

# TLE '17 Contest 8 P2 - Ship Defense

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Fax McClad, Croneria's most defensive bounty hunter, is under attack by the Dankey Kang Gang! He must activate certain defense modes on his personal ship, the Kyuwing, in order to prevent as much damage as possible.

Fax's Kyuwing has  $H$  health points and is equipped with  $D$  defense modes. Each defense mode has an armor and shield component. Every second, shields block up to  $S_i$  of the incoming damage while armor reduces the *remaining* damage by  $A_i\%$ . At any given time, at most one defense mode can be activated, and defense modes can be reactivated.



*Fax McClad attacked by enemy ships.*

There are  $E$  enemy ships that each shoot at Fax's Kyuwing over the course of the battle. Enemy ship  $j$  deals  $X_j$  damage for  $L_j$  seconds starting at the  $T_j^{th}$  second. Note that at any second, the incoming damage is the total damage from all sources at that second.

Since repairs can be quite expensive, Fax wants to optimally choose defense modes to activate in order to reduce the amount of damage he receives. Can you tell him the maximum amount of health points that his ship can have after these enemy encounters?

## Input Specification

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The first line contains three space-separated integers:  $H$  ( $1 \leq H \leq 10^8$ ),  $D$  ( $0 \leq D \leq 5$ ), and  $E$  ( $0 \leq E \leq 1\,000$ ).

$D$  lines of input follow. The  $i^{th}$  line contains  $A_i$  ( $0 \leq A_i \leq 100$ ) and  $S_i$  ( $0 \leq S_i \leq 10\,000$ ).

$E$  lines of input follow. The  $j^{th}$  line contains  $T_j$  ( $0 \leq T_j \leq 500$ ),  $L_j$  ( $1 \leq L_j \leq 500$ ), and  $X_j$  ( $1 \leq X_j \leq 50$ ).

## Output Specification

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The maximum amount of health points that Fax's ship can have remaining, rounded to two decimal places.

If Fax's ship cannot sustain all of the damage, that is, his Kyuwing's health points become 0, then output: `DO A BARREL ROLL!`

## Sample Input 1

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```
100 2 2
50 0
0 10
0 10 11
5 1 50
```

## Sample Output 1

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```
60.50
```

## Explanation 1

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Fax should utilize defense mode 1 during the fifth second.

During all other times, Fax should switch to the defense mode 2 in order to block more of the incoming damage.

## Sample Input 2

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```
10 1 1
50 10
3 1 50
```

## Sample Output 2

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```
DO A BARREL ROLL!
```