# Detective Conan

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 2 seconds |
| Memory limit: | 256 megabytes |

There's an array $arr$ of $n$ integers that contains all kinds of **EVIL**.

The Detective boys were kidnapped and hidden in a subarray of the array $arr$. They told Conan some information about this subarray.

- The bitwise $AND$ of all elements of the array $= a$.
- The bitwise $OR$ of all elements of the array $= o$.
- The bitwise $XOR$ of all elements of the array $= x$.

There may be several subarrays of the array with the given information or none at all. Can you find the number of subarrays of $arr$ satisfying these conditions?

## Input

The first line will contain $T \leq 5$ the number of test cases you need to solve.

Each test case starts with a line containing four integers $n$, $a$, $o$ and $x$. $(0 \leq a, o, x < 2^{20})$

The next line contains $n$ integers representing array $arr$ where $(0 \leq arr_i < 2^{20})$

## Output

For each test case print a single integer which is the number of subarrays satisfying the conditions.

## Scoring

Sub task #1 (9 points): $(1 \leq n \leq 300)$.

Sub task #2 (15 points): $(1 \leq n \leq 3000)$.

Sub task #3 (15 points): $(1 \leq n \leq 10^5, o = 0)$.

Sub task #4 (15 points): $(1 \leq n \leq 10^5, o = 2^m$ for some $0 \leq m < 20)$.

Sub task #5 (46 points): $(1 \leq n \leq 10^5)$.

## Example

| standard input | standard output |
|---|---|
| 3<br>2 1 3 2<br>1 3<br>5 0 0 0<br>0 0 0 1 0<br>5 1 2 3<br>1 2 3 4 5 | 1<br>7<br>0 |

## Note

A subarray of the array $arr$ is a sequence $arr_l, arr_{l+1}, ..., arr_r$ for some integers $(l, r)$ such that $1 \leq l \leq r \leq n$.

**Warning: Large Input/Output files. Be sure to use fast I/O methods.**