Arimaa

# Problem Statement

## Features

* The ability to play the game
* Undo button to rollback moves to the initial state of the turn
* Save/Load game
* The ability to end a game
* 2 player games
* Turn timers with variable settings
* History of turns
* GUI

## Rules

Objective:

Be the first to move a rabbit into the enemy’s home row

Setup:

The gold player places his pieces in the two rows closest to him. These pieces may be in any configuration. The silver player then places his pieces in the two rows closest to him, also placing them in any configuration. The pieces all have a specific rank. These ranks may be: Elephant, Camel, Horse, Dog, Cat, Rabbit, in order of strength. Each player has 1 Elephant, 1 Camel, 2 Horses, 2 Dogs, 2 Cats, and 8 Rabbits.

Play:

The players take turn moving their pieces, the gold player plays first. All pieces have the same movement, in any empty orthogonal direction. Each player has up to 4 moves to spread between their pieces however they like in one turn. A piece can take these four steps in any direction, and they can change directions after each step. A player must take at least one move in each turn.

Stronger pieces can push or pull weaker enemy pieces. To push, the player first displaces the enemy piece into an orthogonal, adjacent square from its original position, then moves their piece into the vacated square. To pull, the player first moves their piece into an orthogonal, adjacent square, then moves the enemy piece into the vacated square. Pushing and pulling take two moves, and must be completed on the same turn. Any combination of pushing, pulling and moving may be done on the same turn, but only one piece may be pushed or pulled at the same time.

A piece freezes weaker enemy pieces that are adjacent to it and cannot move on its own, but can still be pushed or pulled. However, if there is a friendly piece adjacent to the frozen piece, it is not frozen, and can still move.

There are four trap squares on the board (c3, f3, c6 and f6 in standard chess notation). Any piece that is on a trap square is immediately removed from the board, unless it is adjacent to a friendly piece.

Victory Conditions:

* If a rabbit of player A reached goal. If so player A wins.
* If a rabbit of player B reached goal. If so player B wins.
* If player B lost all rabbits. If so player A wins.
* If player A lost all rabbits. If so player B wins.
* If player B has no possible move (all pieces are frozen or have no place to move). If so player A wins.
* If the only moves player B has are 3rd time repetitions. If so player A wins.

Special Situations:

* A push or pull is considered atomic as if the two pieces are moved simultaneously. Thus it is possible for the pulling piece to step into a trap and be removed from the game while completing the pull.
* A player may push or pull the opponent's rabbit into the goal row it is trying to reach. If at the end of the turn the rabbit remains there, the player loses. However if the opponent's rabbit is moved back out of the goal row before the end of the turn, the player does not lose.
* If a player is unable to make a move because all the pieces are frozen or have no place to move, then that player has lost the game.
* If after a turn the same board position and side to move would occur for the third time, then that move is illegal and the player must select a different move. If in the rare case the only moves a player has are not allowed then the player loses due to being unable to make a move.
* If a player loses all the rabbits then that player loses the game. If in the rare case both players lose all rabbits on the same move then the player making the move wins the game.