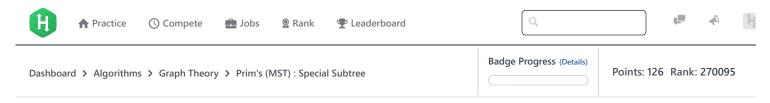
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Prim's (MST): Special Subtree ■



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Given a graph which consists of several edges connecting the N nodes in it. It is required to find a subgraph of the given graph with the following properties:

- The subgraph contains all the nodes present in the original graph.
- The subgraph is of minimum overall weight (sum of all edges) among all such subgraphs.
- It is also required that there is **exactly one**, **exclusive** path between any two nodes of the subgraph.

One specific node S is fixed as the starting point of finding the subgraph. Find the total weight of such a subgraph (sum of all edges in the subgraph)

Input Format

First line has two integers N, denoting the number of nodes in the graph and M, denoting the number of edges in the graph.

The next M lines each consist of three space separated integers x y r, where x and y denote the two nodes between which the **undirected** edge exists, r denotes the length of edge between the corresponding nodes.

The last line has an integer S, denoting the starting node.

Constraints

$$2 \le N \le 3000$$

 $1 \le M \le (N * (N - 1))/2$
 $1 \le x, y, S \le N$
 $0 <= r <= 10^5$

If there are edges between the same pair of nodes with different weights, they are to be considered as is, like multiple edges.

Output Format

Print a single integer denoting the total weight of tree so obtained (sum of weight of edges).

Sample Input 0

- 5 6 1 2 3 1 3 4 4 2 6 5 2 2 2 3 5 3 5 7
- Sample Output 0

15

Explanation 0

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The graph given in the test case is shown as:

Graph

- The nodes A,B,C,D and E denote the obvious 1,2,3,4 and 5 node numbers.
- The starting node is A or 1 (in the given test case)

Applying the Prim's algorithm, edge choices available at first are:

A->B (WT. 3) and A->C (WT. 4), out of which A->B is chosen (smaller weight of edge).

Now the available choices are:

A->C (WT. 4), B->C (WT. 5), B->E (WT. 2) and B->D (WT. 6), out of which B->E is chosen by the algorithm.

Following the same method of the algorithm, the next chosen edges, sequentially are:

A->C and B->D.

Hence the overall sequence of edges picked up by prims are:

```
A->B:B->E:A->C:B->D
```

and Total weight of the hence formed MST is: 15

f in Submissions:<u>9950</u> Max Score:60 Difficulty: Medium Rate This Challenge: ☆☆☆☆☆

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Current Buffer (saved locally, editable) & 49
                                                                                            Java 7
                                                                                                                             Ö
 1 ▼ import java.io.*;
 2 import java.util.*;
 3
   import java.text.*;
 4 import java.math.*;
    import java.util.regex.*;
 5
 7 ▼ public class Solution {
 8
 9 ▼
         public static void main(String[] args) {
10 ▼
             /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11
12
   }
                                                                                                                     Line: 1 Col: 1
                       Test against custom input
                                                                                                         Run Code
                                                                                                                      Submit Code
1 Upload Code as File
```

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