

# Connection protocol

Group AM-17

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## Contents

<b>1</b>	<b>General Informations</b>	<b>2</b>
1.1	Adopted standards . . . . .	2
1.2	Disconnection management . . . . .	2
<b>2</b>	<b>Sequence diagrams</b>	<b>3</b>
2.1	Login sequence diagram . . . . .	3
2.2	Game phase sequence diagram . . . . .	5
2.3	Chat message . . . . .	7
2.4	Win message . . . . .	9

# 1 General Informations

## 1.1 Adopted standards

We used JSON as the standard format for the exchange of messages between Client and Server.

The choice was made due to the fact that, the reconstruction of the objects is simple and convenient if they are written in JSON format, thanks to its easy-to-write parsers.

As you can see in the sequence diagrams in the following sections, every communication begins with ping-pong between Client and Server.

We decided to send a ping every 10 seconds, to check for any possible disconnection of the players (Client).

The 10 seconds timeout starts after every message sent by the Server; when the time run out the Server sends a ping, and if the Client doesn't reply with pong, then that player is disconnected from the current game. Later he can be also reconnected to the same game, using the previous nickname.

## 1.2 Disconnection management

If a player disconnects, he is removed from list of active players and inserted in list of disconnected player.

At this point he has the possibility to reconnect before the end of game, in this case he's added once again inside list of active players and his status (Score, Shelfie, Board, Personal and Common Cards) will be recovered. In order to reconnect, the player needs to log in with the same nickname he had used before the disconnection.

In case of game in which only one player is connected, a 45 seconds countdown begins and if no one reconnects before the time runs out, the only one connected is declared winner.

If everyone disconnects a 45 seconds countdown begins and if no one reconnects before the time runs out game is ended by the server.

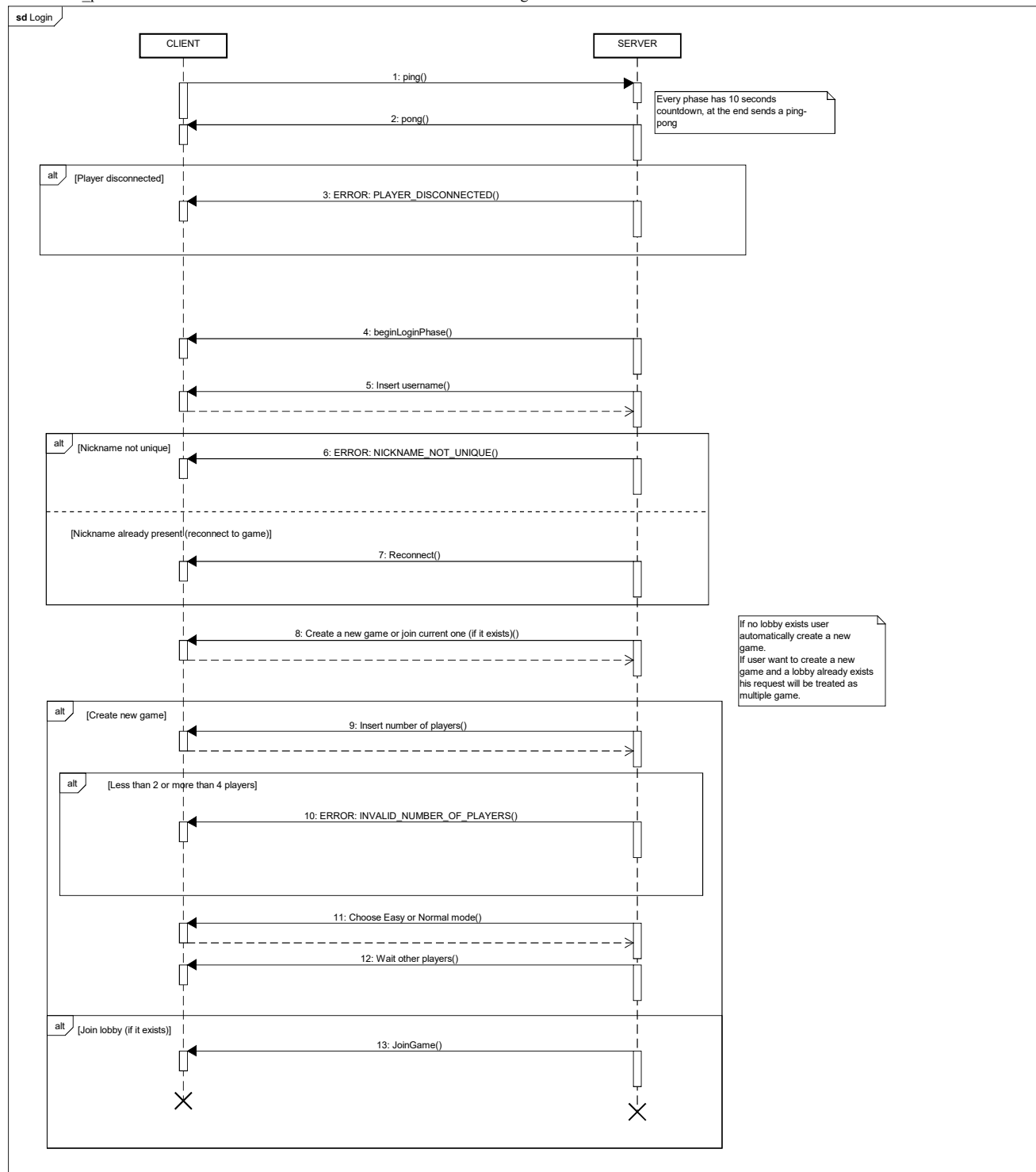
## 2 Sequence diagrams

### 2.1 Login sequence diagram

Login phase is described by the following sequence diagram.

As it can be seen in the sequence diagram there are some possible errors:

- ERROR: `PLAYER_DISCONNECTED`, it's a general error used if the player doesn't respond to the initial ping or after 10 seconds countdown ping.
- ERROR: `NICKNAME_NOT_UNIQUE`, uniqueness of nickname is a requirement.
- ERROR: `INVALID_NUMBER_OF_PLAYERS`, if the current player chooses less than 2 players or more than 4.



## 2.2 Game phase sequence diagram

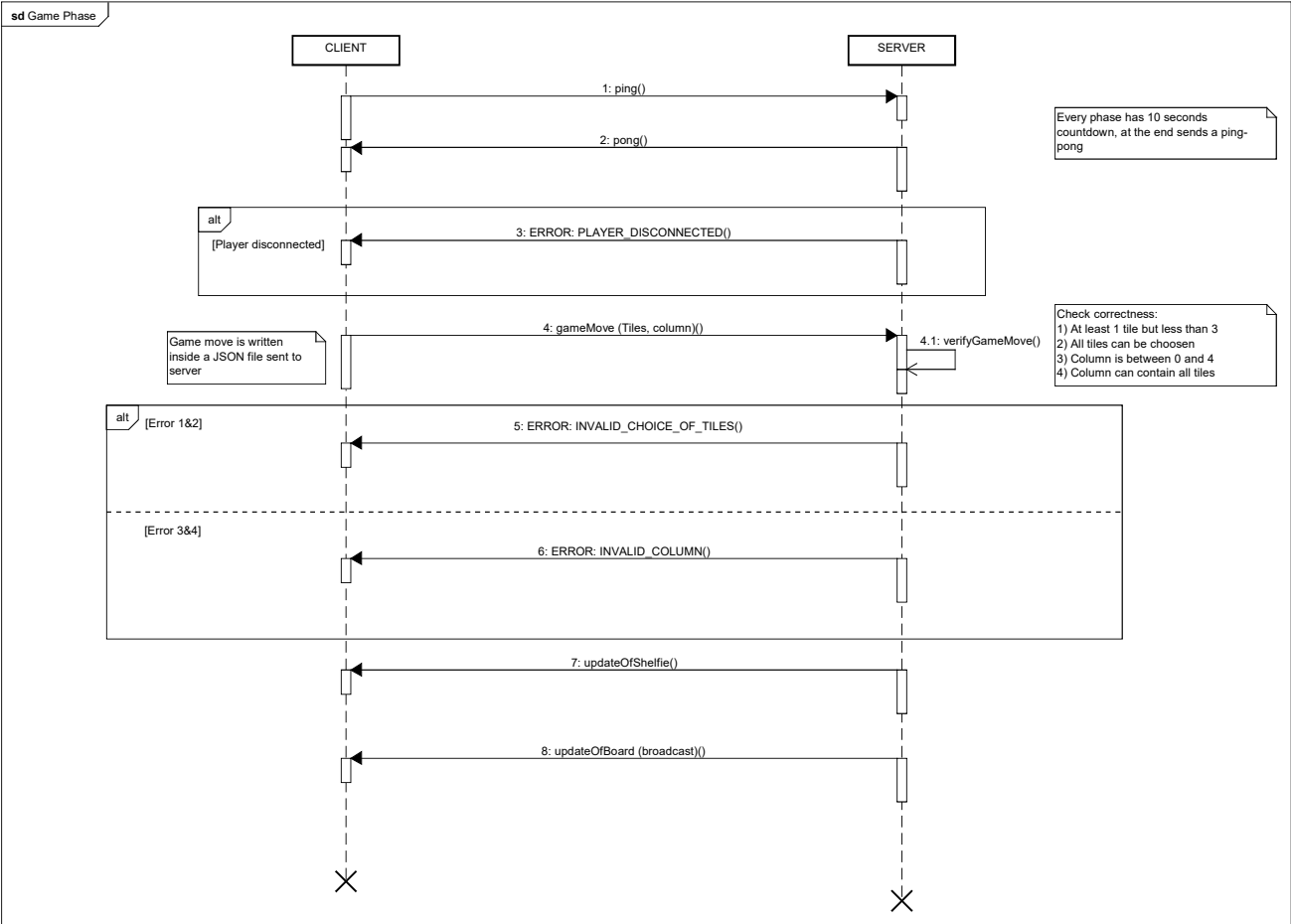
Game phase is described by the following sequence diagram.

We decided to define tile picking order as inserting order in the shelfie.

After having chosen tiles, the player chooses the insertion column.

As it can be seen in the sequence diagram there are some possible errors:

- ERROR: `PLAYER_DISCONNECTED`, it's a general error used if the player doesn't respond to the initial ping or after 10 seconds countdown ping.
- ERROR: `INVALID_CHOICE_OF_TILES`, at least one of the chosen tiles doesn't respect game rules (I.E: not adjacent tiles, not a free side...).
- ERROR: `INVALID_COLUMN`, column cannot contain chosen tiles (I.E: two free spaces for three tiles...).



## 2.3 Chat message

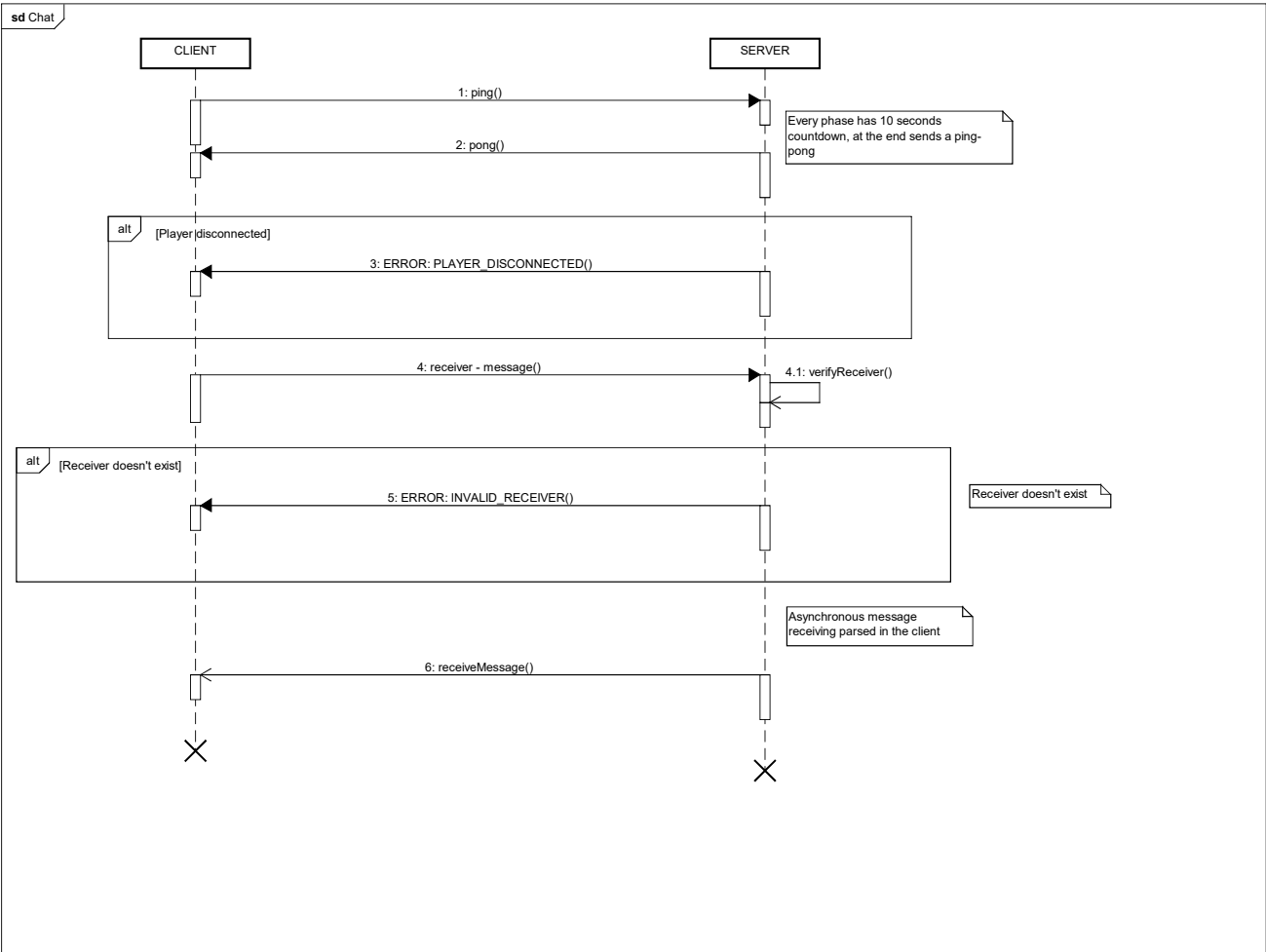
A chat message can be sent at any moment by any player.

Client-server interaction is described by the following sequence diagram.

If receiver is 'all' the message is sent to global chat.

There are some possible errors:

- ERROR: PLAYER\_DISCONNECTED, it's a general error used if the player doesn't respond to the initial ping or after 10 seconds countdown ping.
- ERROR: INVALID\_RECEIVER, if the receiver doesn't exist.





## 2.4 Win message

At the end of the game a "win message" is sent to winner, every other player receives a "lose message".

There are some possible errors:

- ERROR: PLAYER\_DISCONNECTED, it's a general error used if the player doesn't respond to the initial ping or after 10 seconds countdown ping.
- ERROR: INVALID\_RECEIVER, if the receiver doesn't exist.

