

Minimax

Time Limit: 3 second
Memory Limit: 64 MB

Problem Statement

Errorgorn has a simple connected graph with N vertices labeled 0 to $N - 1$ and M undirected edges.

He has Q queries about the minimum weight of a path between 2 vertices, S_i and D_i . The weight of a path is defined by the maximum weight of any edge traversed. Note that if $S_i = D_i$ the answer to the query is 0.

Can you help him answer each query?

Since Q can be quite big, values of S_i and D_i will be compressed. In particular, we will define a recursive sequence $A_i = A_{i-1} \times B + C \pmod{998244353}$ such that $S_i = A_{2 \times i} \pmod{N}$ and $D_i = A_{2 \times i + 1} \pmod{N}$.

Input Format

The first line will contain 3 integers, N , M and Q .

The next M lines will contain 2 integers, U_i , V_i and W_i , denoting that there is a undirected edge of weight W_i from vertex U_i to vertex V_i .

The following line will contain 3 integers, A_0 , B and C .

Output Format

Due to the size of Q , the output will again be compressed. Simply output the sum of the queries, modulo 998244353.

Limits

For all subtasks,

$2 \leq N \leq 10^5$, $1 \leq M \leq 3 \times 10^5$, $1 \leq Q \leq 5 \times 10^7$, $0 \leq W_i \leq 10^9$, $0 \leq A_0, B, C < 998244353$

Subtask 1: $Q \leq 10^5$ (1 marks)

Subtask 2: $Q \leq 10^6$ (2 marks)

Subtask 3: $Q \leq 10^7$ (96 marks)

Subtask 4: There are no more constraints. (1 marks)

Subtask 5: Sample input and output.

Sample Input

```
5 9 5
0 1 7
0 2 6
0 3 5
0 4 2
1 3 1
1 4 10
2 3 9
2 4 15
3 4 3
0 6 9
```

Sample Output

```
20
```

Notes

The queries (S_i, D_i) in the sample testcase are: $(0, 4)$, $(3, 2)$, $(1, 0)$, $(4, 3)$ and $(2, 1)$.

Their respective answers are 2, 6, 3, 3 and 6. So their sum is 20.

HAVE FUN!