Logic behind AI

The AI implementation was one of the most crucial steps in the game. The game should be such that it is fair and gives chances to users to win as well. A good AI should:-

* Be easy to implement without adding much of the overheads to the code.
* Is moderately difficult. This is because a user can quickly lose interest in game if not given a chance to win. Occasional winning is important to keep the user engrossed in the game.
* Is fair. By fair I mean that it is not accessing the inputs given by the user and playing its move according to it. If this happens then the user can never win.

Initially I had implemented an AI but it was never allowing the user to win. It was far away from an ideal AI so I had to rethink. The present logic accesses the last entries of the users and generates its output according to it. Every user is skewed to one of the 3 choices and I am grabbing this loophole in human psychology to defeat the user. The AI keeps a counter of all the moves played by the user and then plays a move that has the highest probability of defeating the user. So if a user is more likely to play a particular move, then the AI is more likely to play its countermove. I have tested my logic extensively using 51 inputs and it is a truly randomized experiment. No correlating or casual factors are present as neither the AI not the user has access to the choices of one other in a particular round. The output of the 51 experiments is given below.

|  |  |
| --- | --- |
| **Round no.** | **Result** |
| 1 | D |
| 2 | D |
| 3 | D |
| 4 | W |
| 5 | W |
| 6 | W |
| 7 | L |
| 8 | D |
| 9 | D |
| 10 | W |
| 11 | L |
| 12 | L |
| 13 | D |
| 14 | L |
| 15 | W |
| 16 | W |
| 17 | L |
| 18 | W |
| 19 | W |
| 20 | D |
| 21 | L |
| 22 | W |
| 23 | L |
| 24 | L |
| 25 | L |
| 26 | D |
| 27 | W |
| 28 | D |
| 29 | D |
| 30 | D |
| 31 | W |
| 32 | W |
| 33 | L |
| 34 | D |
| 35 | D |
| 36 | W |
| 37 | L |
| 38 | D |
| 39 | D |
| 40 | W |
| 41 | L |
| 42 | W |
| 43 | D |
| 44 | D |
| 45 | W |
| 46 | L |
| 47 | L |
| 48 | L |
| 49 | D |
| 50 | W |

Here L=user lost W=user won D=draw

From the table number of

* L=15
* W=17
* D=18

Probability of win= 17/50 =0.34

Probability of lost= 15/50=0.30

Probability of draw= 18/50=0.36

As we can see that the probability of win, lost and draw is nearly equal. Therefore our AI is working accurately. We can also analyze that the AI is losing continuously (or it is not winning) for the first6-7 rounds. It is taking this time to analyze the user.