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Shortest Paths in a Sparse Graph

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Shortest Paths in a Sparse Graph

2.0/2.0 points (graded)

Input file:	sparse.in
Output file:	sparse.out
Time limit:	2 seconds
Memory limit:	256 megabytes

You are given an undirected weighted graph. Find the shortest path from the first vertex to all vertices.

Input

The first line of the input file contains two numbers N and M ($2 \le N \le$ 30 000, $1 \le M \le$ 400 000), the number of vertices and edges of the graph correspondingly.
The next M lines contain edge descriptions. Every edge is described by its endpoints (the source vertex and the target vertex, in any order, as the graph is undirected) and its weight.
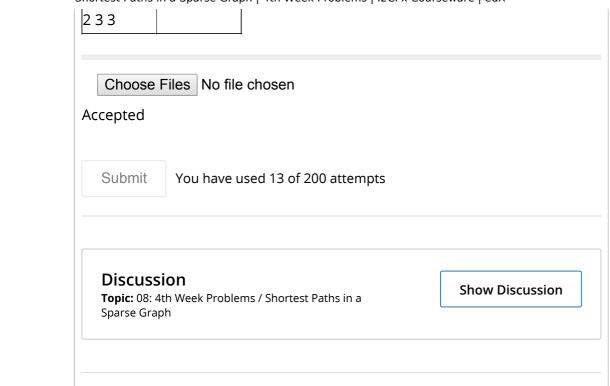
All weights are non-negative and do not exceed 10^4. The indices of vertices are one-based. It is guaranteed that the graph is connected.

Output

Output N numbers. The i-th number should be equal to the shortest distance from vertex 1 to vertex i.

Example

sparse.in	sparse.out
4 5 1 2 1 1 3 5 2 4 8 3 4 1	0 1 4 5

2 3 3

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Topic: 08: 4th Week Problems / Shortest Paths in a
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