Array #2

Leetcode #1295 ✓

Find Numbers With Even Number of Digits ✓

https://leetcode.com/problems/find-numbers-with-even-number-of-digits/description/ ✓

Given an array nums of integers, return how many of them contain an even number of digits

Example 1:
Input: nums = [12, 345, 2, 6, 7896]
Output: 2

Example 2:
Input: nums = [555, 901, 482, 1771]
Output: 1

Constraints:
1 <= nums.length <= 500 ✓
1 <= nums[i] <= 10^5 ✓

Companies:
Amazon, Quora, Adobe

Approach 1:
Check number of digits by dividing it by 10

$$7\ 3\ 2\ 9 / 10 = \boxed{①}$$

$$7\ 3\ 2 / 10 = ①$$

$$7\ 3 / 10 = ①$$

$$7 / 10 = ①$$

$$0$$

$$C = \phi\ 1$$

$$n.$$

Time complexity:
O(n.log(maximum number of ~~digits in a number in array~~))
Space complexity:
O(1)

$$k + 1$$ $$\boxed{8\ 9\ 9\ 9}$$

$$\underbrace{8 \times 10^{3} + 9\ 9\ 9}$$

$$num = a \cdot 10^{k} + b$$

$$10^{k+1} > num \geq 10^{k}$$

$$k \leq \frac{\log_{10}(num)}{3} \leq k+1$$

$$[\quad 10^4 \qquad 10^4 > \quad \geq 10$$

$$10000$$

Approach 2:
Convert num to string and get its length and then do modulo 2

$$7891 \rightarrow "7891" \xrightarrow[len]{} 4 \checkmark$$

Time complexity:
O(n.log(maximum number of digits in a number in array))
Space complexity:
O(log(maximum number of digits in a number in array))

Approach 3: $\checkmark$
Convert num to string and get its length and then do modulo 2

$$10^0 = 1 \qquad \boxed{nD = 1}$$

$$10^1 = 10 \qquad \boxed{nD = 2}$$

$$10^2 = 100 \qquad \boxed{nD = 3}$$

$$\vdots$$

$$\boxed{10^5 = 100000} \qquad \boxed{nD = 6}$$

$$10^5 = 6 \text{ digits}$$
$$k = 5 \qquad \boxed{100000}$$
$$\underline{999999}$$
$$\text{integer } 100001$$

We can say that 10^k is the smallest integer

with $k+1$ digits

$$10^k \leq num < 10^{k+1}$$

a number with $k+1$

digits

$$\boxed{k \leq \log_{10}(num) < k+1}$$

$$\log_{10}(num) = k+1$$

$val = \log_{10}(100) = 2$ $\log_{10}(999) = 2.9\ldots$ $res + 1$

floor → 2   2.01   floor = 2 $res \mathbin{/\!/}$

ceil → 2   ceil = 3 $res - 1 \mathbin{/\!/}$

Time complexity:
O(n.log(maximum number of digits in a number in array))
Space complexity:
O(1)

Approach 4:
$1 <= nums[i] <= 10^5$

$$1 \quad - \quad 9$$
$$10 \quad - \quad 99 \quad \rightarrow even$$
$$100 \quad - \quad 999$$
$$1000 \quad - \quad 9999$$
$$10000 \quad - \quad 99999$$
$$100000$$

$C = 1$

if (> $\overset{10}{=}$ < 99

or

$1000 >=$ = < 999
$== 100000$

Time complexity:
O(n)
Space complexity:
O(1)
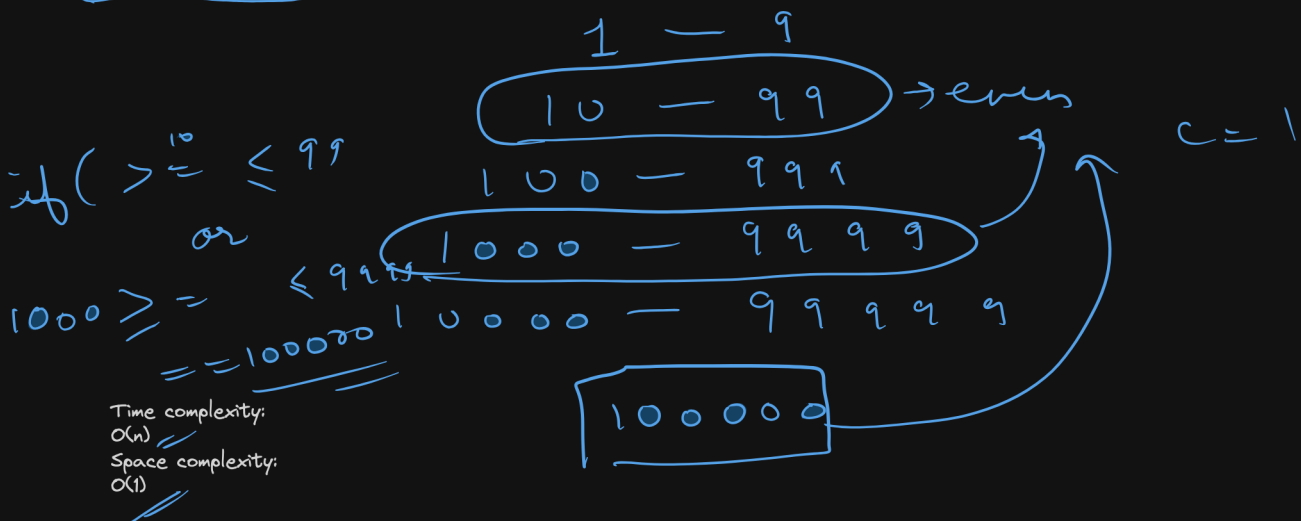
```java
public boolean numberHasEvenDigits(int num) {
    int digitsCount = 0;

    while (num != 0) {
        num = num / 10;
        digitsCount++;
    }

    return digitsCount % 2 == 0;
}

public int findNumbers(int[] nums) {
    int evenCount = 0;

    for (int i = 0; i < nums.length; i++) {
        if (numberHasEvenDigits(nums[i])) {
            evenCount++;
        }
    }
}
```

```java
        return evenCount;
    }


    public int findNumbers(int[] nums) {
        int evenCount = 0;

        for (int num : nums) {
            int len = String.valueOf(num).length();

            if (len % 2 == 0) {
                evenCount++;
            }
        }

        return evenCount;
    }


class Solution {
    public int findNumbers(int[] nums) {
        int evenCount = 0;

        for (int num: nums) {
            int digitCount = (int) Math.floor(Math.log10(num)) + 1;

            if (digitCount % 2 == 0) {
                evenCount++;
            }
        }

        return evenCount;
    }
}

class Solution {
    public int findNumbers(int[] nums) {
        int evenCount = 0;

        for (int num: nums) {
            int digitCount = (int) Math.floor(Math.log10(num)) + 1;

            if (digitCount % 2 == 0) {
                evenCount++;
            }
        }

        return evenCount;
    }
}
```