2013 SDSU Program Design Competition

Connect Four

In the "Connect Four" game there is a 7*6 wall (vertical board, 7 vertical columns and 6 horizontal lines). Two players take turns to drop a ball to get four in a row (horizontally, vertically or diagonally) before the other player can, by clicking on a column to add a ball to the column. The player can use this approach to build his/her own territory or to block the competitor's progress. When one player creates a "four balls in a row" either horizontally, vertically or diagonally before the competitor does this, that player wins. The game is a draw if neither of the players can create a "four balls in a row" when all these 7*6=42 ball slots are occupied.
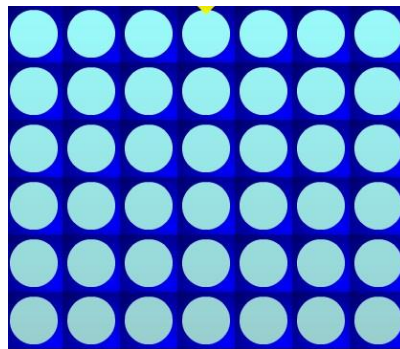
An example of the game-play is as follows:
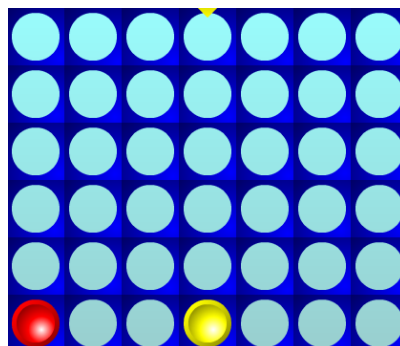Player1: yellow,
Player2: red.
Yellow starts first.

Initial state: the "wall" is empty.

The 1st round: the yellow player drops a ball in the central column, and the red player (computer player in this case) chooses to drop the ball to the first column. Due to gravity, both balls will occupy the lowest available slots.


The 2nd round: the yellow player chooses to "continue grow" its central column, by dropping another ball on top of its first ball. In the meanwhile, the red player considers efficiently building diverse growth, to start another column.
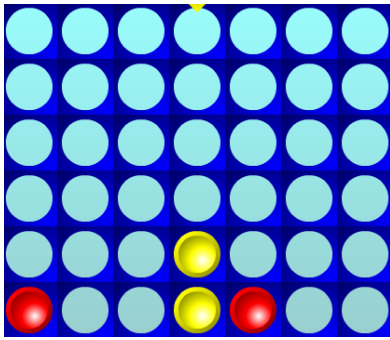
The 3rd round: the yellow player chooses to drop the 3rd ball to the same column. Then the red player found he/she must stop the yellow player, otherwise next round the yellow player will have 4 balls vertically. So the read player drops the ball in the central column.
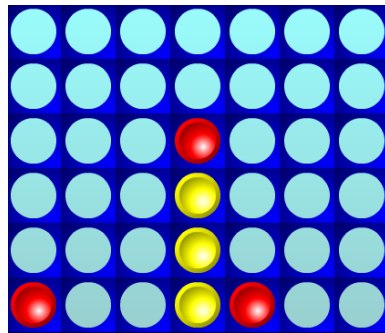

The 4th round: the yellow player has to start another column to find new "connect four" possibilities. Red player also does the same thing. They both consider "self growth" and "blocking the other" in making their decision to drop ball.
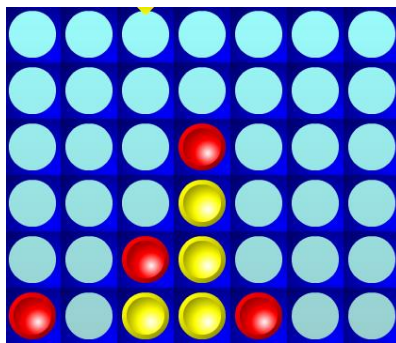
Many rounds later:

The last round: the red player finally builds a "run of four" diagonally before the yellow player does this. As a result, the red player wins.
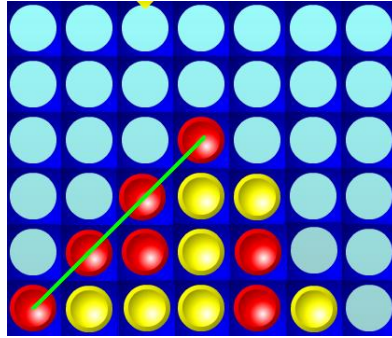
You can design this game for either human-to-human or human-to-computer, or both. Also you can develop this game using any software tools available to you. You may create a web based application, a C/C++ program, a Visual Basic/C++/C# program, Java, or some other programming environment. Your program MUST run on a Windows XP or VISTA or Windows7 computer using standard installation. Brower-based solutions MUST work on at least one of Internet Explorer, Firefox or Google Chrome Web browsers. It is recommended to bring your own laptop to SDSU for demonstration during the competition day.

Your work will be judged on,

1. Correctness of the solution
2. Uniqueness of the design
3. Completeness of solution
4. User-interface design

Team members are encouraged to participate during the presentation. All parts of the presentation and source code should be burned to a clearly labeled CD and submitted to the program design competition committee on the day of the competition.

If you have any questions regarding the problem, please do not hesitate to ask us (wei.wang@sdstate.edu or sung.shin@sdstate.edu). Good luck and have fun!