Problem ID: sockets

"And this is where we research the influence of the magnetic pole in combination with irregular light exposure on vegetation of different environments." the scientist explains. You shiver a bit. Despite Antarctica being a cold place you and your friends decided to visit one of the research facilities there. After all Antarctica *is* a continent and thus must be included in a world trip.

"On way to achieve irregular light exposure we dismissed complex computer generated randomized times but instead used socket timers. You know, those things that consist of a clock and a socket. For each of them you can configure at which time and for how long the socket is provided with electricity. For instance, if you use it for the light like us, with a socket timer you can make the light be switched on every day at 8:00 and for 2 hours; the light automatically goes dark at 10:00 because then the output socket of the socket timer is turned off. Of course, all this only works if the socket timer itself is supplied with energy, because the clock itself needs electricity to run!

As you can probably guess, one socket timer alone doesn't really provide any irregularity, so we chained them. The effect is incredible! The plants never get light exposure at the same time of day. And the results look promising as well!" the scientist claims proudly. "So we decided to use this technique for all our future experiments. Though we have to always make sure that the time until the lights actually turn on for the first time isn't too long. After all, we don't want our plants to wither."

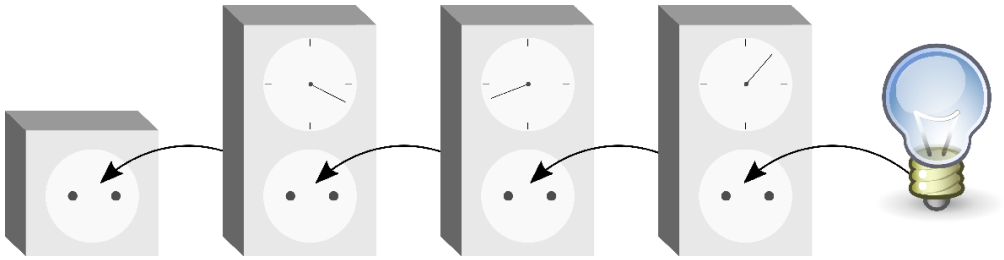

Figure 1: Chaining of socket timers

You are unsure about the value of this research but who are you to judge? So while the scientist continues to explain how the watering works, you try to figure out how this intricate system operates and when the plants will actually get light for the first time.

Input

The input consists of:

- One line with one integer n ($1 \leq n \leq 12$), the number of socket timers.
- n lines, each with two integers s and d ($0 \leq s < 24$, $0 < d \leq 24$), describing a socket timer that is configured to switch on at s:00 for d hours.

The socket timers are given in order, so the first timer is plugged into the power outlet and the light is plugged into the last one.

Output

When all clocks are initially at 0:00, what is the shortest time (in hours) to wait until the light switches on for more than a split second?

Sample Input 1

```
2
8 2
1 1
```

Sample Output 1

```
9
```

Sample Input 2

```
2
0 1
10 1
```

Sample Output 2

```
240
```

Sample Input 3

```
2
20 8
11 5
```

Sample Output 3

```
27
```