Paid Roads

A network of \mathbf{m} roads connects \mathbf{N} cities (numbered from 1 to \mathbf{N}). There may be more than one road connecting one city with another. Some of the roads are paid. There are two ways to pay for travel on a paid road \mathbf{i} from city $\mathbf{a_i}$ to city $\mathbf{b_i}$:

- in advance, in a city **c**_i (which may or may not be the same as **a**_i);
- after the travel, in the city b_i. The payment is P_i in the first case and R_i in the second case.
 Write a program to find a minimal-cost route from the city 1 to the city N.

Input

The first line of the input contains the values of **N** and **m**. Each of the following **m** lines describes one road by specifying the values of $\mathbf{a_i}$, $\mathbf{b_i}$, $\mathbf{c_i}$, $\mathbf{P_i}$, $\mathbf{R_i}$ ($1 \le i \le m$). Adjacent values on the same line are separated by one or more spaces. All values are integers, $1 \le m$, $1 \le m$, $1 \le m$, $1 \le m$.

Output

The first and only line of the output must contain the minimal possible cost of a trip from the city 1 to the city **N**. If the trip is not possible for any reason, the line must contain the word 'impossible'.

Example

Input:

4 5

1 2 1 10 10

2 3 1 30 50

3 4 3 80 80

2 1 2 10 10

1 3 2 10 50

Output:

110