Problem 1720: Decode XORed Array

Problem Information

Difficulty: Easy
Acceptance Rate: 87.18%
Paid Only: No
Tags: Array, Bit Manipulation

Problem Description

There is a **hidden** integer array `arr` that consists of `n` non-negative integers.

It was encoded into another integer array `encoded` of length `n - 1`, such that `encoded[i] = arr[i] XOR arr[i + 1]`. For example, if `arr = [1,0,2,1]`, then `encoded = [1,2,3]`.

You are given the `encoded` array. You are also given an integer `first`, that is the first element of `arr`, i.e. `arr[0]`.

Return _the original array_ `arr`. It can be proved that the answer exists and is unique.

Example 1:

Input: encoded = [1,2,3], first = 1 **Output:** [1,0,2,1] **Explanation:** If arr = [1,0,2,1], then first = 1 and encoded = [1 XOR 0, 0 XOR 2, 2 XOR 1] = [1,2,3]

Example 2:

Input: encoded = [6,2,7,3], first = 4 **Output:** [4,2,0,7,4]

Constraints:

* `2 <= n <= 104` * `encoded.length == n - 1` * `0 <= encoded[i] <= 105` * `0 <= first <= 105`

Code Snippets

C++:

```
class Solution {
public:
vector<int> decode(vector<int>& encoded, int first) {

}
};
```

Java:

```
class Solution {
public int[] decode(int[] encoded, int first) {

}
}
```

Python3:

```
class Solution:
def decode(self, encoded: List[int], first: int) -> List[int]:
```