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1. Number of my moves
    a. 73.5%. The heuristic function here is number of my moves. This heuristic function can help me win most of the time by selecting relatively reasonable path that maximizes this heuristic function. But it fails to consider opponent's situation. This heuristic function canot beat ID_Improved.
    b.

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

Playing Matches:
----------
  Match 1: ID_Improved vs   Random      Result: 19 to 1
  Match 2: ID_Improved vs   MM_Null     Result: 18 to 2
  Match 3: ID_Improved vs   MM_Open     Result: 13 to 7
  Match 4: ID_Improved vs MM_Improved   Result: 18 to 2
  Match 5: ID_Improved vs   AB_Null     Result: 14 to 6
  Match 6: ID_Improved vs   AB_Open     Result: 14 to 6
  Match 7: ID_Improved vs AB_Improved   Result: 17 to 3


Results:
----------
ID_Improved         80.71%

*************************
   Evaluating: Student
*************************

Playing Matches:
----------
  Match 1:   Student   vs   Random      Result: 18 to 2
  Match 2:   Student   vs   MM_Null     Result: 16 to 4
  Match 3:   Student   vs   MM_Open     Result: 12 to 8
  Match 4:   Student   vs MM_Improved   Result: 14 to 6
  Match 5:   Student   vs   AB_Null     Result: 13 to 7
  Match 6:   Student   vs   AB_Open     Result: 14 to 6
  Match 7:   Student   vs AB_Improved   Result: 16 to 4


Results:
----------
Student             73.57%
```

2. Number of opponent moves
    a. 69.29%. The heuristic function here is number of my opponent moves. This heuristic function achieves worse score than first heuristic function by selecting relatively reasonable path for my opponent that maximizes this heuristic function. This heuristic function canot beat ID_Improved. I definitely don't want to use this heuristic function.
    b.

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

Playing Matches:
----------
  Match 1: ID_Improved vs   Random      Result: 19 to 1
  Match 2: ID_Improved vs   MM_Null     Result: 19 to 1
  Match 3: ID_Improved vs   MM_Open     Result: 17 to 3
  Match 4: ID_Improved vs MM_Improved   Result: 15 to 5
  Match 5: ID_Improved vs   AB_Null     Result: 19 to 1
  Match 6: ID_Improved vs   AB_Open     Result: 17 to 3
  Match 7: ID_Improved vs AB_Improved   Result: 18 to 2


Results:
----------
ID_Improved         88.57%

*************************
   Evaluating: Student
*************************

Playing Matches:
----------
  Match 1:   Student   vs   Random      Result: 17 to 3
  Match 2:   Student   vs   MM_Null     Result: 18 to 2
  Match 3:   Student   vs   MM_Open     Result: 11 to 9
  Match 4:   Student   vs MM_Improved   Result: 14 to 6
  Match 5:   Student   vs   AB_Null     Result: 15 to 5
  Match 6:   Student   vs   AB_Open     Result: 10 to 10
  Match 7:   Student   vs AB_Improved   Result: 12 to 8


Results:
----------
Student             69.29%
```

3. Number of my moves – Number of opponent moves
    a. 90%. The heuristic function here is number of my moves minus number of opponent moves. This heuristic function can help me win most of the time by selecting relatively optimal path that maximizes this heuristic function. This heuristic function beats ID_Improved.

       I select this heuristic function based on the following reasons:

       1. It takes number of my move into consideration.
       2. It takes number of opponent move into consideration.
       3. It outperforms ID_Improved baseline benchmark.
       4. It has highest 'Student' score among all three heuristic functions.

       That's why I select this heuristic function to be my final choice.

    b.

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

Playing Matches:
----------
  Match 1: ID_Improved vs   Random      Result: 19 to 1
  Match 2: ID_Improved vs   MM_Null     Result: 20 to 0
  Match 3: ID_Improved vs   MM_Open     Result: 17 to 3
  Match 4: ID_Improved vs MM_Improved   Result: 13 to 7
  Match 5: ID_Improved vs   AB_Null     Result: 19 to 1
  Match 6: ID_Improved vs   AB_Open     Result: 19 to 1
  Match 7: ID_Improved vs AB_Improved   Result: 16 to 4


Results:
----------
ID_Improved         87.86%

**************************
   Evaluating: Student
**************************

Playing Matches:
----------
  Match 1:   Student   vs   Random      Result: 18 to 2
  Match 2:   Student   vs   MM_Null     Result: 19 to 1
  Match 3:   Student   vs   MM_Open     Result: 18 to 2
  Match 4:   Student   vs MM_Improved   Result: 19 to 1
  Match 5:   Student   vs   AB_Null     Result: 18 to 2
  Match 6:   Student   vs   AB_Open     Result: 19 to 1
  Match 7:   Student   vs AB_Improved   Result: 15 to 5


Results:
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Student             90.00%
```