**Design**

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| Scenario | From Client | From Server | Purpose | Data |
| User log in | **name** |  | A user want to log in to the server | User’s name |
|  | **namefull** | If an unknown user want to log in while there are already 100 users in the list, prevent this user to log in. | String “overflowUser” |
|  | **Name back** | Send the user name back and tell the client that communication succeeds. | Username |
| User make choice | **choice** |  | User make a choice | Choice made by client |
| Choice 1 |  | **back** | Send all known user’s name back | String that contains all user’s name, each name is followed by a separator “\t”, after send **back** to Client, set it to “”. |
| Choice 2 |  | **back** | Send all online user’s name back | String that contains all user’s name, each name is followed by a separator “\t”, after send **back** to Client, set it to “”. |
| Choice 3 |  | **prompt** | Tell client to get receiver’s name | String: "Enter recipient's name: " |
| **rname** |  | After get receiver’s name, pass it to server | receiver’s name |
|  | **prompt** | Tell client to get message from user | String: "Enter a message: " |
| **msgerr3** |  | To tell the server if the message is more than 80 characters | String: “true” or “false” |
| **msg1** |  | Send message to server | Message that input by user |
|  | **contains3** | To indicate client that the receiver’s name whether known or unknown | String: “true” or ”false” |
|  | **Isfull3** | To indicate client that is there any targeted user reach the limit of 10 message | String: “true” or “false” |
|  | **Namefull3** | If user want to send a message to an unknown user and there are already 100 users in the list, tell the client that this message can not be sent. | String: “name list full” |
|  | **msgback** | Tell client the message been posted | String: “Message posted to ” + receiver’s name |
| Choice 4 |  | **prompt** | Tell user to enter the message | String: “Enter a message: ” |
|  |  |  |  |
| **msgerr4** |  | To tell the server if the message is more than 80 characters | String: “true” or “false” |
|  | **isfull4** | To indicate client that is there any targeted user reach the limit of 10 messages | String: “true” or “false” |
|  | **back** | If some users already have 10 messages, send back their name | String: user names separated by “, ” |
| **mssg4** |  | Send message to server | Message that enter by user |
| Choice 5 |  | **prompt** | Tell user to enter the message | String: “Enter a message: ” |
|  |  |  |  |
| **msgerr5** |  | To tell the server if the message is more than 80 characters | String: “true” or “false” |
|  | **isfull5** | To indicate client that is there any targeted user reach the limit of 10 messages | String: “true” or “false” |
|  | **back** | If some users already have 10 messages, send back their name | String: user names separated by “, ” |
| **mssg5** |  | Send message to server | Message that enter by user |
| Choice 6 |  | **prompt** | Want client show this prompt to user | String: “my messages: ” |
|  |  | **size** | If this user has any message. Just output “You do not have any message” | String: the amount of message does this user have |
|  |  | **str 1 to size** | Send back all this user’s message one by one | String: messages of this user |