**Software Development Report**
**CSC 221: Programming 2: Fall 2023**
**Manel Casado**
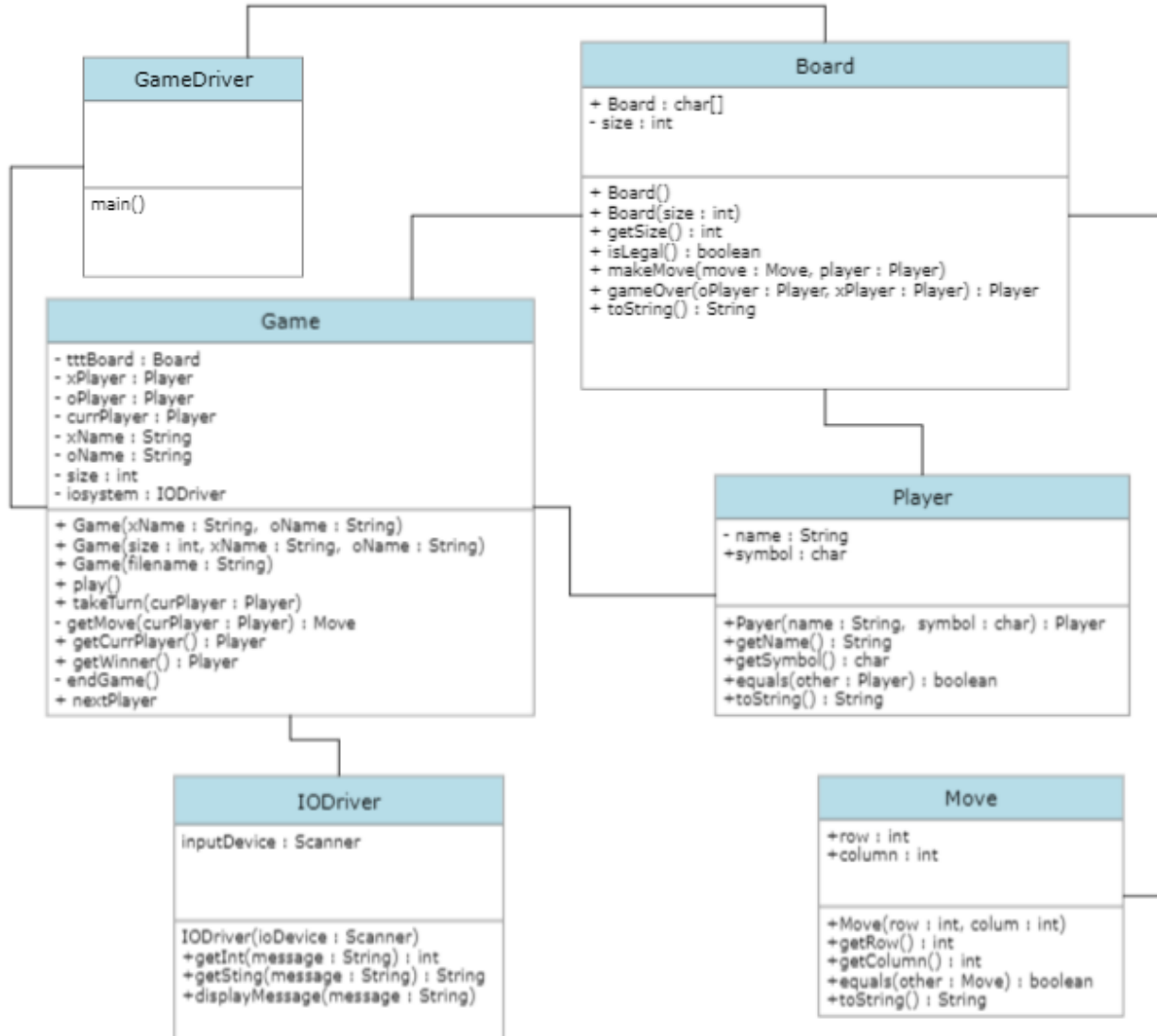**Objects Lab: Tic Tac Toe Game**

## Problem Summary

The program is to create a TicTacToe game using text input. The game allows two players to take turns making moves on a standard 3x3 game board (or other size if desired) until one player wins by forming a line of their symbol ('X' or 'O') horizontally, vertically, or diagonally, or the game ends in a tie when the board is full.

## Implementation Requirement

- The game can be started by providing the names of both players (generating a default 3x3 board)
- It can also be started by providing the names of both players and the desired size
- Or doing the same but trough a text file.

## System Design

## Execution Instructions
- Compile *Board.java, Game.java Player.java, Move.java, IODriver.java and GameDriver.java*
- Run the code at *GameDriver.java* where the main() method is.

## Acceptance Testing Report

| Name | Description | Input | Expected Output | Actual Output | Pass? |
|------|-------------|-------|-----------------|---------------|-------|
| Test1 | Creating game | Game game;<br><br>game = new Game(3,"Manel", "Juan");<br>    game.play(); | 3x3 board with players Manel and Juan | 3x3 board with players Manel and Juan | yes |
| Test2 | First move | `Welcome to Tic Tac Toe!`<br>▶▶\| `Enter the size of the board (e.g., 3 for 3x3): 3`<br>▶▶\| `Enter the name of Player X: manel`<br>▶▶\| `Enter the name of Player O: juan`<br><br>`    _ \| _ \| _`<br>`   --+---+--`<br>`    _ \| _ \| _`<br>`   --+---+--`<br>`    _ \| _ \| _`<br><br>`    manel, enter row (0-2):`<br>▶▶\| `1`<br>`    manel, enter column (0-2):`<br>▶▶\| `1` | `\|  \|`<br>`--+---+--`<br>`  \|X\|`<br>`--+---+--`<br>`  \|  \|` | It's a draw!<br>It's a draw!<br>`\|  \|`<br>`--+---+--`<br>`  \|X\|`<br>`--+---+--`<br>`  \|  \|` | yes, not 100% |

| Test | Description | Steps | Expected | Actual | Pass |
|---|---|---|---|---|---|
| Test3 | Second player turn | ▶▶\| juan, enter row (0-2): <br> ▶▶\| 0 <br> \| juan, enter column (0-2): <br> ▶▶\| 0 | `O\|  \|`<br>`--+---+--`<br>`  \|X\|`<br>`--+---+--`<br>`  \|  \|` | `O\|  \|`<br>`--+---+--`<br>`  \|X\|`<br>`--+---+--`<br>`  \|  \|` | yes |
| Test4 | Make manel win vertically | Make moves with Manel (X) until he wins vertically | `O\|X\|`<br>`--+---+--`<br>`  \|X\|`<br>`--+---+--`<br>`  \|X\|O`<br><br>Player manel wins! | Player juan wins! | Yes, but wrong name |
| Test5 | Make manel win horizontally | Make moves with Manel (X) until he wins vertically | `O\|O\|`<br>`--+----+--`<br>`X \| X \| X`<br>`--+----+--`<br>`  \|X\|O`<br><br>Player manel wins! | Player juan wins! | Yes, but wrong name |
| Test6 | Make manel win in a diagonal | Make moves with Manel (X) until he wins diagonally | `X\| O \| O`<br>`--+---+---`<br>`  \|X\|`<br>`--+---+--`<br>`  \|  \|X`<br>Player manel wins! | Player juan wins! | Yes, but wrong name |
| Test7 | Test for draw | Make the needed moves to get a draw | `X  \|  O  \|  X`<br>`--+---+--`<br>`O  \|  X  \|  X`<br>`--+---+--`<br>`O  \|  X  \|  O`<br>It's a draw! | It's a draw!<br>`X \| O \| X`<br>`--+---+--`<br>`O \| X \| X`<br>`--+---+--`<br>`O \| X \| O` | No, always says it's a draw |

| | | | | `\| manel, enter row (0-2):` | |
|---|---|---|---|---|---|

**Time Spent**
14 hours total for code, testing, and SDR

**Outside Resources used**

Help from my dad for
understanding and developing
the IODriver class.

**Security Report**
No known security issues.

**Ethical Report**
Ethical use:  Can be used for entertainment.
Unethical Use: In an exaggerated point of view it could cause addiction like all games can at some point.

**Future Improvements**
-    Making the game work for different sizes.
-    Being able to detect a draw.
-    Implementing it using GUI.
-    Not outputting it's a draw in all moves even if they're not.
-    Output the correct player name when winning.

**Lessons Learned**
The importance of encapsulation and scalability.

**Improvements of Work**
-    Not letting the longest parts for the last 2 days before the due date.