FASTFLOW - Fast Maximum Flow

Given a graph with N ($2 \le N \le 5{,}000$) vertices numbered 1 to N and M ($1 \le M \le 30{,}000$) undirected, weighted edges, compute the maximum flow / minimum cut (http://en.wikipedia.org/wiki/Maximum_flow_problem) 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 ($1 \le C \le 10^9$) between nodes A and B ($1 \le A, B \le N$). 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

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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/ (http://www.spoj.com/problems/MATCHING/).