Nanthagoapl NG

Day - 53

Interview Questions

Single Number - I, II, III

(Optimal Solution Using Bit Manipulation)

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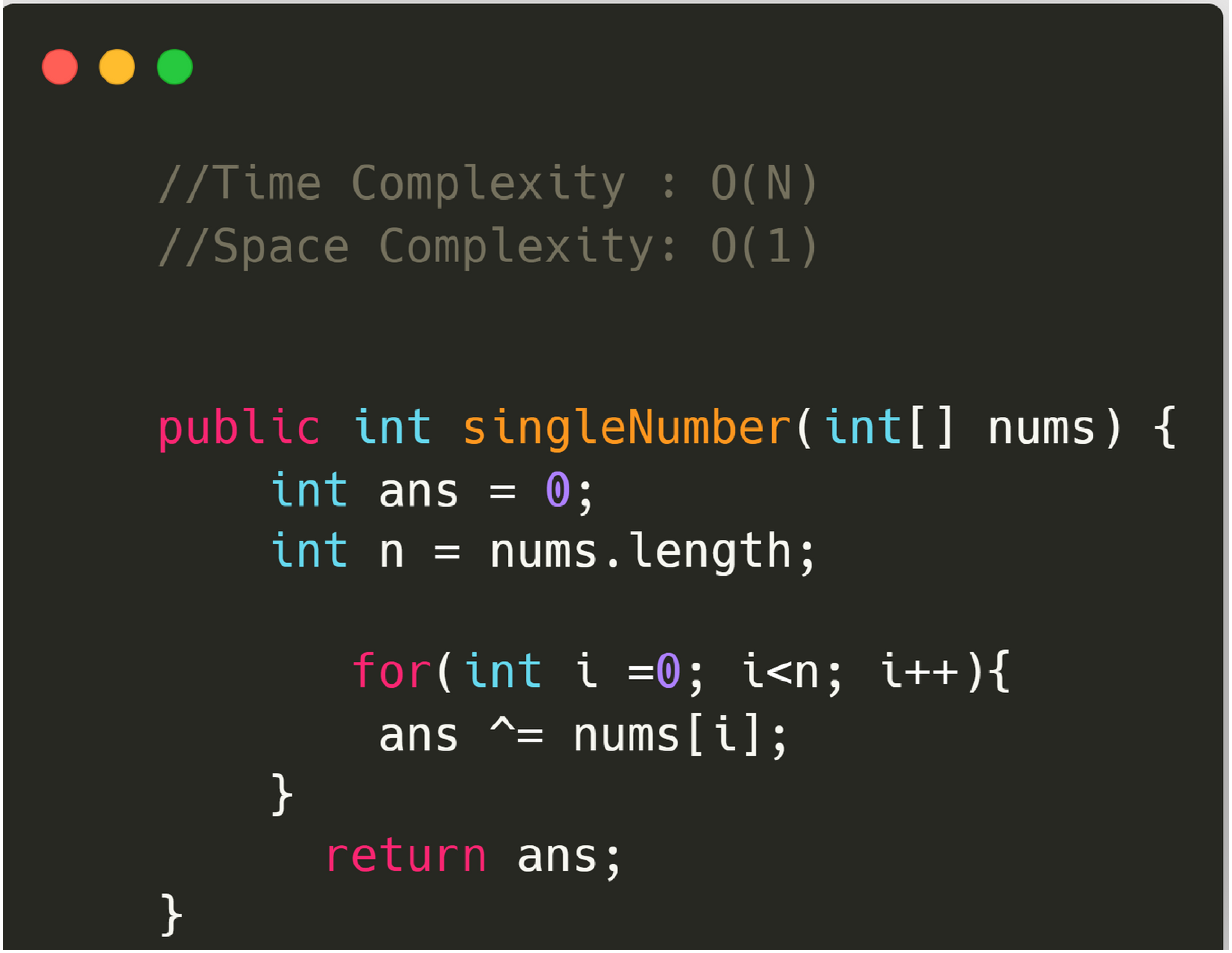
Single Number - I :



```
//Time Complexity : O(N)
//Space Complexity: O(1)


public int singleNumber(int[] nums) {
    int ans = 0;
    int n = nums.length;

       for(int i =0; i<n; i++){
        ans ^= nums[i];
    }
      return ans;
}
```

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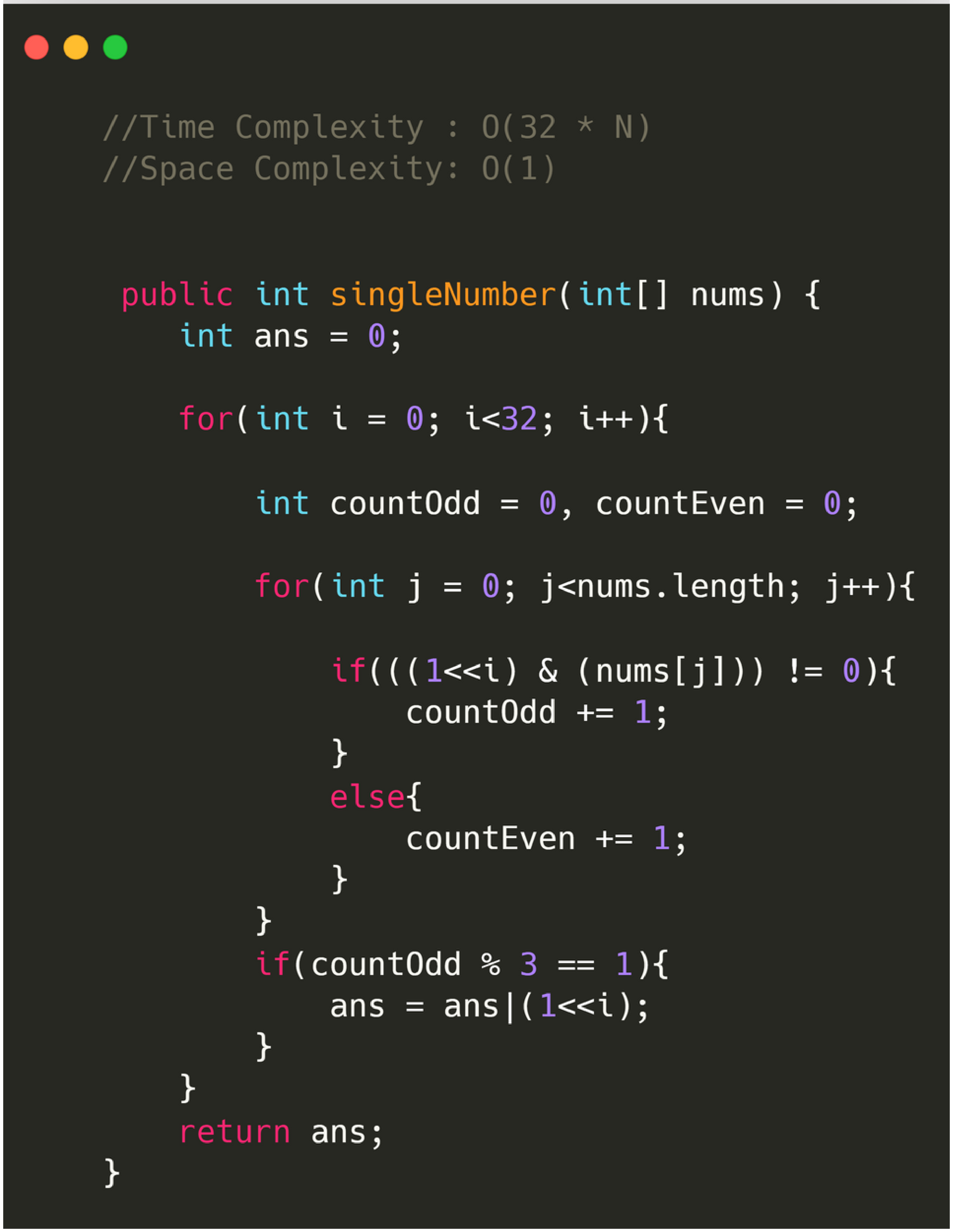
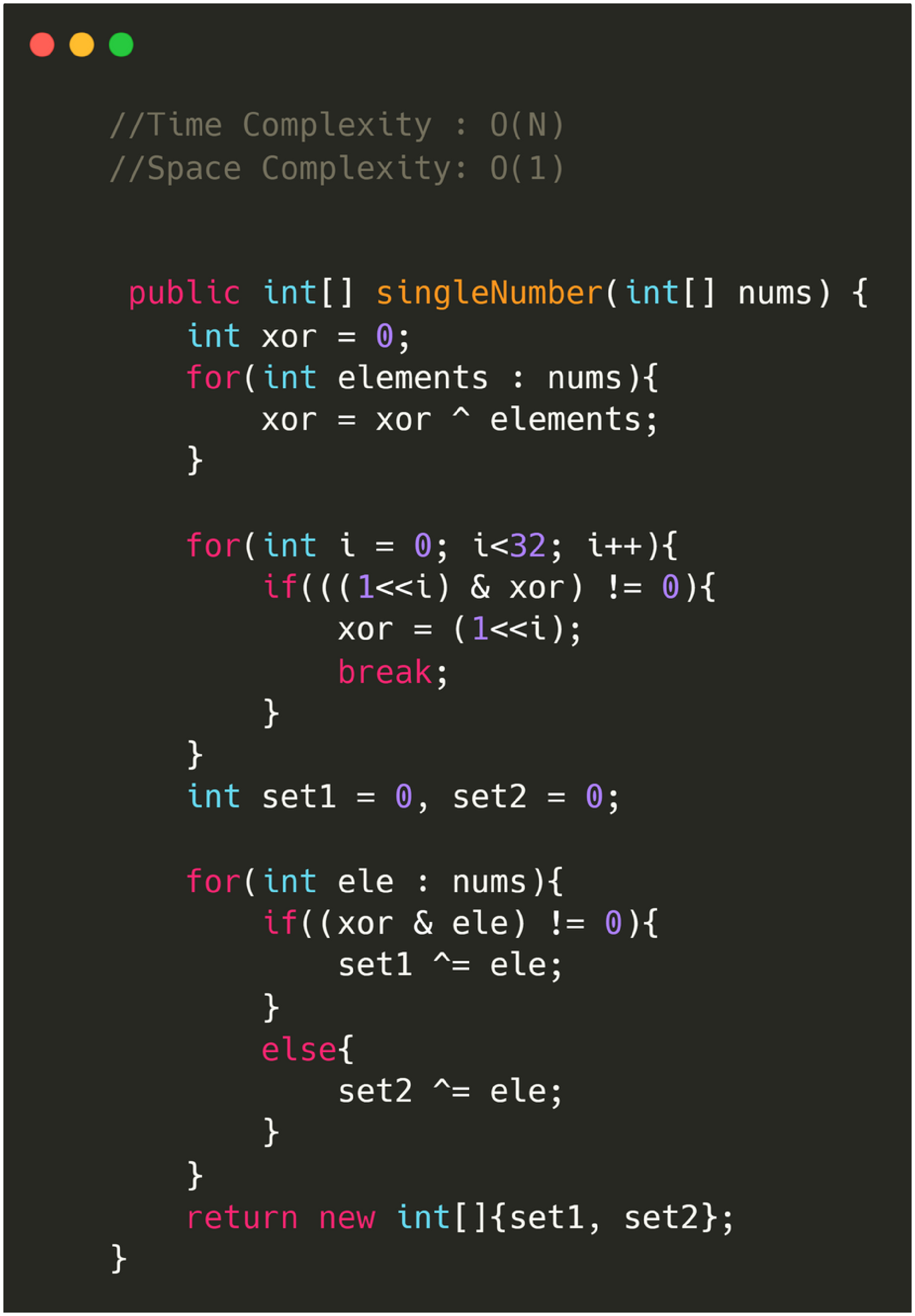
Single Number - II :



```
//Time Complexity : O(32 * N)
//Space Complexity: O(1)


 public int singleNumber(int[] nums) {
    int ans = 0;

    for(int i = 0; i<32; i++){

        int countOdd = 0, countEven = 0;

        for(int j = 0; j<nums.length; j++){

            if(((1<<i) & (nums[j])) != 0){
                countOdd += 1;
            }
            else{
                countEven += 1;
            }
        }
        if(countOdd % 3 == 1){
            ans = ans|(1<<i);
        }
    }
    return ans;
}
```

Single Number - III :



```
//Time Complexity : O(N)
//Space Complexity: O(1)


 public int[] singleNumber(int[] nums) {
    int xor = 0;
    for(int elements : nums){
        xor = xor ^ elements;
    }

    for(int i = 0; i<32; i++){
        if(((1<<i) & xor) != 0){
            xor = (1<<i);
            break;
        }
    }
    int set1 = 0, set2 = 0;

    for(int ele : nums){
        if((xor & ele) != 0){
            set1 ^= ele;
        }
        else{
            set2 ^= ele;
        }
    }
    return new int[]{set1, set2};
}
```