ARTIFICIAL INTELLIGENCE PROJECT PROPOSAL

CONNECT FOUR

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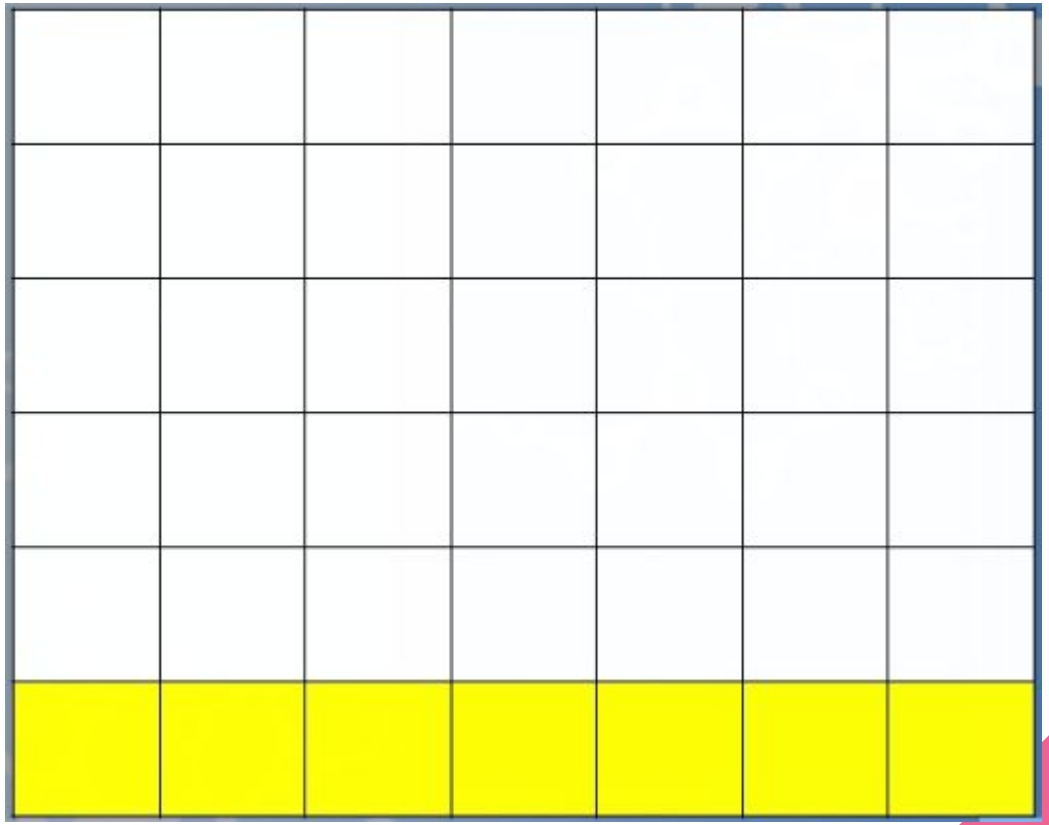
Game Rules

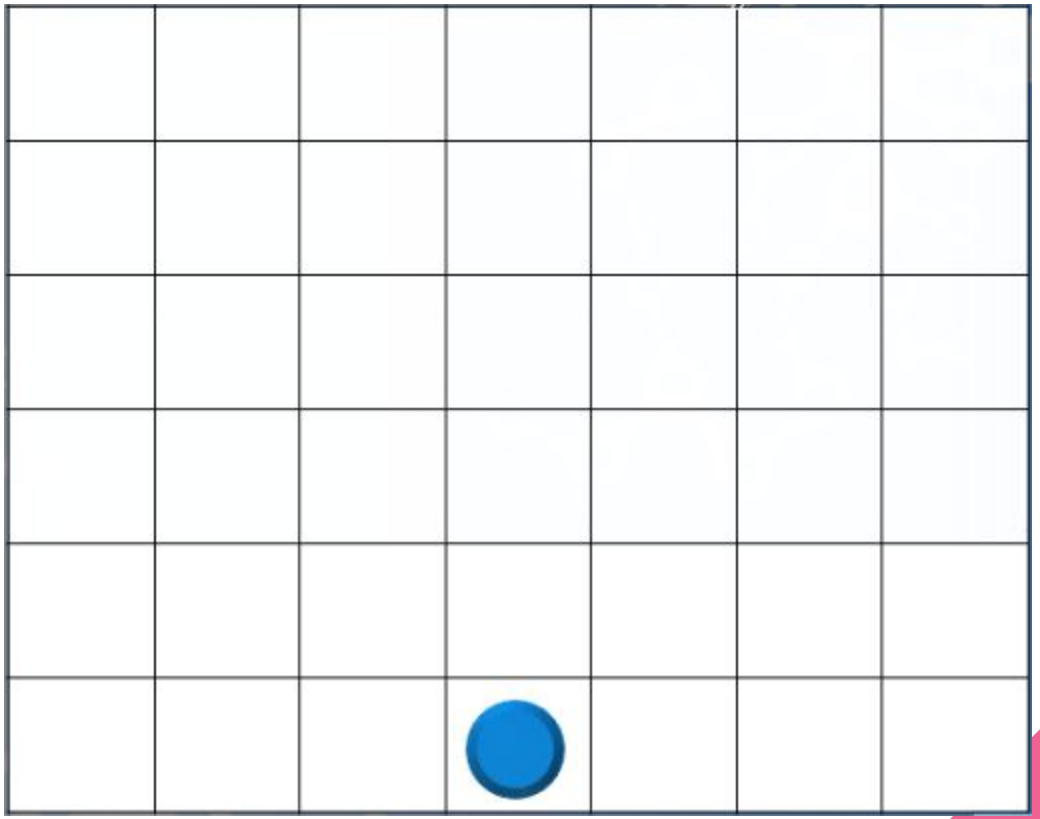
- Consists of seven-column, six-row vertically suspended grid
- Players first choose a color and then take turns dropping colored discs from the top
- The pieces fall straight down, occupying the next available space within the column

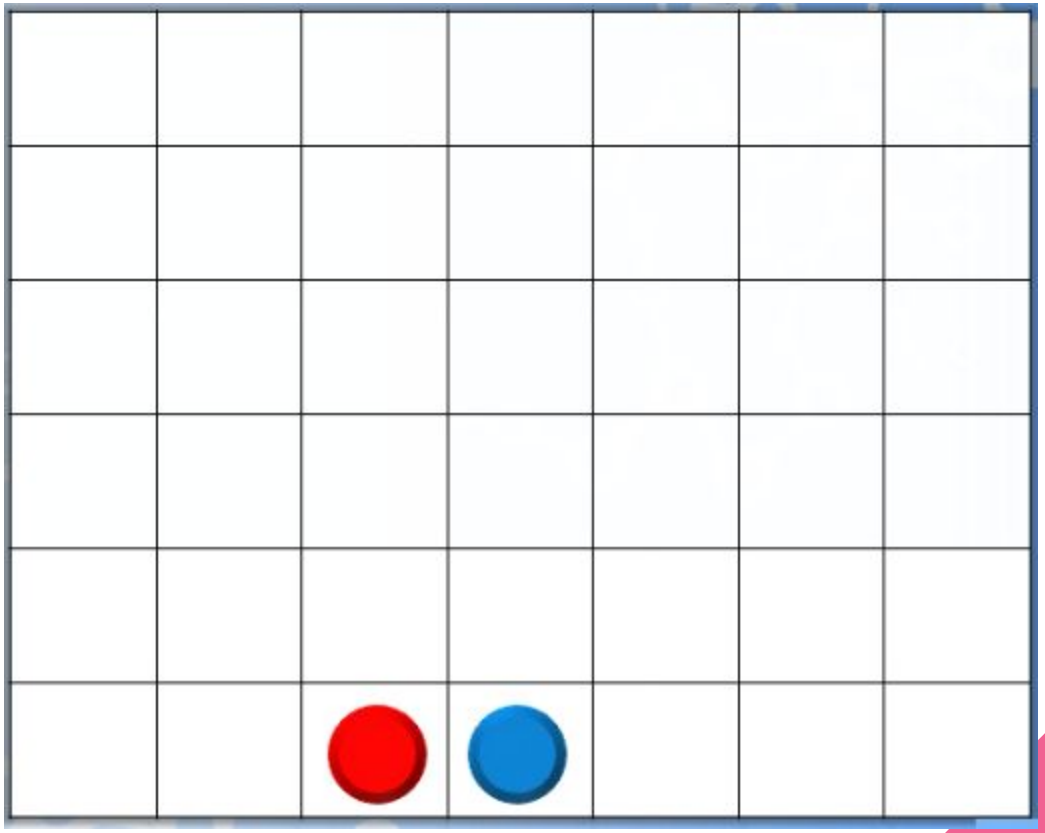
Objective

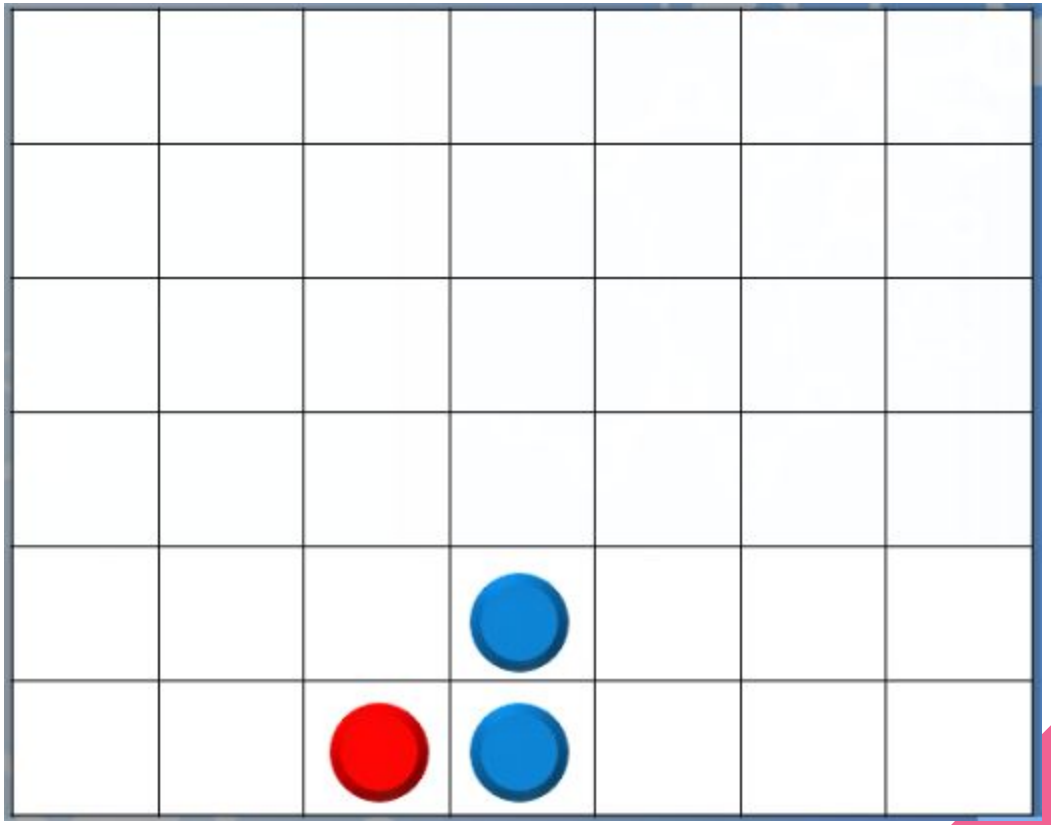
- connect four of one's own discs of the same color next to each other

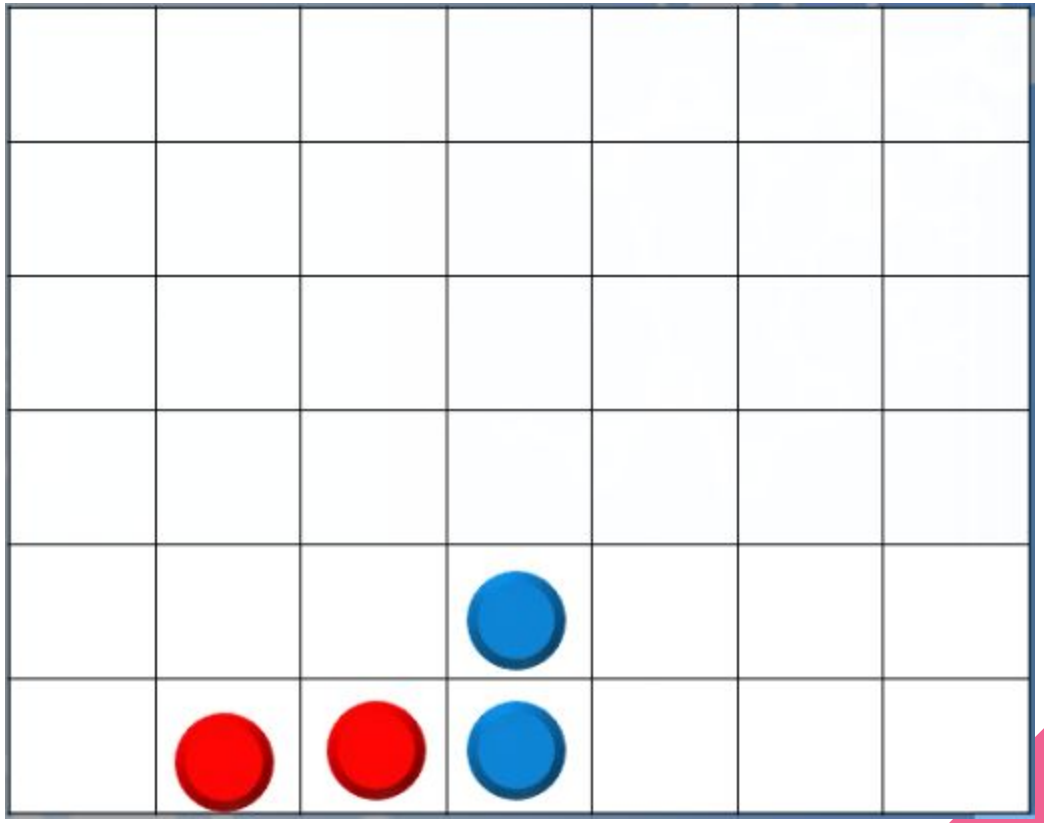
- Vertically
- Horizontally
- diagonally

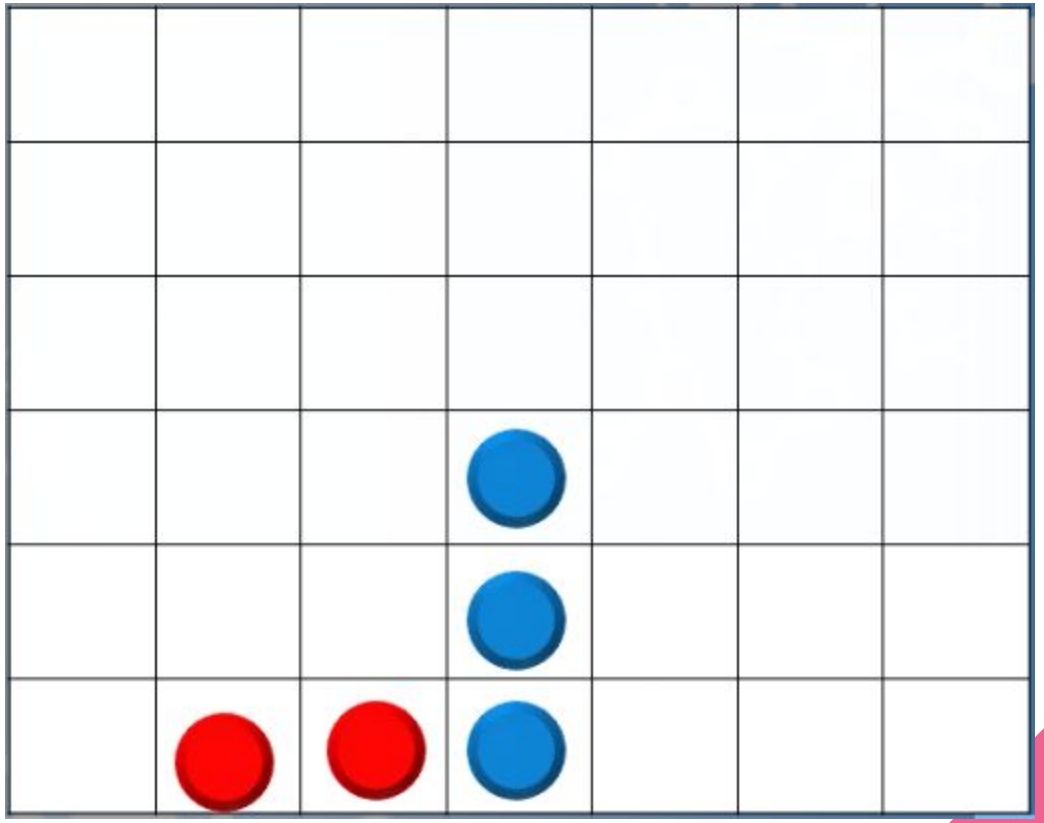


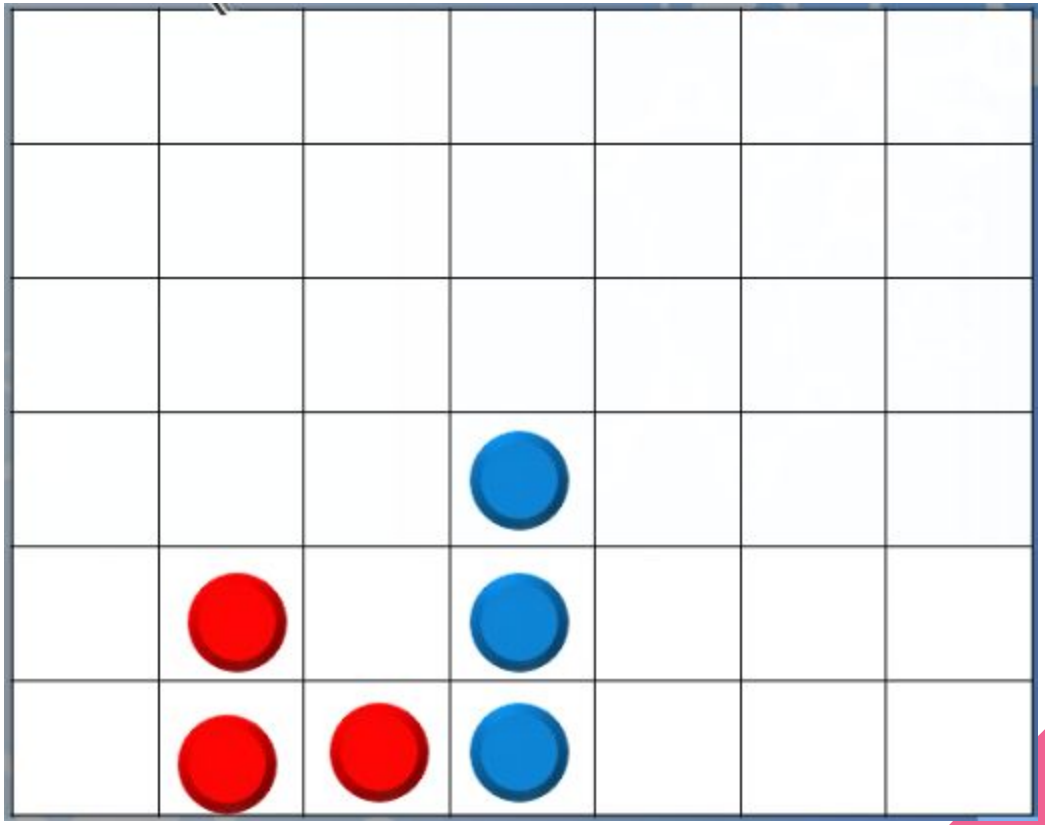


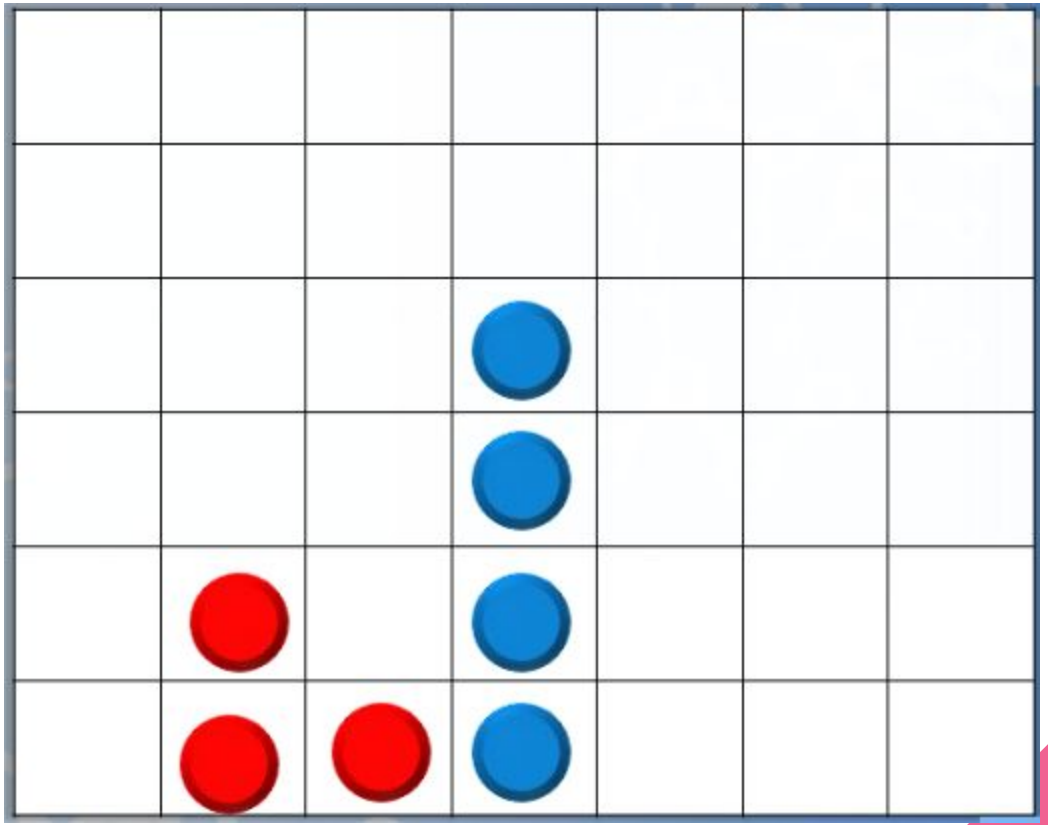


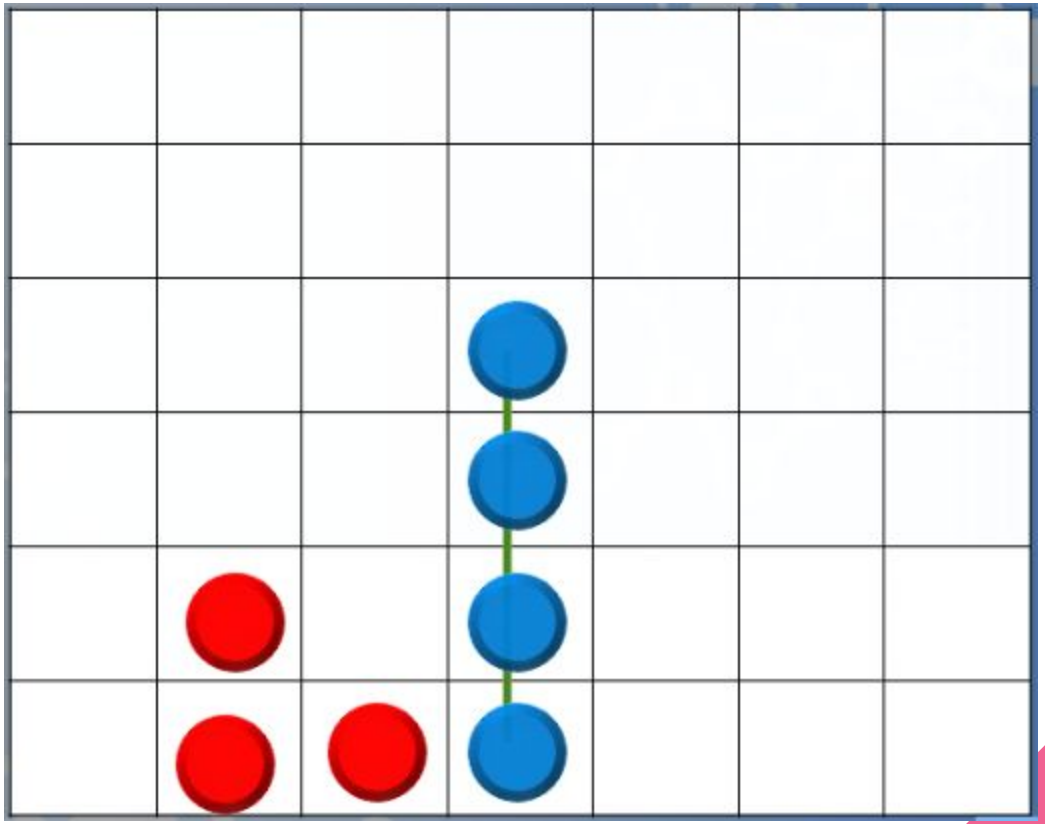


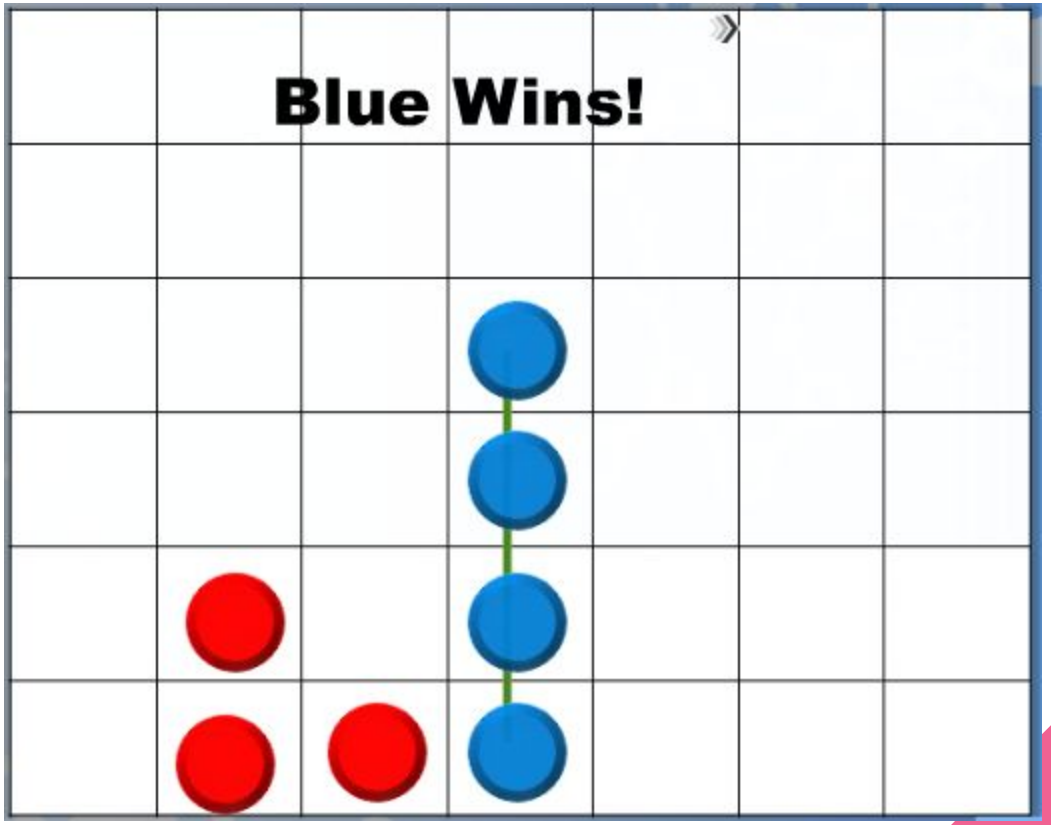






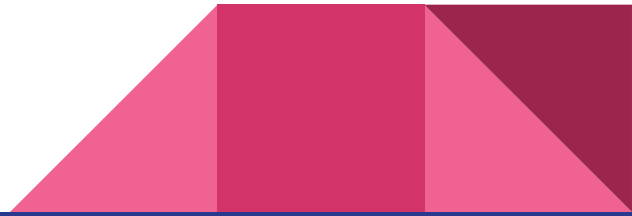




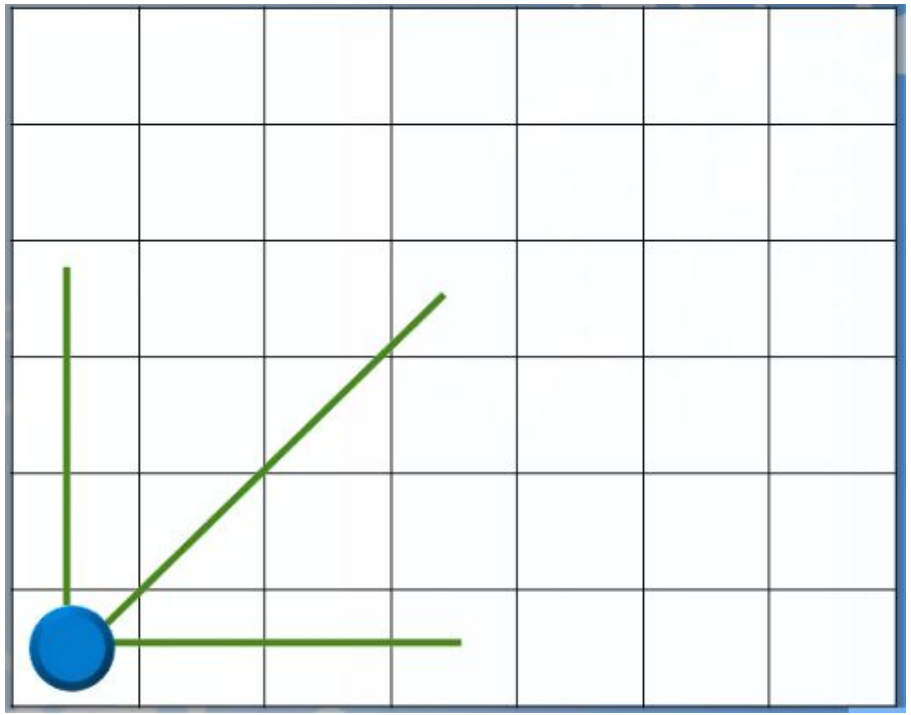

Blue Wins!

Four Different Heuristics

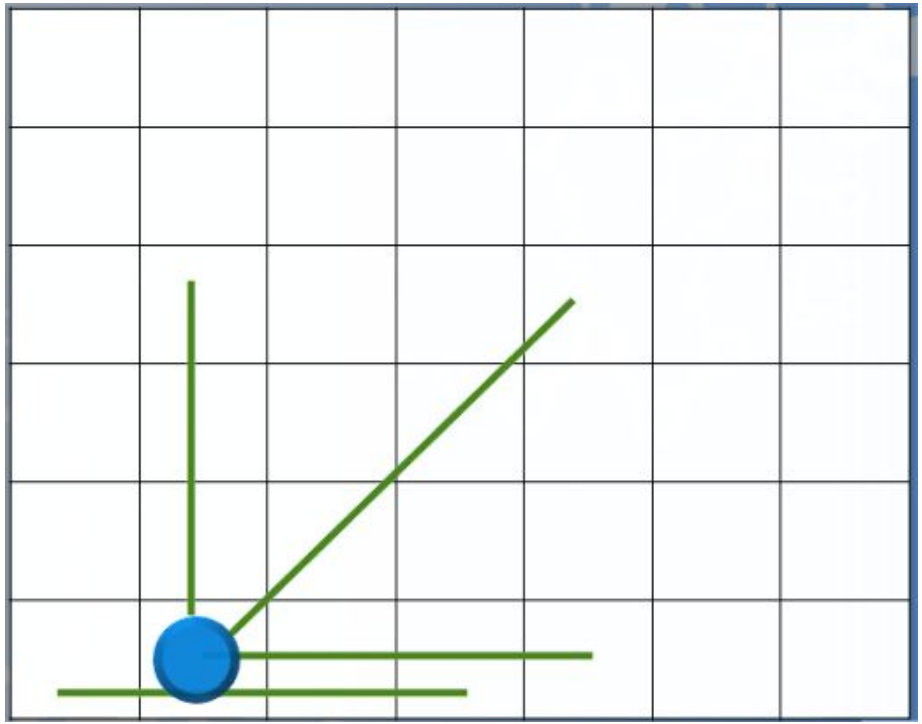
- Number of winning lines
- How many pieces in a row will i get if I move here
- Do I block a good path for the enemy if I move here ?
- Does the space above give the opponent an advantage ?



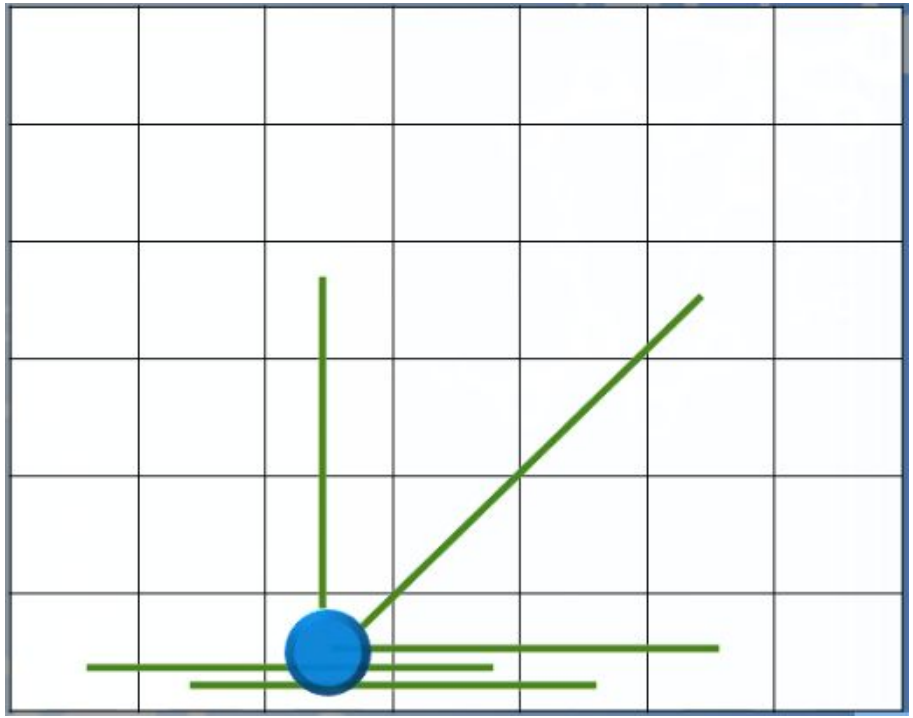
Heuristic 1 (3 possibilities)



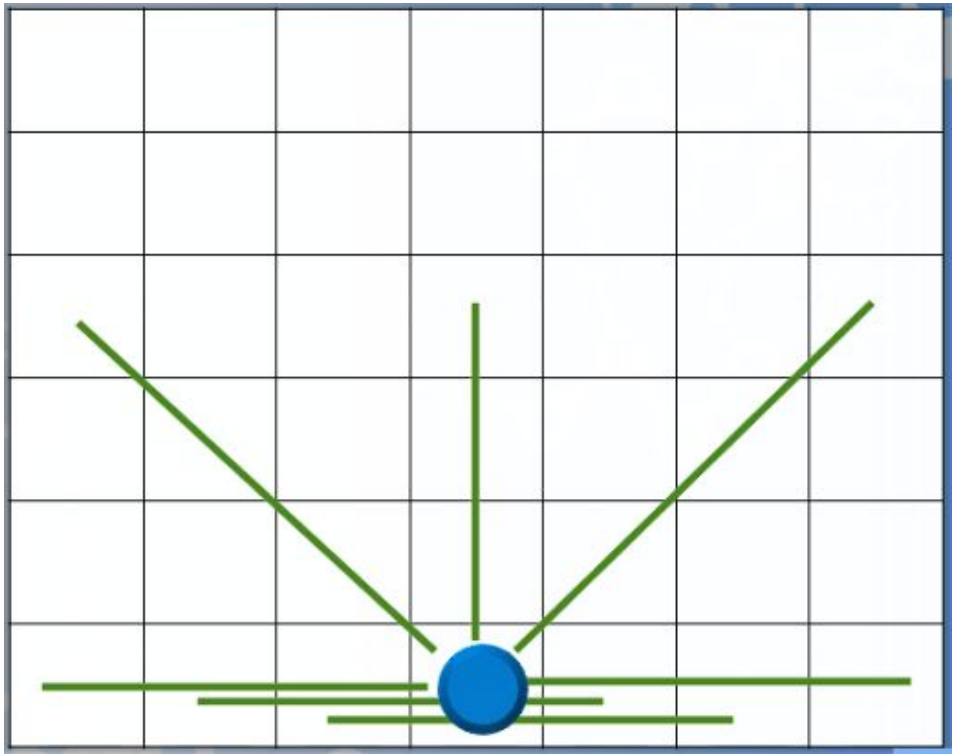
Heuristic 1 (4 possibilities)



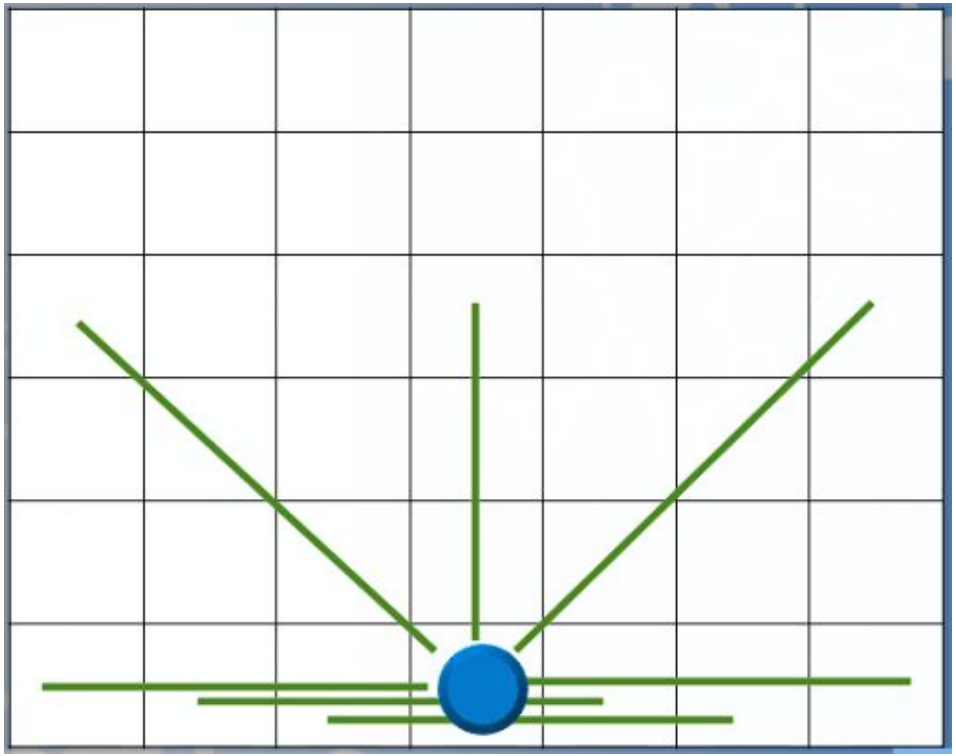
Heuristic 1 (5 possibilities)



Heuristic 1 (7 possibilities)

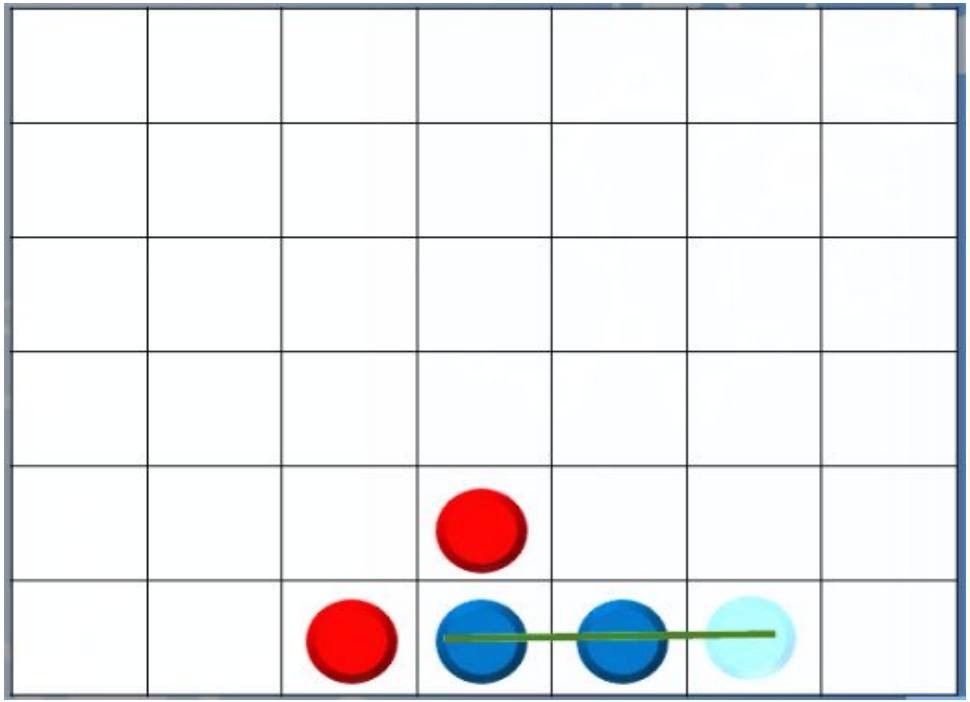


Heuristic 1 (7 possibilities)



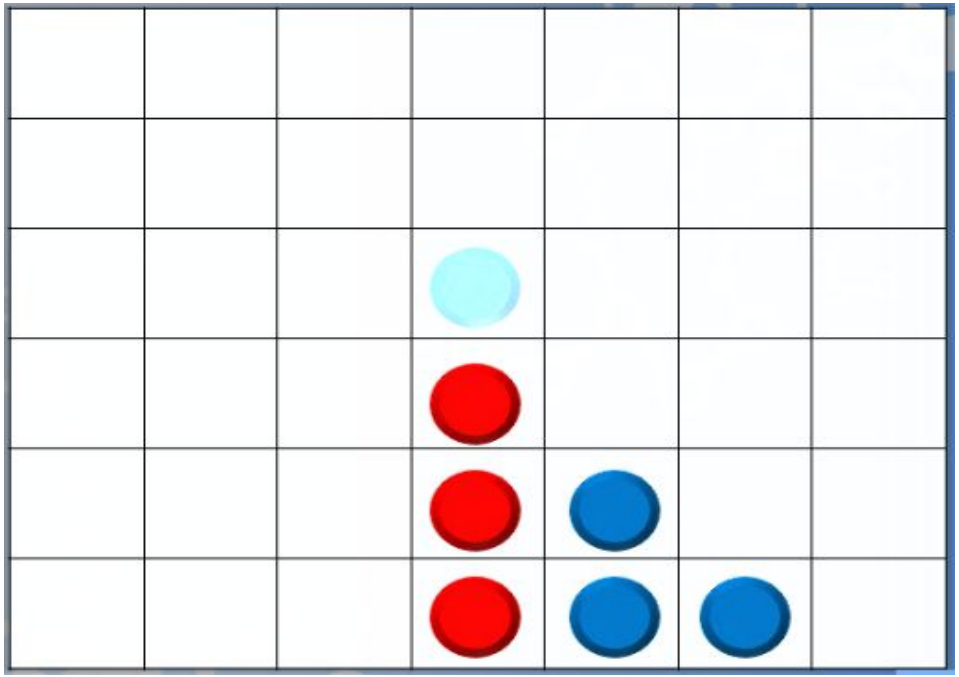
Heuristic 2 (How many pieces in a row will i get if I move here)

The more - The better



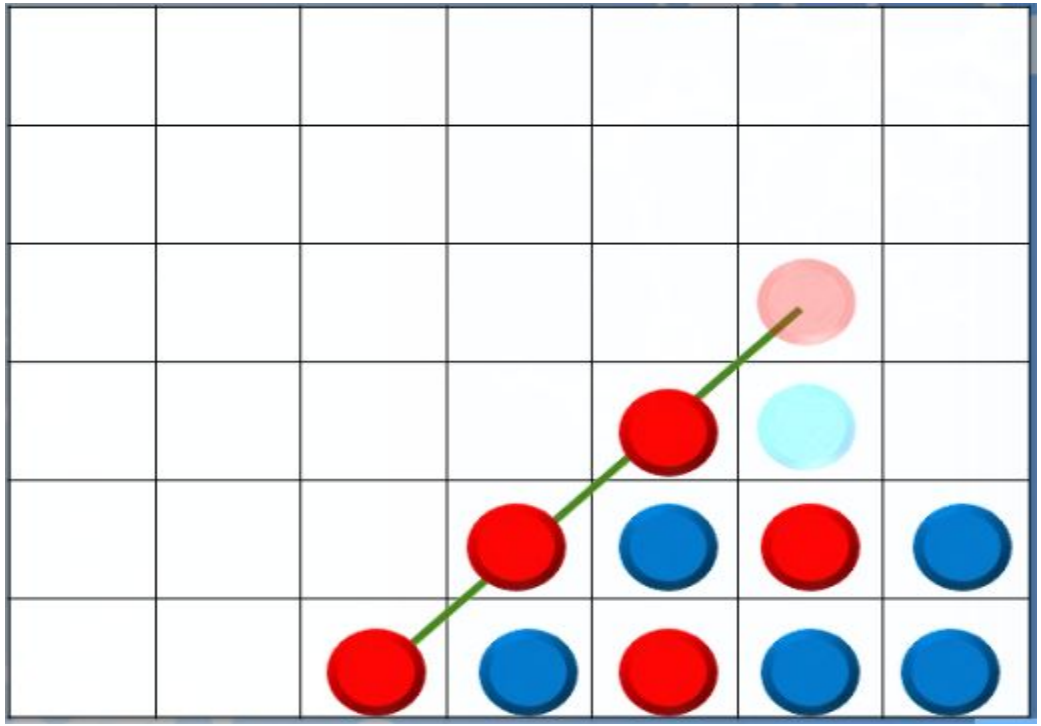
Heuristic 3 (Do I block a good path for the enemy if I move here ?)

Yes - The better



Heuristic 4 (Does the space above give the opponent an advantage ?)

No - The better



Implementation

- Dynamic board and goal setting
- Implementing in C++
- Algorithms : Min-Max , Alpha-Beta Pruning

3 modes

- Player vs player
- Player vs Computer
- Computer vs Computer


THANK YOU