

3227. Vowels Game in a String

Medium Topics Hint

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 = "leetcode"`

Output: `true`

Explanation:

Alice can win the game as follows:

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

```
1 class Solution:
2     def doesAliceWin(self, s: str) -> bool:
3         vowels = ('a', 'e', 'i', 'o', 'u')
4         if not s:
5             return False
6
7         count = 0
8         for c in s:
9             if c in vowels:
10                 count += 1
11
12         print(count)
13         if count == 0:
14             return False
15
16         return True if count % 2 == 0 else False
17
```

computer example

`s = abcd`

Alice: `b`

Bob: `cd`

Alice: `a`

Bob: `∅`

```
1 class Solution:
2     def doesAliceWin(self, s: str) -> bool:
3         #vowels = ('a', 'e', 'i', 'o', 'u')
4         v = 'aeiou'
5         if not s:
6             return False
7
8         count = 0
9         for c in s:
10             if c in v:
11                 return True
12
13         return False
14
```

→ Alice always win,

no matter # of vowel is even or odd,

always leave odd number of vowels for Bob will win

As long as #vowel > 0.