

### Reversi (Othello) Game

The goal of our project is to make a basic two-person reversi game. The reversi board is an 8x8 grid of squares which the players can place their pieces. Each piece has a black side and a white side; each player is assigned to a different color. There will be two game modes: player versus computer and player versus player. On your turn, you place your piece on the board such that it encapsulates one or more of the opposing player's pieces, either vertically, horizontally, or diagonally. All of your opponent's pieces that lie between your pieces are flipped and become your color. Your opponent then plays in the same manner as you. The game ends when there are no more legal moves and the winner is the player with the most pieces on the board.

We will implement the following pieces:

1. Reversi Game: creates a graphics window where the game will be played
2. Reversi Board: creates a  $n \times n$  game board
3. Player: Someone that plays reversi
4. Human: A user-controlled player of the game
5. Computer: A computer-controlled player of the game
6. Tile: The game pieces
7. Is Legal Move: Determines whether a legal move still exists on the board
8. Scorekeeper: Determines who has the greatest number of tiles on the board when the game ends

We will implement the following if time permits:

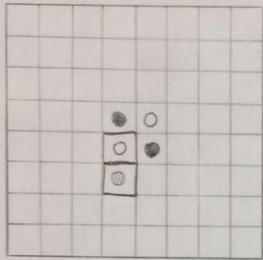
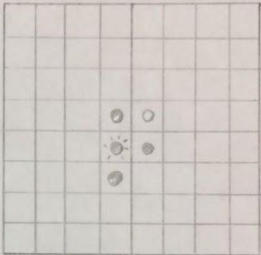
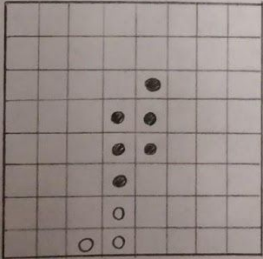
1. Allow the user(s) to choose the size of the game board
2. Allow the user(s) to change the color of the board or their pieces
3. Keep track of victories and losses

We are likely to use the following design patterns:

- Observer:
  - The scorekeeper (observer) is notified of the score from the reversi board (subject)
- Composite:
  - Graphics for all of the objects that are displayed in the reversi game
- Model-View-Controller:
  - The model is the information that tiles store, the controller allows players to move tiles, and the view is the reversi game window
- Strategy:
  - Tiles will have strategies for each type of player, and for players 1 and 2.

Who will do what:

We will work together in the beginning to establish the basics of the overall game class and what each class will need to do. We will then each work individually on the most essential classes: reversi board and tile (Emilee), player (Danielle), and legal move (Miriam). After these classes are created, we will divide any additional work evenly between all group members. We will try to work on our individual tasks at the same time so that we can collaborate to solve possible roadblocks that arise.

<p>Player placing tile</p>  <p>Player One's Turn</p>	<p>Tile changing from white to black</p>  <p>Player One's Turn</p>
<p>No available moves</p>  <p>No available moves <span>Pass</span></p>	<p>Winning the game</p> <div data-bbox="974 1501 1230 1757"><p>Player 1 has 34 ○ pieces.</p><p>Player 2 has 30 ● pieces.</p><p>Player 1 wins!</p></div>