CS 4530 Final Project: Whiteboard

Group 705: Duy Tran, Oliver Baer-Benson, Zhang Tingrui

Motivation

Imagine you and your friend are chatting on Covey.town, and you suddenly have an idea that you want to show them. You tried to explain to them in words but it is not clicking (maybe the idea is too abstract, or your friend is just a visual learner). Then, you grab a pen and paper to show them a diagram with your camera, but you stop yourself. You think, "this would be so much easier if I could have a shared board between two people".
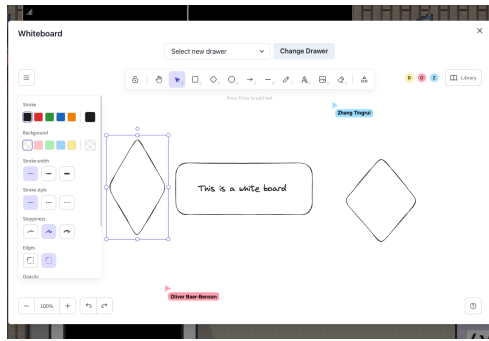
Core stack

- Excalidraw for displaying the board
- ChakraUI for styling components
- socket.io for transferring board state

Demo site & Source code

Architecture
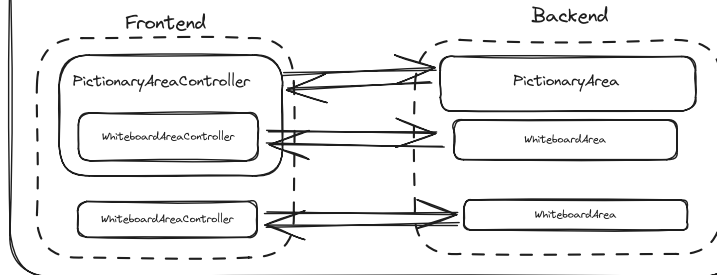
Core Feature: Whiteboard

Me and the team working on the design.

This is an area where you can share your ideas with everyone else in the town. Using the flexible tools that Excalidraw gave us, you can quickly map out the technical design for a new feature. If the board is too crowded, you can always find your viewers by their pointers. Since only the chosen one can hold Excalidraw, viewers cannot draw on the board. However, you can quickly switch drawer with the press of a button.
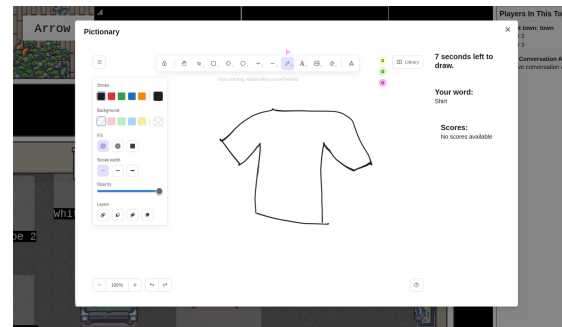
Design

The feature requires two additional InteractableAreas in the Town, one was WhiteboardArea which inherits the InteractableArea class, and the other is PictionaryArea which is similar to TicTacToeArea and inherits from GameArea. The board state from WhiteboardArea is sent from the drawer to the backend and then distributed to the viewers through websockets. The Pictionary Game reused the Whiteboard component by having a separate instance of the WhiteboardAreaController that the game can access for joining/leaving room behavior and changing the drawer (everything else is handled by the whiteboard instance itself).

Extra Feature: Pictionary Game

A round of PictionaryGame featuring an exceptional rendition of a shirt.

As a demonstration of how you can use our Whiteboard component in multiple ways, we created a game in the style of Pictionary (one player draws, the rest guess what they're drawing). We selected this feature because it both highlights the Whiteboard with its core mechanic, and adds to Covey.town's goal of bringing people together with it's simple, collaborative gameplay.

Future Work

The addition that we think would benefit this feature the most in future would be the ability for multiple people to draw at once. We considered adding this feature originally, but after finding a blog post by the creators of Excalidraw detailing their struggles with concurrent drawing, we decided it was out of scope. Tackling this feature would involve dealing with race conditions, synchronizing state without an easy single source of truth, and a lot of edge cases. Furthermore, having only one drawer with the ability to switch fits well with the Pictionary GameEven with the challenge, it would almost certainly be worth implementing given how much it would add to the collaborative aspect of the Whiteboard.