Strategic Board Game

In Term Project, you are expected to implement an AI-based strategic board game. The rules of the game are listed in following sections.

Your application should have a CLI or GUI interface to handle a demo in the grading session. In the demo, Player 1 will be the AI, and Player 2 will be the human. We will manually evaluate the behaviors and also the success of your AI module.

Submission Deadline: December 30, 2024

Demo Hour: Will be announced later.

1. **The Rules of the Game**

   The board size is 7*7.

   Triangle symbols are the pieces of Player 1 which is the AI-based player.

   Circle symbols are the pieces of Player 2 which is the human player.

   Every player has four pieces, and the game starts with the board configuration, as shown in Figure 1.

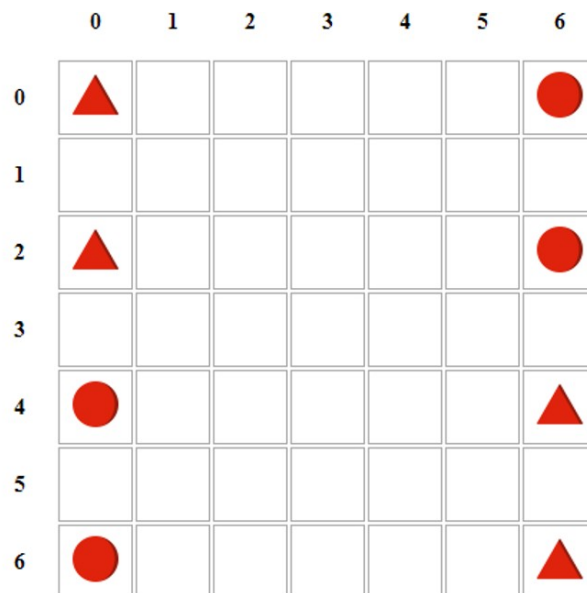   When the game starts, Player 1 moves first.

Figure 1: Initial board configuration.

2. The Rules of the Moves

The pieces can move in both horizontal and vertical directions. Diagonal moves are not allowed.

If the player has more than one piece, the player should make two subsequent moves with different pieces.

If the player has only one piece, the player should make only a single move.

3. Capturing Pieces

If the player's single piece or group of pieces are between the wall and the opponent piece, they are captured (Figure 2, Figure 3).
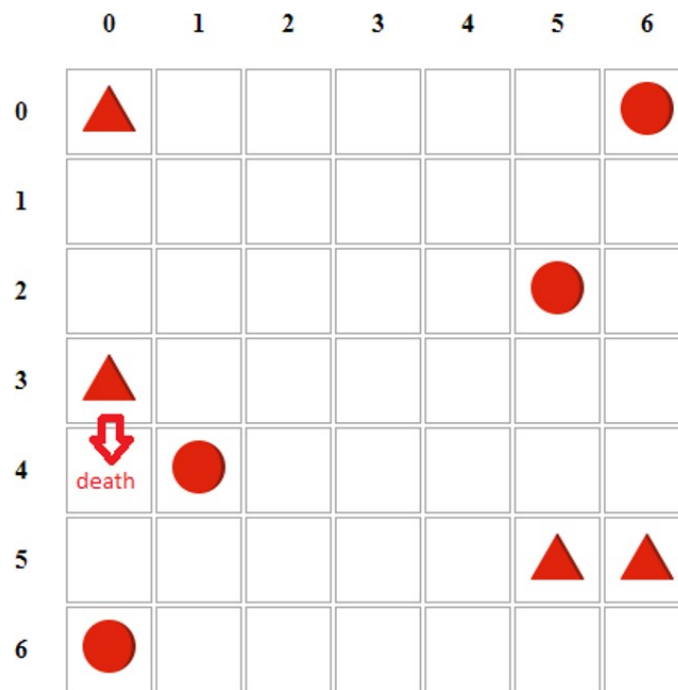

Figure 2: Capturing pieces.

If the player's single piece or group of pieces are between two opponent pieces, it is captured (Figure 4, Figure 5).

If both player's pieces are between two opponent pieces, all of these pieces are captured (Figure 6).

4. Game End

When both players do not have any pieces: It is Draw.

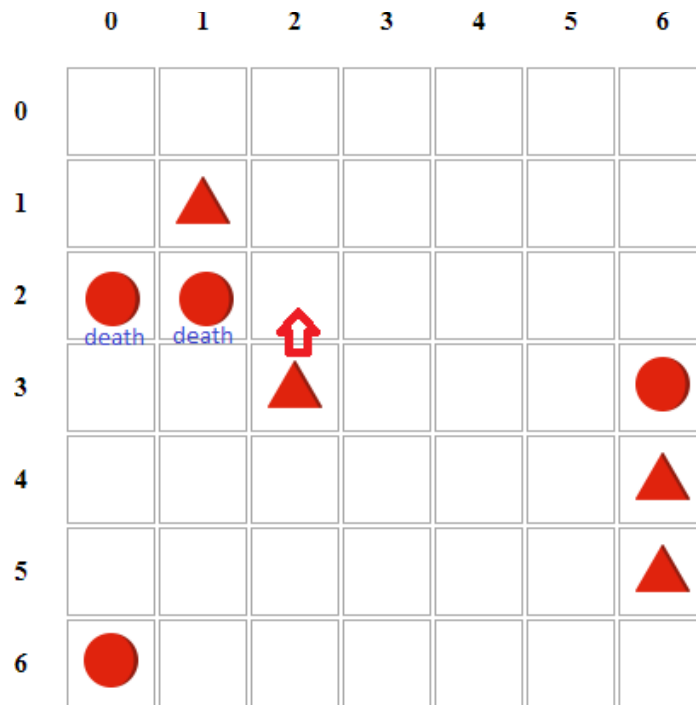When both players have only a single piece: It is Draw.

Figure 3: Capturing pieces.

When the player has some pieces, but the opponent player does not have any pieces: The player wins.

When the player has no pieces, but the opponent player has some pieces: The player losses.

After 50 moves in total:

If both players have same number of pieces: It is Draw.

If the player has more pieces: The player wins.

Else: The player losses.

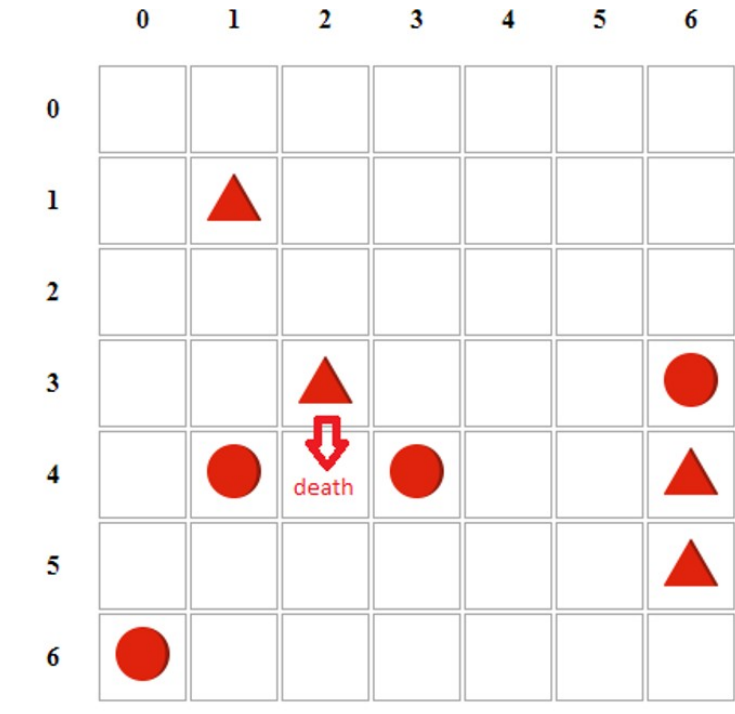## 5. Some Solution Alternatives

Figure 4: Capturing pieces.

Min-Max algorithm

Q-Learning or Deep Q-Learning Networks will also be accepted if you have any Neural Network knowledge.

6. Online Demo

If you have any issues about the online demo, please send an email to:
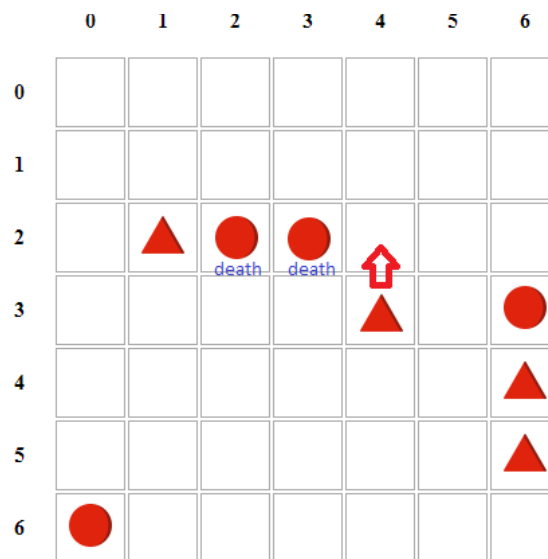
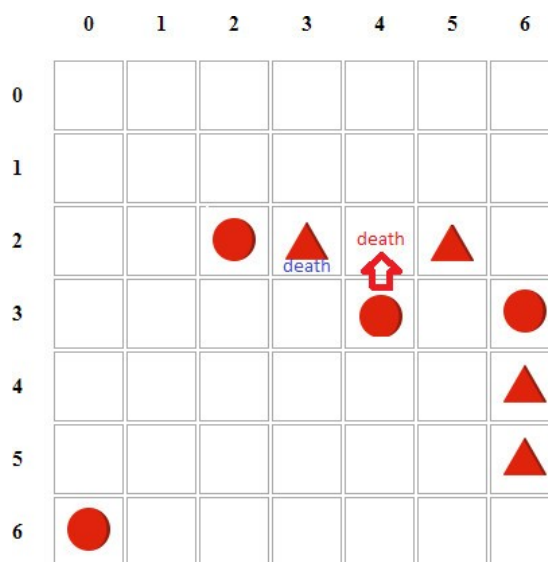cavidebalki.gemirter@std.yeditepe.edu.tr

Figure 5. Capturing Pieces

Figure 6. Capturing Pieces

Good Luck!