Problem D: Carpets

The computer science Professor Toving Liles loves the floor tiles in his office so much that he wants to protect them from damage by careless students. Therefore, he would like to buy cheap small rectangular carpets from the supermarket and cover the floor such that:

1. The entire floor is covered.
2. The carpets do not overlap.
3. The carpets are rotated arbitrarily.
4. No carpet is cut into pieces.

But when checking the supermarket's stock he begins to wonder whether he can accomplish his plan at all. Can you help him?

Input

The first line contains two integers W and H describing the size of his room ($1 \leq W, H \leq 100$).
The second line contains an integer c, denoting the number of different carpet colors the supermarket has in stock ($1 \leq c \leq 7$).
Each of the following c lines consists of three integers a_i, w_i, and h_i, which means: the supermarket's stock contains a_i carpets of size w_i, h_i and color i ($1 \leq a_i \leq 7$; $1 \leq w_i \leq 100$; $1 \leq h_i \leq 100$).
The supermarket has at most 7 carpets, i.e. $\sum_i a_i \leq 7$.

Output

For the given room dimensions and the supermarket's stock of carpets, print "`yes`" if it is possible to cover the room with carpets as specified above and "`no`" otherwise.

Sample Input 1

```
2 4
2
3 1 3
2 2 1
```

Sample Output 1

```
yes
```

Sample Input 2

```
100 100
3
4 42 42
1 100 16
1 32 42
```

Sample Output 2

```
no
```

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