

Connect 4 game

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Description: a board with 6*7 holes, the first player to fill 4 holes vertically or horizontally or diagonally will win

Bonus feature: i could change the difficulty by changing the depth but I did not manage to create its gui, so its running currently with the default depth of 9.

The max depth: the AI can run relatively well (less than 30 seconds) until the depth of 12

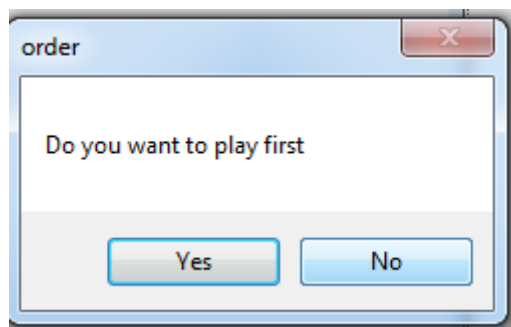
Utility functions: each player starts the game with 69 possible positions to win, during each player turn he can reduce the other player possible positions by a number decided by the location he played in, so ultimately:

the utility function =

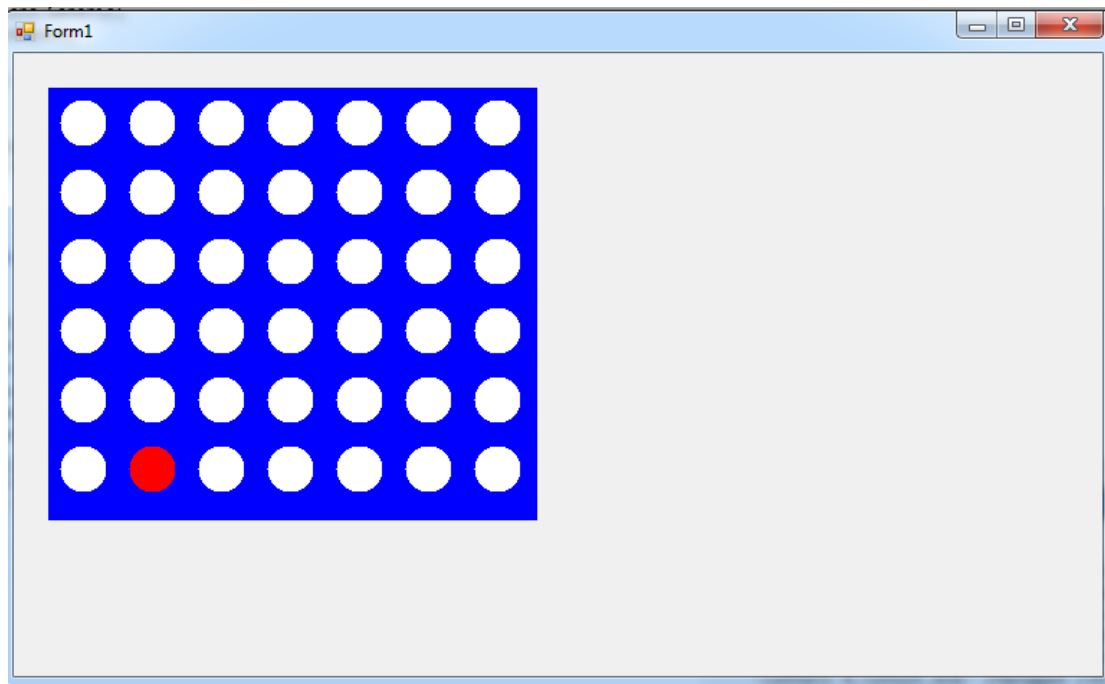
player 1 remaining possible positions - player 2 remaining possible positions

User guide:

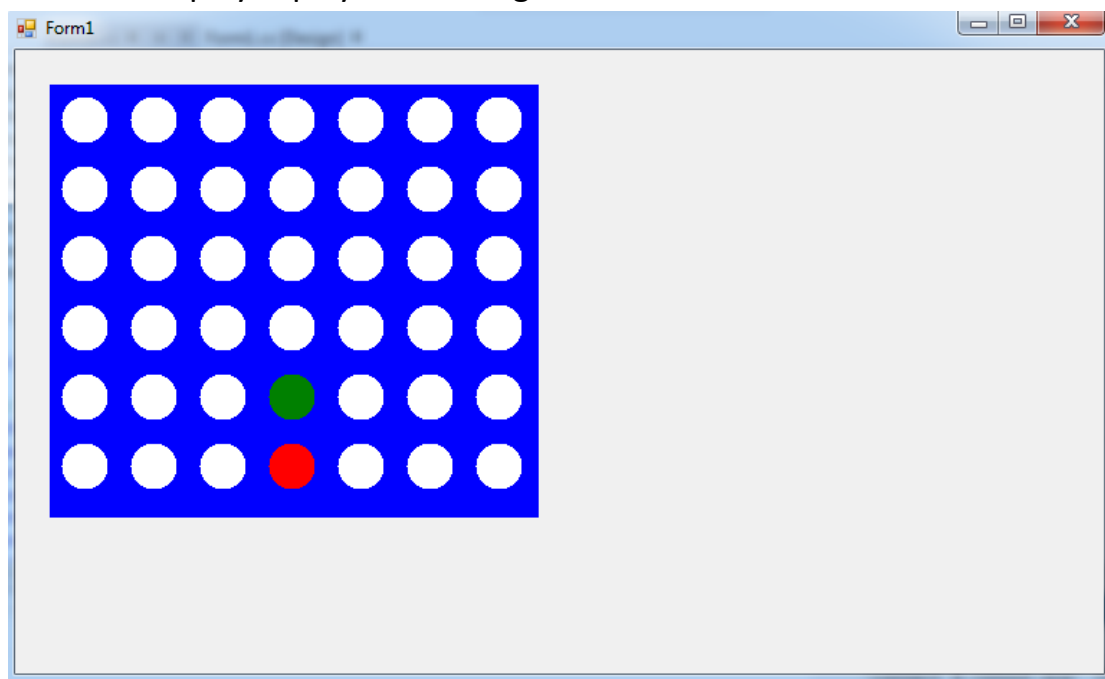
The application starts by asking the player if he wants to play first



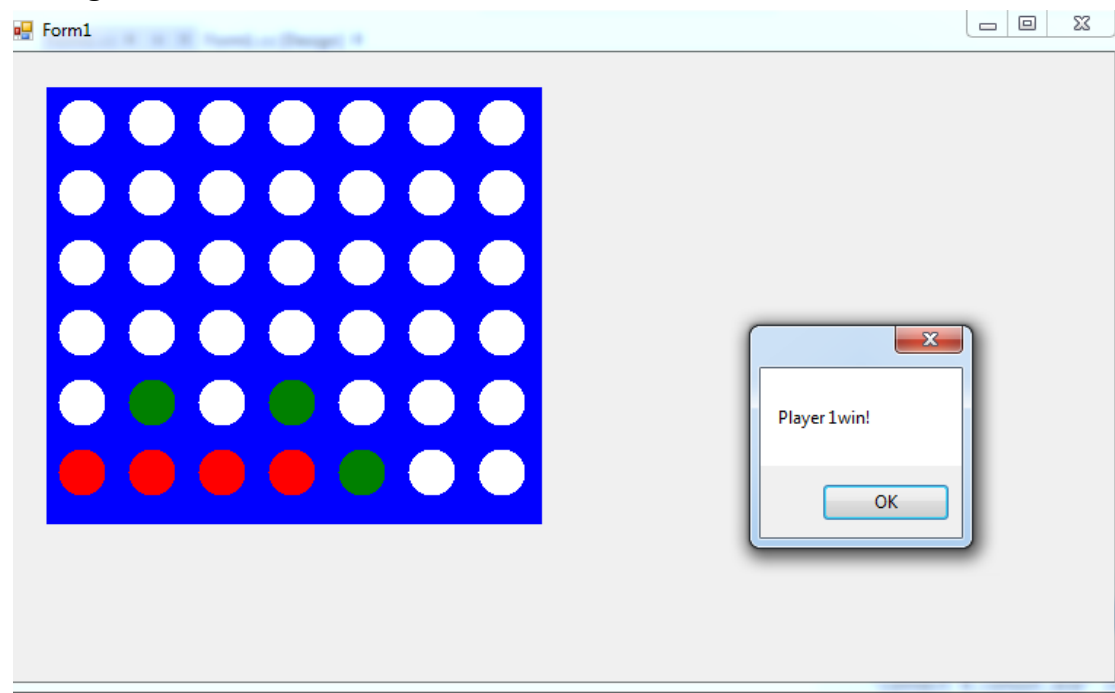
The first player plays with the red coin.



The second player plays with the green coin.



After a winning play the application declares the winner then opens a new game



Sadly I didn't manage to complete the GUI so it crashes sometimes, and after the game ends it restarts the game without asking.

- I did all the work in this project alone except the GUI part I wanted to do at the last hour before the deadline so I looked up for a quick tutorial.
- I tried to optimize the winning check after every play, by looking around the played positions instead of the whole board.
- I tried to find a utility functions that is not exhaustive , just by subtracting a number, without searching the whole board to get a better performance.