Artificial Intelligence

Assignment -2 (Game Playing)

You will develop a software for playing a popular game **Fanorona,** which is a two player turn taking game. Fanorona is played on a board of 5 rows × 9 columns, with lines connecting the intersections. Black and white pieces, twenty-two each, are arranged on all points but the center. The objective of the game is to capture all the opponents' pieces. The game is a draw if neither player succeeds in this.

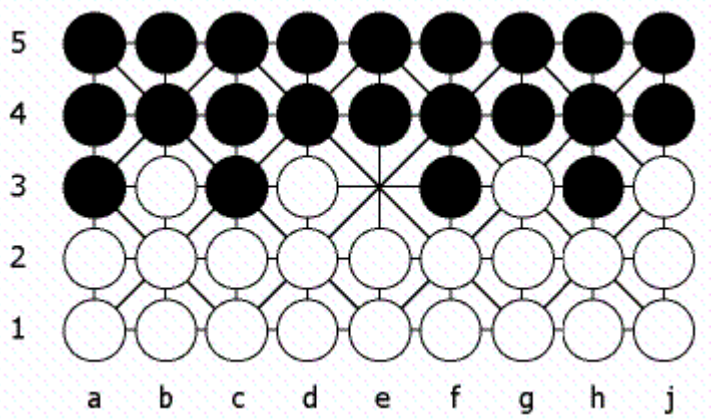
The Fanorona board consists of lines and intersections, creating a grid with 5 rows and 9 columns. A line represents the path along which a stone can move during the game. There are weak and strong intersections. At a weak intersection it is only possible to move a stone horizontally and vertically, while on a strong intersection it is also possible to move a stone diagonally. A stone can only move from one intersection to an adjacent intersection.

The rules of the game are:

- Players alternate turns, starting with White.
- We distinguish two kinds of moves, non-capturing and capturing moves. A non-capturing move is called a *paika* move.
- A paika move consists of moving one stone along a line to an adjacent intersection.
- Capturing moves are obligatory and have to be played in preference to paika moves.
- Capturing implies removing one or more pieces of the opponent. It can be done in two different ways, either (1) by approach or (2) by withdrawal.
    - An approach is the movement of the capturing stone to a point adjacent to an opponent stone provided that the stone is situated on the continuation of the capturing stone's movement line.
    - A withdrawal works analogously to an approach but the difference is that the movement is away from the opponent stone.
- When an opponent stone is captured, all opponent pieces in line behind that stone (as long as there is no interruption by an empty point or an own stone) are captured as well.
- If a player can do an approach and a withdrawal at the same time, he has to choose which one he plays.
- The capturing piece is allowed to continue making successive captures, with the following restrictions:
    - The piece is not allowed to arrive at the same position twice.
    - It is not allowed to move a piece in the same direction as directly before in the capturing sequence. This can happen if an approach follows on a withdrawal.

- The game ends when one player succeeded in capturing all stones of the opponent. If neither player can achieve this, the game is a draw.

The initial configuration of the game is as follows



You are required to develop software to play the game in which one of the players is human. You can choose any programming language to solve this problem. You will implement this game in a team of two. You should also provide a detailed documentation on the solution, detailing the game strategy.

You can refer :
http://www.gamesfromeverywhere.com.au/rules/Fanorona_History_Rules.pdf or other internet resources for understanding the game better.

You will make submission by march 13, via http://intrabits. This assignment will be evaluated for 10 percentage.