Problem C. Spanning Trees

Time Limit: 1.5 seconds
Memory Limit: 1024 MB

Hanh has an undirected, connected, weighted graph. His graph consists of n nodes and m edges. nodes are numbered from 1 to n, inclusive. Edges are numbered from 1 to m, inclusive.

Hanh has two spanning trees, denoted as $T1$ and $G2$. Each tree is presented by the indices of $n-1$ edges belonging to the tree. Hanh finds his graph interesting, but its edges' weights are not so beautiful. He wants to change the weights of its edges so as to satisfy two below conditions:

- The spanning tree $T1$ is a minimum one.
- The spanning tree $G2$ is a maximum one.

In one second, Hanh could select some edge of the graph and either increase or decrease its edge by 1. All weights must remain positive at all time.

Please help Hanh adjust the edges' weights as quickly as possible.

Just a remind:

- A *spanning tree* of an undirected, connected graph is a subset of its edges that consists of exactly $n-1$ edges and connects all its nodes together.
- A *minimum spanning tree* of an undirected, connected, weighted graph is a *spanning tree* with minimum possible total edge weight.
- A *maximum spanning tree* of an undirected, connected, weighted graph is a *spanning tree* with maximum possible total edge weight.

Input

The first line of the input contains a single integer θ ($1 \le \theta \le 6$) denoting the subtask this test belongs to.

The second line contains two integers n and m ($2 \le n \le 50, n-1 \le m \le 1000$) denoting the number of nodes and edges of the graph.

In the next m lines, the i-th one contains three integers u, v and w ($1 \le u, v \le n, 1 \le w \le 10^9$) meaning that the i-th edge of the graph connects node u to node v with weight w. It is guaranteed that the graph is connected.

The next line contains $n-1$ integers $t_1, t_2, \ldots, t_{n-1}$ ($1 \le t_i \le m$) representing the indices of edges belonging to the spanning tree $T1$. It is guaranteed that these edge forms a spanning tree.

The next line contains $n-1$ integers $g_1, g_2, \ldots, g_{n-1}$ ($1 \le g_i \le m$) representing the indices of edges belonging to the spanning tree $G2$. It is guaranteed that these edge forms a spanning tree.

Please be aware that these two spanning trees may share common edges, or may even be the same.

Output

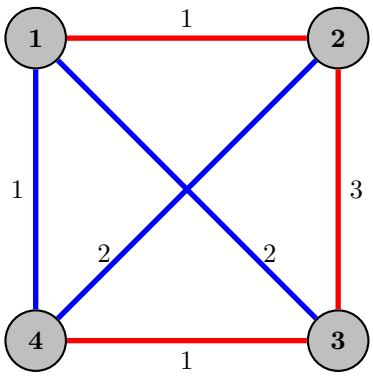
Print a single integer denoting the number of seconds Hanh needs to adjust the weight.

Examples

stdin	stdout
1 4 6 1 2 1 2 3 3 3 4 1 4 1 1 1 3 2 2 4 2 1 2 3 4 5 6	2

Explanation

The following figure demonstrates the graph given in the sample. Edges of the spanning trees $T1$ are marked red. Edges of the spanning trees $G2$ are marked blue.



In this case, we should decrease the cost of the second edge (the edges between nodes 2 and 3) by 2 (from 3 to 1).

Subtask 1 (7 points)

$m \leq 10$ and $w \leq 3$

Subtask 2 (17 points)

$m \leq 10$

Subtask 3 (13 points)

Two given spanning trees coincide. More precisely, $t_1 = g_1, t_2 = g_2, \ldots, t_{n-1} = g_{n-1}$

Subtask 4 (17 points)

$m = n$

Subtask 5 (23 points)

$m = n + 1$

Subtask 6 (23 points)

no additional constraints