Paid Roads

A network of **m** roads connects **N** cities (numbered from 1 to **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 **i** from city $\mathbf{a_i}$ to city $\mathbf{b_i}$:

- in advance, in a city $\mathbf{c_i}$ (which may or may not be the same as $\mathbf{a_i}$);
- after the travel, in the city $\mathbf{b_i}$. The payment is $\mathbf{P_i}$ in the first case and $\mathbf{R_i}$ 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, $1 \le m$, $N \le 10$, $0 \le Pi, Ri \le 100$, $Pi \le Ri$ ($1 \le i \le m$).

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
```