**Project – Chat Application**

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**BIG O for the functions:**

* **Main.java**

The main method- main(String[] args) has O(1) because it is done in constant time.

The start(Stage primaryStage) function has O(1) because there is no any loop, it just starts the server.

* **Server.java**

start(int port) function has O(1) because the time complexity does not depend on input size.

stop(), sendMessage(String message), receiveMessage() all have time complexity of O(1) sice no loops are involved here and they do their tasks in constant time.

* **ServerUI.java**

start(Stage primaryStage) has O(n) because it depends on the number of messages received.

sendMessage() has O(1) because the message is sent in constant time.

* **Client.java**

startConnection(String address, int port), stopConnection(), sendMessage(String message), receiveMessage() all have complexity of O(1) because they all require constant time for their execution.

* **ClientUI.java**

start(Stage primaryStage) has O(n) as it also depends on the number of messages received.

sendMessage() has O(1) as it is done in constant time.