

Use Case 2: Play Scrabble

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Characteristic Information

Goal in Context: The user can successfully complete a round of Scrabble according to the rules in the rulebook. Over several turns eventually the game is completed.

Scope: Application

Level: Primary task

Primary Actor: Player

Stakeholders & Interests:

- ❖ Player: Wants to play Scrabble according to the game's rulebook. Meanwhile the player wants a pleasant, frustration-free gameplay experience. Player wants to be informed why certain actions cannot be performed.

Preconditions: Player joined (Use Case 3.2) or created (Use Case 3.1) customizable game (Use Case 2.1). Either he is playing against bots, remote players, or the tutorial mode (Use Case 4). The Game is running

Success Guarantee (Postconditions): The player was able to successfully start a game, complete turn after turn, until the game ended.

Trigger: Player clicks on 'Create Game Lobby' a game lobby

Main Success Scenario

1. Player customizes the game: *Include UC 2.1: Customize Game*
2. Player starts the game
3. Systems assigns turn to player
4. The player places tile on the board (optional, can be repeated for every tile the player has)
5. User submits play (if no placements he is essentially passing)
6. System ends user's turn
7. System triggers next user's turn
8. Loop back to 4 until game ends
9. Game ends

Extensions

- *a At any time, System fails and game is interrupted:
 - 1. The Server will recover the current data of the game from the logs.
 - 2. Initiate a new game by replaying all prior moves according to the logs.
- *b At any time, User's overtime of 10 minutes is expired:
 - 1. System passes the user's turn to the next player.
 - 2. Game continues, while the user is not eligible to play for the rest of the game.
- 4.1 User places a tile on an already occupied board field:
 - 4.1.1 Tile does not get placed on board and put back on the user's rack.
- 4.2 User places a tile not in the same row or column as his or her placements in the same turn prior to the latest placement.
 - 4.2.1. Tile does not get placed on board and put back on the user's rack.
- 5.1. User submits when there tiles on board not adjacent to other tiles or when there are tiles forming words which are not recognized by the dictionary the game is based on.
 - 5.1.1. Server sends error message back.
 - 5.1.2. Player gets notified about invalid submission.
- 5.2. User already placed tiles this turn:
 - 5.2.1. An information popup shows up asking for confirmation.
 - 5.2.2. Tiles placed this turn are returned back to the rack.
- 5.3. Game bag holds less tiles than player selected to exchange
 - 5.3.1 The player is notified about the amount of tiles in the bag.

Sub-Variations

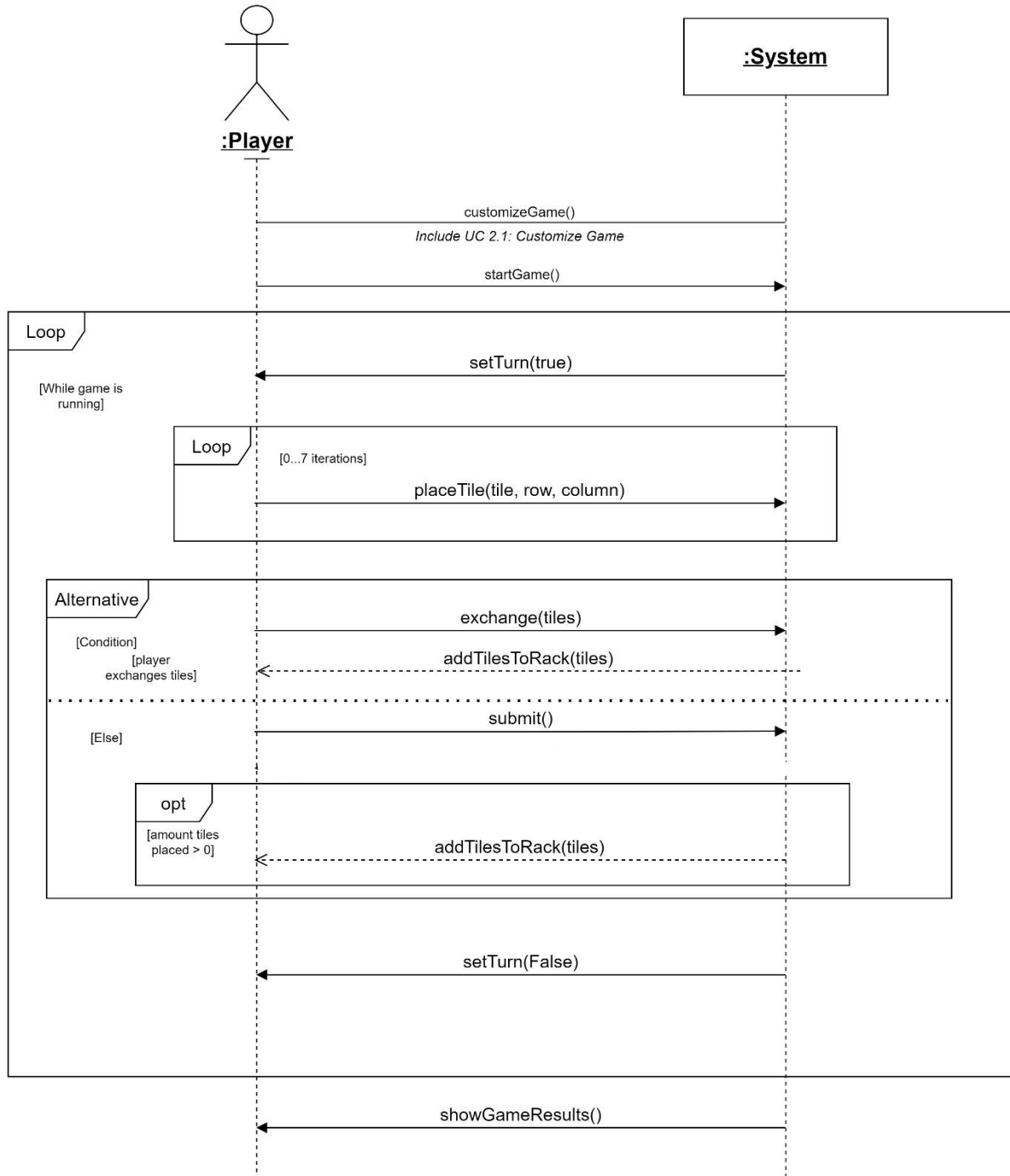
- 5. Player clicks 'exchange' and selects tiles on rack
 - 5.1 All tiles placed on the board in this turn are returned back to the player
 - 5.2 Game takes selected tiles and puts them into the game bag
 - 5.3 Game returns equals amount of tiles out of the bag (without the player's tiles)

Due Date

01.05.2021

System Sequence Diagram

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Operation Contracts

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Contract 2.1: customizeGame

Operation: customizeGame () : void

Cross References: UC 2.1: Customize Game

Preconditions:

- Player was in game lobby and is host of lobby

Postconditions:

- Optionally Player instances were associated with game lobby
- Lobby was customized (see UC 2.1)

Contract 2.2: startGame

Operation: startGame () : void

Cross References: UC 2: Play Scrabble

Preconditions:

- Players was in game lobby and is host of lobby

Postconditions:

- All player instances were associated with game and game was associated with every instance of player in lobby

Contract 2.3: placeTile

Operation: placeTile (tile : Tile, row : integer, column : integer) : void

Cross References: UC 2: Play Scrabble

Preconditions:

- Player's association with game was running
- player.turn was true
- BoardField instance bf, associated in given row and column of instance board associated with the game, had no existing association with any instance of Tile

Postconditions:

- given tile was disassociated from player
- tile was associated with above-mentioned BoardField instance bf

Contract 2.4: exchange

Operation: exchange (tiles : List<Tile>) : void

Cross References: UC 2: Play Scrabble

Preconditions:

- Player's association with game was running
- player.turn was true
- size of list *tiles* was equal or greater than 1
- list game.bag had more Tile instances than size of list *tiles*

Postconditions:

- tiles placed in this turn were reassociated with player and disassociated with the respective BoardField instance.
- every selected instance of Tile was disassociated with player and associated with game
- equal amount to *tiles* Tile instances were disassociated with game and associated with player
- player.turn became false

Contract 2.5: submit

Operation: submit () :

Cross References: UC 2: Play Scrabble

Preconditions:

- Player's association with game was running
- player.turn was true
- placements on the board were valid (or none at all)

Postconditions:

- Player.turn became false