Task 3: `FERRIES`

Kang the Penguin lives on a group of N Antarctic islands, conveniently labelled from 1 to N. Kang's house is on Island 1. He is having a cold today, so he plans to visit a veterinarian who stays on Island N.

Normally, he would swim, but due to his cold, he plans to take ferries to reach his destination instead. There are a total of M ferries (labelled from 1 to M), with Ferry i bringing passengers from some island A_i to some other island B_i for C_i dollars (one direction only). There is at most one ferry going from one island to another island, and some ferries may provide free services. Kang wishes to travel to Island N for as little cost as possible.

Unfortunately for our poor penguin, the captains of the ferries have hatched a money-making scheme today! They know that Kang is planning to take their ferries from Island 1 to Island N, so they conspire to make his journey as expensive as possible. Captains of ferries starting on the same island may permute their destinations among themselves. Due to their contract, however, the cost that a captain charges for riding a ferry remains the same, even if the destination of the ferry has changed. For instance, say that Ferries 1, 2, and 3 start from Island 1. They lead to Islands 2, 3, and 4 respectively, at costs 10, 20, and 30 dollars (also respectively). Then, the captains of Ferry 1 and Ferry 2 may swap destinations, so that now Ferry 1 leads to Island 3 (but still costing 10 dollars) and Ferry 2 leads to Island 2 (but still costing 20 dollars).

The captains, after conspiring, will announce their ferries destinations before Kang boards any ferry, and they cannot change the destinations after the announcement. Kang is aware of the captains' intention but he does not know the ferries destinations before leaving his house. Kang is asking for your help. He wants to know the least amount of money he should bring for the ferries, and yet guaranteed that he has sufficient money to reach his doctor. In other words, he want to find the least possible cost he needs to reach Island N, assuming that the captains make his least cost route as expensive as possible.

Input format

Your program must read from the standard input. The first line of the input contains 2 integers: N and M. The subsequent M lines of the input each contain 3 integers: A_i, B_i, and C_i, representing one ferry each. An example is provided below:

```
4 5
1 2 2
2 4 2
1 3 10
3 4 7
1 4 7
```

Output format

Your program must write to the standard output a single integer, the minimum cost he needs to reach his destination in dollars. For the above example, the output is:

Explanation of Sample Output

Ferries 1, 3 and 5 swap their destinations, so that Ferry 1 now travels to Island 3 (cost still 2 dollars), Ferry 3 to Island 4 (cost still 10 dollars) and Ferry 5 to Island 2 (cost still 7 dollars). After the swaps, the least possible cost for Kang is 9 dollars, traveling either from 1 to 3 to 4, or from 1 to 2 to 4. Note that there is no way to swap the destinations so that the lowest cost from Island 1 to Island 4 is more than 9.

Template

You may use the template provided. The templates handle the input and output, but without the body of the main subroutine.

- **C/C++ program**

  ```
  int ferries(int N, int M, int * A, int * B, int * C)
  ```

- **Pascal program**

  ```
  function ferries (N, M: LongInt; var A, B, C: array of LongInt):
  LongInt;
  ```

Each subroutine takes in N, M, A, B and C and returns the least possible cost for Kang, where N and M are the number of islands and number of ferries respectively, and A, B, C are arrays representing the origins, the destinations, and the costs of the ferries, respectively.

Subtasks

The maximum execution time on each input instance is 1.0 second. Your program will be tested on 4 sets of input instances as follow:

1. (7 marks) All instances in this set satisfy $2 \le N \le 100,000$ and $M = 2N - 4$. There are $N - 2$ ferries leaving from Island 1, going to Island 2, 3, ..., $N - 1$ respectively. There are another $N - 2$ ferries, leaving from Island 2, 3, ..., $N - 1$ respectively, going to Island N.

2. (10 marks) All instances in this set satisfy $2 \le N \le 100,000$ and $1 \le M \le 300,000$. There are one or more ferries leaving from Island 1. There is exactly one ferry leaving from Islands 2, 3, ... $N - 1$.

3. (11 marks) All instances in this set satisfy $2 \le N \le 100,000$ and $1 \le M \le 300,000$. In addition, there are no cycles. In other words, once Kang has left a given island by a ferry, there is no possible sequence of ferry rides that will bring him back to that island.

4. (12 marks) All instances in this set satisfy $2 \le N \le 100,000$ and $1 \le M \le 300,000$.

All instances in all sets satisfy $0 \le C_i \le 10,000$ for each C_i.