Spectrangle networking protocol

Author: Patrick Japink

✉ p.japink@student.utwente.nl

Version: 1.4

> *„ This is my networking protocol. There are many like it but this one is mine. […]"*

Changes from version 1.0 to 1.1 :

- "welcome" method has been updated to include "[extensions]"

- the server now announces when a player chose to skip a turn via "<name> skipped"

Changes from 1.1 to 1.2:

- "welcome" has been de-capitalized in the tabular network protocol and now matches the command in "Definition of commands

Changes from 1.2 to 1.3:

- Commands now exclusively span a single line for networking/TUI convenience reasons

- the formatting in "chat <message>" command has changed (no longer separated by a colon, only a space)

- tile input definition has been changed from [W,W,W,2] to WWW2 for ease of input and parsing – see "Tile rotation and definition"

- the definition of lists as "[]" under "General information" has expanded

- the "replace" command has been changed to create better overall cohesion among commands and easier parsing

- uniform names for the errors have been set under "Definition of errors" in bold

- corrected capitalization in first word of certain command

- the command "<name> skipped" has been altered

Changes from 1.3 to 1.4

- command **4)** under "Tabular networking protocol" has been extended to be able to be parsed in the case that there less than 4 tiles present (marked in red)

- the skip command **6)**, more specifically "skip <name>" is no longer a stand-alone command for ease of parsing reasons, it now replaces the "skip <name>" segment in command **4)** (change also highlighted in red under "Tabular networking protocol")

General information

Agreed upon socket port: 4000

If a player disconnects from the game, the whole game ends and all players are moved to the lobby. No points are calculated.

Documentation notation:

"<>" – used to indicate arguments

"[]" – used to indicate lists. Note: the brackets are notational and not part of the actual output

Content of lists is to be separated by a single space.

In the case of [tiles] it is implied that we are dealing with a two-dimensional array, see "tile definition" below for reference.

In the case of player info (e.g. <player> [tiles]) a new line in to be used for every player, this does not hold for the content of lists of player names (e.g. start with [names])

Definitions of relevant commands

The definition of [tile] and [index] is located below this list.

connect <name> <extensions>

Used by the client after connecting to register with the server. Name is to be validated to not be a duplicate or to include spaces. For <extensions> the argument "chat" is defined to indicate the presence of the chat extension.

welcome [extension]

Used by the server to indicate proper registration of the client, while also communicating the extension, as given by the client.

request <number of players>

Used by the client to request a game with a certain amount of players. Legal arguments include S = [2,4] and input is to be validated. (one integer from 2 to 4 – inclusive).

waiting [names in queue]

Used by the server to announce names from players in queue for game with the same number of players wanted.

start with [names]

Used by server when game starts, gives names of participating players

order [names]

Used by server to communicate the order of turns for current game.

tiles [<name> [tiles]] turn <name>

Used by server to communicate the tiles of each player. In the same command, the name of the player whose turn it is, is announced.

" [<name> [tiles]] " – this includes all players

place <tile> on <index>

Used by the client to indicate a move.

skip <name>

Used by the server to announce that a player must skip a turn, as she cannot make a valid move.

player skipped <name>

Used by the server to announce a player's decision to skip a turn without exchanging a tile, to the remaining players.

skip || exchange <tile>

Attention! The "||" in this command indicates that either sides are a valid command, therefor a choice to be made. "||" is not a part of any command.

Used by the client to skip a turn or to exchange a tile and then skip a turn –in accordance with the game rules.

replace <name> <tile> with <new tile>

Used by server to indicate the events occurred when a player used the "exchange" command as defined above.

move <name> <tile> <index> <points>

Command used by the server after every move made by a player to announce the following things to all participants:

- name of the player that made the move

- tile that was placed

- index (field on board) it was placed on

- points earned with this move

game finished leaderboard [<name> <points>]

Used by the server to announce the results after game has ended. List of names and points to be ordered by points. Again, this command is not used when the game ends unrightfully by a player disconnecting!

" [<name> <points>] **"** – this includes all players

player <name> left

Used by the server to indicate that a player has disconnected from the game.

chat <message>

Command used by the client to send a chat message.

chat <name> <message>

Used by the server to broadcast a message by a player.

Tabular networking protocol

Client	Server	Phase	Server action
connect <name> <extensions> →		**1)** Identification to server	**> validate name**
	← welcome		

request <number of players> →		**2)** Communicating game specifications	
	← waiting [list of names in queue]		
	← start with [names]	**3)** Server announces start	
	← order [list of names]		**> distributing tiles and determining order before first round**
	← tiles: [<name> [tiles]] turn <name> the [tiles] portion of this command has to always have a length of 4 words, every "missing" tile is to substituted by "null" e.g: "WWW1 null null null"	**4)** Announcing tiles and whose turn it is (always occurs after **7)**, unless game is determined to be over. Always occurs after)	
place <tile> on <index> →		**5)** Player announces move	
	← skip <name>	**6)** Skipping (may replace the "turn <name>" segment in command **4)**, if server determines player can't make a move)	
skip || exchange <tile> →			
	(if the first option has been chosen on the step before) ← player skipped <name> _____ **(if second option has been chosen on the step before)** ← replace <name> <tile> with <new tile>		
	← move <name> <tile> <index> <points>	**7)** Server announcing moves (occurs after every move)	
	← game finished leaderboard <name> <points>	**8)** Game has ended	**> players moved to lobby**

	← player <name> left	9) Player disconnects	> *game is ended, no points shown, players moved to lobby*

Chat extension:

Client	Server	Phase
chat <message> →		**1b) Players use chat extension**
	← chat <name> <message>	

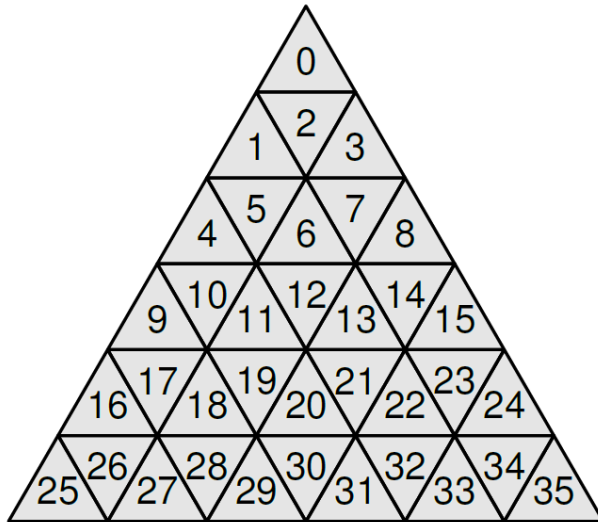## Tile and rotation definition

[Y,B,G, #]   # = point value   [R,G,B, #]
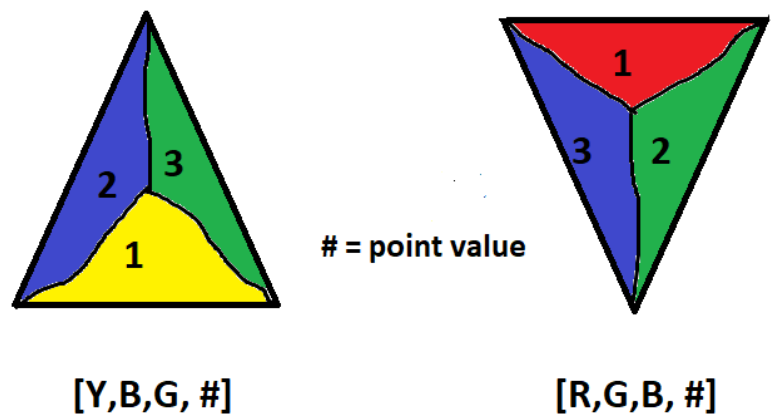
As indicated above, the naming of the sides starts from the base of the triangle and continues in a clockwise fashion.

Example:

exchange WWW2

Index definition:

The index is an integer that represents a game board field.

Example:

place WWW1 on 11

Errors to be defined

- invalid move -> **invalidMove**

- invalid command -> **invalidCommand**

- invalid name – **invalidName**