Single Source Shortest Path

Problem Description

Solve the Single Source Shortest Path problem.

Input Specification

Line 1: N $(2 \leq N \leq 1\,000)$ (vertices), M $(1 \leq M \leq 5\,000)$ (bidirectional edges)

Lines 2 to $M+1$: u_i, v_i, w_i $(1 \leq u_i, v_i \leq N, 1 \leq w_i \leq 10\,000)$, a bidirectional edge from u_i to v_i with weight w_i. Multiple edges between the same pair of vertices may occur in the input.

Output Specification

Lines 1 to N: line i has the length of the shortest path from vertex 1 to vertex i. If no path exists, output -1.

Sample Input

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

Sample Output

```
0
2
4
-1
```