Communication Systems

CS401 Summer 2022 Group 7

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Project topic

The Communication System is for a large organization to be run on a Java platform. Only members of the large organization are allowed to use the Communication systems. These members will be called Employees or IT. The system is structured for clients to message each other.

Important Requirements

- User Client properties: First/Last Name, Employee Number, Password, Role and Status

- Message Class Properties: fromFirstName, fromLastName, toFirstName, toLastName, msgSize, data and type

- The system must provide an interface where users can perform the following actions: Send Messages, View Chat History, Create a Group, Create a New User, and Log Off

- The system must process the chat log where conversations between employees are held as well as an Employee Data Base to keep track of Users and their Status

Overall Design
Data Design
Client side

- The client passes the login id and password to the server

- After successful login, the client will see options

- The commands for the user clients, send chat, view chat, create a group chat, leave a group chat, log out, will be accepted by the clientInput and passed to the server

- The commands for the IT clients, send a message, view messages, create group, logout, create new employee and view chat log file, will be accepted by the clientInput and passed to the server

- If the client's credentials do not exist on the server, then the client is a terminated employee or not an employee and cannot access the system.

Overall Design

Data Design
Server side

- A Switch will interpret clientInput commands that are passed through to the server from the client, then it will be dealt with either by sending a message to the user, creating a new group, logging off the system, returning client chats and logging all client chat history.

- The Server waits to get the login id, and password. After that, the server gets the message. The server sends the logged chat to the log file

- The server will take in the client credentials and compare the client with the stored information

Overall Design
User Interface Design
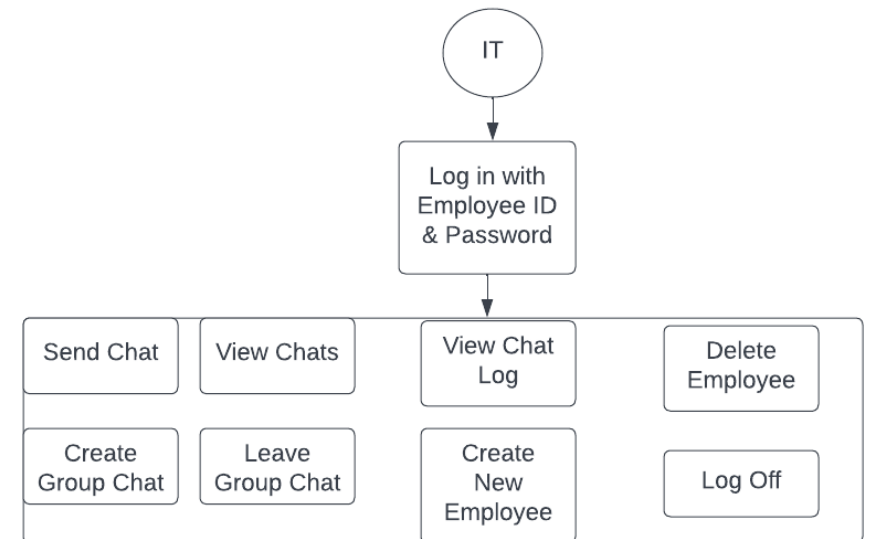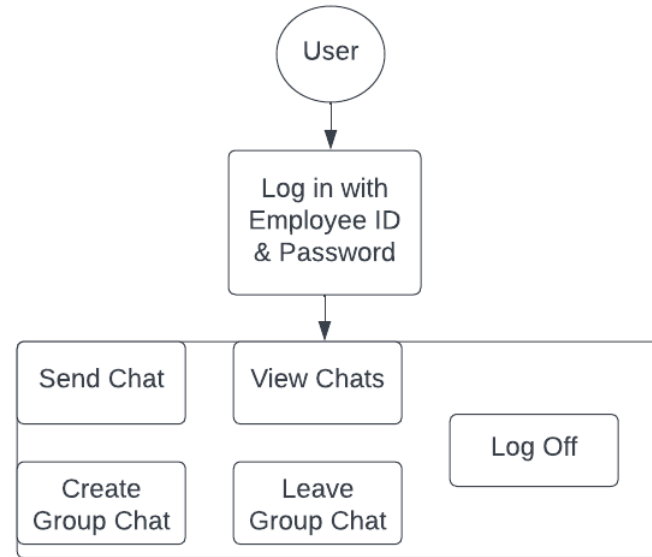
Class UML diagrams

Class UML Diagram

Class Message

properties:
```
private String fromFirstName;
private String fromLastName;
private string toFirstName;
private String toLastName;
private int msgSize;
private string data;
private String type;
```

methods:
```
public String
getFromFirstName() public
String getFromLastName()
public String getToFirstName()
public String getToLastName()
public int getMsgSize()
public string getData()
public string getType()
```

Class User

properties:
```
protected String firstName;
protected String lastName;
protected int empNum;
protected String password;
protected String role;
protected string status;
```

methods:
```
public void setStatus(string stat)
public string getFirstName()
public String getLastName()
public int getEmpNum()
public String getPassword()
public String getRole()
public string getStatus()
```

Class EmpDataBase

properties:
```
private List<User> empDataBase
private List<Message> msgDataBase
```

methods:
```
public void createEmployee(User newEmp)
public Boolean loginEmployee(int userID, String
password)
public User returnEmployee(int userID, string password)
public void sendMessage(Message msg)
public void createGroup(List<Object> group)
public void writeToLogFile(Message msg)
public Boolean checkStatus(String first, String last)
public Boolean checkUser(string first, string last)
public string chatHistory(User user)
public String chatLog()
public void logOff(User user)
public void displayEmployee(User emp)
public void displayEmployees()
```

Class IT extends User

methods:
```
public User createEmployee(string first,
string last, int id, string password, string
role)
public readChatLog()
```

Message Passing

- The Message Class is used to pass messages between the Client and Server in the following ways via specific Constructors: Client logging in via empNum and password, Server sending back message data to Client, Client sending options chosen to drive Switch Statements in Client and Server

- The User Class is only used to return the Client the logged in User Account information, this way we can log the chats sent by this client accordingly

Demonstrate our application

Hindsight lessons

- More time for implementation
- Communication Efficiency between group mates
- Clarify if you need assistance for group mates