

# Single Source Shortest Path

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## Problem Description

Solve the [Single Source Shortest Path](#) problem.

## Input Specification

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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

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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

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

## Sample Output

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```
0
2
4
-1
```