Message sent		Purpose of	Dete	Note
From	То	the message	Data	Note
Client	Server	User log in	["name_len", "name"]	
Server	Client	Log in status (success/error)	["001", "status"]	Status: "E" or "S"
Client	Server	User request	["001", "1"]	Show all known user
Server	Client	All known user	["all_known_user_len", "all_known_user_name]	
Client	Server	User request	["001", "2"]	Show all connected user
Server	Client	All connected user	["all_connected_user_len", "all_connected_user_name]	
Client	Server	User request	["001", "3"]	Send a message to a specified user
Client	Server	Recipient	["name_len", "name"]	
Client	Server	Text message	["message_len", "message"]	
Client	Server	User request	["001", "4"]	Send a message to all currently connected users
Client	Server	Text message	["message_len", "message"]	
Client	Server	User request	["001", "5"]	Send a message to all known users
Client	Server	Text message	["message_len", "message"]	
Client	Server	User request	["001", "6"]	Get my messages
Server	Client	Received Messages	["total_message_len", "send_name", "time", "mess" ,]	Each message has sender's name, time, message. Messages concats one by one
Client	Server	User request	["001", "7"]	User exit

Note:

It is possible for process to receive partial messages with C, which means a loop should be used to get all expected bytes. To deal with this situation, a communicate protocol was used. In the communicate protocol, a package not only contains the message itself, but also includes 3 chars in the head of package to indicate the length of the message. The package is indicated in Fig 1.

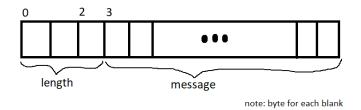


Fig 1. Communicate Protocol