

YOUTUBE LINK

https://www.youtube.com/watch?v=fO_OMG14PGQ

DESIGN RATIONALE

AS A GROUP OF 2, WE DID NOT IMPLEMENT ADVANCED FEATURES.

ALL DESIGN RATIONALE ANSWER IS FOCUSING ON WHAT WE HAVE IMPLEMENTED IN SPRINT 4 TO ACHIEVE A COMPLETE 9MM GAME.

Explain *why* you have designed the architecture for the advanced requirement(s) the way you have.

As we did not implement advanced functions, we will explain why we have implemented the Fly Piece Move and Detect End Game function.

We implemented Fly Piece Move the same as Move Piece Move in previous, because all of Movement in our application implemented the same Interface : Move. By doing this, we can keep all of them in the same structure, but different contents. This also helps us manage, maintain and use them easier with lower crashing risk.

We decided that the Board will be in charge of detecting when the game ends. The reason is the Board contains all of the piece and position information, which the End Game condition requires, and it is updated constantly after every turn. We believe that it is easier and more secure to access these data inside the Board class. When the Board detects End Game, it will signal to the Game class to give an announcement.

Explain *why* you have revised the architecture, if you have revised it. (*What has changed would have been shown in the revised class diagram. This one is about *why* it changed*).

In this Sprint, we did not make any significant changes but minor ones.

CHANGES ARE HIGHLIGHTED IN REVISED DIAGRAM.

In the previous Sprint, we have made some mistakes in creating and using the attributes in classes. We created some attributes public instead of private. This has violated the encapsulation rule. So we have changed all of them to private, then we need to add GETTER functions in classes to achieve the attributes values from the other classes.

Moreover, we have added some missing Abstract classes such as JLabel, JButton.

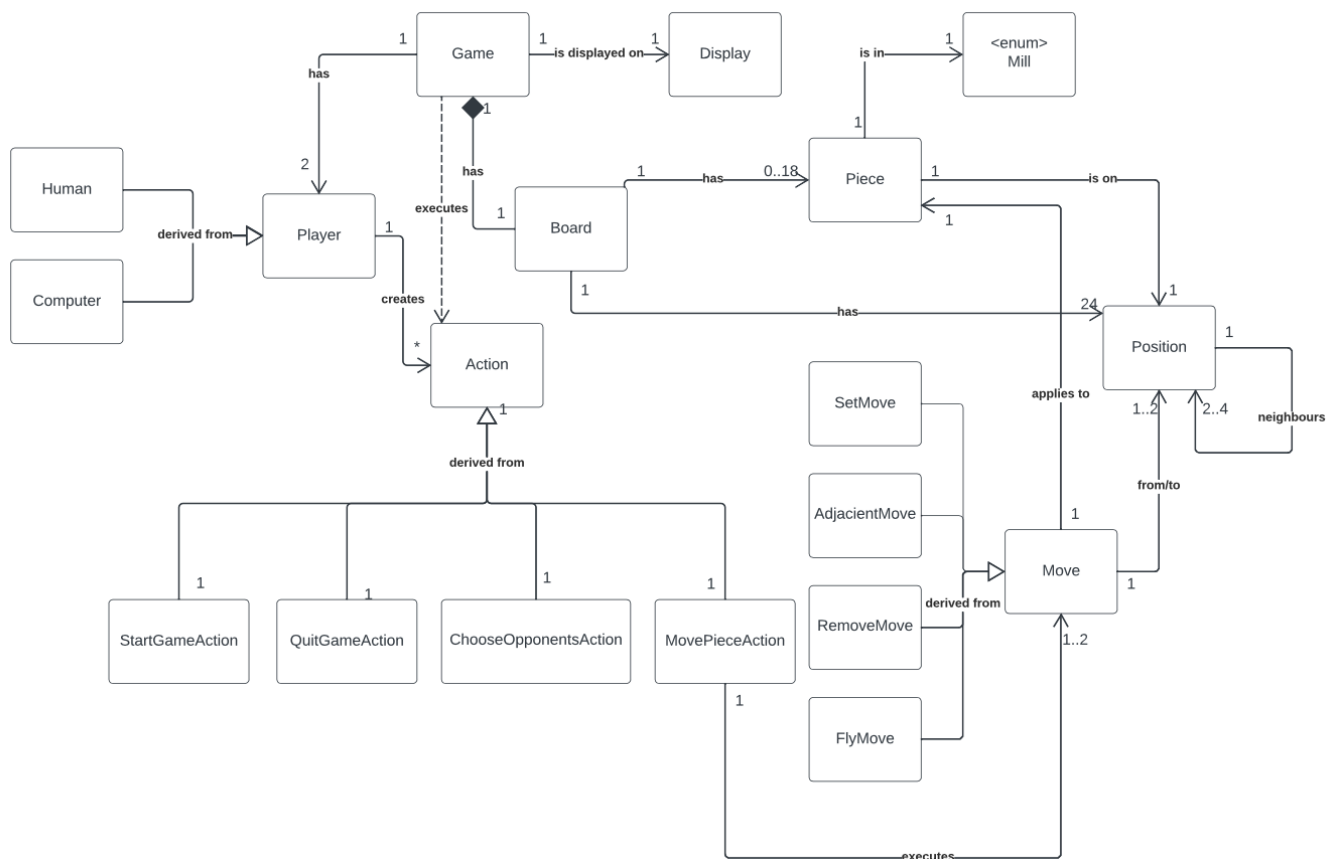
The other change is to synchronise the Move Interface. We found that there was repetition in Movement classes. For example: the getPiece function was used repeatedly in each class. So we put this function inside Move Interface.

Explain when your advanced feature was finalised (e.g. it is the same as we decided from sprint one; or we changed it in Sprint 3) and how easy/difficult it was to implement. e.g. was it easy to implement due to good design practice/pattern(s) that you have applied in the earlier Sprints (provide evidence)? Or was it difficult (such that you needed to rewrite the majority of the code) for the advanced feature?

In Sprint 04, we have to implement Fly Piece and Detect End Game functions to complete the game. I found that the process was pretty easy for us. It did not take us lots of time to complete the Game final phase, and I believe the main reason is a clear Design Structure. Thanks to the clear Domain Model, we were able to build a well structured Class Diagram. Based on the Class Diagram, we had a clear understanding and a clearer vision of what we will implement, class relationships. Moreover, considering applying all of the Rules and design Policies we must follow in Object Oriented Design has helped us avoid unnecessary mistakes while compiling our application. All we have to do is follow the Structure and implement Algorithm. I believe that with this structure, in the future, it will be very easy to add extra functions.

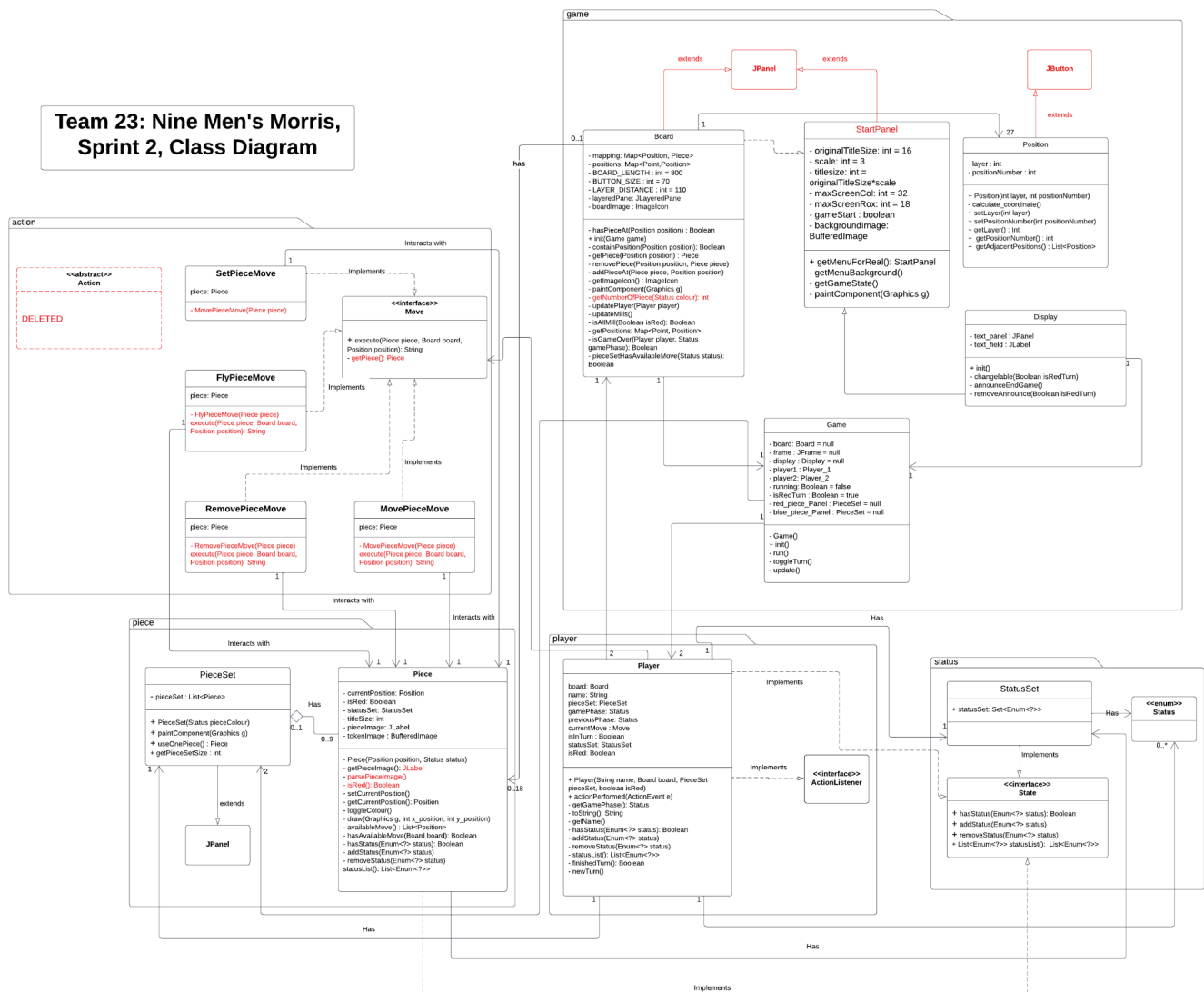
Proof:

The similarity between Domain Model and Class Diagram.



REVISED CLASS DIAGRAM

**Team 23: Nine Men's Morris,
Sprint 2, Class Diagram**



REVISED USER STORIES

Sprint One

As a user

I want to have a game tutorial,
So that I can learn how to play the game.

As a user

I want to have a simple, minimal style UI style,
So that it will increase my excitement in the game, and it is easier to use.

As a user

I want to choose my opponents between human and a computer, So that I can have different game experiences.

As a player

I want to experience 3 different levels easy, medium, hard,
So that I can enjoy their game which is appropriate for my current level.

As a player
I want to save all my matches on clouds,
So that I can access and review them anytime.

As a game player,
I want to move my token,
So that I can form three tokens in a row.

As a game board,
I want to recognise when a "mill" (three in a row) occurs, So that a player can be allowed to remove a piece.

As a game board,
I want to recognise when all 18 pieces have been played,
So that I can allow for sliding, jumping, and removing moves to be played.

As a game board,
I want to keep track of all of a player's mills,
So that a piece cannot be illegally removed from a mill.

As a game board,
I want to ensure no illegal moves are made, So that a fair game can be played.

As a game board,
I want to be able to determine when a player has fewer than three pieces left (in endgame), So that a winner can be chosen.

As a game board,
I want to be able to determine when a player has three pieces left (in endgame), So that, that player can unlock "jump moves".

As a game board,
I want to ensure that moves are made in alternation between the players, So that a fair game can be played.

As a player,
I want to play with my friends online,
So that I can have more fun with friends remotely.

As a player,
I want to be able to chat with my opponent throughout the match, So that I can have fun interactions throughout my game.

As a dedicated player,
I want to have expert recommendation for my moves,

So that I can learn and improve myself to be better at the game.

As a novice player,
I want to have a tutorial mode,
So that I can learn the rules of the game.

As a player,
I want to rewatch my match,
So that I can find out how I could make my moves differently to achieve better results.

As a user,
I want to be able to watch my friends having a match online, So that I can have fun with them too!

As a user with colour blindness,
I want to have a board with great contrast,
So that I can figure out what is going on in the game easily,

As a player,
I want to be able to connect to my friends' phone,
So that we can have our match on our own respective devices

Sprint Four

As a user
I want to have a simple, minimal style UI style,
So that it will increase my excitement in the game, and it is easier to use.

As a game player,
I want to move my token,
So that I can form three tokens in a row.

As a game board,
I want to recognise when a "mill" (three in a row) occurs, So that a player can be allowed to remove a piece.

As a **game**,
I want to recognise when all 18 pieces have been played,
So that I can allow for sliding, jumping, and removing moves to be played.

As a game board,
I want to keep track of all of a player's mills,
So that a piece cannot be illegally removed from a mill.

As a **game**,
I want to ensure no illegal moves are made, So that a fair game can be played.

As a game board,
I want to be able to determine when a player has fewer than three pieces left (in end game), So that a winner can be chosen.

As a game board,
I want to be able to determine when a player has three pieces left, So that the player can unlock "jump moves".

As a **game**,
I want to ensure that moves are made in alternation between the players, So that a fair game can be played.

As a piece, I want to have my position data.

As a player, I want to know when it is my turn.

As a board, I want to know what capabilities players and pieces have.

As a player, I want to place, move and fly pieces.

As a player, I want to know when the game is over and who is the winner.

As the developer, I want all piece Movements to have the same structure.