Problem 3227: Vowels Game in a String

Problem Information

Difficulty: Medium
Acceptance Rate: 77.03%
Paid Only: No
Tags: Math, String, Brainteaser, Game Theory

Problem Description

Alice and Bob are playing a game on a string.

You are given a string `s`, Alice and Bob will take turns playing the following game where Alice starts **first** :

* On Alice's turn, she has to remove any **non-empty** substring from `s` that contains an **odd** number of vowels. * On Bob's turn, he has to remove any **non-empty** substring from `s` that contains an **even** number of vowels.

The first player who cannot make a move on their turn loses the game. We assume that both Alice and Bob play **optimally**.

Return `true` if Alice wins the game, and `false` otherwise.

The English vowels are: `a`, `e`, `i`, `o`, and `u`.

Example 1:

Input: s = "leetcoder"

Output: true

Explanation: Alice can win the game as follows:

* Alice plays first, she can delete the underlined substring in `s = "_**leetco**_ der"` which contains 3 vowels. The resulting string is `s = "der"`. * Bob plays second, he can delete the

underlined substring in `s = "_**d**_ er"` which contains 0 vowels. The resulting string is `s = "er"`. * Alice plays third, she can delete the whole string `s = "**_er_** "` which contains 1 vowel. * Bob plays fourth, since the string is empty, there is no valid play for Bob. So Alice wins the game.

Example 2:

Input: s = "bbcd"

Output: false

Explanation: There is no valid play for Alice in her first turn, so Alice loses the game.

Constraints:

* `1 <= s.length <= 105` * `s` consists only of lowercase English letters.

Code Snippets

C++:

```
class Solution {
public:
bool doesAliceWin(string s) {

}
};
```

Java:

```
class Solution {
public boolean doesAliceWin(String s) {

}
}
```

Python3:

```
class Solution:
def doesAliceWin(self, s: str) -> bool:
```