COMP90015 Distributed Systems – Assignment 2

Distributed Shared Whiteboard

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1. Project Description

The project uses a client-server architecture, design and implement a shared whiteboard that allow multiple users to draw simultaneously on a canvas. The project makes an explicit use of the Sockets and Threads. A GUI is created by using WindowBuilder with SWT Designer and Swing Designer in Eclipse.

2. Implementation Guidelines

2.1 Server

When the server is launched, it sets up the port number where it will listen for incoming client connections.

- java -jar DrawServer.jar <hostname> <port-number>

2.2 Manager

When the manager is launched, it creates a TCP socket bound to the server address and port number.

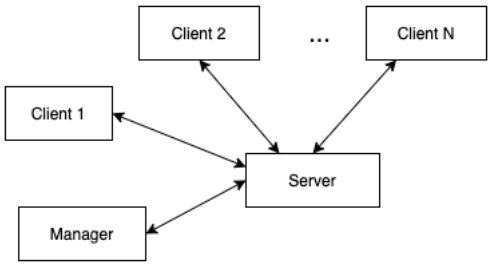
- Java -jar CreateWhiteBoard.jar <hostname> <port-number>

2.3 Client

When the client is launched, it creates a TCP socket bound to the server address and port number.

- Java -jar JoinWhiteBoard.jar <hostname> <port-number>

3 System Architecture



3.1 Communication Protocols

TCP is the communication protocol.

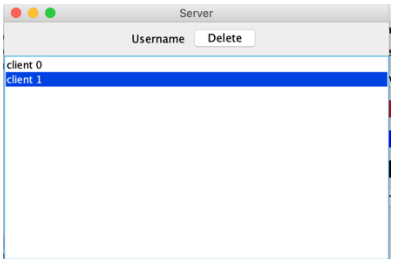
3.2 Message Format

0:1:2:3:4:5:6:7:8:9:10-username

Index	Information
0	Mouse start X
1	Mouse start Y
2	Mouse stop X
3	Mouse stop Y
4	Draw type, Exit, Kick, Clear
5	Text
6	Diameter
7	Width
8	Height
9	Color
10	Stroke

4 User Interface

4.1 Server



4.2 Manager and Client

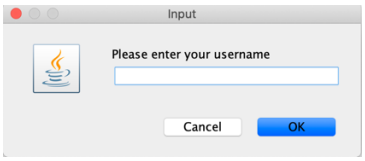


Figure 1: Username Input

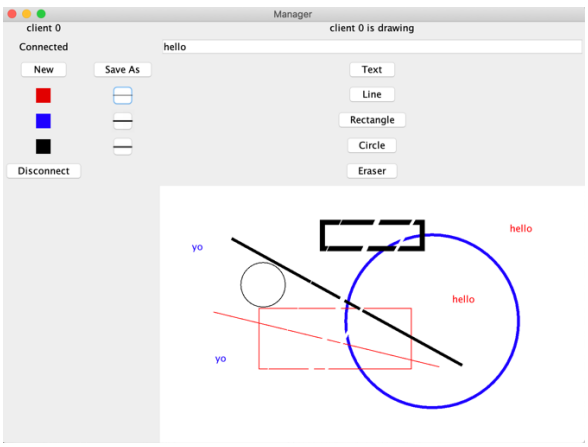


Figure 2: Manager Draw UI

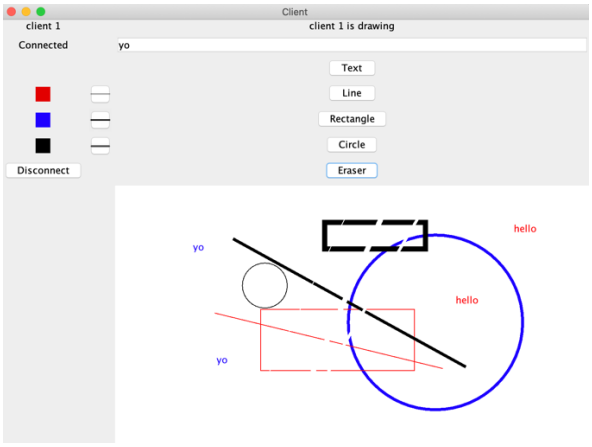
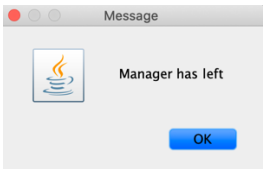
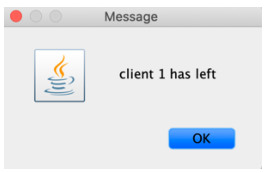


Figure 3: Client Draw UI





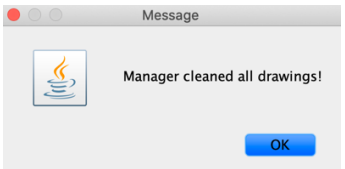
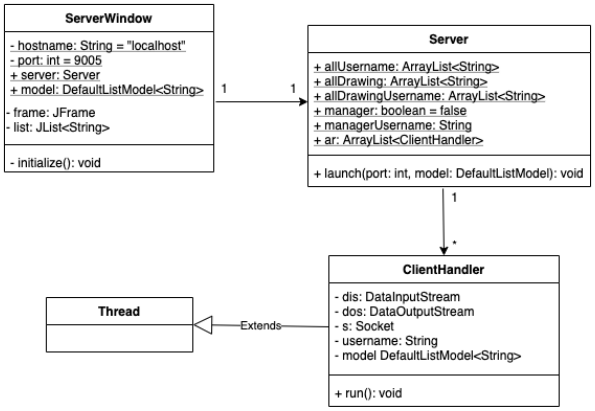


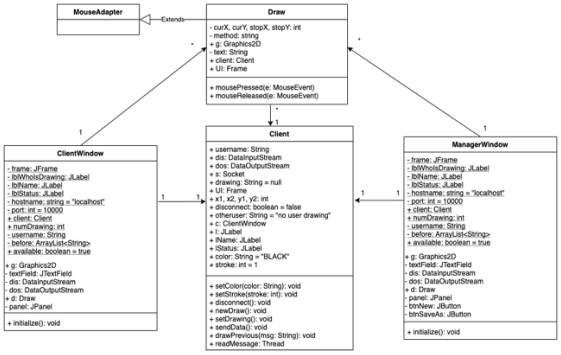
Figure 4: Manager disconnect, other clients received
Figure 5: Client disconnect, other users received
Figure 6: Manager start a new drawing canvas

5 Class Diagram

5.1 Server

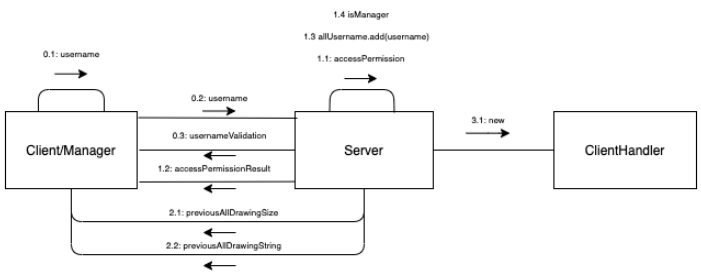


5.2 Client



6 Communication Diagram and Implementation Details

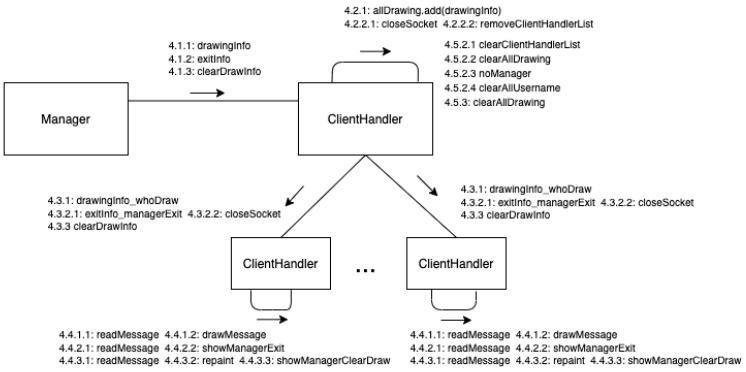
6.1 Setup



Users first give their usernames to server and server check whether the username has been taken or not, and then return the result to the users. The access permission is generated after the valid username is given and the approval or rejection is responded back to the user. The first user is the

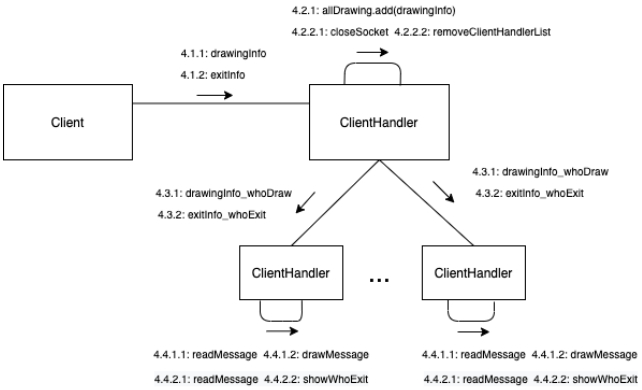
manager and the username is stored in the server. Users will get a message about how many drawings has done so far and start getting the all previous drawing message from the server. After getting all required information, the server new a ClientHandler for the rest of the user requests.

6.2 Manager Communication



Manager drawing information is sent to the ClientHandler and then the drawing information is sent to other users. When manager want to disconnect, the exit information is sent to the ClientHandler and all the user will get a message that the manager has left and all of them will be disconnected to the server. When manager start a new whiteboard, ClientHandler will send a message to all users that manager had cleared the whiteboard and the canvas will be repainted.

6.3 Client Communication



Client drawing information is sent to the ClientHandler and then the drawing information is sent to other users. When client disconnect, the exit information is sent to the ClientHandler and all the user will get a message that the client has left.

7 Innovation

Color and Strokes are extra features implemented in the project.