Pentago Game Rules

TCS Module 2: Software Systems
Programming Project 2021/2022

Pentago

Pentago is a two-player board game where the two players place marbles and rotate parts of the game board in order to get a line of five marbles of their colour, either horizontally, vertically, or diagonally. Traditionally, the starting player plays with black marbles and the other player plays with white marbles; but any colours may be used.

Setup

The game starts with an empty game board, that is, four empty subboards:
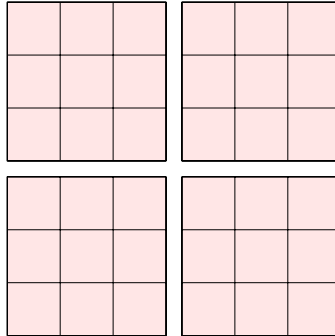
Rules

Each turn consists of two consecutive actions:

1. Place one marble on an empty space on the board.
2. Rotate one of the four subboards 90 degrees clockwise or counter-clockwise.

See Figure 1 for an example where the bottom left subboard is rotated counter-clockwise.

After each turn, that is, after both actions, we check if one of the players now wins the game[1]. The goal of each player is to get five marbles of the player's colour in a row, either vertically, horizontally, or diagonally. See Figure 2. The following situations result in a draw:
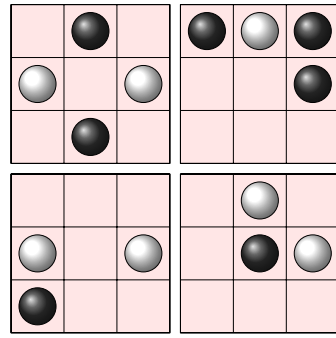
- The board is full and there is no five-in-a-row (see Figure 3a).
- Both players have five-in-a-row (see Figure 3b).

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[1]This is a deviation from the classic rules of Pentago, where winning is checked after placing a marble and again checked after rotating a subboard.
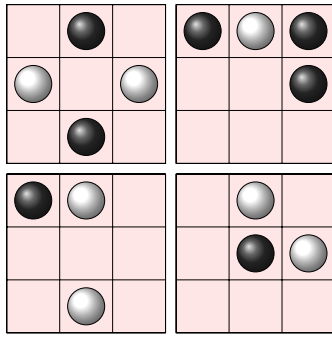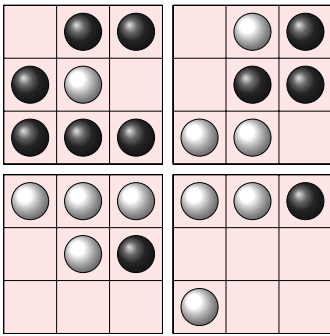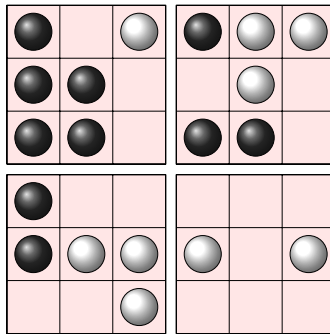
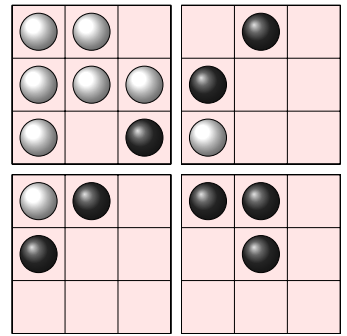(a) before rotation   (b) after rotation

Figure 1: Example of rotating the bottom left subboard counter-clockwise.

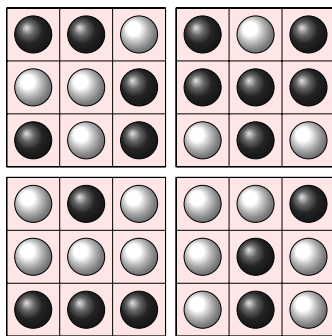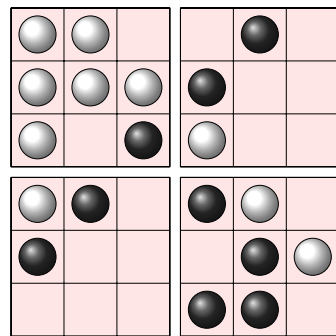(a) white wins horizontally   (b) black wins vertically   (c) black wins diagonally

Figure 2: Examples of winning

(a) the board is full   (b) both players have five-in-a-row

Figure 3: Examples of a draw