

# Problem E: Super Consulting

*Filename:* consulting

*Timelimit:* 3 seconds

Brian Mulch is too smart for his own good. Companies hire him because of his reputation to give business advice, but they never believe him when he tells them that their entire business strategy is flawed. Convincing them is such a chore. Not only will employees not believe him unless their direct superiors agree with him, but he was to convince everyone personally. You would think that if all your superiors were convinced that would be convincing enough, but it appears that everyone else has trouble communicating even the simplest of ideas. Because he is so perceptive, Mr. Mulch knows exactly how much mental energy is necessary to convince someone and how much mental energy will be drained in the process. For any given firm Brian would like to know the minimum starting mental energy required to convince everyone. There may be multiple possible orderings in which to convince people and some may be more efficient than others.

## Input

The first line of input contains a single positive integer  $n$  ( $n \leq 20$ ), the number of employees at a firm. Following this are  $n$  lines, each with three space separated integers:  $s_i$  ( $0 \leq s_i < n$ ,  $s_i < i$ ),  $r_i$  ( $0 \leq r_i \leq 10^3$ ), and  $d_i$  ( $0 \leq d_i \leq r_i$ ), the supervisor of employee  $i$  or -1 if this employee is the CEO, the mental energy necessary to convince employee  $i$ , and the mental energy drained in the process, respectively. Employees are numbered starting at 0 in the order of the input and the CEO is always the employee numbered 0.

## Output

On a line by itself, output a single integer, the minimum mental energy needed to convince everyone.

## Samples

Input	Output
4 -1 2 0 0 2 1 0 5 2 1 10 1	11
3 -1 4 2 0 6 2 0 5 3	9