685 Least Path Cost

Given a positive integer Δ ($0 < \Delta < 10000$), which is called the *overhead*, and M ($0 < M \leq 200$) straight line segments in a two-dimensional plane with the following properties:

1. each line segment has a height, which is a positive integer;
2. two line segments only intersect with each other on endpoints;
3. no two line segments are overlapped.

Each line has a unique number between 1 and M. Each endpoint in the plane has a unique number between 1 and N ($0 < N \leq 400$), where N is the total number of endpoints. A line segment is represented by its two endpoints (n_i, n_j). Let *height(L)* be the height of a line segment L.

A *path* is a sequence of line segments $L_{C_1}, L_{C2}, \ldots, L_{C_k}$, such that $k > 1$, $C_i \neq C_j \quad \forall i \neq j$, L_{C_i} intersects with $L_{C_{i+1}}$ for all $1 \leq i < k$, one endpoint of L_{C_1} does not intersect with any other line segments, and one endpoint of L_{C_k} does not intersect with any other line segments. The cost between two intersection line segments i L_{C_i} and $L_{C_{i+1}}$ is

$$\left| height(L_{C_i}) - height(L_{C_{i+1}}) \right|$$

That is, for example you can image, the number of stairs that one has to climb (up or down) by walking from L_{C_i} to $L_{C_{i+1}}$. The cost of a path $L_{C_1}, L_{C2}, \ldots, L_{C_k}$ is

$$k \cdot \Delta + \sum_{i=1}^{k-1} cost(L_{C_i}, L_{C_{i+1}}).$$

In the example shown in Fig. 1, $\Delta = 25$, $M = 8$, and $N = 9$. Then $cost(L_2, L_3) = 1$ and $cost(L_1, L_6) = 8$. L_1, L_4, L_5 is not a path. There are three paths in the plane. The cost for the path L_1, L_6, L_7, L_8 is 109. The cost for the path L_1, L_4, L_5, L_8 is 131. The cost for the path L_2, L_3 is 51. Hence L_2, L_3 is the path with the least cost.

You may also assume there is at least one path in the plane. Write a program to find the least cost among all paths.

Input

The first line is l, the number of test cases. The first three lines of test case $\#i$ are M_i, N_i and Δ_i which are the numbers of line segments and endpoints, and the overhead, respectively. The following M_i lines each contains the two endpoints of each line segment, starting from L_1 to L_{M_i}, and its height.

Each line segment is represented by three integers, separated by blanks.

Output

Contains l lines. The i^{th} line contains the least cost of all paths in the i^{th} test case.

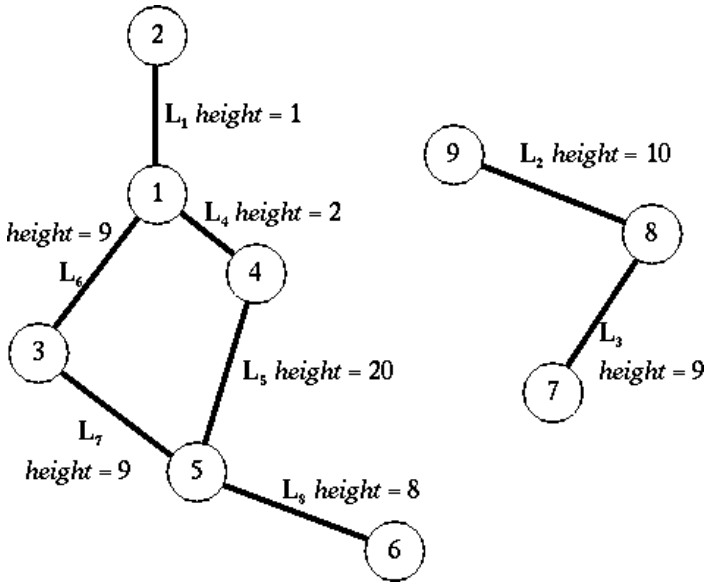

Fig. 1: An example of 8 straight lines with 9 endpoints.

Sample Input

```
2
8
9
25
1 2 1
8 9 10
7 8 9
1 4 2
4 5 20
1 3 9
3 5 9
5 6 8
6
6
21
1 2 1
1 4 2
4 5 20
1 3 9
3 5 9
5 6 8
```

Sample Output

```
51
93
```