

# Boring Commercial

Now it is spring holidays. A lazy student has finally passed all final examination, and he decided to just kick back and just watch TV all day. Oh, his only source of entertainment is watching TV. And TV commercial, as usual, are a big nuisance for him. He can watch any thing on television, but cannot bear even a single second of commercial. So to prevent himself from the boredom of seeing the boring commercial, he keeps shuffling through the TV channels, so that he can watch programs on different channels without seeing even a single commercial.

## Problem

Given the number of channels, and the duration at which the TV commercials are showed on each of the channels, you have to write a program which will print the longest interval for which the lazy student can watch the television by shuffling between the different channels without ever seeing an TV commercial.

For example, consider the simplified situation where there are only three television channels, and suppose that he is watching TV from 2100 hrs to 2400 hrs. Suppose that the commercials are displayed at following time on each of the channels.

- Channel 1: 2100 to 2130, 2200 to 2230 and 2300 to 2330
- Channel 2: 2130 to 2200, 2330 to 2400
- Channel 3: 2100 to 2130, 2330 to 2400

Then in this case, he can watch TV without getting interrupted by commercials for full 3 hours by watching Channel 2 from 2100 to 2130, then Channel 3 from 2130 to 2330, and then Channel 1 from 2330 to 2400.

## Input

The input will consist of several cases. In each case, the first line of the input will be  $n$ , the number of channels, which will then be followed by  $p$  and  $q$ , the time interval between which he will be watching the TV. It will be followed by  $2n$  lines, giving the time slots for each of the channels. For each channel, the first line will be  $k$ , the number of commercial slots, and it will then be followed by  $2k$  numbers giving the commercial slots.

The input will be terminated by values 0 for each of  $n, p, q$ . This case should not be processed.

## Output

For each case, you have to output the maximum duration (in minutes) for which he can watch television without seeing any commercial.

## Sample Input

```
1 2100 2400
1
2130 2200
3 2100 2400
3
2100 2130 2200 2230 2300 2330
2
2130 2200 2330 2400
2
2100 2130 2330 2400
0 0 0
```

## Sample Output

```
120
180
```