

Connect K

Richard Fang
rfangAI

Heuristic

Choose the move that results in the most unblocked (the opponent does not share the same row/col/diagonal) contiguous lines for the player. Weighted by line length

Ex: 5 x 5 , K = 4

next move : red

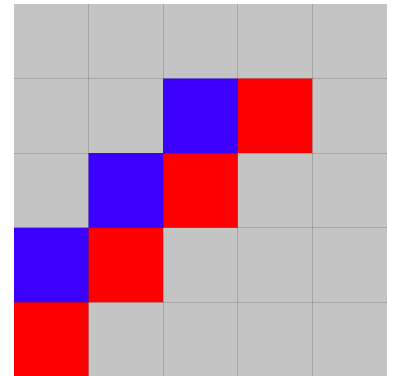
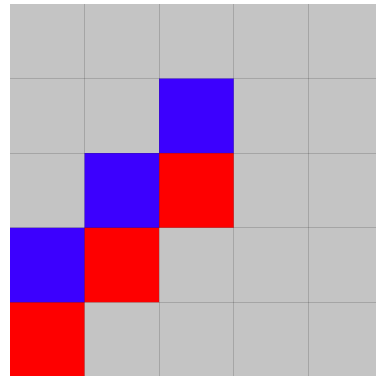
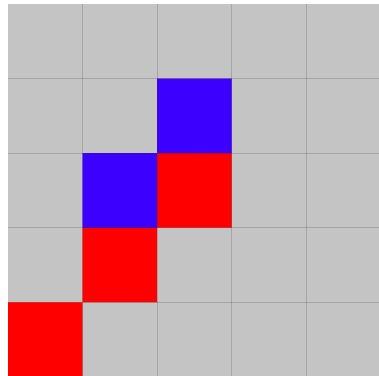
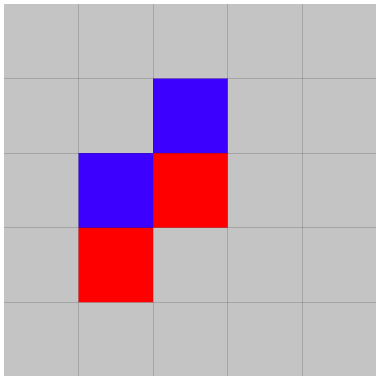
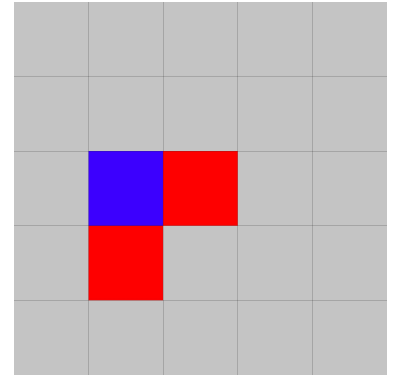
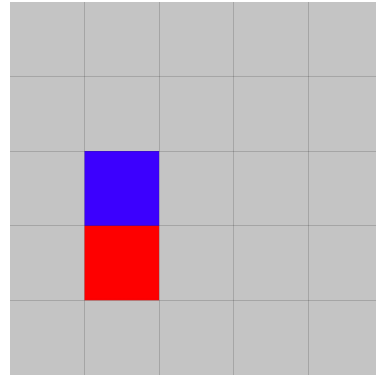
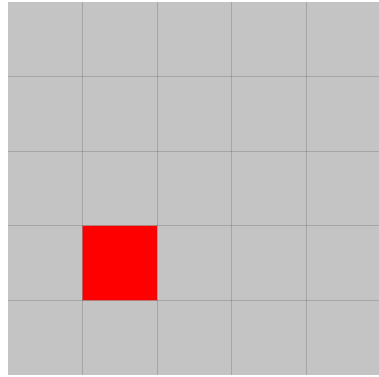
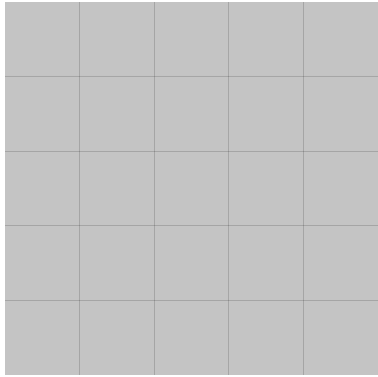
numbers are the number of lines

* even though it is the same length as the other moves, the resulting line is longer.

0		1		0
				0
			1*	1
0	0		0	N
N	0	0	0	N

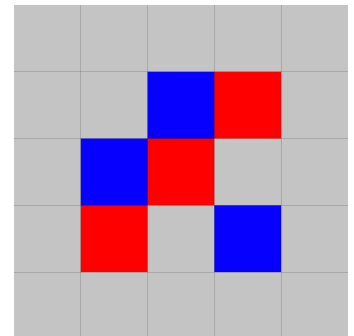
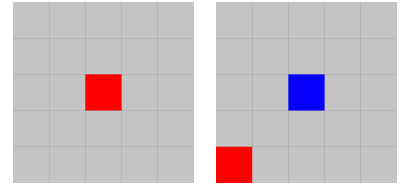
N	1		0	N
0	1		2	0
1				0
0				1
1	0	1	0	0

Actual Result: 5×5 $K = 4$



Prioritized Checks

1. Take the middle spot if available ($W/2, H/2$)
2. Take the spot if player will win (at depth 0)
3. Take the spot if player will lose (at depth 0)
4. Take spot if opponent will have $k - 1$ in a row to avoid this scenario →
5. Take spot if player will have $k - 1$ in a row to be in this scenario →



Other tips

- Don't check all available spots
 - Only check spots that are adjacent to existing pieces
- Focus on getting the min/max algorithm working before adding other constraints (time limit, alpha pruning, etc)
- Step through your algorithm by hand if needed