

# XOR Reachable

Input file:            **standard input**  
Output file:         **standard output**  
Time limit:          3 seconds  
Memory limit:       1024 megabytes

You are given integers  $N$ ,  $M$ , and  $K$ , and an undirected graph with  $N$  vertices and  $M$  edges. The vertices are numbered from 1 to  $N$ , and the edges are numbered from 1 to  $M$ . Edge  $i$  ( $1 \leq i \leq M$ ) connects vertices  $A_i$  and  $B_i$ , and has a non-negative integer weight  $C_i$ . The graph may have multiple edges, but there are no self-loops.

You are given  $Q$  queries. In the  $i$ -th ( $1 \leq i \leq Q$ ) query, you are given an integer  $D_i$ . Find the number of pairs of integers  $(u, v)$  that satisfy the following conditions:

- $1 \leq u < v \leq N$
- It is possible to move from vertex  $u$  to vertex  $v$  by only using edges  $j$  such that  $(C_j \oplus D_i) < K$ , where  $\oplus$  denotes the bitwise XOR operation.

## Input

The input is given from Standard Input in the following format:

```
N M K
A1 B1 C1
A2 B2 C2
⋮
AM BM CM
Q
D1
D2
⋮
DQ
```

- All values in the input are integers.
- $2 \leq N \leq 10^5$
- $1 \leq M \leq 10^5$
- $0 \leq K < 2^{30}$
- $1 \leq A_i < B_i \leq N$  ( $1 \leq i \leq M$ )
- $0 \leq C_i < 2^{30}$  ( $1 \leq i \leq M$ )
- $1 \leq Q \leq 10^5$
- $0 \leq D_i < 2^{30}$  ( $1 \leq i \leq Q$ )

## Output

Output  $Q$  lines. The  $i$ -th line should contain the answer to the  $i$ -th query.

## Examples

standard input	standard output
4 5 5 1 2 17 1 3 4 2 3 20 2 4 3 3 4 5 4 0 7 16 167	2 6 3 0
9 13 488888932 2 7 771479959 3 8 783850182 5 7 430673756 6 8 350738034 4 9 400768807 2 3 83653266 1 2 829786563 5 8 357613791 7 9 579696618 3 7 423191200 3 5 867380255 1 9 907715012 6 9 1033650694 8 498260055 144262908 117665696 848664012 983408133 32610599 478007408 134182829	16 7 5 13 13 16 16 5