Heuristic search

Three heuristic scores were made. The first one in to try to move the reflection point of the opponent. For example, when the opponent is in (4,5), the player tries to move closer to (2, 1) which is the reflection point if we regard (3,3) as the centre of the board. The second heuristic tries to move where the number of available moves of the player is maximum and tries to minimize the number of possible moves for the opponent. This is similar to what was referred to in the lecture. The third one is similar to the second one. It also counts the number of moves of the player and the opponent, and tries to maximize the number of the player's move while trying to minimize the number of opponent's move. It also tries to move closer to the centre of the board because the number of possible moves would be limited around the corners of the board. It also tries to move closer to where the opponent is.

The overall win rate for each heuristic score was 68.6%, 61.4% and 62.9% respectively. Because the first method achieved the highest win rate, I chose it as the final heuristic score. It achieve 90% win rate for Random, MM_Center and MM_Improved players. The performance was worse for AB_Open, AB_Center and AB_Improved, and it narrowly achieved over 50% win-rate.

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                Playing Matches
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Match #	Opponent	AB_Improved	AB_Custom	AB_Custom_2	AB_Custom_3
		Won | Lost	Won | Lost	Won | Lost	Won | Lost
1	Random	9 | 1	9 | 1	8 | 2	5 | 5
2	MM_Open	4 | 6	5 | 5	5 | 5	7 | 3
3	MM_Center	8 | 2	9 | 1	9 | 1	9 | 1
4	MM_Improved	8 | 2	9 | 1	7 | 3	8 | 2
5	AB_Open	2 | 8	6 | 4	4 | 6	4 | 6
6	AB_Center	5 | 5	5 | 5	4 | 6	7 | 3
7	AB_Improved	5 | 5	5 | 5	6 | 4	4 | 6
	Win Rate:	58.6%	68.6%	61.4%	62.9%

There were 18.0 timeouts during the tournament -- make sure your agent handles search timeout correctly, and consider increasing the timeout margin for your agent.

Your ID search forfeited 88.0 games while there were still legal moves available to play.