



FitGame

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Summary

The game begins by asking for your name for a more personalised experience with a choice of mode 1 or mode 2. Mode 1 is the standard game mode with a slider to select your desired difficulty, 1 being the easiest and 5 being the hardest. Below the slider are rules and instructions for the game. When the game starts there will be a board with some pieces already in it, the higher the difficulty, the less amount of pieces that will already be placed. Under the board there will be all the pieces in a North orientation, 2 of each colour to represent the different protrusions. This was chosen as opposed to having the one piece and an action to change the number of protrusions because it makes the pieces easier to see instead of having to constantly change the pieces. At the top right there is a home button and a refresh button. The home button takes you back to the initial screen where you enter your name and select the game mode. The refresh button resets the board to the original state it was given in. Once you complete the board you will be given the time it took to complete the puzzle. Mode 2 is an additional game mode that has fun various shapes for a change instead of the typical whole board.



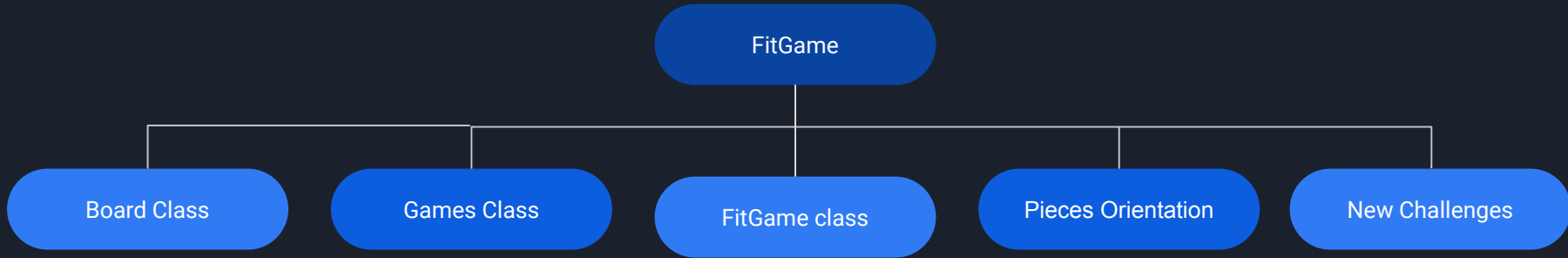
Problems

- Getting coordinates occupied by each pieces
 - For every piece placement, the length of the spine and its direction is used to find the coordinates occupied by the spine either vertically or horizontally. The remaining coordinates are then found by looking at every piece and listing the remaining coordinates that they occupy. Since patterns are found for certain pieces and orientations, they are grouped into the conditions that they fit into.
- Task-6: `getViablePiecePlacements()`
 - Was solved by getting all the possible translations of each orientation of available pieces that would still cover the given coordinate and testing all those pieces concatenated with the original placement to see if it was a valid string or not.
 - Had to duplicate `isPlacementValid` and `isPlacementWellFormed` but edit it so that it would not check for alphabetical ordering as not all pieces concatenated onto the original placement string would be in alphabetical order.
 - Initially code took a long time to run but then added new bits of code so that it would finish within the timeout duration.



Design approach

- Two images per piece for better and easy decision making
- Pieces disappear after snapping to the board to avoid color repetition



- Implements game in gui
- Prepares the board with chosen challenge
- Show pieces available to the player
- Contains methods to move and rotate available pieces

- Randomly chooses game objective depending upon difficulty level chosen
- Provides solution to check completion of the game

- Checks if player move is valid
- Checks for overlapping
- Checks color repetition
- Get possible moves for the player depending on board state

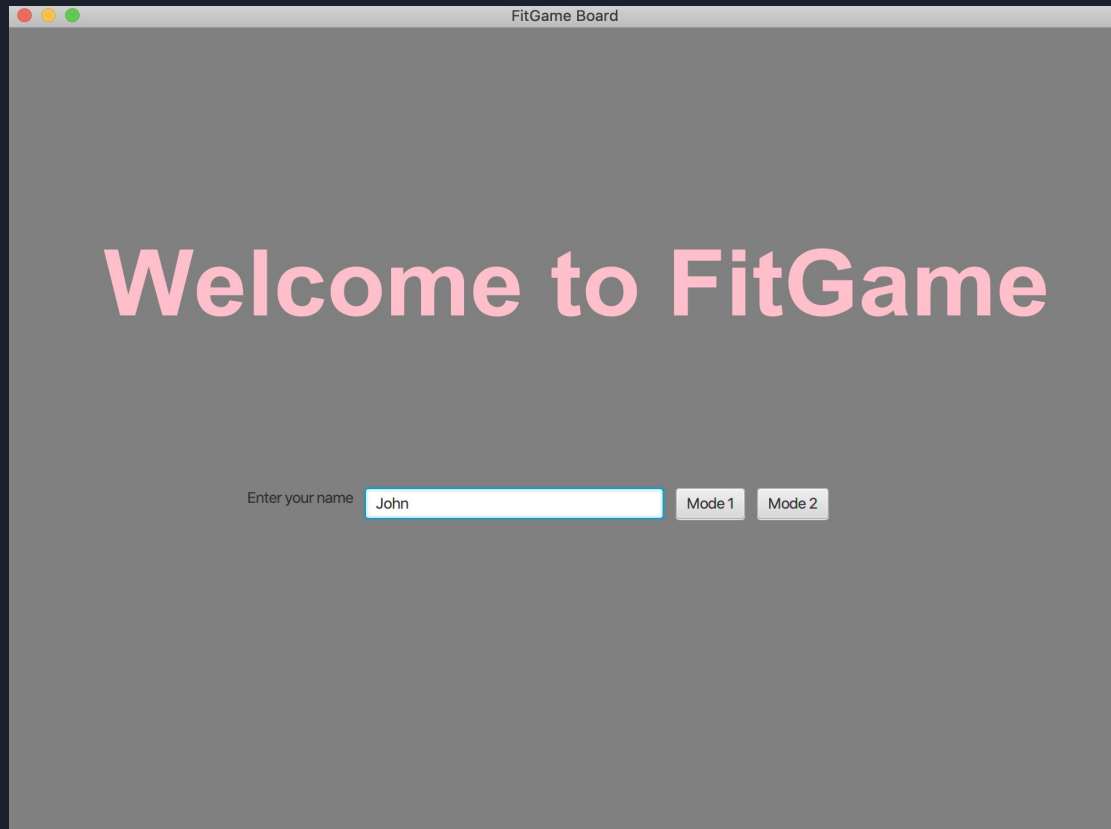
- Includes methods related to pieces given their placement
- Get occupied and available colours
- Get coordinates occupied by pieces which is used for other methods

- Generates interesting challenges
- Includes initial placements, solutions and shapes for every challenges
- Includes methods needed to related to interesting challenges

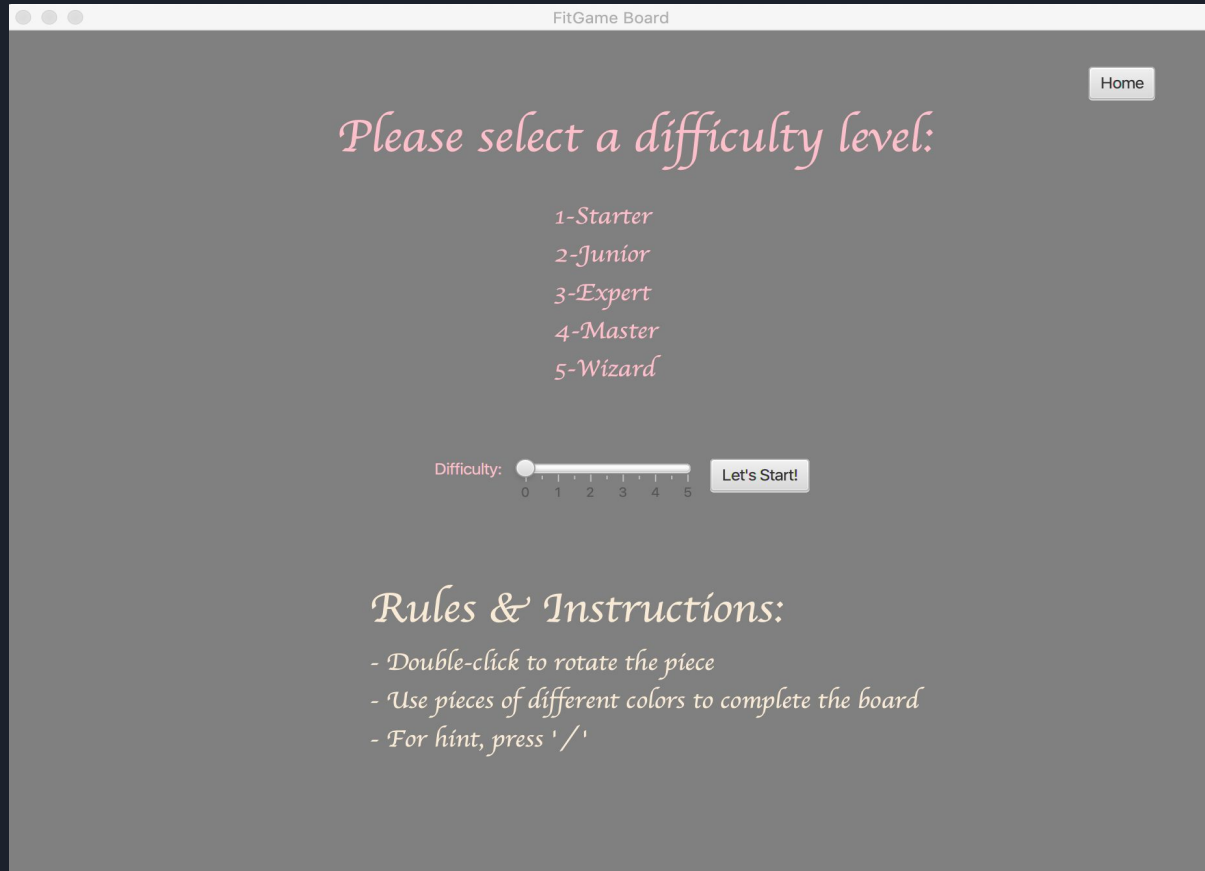


Features

- Two modes
 - Mode 1- Normal challenges
 - Mode 2- Interesting challenges
- Player name for personalisation
- Home button to return to the main menu at any instance
- Refresh button to reset board to initial state for same challenge
- Double click pieces to rotate
- '/' to get a hint
- Timer

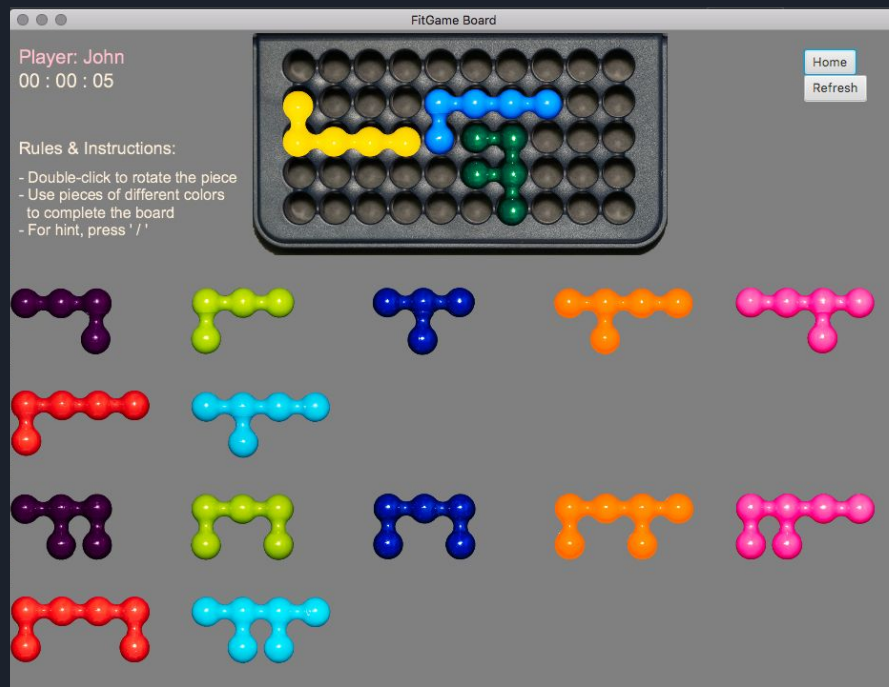
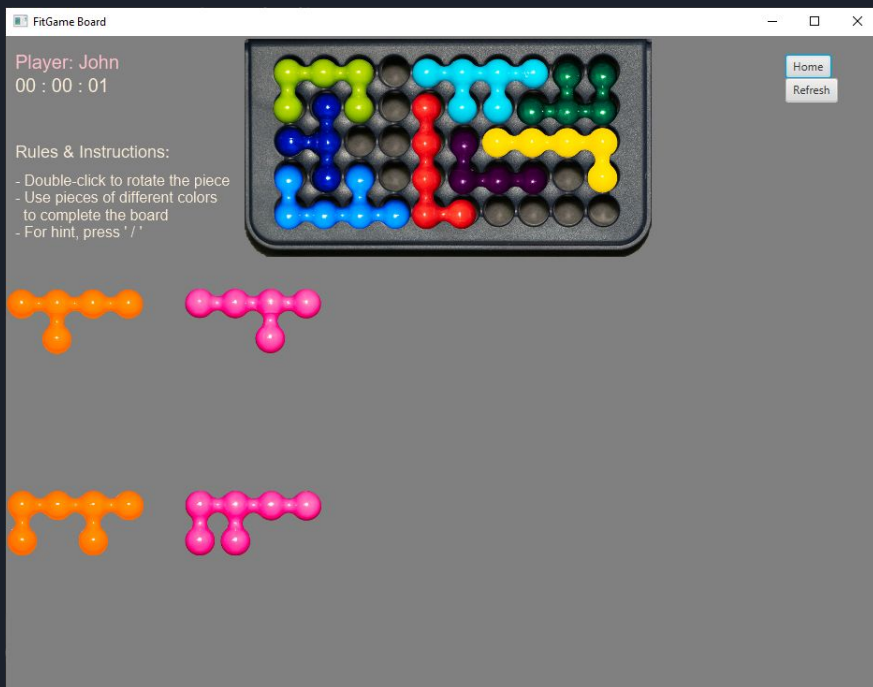


- Player can enter name
- Mode 1 for normal challenges
- Mode 2 for interesting challenges



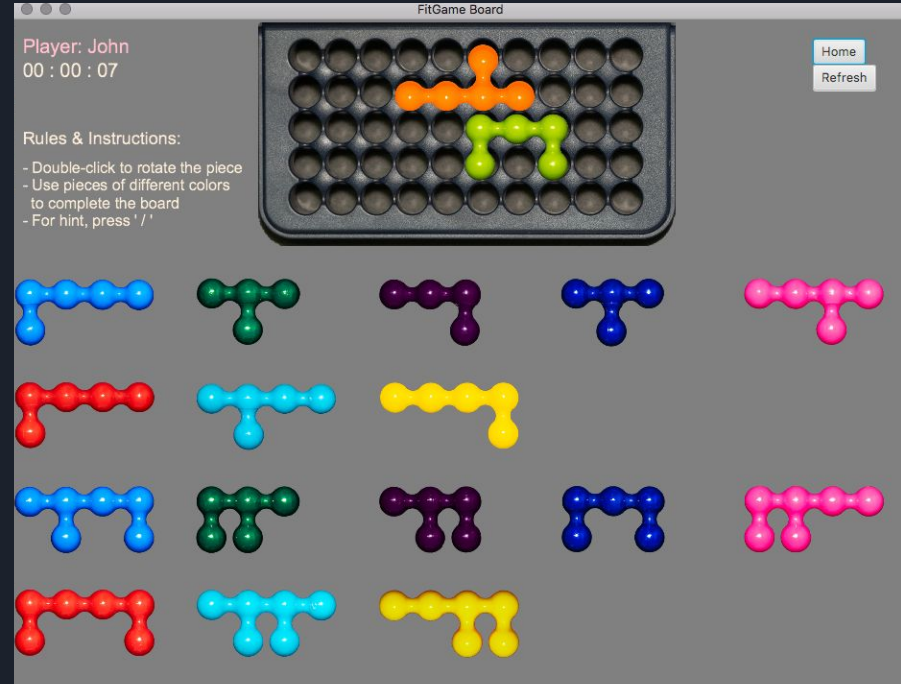
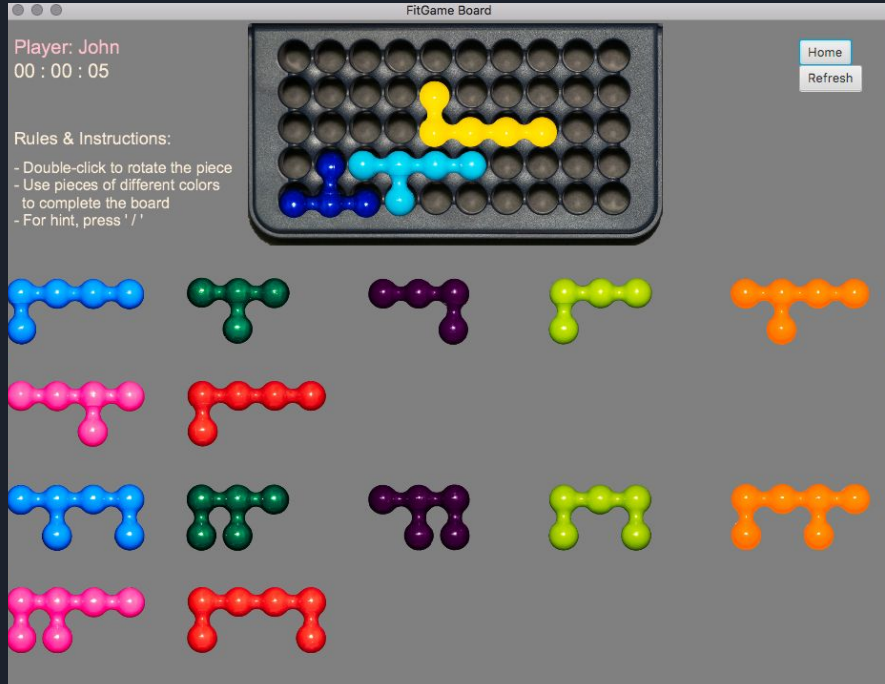
- Player can choose difficulty level
- 1 being the easiest and 5 being the hardest

Mode-1: Normal Challenges:



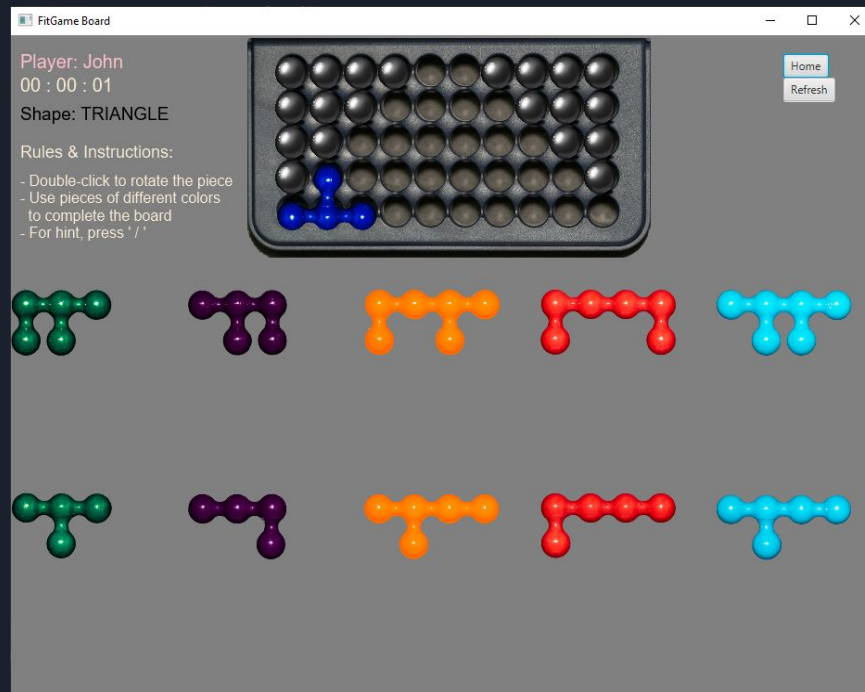
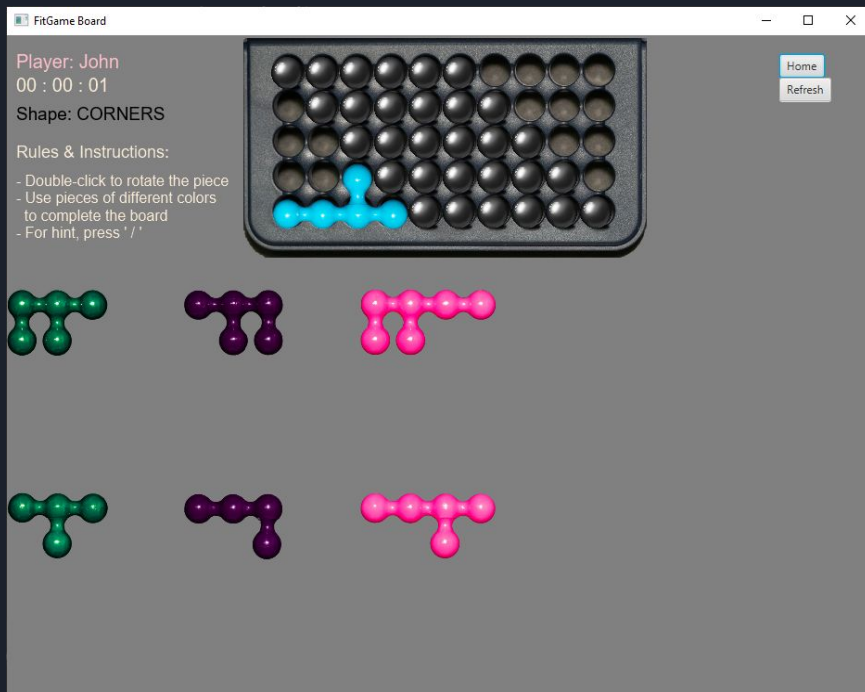
Difficulties 1 and 3

Mode-1: Normal Challenges:



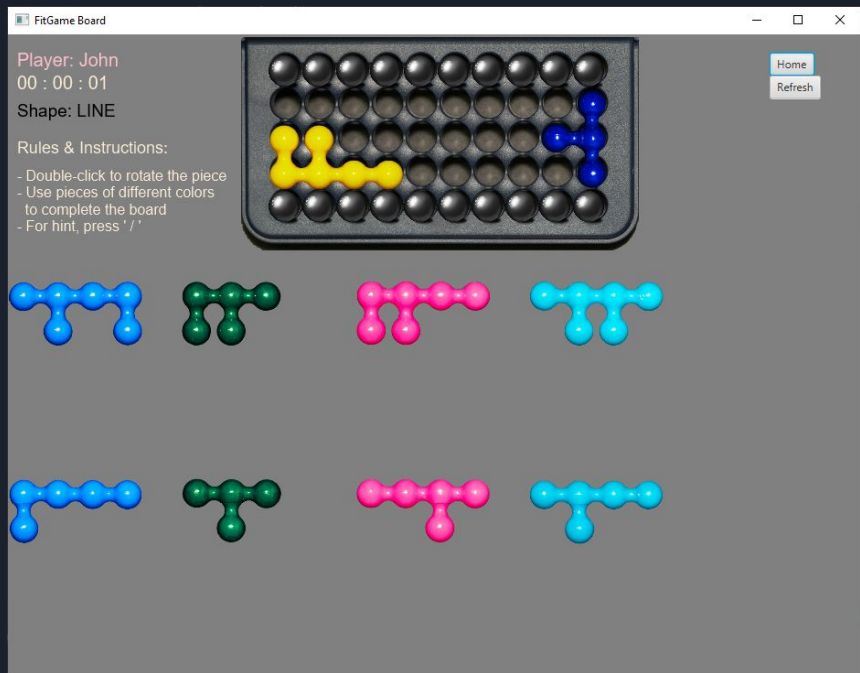
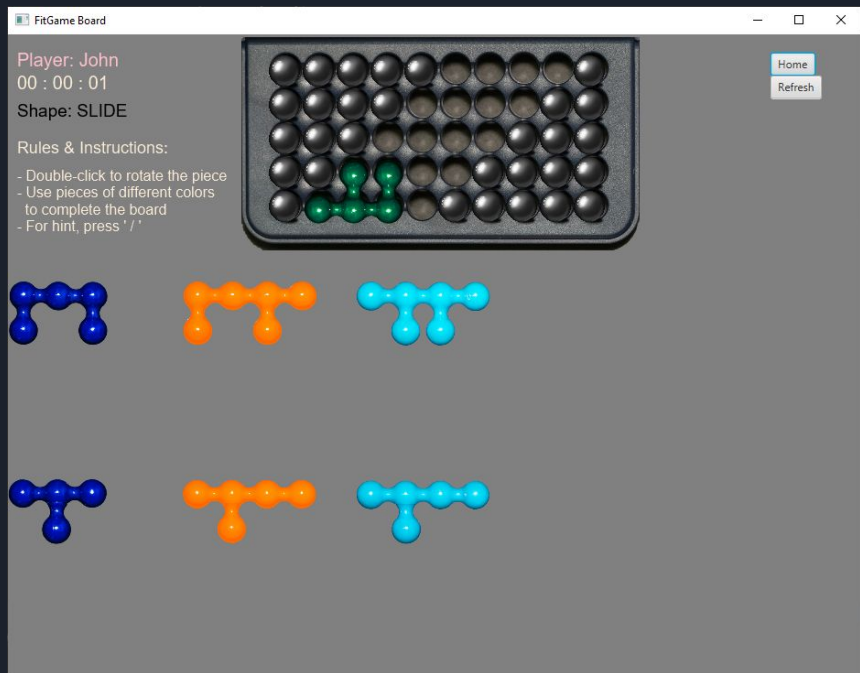
Difficulties 4 and 5

Mode-2: Interesting Challenges:



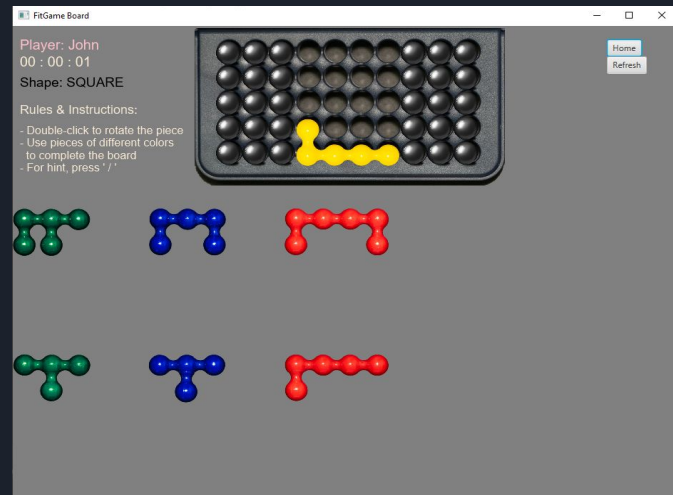
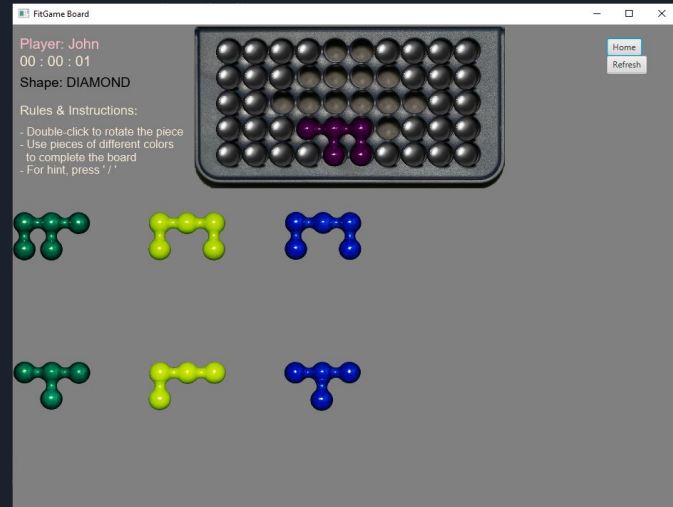
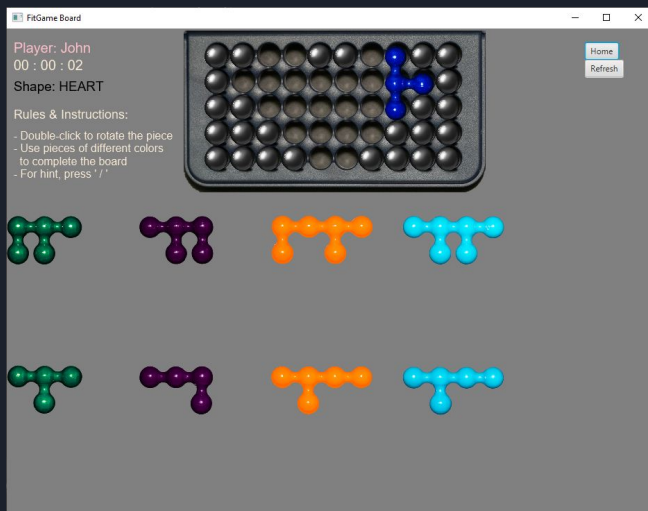
Shapes: corners & triangle

Mode-2: Interesting Challenges:

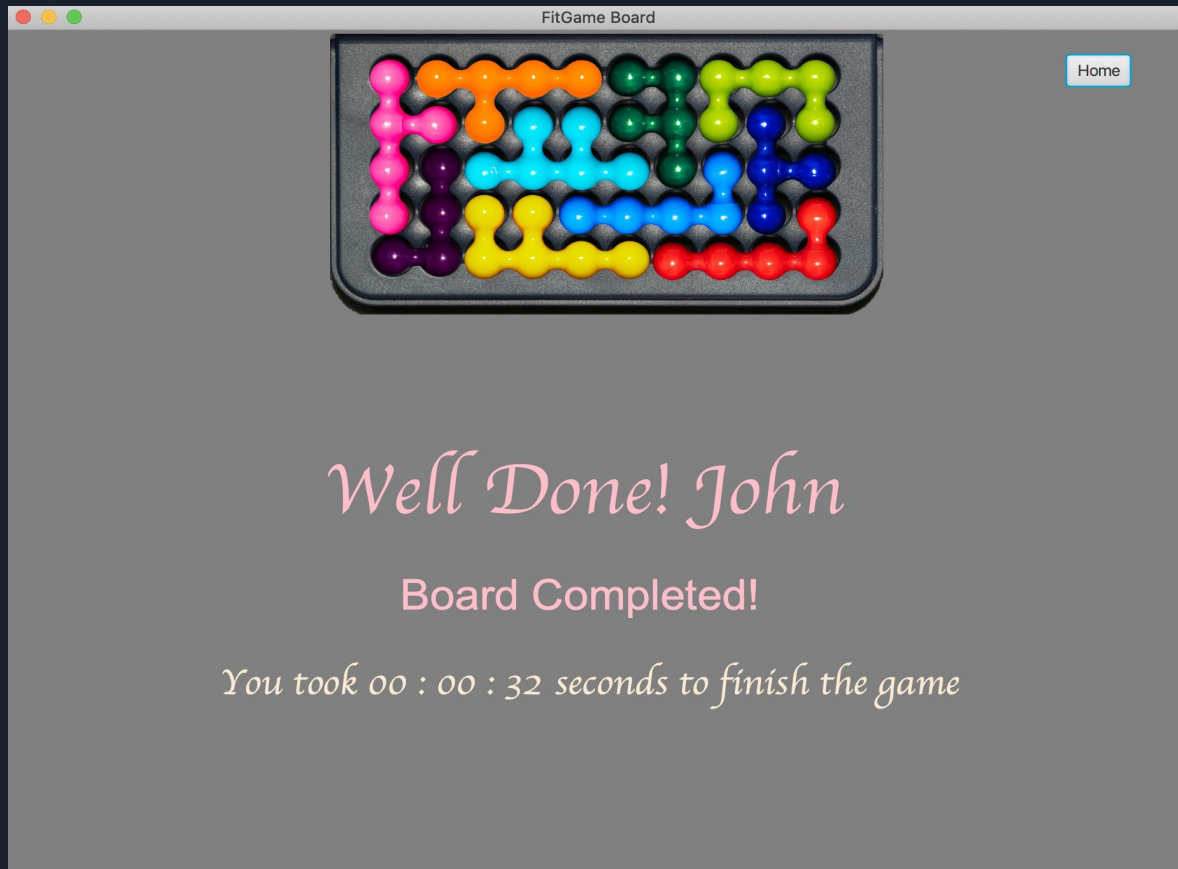


Shapes: slide and line

Mode-2: Interesting Challenges:



Shapes: heart, diamond and square



End screen



Q & A session: