Online 1 (B1/B2): One more coupon

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 Syrjälä 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, what if you have one more coupon? Then, the problem becomes a little bit more challenging. Find the minimum possible travel cost from Dhaka to London in this scenario. You cannot use same coupon twice in the same flight.

(Hint: You can keep track of multiple distances per node based on number of tickets used to reach there)

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**.

Output

Print a single integer:
the **minimum possible travel cost** from Dhaka to London after optimally using **at most two discount coupon.**.

Example

Input	Output
6 6 1 2 8 3 5 4 2 4 4 4 6 6 1 3 10 5 6 6	11