

# COMP2911 Project: Preliminary Design

Stephen Sherratt, Matthew Todd, Rebecca Wiley

May 4, 2011

## 1 Valid moves in Quoridor

Players take turns to move in Quoridor. A move is only valid if it occurs on a player's turn. There are two distinct types of move in Quoridor:

- Moving a piece
- Placing a wall

Players must make exactly one move each turn.

### 1.1 Moving a Piece

A piece may move onto a square directly adjacent to its current square forwards, backwards, left or right unless:

- there is a wall separating the piece's current square from its desired square.
- there is no square in the desired direction of travel (ie. the piece is at the edge of the board).

Additionally, if a player's piece is adjacent to their opponent's piece, they may move their piece to any square adjacent to the opponent's piece provided that it satisfies the two conditions above.

### 1.2 Placing a Wall

A wall may be placed in the gaps between squares such that:

- there are two squares on both sides of the wall (ie. it is not on the edge of the board or crossing the edge of the board).
- it does not intersect with any walls already placed.
- after placing the wall there is at least one path from each player to a square on their respective opposite side of the board.

## 2 Candidate Classes

- Manager
- Game
- Move
  - MovePiece
  - PlaceWall
- Board
- Player
- Piece
- Wall
- Square
- Gap

### 3 Class Responsibilities

#### Manager

##### Responsibilities

- Load Games
- Save Games
- Create Playels
- Start New Game

##### Collaborators

- Game
- Player

#### Game

##### Responsibilities

- Parsing input for moves
- Checking validity of moves
- Making moves
- Undoing and redoing moves
- Determining when a game is over

##### Collaborators

- Manager
- Piece
- Wall
- Player
- Move
- Board

#### Move

##### Responsibilities

- Describing what type of move is being made
- Validating moves

##### Collaborators

- Piece
- Wall
- Player
- Board
- MovePiece
- PlaceWall

#### MovePiece

##### Responsibilities

- Describing the movement of a player's piece
- Validating movement of a piece

##### Collaborators

- Piece
- Player
- Board
- Move

## PlaceWall

### Responsibilities

- Describing the placement of a wall
- Validating placement of a wall

### Collaborators

- Wall
- Player
- Board
- Move

## Board

### Responsibilities

- Keeping track of wall locations
- Checking for paths players can take
- Formatting output so board can be displayed

### Collaborators

- Wall
- Piece
- Square
- Gap

## Player

### Responsibilities

- Keep track of how many walls a player has left
- Store the player's name
- Keep track of the player's piece

### Collaborators

- Piece

## Piece

### Responsibilities

- Keep track of a piece's position
- Move a piece

### Collaborators

- Square

## Wall

### Responsibilities

- Keep track of wall's position
- Be created in desired position

### Collaborators

- Gap

## Square

### Responsibilities

- Have coordinates

### Collaborators

## Gap

### Responsibilities

- Have coordinates
- Keep track of whether or not there is a wall in the gap
- Know which wall is in the gap (if any)

### Collaborators

- Wall

## 4 Class Diagram

