MARATONA DE PROGRAMAÇÃO
InterFatecs

Problem A

Load balancer

Source file: loadbalancer.{ c | cpp | java | py }
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Load balancing is fundamental in distributed applications to promote system efficiency and availability. A load balancer can operate through various strategies. One of them involves sending a new request to the least busy server. In this scenario, when a balancer receives a request, it must decide which server to forward it to, considering the current load on each server. For instance, the load can be measured as the number of requests that the server is processing at the moment. Munarinho is developing a load balancer and needs to verify which server a request will be forwarded to at a given point in time, given the number of servers and a set of requests. To simplify the solution, assume that each request arrives at a specific time instant t (1, 2, 3, 4, ...) and that servers can process infinite requests in parallel. Also, when there is a tie in load between servers, the one with the lowest id will be selected.

Input

The first line of the input contains an integer s ($1 \leq s \leq 10^3$), representing the number of available servers. The second line contains an integer r ($1 \leq r \leq 10^4$), representing the number of requests. The third line contains an integer a ($1 \leq a \leq r$), indicating the order number of one of the informed requests (the first one starting at 1). The next r lines contain two integers t and d ($1 \leq t, d \leq 10^7$), representing, respectively, the arrival instant of the request and how long it will take for this request to be completed. Assume that if a request started at instant $t = 1$ and has a duration $d = 3$, it will finish right before $t = 4$. Therefore, at $t = 4$, the server that processed it will already be free.

Output

You must determine the id of the server to which the informed request will be destined. The servers have ids starting at 1.

Example of Input 1	Example of Output 1
3 7 2 1 10 30 1000 2 20 5 80 3 50 10 200 9 500	1

Example of Input 2	Example of Output 2
3 7 6 1 10 30 1000 2 20 5 80 3 50 10 200 9 500	3