Layer

This chat protocol will be above the TCP layer. Since it will be used for chatting, a connection must be established from client1 to client2 before a message can be sent or received.

Services

This protocol provides a connection between two clients for text message communication.

Messages

Req – Client1 sends request message to Client2 to see if it is available for chat.

Ack – Sent after a Req message is received by Client2. Client2 sends acknowledge message back to Client1 if available

Rej – Sent after a Req message is received by Client2. Client2 sends reject message back to Client1 if unavailable for chat.

Data – Sent after Req message is sent from Client1 to Client2, and Ack message is received from Client2 by Client1. Contains the text data to be sent from Client1 to Client2.
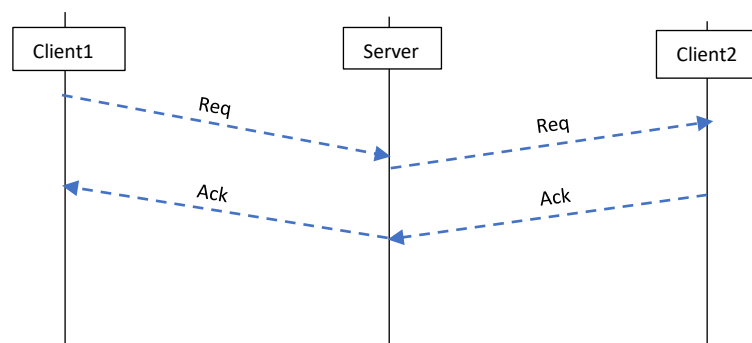
Header

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+-----------------------+-------------------------+----------------------------------------------------------------+
| messageType (1)  | messageLength (1)  |                    data (254)                                      |
+-----------------------+-------------------------+----------------------------------------------------------------+
```

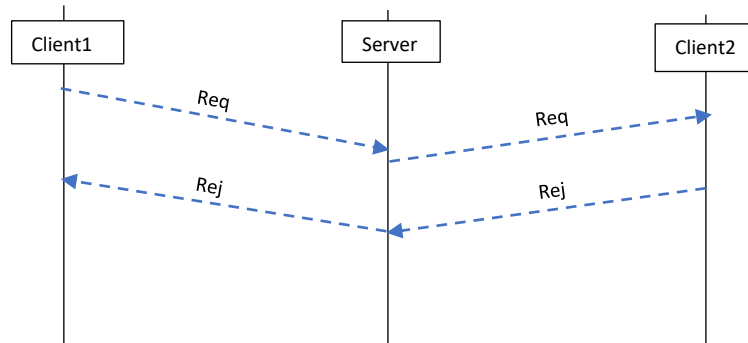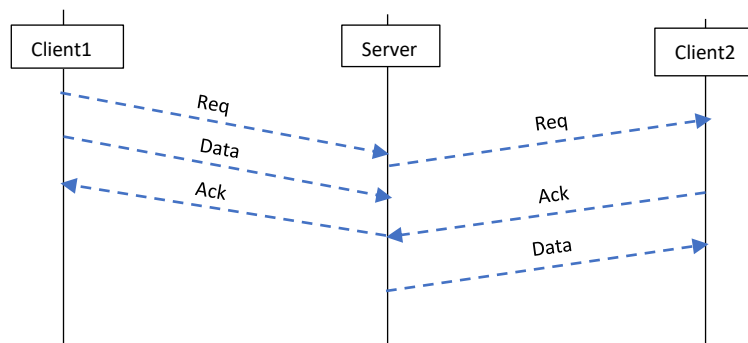| Field:	Size(bytes):	Description:
messageType	1	Determines what type of message is being sent. 0 = Req, 1 = Ack, 2 = Rej, 3 = Data
messageLength	1	Determines the length of the data being sent.
data	254	The text message data that is being sent. Part of message, but not header.

Scenarios

Accept

Client1 sends a request message, which is then forwarded to client2. Client2 receives request message and is available for chat, so sends acknowledge message back. Acknowledge message is forwarded back to Client1.
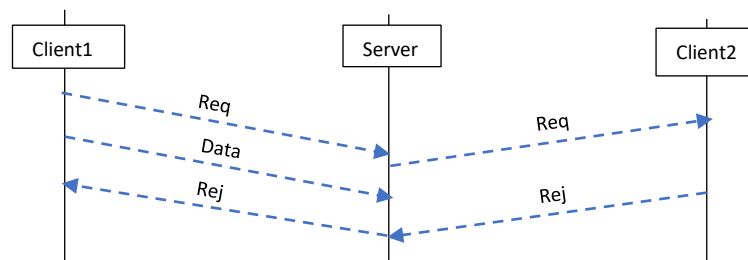
Reject

Client1 sends a request message which is then forwarded to Client2. Client2 is unavailable so it sends reject message back. Reject message is forwarded back to Client1.

Exchange of data – Client2 available

Client1 sends a request message which is then forwarded to Client2. Client1 sends text message. Client2 is available for chat, so sends acknowledge message back, which is forwarded to Client1. Text message data is forwarded to Client2.

Exchange of data – Client2 unavailable

Client1 sends a request message which is then forwarded to Client2. Client sends text message. Client2 is not available for chat, so sends reject message back, which is forwarded to Client1. Text message data is not forwarded to Client2.