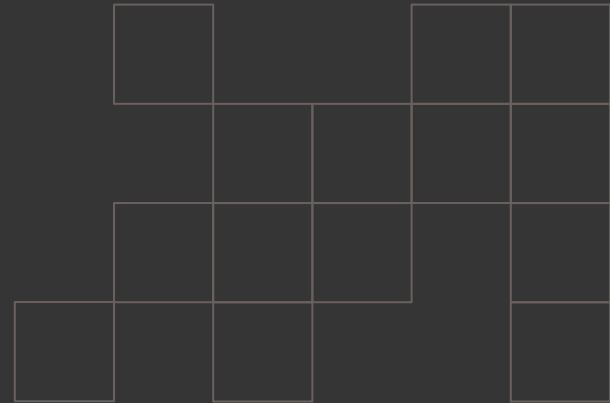
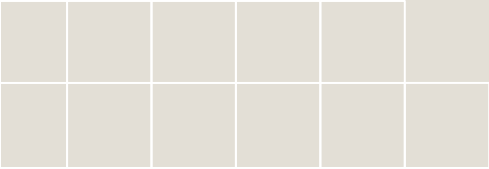


Milestone 3: Scrabble





Game Overview

Scrabble is a classic word game where players use letter tiles to form words on a grid. Each word formed scores points based on the value of the tile and the bonus point squares on the board. The game ends when the tiles run out, and once one player empties their hand of all tiles. The highest scoring player wins. Our online version supports real-time gameplay, chat, and synchronized state using Socket.IO.

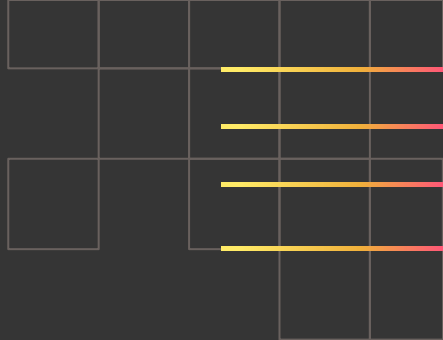


API Endpoints

- Create Game
- Join Game
- Start Game
- Submit Word
- Pass Turn
- Swap Tiles
- Leave Game
- Chat

Submit Word

POST /api/games/:game_id/submit-word



Validation Checks

- User in game and logged in
- Game exists
- The current turn matches player
- Placement letters are a subset of the current hand
- All coordinates on the board
- Target placements are empty
- The word is in a horizontal or vertical line with no gaps
- At least one tile is adjacent to an existing tile. On first turn, one tile must be in the center
- Word must exist in the dictionary
- Any other words formed must exist in the dictionary

State Updates

- Insert tiles on board
- Delete tiles from hand
- Add new tiles to hand
- Update player's score
- Update turn order
- Check for game end and end if needed

Socket.io Events

- game:board:update
- game:score:update
- game:hand:update
- game:turn:change
- game:ended (if needed)

Start Game

POST /api/games/:game_id/start

Validation Checks

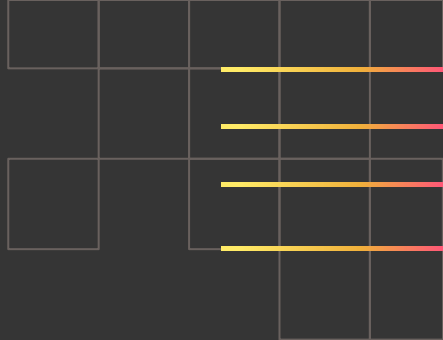
- game with game_id exists
- game has at least 2 players
- game has not already started
- requesting user is the lobby owner

State Updates

- update games table > set status to “active” and save start_time
- create and shuffle the bag
- deal 7 random tiles to each player (insert into player_hand table)
- set current_turn_player_id
- initialize the board

Socket.io Events

- game:started
- game:hand:update
- game:turn:change



Socket.io Events

Global

- global:chat:message

Lobby

- lobby:game:created
(New game)
- lobby:game:updated
(Player joins)

Game

- game:player:joined
- game:player:left
- game:board:update
- game:score:update
- game:turn:change
- game:turn:pass
- game:started
- game:ended
- game:chat:message

Private (Player)

- game:hand:update
- game:tiles:swap
(Player swaps tiles in hand)
- game:action:invalid