Problem H
Robbery

Inspector Robstop is angry. Again, a bank has been robbed and the robber has not been caught – and this happened already the third time this year. Although he did everything in his power to catch the robber: as fast as possible, all roads leading out of the city have been blocked, so the robber could not escape. Then, the inspector asked all the people in the city to watch out for the robber, but the only messages he got were "We don't see him."

This time, it is enough! Inspector Robstop decides to analyse how the robber could escape. To do that, he asks you to write a program which takes all the information about the robber the inspector could get in order to find out where the robber has been at which time.

By chance, the city in which the bank was robbed is rectangular. The city is locked for a certain time t, and during this time, several observations "The robber isn't in the rectangle R_i at time t_i" are reported. Assuming that the robber can move at most one unit per time step (whatever the units are), your program shall try to find the exact position of the robber in each time step.

Input

The input file contains the description of several robberies. The first line of each description consists of three numbers W, H, t ($1 \leq W, H, t \leq 100$) where W is the width, H the height and t the time during which the city is locked.

The next line consist of one integer n ($0 \leq n \leq 1000$), the number of messages the inspector got. The next n lines (one for each of the messages) consist of five integers t_i, L_i, T_i, R_i, B_i each. The integer t_i is the time at which the observation has been made ($1 \leq t_i \leq t$), and L_i, T_i, R_i, B_i are the left, top, right and bottom respectively of the (rectangular) area which has been observed. ($1 \leq L_i \leq R_i \leq W, 1 \leq T_i \leq B_i \leq H$; the point $(1, 1)$ is the upper left corner of the city.) The message always tells that the robber has not been in the given rectangle at time t_i.

Output

For each robbery, first output the line "`Robbery #`k`:`", where k is the number of the robbery. Then, there are three possibilities:

If it is impossible that the robber is still in the city considering the messages, output the line "`The robber has escaped.`"

Output one line of the form "`Time step` τ`: The robber has been at` x`,`y`.`" for each time step, in which the exact location can be deduced. (x and y are the column resp. row of the robber in time step τ.) Output these lines ordered by time.

If nothing can be deduced, output the line "`Nothing known.`" and hope that the inspector won't get yet more angry.

Output a blank line after each processed case.

Sample Input

```
5 1 6
2
1  1 1  4 1
5  2 1  5 1
2 2 5
0
```

Sample Output

```
Robbery #1
Time step 1: The robber has been at 5,1.
Time step 2: The robber has been at 4,1.
Time step 3: The robber has been at 3,1.
Time step 4: The robber has been at 2,1.
Time step 5: The robber has been at 1,1.

Robbery #2
Nothing known.
```