XMPP-Java Documentation

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Index

I. Description

XMPP-Java is a Java-based client for the Extensible Messaging & Presence Protocol (XMPP) with a command-line interface (CLI). It uses Smack (version 4.4.5) for Java VMs to connect to a server specified by the user. Some of the features this client provides:

- Register/Delete Account from the server
- Login to server using username & password
- See other User/s Status Type, Message & Availability
- Send/Receive Subscription requests to other Users on the server
- Change User Status type & Message
- DM/Room chat with other User/s
- Send/Receive Files

The description of each functionality described above is detailed in section 4 (Functionalities).

II. Requirements

The operating system executing this program must have:

- Jave JDK version 20.0.1 or above
- Maven version 20 or above

This project MUST be executed from an IDE such as Visual Studio, Visual Studio Code, or IntelliJ IDEA, due to the Maven dependencies specified in the pom.xml file on project's root folder.

III. Installation and Run Instructions

To be able to run this Client:

1. Clone this repo to a local directory
2. Open Project from an IDE (i.e. Visual Studio or IntelliJ IDEA)
3. Enable Maven dependencies on the IDE

IV. Functionalities

All the Client functionalities' description, user inputs and return types are described in the next sections.

A. Run Client

To Run the Client and connect to a server:

1. Enter server's Name as first and only argument in IDE configuration
2. Execute Program from the IDE

Returns:

- Main Menu if Client established connection with the Server
- Error message in case Server's name was not found or connection with the server could not be established.

B. Register new User

The Client lets users Register new Accounts to the server. To access this functionality:

1. Press "1" from the Main Menu
2. Enter new username (Can be numbers and ascii characters)
   - Enter "exit" to cancel operation
3. Enter new password

Returns:

- Successful operation message & Main message redirection in case new Account was created
- Error message in case Server could not create new Account or Account is already registered

C. User Login

Users can login with their Account's username and password. To Login to an Account:

1. Press "2" from the Main Menu

2. Enter username (case sensitive)
   - Enter “exit” to cancel operation
3. Enter password (case sensitive)

Returns:

- User’s Account session in case Login is successful
- Error message in case Server could not find User’s Account or Account’s credentials are wrong

D. See other User/s information

In order to see all Friends’ Name, Status, Status Message & Availability:

1. Press “1” from the User’s Session Menu
2. Press “1” from the Information Options Menu
   - Press “4” to cancel operation

Returns:

- All Friend’s Name, Status, Status Message and Availability on success (in case User has at least one friend)
- Error Message in case Server could not retrieve other User’s Information

E. See specific User information

In order to see a specific User information on the Server:

1. Press “1” from the User’s Session Menu
2. Press “2” from the Information Options Menu
   - Press “4” to cancel operation
3. Enter User’s username

Returns:

- User’s Name, Status, Status Message and Availability on success
- Error Message in case Server could not retrieve User’s information

F. See own information

To see own credentials stored in the Server:

1. Press “1” from the User’s Session Menu
2. Press “3” from the Information Options Menu
   - Press “4” to cancel operation

Returns:

- Message with User’s current username and password

G. Send Friend Request

To send a subscription request to another User in the Server:

1. Press “2” from the User’s Session Menu
2. Press “1” from the Contact Options Menu
   - Press “3” to cancel operation
3. Enter User’s username

Returns:

- Successful message in case other User received subscription request
- Error message in case User’s username is not registered in the Server or subscription request was automatically rejected

H. Accept/Deny Friend Requests

To Accept/Deny another User’s subscription request:

1. Press “2” from the User’s Session Menu
2. Press “2” from the Contact Options Menu
   - Press “3” to cancel operation
3. Enter (yes) to accept each pending User’s subscription request or (no) to deny it

Client displays all Pending Subscription requests separately until no more requests are found.

I. Change own Status/Message

To change own Presence and/or Presence Message in the Server:

1. Press “3” from the User’s Session Menu
2. Press “1” from the Information Options Menu
   - Press “3” to cancel operation
3. Enter new Status Option (Available is the default value)
4. Enter new Status Message

Returns:

- Successful Message in case Server could update User’s Presence
- Error Message in case Server could not set new Presence

J. Chat with 1 User

To chat directly with another User registered in the Server:

1. Press “4” from the User’s Session Menu
2. Press “1” from the Information Options Menu
   - Press “3” to cancel operation
3. Enter User’s username

Returns:

- Single chat room with User in case Chat could be established between two Users (Enter “exit” to exit Single chat room)
- Error Message in case Server could not establish connection between the two users or username is not registered in the Server

K. Chat with Room

To join/create a Chat Room with other users:

1. Press “4” from the User’s Session Menu
2. Press “3” from the Information Options Menu
   - Press “3” to cancel operation
3. Enter room’s name

Returns:

- Chat room in case the room was successfully joined or created (In case it was created it is made public on the Server so other Users in the Server can join)
- Error Message in case room could not be created or joined by the User

L. Send File to User

To Send a File to another User:

1. Press “5” from the User’s Session Menu
2. Enter User’s username
3. Enter File’s Absolute Path

Returns:

- Successful Message in case another User received the File
- Error Message in case File does not exist, File’s content could not be read or Server was not able to send File

M. Delete Account from the Server

To delete an Account from the Server:

1. Press “3” from the Main Menu
2. Press “2” from the Information Options Menu
   - Press “3” to cancel operation
3. Enter (yes) to confirm operation or (no) to cancel operation

Returns:

- Main Menu options due to Account’s closure in Server
- Error Message in case Server was not able to close User’s Account

N. Close Client

To end Client’s execution:

1. Press “4” from the Main Menu

V. Personal Comments

A. Challenges

Some of the challenges that happened during the implementation of this Client:

- Due to the lack of a valid certificate from the Server, the File Sending & Receiving functionalities where not completely verified. Nonetheless, all possible errors scenarios & handling functions specified by Smack were implemented.
- The notifications received by a User are handled through a Listener, which are displayed as soon as the User receives them. Due to a lack of a GUI implementation, the number of notifications received can affect the user's ability to see Menus and certain notifications.

B. Lessons Learned

With the implementation of this client, the following conclusions can be stated:

- Messaging protocols help to establish a standard form of communication between a server, and multiple implementations of clients. This also enables users to choose many implementations of clients without having to rely on a single source.
- Due to the server being able to process many requests at the same time, its important to implement functionalities that constantly ask the server for certain results. In this implementation of the project, Listeners were used to get User's subscription requests, direct messages (with a User or in a room) & Files sent from other Users.