

## Running Application

There are two ways of running the application

1. Through the jar file by using the following command within the submitted folder:

```
java -cp ./chatApp.jar ie.atu.sw.Runner
```

This will launch the application through a simple menu command line interface. Can choose to run either the Server or the Client side of the application.

2. Both ChatServer.java and ChatClient.java have main methods and can be run by compiling the source code of both.

**NB** ChatClient.java will expect a command line argument of the server IP. This will be displayed by ChatServer.java once running.

Example: *java ie.atu.sw.ChatClient 192.168.8.115*

## Design

Wanted to keep the application compact. The Runner and Menu provide the addition of a simple user interface for starting things off. Composed primarily of statements printed to the console to present the menu, a Scanner for getting user input and a switch statement which will run the Chat Server or Chat Client depending on input.

The Chat Server is multithreaded and keeps an Array List of connected Clients. The Port used by the Server Socket is hardcoded. The only public method run implements Runnable which uses an Executor Service and a Cached thread Pool to continually accept new client connections and creates input and output streams. Its private methods manage sending messages from the server to all clients and distributing client messages. The Server can be quit with “\q” at any time. It contains two private inner classes. The first inner class Server Input handles any user input server side for the chat and allows quitting, its is handled by its own thread which is why it has its own class. The second inner class Client handles when a new client connects, reads input from the client. It will close their socket If the client inputs “\q”.

The Chat Client operates in a similar way to the server class. There is a private inner class Client Input which handles any user input and watches for the quit command “\q”, it is also handles by its own thread. The only public method run will attempt to make a socket connection on the IP address input as a command line argument and passed to the class constructor. The port is hardcoded to match the server. If no connection is made the class must be started again.

For more information on all the above see comments within the source code.

## References

Baeldung, 2021. *Guide to DateTimeFormatter*. [Online]

Available at: <https://www.baeldung.com/java-datetimeformatter>

[Accessed January 2023].

Baeldung, 2022. *Get the IP Address of the Current Machine Using Java*. [Online]

Available at: <https://www.baeldung.com/java-get-ip-address>

[Accessed January 2023].

Geek For Geeks, 2022. *A Group Chat Application in Java*. [Online]

Available at: <https://www.geeksforgeeks.org/a-group-chat-application-in-java/>

[Accessed January 2023].

Java T Point, 2023. *Get Current Date and Time in Java*. [Online]

Available at: <https://www.javatpoint.com/java-get-current-date>

[Accessed January 2023].

NeuralNine, 2022. *Simple TCP Chat Room in Java*. [Online]

Available at: [https://www.youtube.com/watch?v=hlc\\_9Wbn704&t=1208s&ab\\_channel=NeuralNine](https://www.youtube.com/watch?v=hlc_9Wbn704&t=1208s&ab_channel=NeuralNine)

[Accessed January 2023].

Oracle, 2023. *Class Executors*. [Online]

Available at: <https://docs.oracle.com/javase/7/docs/api/java/util/concurrent/Executors.html>

[Accessed January 2023].

Oracle, 2023. *Class PrintWriter*. [Online]

Available at: <https://docs.oracle.com/javase/7/docs/api/java/io/PrintWriter.html>

[Accessed January 2023].

Paulo, F., 2011. *How do I print escape characters in Java?*. [Online]

Available at: <https://stackoverflow.com/questions/7888004/how-do-i-print-escape-characters-in-java>

[Accessed January 2023].

Sierra, K., Bates, B. & Gee, T., 2022. *Head First Java*. Third Edition ed. s.l.:O'Reilly.

WittCode, 2021. *Java Socket Programming - Multiple Clients Chat*. [Online]

Available at: [https://www.youtube.com/watch?v=gLfuZrrfKes&t=2037s&ab\\_channel=WittCode](https://www.youtube.com/watch?v=gLfuZrrfKes&t=2037s&ab_channel=WittCode)

[Accessed January 2023].