# Heuristic Analysis

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## custom_score_3

This function always returns zero. I use it for reference to compare with other two functions. They should be always better.

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## custom_score_2

This is most simple evaluation function. It counts legal player moves and returns as a result. In the isolation game we have bigger chance for winning if we have more available moves as we have more space to act.

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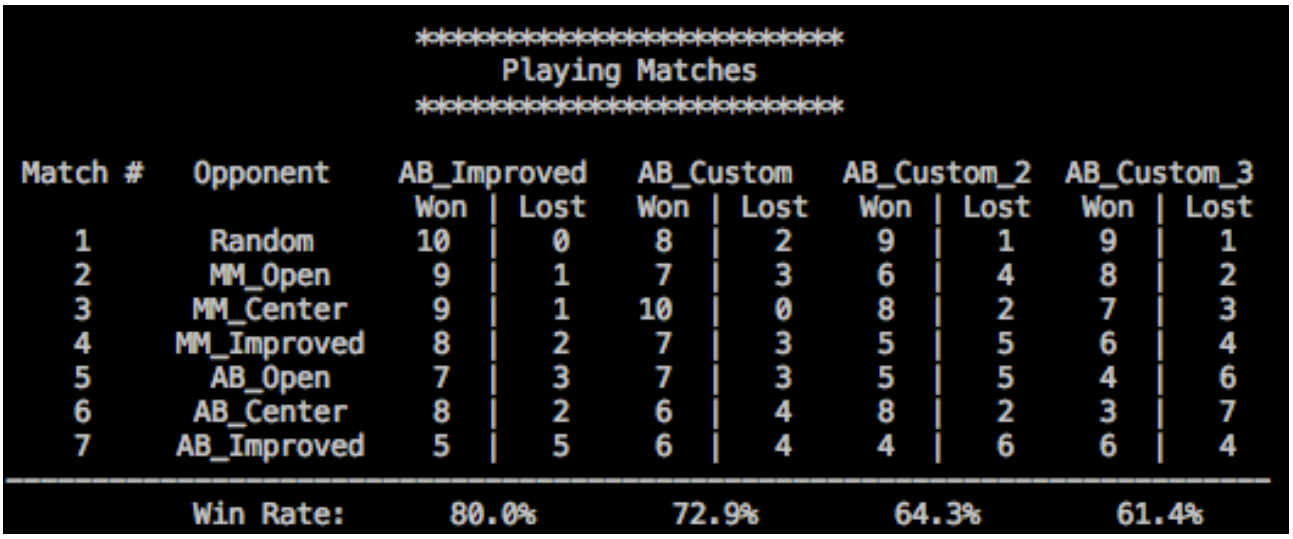
## custom_score

This is my best evaluation function. custom_score_2 is good, by it does not take into account available moves for the opponents. There could be such situations where we have not so many available moves, but our opponent does not have any at all or very few. So, this evaluation function suppose to fix such kind of situation. And here we count difference between available player moves and available opponent moves.

## Execution results

Here you may notice that custom_score shows best results among other evaluation functions.I suppose this function is best and should be used because:

1. We have to use amount of legal moves remaining. Because our goal is maximise this value for the player. custom_score using it.
2. We have to take into account remaining moves for the opponent. custom_score doing it.
3. We have to take into account speed of evaluation function. custom_score is reasonably fast.



Playing Matches

| Match # | Opponent | AB_Improved | | AB_Custom | | AB_Custom_2 | | AB_Custom_3 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Won | Lost | Won | Lost | Won | Lost | Won | Lost |
| 1 | Random | 10 | 0 | 8 | 2 | 9 | 1 | 9 | 1 |
| 2 | MM_Open | 9 | 1 | 7 | 3 | 6 | 4 | 8 | 2 |
| 3 | MM_Center | 9 | 1 | 10 | 0 | 8 | 2 | 7 | 3 |
| 4 | MM_Improved | 8 | 2 | 7 | 3 | 5 | 5 | 6 | 4 |
| 5 | AB_Open | 7 | 3 | 7 | 3 | 5 | 5 | 4 | 6 |
| 6 | AB_Center | 8 | 2 | 6 | 4 | 8 | 2 | 3 | 7 |
| 7 | AB_Improved | 5 | 5 | 6 | 4 | 4 | 6 | 6 | 4 |
| | Win Rate: | 80.0% | | 72.9% | | 64.3% | | 61.4% | |