



Princeton Computer Science Contest – Fall 2023

## Problem 1: Princeton Subway Network (5 points) [CodeForces]

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### Problem Statement

The University's new most expansive construction project is nearly complete: the Princeton Subway Network! However, before the grand opening this semester, the Committee On Subway Construction Operations and Navigation (COSCON) must decide fare prices for the subway.

The New York City Subway has a 7-day fare cap policy to make riding the subway cheaper. In response, COSCON has decided to implement the following fare cap policy: when paying for a ride, if the rider has spent at least  $\$X$  in the 7 days (exact down to the minute and inclusive) preceding the payment, then that ride is free. Otherwise, the ride costs  $\$1$ .

For next semester, you have already planned out a sequence of  $N$  rides and their exact times. In particular, for each ride, you have noted down  $d$ , the number of days after the grand opening the ride takes place, as well as  $h$  and  $m$ , the hour and minute in the day the ride takes place, in 24-hour time (fortunately for you, the University has decided to keep the subway running 24/7).

Under COSCON's fare cap policy, how much will you have to pay for these rides?

### Input/Output Details

**Input:** The first line contains two space-separated integers,  $X$  and  $N$  (in that order), where  $X$  is the fare cap implemented and  $N$  is the number of rides you have planned.

The next  $N$  lines (lines 2 through  $N + 1$ ) each contain 3 space-separated integers  $d$ ,  $h$ , and  $m$ , representing the day, hour, and minute (in that order) of that ride. The lines are all distinct and sorted by date.

**Output:** A single integer representing how much you will have to pay for the rides specified.

**Constraints:**  $1 \leq X, N \leq 1000$

$0 \leq d \leq 1000, 0 \leq h \leq 23, 0 \leq m \leq 59$

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### Sample Input 1

```
2 5
1 0 0
2 0 0
8 0 0
8 0 1
9 0 0
```

### Sample Output 1

```
3
```

**Sample 1 Explanation:** The first 2 rides must be paid for. Since rides 1 and 2 are within the 7 days preceding the 3rd ride, the 3rd ride is free (note that our measure of 7 days is inclusive). By the time of the 4th ride, ride 2 is the only paid ride within the 7 day window, so you need to pay for this ride. By the time of the 5th ride, rides 2 and 4 are the only paid rides within the 7 day window, so the 5th ride is free.

### Sample Input 2

```
1 3
1 20 23
8 20 22
8 20 23
```

### Sample Output 2

```
1
```

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