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Communication Flow Management

Introduction

Having the game structure based on a Client-Server approach, we had to implement a communication part to manage the exchange of data and actions between the user and the game.

Communication takes place through the use of sockets and relies on the Java serialization protocol applied to events.

Once the server has started running, it listens for a connection request from a Client. Once the communication has started there will be the login phase.

Login Phase

When the first player connects to the server, he is registered in a pre-game lobby and a 2-minute countdown starts. It is designed to cancel the same lobby if it is not filled in time.

The lobby is filled when a number of players equal to that previously selected by the first player connects to the server, and once filled the selection of the cards starts.

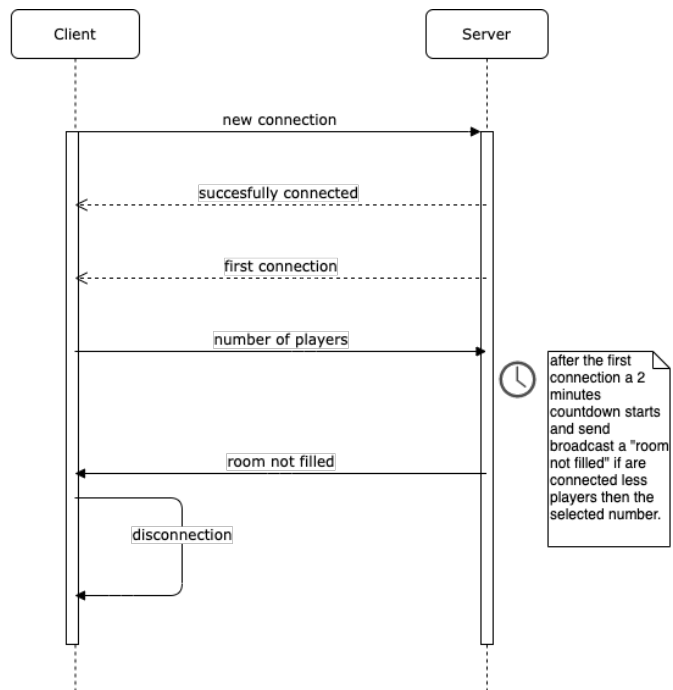


Diagram of client first connection

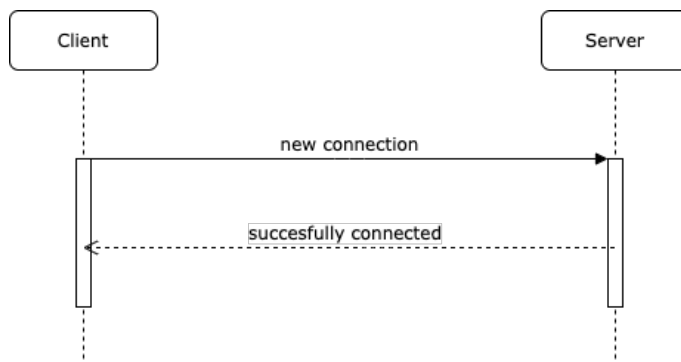


Diagram of client connection if it's not the first connection

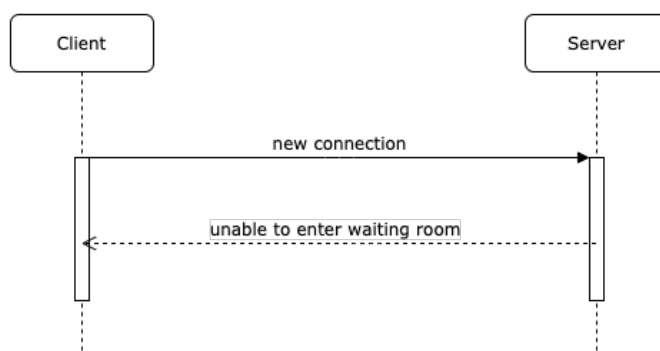
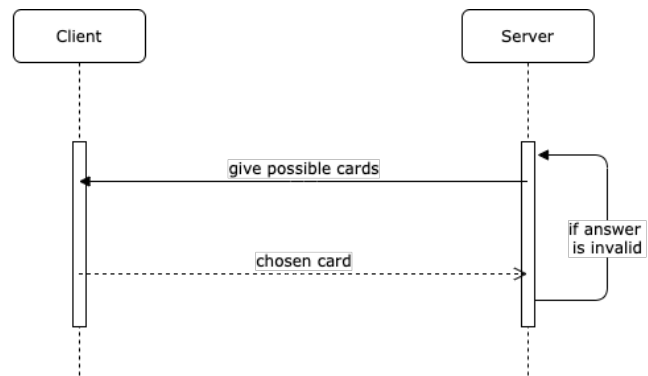


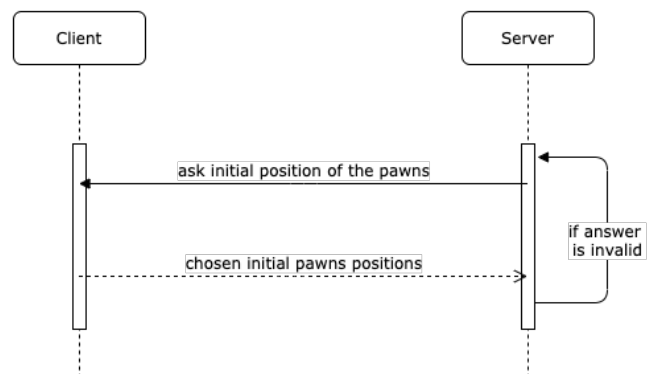
Diagram of new connection when the preGameLobby is closed, so the answer is unable to enter

Game Setup

In the Game Setup phase, players have to choose the card of the divinity they want and place the two pawns on the game board, starting from the first player who has connected.



These events are managed by the diagrams on the side.

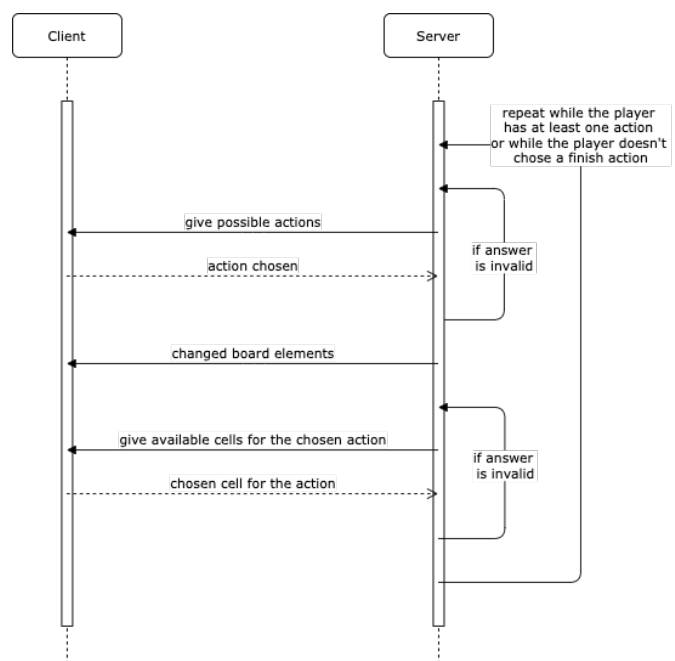


General Action

The decision and execution of an action consists of a sequence of messages.

The first contains the possible actions that can be performed at that precise moment and the user must select one of them.

After this, the user will be provided with the cells in which it is possible to perform the action he had previously selected and he will have to choose one.



As a last message, the user receives the board update.

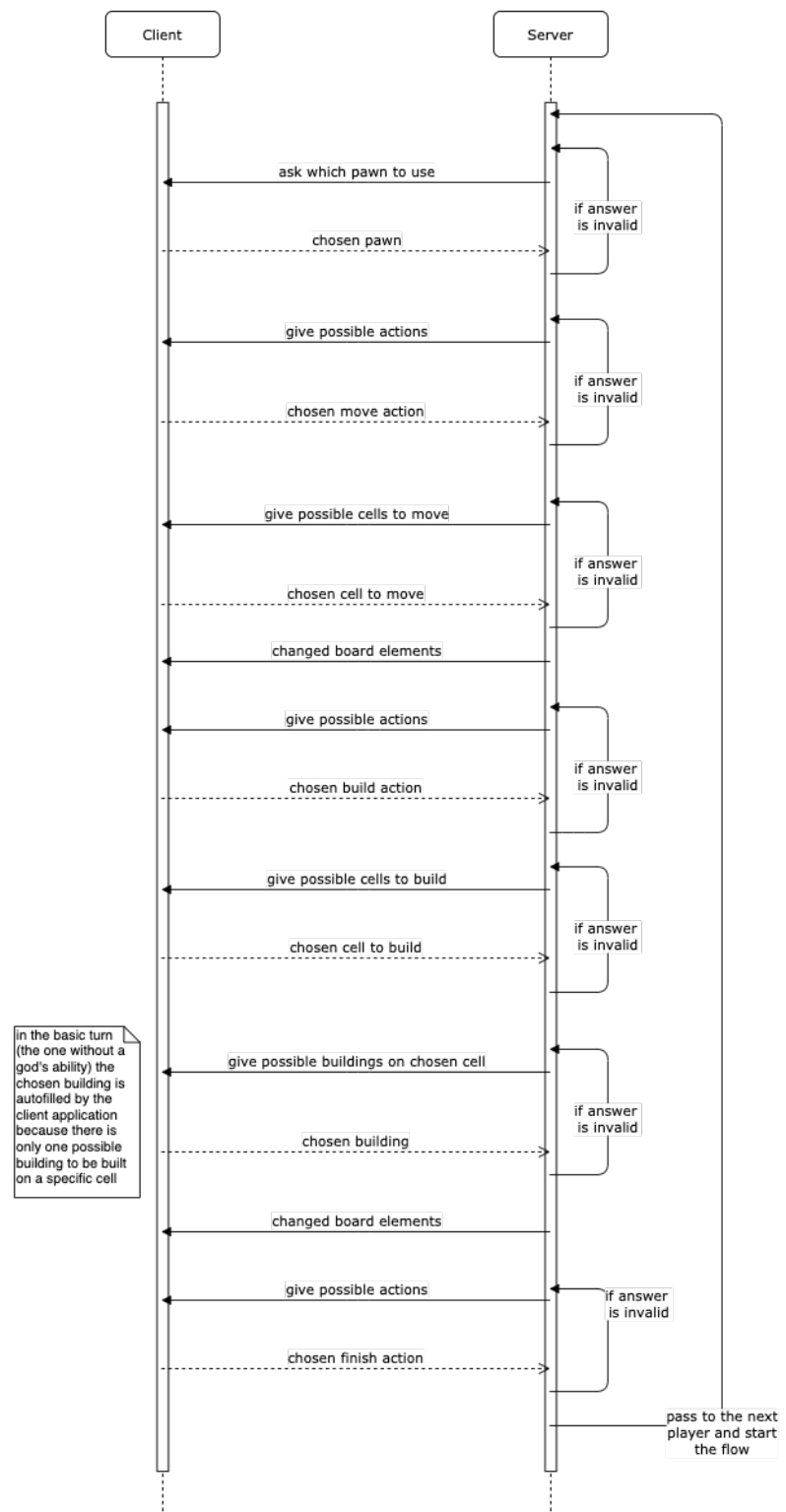
Basic Game Turn

In the basic turn, that is without additional effects of the deities, a player must perform a sequence of moves consisting of a Move action and a Build action, then ending with a Finish action.

During a basic turn the chosen building is autofilled by the client application because there is only one possible building to be built on a specific cell.

At the turn's end the Server pass to the next player and starts a new basic turn flow.

The flow diagram of events between Client and Server is shown alongside.



End Turn

A player ends his turn if he selects a Finish action from his available actions.

His turn, however, can also end earlier, in case he is in a situation where he has no actions available to perform. In this case, the player ends his turn and loses, and his pawns are removed from the game board

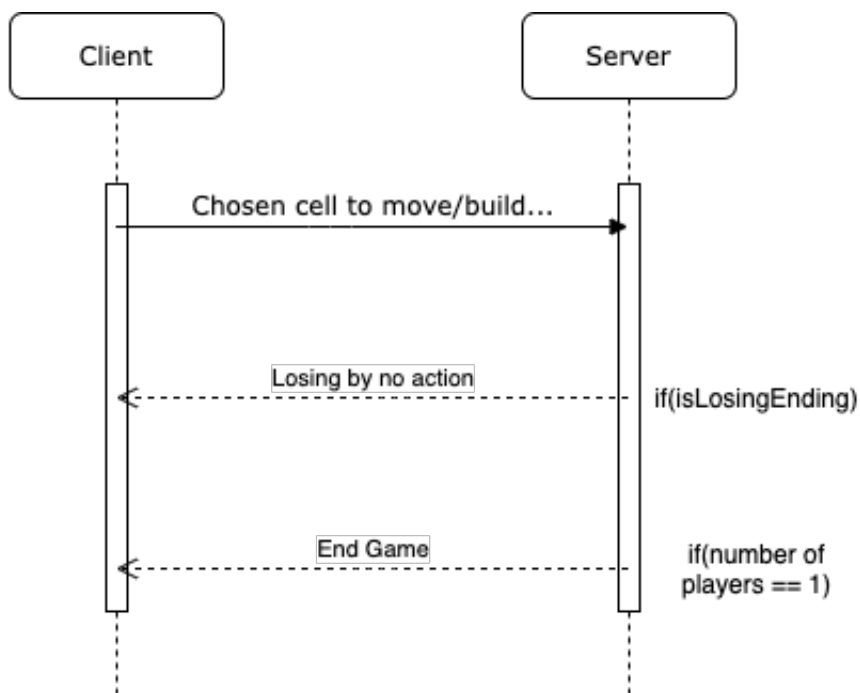


Diagram of end turn with a loss consequence. The losing player is deleted and is checked if the next player can do any action. If there is only one remaining player, the game ends.

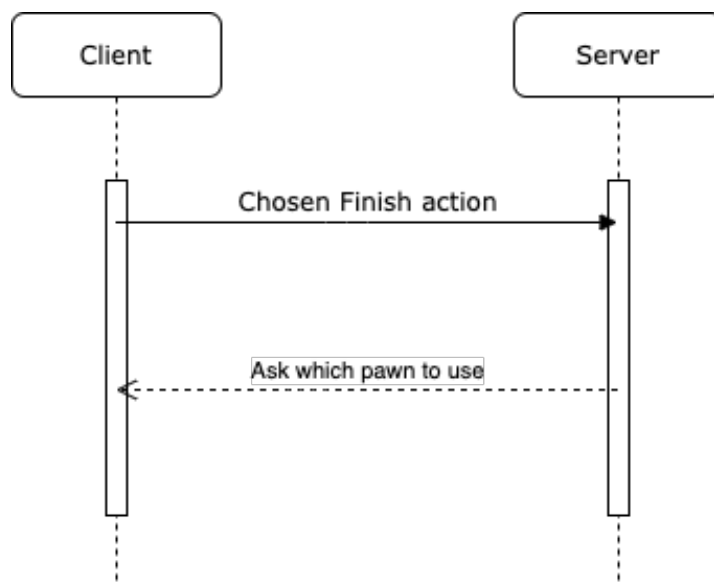


Diagram of end turn with no consequence. The server asks the next player which pawn wants to use.

End Game

The game can end in different ways: if the current player makes a winning move or if all but one player are eliminated and if one player disconnects during game.

End game message is sent in broadcast to players connected to the game, the message causes the disconnection of the players client side, the server stays up to accept new connection to handler a new game.

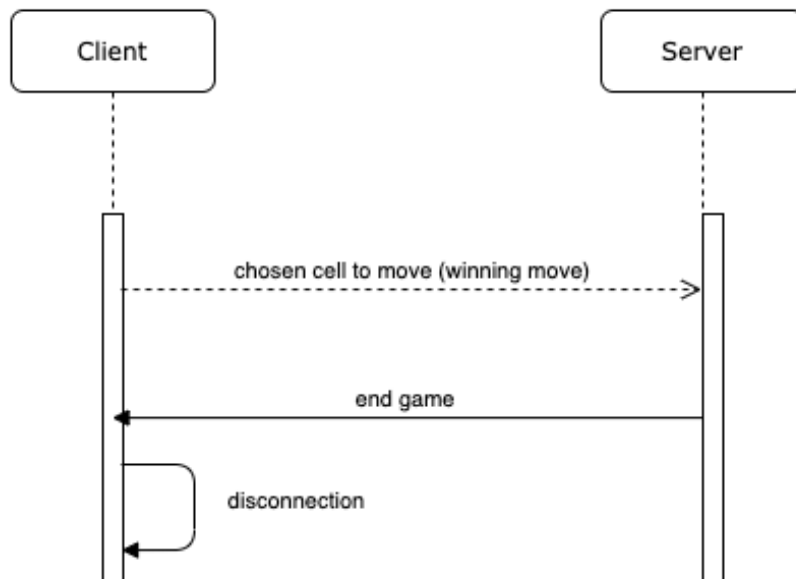


Diagram of end game causes by winning move

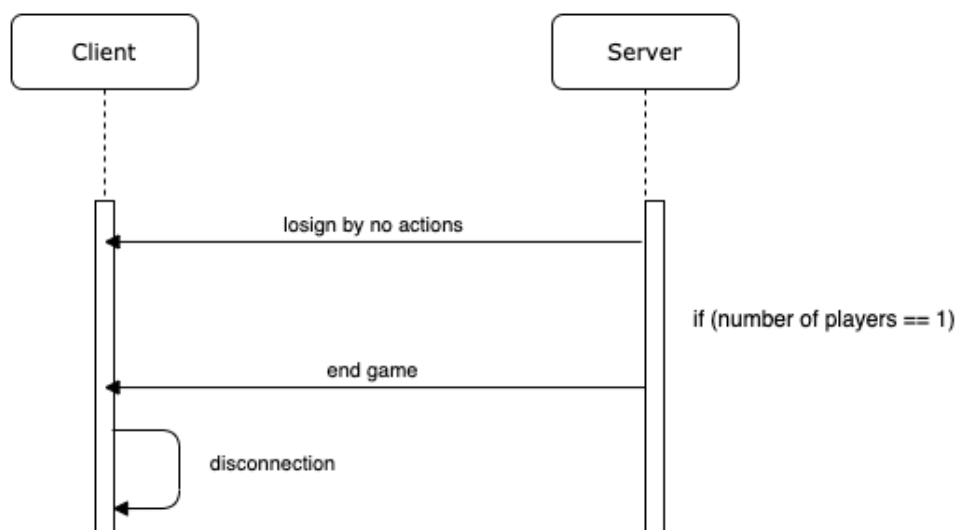


Diagram of end game causes by eliminated player and there is only one player in game

Server to Client Event

AskInitPawnsEvent

This event is used to ask to the user the initial cells where he wants to place his pawns. It contains the already taken cells, saved in Point format.

AskWhichPawnsUseEvent

This event is used to ask to the user which of his available pawns wants to use for this turn. A pawn is available is it can do at least one action.

The event contains only the positions of the available pawns, so we save the positions in Point forma.

ClosedWaitingRoomEvent

This event is used to communicate to the user the closing of the pre-game lobby and the imminent start of the match.

ConnectionEstablishedEvent

This event is used to communicate the establishment of the connection between client and server. It's also used to ask the nickname at the user.

DisconnectionClientEvent

This event is used to communicate to the user that he's been disconnected from the server.

EndGameSTCEvent

This event is used to communicate to the user that the game is ended and the nickname of the winner player.

FirstConnectedEvent

This event is used to communicate to the user that he's the first connected player, and to ask the number of player for the new match.

GivePossibleActionsEvent

This event is used to communicate to the user the possible actions he can perform at this moment.

The actions are saved in string format.

GivePossibleBuildingsEvent

This event is used to communicate to the user the constructible buildings in the previous selected cell.

To identificate the buildings we use only the level number.

GivePossibleCardsEvent

This event is used to communicate to the user the choosable cards.
For each card we save the name and the effect in string format.

GivePossibleCellsToBuildEvent

This event is used to communicate to the user the available cells where the selected pawn can build.

Each cell is saved in Point format.

GivePossibleCellsToDestroyEvent

This event is used to communicate to the user the available cells where the selected pawn can destroy a building.

Each cell is saved in Point format.

GivePossibleCellsToForceEvent

This event is used to communicate to the user the available cells where the selected pawn can force another pawn.

Each cell is saved in Point format.

GivePossibleCellsToMoveEvent

This event is used to communicate to the user the available cells where the selected pawn can be moved

Each cell is saved in Point format.

LosingByNoActionEvent

This event is used to communicate to the user his losing caused by the lack of available actions.

This event contains a sad message.

NotifyStatusEvent

This event is used to communicate to the user the changes in the game status in json format.

OneClientDisconnectedEvent

This event is used to communicate to the user the disconnection of one client.

PlainTextEvent

This event is used to communicate to the user a general string message.

SuccessfullyConnectedEvent

This event is used to communicate to the user that this nickname is available and his corrected connection to the waiting room.

UnableToEnterWaitingRoomEvent

This event is used to communicate to the user that he can't connect to the waiting because is closed.

UnavailableNicknameEvent

This event is used to communicate to the user that the nickname he has chosen is already taken.

Client to Server Event

ChosenBuildActionEvent

This event is used to communicate to the server that the user has chosen a build type action.

ChosenBuildingEvent

This event is used to communicate to the server that the user has chosen a level of building.

ChosenCardEvent

This event is used to communicate to the server that the user has chosen one of the possible cards given.

ChosenCellToBuildEvent

This event is used to communicate to the server that the user has chosen the cell where to build

ChosenCellToDestroyEvent

This event is used to communicate to the server that the user has chosen the cell where to destroy.

ChosenCellToForceEvent

This event is used to communicate to the server that the user has chosen the cell where to force.

ChosenCellToMoveEvent

This event is used to communicate to the server that the user has chosen the cell where to move.

ChosenDestroyActionEvent

This event is used to communicate to the server that the user has chosen a destroy type action.

ChosenFinishActionEvent

This event is used to communicate to the server that the user has chosen a finish type action.

ChosenForceActionEvent

This event is used to communicate to the server that the user has chosen a force type action.

ChosenInitialPawnCellEvent

This event is used to communicate to the server chosen cells where pawns are going to be placed.

ChosenMoveActionEvent

This event is used to communicate to the server that the user has chosen a move type action.

ChosenPawnToUseEvent

This event is used to communicate to the server that the user has chosen the pawn to use for his current turn.

ChosenPlayerNumberEvent

This event is used to communicate to the server that the first connected player has chosen the number of players that will play the game.

ClientDisconnectionEvent

This event is used to communicate to the server the sending client has disconnected.

NewConnectionEvent

This event is used to communicate to the server that the client that just connected has chosen his nickname.