# GIT Department of Computer Engineering
# CSE 222/505 - Spring 2023
# Homework 1 Report

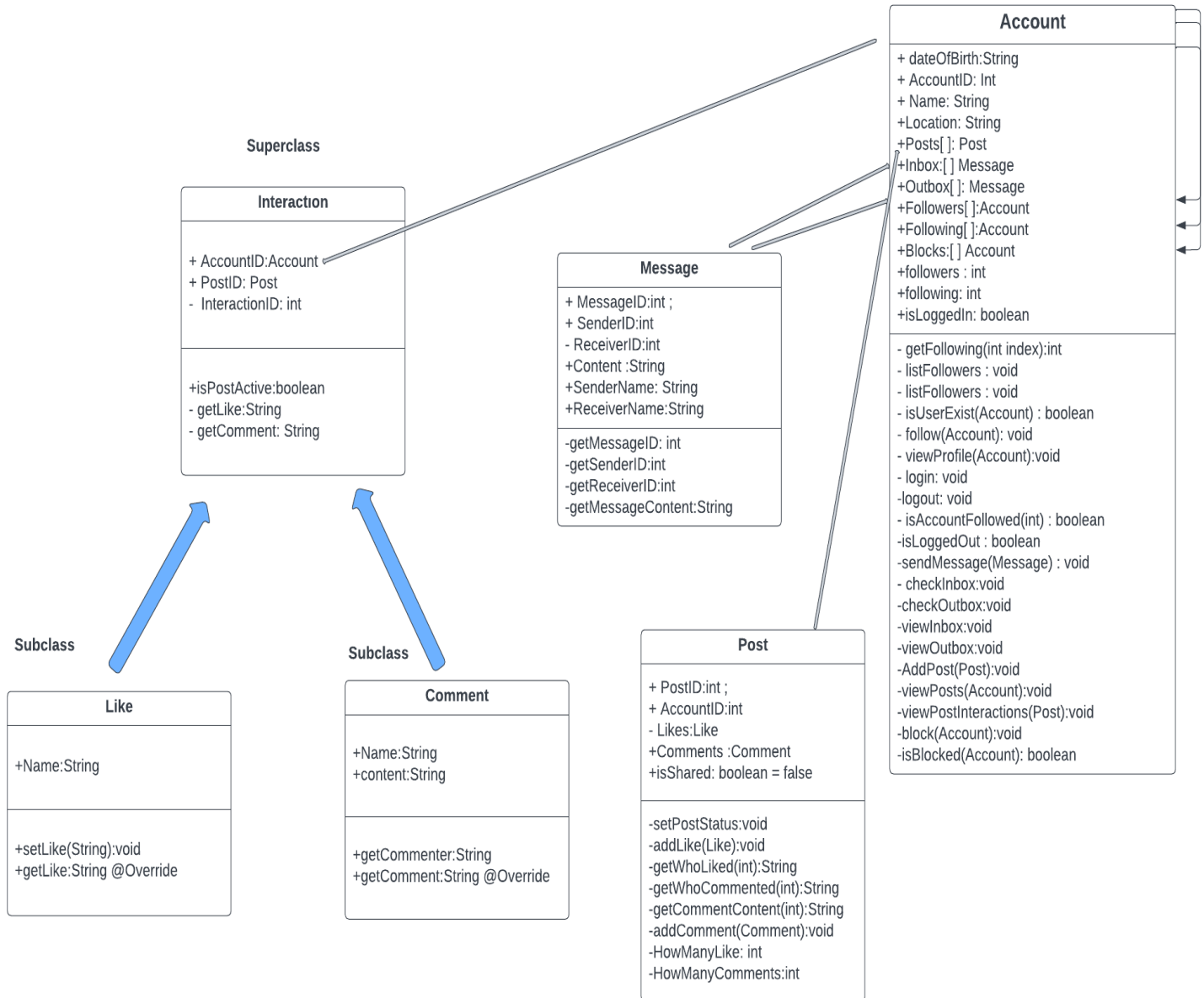**Mehmet Mete Şamlıoğlu**
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## 1-) SYSTEM REQUIREMENTS

The desired system is basically a social media application that facilitates users to interact with each other throughout the system. The system requires basic operations such as sharing a post, sending a message to another user, interacting with a post of an account, viewing other accounts' profiles, follow or blocking an account. There are some restrictions to follow to perform each operation properly. For instance, to send a message to another account it must be checked whether this account has been followed or not. This is the only restriction that is related to the following operations in the system. When it comes to the restrictions that are related to login( ) operations, basically to perform any operation you have to log into your account. The system is not allowing account owners to login into two accounts at once, only one account could be active at once. This exception will be controlled by the system during the runtime, whenever another account tries to log in while there was an active account, an error message will be displayed. There are some other restrictions that are controlled by the system during run time, such as instantiating an object that has the same ID or username as another account that has already been created. It is not allowed to instantiate another account that has a similar ID or username with any account that is already registered to the system, if this restriction is not obeyed, the constructor of the class will throw an Exception and terminate the system. There are two types of errors in the system, in the first type the error message will be displayed only but the system allows you to continue. The second type of operation is handled by an exception-handling mechanism, and this type terminates the system whenever it occurs. As It was mentioned before, if you instantiate an object that has a similar ID to another object the system will terminate because it is not allowed to create that.

## 2-) USE CASE

# 3-)Class Diagrams

## Account

+ dateOfBirth:String
+ AccountID: Int
+ Name: String
+Location: String
+Posts[ ]: Post
+Inbox:[ ] Message
+Outbox[ ]: Message
+Followers[ ]:Account
+Following[ ]:Account
+Blocks:[ ] Account
+followers : int
+following: int
+isLoggedIn: boolean

- getFollowing(int index):int
- listFollowers : void
- listFollowers : void
- isUserExist(Account) : boolean
- follow(Account): void
- viewProfile(Account):void
- login: void
-logout: void
- isAccountFollowed(int) : boolean
-isLoggedOut : boolean
-sendMessage(Message) : void
- checkInbox:void
-checkOutbox:void
-viewInbox:void
-viewOutbox:void
-AddPost(Post):void
-viewPosts(Account):void
-viewPostInteractions(Post):void
-block(Account):void
-isBlocked(Account): boolean

**Superclass**

## Interaction

+ AccountID:Account
+ PostID: Post
- InteractionID: int

+isPostActive:boolean
- getLike:String
- getComment: String

## Message

+ MessageID:int ;
+ SenderID:int
- ReceiverID:int
+Content :String
+SenderName: String
+ReceiverName:String

-getMessageID: int
-getSenderID:int
-getReceiverID:int
-getMessageContent:String

**Subclass**

## Like

+Name:String

+setLike(String):void
+getLike:String @Override

**Subclass**

## Comment

+Name:String
+content:String

+getCommenter:String
+getComment:String @Override

## Post

+ PostID:int ;
+ AccountID:int
- Likes:Like
+Comments :Comment
+isShared: boolean = false

-setPostStatus:void
-addLike(Like):void
-getWhoLiked(int):String
-getWhoCommented(int):String
-getCommentContent(int):String
-addComment(Comment):void
-HowManyLike: int
-HowManyComments:int

## 4- ) PROBLEM-SOLUTION APPROACH

I have encountered a few problems, but many of them were related to each other. The main problem was the accessibility of the Account objects. There were a few ways to access all Account objects one of them was putting each one of them into an Array but it was leading to some other problems such as controlling which account is active and which is not. Since static variables are also forbidden in this homework, I found another solution to either access all the data fields of each Account object that are instantiated and also check whether two of them are active at once. I instantiated an Account object named Admin. The Admin object follows every object, during their instantiations stage. Whenever an Account object is instantiated, the constructor takes Object Admin as a parameter and thanks to that Admin's reference is written on every object's followers data container. For each object Followers[0] contains the admin's reference, this gives me an opportunity to access each object by admin whenever it is required. Thanks to this solution, It became really easy to solve the following problems;

- Is any account logged in
- Is he/she logged out
- Is one account following another, and is the account blocked or not?
- Is a new object account's username or ID already used by an account that is already instantiated?

The second main problem was object duplicates. If one account is not following another, they can not send messages to each other. In this case, the Message object should not be instantiated and the program should terminate whenever it occurred in the constructor of Message. To perform this, I did not allow another way to send a message. To send a message you should instantiate a Message object and if it is not allowed the program will terminate, otherwise there will be an instantiated message object with incorrect parameters. This situation is the same whenever you are willing to interact with a post (like/comment). A post that has not been shared by an account can not be liked or commented. So whenever these objects(Like/Comment) instantiated their constructors will check whether the post that is liked/commented has been shared. If the post has not been shared, the program will terminate. It will not allow you to instantiate a Comment or Like an object. I did not add any other way to like or comment on to post other than instantiating an object because otherwise, there will be like/comment objects with incorrect parameters. These were my main problems and I handled each one of them properly by using the methods that I mentioned above.

## 5-  ) TEST CASES

```
/* Step 1 */
Account Admin = new Account( );
Account sibelgulmez = new Account(13, "sibelgulmez", "06-05-1995","Istanbul",Admin);
Account gokhankaya = new Account (12, "gokhankaya",  "08-09-1990", "Ankara",Admin);
Account gizemsungu = new Account (14, "gizemsungu",  "05-04-1995", "Izmir",Admin);
/* -------------------------------------------------------------------*/
sibelgulmez.login( ); /* Step2 */
Post post1 = new Post(1, "I like Java.");
Post post2 = new Post(2, "Java the coffee...");
/* Step 3 */
sibelgulmez.addPost(post1);
sibelgulmez.addPost(post2);
/* -----------------------*/
/* Step 4 */
sibelgulmez.follow(gizemsungu);
sibelgulmez.follow(gokhankaya);
/*-----------------------*/
sibelgulmez.logout( ); /* Step 5 */
gokhankaya.login( ); /*Step 6 */
gokhankaya.viewProfile(sibelgulmez); /* Step 7 */
gokhankaya.viewPosts(sibelgulmez); /* Step 8 */
Like like1 = new Like(1, gokhankaya, post1); /*Step 9 */
Comment comment1 = new Comment(2, gokhankaya, post1,"me too!"); /*Step 10 */
gokhankaya.follow(sibelgulmez); /* Step 11 */
gokhankaya.follow(gizemsungu);
Message message1 = new Message(1, gokhankaya, gizemsungu, "Hello!"); /* Step 12 */
gokhankaya.logout( ); /* Step 13 */
gizemsungu.login( ); /* Step 14 */
gizemsungu.checkOutbox( ); /* Step 15 */
gizemsungu.checkInbox( ); /* Step 16 */
gizemsungu.viewInbox( ); /* Step 17 */
gizemsungu.viewProfile(sibelgulmez); /* Step 18 */
gizemsungu.viewPosts(sibelgulmez); /* Step 19 */
gizemsungu.viewPostInteractions(post1); /* Step 20 */
Like like2 = new Like(2, sibelgulmez, post1); /* Step 21 */
gizemsungu.viewPostInteractions(1, sibelgulmez); /* Step 22 */  /* There are two ways to invoke method viewPostInteractions(), it is overloaded*/
```

```
/* ------------------------- Scenario 2 Starts --------------------------/ */
System.out.printf("-----------Scenario 2 Starts-----------\n");
/* -----------Step1 -----------*/
gizemsungu.login( );
Post post1 = new Post(1,"Today is a good day!");
Post post2 = new Post(2,"I'm not gonna work today.");
gizemsungu.addPost(post1);
gizemsungu.addPost(post2);
gizemsungu.logout( );
/*----------Step2--------------*/
sibelgulmez.login( );
sibelgulmez.viewProfile(gizemsungu);
sibelgulmez.viewPosts(gizemsungu);
Like like3 = new Like(3, sibelgulmez, post1);
sibelgulmez.logout( );
/*----------------------------*/
/*----------Step3--------------*/
gokhankaya.login( );
gokhankaya.viewProfile(gizemsungu);
Comment comment2 = new Comment(4, gokhankaya, post2, "Nice!");
Message message2 = new Message(5, gokhankaya, gizemsungu,"Hello!");
gokhankaya.logout( );
/*----------------------------*/
/*------------Step4-------------*/
gizemsungu.login( );
gizemsungu.viewProfile(gizemsungu);
gizemsungu.viewPosts(gizemsungu);
gizemsungu.viewPostInteractions(post1);
System.out.printf("\n");
gizemsungu.viewPostInteractions(post2);
gizemsungu.viewInbox( );
gizemsungu.logout( );
```

```
/*---------------- SCENARIO 3 (Bonus Part) Starts--------------*/
System.out.printf("------------- SCENARIO 3 (Bonus Part) Starts--------------\n");
gizemsungu.login( );
gizemsungu.block(sibelgulmez);
gizemsungu.logout( );
sibelgulmez.login( );
sibelgulmez.viewProfile(gizemsungu);
Message message4 = new Message(4, sibelgulmez, gizemsungu, "Hello Gizem!");
sibelgulmez.logout( );
```

## 6-) RUNNING AND RESULTS

**SCENARIO 1**

```
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ java homework1.TestClass1
User ID: 13
Username: sibelgulmez
Location: Istanbul
Birth Date: 06-05-1995
sibelgulmez is following 2 account(s) and has 0 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya.
sibelgulmez has been followed by:
sibelgulmez has 2 post(s)

sibelgulmez's posts...
(PostID: 1): I like Java.
(PostID: 2): Java the coffee...

There is/are 0 message(s) in the outbox.
There is/are 1 message(s) in the inbox.
Message ID: 1
From: gokhankaya
To: gizemsungu
Message: Hello!

User ID: 13
Username: sibelgulmez
Location: Istanbul
Birth Date: 06-05-1995
sibelgulmez is following 2 account(s) and has 1 follower(s).
sibelgulmez is following: gizemsungu, gokhankaya.
sibelgulmez has been followed by: gokhankaya.
sibelgulmez has 2 post(s)

sibelgulmez's posts...
(PostID: 1): I like Java.
(PostID: 2): Java the coffee...

(PostID: 1): I like Java.
The post has 1 like(s).
The post was liked by the following account(s): gokhankaya.
The post has 1 comment(s)...
Comment 1: 'gokhankaya' said 'me too!'

(PostID: 1): I like Java.
The post has 2 like(s).
The post was liked by the following account(s): gokhankaya, sibelgulmez.
The post has 1 comment(s)...
Comment 1: 'gokhankaya' said 'me too!'
```

**SCENARIO 2**

```
-----------Scenario 2 Starts-----------
User ID: 14
Username: gizemsungu
Location: Izmir
Birth Date: 05-04-1995
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu has been followed by: sibelgulmez, gokhankaya.
gizemsungu has 2 post(s)

gizemsungu's posts...
(PostID: 1): Today is a good day!
(PostID: 2): I'm not gonna work today.

User ID: 14
Username: gizemsungu
Location: Izmir
Birth Date: 05-04-1995
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu has been followed by: sibelgulmez, gokhankaya.
gizemsungu has 2 post(s)

User ID: 14
Username: gizemsungu
Location: Izmir
Birth Date: 05-04-1995
gizemsungu is following 0 account(s) and has 2 follower(s).
gizemsungu is following:
gizemsungu has been followed by: sibelgulmez, gokhankaya.
gizemsungu has 2 post(s)

gizemsungu's posts...
(PostID: 1): Today is a good day!
(PostID: 2): I'm not gonna work today.

(PostID: 1): Today is a good day!
The post has 1 like(s).
The post was liked by the following account(s): sibelgulmez.
The post has no comments

(PostID: 2): I'm not gonna work today.
The post has no likes.
The post has 1 comment(s)...
Comment 1: 'gokhankaya' said 'Nice!'

Message ID: 1
From: gokhankaya
To: gizemsungu
Message: Hi!

Message ID: 5
From: gokhankaya
To: gizemsungu
Message: Hello!
```

## SCENARIO 3 (Bonus Part)

```
------------- SCENARIO 3 (Bonus Part) Starts--------------
ERROR: This Accout(gizemsungu) has been blocked/has already blocked you!. You can not view his/her profile
java.lang.Exception: ERROR:This Account has been blocked/has already blocked you! Therefore you can not send the message.

        at homework1.Message.<init>(Message.java:35)
        at homework1.TestClass3.main(TestClass3.java:55)
```

## Special Test Cases

### 1-)

```
        sibelgulmez.login( ); /* Step2 */
        gokhankaya.login( );
```

**Trying to login in without logging out**

```
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ java homework1.Driver
sibelgulmez's account is currently logged in, you should logged out first to login again.
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$
```

### 2-) Instanting a new Account object that has the same ID number or the same username with another

```
Account gizemsungu = new Account (14, "gizemsungu",  "05-04-1995", "Izmir",Admin);
/* -------------------------------------------------------------------------*/
Account metesamlioglu = new Account(14, "metesamlioglu","06-02-1999","Istanbul",Admin);

}
```

```
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ java homework1.Driver
ERROR: This AccountID has already been used by another account.
java.lang.Exception: You can not instantiate this object!

        at homework1.Account.<init>(Account.java:37)
        at homework1.Driver.main(Driver.java:16)
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$
```

**Try to instantiate with the same username**

```
Account gizemsungu = new Account (14, "gizemsungu",  "05-04-1995", "Izmir",Admin);
/* -------------------------------------------------------------------------*/
Account user1 = new Account(14, "gizemsungu","06-02-1999","Istanbul",Admin);
```

```
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ java homework1.Driver
ERROR: This username is already in use.
java.lang.Exception: You can not instantiate this object!

        at homework1.Account.<init>(Account.java:37)
        at homework1.Driver.main(Driver.java:16)
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$
```

## 3-) Liking/Commenting a post that has not been shared by any account

```
    Account gizemsungu = new Account (14, "gizemsungu",  "05-04-1995", "Izmir",Admin);
    /* -----------------------------------------------------------------------*/
    Post post1 = new Post(42, "Merhaba Dünya!");
    Like like1 = new Like(24, gizemsungu, post1);
```

```
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ java homework1.Driver
java.lang.Exception: ERROR: The post that you liked has not been shared by any account!

        at homework1.Like.<init>(Like.java:23)
        at homework1.Driver.main(Driver.java:17)
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ _
```

## 4-) Trying to send a message without following

```
    Account Admin = new Account( );
    Account sibelgulmez = new Account(13, "sibelgulmez", "06-05-1995","Istanbul",Admin);
    Account gokhankaya = new Account (12, "gokhankaya",  "08-09-1990", "Ankara",Admin);
    Account gizemsungu = new Account (14, "gizemsungu",  "05-04-1995", "Izmir",Admin);
    /* ----------------------------------------------------------------------*/
    Message message1 = new Message(15, gizemsungu, gokhankaya, "Hello!");
```

```
meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$ java homework1.Driver
To send a message the account must be followed, please follow the account first.

meterose@DESKTOP-3HDDHUD:/mnt/c/hw1$
```