

24 Card Game

February 6, 2018

1 24 Card Game

In this assignment, you have to find all the valid postfix notations that include the four cards, and also addition, subtraction, multiplication, division, modulus and concatenation operations. Evaluate these postfix notations and see which of them lead to 24.

2 Generating valid postfix expressions

The `find_postfix()` function will find all valid postfix notations for each 4 card combination and evaluate them to see if they are equal to 24. You will first call your `isvalid()` method to check the expression is valid. Then you will call the `evaluate()` method inside of this function to evaluate the expression. There are five different possible forms of a valid postfix notation for 4 cards, where C denotes a card value and X denotes an operation:

1. CCXCCXX
2. CCCCXXX
3. CCCXCXX
4. CCXCXCX
5. CCCXXCX

Every valid possible postfix expression will take one of these five forms. Note that when you have 4 values, it is only possible to have 3 operations in the postfix expression for it to be a valid expression. You will need to use three nested loops iterating over the ops list created for you in order to generate every possible postfix notation. Once you have generated all of these notations, evaluate them, and if an expression evaluates to 24, add it to the set of results.

3 concatenate() function

In this function, you will concatenate the values of two cards and return the combined value. This is one of the operations used in the ops list.

For example: if the card values are 4 and 7, this function should return 47.

4 Output of your code

The output of your code is stored in a results set. The contents of the results set along with the number of solutions is displayed as the final output. For example: Input given is "AAAJ"

J A + A A + *

A A + A J + *

A J + A A + *

A A + J A + *

4 solutions.