Task: DRO
The way home

XXVIII OI, Stage III, Day One. Source file dro. ***Available memory: 512 MB.**   *04/14/2021*

The road network of Byteburg consists of n connected intersections m two-way roads. Each road connects two different intersections. Each two intersections are connected by at most one road. Roads can lead through tunnels and flyovers.

At the intersection number 1 there is a school attended by Bajtek, and at the intersection there is a school number n his house. In the morning his parents drive him to school, but he returns home alone, using public transport. The bus timetable has changed again this year. Since in Byteburg only single-use tickets validated at each bus entry are valid, Bajtek decided to develop the fastest plan to return home, in which there will be at most k transfer. Help him!

Każdy autobus danej linii jedzie po ustalonej trasie, przejeżdżając przez pewne skrzyżowania. Na każdym z tych skrzyżowań zatrzymuje się i można do niego wejść lub z niego wyjść. Autobusy danej linii odjeżdżają w równych odstępach czasu (szczegóły są opisane w sekcji *Wejście*).

Zakładamy, że czas:
- postoju na skrzyżowaniach,
- przesiadki z autobusu do autobusu (o ile nie trzeba na niego czekać),
- przejścia od szkoły do skrzyżowania numer 1 oraz przejścia od skrzyżowania numer n do domu

jest pomijalnie mały.

Wejście

W pierwszym wierszu wejścia znajduje się pięć liczb całkowitych n, m, s, k i t ($2 \le n \le 10\,000$, $1 \le m \le 50\,000$, $1 \le s \le 25\,000$, $0 \le k \le 100$, $0 \le t \le 10^9$) oznaczających kolejno: liczbę skrzyżowań, dróg i linii autobusowych w Bajtogrodzie, maksymalną liczbę przesiadek, które może zrobić Bajtek, oraz minutę, w której wychodzi ze szkoły. Skrzyżowania numerujemy od 1 do n.

In the next m the lines contain descriptions of the roads; each of them contains three integers a, b and c ($1 \le a$, $b \le n$, $a \ne b$, $1 \le c \le 10^9$) indicating that the intersections numbered a and b they are connected by a two-way road that it takes to drive (with any bus that takes this road) c minutes. Each pair disordered $\{a, b\}$ will appear on the input at most once.

Another $2s$ the lines contain descriptions of bus lines; each description in two lines. The first line of the description contains three integers ℓ, x and y ($2 \le \ell \le n$, $0 \le x \le 10^9$, $1 \le y \le 10^9$) and the second string *in pairs of different* integers v_1, v_2, ..., v_ℓ ($1 \le v_i \le n$). This means that the bus of the given line departs from the intersection number v_1 in minutes $x + j \cdot y$ for $j = 0, 1, 2, \ldots$, and then runs one by one through intersections numbered v_2, v_3, ..., v_ℓ.

Sum of numbers ℓ for all bus lines it does not exceed 50,000.

Exit

Your program should output one line with an integer representing the earliest minute that Bytie can reach home, if he left school in one minute vol. If Bytie does not manage to get home at all, write only one word instead NOT.

Example

For the input data: the correct result is: 8

```
4 4 2 1 1
1 2 2
2 3 4
1 3 3
4 3 2
4 0 10
1 2 3 4
3 2 7
1 3 2
```

Explanation of the example: The figure below shows the Byteburg road network from the sample test. The circles represent intersections, the numbers inside the circles are their numbers. The dashes indicate the roads, and the numbers written next to them indicate the travel time of the road. The route of the line 1 bus is marked in red, while the route of the line 2 bus - in blue.
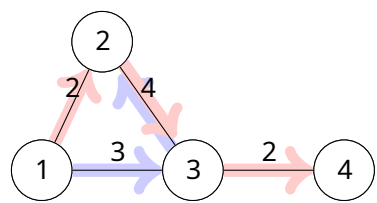
Bajtek leaves school in a minute $vol=1$, he waits for the bus line 2, which arrives in minute 2, goes to the intersection number 3, there he changes in minute 6 to the bus line 1, which arrives at his house in minute 8.

For $k=0$ Bajtek would have to wait at the intersection 1 for the bus line 1, which would start in minute 10 and take Bajtek home in minute 18.

"Assessment" Tests:

1 rating: $n=10$, $m=45$, $k=10$, $vol=123$; intersections with numbers that differ by 1 are connected by roads with a length of 1, and the remaining pairs of intersections are connected by roads with a length of 100; buses start running from minute 0, go between each pair of intersections with numbers that differ by 1 or 2, and run every minute; the answer is 132;

2 rating: $n=103$, $m=102$, $k=100$, $vol=0$; intersections with numbers that differ by 1 are connected by roads of length 1 and the remaining pairs of intersections are not directly connected; there is one bus that starts running at minute 10^9 and goes through the intersections $(1,2,3,\ldots,n)$, and there are buses that start running at minute 0 and transport between each pair of intersections with numbers differing by 1 and end the course; the answer is 10^9+102;

3 rating: $n=10{,}000$, $m=17\,891$, $s=7891$, $k=50$, $vol=0$; the answer is 11 100,000 071.

Assessment

The test suite is divided into the following subtasks. The tests for each subtask consist of one or more separate groups of tests.

Subtask	Conditions	number of points
1	$k=n$	twenty
2	for each bus line: $v_{and} < v_{and+1}$	twenty
3	for each bus line: $\ell=2$	twenty
4	$vol=0$ and for each bus line: $x=0$, $y=1$	twenty
5	without additional conditions	twenty