G. Xor-matic Number of the Graph

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph, constisting of n vertices and m edges. Each edge of the graph has some non-negative integer written on it.

Let's call a triple (u, v, s) **interesting**, if $1 \le u < v \le n$ and there is a path (**possibly non-simple**, i.e. it can visit the same vertices and edges multiple times) between vertices u and v such that xor of all numbers written on the edges of this path is equal to s. **When we compute the value s for some path, each edge is counted in xor as many times, as it appear on this path.** It's not hard to prove that there are finite number of such triples.

Calculate the sum over modulo $10^9 + 7$ of the values of s over all **interesting** triples.

Input

The first line of the input contains two integers n and m ($1 \le n \le 100\,000$, $0 \le m \le 200\,000$) — numbers of vertices and edges in the given graph.

The follow m lines contain three integers u_i, v_i and t_i ($1 \le u_i, v_i \le n$, $0 \le t_i \le 10^{18}$, $u_i \ne v_i$) — vertices connected by the edge and integer written on it. It is guaranteed that graph doesn't contain self-loops and multiple edges.

Output

Print the single integer, equal to the described sum over modulo $10^9 + 7$.

Examples

input

```
4 4
1 2 1
1 3 2
2 3 3
3 4 1
```

output

```
12
```

input

```
4 4
1 2 1
2 3 2
3 4 4
4 1 8
```

output

```
90
```

input

```
8 6
1 2 2
2 3 1
2 4 4
4 5 5
4 6 3
7 8 5
```

output

```
62
```

Note

In the first example the are 6 interesting triples:

1. $(1, 2, 1)$
2. $(1, 3, 2)$
3. $(1, 4, 3)$
4. $(2, 3, 3)$
5. $(2, 4, 2)$
6. $(3, 4, 1)$

The sum is equal to $1 + 2 + 3 + 3 + 2 + 1 = 12$.

In the second example the are 12 interesting triples:

1. $(1, 2, 1)$
2. $(2, 3, 2)$
3. $(1, 3, 3)$
4. $(3, 4, 4)$
5. $(2, 4, 6)$
6. $(1, 4, 7)$
7. $(1, 4, 8)$
8. $(2, 4, 9)$
9. $(3, 4, 11)$
10. $(1, 3, 12)$
11. $(2, 3, 13)$
12. $(1, 2, 14)$

The sum is equal to $1 + 2 + 3 + 4 + 6 + 7 + 8 + 9 + 11 + 12 + 13 + 14 = 90$.