

Software Development Report
CSC 221: Programming II: Fall 2023
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Inheritance Lab: Adding Additional Games

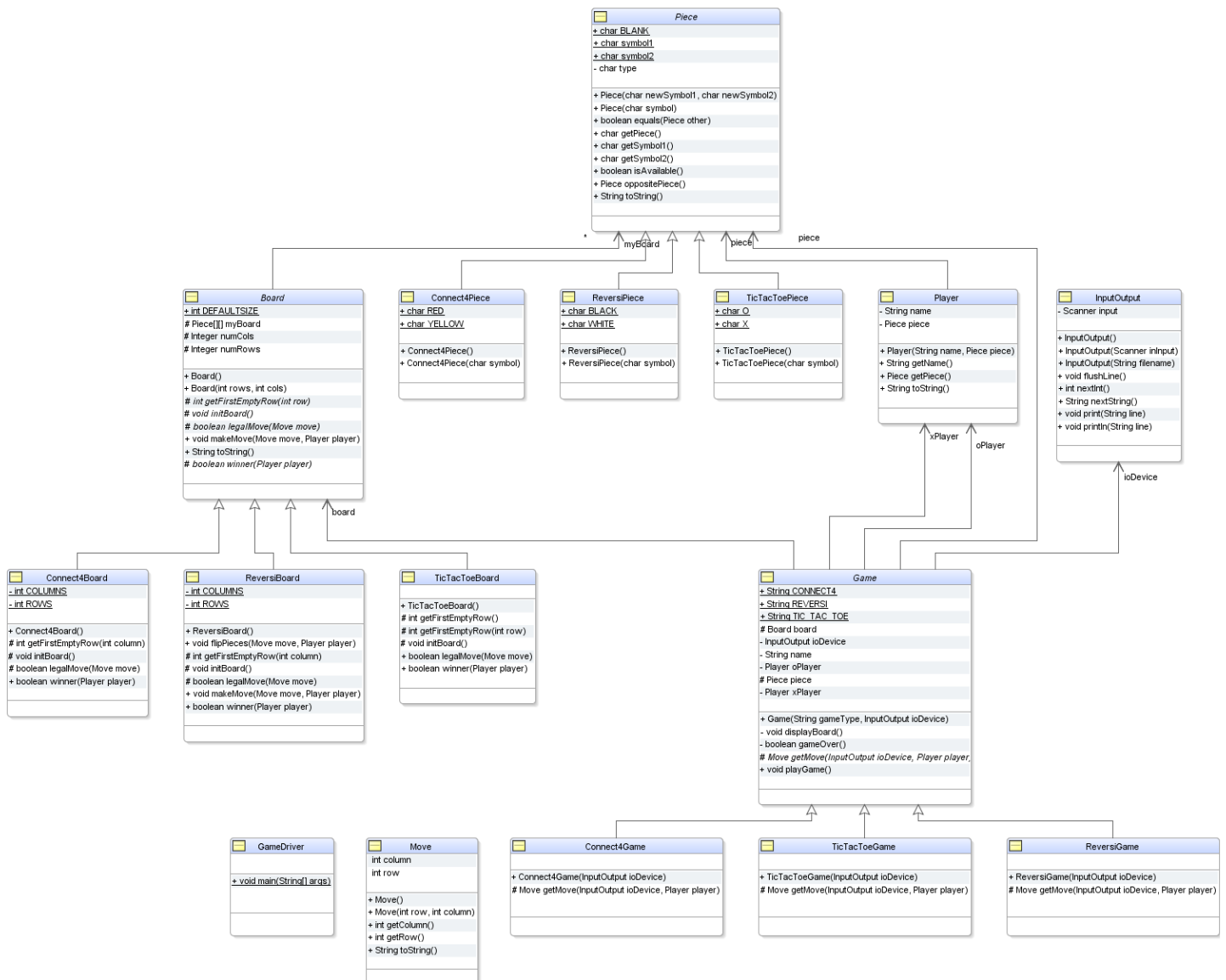
Problem Summary

The goal of this program is to expand the text-based Tic Tac Toe game by adding other games to the program and this way learning how to use inheritance and code in a team. Enmanuel and I chose to implement Connect4 and Reversi as the two required additional games. It consisted of adapting and expanding the classes Board, Game, and Piece in order to make the inheritance possible.

Implementation Requirements

- Compile all classes
- Run *GameDriver.java*
- Choose a game to play
- Enter player names
- Input desired movements for the game using the keyboard

System Design



Acceptance Testing Plan

Name	Description	Input	Expected Output	Actual Output	Pass?
Test1	Play TicTacToe	When asked what game to play select option 1	TicTacToe can be played	<pre> 1. Tic Tac Toe 2. Connect 4 3. Reversi Select a game (1, 2, or 3): >> 1 >> What is the name of Player 1? a >> What is the name of Player 2? b Welcome to Tic Tac Toe! - - - - - - - - - >> It is a's move: </pre>	Yes
Test2	Play Connect4	When asked what game to play select option 2	Connect4 can be played	<pre> 1. Tic Tac Toe 2. Connect 4 3. Reversi Select a game (1, 2, or 3): >> 2 >> What is the name of Player 1? a >> What is the name of Player 2? b Welcome to Connect 4! - </pre>	Yes

				▶▶ It is a's turn, choose a column number:	
Test3	Insert names	When asked for player 1 and player 2 names, insert any names	Works, so it proceeds to game	▶▶ What is the name of Player 1? Manel ▶▶ What is the name of Player 2? Enma Welcome to Tic Tac Toe! _ _ _ _ _ _ _ _ _ ▶▶ It is Manel's move:	Yes
Test4	TTT First move	▶▶ It is Manel's move: 1 ▶▶ 1	X in the middle box of the board	_ _ _ _ X _ _ _ _ ▶▶ It is Enma's move:	Yes
Test5	TTT Second player's turn	▶▶ It is Enma's move: 2 ▶▶ 2	O in the bottom right of the board	_ _ _ _ X _ _ _ O ▶▶ It is Manel's move:	Yes
Test6	Invalid move	Place move where there's already a piece	Illegal move	▶▶ It is Enma's move: 2 ▶▶ 2 Illegal move	Yes
Test7	TTT Win vertically	Make the required moves for one of the players to win with a vertical line of 3 pieces in a row	Player X/O is the winner	O X _ _ X _ _ X O Manel is the winner.	Yes

Test8	TTT Win horizontally	Make the required moves for one of the players to win with a horizontal line of 3 pieces in a row	Player X/O is the winner	<pre> O O O X X _ X _ _ Enma is the winner.</pre>	Yes
Test9	TTT Win diagonally	Make the necessary moves for one of the players to win with a diagonal line of 3 pieces in a row	Player X/O is the winner	<pre> X _ _ O X _ O _ X Manel is the winner.</pre>	Yes
Test10	TTT Test draw	Fill in the board without any of the players winning	Draw!	<pre> >> It is Manel's move: 1 >> 2 X O X O X X O X O >> It is Enma's move:</pre>	No
Test11	C4 First move	3 to play the middle column	R in the middle bottom of the Board	<pre> >> It is a's turn, choose a column number: 3 _ R _ >> It is b's turn, choose a column number:</pre>	Yes

Test12	C4 play on top / player2's turn	3 to play middle column on top of the first piece	Y on top of R in middle column	<p>▶▶ It is b's turn, choose a column number: 3</p> <pre> - Y - - - - - - R - - - </pre> <p>▶▶ It is a's turn, choose a column number:</p>	Yes
Test13	Invalid move	Fill up a column and try to play a piece there	Illegal move	<pre> Y - - - - - R - - - - - Y - - - - - R - - - - - Y - - - - - R - - - - - </pre> <p>▶▶ It is a's turn, choose a column number: 0</p> <p>Illegal move</p>	Yes
Test14	C4 Win vertically	Make the required moves for one of the players to win with a vertical line of 4 pieces in a row	Player R/Y wins!	<p>▶▶ It is b's turn, choose a column number: 3</p> <pre> - - - - - - - - Y - - - - - - Y - - - - - R Y - - - - - R Y - - - - - R R - - - </pre> <p>b is the winner.</p>	Yes
Test15	C4 Win horizontally	Make the required moves for one of the	Player R/Y wins!	<p>▶▶ It is b's turn, choose a column</p>	Yes

		players to win with a horizontal line of 4 pieces in a row		<pre> number: 4 - - - - - - - - - - - - - - - R - - - - - R R - - - - - R Y Y Y Y - - b is the winner. </pre>	
Test16	C4 Win diagonally	Make the necessary moves for one of the players to win with a diagonal line of 4 pieces in a row	Player R/Y wins!	<pre> >> It is a's turn, choose a column number: 3 - - - - - - - - - - - - - R - - - - - R Y - - - - R R Y - - - R Y Y Y R - - a is the winner. </pre>	Yes
Test17	C4 Test draw	Fill in the board without any of the players winning	Draw!	<pre> >> It is a's turn, choose a column number: 6 Y Y Y R Y Y Y R R R Y R R R Y Y Y R Y Y Y R R R Y R R R Y Y Y R Y Y Y R R R Y R R R >> It is a's turn, choose a column number: </pre>	No

Estimation of Time required

In my Software Development Report, I projected this program to take me 13/14 hours between coding, testing, and SDR. It ended up taking me about 20 hours.

Outside Resources used

- Github to code along with my partner
- JDeveloper to generate the UML
- Stackoverflow to understand Inheritance and abstract classes
- TicTacToe Lab classes from the posted correction

Security Report

- Using third-party code is not the safest thing to do
- Program is more secure because of inheritance

Ethical Report

- As all games, this can cause addiction
- Allows two people to play and have fun together

Future Improvements

- Make the program GUI

Lessons Learned

- What inheritance is and how to use it
- How to create a Github directory
- How to use Github as a team
- Group programming

Improvements of Work

- Accurate UML relations
- Code posted in GitHub