Introduction to AI Spring 2020 Group Game Project Spec

The rules of the game are as the file provided before

- The board is initially empty
- ***Black*** moves first
- The four corners are excluded
- The legal moves are:
  - Placement of a piece that causes color flipping of some pieces. This is same as the original Reversi.
  - Placement of a piece in any empty square within the central 6x6 of the board
- A player is skipped if there is no legal move. However, if legal moves still exist, the player has to take one.
- **The time limit for each move is 5 seconds.**
- **If your program returns an illegal move to the server or exceeds the time limit (5 second), the server will scan the valid move from the first row to the last row (row by row) until it finds the valid move and plays the move for the program.**
- The game ends when neither player has any remaining legal move.
- At the end, the score of a player is the number of pieces in his/her color minus the number of pieces in the opponent's color. It is possible for the game to end in a tie.

The tournament rules are exactly the same as mentioned before.

About programming:

You are allowed to use Python (3 or above)/C++ 14(or below) to code your program. TAs will provide code including TCP socket and a basic code template. For simplicity, you only need to fill in the function provided in template code.

- General
  - You don't need to worry about the connection between your program and the tournament judge if you follow the template code. The template code provides a function ***GetStep*** for you to fill in It has two parameters ***(board, is_black)*** and the returned object contains the current move made by you program
  - Function ***GetStep*** will be called only when it's your turn (no matter whether you are playing as Black or White) and only when there are still some valid moves in your turn. That is, you don't need to worry about the situation when there is no valid move.
  - Parameter ***board*** contains the current game board status which is stored in list of list (python) and vector of vector (C++); ***board[i][j]*** indicates the status of square at the i^{th} row and j^{th} column of the board: [0: unoccupied]; [1: occupied by Black]; [2: occupied by White]; [-1: the four corners]. Both i and j are zero based ($0 \leq i, j \leq 7$).
  - Parameter ***is_black*** (Boolean type) is True if you are playing as Black and False if you are playing as White
  - You should return information of your move made in ***GetStep*** as a tuple (python) or a vector (C++). Let the variable ***step*** be your returned value; ***step = (r, c)*** indicates that your program

decides to take a move on position (r, c) (row and column) with the chess black or white (depends on ***is_black***).

- Python
  - **STcpClient.py**: This code includes TCP functions. You should not change it except that you must change the number at line 11 "**idTeam = -1**" into your team number "**idTeam = <team_ number>**". We will announce the team number later.
  - **Sample.py**: This is template code which includes function ***GetStep*** to be filled by you.
  - We will run your code in python 3.6 or above with win10 operating system. Your source code should be able to run directly by python interpreter.
- C++
  - **STcpClient.h**: This code includes TCP functions. You should not change it except that you must change the number at line 18 "**idTeam = -1**" into your team number "**idTeam = <team_ number>**". We will announce the team number later.
  - **Sample.cpp**: This is template code which includes function ***GetStep*** to be filled by you.
  - Notice that template code is written in Visual Studio 2019 with win10 operating system and includes OS-depended code (winsock for TCP) and compiler depended code (**#pragma**). Both compiler and operating system can be found on **https://ca.nctu.edu.tw/**.
  - We will run your code in win10 operating system. DO NOT submit the whole project directory. Instead, just submit **STcpClient.h** and **Sample.cpp**.

TAs strongly recommend you to use the same compiler and operating system as mentioned above to ensure there won't be any unexpected problems.