FIT3077: Software engineering: Architecture and design

S1 2023

Monash University Malaysia

Sprint Four

Nine Men's Morris

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Sprint 4: Design Rationale

Selected Advanced Requirement: Implement new game mode to play against AI

Updates to User Stories

Original User Stories in Sprint One:

1. As a player, I want to start a new game so that I can play the game.
2. As a player, I want to be able to see the full board, so that I can see all tokens
3. As a player, I want to be able to see the total tokens that are alive so that I can strategize my game.
4. As a player, I want to read the rules of the game so that I understand how the game works.
5. As a player, I want to place tokens on the board to create a mill.
6. As a player, I want to be able to play the game with another player so that I can improve my skills.
7. As a player, I want to be able to move my pieces on the board to create a mill or block my opponents.
8. As a player, I want to capture my opponent's tokens so that I can increase my chances of winning.
9. As a player, I want contrasting token colours between me and my opponent so that I can easily differentiate the tokens.
10. As a player, I want to have a bug-free experience so that I can enjoy the game.
11. As a player, I want to clearly see the token that I have selected so that I know which token I am moving.
12. As a player, I want to be able to play the game on the same device with my friend so that we can have fun together.
13. As a player, I want to know when the game is over so that I can see if I have won or lost.
14. As a player, I want to play the game without any internet connection so that I can play it whenever and wherever I want.
15. As a player, I want to quit the game so that I can close it once it is over.
16. As a game board, I want to ensure all moves made are legal so that the game can be played fairly
17. As a game board, I want to ensure that the game rules are enforced so that no player can cheat.
18. As a game board, I want to be sure all positions are distinct so that I can differentiate between them.
19. As a token, I want to be part of the game so that the players can use me to play the game.
20. **As a computer player, I want to be sufficiently challenging so that the player can improve their skills.**
21. **As a computer player, I want to make decisions using a good heuristic function, so that I have a high chance of winning the game.**
22. **As a computer player, I want to be another option for a human player to play with so that they can still play without another human player.**

Design Rationales (explaining the Whys'):

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

● 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).

● 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?