

Network Protocol Documentation for Kniffeliger

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1 Introduction

This document details the protocol for the client/server interaction. All internal commands consist of four characters in uppercase followed by a blank space and optionally one or more parameters.

COMMAND <first parameter> <second parameter>

The commands as well as the needed message and the intended functionality are detailed in the tables below. All network communication is done via `BufferedReader` and `BufferedWriter` and thus all send messages consist of one singular `String` containing all necessary information. Concrete examples for the communication can be found below as well.

2 Command from the client to the server

2.1 Ping

command	parameter	functionality
PING	current system time	sends a ping to the server to check for connection losses
PONG	time send by the server	returns a received ping to the server

2.2 Chat

command	parameter	functionality
CHAT	message	sends the given message to the server to redistribute to all other clients
WHSP	name of one other client and a message	sends the message to the server to redistribute to the given other client
LOCH	message	sends the message to the server to redistribute to all other players in the same lobby

2.3 Lobbies

command	parameter	functionality
LOLI	no parameter	requests a list of all lobbies and their players from the server
CRLO	lobby name	used by the client to create a new lobby with the given name
ENLO	lobby name	used by the client to enter a lobby with the given name
LELO	no parameter	used by the client to leave the lobby they are currently in
LOPL	no parameter	requests a list of all players that are in the same lobby

2.4 Username

command	parameter	functionality
CHNA	username	sends a new username to the server to change the username
RUSR	no parameter	requests the own uername

2.5 Game

command	parameter	functionality
PREP	no parameter	informs the server to initiate all necessary preparations for the game
STRG	no parameter	informs the server to start the game
ROLL	no parameter	communicates that a player wants to roll the dice
SAVE	list of dice numbers	used by the player to save dice before rolling again
ENTY	entry name	communicates that a player wants to enter a dice combination in the given entry in their entry sheet
STEA	username of the victim and entry of the victim	used to play the steal action dice
FRZE	username of the victim and entry of the victim	used to play the freeze action dice
COUT	username of the victim and entry of the victim	used to play the delete action dice
SHFT	no parameter	used to play the shift action dice
SWAP	username of the victim	used to play the swap action dice
ENDT	no parameter	used by the player to end their turn
CHET	no parameter	used when the player uses the implemented cheat code

2.6 Other

command	parameter	functionality
PLLI	no parameter	requests a list of all connected clients from the server
HGSC	no parameter	requests the current high score list from the server
QUIT	no parameter	used to communicate to the server, that a client wants to disconnect

3 Commands from the server to the client

3.1 Ping

command	parameter	functionality
PING	current system time	sends a ping to the server to check for connection losses
PONG	time send by the server	returns a received ping to the server

3.2 Chat

command	parameter	functionality
CHAT	message	sends a message to the client that is printed out in the chat window in the gui

3.3 Lobbies

command	parameter	functionality
LOLI	list of all lobbies and their players	returns the lobby list to the client
CRLO	lobby name	tells the gui that a new lobby has been created
ENLO	lobby name and username	tells the gui that a player has joined a lobby
LELO	lobby name and username	tells the gui that a player has left the lobby
LOST	lobby and status	communicate that the status of the given lobby has changed to the given status
LOPL	list of players	returns a list of all players in the lobby

3.4 Username

command	parameter	functionality
TURS	username	transmits the username

3.5 Game

command	parameter	functionality
STRG	no parameter	tells the gui to prepare for the start of the game
STRT	username and phase	starts a new turn and communicates the current player and game phase
ROLL	rolled dice	returns the result of the dice roll to the client
SAVE	list of dice	returns the successfully saved dice to the player
ALDI	rolled dice	returns the rolled dice of a different player to the gui to update the second tab
FRZE	frozen status and entry name	communicates to the gui that the given entry has been frozen or defrozen
ENTY	entry sheet	communicates the current entry sheet of a player to the gui
ACTN	list of action dice	communicates the current action dice a player has
PONT	points	gives the current points of a player to the gui
ENDT	no parameter	confirms that the turn of a player has been ended
RANK	ranking of the players	communicates the final ranking of the game

3.6 Other

command	parameter	functionality
BRCT	message	used by the server to send useful information text to the client, the text is displayed in the information window in the gui
PLLI	list of all players	returns a list of all connected players to the client
HGSC	current high score list	returns the current high score list to the client to display inthe gui
QUIT	no parameter	initiates the disconnect of the client

4 Examples

4.1 Ping

Every two seconds, the client/server sends a string with PING and the current system time to server/client via a Ping class, e.g. "PING 1711116082041". The other side recognizes the command "PING" by splitting the string and returns the string "PONG 1711116082041". The client/server then compares the received message with the current system time to check for timeouts.

4.2 Chat

The user Anisja (for example) types "hi" into the chat window. Internally, the string "CHAT hi" is sent to the server. In the serverInputHelper class in the switch case the message is sent to the communications class which then sends the string "CHAT Anisja: hi" to all other clients. They in turn print out "Anisja: hi" in the chat window. Analogously if Anisja had chosen "lobby" in the drop down option of the chat, the server gets "LOCH hi" and only sends the message to all the players in the lobby again with the command "CHAT".

If Anisja wants to send a message only to Lina, she chooses the username "Lina" in the drop down of the chat window. Analogously to above, then the string "WHSP Lina hi" is sent to the server. The server splits the string, checks if a client with username Lina exists and in that case sends "CHAT Anisja whispered: hi" to Lina. The clients displays this in the chat window.

4.3 Lobbies

The commands "CRLO", "ENLO" and "LELO" are used to handle creating and entering/leaving lobbies. If the player types in the name "exampleName" in the lobby window of the gui and then presses the button "create lobby", the client then sends "CRLO exampleName" to the server, which creates a new lobby and informs all other clients with the same command about this change. The lobby window in the gui then updates the list of existing lobbies.

If the player then chooses a given lobby from the list and pushes the button "enter lobby", the client sends "ENLO exampleName" to the server which enters the player into the lobby and again informs the clients about this change with the same commands. If the player then presses the home button in the game window of the gui, the client sends "LELO exampleName" to the server which removes the player from the lobby and again informs all other clients.

Everytime the lobby status changes, e.g. if the lobby is full or a game is started, this is communicated to the clients via "LOST lobbyname (status)". The clients then update the lobby status in the lobby list in the lobby gui window.

Before starting a game, the client requests a list of all players that are in the current lobby from the server using "LOPL". The server then returns for example "LOPL Lina Anisja" if Lina and Anisja are the players in the Lobby. The

gui can then initiate all necessary fields for the game with the given usernames.

4.4 username

The user Anisja wants to change their name to Lina, inputs Lina in the according filed in the gui and presses the button "change username". The client then sends "CHNA Lina" to the server, which forwards the string "Lina" to the method for changing the username in the Player class. The method also checks whether the name already exists (in which case a "_number" is added to the end) and then sends "CHNA Lina" (or "CHNA Lina.number") back to the client.

When the player enters a lobby, the client requests the own username from the server using "RUSR". The server returns "TURS Lina" if the players name is Lina for example. This is used to display the own username at the top of the game window.

4.5 Game

Once a player is in a lobby with at least one other player, they can start a game in this lobby. For this the player presses the start button in the gui. The client then send the request to the server using "PREP". The server receives this command and prepares for the game start by initializing all necessary variables. It then sends "STRG" to the client which initiates the gui for the game start. Once finished, the gui returns "STRG" to the server which then calls the start() function in the GameManager to start a game.

At the beginning of each turn, the GameManager class informs the players about the current round and whos turn it is. This happens via e.g. "STRT Lina Main" to indicate that it is Lina's turn in the game pha main.

A usual play move goes like this: the player first rolls the dice using the roll button. This is send to the server via the command "ROLL", the server gives the information to the gameManager to handle and then returns the rolled dice, e.g. "ROLL 1 4 5 3 5" to the current player and "ALDI 1 4 5 3 5" to all players. The player can roll again or save one or multiple dice. This is handled via "SAVE diceNumbers". Once all dice are saved or the player has rolled three times, the player can choose an entry to insert the dice. The choice is send to the server via for example the command "ENTY fullHouse". The server confirms this via the same command and the gui then updates the entry sheet list using "ENTY Lina:ones,twos,threes,fours,fives,sixes,threeOfAKind,fourOfAKind,fullHouse,smallStraight,largeStraight,kniffeliger,chance,pi,". In this case the entry sheet belongs to a player named Lina and the player has no points yet. The server also sends an update of the curent point score to the player. For example "PONT 50" if the player now has 50 points. Once the player wants to end their turn, they press the "end turn" button and the server send "ENDT" to the server to communicate that the next phase of the game is started.

At the end of the game, the server send the final ranking to the players. This for example looks like "RANK 350:Benni,200:Anisja" if Benni scored 350

points and Anisja scored 200 points. The client then opens a pop-up window to display the winner of the game.

Throughout the game, players can gain action dices that grant them special play moves. Everytime a player gets a new action dice or uses one, the server sends the whole list of current action dices to the player via "ACTN actionName:count,actionName:count,...". The gui then updates the counter and enables/disables the action dice buttons accordingly. If a player has a certain action dice and wants to use it, they press the button and choose a victim and an entry if necessary. In the cases of the steal, freeze and cross out actions, this is communicated to the server via "STEA/FRZE/COUT username entry-Name". In the case of the swap action via "SWAP username" and in the case of the shift action via "SHFT". The server handles the action and informs the affected clients about all changes in entry sheets and points using the same commands as above.

4.6 Other

The broadcast is only used by the server to communicate useful information to the clients before and during the game. For example everytime it is a players turn, the server sends "BRCT It's your turn!" to the current player and the message "It's your turn!" is displayed in the information window in the gui.

Everytime a new client connects to the server, an updated list of all players is send to the clients. For example "PLLI Lina Anisja Dominique Riccardo". This is used to update the chat drop down for the whisper chat.

Everytime a player pushes the high score button in the lobby window or the game window of the gui, the command "HGSC" is send to the server. The server then returns the current list (which is saved in the file highscore.txt) back to the player via "HGSC points:username,points:username,...". The gui then opens the high score pop-up window and displays the list.

If the user Anisja wants to disconnect from the game and presses the "leave game" button, the client then sends "QUIT" to the server which then sends "QUIT" back to the client, closes all necessary object for this client, removes the client from the player list and informs other clients via the commands above. The client receives this string, prints out "Goodbye" in the terminal, closes all necessary objects and terminates.