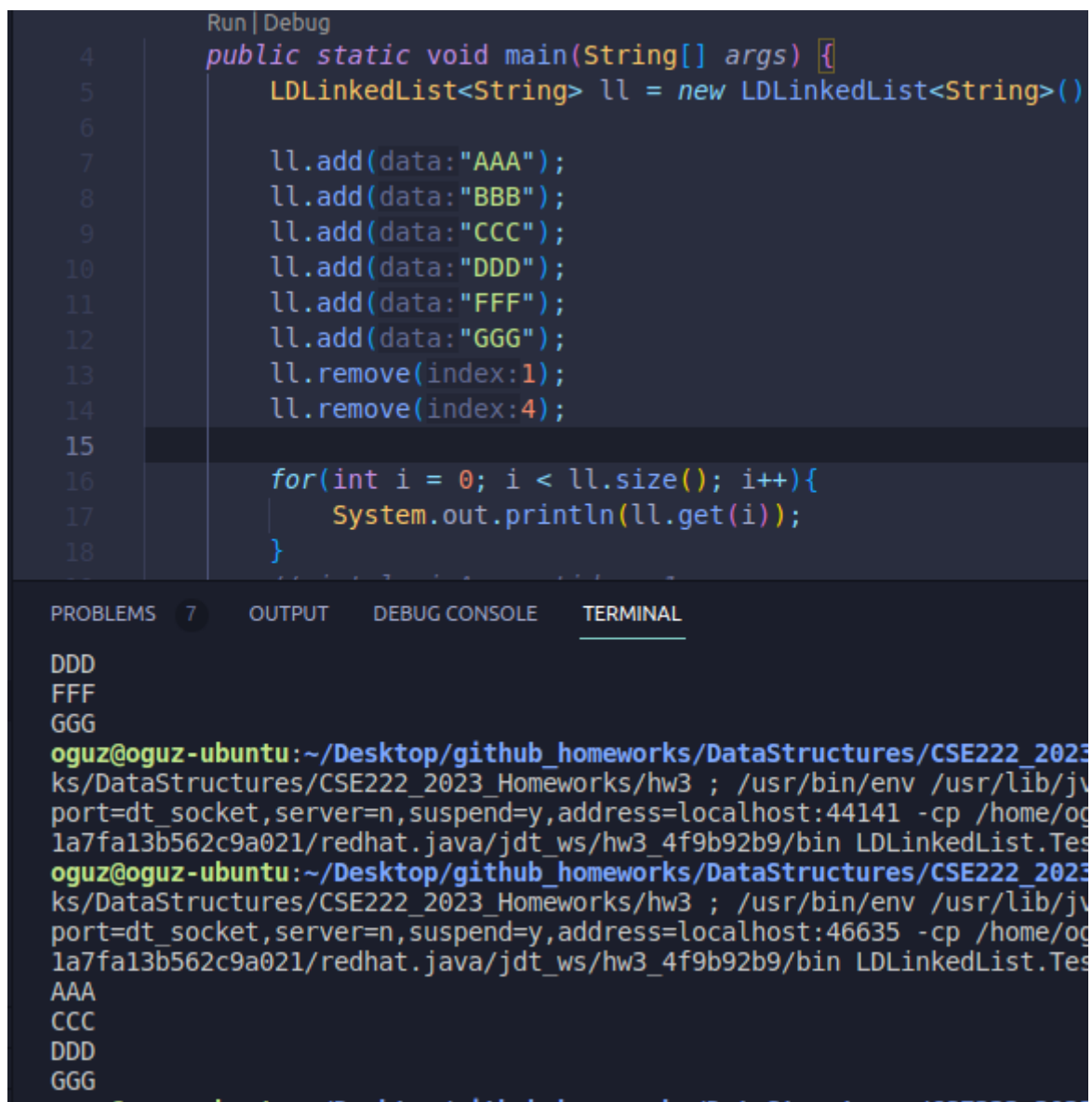
1. Add any string to the LDLinkedList
2. Lazy deletion first delete lower index later delete higher index.

Expectation:

- Lazy deletion will be done successfully

Result

- PASS



```
Run | Debug
4 public static void main(String[] args) {
5     LDLinkedList<String> ll = new LDLinkedList<String>()
6
7     ll.add(data:"AAA");
8     ll.add(data:"BBB");
9     ll.add(data:"CCC");
10    ll.add(data:"DDD");
11    ll.add(data:"FFF");
12    ll.add(data:"GGG");
13    ll.remove(index:1);
14    ll.remove(index:4);
15
16    for(int i = 0; i < ll.size(); i++){
17        System.out.println(ll.get(i));
18    }

```

PROBLEMS 7 OUTPUT DEBUG CONSOLE TERMINAL

```
DDD
FFF
GGG
oguz@oguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023
ks/DataStructures/CSE222_2023_Homeworks/hw3 ; /usr/bin/env /usr/lib/jv
port=dt_socket,server=n,suspend=y,address=localhost:44141 -cp /home/og
1a7fa13b562c9a021/redhat.java/jdt_ws/hw3_4f9b92b9/bin LDLinkedList.Tes
oguz@oguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023
ks/DataStructures/CSE222_2023_Homeworks/hw3 ; /usr/bin/env /usr/lib/jv
port=dt_socket,server=n,suspend=y,address=localhost:46635 -cp /home/og
1a7fa13b562c9a021/redhat.java/jdt_ws/hw3_4f9b92b9/bin LDLinkedList.Tes
AAA
CCC
DDD
GGG
oguz@oguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023
```

Case -9 Steps

1. Add any string to the LDLinkedList
2. Lazy deletion first delete higher index later delete lower index.

Expectation:

- Lazy deletion will be done successfully

Result

- PASS

```
2
3  public class TestClass1 {
4      Run | Debug
5      public static void main(String[] args) {
6          LDLinkedList<String> ll = new LDLinkedList<String>();
7
8          ll.add(data:"AAA");
9          ll.add(data:"BBB");
10         ll.add(data:"CCC");
11         ll.add(data:"DDD");
12         ll.add(data:"FFF");
13         ll.add(data:"GGG");
14         ll.remove(index:4);
15         ll.remove(index:3);
16
17         for(int i = 0; i < ll.size(); i++){
18             System.out.println(ll.get(i));
19         }
20     }
21 }
```

PROBLEMS 7 OUTPUT DEBUG CONSOLE TERMINAL

```
oguz@oguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023_Homeworks/DataStructures/CSE222_2023_Homeworks/hw3 ; /usr/bin/env /usr/lib/jvm/java-11-openjdk-amd64/bin/java -Dport=dt_socket,server=n,suspend=y,address=localhost:34351 -cp /home/oguz/.m2/repository/org/redhat-developer/remedy-dev/jdt_ws/hw3_4f9b92b9/bin LDLinkedList.TestClass1
AAA
BBB
CCC
GGG
```

Case -10 Steps

1. Add any string to the LDLinkedList
2. Lazy deletion delete same index.

Expectation:

- Lazy deletion will not successfully done.

Result

- PASS

```
2
3 public class TestClass1 {
    Run | Debug
4     public static void main(String[] args) {
5         LDLinkedList<String> ll = new LDLinkedList<String>();
6
7         ll.add(data:"AAA");
8         ll.add(data:"BBB");
9         ll.add(data:"CCC");
10        ll.add(data:"DDD");
11        ll.add(data:"FFF");
12        ll.add(data:"GGG");
13        ll.remove(index:4);
14        ll.remove(index:4);
15
16        for(int i = 0; i < ll.size(); i++){
17            System.out.println(ll.get(i));
18        }
19    }
20 }
```

PROBLEMS 7 OUTPUT DEBUG CONSOLE TERMINAL

```
oguz@oguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023_Homeworks/DataStructures/CSE222_2023_Homeworks/hw3 ; /usr/bin/env /usr/lib/jvm/java-17-openjdk-amd64/bin/java -Dport=dt_socket,server=n,suspend=y,address=localhost:34127 -cp /home/oguz/1a7fa13b562c9a021/redhat.java/jdt_ws/hw3_4f9b92b9/bin LDLinkedList.TestClass1
AAA
BBB
CCC
DDD
FFF
GGG
```

5.RUNNING AND COMMAND RESULTS

a. ArraylistScenario 1

```
92b9/bin ArrayList.TestClass1
Step 2... Logging into account (username: sibelgulmez)...

Step 3... Sharing two posts...

Step 4... Following gizemsungu and gokhankaya...

Step 5... Logging out from account (username: sibelgulmez)...

Step 6... Logging into another account (username: gokhankaya)...

Step 7... Viewing sibelgulmez's profile...
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 2 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya,
sibelgulmez's' follower(s):
sibelgulmez has 2 posts.

Step 8... Viewing sibelgulmez's posts...
(Post ID: 1) sibelgulmez: I like Java.
(Post ID: 2) sibelgulmez: Java the coffeee...

Step 9... Liking sibelgulmez's posts...'

Step 10... Adding a comment on a post of sibelgulmez

Step 11... Following sibelgulmez and gizemsungu...

Step 12... Sending a message to gizemsungu...

Step 13... Logging out from account (username: gokhankaya)...

Step 14... Logging into another account (username: gizemsungu)...
```

Ln 174, Co

```
There is/are 1 message(s) in the inbox

Step 17... Viewing inbox ...
-----
Message ID: 1
From: gokhankaya
To: gizemsungu
Message: This homework is too easy!
-----

Step 18... Viewing sibelgulmez's profile...
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 2 account(s) and has 1 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya,
sibelgulmez's' follower(s): gokhankaya,
sibelgulmez has 2 posts.

Step 19... Viewing sibelgulmez's posts...
(Post ID: 1) sibelgulmez: I like Java.
(Post ID: 2) sibelgulmez: Java the coffeee...

Step 20... Viewing sibelgulmez's posts' interactions...
-----
(PostID: 1): I like Java.
The post was liked by the following account(s): gokhankaya,
The post has 1 comment(s)...
Comment 1: ' gokhankaya' said 'me too!'
-----
(PostID: 2): Java the coffeee...
The post has no likes.
The post has no comments.
-----

Step 21... Liking sibelgulmez's posts...'
Liking sibelgulmez's posts...'

Step 22... Viewing sibelgulmez's posts' interactions...
-----
```

b.ArraylistScenario -2

SCENEARIO 2

Logging into account (username: gizemsungu)...
Sharing two posts.
Logging out from account (username: gizemsungu)...

Logging into account (username: sibelgulmez)...

Viewing gizemsungu's profile...

User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Liking gizemsungu's posts...'

Logging out from account (username: sibelgulmez)...

Logging into account (username: gokhankaya)...

Viewing gizemsungu's profile...

User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

gizemsungu has 2 posts.

Viewing gizemsungu's profile...

User ID: 1

Username: gizemsungu

Location: istanbul

Birth Date: 10.06.1999

gizemsungu is following 0 account(s) and has 2 follower(s).

gizemsungu is following:

gizemsungu's' follower(s): sibelgulmez, gokhankaya,

gizemsungu has 2 posts.

Adding a comment on a post of gizemsungu

Sending a message to gizemsungu...

Logging out from account (username: gokhankaya)...

Logging into account (username: gizemsungu)...

Viewing gizemsungu's profile...

User ID: 1

Username: gizemsungu

Location: istanbul

Birth Date: 10.06.1999

gizemsungu is following 0 account(s) and has 2 follower(s).

gizemsungu is following:

gizemsungu's' follower(s): sibelgulmez, gokhankaya,

gizemsungu has 2 posts.

Viewing inbox ...

Message ID: 1

From: gokhankaya

To: gizemsungu

Message: This homework is too easy!

Message ID: 2

From: gokhankaya

To: gizemsungu

Message: Hello!

c.ArraylistScenario -3

```
ArrayList > J TestClass3.java > {} ArrayList
116 //3
117 System.out.print("Logging into account (username: " + gizemsungu.getUsername() + "...");
118 loginAccountid = gizemsungu.login(loginAccountid);
119 System.out.println();
120 // *****
121
122 gizemsungu.block(sibelgulmez, loginAccountid);
123 System.out.println();
124
125 loginAccountid = gizemsungu.logout();
126 System.out.println();
127
128 //*****
129 System.out.print("Logging in to account (username: " + sibelgulmez.getUsername() + "...");
130 loginAccountid = sibelgulmez.login(loginAccountid);
131 System.out.println();
132
133 //*****
134 sibelgulmez.viewProfile(gizemsungu, loginAccountid);
135 System.out.println();
136
137 //*****

PROBLEMS 7 OUTPUT DEBUG CONSOLE TERMINAL

Logging out from account (username: gizemsungu)...
Logging into account (username: gizemsungu)...
Logging out from account (username: gizemsungu)...
Logging in to account (username: sibelgulmez)...
Unable to view Profile
Sending a message to gizemsungu...

oguz@oguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023_Homeworks/hw3$
```

d.Arraylist

```
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 2 account(s) and has 1 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya,
sibelgulmez's' follower(s): gokhankaya,
sibelgulmez has 2 posts.
```

Step 15... Viewing sibelgulmez's posts' interactions...

```
-----
(PostID: 1): I like C but java is not bad.
The post has no likes.
The post has no comments.
-----
```

```
-----
(PostID: 2): Love rainy days in Kasimpasa...
The post was liked by the following account(s): gokhankaya,
The post has 1 comment(s)...
Comment 1: 'gokhankaya' said 'Weather is cold in here!'
-----
```

Step 16...

Step 17... Viewing sibelgulmez's profile...

```
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 1 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu,
sibelgulmez's' follower(s):
sibelgulmez has 2 posts.
```


Step 18... Viewing sibelgulmez's posts' interactions...

(PostID: 1): I like C but java is not bad.
The post has no likes.
The post has no comments.

(PostID: 2): Love rainy days in Kasimpasa...
The post has no likes.
The post has no comments.

Step 19...

Step 20... Viewing sibelgulmez's profile...

User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 1 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu,
sibelgulmez's' follower(s):
sibelgulmez has 2 posts.

Step 21... Viewing sibelgulmez's posts' interactions...

(PostID: 1): I like C but java is not bad.
The post has no likes.
The post has no comments.

(PostID: 2): Love rainy days in Kasimpasa...
The post has no likes.
The post has no comments.

a.LinkedListScenario -1

```
Step 2... Logging into account (username: sibelgulmez)...  
Step 3... Sharing two posts...  
Step 4... Following gizemsungu and gokhankaya...  
Step 5... Logging out from account (username: sibelgulmez)...  
Step 6... Logging into another account (username: gokhankaya)...  
Step 7... Viewing sibelgulmez's profile...  
-----  
User ID: 2  
Username: sibelgulmez  
Location: istanbul  
Birth Date: 10.06.1999  
sibelgulmez is following 2 account(s) and has 0 follower(s).  
sibelgulmez is following: gizemsungu, gokhankaya,  
sibelgulmez's' follower(s):  
sibelgulmez has 2 posts.  
  
Step 8... Viewing sibelgulmez's posts...  
(Post ID: 1) sibelgulmez: I like Java.  
(Post ID: 2) sibelgulmez: Java the coffeee...  
  
Step 9... Liking sibelgulmez's posts...'  
  
Step 10...  
Step 11... Following sibelgulmez and gizemsungu...  
  
Step 12...  
Step 13... Logging out from account (username: gokhankaya)...  
  
Step 14... Logging into another account (username: gizemsungu)...  
  
Step 15... Checking outbox...  
There is/are 0 message(s) in the outbox  
  
Step 16... Checking inbox...  
There is/are 1 message(s) in the inbox
```

```
-----  
Message ID: 1  
From: gokhankaya  
To: gizemsungu  
Message: This homework is too easy!  
-----
```

Step 18... Viewing sibelgulmez's profile...

```
-----  
User ID: 2  
Username: sibelgulmez  
Location: istanbul  
Birth Date: 10.06.1999  
sibelgulmez is following 2 account(s) and has 1 follower(s).  
sibelgulmez is following: gizemsungu, gokhankaya,  
sibelgulmez's' follower(s): gokhankaya,  
sibelgulmez has 2 posts.
```

Step 19... Viewing sibelgulmez's posts...
(Post ID: 1) sibelgulmez: I like Java.
(Post ID: 2) sibelgulmez: Java the coffeee...

Step 20... Viewing sibelgulmez's posts' interactions...

```
-----  
(PostID: 1): I like Java.  
The post was liked by the following account(s): gokhankaya,  
The post has 1 comment(s)...  
Comment 1: ' gokhankaya' said 'me too!'  
-----  
(PostID: 2): Java the coffeee...  
The post has no likes.  
The post has no comments.  
-----
```

Step 21... Liking sibelgulmez's posts...'
Liking sibelgulmez's posts...'

Step 22... Viewing sibelgulmez's posts' interactions...

```
-----  
(PostID: 1): I like Java.  
The post was liked by the following account(s): gokhankaya, gizemsungu  
The post has 1 comment(s)
```

b.LinkedListScenario -2

SCENEARIO 2

```
-----
Logging into account (username: gizemsungu)...
Sharing two posts.
Logging out from account (username: gizemsungu)...

Logging into account (username: sibelgulmez)...

Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Liking gizemsungu's posts...'

Logging out from account (username: sibelgulmez)...

Logging into account (username: gokhankaya)...

Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.
```

```
Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Logging out from account (username: gokhankaya)...

Logging into account (username: gizemsungu)...
Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Viewing inbox ...
-----
Message ID: 1
From: gokhankaya
To: gizemsungu
Message: This homework is too easy!
-----
Message ID: 2
From: gokhankaya
To: gizemsungu
Message: Hello!
-----
```

c.LinkedListScenario -3

```
121
122     gizemsungu.block(sibelgulmez, loginAccountid);
123     System.out.println();
124
125     loginAccountid = gizemsungu.logout();
126     System.out.println();
127
128     //*****
129     System.out.print("Logging in to account (username: " + s
130     loginAccountid = sibelgulmez.login(loginAccountid);
131     System.out.println();
132
133     //*****
134     sibelgulmez.viewProfile(gizemsungu, loginAccountid);
135     System.out.println();
136
137     //*****
138     Message message3 = new Message(messageId:2, gokhankaya.g
139     sibelgulmez.sendMessage(gizemsungu, message3, loginAccou
140     System.out.println();
141
142     //*****
143
```

PROBLEMS 7 OUTPUT DEBUG CONSOLE TERMINAL

```
Logging out from account (username: gizemsungu)...
Logging into account (username: gizemsungu)...
Logging out from account (username: gizemsungu)...
Logging in to account (username: sibelgulmez)...
Unable to view Profile
```

d.LinkedListScenario -4

```
-cp /home/oguz/.config/Code/User/workspaceStorage/dc36d5f11568fc71a7fa
9/bin LinkedList.TestClass4
Step 2... Logging into account (username: sibelgulmez)...
Step 3... Sharing two posts...

Step 4... Following gizemsungu and gokhankaya...

Step 5... Logging out from account (username: sibelgulmez)...

Step 6... Logging into another account (username: gokhankaya)...
Step 7... Liking sibelgulmez's posts...'

Step 8...
Step 9...
Step 11... Unable to send message

Step 12... Logging out from account (username: gokhankaya)...

Step 13... Logging into another account (username: sibelgulmez)...
Step 14... Viewing sibelgulmez's profile...
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 2 account(s) and has 1 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya,
sibelgulmez's' follower(s): gokhankaya,
sibelgulmez has 2 posts.

Step 15... Viewing sibelgulmez's posts' interactions...
-----
(PostID: 1): I like C but java is not bad.
The post has no likes.
The post has no comments.
-----
(PostID: 2): Love rainy days in Kasimpasa...
The post was liked by the following account(s): gokhankaya,
The post has 1 comment(s)...
```

```
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 1 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu,
sibelgulmez's' follower(s):
sibelgulmez has 2 posts.

Step 18... Viewing sibelgulmez's posts' interactions...
-----
(PostID: 1): I like C but java is not bad.
The post has no likes.
The post has no comments.
-----
(PostID: 2): Love rainy days in Kasimpasa...
The post has no likes.
The post has no comments.
-----

Step 19...
Step 20... Viewing sibelgulmez's profile...
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 1 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu,
sibelgulmez's' follower(s):
sibelgulmez has 2 posts.

Step 21... Viewing sibelgulmez's posts' interactions...
-----
(PostID: 1): I like C but java is not bad.
The post has no likes.
The post has no comments.
-----
(PostID: 2): Love rainy days in Kasimpasa...
The post has no likes.
The post has no comments.
-----
```

a.LDLinkedListScenario -1

```
9/bin LDLinkedList.TestClass1
Step 2... Logging into account (username: sibelgulmez)...

Step 3... Sharing two posts...

Step 4... Following gizemsungu and gokhankaya...

Step 5... Logging out from account (username: sibelgulmez)...

Step 6... Logging into another account (username: gokhankaya)...

Step 7... Viewing sibelgulmez's profile...
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 2 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya,
sibelgulmez's' follower(s):
sibelgulmez has 2 posts.

Step 8... Viewing sibelgulmez's posts...
(Post ID: 1) sibelgulmez: I like Java.
(Post ID: 2) sibelgulmez: Java the coffeee...

Step 9... Liking sibelgulmez's posts...'

Step 10...
Step 11... Following sibelgulmez and gizemsungu...

Step 12...
Step 13... Logging out from account (username: gokhankaya)...

Step 14... Logging into another account (username: gizemsungu)...

Step 15... Checking outbox...
There is/are 0 message(s) in the outbox

Step 16... Checking inbox...
There is/are 1 message(s) in the inbox
```

```
-----
Message ID: 1
From: gokhankaya
To: gizemsungu
Message: This homework is too easy!
-----

Step 18... Viewing sibelgulmez's profile...
-----
User ID: 2
Username: sibelgulmez
Location: istanbul
Birth Date: 10.06.1999
sibelgulmez is following 2 account(s) and has 1 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya,
sibelgulmez's' follower(s): gokhankaya,
sibelgulmez has 2 posts.

Step 19... Viewing sibelgulmez's posts...
(Post ID: 1) sibelgulmez: I like Java.
(Post ID: 2) sibelgulmez: Java the coffeee...

Step 20... Viewing sibelgulmez's posts' interactions...
-----
(PostID: 1): I like Java.
The post was liked by the following account(s): gokhankaya,
The post has 1 comment(s)...
Comment 1: ' gokhankaya' said 'me too!'
-----
(PostID: 2): Java the coffeee...
The post has no likes.
The post has no comments.
-----

Step 21... Liking sibelgulmez's posts...'
Liking sibelgulmez's posts...'

Step 22... Viewing sibelgulmez's posts' interactions...
-----
(PostID: 1): I like Java.
The post was liked by the following account(s): gokhankaya, gizemsungu
The post has 1 comment(s)...
```

d.LDLinkedListScenario -2

```
-----
Logging into account (username: gizemsungu)...
Sharing two posts.
Logging out from account (username: gizemsungu)...

Logging into account (username: sibelgulmez)...

Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Liking gizemsungu's posts...'

Logging out from account (username: sibelgulmez)...

Logging into account (username: gokhankaya)...

Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
```

```
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Logging out from account (username: gokhankaya)...

Logging into account (username: gizemsungu)...
Viewing gizemsungu's profile...
-----
User ID: 1
Username: gizemsungu
Location: istanbul
Birth Date: 10.06.1999
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu's' follower(s): sibelgulmez, gokhankaya,
gizemsungu has 2 posts.

Viewing inbox ...
-----
Message ID: 1
From: gokhankaya
To: gizemsungu
Message: This homework is too easy!
-----
Message ID: 2
From: gokhankaya
To: gizemsungu
Message: Hello!
-----
oguz@goguz-ubuntu:~/Desktop/github_homeworks/DataStructures/CSE222_2023
```

c.LinkedListScenario -3

