

Fast Maximum Flow

Given a graph with N ($2 \leq N \leq 5,000$) vertices numbered 1 to N and M ($1 \leq M \leq 30,000$) undirected, weighted edges, compute the [maximum flow / minimum cut](#) from vertex 1 to vertex N .

Input

The first line contains the two integers N and M . The next M lines each contain three integers A , B , and C , denoting that there is an edge of capacity C ($1 \leq C \leq 10^9$) between nodes A and B ($1 \leq A, B \leq N$). Note that it is possible for there to be duplicate edges, as well as an edge from a node to itself.

Output

Print a single integer (which may not fit into a 32-bit integer) denoting the maximum flow / minimum cut between 1 and N .

Example

Input:

```
4 6
1 2 3
2 3 4
3 1 2
2 2 5
3 4 3
4 3 3
```

Output:

```
5
```

Viewing the problem as max-flow, we may send 3 units of flow through the path 1 - 2 - 3 - 4 and 2 units of flow through the path 1 - 3 - 4. Viewing the problem as min-cut, we may cut the first and third edges. Either way the total is 5.

Note: see also <http://www.spoj.com/problems/MATCHING/>.