

# Pentago Game Rules

TCS Module 2: Software Systems  
Programming Project 2021/2022



Version: 1.0

This document describes the rules for the Programming Project game of 2021/2022.

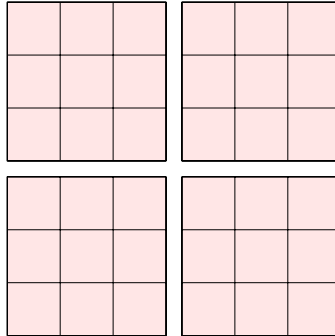
The rules as stated in this document might differ from the official rules. In case of any difference, this document is leading. If there is a game-breaking mistake in this document (e.g. an uncovered edge case or clashing rules), please send an email to Ömer Şakar ([o.f.o.sakar@utwente.nl](mailto:o.f.o.sakar@utwente.nl)).

# 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.

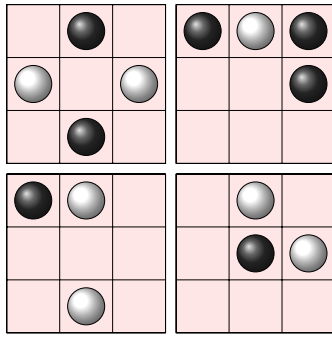
See Figure 1 for an example where the bottom left subboard is rotated counter-clockwise.

After each turn, that is, after both actions, we check if one of the players now wins the game<sup>1</sup>. 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:

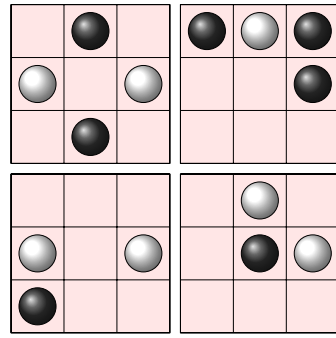
- The board is full and there is no five-in-a-row (see Figure 3a).
- Both players have five-in-a-row (see Figure 3b).

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<sup>1</sup>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.

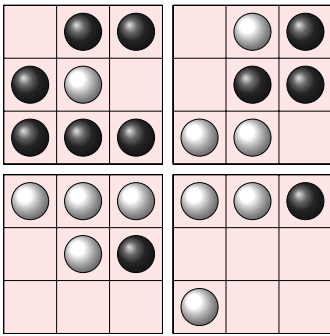


(a) before rotation

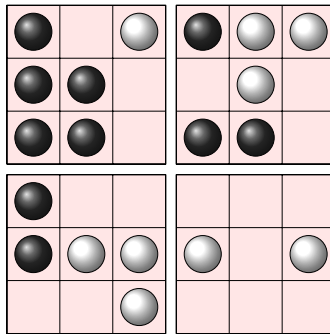


(b) after rotation

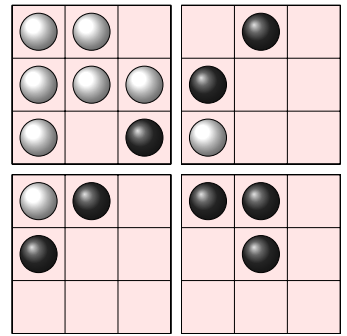
Figure 1: Example of rotating the bottom left subboard counter-clockwise.



(a) white wins horizontally

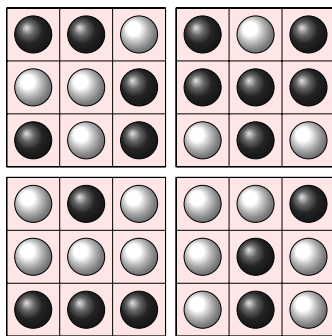


(b) black wins vertically

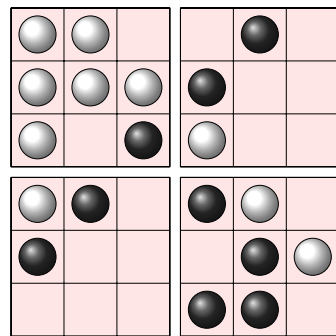


(c) black wins diagonally

Figure 2: Examples of winning



(a) the board is full



(b) both players have five-in-a-row

Figure 3: Examples of a draw