

Count Triplets That Can Form Two Arrays of Equal XOR

Given an array of integers arr.

We want to select three indices i, j and k where $(0 \leq i < j \leq k < \text{arr.length})$.

Let's define a and b as follows:

- $a = \text{arr}[i] \oplus \text{arr}[i + 1] \oplus \dots \oplus \text{arr}[j - 1]$
- $b = \text{arr}[j] \oplus \text{arr}[j + 1] \oplus \dots \oplus \text{arr}[k]$

Note that \oplus denotes the bitwise-xor operation.

Return the number of triplets (i, j and k) Where $a == b$.

Example 1:

Input: arr = [2,3,1,6,7]

Output: 4

Program:

```
def countTriplets(arr):
    n = len(arr)
    prefixXor = [0] * (n + 1)
    for i in range(n):
        prefixXor[i + 1] = prefixXor[i] ^ arr[i]
    count = 0
    for i in range(n):
        for k in range(i + 1, n):
            if prefixXor[i] == prefixXor[k + 1]:
                count += (k - i)
    return count
```

```
arr = [2, 3, 1, 6, 7]
print(countTriplets(arr))
```

Output:

```
C:\Users\srika\Desktop\CSA0863\pythonProject\.venv\Scripts\python.exe "C:\Users\srika\Desktop\CSA0863\pythonProject\DAA COADS.PYTHON\program 56.py"
4
Process finished with exit code 0
```

Time complexity:

$O(n^2)$