

Quoridor

Vision document

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Introduction:

In this project we want to build a computerized version of the Quoridor board game, which is a renowned board game designed by Mirko Marchesi. This computerised version would allow the user to play a game involving 4 players, at least 1 of whom must be human , the remainder would be AI (Artificial intelligence) players. This version would also offer the players to play the game at various difficulty levels and allow the users to save the game to play later on.

Problem Statement:

The computerized version of the Quoridor Board game would provide the user/player to enjoy the game without having the actual board and pawns, all they would need is to just install the game in their computer/smartphone. Our electronic version would increase the accessibility of this game and at the same time it would provide the opportunity for a single player(human) to play the game with our AI(Artificial intelligence) players. The user can also adjust the difficulty level of the game and save his progression in the game to continue it later on. Our program would also make it convenient for the color blind players to enjoy the game without being confused with pawns.

Stakeholder and Key Interests:

| Stakeholder | Key Interests |
|---------------------------------|---|
| Players | Play the Quoridor Board game |
| Artificial Intelligence Players | Plays against the human |
| Group 4 members | <ul style="list-style-type: none">• Implements the game in coded language as their academic project.• Maintenance of the program |
| Teaching Assistant/Marker | Assess the project and mark it |
| Buyer | Might be interested to buy the rights of the game and use it to generate more money. |

User & User Level Goals:

| User | Goals |
|-----------------|---|
| Players(human) | <ul style="list-style-type: none">• Start the game →choose the difficulty level→choose a color for their pawn→choose a shape for their pawn(ex-star,circle, triangle,square. i.e- better feature for fully color blind players) → choose the number of human players→ move the pawns following the game rules.• Save a game(if he/she wants to continue it later)• Reset the game(if he/she wants to restart the game)• Resume the game(if they had a game saved previously)• View the number of walls left in his/her hand• Place the walls wisely to win the game |
| AI Player | <ul style="list-style-type: none">• choose a color fo the pawn.• Choose a random shape of the pawn from the options(ex-star,circle, triangle,square)• Plays the game wisely following the game rules to defeat the opponent(human)• Start playing the game from previously saved game• Stops making move when the game is won is by the opponent(human) or when the game is finished(i.e- human is defeated) |
| Group 4 members | <ul style="list-style-type: none">• Builds the source code of the game using java programming• Provides the instructions on how to run the game• Ensuring that the program runs without any bugs in it. |

Summary of System Features:

- The system shall allow players to play a computerized version of the Quoridor Board game.
- The system shall allow the user to choose the number of players(Human).
- The system shall allow the remaining the players to be AI(players)
- The system shall allow the player to choose a difficulty.
- The system shall allow players to choose the color for their pawns from the available options.
- The system shall allow players to choose the shape for their pawns from the available options.
- The system shall allow the players to make legal moves obeying the game rules.
- The system shall allow the players to rotate a piece.
- The system shall allow the player to save the current game session or load a saved game session and resume playing.
- The system shall allow the player to reset the game.
- The system shall do rule checks to ensure the game is being played correctly.
- The system shall allow the computer player to randomly choose a shape for the pawn from available options.
- The system shall allow the computer player to wait for its turn.
- The system shall allow the computer player to make a wise move following the game rules.
- The system shall allow the computer to keep playing from a previously saved game.
- The system shall allow the computer to stop making moves until the opponent is done with his/her turn.
- The system shall allow the computer to stop making moves after the game is finished.
- The system shall allow the developers(group 4 members) to modify the source code.

Project Risks:

There are 2 things which might be difficult to implement in coded language-

1) Teaching the AI player how to make a move or place a wall in order to defeat or oppose the opponent(Human-player).

2) Making the AI player smart enough so that it plays more smartly when the user chooses the difficult level.