



Arranging Tickets

In Republic of JOI, there are N stations numbered from 1 to N . They are located clockwise on a circular railway in order.

There are N types of train tickets numbered from 1 to N . By the ticket i ($1 \leq i \leq N - 1$), one can travel from the station i to the station $(i + 1)$, or from the station $(i + 1)$ to the station i . By the ticket N , one can travel from the station 1 to the station N , or from the station N to the station 1. One can only buy a package of N tickets consisting of one ticket for each of N types.

You are working at a travel agency in Republic of JOI. Your task is to arrange tickets for customers.

Today, you have M requests for arranging tickets. The i -th request says C_i people want to travel from the station A_i to the station B_i . You want to know the minimum number of packages of tickets you need to buy in order to deal with all the requests.

Task

Given the number of stations and information of requests, write a program which calculates the minimum number of packages of tickets you need to buy.

Input

Read the following data from the standard input.

- The first line of input contains two space separated integers N, M . This means there are N stations in Republic of JOI, and you have M requests today.
- The i -th line of the following M lines contains three space separated integers A_i, B_i, C_i . This means the i -th request says C_i people want to travel from the station A_i to the station B_i .

Output

Write one line to the standard output. The output contains the minimum number of packages of tickets you need to buy.



Constraints

All input data satisfy the following conditions.

- $2 \leq N \leq 200\,000$.
- $1 \leq M \leq 100\,000$.
- $1 \leq A_i \leq N$ ($1 \leq i \leq M$).
- $1 \leq B_i \leq N$ ($1 \leq i \leq M$).
- $1 \leq C_i \leq 1\,000\,000\,000$ ($1 \leq i \leq M$).
- $A_i \neq B_i$ ($1 \leq i \leq M$).

Subtask

Subtask 1 [A points]

The following conditions are satisfied.

- $N \leq 20$.
- $M \leq 20$.
- $C_i = 1$ ($1 \leq i \leq M$).

Subtask 2 [B points]

The following conditions are satisfied.

- $N \leq 300$.
- $M \leq 300$.
- $C_i = 1$ ($1 \leq i \leq M$).

Subtask 3 [C points]

The following conditions are satisfied.

- $N \leq 3\,000$.
- $M \leq 3\,000$.
- $C_i = 1$ ($1 \leq i \leq M$).



Subtask 4 [D points]

The following conditions are satisfied.

- $C_i = 1$ ($1 \leq i \leq M$).

Subtask 5 [E points]

- There are no additional constraints.

Sample Input and Output

Sample Input 1	Sample Output 1
3 3 1 2 1 2 3 1 3 1 1	1

If everybody travels clockwise, each person needs one ticket. Hence you need to buy one package of tickets.

Sample Input 2	Sample Output 2
3 2 1 2 1 1 2 1	1

If one person travels clockwise and the other person travels counterclockwise, they need one ticket for each type. Hence you need to buy one package of tickets.

Sample Input 3	Sample Output 3
6 3 1 4 1 2 5 1 3 6 1	2

For example, you may distribute the tickets in the following way:

- Give the tickets 1, 2, 3 to the person who wants to travel from the station 1 to the station 4.
- Give the tickets 1, 6, 5 to the person who wants to travel from the station 2 to the station 5.



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- Give the tickets 3, 4, 5 to the person who wants to travel from the station 3 to the station 6.

Then, they need at most two tickets for each type. Hence you need to buy two packages of tickets.