Liar's Dice Specifications

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September 14th, 2021

1 Rules of the Game

Liar's dice is a game for two or more players. The object of the game is to be the last player with dice. Each player begins with 5 dice and a cup. At the beginning of each round all players shake their dice in the cup and then turn the cup over, being sure to conceal the values of their dice. For the first round a randomly selcted player begins by making a bid. A bid is a statement about the number of dice of a certain value there are collectively i.e. including all opponents dice. The following player then has three options:

1. They may make a higher bid i.e. they claim that there are a higher number of dice of a certain value (which is not necessarily the same value as the previous players bid).

2. They may call the preceding player a liar. In this case all players reveal their dice and should there be less than the number of dice the preceding player bid then that player loses a die. However, Should there be the same number bid, or more, then the player who challenged the bid loses a die.

3. The player could alternatively say "Spot on". In this case as well all players reveal their dice. However, if the preceding players bid happens to be exactly the case then the challenging player can either; reclaim a lost die, or force the previous player to lose two dice. Should the bid happen to be false i.e. there were more or less dice of a certain value bid then the challenging player loses a die.

Once a challenge is made the round ends and a new round begins, and the player to the left of the loser of the challenge begins the next round. This continues until only one player has dice remaining.

Finally, there are a couple of extra rules involving sixes. A die with a value of six is *wild* and can take on any value. For instance if a player made a bid that there were five dice with value of three on the table, and the following player challenged, then if there were four threes and three sixes, then we would say there are seven threes on the table. Consequently, to account for how much less likely there are to be a certain number of sixes on the table than the same number of another value, sixes are worth double for the purposes of bidding.

For example if a player bid three fives, then the following player could bid two sixes as the value of two sixes is four. Alternatively if a player bid two sixes then the following player would need to bid seven of another value, or three sixes.

2   Specifications

The games will be simulated using a python script which implements the rules outlined in the previous section. The only shared data structure available to players is the bids object. This contains all of the bids from players in the current round. The game playing AIs submitted will need to inheret from the Player class. This interface defines a single method called "move" which takes the bids data structure, and the values of the current players dice as arguments and returns a string representing the next move. The return value must be "Liar", "Spot on", or a valid bid of type tuple where the first indexed item is the quantity bid, and the second is the value.

3   Competition Parameters

The competition parameters i.e. number of games, method of scoring, number of players per game, time limit per move etc. will be determined once all participants have signed up. I'm very open to any suggestions people have about what the fairest way in which to implement this is.