

Amjad Alsharafi (WID180704) (17103443/1)

Algorithm explanation

First, the game will return positive or negative infinity if the game is done:

```
if game.is_winner(player):  
    return float('inf')  
if game.is_loser(player):  
    return float('-inf')
```

Next it gets the distance between the two players:

```
my_position = game.get_player_location(player)  
opponent_position = game.get_player_location(game.get_opponent(player))  
  
dist = math.sqrt(  
    (((my_position[0] - opponent_position[0]) ** 2)  
    + ((my_position[1] - opponent_position[1]) ** 2))  
)
```

Lastly, it will get the number of moves for the two player, and compute the score by getting the difference in the number of available moves (*with the opponent moves scaled because we want to have the maximum number of moves while minimizing the opponent moves*). And scale everything by the distance.

```
my_moves = len(game.get_legal_moves(player))  
opponent_moves = len(game.get_legal_moves(game.get_opponent(player)))  
  
return float(((my_moves) - 100*((opponent_moves))) * dist)
```

Result

```
*****  
Evaluating: ID_Improved
```

Playing Matches:

Match 1:	ID_Improved	vs	Random	Result: 171 to 29
Match 2:	ID_Improved	vs	MM_Null	Result: 143 to 57
Match 3:	ID_Improved	vs	MM_Open	Result: 95 to 105
Match 4:	ID_Improved	vs	MM_Improved	Result: 92 to 108
Match 5:	ID_Improved	vs	AB_Null	Result: 123 to 77
Match 6:	ID_Improved	vs	AB_Open	Result: 114 to 86
Match 7:	ID_Improved	vs	AB_Improved	Result: 111 to 89

Results:

ID_Improved 60.64%

Evaluating: AMJAD

Playing Matches:

Match 1:	AMJAD	vs	Random	Result: 185 to 15
Match 2:	AMJAD	vs	MM_Null	Result: 167 to 33
Match 3:	AMJAD	vs	MM_Open	Result: 125 to 75
Match 4:	AMJAD	vs	MM_Improved	Result: 113 to 87
Match 5:	AMJAD	vs	AB_Null	Result: 154 to 46
Match 6:	AMJAD	vs	AB_Open	Result: 132 to 68
Match 7:	AMJAD	vs	AB_Improved	Result: 132 to 68

Results:

AMJAD 72.00%