

CS4530 Final Project: “Battle Ship”

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Our Feature: Battle Ship

In its current state, CoveyTown provides a place for people to walk around and have discussions, but it has few other activities. The main interactive activity people can participate in is playing Tic Tac Toe. However, Tic Tac Toe is a very simplistic, boring game that finishes quickly and often in an unsatisfying tie. Our project aims to address this problem by adding another interactive activity into CoveyTown: the ability to play Battleship.

Battleship is a classic turn-based board game where two people take turns firing shots at the other player’s board in hopes of deducing the location of, and eventually sinking, their opponent’s ships. It is more complex than Tic Tac Toe, lasts longer, and can never end in a tie. Its addition to CoveyTown will provide a more fun activity for people to do together with more engaging graphics and playable capabilities.

Our Technology Stack & Design

We implemented the battle ship and login feature in the existing covey.town codebase. There are two different BattleShip objects, each defined as a game table, in the tilemap. These objects are constructed upon the map loading and rendered using Phaser. When a player goes near a BattleShip table, they can hit the spacebar to start a new game. A React/Chakra modal will appear where users can track their performance against others within BattleShip via a firebase database, they can also join a game, choose between a single and multi-player game, and change the dimensions of the board. When a user clicks the “start game” button, the backend is called and a new game is instantiated with chosen dimensions and player-mode. Additionally, when the user clicks the solo game button, they can play against an AI opponent. The game is split into two phases: one where each player sets up their boats on the board and randomizes boats (if desired); one where each player takes turns guessing where their opponents’ ships are. Visual elements, such as sprites, colors, and animations help guide the player through the game. We also added a login feature on the home page, which requires users to login with a username and password in order to make progress/win tracking possible for games.

Our CI/CD pipeline runs automated test suites on the frontend/backend components and deploys it via render.com.

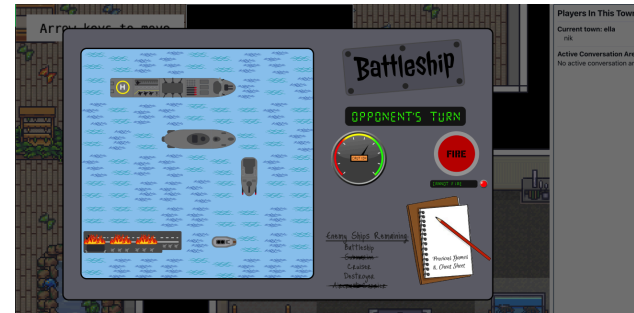
Future Work

Future work may include adding different boat sprites, introducing the ability to rotate boats during the arranging boats phase, allowing users to have an extra turn if they guess where a ship piece is correctly, and improving the AI single player mode so that the AI has multiple difficulty levels (easy, medium, hard, expert). There are other

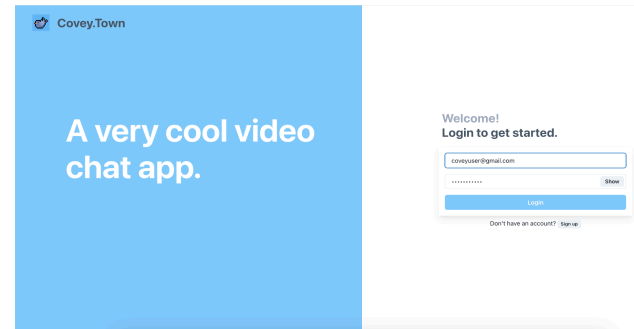
features that could be extended upon as well, such as adding database support for all games as opposed to just BattleShip in the future.

Demo and Source

Our demo site is available at <https://coveytownbattleship.onrender.com/>, and our code is at <https://github.com/neu-cs4530/spring24-project-team-208>



BattleShip is shown as a playable game area.



Users can log in and keep track of their game history here.



Users can join a BattleShip game with the BattleShip menu.