## 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 $\mathbf{a}_{\boldsymbol{i}}$ to city $\mathbf{b}_{\mathbf{i}}$ :

- in advance, in a city $\mathbf{c}_{\mathbf{i}}$ (which may or may not be the same as $\mathbf{a}_{\mathbf{i}}$ );
- after the travel, in the city $\mathbf{b}_{\mathbf{i}}$. The payment is $\mathbf{P}_{\mathbf{i}}$ in the first case and $\mathbf{R}_{\mathbf{i}}$ in the second case. Write a program to find a minimal-cost route from the city 1 to the city $\mathbf{N}$.


## Input

The first line of the input contains the values of $\mathbf{N}$ and $\mathbf{m}$. Each of the following $\mathbf{m}$ lines describes one road by specifying the values of $\mathbf{a}_{\mathbf{i}}, \mathbf{b}_{\mathbf{i}}, \mathbf{c}_{\mathbf{i}}, \mathbf{P}_{\mathbf{i}}, \mathbf{R}_{\mathbf{i}}(1 \leq \mathrm{i} \leq m)$. Adjacent values on the same line are separated by one or more spaces. All values are integers, $1 \leq \mathrm{m}, \mathrm{N} \leq 10,0 \leq \mathrm{Pi}, \mathrm{Ri} \leq 100, \mathrm{Pi} \leq$ $\operatorname{Ri}(1 \leq i \leq m)$.

## 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 $\mathbf{N}$. If the trip is not possible for any reason, the line must contain the word 'impossible'.

## Example

Input:
45
1211010
2313050
3438080
2121010
1321050

## Output:

110

