

CIS 500 – Fundamentals of Software Practice, Winter 2023

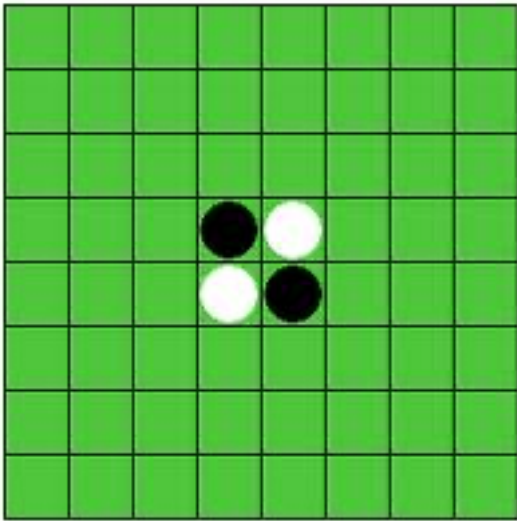
Programming Assignment #4 Due Date: Thursday, April 13, 2023

Objectives

For Project 4, you will implement a program to play the game of Othello (also called Reversi). The objective and the rules of Othello game can be found on Wikipedia here: <http://en.wikipedia.org/wiki/Reversi>:

You can play this game online here: <http://www.mathsisfun.com/games/reversi.html>

The program starts the game with the following board configuration. In our program, the board size can be 4x4 or 6x6 or 8x8.



- Players take alternate turns.
- A player is only allowed to make valid moves. A valid move is one where at least one disc of the opponent is reversed.
- If a player cannot make a valid move, then that player loses his/her turn.
- The game ends when neither player can move or when the board is full.
- The player with the most pieces (discs) on the board at the end wins the game, if there is no tie.

Assignment

You are provided with the following Python files: `othello.py`, `project4.py`, and `project4_tests.py`.

Your task is to complete the indicated methods in `Othello` class in `othello.py`.

You can run the file `project4.py` to play the game from command line, but evaluation of your project submission will be based on the unit tests in `project4_tests.py` file (see the rubric in `Project4_Rubric.pdf`).

Sample Program Run

```
$ python project4.py
!!!! WELCOME TO OTHELLO GAME !!!!!
```

```
Enter board size (4 or 6 or 8): 8
Enter player to start the game (1 or 2): 1
Enter disc color of start player (W/w or B/b): b
Othello Board Size: 8
Player 1 with BLACK disc
Player 2 with WHITE disc
Player to start the game: Player 1
```

```
  0 1 2 3 4 5 6 7
0 - - - - - - -
1 - - - - - - -
2 - - - - - - -
3 - - - B W - - -
4 - - - W B - - -
5 - - - - - - -
6 - - - - - - -
7 - - - - - - -
```

Player 1's Turn (BLACK) - Where do you like to place the disc (row# col#)? 3 5

```
  0 1 2 3 4 5 6 7
0 - - - - - - -
1 - - - - - - -
2 - - - - - - -
3 - - - B B B - -
4 - - - W B - - -
5 - - - - - - -
6 - - - - - - -
7 - - - - - - -
```

Player 2's Turn (WHITE) - Where do you like to place the disc (row# col#)? 2 3

```
  0 1 2 3 4 5 6 7
0 - - - - - - -
1 - - - - - - -
2 - - - W - - - -
3 - - - W B B - -
4 - - - W B - - -
5 - - - - - - -
6 - - - - - - -
7 - - - - - - -
```

Player 1's Turn (BLACK) - Where do you like to place the disc (row# col#)?

(and the game continues until there is a winner or tie)

Running Unit Tests

Issue the following command at command prompt from inside the project directory:

```
$ python project4_tests.py
```

Project Deliverables (VERY IMPORTANT)

1. Upload the following file only on Blackboard by end of day (11:59PM) on due date.
 - othello.py
2. Evaluation of your project will be based on the number of unit tests from `project4_tests.py` file that pass.
3. The submission time on Blackboard will be used as the official submission date/time.
4. **Late penalty (10% per day up to three days late max) applies after Thursday, April 13th.**