Performance of the game agent:
Evaluation of the performance of the custom_score evaluation function against a baseline agent using alpha-beta search and iterative deepening (ID) called `AB_Improved`. The three `AB_Custom` agents use ID and alpha-beta search with the custom_score functions defined in
game_agent.py.

Match #	Opponent	AB_Improved		AB_Custom		AB_Custom_2		AB_Custom_3	
		Won	Lost	Won	Lost	Won	Lost	Won	Lost
1	Random	10	0	10	0	10	0	10	0
2	MM_Open	6	4	7	3	6	4	6	4
3	MM_Center	7	3	7	3	9	1	9	1
4	MM_Improved	10	0	6	4	7	3	10	0
5	AB_Open	5	5	5	5	6	4	3	7
6	AB_Center	5	5	3	7	3	7	5	5
7	AB_Improved	4	6	6	4	4	6	6	4
	Win Rate:	67.1%		62.9%		64.3%		70.0%	

Analysis
In this analysis we develop 3 evaluation methods to come with a strategy to win a game.

Evaluation Function 1:

```
(player_position_from_center/(1+opponent_position_from_center)**2)
```

This function evaluates which player is closer to the center as holding a center position allows player to have an advantage in next move. In the next move player can move is any direction. This is better than a corner position as the moves get limited as player gets pushed towards the corner. But this function doesn't perform so well.

Evaluation Function 2:

```
player_moves_unique/(1+opponent_unique_moves**2)
```

In this function we check if the player has more unique moves as compared to the opponent. More unique means the player has better chance at making a legal moves then the opponent who will not be able to block all the paths for player.

Evaluation Function 3:

```
player_open_spaces/(1+opponent_open_spaces)
```

This function is based on the logic of having more open spaces available next to the player as it will allow player to keep moving. This also based on same concept as function 2 on having more legal moves than opponent without getting blocked. This function also performs better than the rest.

Best Evaluation Function

Of the 3 evaluation functions Evaluation Function 3 `player_open_spaces/(1+opponent_open_spaces)` where we check for ratio of open spaces available to player performs best. This functions function performs better than others in below terms:

1. It has the highest win rate
2. It's simpler in complexity then the others
3. The player's location in considered when scoring so that better moves like being in center is rewarded for better future moves.