

Online 1 (C1/C2): Mandatory flight

Time: 30 mins

Problem description

Let me remind you the story of offline 1.

You are analyzing a global flight network centered around Dhaka (DAC).

A traveler wants to fly from Syreja International Terminal Hazrat Shahjalal International Airport to London Heathrow Airport. Each flight between countries has a fixed ticket price. The traveler has one international discount coupon that can be used to halve the cost of any one flight in the journey. (If the cost is x , it becomes $\lfloor x/2 \rfloor$)

You are given a list of international flights with their prices. Find the minimum possible travel cost from Dhaka to London.

Now, you really want to travel in a certain flight and want to keep it in your travel route mandatorily (mandatory edge). Find the minimum possible travel cost from Dhaka to London in this scenario. Of course, you can use the coupon as before.

Required complexity

Same complexity as Dijkstra.

Input

The first input line contains two integers **n** and **m**, where:

- **n** is the number of airports
- **m** is the number of international flight connections

The airports are numbered **1, 2, ..., n**.

Airport **1** is **Hazrat Shahjalal International Airport (Dhaka)**, and airport **n** is **London Heathrow Airport**.

The next **m** lines describe the flights.

Each line contains three integers **a**, **b**, and **c**, meaning that there is a **unidirectional flight** from airport **a** to airport **b** with ticket price **c**.

After that, one line contains three integers **x**, **y**, and **w**, describing the **mandatory flight**, which is one of the *m* international flight connections given. If it is not possible to reach London using the mandatory flight, print “Not possible”.

Output

Print a single integer:

the **minimum possible travel cost** from Dhaka to London that **includes the mandatory flight**.

Example

Input	Output
5 6 1 2 3 2 3 7 3 5 4 1 4 10 4 3 2 2 5 8 2 3 7	10